



UK Information Exchange Standard

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Abstract

This document presents a generic model that specifies a standardised way of describing information for exchange purposes. It is intended to be implementation agnostic and independent of how any participating organisation might maintain that information within its own boundary.

The standard is modelled as an RDF Schema, RDF being the UK Government preferred format for data exchange, and an international standard managed by the World Wide Web Consortium. Valid IES files can use any of the approved W3C RDF serialisations (JSON, XML, N-triples, Turtle, etc.), and any receiving system should expect data in any of those serialised formats.

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Version History

Version	Date	Description/Summary
0.1	18 th March 2014	Write up of 1 st workshop.
0.2	4 th April 2014	Updates following EWG Workshop to review v0.1 and extend the core set of attributes.
0.3	17 th April 2014	Renamed and updated to reflect workshop review held on 09/04/14.
0.4	29 th April 2014	Incorporated final review comments before release to wider EWG for formal review.
0.5	30 th June 2014	Incorporated feedback from EWG review held on 16 th May 2014.
0.6	3 rd February 2015	<p>Incorporated feedback from, including:</p> <ul style="list-style-type: none"> • New TravelCard subtype of IdentityDocument added. • A number of typographical errors have been corrected. • New attributes added to BankCard entity. • New attributes added to CommunicationsDevice entity. • New attributes added to FinancialAccount entity. • New attributes added to the Passport subtype of the FinancialAccount entity. • Changes to the Introduction section • Attribute Groups added. • Revised example XSD • Addition of TravelBooking entity type.
0.7	27 th February 2015	<p>Incorporated feedback from EWG review meeting (19 Feb 2015)</p> <ul style="list-style-type: none"> • Rules for partial attribute values added • Entity & Attribute Definitions moved to a separate appendix with a different security marking from the main document (so that it can be distributed more widely). • Minor updates and typo fixes to Entity & Attribute Definitions • Class Model added to Appendix B.
1.0	3 rd June 2015	<p>Updated for formal release at v1.0</p> <ul style="list-style-type: none"> • Upper cardinality of source document references for attributes increased to many. • Introduction of the Uncategorised entity type. • New entity type – PaymentArtifact • BankCard entity type deprecated and now abstracted as a PaymentArtifact. • New entity type - Ticket • IdentityDocument.TravelCard deprecated and now abstracted as a Ticket.Travel. • Altitude attribute added to Location entity. • Height attribute added to Person entity. • Attribute tokenisation and wildcards revisited.
1.1	12 th February 2016	Draft of Version 2 that includes Events & Relationship definitions
1.2	30 th June 2016	Updated with examples of Relationships and Events
1.3	30 th July 2016	Separation of appendices into separately issued Annexes. Completion of Events and Relationship sections. Uncategorised types re-specified as Undefined types
1.4	30 th September 2016	Baseline version for review within the EWG prior to release at Version 2.0
1.5	11 th November 2016	Updated following review at EWG Working Group meeting of 4 th November 2016
1.6	2 nd December 2016	Updated document properties to fix printing problems in headers.
1.7	11 th January 2017	Updates resulting from feedback on Version 1.6
2.0	27 th January 2017	Final revisions for RELEASE at v2.0 which includes: <ul style="list-style-type: none"> • Introduction of BusinessIdentity to class model • Update to model description to account for BusinessIdentity • New section added that describes the uses for BusinessIdentity • Updates to attribute names to resolve clashes with real-world values. • New generic attribute qualifier added: DateRecorded • New section on Smart Data Labelling added.
2.1	3 rd March 2017	Minor paragraph style fixes
2.2	6 th April 2017	Inclusion of new type of Attribute Source Location: RelationalDBSourceLocation (document)

		change limited to update of Figure 1 only).
2.3	12 th May 2017	Inclusion of mechanism to support grouping of exchanged items: GroupOfItems (document change limited to update of Figure 1 only).
2.4	30 th June 2017	Addition of Security Label to Attributes.
2.5	24 th August 2017	Introduction section revised and now includes a Legal Disclaimer related to the definition of 'entity' and 'event' within the IES and its compatibility with the UK's Investigatory Power Act 2016 (IPA) for IES users who may be affected by it - e.g. Home Office and intelligence agencies. Document Control and References moved to the end of the document.
2.6	8 th November 2017	EWG review: <ul style="list-style-type: none">• Minor revisions to the introductory text• Entity ExchangedItems renamed ExchangePayload to better reflect its meaning.• Latest model (Figures 1 & 2) provided• IES Model Description updated to reflect model changes• Handling Caveat added to SecurityLabel• Reference to IES Governance Model added• EventLinkages section added.• Future Work section updated• Version shared with 3rd parties
2.7	11 th January 2018	Extensions & modifications for requirements identified by project-specific use. <ul style="list-style-type: none">• PayloadDetail class added to support payload-specific metadata• SecurityLabel added to ExchangedItem• The attribute cardinality rules have been relaxed such that exchanged items might have no attributes.• A new generic attribute qualifier IsPrimary introduced into the standard• New section on Security Labels added• Clarification of the use of the Undefined type when the type is defined but the subtype is not.
3.0	11 th January 2018	Released to Defence and National Security Community for their comments
3.1	19 th July 2018	Initial ideas for extending the model to provide better support for Source References and Attribute Groups.
3.2	7 th September 2018	Model diagrams updated (compatible with changes to example schema – Annex D) Refinements to IES Model Description Updates to use of Undefined entity types
v4 Beta Release	23 rd November 2018	Major changes: <ul style="list-style-type: none">• Now modelled using W3C's RDF Schema• Entity definitions that were in tables now modelled as RDFS Classes• Model is based on the BORO ontology as used in ISO15926 and in the DoDAF, NAF and MODAF meta-models.• Bindings to XML, JSON, etc. are now given by the W3C bindings - i.e. the IES just concentrates on the RDFS logical model - the serialisations are specified by W3C.
4.0.0 Official Release	3 rd April 2019	Minor changes resulting from external review process and from pilot implementations in Triplestores and MongoDB. For details of changes since beta refer to the Error! Reference source not found.
4.1.0		Changes resulting from project engagements <ul style="list-style-type: none">• Device - classes replace attributes - <i>make</i> property now points to Organisation, <i>installedSoftware</i> replaces <i>operatingSystem</i>, <i>model</i> now relates to <i>ModelOfDevice</i>• Currency model revised to use classes, and link to ISO standard ID and country• TelephoneCountryCode revised to uses classes and link to Country• Documents - DocumentFormat added as class, title changed to subclass of Name, publicationDate now an objectProperty to ParticularPeriod• DataObject - DataKey becomes an identifier and ObjectName a Name• IdentityDocument - dates changed to objectProperties pointing at ParticularPeriod. idGender now an objectProperty. visaType now an objectProperty• Person - Gender now a Class

	<ul style="list-style-type: none"> • Communication / Online Event - there were two classes for Message - Message and Messaging. Messaging has been removed. • vehicleColour now changed to objectProperty (hasColour) and moved up to AssetState • GeoRepresentation, ISO19125-WKT and GeoJSON added (see Location page) • Language is now a class and hasLanguageProficiency links a PersonState to their LanguageProficiency - also inLanguage property added to Representation, and called-out the proficiency as a class in its own right • PaymentArtefact - branding now relationship to Organisation, cardType now relationship to a Class, areaOfCoverage now relationship to Location • AgreementName added - now using naming pattern • Business - transferType now an objectProperty (relationship) • CriminalActivity - type of offence now managed as a class, and the offenceCode identifies the Class • PartNumber now identifier on ModelOfDevice • serviceIdentifier now TravelServiceIdentifier • Observation pattern added • Actor and ResponsibleActor replace PersonOrOrganisation • serviceType now onlineServiceType and is now an objectProperty • ClassOfFinancialAccount added. JointAccount added • bookingMethod now implemented as ClassOfTravelBooking • paymentMethod (TravelBooking) now replaced using the Trade model • Rights and Reservations added • Interest - now modelled as states so that attributes can be attached. • altitude - now uses the measures and characteristics model • PointOnEarthSurface, Latitude, Longitude and isCentroidOf added, replacing the old geoidentity which was a hangover from IES3 and made no sense in 4. • hasHeight (person) now uses characteristics and measures model - now PersonHeight • hasTheme (Investigation, Communication, etc.) added to cover those things that are of interest post-event or thematically - e.g. the thing being investigated is not involved formally • Definition for IPAddress still mentioned attribute qualifiers (from v3 of IES) for dealing with IPv4 and IPv6. These are now subtype of IPAddress • A very large number of definitions were incomplete, wrong or just missing. These are now fixed • GeoPoint added - supertype of PointOnEarthSurface - this allows for points above or below the surface of the earth • PassengerName, SeatNumber and BoardingCardNumber are now identifiers and names of Passenger • countryOfRegistration and countryWhereRegistered merged • A basic model for characteristics, measures and units of measure has been added as the current reliance on strings and fixed units was seen to be inadequate by users • PartOfFacility and RoomNumber added • AssessToBeTrue and PossibleWorld added - straw-man models for working with probabilistic data and scenarios • Disposition - Capability and Tendency added - way to deal with dispositional properties <p>payloadContents relationship added - provides way to hold more than one payload per file</p>
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4.2.0	2nd September 2020	<p>Changes resulting from project engagements</p> <ul style="list-style-type: none"> • Possible Worlds Model Added - placeholder for dealing with modal logic. This will grow over time. Shown on assessments page. • TerroristOrganisation now a subtype of OrganisationState to allow for different parties viewing and organisation as being terrorist at different times. This also allows the assessments model to be used. • CriminalOrganisation added - subtype of OrganisationState, working in a similar way to TerroristOrganisation • LawEnforcementOrganisation added - subtype of Organisation. • ClassOfOperation added at request of Home Office Vivace. This enables them to manage multiple taxonomies of criminal investigations in used throughout the UK and international partners • Authorisation model added at request of HO Vivace - provides a high-level framework for things like warrants and other types of authorisations. • EventState added • make and serialNumber now properties of Asset rather than Device • staysAt added to show where a Person stays as opposed to where they legally reside. • VersionOfDocument added • NetworkInterface added • RadioMast and CellularBaseStation added • RadioCoverageArea added • MapGridArea and OSGridReference added (requested by Police / Home Office) • Easting and Northing added (requested by Police / Home Office) • nephewOrNieceOf and cousinOf added • Team and Department added to organisation model • ClassOfOrganisation added (requested by Police / Home Office) • OrganisationIdentifier added (requested by Police / Home Office) • Accent added (requested by Police / Home Office) • DocumentSection added (requested by Police / Home Office) • AuthorisationDocument and RequestDocument added (requested by Police / Home Office) • EncodedData and JsonData added (requested by Police / Home Office) • "model" property removed - now use rdf:type
4.3.0	16 December 2024	<p>Changes resulting from project engagements</p> <ol style="list-style-type: none"> 1. Added Stuff and Count pattern, including addition of: <ul style="list-style-type: none"> • Stuff class • FiniteClassOfElement class • finiteMembershipCount attribute • pluriverse as an instance of Element • Added example use 2. Added Replaceable Parts pattern, including addition of: <ul style="list-style-type: none"> • ReplaceablePart class • InstalledState class as a superclass of InPost (non-breaking) • Added example use 3. Changes to Payloads and Groups pattern: <ul style="list-style-type: none"> • (Bug fix) Added rdfs:subClassOf relation between SecurityLabel and rdfs:Resource • (Bug fix) Added rdfs:subClassOf relation between ExchangedPayload and rdfs:Resource 4. Changes to Posts and Roles pattern: <ul style="list-style-type: none"> • Removal of hasRole, Role and OrganisationRole (breaking change).

		<p>Instead use ReplaceablePart/InPost example now provided in the same pattern</p> <ul style="list-style-type: none"> • Update to definition of InPost now that is also a InstalledState • Corrected relationship between inPost and Post from isPartOf to isStateOf <p>5. Changes to Assessment pattern:</p> <ul style="list-style-type: none"> • Addition of Assessment as a new superclass of AssessToBeTrue (non-breaking) <p>6. Changes to Location pattern:</p> <ul style="list-style-type: none"> • regionCountry, addressRegion deleted. Use inLocation instead • isCentroidOf corrected from being a subProperty of relationship to inLocation • MapGridArea no longer an Asset as well as a Location • RadioCoverageArea no longer an Asset as well as a Location <p>7. Changes to Where and When pattern:</p> <ul style="list-style-type: none"> • happensIn, takesplaceIn deleted. Use inLocation instead. <p>8. Changes to Asset pattern</p> <ul style="list-style-type: none"> • storedIn deleted. Use inLocation instead. <p>9. Changes to Communications Device pattern:</p> <ul style="list-style-type: none"> • Removal of installedSoftware, replaced with InstanceOfSoftware which can be associated as being installed using isPartOf. • Removed ModelOfDevice and ClassOfDevice. Instantiations of ModelOfDevice to be done instead using subClassOf Device. • Linked Device to PartNumber using isIdentifiedBy <p>10. Changes to Period of Time pattern:</p> <ul style="list-style-type: none"> • ParticularPeriod URI pattern now mandated to be non-punctuated encoding (20070118T153000Z). This avoids the use of escape characters in the URI. NOTE: the literal for iso8601PeriodRepresentation remains punctuated. • ParticularPeriod mandated to be in UTC / Zulu time • Period of Time diagram changed to reflect changes to URI encoding • Updates to all examples to include new encoding <p>11. Changes to Disposition pattern:</p> <ul style="list-style-type: none"> • Correction to allHaveDisposition rdfs:Domain - fixed to ClassOfElement not Element <p>12. Changes to Amount of Money pattern:</p> <ul style="list-style-type: none"> • Currency identifier correct to ISO4217Code not ISO639-3Code (country code) <p>13. Changes to Online and Communication patterns covering Message. Message used to inherit from both OnlineEvent and Communication which didn't make sense considering SMS is a subtype of Message. Changes included:</p> <ul style="list-style-type: none"> • Deleted subclass relation between Message and OnlineContentEvent • Added OnlineMessage class with the definition of "A Message that was sent Online." • Added OnlineMessage to the OnlineEvent diagram • Made OnlineMessage a subclass of OnlineContentEvent and Message • Added Communication class to OnlineEvent diagram • Changed Message definition from "A Communication or OnlineContentEvent where a message is sent" to "A Communication where a message is sent" <p>14. IES 4.2 had ClassOfElements and subProperties of rdf:type which encouraged extending the IES classes via ClassOfElements hierarchy rather</p>
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		<p>than the Elements hierarchy. IES 4.3 prunes some of classes (breaking changes) to discourage this behaviour and encourage one approach of extending IES. This approach is documented in "Extending IES4 2024-03-v1.0 O.pdf". Pruned classes and properties include:</p> <ul style="list-style-type: none"> From Authorisation pattern - AuthorisationEventClass deleted – just use subclasses of AuthorisationRequest or GrantOfAuthority. Also requestedActivity, grantedActivityType and allAuthorisedAgainst deleted From Operational pattern - ClassOfOperationalEvent, ClassOfCriminalActivity and typicallyTargets From Criminal pattern - Deleted of special forms of rdf:type, typeOfCriminality. Also deleted OffenceCode. From Financial Account pattern - Deleted special forms of rdf:type, financialAccountType ClassOfFinancialAccount From Organisation pattern - Deleted ClassOfResponsibleActor From Identity Document pattern - Deleted special form of rdf:type, visaType. Also deleted ClassOfTravelVisa. From PaymentArtefact pattern - cardType and ClassOfPaymentArtefact. Just extend PaymentArtifact From Business pattern - deleted transferType and ClassOfMoneyTransfer. Instead just extend TravelBooking From Online pattern - deleted onlineServiceType and ClassOfOnlineService. Instead just extend OnlineService. Also deleted ClassOfWebResource. From Travel Booking - deleted bookingType and ClassOfTravelBooking From Communications Account - deleted ClassOfAccount <p>15. Other changes:</p> <ul style="list-style-type: none"> ExchangedItem changed to Thing. Its definition has also been changed. VersionNumber - update to definition to apply to anything that is identifiable currencyDenomination no longer a subProperty of relationship and rdf:type. Its now just a subtype of rdf:type only. isParticipantStateIn deleted. Just use isParticipantIn. Removed all references of PersonOrOrganisation. All updated to ResponsibleActor Marriage no longer a subClassOf LawEnforcement Latitude and Longitude specified to be xsd:decimal literals hasTheme no longer domain as Investigation, Communication and Meeting. Now that of only Event Updated comment for RecurringPeriod. Changed mention of recurringFrom and recurringUntil to startsIn and endsIn respectively within the definition of RecurringPeriod. Also corrected the mention of recurrentPeriodRepresentation from recurrentPeriod in the definition of RecurringPeriod. Inclusion of missing powertype relations between Elements and ClassOfElements
4.0.0 Official Release	3rd March 2025	License change from Apache 2 to MIT

From version 4.0.0. onwards IES follows a semantic versioning approach - see <https://semver.org/>

Introduction

Background

Across the UK Government there are many separate knowledge stores, including multiple stores within each organisation; and this will remain the case for many years. Many of the knowledge stores contain similar information about the real world but, for numerous technical and business reasons, there is no standardised way of representing such content – this is usually because different terminologies, formats and/or schemas are used for each of these stores.

Analysts across the police, defence and national security community need comprehensive access to the information distributed across these many knowledge stores so that they can concentrate their efforts on analysis and exploitation tasks without having to broker between different internal formats and schemas. Being able to exchange and share information effectively and efficiently is therefore imperative and needs to be achieved without the need for collaborating organisations to:

- develop numerous and bespoke bilateral interchange mechanisms;
- make costly and highly disruptive changes to their individual knowledge stores.

The Information Exchange Standard (IES) was developed in order to enable that collaboration.

Purpose of the IES

The purpose of the IES is to make information exchange easier by providing a common vocabulary for data/information exchanges between knowledge stores. Information from each store is converted to/from the common vocabulary when it travels. Users and systems no longer need to understand many different formats and schemas. Each system only has to understand the relation between its own internal model and that of the IES, dramatically reducing complexity.

A note on the name of the standard

The Information Exchange Standard, as its name suggests and as described in the earlier sections of the Introduction above, was originally devised as a specification for exchange of data/information amongst organisations that need to collaborate to best achieve their individual mandates, but which is independent of the way that the data/information might be retained within each organisation.

This initial purpose gave rise to the name of the standard. However, this does not preclude IES from being used as a specification for wider purposes beyond that of data/information exchange; in fact, IES has already been used as a specification for the way that data/information is persisted in several organisation deployments.

It has been suggested that the name of the IES standard be changed to reflect its wider applicability. Whilst this has been considered, it has been decided that for the time being, and as the standard continues to mature and be promoted, a name change would not be helpful. This decision may be re-addressed at some point in the future.

IMPORTANT: Whilst the IES may be used as a specification for data/information persistence the standard itself does not provide any end-point implementation of such.

Approach

The selection of information types included in the IES is orientated towards those felt to be of greatest interest to a majority of working-level analysts across HMG. The IES recognises that it would be unrealistic to attempt to model the whole world. Nor does it cover highly specialised information types; these will be covered by specialist communities. There are three criteria for including an information type in the IES:

- at least one organisation wants to share the information;
- at least one organisation wants to receive it;
- someone is able and willing to define it.

It is also accepted that users will need to exchange information beyond the scope of any specific version of the

standard. The IES achieves this by including agile extension mechanisms that do not necessitate a potentially time-consuming revision of the standard itself.

Implementation

From v4.0.0, the IES is specified as an RDF Schema. RDF is a standard published by the World Wide Web Consortium (W3C) and is the preferred data exchange format in UK Government. One of the major benefits of using RDF is that the W3C has specified a number of standard data serialisations which have been widely implemented in commercial and open source tools. This means that the IES specification no longer needs to specify its own serialisations. This does mean that any IES compliant interface should be able to read any of the W3C RDF standard serialisation formats. Given the amount of open-source RDF software that can already do this, that should not be a barrier to entry.

Constraints

As with previous versions of IES, the model is only loosely constrained. The model specifies domains and ranges for relationships (RDF properties) but they are purely indicative. Similarly, for Event Participations, IES does not formally constrain which Entities can participate in particular Events - rather it indicates which should be used. The goal is to allow any sending party to express the information they want whilst still providing a framework. Receiving parties should expect to receive such data.

In future releases, it is anticipated that the model will become more constrained as users feed comments back and the IES adapts to different usage patterns.

Extending the Model

As with the previous version of IES, version 4 allows the model to be extended within a particular data exchange file. Unlike the previous versions though, IES 4 uses the W3C's RDF Schema which allows new classes and properties to be defined in data payloads. When extending the IES, users should subtype from the most appropriate class, and also specialise properties from existing properties. This will aid understanding by the receiving party, which is likely to only know about the core IES classes.

Introduction to 4D Ontology

One of the biggest changes from previous versions of IES is the use of the BORO Methodology. BORO is a modelling approach for developing ontologies that are particularly good at describing how things change and move over time - perfect for investigations, operations and intelligence sharing. The BORO approach has previously been used in the Oil and Gas industry for data sharing, resulting in the ISO15926 standard. It has also been used in defence before, under the 5EYES IDEAS Group where the upper ontology that was developed went on to be used in DoDAF, MODAF, NAF and the OMG's UPDM standard.

What is an Ontology?

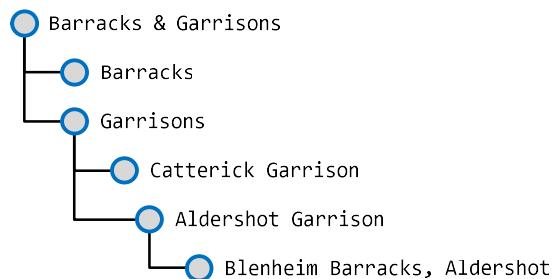
An ontology is a formal model of stuff we are interested in. It defines physical things, types of things, and relationships between them. To be taken seriously as an ontology, certain features have to be in place. A proper ontology must have some underpinning in formal logic and/or set theory – this basically means the fundamental building blocks of the ontology are based on sound mathematical and logical principles. Most serious ontologies also have consistent ways to deal with common concepts such as time, location, properties, etc. Finally, if the ontology is to be developed by more than one person, some sort of repeatable methodology is required. Defining all these things from first principles is a lot of work, so most ontologies re-use an existing “upper ontology”.

So, in summary, an ontology is an extensible model of the things we’re interested in. Formal ontologies provide a set of fundamental components which can be extended to particular domains, and connected together using standard patterns of business logic so as to provide accurate, useful models of those domains of interest. For IES, we have chosen an existing upper ontology with 5EYES pedigree (IDEAS) that we can extend for our purposes, and we’ve chosen an existing and proven methodology (BORO).

What an Ontology isn’t

An ontology has some features in common with data models and taxonomies, but it is important to describe how these differ. A data model defines the structure of some data storage system – e.g. a database or data file. Data models are often developed in three stages; conceptual, logical and physical. The conceptual data model is intended to be an implementation-neutral specification of the core concepts and the relationships between them. The logical data model adds some rigour to the model, but will generally still be reasonably implementation-neutral. The physical data model takes the requirement specified in the logical model and attempts to map it to the storage mechanism of the implementation. An ontology is somewhat like a conceptual model, but one where the logical rigour of the logical data model is enforced by the modelling approach (i.e. it does away with the conceptual/logical split). Furthermore, an ontology is not confined to just types of information. The rigid divide between data model and data that drives traditional information systems development does not exist in an ontology – everything is data. This allows models to adapt and grow with minimal impact on implementation.

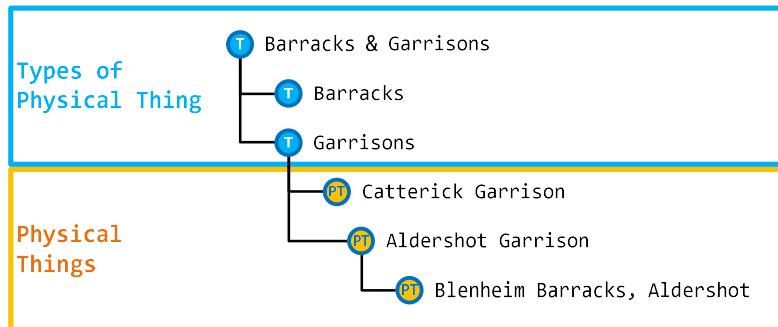
In common with a taxonomy, an ontology generally has a hierarchy of classes – types of things. The difference between the two is really one of rigour and purpose. A taxonomy (for information management purposes) is generally structured to enable the classification of information. This classification work is done in order to aid discovery of that information, and so the taxonomy’s structure is dictated by the requirement to make information easier to find. An ontology’s purpose is to provide an accurate model of the business, so tends to take a more neutral and pedantic approach to classification. The example below is from the UK Defence Taxonomy:



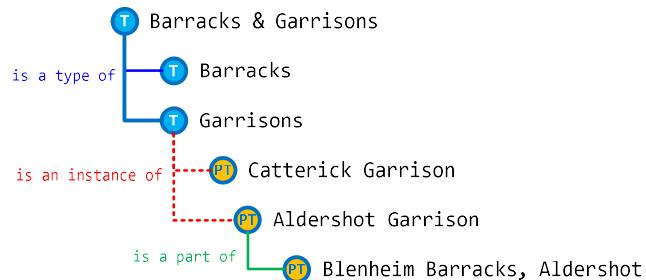
A taxonomy works with words, and the relationships between words. In this case, as we descend the tree, the words become narrower in terms of what they refer to. This is great as a filing system as it allows us to be systematic about

where we store our information whilst providing a hierarchical way to search for it.

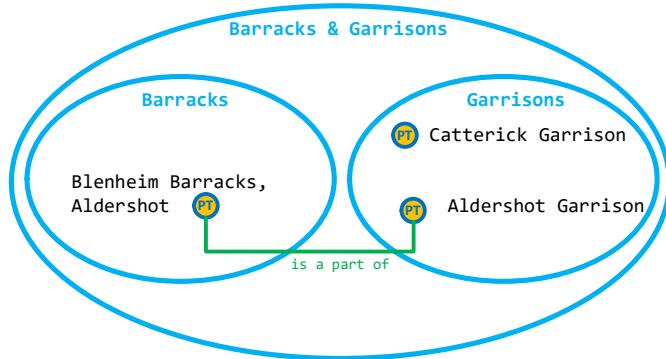
An ontology is intended to be both computer and human interpretable – i.e. it requires a little more semantic and logical rigour. The first enhancement required is to work out the nature of the elements in the taxonomy. Some of these elements are types of things, whilst others are physical things:



Although the broader-narrower relationship between the words holds true, the relationships between the things in the real world to which those words refer¹ is somewhat more varied:



Aldershot and Catterick Garrisons are both *instances* of Garrisons. Barracks is a *type* of Barracks and Garrisons. Blenheim Barracks are *part* of Aldershot Garrison. By being this specific, an ontology allows much more automated processing of information – e.g. counting the number of Garrisons, knowing that Blenheim Barracks is located at Aldershot are then computable, whereas that wouldn't be possible with the less semantically rich broader-narrower relationships. Venn diagrams are sometimes a convenient way to show concepts in an ontology:



The classes are shown as ovals (sets) and the individual physical items as orange dots. The is-part-of relationship is also shown. Developing a good ontology is all about identifying this level of detail and using solid logical principles to model the patterns that emerge.

This level of rigour is not often found in data models either, though much can depend on the data modeller who produced them. Unfortunately, the jump to physical data model can often undo some of this rigour, and often all of

¹ The term “Aldershot Garrison” refers to the actual Aldershot Garrison, but the words are not the thing itself. In linguistics, we can talk about broader and narrower terms. Those relationships between terms usually mirror some relation between the things being referred to, but the nature of those underlying relationships may be very different.

its expressivity. The reason implementers design-out flexibility is usually one of performance – the chosen implementation (usually relational database) cannot be made to perform with such a model. For this reason, ontologies tend to be implemented using a different paradigm to traditional IT systems. Triplestores are the most common way to implement ontologies, as the physical storage pattern closely mirrors the structure of ontologies, obviating the mapping from logical to physical.

One way to think of an ontology is as a set of interlocking building bricks that can be assembled into any number of different things, whereas a data model is more like a model aeroplane that can only be assembled in one way. If you want to build something different with the model aeroplane kit, it's going to require some serious engineering – especially if you've already built it. Changing a brick model at "run time" is reasonably easy however. Extending this already rather tenuous metaphor to taxonomies is a bit of a stretch, but perhaps the taxonomy could be seen as a guidebook to the components of the aeroplane.

The BORO Method

In choosing a formal upper ontology, we have imposed some rules, restrictions and ways of working on ourselves. In this case, the BORO Method is particularly picky about what it calls "criteria for identity". In a nutshell, BORO is not really concerned with the words used to describe concepts. It accepts that everyone has different names for similar (or the same) things, and often the same name is used by different parties to describe different things. The creator of BORO places the blame for all our poor information systems squarely at the door of this problem. BORO takes a different approach - any given thing must be identified in terms of its extent. If it's a physical thing, the extent is defined in space and time - if two things occupy precisely the same space at the same time, they're the same thing. Similarly, if the membership of two classes is the same (e.g. equiangular triangles, and equilateral triangles) then they are the same class. In BORO, you create only one thing (class or element) and attach multiple names, with their appropriate context.

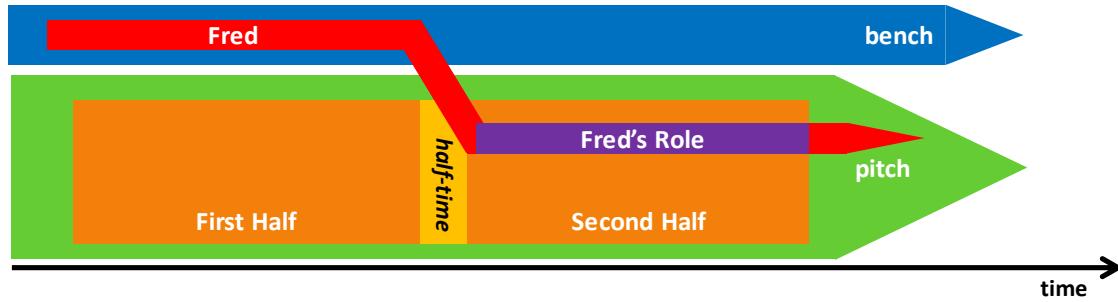
Whilst it all sounds very simple, using the BORO method is anything but simple. We are all rather wedded to our own terminologies and views of the world. Conducting a BORO analysis, especially as a committee, can be very challenging indeed. IES 4 could not claim to be a full BORO ontology for this reason. Rather, it has been guided by the BORO approach, but still retains many of the concepts and structures from previous versions of IES.

Four Dimensions

A consequence of the BORO approach, and extensional ontologies in general, is that they end up treating time the same way they treat space. At first, this can be rather counter-intuitive, but it does provide a very consistent and clear approach for describing how things change and move over time. This takes a little getting used to, but the approach really boils down to creating states of things. So, there's me and there's me last week, which is a state of me. The diagram below shows the Old War Office Building and some of its states:



States can be identified for anything with a spatio-temporal extent. The IES model goes into this in more detail, but the use of states can give us some very powerful capabilities for managing change over time. The example below shows a football match where Fred only plays in the second half.



Fred's role in the match is a state of Fred (all of him for 45 mins) that is in the match - i.e. that state of Fred is part of the match. This approach is used extensively throughout IES 4.0 for entities that take part in events - these are called EventParticipations in IES.

Legal disclaimer for "entity" and "event"

Some of the users of IES may be subject to the Investigatory Powers Act 2016 ("IPA"). This section of the standard is intended to clarify some terms that are used in IES that should not be confused or conflated with terminology from the IPA.

For the purposes of the IES, the entity and event types that are supported within the standard are defined in the model. The meanings assigned to these terms operate solely and exclusively for the purposes of the IES in order to provide a standardised way of describing information to facilitate information sharing between organisations. Neither the IES, nor the categorisation of data pursuant to the IES, are otherwise relevant to each organisation's internal arrangements for categorising, handling or safeguarding data they hold.

The terms entities and events are separately defined in the UK for the purposes of the Investigatory Powers Act 2016 ("IPA"). The IPA definitions are limited to the telecommunications context and are therefore a subset of the entity and event types that are supported within the IES. Any data obtained or retained by an organisation under the IPA must be categorised according to the IPA definitions, and the IPA safeguards must be applied in accordance with those definitions.

IES Model

Notation

The IES4 model has been developed using the OMG's ontology definition meta-model (ODM) profile for UML. Whilst UML may be somewhat foreign to ontology developers, ODM seemed a reasonable compromise for presenting the model to both data architects and ontologists.

Notes for data modellers:

Basic background reading on how to use RDF is the book "Semantic Web for the Working Ontologist".

Otherwise, things to watch out for in the UML are:

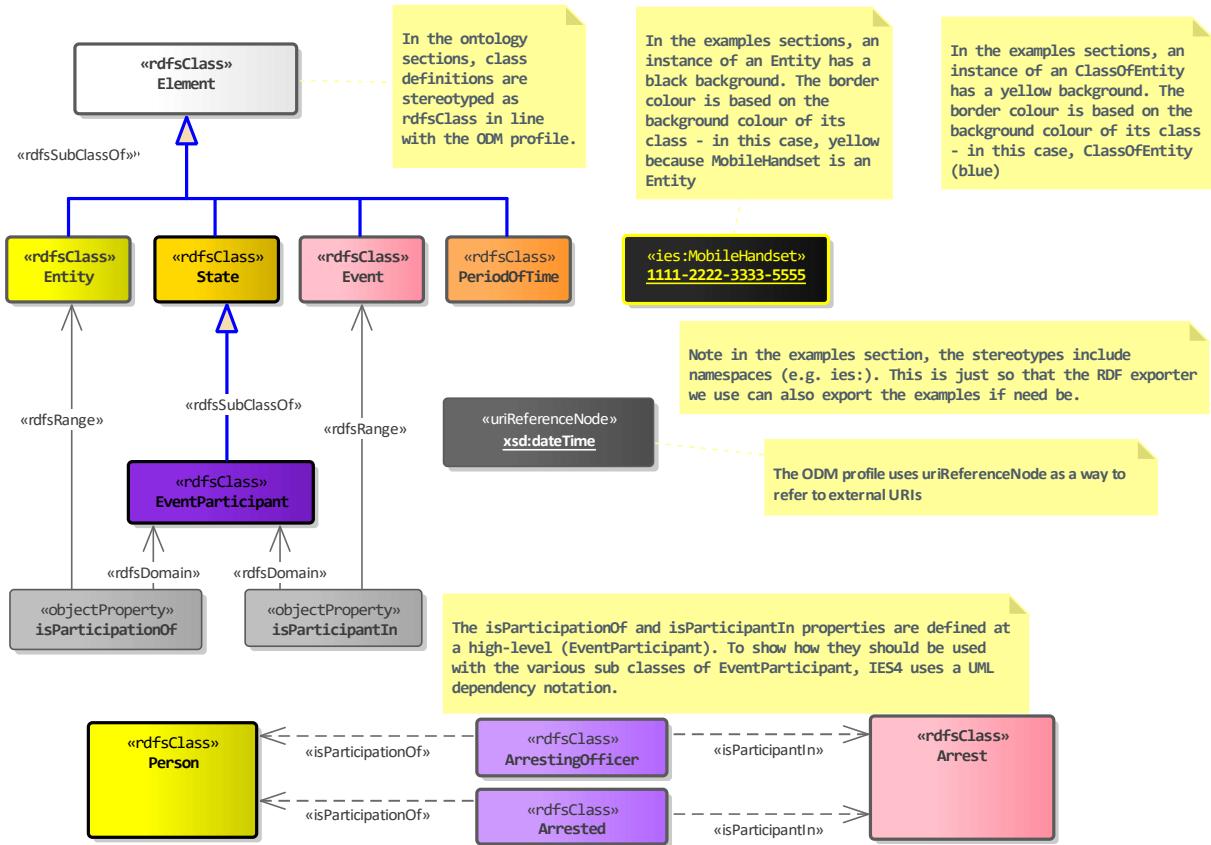
- Relationship definitions and attributes (properties in RDF speak) are shown as boxes rather than lines.
- Multiple inheritance and multiple classification is not just possible, but encouraged in ontology modelling
- Properties (relationships and attributes) can be specialised using the rdfs:subPropertyOf relationship

Notes for ontologists:

- The model uses RDF Schema in preference to OWL wherever possible - this ontology is not intended for reasoning / inference
- It is a formal 4D ontology using the BORO approach...
- ...In other words, the emphasis is on real-world semantic and precision of description rather than any compromises to enable reasoning.
- The ontology is higher order (classes of classes of classes...etc.), and extensional.
- The Sparx ODM template uses something called uriReferenceNode to refer to an external resource. There are a few of these in the ontology, used where it makes reference to RDFS or RDF class definitions.
- There are several sub-classes of classes defined in RDF and RDFS, and also some sub-properties of rdf:type

General notes on notation:

- UML Stereotypes (e.g. <<rdfsClass>>) are used as a shortcut to indicate class membership (rdf:type). It means the thing you're seeing on the page (box or line) is an instance of the thing specified in the stereotype.
- There is an examples package (not exported with the RDF) that contains a number of instances used in example diagrams. Instances of **Elements** are shown with a black background. Instances of **ClassOfElement** are shown with a yellow background if they're **ClassOfEntity** and a pink background if they're **ClassOfEvent**.
- Stereotypes are used liberally (see above) as a shorthand for rdf:type
- rdfs:subClassOf (relates classes to their supertypes) is shown with a thick royal blue line
- rdfs:subPropertyOf (related properties to their subproperties) is shown with a thick dark blue line
- Sometimes, a pattern defined at a high-level is referred to using a UML:dependency. This has no formal semantics other than to indicate to the implementer that the pattern should be used in this case



Model Change Log

v4 Beta 1 - Released September 2018 to IES team for internal review

v4 Beta 2 - Released December 2018 to wider community for review, including some implementation trials

v4.0.0 - FIRST OFFICIAL RELEASE - Changes resulting from initial release and trial implementations

- Rename iso3166-1Alpha-3 to iso3166_1Alpha_3 - hyphens may cause issues with some programming languages (e.g. Python)
- Rename UN-LOCODE to UN_LOCODE - hyphens may cause issues with some programming languages (e.g. Python)
- Addition of SubjectOfInterest - required for every inter-agency data exchange trial implementation
- Addition of isPrimaryForOrganisation - added to cover things like primary names, primary SOIs, etc. within context of an organisation
- "venue" attribute on Ticket changed to "venueStatedOnTicket" to make it clear this may not be the final venue of the event
- Attendance added as subtype of Presence for when the Entity present is a Person (particularly useful with unidentified people)
- Duration added - this was an oversight. It had been discussed and was supposed to have been added, but slipped through the net.
- Reversed the direction of all the representation relationships (names, IDs, etc.) as the existing direction was counter-intuitive in RDF TTL and JSON-LD
- vehicleIdentificationNumber had not been changed to an Identifier before initial release. This was an oversight. Now corrected.
- bookingReference had not been changed to an Identifier before initial release. This was an oversight. Now corrected.
- Added knownAssociate to the Social diagram
- isTeacherOf added to Professional diagram
- worksWith reinstated (was taken out in v4, but there are cases where it can't be replaced by organisation and employedBy)
- PeriodOfTime was causing problems in initial implementations around how to query it. This has now been fixed with the explicit addition of ArbitraryPeriod and the rationalisation of the attributes used.
- Added OnlineArtefactInEvent to cover when OnlineArtefacts participate in online events
- Added Cookie as an OnlineArtefact and also a relationship called cookieOnDevice
- Changed a lot of IDs and Names in the Online diagram that were attributes into Names and Identifiers.
- URI is now all upper-case
- Added subtypes of CommunicationsAccount - e.g. TelephoneAccount, EmailAccount, etc.
- Added hostedOn relating a WebResourceState to the OnlineService that hosts it
- WholeLifeState removed. Was never needed and was a hangover from early IES 4 development work.
- holderOfAccount direction changed and renamed to holdsAccount
- ClassOfState added to enable Roles
- Roles and Posts added
- OnlineAccountState added to cope with changing screen names, passwords

v4.1.0 - Changes resulting from project engagements

- Device - classes replace attributes - *make* property now points to Organisation, *installedSoftware* replaces *operatingSystem*, *model* now relates to ModelOfDevice
- Currency model revised to use classes, and link to ISO standard ID and country
- TelephoneCountryCode revised to uses classes and link to Country
- Documents - DocumentFormat added as class, title changed to subclass of Name, publicationDate now an objectProperty to ParticularPeriod
- DataObject - DataKey becomes an identifier and ObjectName a Name
- IdentityDocument - dates changed to objectProperties pointing at ParticularPeriod. idGender now an objectProperty. visaType now an objectProperty

- Person - Gender now a Class
- Communication / Online Event - there were two classes for Message - Message and Messaging. Messaging has been removed.
- vehicleColour now changed to objectProperty (hasColour) and moved up to AssetState
- GeoRepresentation, ISO19125-WKT and GeoJSON added (see Location page)
- Language is now a class and hasLanguageProficiency links a PersonState to their LanguageProficiency - also inLanguage property added to Representation, and called-out the proficiency as a class in its own right
- PaymentArtefact - branding now relationship to Organisation, cardType now relationship to a Class, areaOfCoverage now relationship to Location
- AgreementName added - now using naming pattern
- Business - transferType now an objectProperty (relationship)
- CriminalActivity - type of offence now managed as a class, and the offenceCode identifies the Class
- PartNumber now identifier on ModelOfDevice
- serviceIdentifier now TravelServiceIdentifier
- Observation pattern added
- Actor and ResponsibleActor replace PersonOrOrganisation
- serviceType now onlineServiceType and is now an objectProperty
- ClassOfFinancialAccount added. JointAccount added
- bookingMethod now implemented as ClassOfTravelBooking
- paymentMethod (TravelBooking) now replaced using the Trade model
- Rights and Reservations added
- Interest - now modelled as states so that attributes can be attached.
- altitude - now uses the measures and characteristics model
- PointOnEarthSurface, Latitude, Longitude and isCentroidOf added, replacing the old geoldentity which was a hangover from IES3 and made no sense in 4.
- hasHeight (person) now uses characteristics and measures model - now PersonHeight
- hasTheme (Investigation, Communication, etc.) added to cover those things that are of interest post-event or thematically - e.g. the thing being investigated is not involved formally
- Definition for IPAddress still mentioned attribute qualifiers (from v3 of IES) for dealing with IPv4 and IPv6. These are now subtype of IPAddress
- A very large number of definitions were incomplete, wrong or just missing. These are now fixed
- GeoPoint added - supertype of PointOnEarthSurface - this allows for points above or below the surface of the earth
- PassengerName, SeatNumber and BoardingCardNumber are now identifiers and names of Passenger
- countryOfRegistration and countryWhereRegistered merged
- A basic model for characteristics, measures and units of measure has been added as the current reliance on strings and fixed units was seen to be inadequate by users
- PartOfFacility and RoomNumber added
- AssessToBeTrue and PossibleWorld added - straw-man models for working with probabilistic data and scenarios
- Disposition - Capability and Tendency added - way to deal with dispositional properties
- payLoadContents relationship added - provides way to hold more than one payload per file

v4.2.0 - Changes resulting from project engagements

- **Possible Worlds Model Added** - placeholder for dealing with modal logic. This will grow over time. Shown on assessments page.
- **TerroristOrganisation** now a subtype of OrganisationState to allow for different parties viewing an organisation as being terrorist at different times. This also allows the assessments model to be used.
- **CriminalOrganisation added** - subtype of OrganisationState, working in a similar way to TerroristOrganisation
- **LawEnforcementOrganisation** added - subtype of Organisation.
- **ClassOfOperation** added at request of Home Office Vivace. This enables them to manage multiple taxonomies of criminal investigations in use throughout the UK and international partners
- **Authorisation** model added at request of HO Vivace - provides a high-level framework for things like warrants and other types of authorisations.
- **EventState** added
- make and serialNumber now properties of Asset rather than Device

- `staysAt` added to show where a Person stays as opposed to where they legally reside.
- `VersionOfDocument` added
- `NetworkInterface` added
- `RadioMast` and `CellularBaseStation` added
- `RadioCoverageArea` added
- `MapGridArea` and `OSGridReference` added (requested by Police / Home Office)
- `Easting` and `Northing` added (requested by Police / Home Office)
- `nephewOrNieceOf` and `cousinOf` added
- `Team` and `Department` added to organisation model
- `ClassOfOrganisation` added (requested by Police / Home Office)
- `OrganisationIdentifier` added (requested by Police / Home Office)
- `Accent` added (requested by Police / Home Office)
- `DocumentSection` added (requested by Police / Home Office)
- `AuthorisationDocument` and `RequestDocument` added (requested by Police / Home Office)
- `EncodedData` and `JsonData` added (requested by Police / Home Office)
- "model" property removed - now use `rdf:type`

v4.3.0 - Changes resulting from project engagements

1. Added `Stuff` and `Count` pattern, including addition of:
 - `Stuff` class
 - `FiniteClassOfElement` class
 - `finiteMembershipCount` attribute
 - `pluriverse` as an instance of `Element`
 - Added example use
2. Added `Replaceable Parts` pattern, including addition of:
 - `ReplaceablePart` class
 - `InstalledState` class as a superclass of `InPost` (non-breaking)
 - Added example use
3. Changes to `Payloads and Groups` pattern:
 - (Bug fix) Added `rdfs:subClassOf` relation between `SecurityLabel` and `rdfs:Resource`
 - (Bug fix) Added `rdfs:subClassOf` relation between `ExchangedPayload` and `rdfs:Resource`
4. Changes to `Posts and Roles` pattern:
 - Removal of `hasRole`, `Role` and `OrganisationRole` (breaking change). Instead use `ReplaceablePart/InPost` example now provided in the same pattern
 - Update to definition of `InPost` now that is also a `InstalledState`
 - Corrected relationship between `inPost` and `Post` from `isPartOf` to `isStateOf`
5. Changes to `Assessment` pattern:
 - Addition of `Assessment` as a new superclass of `AssessToBeTrue` (non-breaking)
6. Changes to `Location` pattern:
 - `regionCountry`, `addressRegion` deleted. Use `inLocation` instead
 - `isCentroidOf` corrected from being a `subProperty` of relationship to `inLocation`
 - `MapGridArea` no longer an `Asset` as well as a `Location`
 - `RadioCoverageArea` no longer an `Asset` as well as a `Location`
7. Changes to `Where and When` pattern:
 - `happensIn`, `takesplaceIn` deleted. Use `inLocation` instead.
8. Changes to `Asset` pattern
 - `storedIn` deleted. Use `inLocation` instead.
9. Changes to `Communications Device` pattern:
 - Removal of `installedSoftware`, replaced with `InstanceOfSoftware` which can be associated as being installed using `isPartOf`.
 - Removed `ModelOfDevice` and `ClassOfDevice`. Instantiations of `ModelOfDevice` to be done instead using `subClassOf Device`.
 - Linked Device to `PartNumber` using `isIdentifiedBy`
10. Changes to `Period of Time` pattern:
 - `ParticularPeriod` URI pattern now mandated to be non-punctuated encoding (20070118T153000Z). This avoids

the use of escape characters in the URI. NOTE: the literal for **iso8601PeriodRepresentation** remains punctuated.

- **ParticularPeriod** mandated to be in UTC / Zulu time
 - **Period of Time** diagram changed to reflect changes to URI encoding
 - Updates to all examples to include new encoding
11. Changes to **Disposition** pattern:
- Correction to **allHaveDisposition** rdfs:Domain - fixed to **ClassOfElement** not **Element**
12. Changes to **Amount of Money** pattern:
- Currency identifier correct to **ISO4217Code** not **ISO639-3Code** (country code)
13. Changes to **Online** and **Communication** patterns covering **Message**. **Message** used to inherit from both **OnlineEvent** and **Communication** which didn't make sense considering **SMS** is a subtype of **Message**. Changes included:
- Deleted subclass relation between **Message** and **OnlineContentEvent**
 - Added **OnlineMessage** class with the definition of "A Message that was sent Online."
 - Added **OnlineMessage** to the **OnlineEvent** diagram
 - Made **OnlineMessage** a subclass of **OnlineContentEvent** and **Message**
 - Added **Communication** class to **OnlineEvent** diagram
 - Changed **Message** definition from "A Communication or OnlineContentEvent where a message is sent" to "A Communication where a message is sent"
14. IES 4.2 had ClassOfElements and subProperties of rdf:type which encouraged extending the IES classes via ClassOfElements hierarchy rather than the Elements hierarchy. IES 4.3 prunes some of classes (breaking changes) to discourage this behaviour and encourage one approach of extending IES. This approach is documented in "Extending IES4 2024-03-v1.0 O.pdf". Pruned classes and properties include:
- From **Authorisation pattern** - **AuthorisationEventClass** deleted – just use subclasses of **AuthorisationRequest** or **GrantOfAuthority**. Also **requestedActivity**, **grantedActivityType** and **allAuthorisedAgainst** deleted
 - From **Operational** pattern - **ClassOfOperationalEvent**, **ClassOfCriminalActivity** and **typicallyTargets**
 - From **Criminal** pattern - Deleted of **special forms of rdf:type**, **typeOfCriminality**. Also deleted **OffenceCode**.
 - From **Financial Account** pattern - Deleted special forms of **rdf:type**, **financialAccountType** **ClassOfFinancialAccount**
 - From **Organisation** pattern - Deleted **ClassOfResponsibleActor**
 - From **Identity Document** pattern - Deleted special form of **rdf:type**, **visaType**. Also deleted **ClassOfTravelVisa**.
 - From **PaymentArtefact** pattern - **cardType** and **ClassOfPaymentArtefact**. Just extend **PaymentArtifact**
 - From **Business** pattern - deleted **transferType** and **ClassOfMoneyTransfer**. Instead just extend **TravelBooking**
 - From **Online** pattern - deleted **onlineServiceType** and **ClassOfOnlineService**. Instead just extend **OnlineService**. Also deleted **ClassOfWebResource**.
 - From **Travel Booking** - deleted **bookingType** and **ClassOfTravelBooking**
 - From **Communications Account** - deleted **ClassOfAccount**
15. Other changes:
- **ExchangedItem** changed to **Thing**. Its definition has also been changed.
 - **VersionNumber** - update to definition to apply to anything that is identifiable
 - **currencyDenomination** no longer a subProperty of relationship and **rdf:type**. Its now just a subtype of **rdf:type** only.
 - **isParticipantStateln** deleted. Just use **isParticipantIn**.
 - Removed all references of **PersonOrOrganisation**. All updated to **ResponsibleActor**
 - **Marriage** no longer a subClassOf **LawEnforcement**
 - **Latitude** and **Longitude** specified to be xsd:decimal literals
 - **hasTheme** no longer domain as **Investigation**, **Communication** and **Meeting**. Now that of only **Event**
 - Updated comment for **RecurringPeriod**. Changed mention of recurringFrom and recurringUntil to startsln and endsln respectively within the definition of **RecurringPeriod**. Also corrected the mention of **recurrentPeriodRepresentation** from recurrentPeriod in the definition of **RecurringPeriod**.
 - Inclusion of missing **powertype** relations between Elements and ClassOfElements

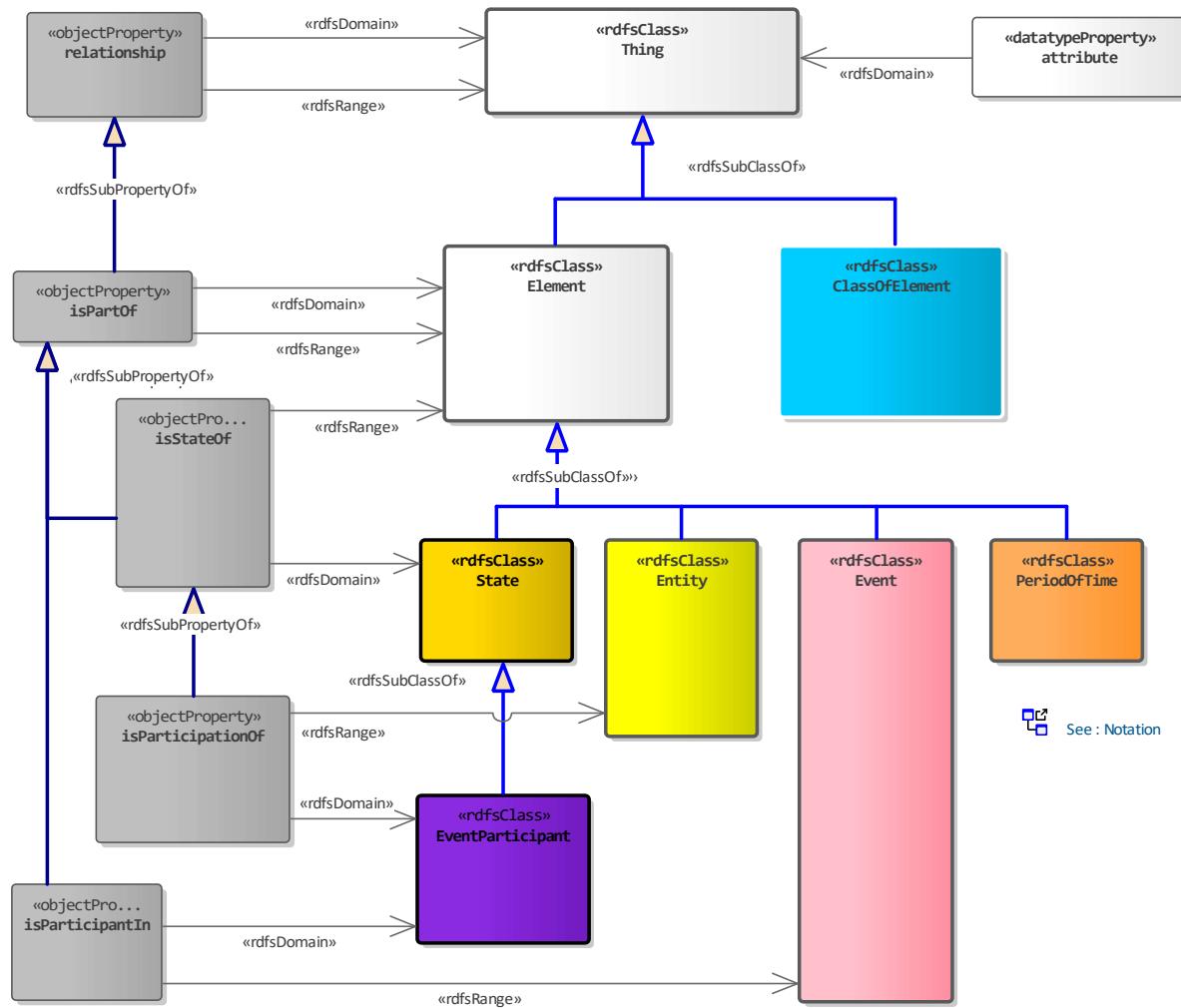
v4.3.1 - License change from Apache 2 to MIT

See page notes (click on diagram background and look at notes). This image should be deleted in MS Word export phase.

IES Overview

The Information Exchange Standard is based on 6 key items which are subtypes of Thing:

- Element - anything physical - i.e. things that have extent in space (and time)
- Entity - a tangible thing like a Person, a Device, Location, etc.
- ClassOfElement- a class or category of Element
- State - a temporal state of an Entity (e.g. a moment in a Person's life, a phase of a Project, etc.) and can be of any duration
- Event - an activity or incident, involving one or more participating Entities, that occurred/started at a specific point in time - e.g. a meeting or a telephone call.
- PeriodOfTime - a specific period of time (past, present or future)
- relationship - relates Things.

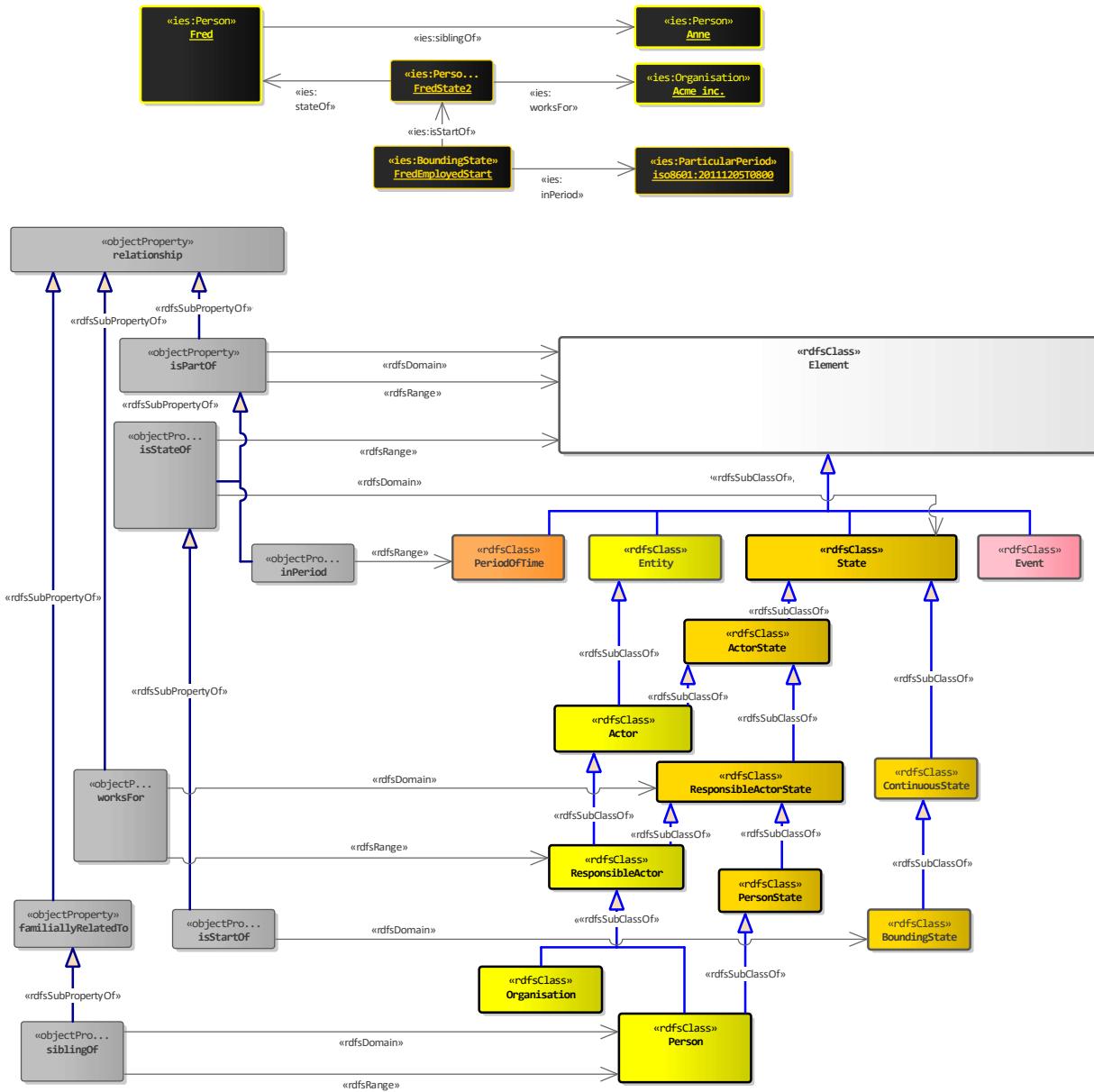


Relationships

Relationships may exist between Things in IES - and can be used to assert anything from structural to legal connections between things. The concept of a relationship should be familiar to anyone who has looked at data model or ontology before. However, as IES4 is a 4D ontology, the relationships may only apply to a certain phase (state) of the Element - e.g. someone working for an Organisation for a period of time. Unlike attributes, the majority of relationships fall into this category. There are exceptions, such as being the sibling of someone (it's for life for both of them) but it turns out the majority are temporal. Like attributes, we create a State of the Entity instance in question and then attach the relationship to the State.

In the example below, Fred has always been Barry's sibling and will continue to be whilst they both exist so there is no need for a State. In the second relationship, Fred worked for Acme since 5th December 2011, and is still working there because there is no end date.

Note: in the example below, Fred still works for Acme. But if Fred had left Acme, and we didn't know when, the end BoundingState should be created to show the Employed state had ended, even though there is no associated PeriodOfTime



Period of Time

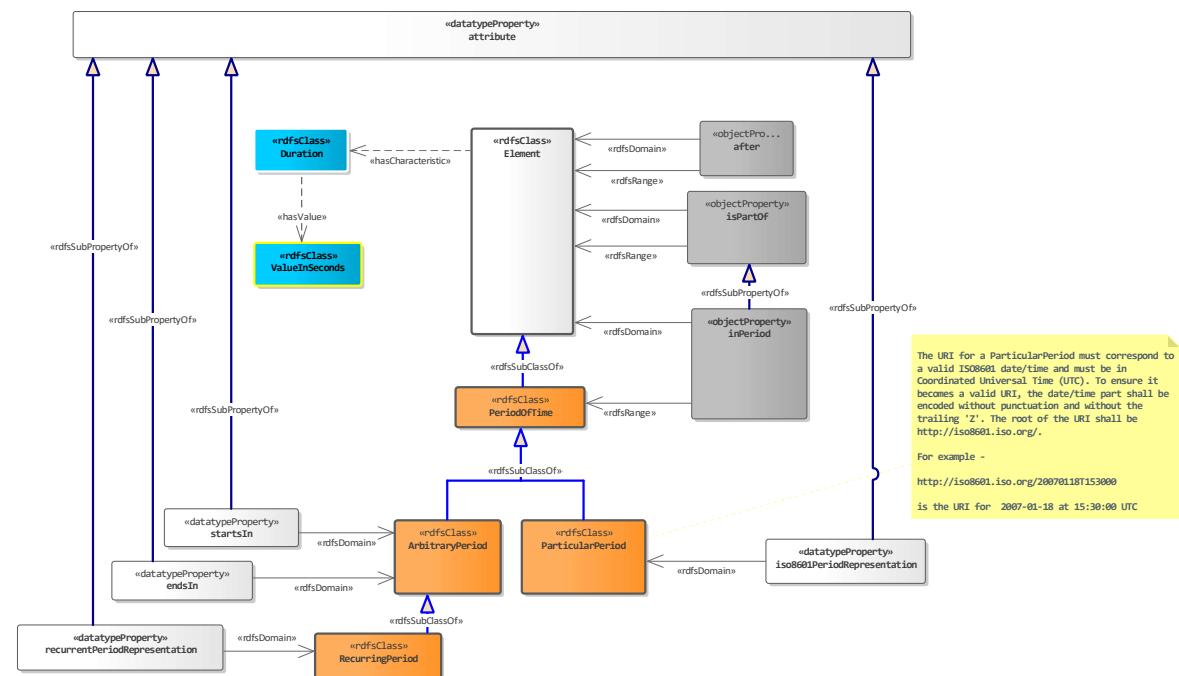
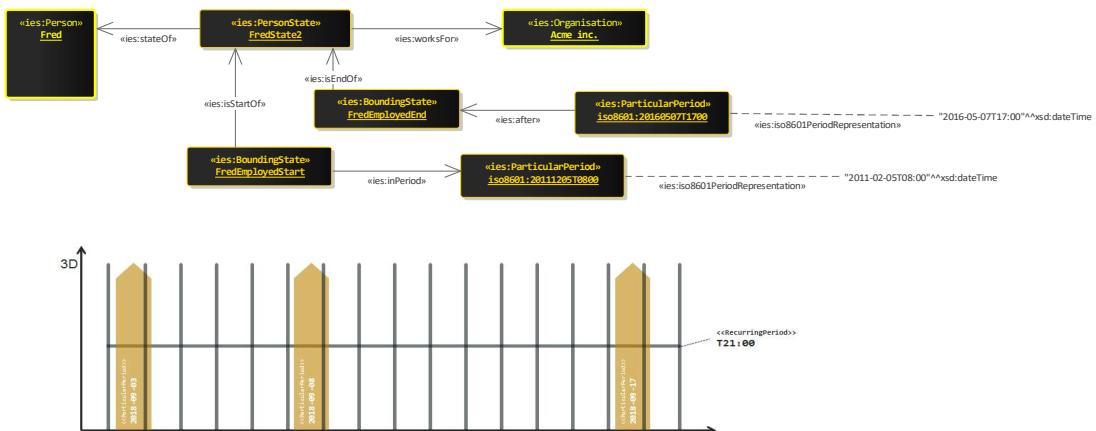
Periods of time are Elements in a 4D ontology. They can be treated like any other element -e.g. assembled with isPartOf relationships. This is the big advantage to a 4D ontology - time is treated the same way as space, which allows complex temporal logic information to be expressed using very simple constructs.

IES also allows a duration to be specified even when the precise start and end are not known - e.g. we can specify a meeting lasted an hour and took place on a particular day, but we don't know what time it began and ended.

Note: to prevent duplicate periods being created, the uri of each period should reflect the ISO8601 datetime in Coordinated Universal Time (encoded without punctuation). So for example, the uri for January 2008 would be <http://iso8601.iso.org#200801>. For ParticularPeriod, this is fairly simple. For PeriodOfTime, the ISO8601 encoding for the period should be used.

In the first example below, we show that Fred began working for Acme in 2011, and that we know he left Acme, and we're not sure of the day he left, but it was before 2016-05-07.

Technically, a PeriodOfTime is all of space, for a specific (or recurring) period (see the second example below; a space-time diagram which has 3 particular days, and a recurring 1 minute period, every day):

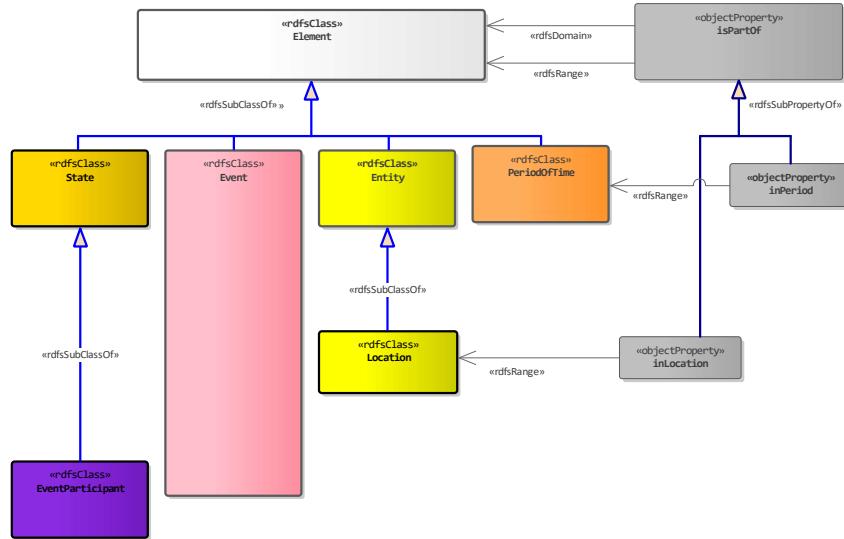
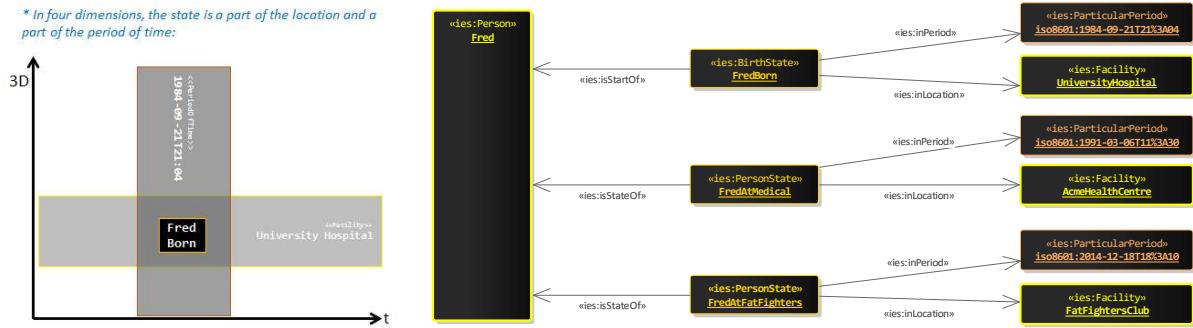


Where and When

Because IES4 is a 4D ontology, time and space (in fact spacetime) are handled in the same way*. If something happens entirely within a location, it is part of that location. If a person walks through a location, there is a state of them that is part of that location. Similarly, if something happens in a particular period of time, it is part of that period of time. IES4 specifies subproperties of the `isPartOf` relationship with slightly more intuitive names; `inLocation`, `happensIn`, `takesPlaceIn`, `inPeriod`, etc.

States are a key feature in all of this. States are special kinds of parts (in 4D) that are all of the space for some of the time - e.g. you yesterday, you today. They form the basis for temporal properties, participations, etc.

* Space is a relative thing - you may move around relative to other things, but the whole-life you is a single Entity instance. There are states of that whole-life Entity that are part of different Locations though.

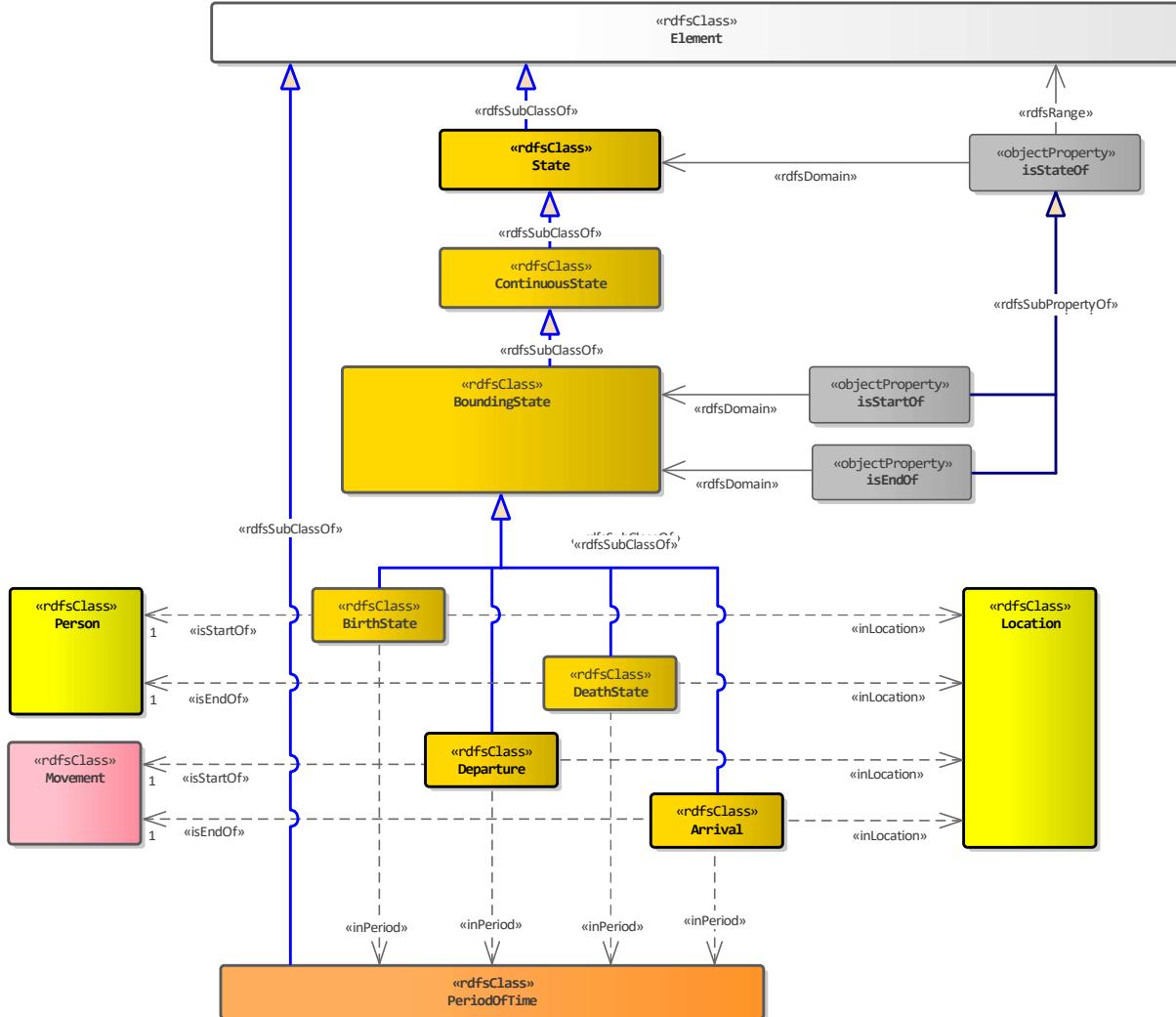


Start and End

The starts and ends of Elements can be modelled using BoundingStates. A BoundingState can be connected to the Element via an *isStartOf* or and *isEndOf* relationship to indicate whether it begins or ends the Element.

There are some special cases of BoundingStates such as BirthState, Departure, etc.

The use of BoundingStates in combination with the *after* relationship allow complex temporal logic to be expressed using very simple constructs - e.g. Elements starting before others, ending before others, etc.

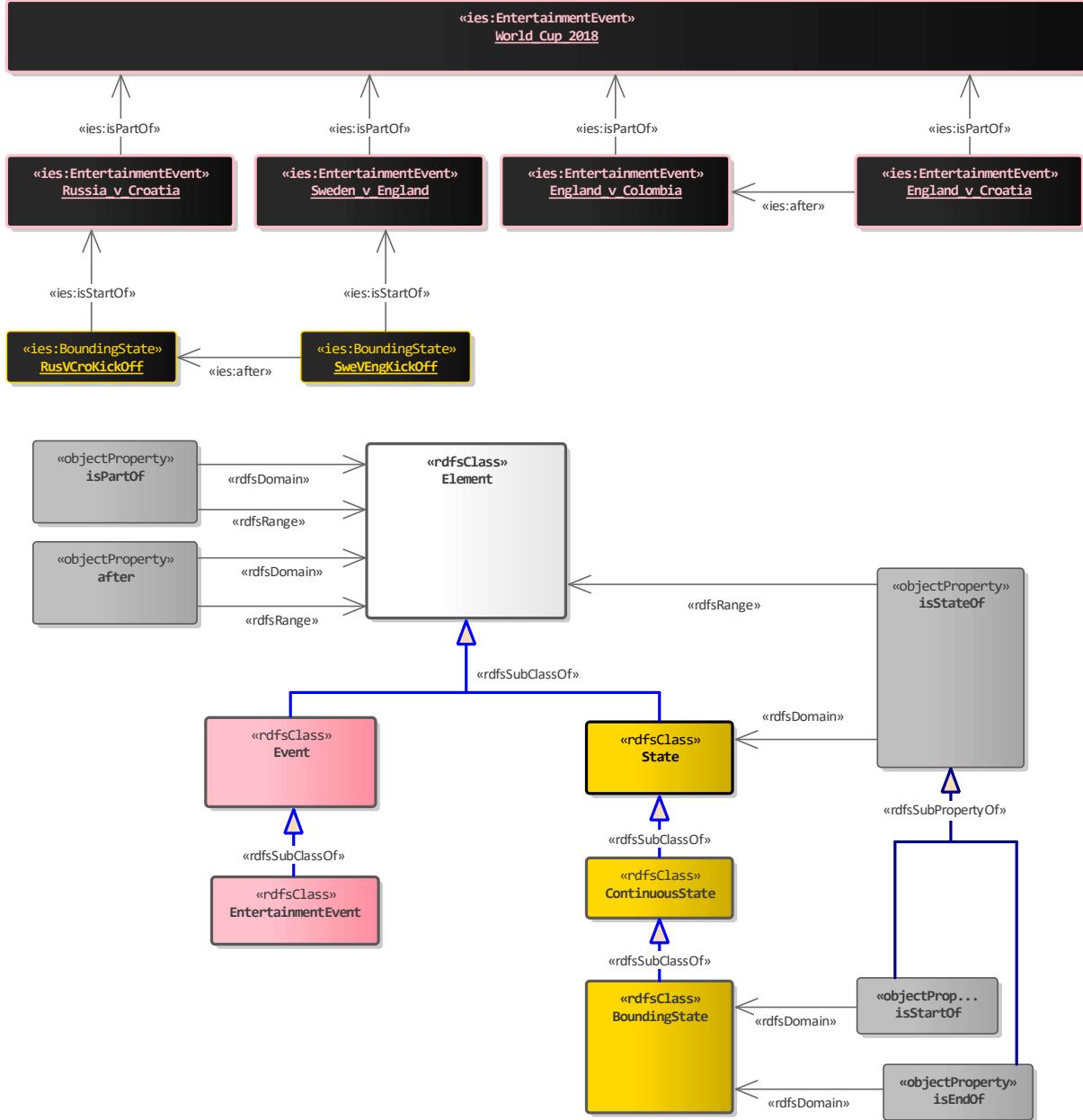


Event Linkages

IES 3 introduced the concept of EventLinkage - associations between Events. As of v3.2 of IES, few of these EventLinkages had been specified and those that had were covered by relationships in v4 - isPartOf and after.

The example below shows two football matches that were part of the World Cup in 2018, and the fact that one happened (i.e. started *and* finished) before the other.

For more complex temporal logic, such as an Event *starting* before another one, the after relationship can be used between BoundingStates. In the example below, the Sweden vs England match started after the Russia V Croatia match



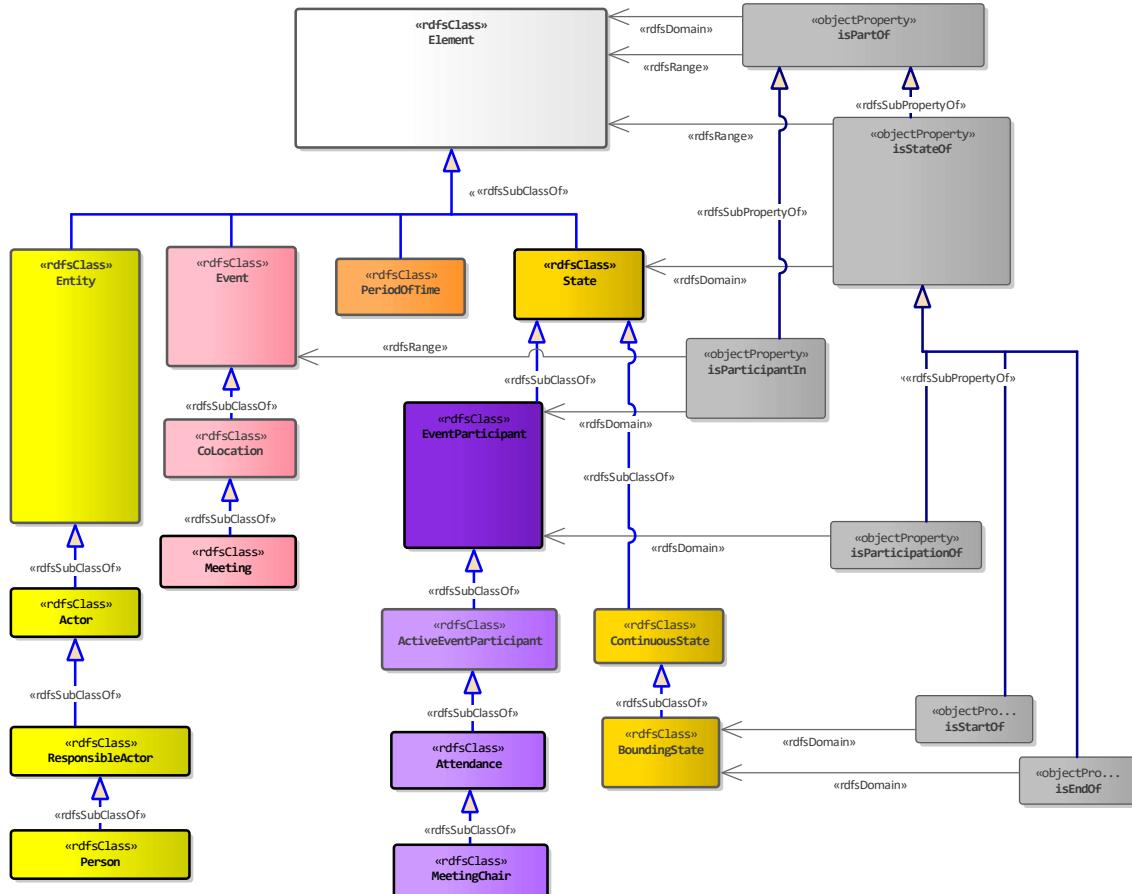
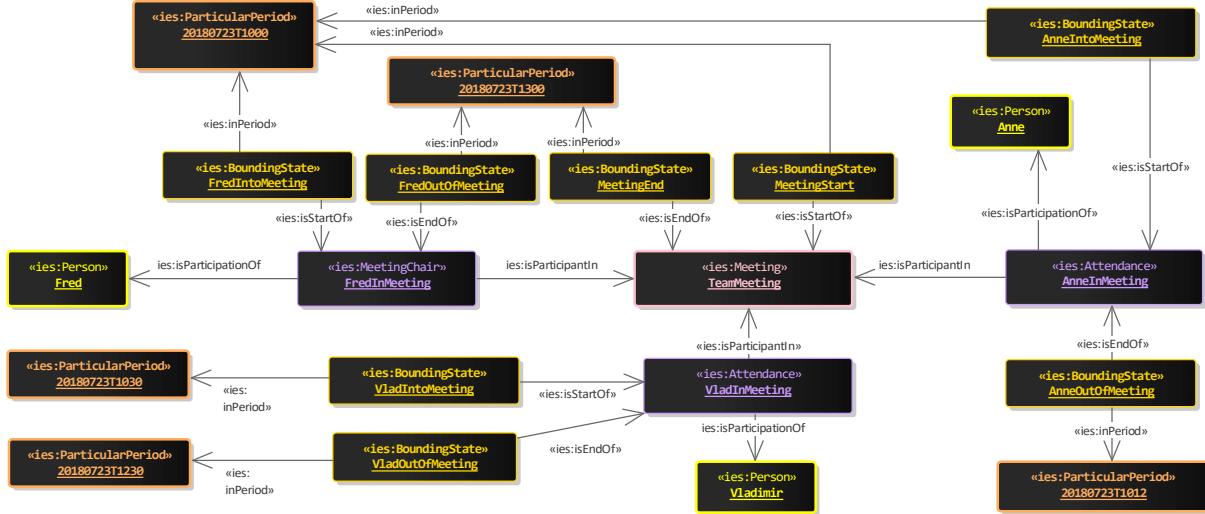
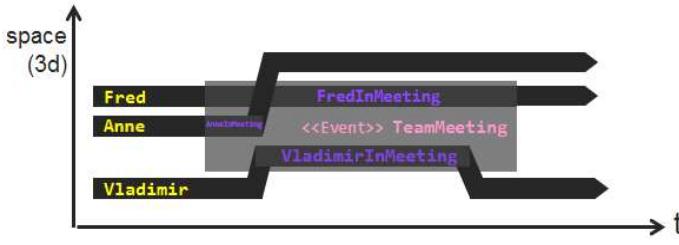
Event Participation

Participation in Events is modelled in a similar way to temporal relationships. Just as with relationships, we care about the period of time that a participant (an Entity) was involved in an Event. A subtype of State (EventParticipant) connects the Entity to the Event.

This allows us to have many participants (Entities) in an Event, and for each of their participations to have a different start and end times. So, in the example below, we can see that Barry left the meeting after 12 minutes and that Vlad was only there for 2 of the 3 hours.

IES4 also has a subtype of EventParticipant called ActiveEventParticipant. Subtypes of this class are those participations where the participant is actively contributing to the event. Those participations that are not subtypes of ActiveEventParticipant are assumed to be passive.

The Role construct for states is inherited by EventParticipant allowing more specific roles to be defined for the EventParticipant.

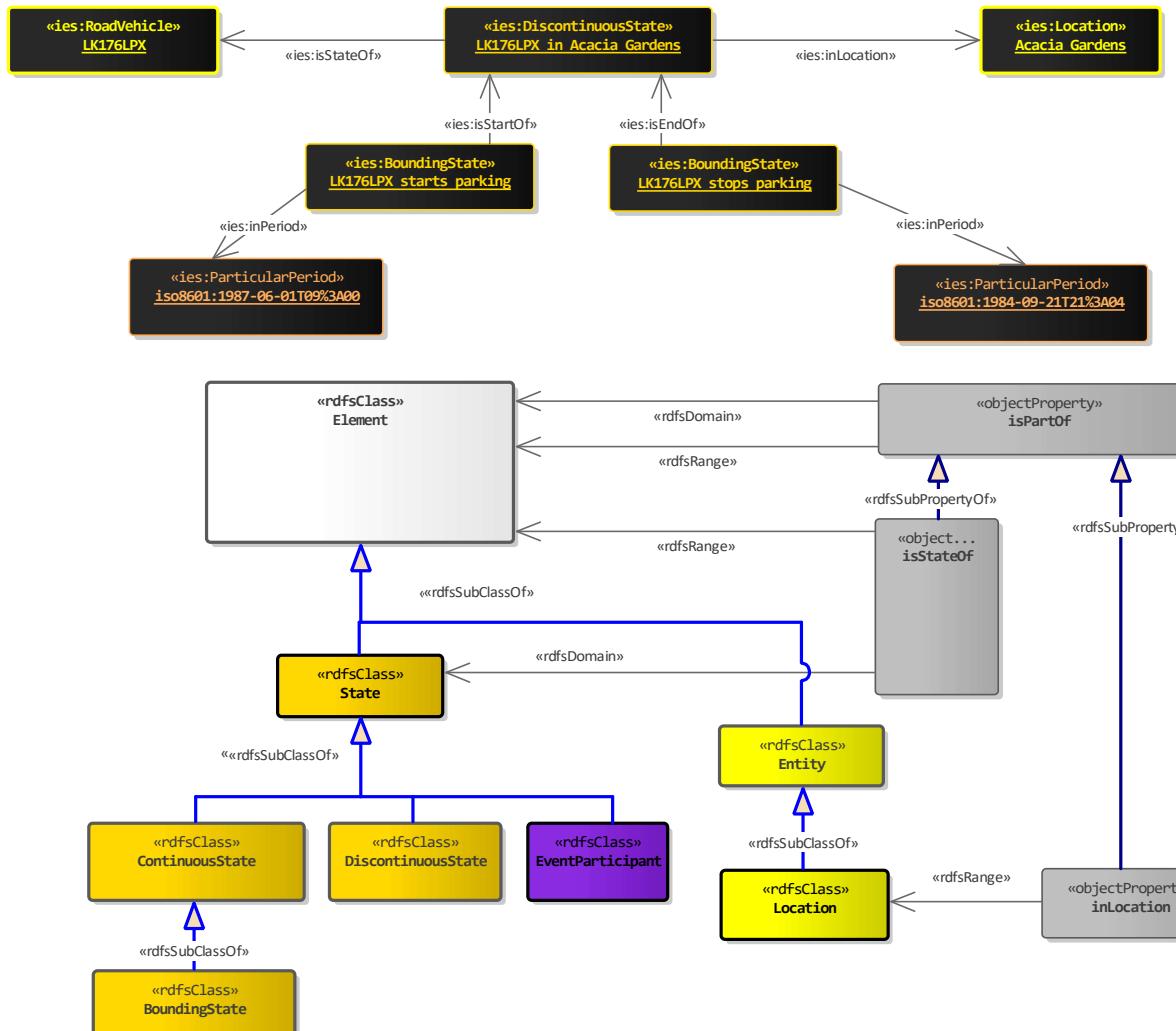


Sometimes

When modelling real world events, many models fail to distinguish between a specific Event or occurrence, and the more general case where something *usually* occurs. The 4D approach has an answer for this - temporally dissected states. These are like ordinary states, but are not contiguous in time. We also don't have to identify the individual occurrences, we just have to say that there are occurrences.

This is particularly useful with locations. If we want to say a vehicle is usually in a location, we don't want to have to identify every state of it when it was in that location. We can simply identify the collection of those temporally separated states, called a DiscontinuousState in IES 4. If we say that the DiscontinuousState of the car is in a location, we mean that all of the extent (which we haven't explicitly called out) is part of the location.

At first glance, this may seem contrary to the BORO mantra about always identifying the spatio-temporal extent of Elements. However, what this does allow us to identify an extent that we know exists, but we don't know the details. Like other States, we can identify the start and end times - e.g. saying a car usually parked in a particular location between one date and another.

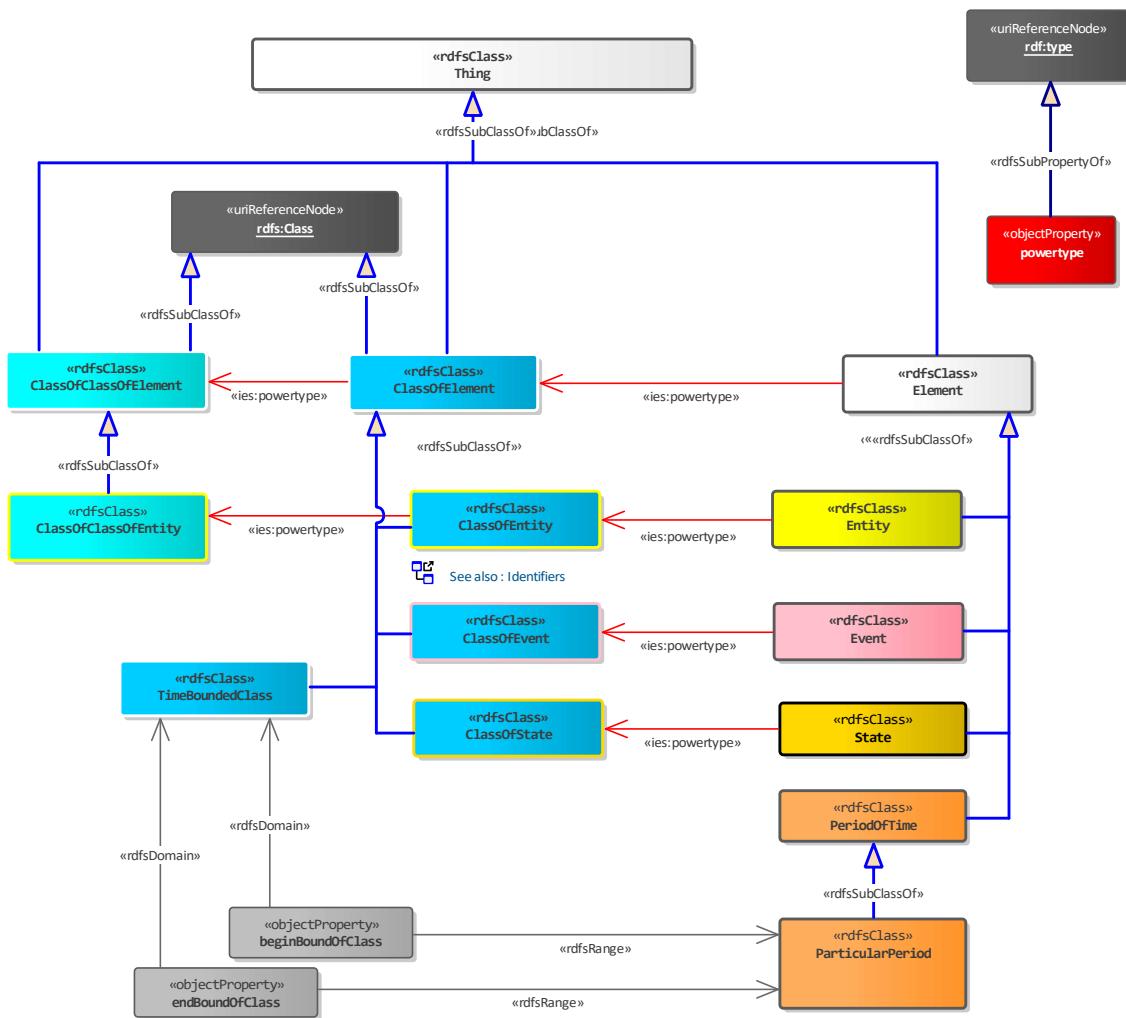
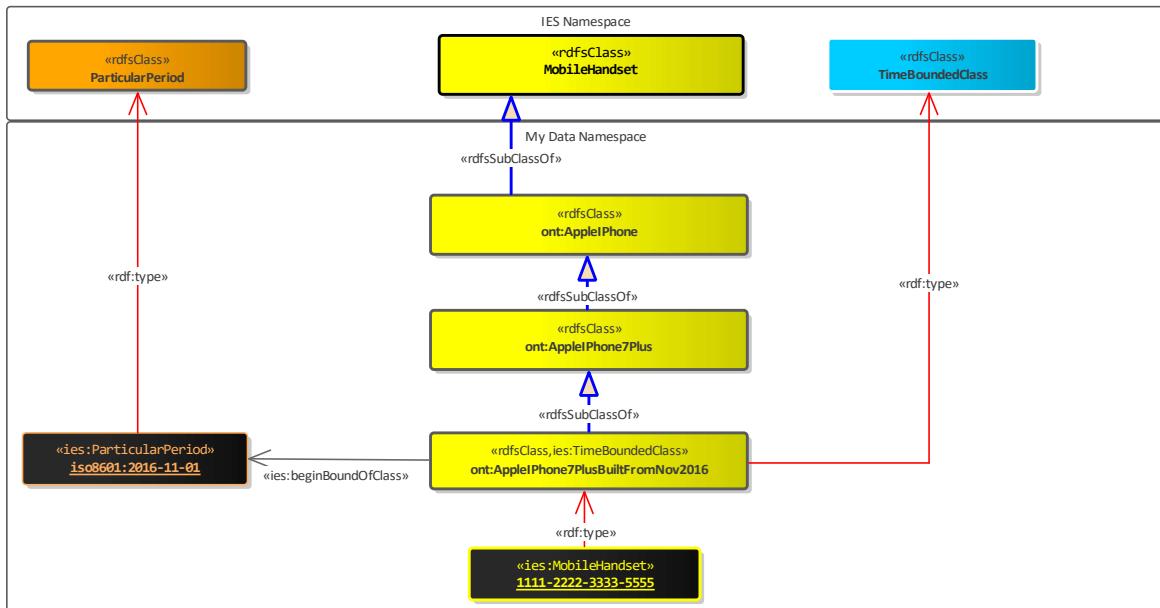


Types

IES4 allows new types (classes, categories, sets, whatever you want to call them) to be exchanged in the data payload. To do this, we "push up" a type level using the powertype relationship which formally specifies that one class is the set of all possible subsets of the other (see wikipedia entry for "powerset" and "Cantor's theorem").

ClassOfEntity is explicitly specialised for use in representation and identifiers, but otherwise **ClassOfEntity** and **ClassOfEvent** replace the old GeneralConcept Entity in IES3.

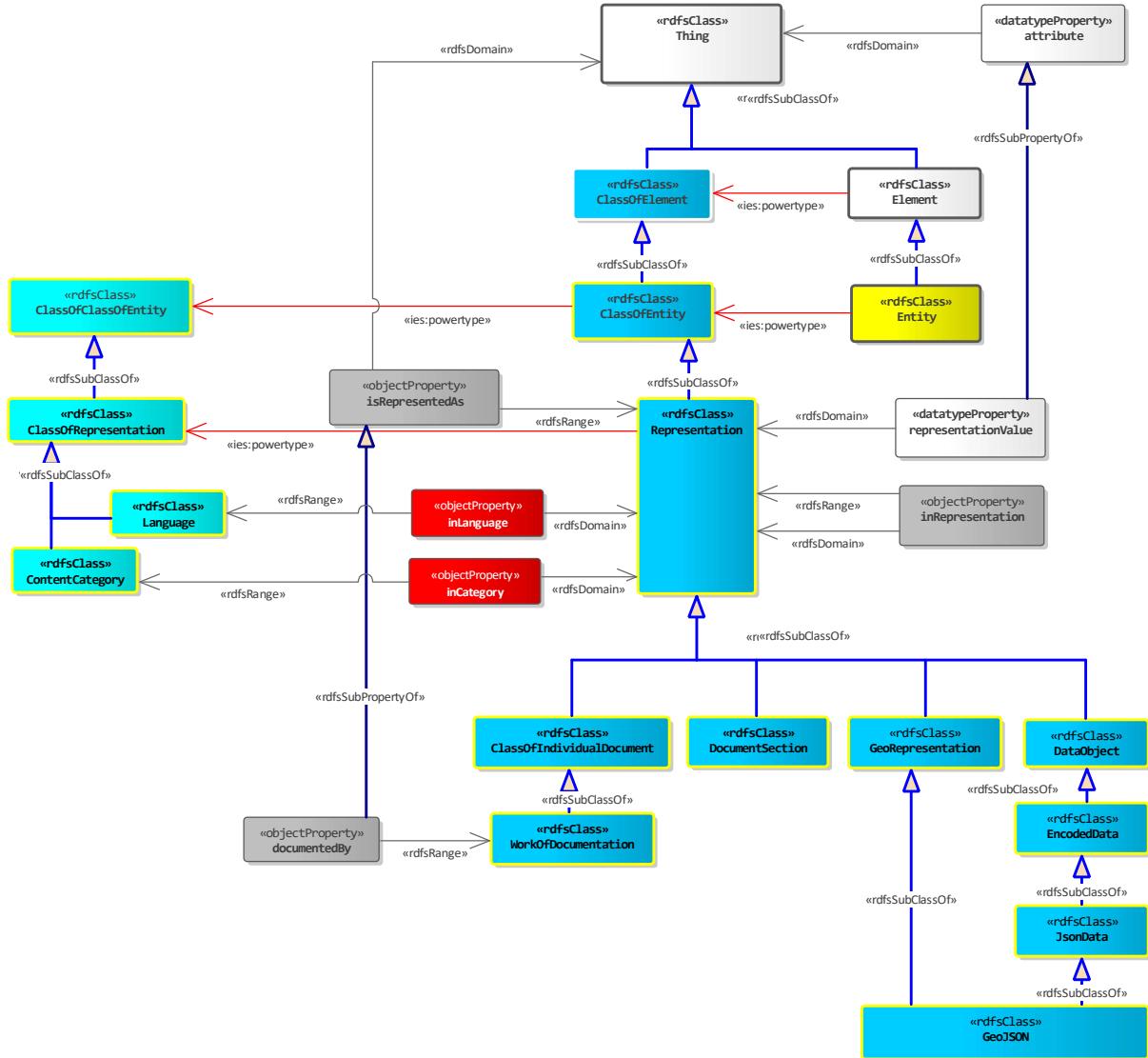
Hierarchies of **ClassOfElement** can be built using the *rdfs:subClassOf* relationship. Instances of the **ClassOfElement** can be asserted using *rdf:type*. See example below:



Representation and Content

IES distinguished between things in the real world and our representations of them. In this case, a Representation is not a PhysicalThing (see Document for the distinction). Representations may be documents, videos, blog text, etc. The represents relationship links Things to their Representations.

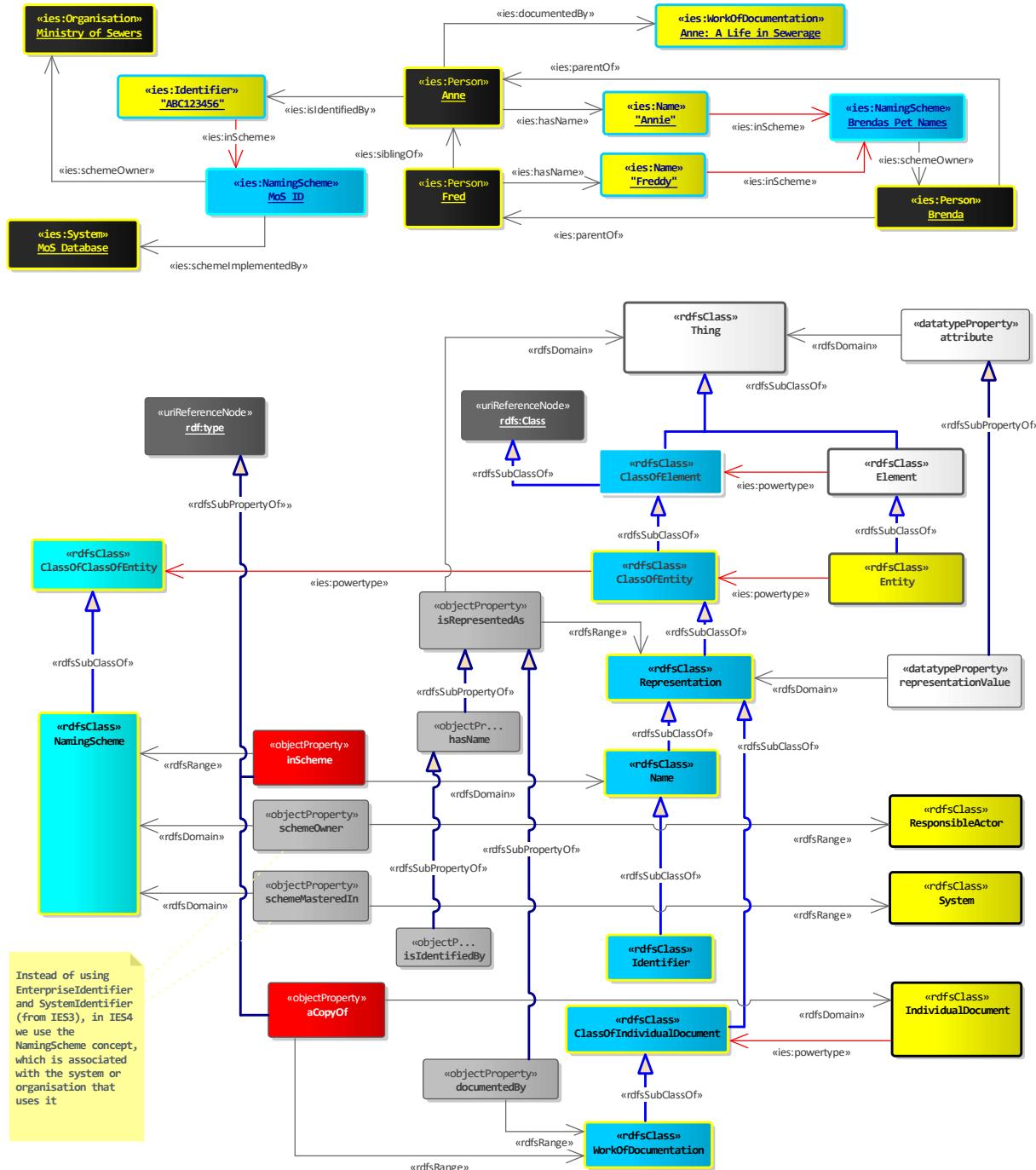
Sometimes it is important to establish arbitrary categories of Representation - such as "financial accounts", "pictures of kittens" or "educational films". ContentCategory is used to collect together all Representations of similar content.



Identifiers

IES4 distinguishes between things in the real world and representations of those things. The representation pattern allows any **Thing** to have multiple representations - e.g. a book about the Ministry Of Defence, the DUNS number for the Ministry Of Defence, etc.

Representations specialise into **WorksOfDocumentation** (see Document diagram in Entities section), **Names**, and **Identifiers**. **Names** and **Identifiers** belong to **NamingSchemes** - this allows us to give context when an **Element** has more than one **Name** or **Identifier**. **NamingSchemes** may be implemented in **Systems** and used by **Organisations**. This replaces the idea of **EnterpriseIdentity** and **SystemIdentity** in IES3



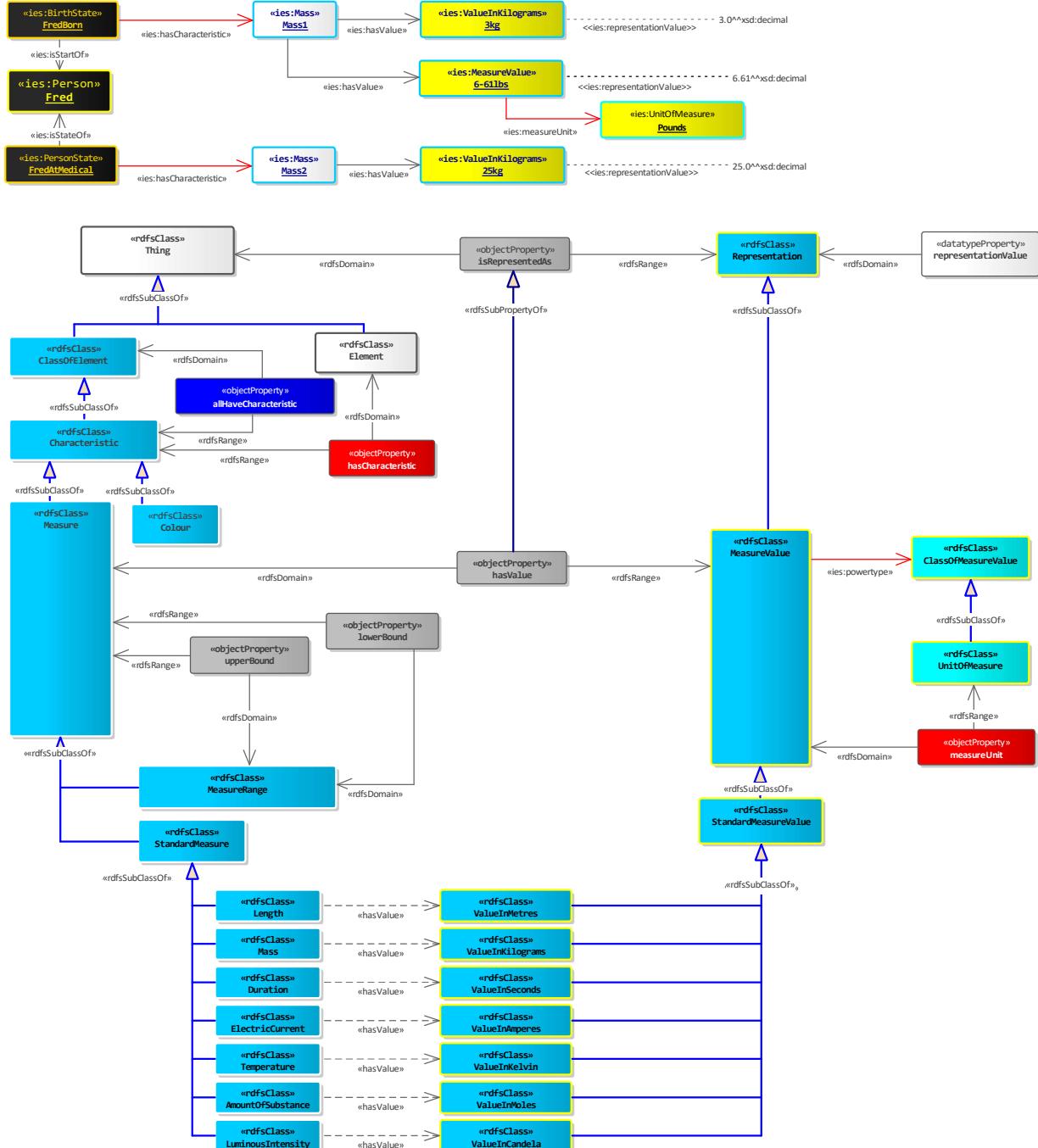
Characteristics and Measures

IES provides a basic set of classes for characteristics and measures. Characteristics are properties of Elements that are qualitative, Measures are quantitative. To support Measures, IES provides classes for all the SI units, a model for units of measure and an ability to specify measure ranges.

The key points about this model are that the Measure is separate from its representation so the same measure can have more than value with different units of measure (e.g. 1kg and 2.2lbs).

Characteristics and measures can be applied to an Element, or to a ClassOfElement in the case where all instances of the ClassOfElement share the same characteristic or measure - e.g. all London buses being red.

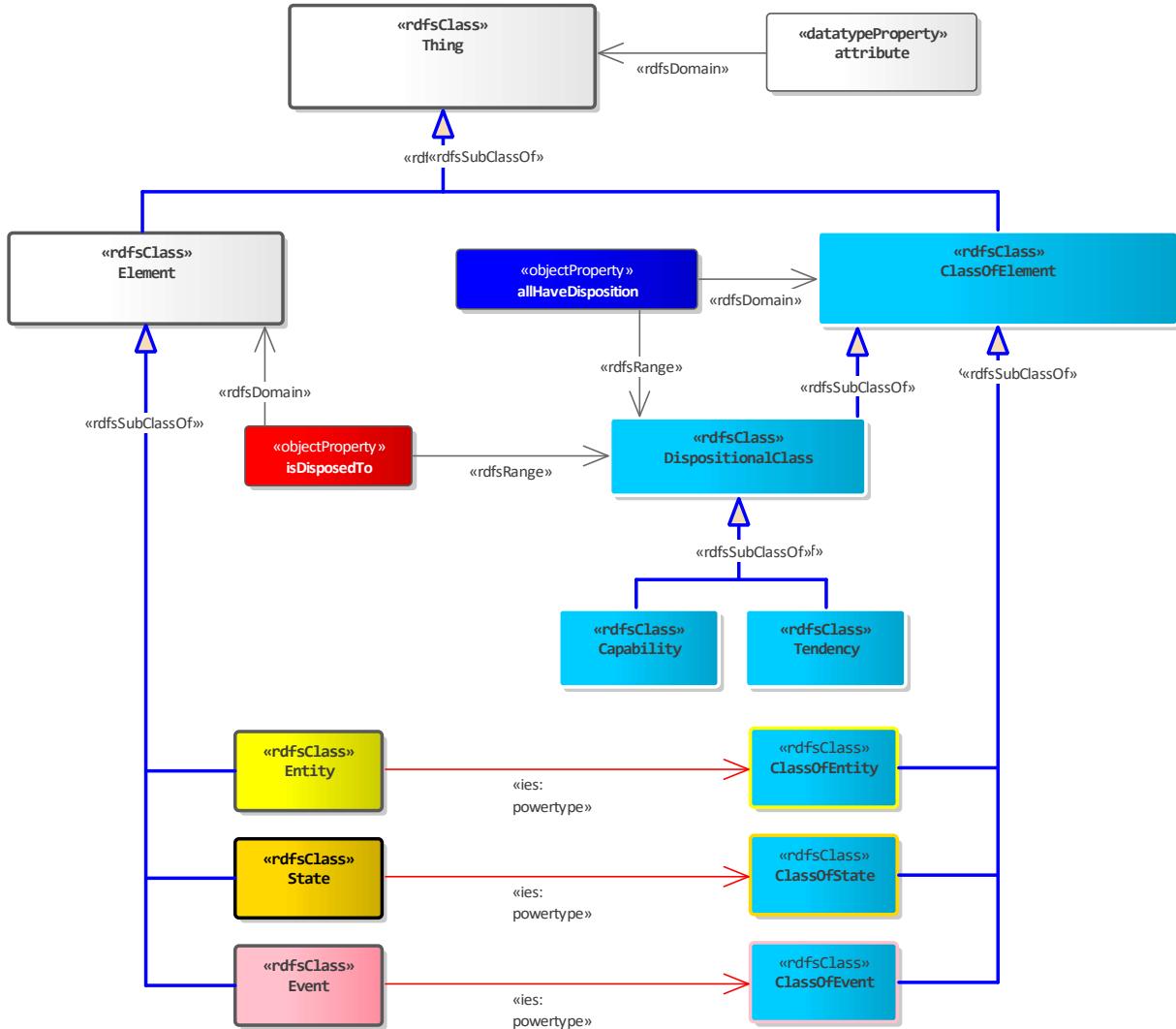
This model is new in IES 4.1 - previously, there was no consistent way to do this, but mostly it relied on attributes.



Disposition

A disposition is about an Element's capability or tendency to do something or to exhibit a property. It may be that the Element has never actually done the thing it is capable of - e.g. an aircraft capable of Mach 2 but that has not yet flown that fast. Similarly, a Person may be assessed as having a tendency towards violence based just on what they say and threaten to do, but may not have actually been violent.

Dispositions are managed in IES using DispositionalClass - something that was also in the international IDEAS ontology where capability was a key concept they had to model. Dispositional classes collect together all Elements that share the same disposition (e.g. all aircraft capable of Mach 2).

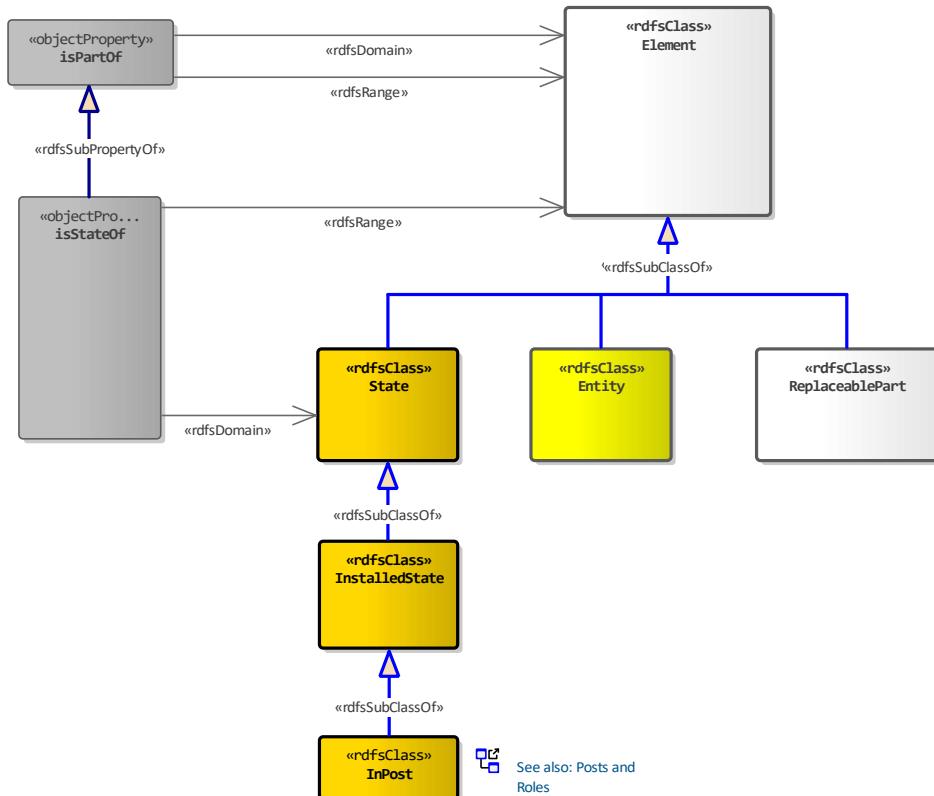
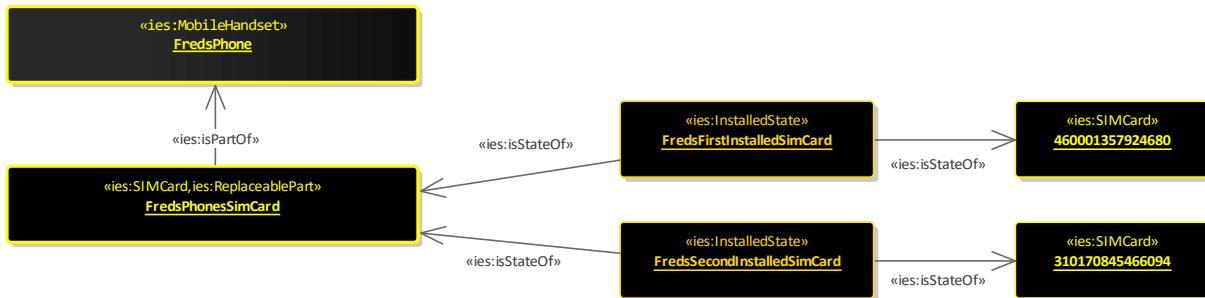


Replaceable Parts

Understanding a thing's parts can be straight-forward at any given time, however that is complicated by changes over time. For example, a car's components, like its gearbox or tyres, can be replaced when worn. When we replace a car's tyre, it remains the same car, just with a different tyre. BORO and 4D thinking clarifies this: the extent of the car contains a temporal part of one tyre followed by the temporal part of another tyre. At any one time, the car overlaps with only one tyre; but, over time, it overlaps with two tyres. The two tyres have **InstalledStates** that are parts of the car.

Sometimes it is useful to call out the enduring part of an Element e.g. the tyre of a car whichever actual tyre is installed at a given time. This is what we call a **ReplaceablePart**. A replaceable part can be substituted or exchanged without altering the overall identity or functionality. Moreover, the identity of a **ReplaceablePart** can survive periods when nothing fulfils its purpose or role, i.e. its existence is not necessarily continuous.

In IES, we instantiate this enduring, replaceable part as both a **ReplaceablePart** and the class of Element that is intended to be installed into it. For example, the replaceable tyre part of a car is instantiated as both a **ReplaceablePart** and a Tyre.

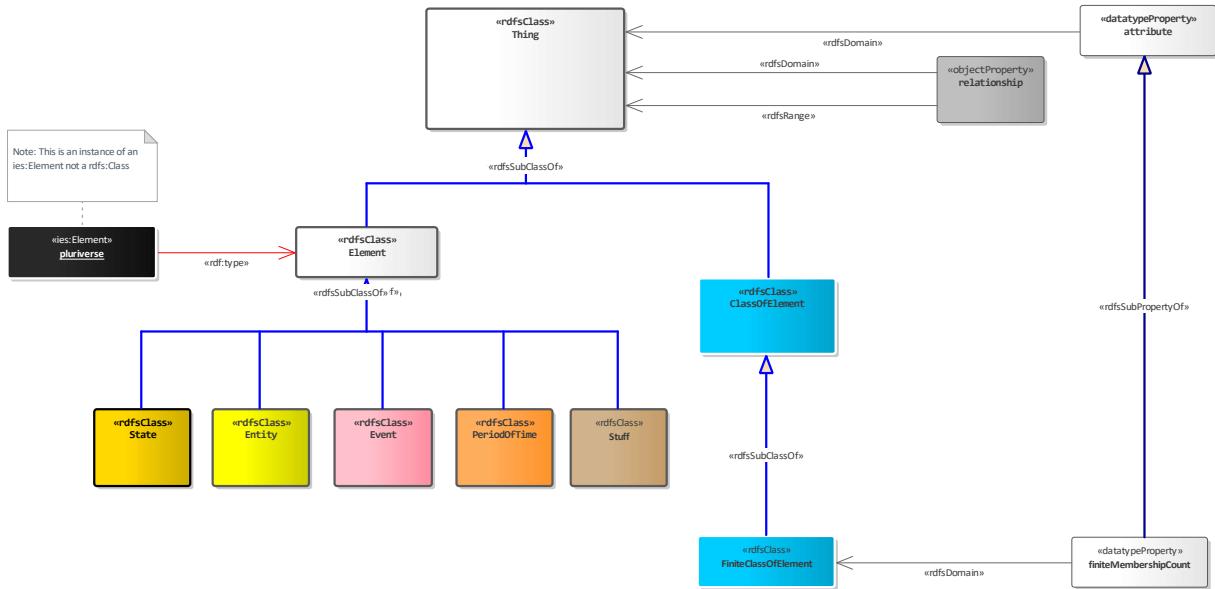
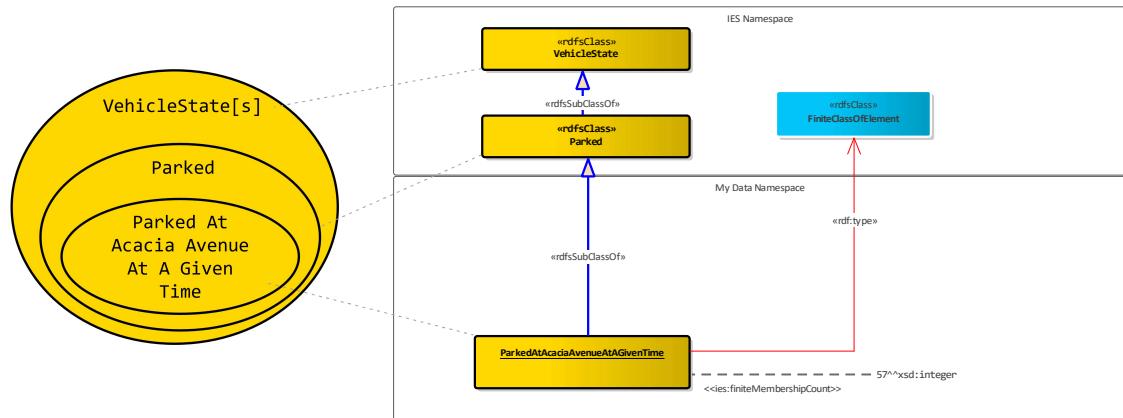


Stuff and Count

There are times where we want to talk about sets of elements without having to instantiate every individual element as an instance. Instead, we want to just provide a count of the members of the set e.g. the number of cars in the set parked at Acacia Avenue. Such sets are instances of **FiniteClassOfElement** where the count is provided using the attribute **finiteMembershipCount**.

In the illustrated example, to get the set of cars parked at Acacia Avenue, we create a subClassOf of the set of all parked cars, **Parked**. This gives us a specific subset of cars parked at Acacia Avenue at a time. This subclass is also an instance of **FiniteClassOfElement** allowing us to assign 57 as its **finiteMembershipCount**.

There are physically things in the world that are difficult to call out as separate individuals due to their high divisibility. For example, water in a swimming pool, sand on a beach or the walls and floors of a building. **Stuff** allows us to talk about these highly divisible or generally uncountable things.

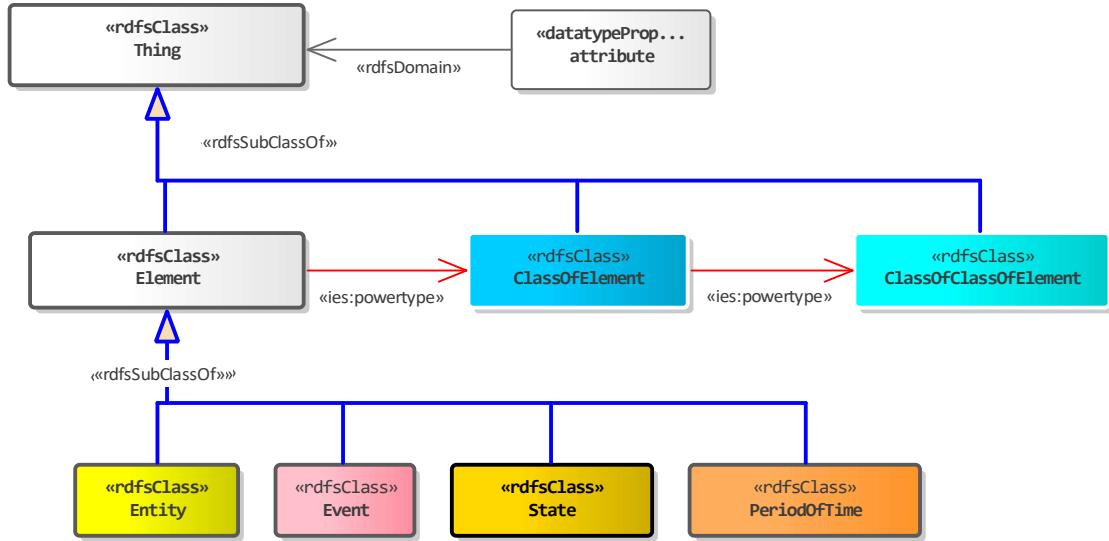


Attributes

Attributes can be applied to any Exchanged Item - Entities, Events and ClassOfEntity.

Attributes are RDF properties (actually, OWL datatype properties), typed by any XML Schema simple datatype - e.g. xsd:string, xsd:double, xsd:dateTime, etc. (refer to W3C XML Schema specification for complete list).

Attributes are not as widely used in IES4 as in IES3 where they were used for measures, identifiers and names. In IES4 they are only used for categorical statements - e.g. the purpose of a mission, the amount of currency, etc.

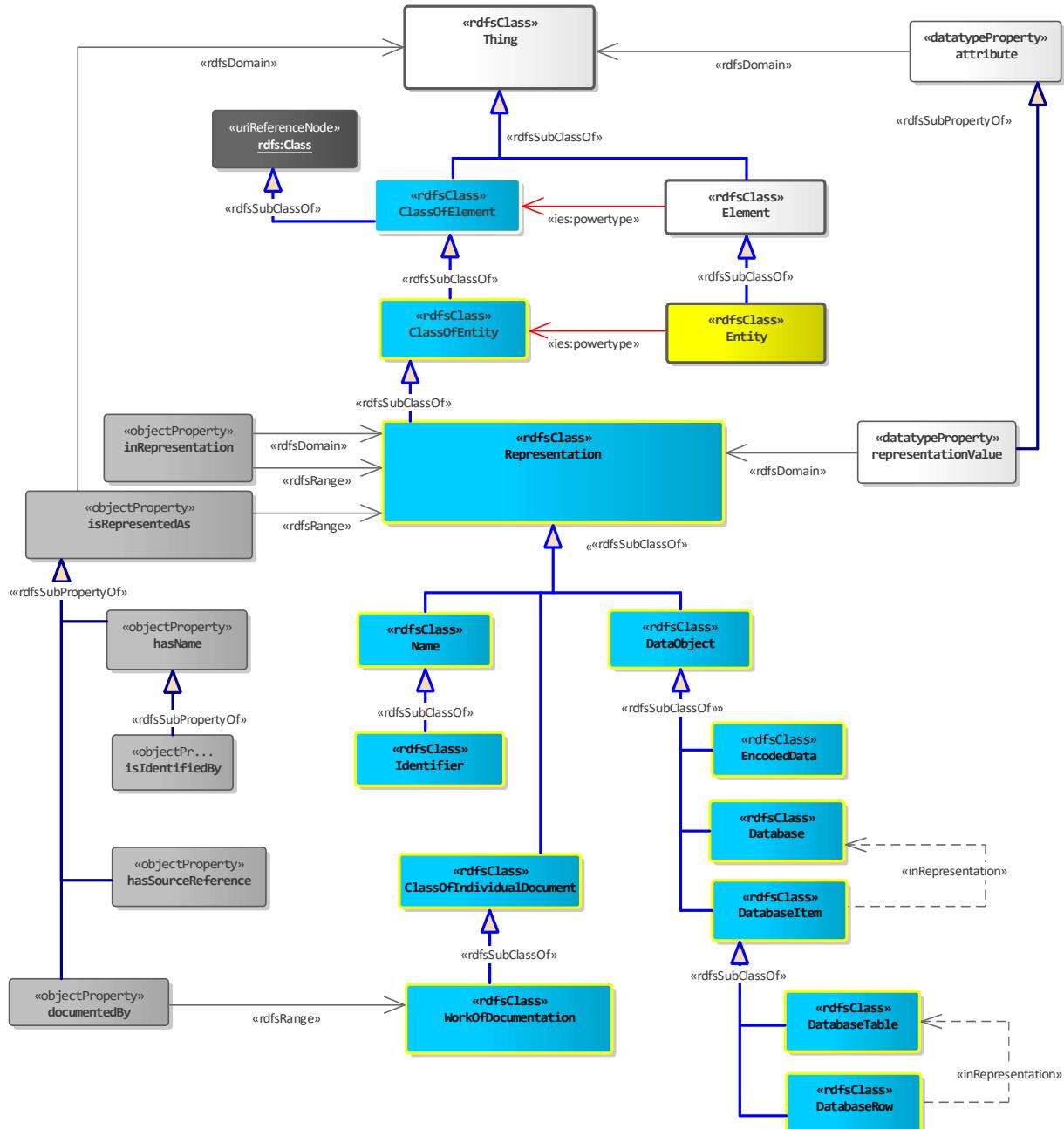


Source References

The IES3 Source Reference capability is maintained in IES4, but leverages the Representation pattern to achieve the same thing. The key relationship here is `hasSourceReference` which links the Representation (Document, DataObject, etc.) to the Thing it was the source for.

Representations can be assembled into structures using the `inRepresentation` relationship.

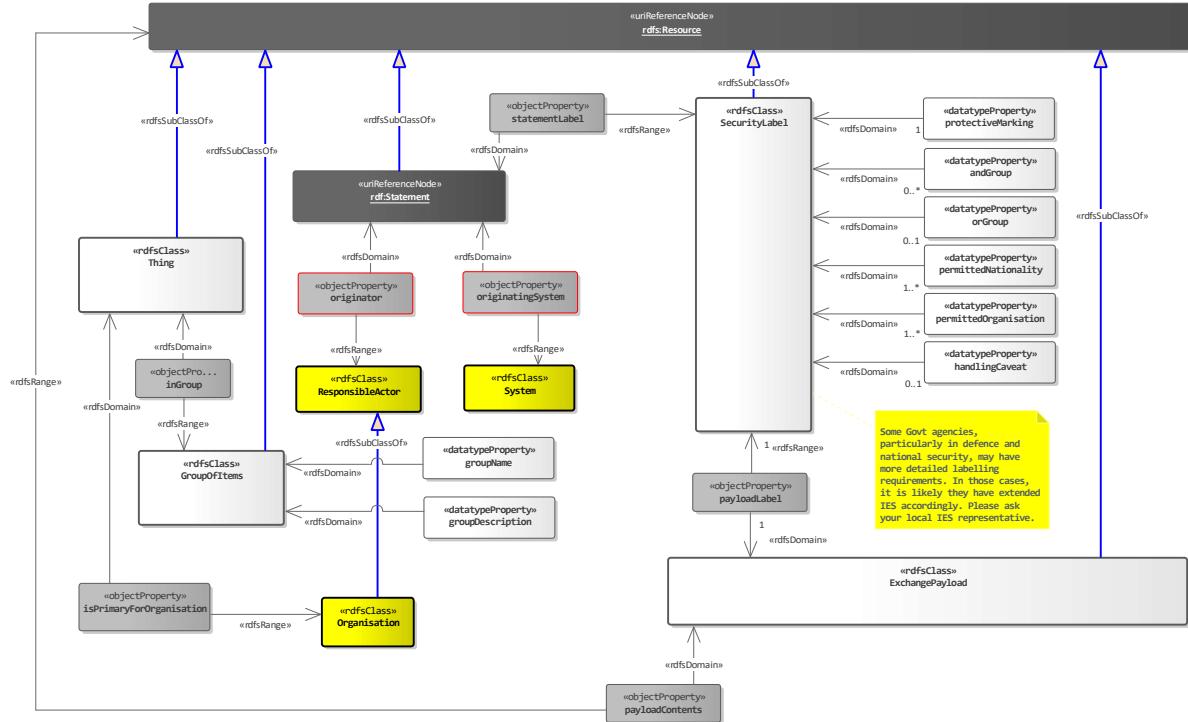
Note: As IES4 is modelled in RDF Schema, the data will be RDF (encoded as TTL, JSON, XML, etc.). Referring to relationships (i.e. triples) in RDF involves using the RDF reification pattern, so if sourceReferenceFor is to relate to an attribute or relationship then RDF reification is the approach that shall be used.



Payloads and Groups

IES3 had the concept of an **ExchangePayload** object to which all the Things and Groups were attached. In reality, there was only ever one payload in a file, so in IES4, whilst the **ExchangePayload** class is kept, it is simply an object in the RDF file to which meta-data about the whole file can be attached. The concept of **GroupOfItems** is retained from IES3.

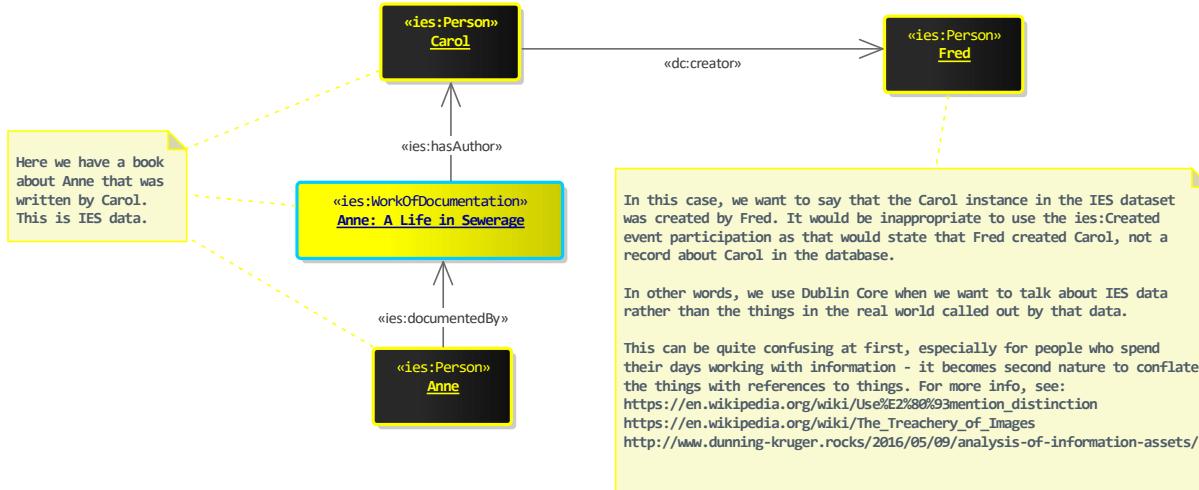
It is sometimes important to specify the origins (organisation, system, etc.) of certain information. This is achieved using the *originator* and *originatingSystem* which link `rdf:Resources` (i.e. anything) to their origin. These can be applied to `GroupsOfItems` also, but care must be taken not to put the same **Thing** in different `GroupOfItem` instances that have *originator* or *originatingSystem* properties linked to them. If the source of a relationship (triple) has to be specified, the *originator* and *originatingSystem* properties can be applied to `rdf:Statement` (see RDF documentation on reification).



Metadata

IES has classes for dealing with documents, and for dealing with representation of objects in a lot of different ways. However, when it comes to specifying meta-data about IES instances - e.g. who created, when it was created, etc. - the Dublin Core metadata standard is to be used.

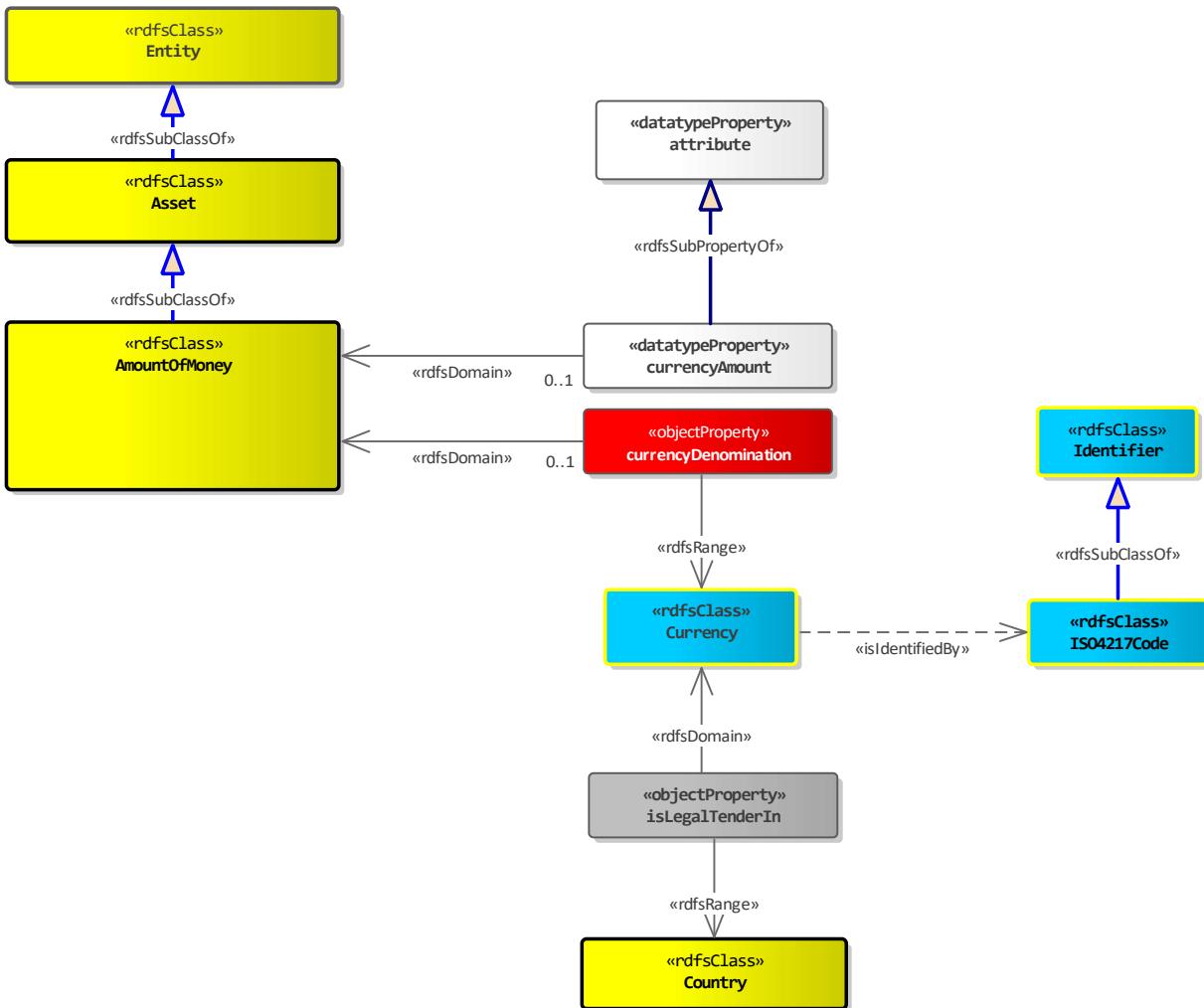
The fact that IES has its own document referencing capability *and* Dublin Core may seem a little confusing. The example below attempts to clear this.



Entities

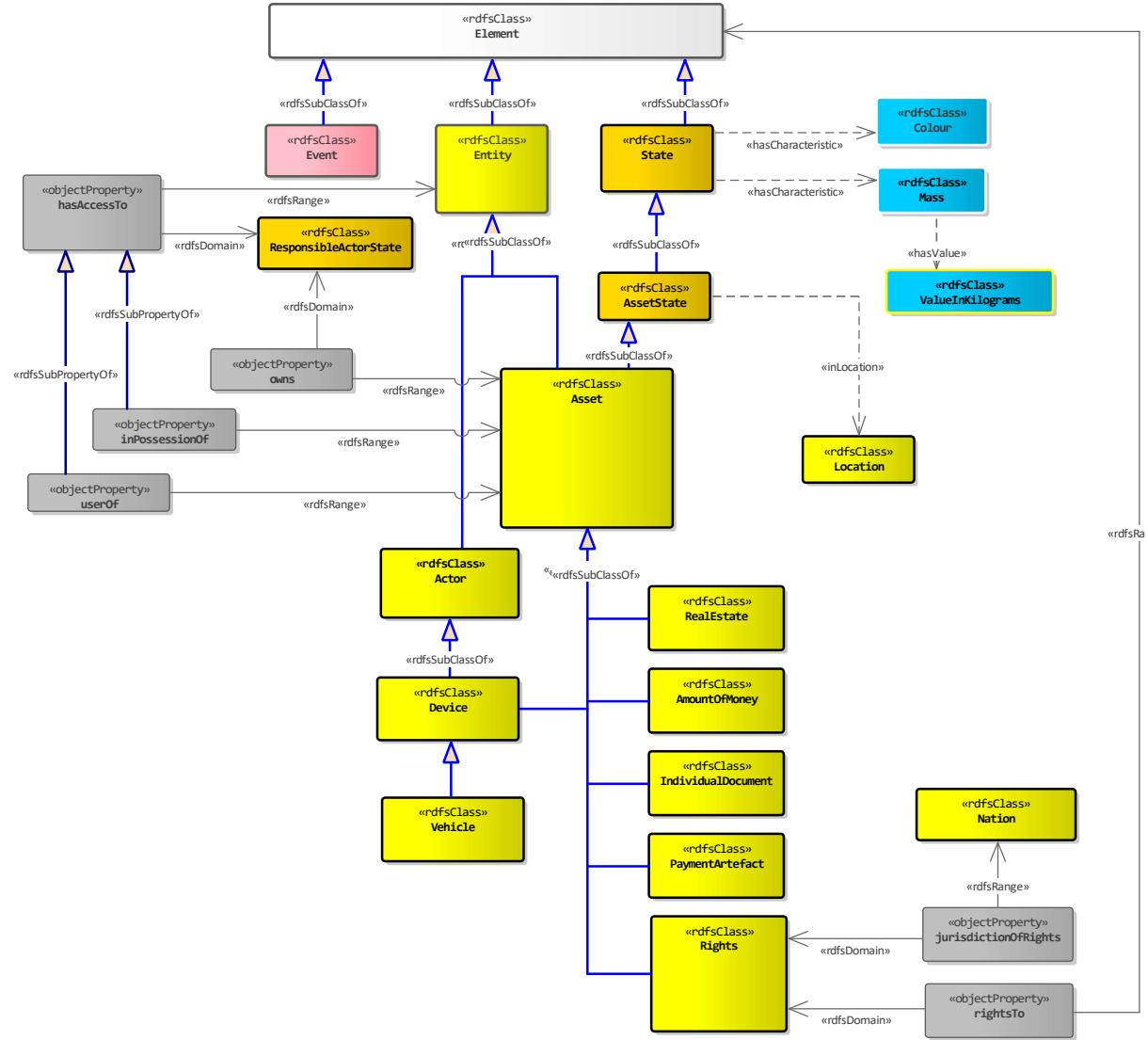
Amount of Money

This part of IES deals with specific amounts of a given currency



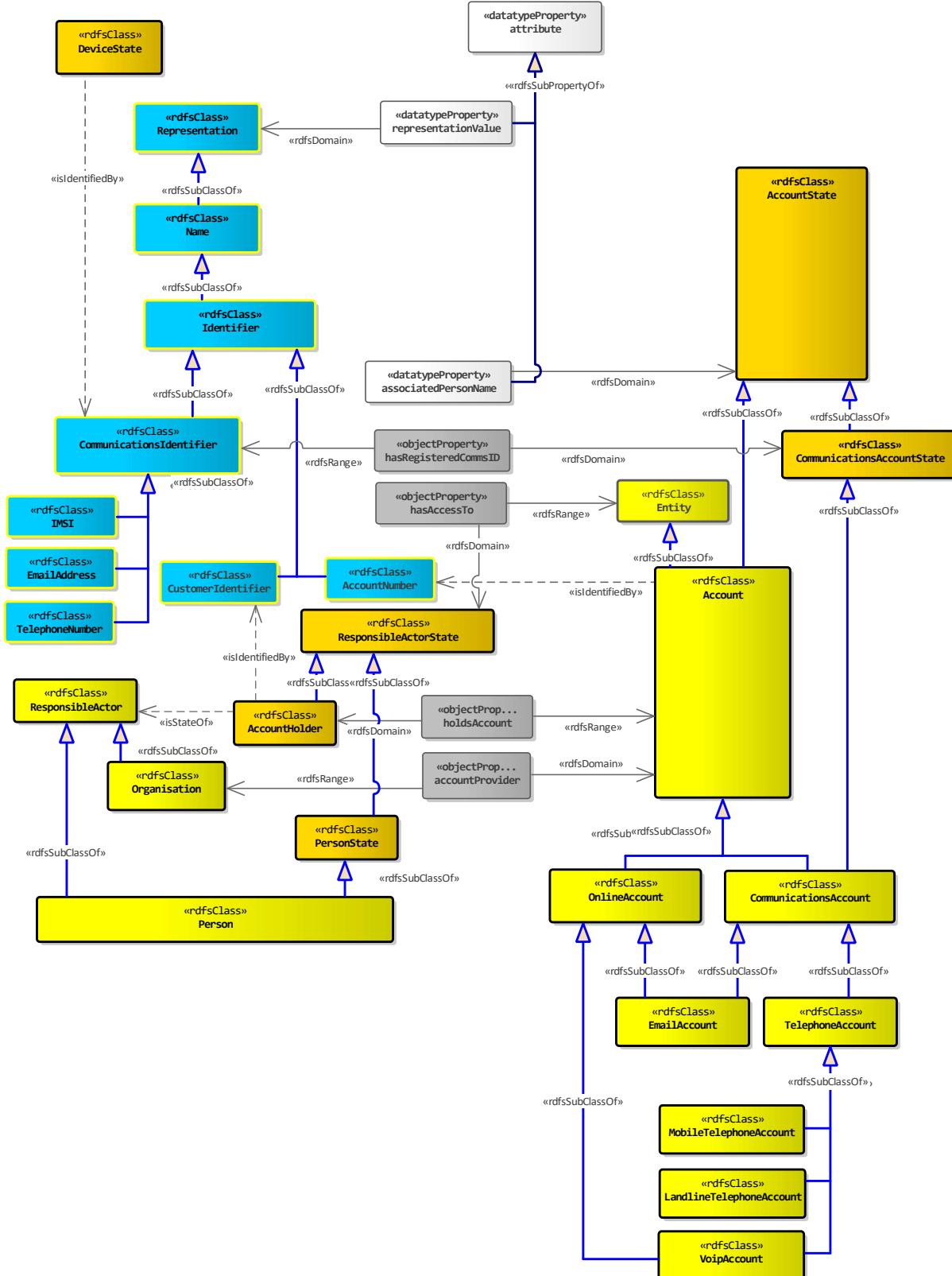
Assets

Assets are Entities that are either man-made or whose extent is defined in such a way as to specify ownership - e.g. a parcel of real estate.



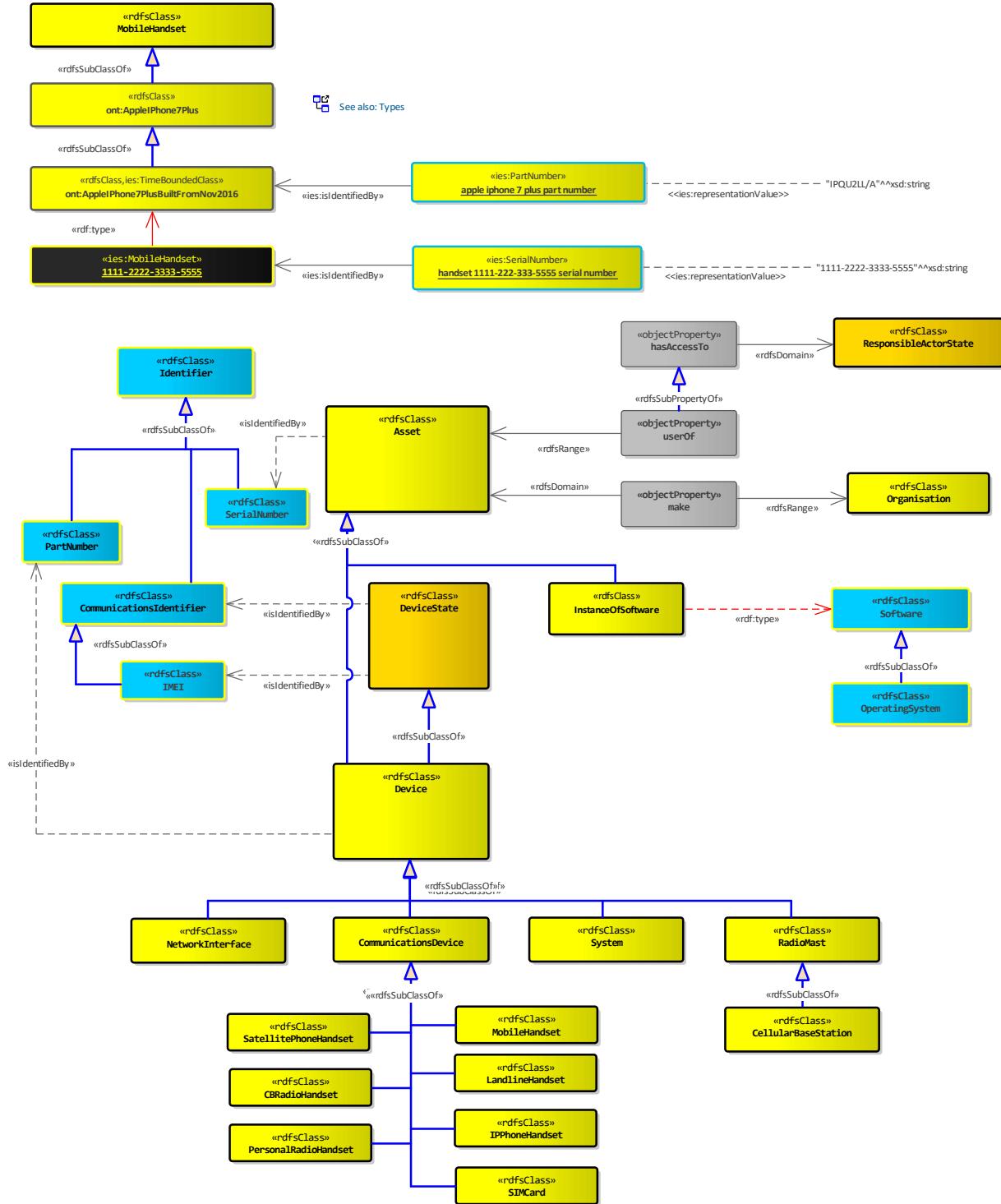
Communications Account

Communications Accounts are new for IES4. In most online and telecoms scenarios, the account, who holds it, and who provides it are more important than the device or handset (which IES 4 majored on). CommunicationsAccount inherits much from the generic Account class, then adds a relationship to CommunicationsIdentifier.



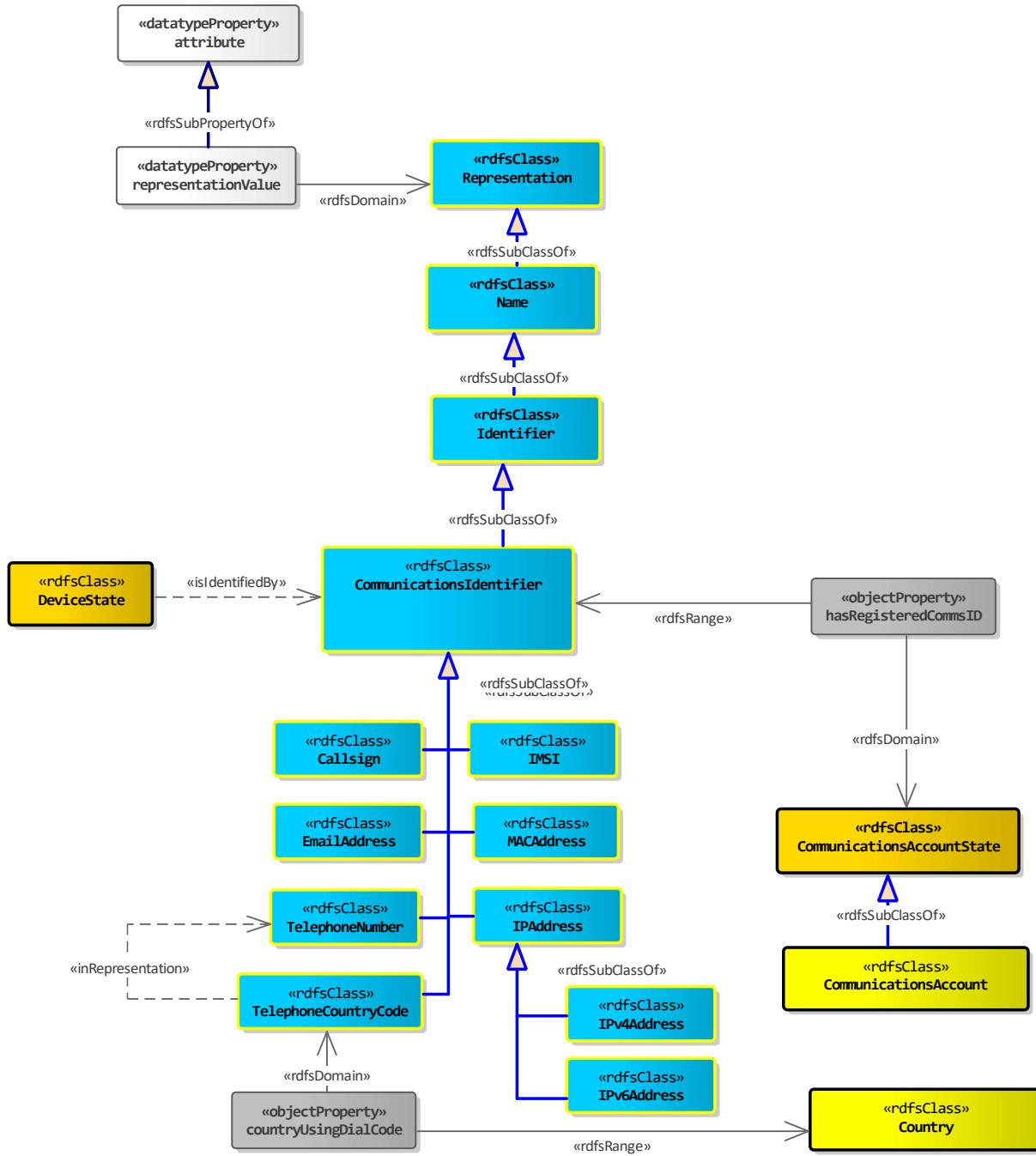
Communications Device

Devices are Assets that have been designed to perform one or more functions. IES then further sub-divides Device into *System* and *CommunicationsDevice*. A CommunicationsDevice is a self-contained device that acts as an endpoint for communication. A System is a collection of interacting Devices that together provide one or more functions. System components are generally removable / replacable.



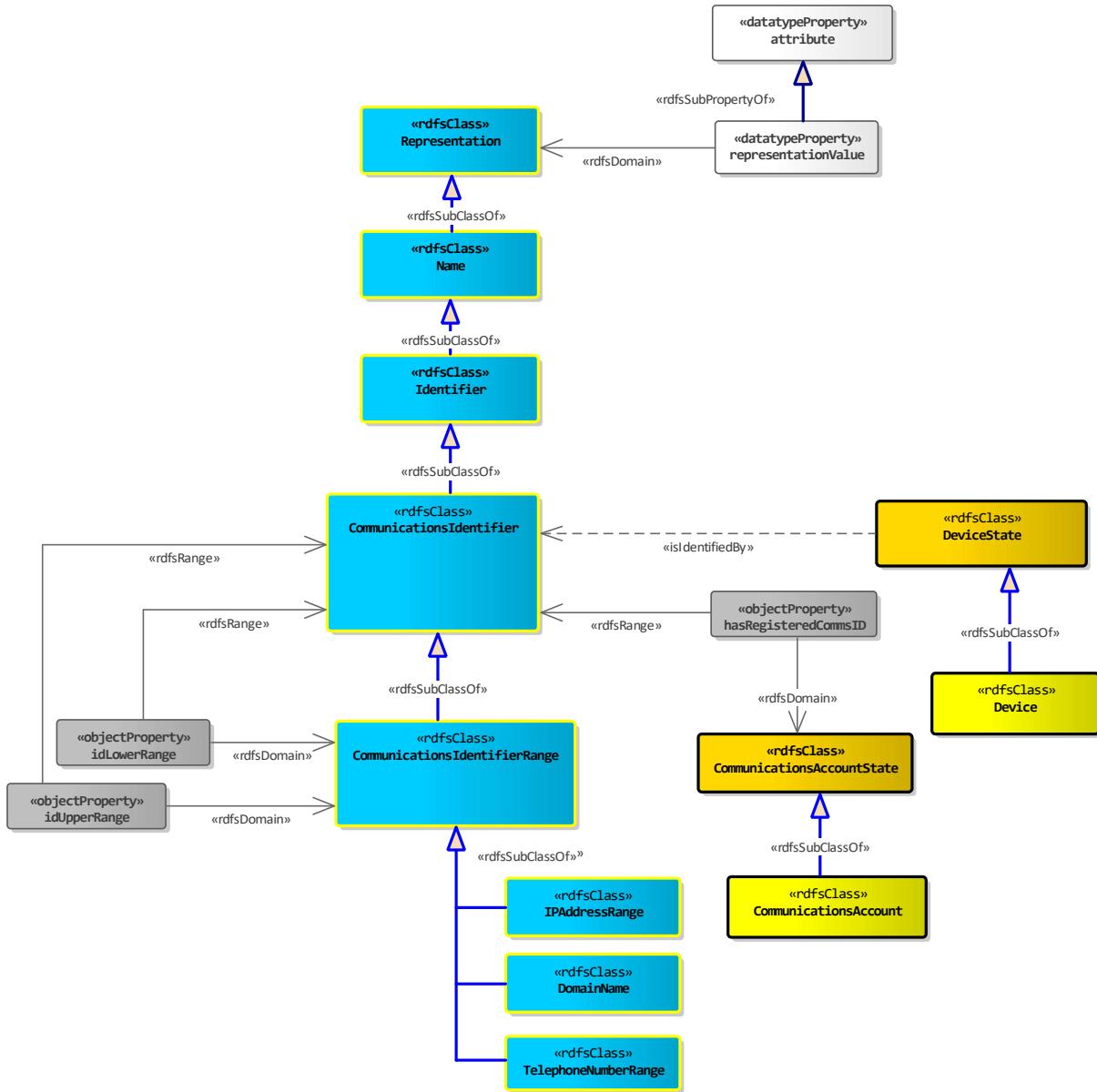
Communications Identifier

CommunicationsIdentifiers identify Devices (actually DeviceState, as the identifier may change over time). The identifiers are usually managed in a CommunicationsAccount, and again, we use the State rather than the WholeLife CommunicationsAccount as CommunicationsIdentifiers can move from account to account.



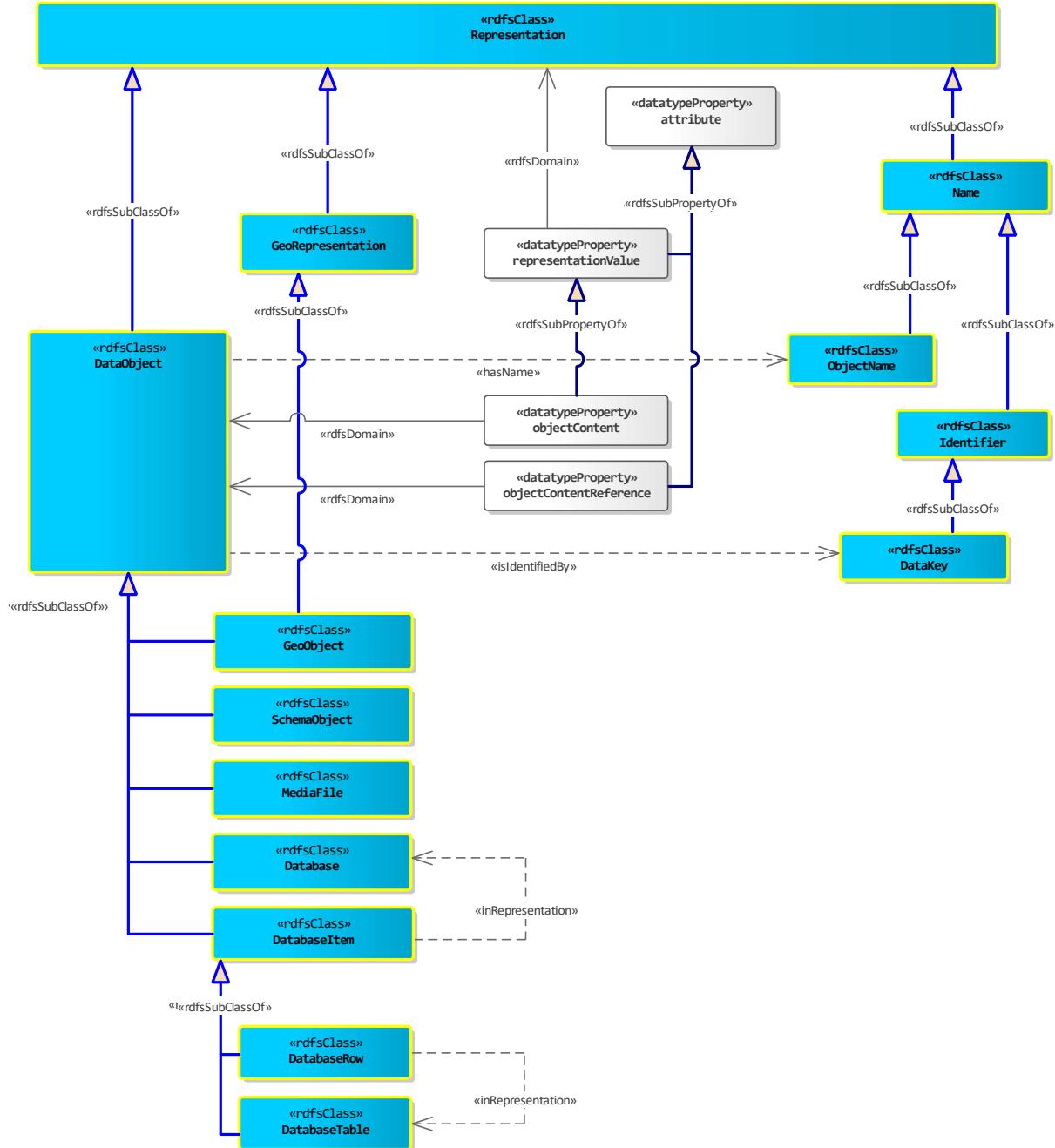
Communications Identifier Range

A CommunicationsIdentifierRange is a CommunicationsIdentifier that specifies a group of identifiers for Devices.



Data Object

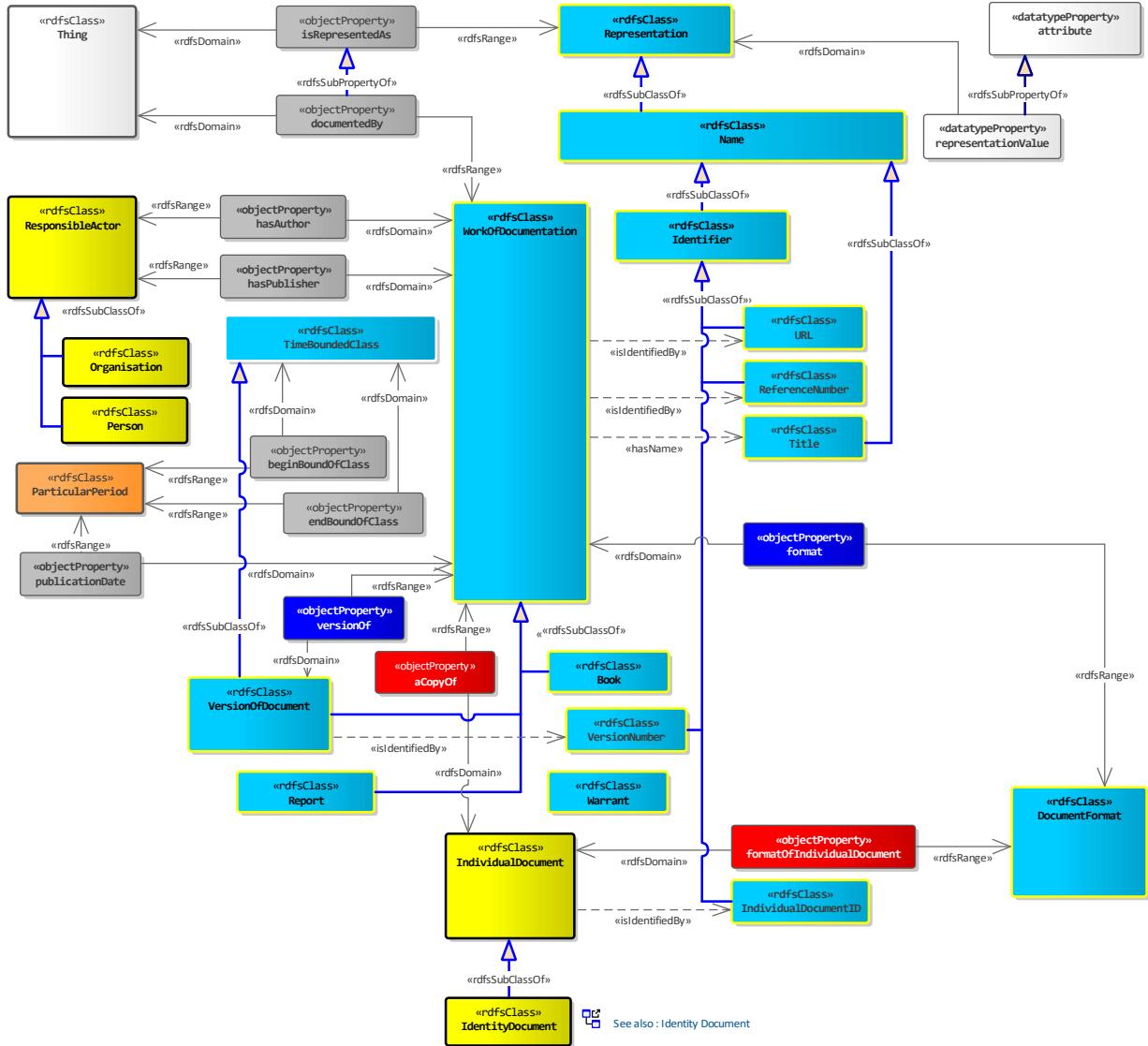
A DataObject is a Representationt that may contain internal structure that can be exploited using bespoke tools and/or applications. DataObjects might be geoobjects, video files, audio files, etc.



Document

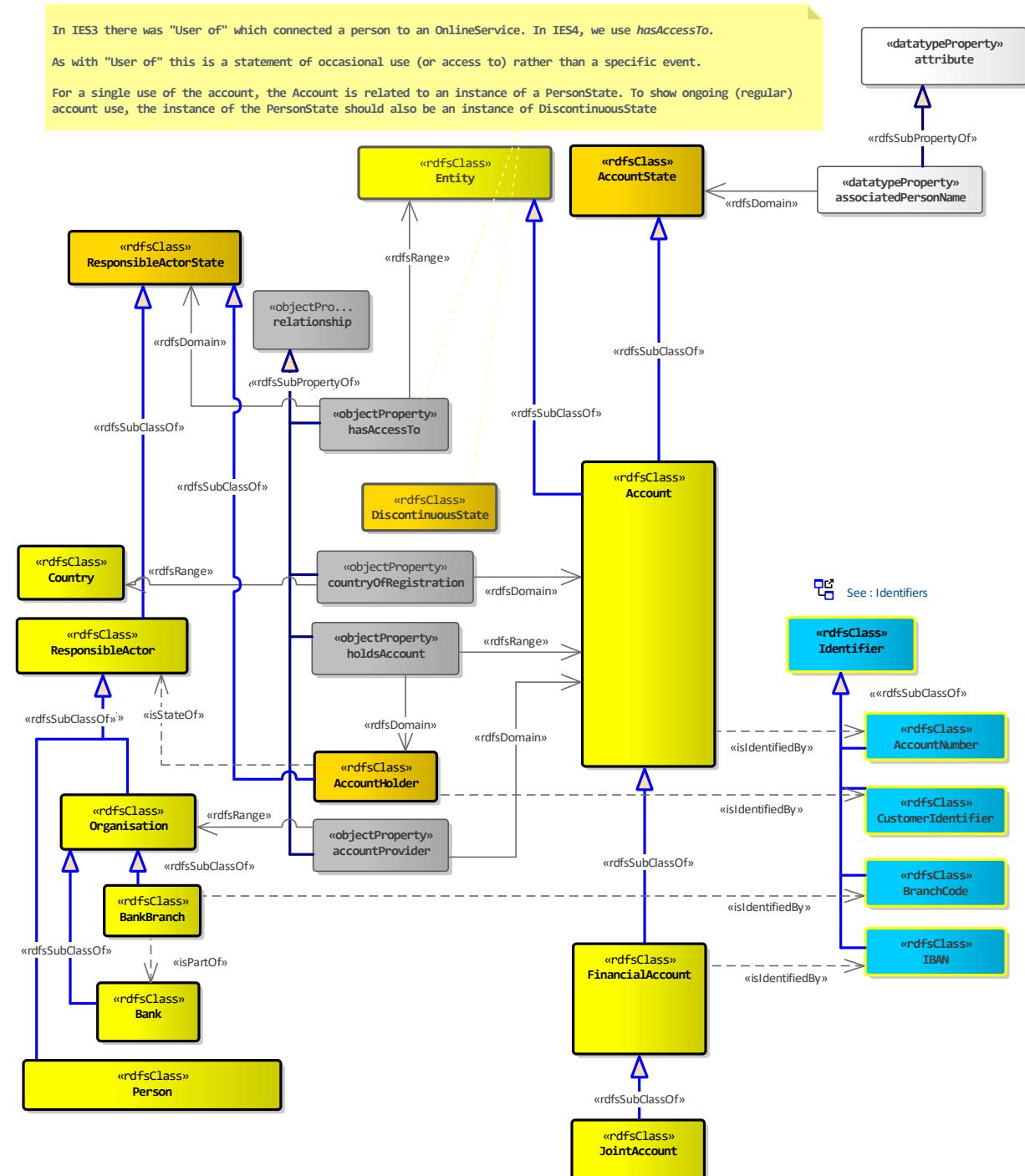
In IES 3 there was just "Document", but it wasn't clear if this referred to a specific, individual copy of a document, or just the document in general (of which there may be many copies). For example, it wasn't clear if it was "my copy of War & Peace" or just "War and Peace".

This has been rectified in IES4 and "Document" has been replaced by "Work of Documentation" (the general case) and "IndividualDocument" (a particular instance of a document). In the majority of cases, WorkOfDocumentation will be used, but where we care about a particular instance (e.g. forensics, evidence, historical interest, etc.) then IndividualDocument should be used. The IndividualDocument can be related to the WorkOfDocumentation it is an instance of using the "aCopyOf" property.



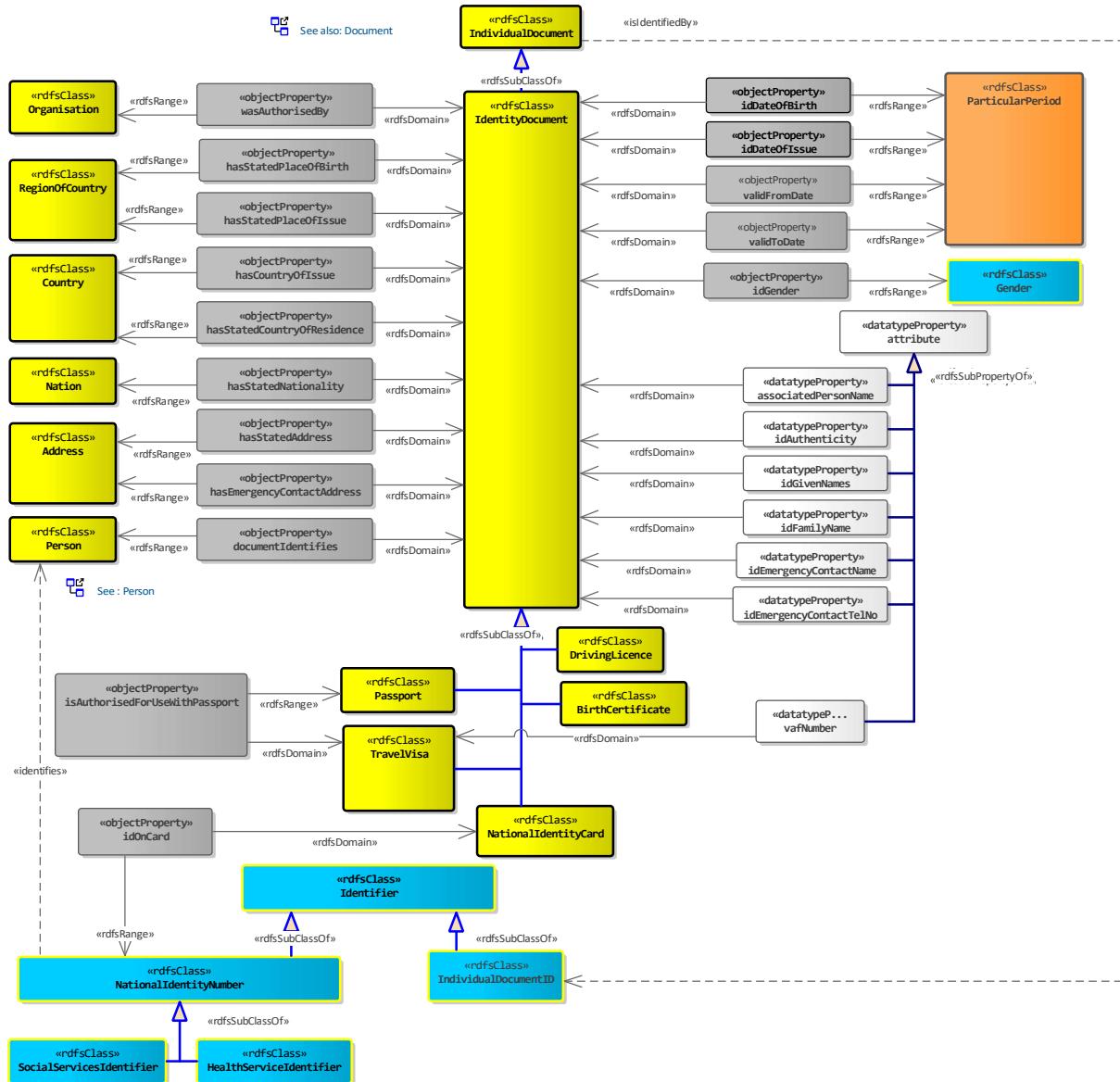
Financial Account

Accounts are ways to collect together transactions and other related Events. A FinancialAccount is an Account that is used to manage financial transactions.



Identity Document

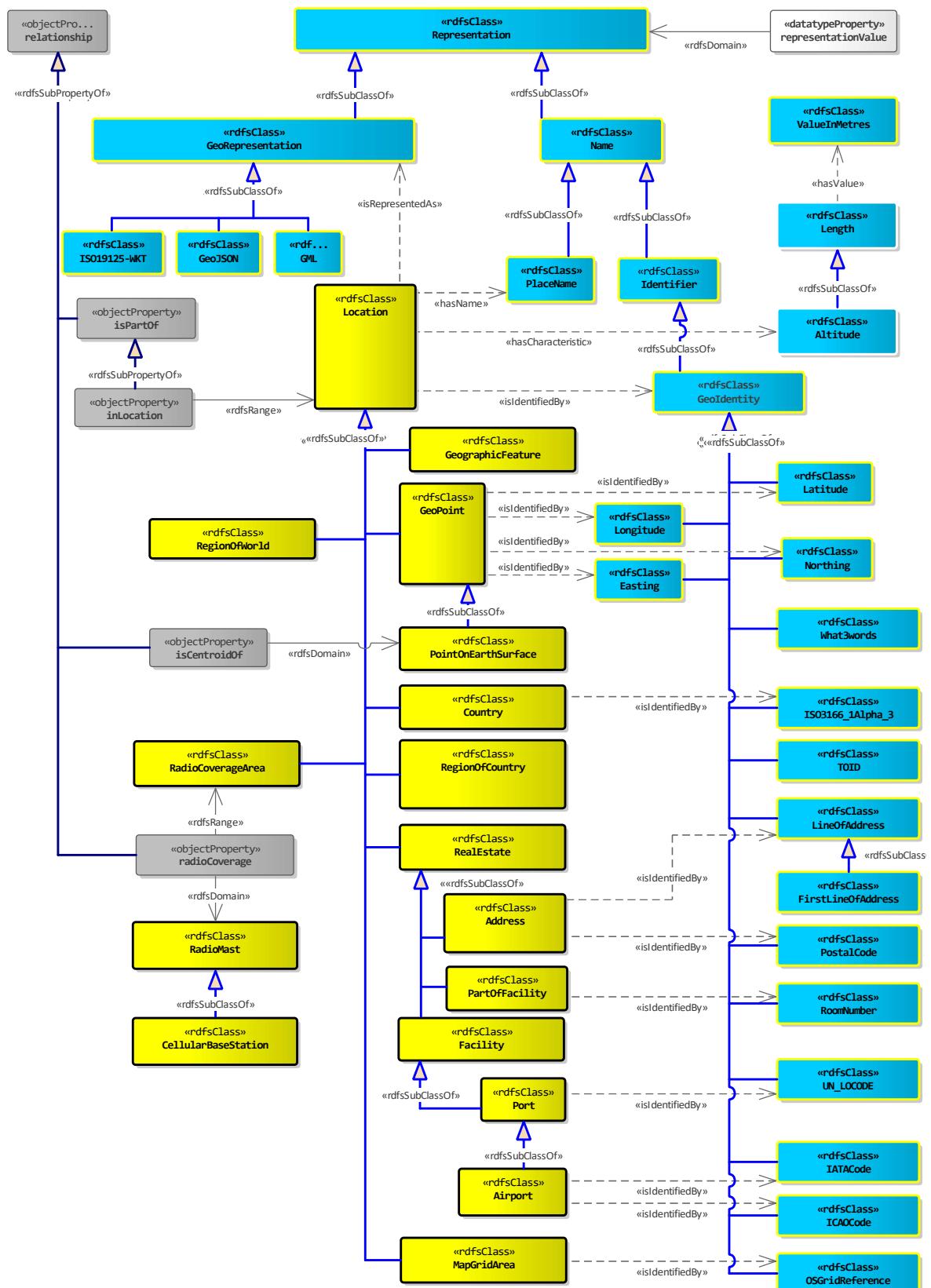
IdentityDocuments are IndividualDocuments that can be used to authenticate the identity of their bearers.



Location

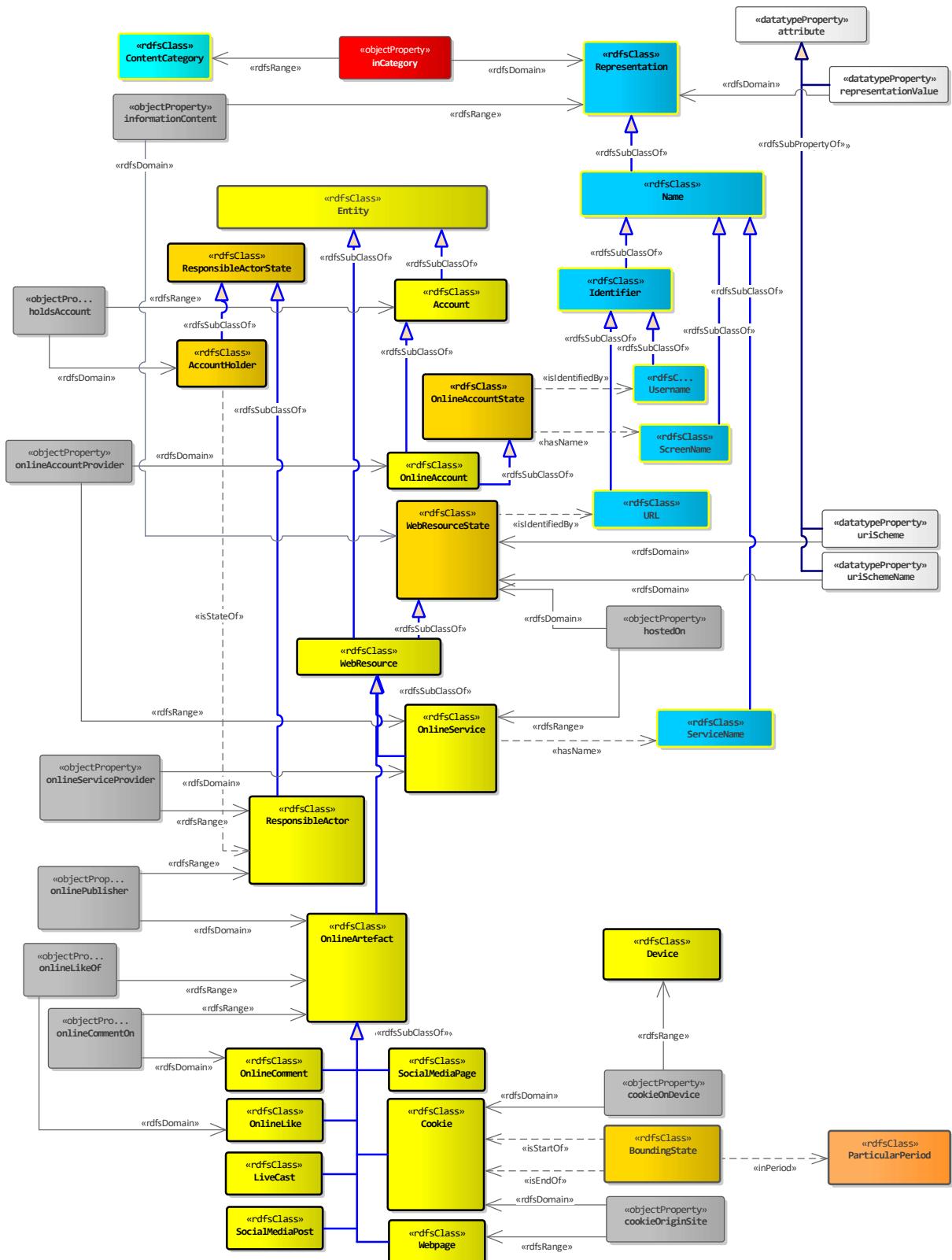
Locations are physical chunks of the earth (and usually the airspace above) - i.e. they are defined by their extent.

The model is intended to be used hierarchically - e.g. an Address should be part of (inLocation) a RegionOfCountry which should be part of (inLocation) a Country, etc.



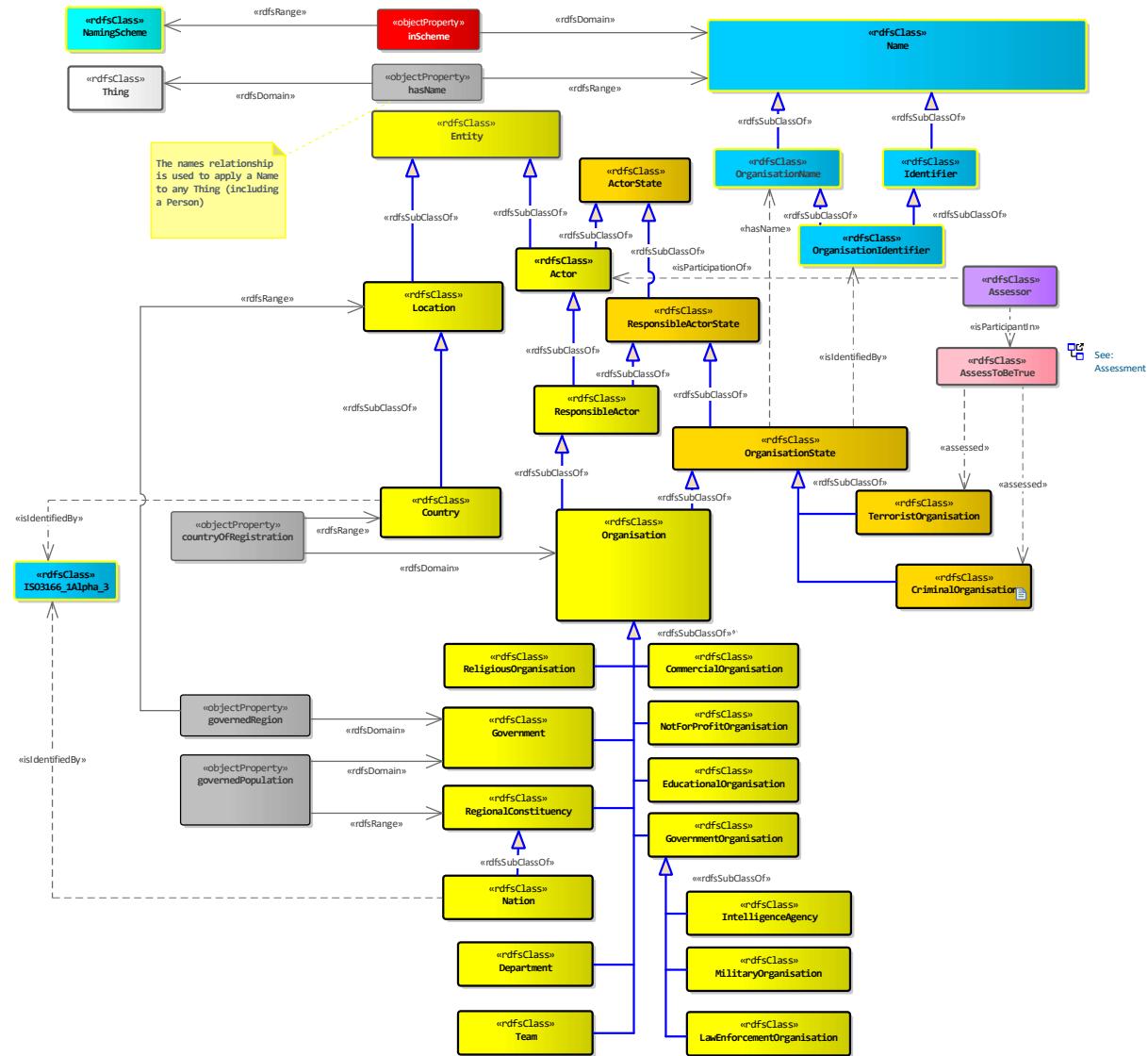
Online

This diagram covers the online aspects of IES.



Organisation

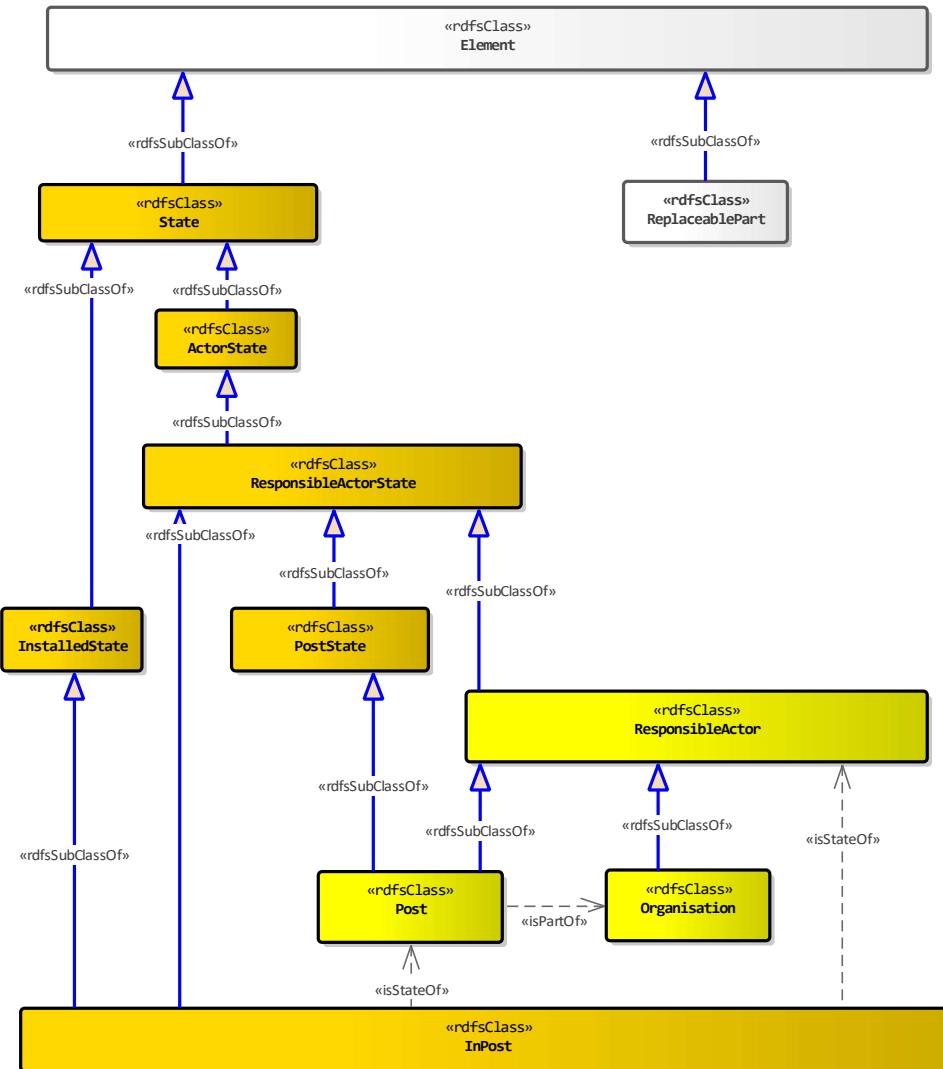
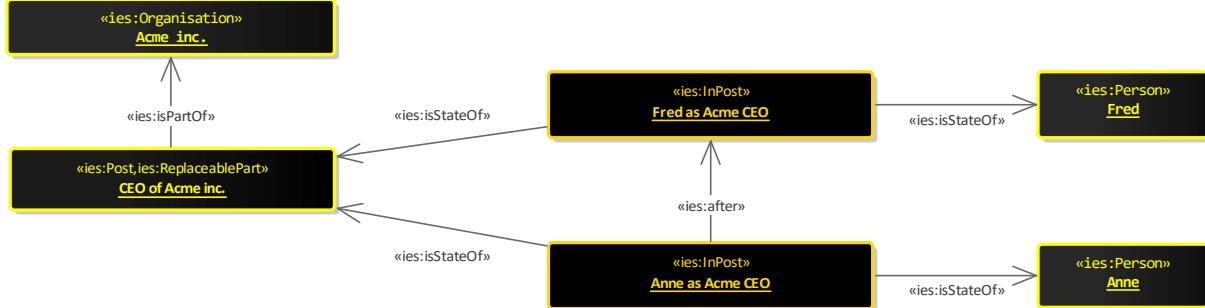
This diagram covers the Organisation aspects of IES.



Posts and Roles

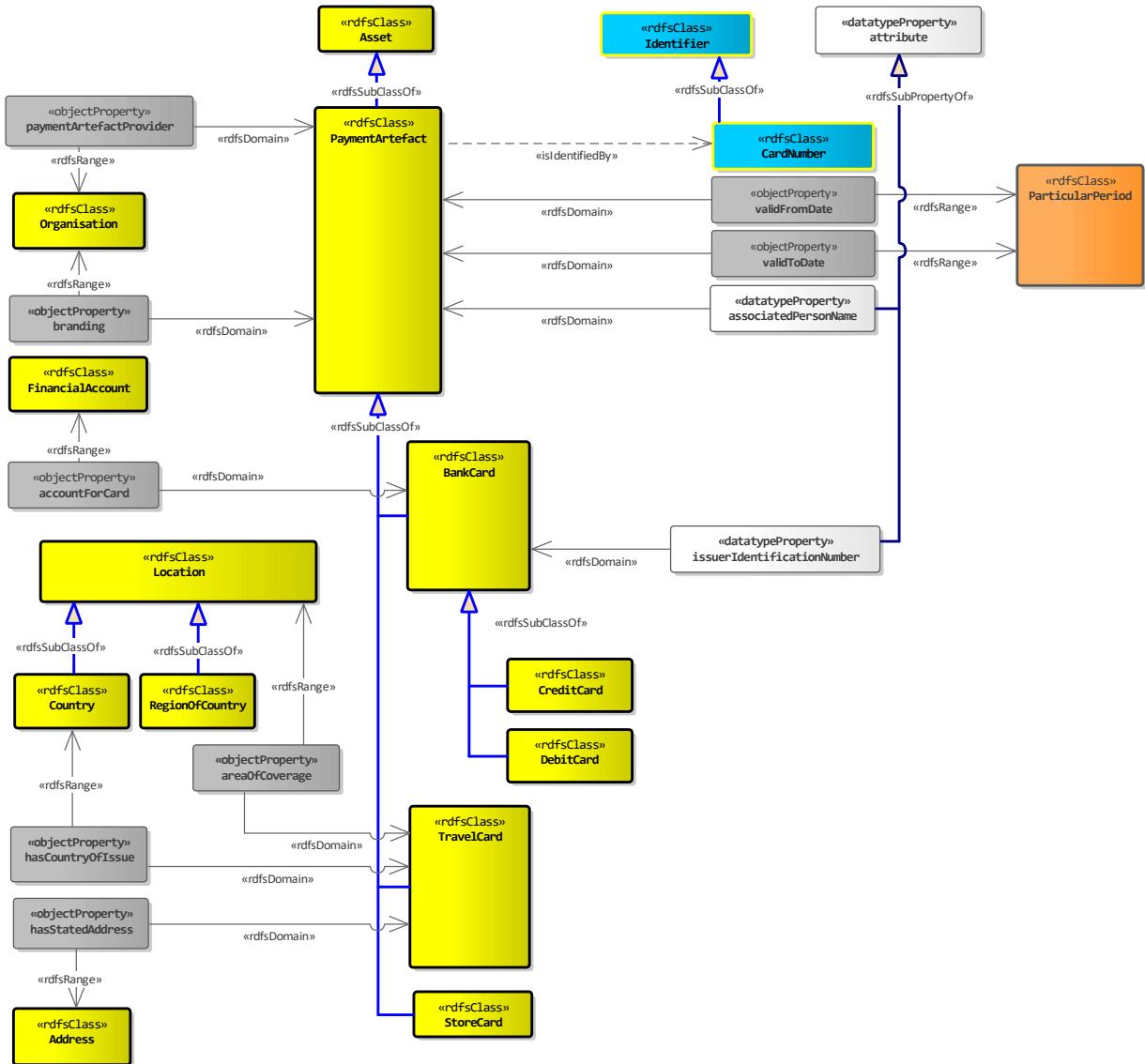
Posts are parts of Organisations. A ResponsibleActor can be in post for a period of time - i.e. there is a state of the ResponsibleActor (InPost) that is part of the Post. Note that this is part of the Post, not a state of it, as there may be more than one ResponsibleActor in a given Post at the same time.

Roles are also defined. These are ClassOfStates that are used to categorise a given state in terms of its role.



PaymentArtefact

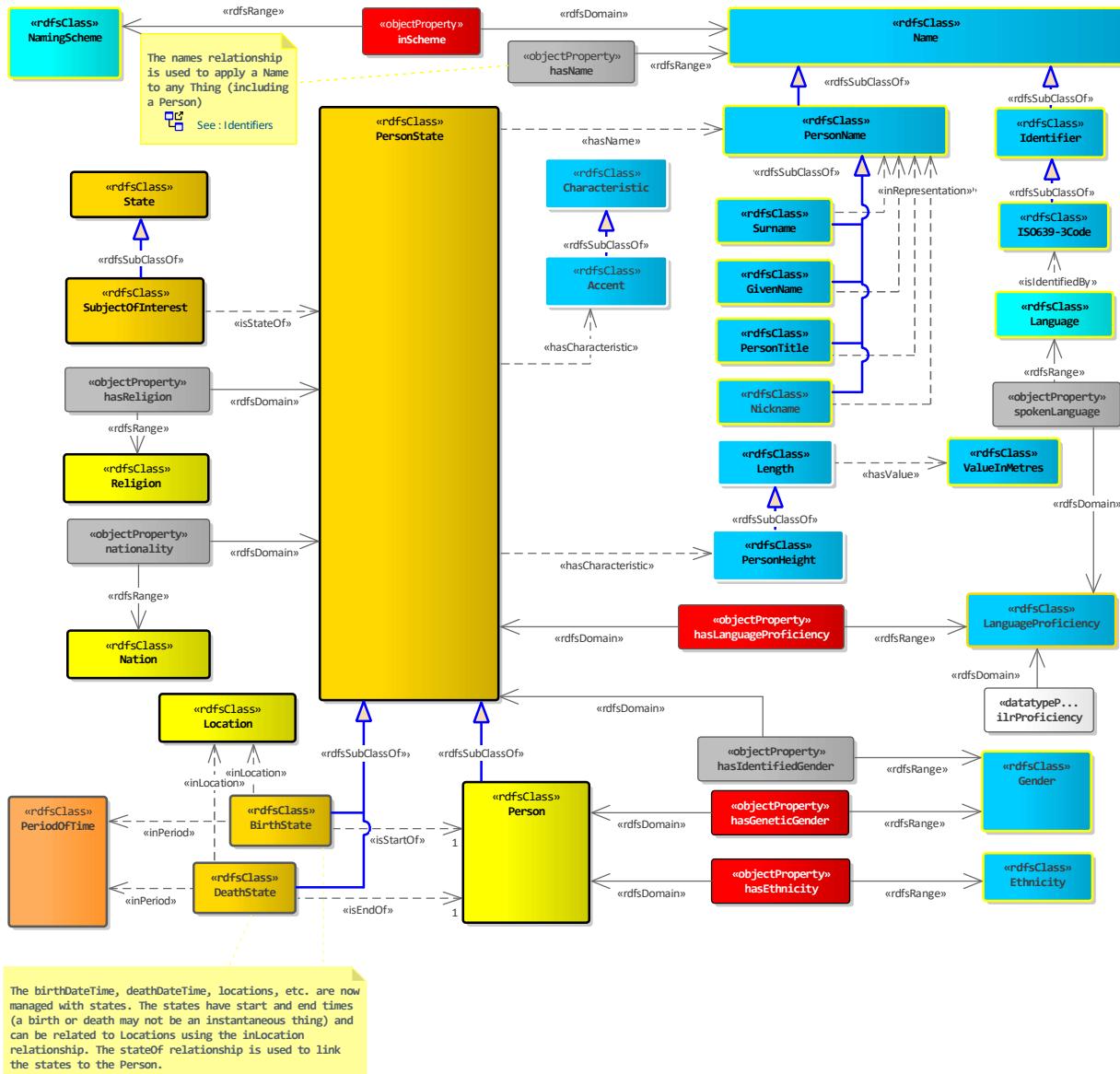
PaymentArtefacts are used in transactions, and also sometimes to identify people.



Person

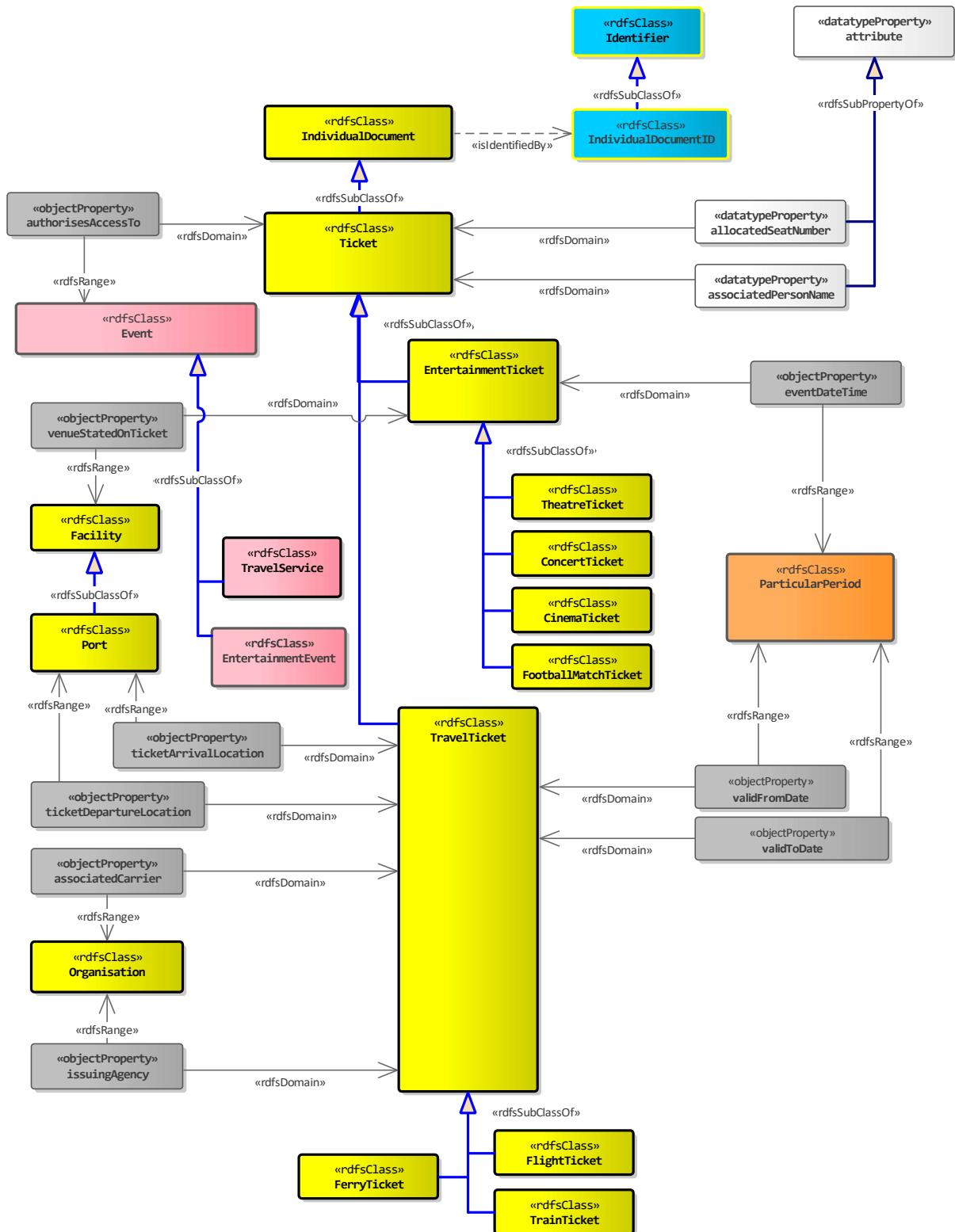
This diagram covers people, and people pretending to be other people (aliases). Most personal attributes belong to a PersonState as they are things that can change throughout the Person's life. The two whole-life properties that cannot be changed are their ethnicity and their genetic gender.

Two special states are identified - birth and death which are bounding states for the whole life person and can be used to identify the location and date of birth.



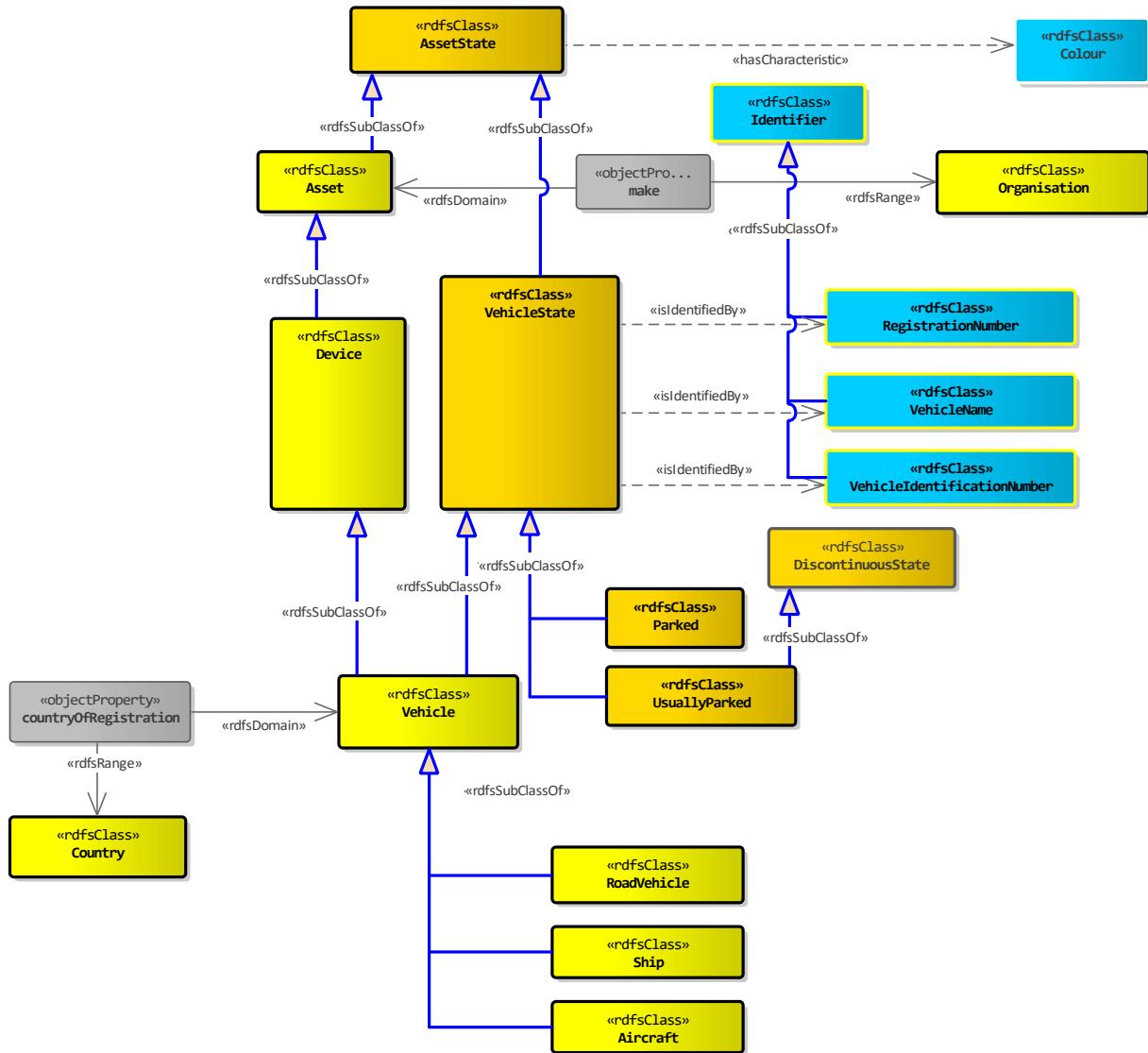
Ticket

Tickets are IndividualDocuments that authorise access to Events - e.g. travel and entertainment.

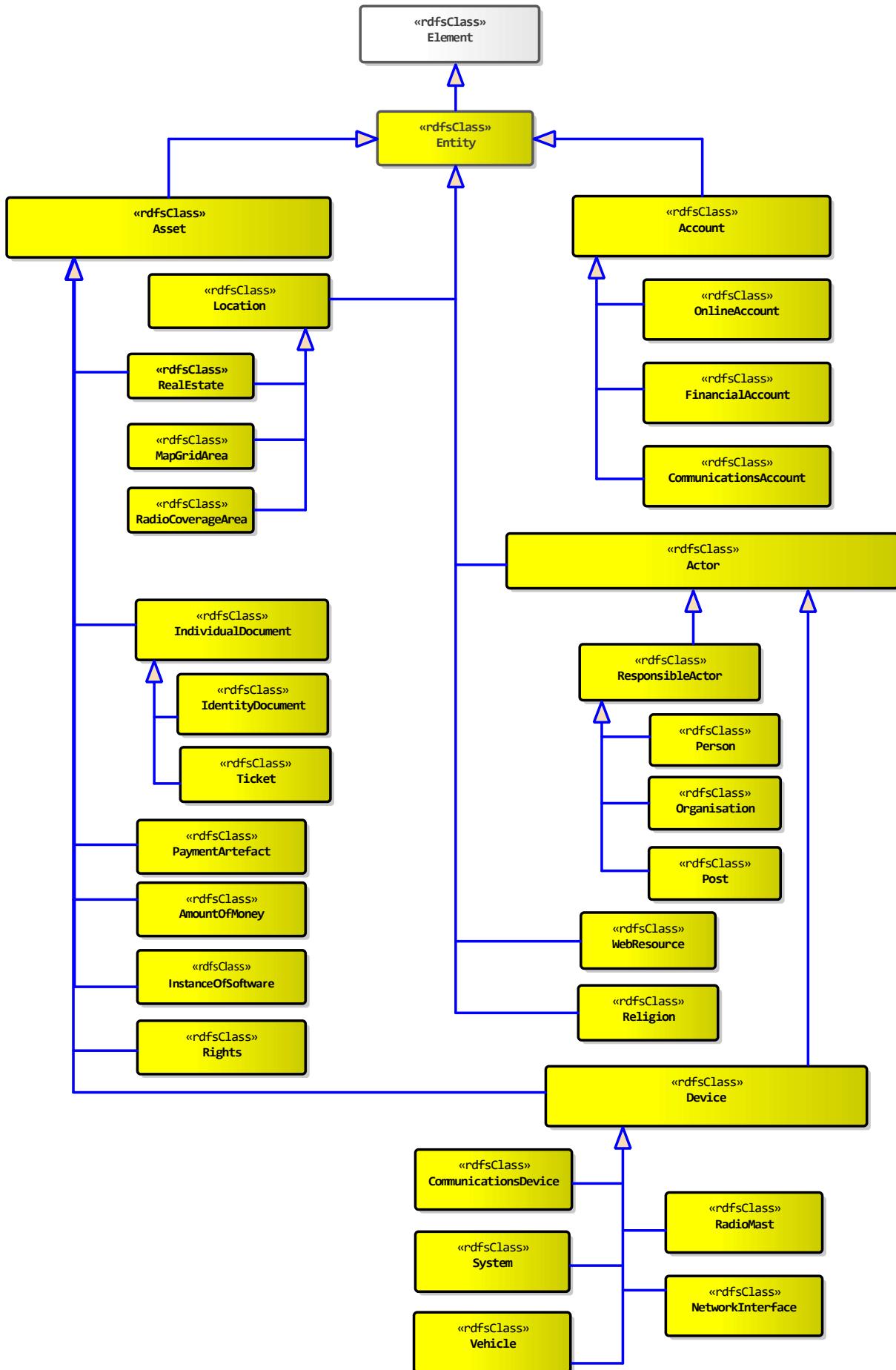


Vehicle

A means of transportation – e.g. car, aircraft, ship.



All Entities



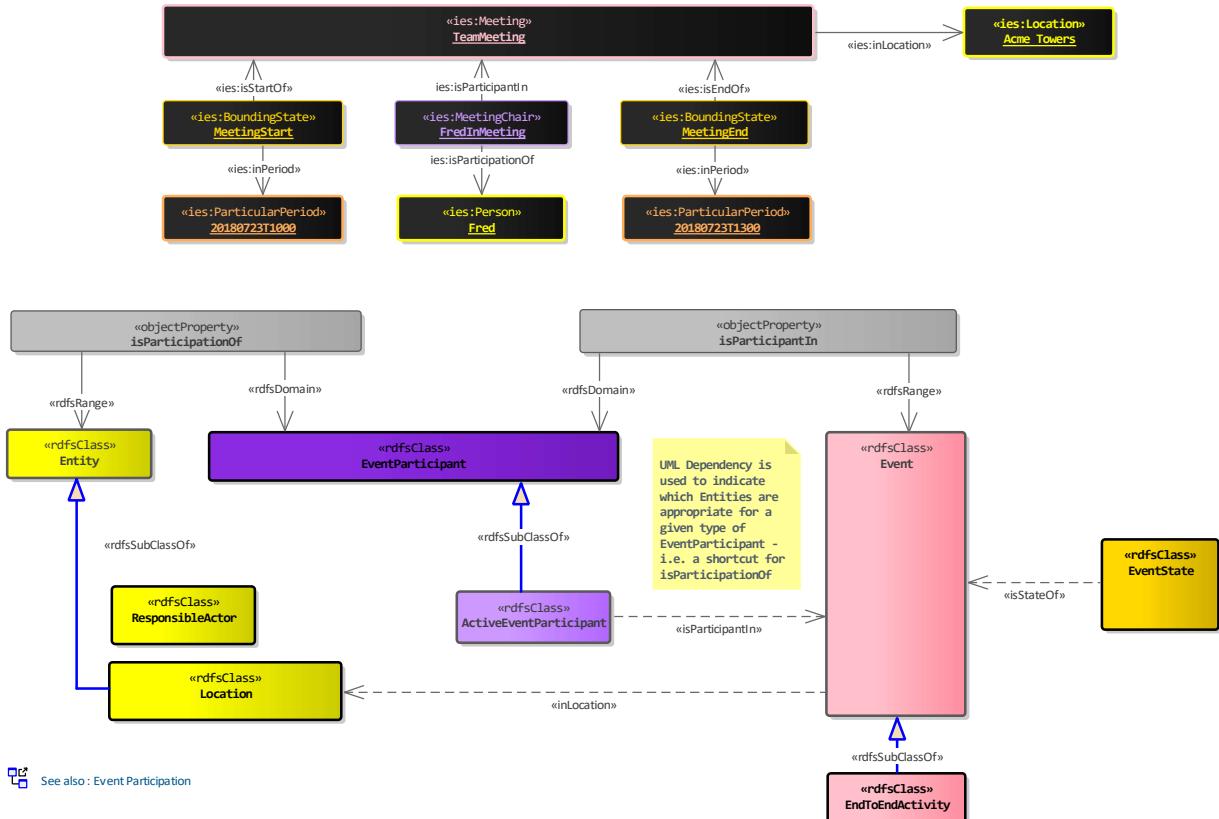
Events

Events Dear Boy, Events

An Event is an activity or incident involving one or more participants (i.e. Entities). The participating Entities are related to the Events via an EventParticipant subtype. To relate the EventParticipant to the Entity, use the isParticipationOf relationship. To relate the EventParticipation to the Event, use the isParticipantIn relationship. Rather than create sub-properties of these relationships for each type of EventParticipation, a simplified notation (UML Dependency - dashed line with arrow-head) is used in the Event diagrams to indicate the appropriate Events and Entities for each type of EventParticipation.

There are two key types of EventParticipant - Actor and ActedUpon. Actor relates a Person or Organisation to the Event they conduct. ActedUpon relates an Entity to the Event that has an effect upon them. These two EventParticipants generalise and replace a number of the participants specified in IES 3.x (see the specific Event subtypes for examples).

Locations of Events are handled with more precision in IES4. The happensIn relationship can be used to assert the encompassing Location for the whole Event - e.g. an arrest that takes place in Trafalgar Square. However, some Locations merely participate in the Event - e.g. departure and destination ports, weapon and target locations in attacks, etc. For this reason, happensIn should only be used when the Event takes place entirely within the envelope of the Location. This precision is necessary for interpreting Events in geo systems, timeline visualisations, etc.



Assessment

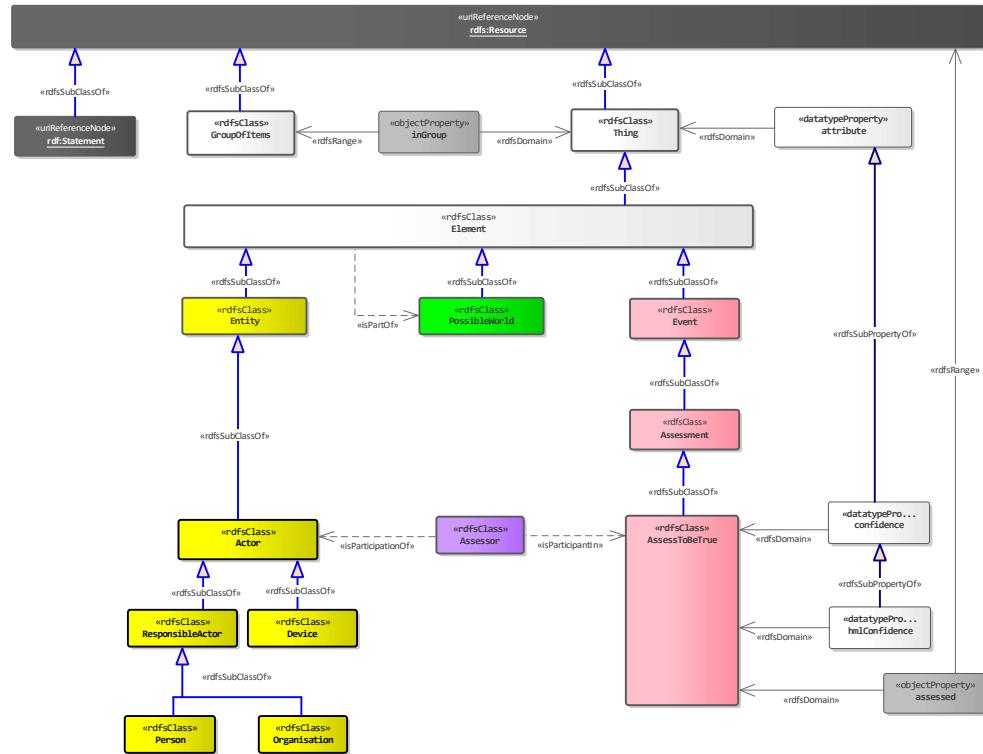
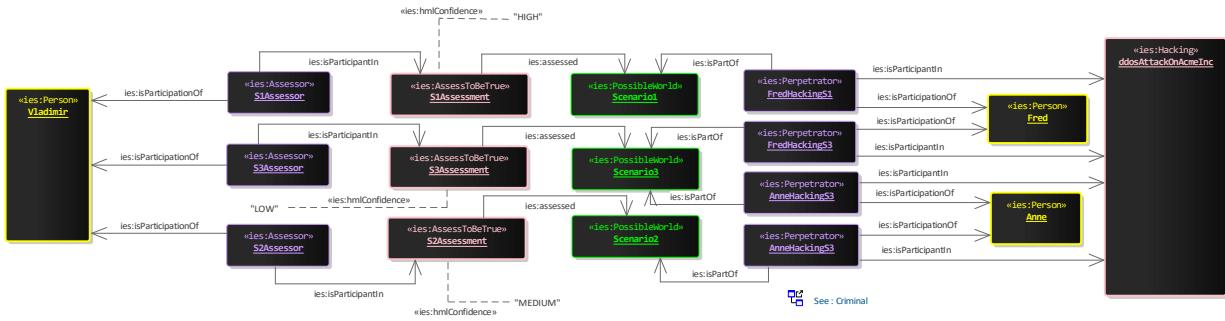
The Assessment pattern breaks away from the usual IES EventParticipant pattern slightly. There is still an event (AssessToBeTrue) and a participant (Assessor) but the thing that is being assessed isn't necessarily a participant - it could be something intangible such as Class or relationship, so a simple owl:objectProperty is used to link the event to the thing that has been assessed to be true.

A high, medium, low rating must be provided for all assessments. Whilst it is realised that these values may have different meanings between various parties - e.g. medical, policing, intelligence, etc., there has to be some rough indicator, so hmlConfidence will have to be it.

A further (e.g. more specific) confidence indicator may also be provided. IES does not mandate how that confidence is measured.

This model also introduces (new to IES 4.1.0) the idea of a PossibleWorld (as used in ISO15926, IDEAS and Prof Matthew West's guide to high quality data models). A PossibleWorld is a scenario - something that may or may not have occurred, and encompasses a number of events and entities that would have existed in that world. The likelihood of a PossibleWorld is defined using AssessToBeTrue.

In the example shown, there are three scenarios. In scenario 1, Fred is assessed to have carried out the hacking alone. In 2, Barry did it alone. In 3, they both did it. Vladimir has assessed the scenarios with HIGH MEDIUM and LOW confidence.

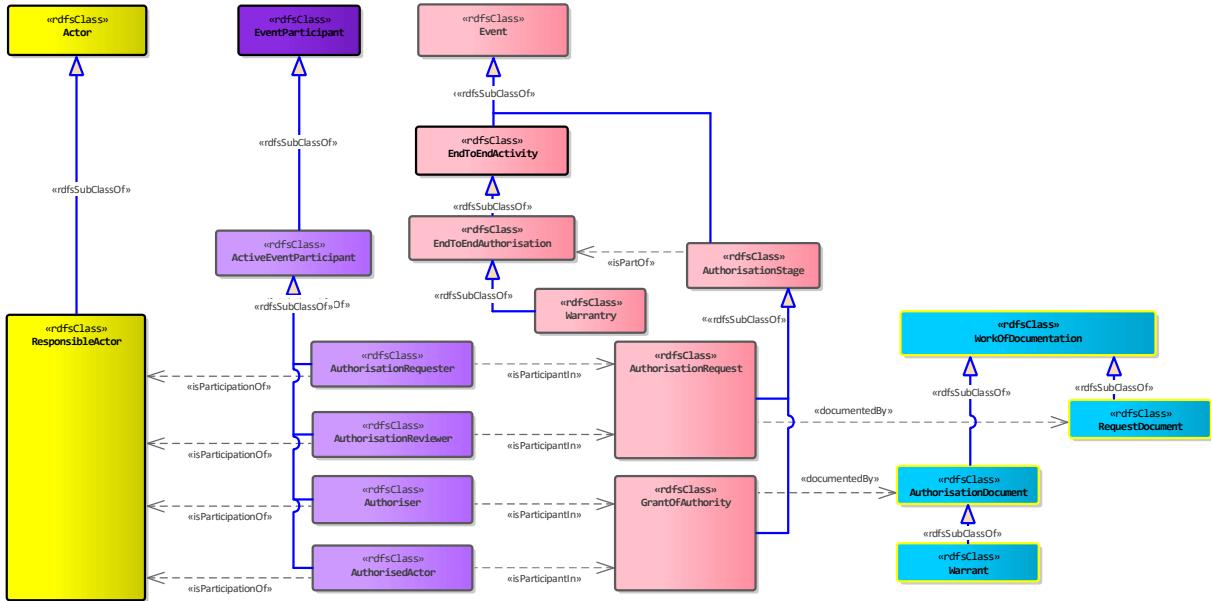


Authorisation

The Authorisation Model (added in v4.2 of IES) is about capturing the end-to-end authorisation process from request, through grant of authority to act, through to the actions that take place under that authority. The primary need for this model is in Police warranty, though the model is general and can be used for other forms of authorisation.

The EndToEndAuthorisation is composed of (using isPartOf) the AuthorisationRequest and the GrantOfAuthority. Any other Events that occur under that authority should also be made part of the EndToEndAuthorisation - i.e. it encompasses not only the administration of the authorisation but also the actions that take place under it.

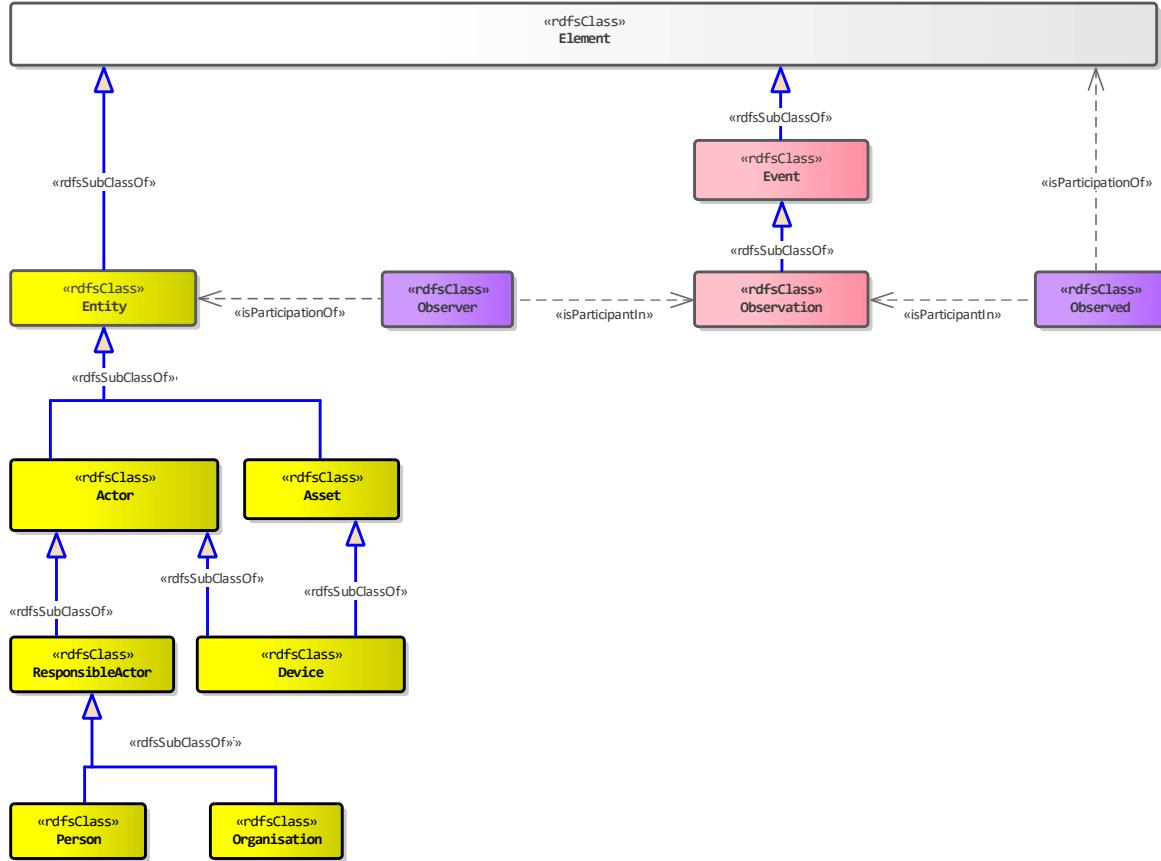
The request and grant events are linked to the AuthorisedEventClass (or classes) they authorise - e.g. requesting authorisation to travel would mean the travel EventClass is then related to AuthorisationRequest via a requestedActivityType relationship. It is usual for authorisations (esp. warrants) to be time-bounded. Hence, any AuthorisedEventClass will usually also be an instance of a TimeBoundedClass.



Observation

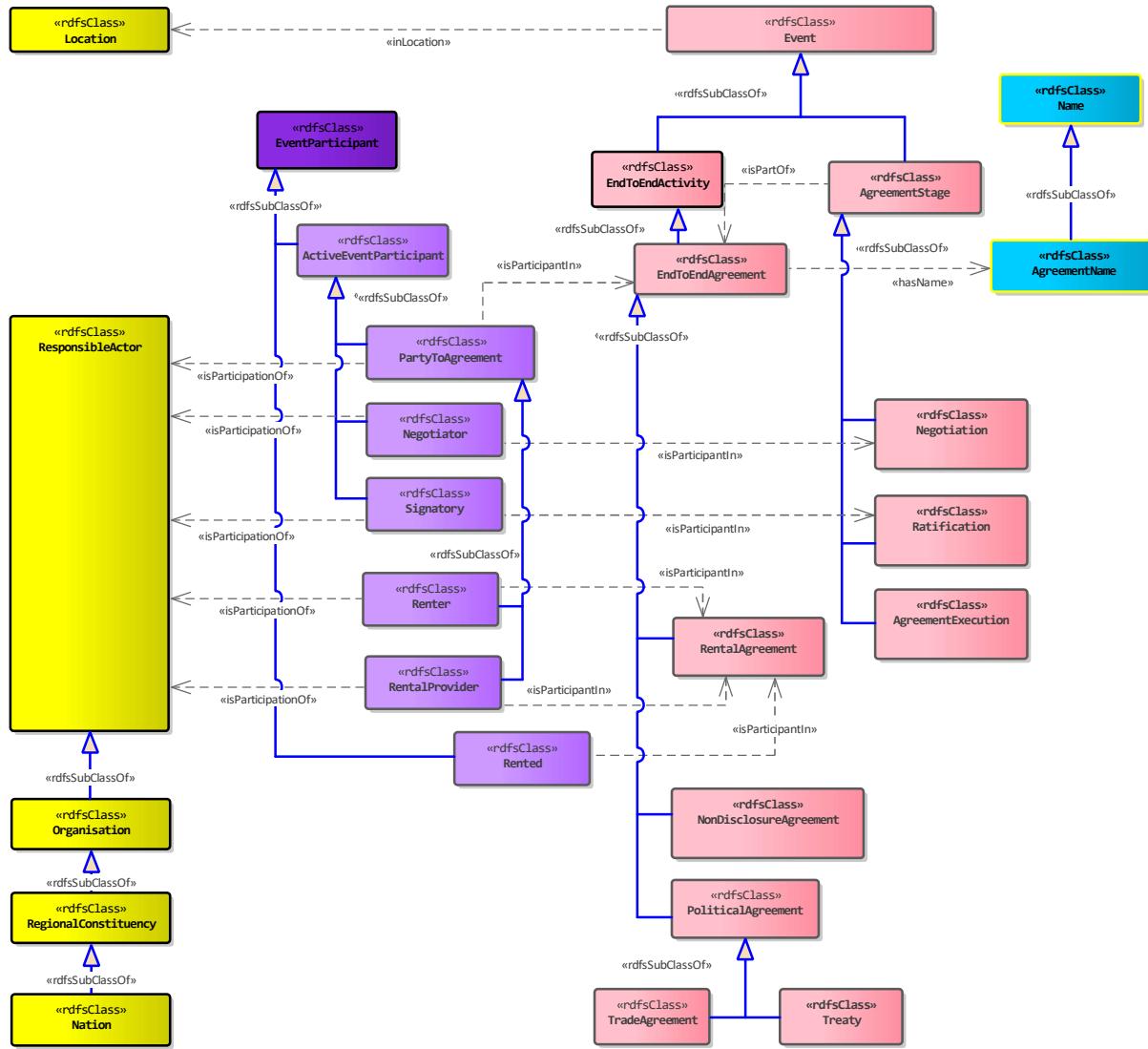
The Observation pattern specialises the EventParticipation pattern. There is an Event (activity) of Observation, in which one or more Entities can be involved as Observer. Elements (Events or Entities) also participate as the Observed role.

The use of the EventParticipation pattern allows for the locations of Observer and Observed to be different.



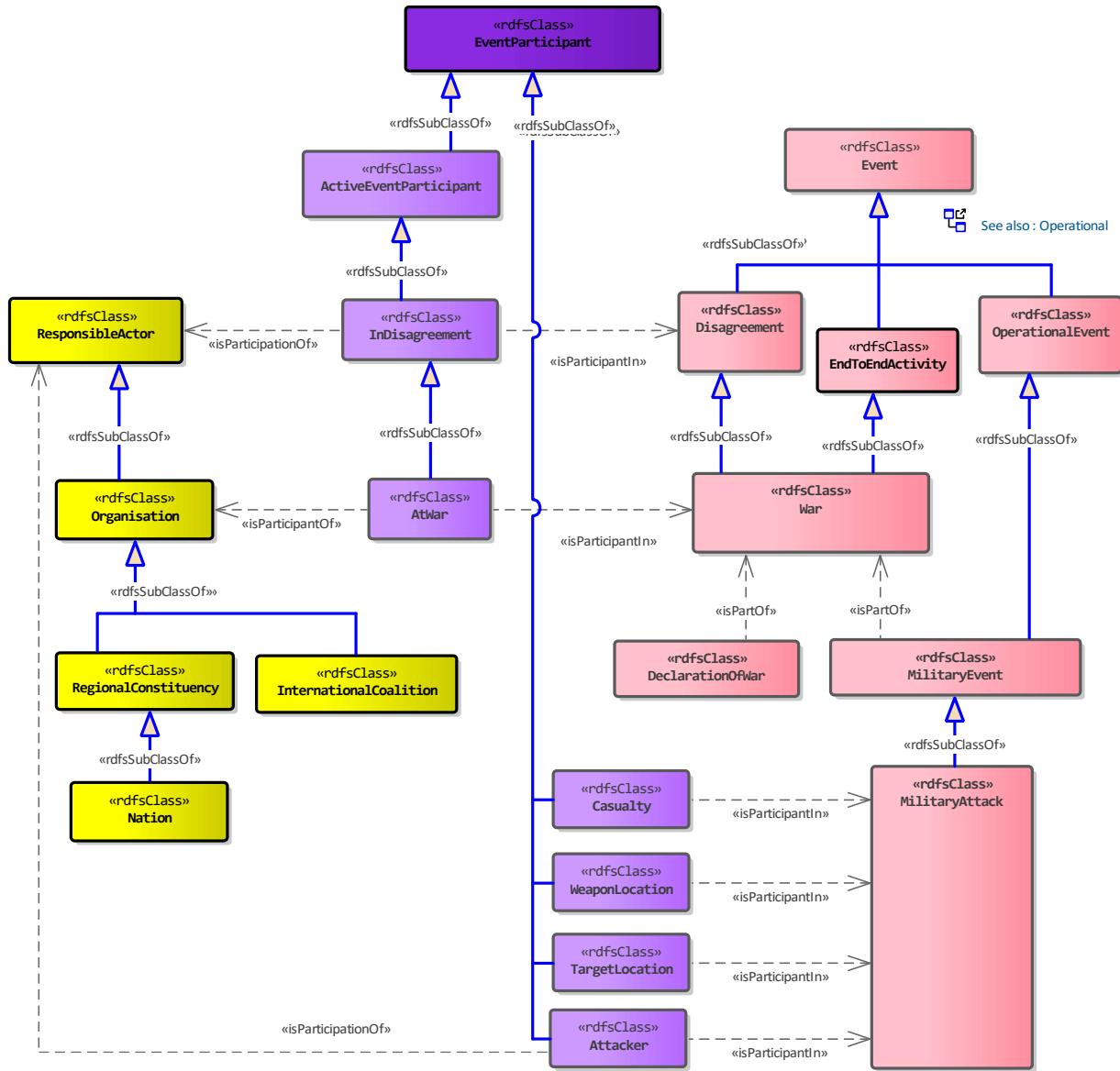
Agreement

In IES4, Agreements are handled using a pattern of AgreementStages that form part of an EndToEndAgreement.



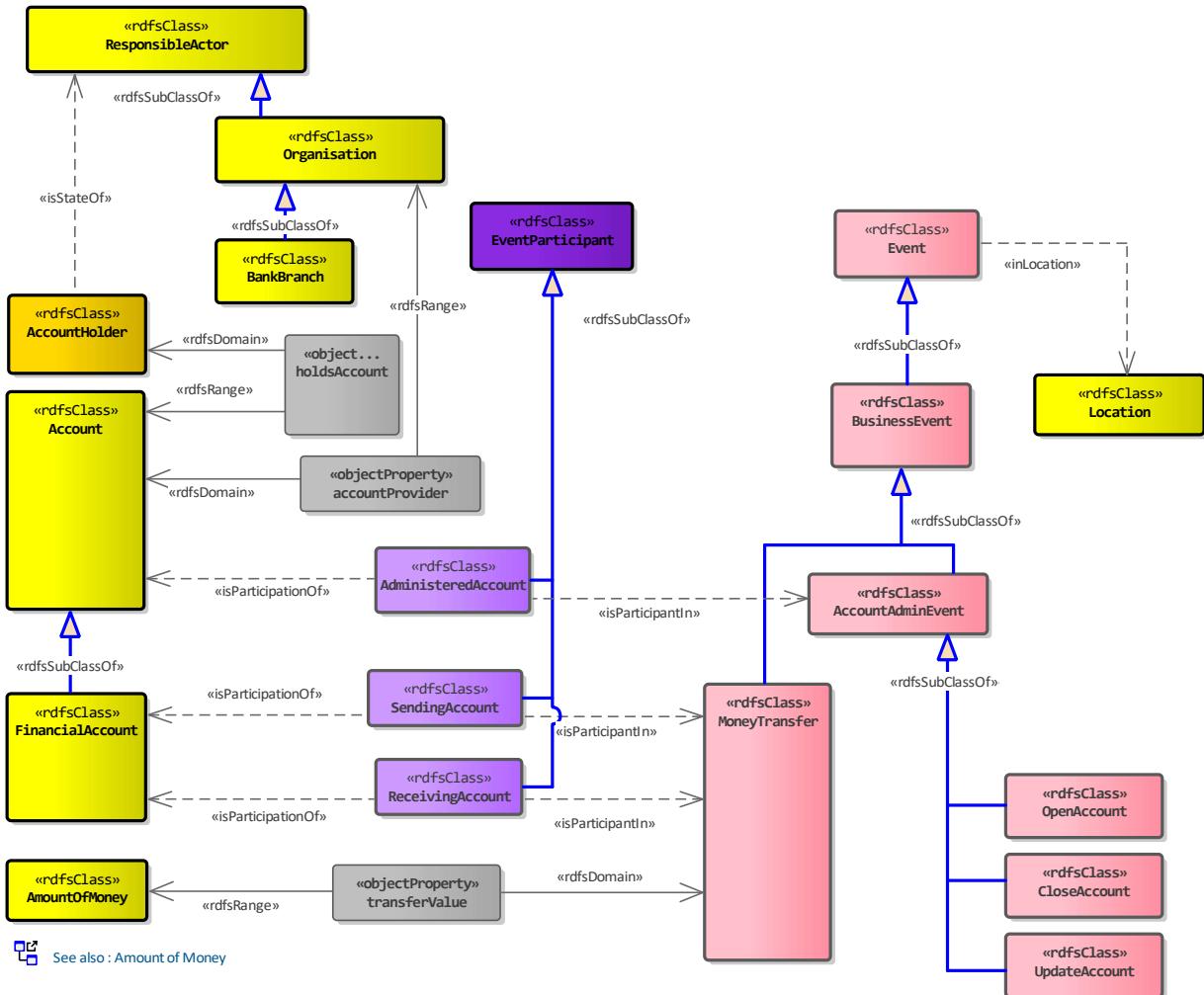
Disagreement and War

IES3 listed disagreements and war in the event tables. IES4 has maintained these two concepts, making War a specialisation of Disagreement. There are two accompanying EventParticipations (*inDisagreement* and *atWar*) also.



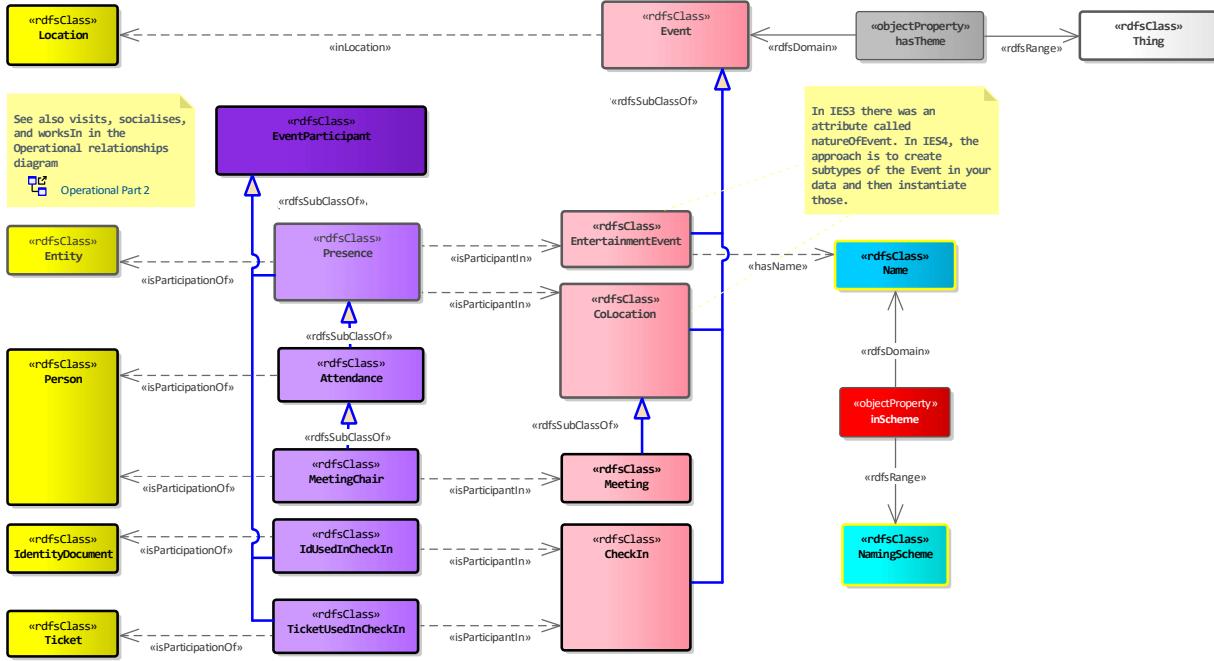
Business

The BusinessEvent model is really about Events that affect accounts - opening them, closing them and updating them. It also covers money transfers between FinancialAccounts.



Attendance

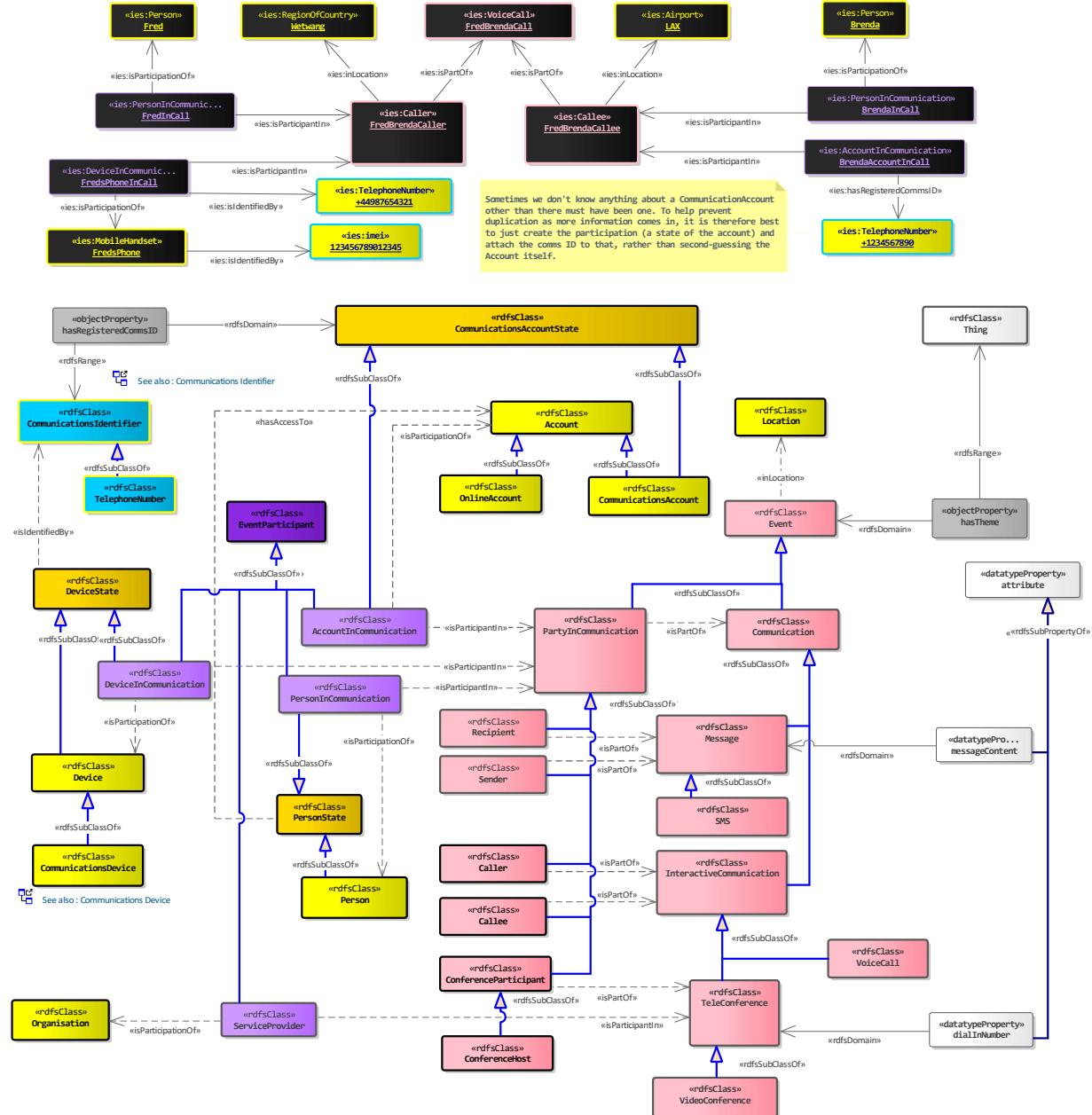
The attendance model in IES4 introduces some new concepts from IES3 - Meeting and CheckIn. These events weren't explicitly called out in IES3 - being colocated doesn't necessarily mean people are meeting.



Communication

The Communication Event consists of two or more PartyInCommunication events - each being an "end" of the communication. A PartyInCommunication may involve the participations of people, accounts or devices.

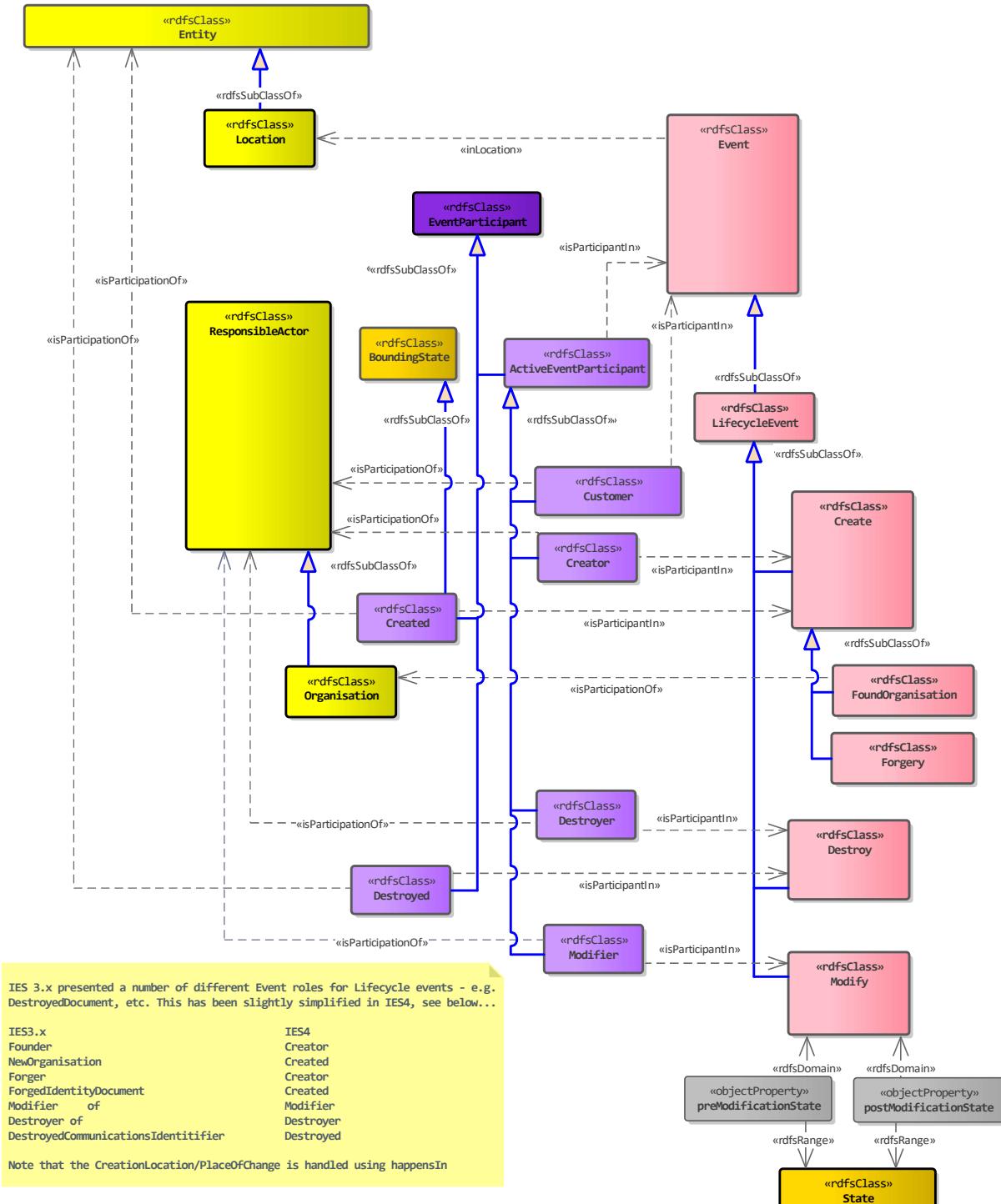
In the example shown, Fred calls Brenda (we know they were both on the call). We also know which phone Fred used, but we don't know for Brenda, so all we can do is assume she has a US phone account that had a particular number.



Lifecycle

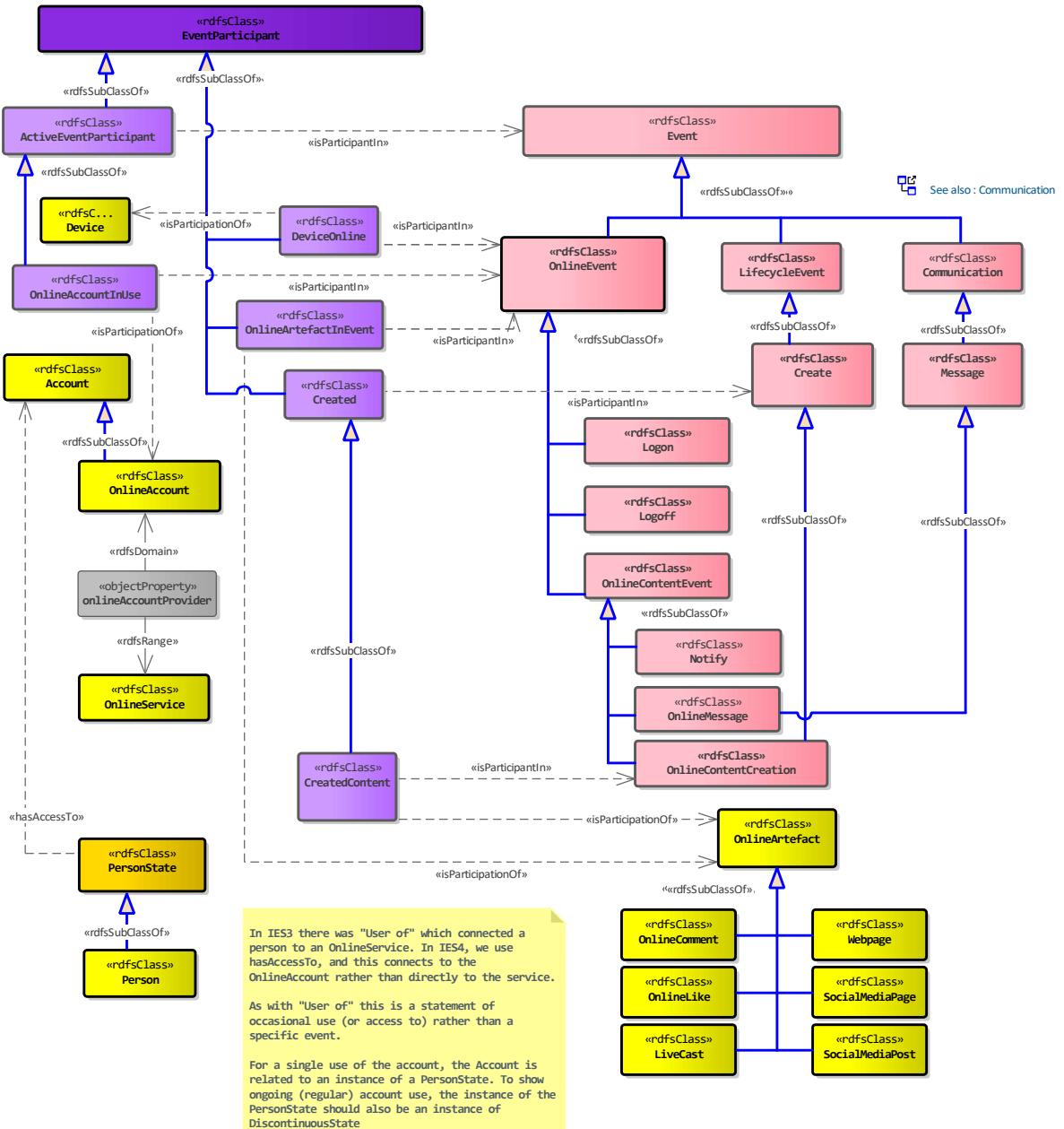
Lifecycle Events cover the creation, modification and destruction of things.

Some of the roles originally in IES3 have been simplified in IES4 (see table at the bottom of the diagram)



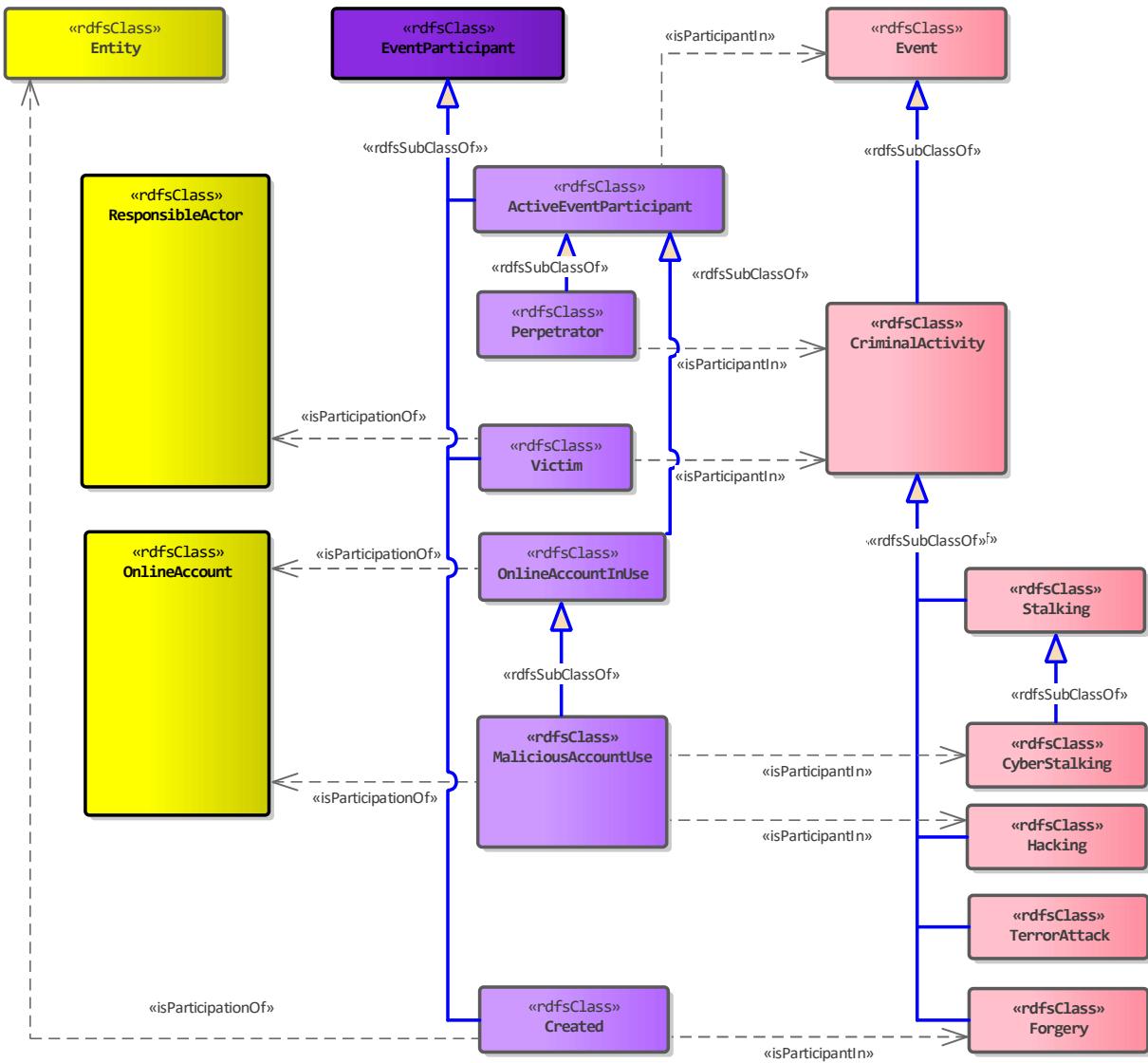
OnlineEvent

OnlineEvents are activities such as logging in, notifications, etc.



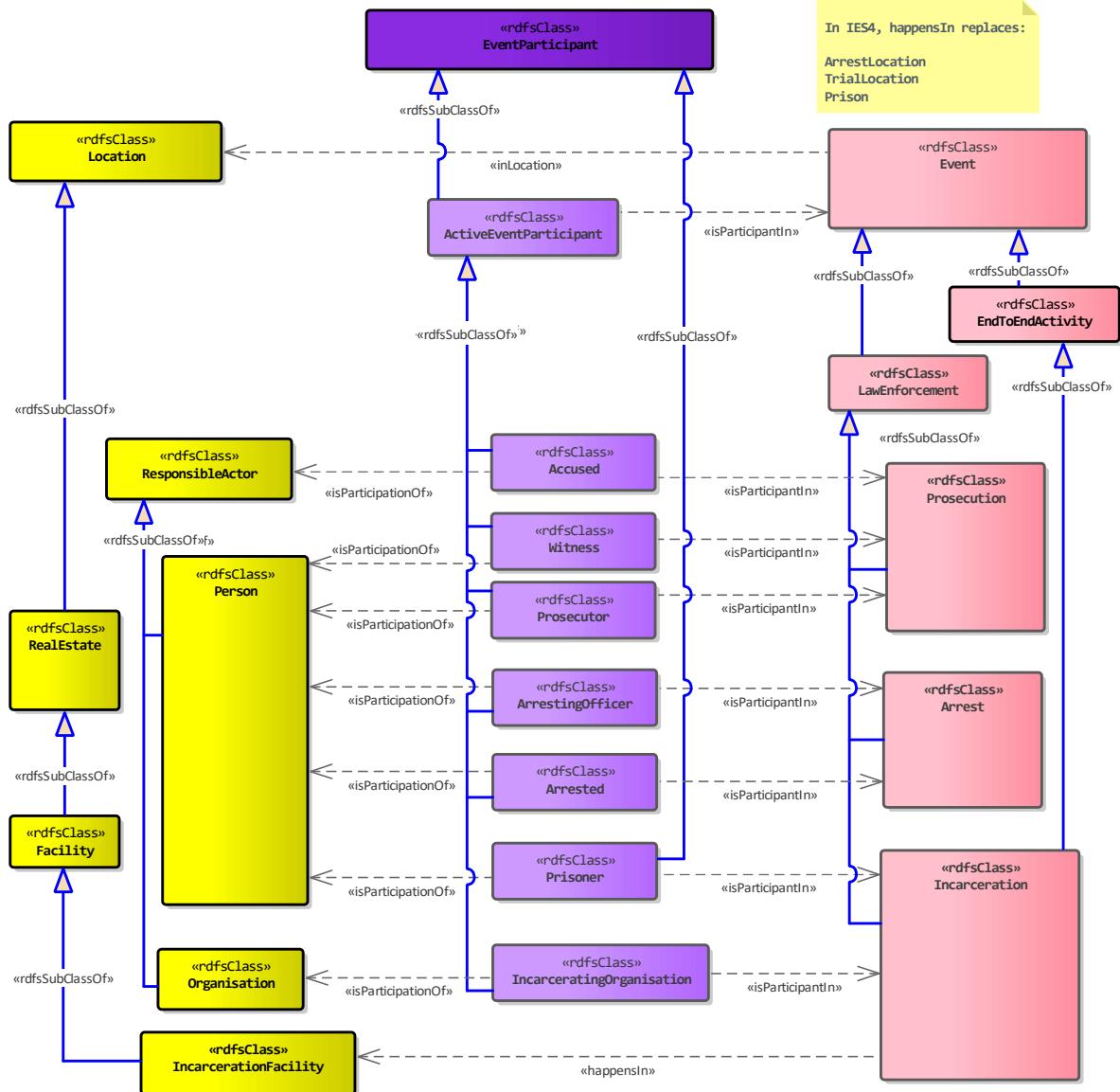
Criminal

Criminal Activity covers any Event that involves breaking the law



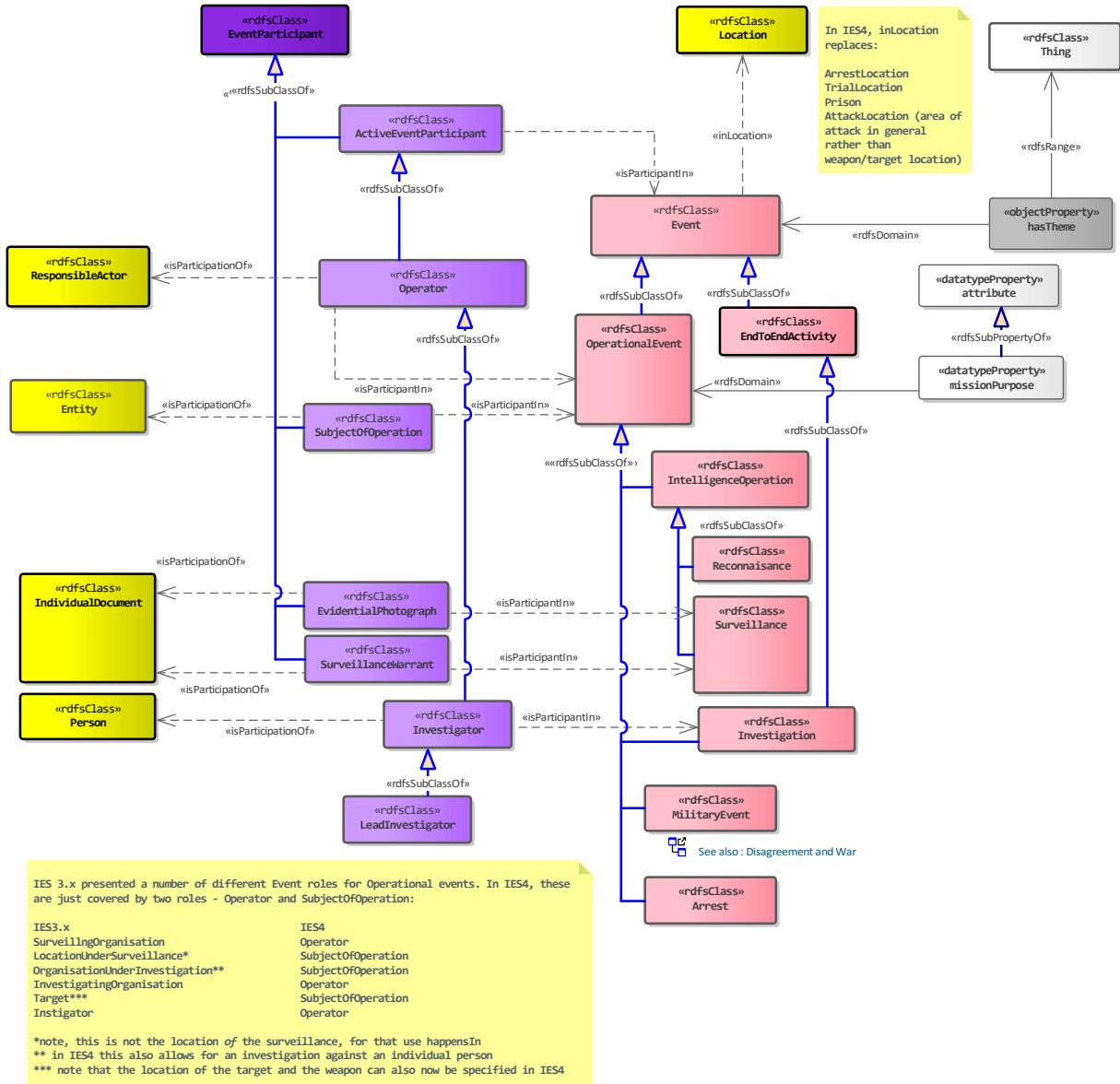
Law Enforcement

In IES3, law enforcement came under OperationalEvent, but has been separated out for IES4.



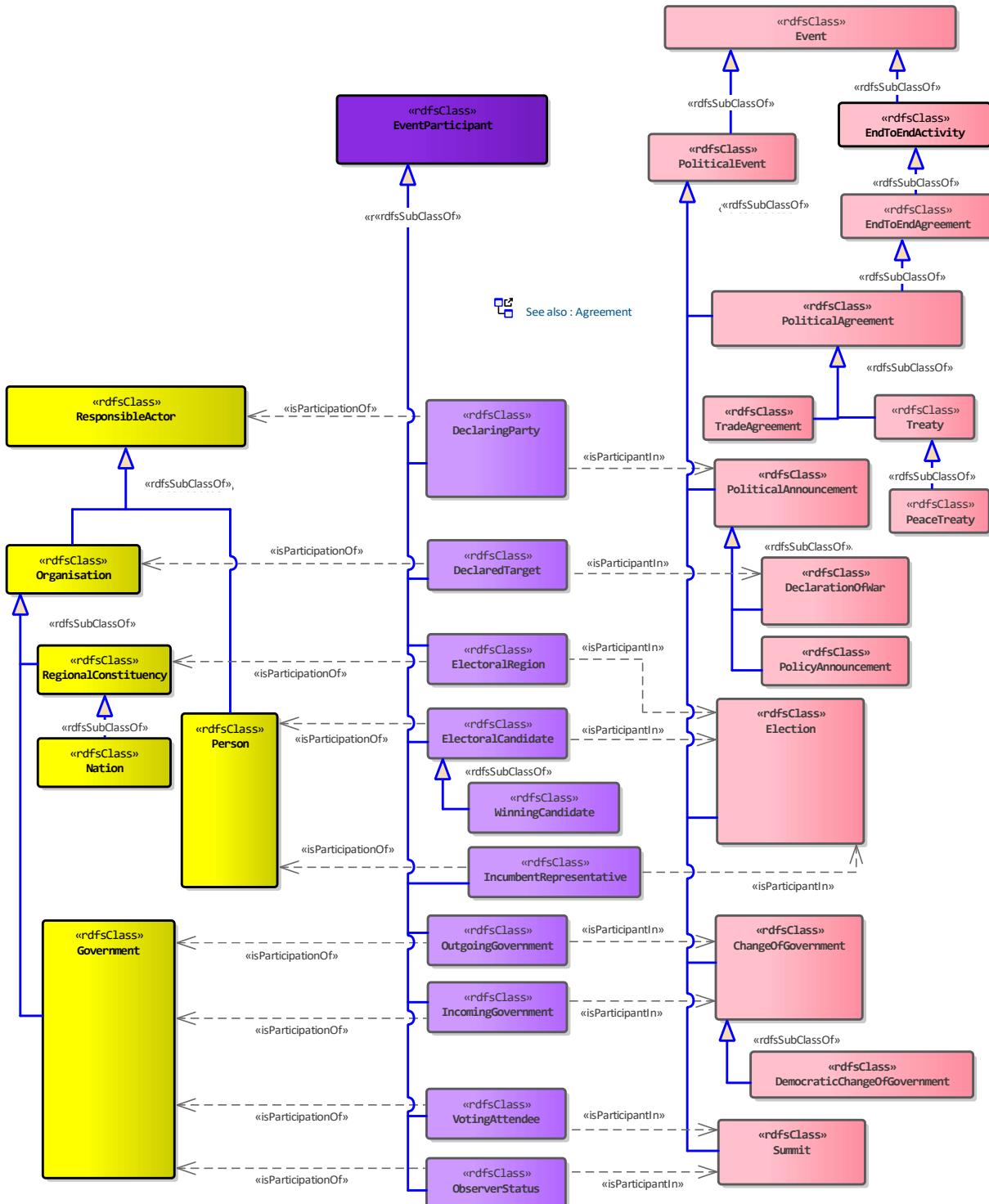
Operational

Operational Events are conducted against targets (SubjectOfOperation). They specialise into IntelligenceOperations and MilitaryEvents.



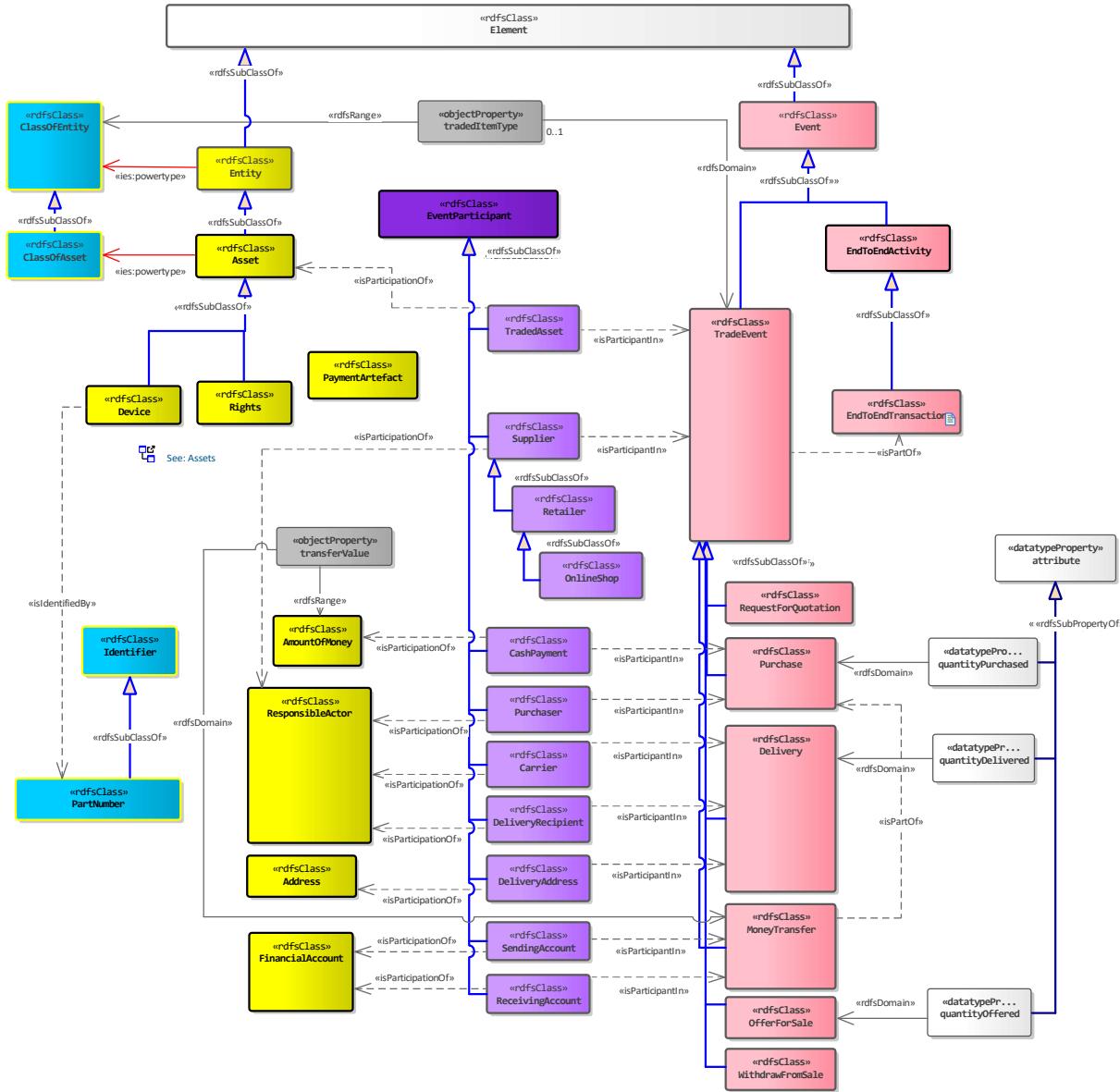
Political

PoliticalEvents are Events that take place in local or national government, or in intergovernmental interactions.



Trade

TradeEvents cover the whole sales lifecycle from RFQ to delivery. Individual TradeEvents can be grouped into an EndToEndTransaction



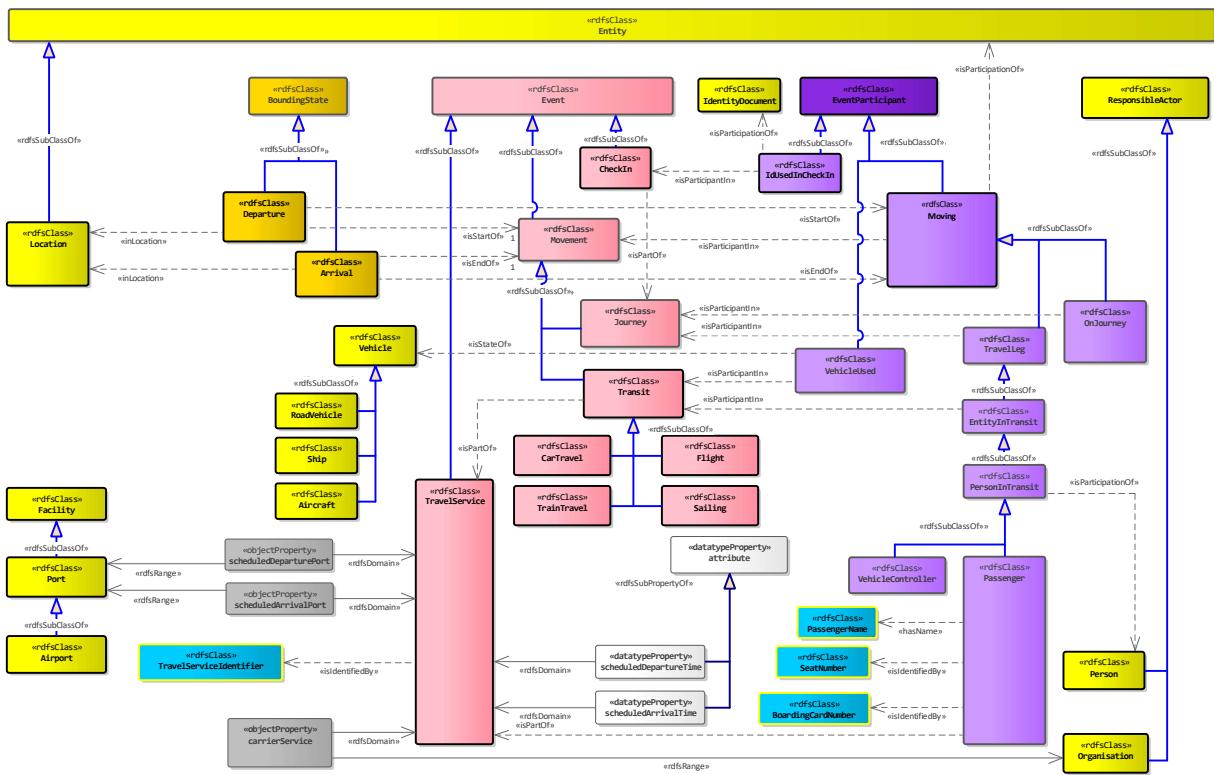
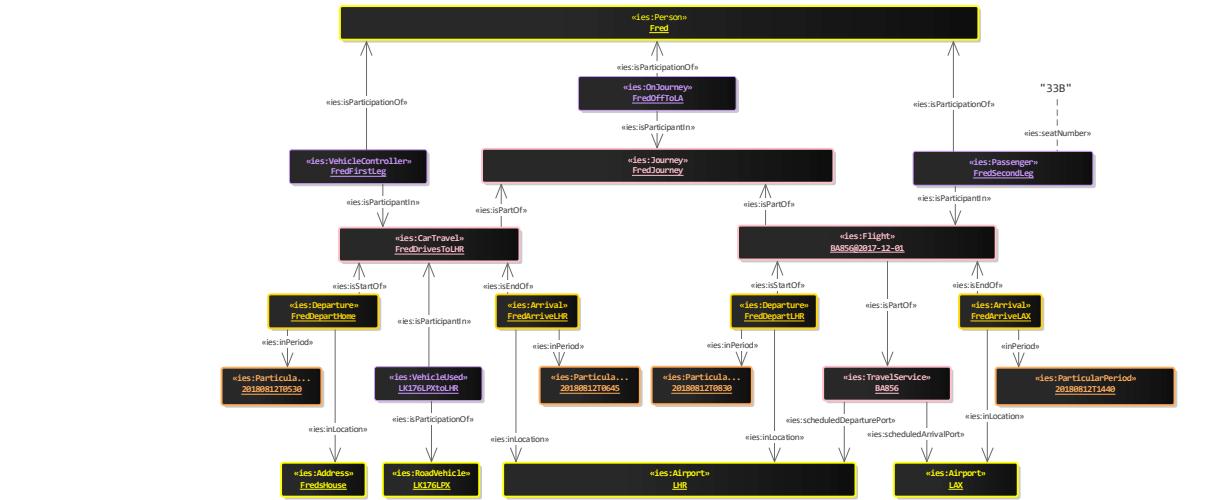
Movement

The Travel model in IES4 is based on that from IES3, but combines the concepts on TravelService and Travel into one model. As a result of this merging, the model can appear somewhat daunting, but is really made up four basic concepts:

- * Movement - an event where one or more Entities move from one location to another. Pretty much everything about this is optional - we may not know what moved, where it started or where it ended.
- * Moving - the state of an Entity when it is moving. This can be (and usually will be) part of a Movement event (when we want to say more about the other participants). However, it can be used on its own, as the state of an Entity just to say we knew the Entity moved.
- * Journey - a Movement which is made up of two or more TravelLegs (also Movements). Journeys are used to collect together individual movements into an end-to-end journey
- * TravelService - the end to end provision of a regular, scheduled travel function - this could be a bus route, a numbered flight (e.g. BA123) or a regular sailing.

All the above can have Departure and Arrival states, and those states can be in a Location, and in a Period. Additionally, IES allows for the specification of the actual Vehicle used, and in the case of People in transit, whether a person was driving / piloting or was simply as passenger.

Overall, much like the rest of IES, this model has been designed to work with as much or as little detail as is available. The (moderately complex) example below shows Fred's Journey to Los Angeles. The first leg is by car to Heathrow Airport, then by plane to LAX. We don't know what happened to him after his arrival in LAX.

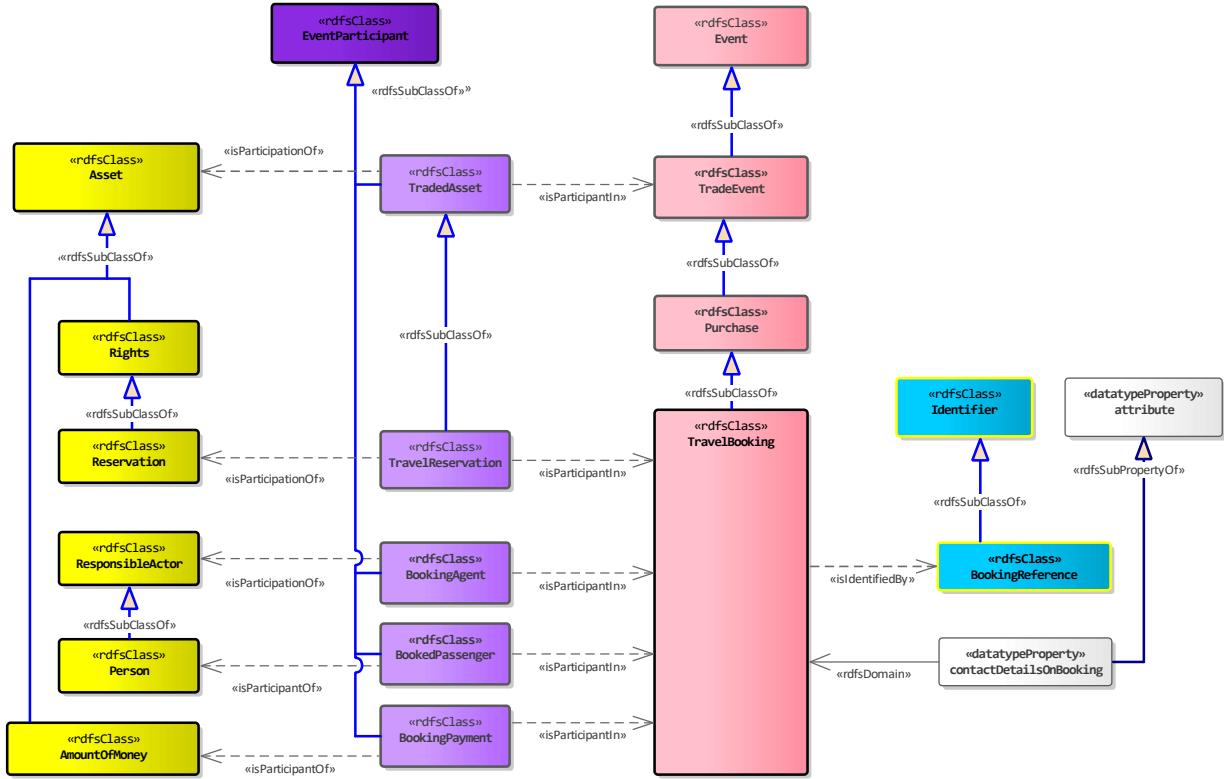


Travel Booking

The booking of planned travel arrangements.

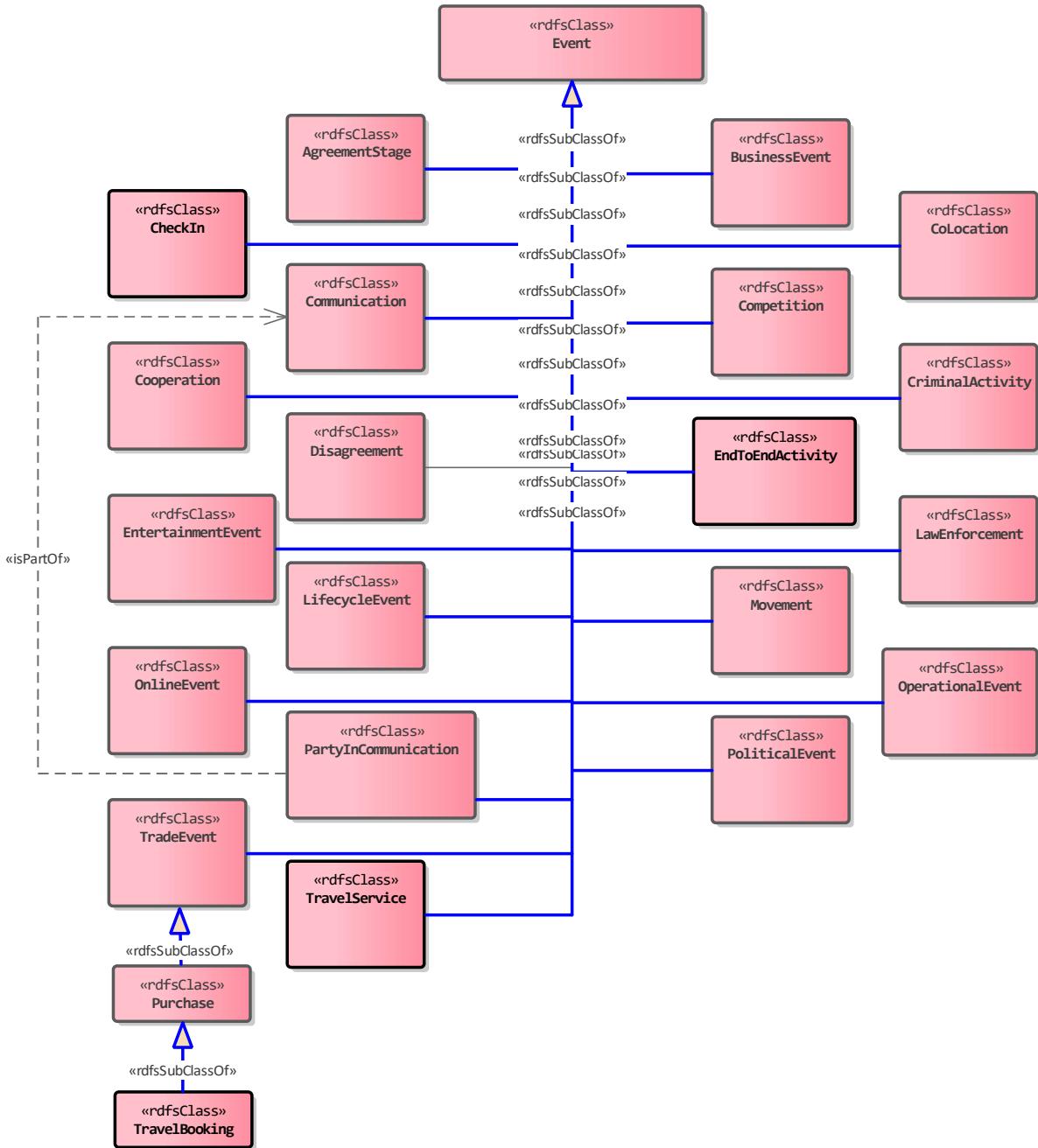
TravelBookings may include bookings for Flights, Ferry Crossings, Train Journeys (i.e Travel Services), and also Hotels, Hire Cars etc. when these have been modelled. These will be included on the booking as relationships to the appropriate other entities.

TravelBooking is currently an Entity though there is some debate as to whether it really should be an Event



All Events

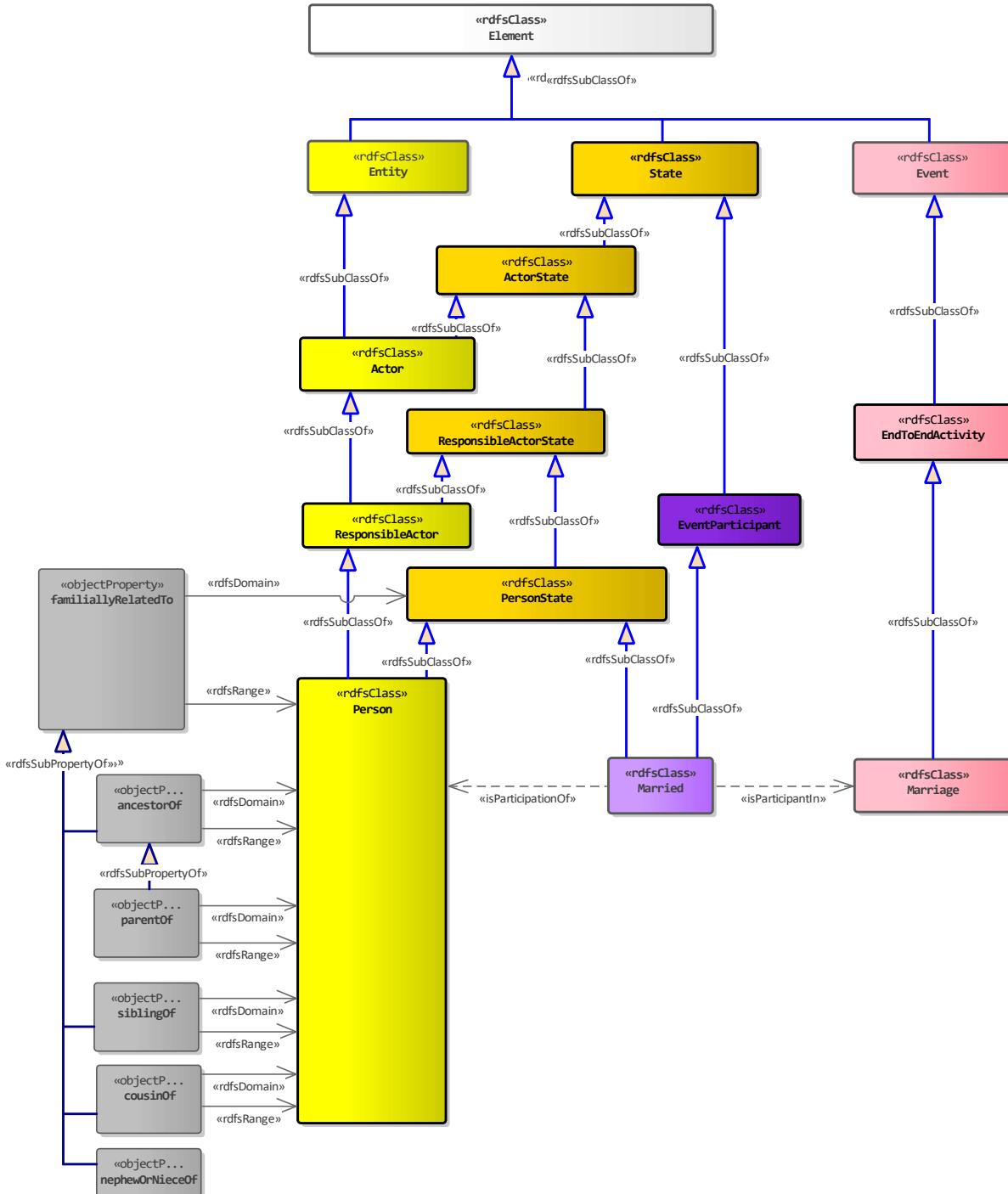
The diagram below shows all the immediate subtypes of Event



Relationships

Familial

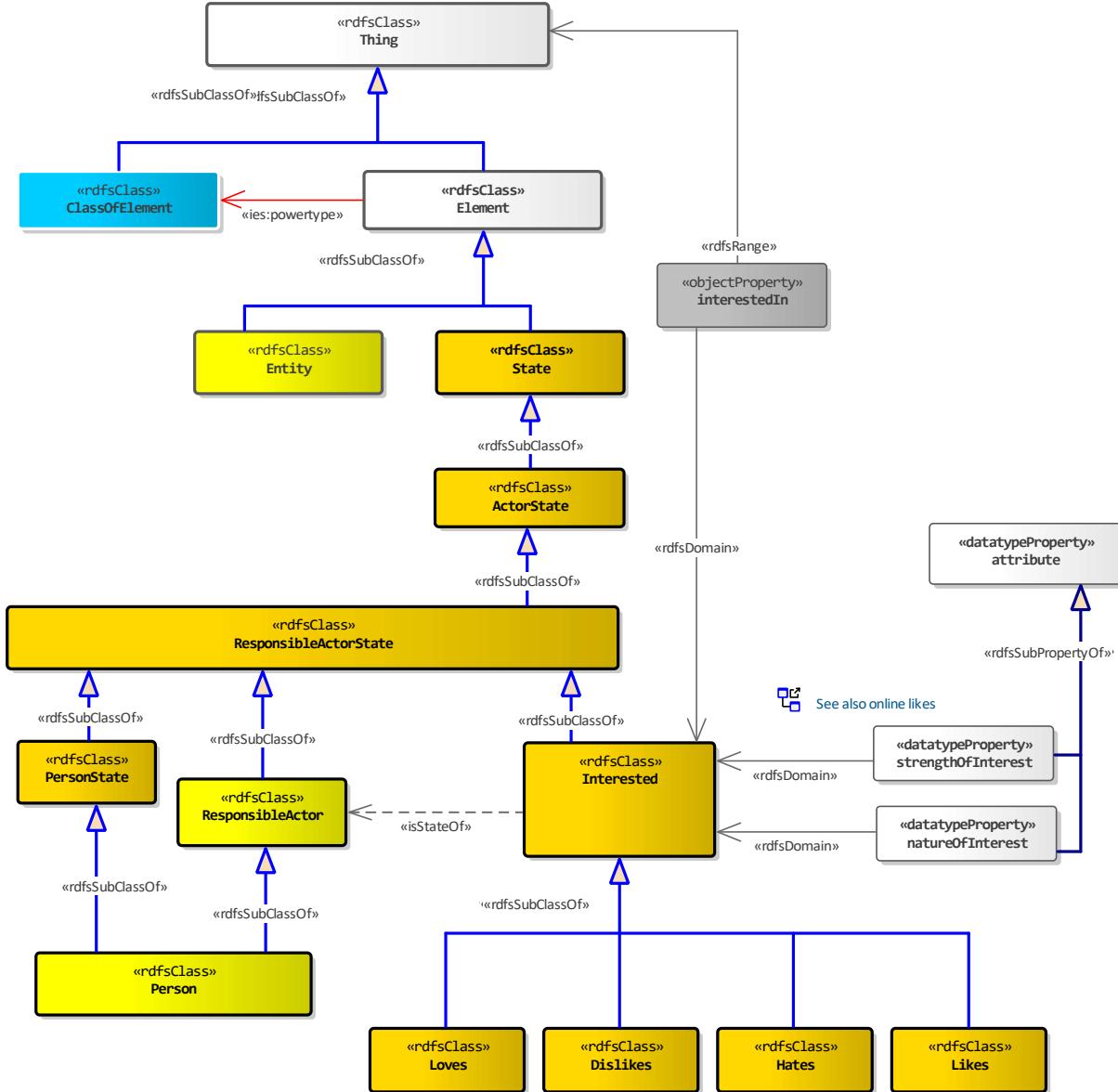
Most of the familial relationships from IES3 end up being relationships in IES4 - in fact the blood relations end up being between whole-life Person entities as the relationship lasts for life. The one exception is Marriage which has been modelled as an EndToEndActivity due to its temporal nature and the fact that the "relationship" is bidirectional.



Interest

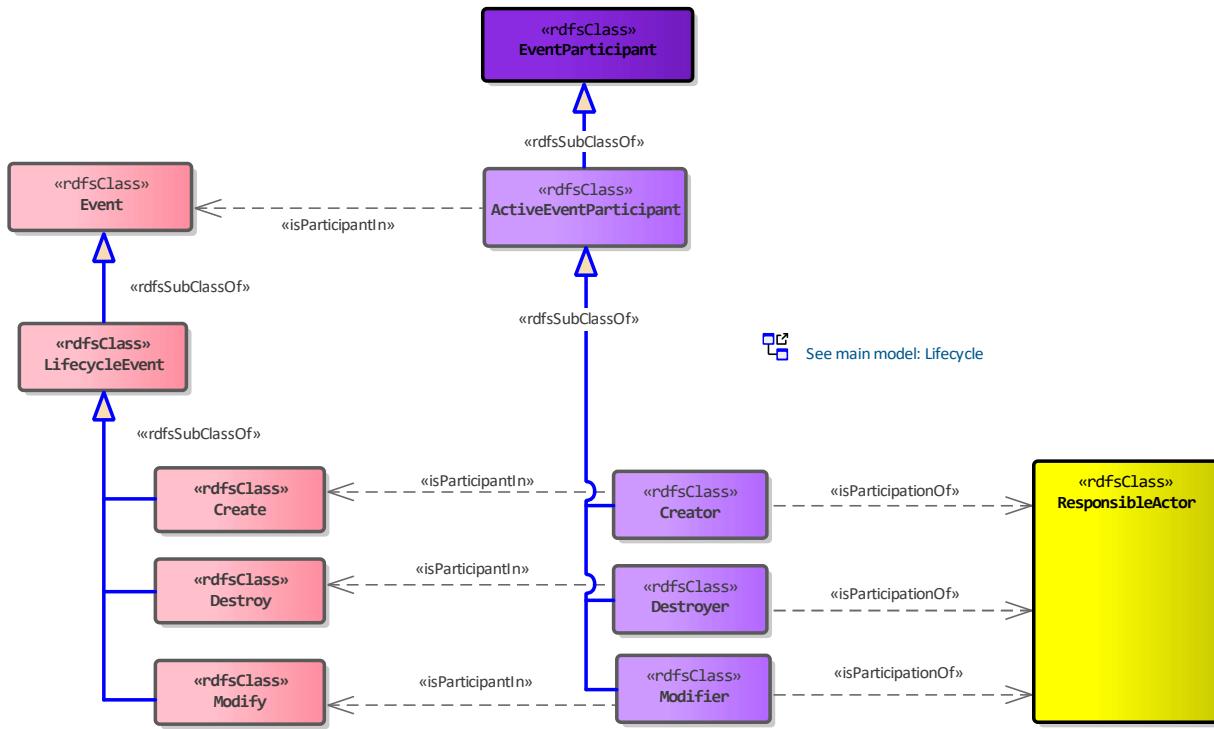
The interestedIn relationship links a ResponsibleActorState to something they are interested in (any Thing). The state is used, as people tend not to be interested in something for their whole lives.

GeneralConcepts are often the things of interest (e.g. football, finance, animal husbandry, etc.), but there may be Entities that are also of interest (e.g. a financier being interested in Vodafone plc)



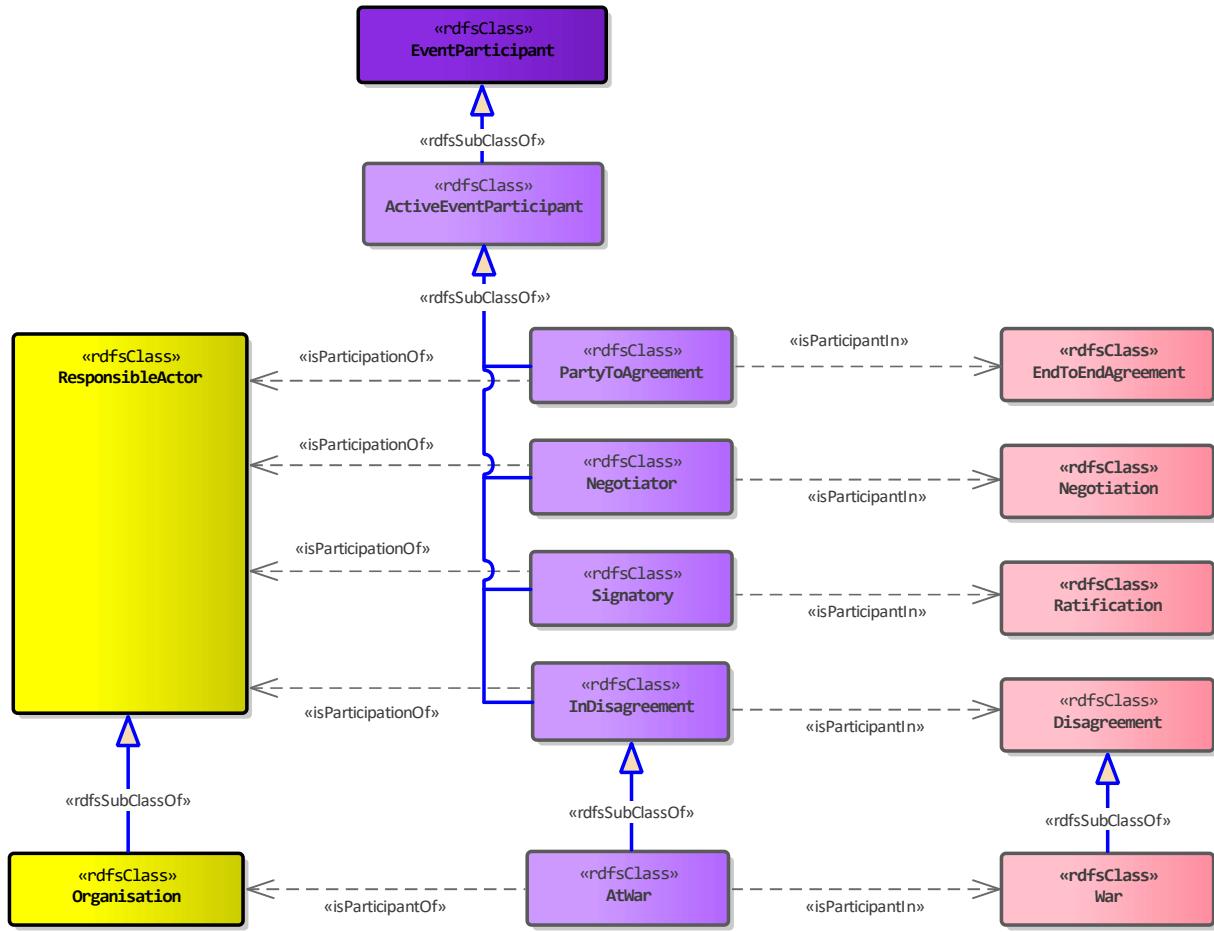
Lifecycle Relationships

All of the Lifecycle relationships from IES3 end up being EventParticipants in IES4



Mutual Understanding

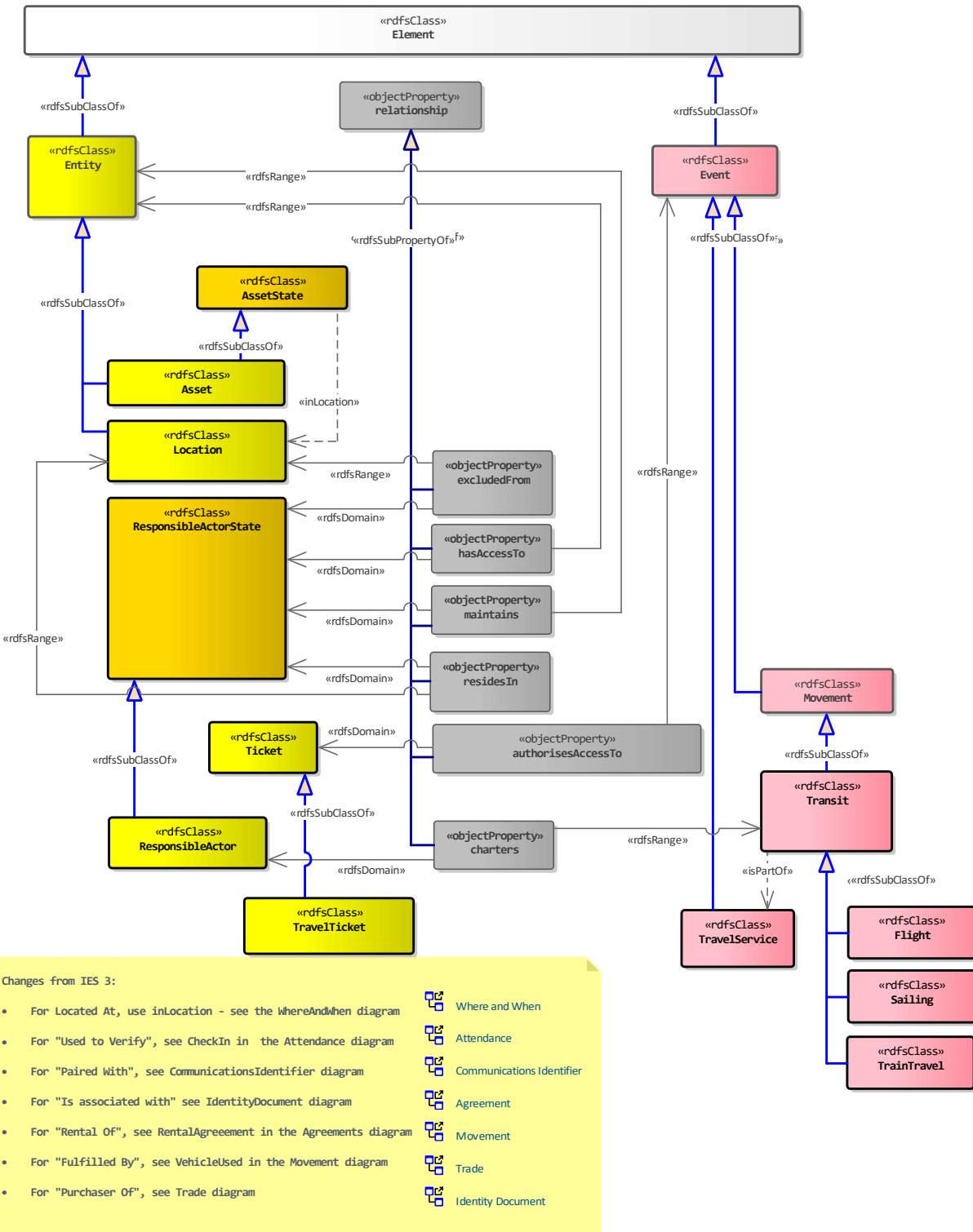
All of the Mutual Understanding relationships from IES3 end up being EventParticipants in IES4



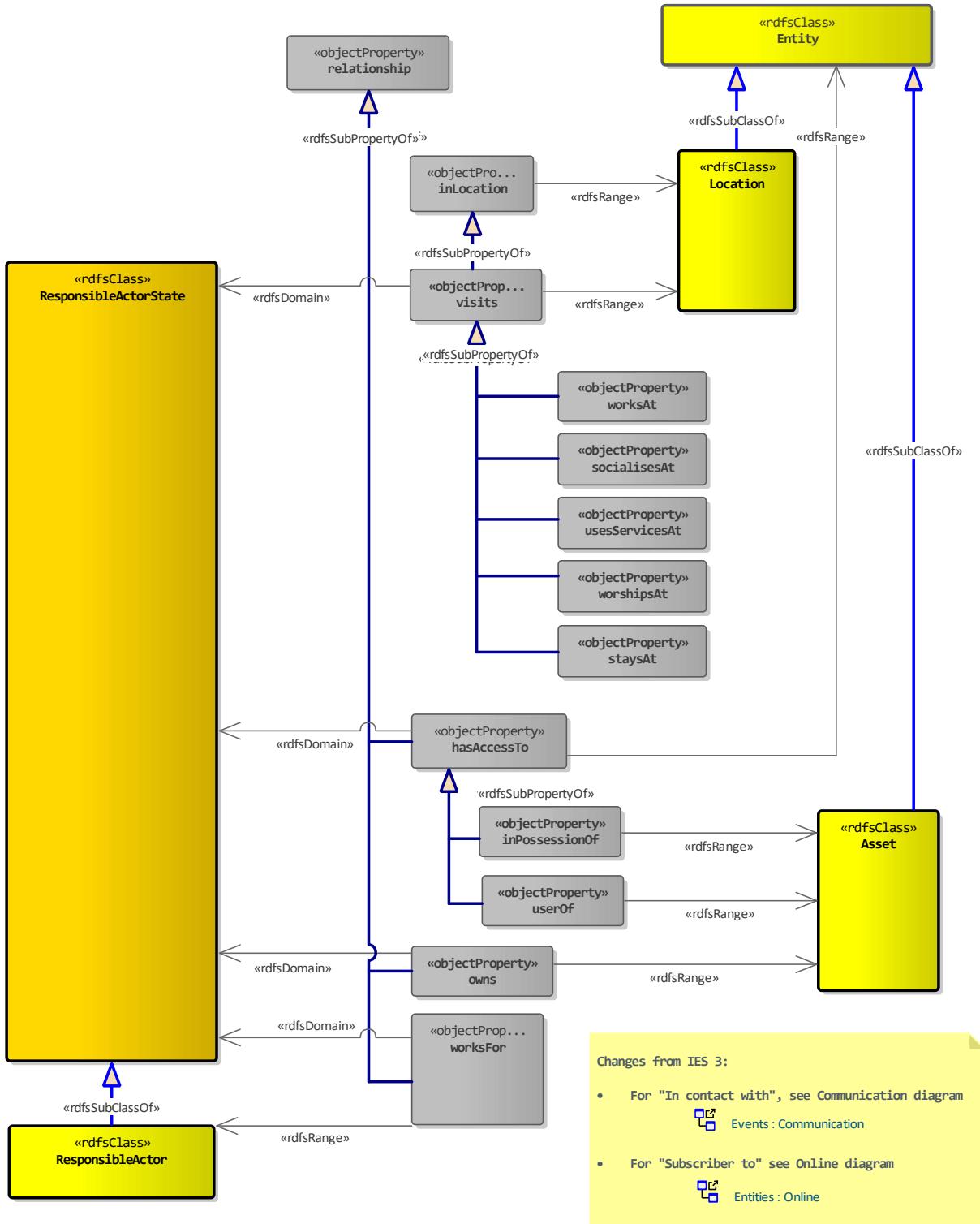
See main models:

-  Events : Agreement
-  Events : Disagreement and War

Operational Part 1



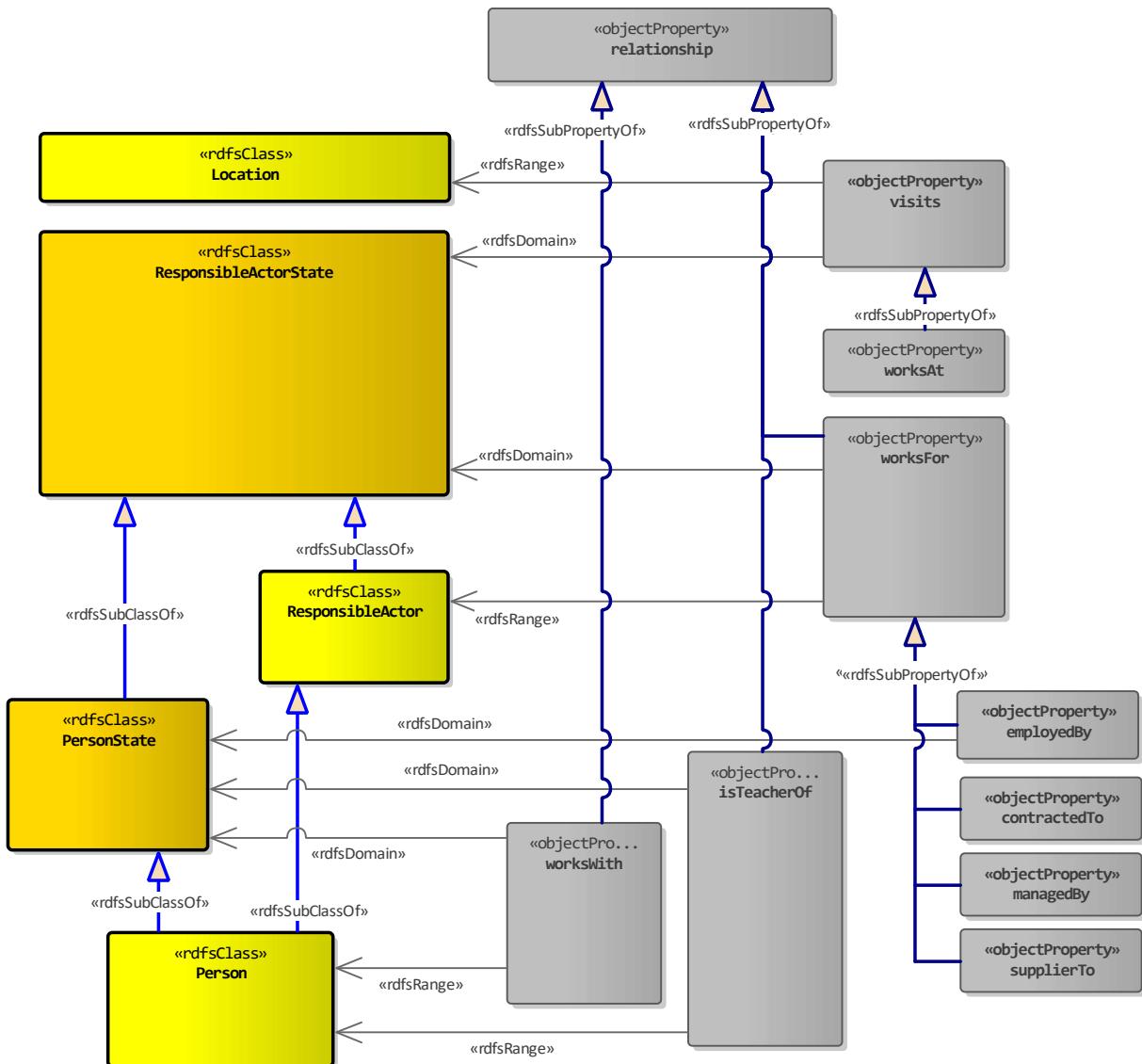
Operational Part 2



Changes from IES 3:

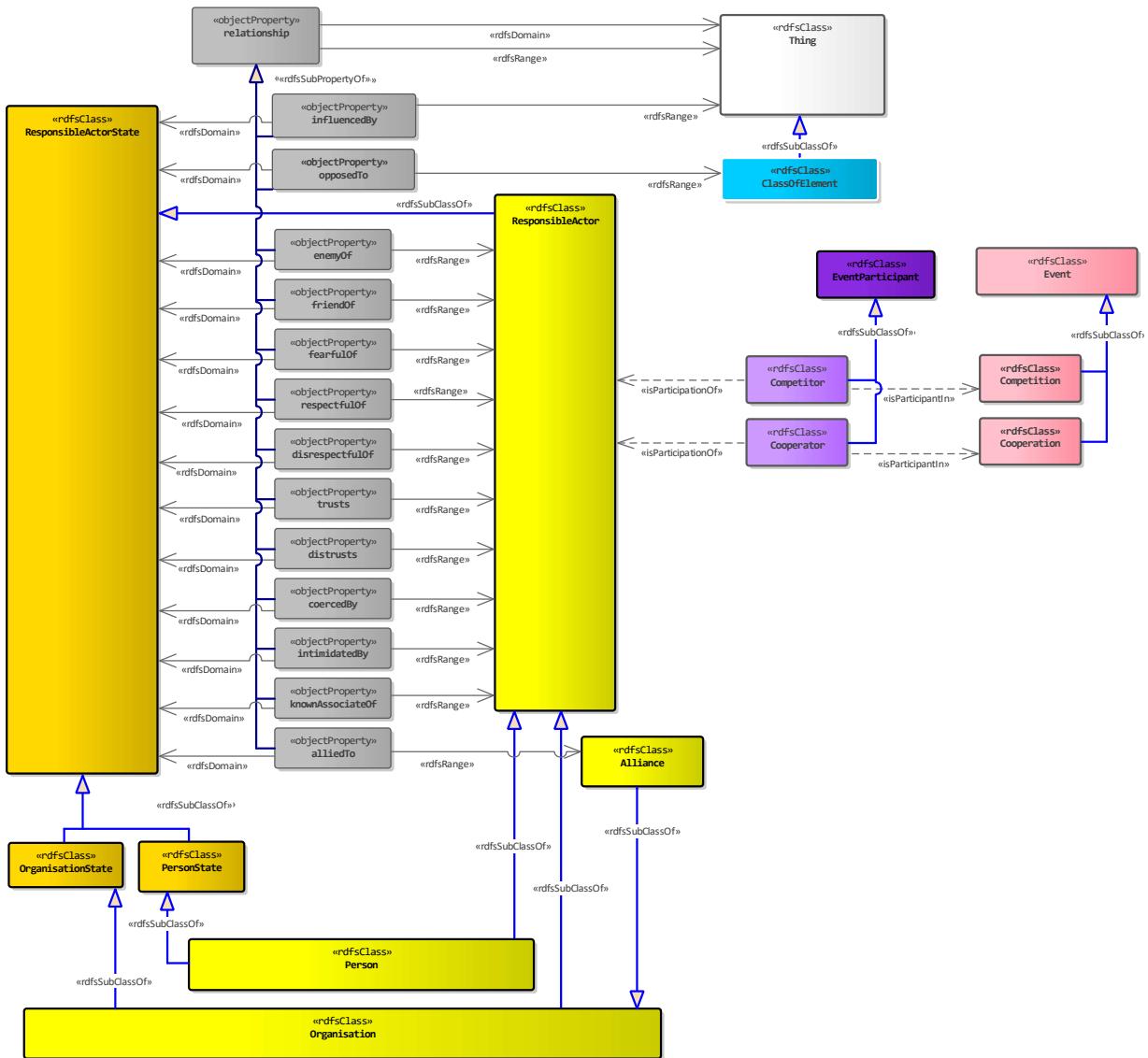
- For "In contact with", see Communication diagram
Events : Communication
- For "Subscriber to" see Online diagram
Entities : Online

Professional



Social

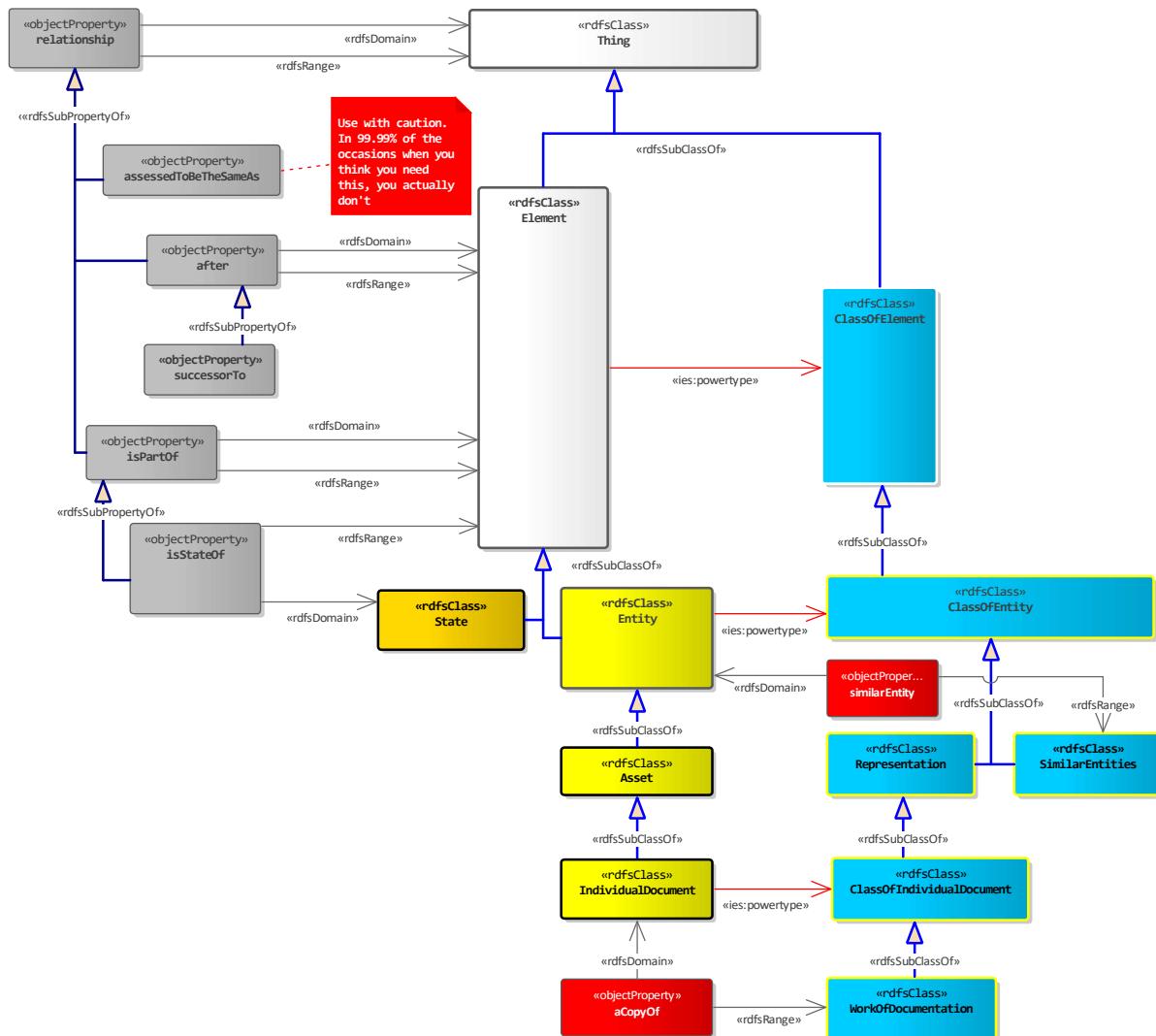
The nearest an ontologist gets to Tinder



Structural

The way that structural relationships handled (as defined in IES3) has changed in IES 4. Care must be taken in how these are used.

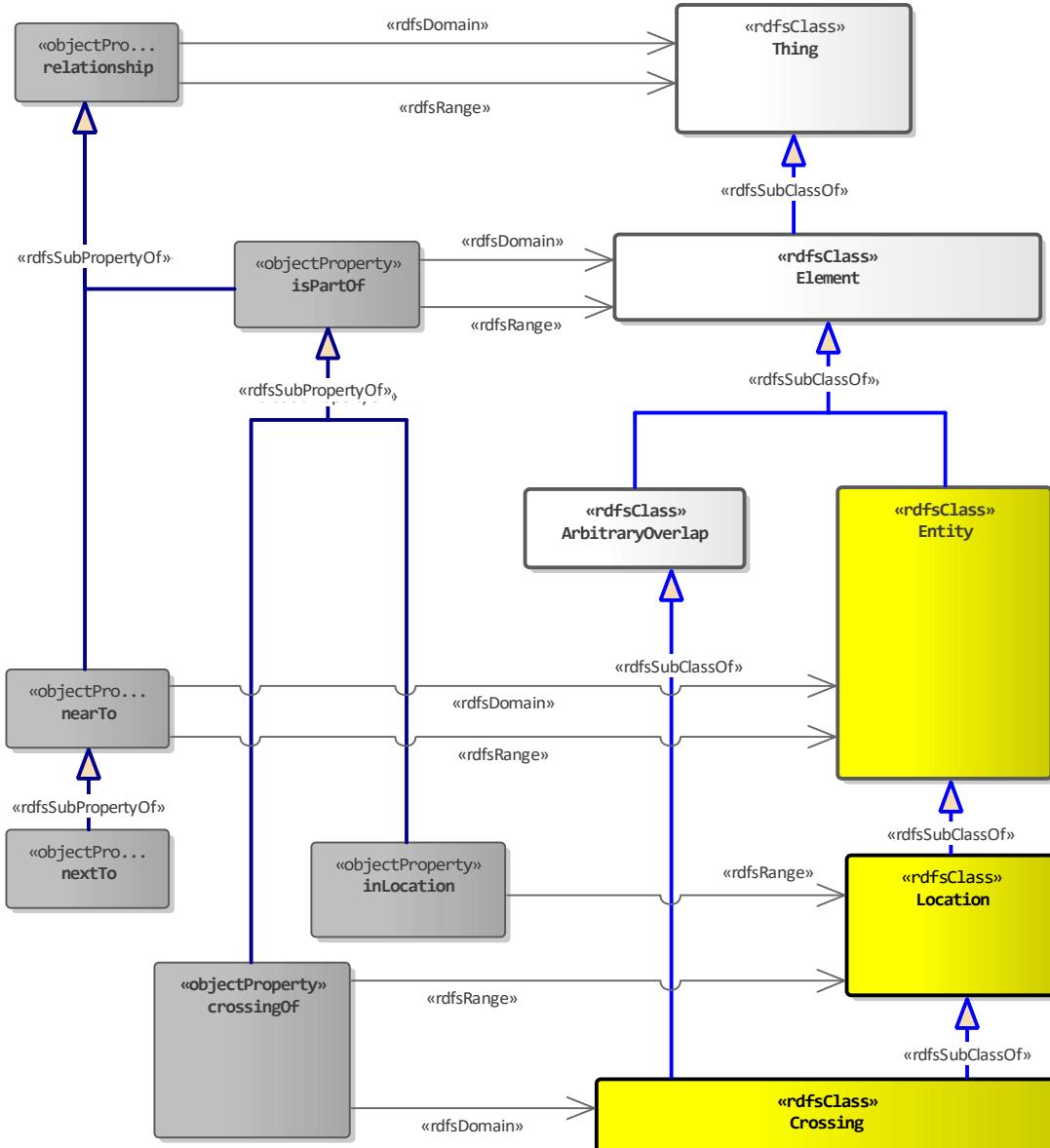
- assessedToBeTheSameAs - in a 4D (extensional) ontology if two things are the same, there should only be one instance. In most (IES3) cases, things that were deemed to be the same were often just two states of the same whole-life thing. In other cases, they were just two sets of identifiers for the same thing, used by different naming schemes. That said, in very rare circumstances (usually when data arrives from more than one place) two things genuinely are the same (same spatial and temporal extents). If possible, these should be merged into one, and their original identifiers kept. If not, and when all other approaches are not possible, then the assessedToBeTheSameAs relationship may be used. Please try not to though. Thanks.
- Copy of (IES3) is simply two instances of the same class. So for documents, this would be two IndividualDocument instances from one WorkOfDocumentation, using the aCopyOf relationship.
- "Similar to" is now handled by creating a SimilarEntities class and using similarEntity to link the Entity instances to the class. This allows for more than two similar entities to be modelled.
- "Part of" is now "isPartOf" and is used in a similar way as to IES3, but has many subtypes that are used for putting things in locations, periods of time, etc.



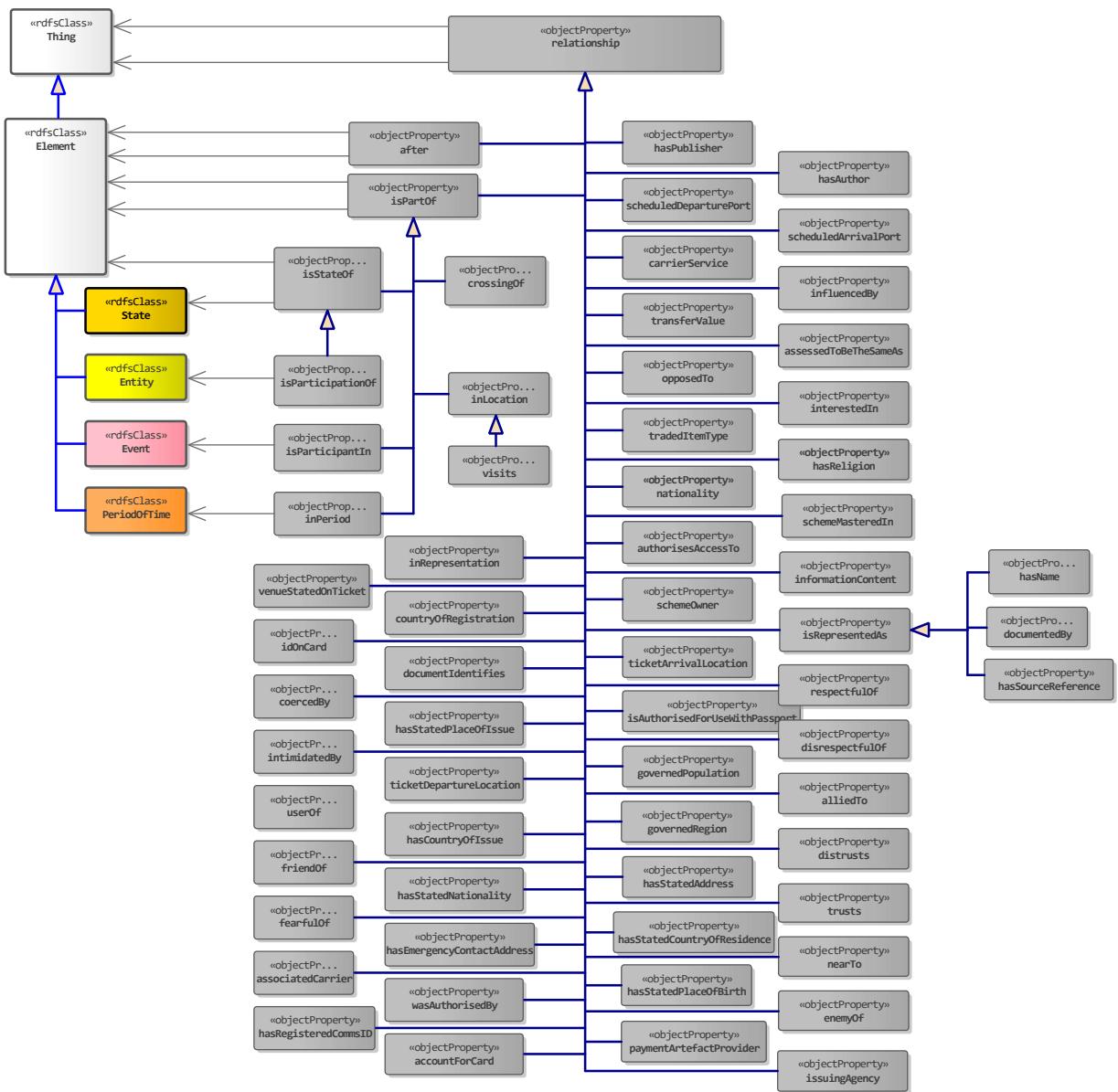
Topological

As with the Structural Relationships, Topological Relationships are handled differently in IES4 due to the criteria of identity (space and time - if "two things" occupy precisely the same space for the same period of time, they are the same thing and only one instance should be created).

- "Equal to" is a case in point. Here, there should be just one location with multiple identifiers. Note that the examples in IES3 are not always exactly the same extent, so sometimes, these would be *isPartOf* relationships
- "Crosses" is a case of two extents having shared parts, and is modelled using the **Crossing** Entity and *crossingOf* relationship
- For "is within", use the more general *inLocation* relationship



All Relationships



All Elements

Accent

«rdfsClass»

A Characteristic whose members are people who all share the same national or regional accent

Account

«rdfsClass»

An [Entity](#) that is the collection of all transactions between a provider and a customer

AccountAdminEvent

«rdfsClass»

A [BusinessEvent](#) that an [Account](#) participates in

accountForCard

«objectProperty»

Relates a [BankCard](#) to the [FinancialAccount](#) which the card is issued against.

AccountHolder

«rdfsClass»

A [PersonState](#) when they hold an [Account](#)

AccountInCommunication

«rdfsClass»

An [AccountState](#) (and an [EventParticipant](#)) when an [Account](#) is involved in communicating.

AccountNumber

«rdfsClass»

The account number for the respective [FinancialAccount](#).

accountProvider

«objectProperty»

The [Organisation](#) that provides the [FinancialAccount](#)

AccountState

«rdfsClass»

A temporal state of an [Account](#)

Accused

«rdfsClass»

A [ResponsibleActor](#)'s role as the accused in a [Prosecution](#)

aCopyOf

«objectProperty»

An [rdf:type relationship](#) that asserts a Document is a copy of WorkOfDocumentation

Note: Document instances are individual physical documents whereas [WorkOfDocumentation](#) is the general case of a document - e.g. "War and Peace" vs "my copy of [War](#) and Peace"

ActiveEventParticipant

«rdfsClass»

An [EventParticipant](#) where the participant is "actively" engaged in the [Event](#).

Note: In BORO, EventParticipant would be "Involvement" and ActiveEventParticipant would be "Participation".

Actor

«rdfsClass»

An [Entity](#) that is capable of performing functions - i.e. actively participating in an Event.

ActorState

«rdfsClass»

A temporal state of an [Actor](#)

Address

«rdfsClass»

A [Location](#) that can be specified by a postal address

AdministeredAccount

«rdfsClass»

An [EventParticipant](#) where a [FinancialAccount](#) is administered

after

«objectProperty»

A [relationship](#) linking two Elements where one ends before the other starts

AgreementExecution

«rdfsClass»

An [AgreementStage](#) which includes all the ongoing activities that conform to the agreement reached

AgreementName

«rdfsClass»

A [Name](#) that is used to refer to an [EndToEndAgreement](#).

AgreementStage

«rdfsClass»

An [Event](#) which is part of an [EndToEndAgreement](#)

Aircraft

«rdfsClass»

A [Vehicle](#) that travels by air

Airport

«rdfsClass»

A [Port](#) used for air travel

allHaveCharacteristic

«objectProperty»

An rdfs:subClassOf [relationship](#) that asserts that all instances of a ClassOfElement share a particular Characteristic or Measure

e.g. all London buses being red, all heavyweight boxers weighing more than 200lbs

allHaveDisposition

«objectProperty»

An rdfs:subClassOf [relationship](#) that asserts that all instances of a ClassOfElement share a disposition

e.g. all Eurofighters being cable of Mach 2

Alliance

«rdfsClass»

An [Organisation](#) made up of allies - these could be people or organisations, and the alliance may be quite loose.

alliedTo

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one is allied to the other.

allocatedSeatNumber

«datatypeProperty»

The seat number associated with the ticket

Altitude

«rdfsClass»

The Length that is the distance above (or below in the case of negative numbers) the surface of the WGS84 spheroid of the respective [Location](#)

AmountOfMoney

«rdfsClass»

A specific amount of a given currency

AmountOfSubstance

«rdfsClass»

The Measure of the stoichiometric quantity of substance (usually measured in moles)

ancestorOf

«objectProperty»

A Relationship between two [Person](#) Entities that indicates one is and ancestor of the other

Note: was called "relative of" in IES 3.x, but was really only about ancestry, so is changed here.

andGroup

«datatypeProperty»

The groups (if any) which the requesting user must be a member of in order to access the item. See the EDH specification for further details.

Allowable Values:

See EDH Standard

ArbitraryOverlap

«rdfsClass»

An [Element](#) whose extent is defined by being the shared overlap of two or more Elements

ArbitraryPeriod

«rdfsClass»

A [PeriodOfTime](#) for which is not delineated by a particular clock period - e.g. not a year, not a month, not a day, not

an hour, etc. Instead it is one which is most clearly specified in terms of start and end that are [ParticularPeriods](#).

areaOfCoverage

«objectProperty»

The area over which the TravelCard is valid

Examples:

London - Zone 1

London - All Zones

Arrest

«rdfsClass»

A [LawEnforcement Event](#) where a [Person](#) is arrested

Arrested

«rdfsClass»

A [Person](#)'s role when arrested

ArrestingOfficer

«rdfsClass»

A [Person](#)'s role as arresting officer

Arrival

«rdfsClass»

A [BoundingState](#) that marks the end of a [Movement](#) event

The date/time of the arrival can be specified using the [inPeriod](#) relationship.

assessed

«objectProperty»

An owl:objectProperty that links an AssesToBeTrue to the rdfs:Resource that is assessed to be true.

assessedToBeTheSameAs

«objectProperty»

A [relationship](#) that asserts two Things that may have been previously judged to be different are in fact the same thing.

WARNING: by "the same" we mean they occupy the same space for the same period of time - i.e. not two different things in the same place at different times, and not the same physical item at two different periods of time. The [Identifier](#) and [State](#) patterns should do most of what is needed here, and it is *extremely rare* that this would ever be needed. Do not use unless absolutely necessary.

Assessment

«rdfsClass»

An Event where an actor makes a subjective judgement against a thing. This can be a judgement of belief in a thing's possibility, categorisation or other qualitative aspect.

Examples include:

- Having 'HIGH' confidence that Anne committed the murder.
- Assessing a statement made in an internet article as being true or false.
- Assessing a house to having an energy performance of 'B'
- Assessing the odds of England winning the World Cup as 20-1

Assessor

«rdfsClass»

An [EventParticipant](#) where an Actor assesses something to be true.

AssessToBeTrue

«rdfsClass»

An Assessment where a fact is assessed to be true by a Actor (i.e. a [Person](#) or Device)

An AssessToBeTrue shall have one and only one [hmlConfidence](#) attribute (i.e. this is mandatory)

Asset

«rdfsClass»

An [Entity](#) that is either man-made (or defined - see [Rights](#)) or whose extent is defined in such a way as to specify ownership - e.g. a parcel of real estate

AssetState

«rdfsClass»

A temporal state of an [Asset](#)

associatedCarrier

«objectProperty»

The Organisation that provides the transport specified on the [Ticket](#)

associatedPersonName

«datatypeProperty»

The name of the Person which is associated with the Entity

This may be the name of an account holder, the name printed on ID, tickets, etc.

Note in 3.x, this was several different attributes:

accountHolderName on FinancialAccount

nameOnLicense, etc. on IdentityDocument

ticketHolderName on Ticket

Attacker

«rdfsClass»

Relates a [MilitaryAttack](#) to the [Organisation](#) conducting the attack

Attendance

«rdfsClass»

A [Presence](#) where the [Person](#) is present

Note - we may not know the identity of the person, so would just create only the [Attendance](#) ([EventParticipant](#)). This allows the [model](#) to grow as more information is discovered without recourse to using sameAs relationships.

attribute

«datatypeProperty»

A feature or property of a Thing.

Note: In IES4 it is important to distinguish between names and attributes - attribute should never be used to identify or name something - for that, use Name or Identifier.

AtWar

«rdfsClass»

An [InDisagreement](#) where the parties have declared war

AuthorisationDocument

«rdfsClass»

A [WorkOfDocumentation](#) that provides permission

AuthorisationRequest

«rdfsClass»

An [AuthorisationStage](#) where a [ResponsibleActor](#) requests authorisation to act from another [ResponsibleActor](#)

AuthorisationRequester

«rdfsClass»

An [ActiveEventParticipant](#) where a [ResponsibleActor](#) requests authority to act

AuthorisationReviewer

«rdfsClass»

An [ActiveEventParticipant](#) where a [ResponsibleActor](#) reviews an [AuthorisationRequest](#)

AuthorisationStage

«rdfsClass»

An [Event](#) which is part of an [EndToEndAuthorisation](#)

AuthorisedActor

«rdfsClass»

An [ActiveEventParticipant](#) where a [ResponsibleActor](#) is granted authority to act in a [GrantOfAuthority](#)

Authoriser

«rdfsClass»

An [ActiveEventParticipant](#) where a [ResponsibleActor](#) acts as the authoriser (sign off) in a [GrantOfAuthority](#)

authorisesAccessTo

«objectProperty»

The Event for which the respective Ticket applies.

Bank

«rdfsClass»

An [Organisation](#) that holds a banking license and can conduct financial transactions on behalf of customers

BankBranch

«rdfsClass»

An operating division of a [Bank](#), usually a high street branch, but might also be the online arm of a Bank

BankCard

«rdfsClass»

A [PaymentArtefact](#) that is a physical card used for making financial transactions.

Note: when used online, the accompanying Fan

beginBoundOfClass

«objectProperty»

A [relationship](#) linking a [TimeBoundedClass](#) to the [ParticularPeriod](#) that marks the beginning bound date of its instances

BirthCertificate

«rdfsClass»

An [IdentityDocument](#) issued to prove the data and place of birth of a [Person](#)

BirthState

«rdfsClass»

A [BoundingState](#) that marks the beginning of a [Person](#)'s life.

The location of the birth can be specified using [inLocation](#)

The date/time of the birth can be specified using the [inPeriod](#) relationship.

BoardingCardNumber

«rdfsClass»

The number of the boarding card issued to the Passenger.

Book

«rdfsClass»

A [WorkOfDocumentation](#) that is a published book

BookedPassenger

«rdfsClass»

A [Person](#)'s involvement as a booked traveller in a [TravelBooking](#)

BookingAgent

«rdfsClass»

A [ResponsibleActor](#)'s involvement as the facilitator of a [TravelBooking](#)

BookingPayment

«rdfsClass»

An [EventParticipant](#) where an [AmountOfMoney](#) in cash is used as payment in a [TravelBooking](#).

When neither card nor cash is used, there will be an accompanying [MoneyTransfer](#)

BookingReference

«rdfsClass»

An [Identifier](#) that is notionally unique number that is allocated to a [TravelBooking](#).

Note that Booking Reference Numbers are recycled and so are not unique in their own right. When combined with the BookingDate it is potentially possible to identify a specific booking.

BoundingState

«rdfsClass»

A [ContinuousState](#) that occurs at the beginning or end of an [Element](#)

The date/time of the state can be specified using the [inPeriod](#) relationship.

BranchCode

«rdfsClass»

In identifier for a [BankBranch](#) - In the UK this is often referred to as the Sort Code.

branding

«objectProperty»

A brand or logo that is represented on an Entity

e.g. some bank cards are branded by a car manufacturer, etc. but actually operated by a bank

BusinessEvent

«rdfsClass»

An [Event](#) that is commercial or administrative in nature

Callee

«rdfsClass»

An [PartyInCommunication](#) where the communicating party is called in an [InteractiveCommunication](#)

Caller

«rdfsClass»

An [PartyInCommunication](#) where the communicating party is the caller in an [InteractiveCommunication](#)

Callsign

«rdfsClass»

In broadcasting and radio communications, a call sign (also known as a call name or call letters – and historically as a call signal) is a unique designation for a transmitting station.

Capability

«rdfsClass»

A DispositionalClass where all the instances share the same capability

Example: Vehicles capable of Mach 2

CardNumber

«rdfsClass»

An [Identifier](#) that is the long number on the face of the card ([PaymentArtefact](#))

CardUsed

«rdfsClass»

An [EventParticipant](#) where a [PaymentArtefact](#) is participant in a [TradeEvent](#)

Carrier

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [Delivery](#) as a carrier

carrierService

«objectProperty»

The Organisation that provides the transport specified on the [Ticket](#)

CarTravel

«rdfsClass»

A [TravelService](#) by car

CashPayment

«rdfsClass»

An [EventParticipant](#) where an [AmountOfMoney](#) in cash is used as payment in a [Purchase](#).

When neither card nor cash is used, there will be an accompanying [MoneyTransfer](#)

Casualty

«rdfsClass»

Relates a [MilitaryAttack](#) to a [Person](#) who was injured or killed in the attack

CBRadioHandset

«rdfsClass»

A [CommunicationsDevice](#) used to hold radio conversations on frequencies allocated as "Citizen Band"

CellularBaseStation

«rdfsClass»

A [RadioMast](#) that is used for cellular communication

ChangeOfGovernment

«rdfsClass»

A [PoliticalEvent](#) where one [Government](#) is replaced by another.

Characteristic

«rdfsClass»

A ClassOfElement whose instances all share a common property - e.g. they are all the same colour, mass, etc.

charters

«objectProperty»

A Relationship between a [ResponsibleActor](#) and the [Transit](#) they have chartered.

CheckIn

«rdfsClass»

An [Event](#) where a [Person](#) checks in to a hotel or [Transit](#). This also includes swiping tickets to use public transport

The location of the [CheckIn](#) is specified using a [happensIn](#) relationship.

The CheckIn may be part of another Event - e.g. an [EntertainmentEvent](#) or [Transit](#) event. Simply use the [isPartOfRelationship](#) to specify this.

CinemaTicket

«rdfsClass»

An [EntertainmentTicket](#) that permits attendance at a cinema

ClassOfAmountOfMoney

«rdfsClass»

The [powertype](#) of [AmountOfMoney](#)

ClassOfAsset

«rdfsClass»

The [powertype](#) of [Asset](#)- i.e. a [ClassOfEntity](#) whose instances are classes of Asset

Examples:

* Vauxhall Insignia, VW Golf

* Smartphone

* Apple iPhone 6S

ClassOfClassOfElement

«rdfsClass»

An [rdfs:Class](#) and an [Thing](#) whose instances are classes of [Element](#)

ClassOfClassOfEntity

«rdfsClass»

The [powertype](#) of [ClassOfEntity](#)

ClassOfElement

«rdfsClass»

An [rdfs:Class](#) and an [Thing](#) whose instances are classes of [Element](#)

Examples:

- Human groupings (e.g. Nigerian Women, British Men, Righthanded people, English Speakers);
- Political Ideologies
- Weapons
- Days of the week
- Standard procedures
- etc.

ClassOfEntity

«rdfsClass»

The [powertype](#) of [Entity](#) - i.e. a [ClassOfElement](#) whose instances are classes of Entity

Examples:

- Human groupings (e.g. Nigerian Women, British Men, Righthanded people, English Speakers);
- Weapons
- Etc.

ClassOfEvent

«rdfsClass»

An [ClassOfElement](#) whose instances are classes of [Event](#). This is the [powertype](#) of Event.

Examples:

- * Conference
- * Football Match
- * Annual General [Meeting](#)

ClassOfIndividualDocument

«rdfsClass»

The [powertype](#) of [IndividualDocument](#)

ClassOfMeasureValue

«rdfsClass»

A ClassOfRepresentation that is the powertype of [MeasureValue](#)

ClassOfPerson

«rdfsClass»

The [powertype](#) of [Person](#)

ClassOfPersonState

«rdfsClass»

The [powertype](#) of [PersonState](#)

ClassOfRepresentation

«rdfsClass»

The [powertype](#) of [Representation](#)

ClassOfResponsibleActor

«rdfsClass»

The [powertype](#) of [ResponsibleActor](#)

ClassOfResponsibleActorState

«rdfsClass»

A [ClassOfState](#) that is the [powertype](#) of [ResponsibleActorState](#)

ClassOfState

«rdfsClass»

A [ClassOfElement](#) whose instances are classes of States. This is the [powertype](#) of State.

Examples:

* Roles

CloseAccount

«rdfsClass»

An [AccountAdminEvent](#) where an [Account](#) is shut down.

coercedBy

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one (range) coerces the other (domain).

CoLocation

«rdfsClass»

An [Event](#) where the activity is uncertain, but it is known that some Entities were present

Note: whilst colocation can be easily inferred from data, sometimes it's important to call out specific instances where entities of interest were in the same place at the same time.

Colour

«rdfsClass»

A Characteristic whose members all have the same colour

CommercialOrganisation

«rdfsClass»

An [Organisation](#) that is run for profit

Communication

«rdfsClass»

An [Event](#) where two or more parties interact and exchange information

CommunicationsAccount

«rdfsClass»

An [Account](#) of the communications transactions provided to a customer

CommunicationsAccountState

«rdfsClass»

A temporal state of a [CommunicationsAccount](#)

CommunicationsDevice

«rdfsClass»

A [Device](#) that provides an endpoint for communications – e.g. mobile telephone, landline, satellite phone, CB Radio, etc.

CommunicationsIdentifier

«rdfsClass»

An [Identifier](#) for the end-point of a communication

CommunicationsIdentifierRange

«rdfsClass»

A specified range of identifiers for the end-points of a communication.

Competition

«rdfsClass»

An [Event](#) where the participants are competing with each other

Competitor

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) is in competition

ConcertTicket

«rdfsClass»

An [EntertainmentTicket](#) where the [Event](#) is a concert

ConferenceHost

«rdfsClass»

A [ConferenceParticipant](#) that is in the role of host

ConferenceParticipant

«rdfsClass»

An [PartyInCommunication](#) that is a participant in a [TeleConference](#)

confidence

«datatypeProperty»

A qualitative or quantitative indication of the confidence of an AssessToBeTrue

contactDetailsOnBooking

«datatypeProperty»

The contact details of the Person making the booking as recorded on the actual Travel Booking.

Note that if these details can be parsed to identify the contact telephone number, contact email address etc. then they should be mapped as instances of [relationship](#) to the respective [CommunicationsIdentifier](#) (PhoneNumber, EmailAddress, etc.).

ContentCategory

«rdfsClass»

An [ClassOfClassOfEntity](#) whose instances collect together all Representations that have similar content.

Examples:

- * Fiction
- * Non-Fiction
- * Financial Information
- * Extremist Media

ContinuousState

«rdfsClass»

A [State](#) that is temporally continuous - i.e. it is not a [DiscontinuousState](#)

contractedTo

«objectProperty»

A [worksFor](#) relationship where a [ResponsibleActor](#) (domain) is contracted to another ResponsibleActor (range).

Cookie

«rdfsClass»

An [OnlineArtefact](#) that is stored on a [Device](#) to enable continuity of session, log-in, or simply to track activity online.

Cookies tend to be ephemeral, and unique to a device, so no states are required. Simply use [cookieOnDevice](#) relationship mark the start and end BoundingStates of the Cookie.

cookieOnDevice

«objectProperty»

Relates a [Cookie](#) to the [Device](#) it is installed on.

Note: there is usually no need for states here as the Cookie itself has begin and end times.

cookieOriginSite

«objectProperty»

Relates a [Cookie](#) to the [Webpage](#) from which it originated.

Cooperation

«rdfsClass»

An [Event](#) where the participants are cooperating with each other

Cooperator

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) is in [Cooperation](#)

Country

«rdfsClass»

A [Location](#) whose land extent / borders are recognised as a [Country](#) by the International Standards [Organisation](#) (ISO)

Note: this is simply the land, any buildings on it, and the airspace and ground beneath as recognised by the ISO definition. It does not include the nationals of the Country, its Government, etc.

countryOfRegistration

«objectProperty»

The Country in which the respective [Entity](#) is registered / recognised.

countryUsingDialCode

«objectProperty»

A [relationship](#) between a [TelephoneCountryCode](#) and a [Country](#) that uses that code.

Note: more than one Country may use the same code, and in rare cases a given Country may have more than one code.

cousinOf

«objectProperty»

A Relationship between two [Person](#) Entities that indicates one is the cousin of the other

Create

«rdfsClass»

A [LifecycleEvent](#) where an [Entity](#) is brought into existence.

Created

«rdfsClass»

An [EventParticipant](#) where an [Entity](#) is created

The date/time of the creation can be specified using the *inPeriod* relationship.

CreatedContent

«rdfsClass»

A [Create](#) [EventParticipant](#) where online content is created

Creator

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [Create](#) event as a creator

CreditCard

«rdfsClass»

A [BankCard](#) that allows the customer to carry a line of credit

CriminalActivity

«rdfsClass»

An [Event](#) which is illegal within the laws of the jurisdiction in which it takes place.

Note: If the [CriminalActivity](#) falls into one of the Home Office Offence Classification Index codes, then this should be provided using the offenceCode attribute.

CriminalOrganisation

«rdfsClass»

An [OrganisationState](#) that is assessed to be breaking the law in an organised manner

Crossing

«rdfsClass»

A [Location](#) and an [ArbitraryOverlap](#) whose extent is defined by the shared overlap of two or more Locations

crossingOf

«objectProperty»

A partOf [relationship](#) to indicate a [Location](#) (range) has a [Crossing](#) (domain)

Currency

«rdfsClass»

A [ClassOfAmountOfMoney](#) that is the denomination as currency.

The identifier should be specified as an ISO4217 three-letter code (e.g. USD, GBP, EUR, etc.)

currencyAmount

«datatypeProperty»

A number that represents the amount of currency.

Note: sometimes the number and/or the currency may be unknown and therefore not instantiated

currencyDenomination

«objectProperty»

The currency in which the [AmountOfMoney](#) is denominated

Customer

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) is the customer for the [Event](#) - i.e. the Event has been conducted as a service to them, or in production of goods for them.

CustomerIdentifier

«rdfsClass»

The customer identifier associated with the Financial Account.

A single [Customer](#) Identity could be associated with more than one Financial [Account](#) managed by the same provider.

CyberStalking

«rdfsClass»

A form of [Stalking](#) which takes place online.

Database

«rdfsClass»

A [DataObject](#) that is the contents of an entire database (note this is still a class, as there may be many copies of the database)

DatabaseItem

«rdfsClass»

A [DataObject](#) that is part of the data in a Database

Examples:

* A table, row, column in RDBMS

* A document in a document db

* a key-value pair in KVDB

* named graph in a graph db

DatabaseRow

«rdfsClass»
A [DataObject](#) that is an entire row of a table in a database (note this is still a class, as there may be many copies of the database)

DatabaseTable

«rdfsClass»
A [DataObject](#) that is the entire contents of a table in a database (note this is still a class, as there may be many copies of the database)

DataKey

«rdfsClass»
A unique key (usually only unique within a Database, though it could be a GUID) that identifies a [DataObject](#)

DataObject

«rdfsClass»
A [Representation](#) which might contain internal structure that can be exploited using bespoke tools and/or applications. Data objects might be geoobjects, video files, audio files, etc.

DeathState

«rdfsClass»
A [BoundingState](#) that marks the end of a [Person](#)'s life

The location of the death can be specified using *inLocation*

The date/time of the death can be specified using the *inPeriod* relationship.

DebitCard

«rdfsClass»
A [BankCard](#) where transactions debit from a bank account

DeclarationOfWar

«rdfsClass»
A [PoliticalAnnouncement](#) marking the start of a [War](#)

DeclaredTarget

«rdfsClass»
The [Organisation](#) against which [War](#) has been declared

DeclaringParty

«rdfsClass»
An [EventParticipant](#) where a [ResponsibleActor](#) makes an Announcement

Note: this also covers GoverningParty from IES 3.2

Delivery

«rdfsClass»
A [TradeEvent](#) where one or more Entities are delivered to the receiving party

DeliveryAddress

«rdfsClass»
An [EventParticipant](#) where an [Address](#) participates in a [Delivery](#) as a the location to which the delivery is made

DeliveryRecipient

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [Delivery](#) as a recipient

DemocraticChangeOfGovernment

«rdfsClass»

A [ChangeOfGovernment](#) that comes about by democratic means

Department

«rdfsClass»

An [Organisation](#) that is part of another Organisation - usually part of a [CommercialOrganisation](#), though other Organisations have departments

Departure

«rdfsClass»

An [EventParticipant](#) and a [BoundingState](#) that marks the start of a Travel event

The date/time of the departure can be specified using the *inPeriod* relationship.

Destroy

«rdfsClass»

A [LifecycleEvent](#) where an [Entity](#) is destroyed

Destroyed

«rdfsClass»

An [EventParticipant](#) where an [Entity](#) is destroyed

Destroyer

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [Destroy](#) event as a destroyer

Device

«rdfsClass»

An [Asset](#) that is man-made and performs one or more functions - i.e. it is also an [Actor](#)

DeviceInCommunication

«rdfsClass»

A [DeviceState](#) (and an EventParticipant) when a Device is communicating.

DeviceOnline

«rdfsClass»

An [EventParticipant](#) where a [Device](#) participates in an [OnlineEvent](#)

DeviceState

«rdfsClass»

A temporalState of a [Device](#)

dialInNumber

«datatypeProperty»

The number dialed to take part in the [TeleConference](#)

Disagreement

«rdfsClass»

An [Event](#) that covers the end-to-end disagreement between parties

DiscontinuousState

«rdfsClass»

A [State](#) that is temporally dissected - i.e. it is not a continuous state, but in fact a fusion of states (which may or may not be specified)

This is used for managing situations where something happens from time to time, and we don't always know when it happens. For example, if a vehicle is usually parked in a street, we would use a [DiscontinuousState](#) of the vehicle that would be inLocation.

Dislikes

«rdfsClass»

A [Interested](#) state where a [ResponsibleActor](#) dislikes something

DispositionalClass

«rdfsClass»

A ClassOfElement whose instances all share the same disposition - e.g. capability or tendency

Example: Vehicles capable of Mach 2

disrespectfulOf

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one is disrespectful of the other.

Note: this should not be considered a bi-directional relationship. Just because one person disrespects another person does not necessarily mean the feeling is reciprocated.

distrusts

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one [distrusts](#) the other.

Note: this should not be considered a bi-directional relationship. Just because one person distrusts another person does not necessarily mean the feeling is reciprocated.

documentedBy

«objectProperty»

An [isRepresentedAs](#) relationship that asserts a [WorkOfDocumentation](#) is about an [Thing](#)

DocumentFormat

«rdfsClass»

A [ClassOfIndividualDocument](#) whose members are all of the same document [format](#) - e.g.

PDF

MS Word

documentIdentifies

«objectProperty»

Links an [IdentityDocument](#) to the [Person](#) it identifies.

Note: was "Is associated with" in IES3

DocumentSection

«rdfsClass»

A [Representation](#) that is a section/chapter/paragraph in a [WorkOfDocumentation](#)

Note: inRepresentation should be used to associate the DocumentSection with the WorkOfDocumentation or other DocumentSection it is part of.

DomainName

«rdfsClass»

A [CommunicationsIdentifierRange](#) that defines a realm of administrative autonomy, authority or control within the internet. [from wikipedia]

DrivingLicence

«rdfsClass»

An [IdentityDocument](#) that permits a [Person](#) to drive a [Vehicle](#) in the [Country](#) of issue.

Duration

«rdfsClass»

The Measure of an Element's temporal extent

Easting

«rdfsClass»

The Geoldentity that is a representation of the eastward componrnt of cartesian point on a map - i.e. on a 2D projection of the globe such as a mercator projection.

EducationalOrganisation

«rdfsClass»

An [Organisation](#) that provides education

Election

«rdfsClass»

A [PoliticalEvent](#) where the population vote for their preferred [ElectoralCandidate](#) to become their representative.

ElectoralCandidate

«rdfsClass»

A [Person](#) standing for elected office

ElectoralRegion

«rdfsClass»

The [RegionalConstituency](#) being decided in an [Election](#)

ElectricCurrent

«rdfsClass»

The Measure of the flow of electric charge.

Note: whilst this is a tricky Measure in a 4D ontology, it should be used in a niaive manner - i.e. a measure of a State of an Entity when the current is flowing through it.

Element

«rdfsClass»

An [Thing](#) that has a spatial extent and can have start and end dates

EmailAccount

«rdfsClass»

A [CommunicationsAccount](#) that is used to administer the use of one or more e-mail addresses.

EmailAddress

«rdfsClass»

A [CommunicationsIdentifier](#) that uniquely identifies an email account.

Format: local-part@domain

employedBy

«objectProperty»

A [worksFor](#) [relationship](#) where the worker is employed.

EncodedData

«rdfsClass»

A [Representation](#) which is external data according to a data format that is not in IES format.

endBoundOfClass

«objectProperty»

A [relationship](#) linking a [TimeBoundedClass](#) to the [ParticularPeriod](#) that marks the end bound date of its instances

endsIn

«datatypeProperty»

An xsd:DateTime for the end of the period

EndToEndActivity

«rdfsClass»

An [Event](#) (usually of long duration) that is composed of a number of other Events.

EndToEndAgreement

«rdfsClass»

An [EndToEndActivity](#) which is the overall process of agreeing something, including all the events that take place under that agreement, such as the negotiation, signing, delivery of service, etc.

EndToEndAuthorisation

«rdfsClass»

An [EndToEndActivity](#) which is the overall process of requesting, receiving authority to act, and the conduct of activities under that authorisation until the period of authorisation ends.

EndToEndTransaction

«rdfsClass»

An [EndToEndActivity](#) covering the lifecycle of the trade

enemyOf

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one is the enemy of the other.

Note: this should not be considered a bi-directional relationship. Just because one person considers another person their enemy does not necessarily mean the feeling is reciprocated.

EntertainmentEvent

«rdfsClass»

An [Event](#) where entertainment (sporting, music, theatre, etc.) is provided

EntertainmentTicket

«rdfsClass»

A [Ticket](#) to an [EntertainmentEvent](#)

Entity

«rdfsClass»

An [Entity](#) typically represents a tangible thing like a Person, a Communications Device, or a Location.

EntityInTransit

«rdfsClass»

A [TravelLeg](#) where an [Entity](#) is moving in [Transit](#)

Ethnicity

«rdfsClass»

A [ClassOfPerson](#) whose members all share the same ethnicity

Event

«rdfsClass»

An [Event](#) represents an activity or incident, involving one or more participating entities, that occurred/started at a specific point in time – e.g. a meeting, or a telephone call.

eventDateTime

«objectProperty»

The date/time of the performance to which the ticket is valid.

EventParticipant

«rdfsClass»

A [State](#) which is the participating role of an [Entity](#) in an Event.

Note: this includes inactive participation (e.g. something that is being repaired). If the participation is known to be active then ActiveEventParticipant (or one of its subtypes) should be used. In BORO, EventParticipant would be "Involvement" and ActiveEventParticipant would be "Participation".

EventState

«rdfsClass»

A temporal state of an [Event](#)

Note: care must be taken with using this in a 4D, extensional model such as IES. States such as "Ended" would not be appropriate, for example - in such a case, the temporal extent of the Event or the presence of a BoundingState to end it would be correct.

EvidentialPhotograph

«rdfsClass»

Relates a [Surveillance Event](#) to a Document that is the evidence resulting from the Surveillance

ExchangePayload

«rdfsClass»

A marker object that shall be present in all IES exchange files. This object is the domain for all meta-data about the file.

Wherever possible, Dublin-Core meta-data tags should be used on an ExchangePayload. If locally defined properties are needed, then these may also be defined and included in the exchange file.

excludedFrom

«objectProperty»

A Relationship between a [ResponsibleActorState](#) and a [Location](#) they are not allowed to enter.

Note: any additional information about how or why the exclusion is in place should be added to the state

Facility

«rdfsClass»

A [Location](#) that is man-made, but is typically larger than an [Address](#) (i.e. it may have more than one postal address)

Examples:

Military camps, factories, sports facilities, airports, etc.

familiarlyRelatedTo

«objectProperty»

A Relationship between [PersonState](#) (which may be a Person, or just a temporal state of Person) and another [Person](#) to indicate they have a familial relationship.

Note: some relationships will be temporal (e.g. spouseOf) and therefore related a state to a Person. Others will be for life (i.e. from the birth of the youngest until one of them dies) and therefore between two whole-life Person entities.

fearfulOf

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one is fearful of the other.

Note: this should not be considered a bi-directional relationship. Just because one person considers another person a threat does not necessarily mean the feeling is reciprocated.

FerryTicket

«rdfsClass»

A [Ticket](#) that is used to travel by sea

FinancialAccount

«rdfsClass»

An [Account](#) held for financial management purposes.

FiniteClassOfElement

«rdfsClass»

A ClassOfElement whose instances are classes with finite, fixed membership of Elements.

finiteMembershipCount

«datatypeProperty»

An integer count of members of a FiniteClassOfElement.

FirstLineOfAddress

«rdfsClass»

The first line of the Address including the number of the dwelling and the street name.

Flight

«rdfsClass»

A [TravelService](#) by air

FlightTicket

«rdfsClass»

A [Ticket](#) that is used to travel by air

FootballMatchTicket

«rdfsClass»

An EntertainmentTicket for a football match

Forgery

«rdfsClass»

A [CriminalActivity](#) that is the creation of fake items

(also a subclass of Create).

format

«objectProperty»

The [format](#) of the respective WorkOfDocumentation.

Examples:

PDF

MS Word

formatOfIndividualDocument

«objectProperty»

The [format](#) of the respective IndividualDocument.

Examples:

PDF

Printed

FoundOrganisation

«rdfsClass»

A Create Event where an Organisation is founded

friendOf

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one is the friend of the other.

Note: this should not be considered a bi-directional relationship. Just because one person considers another person their friend does not necessarily mean the feeling is reciprocated. Not that I'm bitter or anything. See also [Stalking](#) if you must.

Gender

«rdfsClass»

A ClassOfPerson whose members all share the same gender

GeographicFeature

«rdfsClass»

A Location that is a naturally occurring feature on the earth.

Geoidentity

«rdfsClass»

A unique Identifier attributed to the respective Location

GeoJSON

«rdfsClass»

[GeoJSON](#) is an open standard [format](#) designed for representing simple geographical features, along with their non-spatial attributes. It is based on JSON, the JavaScript Object Notation.

GeoJSON mandates use of WGS 84 coordinate system - see IETF RFC 7946

GeoObject

«rdfsClass»

A DataObject and a GeoRepresentation that contains geographical information

GeoPoint

«rdfsClass»

A [Location](#) that is a point (mathematically speaking, of vanishing volume) on, below or above the surface of the WGS84 spheroid. The distance from the spheroid surface is given by the altitudeInMetres attribute.

GeoRepresentation

«rdfsClass»

A [Representation](#) for a [Location](#) - e.g. a point, a polyline, etc.

GivenName

«rdfsClass»

A PersonName that is one of the given names of a Person

Note:

A GivenName will often be applied to a [State](#) of the Person, as names tend to change over time

GML

«rdfsClass»

The Geography-Markup-Language (GML) is the XML grammar defined by the Open Geospatial Consortium (OGC) to express geographical features. [GML](#) serves as a modeling language for geographic systems as well as an open interchange [format](#) for geographic transactions on the Internet.

Key to GML's utility is its ability to integrate all forms of geographic information, including not only conventional "vector" or discrete objects, but coverages (see also GMLJP2) and sensor data.

governedPopulation

«objectProperty»

Relates a [Government](#) to the RegionalPopulation that it governs.

governedRegion

«objectProperty»

The [Location](#) which the respective [Government](#) is in charge of.

See also governedPopulation - sometimes Locations have no people, and sometimes people reside outside the

region in which they are legally citizens.

Note: A Government instance has a start and end date corresponding to its time in power.

Government

«rdfsClass»

An Organisation that is (usually) elected to run a governedRegion

GovernmentOrganisation

«rdfsClass»

An [Organisation](#) that is part of, or controlled by a national or local Government

GrantOfAuthority

«rdfsClass»

An [AuthorisationStage](#) where a [ResponsibleActor](#) grants another [ResponsibleActor](#) authority to act.

groupDescription

«datatypeProperty»

A simple text description of a GroupOfItems

groupName

«datatypeProperty»

A name given to a GroupOfItems

GroupOfItems

«rdfsClass»

A collection of [Thing](#) that have been gathered together for a purpose.

Note: The same Thing can be in more than one [GroupOfItems](#)

Hacking

«rdfsClass»

A [CriminalActivity](#) where computer equipment is interfered with without the owners permission

handlingCaveat

«datatypeProperty»

A textual description of any handling caveats that must be adhered to.

hasAccessTo

«objectProperty»

A Relationship between a [ResponsibleActorState](#) and an [Entity](#) they have access to - e.g. a FinancialAccount, CommunicationsDevice, etc.

hasAuthor

«objectProperty»

The author of the respective document.

hasCharacteristic

«objectProperty»

An [rdf:type relationship](#) that asserts an Element has a Characteristic or Measure

hasCountryOfIssue

«objectProperty»

The country in which the respective [IdentityDocument](#) or [PaymentArtefact](#) was issued.

hasEmergencyContactAddress

«objectProperty»

The address of an emergency contact as printed on the [IdentityDocument](#)

hasEthnicity

«objectProperty»

The ethnic group that the respective [Person](#) belongs to.

The Metropolitan Police standard shall be used as the reference data standard.

hasGeneticGender

«objectProperty»

The gender the [Person](#) was born with (sex) and which would result from a DNA test.

hasIdentifiedGender

«objectProperty»

The gender the [Person](#) chooses to identify as

hasLanguageProficiency

«objectProperty»

A language spoken by the respective [Person](#) at a stage (PersonState) in their life

hasName

«objectProperty»

An [isRepresentedAs relationship](#) that asserts an [Thing](#) is identified (albeit loosely) by a [Name](#)

hasPublisher

«objectProperty»

The publisher of the document.

hasRegisteredCommsID

«objectProperty»

A [relationship](#) between a [CommunicationsIdentifier](#) and the [CommunicationsAccountState](#) of the account to which the identifier is registered

hasReligion

«objectProperty»

A [relationship](#) where a [PersonState](#) holds or follows a [Religion](#)

hasSourceReference

«objectProperty»

A [isRepresentedAs relationship](#) that asserts a [Representation](#) is the source (information provenance) for an [Thing](#)

hasStatedAddress

«objectProperty»

The address of the owner/user as recorded on the respective [IdentityDocument](#) or PaymentArtefact.

hasStatedCountryOfResidence

«objectProperty»

The country of residence as printed on the respective [IdentityDocument](#)

hasStatedNationality

«objectProperty»

The [nationality](#) of the identity holder as specified on the IdentityDocument.

hasStatedPlaceOfBirth

«objectProperty»

A [relationship](#) to the place of birth as recorded on the respective [IdentityDocument](#)

hasStatedPlaceOfIssue

«objectProperty»

A [relationship](#) to the place of issue as specified on the [IdentityDocument](#)

hasTheme

«objectProperty»

A [relationship](#) linking an [Event](#) (e.g. Communication, [Meeting](#) or Investigation) to an [Thing](#) that is a theme (or topic)

Examples:

- * A Event being investigated [after](#) it occurred
- * A general investigation into a Location
- * A Meeting discussing a new project
- * A [VoiceCall](#) about a [Vehicle](#)

hasValue

«objectProperty»

An [isRepresentedAs](#) [relationship](#) that asserts a Measure has a MeasureValue

Note: a given Measure may have more than one value (e.g. 1kg or 2.2lbs) in different units of measure.

Hates

«rdfsClass»

An [Interested](#) state where a [ResponsibleActor](#) hates something

HealthServiceIdentifier

«rdfsClass»

A NationalIdentityNumber used for managing a citizen's through-life healthcare

In UK, this would be an NHS number, apart from Scotland where it is called a CHI number

hmlConfidence

«datatypeProperty»

A confidence whose value must be one of "HIGH", "MEDIUM", or "LOW"

This is a mandatory attribute for AssessToBeTrue

holdsAccount

«objectProperty»

Relates an [AccountHolder](#) (PersonState) to the [Account](#) they hold

hostedOn

«objectProperty»

Relates a [WebResourceState](#) to the [OnlineService](#) that hosts it

IATACode

«rdfsClass»

A Geoldentity that is administered by the International Air Transport Associate for airport identification

IBAN

«rdfsClass»

An Identifier that is an International [Bank Account](#) Number

See ISO 13616:2007

ICAOCode

«rdfsClass»

A Geoldentity that is administered by the International Civil Aviation Organisation for identifying airports

idAuthenticity

«datatypeProperty»

Provides an indication of the believed authenticity of the IdentityDocument

Genuine

Fake

Unknown

idDateOfBirth

«objectProperty»

The Date of Birth as specified on the respective IdentityDocument.

idDateOfIssue

«objectProperty»

The date that the respective Identity Document was actually issued – this is different from the ValidFromDate on EphemeraldDocuments.

idEmergencyContactName

«datatypeProperty»

The name of an emergency contact as printed on the [IdentityDocument](#)

idEmergencyContactTelNo

«datatypeProperty»

The telephone number of an emergency contact as printed on the [IdentityDocument](#)

Identifier

«rdfsClass»

A [Name](#) that is unique within the specified context

IdentityDocument

«rdfsClass»

An IndividualDocument used to confirm the identity of the bearer (and often enables a particular activity – e.g. a passport enables the bearer to travel across international borders).

idFamilyName

«datatypeProperty»

The family name as printed on the [IdentityDocument](#)

idGender

«objectProperty»

The gender as recorded on the respective [IdentityDocument](#)

idGivenNames

«datatypeProperty»

The given names as printed on the [IdentityDocument](#)

idLowerRange

«objectProperty»

A [relationship](#) between a [CommunicationsIdentifierRange](#) and the [CommunicationsIdentifier](#) that is the lower limit of the identifier range

idOnCard

«objectProperty»

A [relationship](#) that asserts a [NationalIdentityNumber](#) (which identifies a person) is featured on a [NationalIdentityCard](#)

idUpperRange

«objectProperty»

A [relationship](#) between a [CommunicationsIdentifierRange](#) and the [CommunicationsIdentifier](#) that is the upper limit of the identifier range

IdUsedInCheckIn

«rdfsClass»

An [EventParticipant](#) where an [IdentityDocument](#) is used in a [CheckIn](#) event

ilrProficiency

«datatypeProperty»

The Proficiency qualifier is specified using the Interagency [Language](#) Roundtable (ILR) scale [E].

- (a) ILR Level 0 – No proficiency
- (b) ILR Level 1 – Elementary Proficiency
- (c) ILR Level 2 – Limited Working Proficiency
- (d) ILR Level 3 – Professional Working Proficiency
- (e) ILR Level 4 – Full Professional Proficiency
- (f) ILR Level 5 – Native or Bilingual Proficiency

IMEI

«rdfsClass»

The International Mobile Equipment Identity used to identify GSM, WCDMA and iDEN mobile phone handsets, as well as some satellite phones.

Usually a 15-digit number (14 digits plus a check digit)

Example Value:

123456789012345

IMSI

«rdfsClass»

The International Mobile Subscriber Number

Historically, this is stored as a 64-bit number on the SIM Card (it is NOT identity of the SIM Card itself), but now can be a software assigned identifier to any mobile subscriber interface.

An [IMSI](#) is usually presented as a 15-digit number, but it can be shorter.

The first three digits are the Mobile [Country](#) Code (MCC), followed by a 2 or 3 digit Mobile Network Code (MNC) and the remaining digits are the Mobile Subscription Identification Number (MSIN).

For the example shown this would be:

- 404=India,
- 68=MTNL Delhi
- 1234567890=Subscriber ID

IncarceratingOrganisation

«rdfsClass»

An Organisations's role in incarcerating a [Person](#)

Incarceration

«rdfsClass»

A [LawEnforcement EndToEndActivity](#) where a [Person](#) is incarcerated

IncarcerationFacility

«rdfsClass»

A Facility used for incarceration - e.g. a prison, detention centre, or remand facility

inCategory

«objectProperty»

An [rdf:type](#) relationship that asserts a [Representation](#) belongs to a [ContentCategory](#)

IncomingGovernment

«rdfsClass»

The [Government](#) that took power after a ChangeOfGovernment

IncumbentRepresentative

«rdfsClass»

A [Person](#) in-office prior to the [Election](#) being decided

InDisagreement

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) is in disagreement

IndividualDocument

«rdfsClass»

An Asset that is a written, photographed or drawn representation of thoughts. This might include, but not limited to, formal reports, books, legal instruments. Such documents might exist in a wide variety of forms, both printed and in electronic form.

Note: this is an individual document - i.e. physical or (rarely) a specific electronic copy (e.g. on a specific hard disk...told you it was rare). In most cases, we refer to the document in general - [WorkOfDocumentation](#)

IndividualDocumentID

«rdfsClass»

An Identifier used to uniquely identify an [IndividualDocument](#)

influencedBy

«objectProperty»

A [relationship](#) between a [ResponsibleActor](#) and the thing that influences them

informationContent

«objectProperty»

A [relationship](#) between a WebResourceState and a [Representation](#) that asserts the Representation is the content of the WebResource

Note: a state is used here as the content may change over time even though the WebResource persists

inGroup

«objectProperty»

A property linking a [Thing](#) to a [GroupOfItems](#) indicating that it belongs to that group.

Note: A Thing may be in more than one group and a group may contain more than one Thing

inLanguage

«objectProperty»

An [rdf:type](#) [relationship](#) that asserts a [Representation](#) is in a particular [Language](#)

inLocation

«objectProperty»

A partOf [relationship](#) to indicate an [Element](#) is entirely within a [Location](#)

inPeriod

«objectProperty»

A partOf [relationship](#) to indicate an Element's lifetime is entirely within a PeriodOfTime

Example:

Fred's birth is in May 1978

inPossessionOf

«objectProperty»

A Relationship between a [ResponsibleActor](#) and an [Asset](#) they have in their possession.

Note: this is separate to ownership - e.g. the possessor may well be the owner (use the [owns](#) relationship) but may also be a result of borrowing, theft, temporary custodianship,

InPost

«rdfsClass»

An [InstalledState](#) of a [ResponsibleActor](#) when they are in a [Post](#).

inRepresentation

«objectProperty»

A [relationship](#) that asserts a [Representation](#) is part of another Representation

InResidence

«rdfsClass»

A temporal state of a ResponsibleActor

Note: this is the superclass of [ResponsibleActor](#) (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states.

inScheme

«objectProperty»

An [rdf:type](#) relationship that asserts a [Representation](#) is a member of a [RepresentationScheme](#)

InstalledState

«rdfsClass»

A temporal state of an Entity when it fulfils a ReplaceablePart.

InstanceOfSoftware

«rdfsClass»

An [Asset](#) that is an installed instance of a set of programmatic instructions that control or affect the behaviour of an [Asset](#) (usually a Device).

IntelligenceAgency

«rdfsClass»

A [GovernmentOrganisation](#) that collects, analyses or disseminates intelligence

IntelligenceOperation

«rdfsClass»

An OperationalEvent that involves the gathering, analysis or dissemination of intelligence

InteractiveCommunication

«rdfsClass»

A Communication that occurs synchronously - e.g. a video or voice call

Interested

«rdfsClass»

A [ResponsibleActorState](#) where the [Actor](#) is interested in something

interestedIn

«objectProperty»

A Relationship between a [ResponsibleActor](#) (or state thereof) and an [Entity](#) they are interested in.

InternationalCoalition

«rdfsClass»

An [Organisation](#) formed of Nations who have agreed to pursue a particular course (e.g. a war)

intimidatedBy

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one (range) intimidates the other (domain).

Investigation

«rdfsClass»

An IntelligenceOperation that researches a particular threat, or theme.

Investigator

«rdfsClass»

An [Operator](#) role where a [Person](#) is an investigator

InWork

«rdfsClass»

A temporal state of a ResponsibleActor

Note: this is the superclass of [ResponsibleActor](#) (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states.

InWorship

«rdfsClass»

A temporal state of a ResponsibleActor

Note: this is the superclass of [ResponsibleActor](#) (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states.

IPAddress

«rdfsClass»

An Identifier that is an Internet Protocol address.

IPAddressRange

«rdfsClass»

A CommunicationIdentifierRange between two IPAddress instances

In these examples the IPv4 address range is specified using the following format:

<lower address> - <upper address> using one of a number of different IPv4 address notations.

The IPv4 address range is all the IPv4 addresses between the <lower address> and the <upper address> (inclusive).

Both examples here represent the same address range (but in different notations).

The Dot Decimal Range notation specifies the <lower address> and the <upper address> in Dot Decimal form – where

each of these 32-bit IPv4 addresses are expressed as four octets expressed individually in decimal and separated by periods.

The Dot Hexadecimal Range notation specifies the <lower address> and the <upper address> in Dot Hexadecimal form – where each of these 32-bit IPv4 addresses are expressed as four octets where each octet is prefixed with 0x, expressed individually in hexadecimal and separated by periods.

IPPhoneHandset

«rdfsClass»

A CommunicationsDevice that is a telephone using internet protocols

IPv4Address

«rdfsClass»

An IPAddress conforming to v4 of the standard

IPv6Address

«rdfsClass»

An IPAddress conforming to v6 of the standard

isAuthorisedForUseWithPassport

«objectProperty»

The passport associated with the Visa.

Note: if the IES data does not already contain the associated passport, a [Passport](#) instance must be created, and the appropriate passport number specified.

isCentroidOf

«objectProperty»

An [inLocation relationship](#) to indicate a [PointOnEarthSurface](#) is the centroid of a [Location](#)

isDisposedTo

«objectProperty»

An [rdf:type relationship](#) that asserts an Element is a member of a DispositionalClass - i.e. it is disposed to (capable of, tends to, etc.) the specified disposition.

isEndOf

«objectProperty»

An [isStateOf](#) that relates a [BoundingState](#) to the [Element](#) it marks the end of

isIdentifiedBy

«objectProperty»

A [hasName relationship](#) that asserts an [Identifier](#) identifies an [Thing](#)

isLegalTenderIn

«objectProperty»

The [Country](#) in which a [Currency](#) is legal tender

ISO19125-WKT

«rdfsClass»

A [GeoRepresentation](#) using Well-Known-Text encoding for ISO19125 simple features.

Note: the WKT must include the coordinate reference system used - e.g WGS 84

ISO3166_1Alpha_3

«rdfsClass»

ISO 3166-1 alpha 3 (3-Letter [Country](#) Code)

ISO4217Code

«rdfsClass»

ISO4217 three-letter currency code (e.g. USD, GBP, EUR, etc.)

ISO639-3Code

«rdfsClass»

ISO639-3 three-letter language code

iso8601PeriodRepresentation

«datatypeProperty»

A ISO8601 datetime (as [xsd:date](#)) that represents the ParticularPeriod.

This representation is also encoded in the URI of the period, this is an additional required [attribute](#) to enable querying by date and SPARQL temporal operations. The literal string shall be encoded in UTC (Coordinated Universal Time) but unlike the URI, it must be punctuated. For example: "2007-01-18T15:30:00"

isParticipantIn

«objectProperty»

An [isPartOf](#) that relates an [EventParticipant](#) to the [Event](#) it participates in.

isParticipationOf

«objectProperty»

An [isStateOf](#) that relates an [EventParticipant](#) to the [Element](#) that is the participant

isPartOf

«objectProperty»

A [relationship](#) linking an [Element](#) to another that it is part of.

Examples:

London partOf UK

My Arm partOf Me

isPrimaryForOrganisation

«objectProperty»

A [relationship](#) linking an [Thing](#) to the [ResponsibleActor](#) that prefers the use of that Thing.

This is used when there are more than one state, name, etc. for a given item, and there is a requirement to specify which one is considered primary / preferred by a particular Organisation.

Examples:

* A primary name for a person (applied to PersonName)

* A primary DoB for a person (applied to BirthState)

* A primary [nationality](#) for a person (applied to the [PersonState](#) that links to the Nation)

isRepresentedAs

«objectProperty»

A [relationship](#) that asserts a [Representation](#) in someway depicts an [Thing](#)

isStartOf

«objectProperty»

An [isStateOf](#) that relates a [BoundingState](#) to the [Element](#) it marks the start of

isStateOf

«objectProperty»

An [isPartOf](#) linking an [Element](#) to a temporal [State](#) of that Element

Examples:

You, you yesterday

issuerIdentificationNumber

«datatypeProperty»

The IIN is a number that uniquely identifies the issuer of the [Bank](#) Card.

An ISO/IEC 7812 number contains a single-digit *major industry identifier* (MII), a six-digit *issuer identification number* (IIN), an *individual account identification* number, and a single digit checksum.

issuingAgency

«objectProperty»

The [Organisation](#) that issued the ticket – this might be different from the travel provider.

isTeacherOf

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities that indicates one teaches the other.

In the case where the teaching is occasional / ad-hoc (i.e. there isn't an ongoing course) then the instance of the [ResponsibleActorState](#) should also be an instance of [DiscontinuousState](#)

JointAccount

«rdfsClass»

A [FinancialAccount](#) held by more than one person

Journey

«rdfsClass»

A [Movement](#) which is made up of two or more TravelLegs

Note: this may include a number of legs to the journey (i.e. instances of [TravelLeg](#) that are part of the Journey)

JsonData

«rdfsClass»

An [EncodedData](#) which is in JSON format

jurisdictionOfRights

«objectProperty»

A Relationship between [Rights](#) and the [Nation](#) under whose laws the Rights are established

knownAssociateOf

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where both are known to know each other but the extent to which they interact (e.g. friendship, work, criminal activity, etc.) is not known.

LandlineHandset

«rdfsClass»

A CommunicationsDevice that connects using fixed line telecommunications

LandlineTelephoneAccount

«rdfsClass»

A [TelephoneAccount](#) where the telephones in use connect using a wired network and operate only in a specific location

Language

«rdfsClass»

A ClassOfRepresentation that is a spoken or written form of human communication

LanguageProficiency

«rdfsClass»

A [ClassOfPersonState](#) indicating the proficiency a person has in a particular language at that state in their life.

Latitude

«rdfsClass»

A Geoldentity that is a decimal representation of an angle of latitude of a [PointOnEarthSurface](#) (WGS84)

LawEnforcement

«rdfsClass»

An Event that involves the application of criminal law

LawEnforcementOrganisation

«rdfsClass»

A [GovernmentOrganisation](#) that investigates crimes and brings the perpetrators to justice.

Wikipedia definition: Law enforcement is any system by which some members of society act in an organized manner to enforce the law by discovering, deterring, rehabilitating, or punishing people who violate the rules and norms governing that society.

LeadInvestigator

«rdfsClass»

An [Investigator](#) who is charge of an [Investigation](#)

Length

«rdfsClass»

The Measure of distance as specified by the International System of Quantities

LifecycleEvent

«rdfsClass»

An Event that brings about change to its environment or another Element - e.g. creation, destruction or modification

Likes

«rdfsClass»

An [Interested State](#) where a [ResponsibleActor](#) likes something

LineOfAddress

«rdfsClass»

A line in an Address. There may be any number of these.

LiveCast

«rdfsClass»

An OnlineArtefact that is video or audio streamed online in real time.

Note: the begin and end dates for a [LiveCast](#) instance mark its life online rather than the [duration](#) of the actual recording. The recording itself should be tracked using an [OnlineContentCreation](#) Event.

Location

«rdfsClass»

An Entity that is a geographic place which specifies a point or an area on the Earth's surface or elsewhere.

LocationState

«rdfsClass»

A temporal state of a [Location](#)

Logoff

«rdfsClass»

A OnlineEvent where an [OnlineAccount](#) logs out of an [OnlineService](#)

Logon

«rdfsClass»

A OnlineEvent where an [OnlineAccount](#) logs onto an [OnlineService](#)

Longitude

«rdfsClass»

The Geoldentity that is a decimal representation of an angle of longitude of a [PointOnEarthSurface](#) (WGS84)

Loves

«rdfsClass»

A [interestedIn relationship](#) where a [Person](#) loves another Person

lowerBound

«objectProperty»

A [relationship](#) a MeasureRange to the Measure that is its lower bound

LuminousIntensity

«rdfsClass»

The Measure of radiated light

MACAddress

«rdfsClass»

A CommunicationsIdentifier that is used to identify network interface controllers

Various forms of the MAC address can be used:

- (a) six groups of two hexadecimal digits, separated by hyphens (-) or colons (:), in transmission order
- (b) three groups of four hexadecimal digits separated by dots (.) again in transmission order.
- 2. The [make](#) & [model](#) of the network interface is encoded within the MAC address.

maintains

«objectProperty»

A Relationship between a [ResponsibleActorState](#) and an [Entity](#) they maintain

make

«objectProperty»

A [relationship](#) from the device to its "make" - i.e. organisation that brands it (even if the manufacture is contracted-out)

Example - an iPhone 6S has [make](#) Apple

MaliciousAccountUse

«rdfsClass»

An OnlineAccountInUse where the account is used to conduct a [CriminalActivity](#) online

managedBy

«objectProperty»

A [worksFor relationship](#) where the managed [ResponsibleActorState](#) (domain) is managed by another [ResponsibleActor](#) (range).

MapGridArea

«rdfsClass»

A [Location](#) whose area is specified by a grid on a map.

Note this is the actual area, not the map grid.

Marriage

«rdfsClass»

An [EndToEndActivity](#) covering the entire extent of a two people's marriage (from the ceremony to either divorce or death)

Note: As IES4 does not increase the scope of IES3, [Marriage](#) also includes common-law partners and civil partnerships

Married

«rdfsClass»

A [State](#) when a [Person](#) is married to another person

Mass

«rdfsClass»

The Measure of an Entity's resistance to acceleration as specified by the International System of Quantities

Measure

«rdfsClass»

An Characteristic which is measurable on a scale

MeasureRange

«rdfsClass»

A Measure specified by upper and lower bound Measures

measureUnit

«objectProperty»

An [rdf:type relationship](#) that asserts a Measure is represented using a particular UnitOfMeasure

MeasureValue

«rdfsClass»

A [Representation](#) of the value of a Measure

Note: A UnitOfMeasure is almost always required. The reason it is not mandatory is that in some cases (due to partial reporting) we do not have complete information - e.g. we know the value was stated to be 10 but we don't know if that's metres or feet

MediaFile

«rdfsClass»

A DataObject that is a stand-alone file - e.g. a video, image or sound recording

Meeting

«rdfsClass»

A [CoLocation](#) where the attendees (Presence) communicate with each other

MeetingChair

«rdfsClass»

An Attendance where the [Person](#) involved is the chair of a [Meeting](#)

Message

«rdfsClass»

A [Communication](#) where a message is sent.

messageContent

«datatypeProperty»

An attribute representing the content of a message

Example:

messageContent = See you at Waterloo station at 18:15

MilitaryAttack

«rdfsClass»

A MilitaryEvent where force is used

Note: was called "Attack" in v3.x - now called "MilitaryAttack" to distinguish from domestic attacks, terrorist attacks, hacking attacks, etc.

MilitaryEvent

«rdfsClass»

An OperationalEvent that involves military staff

MilitaryOrganisation

«rdfsClass»

A [GovernmentOrganisation](#) that conducts warfighting, peacekeeping and emergency civil support functions

missionPurpose

«datatypeProperty»

A short description of why an IntelligenceOperation was carried out used for legal justification

Agencies that work in the intelligence domain may wish to standardise these descriptions.

MobileHandset

«rdfsClass»

A CommunicationsDevice that is a portable telephone using cellular networks

MobileTelephoneAccount

«rdfsClass»

A [TelephoneAccount](#) where the telephones in use connects using a cellular network

Modifier

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [Modify](#) event as a modifier

Modify

«rdfsClass»

A LifecycleEvent where something is changed

MoneyTransfer

«rdfsClass»

A [BusinessEvent](#) where an [AmountOfMoney](#) is moved from one [FinancialAccount](#) to another.

Usually a Money Transfer event will involve two accounts but we might not know both, or it might be a cash transfer

– in which case only one of the participants might be specified.

Movement

«rdfsClass»

An [Event](#) where an [Entity](#) moves from one place to another.

Moving

«rdfsClass»

An EventParticipant in which an [Entity](#) moves from one [Location](#) to another

Name

«rdfsClass»

A [Representation](#) that is used to refer to something, usually in context of a NamingScheme

Examples:

GBR - the ISO Trigram for the United Kingdom

GB - the FIPS two-letter code for the United Kingdom

"Michael Caine" - stage name for Maurice Micklewhite

NamingScheme

«rdfsClass»

An [ClassOfClassOfEntity](#) whose instances collect together all Names that belong to a particular scheme - i.e. an organisational identity scheme, a systems primary key format, etc.

Nation

«rdfsClass»

The people of a [Country](#) (or group of Countries recognised as a Nation).

Note: this is distinct to a Country which is the land mass under control by the Nation, though ISO Country codes are regularly used to also identify Nations.

NationalIdentityCard

«rdfsClass»

An IdentityDocument issued by a Government to identify a Person

NationalIdentityNumber

«rdfsClass»

An Identifier of a Person that is specified by a GovernmentOrganisation

nationality

«objectProperty»

A [relationship](#) to a [Nation](#) which recognises the [Person](#) (or [State](#)) of Person, as it is possible to renounce a nationality) as one of their nationals.

natureOfInterest

«datatypeProperty»

NatureOfInterest is limited to the following values:

- Personal
- Professional
- Academic

nearTo

«objectProperty»

A [relationship](#) linking an [Entity](#) to another Entity it is proximate to in space

Negotiation

«rdfsClass»

An [AgreementStage](#) where parties are trying to find agreement

Negotiator

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) negotiates an agreement

nephewOrNieceOf

«objectProperty»

A Relationship between two [Person](#) Entities that indicates one is the nephew or niece of the other.

Note: people can become nephews or nieces at different stages in their lives (e.g. as people marry) so PersonState should be used in cases where someone has not always been related in this way (i.e. not from birth)

NetworkInterface

«rdfsClass»

An [Device](#) (usually part of another Device) that provides wired or wireless access to a network.

Network interfaces can often be removable. To model this, create DeviceStates of the NetworkInterface and make them part of the Device which hosts the interface for that period of time.

nextTo

«objectProperty»

A [nearTo](#) linking an [Entity](#) to another Entity it is immediately proximate to (i.e. touching) in space

Nickname

«rdfsClass»

A PersonName that is an unofficial or casual name

Note:

An nickname will often be applied to a [State](#) of the Person, as these tend to be non-permanent names

NonDisclosureAgreement

«rdfsClass»

An [EndToEndAgreement](#) where parties agree not to disclose certain information

Northing

«rdfsClass»

The Geoldentity that is a representation of the northward componrnt of cartesian point on a map - i.e. on a 2D projection of the globe such as a mercator projection.

NotForProfitOrganisation

«rdfsClass»

An [Organisation](#) where all income is reinvested, or distributed - i.e. no profit is made.

Notify

«rdfsClass»

An OnlineContentEvent where a notification is raised - i.e. an application-generated event (not a user-generated

event)

objectContent

«datatypeProperty»

The content of the data object.

Whenever a [DataObject](#) is exchanged it must include either the ObjectContent or an ObjectContentReference or both.

The ContentStandard qualifier specifies the standard (either by name or by reference) that is applicable to the content of the DataObject.

The ContentFormat qualifier specifies the [format](#) of the content of the DataObject.

objectContentReference

«datatypeProperty»

An ObjectContentReference is a resolvable reference to the 'content' of the respective DataObject.

Whenever a [DataObject](#) is exchanged it must include either the ObjectContent or an ObjectContentReference or both.

ObjectName

«rdfsClass»

A Name given to a DataObject.

Observation

«rdfsClass»

An [Event](#) where an [Element](#) (Event or Entity) is observed by an [Entity](#) (i.e. a [Person](#) or Device)

Observed

«rdfsClass»

An [EventParticipant](#) where an [Element](#) is [Observed](#)

Observer

«rdfsClass»

An [EventParticipant](#) where an [Entity](#) observes another Entity or [Event](#)

ObserverStatus

«rdfsClass»

When a [Government](#) has observer rights at a [Summit](#)

OfferForSale

«rdfsClass»

A [TradeEvent](#) where one or more Entities of the same type (specified by an ClassOfEntity) are offered for sale or exchange

OnJourney

«rdfsClass»

An EventParticipant in which an [Entity](#) is on a [Journey](#) (i.e. a multi-part journey)

OnlineAccount

«rdfsClass»

An Account that enables a person, organisation or other entity to participate within a particular online domain.

Note: was called "OnlinelIdentifier" in previous versions of IES

OnlineAccountInUse

«rdfsClass»

An [EventParticipant](#) where an [OnlineAccount](#) participates in an [OnlineEvent](#)

onlineAccountProvider

«objectProperty»

Relates an [OnlineAccount](#) to the [OnlineService](#) that provides and administers the account.

Note: was called "Domain" in previous IES versions

OnlineAccountState

«rdfsClass»

A temporal state of an [OnlineAccount](#)

OnlineArtefact

«rdfsClass»

A WebResource which is any kind of media presented online that is more granular than a webpage, and user-generated - e.g. a blog post, tweet, facebook post, etc.

Note: when applying begin and end states (and periods of time) to OnlineArtefact, the times should correspond to the life of the content, not the [duration](#) of the posting activity.

OnlineArtefactInEvent

«rdfsClass»

An [EventParticipant](#) where an [OnlineArtefact](#) participates in an [OnlineEvent](#)

OnlineComment

«rdfsClass»

An OnlineArtefact that is a comment on an existing OnlineArtefact instance

onlineCommentOn

«objectProperty»

Relates an [OnlineComment](#) to the OnlineContent that was commented on

OnlineContentCreation

«rdfsClass»

An OnlineContentEvent where a "post" is made.

Examples:

- * Posting a blog
- * Posting a comment
- * Tweeting (other microblogs are available, probably)
- * A Facebook, LinkedIn, Instagram, etc. post

OnlineContentEvent

«rdfsClass»

An [OnlineEvent](#) where content (text, images, video, etc.) is uploaded, downloaded or viewed

OnlineEvent

«rdfsClass»

An [Event](#) on a computer network. This can include events on any network of computer including the internet or other air-gapped or isolated network.

OnlineLike

«rdfsClass»

OnlineArtifact that is a "like" of an existing OnlineArtifact instance

onlineLikeOf

«objectProperty»

Relates an [OnlineLike](#) to the OnlineContent that was "liked"

OnlineMessage

«rdfsClass»

A [Message](#) that was sent Online or any other networked system including air-gapped networks.

onlinePublisher

«objectProperty»

Relates an [OnlineArtifact](#) to the [ResponsibleActor](#) that produced it.

OnlineService

«rdfsClass»

A service provided on a computer network.

onlineServiceProvider

«objectProperty»

Relates an [OnlineService](#) to the [ResponsibleActor](#) that owns/runs it

OnlineShop

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [TradeEvent](#) as an online shop

OpenAccount

«rdfsClass»

An AccountAdminEvent where a new Account is opened

OperatingSystem

«rdfsClass»

[Software](#) that provides the basic access layer to hardware

OperationalEvent

«rdfsClass»

An Event conducted by military or national security actors

Operator

«rdfsClass»

A ResponsibleActor's role in an [OperationalEvent](#) where they are one of the operators

opposedTo

«objectProperty»

A coupling between a [ResponsibleActor](#) (or state thereof) and an [ClassOfElement](#) to which they are opposed

Examples: an organisation that is opposed to Nuclear Weapons

Organisation

«rdfsClass»

A ResponsibleActor that is a group of people formed for one or more of purposes – e.g. government organisations, educational organisations, terrorists organisations, religious organisations, etc.

OrganisationIdentifier

«rdfsClass»

A unique Identifier for an Organisation (more usually an OrganisationState)

Example:

DUNS number

VAT number

Companies House Number

Registered Charity Number

OrganisationName

«rdfsClass»

A [Name](#) used to identify an [Organisation](#)

OrganisationState

«rdfsClass»

A temporal state of an [Organisation](#)

orGroup

«datatypeProperty»

The groups (if any) which the requesting user must be a member of at least one of in order to access the item. See the EDH specification for further details.

Allowable Values:

See EDH Standard

originatingSystem

«objectProperty»

The [System](#) that produced the dataset

originator

«objectProperty»

The [ResponsibleActor](#) that produced the dataset

OSGridReference

«rdfsClass»

A Geoidentity that is an Ordnance Survey Grid Reference - i.e. pertaining to Great Britain.

OutgoingGovernment

«rdfsClass»

The [Government](#) that left power following a ChangeOfGovernment

owns

«objectProperty»

A Relationship between a [ResponsibleActor](#) and an [Asset](#) they legally own

parentOf

«objectProperty»

A Relationship between two [Person](#) Entities that indicates one is the parent of the other

Parked

«rdfsClass»

A temporal state of a [Vehicle](#) where it is not moving.

Examples:

- * A car parked on the roadside
- * A ship in dock or at anchor
- * An aircraft parked on the tarmac or in a hangar

ParticularPeriod

«rdfsClass»

A [PeriodOfTime](#) that is a specific, contiguous extent of time.

IMPORTANT NOTE: The URI of a [ParticularPeriod](#) shall be encoded in UTC (Coordinated Universal Time) and as follows:

<http://iso8601.iso.org/20070118T153000>

Where the content after the / is encoded without punctuation and without the trailing "Z". In the example above, the punctuated equivalent would be "2007-01-18T15:30:00Z"

The reason behind using a URI is that receiving systems can resolve the periods of time and de-duplicate.

Examples:

Tuesday 28th August 2018

2016

December 1944

PartNumber

«rdfsClass»

A unique Identifier for the a ModelOfDevice

Note: this is different to a serial number which is unique to each [Device](#)

PartOfFacility

«rdfsClass»

A [Location](#) that is contained within a Facility - e.g. a room, laboratory, floor, etc.

PartyInCommunication

«rdfsClass»

An [Event](#) that is part of (usually one end of) a [Communication](#) Event.

Sometimes, all we know about a [PartyInCommunication](#) is their [CommunicationsIdentifier](#) (phone number, e-mail address, maybe even just an IP address) so the [isIdentifiedBy](#) [relationship](#) may be applied to PartyInCommunication

PartyToAgreement

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) is party to an EndToEndAgreement

Note: this includes EndToEndAgreements that were never ratified - i.e. they got to the negotiation stage but were never put into force

Passenger

«rdfsClass»

A [PersonInTransit](#) where the [Person](#) travelling is a [Passenger](#) on a [Transit](#)

PassengerName

«rdfsClass»

The Name of the Person being used for Travel - it may not be known if this is the actual Name the Person travelling, as someone else may be using their ticket.

Passport

«rdfsClass»

An IdentityDocument that confirms a Person's nationality and permits them to cross national boundaries

payloadContents

«objectProperty»

A link from an [ExchangePayload](#) to an rdfs:Resource that is in that payload.

If there is no payloadContents link, then it is assumed that all the contents of the file are in the ExchangePayload. Under this circumstance, more than one ExchangePayload would be an error.

The payloadContents link will usually refer to a named graph, but it can also be used to refer to individual rdf:Statements and rdfs:Resources.

payloadLabel

«objectProperty»

A mandatory link from an [ExchangePayload](#) to the [SecurityLabel](#) that provides the default access control for all statements in the payload.

Note: individual statements may deviate from the default by applying their own SecurityLabels

PaymentArtifact

«rdfsClass»

An Asset that is means of payment

paymentArtifactProvider

«objectProperty»

The [Organisation](#) that provided the [PaymentArtifact](#)

PeaceTreaty

«rdfsClass»

A [Treaty](#) that formalises the end of hostilities in a [War](#)

PeriodOfTime

«rdfsClass»

A [PeriodOfTime](#) is an [Element](#) whose spatial extent is everywhere, but whose temporal extent is limited.

permittedNationality

«datatypeProperty»

The nationalities of those who are permitted to access the item. See the EDH specification for further details.

Allowable Values:

See EDH Standard

permittedOrganisation

«datatypeProperty»

The organisations who are permitted to access the item. See the EDH specification for further details.

Allowable Values:

See EDH Standard

Perpetrator

«rdfsClass»

An [Actor](#) where the [ResponsibleActor](#) conducts a [CriminalActivity](#)

Person

«rdfsClass»

A human being, living or dead. This also includes what may appear to be a person, but is in fact an Alias

PersonalRadioHandset

«rdfsClass»

A CommunicationsDevice for portable radio communications - e.g. a walkie-talkie

PersonHeight

«rdfsClass»

The Length that is the height of a PersonState

PersonInCommunication

«rdfsClass»

A [PersonState](#) (and an EventParticipant) when a [Person](#) is involved in communicating.

PersonInTransit

«rdfsClass»

An [EntityInTransit](#) where the [Entity](#) is a [Person](#)

PersonName

«rdfsClass»

A [Name](#) used to identify / refer to a Person

Note: this is the full name as known to the organisation managing the NamingScheme. For first names, surnames, etc. use a subtype of PersonName

A [PersonName](#) may be composed of Surname, GivenName, etc. using the [inRepresentation relationship](#)

PersonState

«rdfsClass»

A temporal state of a [Person](#)

PersonTitle

«rdfsClass»

The title associated with the name of the person.

PlaceName

«rdfsClass»

A [Name](#) that is used to refer to a Location.

Note: the naming pattern is used here as different parties (even standards bodies !) may have different names for the same [Location](#)

PointOnEarthSurface

«rdfsClass»

A [Location](#) that is a point (mathematically speaking, of vanishing area) on the surface of the WGS84 spheroid

PolicyAnnouncement

«rdfsClass»

A PoliticalAnnouncement about policy

PoliticalAgreement

«rdfsClass»

A PoliticalEvent that is also an EndToEndAgreement

Note: was called Agreement in IES 3.x, but that was confusing for business agreements, personal agreements, etc.

PoliticalAnnouncement

«rdfsClass»

A PoliticalEvent where information is released to the public

Note: was called Announcement in IES 3.x, but that was confusing for business announcements , personal announcements , etc.

PoliticalEvent

«rdfsClass»

An Event related to democratic processes or party politics

Port

«rdfsClass»

A [Facility](#) which is a recognised terminus for international travel

PossibleWorld

«rdfsClass»

An Element that encompasses a number of Events, Entities and States that may occur / have occurred. A PossibleWorld is used for scenario planning and forensics.

This is a very simple placeholder for an area of IES that is likely to grow in the future. For now, it can be used to group together a number of elements (using isPartOf relationship) to assert that they share the same truth - i.e. in one possible scenario, all of them were true. The same Element may exist in more than one PossibleWorld - i.e. scenarios may share elements. For version 4.1.0 of IES, PossibleWorld is to be used with AssessToBeTrue in order to specify a level of confidence or probability. More work is needed on this in later IES versions.

Post

«rdfsClass»

A part of an [Organisation](#) that has particular responsibilities

PostalCode

«rdfsClass»

A Geoidentity used to (partially) identify and address

postModificationState

«objectProperty»

A partOf [relationship](#) to indicate a [State](#) of an [Entity](#) just [after](#) the [Modify](#) event

Note: For BORO purists, this means the post State is part of the Modify [Event](#) (i.e. the extent of the Modify Event includes the State)

PostState

«rdfsClass»

A temporal state of a [Post](#)

powertype

«objectProperty»

An [rdf:type](#) [relationship](#) that asserts one Class is the powerset of the other (see Cantor's theorem).

preModificationState

«objectProperty»

A partOf [relationship](#) to indicate a [State](#) of an [Entity](#) just prior to the [Modify](#) event

Note: For BORO purists, this means the pre State is part of the Modify [Event](#) (i.e. the extent of the Modify Event includes the State)

Presence

«rdfsClass»

An [EventParticipant](#) where an [Entity](#) is CoLocated with other Entities of interest

Prisoner

«rdfsClass»

A person's role when incarcerated

Prosecution

«rdfsClass»

A LawEnforcement Event that is the trial of a suspect

Prosecutor

«rdfsClass»

A person's role as a prosecutor in a trial

protectiveMarking

«datatypeProperty»

The classification applied to the respective item. This is equivalent to the Classification field within the EDH

Allowable Values:

OFFICIAL

OFFICIAL-SENSITIVE

SECRET

TOP SECRET

publicationDate

«objectProperty»

The date of publication of the respective document.

Purchase

«rdfsClass»

A [TradeEvent](#) where an [Entity](#) is bought

Purchaser

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [TradeEvent](#) as a purchaser

Note: in the case of a RequestForQuotation, the purchaser is the person or organisation issuing the RfQ

Note: in the case of an online purchase where the buyer is unknown, the participant may be an OnlinelIdentifier

quantityDelivered

«datatypeProperty»

The number of Entities (of the same type) that were delivered

quantityOffered

«datatypeProperty»

The number of Entities (of the same type) that are being offered for sale

quantityPurchased

«datatypeProperty»

The number of Entities (of the same type) that were purchased

radioCoverage

«objectProperty»

A [relationship](#) linking a RadioMast to its RadioCoverageArea

RadioCoverageArea

«rdfsClass»

A [Location](#) whose area is that in which a [RadioMast](#) has viable communications coverage.

Note: The RadioMast itself may not be part of this area, as often the immediate area around the base of a RadioMast is a deadspot.

Note: Most radio area coverage is complex in shape, and the preferred representation in IES4 is [GeoJSON](#). No attempt is made here to differentiate between signal strength zones. To do this, create multiple RadioCoverAreas for the same RadioMast and label them appropriately.

RadioMast

«rdfsClass»

An [Device](#) that is placed in a Location to provide either a link from a wired to wireless connection, or to relay between two wireless endpoints.

Ratification

«rdfsClass»

An [AgreementStage](#) where parties have arrived at a consensus and approve the agreement

RealEstate

«rdfsClass»

A [Location](#) (and an Asset) that has been defined or constructed for the purpose of ownership

ReceivingAccount

«rdfsClass»

An [EventParticipant](#) where a [FinancialAccount](#) receives money

Recipient

«rdfsClass»

An [PartyInCommunication](#) where the communicating party is the recipient of a message

Reconnaissance

«rdfsClass»

An IntelligenceOperation where an Entity or Event is observed for the purposes of planning

recurrentPeriodRepresentation

«datatypeProperty»

A modified ISO8601 [format](#) (hence use of xsd:string) where elements of the time/date are blanked with ?? characters.

The purpose of this is to be able to specify e.g. a time of day with no date - i.e. all recurrences of that time of day.

RecurringPeriod

«rdfsClass»

A [PeriodOfTime](#) that is composed of regularly recurring periods of time.

ISO8601 is used to represent these periods (*recurrentPeriodRepresentation* property), using the blanking technique (e.g. blanking the date to give a daily time). The recurrence can be limited using the *startsIn* and *endsIn* properties
Examples:

Every Tuesday from 28th August 2018 to 2 October 2018

13:00 to 14:00 on every day from 27th June 2016 to 2 October 2024

ReferenceNumber

«rdfsClass»

An Identifier used to uniquely identify a document.

RegionalConstituency

«rdfsClass»

The people residing (or entitled to reside / vote in) a particular Location.

RegionOfCountry

«rdfsClass»

A [Location](#) that is a general subdivision of a Country

e.g. cities, towns, counties, states, etc.

RegionOfWorld

«rdfsClass»

A [Location](#) that is a general subdivision of the world - e.g. continents, sub-continents, economic areas, etc.

Regions of the world may sometimes be spatially separated (e.g. economic areas)

RegistrationNumber

«rdfsClass»

The registration number for the respective [Vehicle](#) (with or without spaces).

For road vehicles this is often referred to as the VRN (vehicle registration number).

For aircraft the tail number is often used as a means of identification and/or registration.

relationship

«objectProperty»

A relationship represents an association between two Things

Religion

«rdfsClass»

An [Entity](#) whose extent is all the people (PersonState) who share the same belief.

Religions may be part of other religions - e.g. Christianity being made up of Catholic, Protestant, Orthodox, etc.

1. The religion 'practiced' by the respective Person..
2. The religion may be qualified to identify a particular sect.
3. The Metropolitan Police standard [F] shall be used as the reference data standard

ReligionState

«rdfsClass»

A temporal state of an [Religion](#)

ReligiousOrganisation

«rdfsClass»

An [Organisation](#) formed around a particular religious belief

RentalAgreement

«rdfsClass»

An [EndToEndAgreement](#) where one Party rents an [Entity](#) to another

RentalProvider

«rdfsClass»

A [PartyToAgreement](#) where a [ResponsibleActor](#) provides an [Entity](#) to rent

Rented

«rdfsClass»

An [EventParticipant](#) where an [Entity](#) is rented

Renter

«rdfsClass»

A [PartyToAgreement](#) where a [ResponsibleActor](#) rents an [Entity](#) from another party

ReplaceablePart

«rdfsClass»

An [Element](#) which is a part of a whole that can be replaced (possibly multiple times) without altering its overall identity. It is coincident with any Element which fulfils its purpose, role or function to the whole.

The identity of a ReplaceablePart can survive periods when no Element fulfils its purpose.

A RepleacablePart does not survive the destruction of the whole it is a part of, though an Element that fulfils the RepleacablePart may do.

Examples include:

- Tyres of a car
- CEO of a company
- Simcard in a mobile handset
- A pump in an oil refinery system

Report

«rdfsClass»

A WorkOfDocumentation that offers one or more persons view on a particular topic.

Representation

«rdfsClass»

An [ClassOfEntity](#) whose instances are representations of things in the real world

Examples:

- * an identifier used for a Person
- * a document (though not an individual copy of a document)

representationValue

«datatypeProperty»

The exemplar text, number, etc. of a [Representation](#)

RequestDocument

«rdfsClass»

A [WorkOfDocumentation](#) that requests permission

RequestForQuotation

«rdfsClass»

A [TradeEvent](#) where one or more Entities are required

Reservation

«rdfsClass»

[Rights](#) where the rights holder has reserved some future event - e.g. hotel reservation, travel reservation, delivery, etc.

residesIn

«objectProperty»

A Relationship between a [ResponsibleActorState](#) and a [Location](#) at which they registered as a resident.

Note this is legal / administrative construct. See also StaysAt

respectfulOf

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one respects the other.

Note: this should not be considered a bi-directional relationship. Just because one person respects another person does not necessarily mean the feeling is reciprocated.

ResponsibleActor

«rdfsClass»

An [Actor](#) that can be held legally responsible for their actions - generally a [Person](#) or an Organisation. This also includes Posts which may be filled by people or organisations.

Note: there are many situations (mostly due to the law) where a Person or [Organisation](#) can be the subject of a [relationship](#) or [Event](#) interchangeably. Hence the need for a parent class in the IES ontology.

ResponsibleActorState

«rdfsClass»

A temporal state of a ResponsibleActor

Note: this is the superclass of [ResponsibleActor](#) (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states.

Retailer

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [TradeEvent](#) as a retailer

Rights

«rdfsClass»

An [Asset](#) which encompasses the legal rights to an [Element](#)

Strictly speaking, all property (therefore most Assets) are a question of rights. No-one actually [owns](#) something, they have a legal right of that thing. In most cases, we can deal with this just using Asset. However in more complex cases, rights can be bought and sold (and of course owned) to things which aren't generally viewed as assets - e.g. paying a delivery cost, owning the leasehold to a property, etc.

Examples:

- * The performance rights to a Song
- * The rights to purchase currency at a pre-agreed rate in the future

rightsTo

«objectProperty»

A Relationship between [Rights](#) and the [Element](#) to which the Rights apply

Example:

- * Rights to travel on a particular service (a travel reservation)
- * Rights to a parcel of land

RoadVehicle

«rdfsClass»

A [Vehicle](#) that travels by road (surprisingly enough)

RoomNumber

«rdfsClass»

A Geoidentity used to identify a PartOfFacility

Sailing

«rdfsClass»

A [TravelService](#) by sea

SatellitePhoneHandset

«rdfsClass»

A CommunicationsDevice that communicates via satellite.

scheduledArrivalPort

«objectProperty»

The [Port](#) from which the [TravelService](#) is scheduled to arrive

scheduledArrivalTime

«datatypeProperty»

The date/time on which the service was scheduled to arrive

The [format](#) of this [attribute](#) is a restricted string based upon the ISO 8601 Extended Format.

scheduledDeparturePort

«objectProperty»

The [Port](#) from which the [TravelService](#) is scheduled to depart

scheduledDepartureTime

«datatypeProperty»

The date/time on which the service was scheduled to depart

The [format](#) of this [attribute](#) is a restricted string based upon the ISO 8601 Extended Format.

SchemaObject

«rdfsClass»

A DataObject that is a standardised plan or outline for something.

e.g. Bristol City Street Furniture Schema

schemeMasteredIn

«objectProperty»

A [relationship](#) that asserts a [NamingScheme](#) is owned by a [System](#) that is the master for its names / identifiers - i.e. the uniqueness of the name/identifier is limited to the system.

schemeOwner

«objectProperty»

A [relationship](#) that asserts a RepresentationScheme is governed and used by a [ResponsibleActor](#).

ScreenName

«rdfsClass»

A display Name used by the account which may be non-unique, and may not be the same as the username

SeatNumber

«rdfsClass»

The number of the seat that the Passenger should be travelling in. Whilst this partially identifies the Passenger, there is no guarantee that people have not swapped seats.

SecurityLabel

«rdfsClass»

A SecurityLabel may be assigned at the statement (triple) level or to the entire ExchangePayload. They provide a mechanism to specify access restrictions and handling instructions for specific triples.

Note: In any given IES exchange, a [SecurityLabel](#) must be applied to the ExchangePayload. Individual SecurityLabels at the statement level are used to indicate where individual statements deviate from the overall payload SecurityLabel

Sender

«rdfsClass»

An [PartyInCommunication](#) where the communicating party is the sender of a message

SendingAccount

«rdfsClass»

An [EventParticipant](#) where a [FinancialAccount](#) sends money

SerialNumber

«rdfsClass»

An Identifier for Device that has been assigned at manufacture.

Example Value:

123ABC456DEF

ServiceName

«rdfsClass»

The Name of the OnlineService

This should not be confused with a webpage (see the [Webpage](#) entity type). The Online Service may be provided via a webpage.

ServiceProvider

«rdfsClass»

The role of an [Organisation](#) in providing a Service (e.g. a TeleConference)

ServiceUser

«rdfsClass»

A temporal state of a ResponsibleActor

Note: this is the superclass of [ResponsibleActor](#) (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states.

Ship

«rdfsClass»

A [Vehicle](#) that travels on water

siblingOf

«objectProperty»

A Relationship between two [Person](#) Entities that indicates one is the sibling of the other

Signatory

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) ratifies an agreement

SIMCard

«rdfsClass»

A CommunicationsDevice that holds data about a IMSI

SimilarEntities

«rdfsClass»

An [ClassOfEntity](#) whose instances are considered similar

similarEntity

«objectProperty»

An [rdf:type relationship](#) that asserts an [Entity](#) is similar to other Entities that are also related to the same [SimilarEntities](#) class.

SMS

«rdfsClass»

A Message (text and images) sent over a cellular network

socialisesAt

«objectProperty»

A [visits relationship](#) between a [ResponsibleActor](#) and a [Location](#) they socialise in.

Note: more often than not, this will be a statement of occasional socialising, so the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, [inLocation](#) would generally be used.

Socialising

«rdfsClass»

A temporal state of a ResponsibleActor

Note: this is the superclass of [ResponsibleActor](#) (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states.

SocialMediaPage

«rdfsClass»

An OnlineArtefact that is user-created - e.g. a facebook timeline, twitter feed, etc.

SocialMediaPost

«rdfsClass»

An OnlineArtefact that is part of a SocialMediaPage

Note: the content may be created by a different account to the one which created the [SocialMediaPage](#)

SocialServicesIdentifier

«rdfsClass»

An NationalldentityNumber used for managing a citizen's access to social services

In UK, this would be an NI number, in the US, it would be the social security number

Software

«rdfsClass»

A [ClassOfAsset](#) that is programmatic instructions that control or affect the behaviour of an [Asset](#) (usually a Device).

Note that [Software](#) is a class, as the same Software may be installed in multiple locations.

spokenLanguage

«objectProperty»

The language in which someone is proficient

Stalking

«rdfsClass»

A CriminalActivity involving the malicious surveillance of a person, often in threatening manner

StandardMeasure

«rdfsClass»

A Measure specified in the International system of quantities

StandardMeasureValue

«rdfsClass»

A MeasureValue that is expressed in SI units

startsIn

«datatypeProperty»

An xsd:DateTime for the start of the period

State

«rdfsClass»

A temporal state of an Element

Note: IES requires that any [State](#) must be related to its whole-life Element. In some cases, the identity of the whole-life element may be unknown (or of unknown type) but a whole-life element must still be created and related to the State.

Note: When Events are decomposed into temporal parts, those parts are often Events themselves. The exception is when the temporal part is arbitrary (e.g. the 11th second of a meeting) when a State should be used. These are rare though.

statementLabel

«objectProperty»

A link from an [rdf.Statement](#) (see W3C guidance on RDF reification) to the [SecurityLabel](#) that provides the access control for that statement.

Note: All exchanges should have a default [payloadLabel](#) specified. The use of [statementLabel](#) is required when individual statements deviate from the default in terms of their access control.

staysAt

«objectProperty»

A [visits relationship](#) between a [ResponsibleActor](#) and a [Location](#) where the person stays at the Location. This should not be confused with [residesIn](#) which is an assertion of legal residence.

Note: more often than not, this will be a statement of regular/occasional stays, so the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, [inLocation](#) would generally be used.

StoreCard

«rdfsClass»

A PaymentArtefact issued by a retail Organisation that can only be used to pay for items supplied by that Organisation.

strengthOfInterest

«datatypeProperty»

StrengthOfInterest is used in its most general sense and is limited to the following values:

- Weak
- Strong
- Fanatical

Stuff

«rdfsClass»

An element that is highly dissective or generally uncountable. For example, sand, water, gas and coffee.

SubjectOfInterest

«rdfsClass»

A [State](#) during which an [Element](#) is of interest to an investigation

SubjectOfOperation

«rdfsClass»

An EventParticipant where an [Entity](#) is the subject of an OperationalEvent

Examples:

- * person / organisation under investigation
- * recon'd location
- * subject of surveillance

successorTo

«objectProperty»

An [after relationship](#) linking two Elements where one ends and the other comes after as a replacement

Summit

«rdfsClass»

A PoliticalEvent where senior leaders assemble to discuss and agree policy or treaties

Supplier

«rdfsClass»

An [EventParticipant](#) where a [ResponsibleActor](#) participates in a [TradeEvent](#) as a supplier

supplierTo

«objectProperty»

A [worksFor relationship](#) where the supplier (domain) is contracted to deliver goods or services to client (range)

Surname

«rdfsClass»

A PersonName that is their inherited or married name

Note:

A surname will often be applied to a [State](#) of the Person, as names tend to change over time

Surveillance

«rdfsClass»

An IntelligenceOperation that involves the continued observation of a Person or Location

SurveillanceWarrant

«rdfsClass»

Relates a [Surveillance Event](#) to a Document that is the warrant for the Surveillance

System

«rdfsClass»

An [Device](#) comprising software and hardware brought together for a purpose. The Devices may or may not be removable / replaceable

SystemState

«rdfsClass»

A temporal state of a [System](#)

TargetLocation

«rdfsClass»

Relates an [MilitaryAttack](#) to the location specified for the attack

Team

«rdfsClass»

An [Organisation](#) formed around a particular pursuit or task

TeleConference

«rdfsClass»

An InteractiveCommunication where 2 or more parties communicate using audio

TelephoneAccount

«rdfsClass»

A [CommunicationsAccount](#) that is used to administer the use of one or more telephone numbers.

TelephoneCountryCode

«rdfsClass»

The dialing code for a country as specified by the ITU

TelephoneNumber

«rdfsClass»

A CommunicationsIdentifier that enables calls to be directed to particular handset

TelephoneNumberRange

«rdfsClass»

A CommunicationsIdentifierRange of TelephoneNumbers

Temperature

«rdfsClass»

The Measure of the thermodynamic temperature of an Element

Tendency

«rdfsClass»

A DispositionalClass where all the instances share the same tendency

Example: People who tend to violence

TerrorAttack

«rdfsClass»

A CriminalActivity that is politically motivated and designed to cause terror

TerroristOrganisation

«rdfsClass»

An [OrganisationState](#) that is assessed to be conducting acts of terror to achieve a political or religious goal.

TheatreTicket

«rdfsClass»

An EntertainmentTicket for a theatre show

Thing

«rdfsClass»

A rdfs:Resource which is a real or possible world 'thing'.

Thing and its immediate subclasses are too broad a set of concepts to ever need to instantiate directly.

EXAMPLES:

- An instance of a class (element)
- A class (class of element)

Ticket

«rdfsClass»

Documented authority (paid-for or otherwise) entitling the bearer to some specified activity.

ticketArrivalLocation

«objectProperty»

The arrival location as stated on the ticket.

ticketDepartureLocation

«objectProperty»

The departure location as stated on the ticket.

TicketUsedInCheckIn

«rdfsClass»

An [EventParticipant](#) where a Ricket is used in a [CheckIn](#) event

e.g. a London Underground ticket being used at a barrier, or a concert ticket being scanned on arrival at the venue

TimeBoundedClass

«rdfsClass»

A [ClassOfElement](#) whose instances all begin and end within the bounds specified for the Class. In other words, a class that is defined by the temporal extent of its members.

Note, if either the begin or end bound are missing, it is taken to be indeterminate. For example, if the begin bound is 1st Jan 2018, the class has instances that all started after that date, and their end is irrelevant.

Example:

Everything that began and ended in the year 1900 - this would include all activities that took place within that year (but did not extend beyond it), everything created and destroyed within that time, and everything that was born and died during the period.

Title

«rdfsClass»

The title of the respective document.

TOID

«rdfsClass»

TOIDs (TOpographic IDentifiers) are unique and persistent identifiers created and managed by Ordnance Survey Great Britain to identify topographic objects in OS datasets.

Example: the [TOID](#) for the Tower of London is osgb1000006032892.

TradeAgreement

«rdfsClass»

A PoliticalAgreement that sets tariffs and standards for trade between nations.

TradedAsset

«rdfsClass»

An [EventParticipant](#) where an [Asset](#) is participant in a TradeEvent

This could be a specific Asset (e.g. serial numbered item) being offered for sale (as opposed to a type of Asset) or an Asset being delivered, withdrawn from sale, etc.

tradedItemType

«objectProperty»

The type of entity involved in the TradeEvent

e.g. "Dyson Animal Mk3"

Note: there may be no more than one itemType for a given [TradeEvent](#) - i.e. a new TradeEvent must be instantiated for each [ClassOfEntity](#) sold, offered, delivered, etc.

Note: was "ItemType" in IES 3.2

TradeEvent

«rdfsClass»

An [Event](#) where something is offered, bought or exchanged

TrainTicket

«rdfsClass»

A [Ticket](#) that is used to travel by rail

TrainTravel

«rdfsClass»

A [TravelService](#) by rail

transferValue

«objectProperty»

A relationship from a MoneyTransfer to the AmountOfMoney transferred.

Transit

«rdfsClass»

A [Movement](#) that is an individual transportation - e.g. an individual flight, sailing, etc.

TravelBooking

«rdfsClass»

The Purchase of planned travel arrangements.

3. Travel Bookings may include bookings for Flights, Ferry Crossings, Train Journeys (i.e Travel Services), and also Hotels, Hire Cars etc. when these have been modelled. These will be included on the booking as relationships to the appropriate other entities.

TravelCard

«rdfsClass»

A PaymentArtefact that permits travel on public transport

TravelLeg

«rdfsClass»

An EventParticipant in which a [Entity](#) travels. That travel may be part of a Journey.

The [TravelLeg](#) may be part of a [Journey](#) (i.e. the Journey has one or more legs).

TravelReservation

«rdfsClass»

A [TradedAsset](#) where the asset is a [Reservation](#)

TravelService

«rdfsClass»

A transportation service, often provided as a public service – e.g. a scheduled flight, rail journey, ferry crossing, etc.

TravelServiceIdentifier

«rdfsClass»

The Identifier for the respective Travel Service – this is how humans would usually refer to the service

Note however that often this identifier does not, on its own, uniquely identify any given instance of a travel service – e.g. [Flight](#) BA0010 is reused on a daily basis to refer to the flight between London Heathrow and Los Angeles. As such, to uniquely identify any given instance of a Travel Service you would need to combine it with other attributes – typically departure date/time.

For Flights, this will be the Flight Number.

For Ferry Sailings this is typically the name of the vessel that is scheduled to [make](#) that sailing and, when combined with the departure date/time can be used to uniquely identify that sailing. Note that if the actual vessel that makes the sailing is different to that which was scheduled (e.g. as result of the scheduled vessel being out of commission), this identifier is not modified.

TravelTicket

«rdfsClass»

A Ticket that permits travel on a particular route or set of routes

TravelVisa

«rdfsClass»

An IdentityDocument, usually attached to a Passport, which allows a Person to remain in a Country for a set period of time.

Treaty

«rdfsClass»

An [EndToEndAgreement](#) that is between Nations and subject to international law

trusts

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities where one [trusts](#) the other.

Note: this should not be considered a bi-directional relationship. Just because one person trusts another person does not necessarily mean the feeling is reciprocated.

UN_LOCODE

«rdfsClass»

A Geoidentity that is a United Nations Code for Trade and Transport Locations

UnitOfMeasure

«rdfsClass»

A ClassOfMeasureValue that is used to quantify a Measure on a standard scale

UpdateAccount

«rdfsClass»

An AccountAdminEvent where an Account is modified

upperBound

«objectProperty»

A [relationship](#) a MeasureRange to the Measure that is its upper bound

uriScheme

«datatypeProperty»

URI scheme is the top level of the uniform resource identifier (URI) naming structure. All URIs and absolute URI references are formed with a scheme name, followed by a colon character (":"), and the remainder of the URI called the *scheme-specific part*.

uriSchemeName

«datatypeProperty»

URI scheme is the top level of the uniform resource identifier (URI) naming structure. All URIs and absolute URI references are formed with a scheme name, followed by a colon character (":"), and the remainder of the URI called the scheme-specific part.

A list of official IANA-registered URI schemes can be found at:

http://en.wikipedia.org/wiki/URI_scheme#OfficialIANA-registered_schemes

URL

«rdfsClass»

An Identifier for a WebResource

Username

«rdfsClass»

The Identity for an account registered with a computer-network-based service e.g. the internet.

An email address can be used as an online identifier for a specific domain (like Facebook). Where this is the case it can be considered to be both an instance of an email address and an instance of a username for an online identity.

userOf

«objectProperty»

A hasAccessTo relationship between a [ResponsibleActor](#) and an [Asset](#) they use.

Note: more often than not, this will be a statement of occasional use, so the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous use, but generally this would be modelled with the appropriate type of [Event](#) and EventParticipants

usesServicesAt

«objectProperty»

A [visits relationship](#) between a [ResponsibleActor](#) and a [Location](#) where they use services - e.g. banking, shopping, etc..

Note: more often than not, this will be a statement of regular/occasional use, so the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState. In rarer occasions, it may be used to

highlight a single, continuous visit, but in that case, [inLocation](#) would generally be used.

UsuallyParked

«rdfsClass»

A temporal state of a [Vehicle](#) which is the fusion of all its [Parked](#) states

Examples:

- * A car that is usually parked in Acacia Avenue
- * A ship that regularly docks at Dover
- * An aircraft that regularly resides in a private hangar

vafNumber

«datatypeProperty»

The Visa Application Form (VAF) number.

validFromDate

«objectProperty»

The date that the respective [IdentityDocument](#) or [Ticket](#) is valid from.

validToDate

«objectProperty»

The date that the respective [IdentityDocument](#) or [Ticket](#) is valid to.

ValueInAmperes

«rdfsClass»

A StandardMeasureValue for ElectricCurrent in amperes

ValueInCandela

«rdfsClass»

A StandardMeasureValue for LuminousIntensity in candela

ValueInKelvin

«rdfsClass»

A StandardMeasureValue for Temperature in kelvin

ValueInKilograms

«rdfsClass»

A StandardMeasureValue for Mass in kilograms

ValueInMetres

«rdfsClass»

A StandardMeasureValue for Length in metres

ValueInMoles

«rdfsClass»

A StandardMeasureValue for AmountOfSubstance in moles

ValueInSeconds

«rdfsClass»

A StandardMeasureValue for Duration in seconds

Vehicle

«rdfsClass»

An Asset that is a means of transportation – e.g. car, aircraft, ship.

VehicleController

«rdfsClass»

A [PersonInTransit](#) where the [Person](#) is in control of the Transit

e.g. driver of a car, pilot of plane, captain of a ship

VehicleIdentificationNumber

«rdfsClass»

VIN – [Vehicle](#) Identification Number.

For road vehicles this is often directly referred to as the VIN, but this can also be applied in a generic fashion to other vehicle types.

ISO 3833 for road vehicles (17-digits)

VehicleName

«rdfsClass»

The Name of the respective [Vehicle](#) (if applicable) – often this only applies to ships/boats.

Examples:

The Saucy Sue

The Bountiful Blumpkin

VehicleState

«rdfsClass»

A temporal state of a [Vehicle](#)

VehicleUsed

«rdfsClass»

An EventParticipant in which a [Vehicle](#) is used to transport Entities

venueStatedOnTicket

«objectProperty»

The venue of the event the [Ticket](#) is for.

Note: venues change, and the actual event may not run at the stated venue.

VersionNumber

«rdfsClass»

The number or code that identifies the version of something.

versionOf

«objectProperty»

A relationship between a VersionOfDocument and the WorkOfDocumentation it is a version of.

VersionOfDocument

«rdfsClass»

A [WorkOfDocumentation](#) and a [TimeBoundedClass](#) that is a versionOf a WorkOfDocumentation

Victim

«rdfsClass»

An EventParticipant where a [ResponsibleActor](#) is the victim of a [CriminalActivity](#)

VideoConference

«rdfsClass»

A [TeleConference](#) where parties communicate over video (with audio)

Visiting

«rdfsClass»

A temporal state of a ResponsibleActor

Note: this is the superclass of [ResponsibleActor](#) (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states.

visits

«objectProperty»

A Relationship and in [inLocation](#) between a [ResponsibleActor](#) and a [Location](#) they visit.

Note: more often than not, this will be a statement of occasional visiting, so the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, inLocation would generally be used.

VoiceCall

«rdfsClass»

An InteractiveCommunication by voice

VoipAccount

«rdfsClass»

A [TelephoneAccount](#) where the voice communication is over IP. This may also include video communication, screen sharing, etc.

VotingAttendee

«rdfsClass»

When a [Government](#) has voting rights at a [Summit](#)

War

«rdfsClass»

A [Disagreement](#) where at least one party has declared war

Warrant

«rdfsClass»

An [AuthorisationDocument](#) that provides legal permission, usually for something that would be considered illegal or intrusive otherwise

Warranty

«rdfsClass»

An EndToEndAuthorisation where the process involves legal warrants.

wasAuthorisedBy

«objectProperty»

A [relationship](#) to the [Organisation](#) that was the authorising agency for the [IdentityDocument](#)

WeaponLocation

«rdfsClass»

Relates an [MilitaryAttack](#) to the location of the attacking weapon system

Webpage

«rdfsClass»

An OnlineArtefact that is a page on the web.

WebResource

«rdfsClass»

Any http presence on the web

WebResourceState

«rdfsClass»

A temporal state of an [WebResource](#)

What3words

«rdfsClass»

A Geoidentity that is a what3words Location specifier

(see what3words.com)

WinningCandidate

«rdfsClass»

The [Person](#) who won the [Election](#)

WithdrawFromSale

«rdfsClass»

A [TradeEvent](#) where a type of entity is withdrawn from sale

Witness

«rdfsClass»

A [Person](#)'s role as a witness in a trial

WorkOfDocumentation

«rdfsClass»

A [Representation](#) that is the general case of a document - i.e. "War and Peace" as opposed to "My copy of [War](#) and Peace"

worksAt

«objectProperty»

A [visits relationship](#) between a [ResponsibleActor](#) and a [Location](#) they work in.

Note: more often than not, this will be a statement of occasional presence, so the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous presence, but in that case, [inLocation](#) would generally be used.

worksFor

«objectProperty»

A Relationship between a [ResponsibleActor](#) (range - employer) and a [ResponsibleActorState](#) (domain- employed) that indicates one works for the other.

In the case where the work is occasional / ad-hoc (i.e. there isn't an ongoing work contract) then the instance of the

ResponsibleActorState should also be an instance of [DiscontinuousState](#)

worksWith

«objectProperty»

A Relationship between two [ResponsibleActor](#) Entities that indicates one works with the other.

In the case where the work is occasional / ad-hoc (i.e. there isn't an ongoing job) then the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState

Note: this [relationship](#) should only be used when it is not known who the two people work for (in which case create an organisation and used employedBy) or when the working relationship is rather loose - e.g. in cases of criminal cooperation.

worshipsAt

«objectProperty»

A [visits](#) [relationship](#) between a [ResponsibleActor](#) and a [Location](#) where they undertake religious worship

Note: more often than not, this will be a statement of regular/occasional worship, so the instance of the [ResponsibleActorState](#) should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, [inLocation](#) would generally be used.

pluriverse

«ies:Element»

An instance of Element which is the sum of all possible worlds including everything in those worlds. Put another way, this is everything in our world and everything in all possible worlds.

rdf:Statement

«uriReferenceNode»

rdf:type

«uriReferenceNode»

rdfs:Class

«uriReferenceNode»

rdfs:Resource

«uriReferenceNode»

rdfs:subClassOf

«uriReferenceNode»

xsd:dateTime

«uriReferenceNode»

xsd:float

«uriReferenceNode»

Annex A - RDF Schema

```
# baseURI: http://ies.data.gov.uk/ontology/ies4
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix sh: <http://www.w3.org/ns/shacl#> .
@prefix sparx: <http://data.sparxsystems.com#> .
@prefix ies: <http://ies.data.gov.uk/ontology/ies4#> .
<http://ies.data.gov.uk/ontology/ies4> rdf:type owl:Ontology .
ies:Accent rdf:type rdfs:Class .
ies:Accent sparx:guid "{63409D9A-1779-444a-BF04-23C03B3B2F72}" .
ies:Accent rdfs:comment "A Characteristic whose members are people who all share the same national or regional accent" .
ies:Accent rdfs:subClassOf ies:Characteristic .
ies:Account rdf:type rdfs:Class .
ies:Account sparx:guid "{31BFE794-924E-44e3-942E-ADC9ED19FB41}" .
ies:Account rdfs:comment "An Entity that is the collection of all transactions between a provider and a customer" .
ies:Account rdfs:subClassOf ies:Entity .
ies:Account rdfs:subClassOf ies:AccountState .
ies:AccountAdminEvent rdf:type rdfs:Class .
ies:AccountAdminEvent sparx:guid "{19E90CA4-F0EB-4245-826E-EDC278642B41}" .
ies:AccountAdminEvent rdfs:comment "A BusinessEvent that an Account participates in" .
ies:AccountAdminEvent rdfs:subClassOf ies:BusinessEvent .
ies:accountForCard rdf:type owl:ObjectProperty .
ies:accountForCard sparx:guid "{7891E893-560B-4d47-80B4-C78A667767F6}" .
ies:accountForCard rdfs:comment "Relates a BankCard to the FinancialAccount which the card is issued against." .
ies:accountForCard rdfs:subPropertyOf ies:relationship .
ies:accountForCard rdfs:domain ies:BankCard .
ies:accountForCard rdfs:range ies:FinancialAccount .
ies:AccountHolder rdf:type rdfs:Class .
ies:AccountHolder sparx:guid "{C93379F2-6B01-4100-ABFA-BD26098AC1CB}" .
ies:AccountHolder rdfs:comment "A PersonState when they hold an Account" .
ies:AccountHolder rdfs:subClassOf ies:ResponsibleActorState .
ies:AccountInCommunication rdf:type rdfs:Class .
ies:AccountInCommunication sparx:guid "{942FBF46-A7EF-432b-99D0-1E0E3E874C21}" .
ies:AccountInCommunication rdfs:comment "An AccountState (and an EventParticipant) when an Account is involved in communicating. " .
ies:AccountInCommunication rdfs:subClassOf ies:EventParticipant .
ies:AccountInCommunication rdfs:subClassOf ies:CommunicationsAccountState .
ies:AccountNumber rdf:type rdfs:Class .
ies:AccountNumber sparx:guid "{A72F0FF1-88F2-4b36-A2C4-26B4B0698A2C}" .
ies:AccountNumber rdfs:comment "The account number for the respective FinancialAccount." .
ies:AccountNumber rdfs:subClassOf ies:Identifier .
ies:accountProvider rdf:type owl:ObjectProperty .
ies:accountProvider sparx:guid "{0F9244C3-B2F5-4d8a-AED2-54B7FDAB9578}" .
ies:accountProvider rdfs:comment "The Organisation that provides the FinancialAccount" .
ies:accountProvider rdfs:subPropertyOf ies:relationship .
ies:accountProvider rdfs:range ies:Organisation .
ies:accountProvider rdfs:domain ies:Account .
ies:AccountState rdf:type rdfs:Class .
ies:AccountState sparx:guid "{0BCDB801-1F3B-4496-B04B-95EF545E9445}" .
ies:AccountState rdfs:comment "A temporal state of an Account" .
ies:AccountState rdfs:subClassOf ies:State .
ies:Accused rdf:type rdfs:Class .
ies:Accused sparx:guid "{AA4D8A62A-DC98-410c-80D2-57C98C1E95C0}" .
ies:Accused rdfs:comment "A ResponsibleActors role as the accused in a Prosecution" .
ies:Accused rdfs:subClassOf ies:ActiveEventParticipant .
ies:Accused rdfs:subClassOf ies:ResponsibleActorState .
ies:aCopyOf rdf:type owl:ObjectProperty .
ies:aCopyOf sparx:guid "{22D9054C-AE5C-4afe-99D9-3C9D65C86CB9}" .
ies:aCopyOf rdfs:comment "An rdf:type relationship that asserts a Document is a copy of WorkOfDocumentationNote: Document instances are individual physical documents whereas WorkOfDocumentation is the general case of a document - e.g. War and Peace vs my copy of War and Peace" .
ies:aCopyOf rdfs:subPropertyOf rdf:type .
ies:aCopyOf rdfs:domain ies:IndividualDocument .
ies:aCopyOf rdfs:range ies:WorkOfDocumentation .
ies:ActiveEventParticipant rdf:type rdfs:Class .
ies:ActiveEventParticipant sparx:guid "{3360DCC9-D39B-4280-8872-2FE122240407}" .
ies:ActiveEventParticipant rdfs:comment "An EventParticipant where the participant is actively engaged in the Event.Note: In BORO, EventParticipant would be Involvement and ActiveEventParticipant would be Participation." .
ies:ActiveEventParticipant rdfs:subClassOf ies:EventParticipant .
ies:Actor rdf:type rdfs:Class .
ies:Actor sparx:guid "{B2B15802-9CE9-4a9d-9DE0-8289D8474E9B}" .
ies:Actor rdfs:comment "An Entity that is capable of performing functions - i.e. actively participating in an Event." .
ies:Actor rdfs:subClassOf ies:Entity .
ies:Actor rdfs:subClassOf ies:ActorState .
ies:ActorState rdf:type rdfs:Class .
ies:ActorState sparx:guid "{7ED8BC7C-A85F-4ed5-AC6F-D640F2DF4B7B}" .
ies:ActorState rdfs:comment "A temporal state of an Actor" .
ies:ActorState rdfs:subClassOf ies:State .
ies:Address rdf:type rdfs:Class .
ies:Address sparx:guid "{C90267B5-77A3-4b79-BD0D-7C50C3F4C333}" .
ies:Address rdfs:comment "A Location that can be specified by a postal address" .
ies:Address rdfs:subClassOf ies:RealEstate .
ies:AdministeredAccount rdf:type rdfs:Class .
ies:AdministeredAccount sparx:guid "{D779F547-C1FB-4d48-9BB8-CB37B9D2F82C}" .
ies:AdministeredAccount rdfs:comment "An EventParticipant where a FinancialAccount is administered" .
ies:AdministeredAccount rdfs:subClassOf ies:EventParticipant .
ies:after rdf:type owl:ObjectProperty .
ies:after sparx:guid "{FA4ADF04-16DA-4b5c-AE9A-6AB8CD07DCDB}" .
ies:after rdfs:comment "A relationship linking two Elements where one ends before the other starts" .
ies:after rdfs:subPropertyOf ies:relationship .
ies:after rdfs:domain ies:Element .
ies:after rdfs:range ies:Element .
ies:AgreementExecution rdf:type rdfs:Class .
ies:AgreementExecution sparx:guid "{93F71FAF-AEF4-4e41-8CEB-FC6447B20428}" .
ies:AgreementExecution rdfs:comment "An AgreementStage which includes all the ongoing activities that conform to the agreement reached" .
ies:AgreementExecution rdfs:subClassOf ies:AgreementStage .
ies:AgreementName rdf:type rdfs:Class .
ies:AgreementName sparx:guid "{7A750064-E711-4871-AFC3-39057342FB9E}" .
ies:AgreementName rdfs:comment "A Name that is used to refer to an EndToEndAgreement." .
ies:AgreementName rdfs:subClassOf ies:Name .
ies:AgreementStage rdf:type rdfs:Class .
```

ies:AgreementStage sparx:guid "{422B4F1C-DA90-400b-8FFD-43C90B4F10F4}" .
 ies:AgreementStage rdfs:comment "An Event which is part of an EndToEndAgreement" .
 ies:AgreementStage rdfs:subClassOf ies:Event .
 ies:Aircraft rdf:type rdfs:Class .
 ies:Aircraft sparx:guid "{01A64A84-7A14-45a5-AAF2-F1AA614D5F30}" .
 ies:Aircraft rdfs:comment "A Vehicle that travels by air" .
 ies:Aircraft rdfs:subClassOf ies:Vehicle .
 ies:Airport rdf:type rdfs:Class .
 ies:Airport sparx:guid "{82E3793F-D001-40ca-927c-7A6FEF913503}" .
 ies:Airport rdfs:comment "A Port used for air travel" .
 ies:Airport rdfs:subClassOf ies:Port .
 ies:AllHaveCharacteristic rdf:type owl:ObjectProperty .
 ies:allHaveCharacteristic sparx:guid "{81A1E70D-6ADB-4843-BCA6-C0A710E7716B}" .
 ies:allHaveCharacteristic rdfs:comment "An rdfs:subClassOf relationship that asserts that all instances of a ClassOfElement share a particular Characteristic or Measure.g. all London buses being red, all heavyweight boxers weighing more than 200lbs" .
 ies:allHaveCharacteristic rdfs:subPropertyOf ies:relationship .
 ies:allHaveCharacteristic rdfs:subPropertyOf rdfs:subClassOf .
 ies:allHaveCharacteristic rdfs:domain ies:ClassOfElement .
 ies:allHaveCharacteristic rdfs:range ies:Characteristic .
 ies:allHaveDisposition rdf:type owl:ObjectProperty .
 ies:allHaveDisposition sparx:guid "{6F8504E0-E03C-43fa-AA81-C3341CA551E3}" .
 ies:allHaveDisposition rdfs:comment "An rdfs:subClassOf relationship that asserts that all instances of a ClassOfElement share a dispositione.g. all Eurofighters being cable of Mach 2" .
 ies:allHaveDisposition rdfs:subPropertyOf ies:relationship .
 ies:allHaveDisposition rdfs:subPropertyOf rdfs:subClassOf .
 ies:allHaveDisposition rdfs:range ies:DispositionalClass .
 ies:allHaveDisposition rdfs:domain ies:ClassOfElement .
 ies:Alliance rdf:type rdfs:Class .
 ies:Alliance sparx:guid "{3D83E15F-ACAB-48e4-8C7B-84580807E06F}" .
 ies:Alliance rdfs:comment "An Organisation made up of allies - these could be people or organisations, and the alliance may be quite loose." .
 ies:Alliance rdfs:subClassOf ies:Organisation .
 ies:alliedTo rdf:type owl:ObjectProperty .
 ies:alliedTo sparx:guid "{7F818F57-2C3B-4629-8EEC-F5F8310AE655}" .
 ies:alliedTo rdfs:comment "A Relationship between two ResponsibleActor Entities where one is allied to the other." .
 ies:alliedTo rdfs:subPropertyOf ies:relationship .
 ies:alliedTo rdfs:range ies:Alliance .
 ies:alliedTo rdfs:domain ies:ResponsibleActorState .
 ies:allocatedSeatNumber rdf:type owl:DatatypeProperty .
 ies:allocatedSeatNumber sparx:guid "{518E9B39-58C0-4e89-831D-B6099C3B9892}" .
 ies:allocatedSeatNumber rdfs:comment "The seat number associated with the ticket" .
 ies:allocatedSeatNumber rdfs:subPropertyOf ies:attribute .
 ies:allocatedSeatNumber rdfs:domain ies:Ticket .
 ies:Altitude rdf:type rdfs:Class .
 ies:Altitude sparx:guid "{51B6F4C5-0DA3-437d-9507-385148C2ABCD}" .
 ies:Altitude rdfs:comment "The Length that is the distance above (or below in the case of negative numbers) the surface of the WGS84 spheroid of the respective Location " .
 ies:Altitude rdfs:subClassOf ies:length .
 ies:AmountOfMoney rdf:type rdfs:Class .
 ies:AmountOfMoney sparx:guid "{0DF94DE5-68B7-45b4-A106-A11CE06C31B8}" .
 ies:AmountOfMoney rdfs:comment "A specific amount of a given currency" .
 ies:AmountOfMoney rdfs:subClassOf ies:Asset .
 ies:AmountOfMoney ies:powertype ies:ClassOfAmountOfMoney .
 ies:AmountOfSubstance rdf:type rdfs:Class .
 ies:AmountOfSubstance sparx:guid "{324D0329-1299-45cc-92A5-270134E66512}" .
 ies:AmountOfSubstance rdfs:comment "The Measure of the stoichiometric quantity of substance (usually measured in moles)" .
 ies:AmountOfSubstance rdfs:subClassOf ies:StandardMeasure .
 ies:ancestorOf rdf:type owl:ObjectProperty .
 ies:ancestorOf sparx:guid "{15388C46-262D-4F70-8F65-83758A5AEAF5}" .
 ies:ancestorOf rdfs:comment "A Relationship between two Person Entities that indicates one is and ancestor of the otherNote: was called relative of in IES 3.x, but was really only about ancestry, so is changed here. " .
 ies:ancestorOf rdfs:domain ies:Person .
 ies:ancestorOf rdfs:range ies:Person .
 ies:ancestorOf rdfs:subPropertyOf ies:familiallyRelatedTo .
 ies:andGroup rdf:type owl:DatatypeProperty .
 ies:andGroup sparx:guid "{1326576A-6240-47b0-AED7-5F3FC4E3884D}" .
 ies:andGroup rdfs:comment "The groups (if any) which the requesting user must be a member of in order to access the item. See the EDH specification for further details.Allowable Values:See EDH Standard" .
 ies:andGroup rdfs:domain ies:SecurityLabel .
 ies:ArbitraryOverlap rdf:type rdfs:Class .
 ies:ArbitraryOverlap sparx:guid "{F8FAFBF60-63D3-42ae-BA6A-54CFD0C036BF}" .
 ies:ArbitraryOverlap rdfs:comment "An Element whose extent is defined by being the shared overlap of two or more Elements" .
 ies:ArbitraryOverlap rdfs:subClassOf ies:Element .
 ies:ArbitraryPeriod rdf:type rdfs:Class .
 ies:ArbitraryPeriod sparx:guid "{68BA678C-DC8A-453e-BFCC-D9FB48339D99}" .
 ies:ArbitraryPeriod rdfs:comment "A PeriodOfTime for which is not delineated by a particular clock period - e.g. not a year, not a month, not a day, not an hour, etc. Instead it is one which is most clearly specified in terms of start and end that are ParticularPeriods." .
 ies:ArbitraryPeriod rdfs:subClassOf ies:PeriodOfTime .
 ies:areaOfCoverage rdf:type owl:ObjectProperty .
 ies:areaOfCoverage sparx:guid "{C6BA7464-C00E-4ff6-AE7B-9CE9D4E08FDF}" .
 ies:areaOfCoverage rdfs:comment "The area over which the TravelCard is valid Examples:London - Zone 1London - All Zones" .
 ies:areaOfCoverage rdfs:subPropertyOf ies:relationship .
 ies:areaOfCoverage rdfs:domain ies:TravelCard .
 ies:areaOfCoverage rdfs:range ies:Location .
 ies:Arrest rdf:type rdfs:Class .
 ies:Arrest sparx:guid "{D807184C-2F7B-4a5d-AA8F-7EE7B5A04F94}" .
 ies:Arrest rdfs:comment "A LawEnforcement Event where a Person is arrested" .
 ies:Arrest rdfs:subClassOf ies:LawEnforcement .
 ies:Arrest rdfs:subClassOf ies:OperationalEvent .
 ies:Arrested rdf:type rdfs:Class .
 ies:Arrested sparx:guid "{8870A3B5-32FA-4aaF-86F1-7DB674585F3A}" .
 ies:Arrested rdfs:comment "A Persons role when arrested" .
 ies:Arrested rdfs:subClassOf ies:ActiveEventParticipant .
 ies:Arrested rdfs:subClassOf ies:PersonState .
 ies:ArrestingOfficer rdf:type rdfs:Class .
 ies:ArrestingOfficer sparx:guid "{5B3F41C3-91CC-442f-A4F8-615E77751734}" .
 ies:ArrestingOfficer rdfs:comment "A Persons role as arresting officer" .
 ies:ArrestingOfficer rdfs:subClassOf ies:ActiveEventParticipant .
 ies:ArrestingOfficer rdfs:subClassOf ies:PersonState .
 ies:Arrival rdf:type rdfs:Class .
 ies:Arrival sparx:guid "{F2C03DA3-B554-4bde-A0DE-EFB5BEE19C56}" .
 ies:Arrival rdfs:comment "A BoundingState that marks the end of a Movement eventThe date/time of the arrival can be specified using the inPeriod relationship" .
 ies:Arrival rdfs:subClassOf ies:BoundingState .
 ies:assessed rdf:type owl:ObjectProperty .
 ies:assessed sparx:guid "{669E3CD0-CD9D-496c-A711-ECDE3F589012}" .
 ies:assessed rdfs:comment "An owl:objectProperty that links an AssesToBeTrue to the rdfs:Resource that is assessed to be true." .
 ies:assessed rdfs:domain ies:AssessToBeTrue .

ies:assessed rdfs:range rdfs:Resource .
 ies:assessedToBeTheSameAs rdf:type owl:ObjectProperty .
 ies:assessedToBeTheSameAs sparx:guid "{6A1C6C65-D671-4ea3-9184-044AE2A802CF}" .
 ies:assessedToBeTheSameAs rdfs:comment "A relationship that asserts two Things that may have been previously judged to be different are in fact the same thing. WARNING: by the same we mean they occupy the same space for the same period of time - i.e. not two different things in the same place at different times, and not the same physical item at two different periods of time. The Identifier and State patterns should do most of what is needed here, and it is extremely rare that this would ever be needed. Do not use unless absolutely necessary. ".
 ies:assessedToBeTheSameAs rdfs:subPropertyOf ies:relationship .
 ies:Assessment rdf:type rdfs:Class .
 ies:Assessment sparx:guid "{E4AB3D9-9978-446f-9C39-4F4C41FB3D45}" .
 ies:Assessment rdfs:comment "An Event where an actor makes a subjective judgement against a thing. This can be a judgement of belief in a thing's possibility, categorisation or other qualitative aspect.Examples include:- Having HIGH confidence that Anne committed the murder.- Assessing a statement made in an internet article as being true or false.- Assessing a house to having an energy performance of B- Assessing the odds of England winning the World Cup as 20-1" .
 ies:Assessment rdfs:subClassOf ies:Event .
 ies:Assessor rdf:type rdfs:Class .
 ies:Assessor sparx:guid "{80F9B97D-2C7F-4978-83A3-BE934DD4E1FF}" .
 ies:Assessor rdfs:comment "An EventParticipant where an Actor assesses something to be true." .
 ies:Assessor rdfs:subClassOf ies:ActiveEventParticipant .
 ies:AssessToBeTrue rdf:type rdfs:Class .
 ies:AssessToBeTrue sparx:guid "{7150208D-002E-45ed-8279-44843F4DA897}" .
 ies:AssessToBeTrue rdfs:comment "An Assessment where a fact is assessed to be true by a Actor (i.e. a Person or Device)An AssessToBeTrue shall have one and only one hmlConfidence attribute (i.e. this is mandatory)" .
 ies:AssessToBeTrue rdfs:subClassOf ies:Assessment .
 ies:Asset rdf:type rdfs:Class .
 ies:Asset sparx:guid "{40231334-5ACC-4dd4-A8C1-05012E2170E0}" .
 ies:Asset rdfs:comment "An Entity that is either man-made (or defined - see Rights) or whose extent is defined in such a way as to specify ownership - e.g. a parcel of real estate" .
 ies:Asset rdfs:subClassOf ies:Entity .
 ies:Asset rdfs:subClassOf ies:AssetState .
 ies:Asset ies:powertype ies:ClassOfAsset .
 ies:AssetState rdf:type rdfs:Class .
 ies:AssetState sparx:guid "{CA196722-9531-4eb4-A8CF-B9A5145CDCFD}" .
 ies:AssetState rdfs:comment "A temporal state of an Asset" .
 ies:AssetState rdfs:subClassOf ies:State .
 ies:associatedCarrier rdf:type owl:ObjectProperty .
 ies:associatedCarrier sparx:guid "{2E464C7F-FC0B-4dcc-9B1C-5DC8A87B4CE3A}" .
 ies:associatedCarrier rdfs:comment "The Organisation that provides the transport specified on the Ticket" .
 ies:associatedCarrier rdfs:subPropertyOf ies:relationship .
 ies:associatedCarrier rdfs:domain ies:TravelTicket .
 ies:associatedCarrier rdfs:range ies:Organisation .
 ies:associatedPersonName rdf:type owl:DatatypeProperty .
 ies:associatedPersonName sparx:guid "{022535DE-2100-420b-B4BC-10465DEEC3C}" .
 ies:associatedPersonName rdfs:comment "The name of the Person which is associated with the EntityThis may be the name of an account holder, the name printed on ID, tickets, etc.Note in 3.x, this was several different attributes:accountHolderName on FinancialAccountnameOnLicense, etc. on IdentityDocumentTicketHolderName on Ticket" .
 ies:associatedPersonName rdfs:domain ies:Ticket .
 ies:associatedPersonName rdfs:domain ies:AccountState .
 ies:associatedPersonName rdfs:domain ies:IdentityDocument .
 ies:associatedPersonName rdfs:domain ies:PaymentArtifact .
 ies:associatedPersonName rdfs:subPropertyOf ies:attribute .
 ies:Attacker rdf:type rdfs:Class .
 ies:Attacker sparx:guid "{73D38C0E-3291-4de9-8920-F37980CB3A9E}" .
 ies:Attacker rdfs:comment "Relates a MilitaryAttack to the Organisation conducting the attack" .
 ies:Attacker rdfs:subClassOf ies:EventParticipant .
 ies:Attendance rdf:type rdfs:Class .
 ies:Attendance sparx:guid "{62605F2C-9153-40f4-9F2A-39386DB072D3}" .
 ies:Attendance rdfs:comment "A Presence where the Person is presentNote - we may not know the identity of the person, so would just create only the Attendance (EventParticipant). This allows the model to grow as more information is discovered without recourse to using sameAs relationships." .
 ies:Attendance rdfs:subClassOf ies:Presence .
 ies:Attendance rdfs:subClassOf ies:PersonState .
 ies:Attendance rdfs:subClassOf ies:ActiveEventParticipant .
 ies:attribute rdf:type owl:DatatypeProperty .
 ies:attribute sparx:guid "{4A8E5877-32DF-428F-9A60-6AC3D0083FFCA}" .
 ies:attribute rdfs:comment "A feature or property of a Thing.Note: In IES4 it is important to distinguish between names and attributes - attribute should never be used to identify or name something - for that, use Name or Identifier." .
 ies:attribute rdfs:domain ies:Thing .
 ies:AtWar rdf:type rdfs:Class .
 ies:AtWar sparx:guid "{89953404-8A71-46ef-8F7B-90C12EE286FD}" .
 ies:AtWar rdfs:comment "An Disagreement where the parties have declared war" .
 ies:AtWar rdfs:subClassOf ies:InDisagreement .
 ies:AuthorisationDocument rdf:type rdfs:Class .
 ies:AuthorisationDocument sparx:guid "{8177A2FB-CA54-4dc5-9884-33FBA660B174}" .
 ies:AuthorisationDocument rdfs:comment "A WorkOfDocumentation that provides permission" .
 ies:AuthorisationDocument rdfs:subClassOf ies:WorkOfDocumentation .
 ies:AuthorisationRequest rdf:type rdfs:Class .
 ies:AuthorisationRequest sparx:guid "{1D6BAE08-B8F1-4eee-928E-991B3B46EADF}" .
 ies:AuthorisationRequest rdfs:comment "An AuthorisationStage where a ResponsibleActor requests authorisation to act from another ResponsibleActor" .
 ies:AuthorisationRequest rdfs:subClassOf ies:AuthorisationStage .
 ies:AuthorisationRequester rdf:type rdfs:Class .
 ies:AuthorisationRequester sparx:guid "{81BF6EA6-996D-4148-8F5D-8B41156637F6}" .
 ies:AuthorisationRequester rdfs:comment "An ActiveEventParticipant where a ResponsibleActor requests authority to act " .
 ies:AuthorisationRequester rdfs:subClassOf ies:ActiveEventParticipant .
 ies:AuthorisationReviewer rdf:type rdfs:Class .
 ies:AuthorisationReviewer sparx:guid "{8E4CC036-C4C5-4222-8532-9B6C53ECC56E}" .
 ies:AuthorisationReviewer rdfs:comment "An ActiveEventParticipant where a ResponsibleActor reviews an AuthorisationRequest" .
 ies:AuthorisationReviewer rdfs:subClassOf ies:ActiveEventParticipant .
 ies:AuthorisationStage rdf:type rdfs:Class .
 ies:AuthorisationStage sparx:guid "{2D5069F2-FE77-477f-A607-FA6458E64173}" .
 ies:AuthorisationStage rdfs:comment "An Event which is part of an EndToEndAuthorisation" .
 ies:AuthorisationStage rdfs:subClassOf ies:Event .
 ies:AuthorisedActor rdf:type rdfs:Class .
 ies:AuthorisedActor sparx:guid "{F69279D2-BA11-4a31-8739-0D91EF5B9BEF}" .
 ies:AuthorisedActor rdfs:comment "An ActiveEventParticipant where a ResponsibleActor is granted authority to act in a GrantOfAuthority " .
 ies:AuthorisedActor rdfs:subClassOf ies:ActiveEventParticipant .
 ies:Authoriser rdf:type rdfs:Class .
 ies:Authoriser sparx:guid "{4660DCDFB-B642-468b-A47A-E83291A86C6B}" .
 ies:Authoriser rdfs:comment "An ActiveEventParticipant where a ResponsibleActor acts as the authoriser (sign off) in a GrantOfAuthority " .
 ies:Authoriser rdfs:subClassOf ies:ActiveEventParticipant .
 ies:authorisesAccessTo rdf:type owl:ObjectProperty .
 ies:authorisesAccessTo sparx:guid "{A2DA918D-843C-43c9-A974-4795601E9D65}" .
 ies:authorisesAccessTo rdfs:comment "The Event for which the respective Ticket applies." .
 ies:authorisesAccessTo rdfs:subPropertyOf ies:relationship .
 ies:authorisesAccessTo rdfs:domain ies:Ticket .
 ies:authorisesAccessTo rdfs:range ies:Event .
 ies:Bank rdf:type rdfs:Class .
 ies:Bank sparx:guid "{4E10343E-8350-4354-B3DB-A7F74B4535EF}" .

ies:Bank rdfs:comment "An Organisation that holds a banking license and can conduct financial transactions on behalf of customers" .
 ies:Bank rdfs:subClassOf ies:Organisation .
 ies:BankBranch rdf:type rdfs:Class .
 ies:BankBranch sparx:guid "{02E3C3B8-8650-4867-8390-823E4B3360E6}" .
 ies:BankBranch rdfs:comment "An operating division of a Bank, usually a high street branch, but might also be the online arm of a Bank" .
 ies:BankBranch rdfs:subClassOf ies:Organisation .
 ies:BankCard rdf:type rdfs:Class .
 ies:BankCard sparx:guid "{848A9E0F-F3B4-47c3-AA7E-2FF6BE92170C}" .
 ies:BankCard rdfs:comment "A PaymentArtefact that is a physical card used for making financial transactions. Note: when used online, the accompanying Fan" .
 ies:BankCard rdfs:subClassOf ies:PaymentArtefact .
 ies:beginBoundOfClass rdf:type owl:ObjectProperty .
 ies:beginBoundOfClass sparx:guid "{2C441F0A-635D-41ef-B8CC-96AA07958F8E}" .
 ies:beginBoundOfClass rdfs:comment "A relationship linking a TimeBoundedClass to the ParticularPeriod that marks the beginning bound date of its instances" .
 ies:beginBoundOfClass rdfs:subPropertyOf ies:relationship .
 ies:beginBoundOfClass rdfs:domain ies:TimeBoundedClass .
 ies:beginBoundOfClass rdfs:range ies:ParticularPeriod .
 ies:BirthCertificate rdf:type rdfs:Class .
 ies:BirthCertificate sparx:guid "{4457E8AF-EDBD-4ef1-B62B-59037829B961}" .
 ies:BirthCertificate rdfs:comment "An IdentityDocument issued to prove the data and place of birth of a Person" .
 ies:BirthCertificate rdfs:subClassOf ies:IdentityDocument .
 ies:BirthState rdf:type rdfs:Class .
 ies:BirthState sparx:guid "{CFE53096-32FC-47C8-98BA-950EE6F988CB}" .
 ies:BirthState rdfs:comment "A BoundingState that marks the beginning of a Persons life. The location of the birth can be specified using inLocationThe date/time of the birth can be specified using the inPeriod relationship." .
 ies:BirthState rdfs:subClassOf ies:BoundingState .
 ies:BirthState rdfs:subClassOf ies:Personstate .
 ies:BoardingCardNumber rdf:type rdfs:Class .
 ies:BoardingCardNumber sparx:guid "{683E5B90-2514-4342-AE34-894D2DAC2AF0}" .
 ies:BoardingCardNumber rdfs:comment "The number of the boarding card issued to the Passenger." .
 ies:BoardingCardNumber rdfs:subClassOf ies:Identifier .
 ies:Book rdf:type rdfs:Class .
 ies:Book sparx:guid "{22AB6FA2-B088-4ef6-AE3A-5843FB45C8AE}" .
 ies:Book rdfs:comment "A WorkOfDocumentation that is a published book" .
 ies:Book rdfs:subClassOf ies:WorkOfDocumentation .
 ies:BookedPassenger rdf:type rdfs:Class .
 ies:BookedPassenger sparx:guid "{53C6BCA9-4D66-4bac-B946-0A8541CF510A}" .
 ies:BookedPassenger rdfs:comment "A Persons involvement as a booked traveller in a TravelBooking" .
 ies:BookedPassenger rdfs:subClassOf ies:EventParticipant .
 ies:BookedPassenger rdfs:subClassOf ies:ResponsibleActorState .
 ies:BookingAgent rdf:type rdfs:Class .
 ies:BookingAgent sparx:guid "{0AF87601-5B3E-4c5e-8149-D0D3C0073C42}" .
 ies:BookingAgent rdfs:comment "A ResponsibleActors involvement as the facilitator of a TravelBooking" .
 ies:BookingAgent rdfs:subClassOf ies:EventParticipant .
 ies:BookingAgent rdfs:subClassOf ies:ResponsibleActorState .
 ies:BookingPayment rdf:type rdfs:Class .
 ies:BookingPayment sparx:guid "{618DEBA6-BE87-44e3-A1C7-246D0CE60ADC}" .
 ies:BookingPayment rdfs:comment "An EventParticipant where an AmountOfMoney in cash is used as payment in a TravelBooking. When neither card nor cash is used, there will be an accompanying MoneyTransfer" .
 ies:BookingPayment rdfs:subClassOf ies:EventParticipant .
 ies:BookingReference rdf:type rdfs:Class .
 ies:BookingReference sparx:guid "{D31E959A-6354-40e7-8370-1FE5246624AD}" .
 ies:BookingReference rdfs:comment "An Identifier that is notionally unique number that is allocated to a TravelBooking. Note that Booking Reference Numbers are recycled and so are not unique in their own right. When combined with the BookingDate it is potentially possible to identify a specific booking." .
 ies:BookingReference rdfs:subClassOf ies:Identifier .
 ies:BoundingState rdf:type rdfs:Class .
 ies:BoundingState sparx:guid "{892345CD-9FAT-4982-978D-B6D3ABA839C}" .
 ies:BoundingState rdfs:comment "A ContinuousState that occurs at the beginning or end of an Element The date/time of the state can be specified using the inPeriod relationship." .
 ies:BoundingState rdfs:subClassOf ies:ContinuousState .
 ies:BranchCode rdf:type rdfs:Class .
 ies:BranchCode sparx:guid "{012F7F29-4F8E-4263-8224-126050EE175F}" .
 ies:BranchCode rdfs:comment "In identifier for a BankBranch - In the UK this is often referred to as the Sort Code." .
 ies:BranchCode rdfs:subClassOf ies:Identifier .
 ies:branding rdf:type owl:ObjectProperty .
 ies:branding sparx:guid "{62675B63-9169-4f05-9993-E1B17540A6C1}" .
 ies:branding rdfs:comment "A brand or logo that is represented on an Entity.e.g. some bank cards are branded by a car manufacturer, etc. but actually operated by a bank" .
 ies:branding rdfs:domain ies:PaymentArtefact .
 ies:branding rdfs:subPropertyOf ies:relationship .
 ies:branding rdfs:range ies:Organisation .
 ies:BusinessEvent rdf:type rdfs:Class .
 ies:BusinessEvent sparx:guid "{94CEDBD1-8E3D-4cb4-8155-FBD621DA6A0D}" .
 ies:BusinessEvent rdfs:comment "An Event that is commercial or administrative in nature" .
 ies:BusinessEvent rdfs:subClassOf ies:Event .
 ies:Callee rdf:type rdfs:Class .
 ies:Callee sparx:guid "{F50BAD6D-E8E0-4fd8-B54C-3E24A62491A6}" .
 ies:Callee rdfs:comment "An PartyInCommunication where the communicating party is called in an InteractiveCommunication" .
 ies:Callee rdfs:subClassOf ies:PartyInCommunication .
 ies:Caller rdf:type rdfs:Class .
 ies:Caller sparx:guid "{03DDC2F5-F961-47c2-B8F8-B27A752AEC34}" .
 ies:Caller rdfs:comment "An PartyInCommunication where the communicating party is the caller in an InteractiveCommunication" .
 ies:Caller rdfs:subClassOf ies:PartyInCommunication .
 ies:Callsign rdf:type rdfs:Class .
 ies:Callsign sparx:guid "{25F4F685-3931-4cdc-AF43-1A9194BBE15D}" .
 ies:Callsign rdfs:comment "In broadcasting and radio communications, a call sign (also known as a call name or call letters ☐ and historically as a call signal) is a unique designation for a transmitting station." .
 ies:Callsign rdfs:subClassOf ies:CommunicationsIdentifier .
 ies:Capability rdf:type rdfs:Class .
 ies:Capability sparx:guid "{91D62F08-ED05-4558-9321-368712A34A30}" .
 ies:Capability rdfs:comment "A DispositionalClass where all the instances share the same capabilityExample: Vehicles capable of Mach 2" .
 ies:Capability rdfs:subClassOf ies:DispositionalClass .
 ies:CardNumber rdf:type rdfs:Class .
 ies:CardNumber sparx:guid "{0887F3453-B1D7-41e6-B79F-31B123ED0D68}" .
 ies:CardNumber rdfs:comment "An Identifier that is the long number on the face of the card (PaymentArtefact)" .
 ies:CardNumber rdfs:subClassOf ies:Identifier .
 ies:CardUsed rdf:type rdfs:Class .
 ies:CardUsed sparx:guid "{1B9C8EB0-69A7-4fe7-8358-0F6067439C42}" .
 ies:CardUsed rdfs:comment "An EventParticipant where a PaymentArtefact is participant in a TradeEvent" .
 ies:CardUsed rdfs:subClassOf ies:EventParticipant .
 ies:Carrier rdf:type rdfs:Class .
 ies:Carrier sparx:guid "{91DC18F6-3E35-411c-814D-5ACE83BE316}" .
 ies:Carrier rdfs:comment "An EventParticipant where a ResponsibleActor participates in a Delivery as a carrier" .
 ies:Carrier rdfs:subClassOf ies:EventParticipant .
 ies:carrierService rdf:type owl:ObjectProperty .

ies:carrierService sparx:guid "{76C31798-780C-41b0-A985-0AE3B1C3A478}" .
 ies:carrierService rdfs:comment "The Organisation that provides the transport specified on the Ticket" .
 ies:carrierService rdfs:subPropertyOf ies:relationship .
 ies:carrierService rdfs:domain ies:TravelService .
 ies:carrierService rdfs:range ies:organisation .
 ies:CarTravel rdf:type rdfs:Class .
 ies:CarTravel sparx:guid "{F5E28CD3-4529-42f2-9ED9-95801B42ED3F}" .
 ies:CarTravel rdfs:comment "A TravelService by car" .
 ies:CarTravel rdfs:subClassOf ies:Transit .
 ies:CashPayment rdf:type rdfs:Class .
 ies:CashPayment sparx:guid "{62A9AA44-6C36-448b-805F-E13203CFB4FC}" .
 ies:CashPayment rdfs:comment "An EventParticipant where an AmountOfMoney in cash is used as payment in a Purchase. When neither card nor cash is used, there will be an accompanying MoneyTransfer" .
 ies:CashPayment rdfs:subClassOf ies:EventParticipant .
 ies:Casualty rdf:type rdfs:Class .
 ies:Casualty sparx:guid "{61D00F47-977E-43f6-BD30-77CBAA74CC1}" .
 ies:Casualty rdfs:comment "Relating a MilitaryAttack to a Person who was injured or killed in the attack" .
 ies:Casualty rdfs:subClassOf ies:EventParticipant .
 ies:CBRadioHandset rdf:type rdfs:Class .
 ies:CBRadioHandset sparx:guid "{18EB7B22-5927-4b0e-98A8-638D28BDCF87}" .
 ies:CBRadioHandset rdfs:comment "A CommunicationsDevice used to hold radio conversations on frequencies allocated as Citizen Band" .
 ies:CBRadioHandset rdfs:subClassOf ies:CommunicationsDevice .
 ies:CellularBaseStation rdf:type rdfs:Class .
 ies:CellularBaseStation sparx:guid "{904A1395-8687-4f0b-BC5D-61A756210B4D}" .
 ies:CellularBaseStation rdfs:comment "A RadioMast that is used for cellular communication" .
 ies:CellularBaseStation rdfs:subClassOf ies:RadioMast .
 ies:CellularBaseStation rdfs:subClassOf ies:SystemState .
 ies:ChangeOfGovernment rdf:type rdfs:Class .
 ies:ChangeOfGovernment sparx:guid "{7FA15F56-86C4-47f4-9032-999C17703368}" .
 ies:ChangeOfGovernment rdfs:comment "A PoliticalEvent where one Government is replaced by another." .
 ies:ChangeOfGovernment rdfs:subClassOf ies:PoliticalEvent .
 ies:Characteristic rdf:type rdfs:Class .
 ies:Characteristic sparx:guid "{A7F266E8-B1CB-4b9b-8AF1-1EF2A7D8F5EE}" .
 ies:Characteristic rdfs:comment "A ClassOfElement whose instances all share a common property - e.g. they are all the same colour, mass, etc. " .
 ies:Characteristic rdfs:subClassOf ies:ClassOfElement .
 ies:Charters rdf:type owl:ObjectProperty .
 ies:Charters sparx:guid "{48223A62-12E6-4953-8F80-8C7A48151825}" .
 ies:Charters rdfs:comment "A Relationship between a ResponsibleActor and the Transit they have chartered." .
 ies:Charters rdfs:domain ies:ResponsibleActor .
 ies:Charters rdfs:range ies:Transit .
 ies:Charters rdfs:subPropertyOf ies:relationship .
 ies:CheckIn rdf:type rdfs:Class .
 ies:CheckIn sparx:guid "{87308A03-5C79-4d94-99E1-660042AC7929}" .
 ies:CheckIn rdfs:comment "An Event where a Person checks in to a hotel or Transit. This also includes swiping tickets to use public transport. The location of the CheckIn is specified using a happensIn relationship. The CheckIn may be part of another Event - e.g. an EntertainmentEvent or Transit event. Simply use the isPartOf relationship to specify this." .
 ies:CheckIn rdfs:subClassOf ies:Event .
 ies:CinemaTicket rdf:type rdfs:Class .
 ies:CinemaTicket sparx:guid "{7E0C25C9-DD3A-463e-A481-7CA4EA4AC8C5}" .
 ies:CinemaTicket rdfs:comment "An EntertainmentTicket that permits attendance at a cinema" .
 ies:CinemaTicket rdfs:subClassOf ies:EntertainmentTicket .
 ies:ClassOfAmountOfMoney rdf:type rdfs:Class .
 ies:ClassOfAmountOfMoney sparx:guid "{E5C27DA8-7DF1-49ea-A9EC-ABE17AFD2047}" .
 ies:ClassOfAmountOfMoney rdfs:comment "The powertype of AmountOfMoney" .
 ies:ClassOfAmountOfMoney rdfs:subClassOf ies:ClassOfAsset .
 ies:ClassOfAsset rdf:type rdfs:Class .
 ies:ClassOfAsset sparx:guid "{F999F59A-7C7B-40f3-8F86-5B2592889E95}" .
 ies:ClassOfAsset rdfs:comment "The powertype of Asset - i.e. a ClassOfEntity whose instances are classes of AssetExamples: * Vauxhall Insignia, VW Golf* Smartphone* Apple iPhone 6S" .
 ies:ClassOfAsset rdfs:subClassOf ies:ClassOfEntity .
 ies:ClassOfClassOfElement rdf:type rdfs:Class .
 ies:ClassOfClassOfElement sparx:guid "{85305668-DE1A-454a-87EE-346A221E846C}" .
 ies:ClassOfClassOfElement rdfs:comment "An rdfs:Class and an Thing whose instances are classes of classes of Element" .
 ies:ClassOfClassOfElement rdfs:subClassOf ies:Thing .
 ies:ClassOfClassOfElement rdf:type rdfs:subClassOf rdfs:Class .
 ies:ClassOfClassOfEntity rdf:type rdfs:Class .
 ies:ClassOfClassOfEntity sparx:guid "{1F9AC8FE-3862-48d6-A3DC-E429B08D2B26}" .
 ies:ClassOfClassOfEntity rdfs:comment "The powertype of ClassOfEntity" .
 ies:ClassOfClassOfEntity rdfs:subClassOf ies:ClassOfClassOfElement .
 ies:ClassOfElement rdf:type rdfs:Class .
 ies:ClassOfElement sparx:guid "{3C13E07D-5796-4d03-9EBC-C75277E87CA4}" .
 ies:ClassOfElement rdfs:comment "An rdfs:Class and an Thing whose instances are classes of ElementExamples: Human groupings (e.g. Nigerian Women, British Men, Righthanded people, English Speakers); Political Ideologies Weapons Days of the week Standard procedures etc." .
 ies:ClassOfElement rdfs:subClassOf ies:Thing .
 ies:ClassOfElement rdfs:subClassOf rdfs:Class .
 ies:ClassOfElement ies:powertype ies:ClassOfClassOfElement .
 ies:ClassOfEntity rdf:type rdfs:Class .
 ies:ClassOfEntity sparx:guid "{D1B2FB30-36CA-4012-B85F-514E270BF541}" .
 ies:ClassOfEntity rdfs:comment "The powertype of Entity - i.e. a ClassOfElement whose instances are classes of EntityExamples: Human groupings (e.g. Nigerian Women, British Men, Righthanded people, English Speakers); Weapons Etc." .
 ies:ClassOfEntity rdfs:subClassOf ies:ClassOfElement .
 ies:ClassOfEntity ies:powertype ies:ClassOfClassOfEntity .
 ies:ClassOfEvent rdf:type rdfs:Class .
 ies:ClassOfEvent sparx:guid "{4FA194C6-BBF9-45ab-85DE-5802D8C3A531}" .
 ies:ClassOfEvent rdfs:comment "An ClassOfElement whose instances are classes of Event. This is the powertype of Event.Examples: * Conference* Football Match* Annual General Meeting" .
 ies:ClassOfEvent rdfs:subClassOf ies:ClassOfElement .
 ies:ClassOfIndividualDocument rdf:type rdfs:Class .
 ies:ClassOfIndividualDocument sparx:guid "{CCC8FA06-CDA8-491d-BFFC-0A88D6A565B1}" .
 ies:ClassOfIndividualDocument rdfs:comment "The powertype of IndividualDocument" .
 ies:ClassOfIndividualDocument rdfs:subClassOf ies:Representation .
 ies:ClassOfMeasureValue rdf:type rdfs:Class .
 ies:ClassOfMeasureValue sparx:guid "{4520A91C-D956-46c1-9A81-93C4C0B12880}" .
 ies:ClassOfMeasureValue rdfs:comment "A ClassOfRepresentation that is the powertype of MeasureValue" .
 ies:ClassOfMeasureValue rdfs:subClassOf ies:ClassOfRepresentation .
 ies:ClassOfPerson rdf:type rdfs:Class .
 ies:ClassOfPerson sparx:guid "{2A62C672-1757-4a2d-874B-C099C9DEC416}" .
 ies:ClassOfPerson rdfs:comment "The powertype of Person" .
 ies:ClassOfPerson rdfs:subClassOf ies:ClassOfResponsibleActor .
 ies:ClassOfPersonState rdf:type rdfs:Class .
 ies:ClassOfPersonState sparx:guid "{92CDC810-9DFA-476b-A2E7-33121F65905B}" .
 ies:ClassOfPersonState rdfs:comment "The powertype of PersonState" .
 ies:ClassOfPersonState rdfs:subClassOf ies:ClassOfResponsibleActorState .
 ies:ClassOfRepresentation rdf:type rdfs:Class .
 ies:ClassOfRepresentation sparx:guid "{4FFEB84D-B823-4829-9A3A-ADE51EF0F0F5}" .
 ies:ClassOfRepresentation rdfs:comment "The powertype of Representation" .

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ies:ClassOfRepresentation rdfs:subClassOf ies:ClassOfClassOfEntity .
ies:ClassOfResponsibleActor rdf:type rdfs:Class .
ies:ClassOfResponsibleActor sparx:guid "{9FC2431D-63A4-4e1b-8D31-2BCD125853D9}" .
ies:ClassOfResponsibleActor rdfs:comment "The powertype of ResponsibleActor " .
ies:ClassOfResponsibleActor rdfs:subClassOf ies:ClassOfEntity .
ies:ClassOfResponsibleActorState rdf:type rdfs:Class .
ies:ClassOfResponsibleActorState sparx:guid "{9CEF4F29-5619-4d8f-A9DE-8CB43270C7F5}" .
ies:ClassOfResponsibleActorState rdfs:comment "A ClassOfState that is the powertype of ResponsibleActorState " .
ies:ClassOfResponsibleActorState rdfs:subClassOf ies:ClassOfState .
ies:ClassOfState rdf:type rdfs:Class .
ies:ClassOfState sparx:guid "{0358DAB-D22C-4ee5-8F9A-CF18F3E432BD}" .
ies:ClassOfState rdfs:comment "A ClassOfElement whose instances are classes of States. This is the powertype of State.Examples:* Roles" .
ies:ClassOfState rdfs:subClassOf ies:ClassOfElement .
ies:CloseAccount rdf:type rdfs:Class .
ies:CloseAccount sparx:guid "{2A5450A7-5B26-4605-A109-5CB26DD9A70F}" .
ies:CloseAccount rdfs:comment "An AccountAdminEvent where an Account is shut down." .
ies:CloseAccount rdfs:subClassOf ies:AccountAdminEvent .
ies:coercedBy rdf:type owl:ObjectProperty .
ies:coercedBy sparx:guid "{9E413787-42C8-4cd4-B7B1-63E38F6A02D9}" .
ies:coercedBy rdfs:comment "A Relationship between two ResponsibleActor Entities where one (range) coerces the other (domain)." .
ies:coercedBy rdfs:subPropertyOf ies:relationship .
ies:coercedBy rdfs:range ies:ResponsibleActor .
ies:coercedBy rdfs:domain ies:ResponsibleActorState .
ies:Colocation rdf:type rdfs:Class .
ies:Colocation sparx:guid "{3524D10D-D9B0-416d-ADED-D5AAEB99DD09}" .
ies:Colocation rdfs:comment "An Event where the activity is uncertain, but it is known that some Entities were presentNote: whilst colocation can be easily inferred from data, sometimes its important to call out specific instances where entities of interest were in the same place at the same time." .
ies:Colocation rdfs:subClassOf ies:Event .
ies:Colour rdf:type rdfs:Class .
ies:Colour sparx:guid "{B10D22FB-1D6A-47c9-B1C0-E870D43A5C52}" .
ies:Colour rdfs:comment "A Characteristic whose members all have the same colour" .
ies:Colour rdfs:subClassOf ies:Characteristic .
ies:CommercialOrganisation rdf:type rdfs:Class .
ies:CommercialOrganisation sparx:guid "{1456439C-65C9-4a39-A743-09A7D0FBF248}" .
ies:CommercialOrganisation rdfs:comment "An Organisation that is run for profit" .
ies:CommercialOrganisation rdfs:subClassOf ies:Organisation .
ies:Communication rdf:type rdfs:Class .
ies:Communication sparx:guid "{6698805F-F492-4f1f-954C-E1EB3C53E148}" .
ies:Communication rdfs:comment "An Event where two or more parties interact and exchange information" .
ies:Communication rdfs:subClassOf ies:Event .
ies:CommunicationsAccount rdf:type rdfs:Class .
ies:CommunicationsAccount sparx:guid "{8300451C-1DF9-4545-9174-D8AA69C58CCD}" .
ies:CommunicationsAccount rdfs:comment "An Account of the communications transactions provided to a customer" .
ies:CommunicationsAccount rdfs:subClassOf ies:CommunicationsAccountState .
ies:CommunicationsAccount rdfs:subClassOf ies:Account .
ies:CommunicationsAccountState rdf:type rdfs:Class .
ies:CommunicationsAccountState sparx:guid "{20BB42F0-3F2D-4bb7-88DD-F4D05377D59B}" .
ies:CommunicationsAccountState rdfs:comment "A temporal state of a CommunicationsAccount" .
ies:CommunicationsAccountState rdfs:subClassOf ies:AccountState .
ies:CommunicationsDevice rdf:type rdfs:Class .
ies:CommunicationsDevice sparx:guid "{32EB46A5-0FA4-44e9-A9E9-9424E80BDE91}" .
ies:CommunicationsDevice rdfs:comment "A Device that provides an endpoint for communications e.g. mobile telephone, landline, satellite phone, CB Radio, etc." .
ies:CommunicationsDevice rdfs:subClassOf ies:Device .
ies:CommunicationsIdentifier rdf:type rdfs:Class .
ies:CommunicationsIdentifier sparx:guid "{A8237889-9774-46b9-9845-CC75BE882F06}" .
ies:CommunicationsIdentifier rdfs:comment "An Identifier for the end-point of a communication" .
ies:CommunicationsIdentifier rdfs:subClassOf ies:Identifier .
ies:CommunicationsIdentifierRange rdf:type rdfs:Class .
ies:CommunicationsIdentifierRange sparx:guid "{DF388418-F296-46a5-A2A3-4297F084DD07}" .
ies:CommunicationsIdentifierRange rdfs:comment "A specified range of identifiers for the end-points of a communication" .
ies:CommunicationsIdentifierRange rdfs:subClassOf ies:CommunicationsIdentifier .
ies:Competition rdf:type rdfs:Class .
ies:Competition sparx:guid "{98421510-0A8A-4942-9743-191EA0DCA9E6}" .
ies:Competition rdfs:comment "An Event where the participants are competing with each other" .
ies:Competition rdfs:subClassOf ies:Event .
ies:Competitor rdf:type rdfs:Class .
ies:Competitor sparx:guid "{763C82F1-5CE0-4652-8A93-D56D93DE1544}" .
ies:Competitor rdfs:comment "An EventParticipant where a ResponsibleActor is in competition" .
ies:Competitor rdfs:subClassOf ies:EventParticipant .
ies:Competitor rdfs:subClassOf ies:ResponsibleActorState .
ies:ConcertTicket rdf:type rdfs:Class .
ies:ConcertTicket sparx:guid "{8FF9DE7F-137B-4a03-AB24-7D84FCFB99C0}" .
ies:ConcertTicket rdfs:comment "An EntertainmentTicket where the Event is a concert" .
ies:ConcertTicket rdfs:subClassOf ies:EntertainmentTicket .
ies:ConferenceHost rdf:type rdfs:Class .
ies:ConferenceHost sparx:guid "{B59AB165-6D9C-423f-9CB2-85B4E1B37D93}" .
ies:ConferenceHost rdfs:comment "A ConferenceParticipant that is in the role of host" .
ies:ConferenceHost rdfs:subClassOf ies:ConferenceParticipant .
ies:ConferenceParticipant rdf:type rdfs:Class .
ies:ConferenceParticipant sparx:guid "{5C76FE3F-FF06-4abc-B495-0D4F35FB5252}" .
ies:ConferenceParticipant rdfs:comment "An PartyInCommunication that is a participant in a TeleConference" .
ies:ConferenceParticipant rdfs:subClassOf ies:PartyInCommunication .
ies:confidence rdf:type owl:DatatypeProperty .
ies:confidence sparx:guid "{45FE24B3-B146-4199-B760-C1150CEF9AB2}" .
ies:confidence rdfs:comment "A qualitative or quantitative indication of the confidence of an AssessToBeTrue" .
ies:confidence rdfs:subPropertyOf ies:attribute .
ies:confidence rdfs:domain ies:AssessToBeTrue .
ies:contactDetailsOnBooking rdf:type owl:DatatypeProperty .
ies:contactDetailsOnBooking sparx:guid "{B54BB629-E007-4099-BC01-B512894F1E89}" .
ies:contactDetailsOnBooking rdfs:comment "The contact details of the Person making the booking as recorded on the actual Travel Booking.Note that if these details can be parsed to identify the contact telephone number, contact email address etc. then they should be mapped as instances of relationship to the respective CommunicationsIdentifier (PhoneNumber, EmailAddress, etc.)." .
ies:contactDetailsOnBooking rdfs:subPropertyOf ies:attribute .
ies:contactDetailsOnBooking rdfs:domain ies:TravelBooking .
ies:ContentCategory rdf:type rdfs:Class .
ies:ContentCategory sparx:guid "{8CA5551A-EAEB-4145-A75F-2E7D7DAD5A57}" .
ies:ContentCategory rdfs:comment "An ClassOfClassOfEntity whose instances collect together all Representations that have similar content.Examples:* Fiction* Non-Fiction* Financial Information* Extremist Media" .
ies:ContentCategory rdfs:subClassOf ies:ClassOfRepresentation .
ies:ContinuousState rdf:type rdfs:Class .
ies:ContinuousState sparx:guid "{6E5AF4BB-BB7F-4387-A7BB-476B81FEC103}" .
ies:ContinuousState rdfs:comment "A State that is temporally continuous - i.e. it is not a DiscontinuousState" .
ies:ContinuousState rdfs:subClassOf ies:State .
ies:contractedTo rdf:type owl:ObjectProperty .
ies:contractedTo sparx:guid "{0876AE1F-7202-41d9-A00F-208B118BBF79}" .

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ies:contractedTo rdfs:comment "A worksFor relationship where a ResponsibleActor (domain) is contracted to another ResponsibleActor (range)." .
 ies:contractedTo rdfs:subPropertyOf ies:worksFor .
 ies:Cookie rdf:type rdfs:Class .
 ies:Cookie sparx:guid "{C81B6EAD-8494-45ca-928C-21CB6D395C39}" .
 ies:Cookie rdfs:comment "An OnlineArtefact that is stored on a Device to enable continuity of session, log-in, or simply to track activity online.Cookies tend to be ephemeral, an unique to a device, so no states are required. Simply use cookieOnDevice relationship mark the stand and end BoundingStates of the Cookie. " .
 ies:Cookie rdfs:subClassOf ies:OnlineArtefact .
 ies:cookieOnDevice rdf:type owl:ObjectProperty .
 ies:cookieOnDevice sparx:guid "{76D8EA41-E338-4db5-BB30-D642CF0F90EB}" .
 ies:cookieOnDevice rdfs:comment "Relates a Cookie to the Device it is installed on.Note: there is usually no need for states here as the Cookie itself has begin and end times." .
 ies:cookieOnDevice rdfs:subPropertyOf ies:relationship .
 ies:cookieOnDevice rdfs:domain ies:Cookie .
 ies:cookieOnDevice rdfs:range ies:Device .
 ies:cookieOriginSite rdf:type owl:ObjectProperty .
 ies:cookieOriginSite sparx:guid "{24E8B958-284F-4be2-AACD-A7B2A94B97D4}" .
 ies:cookieOriginSite rdfs:comment "Relates a Cookie to the Webpage from which it originated." .
 ies:cookieOriginSite rdfs:subPropertyOf ies:relationship .
 ies:cookieOriginSite rdfs:domain ies:Cookie .
 ies:cookieOriginSite rdfs:range ies:Webpage .
 ies:Cooperation rdf:type rdfs:Class .
 ies:Cooperation sparx:guid "{F650B9E3-2669-455e-B20C-92737CFD9A08}" .
 ies:Cooperation rdfs:comment "An Event where the participants are cooperating with each other" .
 ies:Cooperation rdfs:subClassOf ies:Event .
 ies:Cooperator rdf:type rdfs:Class .
 ies:Cooperator sparx:guid "{2896182A-9363-4c6a-BE62-132B072A7520}" .
 ies:Cooperator rdfs:comment "An EventParticipant where a ResponsibleActor is in Cooperation" .
 ies:Cooperator rdfs:subClassOf ies:EventParticipant .
 ies:Cooperator rdfs:subClassOf ies:ResponsibleActorState .
 ies:Country rdf:type rdfs:Class .
 ies:Country sparx:guid "{92EBAA9B-48C2-4082-9FE5-603977BD6846}" .
 ies:Country rdfs:comment "A Location whose land extent / borders are recognised as a Country by the International Standards Organisation (ISO)Note: this is simply the land, any buildings on it, and the airspace and ground beneath as recognised by the ISO definition. It does not include the nationals of the Country, its Government, etc. " .
 ies:Country rdfs:subClassOf ies:Location .
 ies:countryOfRegistration rdf:type owl:ObjectProperty .
 ies:countryOfRegistration sparx:guid "{D33498ED-B6A0-41ea-864F-CE95E2B1E010}" .
 ies:countryOfRegistration rdfs:comment "The Country in which the respective Entity is registered / recognised." .
 ies:countryOfRegistration rdfs:domain ies:Account .
 ies:countryOfRegistration rdfs:domain ies:Organisation .
 ies:countryOfRegistration rdfs:range ies:Country .
 ies:countryOfRegistration rdfs:subPropertyOf ies:relationship .
 ies:countryOfRegistration rdfs:domain ies:Vehicle .
 ies:countryUsingDialCode rdf:type owl:ObjectProperty .
 ies:countryUsingDialCode sparx:guid "{8C3F2C71-C7A2-414a-85C2-DFCD2D91D8E5}" .
 ies:countryUsingDialCode rdfs:comment "A relationship between a TelephoneCountryCode and a Country that uses that code.Note: more than one Country may use the same code, and in rare cases a given Country may have more than one code." .
 ies:countryUsingDialCode rdfs:subPropertyOf ies:relationship .
 ies:countryUsingDialCode rdfs:domain ies:TelephoneCountryCode .
 ies:countryUsingDialCode rdfs:range ies:Country .
 ies:cousinOf rdf:type owl:ObjectProperty .
 ies:cousinOf sparx:guid "{32A625FA-3159-4b36-B551-3742BA11C7A8}" .
 ies:cousinOf rdfs:comment "A Relationship between two Person Entities that indicates one is the cousin of the other" .
 ies:cousinOf rdfs:subPropertyOf ies:familiallyRelatedTo .
 ies:cousinOf rdfs:domain ies:Person .
 ies:cousinOf rdfs:range ies:Person .
 ies>Create rdf:type rdfs:Class .
 ies>Create sparx:guid "{AF60517B-E4EF-48ca-BE0F-56E0A89660FD}" .
 ies>Create rdfs:comment "A LifecycleEvent where an Entity is brought into existence." .
 ies>Create rdfs:subClassOf ies:LifecycleEvent .
 ies:Created rdf:type rdfs:Class .
 ies:Created sparx:guid "{46DE5D1F-B3CE-4858-A6D1-64A0B891A00F}" .
 ies:Created rdfs:comment "An EventParticipant where an Entity is createdThe date/time of the creation can be specified using the inPeriod relationship." .
 ies:Created rdfs:subClassOf ies:EventParticipant .
 ies:Created rdfs:subClassOf ies:BoundingState .
 ies:CreatedContent rdf:type rdfs:Class .
 ies:CreatedContent sparx:guid "{1EBC6375-B26C-4506-B4DE-85B74E476362}" .
 ies:CreatedContent rdfs:comment "A Create EventParticipant where online content is created" .
 ies:CreatedContent rdfs:subClassOf ies:Created .
 ies:Creator rdf:type rdfs:Class .
 ies:Creator sparx:guid "{850DB6D5-C8E8-4aa8-87A0-4E7680FF854A}" .
 ies:Creator rdfs:comment "An EventParticipant where a ResponsibleActor participates in a Create event as a creator" .
 ies:Creator rdfs:subClassOf ies:ActiveEventParticipant .
 ies:CreditCard rdf:type rdfs:Class .
 ies:CreditCard sparx:guid "{C2174205-C96F-4427-A401-19C1DEF0E4AF}" .
 ies:CreditCard rdfs:comment "A BankCard that allows the customer to carry a line of credit" .
 ies:CreditCard rdfs:subClassOf ies:BankCard .
 ies:CriminalActivity rdf:type rdfs:Class .
 ies:CriminalActivity sparx:guid "{43E58528-16E4-48b3-8F13-10500879EA83}" .
 ies:CriminalActivity rdfs:comment "An Event which is illegal within the laws of the jurisdiction in which it takes place.Note: If the CriminalActivity falls into one of the Home Office Offence Classification Index codes, then this should be provided using the offenceCode attribute." .
 ies:CriminalActivity rdfs:subClassOf ies:Event .
 ies:CriminalOrganisation rdf:type rdfs:Class .
 ies:CriminalOrganisation sparx:guid "{3CEFB37C-D5EE-4c9d-848D-C8E2DB206482}" .
 ies:CriminalOrganisation rdfs:comment "An OrganisationState that is assessed to be breaking the law in an organised manner" .
 ies:CriminalOrganisation rdfs:subClassOf ies:OrganisationState .
 ies:Crossing rdf:type rdfs:Class .
 ies:Crossing sparx:guid "{B85F065A-6A18-433e-9195-7B6BCBB91C7C}" .
 ies:Crossing rdfs:comment "A Location and an ArbitraryOverlap whose extent is defined by the shared overlap of two or more Locations" .
 ies:Crossing rdfs:subClassOf ies:Location .
 ies:Crossing rdfs:subClassOf ies:ArbitraryOverlap .
 ies:crossingOf rdf:type owl:ObjectProperty .
 ies:crossingOf sparx:guid "{5A0E8F10-EE46-49bd-8E25-A67040D4A40B}" .
 ies:crossingOf rdfs:comment "A partOf relationship to indicate a Location (range) has a Crossing (domain)" .
 ies:crossingOf rdfs:subPropertyOf ies:isPartOf .
 ies:crossingOf rdfs:domain ies:Crossing .
 ies:crossingOf rdfs:range ies:Location .
 ies:Currency rdf:type rdfs:Class .
 ies:Currency sparx:guid "{A06EE74F-9A66-4b33-8DC3-3B1C2B362862}" .
 ies:Currency rdfs:comment "A ClassOfAmountOfMoney that is the denomination as currency.The identifier should be specified as an ISO4217 three-letter code (e.g. USD, GBP, EUR, etc.)" .
 ies:Currency rdfs:subClassOf ies:ClassOfAmountOfMoney .
 ies:currencyAmount rdf:type owl:DatatypeProperty .
 ies:currencyAmount sparx:guid "{C53F62D0-0817-404b-9624-95A89D94F9A2}" .
 ies:currencyAmount rdfs:comment "A number that represents the amount of currency. Note: sometimes the number and/or the currency may be unknown and therefore

not instantiated" .

ies:currencyAmount rdfs:subPropertyOf ies:attribute .

ies:currencyAmount rdfs:domain ies:AmountOfMoney .

ies:currencyDenomination rdf:type owl:ObjectProperty .

ies:currencyDenomination sparc:guid "{AE8A5533-9C08-46e7-8131-E3D119F6AAE3}" .

ies:currencyDenomination rdfs:comment "The currency in which the AmountOfMoney is denominated" .

ies:currencyDenomination rdfs:domain ies:AmountOfMoney .

ies:currencyDenomination rdf:type ies:Currency .

ies:currencyDenomination rdfs:subPropertyOf rdf:type .

ies:Customer rdf:type rdfs:Class .

ies:Customer sparc:guid "{76689446-5969-49d3-8E7E-A92C86C244D5}" .

ies:Customer rdfs:comment "An EventParticipant where a ResponsibleActor is the customer for the Event - i.e. the Event has been conducted as a service to them, or in production of goods for them" .

ies:Customer rdfs:subClassOf ies:ActiveEventParticipant .

ies:CustomerIdentifier rdf:type rdfs:Class .

ies:CustomerIdentifier sparc:guid "{43560C95-66A3-4d69-A743-F0A166DE51FC}" .

ies:CustomerIdentifier rdfs:comment "The customer identifier associated with the Financial Account. A single Customer Identity could be associated with more than one Financial Account managed by the same provider." .

ies:CustomerIdentifier rdfs:subClassOf ies:Identifier .

ies:CyberStalking rdf:type rdfs:Class .

ies:CyberStalking sparc:guid "{8CF52FB7-69F2-4ef2-8074-FB90EE924139}" .

ies:CyberStalking rdfs:comment "A form of Stalking which takes place online." .

ies:CyberStalking rdfs:subClassOf ies:Stalking .

ies:Database rdf:type rdfs:Class .

ies:Database sparc:guid "{3099B032-4B0A-4aec-ABCD-3E862C4C1979}" .

ies:Database rdfs:comment "A DataObject that is the contents of an entire database (note this is still a class, as there may be many copies of the database)" .

ies:Database rdfs:subClassOf ies:DataObject .

ies:DatabaseItem rdf:type rdfs:Class .

ies:DatabaseItem sparc:guid "{73F8D96C-A9EC-4301-9968-0F7BF9826C45}" .

ies:DatabaseItem rdfs:comment "A DataObject that is part of the data in a DatabaseExamples:* A table, row, column in RDBMS* A document in a document db* A key-value pair in KVDB* named graph in a graph db" .

ies:DatabaseItem rdfs:subClassOf ies:DataObject .

ies:DatabaseRow rdf:type rdfs:Class .

ies:DatabaseRow sparc:guid "{1F23EB62-323B-402d-84BD-B4D417ED1A73}" .

ies:DatabaseRow rdfs:comment "A DataObject that is an entire row of a table in a database (note this is still a class, as there may be many copies of the database)" .

ies:DatabaseRow rdfs:subClassOf ies:DatabaseItem .

ies:DatabaseTable rdf:type rdfs:Class .

ies:DatabaseTable sparc:guid "{D9E56CAA-4668-4248-B087-C041363816DD}" .

ies:DatabaseTable rdfs:comment "A DataObject that is the entire contents of a table in a database (note this is still a class, as there may be many copies of the database)" .

ies:DatabaseTable rdfs:subClassOf ies:DatabaseItem .

ies:DataKey rdf:type rdfs:Class .

ies:DataKey sparc:guid "{2D88DE83-F87F-48ad-A485-9FFA79ED90D8}" .

ies:DataKey rdfs:comment "A unique key (usually only unique within a Database, though it could be a GUID) that identifies a DataObject" .

ies:DataKey rdfs:subClassOf ies:Identifier .

ies:DataObject rdf:type rdfs:Class .

ies:DataObject sparc:guid "{CAC97EB4-E0E8-4576-9637-1FBED5F9FEF2}" .

ies:DataObject rdfs:comment "A Representation which might contain internal structure that can be exploited using bespoke tools and/or applications. Data objects might be geoobjects, video files, audio files, etc." .

ies:DataObject rdfs:subClassOf ies:Representation .

ies:DeathState rdf:type rdfs:Class .

ies:DeathState sparc:guid "{F6173D27-D86D-40f8-A5B0-36DCCF85D396}" .

ies:DeathState rdfs:comment "A BoundingState that marks the end of a Persons lifeThe location of the death can be specified using inLocationThe date/time of the death can be specified using the inPeriod relationship. " .

ies:DeathState rdfs:subClassOf ies:BoundingState .

ies:DeathState rdfs:subClassOf ies:PersonState .

ies:DebitCard rdf:type rdfs:Class .

ies:DebitCard sparc:guid "{F0C846E7-76B9-4ab6-988E-3694C95818E7}" .

ies:DebitCard rdfs:comment "A BankCard where transactions debit from a bank account" .

ies:DebitCard rdfs:subClassOf ies:BankCard .

ies:DeclarationOfWar rdf:type rdfs:Class .

ies:DeclarationOfWar sparc:guid "{5E25DC95-E376-420f-9991-F5175476B386}" .

ies:DeclarationOfWar rdfs:comment "A PoliticalAnnouncement marking the start of a War" .

ies:DeclarationOfWar rdfs:subClassOf ies:PoliticalAnnouncement .

ies:DeclaredTarget rdf:type rdfs:Class .

ies:DeclaredTarget sparc:guid "[198808BB-348E-4ea3-B62E-ED6356F7D4A0]" .

ies:DeclaredTarget rdfs:comment "The Organisation against which War has been declared" .

ies:DeclaredTarget rdfs:subClassOf ies:EventParticipant .

ies:DeclaringParty rdf:type rdfs:Class .

ies:DeclaringParty sparc:guid "{82139547-0CA1-448d-997F-3386EFDF049C}" .

ies:DeclaringParty rdfs:comment "An EventParticipant where a ResponsibleActor makes an AnnouncementNote: this also covers GoverningParty from IES 3.2"

ies:DeclaringParty rdfs:subClassOf ies:EventParticipant .

ies:Delivery rdf:type rdfs:Class .

ies:Delivery sparc:guid "{F428AD45-2349-4cd0-815F-8F768B08C6E6}" .

ies:Delivery rdfs:comment "A TradeEvent where one or more Entities are delivered to the receiving party" .

ies:Delivery rdfs:subClassOf ies:TradeEvent .

ies:DeliveryAddress rdf:type rdfs:Class .

ies:DeliveryAddress sparc:guid "{096F83D3-F25E-4d48-96E8-566731C06DB1}" .

ies:DeliveryAddress rdfs:comment "An EventParticipant where an Address participates in a Delivery as the location to which the delivery is made" .

ies:DeliveryAddress rdfs:subClassOf ies:EventParticipant .

ies:DeliveryRecipient rdf:type rdfs:Class .

ies:DeliveryRecipient sparc:guid "{63289363-A4D6-4abf-BE19-6DCDDCF9B28F}" .

ies:DeliveryRecipient rdfs:comment "An EventParticipant where a ResponsibleActor participates in a Delivery as a recipient" .

ies:DeliveryRecipient rdfs:subClassOf ies:EventParticipant .

ies:DemocraticChangeOfGovernment rdf:type rdfs:Class .

ies:DemocraticChangeOfGovernment sparc:guid "{33C68A39-AF9C-4f37-97EA-1DE4BAC4F7FB}" .

ies:DemocraticChangeOfGovernment rdfs:comment "A ChangeOfGovernment that comes about by democratic means" .

ies:DemocraticChangeOfGovernment rdfs:subClassOf ies:ChangeOfGovernment .

ies:Department rdf:type rdfs:Class .

ies:Department sparc:guid "{6C7891C7-E095-41f4-A894-AA0C6A22F5D2}" .

ies:Department rdfs:comment "An Organisation that is part of another Organisation - usually part of a CommercialOrganisation, though other Organisations have departments" .

ies:Department rdfs:subClassOf ies:Organisation .

ies:Departure rdf:type rdfs:Class .

ies:Departure sparc:guid "{0FCBDA68-181C-40e1-9C5B-0E225CA827DB}" .

ies:Departure rdfs:comment "An EventParticipant and a BoundingState that marks the start of a Travel eventThe date/time of the departure can be specified using the inPeriod relationship. " .

ies:Departure rdfs:subClassOf ies:BoundingState .

ies:Destroy rdf:type rdfs:Class .

ies:Destroy sparc:guid "{27000BBA-F3F9-4355-B466-92CE04477C9B}" .

ies:Destroy rdfs:comment "LifecycleEvent where an Entity is destroyed" .

ies:Destroyed rdfs:subClassOf ies:LifecycleEvent .

ies:Destroyed rdf:type rdfs:Class .

ies:Destroyed sparc:guid "{E70CA8CD-51DC-4f77-982C-C233F9493FF9}" .

ies:Destroyed rdfs:comment "An EventParticipant where an Entity is destroyed" .
 ies:Destroyed rdfs:subClassOf ies:EventParticipant .
 ies:Destroyer rdf:type rdfs:Class .
 ies:Destroyer sparx:guid "{C02929D-5946-48dd-94CB-80EC23A56300}" .
 ies:Destroyer rdfs:comment "An EventParticipant where a ResponsibleActor participates in a Destroy event as a destroyer" .
 ies:Destroyer rdfs:subClassOf ies:ActiveEventParticipant .
 ies:Device rdf:type rdfs:Class .
 ies:Device sparx:guid "{115F2F9B-21F3-4903-8EAA-AB3AEFE97461}" .
 ies:Device rdfs:comment "An Asset that is man-made and performs one or more functions - i.e. it is also an Actor" .
 ies:Device rdfs:subClassOf ies:Actor .
 ies:Device rdfs:subClassOf ies:Asset .
 ies:Device rdfs:subClassOf ies:DeviceState .
 ies:DeviceInCommunication rdf:type rdfs:Class .
 ies:DeviceInCommunication sparx:guid "{0073BD83-64CB-433c-BF4D-A6BB01862F14}" .
 ies:DeviceInCommunication rdfs:comment "A DeviceState (and an EventParticipant) when a Device is communicating." .
 ies:DeviceInCommunication rdfs:subClassOf ies:EventParticipant .
 ies:DeviceInCommunication rdfs:subClassOf ies:DeviceState .
 ies:DeviceOnline rdf:type rdfs:Class .
 ies:DeviceOnline sparx:guid "{7008C564-35E1-4921-8759-5DAFA51B4E83}" .
 ies:DeviceOnline rdfs:comment "An EventParticipant where a Device participates in an OnlineEvent" .
 ies:DeviceOnline rdfs:subClassOf ies:EventParticipant .
 ies:DeviceOnline rdfs:subClassOf ies:DeviceState .
 ies:DeviceState rdf:type rdfs:Class .
 ies:DeviceState sparx:guid "{6107EEA5-1A13-46e4-83FB-14740437B814}" .
 ies:DeviceState rdfs:comment "A temporalState of a Device" .
 ies:DeviceState rdfs:subClassOf ies:AssetState .
 ies:dialInNumber rdf:type owl:DatatypeProperty .
 ies:dialInNumber sparx:guid "{73F2438B-77F5-49ee-B7D0-84D5D50B378F}" .
 ies:dialInNumber rdfs:comment "The number dialed to take part in the TeleConference" .
 ies:dialInNumber rdfs:subPropertyOf ies:attribute .
 ies:dialInNumber rdfs:domain ies:TeleConference .
 ies:Disagreement rdf:type rdfs:Class .
 ies:Disagreement sparx:guid "{E73C74A9-B356-40a4-BDBB-40567592BBD0}" .
 ies:Disagreement rdfs:comment "An Event that covers the end-to-end disagreement between parties" .
 ies:Disagreement rdfs:subClassOf ies:Event .
 ies:DiscontinuousState rdf:type rdfs:Class .
 ies:DiscontinuousState sparx:guid "{52DB371E-71AC-4812-B3CF-0FD7D73F1BB0}" .
 ies:DiscontinuousState rdfs:comment "A State that is temporally dissected - i.e. it is not a continuous state, but in fact a fusion of states (which may or may not be specified)This is used for managing situations where something happens from time to time, and we dont always know when it happens. For example, if a vehicle is usually parked in a street, we would use a DiscontinuousState of the vehicle that would be inLocation." .
 ies:DiscontinuousState rdfs:subClassOf ies:State .
 ies:Dislikes rdf:type rdfs:Class .
 ies:Dislikes sparx:guid "{30A0F2DA-DB31-40fd-8723-88A24B2F8448}" .
 ies:Dislikes rdfs:comment "A Interested state where a ResponsibleActor dislikes something" .
 ies:Dislikes rdfs:subClassOf ies:Interested .
 ies:DispositionaClass rdf:type rdfs:Class .
 ies:DispositionaClass sparx:guid "{2855AF50-EFF4-4ced-B499-AE42423A4DE3}" .
 ies:DispositionaClass rdfs:comment "A ClassOfElement whose instances all share the same disposition - e.g. capability or tendencyExample: Vehicles capable of Mach 2" .
 ies:DispositionaClass rdfs:subClassOf ies:ClassOfElement .
 ies:disrespectfulOf rdf:type owl:ObjectProperty .
 ies:disrespectfulOf sparx:guid "{369D2CA7-BFFD-4bc3-941F-47262C3DBF1F}" .
 ies:disrespectfulOf rdfs:comment "A Relationship between two ResponsibleActor Entities where one is disrespectful of the other.Note: this should not be considered a bi-directional relationship. Just because one person disrespects another person does not necessarily mean the feeling is reciprocated." .
 ies:disrespectfulOf rdfs:subPropertyOf ies:relationship .
 ies:disrespectfulOf rdfs:range ies:ResponsibleActor .
 ies:disrespectfulOf rdfs:domain ies:ResponsibleActorState .
 ies:distrusts rdf:type owl:ObjectProperty .
 ies:distrusts sparx:guid "{3499FB8A-AA42-4367-BBBC-79A69338BD70}" .
 ies:distrusts rdfs:comment "A Relationship between two ResponsibleActor Entities where one distrusts the other.Note: this should not be considered a bi-directional relationship. Just because one person distrusts another person does not necessarily mean the feeling is reciprocated." .
 ies:distrusts rdfs:subPropertyOf ies:relationship .
 ies:distrusts rdfs:range ies:ResponsibleActor .
 ies:distrusts rdfs:domain ies:ResponsibleActorState .
 ies:documentedBy rdf:type owl:ObjectProperty .
 ies:documentedBy sparx:guid "{AC7C948A-F19C-4296-AC38-0FEE6A4C5E90}" .
 ies:documentedBy rdfs:comment "An isRepresentedAs relationship that asserts a WorkOfDocumentation is about an Thing" .
 ies:documentedBy rdfs:subPropertyOf ies:isRepresentedAs .
 ies:documentedBy rdfs:domain ies:Thing .
 ies:documentedBy rdfs:range ies:WorkOfDocumentation .
 ies:DocumentFormat rdf:type rdfs:Class .
 ies:DocumentFormat sparx:guid "{ACB44E46-7A30-4911-A9F0-3D5412FB3725}" .
 ies:DocumentFormat rdfs:comment "A ClassOfIndividualDocument whose members are all of the same document format - e.g.PDFMS Word" .
 ies:DocumentFormat rdfs:subClassOf ies:ClassOfIndividualDocument .
 ies:documentIdentifies rdf:type owl:ObjectProperty .
 ies:documentIdentifies sparx:guid "{F28738A6-5EBA-4d80-980B-AA9E6F28B81A}" .
 ies:documentIdentifies rdfs:comment "Links an IdentityDocument to the Person it identifies.Note: was Is associated with in IES3" .
 ies:documentIdentifies rdfs:subPropertyOf ies:relationship .
 ies:documentIdentifies rdfs:domain ies:IdentityDocument .
 ies:documentIdentifies rdfs:range ies:Person .
 ies:DocumentSection rdf:type rdfs:Class .
 ies:DocumentSection sparx:guid "{19FE20BA-D898-46d4-8916-3E73BC059D54}" .
 ies:DocumentSection rdfs:comment "A Representation that is a section/chapter/paragraph in a WorkOfDocumentationNote: inRepresentation should be used to associate the DocumentSection with the WorkOfDocumentation or other DocumentSection it is part of." .
 ies:DocumentSection rdfs:subClassOf ies:Representation .
 ies:DomainName rdf:type rdfs:Class .
 ies:DomainName sparx:guid "{42FBF9AC-2D28-453a-80A0-2A271DA32EB5}" .
 ies:DomainName rdfs:comment "A CommunicationsIdentifierRange that defines a realm of administrative autonomy, authority or control within the internet. [from wikipedia]" .
 ies:DomainName rdfs:subClassOf ies:CommunicationsIdentifierRange .
 ies:DrivingLicence rdf:type rdfs:Class .
 ies:DrivingLicence sparx:guid "{44C1DD59-354B-405a-9755-417240802DE4}" .
 ies:DrivingLicence rdfs:comment "An IdentityDocument that permits a Person to drive a Vehicle in the Country of issue." .
 ies:DrivingLicence rdfs:subClassOf ies:IdentityDocument .
 ies:Duration rdf:type rdfs:Class .
 ies:Duration sparx:guid "{7852A5E5-8684-49f2-82AE-3368032163B1}" .
 ies:Duration rdfs:comment "The Measure of an Elements temporal extent" .
 ies:Duration rdfs:subClassOf ies:StandardMeasure .
 ies:Easting rdf:type rdfs:Class .
 ies:Easting sparx:guid "{A4502460-5487-446b-A9AA-003B49F9682B}" .
 ies:Easting rdfs:comment "The GeoIdentity that is a representation of the eastward componrnrnent of cartesian point on a map - i.e. on a 2D projection of the globe such as a mercator projection." .
 ies:Easting rdfs:subClassOf ies:GeoIdentity .
 ies:EducationalOrganisation rdf:type rdfs:Class .
 ies:EducationalOrganisation sparx:guid "{F30D350C-848D-4b02-AEA5-86575CEEEFB3}" .
 ies:EducationalOrganisation rdfs:comment "An Organisation that provides education" .

ies:EducationalOrganisation rdfs:subClassOf ies:Organisation .
 ies:Election rdf:type rdfs:Class .
 ies:Election sparx:guid "{7D9E328D-345E-43f5-8163-9657E4D016BD}" .
 ies:Election rdfs:comment "A PoliticalEvent where the population vote for their preferred ElectoralCandidate to become their representative. " .
 ies:Election rdfs:subClassOf ies:PoliticalEvent .
 ies:ElectoralCandidate rdf:type rdfs:Class .
 ies:ElectoralCandidate sparx:guid "{E035D766-CB68-49c3-AC69-A56F3487C625}" .
 ies:ElectoralCandidate rdfs:comment "A Person standing for elected office" .
 ies:ElectoralCandidate rdfs:subClassOf ies:EventParticipant .
 ies:ElectoralRegion rdf:type rdfs:Class .
 ies:ElectoralRegion sparx:guid "{515468C2-B4D9-449d-8AC4-575973EFBF6B}" .
 ies:ElectoralRegion rdfs:comment "The RegionalConstituency being decided in an Election" .
 ies:ElectoralRegion rdfs:subClassOf ies:EventParticipant .
 ies:ElectricCurrent rdf:type rdfs:Class .
 ies:ElectricCurrent sparx:guid "{9442C4E6-A52B-4c93-B942-8893D90B3B14}" .
 ies:ElectricCurrent rdfs:comment "The Measure of the flow of electric charge.Note: whilst this is a tricky Measure in a 4D ontology, it should be used in a niaive manner - i.e. measure of a State of an Entity when the current is flowing through it." .
 ies:ElectricCurrent rdfs:subClassOf ies:StandardMeasure .
 ies:Element rdf:type rdfs:Class .
 ies:Element sparx:guid "{97EDC90F-3B36-4da8-AE77-D5FDBDEA2B21}" .
 ies:Element rdfs:comment "An Thing that has a spatial extent and can have start and end dates" .
 ies:Element rdfs:subClassOf ies:Thing .
 ies:Element ies:powertype ies:ClassOfElement .
 ies:EmailAccount rdf:type rdfs:Class .
 ies:EmailAccount sparx:guid "{FCBB35B9-704B-46c1-8054-10B7DA7EB8F8}" .
 ies:EmailAccount rdfs:comment "A CommunicationsAccount that is used to administer the use of one or more e-mail addresses." .
 ies:EmailAccount rdfs:subClassOf ies:CommunicationsAccount .
 ies:EmailAccount rdfs:subClassOf ies:OnlineAccount .
 ies:EmailAddress rdf:type rdfs:Class .
 ies:EmailAddress sparx:guid "{36F61EDF-6E6E-4d8d-9E75-275A820F6D96}" .
 ies:EmailAddress rdfs:comment "A CommunicationsIdentifier that uniquely identifies an email account.Format: local-part@domain" .
 ies:EmailAddress rdfs:subClassOf ies:CommunicationsIdentifier .
 ies:employedBy rdf:type owl:ObjectProperty .
 ies:employedBy sparx:guid "{74721DF1-18D6-4c1b-93CC-71C888C6D405}" .
 ies:employedBy rdfs:comment "A worksFor relationship where the worker is employed." .
 ies:employedBy rdfs:subPropertyOf ies:worksFor .
 ies:employedBy rdfs:domain ies:PersonState .
 ies:EncodedData rdf:type rdfs:Class .
 ies:EncodedData sparx:guid "{8AF1DB0B-9BEB-4a33-A459-7EF2BE309E81}" .
 ies:EncodedData rdfs:comment "A Representation which is external data according to a data format that is not in IES format." .
 ies:EncodedData rdfs:subClassOf ies:DataObject .
 ies:endBoundOfClass rdf:type owl:ObjectProperty .
 ies:endBoundOfClass sparx:guid "{F8109922-1CB1-490d-BBB5-FD5B76E19FD1}" .
 ies:endBoundOfClass rdfs:comment "A relationship linking a TimeBoundedClass to the ParticularPeriod that marks the end bound date of its instances" .
 ies:endBoundOfClass rdfs:subPropertyOf ies:relationship .
 ies:endBoundOfClass rdfs:domain ies:TimeBoundedClass .
 ies:endBoundOfClass rdfs:range ies:ParticularPeriod .
 ies:endsIn rdf:type owl:DatatypeProperty .
 ies:endsIn sparx:guid "{6767DFCD-3FCB-42cc-BEE3-9FA9A324DF0B}" .
 ies:endsIn rdfs:comment "An xsd:DateTime for the end of the period" .
 ies:endsIn rdfs:subPropertyOf ies:attribute .
 ies:endsIn rdfs:domain ies:ArbitraryPeriod .
 ies:EndToEndActivity rdf:type rdfs:Class .
 ies:EndToEndActivity sparx:guid "{A88ABE99-106C-4843-A2E4-753162603859}" .
 ies:EndToEndActivity rdfs:comment "An Event (usually of long duration) that is composed of a number of other Events." .
 ies:EndToEndActivity rdfs:subClassOf ies:Event .
 ies:EndToEndAgreement rdf:type rdfs:Class .
 ies:EndToEndAgreement sparx:guid "{1B39630B-B00F-4def-9C65-48082C4AD2E0}" .
 ies:EndToEndAgreement rdfs:comment "An EndToEndActivity which is the overall process of agreeing something, including all the events that take place under that agreement, such as the negotiation, signing, delivery of service, etc." .
 ies:EndToEndAgreement rdfs:subClassOf ies:EndToEndActivity .
 ies:EndToEndAuthorisation rdf:type rdfs:Class .
 ies:EndToEndAuthorisation sparx:guid "{D75F18D1-95D6-481b-84D5-F8D7F3A5A389}" .
 ies:EndToEndAuthorisation rdfs:comment "An EndToEndActivity which is the overall process of requesting, receiving authority to act, and the conduct of activities under that authorisation until the period of authorisation ends. " .
 ies:EndToEndAuthorisation rdfs:subClassOf ies:EndToEndActivity .
 ies:EndToEndTransaction rdf:type rdfs:Class .
 ies:EndToEndTransaction sparx:guid "{911EB3DE-A001-493d-850D-3CF5A848791D}" .
 ies:EndToEndTransaction rdfs:comment "An EndToEndActivity covering the lifecycle of the trade" .
 ies:EndToEndTransaction rdfs:subClassOf ies:IntelligenceOperation .
 ies:EndToEndTransaction rdfs:subClassOf ies:EndToEndActivity .
 ies:enemyOf rdf:type owl:ObjectProperty .
 ies:enemyOf sparx:guid "{7f1A6A06-5223-4bf9-B903-1061A127D62C}" .
 ies:enemyOf rdfs:comment "A Relationship between two ResponsibleActor Entities where one is the enemy of the other.Note: this should not be considered a bi-directional relationship. Just because one person considers another person their enemy does not necessarily mean the feeling is reciprocated. " .
 ies:enemyOf rdfs:subPropertyOf ies:relationship .
 ies:enemyOf rdfs:domain ies:ResponsibleActorState .
 ies:enemyOf rdfs:range ies:ResponsibleActor .
 ies:EntertainmentEvent rdf:type rdfs:Class .
 ies:EntertainmentEvent sparx:guid "{78C34A99-CD14-43cb-82AE-93A0F8CF022B}" .
 ies:EntertainmentEvent rdfs:comment "An Event where entertainment (sporting, music, theatre, etc.) is provided" .
 ies:EntertainmentEvent rdfs:subClassOf ies:Event .
 ies:EntertainmentTicket rdf:type rdfs:Class .
 ies:EntertainmentTicket sparx:guid "{96989C30-99CC-4606-A8D4-DFD9421F0E34}" .
 ies:EntertainmentTicket rdfs:comment "A Ticket to an EntertainmentEvent" .
 ies:EntertainmentTicket rdfs:subClassOf ies:Ticket .
 ies:Entity rdf:type rdfs:Class .
 ies:Entity sparx:guid "{F4EDE167-6F5A-417d-9984-0221CCDF752C}" .
 ies:Entity rdfs:comment "An Entity typically represents a tangible thing like a Person, a Communications Device, or a Location." .
 ies:Entity rdfs:subClassOf ies:Element .
 ies:Entity ies:powertype ies:ClassOfEntity .
 ies:EntityInTransit rdf:type rdfs:Class .
 ies:EntityInTransit sparx:guid "{74169219-A47C-48ce-A25F-3948E7E873B6}" .
 ies:EntityInTransit rdfs:comment "A TravelLeg where an Entity is moving in Transit" .
 ies:EntityInTransit rdfs:subClassOf ies:TravelLeg .
 ies:Ethnicity rdf:type rdfs:Class .
 ies:Ethnicity sparx:guid "{8AC946A4-4C03-463c-9F32-37EA8593988A}" .
 ies:Ethnicity rdfs:comment "A ClassOfPerson whose members all share the same ethnicity" .
 ies:Ethnicity rdfs:subClassOf ies:ClassOfPerson .
 ies:Event rdf:type rdfs:Class .
 ies:Event sparx:guid "{B376370E-F5E8-4287-A3EC-AC35532919B1}" .
 ies:Event rdfs:comment "An Event represents an activity or incident, involving one or more participating entities, that occurred/started at a specific point in time @ e.g. a meeting, or a telephone call." .
 ies:Event rdfs:subClassOf ies:Element .
 ies:Event ies:powertype ies:ClassOfEvent .
 ies:eventDateTime rdf:type owl:ObjectProperty .

ies:eventDateTime sparx:guid "{07DCD4FC-938C-438d-ABE6-F7F64E66A255}" .
 ies:eventDateTime rdfs:comment "The date/time of the performance to which the ticket is valid." .
 ies:eventDateTime rdfs:subPropertyOf ies:relationship .
 ies:eventDateTime rdfs:domain ies:EntertainmentTicket .
 ies:eventDateTime rdfs:range ies:ParticularPeriod .
 ies:EventParticipant rdf:type rdfs:Class .
 ies:EventParticipant sparx:guid "{C5AB420C-1AB6-479a-97E1-4F2FD37725CB}" .
 ies:EventParticipant rdfs:comment "A State which is the participating role of an Entity in an Event.Note: this includes inactive participation (e.g. something that is being repaired). If the participation is known to be active then ActiveEventParticipant (or one of its subtypes) should be used. In BORO, EventParticipant would be Involvement and ActiveEventParticipant would be Participation." .
 ies:EventParticipant rdfs:subClassOf ies:State .
 ies:EventState rdf:type rdfs:Class .
 ies:EventState sparx:guid "{FE668C24-D25C-4273-872A-EB77CB09341D}" .
 ies:EventState rdfs:comment "A temporal state of an EventNote: care must be taken with using this in a 4D, extensional model such as IES. States such as Ended would not be appropriate, for example - in such a case, the temporal extent of the Event or the presence of a BoundingState to end it would be correct." .
 ies:EventState rdfs:subClassOf ies:State .
 ies:EvidentialPhotograph rdf:type rdfs:Class .
 ies:EvidentialPhotograph sparx:guid "{AFFFF30F-B274-4466-B0F2-D2A6A78E1832}" .
 ies:EvidentialPhotograph rdfs:comment "Relates a Surveillance Event to a Document that is the evidence resulting from the Surveillance" .
 ies:EvidentialPhotograph rdfs:subClassOf ies:EventParticipant .
 ies:ExchangePayload rdf:type rdfs:Class .
 ies:ExchangePayload sparx:guid "{749B002E-37B1-4754-B3B2-96642B3CF4A7}" .
 ies:ExchangePayload rdfs:comment "A marker object that shall be present in all IES exchange files. This object is the domain for all meta-data about the file.Wherever possible, Dublin-Core meta-data tags should be used on an ExchangePayload. If locally defined properties are needed, then these may also be defined and included in the exchange file." .
 ies:ExchangePayload rdfs:subClassOf rdfs:Resource .
 ies:excludedFrom rdf:type owl:ObjectProperty .
 ies:excludedFrom sparx:guid "{883B5479-62D-47a4-BC14-9A11835D820B}" .
 ies:excludedFrom rdfs:comment "A Relationship between a ResponsibleActorState and a Location they are not allowed to enter.Note: any additional information about how or why the exclusion is in place should be added to the state" .
 ies:excludedFrom rdfs:subPropertyOf ies:relationship .
 ies:excludedFrom rdfs:domain ies:ResponsibleActorState .
 ies:excludedFrom rdfs:range ies:location .
 ies:Facility rdf:type rdfs:Class .
 ies:Facility sparx:guid "{9CD2C1B1-85B1-4579-9376-07827AD68461}" .
 ies:Facility rdfs:comment "A Location that is man-made, but is typically larger than an Address (i.e. it may have more than one postal address)Examples: Military camps, factories, sports facilities, airports, etc." .
 ies:Facility rdfs:subClassOf ies:RealEstate .
 ies:familiarlyRelatedTo rdf:type owl:ObjectProperty .
 ies:familiarlyRelatedTo sparx:guid "{3AA26AC6-206D-4b6d-BDEC-C9E2B4814BE7}" .
 ies:familiarlyRelatedTo rdfs:comment "A Relationship between PersonState (which may be a Person, or just a temporal state of Person) and another Person to indicate they have a familial relationship.Note: some relationships will be temporal (e.g. spouseOf) and therefore related a state to a Person. Others will be for life (i.e. from the birth of the youngest until one of them dies) and therefore between two whole-life Person entities." .
 ies:familiarlyRelatedTo rdfs:subPropertyOf ies:relationship .
 ies:familiarlyRelatedTo rdfs:domain ies:PersonState .
 ies:familiarlyRelatedTo rdfs:range ies:Person .
 ies:fearfulOf rdf:type owl:ObjectProperty .
 ies:fearfulOf sparx:guid "{A589F81D-DC15-4b71-80B5-BA4CD46B2E41}" .
 ies:fearfulOf rdfs:comment "A Relationship between two ResponsibleActor Entities where one is fearful of the other.Note: this should not be considered a bi-directional relationship. Just because one person considers another person a threat does not necessarily mean the feeling is reciprocated." .
 ies:fearfulOf rdfs:subPropertyOf ies:relationship .
 ies:fearfulOf rdfs:range ies:ResponsibleActor .
 ies:fearfulOf rdfs:domain ies:ResponsibleActorState .
 ies:FerryTicket rdf:type rdfs:Class .
 ies:FerryTicket sparx:guid "{B2ED961F-245E-4e74-A32F-6B9CF1BBDF2B}" .
 ies:FerryTicket rdfs:comment "A Ticket that is used to travel by sea" .
 ies:FerryTicket rdfs:subClassOf ies:TravelTicket .
 ies:FinancialAccount rdf:type rdfs:Class .
 ies:FinancialAccount sparx:guid "[44DAC574-2A2E-44bc-ACD2-236811FA8D29]" .
 ies:FinancialAccount rdfs:comment "An Account held for financial management purposes" .
 ies:FinancialAccount rdfs:subClassOf ies:Account .
 ies:FiniteClassOfElement rdf:type rdfs:Class .
 ies:FiniteClassOfElement sparx:guid "{06BAC6F4-F6B2-4be1-95C5-8E31C34796CB}" .
 ies:FiniteClassOfElement rdfs:comment "A ClassOfElement whose instances are classes with finite, fixed membership of Elements." .
 ies:FiniteClassOfElement rdfs:subClassOf ies:ClassOfElement .
 ies:finiteMembershipCount rdf:type owl:DatatypeProperty .
 ies:finiteMembershipCount sparx:guid "[F3DDDC24-010C-4cd2-BF97-7464EAF45317]" .
 ies:finiteMembershipCount rdfs:comment "An integer count of members of a FiniteClassOfElement" .
 ies:finiteMembershipCount rdfs:subPropertyOf ies:attribute .
 ies:finiteMembershipCount rdfs:domain ies:FiniteClassOfElement .
 ies:firstLineOfAddress rdf:type rdfs:Class .
 ies:firstLineOfAddress sparx:guid "{886D087E-3D76-4836-9201-1244B80CDC69}" .
 ies:firstLineOfAddress rdfs:comment "The first line of the Address including the number of the dwelling and the street name" .
 ies:firstLineOfAddress rdfs:subClassOf ies:lineOfAddress .
 ies:Flight rdf:type rdfs:Class .
 ies:Flight sparx:guid "{375B0887-712F-43f0-BBF4-5C544D75AC39}" .
 ies:Flight rdfs:comment "A TravelService by air" .
 ies:Flight rdfs:subClassOf ies:Transit .
 ies:FlightTicket rdf:type rdfs:Class .
 ies:FlightTicket sparx:guid "{3A9A1BA9-465F-4f6d-BD55-9F3F8AE40AE0}" .
 ies:FlightTicket rdfs:comment "A Ticket that is used to travel by air" .
 ies:FlightTicket rdfs:subClassOf ies:TravelTicket .
 ies:FootballMatchTicket rdf:type rdfs:Class .
 ies:FootballMatchTicket sparx:guid "[D6A26F73-5748-47db-813F-E1813577F41B]" .
 ies:FootballMatchTicket rdfs:comment "An EntertainmentTicket for a football match" .
 ies:FootballMatchTicket rdfs:subClassOf ies:EntertainmentTicket .
 ies:Forgery rdf:type rdfs:Class .
 ies:Forgery sparx:guid "(78686D99-2AAC-4f5b-8EE0-456BDCC6F99E)" .
 ies:Forgery rdfs:comment "A CriminalActivity that is the creation of fake items(also a subclass of Create)." .
 ies:Forgery rdfs:subClassOf ies>Create .
 ies:Forgery rdfs:subClassOf ies:CriminalActivity .
 ies:format rdf:type owl:ObjectProperty .
 ies:format sparx:guid "{EF2C13D4-7106-4799-BB72-7CD47714F257}" .
 ies:format rdfs:comment "The format of the respective WorkOfDocumentation.Examples:PDFMS Word" .
 ies:format rdfs:subPropertyOf ies:relationship .
 ies:format rdfs:subPropertyOf rdfs:subClassOf .
 ies:format rdfs:domain ies:WorkOfDocumentation .
 ies:format rdfs:range ies:DocumentFormat .
 ies:formatOfIndividualDocument rdf:type owl:ObjectProperty .
 ies:formatOfIndividualDocument sparx:guid "{F1F94713-6D95-4928-B537-4FBA55D09E34}" .
 ies:formatOfIndividualDocument rdfs:comment "The format of the respective IndividualDocument.Examples:PDFPrinted" .
 ies:formatOfIndividualDocument rdfs:subPropertyOf ies:relationship .
 ies:formatOfIndividualDocument rdfs:domain ies:IndividualDocument .
 ies:formatOfIndividualDocument rdfs:subPropertyOf rdf:type .
 ies:formatOfIndividualDocument rdfs:range ies:DocumentFormat .
 ies:FoundOrganisation rdf:type rdfs:Class .

ies:FoundOrganisation sparx:guid "{5054AFA3-8FC7-449d-93EE-C69B9D2AE118}" .
 ies:FoundOrganisation rdfs:comment "A Create Event where an Organisation is founded" .
 ies:FoundOrganisation rdfs:subClassOf ies>Create .
 ies:friendOf rdf:type owl:ObjectProperty .
 ies:friendOf sparx:guid "{13EB3439-497F-49ad-A7F4-DEF8A600F640}" .
 ies:friendOf rdfs:comment "A Relationship between two ResponsibleActor Entities where one is the friend of the other. Note: this should not be considered a bi-directional relationship. Just because one person considers another person their friend does not necessarily mean the feeling is reciprocated. Not that Im bitter or anything. See also Stalking if you must. " .
 ies:friendOf rdfs:range ies:ResponsibleActor .
 ies:friendOf rdfs:domain ies:ResponsibleActorState .
 ies:Gender rdf:type rdfs:Class .
 ies:Gender sparx:guid "{8B4DB18E-DF46-4419-B0ED-0159A25F2319}" .
 ies:Gender rdfs:comment "A ClassOfPerson whose members all share the same gender" .
 ies:Gender rdfs:subClassOf ies:ClassOfPerson .
 ies:GeographicFeature rdf:type rdfs:Class .
 ies:GeographicFeature sparx:guid "{7EEE1EF7-C814-4eee-85B3-F48698FD52B6}" .
 ies:GeographicFeature rdfs:comment "A Location that is a naturally occurring feature on the earth." .
 ies:GeographicFeature rdfs:subClassOf ies:Location .
 ies:GeoIdentity rdf:type rdfs:Class .
 ies:GeoIdentity sparx:guid "{87251DA1-7293-445e-987F-F13E331B6BDF}" .
 ies:GeoIdentity rdfs:comment "A unique Identifier attributed to the respective Location" .
 ies:GeoIdentity rdfs:subClassOf ies:Identifier .
 ies:GeoJSON rdf:type rdfs:Class .
 ies:GeoJSON sparx:guid "{417C1F4E-6A5D-4631-B275-8E982252791A}" .
 ies:GeoJSON rdfs:comment "GeoJSON is an open standard format designed for representing simple geographical features, along with their non-spatial attributes. It is based on JSON, the JavaScript Object Notation. GeoJSON mandates use of WGS 84 coordinate system - see IETF RFC 7946" .
 ies:GeoJSON rdfs:subClassOf ies:JsonData .
 ies:GeoJSON rdfs:subClassOf ies:GeoRepresentation .
 ies:GeoObject rdf:type rdfs:Class .
 ies:GeoObject sparx:guid "{EA165884-8DF6-4aa6-848C-C682F6969D9F}" .
 ies:GeoObject rdfs:comment "A DataObject and a GeoRepresentation that contains geographical information" .
 ies:GeoObject rdfs:subClassOf ies:DataObject .
 ies:GeoObject rdfs:subClassOf ies:GeoRepresentation .
 ies:GeoPoint rdf:type rdfs:Class .
 ies:GeoPoint sparx:guid "{9A9467C3-D5FC-4964-8943-FE63ADF38914}" .
 ies:GeoPoint rdfs:comment "A Location that is a point (mathematically speaking, of vanishing volume) on, below or above the surface of the WGS84 spheroid. The distance from the spheroid surface is given by the altitudeInMetres attribute." .
 ies:GeoPoint rdfs:subClassOf ies:location .
 ies:GeoRepresentation rdf:type rdfs:Class .
 ies:GeoRepresentation sparx:guid "{A8C07233-5D62-4ad4-B405-2D15FC37497}" .
 ies:GeoRepresentation rdfs:comment "A Representation for a Location - e.g. a point, a polyline, etc." .
 ies:GeoRepresentation rdfs:subClassOf ies:Representation .
 ies:GivenName rdf:type rdfs:Class .
 ies:GivenName sparx:guid "{A01A5045-B09C-4bea-8C96-881C29F2EE60}" .
 ies:GivenName rdfs:comment "A PersonName that is one of the given names of a PersonNote: A GivenName will often be applied to a State of the Person, as names tend to change over time" .
 ies:GivenName rdfs:subClassOf ies:PersonName .
 ies:GML rdf:type rdfs:Class .
 ies:GML sparx:guid "{AE59CB88-3178-4bad-9F43-1276337C7944}" .
 ies:GML rdfs:comment "The Geography-Markup-Language (GML) is the XML grammar defined by the Open Geospatial Consortium (OGC) to express geographical features. GML serves as a modeling language for geographic systems as well as an open interchange format for geographic transactions on the Internet. Key to GMLs utility is its ability to integrate all forms of geographic information, including not only conventional vector or discrete objects, but coverages (see also GMLJP2) and sensor data." .
 ies:GML rdfs:subClassOf ies:GeoRepresentation .
 ies:governedPopulation rdf:type owl:ObjectProperty .
 ies:governedPopulation sparx:guid "{917C549C-259F-4850-9CFD-35E05485BF63}" .
 ies:governedPopulation rdfs:comment "Relates a Government to the RegionalPopulation that it governs. " .
 ies:governedPopulation rdfs:subPropertyOf ies:relationship .
 ies:governedPopulation rdfs:domain ies:Government .
 ies:governedPopulation rdfs:range ies:RegionalConstituency .
 ies:governedRegion rdf:type owl:ObjectProperty .
 ies:governedRegion sparx:guid "{72DC3E90-53CE-434d-A5F3-89BDCE08A201}" .
 ies:governedRegion rdfs:comment "The Location which the respective Government is in charge of. See also governedPopulation - sometimes Locations have no people, and sometimes people reside outside the region in which they are legally citizens. Note: A Government instance has a start and end date corresponding to its time in power. " .
 ies:governedRegion rdfs:subPropertyOf ies:relationship .
 ies:governedRegion rdfs:domain ies:Government .
 ies:governedRegion rdfs:range ies:Location .
 ies:Government rdf:type rdfs:Class .
 ies:Government sparx:guid "{D62DBBB8-53FC-405a-BC43-89CA337563A0}" .
 ies:Government rdfs:comment "An Organisation that is (usually) elected to run a governedRegion" .
 ies:Government rdfs:subClassOf ies:Organisation .
 ies:GovernmentOrganisation rdf:type rdfs:Class .
 ies:GovernmentOrganisation sparx:guid "{0D042066-06C8-48d6-8387-500CF8EE2592}" .
 ies:GovernmentOrganisation rdfs:comment "An Organisation that is part of, or controlled by a national or local Government" .
 ies:GovernmentOrganisation rdfs:subClassOf ies:Organisation .
 ies:GrantOfAuthority rdf:type rdfs:Class .
 ies:GrantOfAuthority sparx:guid "{F5EAAEEE-C0B2-469f-9048-3E0731ED8342}" .
 ies:GrantOfAuthority rdfs:comment "An AuthorisationStage where a ResponsibleActor grants another ResponsibleActor authority to act." .
 ies:GrantOfAuthority rdfs:subClassOf ies:AuthorisationStage .
 ies:groupDescription rdf:type owl:DatatypeProperty .
 ies:groupDescription sparx:guid "{2F618A01-5D5F-483c-8652-8B81196AA086}" .
 ies:groupDescription rdfs:comment "A simple text description of a GroupOfItems" .
 ies:groupDescription rdfs:domain ies:GroupOfItems .
 ies:groupName rdf:type owl:DatatypeProperty .
 ies:groupName sparx:guid "{42463865-450C-4a9a-9EF0-5322222C2B97}" .
 ies:groupName rdfs:comment "A name given to a GroupOfItems" .
 ies:groupName rdfs:domain ies:GroupOfItems .
 ies:GroupOfItems rdf:type rdfs:Class .
 ies:GroupOfItems sparx:guid "{04C2111A-D958-4a95-9271-7208B849DD8}" .
 ies:GroupOfItems rdfs:comment "A collection of Thing that have been gathered together for a purpose. Note: The same Thing can be in more than one GroupOfItems" .
 ies:GroupOfItems rdfs:subClassOf rdfs:Resource .
 ies:Hacking rdf:type rdfs:Class .
 ies:Hacking sparx:guid "{2AC7FDAB-7BB8-41ee-B558-AEBFE01274F2}" .
 ies:Hacking rdfs:comment "A CriminalActivity where computer equipment is interfered with without the owners permission" .
 ies:Hacking rdfs:subClassOf ies:CriminalActivity .
 ies:handlingCaveat rdf:type owl:DatatypeProperty .
 ies:handlingCaveat sparx:guid "{1C02B06E-3159-48f6-9575-64B62765498B}" .
 ies:handlingCaveat rdfs:comment "A textual description of any handling caveats that must be adhered to." .
 ies:handlingCaveat rdfs:domain ies:SecurityLabel .
 ies:hasAccessTo rdf:type owl:ObjectProperty .
 ies:hasAccessTo sparx:guid "{CB7F872F-7999-4bfd-8274-2C0E0AFE22AB}" .
 ies:hasAccessTo rdfs:comment "A Relationship between a ResponsibleActorState and an Entity they have access to - e.g. a FinancialAccount, CommunicationsDevice, etc." .
 ies:hasAccessTo rdfs:subPropertyOf ies:relationship .

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ies:hasAccessTo rdfs:domain ies:ResponsibleActorState .
ies:hasAccessTo rdfs:range ies:Entity .
ies:hasAuthor rdf:type owl:ObjectProperty .
ies:hasAuthor sparx:guid "{9464D0864-E76F-4e09-89E1-D3B2D3E63F3B}" .
ies:hasAuthor rdfs:comment "The author of the respective document." .
ies:hasAuthor rdfs:subPropertyOf ies:relationship .
ies:hasAuthor rdfs:domain ies:WorkOfDocumentation .
ies:hasAuthor rdfs:range ies:ResponsibleActor .
ies:hasCharacteristic rdf:type owl:ObjectProperty .
ies:hasCharacteristic sparx:guid "{720D0AA3-81F7-4220-A7A5-34304E33B72F}" .
ies:hasCharacteristic rdfs:comment "An rdf:type relationship that asserts an Element has a Characteristic or Measure" .
ies:hasCharacteristic rdfs:subPropertyOf rdf:type .
ies:hasCharacteristic rdfs:subPropertyOf ies:relationship .
ies:hasCharacteristic rdfs:domain ies:Element .
ies:hasCharacteristic rdfs:range ies:Characteristic .
ies:hasCountryOfIssue rdf:type owl:ObjectProperty .
ies:hasCountryOfIssue sparx:guid "{E7500475-8C4F-47a3-8AAB-C5679621FAE8}" .
ies:hasCountryOfIssue rdfs:comment "The country in which the respective IdentityDocument or PaymentArtefact was issued." .
ies:hasCountryOfIssue rdfs:subPropertyOf ies:relationship .
ies:hasCountryOfIssue rdfs:domain ies:IdentityDocument .
ies:hasCountryOfIssue rdfs:range ies:Country .
ies:hasCountryOfIssue rdfs:domain ies:TravelCard .
ies:hasEmergencyContactAddress rdf:type owl:ObjectProperty .
ies:hasEmergencyContactAddress sparx:guid "{0AAF6757-AAC9-43c4-8B43-CB3358EADCA4}" .
ies:hasEmergencyContactAddress rdfs:comment "The address of an emergency contact as printed on the IdentityDocument" .
ies:hasEmergencyContactAddress rdfs:subPropertyOf ies:relationship .
ies:hasEmergencyContactAddress rdfs:domain ies:IdentityDocument .
ies:hasEmergencyContactAddress rdfs:range ies:Address .
ies:hasEthnicity rdf:type owl:ObjectProperty .
ies:hasEthnicity sparx:guid "{BC3185CE-53F4-45de-A6D4-DAC8343B4D1C}" .
ies:hasEthnicity rdfs:comment "The ethnic group that the respective Person belongs to. The Metropolitan Police standard shall be used as the reference data standard." .
ies:hasEthnicity rdfs:domain ies:Person .
ies:hasEthnicity rdfs:subPropertyOf ies:relationship .
ies:hasEthnicity rdfs:range ies:Ethnicity .
ies:hasEthnicity rdfs:subPropertyOf rdf:type .
ies:hasGeneticGender rdf:type owl:ObjectProperty .
ies:hasGeneticGender sparx:guid "{8914E7DF-443B-4a3a-A945-AAD11B82A86A}" .
ies:hasGeneticGender rdfs:comment "The gender the Person was born with (sex) and which would result from a DNA test." .
ies:hasGeneticGender rdfs:subPropertyOf ies:relationship .
ies:hasGeneticGender rdfs:domain ies:Person .
ies:hasGeneticGender rdfs:range ies:Gender .
ies:hasGeneticGender rdfs:subPropertyOf rdf:type .
ies:hasIdentifiedGender rdf:type owl:ObjectProperty .
ies:hasIdentifiedGender sparx:guid "{7640BFC-B520-458c-A7C1-16651DDF217F}" .
ies:hasIdentifiedGender rdfs:comment "The gender the Person chooses to identify as" .
ies:hasIdentifiedGender rdfs:domain ies:PersonState .
ies:hasIdentifiedGender rdfs:range ies:Gender .
ies:hasIdentifiedGender rdfs:subPropertyOf ies:relationship .
ies:hasLanguageProficiency rdf:type owl:ObjectProperty .
ies:hasLanguageProficiency sparx:guid "{2065B9A0-DCAD-45be-9F0D-BD4398261A7F}" .
ies:hasLanguageProficiency rdfs:comment "A language spoken by the respective Person at a stage (PersonState) in their life" .
ies:hasLanguageProficiency rdfs:subPropertyOf ies:relationship .
ies:hasLanguageProficiency rdfs:domain ies:PersonState .
ies:hasLanguageProficiency rdfs:range ies:LanguageProficiency .
ies:hasLanguageProficiency rdfs:subPropertyOf rdf:type .
ies:hasName rdf:type owl:ObjectProperty .
ies:hasName sparx:guid "{C3A3E636-0C73-4af7-88E3-81C9243CE456}" .
ies:hasName rdfs:comment "An isRepresentedAs relationship that asserts an Thing is identified (albeit loosely) by a Name" .
ies:hasName rdfs:subPropertyOf ies:isRepresentedAs .
ies:hasName rdfs:domain ies:Thing .
ies:hasName rdfs:range ies:Name .
ies:hasPublisher rdf:type owl:ObjectProperty .
ies:hasPublisher sparx:guid "{07FD1DF6-BA77-4657-B3D3-D6D579FD4608}" .
ies:hasPublisher rdfs:comment "The publisher of the document." .
ies:hasPublisher rdfs:subPropertyOf ies:relationship .
ies:hasPublisher rdfs:domain ies:WorkOfDocumentation .
ies:hasPublisher rdfs:range ies:ResponsibleActor .
ies:hasRegisteredCommsID rdf:type owl:ObjectProperty .
ies:hasRegisteredCommsID sparx:guid "{E076AFB8-F6F8-4b06-82B3-7ED568D1EE73}" .
ies:hasRegisteredCommsID rdfs:comment "A relationship between a CommunicationsIdentifier and the CommunicationsAccountState of the account to which the identifier is registered" .
ies:hasRegisteredCommsID rdfs:subPropertyOf ies:relationship .
ies:hasRegisteredCommsID rdfs:domain ies:CommunicationsAccountState .
ies:hasRegisteredCommsID rdfs:range ies:CommunicationsIdentifier .
ies:hasReligion rdf:type owl:ObjectProperty .
ies:hasReligion sparx:guid "{6D1839A4-342A-4e34-823C-BDB392483048}" .
ies:hasReligion rdfs:comment "A relationship where a PersonState holds or follows a Religion" .
ies:hasReligion rdfs:subPropertyOf ies:relationship .
ies:hasReligion rdfs:domain ies:PersonState .
ies:hasReligion rdfs:range ies:Religion .
ies:hasSourceReference rdf:type owl:ObjectProperty .
ies:hasSourceReference sparx:guid "{16480E86-9FE4-4b37-ACFB-9E410F190664}" .
ies:hasSourceReference rdfs:comment "A isRepresentedAs relationship that asserts a Representation is the source (information provenance) for an Thing" .
ies:hasSourceReference rdfs:subPropertyOf ies:isRepresentedAs .
ies:hasStatedAddress rdf:type owl:ObjectProperty .
ies:hasStatedAddress sparx:guid "{0451B5D4-99CB-47a7-BB93-DF4DF6625837}" .
ies:hasStatedAddress rdfs:comment "The address of the owner/user as recorded on the respective IdentityDocument or PaymentArtefact" .
ies:hasStatedAddress rdfs:subPropertyOf ies:relationship .
ies:hasStatedAddress rdfs:domain ies:IdentityDocument .
ies:hasStatedAddress rdfs:range ies:Address .
ies:hasStatedAddress rdfs:domain ies:TravelCard .
ies:hasStatedCountryOfResidence rdf:type owl:ObjectProperty .
ies:hasStatedCountryOfResidence sparx:guid "{9A4EB722-0BDA-4ba7-B895-7A4E273865C9}" .
ies:hasStatedCountryOfResidence rdfs:comment "The country of residence as printed on the respective IdentityDocument" .
ies:hasStatedCountryOfResidence rdfs:subPropertyOf ies:relationship .
ies:hasStatedCountryOfResidence rdfs:range ies:Country .
ies:hasStatedCountryOfResidence rdfs:domain ies:IdentityDocument .
ies:hasStatedNationality rdf:type owl:ObjectProperty .
ies:hasStatedNationality sparx:guid "{C8AB9A91-97ED-4868-8167-44E71F40AFE7}" .
ies:hasStatedNationality rdfs:comment "The nationality of the identity holder as specified on the IdentityDocument" .
ies:hasStatedNationality rdfs:subPropertyOf ies:relationship .
ies:hasStatedNationality rdfs:domain ies:IdentityDocument .
ies:hasStatedNationality rdfs:range ies:Nation .
ies:hasStatedPlaceOfBirth rdf:type owl:ObjectProperty .
ies:hasStatedPlaceOfBirth sparx:guid "{F95710A9-B0A7-4f7b-ADAA-08A2DCBD9C35}" .

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ies:hasStatedPlaceOfBirth rdfs:comment "A relationship to the place of birth as recorded on the respective IdentityDocument" .
 ies:hasStatedPlaceOfBirth rdfs:subPropertyOf ies:relationship .
 ies:hasStatedPlaceOfBirth rdfs:domain ies:IdentityDocument .
 ies:hasStatedPlaceOfBirth rdfs:range ies:RegionOfCountry .
 ies:hasStatedPlaceOfIssue rdf:type owl:ObjectProperty .
 ies:hasStatedPlaceOfIssue sparx:guid "{644B75E8-92A0-4f16-861E-3B4FDF572E}" .
 ies:hasStatedPlaceOfIssue rdfs:comment "A relationship to the place of issue as specified on the IdentityDocument" .
 ies:hasStatedPlaceOfIssue rdfs:subPropertyOf ies:relationship .
 ies:hasStatedPlaceOfIssue rdfs:domain ies:IdentityDocument .
 ies:hasStatedPlaceOfIssue rdfs:range ies:RegionOfCountry .
 ies:hasTheme rdf:type owl:ObjectProperty .
 ies:hasTheme sparx:guid "{654C83B-75CF-4940-A2CF-C7820141C5AE}" .
 ies:hasTheme rdfs:comment "A relationship linking an Event (e.g. Communication, Meeting or Investigation) to an Thing that is a theme (or topic)Examples:* A Event being investigated after it occurred* A general investigation into a Location* A Meeting discussing a new project* A VoiceCall about a Vehicle"
 .
 ies:hasTheme rdfs:subPropertyOf ies:relationship .
 ies:hasTheme rdfs:range ies:Thing .
 ies:hasTheme rdfs:domain ies:Event .
 ies:hasValue rdf:type owl:ObjectProperty .
 ies:hasValue sparx:guid "{8FD84185-A7CE-4d5d-974B-55F693C4376D}" .
 ies:hasValue rdfs:comment "An IsRepresentedAs relationship that asserts a Measure has a MeasureValueNote: a given Measure may have more than one value (e.g. 1kg or 2.2lbs) in different units of measure." .
 ies:hasValue rdfs:subPropertyOf ies:isRepresentedAs .
 ies:hasValue rdfs:domain ies:Measure .
 ies:hasValue rdfs:range ies:MeasureValue .
 ies:Hates rdf:type rdfs:Class .
 ies:Hates sparx:guid "{6939AE2F-D74D-4446-8A88-5C26669689BA}" .
 ies:Hates rdfs:comment "An Interested state where a ResponsibleActor hates something" .
 ies:Hates rdfs:subClassOf ies:Interested .
 ies:HealthServiceIdentifier rdf:type rdfs:Class .
 ies:HealthServiceIdentifier sparx:guid "{FBCCD717-E163-4129-B270-966F5D404260}" .
 ies:HealthServiceIdentifier rdfs:comment "A NationalIdentityNumber used for managing a citizens through-life healthcareIn UK, this would be an NHS number, apart from Scotland where it is called a CHI number" .
 ies:HealthServiceIdentifier rdfs:subClassOf ies:NationalIdentityNumber .
 ies:hmlConfidence rdf:type owl:DatatypeProperty .
 ies:hmlConfidence sparx:guid "{04F797E7-985C-48c5-A50D-A14CFF7725DE}" .
 ies:hmlConfidence rdfs:comment "A confidence whose value must be one of HIGH, MEDIUM, or LOWThis is a mandatory attribute for AssessToBeTrue" .
 ies:hmlConfidence rdfs:subPropertyOf ies:confidence .
 ies:hmlConfidence rdfs:domain ies:AssessToBeTrue .
 ies:holdsAccount rdf:type owl:ObjectProperty .
 ies:holdsAccount sparx:guid "{6314A9B0-4578-42a8-A553-1FDDF35AC7F1}" .
 ies:holdsAccount rdfs:comment "Relates an AccountHolder (PersonState) to the Account they hold" .
 ies:holdsAccount rdfs:subPropertyOf ies:relationship .
 ies:holdsAccount rdfs:domain ies:AccountHolder .
 ies:holdsAccount rdfs:range ies:Account .
 ies:hostedOn rdf:type owl:ObjectProperty .
 ies:hostedOn sparx:guid "{F5C27E55-623E-4fa7-95C3-DD0A722D1035}" .
 ies:hostedOn rdfs:comment "Relates a WebResourceState to the OnlineService that hosts it" .
 ies:hostedOn rdfs:subPropertyOf ies:relationship .
 ies:hostedOn rdfs:domain ies:WebResourceState .
 ies:hostedOn rdfs:range ies:OnlineService .
 ies:IATACode rdf:type rdfs:Class .
 ies:IATACode sparx:guid "{AA530BCE-02F2-4195-A431-573D13A5B41C}" .
 ies:IATACode rdfs:comment "A GeoIdentity that is administered by the International Air Transport Associate for airport identification" .
 ies:IATACode rdfs:subClassOf ies:GeoIdentity .
 ies:IBAN rdf:type rdfs:Class .
 ies:IBAN sparx:guid "{40E59970-04CE-4961-83FC-179739C4DEC3}" .
 ies:IBAN rdfs:comment "An Identifier that is an International Bank Account NumberSee ISO 13616:2007" .
 ies:IBAN rdfs:subClassOf ies:Identifier .
 ies:ICAOCode rdf:type rdfs:Class .
 ies:ICAOCode sparx:guid "{239A3A0C-183C-432F-9147-7259C9573AA2}" .
 ies:ICAOCode rdfs:comment "A GeoIdentity that is administered by the International Civil Aviation Organisation for identifying airports" .
 ies:ICAOCode rdfs:subClassOf ies:GeoIdentity .
 ies:idAuthenticity rdf:type owl:DatatypeProperty .
 ies:idAuthenticity sparx:guid "[1185F43F-7EBB-4e38-A1B3-FF1421F3416D]" .
 ies:idAuthenticity rdfs:comment "Provides an indication of the believed authenticity of the IdentityDocumentGenuineFakeUnknown" .
 ies:idAuthenticity rdfs:subPropertyOf ies:attribute .
 ies:idAuthenticity rdf:type owl:ObjectProperty .
 ies:idDateOfBirth rdf:type rdfs:Class .
 ies:idDateOfBirth sparx:guid "{9E77B9DE-E76A-454d-B4B5-52496358FC65}" .
 ies:idDateOfBirth rdfs:comment "The Date of Birth as specified on the respective IdentityDocument" .
 ies:idDateOfBirth rdfs:subPropertyOf ies:relationship .
 ies:idDateOfBirth rdf:type owl:IdentityDocument .
 ies:idDateOfBirth rdfs:range ies:ParticularPeriod .
 ies:idDateOfIssue rdf:type owl:ObjectProperty .
 ies:idDateOfIssue sparx:guid "[ACAC12AD-16C3-480d-8149-C026F8BE9F81]" .
 ies:idDateOfIssue rdfs:comment "The date that the respective Identity Document was actually issued @ this is different from the ValidFromDate on EphemerallDocuments" .
 ies:idDateOfIssue rdfs:subPropertyOf ies:relationship .
 ies:idDateOfIssue rdfs:domain ies:IdentityDocument .
 ies:idDateOfIssue rdfs:range ies:ParticularPeriod .
 ies:idEmergencyContactName rdf:type owl:DatatypeProperty .
 ies:idEmergencyContactName sparx:guid "{96B7C774-1FE0-4307-BB62-B5899F953FF2}" .
 ies:idEmergencyContactName rdfs:comment "The name of an emergency contact as printed on the IdentityDocument" .
 ies:idEmergencyContactName rdfs:subPropertyOf ies:attribute .
 ies:idEmergencyContactName rdf:type owl:IdentityDocument .
 ies:idEmergencyContactTelNo rdf:type owl:DatatypeProperty .
 ies:idEmergencyContactTelNo sparx:guid "(0198C1BE-43A0-4841-925E-FA5C47991AC3)" .
 ies:idEmergencyContactTelNo rdfs:comment "The telephone number of an emergency contact as printed on the IdentityDocument" .
 ies:idEmergencyContactTelNo rdfs:subPropertyOf ies:attribute .
 ies:idEmergencyContactTelNo rdf:type owl:IdentityDocument .
 ies:Identifier rdf:type rdfs:Class .
 ies:Identifier sparx:guid "{315E6AD3-F2DA-4f69-864F-DA2B95121E2E}" .
 ies:Identifier rdfs:comment "A Name that is unique within the specified context" .
 ies:Identifier rdfs:subClassOf ies:Name .
 ies:IdentityDocument rdf:type rdfs:Class .
 ies:IdentityDocument sparx:guid "(BDF4EBD9-7F41-4d90-91A7-571177330C1B)" .
 ies:IdentityDocument rdfs:comment "An IndividualDocument used to confirm the identity of the bearer (and often enables a particular activity @ e.g. a passport enables the bearer to travel across international borders)." .
 ies:IdentityDocument rdf:type owl:IdentityDocument .
 ies:idFamilyName rdf:type owl:DatatypeProperty .
 ies:idFamilyName sparx:guid "{CCD1F7FE-C42A-4503-BF24-00E8805BD5DD}" .
 ies:idFamilyName rdfs:comment "The family name as printed on the IdentityDocument" .
 ies:idFamilyName rdfs:subPropertyOf ies:attribute .
 ies:idFamilyName rdfs:domain ies:IdentityDocument .
 ies:idGender rdf:type owl:ObjectProperty .
 ies:idGender sparx:guid "{D5B27630-C222-45be-87C2-5C4F8592487B}" .

ies:idGender rdfs:comment "The gender as recorded on the respective IdentityDocument" .
 ies:idGender rdfs:subPropertyOf ies:relationship .
 ies:idGender rdfs:domain ies:IdentityDocument .
 ies:idGender rdfs:range ies:Gender .
 ies:idGivenNames rdfs:type owl:DatatypeProperty .
 ies:idGivenNames sparx:guid "{77CA0C8D-71F0-4cb9-8621-407396FAC5A1}" .
 ies:idGivenNames rdfs:comment "The given names as printed on the IdentityDocument" .
 ies:idGivenNames rdfs:subPropertyOf ies:attribute .
 ies:idGivenNames rdfs:domain ies:IdentityDocument .
 ies:idLowerRange rdf:type owl:ObjectProperty .
 ies:idLowerRange sparx:guid "{6C79CE89-8E17-4ee7-ABA8-DDA5D4AFC78B}" .
 ies:idLowerRange rdfs:comment "A relationship between a CommunicationsIdentifierRange and the CommunicationsIdentifier that is the lower limit of the identifier range" .
 ies:idLowerRange rdfs:subPropertyOf ies:relationship .
 ies:idLowerRange rdfs:domain ies:CommunicationsIdentifierRange .
 ies:idLowerRange rdfs:range ies:CommunicationsIdentifier .
 ies:idOnCard rdf:type owl:ObjectProperty .
 ies:idOnCard sparx:guid "{92D9B068-F8D4-4cbc-AD57-1DA39D5CC1C7}" .
 ies:idOnCard rdfs:comment "A relationship that asserts a NationalIdentityNumber (which identifies a person) is featured on a NationalIdentityCard" .
 ies:idOnCard rdfs:subPropertyOf ies:relationship .
 ies:idOnCard rdfs:domain ies:NationalIdentityCard .
 ies:idOnCard rdfs:range ies:NationalIdentityNumber .
 ies:idUpperRange rdf:type owl:ObjectProperty .
 ies:idUpperRange sparx:guid "{7615FB07-E0C5-4734-AFC8-FD52688DD2CC}" .
 ies:idUpperRange rdfs:comment "A relationship between a CommunicationsIdentifierRange and the CommunicationsIdentifier that is the upper limit of the identifier range" .
 ies:idUpperRange rdfs:subPropertyOf ies:relationship .
 ies:idUpperRange rdfs:domain ies:CommunicationsIdentifierRange .
 ies:idUpperRange rdfs:range ies:CommunicationsIdentifier .
 ies:IdUsedInCheckIn rdf:type rdfs:Class .
 ies:IdUsedInCheckIn sparx:guid "{F481C966-058B-4caf-A427-9E492CAD0D63}" .
 ies:IdUsedInCheckIn rdfs:comment "An EventParticipant where an IdentityDocument is used in a CheckIn event" .
 ies:IdUsedInCheckIn rdfs:subClassOf ies:EventParticipant .
 ies:ilrProficiency rdf:type owl:DatatypeProperty .
 ies:ilrProficiency sparx:guid "{471CF113-1728-47fd-A763-D1FA69226FC4}" .
 ies:ilrProficiency rdfs:comment "The Proficiency qualifier is specified using the Interagency Language Roundtable (ILR) scale [E].(a) ILR Level 0 ☐ No proficiency(b) ILR Level 1 ☐ Elementary Proficiency(c) ILR Level 2 ☐ Limited Working Proficiency(d) ILR Level 3 ☐ Professional Working Proficiency(e) ILR Level 4 ☐ Full Professional Proficiency(f) ILR Level 5 ☐ Native or Bilingual Proficiency" .
 ies:ilrProficiency rdfs:subPropertyOf ies:attribute .
 ies:ilrProficiency rdfs:domain ies:LanguageProficiency .
 ies:IMEI rdf:type rdfs:Class .
 ies:IMEI sparx:guid "{3987794E-6E2E-4457-8BF7-47813B51B139}" .
 ies:IMEI rdfs:comment "The International Mobile Equipment Identity used to identify GSM, WCDMA and iDEN mobile phone handsets, as well as some satellite phones.Usually a 15-digit number (14 digits plus a check digit)Example Value:123456789012345" .
 ies:IMEI rdfs:subClassOf ies:CommunicationsIdentifier .
 ies:IMSI rdf:type rdfs:Class .
 ies:IMSI sparx:guid "{C817C1ED-863B-41f0-B5C1-14117E926A94}" .
 ies:IMSI rdfs:comment "The International Mobile Subscriber NumberHistorically, this is stored as a 64-bit number on the SIM Card (it is NOT identity of the SIM Card itself), but now can be a software assigned identifier to any mobile subscriber interface. An IMSI is usually presented as a 15-digit number, but it can be shorter.The first three digits are the Mobile Country Code (MCC), followed by a 2 or 3 digit Mobile Network Code (MNC) and the remaining digits are the Mobile Subscription Identification Number (MSIN).For the example shown this would be:- 404=India,- 68=MTNL Delhi-1234567890=Subscriber ID" .
 ies:IMSI rdfs:subClassOf ies:CommunicationsIdentifier .
 ies:IncarceratingOrganisation rdf:type rdfs:Class .
 ies:IncarceratingOrganisation sparx:guid "{321CB600-140F-452F-96B7-640DE8289ECF}" .
 ies:IncarceratingOrganisation rdfs:comment "An Organisations role in incarcerating a Person" .
 ies:IncarceratingOrganisation rdfs:subClassOf ies:ActiveEventParticipant .
 ies:IncarceratingOrganisation rdfs:subClassOf ies:PersonState .
 ies:Incarceration rdf:type rdfs:Class .
 ies:Incarceration sparx:guid "{06972684-050B-4f36-9393-B8790D510F5C}" .
 ies:Incarceration rdfs:comment "A LawEnforcement EndToEndActivity where a Person is incarcerated" .
 ies:Incarceration rdfs:subClassOf ies:LawEnforcement .
 ies:Incarceration rdfs:subClassOf ies:EndtoEndActivity .
 ies:IncarcerationFacility rdf:type rdfs:Class .
 ies:IncarcerationFacility sparx:guid "{B5C15382-451A-4446-BBE6-C67FBDB04402}" .
 ies:IncarcerationFacility rdfs:comment "A Facility used for incarceration - e.g. a prison, detention centre, or remand facility" .
 ies:IncarcerationFacility rdfs:subClassOf ies:Facility .
 ies:inCategory rdf:type owl:ObjectProperty .
 ies:inCategory sparx:guid "{D1084B95-5BF1-4e3f-A2A8-8F52F045C31A}" .
 ies:inCategory rdfs:comment "An rdf:type relationship that asserts a Representation belongs to a ContentCategory" .
 ies:inCategory rdfs:subPropertyOf rdf:type .
 ies:inCategory rdfs:range ies:ContentCategory .
 ies:inCategory rdfs:domain ies:Representation .
 ies:inCategory rdfs:subPropertyOf ies:relationship .
 ies:IncomingGovernment rdf:type rdfs:Class .
 ies:IncomingGovernment sparx:guid "{BC752C7E-611B-47d6-BA89-05E58CD23803}" .
 ies:IncomingGovernment rdfs:comment "The Government that took power after a ChangeOfGovernment" .
 ies:IncomingGovernment rdfs:subClassOf ies:EventParticipant .
 ies:IncumbentRepresentative rdf:type rdfs:Class .
 ies:IncumbentRepresentative sparx:guid "{5C4C2871-5F61-4704-83D0-9F8CF42890BF}" .
 ies:IncumbentRepresentative rdfs:comment "A Person in-office prior to the Election being decided" .
 ies:IncumbentRepresentative rdfs:subClassOf ies:EventParticipant .
 ies:InDisagreement rdf:type rdfs:Class .
 ies:InDisagreement sparx:guid "{F12D45EA-66D5-4016-BDF7-E1CD8F48CCF5}" .
 ies:InDisagreement rdfs:comment "An EventParticipant where a ResponsibleActor is in disagreement" .
 ies:InDisagreement rdfs:subClassOf ies:ActiveEventParticipant .
 ies:IndividualDocument rdf:type rdfs:Class .
 ies:IndividualDocument sparx:guid "{0F327324-6B4E-40b1-B96B-97A334BA5E4A}" .
 ies:IndividualDocument rdfs:comment "An Asset that is a written, photographed or drawn representation of thoughts. This might include, but not limited to, formal reports, books, legal instruments. Such documents might exist in a wide variety of forms, both printed and in electronic form.Note: this is an individual document - i.e. physical or (rarely) a specific electronic copy (e.g. on a specific hard disk...told you it was rare). In most cases, we refer to the document in general - WorkOfDocumentation" .
 ies:IndividualDocument rdfs:subClassOf ies:Asset .
 ies:IndividualDocument ies:powertype ies:ClassOfIndividualDocument .
 ies:IndividualDocumentID rdf:type rdfs:Class .
 ies:IndividualDocumentID sparx:guid "{D68F4E10-957A-4e98-8447-8F2768940DA7}" .
 ies:IndividualDocumentID rdfs:comment "An Identifier used to uniquely identify an IndividualDocument" .
 ies:IndividualDocumentID rdfs:subClassOf ies:Identifier .
 ies:influencedBy rdf:type owl:ObjectProperty .
 ies:influencedBy sparx:guid "{411F5C4C-9AD0-462a-BE10-3F43958B7D66}" .
 ies:influencedBy rdfs:comment "A relationship between a ResponsibleActor and the thing that influences them" .
 ies:influencedBy rdfs:subPropertyOf ies:relationship .
 ies:influencedBy rdfs:range ies:Thing .
 ies:influencedBy rdfs:domain ies:ResponsibleActorState .
 ies:informationContent rdf:type owl:ObjectProperty .
 ies:informationContent sparx:guid "{5BEE4248-DC98-4625-8553-3BB2171A1EDE}" .
 ies:informationContent rdfs:comment "A relationship between a WebResourceState and a Representation that asserts the Representation is the content of"

the WebResourceNote: a state is used here as the content may change over time even though the WebResource persists" .
 ies:informationContent rdfs:subPropertyOf ies:relationship .
 ies:informationContent rdfs:domain ies:WebResourceState .
 ies:informationContent rdfs:range ies:Representation .
 ies:inGroup rdf:type owl:ObjectProperty .
 ies:inGroup sparx:guid "{C21D2CA2-6F42-4b7c-9092-8B8C5B7BAF9F}" .
 ies:inGroup rdfs:comment "A property linking a Thing to a GroupOfItems indicating that it belongs to that group. Note: A Thing may be in more than one group and a group may contain more than one Thing" .
 ies:inGroup rdfs:domain ies:Thing .
 ies:inGroup rdfs:range ies:GroupOfItems .
 ies:inLanguage rdf:type owl:ObjectProperty .
 ies:inLanguage sparx:guid "{FF902F8E-6B22-4f17-9C16-48543251D22E}" .
 ies:inLanguage rdfs:comment "An rdf:type relationship that asserts a Representation is in a particular Language" .
 ies:inLanguage rdfs:subPropertyOf rdf:type .
 ies:inLanguage rdfs:subPropertyOf ies:relationship .
 ies:inLanguage rdfs:range ies:Language .
 ies:inLanguage rdfs:domain ies:Representation .
 ies:inLocation rdf:type owl:ObjectProperty .
 ies:inLocation sparx:guid "{463F9B14-2014-4364-B4F0-658A20DFCBFA}" .
 ies:inLocation rdfs:comment "A partOf relationship to indicate an Element is entirely within a Location" .
 ies:inLocation rdfs:subPropertyOf ies:isPartOf .
 ies:inLocation rdfs:range ies:location .
 ies:inPeriod rdf:type owl:ObjectProperty .
 ies:inPeriod sparx:guid "{2F08EF25-A5C8-48ad-85E3-903DB008AA19}" .
 ies:inPeriod rdfs:comment "A partOf relationship to indicate an Elements lifetime is entirely within a PeriodOfTimeExample:Freds birth is in May 1978" .
 ies:inPeriod rdfs:subPropertyOf ies:isPartOf .
 ies:inPeriod rdf:type ies:PeriodOfTime .
 ies:inPeriod rdfs:domain ies:Element .
 ies:inPossessionOf rdf:type owl:ObjectProperty .
 ies:inPossessionOf sparx:guid "{0A28624B-C5E3-461e-B84A-E55B550B5D06}" .
 ies:inPossessionOf rdfs:comment "A Relationship between a ResponsibleActor and an Asset they have in their possession. Note: this is separate to ownership - e.g. the possessor may well be the owner (use the owns relationship) but may also be a result of borrowing, theft, temporary custodianship, " .
 ies:inPossessionOf rdfs:range ies:Asset .
 ies:inPossessionOf rdfs:subPropertyOf ies:hasAccessTo .
 ies:InPost rdf:type rdfs:Class .
 ies:InPost sparx:guid "{6C1949B5-B86B-4940-8912-9008CCD67150}" .
 ies:InPost rdfs:comment "An InstalledState of a ResponsibleActor when they are in a Post" .
 ies:InPost rdfs:subClassOf ies:ResponsibleActorState .
 ies:InPost rdfs:subClassOf ies:InstalledState .
 ies:inRepresentation rdf:type owl:ObjectProperty .
 ies:inRepresentation sparx:guid "{7238489D-6802-4733-9F7F-9B31D02B3C81}" .
 ies:inRepresentation rdfs:comment "A relationship that asserts a Representation is part of another Representation" .
 ies:inRepresentation rdfs:subPropertyOf ies:relationship .
 ies:inRepresentation rdfs:domain ies:Representation .
 ies:inRepresentation rdfs:range ies:Representation .
 ies:InResidence rdf:type rdfs:Class .
 ies:InResidence sparx:guid "{1FD8448F-E28C-4e36-A085-935C20256F52}" .
 ies:InResidence rdfs:comment "A temporal state of a ResponsibleActorNote: this is the superclass of ResponsibleActor (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states. " .
 ies:InResidence rdfs:subClassOf ies:Visiting .
 ies:inScheme rdf:type owl:ObjectProperty .
 ies:inScheme sparx:guid "{7EB9FE85-127C-4918-AC56-62E1BE1DE825}" .
 ies:inScheme rdfs:comment "An rdf:type relationship that asserts a Representation is a member of a RepresentationScheme" .
 ies:inScheme rdfs:subPropertyOf rdf:type .
 ies:inScheme rdfs:domain ies:Name .
 ies:inScheme rdfs:range ies:NamingScheme .
 ies:InstalledState rdf:type rdfs:Class .
 ies:InstalledState sparx:guid "{6B36C428-3A86-493e-9B3B-6D394C567577}" .
 ies:InstalledState rdfs:comment "A temporal state of an Entity when it fulfils a ReplaceablePart" .
 ies:InstalledState rdfs:subClassOf ies:State .
 ies:InstanceOfSoftware rdf:type rdfs:Class .
 ies:InstanceOfSoftware sparx:guid "{297F9CC1-2ACF-4da0-92D9-0AA9E808CAD8}" .
 ies:InstanceOfSoftware rdfs:comment "An Asset that is an installed instance of a set of programmatic instructions that control or affect the behaviour of an Asset (usually a Device)." .
 ies:InstanceOfSoftware rdfs:subClassOf ies:Asset .
 ies:IntelligenceAgency rdf:type rdfs:Class .
 ies:IntelligenceAgency sparx:guid "{F87E3B6F-5872-47eb-89F8-6642DD7C8237}" .
 ies:IntelligenceAgency rdfs:comment "A GovernmentOrganisation that collects, analyses or disseminates intelligence" .
 ies:IntelligenceAgency rdfs:subClassOf ies:GovernmentOrganisation .
 ies:IntelligenceOperation rdf:type rdfs:Class .
 ies:IntelligenceOperation sparx:guid "{A0A9CD13-A4B4-415b-9187-64C9B72E2F4E}" .
 ies:IntelligenceOperation rdfs:comment "An OperationalEvent that involves the gathering, analysis or dissemination of intelligence" .
 ies:IntelligenceOperation rdfs:subClassOf ies:OperationalEvent .
 ies:InteractiveCommunication rdf:type rdfs:Class .
 ies:InteractiveCommunication sparx:guid "{6D5E11EE-C61A-4e38-913F-BBAF2A34A288}" .
 ies:InteractiveCommunication rdfs:comment "A Communication that occurs synchronously - e.g. a video or voice call" .
 ies:InteractiveCommunication rdfs:subClassOf ies:Communication .
 ies:Interested rdf:type rdfs:Class .
 ies:Interested sparx:guid "{B1D011F9-9585-49eb-97C4-86E82D6F0BCF}" .
 ies:Interested rdfs:comment "A ResponsibleActorState where the Actor is interested in something" .
 ies:Interested rdfs:subClassOf ies:ResponsibleActorState .
 ies:interestedIn rdf:type owl:ObjectProperty .
 ies:interestedIn sparx:guid "{7BD2B884-F02C-4da2-AF6A-21B790FBF669}" .
 ies:interestedIn rdfs:comment "A Relationship between a ResponsibleActor (or state thereof) and an Entity they are interested in." .
 ies:interestedIn rdfs:subPropertyOf ies:relationship .
 ies:interestedIn rdfs:domain ies:Interested .
 ies:interestedIn rdfs:range ies:Thing .
 ies:InternationalCoalition rdf:type rdfs:Class .
 ies:InternationalCoalition sparx:guid "{AE70547D-8E7E-474e-B7FD-F0A81F470157}" .
 ies:InternationalCoalition rdfs:comment "An Organisation formed of Nations who have agreed to pursue a particular course (e.g. a war)" .
 ies:InternationalCoalition rdfs:subClassOf ies:Organisation .
 ies:intimidatedBy rdf:type owl:ObjectProperty .
 ies:intimidatedBy sparx:guid "{39D0AC05-01DB-423a-861A-26E6125DF906}" .
 ies:intimidatedBy rdfs:comment "A Relationship between two ResponsibleActor Entities where one (range) intimidates the other (domain)." .
 ies:intimidatedBy rdfs:subPropertyOf ies:relationship .
 ies:intimidatedBy rdfs:range ies:ResponsibleActor .
 ies:intimidatedBy rdfs:domain ies:ResponsibleActorState .
 ies:Investigation rdf:type rdfs:Class .
 ies:Investigation sparx:guid "{2912E599-436D-4b79-B94F-02FA2319F201}" .
 ies:Investigation rdfs:comment "An IntelligenceOperation that researches a particular threat, or theme." .
 ies:Investigation rdfs:subClassOf ies:OperationalEvent .
 ies:Investigation rdfs:subClassOf ies:EndtoEndActivity .
 ies:Investigator rdf:type rdfs:Class .
 ies:Investigator sparx:guid "{3525F314-87ED-43c8-9A84-68EDCD203B30}" .
 ies:Investigator rdfs:comment "An Operator role where a Person is an investigator" .
 ies:Investigator rdfs:subClassOf ies:Operator .

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ies:InWork rdf:type rdfs:Class .
ies:InWork sparx:guid "{82B189F4-9800-4b44-B10D-521B038455F1}" .
ies:InWork rdfs:comment "A temporal state of a ResponsibleActorNote: this is the superclass of ResponsibleActor (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states. " .
ies:InWork rdfs:subClassOf ies:Visiting .
ies:InWorship rdf:type rdfs:Class .
ies:InWorship sparx:guid "{4D914AB7-E337-4ff2-9154-9CA0BF7156EB}" .
ies:InWorship rdfs:comment "A temporal state of a ResponsibleActorNote: this is the superclass of ResponsibleActor (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states. " .
ies:InWorship rdfs:subClassOf ies:Visiting .
ies:IPAddress rdf:type rdfs:Class .
ies:IPAddress sparx:guid "{451C4C40-4183-4130-B67C-6F746B8B8BCA}" .
ies:IPAddress rdfs:comment "An Identifier that is an Internet Protocol address." .
ies:IPAddress rdfs:subClassOf ies:CommunicationsIdentifier .
ies:IPAddressRange rdf:type rdfs:Class .
ies:IPAddressRange sparx:guid "{BEC2FDBC-6F37-4446-AEE1-3D4627DDDF2}" .
ies:IPAddressRange rdfs:comment "A CommunicationIdentifierRange between two IPAddress instancesIn these examples the IPv4 address range is specified using the following format:&lt;lower address&gt; - &lt;upper address&gt;; using one of a number of different IPv4 address notations.The IPv4 address range is all the IPv4 addresses between the &lt;lower address&gt; and the &lt;upper address&gt; (inclusive).Both examples here represent the same address range (but in different notations).The Dot Decimal Range notation specifies the &lt;lower address&gt; and the &lt;upper address&gt; in Dot Decimal form . Where each of these 32-bit IPv4 addresses are expressed as four octets where each octet is prefixed with 0x, expressed individually in decimal and separated by periods.The Dot Hexadecimal Range notation specifies the &lt;lower address&gt; and the &lt;upper address&gt; in Dot Hexadecimal form . Where each of these 32-bit IPv4 addresses are expressed as four octets where each octet is prefixed with 0x, expressed individually in hexadecimal and separated by periods." .
ies:IPAddressRange rdfs:subClassOf ies:CommunicationsIdentifierRange .
ies:IPPhoneHandset rdf:type rdfs:Class .
ies:IPPhoneHandset sparx:guid "{0B494F4A-9E82-4667-89AD-3D22FC9B5742}" .
ies:IPPhoneHandset rdfs:comment "A CommunicationsDevice that is a telephone using internet protocols" .
ies:IPPhoneHandset rdfs:subClassOf ies:CommunicationsDevice .
ies:IPv4Address rdf:type rdfs:Class .
ies:IPv4Address sparx:guid "{142D6D4D-6EF3-48aa-8B7B-86DA73690E3E}" .
ies:IPv4Address rdfs:comment "An IPAddress conforming to v4 of the standard" .
ies:IPv4Address rdfs:subClassOf ies:IPAddress .
ies:IPv6Address rdf:type rdfs:Class .
ies:IPv6Address sparx:guid "{78549D65-75F2-41c3-AC14-F0D441AD6354}" .
ies:IPv6Address rdfs:comment "An IPAddress conforming to v6 of the standard" .
ies:IPv6Address rdfs:subClassOf ies:IPAddress .
ies:isAuthorisedForUseWithPassport rdf:type owl:ObjectProperty .
ies:isAuthorisedForUseWithPassport sparx:guid "{1CA57828-3868-450b-B477-C59A196EAE34}" .
ies:isAuthorisedForUseWithPassport rdfs:comment "The passport associated with the Visa.Note: if the IES data does not already contain the associated passport, a Passport instance must be created, and the appropriate passport number specified." .
ies:isAuthorisedForUseWithPassport rdfs:subPropertyOf ies:relationship .
ies:isAuthorisedForUseWithPassport rdfs:domain ies:TravelVisa .
ies:isAuthorisedForUseWithPassport rdfs:range ies:Passport .
ies:isCentroidOf rdf:type owl:ObjectProperty .
ies:isCentroidOf sparx:guid "{44ADC197-D9FA-4889-B6AF-929C3546F4A0}" .
ies:isCentroidOf rdfs:comment "An inlocation relationship to indicate a PointOnEarthSurface is the centroid of a Location" .
ies:isCentroidOf rdfs:subPropertyOf ies:relationship .
ies:isCentroidOf rdfs:domain ies:PointOnEarthSurface .
ies:isDisposedTo rdf:type owl:ObjectProperty .
ies:isDisposedTo sparx:guid "{B093F8DA-AE08-4819-8E1C-F119EF212566}" .
ies:isDisposedTo rdfs:comment "An rdf:type relationship that asserts an Element is a member of a DispositionalClass - i.e. it is disposed to (capable of, tends to, etc.) the specified disposition" .
ies:isDisposedTo rdfs:subPropertyOf rdf:type .
ies:isDisposedTo rdfs:subPropertyOf ies:relationship .
ies:isDisposedTo rdfs:domain ies:Element .
ies:isDisposedTo rdfs:range ies:DispositionalClass .
ies:isEndOf rdf:type owl:ObjectProperty .
ies:isEndOf sparx:guid "{EA859D48-5BA4-40b3-A52D-1465D1765262}" .
ies:isEndOf rdfs:comment "An isStateOf that relates a BoundingState to the Element it marks the end of" .
ies:isEndOf rdfs:subPropertyOf ies:isStateOf .
ies:isEndOf rdfs:domain ies:BoundingState .
ies:isIdentifiedBy rdf:type owl:ObjectProperty .
ies:isIdentifiedBy sparx:guid "{FBA54E5F-91BF-4ba2-8B67-79C899963149}" .
ies:isIdentifiedBy rdfs:comment "A hasName relationship that asserts an Identifier identifies an Thing" .
ies:isIdentifiedBy rdfs:subPropertyOf ies:hasName .
ies:isIdentifiedBy rdfs:domain ies:Thing .
ies:isIdentifiedBy rdfs:range ies:Identifier .
ies:isLegalTenderIn rdf:type owl:ObjectProperty .
ies:isLegalTenderIn sparx:guid "{2415B865-3C37-4595-9F38-11075EAB5D34}" .
ies:isLegalTenderIn rdfs:comment "The Country in which a Currency is legal tender" .
ies:isLegalTenderIn rdfs:subPropertyOf ies:relationship .
ies:isLegalTenderIn rdfs:domain ies:Currency .
ies:isLegalTenderIn rdfs:range ies:Country .
ies:ISO19125-WKT rdf:type rdfs:Class .
ies:ISO19125-WKT sparx:guid "{22B79CFD-DEDA-42e1-8864-E8421D36CF19}" .
ies:ISO19125-WKT rdfs:comment "A GeoRepresentation using Well-Known-Text encoding for ISO19125 simple features.Note: the WKT must include the coordinate reference system used - e.g. WGS 84" .
ies:ISO19125-WKT rdfs:subClassOf ies:GeoRepresentation .
ies:ISO3166_1Alpha_3 rdf:type rdfs:Class .
ies:ISO3166_1Alpha_3 sparx:guid "{B92D79E2-9E7D-4df7-8D38-3D884AA09AD2}" .
ies:ISO3166_1Alpha_3 rdfs:comment "ISO 3166-1 alpha 3 (3-Letter Country Code)" .
ies:ISO3166_1Alpha_3 rdfs:subClassOf ies:GeoIdentity .
ies:ISO4217Code rdf:type rdfs:Class .
ies:ISO4217Code sparx:guid "{598ACB6-DF51-4bd9-A5DD-52EDE1895327}" .
ies:ISO4217Code rdfs:comment "ISO4217 three-letter currency code (e.g. USD, GBP, EUR, etc.)" .
ies:ISO4217Code rdfs:subClassOf ies:Identifier .
ies:ISO639-3Code rdf:type rdfs:Class .
ies:ISO639-3Code sparx:guid "{ECCFED94D-CC69-46f9-B09D-B282D5665787}" .
ies:ISO639-3Code rdfs:comment "ISO639-3 three-letter language code" .
ies:ISO639-3Code rdfs:subClassOf ies:Identifier .
ies:iso8601PeriodRepresentation rdf:type owl:DatatypeProperty .
ies:iso8601PeriodRepresentation sparx:guid "{E9372543-434E-45d3-A1F0-8D711952D10A}" .
ies:iso8601PeriodRepresentation rdfs:comment "A ISO8601 datetime (as xsd:dateTime) that represents the ParticularPeriod. This representation is also encoded in the URI of the period, this is an additional required attribute to enable querying by dateTime and SPARQL temporal operations. The literal string shall be encoded in UTC (Coordinated Universal Time) but unlike the URI, it must be punctuated. For example: 2007-01-18T15:30:00" .
ies:iso8601PeriodRepresentation rdfs:subPropertyOf ies:attribute .
ies:iso8601PeriodRepresentation rdfs:domain ies:ParticularPeriod .
ies:isParticipantIn rdf:type owl:ObjectProperty .
ies:isParticipantIn sparx:guid "{BAE86D9-C90E-4f8d-96F5-A01BB0C49711}" .
ies:isParticipantIn rdfs:comment "An isPartOf that relates an EventParticipant to the Event it participates in." .
ies:isParticipantIn rdfs:subPropertyOf ies:isPartOf .
ies:isParticipantIn rdfs:range ies:Event .
ies:isParticipantIn rdfs:domain ies:EventParticipant .
ies:isParticipationOf rdf:type owl:ObjectProperty .
ies:isParticipationOf sparx:guid "{DF9F6056-CCD4-41aa-9A86-536F6150EC25}" .
ies:isParticipationOf rdfs:comment "An isStateOf that relates an EventParticipant to the Element that is the participant" .
ies:isParticipationOf rdfs:subPropertyOf ies:isStateOf .

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ies:isParticipationOf rdfs:domain ies:EventParticipant .
 ies:isParticipationOf rdfs:range ies:Entity .
 ies:isPartOf rdf:type owl:ObjectProperty .
 ies:isPartOf sparx:guid "{CD85D7F7-783B-4d06-B023-56DBBDDC02DC}" .
 ies:isPartOf rdfs:comment "A relationship linking an Element to another that it is part of.Examples:London partOf UKMy Arm partOf Me" .
 ies:isPartOf rdfs:subPropertyOf ies:relationship .
 ies:isPartOf rdfs:domain ies:Element .
 ies:isPartOf rdfs:range ies:Element .
 ies:isPrimaryForOrganisation rdf:type owl:ObjectProperty .
 ies:isPrimaryForOrganisation sparx:guid "{D6974F5E-B24C-4a06-9AC1-DB6299E9BF55}" .
 ies:isPrimaryForOrganisation rdfs:comment "A relationship linking an Thing to the ResponsibleActor that prefers the use of that Thing.This is used when there are more than one state, name, etc. for given item, and there is a requirement to specify which one is considered primary / preferred by a particular Organisation.Examples:* A primary name for a person (applied to PersonName)* A primary DoB for a person (applied to BirthState)* A primary nationality for a person (applied to the PersonState that links to the Nation)" .
 ies:isPrimaryForOrganisation rdfs:subPropertyOf ies:relationship .
 ies:isPrimaryForOrganisation rdfs:domain ies:Thing .
 ies:isPrimaryForOrganisation rdfs:range ies:Organisation .
 ies:isRepresentedAs rdf:type owl:ObjectProperty .
 ies:isRepresentedAs sparx:guid "{D106A0A9-55C4-454F-9E20-35BA54114036}" .
 ies:isRepresentedAs rdfs:comment "A relationship that asserts a Representation in someway depicts an Thing" .
 ies:isRepresentedAs rdfs:subPropertyOf ies:relationship .
 ies:isRepresentedAs rdfs:domain ies:Thing .
 ies:isRepresentedAs rdfs:range ies:Representation .
 ies:isStartOf rdf:type owl:ObjectProperty .
 ies:isStartOf sparx:guid "{D9E068B1-2A44-4523-B8FC-F9888212B35C}" .
 ies:isStartOf rdfs:comment "An isStateOf that relates a BoundingState to the Element it marks the start of" .
 ies:isStartOf rdfs:subPropertyOf ies:isStateOf .
 ies:isStartOf rdfs:domain ies:BoundingState .
 ies:isStartOf rdf:type owl:ObjectProperty .
 ies:isStateOf sparx:guid "{F7CBF87A-6ECC-4c9f-B698-FD3CF3F7980E}" .
 ies:isStateOf rdfs:comment "An isPartOf linking an Element to a temporal State of that Element Examples:You, you yesterday" .
 ies:isStateOf rdfs:subPropertyOf ies:isPartOf .
 ies:isStateOf rdfs:range ies:Element .
 ies:isStateOf rdfs:domain ies:State .
 ies:issuerIdentificationNumber rdf:type owl:DatatypeProperty .
 ies:issuerIdentificationNumber sparx:guid "{5E353B12-2503-429F-A683-F7C77E0DFBAD}" .
 ies:issuerIdentificationNumber rdfs:comment "The IIN is a number that uniquely identifies the issuer of the Bank Card.An ISO/IEC 7812 number contains a single-digit major industry identifier (MII), a six-digit issuer identification number (IIN), an individual account identification number, and a single digit checksum." .
 ies:issuerIdentificationNumber rdfs:subPropertyOf ies:attribute .
 ies:issuerIdentificationNumber rdfs:domain ies:BankCard .
 ies:issuingAgency rdf:type owl:ObjectProperty .
 ies:issuingAgency sparx:guid "{74D86486-8E18-474a-8930-B92E759BBE06}" .
 ies:issuingAgency rdfs:comment "The Organisation that issued the ticket @ this might be different from the travel provider." .
 ies:issuingAgency rdfs:subPropertyOf ies:relationship .
 ies:issuingAgency rdfs:range ies:Organisation .
 ies:issuingAgency rdfs:domain ies:TravelTicket .
 ies:isTeacherOf rdf:type owl:ObjectProperty .
 ies:isTeacherOf sparx:guid "{B8650A61-3B08-4f62-8EAB-0F9D007B20CE}" .
 ies:isTeacherOf rdfs:comment "A Relationship between two ResponsibleActor Entities that indicates one teaches the other.In the case where the teaching is occasional / ad-hoc (i.e. there isn't an ongoing course) then the instance of the ResponsibleActorState should also be an instance of DiscontinuousState" .
 ies:isTeacherOf rdfs:subPropertyOf ies:relationship .
 ies:isTeacherOf rdfs:domain ies:PersonState .
 ies:isTeacherOf rdfs:range ies:Person .
 ies:JointAccount rdf:type rdfs:Class .
 ies:JointAccount sparx:guid "{AD17E3D9-CAB2-4a60-99C9-109F4496F92F}" .
 ies:JointAccount rdfs:comment "A FinancialAccount held by more than one person" .
 ies:JointAccount rdfs:subClassOf ies:FinancialAccount .
 ies:Journey rdf:type rdfs:Class .
 ies:Journey sparx:guid "{88571665-0AA1-40be-A7A0-A35BE86B7192}" .
 ies:Journey rdfs:comment "A Movement which is made up of two or more TravelLegsNote: this may include a number of legs to the journey (i.e. instances of TravelLeg that are part of the Journey)" .
 ies:Journey rdfs:subClassOf ies:Movement .
 ies:jsonData rdf:type rdfs:Class .
 ies:jsonData sparx:guid "{6A9A0065C-A31A-42be-B7E2-275F076DCA9D}" .
 ies:jsonData rdfs:comment "An EncodedData which is in JSON format" .
 ies:jsonData rdfs:subClassOf ies:EncodedData .
 ies:jurisdictionOfRights rdf:type owl:ObjectProperty .
 ies:jurisdictionOfRights sparx:guid "{62EF76B2-4AB0-4e1e-98C4-61C3A85BF980}" .
 ies:jurisdictionOfRights rdfs:comment "A Relationship between Rights and the Nation under whose laws the Rights are established" .
 ies:jurisdictionOfRights rdfs:subPropertyOf ies:relationship .
 ies:jurisdictionOfRights rdfs:domain ies:Rights .
 ies:jurisdictionOfRights rdfs:range ies:Nation .
 ies:knownAssociateOf rdf:type owl:ObjectProperty .
 ies:knownAssociateOf sparx:guid "{57F3607C-0204-4590-9442-24F372A35931}" .
 ies:knownAssociateOf rdfs:comment "A Relationship between two ResponsibleActor Entities where both are known to know each other but the extent to which they interact (e.g. friendship, work, criminal activity, etc.) is not known." .
 ies:knownAssociateOf rdfs:subPropertyOf ies:relationship .
 ies:knownAssociateOf rdfs:domain ies:ResponsibleActorState .
 ies:knownAssociateOf rdfs:range ies:ResponsibleActor .
 ies:LandlineHandset rdf:type rdfs:Class .
 ies:LandlineHandset sparx:guid "{57C9F8DF-AFE6-4374-9403-ACACAC26FCE4}" .
 ies:LandlineHandset rdfs:comment "A CommunicationsDevice that connects using fixed line telecommunications" .
 ies:LandlineHandset rdfs:subClassOf ies:CommunicationsDevice .
 ies:LandlineTelephoneAccount rdf:type rdfs:Class .
 ies:LandlineTelephoneAccount sparx:guid "{D7F83A2D-6428-4211-964D-E1E8A8089083}" .
 ies:LandlineTelephoneAccount rdfs:comment "A TelephoneAccount where the telephones in use connect using a wired network and operate only in a specific location" .
 ies:LandlineTelephoneAccount rdfs:subClassOf ies:TelephoneAccount .
 ies:Language rdf:type rdfs:Class .
 ies:Language sparx:guid "{82652FF5-258F-459c-BC7F-6DAC65E1ECA1}" .
 ies:Language rdfs:comment "A ClassOfRepresentation that is a spoken or written form of human communication" .
 ies:Language rdfs:subClassOf ies:ClassOfRepresentation .
 ies:LanguageProficiency rdf:type rdfs:Class .
 ies:LanguageProficiency sparx:guid "{EB73AB32-8232-4b58-8271-640DDDDCC7DE}" .
 ies:LanguageProficiency rdfs:comment "A ClassOfPersonState indicating the proficiency a person has in a particular language at that state in their life." .
 ies:LanguageProficiency rdfs:subClassOf ies:ClassOfPersonState .
 ies:Latitude rdf:type rdfs:Class .
 ies:Latitude sparx:guid "{BD14E8F1-DDBC-4bdF-BC40-E5FAE937ADA6}" .
 ies:Latitude rdfs:comment "A GeoIdentity that is a decimal representation of an angle of latitude of a PointOnEarthSurface (WGS84)" .
 ies:Latitude rdfs:subClassOf ies:GeoIdentity .
 ies:LawEnforcement rdf:type rdfs:Class .
 ies:LawEnforcement sparx:guid "{3876B81C-E316-4e11-A6C4-8024E52F7698}" .
 ies:LawEnforcement rdfs:comment "An Event that involves the application of criminal law" .
 ies:LawEnforcement rdfs:subClassOf ies:Event .

ies:LawEnforcementOrganisation rdf:type rdfs:Class .
 ies:LawEnforcementOrganisation spax:guid "{15806699-2F00-4891-B2A0-8A211CEDFC10}" .
 ies:LawEnforcementOrganisation rdfs:comment "A GovernmentOrganisation that investigates crimes and brings the perpetrators to justice. Wikipedia definition: Law enforcement is any system by which some members of society act in an organized manner to enforce the law by discovering, deterring, rehabilitating, or punishing people who violate the rules and norms governing that society." .
 ies:LawEnforcementOrganisation rdfs:subClassOf ies:GovernmentOrganisation .
 ies:LeadInvestigator rdf:type rdfs:Class .
 ies:LeadInvestigator spax:guid "{E1AF7AFE-FA2F-40F7-88A3-CA6988BC2E0D}" .
 ies:LeadInvestigator rdfs:comment "An Investigator who is charge of an Investigation" .
 ies:LeadInvestigator rdfs:subClassOf ies:Investigator .
 ies:Length rdf:type rdfs:Class .
 ies:Length spax:guid "{5C21DE93-329F-4209-87FF-19610CB0D367}" .
 ies:Length rdfs:comment "The Measure of distance as specified by the International System of Quantities" .
 ies:Length rdfs:subClassOf ies:StandardMeasure .
 ies:LifecycleEvent rdf:type rdfs:Class .
 ies:LifecycleEvent spax:guid "{FA07AB7A-0EE8-4258-BE8B-260F9A1192A7}" .
 ies:LifecycleEvent rdfs:comment "An Event that brings about change to its environment or another Element - e.g. creation, destruction or modification" .
 ies:LifecycleEvent rdfs:subClassOf ies:Event .
 ies:Likes rdf:type rdfs:Class .
 ies:Likes spax:guid "{B292748F-D41E-4c3b-9335-04D4B06A1F34}" .
 ies:Likes rdfs:comment "An Interested State where a ResponsibleActor likes something" .
 ies:Likes rdfs:subClassOf ies:Interested .
 ies:LineOfAddress rdf:type rdfs:Class .
 ies:LineOfAddress spax:guid "{E0D8895D-2230-4c80-8B06-351581C53436}" .
 ies:LineOfAddress rdfs:comment "A line in an Address. There may be any number of these." .
 ies:LineOfAddress rdfs:subClassOf ies:GeoIdentity .
 ies:LiveCast rdf:type rdfs:Class .
 ies:LiveCast spax:guid "{ECC6EB5E-CB08-464d-81A4-BA3ECDCCB784C}" .
 ies:LiveCast rdfs:comment "An OnlineArtefact that is video or audio streamed online in real time. Note: the begin and end dates for a LiveCast instance mark its life online rather than the duration of the actual recording. The recording itself should be tracked using an OnlineContentCreation Event." .
 ies:LiveCast rdfs:subClassOf ies:OnlineArtefact .
 ies:location rdf:type rdfs:Class .
 ies:Location spax:guid "{E1A494ED-D493-44ab-8BF9-ABC6889D4D9A}" .
 ies:Location rdfs:comment "An Entity that is a geographic place which specifies a point or an area on the Earths surface or elsewhere." .
 ies:Location rdfs:subClassOf ies:Entity .
 ies:Location rdfs:subClassOf ies:LocationState .
 ies:LocationState rdf:type rdfs:Class .
 ies:LocationState spax:guid "{7CAFACD0-94F9-400e-B20E-E4CE31943E5}" .
 ies:LocationState rdfs:comment "A temporal state of a Location" .
 ies:LocationState rdfs:subClassOf ies:State .
 ies:Logoff rdf:type rdfs:Class .
 ies:Logoff spax:guid "{8010625F-BA25-457a-93CF-7EC1E99261D7}" .
 ies:Logoff rdfs:comment "A OnlineEvent where an OnlineAccount logs out of an OnlineService" .
 ies:Logoff rdfs:subClassOf ies:OnlineEvent .
 ies:Logon rdf:type rdfs:Class .
 ies:Logon spax:guid "{43CDB7F8-E77E-4eba-A92E-C6A74AF954CA}" .
 ies:Logon rdfs:comment "A OnlineEvent where an OnlineAccount logs onto an OnlineService" .
 ies:Logon rdfs:subClassOf ies:OnlineEvent .
 ies:Longitude rdf:type rdfs:Class .
 ies:Longitude spax:guid "{B2C5522F-EA60-455a-B00F-9CC87A76E5B0}" .
 ies:Longitude rdfs:comment "The GeoIdentity that is a decimal representation of an angle of longitude of a PointOnEarthSurface (WGS84)" .
 ies:Longitude rdfs:subClassOf ies:GeoIdentity .
 ies:Loves rdf:type rdfs:Class .
 ies:Loves spax:guid "{E543978A-06D0-4c79-BCCD-A62DE9294A85}" .
 ies:Loves rdfs:comment "A interestedIn relationship where a Person loves another Person" .
 ies:Loves rdfs:subClassOf ies:Interested .
 ies:lowerBound rdf:type owl:ObjectProperty .
 ies:lowerBound spax:guid "{96717346-1DF4-4ea-e-A7CF-E389B4454B47}" .
 ies:lowerBound rdfs:comment "A relationship a MeasureRange to the Measure that is its lower bound" .
 ies:lowerBound rdfs:subPropertyOf ies:relationship .
 ies:lowerBound rdfs:range ies:Measure .
 ies:lowerBound rdfs:domain ies:MeasureRange .
 ies:LuminousIntensity rdf:type rdfs:Class .
 ies:LuminousIntensity spax:guid "{8431C546-B6F9-40f-9EC-383FE985D115}" .
 ies:LuminousIntensity rdfs:comment "The Measure of radiated light" .
 ies:LuminousIntensity rdfs:subClassOf ies:StandardMeasure .
 ies:MACAddress rdf:type rdfs:Class .
 ies:MACAddress spax:guid "{DE1EDE92-142C-4c05-AD61-BE58822B2E17}" .
 ies:MACAddress rdfs:comment "A CommunicationsIdentifier that is used to identify network interface controllersVarious forms of the MAC address can be used:(a) six groups of two hexadecimal digits, separated by hyphens (-) or colons (:), in transmission order(b) three groups of four hexadecimal digits separated by dots (.) again in transmission order.2. The make & model of the network interface is encoded within the MAC address." .
 ies:MACAddress rdfs:subClassOf ies:CommunicationsIdentifier .
 ies:maintains rdf:type owl:ObjectProperty .
 ies:maintains spax:guid "{727175D4-0998-49a0-BAEE-6B8F1F1FD8D4}" .
 ies:maintains rdfs:comment "A Relationship between a ResponsibleActorState and an Entity they maintain" .
 ies:maintains rdfs:subPropertyOf ies:relationship .
 ies:maintains rdfs:range ies:Entity .
 ies:maintains rdfs:domain ies:ResponsibleActorState .
 ies:make rdf:type owl:ObjectProperty .
 ies:make spax:guid "{E0036B31-8D73-4268-8959-6E9A5EE55BB2}" .
 ies:make rdfs:comment "A relationship from the device to its make - i.e. organisation that brands it (even if the manufacture is contracted-out)Example - an iPhone 6S has make Apple" .
 ies:make rdfs:domain ies:Asset .
 ies:make rdfs:subPropertyOf ies:relationship .
 ies:make rdfs:range ies:Organisation .
 ies:MaliciousAccountUse rdf:type rdfs:Class .
 ies:MaliciousAccountUse spax:guid "{F0C08ADE-7EE5-4392-9877-5FD8FB4076E9}" .
 ies:MaliciousAccountUse rdfs:comment "An OnlineAccountInUse where the account is used to conduct a CriminalActivity online" .
 ies:MaliciousAccountUse rdfs:subClassOf ies:OnlineAccountInUse .
 ies:managedBy rdf:type owl:ObjectProperty .
 ies:managedBy spax:guid "{8991D995-1915-47b7-B180-D9EBC4A1FD1F}" .
 ies:managedBy rdfs:comment "A worksFor relationship where the managed ResponsibleActorState (domain) is managed by another ResponsibleActor (range)." .
 ies:managedBy rdfs:subPropertyOf ies:worksFor .
 ies:MapGridArea rdf:type rdfs:Class .
 ies:MapGridArea spax:guid "{18A66904-823F-471d-A465-65ECD2D69867}" .
 ies:MapGridArea rdfs:comment "A Location whose area is specified by a grid on a map. Note this is the actual area, not the map grid. " .
 ies:MapGridArea rdfs:subClassOf ies:Location .
 ies:Marriage rdf:type rdfs:Class .
 ies:Marriage spax:guid "{9DFEDF24-1203-4341-B282-BD37C1B9CDF5}" .
 ies:Marriage rdfs:comment "An EndToEndActivity covering the entire extent of a two peoples marriage (from the ceremony to either divorce or death)Note: As IES4 does not increase the scope of IES3, Marriage also includes common-law partners and civil partnerships" .
 ies:Marriage rdfs:subClassOf ies:EndToEndActivity .
 ies:Married rdf:type rdfs:Class .
 ies:Married spax:guid "{D03A0D8B-79F5-4901-97BC-2767FD46CD5F}" .

ies:Married rdfs:comment "A State when a Person is married to another person" .
 ies:Married rdfs:subClassOf ies:PersonState .
 ies:Married rdfs:subClassOf ies:EventParticipant .
 ies:Mass rdf:type rdfs:Class .
 ies:Mass sparx:guid "[AEBFC416-9650-472d-99C6-F0A46B7359EB]" .
 ies:Mass rdfs:comment "The Measure of an Entitys resistance to acceleration as specified by the International System of Quantities" .
 ies:Mass rdfs:subClassOf ies:StandardMeasure .
 ies:Measure rdf:type rdfs:Class .
 ies:Measure sparx:guid "[66CF79FCE-E2C9-4eBb-848C-39BD8616F77D]" .
 ies:Measure rdfs:comment "An Characteristic which is measurable on a scale" .
 ies:Measure rdfs:subClassOf ies:Characteristic .
 ies:MeasureRange rdf:type rdfs:Class .
 ies:MeasureRange sparx:guid "[CCBF963-EB27-40d5-BE9F-47CDF4D352F8]" .
 ies:MeasureRange rdfs:comment "A Measure specified by upper and lower bound Measures" .
 ies:MeasureRange rdfs:subClassOf ies:Measure .
 ies:measureUnit rdf:type owl:ObjectProperty .
 ies:measureUnit sparx:guid "[161079F3-8089-4124-A67A-5D6A7A4EA511]" .
 ies:measureUnit rdfs:comment "An rdf:type relationship that asserts a Measure is represented using a particular UnitOfMeasure" .
 ies:measureUnit rdfs:subPropertyOf rdf:type .
 ies:measureUnit rdfs:subPropertyOf ies:relationship .
 ies:measureUnit rdfs:domain ies:MeasureValue .
 ies:measureUnit rdfs:range ies:UnitOfMeasure .
 ies:MeasureValue rdf:type rdfs:Class .
 ies:MeasureValue sparx:guid "[3693B7DE-DCE7-4bf9-BC2A-A8914DA4A11E]" .
 ies:MeasureValue rdfs:comment "A Representation of the value of a MeasureNote: A UnitOfMeasure is almost always required. The reason it is not mandatory is that in some cases (due to partial reporting) we do not have complete information - e.g. we know the value was stated to be 10 but we dont know if thats metres or feet" .
 ies:MeasureValue rdfs:subClassOf ies:Representation .
 ies:MeasureValue ies:powertype ies:ClassOfMeasureValue .
 ies:Mediafile rdf:type rdfs:Class .
 ies:Mediafile sparx:guid "[CE2E2EB2-17F7-4054-9107-E8DC275B0B11]" .
 ies:Mediafile rdfs:comment "A DataObject that is a stand-alone file - e.g. a video, image or sound recording" .
 ies:Mediafile rdfs:subClassOf ies:DataObject .
 ies:Meeting rdf:type rdfs:Class .
 ies:Meeting sparx:guid "[6445E51F-3DDF-4dcf-ABDF-3ED123D53188]" .
 ies:Meeting rdfs:comment "A Colocation where the attendees (Presence) communicate with each other" .
 ies:Meeting rdfs:subClassOf ies:Colocation .
 ies:MeetingChair rdf:type rdfs:Class .
 ies:MeetingChair sparx:guid "[B499C172-310D-4c5f-BA92-93B1C7874EEB]" .
 ies:MeetingChair rdfs:comment "An Attendance where the Person involved is the chair of a Meeting" .
 ies:MeetingChair rdfs:subClassOf ies:Attendance .
 ies:Message rdf:type rdfs:Class .
 ies:Message sparx:guid "[70AEDFC7-2B17-43d8-BF49-B5ACF8812317]" .
 ies:Message rdfs:comment "Communication where a message is sent." .
 ies:Message rdfs:subClassOf ies:Communication .
 ies:messageContent rdf:type owl:DatatypeProperty .
 ies:messageContent sparx:guid "[E1A85BEA-C374-4727-A189-E536BA248D98]" .
 ies:messageContent rdfs:comment "An attribute representing the content of a messageExample:messageContent = See you at Waterloo station at 18:15" .
 ies:messageContent rdfs:subPropertyOf ies:attribute .
 ies:messageContent rdfs:domain ies:Message .
 ies:MilitaryAttack rdf:type rdfs:Class .
 ies:MilitaryAttack sparx:guid "[8787BE51-8FE0-4d76-97B4-608311434F5B]" .
 ies:MilitaryAttack rdfs:comment "A MilitaryEvent where force is usedNote: was called Attack in v3.x - now called MilitaryAttack to distinguish from domestic attacks, terrorist attacks, hacking attacks, etc." .
 ies:MilitaryAttack rdfs:subClassOf ies:MilitaryEvent .
 ies:MilitaryEvent rdf:type rdfs:Class .
 ies:MilitaryEvent sparx:guid "[8EA1764B-26BE-4a72-ADEF-385C4CD657C3]" .
 ies:MilitaryEvent rdfs:comment "An OperationalEvent that involves military staff" .
 ies:MilitaryEvent rdfs:subClassOf ies:OperationalEvent .
 ies:MilitaryOrganisation rdf:type rdfs:Class .
 ies:MilitaryOrganisation sparx:guid "[492AB59A-342E-4d74-B85B-E6CA95BBC3B2]" .
 ies:MilitaryOrganisation rdfs:comment "A GovernmentOrganisation that conducts warfighting, peacekeeping and emergency civil support functions" .
 ies:MilitaryOrganisation rdfs:subClassOf ies:GovernmentOrganisation .
 ies:missionPurpose rdf:type owl:DatatypeProperty .
 ies:missionPurpose sparx:guid "[A6DED556-1288-45b7-A69C-A6A3D813269B]" .
 ies:missionPurpose rdfs:comment "A short description of why an IntelligenceOperation was carried out used for legal justificationAgencies that work in the intelligence domain may wish to standardise these descriptions. " .
 ies:missionPurpose rdfs:subPropertyOf ies:attribute .
 ies:missionPurpose rdfs:domain ies:OperationalEvent .
 ies:MobileHandset rdf:type rdfs:Class .
 ies:MobileHandset sparx:guid "[3BF8FC71-64BD-4fb5-BEFD-D7FCB936FA12]" .
 ies:MobileHandset rdfs:comment "A CommunicationsDevice that is a portable telephone using cellular networks" .
 ies:MobileHandset rdfs:subClassOf ies:CommunicationsDevice .
 ies:MobileTelephoneAccount rdf:type rdfs:Class .
 ies:MobileTelephoneAccount sparx:guid "[9F5EDA24-5991-48e7-9303-C86E25A196CF]" .
 ies:MobileTelephoneAccount rdfs:comment "A TelephoneAccount where the telephones in use connects using a cellular network" .
 ies:MobileTelephoneAccount rdfs:subClassOf ies:TelephoneAccount .
 ies:Modified rdf:type rdfs:Class .
 ies:Modified sparx:guid "[21A341AE-9A38-4f45-BCB5-B29002DC1B90]" .
 ies:Modified rdfs:comment "An EventParticipant where a ResponsibleActor participates in a Modify event as a modifier" .
 ies:Modified rdfs:subClassOf ies:ActiveEventParticipant .
 ies:Modify rdf:type rdfs:Class .
 ies:Modify sparx:guid "[3EF09CE4-79B0-42be-9AA1-12B97611BF2B]" .
 ies:Modify rdfs:comment "A LifecycleEvent where something is changed" .
 ies:Modify rdfs:subClassOf ies:LifecycleEvent .
 ies:MoneyTransfer rdf:type rdfs:Class .
 ies:MoneyTransfer sparx:guid "[D94ED70F-8CCA-4c6e-8A5E-65450BBA62D7]" .
 ies:MoneyTransfer rdfs:comment "A BusinessEvent where an AmountOfMoney is moved from one FinancialAccount to another.Usually a Money Transfer event will involve two accounts but we might not know both, or it might be a cash transfer in which case only one of the participants might be specified." .
 ies:MoneyTransfer rdfs:subClassOf ies:BusinessEvent .
 ies:MoneyTransfer rdfs:subClassOf ies:TradeEvent .
 ies:Movement rdf:type rdfs:Class .
 ies:Movement sparx:guid "[95B5AC4-956A-4b29-AB9E-BDCD12EF319F]" .
 ies:Movement rdfs:comment "An Event where an Entity moves from one place to another." .
 ies:Movement rdfs:subClassOf ies:Event .
 ies:Moving rdf:type rdfs:Class .
 ies:Moving sparx:guid "[D06C3801-F91C-436d-9D7F-DFDE29B48E5C]" .
 ies:Moving rdfs:comment "An EventParticipant in which an Entity moves from one Location to another" .
 ies:Moving rdfs:subClassOf ies:EventParticipant .
 ies:Name rdf:type rdfs:Class .
 ies:Name sparx:guid "[D7CC966-56EB-4220-A650-A993E598F2E2]" .
 ies:Name rdfs:comment "A Representation that is used to refer to something, usually in context of a NamingSchemeExamples:GBR - the ISO Trigram for the United KingdomGB - the FIPS two-letter code for the United KingdomMichael Caine - stage name for Maurice Micklewhite" .
 ies:Name rdfs:subClassOf ies:Representation .
 ies:NamingScheme rdf:type rdfs:Class .
 ies:NamingScheme sparx:guid "[222534A5-25C8-4ecd-BE55-27DA1534D402]" .
 ies:NamingScheme rdfs:comment "An ClassOfClassOfEntity whose instances collect together all Names that belong to a particular scheme - i.e. an organisational

identity scheme, a systems primary key format, etc." .

ies:NamingScheme rdfs:subClassOf ies:ClassOfClassOfEntity .

ies:Nation rdf:type rdfs:Class .

ies:Nation sparx:guid "{6AE6F8A5-F427-4ea6-BABD-5720F07430F5}" .

ies:Nation rdfs:comment "The people of a Country (or group of Countries recognised as a Nation).Note: this is distinct to a Country which is the land mass under control by the Nation, though ISO Country codes are regularly used to also identify Nations. " .

ies:Nation rdfs:subClassOf ies:RegionalConstituency .

ies:NationalIdentityCard rdf:type rdfs:Class .

ies:NationalIdentityCard sparx:guid "{843EDF77-78C4-4a09-9866-DBCC726AD5E6}" .

ies:NationalIdentityCard rdfs:comment "An IdentityDocument issued by a Government to identify a Person" .

ies:NationalIdentityCard rdfs:subClassOf ies:IdentityDocument .

ies:NationalIdentityNumber rdf:type rdfs:Class .

ies:NationalIdentityNumber sparx:guid "{F2C8F705-DA4A-4131-A860-CF1AC33BED95}" .

ies:NationalIdentityNumber rdfs:comment "An Identifier of a Person that is specified by a GovernmentOrganisation " .

ies:NationalIdentityNumber rdfs:subClassOf ies:Identifier .

ies:nationality rdf:type owl:ObjectProperty .

ies:nationality sparx:guid "{45CD45C1-624D-4f2f-81F6-EF19300820A9}" .

ies:nationality rdfs:comment "A relationship to a Nation which recognises the Person (or State of Person, as it is possible to renounce a nationality) as one of their nationals." .

ies:nationality rdfs:subPropertyOf ies:relationship .

ies:nationality rdfs:range ies:Nation .

ies:nationality rdfs:domain ies:PersonState .

ies:natureOfInterest rdf:type owl:DatatypeProperty .

ies:natureOfInterest sparx:guid "{0C0728AF-89F2-418f-A03E-107689F0ACA0}" .

ies:natureOfInterest rdfs:comment "NatureOfInterest is limited to the following values:@ Personal@ Professional@ Academic" .

ies:natureOfInterest rdfs:subPropertyOf ies:attribute .

ies:natureOfInterest rdfs:domain ies:Interested .

ies:nearTo rdf:type owl:ObjectProperty .

ies:nearTo sparx:guid "{E3BB8807-9CC5-407a-8CC7-E2B0E1B69476}" .

ies:nearTo rdfs:comment "A relationship linking an Entity to another Entity it is proximate to in space" .

ies:nearTo rdfs:subPropertyOf ies:relationship .

ies:nearTo rdfs:domain ies:Entity .

ies:nearTo rdfs:range ies:Entity .

ies:Negotiation rdf:type rdfs:Class .

ies:Negotiation sparx:guid "{FB2EA8AE-164A-4642-82E3-D2622DC6FCCB}" .

ies:Negotiation rdfs:comment "An AgreementStage where parties are trying to find agreement" .

ies:Negotiation rdfs:subClassOf ies:AgreementStage .

ies:Negotiator rdf:type rdfs:Class .

ies:Negotiator sparx:guid "{D4B25AAF-F083-45ba-8188-25DE9D86013D}" .

ies:Negotiator rdfs:comment "An EventParticipant where a ResponsibleActor negotiates an agreement" .

ies:Negotiator rdfs:subClassOf ies:ActiveEventParticipant .

ies:nephewOrNieceOf rdf:type owl:ObjectProperty .

ies:nephewOrNieceOf sparx:guid "{1995033D-7AF2-468c-998D-61E86FB51B16}" .

ies:nephewOrNieceOf rdfs:comment "A Relationship between two Person Entities that indicates one is the nephew or niece of the other.Note: people can become nephews or nieces at different stages in their lives (e.g. as people marry) so PersonState should be used in cases where someone has not always been related in this way (i.e. not from birth)" .

ies:nephewOrNieceOf rdfs:subPropertyOf ies:famillyRelatedTo .

ies:NetworkInterface rdf:type rdfs:Class .

ies:NetworkInterface sparx:guid "{C544CCAC-91C5-4e82-B5D9-7A1B8D48E771}" .

ies:NetworkInterface rdfs:comment "An Device (usually part of another Device) that provides wired or wireless access to a network.Network interfaces can often be removable. To model this, create DeviceStates of the NetworkInterface and make them part of the Device which hosts the interface for that period of time. " .

ies:NetworkInterface rdfs:subClassOf ies:Device .

ies:NetworkInterface rdfs:subClassOf ies:SystemState .

ies:nextTo rdf:type owl:ObjectProperty .

ies:nextTo sparx:guid "{F33CAAA7-85A7-4e41-B0D4-3EAC4E6F73CC}" .

ies:nextTo rdfs:comment "A nearTo linking an Entity to another Entity it is immediately proximate to (i.e. touching) in space" .

ies:nextTo rdfs:subPropertyOf ies:nearTo .

ies:Nickname rdf:type rdfs:Class .

ies:Nickname sparx:guid "{BA4B97EE-58E2-4796-949C-F62EAAE56C9}" .

ies:Nickname rdfs:comment "A PersonName that is an unofficial or casual nameNote:An nickname will often be applied to a State of the Person, as these tend to be non-permanent names" .

ies:Nickname rdfs:subClassOf ies:PersonName .

ies:NonDisclosureAgreement rdf:type rdfs:Class .

ies:NonDisclosureAgreement sparx:guid "[672C510D-8836-4a41-8921-C732DF430278]" .

ies:NonDisclosureAgreement rdfs:comment "An EndToEndAgreement where parties agree not to disclose certain information" .

ies:NonDisclosureAgreement rdfs:subClassOf ies:EndToEndAgreement .

ies:Northing rdf:type rdfs:Class .

ies:Northing sparx:guid "{09649FF9-DDD7-4493-B9EC-7A716B0FC616}" .

ies:Northing rdfs:comment "The GeoIdentity that is a representation of the northward componrnt of cartesian point on a map - i.e. on a 2D projection of the globe such as a mercator projection." .

ies:Northing rdfs:subClassOf ies:GeoIdentity .

ies:NotForProfitOrganisation rdf:type rdfs:Class .

ies:NotForProfitOrganisation sparx:guid "{C2B4A066-E4A7-4cf5-BD1F-8381364F5D30}" .

ies:NotForProfitOrganisation rdfs:comment "An Organisation where all income is reinvested, or distributed - i.e. no profit is made." .

ies:NotForProfitOrganisation rdfs:subClassOf ies:Organisation .

ies:Notify rdf:type rdfs:Class .

ies:Notify sparx:guid "[15EF63E0-1223-4874-A2D4-43F75ACF5315]" .

ies:Notify rdfs:comment "An OnlineContentEvent where a notification is raised - i.e. an application-generated event (not a user-generated event)" .

ies:Notify rdfs:subClassOf ies:OnlineContentEvent .

ies:objectContent rdf:type owl:DatatypeProperty .

ies:objectContent sparx:guid "[222FB07-DCCF-40c6-BD15-4ADB64A8AA5]" .

ies:objectContent rdfs:comment "The content of the data object.Whenever a DataObject is exchanged it must include either the ObjectContent or an ObjectContentReference or both.The ContentStandard qualifier specifies the standard (either by name or by reference) that is applicable to the content of the DataObject.The ContentFormat qualifier specifies the format of the content of the DataObject." .

ies:objectContent rdfs:subPropertyOf ies:representationValue .

ies:objectContent rdfs:domain ies:DataObject .

ies:objectContentReference rdf:type owl:DatatypeProperty .

ies:objectContentReference sparx:guid "[6B006ABD-05CF-485c-A483-563C5E85F189]" .

ies:objectContentReference rdfs:comment "An ObjectContentReference is a resolvable reference to the @content@ of the respective DataObject.Whenever a DataObject is exchanged it must include either the ObjectContent or an ObjectContentReference or both." .

ies:objectContentReference rdfs:subPropertyOf ies:attribute .

ies:objectContentReference rdfs:domain ies:DataObject .

ies:ObjectName rdf:type rdfs:Class .

ies:ObjectName sparx:guid "{9A372833-B327-4cb0-9950-786A2FBF7CC3}" .

ies:ObjectName rdfs:comment "A Name given to a DataObjct." .

ies:ObjectName rdfs:subClassOf ies:Name .

ies:Observation rdf:type rdfs:Class .

ies:Observation sparx:guid "{8CA40CCF-A099-49fd-80CB-CA6DA733FAB4}" .

ies:Observation rdfs:comment "An Event where an Element (Event or Entity) is observed by an Entity (i.e. a Person or Device)" .

ies:Observation rdfs:subClassOf ies:Event .

ies:Observed rdf:type rdfs:Class .

ies:Observed sparx:guid "{CC05ABD0-7BAB-4484-8E8C-ED07C1AA3C93}" .

ies:Observed rdfs:comment "An EventParticipant where an Element is Observed" .

ies:Observed rdfs:subClassOf ies:EventParticipant .

ies:Observer rdf:type rdfs:Class .

ies:Observer sparx:guid "{C58A1AB4-19E2-48d0-B606-3BD5C5DD3860}" .

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ies:Observer rdfs:comment "An EventParticipant where an Entity observes another Entity or Event" .
ies:Observer rdfs:subClassOf ies:ActiveEventParticipant .
ies:ObserverStatus rdf:type rdfs:Class .
ies:ObserverStatus sparx:guid "{FB2FDA67-B258-4b18-9E95-3B9DFAB8FB14}" .
ies:ObserverStatus rdfs:comment "When a Government has observer rights at a Summit" .
ies:ObserverStatus rdfs:subClassOf ies:EventParticipant .
ies:OfferForSale rdf:type rdfs:Class .
ies:OfferForSale sparx:guid "(1D589649-490D-4558-91D5-2D977B2B42DE)" .
ies:OfferForSale rdfs:comment "A TradeEvent where one or more Entities of the same type (specified by an ClassOfEntity) are offered for sale or exchange" .
ies:OfferForSale rdfs:subClassOf ies:TradeEvent .
ies:OnJourney rdf:type rdfs:Class .
ies:OnJourney sparx:guid "(80AF655-A969-46be-BE72-035C053C1C4F)" .
ies:OnJourney rdfs:comment "An EventParticipant in which an Entity is on a Journey (i.e. a multi-part journey)" .
ies:OnJourney rdfs:subClassOf ies:Moving .
ies:OnlineAccount rdf:type rdfs:Class .
ies:OnlineAccount sparx:guid "{E95170B9-2599-46dc-BEDC-012B08F09D43}" .
ies:OnlineAccount rdfs:comment "An Account that enables a person, organisation or other entity to participate within a particular online domain.Note: was called OnlineIdentifier in previous versions of IES" .
ies:OnlineAccount rdfs:subClassOf ies:Account .
ies:OnlineAccount rdfs:subClassOf ies:OnlineAccountState .
ies:OnlineAccountInUse rdf:type rdfs:Class .
ies:OnlineAccountInUse sparx:guid "{BCFD5BED-785D-4c5d-B004-2C8A5C7B40C3}" .
ies:OnlineAccountInUse rdfs:comment "An EventParticipant where an OnlineAccount participates in an OnlineEvent" .
ies:OnlineAccountInUse rdfs:subClassOf ies:ActiveEventParticipant .
ies:onlineAccountProvider rdf:type owl:ObjectProperty .
ies:onlineAccountProvider sparx:guid "[2CF18157-A2F6-41c8-8A87-7B82EEB71F40]" .
ies:onlineAccountProvider rdfs:comment "Relates an OnlineAccount to the OnlineService that provides and administers the account.Note: was called Domain in previous IES versions" .
ies:onlineAccountProvider rdfs:subPropertyOf ies:relationship .
ies:onlineAccountProvider rdfs:domain ies:OnlineAccount .
ies:onlineAccountProvider rdfs:range ies:OnlineService .
ies:OnlineAccountState rdf:type rdfs:Class .
ies:OnlineAccountState sparx:guid "{4C0D1724-B820-4a87-AD36-08C0612CE21F}" .
ies:OnlineAccountState rdfs:comment "A temporal state of an OnlineAccount" .
ies:OnlineAccountState rdfs:subClassOf ies:AccountState .
ies:OnlineArtefact rdf:type rdfs:Class .
ies:OnlineArtefact sparx:guid "[54500458-51CF-46b5-A5A3-14B1D5C7F755]" .
ies:OnlineArtefact rdfs:comment "A WebResource which is any kind of media presented online that is more granular than a webpage, and user-generated - e.g. a blog post, tweet, facebook post, etc.Note: when applying begin and end states (and periods of time) to OnlineArtefact, the times should correspond to the life of the content, not the duration of the posting activity." .
ies:OnlineArtefact rdfs:subClassOf ies:WebResource .
ies:OnlineArtefactInEvent rdf:type rdfs:Class .
ies:OnlineArtefactInEvent sparx:guid "[FE21E354-7770-4e6b-A7EA-E012F759E835]" .
ies:OnlineArtefactInEvent rdfs:comment "An EventParticipant where an OnlineArtefact participates in an OnlineEvent" .
ies:OnlineArtefactInEvent rdfs:subClassOf ies:EventParticipant .
ies:OnlineArtefactInEvent rdfs:subClassOf ies:DeviceState .
ies:OnlineComment rdf:type rdfs:Class .
ies:OnlineComment sparx:guid "[FF216817-5858-4db5-88C5-20AE6A466265]" .
ies:OnlineComment rdfs:comment "An OnlineArtefact that is a comment on an existing OnlineArtefact instance" .
ies:OnlineComment rdfs:subClassOf ies:OnlineArtefact .
ies:onlineCommentOn rdf:type owl:ObjectProperty .
ies:onlineCommentOn sparx:guid "[0A4C12E6-CA4C-43f1-9C6C-FBE23197975F]" .
ies:onlineCommentOn rdfs:comment "Relates an OnlineComment to the OnlineContent that was commented on" .
ies:onlineCommentOn rdfs:subPropertyOf ies:relationship .
ies:onlineCommentOn rdfs:range ies:OnlineArtefact .
ies:onlineCommentOn rdfs:domain ies:OnlineComment .
ies:OnlineContentCreation rdf:type rdfs:Class .
ies:OnlineContentCreation sparx:guid "[DB70D7EE-5076-4eb2-950B-63C71A3C8859]" .
ies:OnlineContentCreation rdfs:comment "An OnlineContentEvent where a post is made.Examples:* Posting a blog* Posting a comment* Tweeting (other microblogs are available, probably)* A Facebook, LinkedIn, Instagram, etc. post" .
ies:OnlineContentCreation rdfs:subClassOf ies:OnlineContentEvent .
ies:OnlineContentCreation rdfs:subClassOf ies>Create .
ies:OnlineContentEvent rdf:type rdfs:Class .
ies:OnlineContentEvent sparx:guid "[2176DEAE-6B5A-4906-AE37-FC76B0A50C0D]" .
ies:OnlineContentEvent rdfs:comment "An OnlineEvent where content (text, images, video, etc.) is uploaded, downloaded or viewed" .
ies:OnlineContentEvent rdfs:subClassOf ies:OnlineEvent .
ies:OnlineEvent rdf:type rdfs:Class .
ies:OnlineEvent sparx:guid "[24499751-7D98-4f2e-B880-8D5BC4FCEF30]" .
ies:OnlineEvent rdfs:comment "An Event on a computer network. This can include events on any network of computer including the internet or other air-gapped or isolated network." .
ies:OnlineEvent rdfs:subClassOf ies:Event .
ies:OnlineLike rdf:type rdfs:Class .
ies:OnlineLike sparx:guid "{5B50E0ECC-45FC-4e5b-933E-51BC0FEE0FCD}" .
ies:OnlineLike rdfs:comment "OnlineArtefact that is a like of an existing OnlineArtefact instance" .
ies:OnlineLike rdfs:subClassOf ies:OnlineArtefact .
ies:onlineLikeOf rdf:type owl:ObjectProperty .
ies:onlineLikeOf sparx:guid "[44A3F24C6-EEC9-48ce-93FB-26FF64E1268A]" .
ies:onlineLikeOf rdfs:comment "Relates an OnlineLike to the OnlineContent that was liked" .
ies:onlineLikeOf rdfs:subPropertyOf ies:relationship .
ies:onlineLikeOf rdfs:domain ies:OnlineLike .
ies:onlineLikeOf rdfs:range ies:OnlineArtefact .
ies:OnlineMessage rdf:type rdfs:Class .
ies:OnlineMessage sparx:guid "[067EA85-D3DD-478c-AF00-FB54F95DF1E2]" .
ies:OnlineMessage rdfs:comment "A Message that was sent Online or any other networked system including air-gapped networks." .
ies:OnlineMessage rdfs:subClassOf ies:OnlineContentEvent .
ies:OnlineMessage rdfs:subClassOf ies:Message .
ies:onlinePublisher rdf:type owl:ObjectProperty .
ies:onlinePublisher sparx:guid "[34F13F26-7C4E-451a-BDA0-62BA7738039F]" .
ies:onlinePublisher rdfs:comment "Relates an OnlineArtefact to the ResponsibleActor that produced it." .
ies:onlinePublisher rdfs:subPropertyOf ies:relationship .
ies:onlinePublisher rdf:type rdfs:Domain .
ies:onlinePublisher rdfs:range ies:ResponsibleActor .
ies:OnlineService rdf:type rdfs:Class .
ies:OnlineService sparx:guid "[27BEFD0A-B30B-47db-B863-13E48D1172F9]" .
ies:OnlineService rdfs:comment "A service provided on a computer network." .
ies:OnlineService rdfs:subClassOf ies:WebResource .
ies:onlineServiceProvider rdf:type owl:ObjectProperty .
ies:onlineServiceProvider sparx:guid "[DDE1404A-AAC3-4d46-9BA3-8E097A55C7F5]" .
ies:onlineServiceProvider rdfs:comment "Relates an OnlineService to the ResponsibleActor that owns/runs it" .
ies:onlineServiceProvider rdfs:subPropertyOf ies:relationship .
ies:onlineServiceProvider rdfs:domain ies:OnlineService .
ies:onlineServiceProvider rdfs:range ies:ResponsibleActor .
ies:OnlineShop rdf:type rdfs:Class .
ies:OnlineShop sparx:guid "[980404C4-C512-4f36-B3B1-5088CC754DCF]" .
ies:OnlineShop rdfs:comment "An EventParticipant where a ResponsibleActor participates in a TradeEvent as an online shop" .
ies:OnlineShop rdfs:subClassOf ies:Retailer .

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ies:OpenAccount rdf:type rdfs:Class .
ies:OpenAccount sparx:guid "{A8B06392-A9A3-4de4-93FB-24F08A546434}" .
ies:OpenAccount rdfs:comment "An AccountAdminEvent where a new Account is opened" .
ies:OpenAccount rdfs:subClassOf ies:AccountAdminEvent .
ies:OperatingSystem rdf:type rdfs:Class .
ies:OperatingSystem sparx:guid "{4F83D781-7E46-4ad4-B2A5-ECD27565EA49}" .
ies:OperatingSystem rdfs:comment "Software that provides the basic access layer to hardware" .
ies:OperatingSystem rdfs:subClassOf ies:Software .
ies:OperationalEvent rdf:type rdfs:Class .
ies:OperationalEvent sparx:guid "{59121C21-38E4-4224-8C2D-4D3E94A3A0D9}" .
ies:OperationalEvent rdfs:comment "An Event conducted by military or national security actors" .
ies:OperationalEvent rdfs:subClassOf ies:Event .
ies:Operator rdf:type rdfs:Class .
ies:Operator sparx:guid "{6730B57A-3E53-4bd2-B784-78C4FB239DBF}" .
ies:Operator rdfs:comment "A ResponsibleActors role in an OperationalEvent where they are one of the operators " .
ies:Operator rdfs:subClassOf ies:ActiveEventParticipant .
ies:opposedTo rdf:type owl:ObjectProperty .
ies:opposedTo sparx:guid "{436E6ABB-C1E3-48e4-B15B-63E700B27EA8}" .
ies:opposedTo rdfs:comment "A coupling between a ResponsibleActor (or state thereof) and an ClassOfElement to which they are opposedExamples: an organisation that is opposed to Nuclear Weapons" .
ies:opposedTo rdfs:subPropertyOf ies:relationship .
ies:opposedTo rdfs:domain ies:ResponsibleActorState .
ies:opposedTo rdfs:range ies:ClassOfElement .
ies:Organisation rdf:type rdfs:Class .
ies:Organisation sparx:guid "{1ECB4C6E-6A30-4dc5-A4AC-9A9DF5B6A54F}" .
ies:Organisation rdfs:comment "A ResponsibleActor that is a group of people formed for one or more of purposes e.g. government organisations, educational organisations, terrorists organisations, religious organisations, etc." .
ies:Organisation rdfs:subClassOf ies:ResponsibleActor .
ies:Organisation rdfs:subClassOf ies:OrganisationState .
ies:OrganisationIdentifier rdf:type rdfs:Class .
ies:OrganisationIdentifier sparx:guid "{13865B40-B57D-44e7-9658-00C45C8175C8}" .
ies:OrganisationIdentifier rdfs:comment "A unique Identifier for an Organisation (more usually an OrganisationState)Example:DUNS numberVAT numberCompanies House Number Registered Charity Number" .
ies:OrganisationIdentifier rdfs:subClassOf ies:Identifier .
ies:OrganisationIdentifier rdfs:subClassOf ies:organisationName .
ies:OrganisationName rdf:type rdfs:Class .
ies:OrganisationName sparx:guid "{065C9864-96E2-47f5-9769-E7942C1A208F}" .
ies:OrganisationName rdfs:comment "A Name used to identify an Organisation" .
ies:OrganisationName rdfs:subClassOf ies:name .
ies:OrganisationState rdf:type rdfs:Class .
ies:OrganisationState sparx:guid "{F3D86A59-B2DE-4743-A9A8-7DA9CCC68638}" .
ies:OrganisationState rdfs:comment "A temporal state of an Organisation" .
ies:OrganisationState rdfs:subClassOf ies:ResponsibleActorState .
ies:orGroup rdf:type owl:DatatypeProperty .
ies:orGroup sparx:guid "{71249792-E0AF-4F98-86ED-17115F173A7}" .
ies:orGroup rdfs:comment "The groups (if any) which the requesting user must be a member of at least one of in order to access the item. See the EDH specification for further details.Allowable Values:See EDH Standard" .
ies:orGroup rdfs:domain ies:SecurityLabel .
ies:originatingSystem rdf:type owl:ObjectProperty .
ies:originatingSystem sparx:guid "{D4A003A3-7FEF-409c-8935-743CD97299E7}" .
ies:originatingSystem rdfs:comment "The System that produced the dataset" .
ies:originatingSystem rdfs:range ies:System .
ies:originatingSystem rdfs:domain rdf:Statement .
ies:originator rdf:type owl:ObjectProperty .
ies:originator sparx:guid "{4978D7F3-E686-4b30-9356-F0C4DC7A158D}" .
ies:originator rdfs:comment "The ResponsibleActor that produced the dataset" .
ies:originator rdfs:range ies:ResponsibleActor .
ies:originator rdfs:domain rdf:Statement .
ies:OSGridReference rdf:type rdfs:Class .
ies:OSGridReference sparx:guid "{697EEA12-8FD3-49e0-A4A2-A045B4570550}" .
ies:OSGridReference rdfs:comment "A GeoIdentity that is an Ordnance Survey Grid Reference - i.e. pertaining to Great Britain." .
ies:OSGridReference rdfs:subClassOf ies:GeoIdentity .
ies:OutgoingGovernment rdf:type rdfs:Class .
ies:OutgoingGovernment sparx:guid "{A5516CD2-940B-4827-B38A-AD86AF934E99}" .
ies:OutgoingGovernment rdfs:comment "The Government that left power following a ChangeOfGovernment" .
ies:OutgoingGovernment rdfs:subClassOf ies:EventParticipant .
ies:owns rdf:type owl:ObjectProperty .
ies:owns sparx:guid "{FDD94D9F-F343-4c1b-9688-752C896A3C7C}" .
ies:owns rdfs:comment "A Relationship between a ResponsibleActor and an Asset they legally own" .
ies:owns rdfs:subPropertyOf ies:relationship .
ies:owns rdfs:domain ies:ResponsibleActorState .
ies:owns rdfs:range ies:Asset .
ies:parentOf rdf:type owl:ObjectProperty .
ies:parentOf sparx:guid "{6f13083C-505A-473e-9EDB-B0E534A341FB}" .
ies:parentOf rdfs:comment "A Relationship between two Person Entities that indicates one is the parent of the other" .
ies:parentOf rdfs:subPropertyOf ies:ancestorOf .
ies:parentOf rdfs:domain ies:Person .
ies:parentOf rdfs:range ies:Person .
ies:Parked rdf:type rdfs:Class .
ies:Parked sparx:guid "{B6A503E5-3FC4-4a45-8DC0-994EA31A895A}" .
ies:Parked rdfs:comment "A temporal state of a Vehicle where it is not moving. Examples:* A car parked on the roadside* A ship in dock or at anchor* An aircraft parked on the tarmac or in a hangar" .
ies:Parked rdfs:subClassOf ies:VehicleState .
ies:ParticularPeriod rdf:type rdfs:Class .
ies:ParticularPeriod sparx:guid "{2173F463-524C-457c-B106-51322F64F122}" .
ies:ParticularPeriod rdfs:comment "A PeriodOfTime that is a specific, contiguous extent of time.IMPORTANT NOTE: The URI of a ParticularPeriod shall be encoded in UTC (Coordinated Universal Time) and as follows:http://iso8601.iso.org/20070118T153000Where the content after the / is encoded without punctuation and without the trailing Z. In the example above, the punctuated equivalent would be 2007-01-18T15:30:00ZThe reason behind using a URI is that receiving systems can resolve the periods of time and de-duplicate. Examples:Tuesday 28th August 20182016December 1944" .
ies:ParticularPeriod rdfs:subClassOf ies:PeriodOfTime .
ies:PartNumber rdf:type rdfs:Class .
ies:PartNumber sparx:guid "{772CD8A3-3DCA-4cc7-8BA3-17D1C57E94BC}" .
ies:PartNumber rdfs:comment "A unique Identifier for the a ModelOfDeviceNote: this is different to a serial number which is unique to each Device" .
ies:PartNumber rdfs:subClassOf ies:Identifier .
ies:PartOffacility rdf:type rdfs:Class .
ies:PartOffacility sparx:guid "{3EEFA421-6B88-4e51-9B20-4FFA22E8C5CA}" .
ies:PartOffacility rdfs:comment "A Location that is contained within a Facility - e.g. a room, laboratory, floor, etc." .
ies:PartOffacility rdfs:subClassOf ies:RealEstate .
ies:PartyInCommunication rdf:type rdfs:Class .
ies:PartyInCommunication sparx:guid "{A5713B2C-E098-4dd2-BD46-42DA51899FEA}" .
ies:PartyInCommunication rdfs:comment "An Event that is part of (usually one end of) a Communication Event.Sometimes, all we know about a PartyInCommunication is their CommunicationsIdentifier (phone number, e-mail address, maybe even just an IP address) so the isIdentifiedBy relationship may be applied to PartyInCommunication" .
ies:PartyInCommunication rdfs:subClassOf ies:Event .
ies:PartyToAgreement rdf:type rdfs:Class .
ies:PartyToAgreement sparx:guid "{AF57E842-9BF7-4f6e-B180-DDEACB0F5386}" .
ies:PartyToAgreement rdfs:comment "An EventParticipant where a ResponsibleActor is party to an EndToEndAgreementNote: this includes EndToEndAgreements"

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that were never ratified - i.e. they got to the negotiation stage but were never put into force" .

ies:PartyToAgreement rdfs:subClassOf ies:ActiveEventParticipant .

ies:Passenger rdf:type rdfs:Class .

ies:Passenger sparx:guid "[D6D07656-1866-4cb4-97A7-FC4C1CB65416]" .

ies:Passenger rdfs:comment "A PersonInTransit where the Person travelling is a Passenger on a Transit" .

ies:Passenger rdfs:subClassOf ies:PersonInTransit .

ies:PassengerName rdf:type rdfs:Class .

ies:PassengerName sparx:guid "[E5C1270D-35AD-4f86-B0E4-1DC0039174E3]" .

ies:PassengerName rdfs:comment "The Name of the Person being used for Travel - it may not be known if this is the actual Name the Person travelling, as someone else may be using their ticket." .

ies:PassengerName rdfs:subClassOf ies:Name .

ies:Passport rdf:type rdfs:Class .

ies:Passport sparx:guid "[13ABC7CA-915E-4069-8EA7-FD205A5336C5]" .

ies:Passport rdfs:comment "An IdentityDocument that confirms a Persons nationality and permits them to cross national boundaries" .

ies:Passport rdfs:subClassOf ies:IdentityDocument .

ies:payloadContents rdf:type owl:ObjectProperty .

ies:payloadContents sparx:guid "{10DEB6B8-80CC-4bfc-B10F-1830B559C21F}" .

ies:payloadContents rdfs:comment "A link from an ExchangePayload to an rdfs:Resource that is in that payload.If there is no payloadContents link, then it is assumed that all the contents of the file are in the ExchangePayload. Under this circumstance, more than one ExchangePayload would be an error. The payloadContents link will usually refer to a named graph, but it can also be used to refer to individual rdf:Statements and rdfs:Resources." .

ies:payloadContents rdfs:domain ies:ExchangePayload .

ies:payloadContents rdfs:range rdfs:Resource .

ies:payloadLabel rdf:type owl:ObjectProperty .

ies:payloadLabel sparx:guid "(259167E4-D0B3-4f03-9653-CAD778F5F6F3)" .

ies:payloadLabel rdfs:comment "A mandatory link from an ExchangePayload to the SecurityLabel that provides the default access control for all statements in the payload.Note: individual statements may deviate from the default by applying their own SecurityLabels" .

ies:payloadLabel rdfs:domain ies:ExchangePayload .

ies:payloadLabel rdfs:range ies:SecurityLabel .

ies:PaymentArtifact rdf:type rdfs:Class .

ies:PaymentArtifact sparx:guid "[9882D901-1B22-4b89-81D1-031F840A20D0]" .

ies:PaymentArtifact rdfs:comment "An Asset that is means of payment" .

ies:PaymentArtifact rdfs:subClassOf ies:Asset .

ies:paymentArtifactProvider rdf:type owl:ObjectProperty .

ies:paymentArtifactProvider sparx:guid "{C793E699-C27B-49cc-9358-C4A0E17E609E}" .

ies:paymentArtifactProvider rdfs:comment "The Organisation that provided the PaymentArtifact" .

ies:paymentArtifactProvider rdfs:subPropertyOf ies:relationship .

ies:paymentArtifactProvider rdfs:domain ies:PaymentArtifact .

ies:paymentArtifactProvider rdfs:range ies:Organisation .

ies:PeaceTreaty rdf:type rdfs:Class .

ies:PeaceTreaty sparx:guid "[10FBBF98-4604-46d9-AD12-211597532B9E]" .

ies:PeaceTreaty rdfs:comment "A Treaty that formalises the end of hostilities in a War" .

ies:PeaceTreaty rdfs:subClassOf ies:Treaty .

ies:PeriodOfTime rdf:type rdfs:Class .

ies:PeriodOfTime sparx:guid "[3DFDA898-C340-4279-8B3C-275359D5B02D]" .

ies:PeriodOfTime rdfs:comment "A PeriodofTime is an Element whose spatial extent is everywhere, but whose temporal extent is limited. " .

ies:PeriodOfTime rdfs:subClassOf ies:Element .

ies:permittedNationality rdf:type owl:DatatypeProperty .

ies:permittedNationality sparx:guid "[FA623989-B6A4-40e2-A956-B8FFEA478895]" .

ies:permittedNationality rdfs:comment "The nationalities of those who are permitted to access the item. See the EDH specification for further details.Allowable Values:See EDH Standard" .

ies:permittedNationality rdfs:domain ies:SecurityLabel .

ies:permittedOrganisation rdf:type owl:DatatypeProperty .

ies:permittedOrganisation sparx:guid "[90F3E89D-1456-41fe-9354-4E13C4D79564]" .

ies:permittedOrganisation rdfs:comment "The organisations who are permitted to access the item. See the EDH specification for further details.Allowable Values:See EDH Standard" .

ies:permittedOrganisation rdfs:domain ies:SecurityLabel .

ies:Perpetrator rdf:type rdfs:Class .

ies:Perpetrator sparx:guid "[D625B538-7D72-4d7d-BA50-D79712A264ED]" .

ies:Perpetrator rdfs:comment "An Actor where the ResponsibleActor conducts a CriminalActivity" .

ies:Perpetrator rdfs:subClassOf ies:ActiveEventParticipant .

ies:Person rdf:type rdfs:Class .

ies:Person sparx:guid "[5D5C5B9B-5E90-4100-8353-8EE9F3D772E2]" .

ies:Person rdfs:comment "A human being, living or dead. This also includes what may appear to be a person, but is in fact an Alias" .

ies:Person rdfs:subClassOf ies:ResponsibleActor .

ies:Person rdfs:subClassOf ies:PersonState .

ies:Person ies:powertype ies:ClassOfPerson .

ies:PersonalRadioHandset rdf:type rdfs:Class .

ies:PersonalRadioHandset sparx:guid "[D984921F-87A3-4ee9-8A3D-A88F564295FA]" .

ies:PersonalRadioHandset rdfs:comment "A CommunicationsDevice for portable radio communications - e.g. a walkie-talkie" .

ies:PersonalRadioHandset rdfs:subClassOf ies:CommunicationsDevice .

ies:PersonHeight rdf:type rdfs:Class .

ies:PersonHeight sparx:guid "[57060AD9-A6D7-496d-A2BF-22B930400EEE]" .

ies:PersonHeight rdfs:comment "The Length that is the height of a PersonState" .

ies:PersonHeight rdfs:subClassOf ies:Length .

ies:PersonInCommunication rdf:type rdfs:Class .

ies:PersonInCommunication sparx:guid "[0383D09B-8C40-417d-8C1A-75220EAF496E]" .

ies:PersonInCommunication rdfs:comment "A PersonState (and an EventParticipant) when a Person is involved in communicating. " .

ies:PersonInCommunication rdfs:subClassOf ies:EventParticipant .

ies:PersonInCommunication rdfs:subClassOf ies:PersonState .

ies:PersonInTransit rdf:type rdfs:Class .

ies:PersonInTransit sparx:guid "[9888A3F3-7E9B-4806-BD4E-2FC4D87A5902]" .

ies:PersonInTransit rdfs:comment "An EntityInTransit where the Entity is a Person" .

ies:PersonInTransit rdfs:subClassOf ies:EntityInTransit .

ies:PersonName rdf:type rdfs:Class .

ies:PersonName sparx:guid "[F114F86C-3B88-4be7-A686-A1D80002DF28]" .

ies:PersonName rdfs:comment "A Name used to identify / refer to a PersonNote: this is the full name as known to the organisation managing the NamingScheme. For first names, surnames, etc. use a subtype of PersonNameA PersonName may be composed of Surname, GivenName, etc. using the inRepresentation relationship" .

ies:PersonName rdfs:subClassOf ies:Name .

ies:PersonName rdf:type rdfs:Class .

ies:PersonState sparx:guid "[38F8B795-0BCE-4945-8C69-8678ED935C1A]" .

ies:PersonState rdfs:comment "A temporal state of a Person" .

ies:PersonState rdfs:subClassOf ies:ResponsibleActorState .

ies:PersonState ies:powertype ies:ClassOfPersonState .

ies:PersonTitle rdf:type rdfs:Class .

ies:PersonTitle sparx:guid "[CA360588-835C-48ef-944A-2507708ADA71]" .

ies:PersonTitle rdfs:comment "The title associated with the name of the person." .

ies:PersonTitle rdfs:subClassOf ies:PersonName .

ies:PlaceName rdf:type rdfs:Class .

ies:PlaceName sparx:guid "[37DB1A2C-9382-4dac-8AE8-9DEC5A337E16]" .

ies:PlaceName rdfs:comment "A Name that is used to refer to a Location.Note: the naming pattern is used here as different parties (even standards bodies !) may have different names for the same Location" .

ies:PlaceName rdfs:subClassOf ies:Name .

ies:PointOnEarthSurface rdf:type rdfs:Class .

ies:PointOnEarthSurface sparx:guid "[A11A426E-ED15-4aaf-B9A5-02A406053AA]" .

ies:PointOnEarthSurface rdfs:comment "A Location that is a point (mathematically speaking, of vanishing area) on the surface of the WGS84 spheroid" .

ies:PointOnEarthSurface rdfs:subClassOf ies:GeoPoint .

ies:PolicyAnnouncement rdf:type rdfs:Class .
 ies:PolicyAnnouncement sparc:guid "{345E8F46-AC41-452b-B2F9-694DBED556FD}" .
 ies:PolicyAnnouncement rdfs:comment "A PoliticalAnnouncement about policy" .
 ies:PolicyAnnouncement rdfs:subClassOf ies:PoliticalAnnouncement .
 ies:PoliticalAgreement rdf:type rdfs:Class .
 ies:PoliticalAgreement sparc:guid "{686C88FB-6CB2-4185-9FCF-89D2D4BB3051}" .
 ies:PoliticalAgreement rdfs:comment "A PoliticalEvent that is also an EndToEndAgreementNote: was called Agreement in IES 3.x, but that was confusing for business agreements, personal agreements, etc." .
 ies:PoliticalAgreement rdfs:subClassOf ies:PoliticalEvent .
 ies:PoliticalAnnouncement rdf:type rdfs:Class .
 ies:PoliticalAnnouncement sparc:guid "{5D5957B-E4B6-4cbb-8CE9-887F7152820F}" .
 ies:PoliticalAnnouncement rdfs:comment "A PoliticalEvent where information is released to the publicNote: was called Announcement in IES 3.x, but that was confusing for business announcements , personal announcements , etc." .
 ies:PoliticalAnnouncement rdfs:subClassOf ies:PoliticalEvent .
 ies:PoliticalEvent rdf:type rdfs:Class .
 ies:PoliticalEvent sparc:guid "{3AE6FDD-5B3B-4092-9549-C05E8A5FED41}" .
 ies:PoliticalEvent rdfs:comment "An Event related to democratic processes or party politics" .
 ies:PoliticalEvent rdfs:subClassOf ies:Event .
 ies:Port rdf:type rdfs:Class .
 ies:Port sparc:guid "{57860A04-0128-4c7e-9BFD-83D3BA432F8C}" .
 ies:Port rdfs:comment "A Facility which is a recognised terminus for international travel" .
 ies:Port rdfs:subClassOf ies:Facility .
 ies:PossibleWorld rdf:type rdfs:Class .
 ies:PossibleWorld sparc:guid "{15E93B86-6969-47f2-8036-0B7B96E9BDA2}" .
 ies:PossibleWorld rdfs:comment "An Element that encompasses a number of Events, Entities and States that may occur / have occurred. A PossibleWorld is used for scenario planning and forensics. This is a very simple placeholder for an area of IES that is likely to grow in the future. For now, it can be used to group together a number of elements (using isPartOf relationship) to assert that they share the same truth - i.e. in one possible scenario, all of them were true. The same Element may exist in more than one PossibleWorld - i.e. scenarios may share elements. For version 4.1.0 of IES, PossibleWorld is to be used with AssessToBeTrue in order to specify a level of confidence or probability. More work is needed on this in later IES versions." .
 ies:PossibleWorld rdfs:subClassOf ies:Element .
 ies:Post rdf:type rdfs:Class .
 ies:Post sparc:guid "{C28E83C-1895-4901-ABF8-9D78C9C12C62}" .
 ies:Post rdfs:comment "A part of an Organisation that has particular responsibilities" .
 ies:Post rdfs:subClassOf ies:ResponsibleActor .
 ies:Post rdfs:subClassOf ies:PostState .
 ies:PostalCode rdf:type rdfs:Class .
 ies:PostalCode sparc:guid "{6A0385E2-3FB1-4a42-A254-BC382D92E27A}" .
 ies:PostalCode rdfs:comment "A GeoIdentity used to (partially) identify and address" .
 ies:PostalCode rdfs:subClassOf ies:GeoIdentity .
 ies:postModificationState rdf:type owl:ObjectProperty .
 ies:postModificationState sparc:guid "{2B02EF33-E12A-42ec-B047-533F6D8F159D}" .
 ies:postModificationState rdfs:comment "A partOf relationship to indicate a State of an Entity just after the Modify eventNote: For BORO purists, this means the post State is part of the Modify Event (i.e. the extent of the Modify Event includes the State)" .
 ies:postModificationState rdfs:subPropertyOf ies:isStateOf .
 ies:postModificationState rdfs:domain ies:Modify .
 ies:postModificationState rdfs:range ies:State .
 ies:PostState rdf:type rdfs:Class .
 ies:PostState sparc:guid "{DB51B007-E3E8-431f-9C23-3C0A7E83FB11}" .
 ies:PostState rdfs:comment "A temporal state of a Post" .
 ies:PostState rdfs:subClassOf ies:ResponsibleActorState .
 ies:pownerty rdf:type owl:ObjectProperty .
 ies:pownerty sparc:guid "{D4BD48E8-7688-4d3c-AB83-E653DB89170D}" .
 ies:pownerty rdfs:comment "An rdf:type relationship that asserts one Class is the powerset of the other (see Cantors theorem)." .
 ies:pownerty rdfs:subPropertyOf rdf:type .
 ies:preModificationState rdf:type owl:ObjectProperty .
 ies:preModificationState sparc:guid "{4E954855-D50A-42ab-9401-4B1C890542AD}" .
 ies:preModificationState rdfs:comment "A partOf relationship to indicate a State of an Entity just prior to the Modify eventNote: For BORO purists, this means the pre State is part of the Modify Event (i.e. the extent of the Modify Event includes the State)" .
 ies:preModificationState rdfs:subPropertyOf ies:isStateOf .
 ies:preModificationState rdfs:domain ies:Modify .
 ies:preModificationState rdfs:range ies:State .
 ies:Presence rdf:type rdfs:Class .
 ies:Presence sparc:guid "{8404464D-3904-4c59-AE0E-B3FAFB46AC4E}" .
 ies:Presence rdfs:comment "An EventParticipant where an Entity is CoLocated with other Entities of interest" .
 ies:Presence rdfs:subClassOf ies:EventParticipant .
 ies:Prisoner rdf:type rdfs:Class .
 ies:Prisoner sparc:guid "{885EA1C2-29D7-4b7c-B479-D43E4F77B5BD}" .
 ies:Prisoner rdfs:comment "A persons role when incarcerated" .
 ies:Prisoner rdfs:subClassOf ies:EventParticipant .
 ies:Prisoner rdfs:subClassOf ies:PersonState .
 ies:Prosecution rdf:type rdfs:Class .
 ies:Prosecution sparc:guid "{024133FE-9D08-4e5d-A97D-A34B5EA01C41}" .
 ies:Prosecution rdfs:comment "A LawEnforcement Event that is the trial of a suspect" .
 ies:Prosecution rdfs:subClassOf ies:LawEnforcement .
 ies:Prosecutor rdf:type rdfs:Class .
 ies:Prosecutor sparc:guid "{ABDC5FD5-3281-4cd5-A9B0-188292D8C6B7}" .
 ies:Prosecutor rdfs:comment "A persons role as a prosecutor in a trial" .
 ies:Prosecutor rdfs:subClassOf ies:ActiveEventParticipant .
 ies:Prosecutor rdfs:subClassOf ies:ResponsibleActorState .
 ies:protectiveMarking rdf:type owl:DatatypeProperty .
 ies:protectiveMarking sparc:guid "{7E5590F8-B142-49d8-8FB0-414716CF9F16}" .
 ies:protectiveMarking rdfs:comment "The classification applied to the respective item. This is equivalent to the Classification field within the EDHallowable Values: OFFICIAL-SENSITIVE-SECRET TOP SECRET" .
 ies:protectiveMarking rdfs:domain ies:SecurityLabel .
 ies:publicationDate rdf:type owl:ObjectProperty .
 ies:publicationDate sparc:guid "{CD6E380B-7AD4-43d6-A128-9C666ABD8223}" .
 ies:publicationDate rdfs:comment "The date of publication of the respective document" .
 ies:publicationDate rdfs:subPropertyOf ies:relationship .
 ies:publicationDate rdfs:domain ies:WorkOfDocumentation .
 ies:publicationDate rdfs:range ies:ParticularPeriod .
 ies:Purchase rdf:type rdfs:Class .
 ies:Purchase sparc:guid "{0A9A9F7D-A6F1-4629-BD2B-7990D2D36493}" .
 ies:Purchase rdfs:comment "A TradeEvent where an Entity is bought" .
 ies:Purchase rdfs:subClassOf ies:TradeEvent .
 ies:Purchaser rdf:type rdfs:Class .
 ies:Purchaser sparc:guid "{B10A694D-31AA-456c-8C51-B7B5F101A39F}" .
 ies:Purchaser rdfs:comment "An EventParticipant where a ResponsibleActor participates in a TradeEvent as a purchaserNote: in the case of a RequestForQuotation, the purchaser is the person or organisation issuing the RfQNote: in the case of an online purchase where the buyer is unknown, the participant may be an OnlineIdentifier" .
 ies:Purchaser rdfs:subClassOf ies:EventParticipant .
 ies:quantityDelivered rdf:type owl:DatatypeProperty .
 ies:quantityDelivered sparc:guid "{7550DAB0-DF0E-4c61-9198-5DE767677A3A}" .
 ies:quantityDelivered rdfs:comment "The number of Entities (of the same type) that were delivered" .
 ies:quantityDelivered rdfs:subPropertyOf ies:attribute .
 ies:quantityDelivered rdfs:domain ies:Delivery .
 ies:quantityOffered rdf:type owl:DatatypeProperty .

ies:quantityOffered sparx:guid "{AEC476A1-AE39-4a9e-9EE3-DD45B50B0F26}" .
 ies:quantityOffered rdfs:comment "The number of Entities (of the same type) that are being offered for sale" .
 ies:quantityOffered rdfs:subPropertyOf ies:attribute .
 ies:quantityOffered rdf:type owl:DatatypeProperty .
 ies:quantityPurchased sparx:guid "{0D2231E8-6AF1-4e59-B8FA-86A26334CC71}" .
 ies:quantityPurchased rdfs:comment "The number of Entities (of the same type) that were purchased" .
 ies:quantityPurchased rdfs:subPropertyOf ies:attribute .
 ies:quantityPurchased rdfs:domain ies:Purchaser .
 ies:radioCoverage rdf:type owl:ObjectProperty .
 ies:radioCoverage sparx:guid "{3B5E5043-30C2-4e67-86C8-F59F55AEBA90}" .
 ies:radioCoverage rdfs:comment "A relationship linking a RadioMast to its RadioCoverageArea" .
 ies:radioCoverage rdfs:domain ies:RadioMast .
 ies:radioCoverage rdfs:range ies:RadioCoverageArea .
 ies:radioCoverage rdfs:subPropertyOf ies:relationship .
 ies:RadioCoverageArea rdf:type rdfs:Class .
 ies:RadioCoverageArea sparx:guid "{7A2CC7C7-6B82-4751-BDBE-A770B3AFBBEB}" .
 ies:RadioCoverageArea rdfs:comment "A Location whose area is that in which a RadioMast has viable communications coverage. Note: The RadioMast itself may not be part of this area, as often the immediate area around the base of a RadioMast is a deadspot. Note: Most radio area coverage is complex in shape, and the preferred representation in IES4 is GeoJSON. No attempt is made here to differentiate between signal strength zones. To do this, create multiple RadioCoverAreas for the same RadioMast and label them appropriately." .
 ies:RadioCoverageArea rdfs:subClassOf ies:Location .
 ies:RadioMast rdf:type rdfs:Class .
 ies:RadioMast sparx:guid "{F02CF55-12A7-4308-9A60-E2353DE5BE58}" .
 ies:RadioMast rdfs:comment "An Device that is placed in a Location to provide either a link from a wired to wireless connection, or to relay between two wireless endpoints." .
 ies:RadioMast rdfs:subClassOf ies:Device .
 ies:RadioMast rdfs:subClassOf ies:SystemState .
 ies:Ratification rdf:type rdfs:Class .
 ies:Ratification sparx:guid "{31977608-5432-4d6f-AEE0-19838197C813}" .
 ies:Ratification rdfs:comment "An AgreementStage where parties have arrived at a consensus and approve the agreement" .
 ies:Ratification rdfs:subClassOf ies:AgreementStage .
 ies:RealEstate rdf:type rdfs:Class .
 ies:RealEstate sparx:guid "{8F00F17F-34EE-43c6-8DA4-30F698384FD3}" .
 ies:RealEstate rdfs:comment "A Location (and an Asset) that has been defined or constructed for the purpose of ownership" .
 ies:RealEstate rdfs:subClassOf ies:Location .
 ies:RealEstate rdfs:subClassOf ies:Asset .
 ies:ReceivingAccount rdf:type rdfs:Class .
 ies:ReceivingAccount sparx:guid "{25965198-3FE0-4bb9-BCA9-808E15A3EE49}" .
 ies:ReceivingAccount rdfs:comment "An EventParticipant where a FinancialAccount receives money" .
 ies:ReceivingAccount rdfs:subClassOf ies:EventParticipant .
 ies:Recipient rdf:type rdfs:Class .
 ies:Recipient sparx:guid "{AAC709FB-0B88-4517-B5BB-FE2320992073}" .
 ies:Recipient rdfs:comment "An PartyInCommunication where the communicating party is the recipient of a message" .
 ies:Recipient rdfs:subClassOf ies:PartyInCommunication .
 ies:Reconnaissance rdf:type rdfs:Class .
 ies:Reconnaissance sparx:guid "{88EF5E6-4F5-4376-8112-EC294A673923}" .
 ies:Reconnaissance rdfs:comment "An IntelligenceOperation where an Entity or Event is observed for the purposes of planning" .
 ies:Reconnaissance rdfs:subClassOf ies:IntelligenceOperation .
 ies:recurrentPeriodRepresentation rdf:type owl:DatatypeProperty .
 ies:recurrentPeriodRepresentation sparx:guid "{442AC7F0-AE57-4090-88D6-55A3825CECAA}" .
 ies:recurrentPeriodRepresentation rdfs:comment "A modified ISO8601 format (hence use of xsd:string) where elements of the time/date are blanked with ?? characters. The purpose of this is to be able to specify e.g. a time of day with no date - i.e. all recurrences of that time of day." .
 ies:recurrentPeriodRepresentation rdfs:subPropertyOf ies:attribute .
 ies:recurrentPeriodRepresentation rdfs:domain ies:RecurringPeriod .
 ies:RecurringPeriod rdf:type rdfs:Class .
 ies:RecurringPeriod sparx:guid "{986E66AC-9092-410b-88AD-30B86EFC32DD}" .
 ies:RecurringPeriod rdfs:comment "A PeriodOfTime that is composed of regularly recurring periods of time.ISO8601 is used to represent these periods (recurrentPeriodRepresentation property), using the blanking technique (e.g. blanking the date to give a daily time). The recurrence can be limited using the startsIn and endsIn properties Examples:Every Tuesday from 28th August 2018 to 2 October 201813:00 to 14:00 on every day from 27th June 2016 to 2 October 2024" .
 ies:RecurringPeriod rdfs:subClassOf ies:ArbitraryPeriod .
 ies:ReferenceNumber rdf:type rdfs:Class .
 ies:ReferenceNumber sparx:guid "{A0DC70D-9237-480b-A712-F5381C5FFA1A}" .
 ies:ReferenceNumber rdfs:comment "An Identifier used to uniquely identify a document" .
 ies:ReferenceNumber rdfs:subClassOf ies:Identifier .
 ies:RegionalConstituency rdf:type rdfs:Class .
 ies:RegionalConstituency sparx:guid "{FC55D479-07C4-4d98-B48C-5032190E493D}" .
 ies:RegionalConstituency rdfs:comment "The people residing (or entitled to reside / vote in) a particular Location" .
 ies:RegionalConstituency rdfs:subClassOf ies:Organisation .
 ies:RegionOfCountry rdf:type rdfs:Class .
 ies:RegionOfCountry sparx:guid "{65D869DB-19EE-4886-98BA-E579C39C4A68}" .
 ies:RegionOfCountry rdfs:comment "A Location that is a general subdivision of a Country.e.g. cities, towns, counties, states, etc." .
 ies:RegionOfCountry rdfs:subClassOf ies:Location .
 ies:RegionOfWorld rdf:type rdfs:Class .
 ies:RegionOfWorld sparx:guid "{18C405CE-CC09-4e02-A44D-0FB00C6F6B37}" .
 ies:RegionOfWorld rdfs:comment "A Location that is a general subdivision of the world - e.g. continents, sub-continents, economic areas, etc.Regions of the world may sometimes be spatially separated (e.g. economic areas)" .
 ies:RegionOfWorld rdfs:subClassOf ies:Location .
 ies:RegistrationNumber rdf:type rdfs:Class .
 ies:RegistrationNumber sparx:guid "{1E784B9C-1A5D-4035-B134-67A758FB869D}" .
 ies:RegistrationNumber rdfs:comment "The registration number for the respective Vehicle (with or without spaces).For road vehicles this is often referred to as the VRN (vehicle registration number).For aircraft the tail number is often used as a means of identification and/or registration" .
 ies:RegistrationNumber rdfs:subClassOf ies:Identifier .
 ies:relationship rdf:type owl:ObjectProperty .
 ies:relationship sparx:guid "{DCE662F5-7BD8-457e-AE7E-2E5FE43DBA1A}" .
 ies:relationship rdfs:comment "A relationship represents an association between two Things" .
 ies:relationship rdfs:range ies:Thing .
 ies:relationship rdfs:domain ies:Thing .
 ies:Religion rdf:type rdfs:Class .
 ies:Religion sparx:guid "{BD538820-CE91-4b9a-ADB8-C105FE0F2E7B}" .
 ies:Religion rdfs:comment "An Entity whose extent is all the people (PersonState) who share the same belief.Religions may be part of other religions - e.g. Christianity being made up of Catholic, Protestant, Orthodox, etc. 1. The religion @practiced@ by the respective Person..2. The religion may be qualified to identify a particular sect.3. The Metropolitan Police standard [F] shall be used as the reference data standard" .
 ies:Religion rdfs:subClassOf ies:Entity .
 ies:Religion rdfs:subClassOf ies:ReligionState .
 ies:ReligionState rdf:type rdfs:Class .
 ies:ReligionState sparx:guid "{E7B02F98-C52E-4db0-AF32-3D5131710EE7}" .
 ies:ReligionState rdfs:comment "A temporal state of an Religion" .
 ies:ReligionState rdfs:subClassOf ies:State .
 ies:ReligiousOrganisation rdf:type rdfs:Class .
 ies:ReligiousOrganisation sparx:guid "{2978340B-C4AA-4331-A68D-54A158798DAC}" .
 ies:ReligiousOrganisation rdfs:comment "An Organisation formed around a particular religious belief" .
 ies:ReligiousOrganisation rdfs:subClassOf ies:Organisation .
 ies:RentalAgreement rdf:type rdfs:Class .
 ies:RentalAgreement sparx:guid "{F38D2E58-C29A-4e3c-93BF-C33800969720}" .
 ies:RentalAgreement rdfs:comment "An EndToEndAgreement where one Party rents an Entity to another" .

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ies:RentalAgreement rdfs:subClassOf ies:EndToEndAgreement .
ies:RentalProvider rdf:type rdfs:Class .
ies:RentalProvider sparx:guid "{8ECC64A4-CED0-4122-AB54-64EA870837FC}" .
ies:RentalProvider rdfs:comment "A PartyToAgreement where a ResponsibleActor provides an Entity to rent" .
ies:RentalProvider rdfs:subClassOf ies:PartyToAgreement .
ies:Rented rdf:type rdfs:Class .
ies:Rented sparx:guid "{E5C65CAB-65BE-4502-8B46-5C5CC3C73B00}" .
ies:Rented rdfs:comment "An EventParticipant where an Entity is rented" .
ies:Rented rdfs:subClassOf ies:EventParticipant .
ies:Renter rdf:type rdfs:Class .
ies:Renter sparx:guid "{E2FC3A09-EC9D-4ab9-B273-A526CB511B5A}" .
ies:Renter rdfs:comment "A PartyToAgreement where a ResponsibleActor rents an Entity from another party" .
ies:Renter rdfs:subClassOf ies:PartyToAgreement .
ies:ReplaceablePart rdf:type rdfs:Class .
ies:ReplaceablePart sparx:guid "{624D6CD1-31D9-46db-B42D-56DAD35BABD8}" .
ies:ReplaceablePart rdfs:comment "An Element which is a part of a whole that can be replaced (possibly multiple times) without altering its overall identity. It is coincident with any Element which fulfils its purpose, role or function to the whole. The identity of a ReplaceablePart can survive periods when no Element fulfils its purpose. A ReplaceablePart does not survive the destruction of the whole it is a part of, though an Element that fulfils the ReplaceablePart may do. Examples include:- Tyres of a car - CEO of a company - Simcard in a mobile handset - A pump in an oil refinery system" .
ies:ReplaceablePart rdfs:subClassOf ies:Element .
ies:Report rdf:type rdfs:Class .
ies:Report sparx:guid "{8D510CB0-C9BF-4de3-A442-9070ABB15732}" .
ies:Report rdfs:comment "A WorkOfDocumentation that offers one or more persons view on a particular topic." .
ies:Report rdfs:subClassOf ies:WorkOfDocumentation .
ies:Representation rdf:type rdfs:Class .
ies:Representation sparx:guid "{675ASC23-0746-43d0-96D0-AF0DF72CD697}" .
ies:Representation rdfs:comment "An ClassOfEntity whose instances are representations of things in the real world Examples:* an identifier used for a Person* a document (though not an individual copy of a document)" .
ies:Representation rdfs:subClassOf ies:ClassOfEntity .
ies:Representation ies:powertype ies:ClassOfRepresentation .
ies:representationValue rdf:type owl:DatatypeProperty .
ies:representationValue sparx:guid "{AE00F10E-F42B-4fc0-B07B-21F754F16FD4}" .
ies:representationValue rdfs:comment "The exemplar text, number, etc. of a Representation" .
ies:representationValue rdfs:subPropertyOf ies:attribute .
ies:representationValue rdfs:domain ies:Representation .
ies:RequestDocument rdf:type rdfs:Class .
ies:RequestDocument sparx:guid "{C0273975-049B-40f0-817C-DFBFA4A3E5CE}" .
ies:RequestDocument rdfs:comment "A WorkOfDocumentation that requests permission" .
ies:RequestDocument rdfs:subClassOf ies:WorkOfDocumentation .
ies:RequestForQuotation rdf:type rdfs:Class .
ies:RequestForQuotation sparx:guid "{300203EC-607A-4d77-AE6F-7EAE7FA44DF2}" .
ies:RequestForQuotation rdfs:comment "A TradeEvent where one or more Entities are required" .
ies:RequestForQuotation rdfs:subClassOf ies:TradeEvent .
ies:Reservation rdf:type rdfs:Class .
ies:Reservation sparx:guid "{CDF94674-D458-4996-9A99-6CBFFF3907EB}" .
ies:Reservation rdfs:comment "Rights where the rights holder has reserved some future event - e.g. hotel reservation, travel reservation, delivery, etc." .
ies:Reservation rdfs:subClassOf ies:Rights .
ies:residesIn rdf:type owl:ObjectProperty .
ies:residesIn sparx:guid "{6BC3DD08-477E-4c8a-B85D-E637CF9DB6DF}" .
ies:residesIn rdfs:comment "A Relationship between a ResponsibleActorState and a Location at which they registered as a resident. Note this is legal / administrative construct. See also StaysAt" .
ies:residesIn rdfs:subPropertyOf ies:relationship .
ies:residesIn rdfs:domain ies:ResponsibleActorState .
ies:residesIn rdfs:range ies:Location .
ies:respectfulOf rdf:type owl:ObjectProperty .
ies:respectfulOf sparx:guid "{EEBCE044-4882-4c95-9C2D-93CE5EB7A275}" .
ies:respectfulOf rdfs:comment "A Relationship between two ResponsibleActor Entities where one respects the other. Note: this should not be considered a bi-directional relationship. Just because one person respects another person does not necessarily mean the feeling is reciprocated." .
ies:respectfulOf rdfs:subPropertyOf ies:relationship .
ies:respectfulOf rdfs:range ies:ResponsibleActor .
ies:respectfulOf rdfs:domain ies:ResponsibleActorState .
ies:ResponsibleActor rdf:type rdfs:Class .
ies:ResponsibleActor sparx:guid "{D09EDE21-E862-4ec1-BC0F-045CCE5454A9}" .
ies:ResponsibleActor rdfs:comment "An Actor that can be held legally responsible for their actions - generally a Person or an Organisation. This also includes Posts which may be filled by people or organisations. Note: there are many situations (mostly due to the law) where a Person or Organisation can be the subject of a relationship or Event interchangeably. Hence the need for a parent class in the IES ontology." .
ies:ResponsibleActor rdfs:subClassOf ies:Actor .
ies:ResponsibleActor rdfs:subClassOf ies:ResponsibleActorState .
ies:ResponsibleActor ies:powertype ies:ClassOfResponsibleActor .
ies:ResponsibleActorState rdf:type rdfs:Class .
ies:ResponsibleActorState sparx:guid "{100B93CD-937E-4fd -8851-02D1DC07F5B6}" .
ies:ResponsibleActorState rdfs:comment "A temporal state of a ResponsibleActor Note: this is the superclass of ResponsibleActor (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states." .
ies:ResponsibleActorState rdfs:subClassOf ies:ActorState .
ies:ResponsibleActorState ies:powertype ies:ClassOfResponsibleActorState .
ies:Retailer rdf:type rdfs:Class .
ies:Retailer sparx:guid "{BA2472AB-56F0-462e-9460-F0192ABCD979}" .
ies:Retailer rdfs:comment "An EventParticipant where a ResponsibleActor participates in a TradeEvent as a retailer" .
ies:Retailer rdfs:subClassOf ies:Supplier .
ies:Rights rdf:type rdfs:Class .
ies:Rights sparx:guid "{487778E0-4BD7-4d9a-B7F7-63731478E1A2}" .
ies:Rights rdfs:comment "An Asset which encompasses the legal rights to an Element Strictly speaking, all property (therefore most Assets) are a question of rights. No-one actually owns something, they have a legal right of that thing. In most cases, we can deal with this just using Asset. However in more complex cases, rights can be bought and sold (and of course owned) to things which aren't generally viewed as assets - e.g. paying a delivery cost, owning the leasehold to a property, etc. Examples:* The performance rights to a Song* The rights to purchase currency at a pre-agreed rate in the future" .
ies:Rights rdfs:subClassOf ies:Asset .
ies:rightsTo rdf:type owl:ObjectProperty .
ies:rightsTo sparx:guid "{04A80EF0-8E34-4bd8-8A8E-31D89028F9B6}" .
ies:rightsTo rdfs:comment "A Relationship between Rights and the Element to which the Rights apply Example:* Rights to travel on a particular service (a travel reservation)* Rights to a parcel of land" .
ies:rightsTo rdfs:subPropertyOf ies:relationship .
ies:rightsTo rdfs:domain ies:Rights .
ies:rightsTo rdfs:range ies:Element .
ies:RoadVehicle rdf:type rdfs:Class .
ies:RoadVehicle sparx:guid "{830B2164-E880-4bef-A62C-B38CEB6A824D}" .
ies:RoadVehicle rdfs:comment "A Vehicle that travels by road (surprisingly enough)" .
ies:RoadVehicle rdfs:subClassOf ies:Vehicle .
ies:RoomNumber rdf:type rdfs:Class .
ies:RoomNumber sparx:guid "{0B2564A8-9A95-4164-BB49-01900DD530AD}" .
ies:RoomNumber rdfs:comment "A GeoIdentity used to identify a PartOfFacility" .
ies:RoomNumber rdfs:subClassOf ies:GeoIdentity .
ies:Sailing rdf:type rdfs:Class .
ies:Sailing sparx:guid "{803AF0E7-01EC-4123-B888-3FB6369C840F}" .
ies:Sailing rdfs:comment "A TravelService by sea" .
ies:Sailing rdfs:subClassOf ies:Transit .

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ies:SatellitePhoneHandset rdf:type rdfs:Class .
 ies:SatellitePhoneHandset sparx:guid "{3634DBF3-AA3A-402e-9D08-906C06FAFEDB}" .
 ies:SatellitePhoneHandset rdfs:comment "A CommunicationsDevice that communicates via satellite. " .
 ies:SatellitePhoneHandset rdfs:subClassOf ies:CommunicationsDevice .
 ies:scheduledArrivalPort rdf:type owl:ObjectProperty .
 ies:scheduledArrivalPort sparx:guid "{6BC73189-2B25-4e1c-A935-EDA8106F3EB3}" .
 ies:scheduledArrivalPort rdfs:comment "The Port from which the TravelService is scheduled to arrive" .
 ies:scheduledArrivalPort rdfs:subPropertyOf ies:relationship .
 ies:scheduledArrivalPort rdf:type rdfs:domain ies:TravelService .
 ies:scheduledArrivalPort rdf:type rdfs:range ies:Port .
 ies:scheduledArrivalTime rdf:type owl:DatatypeProperty .
 ies:scheduledArrivalTime sparx:guid "{DB387BD9-FF24-4069-A8DD-C24F5D074C0C}" .
 ies:scheduledArrivalTime rdfs:comment "The date/time on which the service was scheduled to arriveThe format of this attribute is a restricted string based upon the ISO 8601 Extended Format." .
 ies:scheduledArrivalTime rdfs:subPropertyOf ies:attribute .
 ies:scheduledArrivalTime rdfs:domain ies:TravelService .
 ies:scheduledDeparturePort rdf:type owl:ObjectProperty .
 ies:scheduledDeparturePort sparx:guid "{1312D263-F609-4df3-A1DB-AA0557B3B894B}" .
 ies:scheduledDeparturePort rdfs:comment "The Port from which the TravelService is scheduled to depart" .
 ies:scheduledDeparturePort rdfs:subPropertyOf ies:relationship .
 ies:scheduledDeparturePort rdfs:domain ies:TravelService .
 ies:scheduledDeparturePort rdf:type rdfs:range ies:Port .
 ies:scheduledDepartureTime rdf:type owl:DatatypeProperty .
 ies:scheduledDepartureTime sparx:guid "{340CF0CC-BA75-40b7-8B8A-167CD65C1830}" .
 ies:scheduledDepartureTime rdfs:comment "The date/time on which the service was scheduled to departThe format of this attribute is a restricted string based upon the ISO 8601 Extended Format." .
 ies:scheduledDepartureTime rdfs:subPropertyOf ies:attribute .
 ies:scheduledDepartureTime rdfs:domain ies:TravelService .
 ies:SchemaObject rdf:type rdfs:Class .
 ies:SchemaObject sparx:guid "{D3375B85-6773-40e1-8CA2-B393DD02B98C}" .
 ies:SchemaObject rdfs:comment "A DataObject that is a standardised plan or outline for something.e.g. Bristol City Street Furniture Schema" .
 ies:SchemaObject rdfs:subClassOf ies:DataObject .
 ies:schemeMasteredIn rdf:type owl:ObjectProperty .
 ies:schemeMasteredIn sparx:guid "{C2C5FF87-189C-478a-B3BF-4706D798087F}" .
 ies:schemeMasteredIn rdfs:comment "A relationship that asserts a NamingScheme is owned by a System that is the master for its names / identifiers - i.e. the uniqueness of the name/identifier is limited to the system." .
 ies:schemeMasteredIn rdfs:subPropertyOf ies:relationship .
 ies:schemeMasteredIn rdfs:domain ies:NamingScheme .
 ies:schemeMasteredIn rdfs:range ies:System .
 ies:schemeOwner rdf:type owl:ObjectProperty .
 ies:schemeOwner sparx:guid "{8D4284A8-30D3-459d-A729-F5C8FE16D418}" .
 ies:schemeOwner rdfs:comment "A relationship that asserts a RepresentationScheme is governed and used by a ResponsibleActor" .
 ies:schemeOwner rdfs:subPropertyOf ies:relationship .
 ies:schemeOwner rdf:type rdfs:range ies:ResponsibleActor .
 ies:schemeOwner rdfs:domain ies:NamingScheme .
 ies:ScreenName rdf:type rdfs:Class .
 ies:ScreenName sparx:guid "{8C1321B7-8686-4a21-B99A-6C4A98B411A7}" .
 ies:ScreenName rdfs:comment "A display Name used by the account which may be non-unique, and may not be the same as the username" .
 ies:ScreenName rdfs:subClassOf ies:Name .
 ies:SeatNumber rdf:type rdfs:Class .
 ies:SeatNumber sparx:guid "{03D1711E-F9A7-41b1-B82F-B442FDF82EBF}" .
 ies:SeatNumber rdfs:comment "The number of the seat that the Passenger should be travelling in. Whilst this partially identifies the Passenger, there is no guarantee that people have not swapped seats. " .
 ies:SeatNumber rdfs:subClassOf ies:Identifier .
 ies:SecurityLabel rdf:type rdfs:Class .
 ies:SecurityLabel sparx:guid "{CED628E4-8641-486b-BCD7-CB4E147E7AE6}" .
 ies:SecurityLabel rdfs:comment "A SecurityLabel may be assigned at the statement (triple) level or to the entire ExchangePayload. They provide a mechanism to specify access restrictions and handling instructions for specific triples.Note: In any given IES exchange, a SecurityLabel must be applied to the ExchangePayload. Individual SecurityLabels at the statement level are used to indicate where individual statements deviate from the overall payload SecurityLabel" .
 ies:SecurityLabel rdfs:subClassOf rdfs:Resource .
 ies:Sender rdf:type rdfs:Class .
 ies:Sender sparx:guid "{44C93DB5-8DFA-4585-9060-EEC789E0A5AC}" .
 ies:Sender rdfs:comment "An PartyInCommunication where the communicating party is the sender of a message" .
 ies:Sender rdfs:subClassOf ies:PartyInCommunication .
 ies:SendingAccount rdf:type rdfs:Class .
 ies:SendingAccount sparx:guid "{F7172876-85F6-4d29-B11F-A1B36616416A}" .
 ies:SendingAccount rdfs:comment "An EventParticipant where a FinancialAccount sends money" .
 ies:SendingAccount rdfs:subClassOf ies:EventParticipant .
 ies:SerialNumber rdf:type rdfs:Class .
 ies:SerialNumber sparx:guid "{51F79BC9-9BB5-47d6-973B-6F86F289B5FB}" .
 ies:SerialNumber rdfs:comment "An Identifier for Device that has been assigned at manufacture.Example Value:123ABC456DEF" .
 ies:SerialNumber rdfs:subClassOf ies:Identifier .
 ies:ServiceName rdf:type rdfs:Class .
 ies:ServiceName sparx:guid "{8F8428BA-8586-4e34-9C75-FBA7A647B8EA}" .
 ies:ServiceName rdfs:comment "The Name of the OnlineServiceThis should not be confused with a webpage (see the Webpage entity type). The Online Service may be provided via a webpage." .
 ies:ServiceName rdfs:subClassOf ies:Name .
 ies:ServiceProvider rdf:type rdfs:Class .
 ies:ServiceProvider sparx:guid "{496683C9-EB89-46ac-87D0-4864F1B54ED4}" .
 ies:ServiceProvider rdfs:comment "The role of an Organisation in providing a Service (e.g. a TeleConference)" .
 ies:ServiceProvider rdfs:subClassOf ies:EventParticipant .
 ies:ServiceUser rdf:type rdfs:Class .
 ies:ServiceUser sparx:guid "{CB4023BB-4B36-43a3-BCED-A7715FD597B0}" .
 ies:ServiceUser rdfs:comment "A temporal state of a ResponsibleActorNote: this is the superclass of ResponsibleActor (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states. " .
 ies:ServiceUser rdfs:subClassOf ies:Visiting .
 ies:Ship rdf:type rdfs:Class .
 ies:Ship sparx:guid "{14098566-1FF3-4599-B9A5-41167861538B}" .
 ies:Ship rdfs:comment "A Vehicle that travels on water" .
 ies:Ship rdfs:subClassOf ies:Vehicle .
 ies:Ship rdfs:subClassOf ies:Vessel .
 ies:siblingOf rdf:type owl:ObjectProperty .
 ies:siblingOf sparx:guid "{A0D40C4F-B513-4c9f-8D4A-79D0FA7CE5F0}" .
 ies:siblingOf rdfs:comment "A Relationship between two Person Entities that indicates one is the sibling of the other" .
 ies:siblingOf rdfs:subPropertyOf ies:familiarlyRelatedTo .
 ies:siblingOf rdf:type rdfs:domain ies:Person .
 ies:siblingOf rdf:type rdfs:range ies:Person .
 ies:Signatory rdf:type rdfs:Class .
 ies:Signatory sparx:guid "{C55A12C9-CF85-4b7c-B422-1D41054E9570}" .
 ies:Signatory rdfs:comment "An EventParticipant where a ResponsibleActor ratifies an agreement" .
 ies:Signatory rdfs:subClassOf ies:ActiveEventParticipant .
 ies:SIMCard rdf:type rdfs:Class .
 ies:SIMCard sparx:guid "{3244F6B1-8636-4895-B3B1-283CF057F826}" .
 ies:SIMCard rdfs:comment "A CommunicationsDevice that holds data about a IMSI" .
 ies:SIMCard rdfs:subClassOf ies:CommunicationsDevice .
 ies:SimilarEntities rdf:type rdfs:Class .

ies:SimilarEntities sparx:guid "{A4B13044-00FD-4868-8147-1A3C9E84DAAB}" .
 ies:SimilarEntities rdfs:comment "An ClassOfEntity whose instances are considered similar" .
 ies:SimilarEntities rdfs:subClassOf ies:ClassOfEntity .
 ies:similarEntity rdf:type owl:ObjectProperty .
 ies:similarEntity sparx:guid "{333E73AD-563F-443c-A9B3-CA122FDF75B9}" .
 ies:similarEntity rdfs:comment "An rdf:type relationship that asserts an Entity is similar to other Entities that are also related to the same SimilarEntities class." .
 ies:similarEntity rdfs:subPropertyOf rdf:type .
 ies:similarEntity rdfs:domain ies:SimilarEntities .
 ies:SMS rdf:type rdfs:Class .
 ies:SMS sparx:guid "{4C19E163-710B-4ccb-9F1C-569F8E348BDC}" .
 ies:SMS rdfs:comment "A Message (text and images) sent over a cellular network" .
 ies:SMS rdfs:subClassOf ies:Message .
 ies:socialisesAt rdf:type owl:ObjectProperty .
 ies:socialisesAt sparx:guid "{1D09F0978-EFD2-4e27-9242-219637C574EF}" .
 ies:socialisesAt rdfs:comment "A visits relationship between a ResponsibleActor and a Location they socialise in. Note: more often than not, this will be a statement of occasional socialising, so the instance of the ResponsibleActorState should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, inLocation would generally be used." .
 ies:socialisesAt rdfs:subPropertyOf ies:visits .
 ies:Socialising rdf:type rdfs:Class .
 ies:Socialising sparx:guid "{439817EA-5973-45ab-9C01-9D75ED7D8888}" .
 ies:Socialising rdfs:comment "A temporal state of a ResponsibleActorNote: this is the superclass of ResponsibleActor (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states." .
 ies:Socialising rdfs:subClassOf ies:Visiting .
 ies:SocialMediaPage rdf:type rdfs:Class .
 ies:SocialMediaPage sparx:guid "{3DC012C3-E273-4ec2-A462-CEDEB27262C1}" .
 ies:SocialMediaPage rdfs:comment "An OnlineArtefact that is user-created - e.g. a facebook timeline, twitter feed, etc." .
 ies:SocialMediaPage rdfs:subClassOf ies:OnlineArtefact .
 ies:SocialMediaPost rdf:type rdfs:Class .
 ies:SocialMediaPost sparx:guid "{4B3AE19C-6369-49d0-B7B5-949714FFFC95}" .
 ies:SocialMediaPost rdfs:comment "An OnlineArtefact that is part of a SocialMediaPageNote: the content may be created by a different account to the one which created the SocialMediaPage" .
 ies:SocialMediaPost rdfs:subClassOf ies:OnlineArtefact .
 ies:SocialServicesIdentifier rdf:type rdfs:Class .
 ies:SocialServicesIdentifier sparx:guid "{DF17458A-3BB8-4851-B88A-1E08C2EFA697}" .
 ies:SocialServicesIdentifier rdfs:comment "An NationalIdentityNumber used for managing a citizens access to social servicesIn UK, this would be an NI number, in the US, it would be the social security number" .
 ies:SocialServicesIdentifier rdfs:subClassOf ies:NationalIdentityNumber .
 ies:Software rdf:type rdfs:Class .
 ies:Software sparx:guid "{B6014BB6-FD82-4748-8DFF-65401770515C}" .
 ies:Software rdfs:comment "A ClassOfAsset that is programmatic instructions that control or affect the behaviour of an Asset (usually a Device). Note that Software is a class, as the same Software may be installed in multiple locations." .
 ies:Software rdfs:subClassOf ies:ClassOfAsset .
 ies:spokenLanguage rdf:type owl:ObjectProperty .
 ies:spokenLanguage sparx:guid "{FA149043-EA61-4497-A036-589DA1FD312E}" .
 ies:spokenLanguage rdfs:comment "The language in which someone is proficient" .
 ies:spokenLanguage rdfs:range ies:Language .
 ies:spokenLanguage rdfs:subPropertyOf ies:relationship .
 ies:spokenLanguage rdfs:domain ies:LanguageProficiency .
 ies:Stalking rdf:type rdfs:Class .
 ies:Stalking sparx:guid "{9B232210-27A3-410a-A713-EFDE7922C61C}" .
 ies:Stalking rdfs:comment "A CriminalActivity involving the malicious surveillance of a person, often in threatening manner" .
 ies:Stalking rdfs:subClassOf ies:CriminalActivity .
 ies:StandardMeasure rdf:type rdfs:Class .
 ies:StandardMeasure sparx:guid "{C441DE5B-739A-4a83-BE87-96BC63A530B3}" .
 ies:StandardMeasure rdfs:comment "A Measure specified in the International system of quantities" .
 ies:StandardMeasure rdfs:subClassOf ies:Measure .
 ies:StandardMeasureValue rdf:type rdfs:Class .
 ies:StandardMeasureValue sparx:guid "{773272F0-DBAB-4c47-8E21-01171FC82245}" .
 ies:StandardMeasureValue rdfs:comment "A MeasureValue that is expressed in SI units" .
 ies:StandardMeasureValue rdfs:subClassOf ies:MeasureValue .
 ies:startsIn rdf:type owl:DatatypeProperty .
 ies:startsIn sparx:guid "{861E3D08-3659-489a-B100-0E943CF3F3F0}" .
 ies:startsIn rdfs:comment "An xsd:DateTime for the start of the period" .
 ies:startsIn rdfs:domain ies:ArbitraryPeriod .
 ies:startsIn rdfs:subPropertyOf ies:attribute .
 ies:State rdf:type rdfs:Class .
 ies:State sparx:guid "{47301D66-CBD5-4d10-9481-B66966A3F3A2}" .
 ies:State rdfs:comment "A temporal state of an ElementNote: IES requires that any State must be related to its whole-life Element. In some cases, the identity of the whole-life element may be unknown (or of unknown type) but a whole-life element must still be created and related to the State. Note: When Events are decomposed into temporal parts, those parts are often Events themselves. The exception is when the temporal part is arbitrary (e.g. the 11th second of a meeting) when a State should be used. These are rare though." .
 ies:State rdfs:subClassOf ies:Element .
 ies:State ies:powertype ies:ClassOfState .
 ies:statementLabel rdf:type owl:ObjectProperty .
 ies:statementLabel sparx:guid "{7EC7FCEE-7C60-4233-8938-D6320BD951F2}" .
 ies:statementLabel rdfs:comment "A link from an rdf:Statement (see W3C guidance on RDF reification) to the SecurityLabel that provides the access control for that statement. Note: All exchanges should have a default payloadLabel specified. The use of statementLabel is required when individual statements deviate from the default in terms of their access control." .
 ies:statementLabel rdfs:domain rdf:Statement .
 ies:statementLabel rdfs:range ies:SecurityLabel .
 ies:staysAt rdf:type owl:ObjectProperty .
 ies:staysAt sparx:guid "{90332C00-0188-4773-8A71-F9ED15F5ED33}" .
 ies:staysAt rdfs:comment "A visits relationship between a ResponsibleActor and a Location where the person stays at the Location. This should not be confused with residesIn which is an assertion of legal residence. Note: more often than not, this will be a statement of regular/occasional stays, so the instance of the ResponsibleActorState should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, inLocation would generally be used." .
 ies:staysAt rdfs:subPropertyOf ies:visits .
 ies:StoreCard rdf:type rdfs:Class .
 ies:StoreCard sparx:guid "{686293F8-123B-478f-9A67-A6074937B528}" .
 ies:StoreCard rdfs:comment "A PaymentArtefact issued by a retail Organisation that can only be used to pay for items supplied by that Organisation." .
 ies:StoreCard rdfs:subClassOf ies:PaymentArtefact .
 ies:strengthOfInterest rdf:type owl:DatatypeProperty .
 ies:strengthOfInterest sparx:guid "{4B3D340-AA0C-4fc4-80CC-283AE0FC85DF}" .
 ies:strengthOfInterest rdfs:comment "StrengthOfInterest is used in its most general sense and is limited to the following values:@ Weak@ Strong@ Fanatical" .
 ies:strengthOfInterest rdfs:subPropertyOf ies:attribute .
 ies:strengthOfInterest rdfs:domain ies:Interested .
 ies:Stuff rdf:type rdfs:Class .
 ies:Stuff sparx:guid "{CC9E60AC-B3C8-4c9b-B657-2734538AE2B9}" .
 ies:Stuff rdfs:comment "An element that is highly disective or generally uncountable. For example, sand, water, gas and coffee." .
 ies:Stuff rdfs:subClassOf ies:Element .
 ies:SubjectOfInterest rdf:type rdfs:Class .
 ies:SubjectOfInterest sparx:guid "{BFFBC847-AD87-458e-9A86-690D659EB48F}" .
 ies:SubjectOfInterest rdfs:comment "A State during which an Element is of interest to an investigation" .

ies:SubjectOfInterest rdfs:subClassOf ies:State .
 ies:SubjectOfOperation rdf:type rdfs:Class .
 ies:SubjectOfOperation sparx:guid "{11F2A275-650F-407d-8E86-F99DDEF4AAAF}" .
 ies:SubjectOfOperation rdfs:comment "An EventParticipant where an Entity is the subject of an OperationalEventExamples:* person / organisation under investigation* record location* subject of surveillance" .
 ies:SubjectOfOperation rdfs:subClassOf ies:EventParticipant .
 ies:successorTo rdf:type owl:ObjectProperty .
 ies:successorTo sparx:guid "{BEC84E4F-F407-4a20-BC68-AD1723A3F860}" .
 ies:successorTo rdfs:comment "An after relationship linking two Elements where one ends and the other comes after as a replacement" .
 ies:successorTo rdfs:subPropertyOf ies:after .
 ies:Summit rdf:type rdfs:Class .
 ies:Summit sparx:guid "{78D65599-BCBB-491a-8C34-75B9F7AB60D5}" .
 ies:Summit rdfs:comment "A PoliticalEvent where senior leaders assemble to discuss and agree policy or treaties" .
 ies:Summit rdfs:subClassOf ies:PoliticalEvent .
 ies:Supplier rdf:type rdfs:Class .
 ies:Supplier sparx:guid "{E4D44720-DBEE-434e-A61E-35FE8B66A4BE}" .
 ies:Supplier rdfs:comment "An EventParticipant where a ResponsibleActor participates in a TradeEvent as a supplier" .
 ies:Supplier rdfs:subClassOf ies:EventParticipant .
 ies:supplierTo rdf:type owl:ObjectProperty .
 ies:supplierTo sparx:guid "{4F013D3F-E237-489a-96D5-5E9E54C6A388}" .
 ies:supplierTo rdfs:comment "A worksFor relationship where the supplier (domain) is contracted to deliver goods or services to client (range)" .
 ies:supplierTo rdfs:subPropertyOf ies:worksFor .
 ies:Surname rdf:type rdfs:Class .
 ies:Surname sparx:guid "{B5A0C08A-39B3-4bd1-9D19-CE87E0F7DEBB}" .
 ies:Surname rdfs:comment "A PersonName that is their inherited or married nameNote:A surname will often be applied to a State of the Person, as names tend to change over time" .
 ies:Surname rdfs:subClassOf ies:PersonName .
 ies:Surveillance rdf:type rdfs:Class .
 ies:Surveillance sparx:guid "{AD0F575E-5C28-4594-B346-50E9F22C2A8E}" .
 ies:Surveillance rdfs:comment "An IntelligenceOperation that involves the continued observation of a Person or Location" .
 ies:Surveillance rdfs:subClassOf ies:IntelligenceOperation .
 ies:SurveillanceWarrant rdf:type rdfs:Class .
 ies:SurveillanceWarrant sparx:guid "{A86EC717-55AF-456c-BEC4-E1BA295D0227}" .
 ies:SurveillanceWarrant rdfs:comment "Relates a Surveillance Event to a Document that is the warrant for the Surveillance" .
 ies:SurveillanceWarrant rdfs:subClassOf ies:EventParticipant .
 ies:System rdf:type rdfs:Class .
 ies:System sparx:guid "{F682A265-1AFE-4287-A9CD-0D4C83F54C52}" .
 ies:System rdfs:comment "An Device comprising software and hardware brought together for a purpose. The Devices may or may not be removable / replaceable" .
 ies:System rdfs:subClassOf ies:Device .
 ies:System rdfs:subClassOf ies:SystemState .
 ies:SystemState rdf:type rdfs:Class .
 ies:SystemState sparx:guid "{056DDAD3-9315-4a8a-8598-3DD4F783C5CF}" .
 ies:SystemState rdfs:comment "A temporal state of a System" .
 ies:SystemState rdfs:subClassOf ies:State .
 ies:TargetLocation rdf:type rdfs:Class .
 ies:TargetLocation sparx:guid "{9BEF1C80-3823-4611-9349-AA1E11E41BE7}" .
 ies:TargetLocation rdfs:comment "Relates an MilitaryAttack to the location specified for the attack" .
 ies:TargetLocation rdfs:subClassOf ies:EventParticipant .
 ies:Team rdf:type rdfs:Class .
 ies:Team sparx:guid "{7B20EC37-6D66-4cd9-97DF-2A30B324C421}" .
 ies:Team rdfs:comment "An Organisation formed around a particular pursuit or task" .
 ies:Team rdfs:subClassOf ies:Organisation .
 ies:TeleConference rdf:type rdfs:Class .
 ies:TeleConference sparx:guid "{6EAC8930-3D16-4e44-9706-989BDF6564A5}" .
 ies:TeleConference rdfs:comment "An InteractiveCommunication where 2 or more parties communicate using audio" .
 ies:TeleConference rdfs:subClassOf ies:InteractiveCommunication .
 ies:TelephoneAccount rdf:type rdfs:Class .
 ies:TelephoneAccount sparx:guid "{593AE684-C2E9-4e40-A7FD-549BFA64900D}" .
 ies:TelephoneAccount rdfs:comment "A CommunicationsAccount that is used to administer the use of one or more telephone numbers." .
 ies:TelephoneAccount rdfs:subClassOf ies:CommunicationsAccount .
 ies:TelephoneCountryCode rdf:type rdfs:Class .
 ies:TelephoneCountryCode sparx:guid "{79C84EC1-83EC-45a8-A3CE-F88CFFBF9434}" .
 ies:TelephoneCountryCode rdfs:comment "The dialing code for a country as specified by the ITU" .
 ies:TelephoneCountryCode rdfs:subClassOf ies:CommunicationsIdentifier .
 ies:PhoneNumber rdf:type rdfs:Class .
 ies:PhoneNumber sparx:guid "{168D7B01-CD70-4f83-A414-19B6ABEB961C}" .
 ies:PhoneNumber rdfs:comment "A CommunicationsIdentifier that enables calls to be directed to particular handset" .
 ies:PhoneNumber rdfs:subClassOf ies:CommunicationsIdentifier .
 ies:PhoneNumberRange rdf:type rdfs:Class .
 ies:PhoneNumberRange sparx:guid "{007F88AD-9CDF-4aa1-BE73-18C688DA8C05}" .
 ies:PhoneNumberRange rdfs:comment "A CommunicationsIdentifierRange of TelephoneNumbers" .
 ies:PhoneNumberRange rdfs:subClassOf ies:CommunicationsIdentifierRange .
 ies:Temperature rdf:type rdfs:Class .
 ies:Temperature sparx:guid "{3FEB0BB0-F127-431a-B117-CC986B11D61A}" .
 ies:Temperature rdfs:comment "The Measure of the thermodynamic temperature of an Element" .
 ies:Temperature rdfs:subClassOf ies:StandardMeasure .
 ies:Tendency rdf:type rdfs:Class .
 ies:Tendency sparx:guid "{2B451601-EC1D-4bd4-A782-6E0B7E0D416D}" .
 ies:Tendency rdfs:comment "A DispositionalClass where all the instances share the same tendencyExample: People who tend to violence" .
 ies:Tendency rdfs:subClassOf ies:DispositionalClass .
 ies:TerrorAttack rdf:type rdfs:Class .
 ies:TerrorAttack sparx:guid "{F8454637-80DD-44a7-AD91-6DECE44F0171}" .
 ies:TerrorAttack rdfs:comment "CriminalActivity that is politically motivated and designed to cause terror" .
 ies:TerrorAttack rdfs:subClassOf ies:CriminalActivity .
 ies:TerroristOrganisation rdf:type rdfs:Class .
 ies:TerroristOrganisation sparx:guid "{6467A4EF-46BA-401c-A5C7-668BAFB6E228}" .
 ies:TerroristOrganisation rdfs:comment "An OrganisationState that is assessed to be conducting acts of terror to achieve a political or religious goal." .
 ies:TerroristOrganisation rdfs:subClassOf ies:OrganisationState .
 ies:TheatreTicket rdf:type rdfs:Class .
 ies:TheatreTicket sparx:guid "{5CD50268-582A-426B-B4CC-F6EE3088B4A3}" .
 ies:TheatreTicket rdfs:comment "An EntertainmentTicket for a theatre show" .
 ies:TheatreTicket rdfs:subClassOf ies:EntertainmentTicket .
 ies:Thing rdf:type rdfs:Class .
 ies:Thing sparx:guid "{485CBF1A-04FF-4741-8471-46A03D28C406}" .
 ies:Thing rdfs:comment "A rdfs:Resource which is a real or possible world thing.Thing and its immediate subclasses are too broad a set of concepts to ever need to instantiate directly.EXAMPLES:- An instance of a class (element)- A class (class of element)" .
 ies:Thing rdfs:subClassOf rdfs:Resource .
 ies:Ticket rdf:type rdfs:Class .
 ies:Ticket sparx:guid "{0BC61540-2AFB-42e6-A845-79771EE0268D}" .
 ies:Ticket rdfs:comment "Documented authority (paid-for or otherwise) entitling the bearer to some specified activity" .
 ies:Ticket rdfs:subClassOf ies:IndividualDocument .
 ies:ticketArrivallocation rdf:type owl:ObjectProperty .
 ies:ticketArrivallocation sparx:guid "{A4906B5E-8718-404e-8EEF-20AE29106383}" .
 ies:ticketArrivallocation rdfs:comment "The arrival location as stated on the ticket." .
 ies:ticketArrivallocation rdfs:subPropertyOf ies:relationship .

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ies:ticketArrivalLocation rdfs:range ies:Port .
ies:ticketArrivalLocation rdfs:domain ies:TravelTicket .
ies:ticketDeparturelocation rdf:type owl:ObjectProperty .
ies:ticketDeparturelocation sparx:guid "{952E5981-257F-429e-9F22-8D2E3B9282C7}" .
ies:ticketDeparturelocation rdfs:comment "The departure location as stated on the ticket." .
ies:ticketDeparturelocation rdfs:subPropertyOf ies:relationship .
ies:ticketDeparturelocation rdfs:range ies:Port .
ies:ticketDeparturelocation rdfs:domain ies:TravelTicket .
ies:TicketUsedInCheckIn rdf:type rdfs:Class .
ies:TicketUsedInCheckIn sparx:guid "{92470C59-DFA6-47f7-A525-50CDABC8F852}" .
ies:TicketUsedInCheckIn rdfs:comment "An EventParticipant where a Ricket is used in a CheckIn event.e.g. a London Underground ticket being used at a barrier, or a concert ticket being scanned on arrival at the venue" .
ies:TicketUsedInCheckIn rdfs:subClassOf ies:EventParticipant .
ies:TimeBoundedClass rdf:type rdfs:Class .
ies:TimeBoundedClass sparx:guid "{E7A659A5-9059-4ea5-8FAB-8A29AFC47D9A}" .
ies:TimeBoundedClass rdfs:comment "A ClassOfElement whose instances all begin and end within the bounds specified for the Class. In other words, a class that is defined by the temporal extent of its members. Note, if either the begin or end bound are missing, it is taken to be indeterminate. For example, if the begin bound is 1st Jan 2018, the class has instances that all started after that date, and their end is irrelevant. Example:Everything that began and ended in the year 1900 - this would include all activities that took place within that year (but did not extend beyond it), everything created and destroyed within that time, and everything that was born and died during the period. " .
ies:TimeBoundedClass rdfs:subClassOf ies:ClassOfElement .
ies:Title rdf:type rdfs:Class .
ies:Title sparx:guid "{30F5944F-75C3-4f12-A315-4E94ABC809E}" .
ies:Title rdfs:comment "The title of the respective document." .
ies:Title rdfs:subClassOf ies:Name .
ies:TOID rdf:type rdfs:Class .
ies:TOID sparx:guid "(79D9049D-E63F-4c94-B348-49506A75B9F8)" .
ies:TOID rdfs:comment "TOIDs (TOpographic IDentifiers) are unique and persistent identifiers created and managed by Ordnance Survey Great Britain to identify topographic objects in OS datasets. Example: the TOID for the Tower of London is osgb1000006032892." .
ies:TOID rdfs:subClassOf ies:GeoIdentity .
ies:TradeAgreement rdf:type rdfs:Class .
ies:TradeAgreement sparx:guid "{54A4E900-7E8E-49fd-91F4-23ADDDF2DA60}" .
ies:TradeAgreement rdfs:comment "A PoliticalAgreement that sets tariffs and standards for trade between nations. " .
ies:TradeAgreement rdfs:subClassOf ies:PoliticalAgreement .
ies:TradedAsset rdf:type rdfs:Class .
ies:TradedAsset sparx:guid "(57ADBC97-C089-4d1a-A334-A9C44EAEC38A)" .
ies:TradedAsset rdfs:comment "An EventParticipant where an Asset is participant in a TradeEventThis could be a specific Asset (e.g. serial numbered item) being offered for sale (as opposed to a type of Asset) or an Asset being delivered, withdrawn from sale, etc." .
ies:TradedAsset rdfs:subClassOf ies:EventParticipant .
ies:tradedItemType rdf:type owl:ObjectProperty .
ies:tradedItemType sparx:guid "{A92F03F0-CB9E-4667-B985-25377303416A}" .
ies:tradedItemType rdfs:comment "The type of entity involved in the TradeEvent.e.g. Dyson Animal Mk3Note: there may be no more than one itemType for a given TradeEvent - i.e. a new TradeEvent must be instantiated for each ClassOfEntity sold, offered, delivered, etc.Note: was ItemType in IES 3.2" .
ies:tradedItemType rdfs:subPropertyOf ies:relationship .
ies:tradedItemType rdfs:domain ies:TradeEvent .
ies:tradedItemType rdfs:range ies:ClassOfEntity .
ies:TradeEvent rdf:type rdfs:Class .
ies:TradeEvent sparx:guid "{CA86862B-DA7E-487c-907B-26FA5D0564CD}" .
ies:TradeEvent rdfs:comment "An Event where something is offered, bought or exchanged" .
ies:TradeEvent rdfs:subClassOf ies:Event .
ies:TrainTicket rdf:type rdfs:Class .
ies:TrainTicket sparx:guid "{A8715447-3583-45d0-9550-625CF96B3E2E}" .
ies:TrainTicket rdfs:comment "A Ticket that is used to travel by rail" .
ies:TrainTicket rdfs:subClassOf ies:TravelTicket .
ies:TrainTravel rdf:type rdfs:Class .
ies:TrainTravel sparx:guid "{F2D6CFE4-BCE9-4bce-ADB0-075656038A55}" .
ies:TrainTravel rdfs:comment "A TravelService by rail" .
ies:TrainTravel rdfs:subClassOf ies:Transit .
ies:transferValue rdf:type owl:ObjectProperty .
ies:transferValue sparx:guid "{A9D81DAB-281E-48ae-BB33-8518701ABBDE}" .
ies:transferValue rdfs:comment "A relationship from a MoneyTransfer to the AmountOfMoney transferred." .
ies:transferValue rdfs:subPropertyOf ies:relationship .
ies:transferValue rdfs:domain ies:MoneyTransfer .
ies:transferValue rdfs:range ies:AmountOfMoney .
ies:Transit rdf:type rdfs:Class .
ies:Transit sparx:guid "(7693D2C9-0F06-4005-BB8D-B5B572B2281A)" .
ies:Transit rdfs:comment "A Movement that is an individual transportation - e.g. an individual flight, sailing, etc." .
ies:Transit rdfs:subClassOf ies:Movement .
ies:TravelBooking rdf:type rdfs:Class .
ies:TravelBooking sparx:guid "{76DC9A0C-F6E8-4ff4-ADD6-072DC1EBE3AB}" .
ies:TravelBooking rdfs:comment "The Purchase of planned travel arrangements.3. Travel Bookings may include bookings for Flights, Ferry Crossings, Train Journeys (i.e Travel Services), and also Hotels, Hire Cars etc. When these have been modelled. These will be included on the booking as relationships to the appropriate other entities." .
ies:TravelBooking rdfs:subClassOf ies:Purchase .
ies:TravelCard rdf:type rdfs:Class .
ies:TravelCard sparx:guid "{E1DBA09D-C260-4dd8-B6FF-C2FA8968A00B}" .
ies:TravelCard rdfs:comment "A PaymentArtefact that permits travel on public transport" .
ies:TravelCard rdfs:subClassOf ies:PaymentArtefact .
ies:Travelleg rdf:type rdfs:Class .
ies:Travelleg sparx:guid "(55384377-146A-47c9-8706-18A1343A219C)" .
ies:Travelleg rdfs:comment "An EventParticipant in which a Entity travels. That travel may be part of a Journey.The TravelLeg may be part of a Journey (i.e. the Journey has one of more legs)." .
ies:TravelLeg rdfs:subClassOf ies:Moving .
ies:TravelReservation rdf:type rdfs:Class .
ies:TravelReservation sparx:guid "(88B290363-239E-415e-9F2D-8267D1BA2ECB)" .
ies:TravelReservation rdfs:comment "A TradedAsset where the asset is a Reservation" .
ies:TravelReservation rdfs:subClassOf ies:TradedAsset .
ies:TravelService rdf:type rdfs:Class .
ies:TravelService sparx:guid "{3D0FC30A-CF82-44f2-970E-BFD04EADBA74}" .
ies:TravelService rdfs:comment "A transportation service, often provided as a public service @ e.g. a scheduled flight, rail journey, ferry crossing, etc." .
ies:TravelService rdfs:subClassOf ies:Event .
ies:TravelServiceIdentifier rdf:type rdfs:Class .
ies:TravelServiceIdentifier sparx:guid "{680FD822-C1F6-4d09-94D5-5D586C947DE1}" .
ies:TravelServiceIdentifier rdfs:comment "The Identifier for the respective Travel Service @ this is how humans would usually refer to the service Note however that often this identifier does not, on its own, uniquely identify any given instance of a travel service @ e.g. Flight BA0010 is reused on a daily basis to refer to the flight between London Heathrow and Los Angeles. As such, to uniquely identify any given instance of a Travel Service you would need to combine it with other attributes @ typically departure date/time.For Flights, this will be the Flight Number.For Ferry Sailings this is typically the name of the vessel that is scheduled to make that sailing and, when combined with the departure date/time can be used to uniquely identify that sailing. Note that if the actual vessel that makes the sailing is different to that which was scheduled (e.g. as result of the scheduled vessel being out of commission), this identifier is not modified." .
ies:TravelServiceIdentifier rdfs:subClassOf ies:Identifier .
ies:TravelTicket rdf:type rdfs:Class .
ies:TravelTicket sparx:guid "(6c669BEF-9267-4612-9F29-B28918B203F5)" .
ies:TravelTicket rdfs:comment "A Ticket that permits travel on a particular route or set of routes" .
ies:TravelTicket rdfs:subClassOf ies:Ticket .
ies:TravelVisa rdf:type rdfs:Class .

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ies:TravelVisa sparx:guid "{C066EEB4-91AF-4ee6-BB02-44A49087946B}" .
ies:TravelVisa rdfs:comment "An IdentityDocument, usually attached to a Passport, which allows a Person to remain in a Country for a set period of time.
".
ies:TravelVisa rdfs:subClassOf ies:IdentityDocument .
ies:Treaty rdf:type rdfs:Class .
ies:Treaty sparx:guid "{59599C48-F3DE-49a0-B76F-BE4CB1293CBA}" .
ies:Treaty rdfs:comment "An EndToEndAgreement that is between Nations and subject to international law" .
ies:Treaty rdfs:subClassOf ies:PoliticalAgreement .
ies:trusts rdf:type owl:ObjectProperty .
ies:trusts sparx:guid "{37CEEA2E-93E7-446d-A181-A55A091C3B22}" .
ies:trusts rdfs:comment "A Relationship between two ResponsibleActor Entities where one trusts the other. Note: this should not be considered a bi-directional relationship. Just because one person trusts another person does not necessarily mean the feeling is reciprocated. " .
ies:trusts rdfs:subPropertyOf ies:relationship .
ies:trusts rdfs:range ies:ResponsibleActor .
ies:trusts rdfs:domain ies:ResponsibleActorState .
ies:UN_LCODE rdf:type rdfs:Class .
ies:UN_LCODE sparx:guid "(AEAT85BB-B625-41aa-8738-FB0F3726A281)" .
ies:UN_LCODE rdfs:comment "A GeoIdentity that is a United Nations Code for Trade and Transport Locations" .
ies:UN_LCODE rdfs:subClassOf ies:GeoIdentity .
ies:UnitOfMeasure rdf:type rdfs:Class .
ies:UnitOfMeasure sparx:guid "{9F2DE0F4-58B1-46b7-B25A-545D756381A8}" .
ies:UnitOfMeasure rdfs:comment "A ClassOfMeasureValue that is used to quantify a Measure on a standard scale" .
ies:UnitOfMeasure rdfs:subClassOf ies:ClassOfMeasureValue .
ies:UpdateAccount rdf:type rdfs:Class .
ies:UpdateAccount sparx:guid "{E2D19BE1-B1BF-4e0b-8D44-AFFD739756BA}" .
ies:UpdateAccount rdfs:comment "An AccountAdminEvent where an Account is modified" .
ies:UpdateAccount rdfs:subClassOf ies:AccountAdminEvent .
ies:upperBound rdf:type owl:ObjectProperty .
ies:upperBound sparx:guid "D700FE64-4100-4ade-93CE-6219A7BC0BCB" .
ies:upperBound rdfs:comment "A relationship a MeasureRange to the Measure that is its upper bound" .
ies:upperBound rdfs:subPropertyOf ies:relationship .
ies:upperBound rdfs:domain ies:MeasureRange .
ies:upperBound rdfs:range ies:Measure .
ies:uriScheme rdf:type owl:DatatypeProperty .
ies:uriScheme sparx:guid "D97141BD-F6CF-4b10-B4E5-B1ECF6DF5178" .
ies:uriScheme rdfs:comment "URI scheme is the top level of the uniform resource identifier (URI) naming structure. All URIs and absolute URI references are formed with a scheme name, followed by a colon character (:), and the remainder of the URI called the scheme-specific part." .
ies:uriScheme rdfs:subPropertyOf ies:attribute .
ies:uriScheme rdfs:domain ies:WebResourceState .
ies:uriSchemeName rdf:type owl:DatatypeProperty .
ies:uriSchemeName sparx:guid "AAABDE3D-31D8-4c1e-B114-72E8B37D6CAA" .
ies:uriSchemeName rdfs:comment "URI scheme is the top level of the uniform resource identifier (URI) naming structure. All URIs and absolute URI references are formed with a scheme name, followed by a colon character (:), and the remainder of the URI called the scheme-specific part. A list of official IANA-registered URI schemes can be found at: http://en.wikipedia.org/wiki/URI_scheme#Official_IANAre registered_schemes" .
ies:uriSchemeName rdfs:subPropertyOf ies:attribute .
ies:uriSchemeName rdfs:domain ies:WebResourceState .
ies:URL rdf:type rdfs:Class .
ies:URL sparx:guid "{C23AB49C-0734-45b7-A383-8EEA305CD8E4}" .
ies:URL rdfs:comment "An Identifier for a WebResource" .
ies:URL rdfs:subClassOf ies:Identifier .
ies:Username rdf:type rdfs:Class .
ies:Username sparx:guid "9D703CE2-DED0-4aba-BE21-474781670297" .
ies:Username rdfs:comment "The Identity for an account registered with a computer-network-based service e.g. the internet. An email address can be used as an online identifier for a specific domain (like Facebook). Where this is the case it can be considered to be both an instance of an email address and an instance of a username for an online identity." .
ies:Username rdfs:subClassOf ies:Identifier .
ies:userOf rdf:type owl:ObjectProperty .
ies:userOf sparx:guid "01984617-C96D-48b3-ACDE-25F525719AEF" .
ies:userOf rdfs:comment "A hasAccessTo relationship between a ResponsibleActor and an Asset they use. Note: more often than not, this will be a statement of occasional use, so the instance of the ResponsibleActorState should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous use, but generally this would be modelled with the appropriate type of Event and EventParticipants" .
ies:userOf rdfs:range ies:Asset .
ies:userOf rdfs:subPropertyOf ies:hasAccessTo .
ies:usesServicesAt rdf:type owl:ObjectProperty .
ies:usesServicesAt sparx:guid "[958E4D57-8A19-4855-B9B3-6BB2F93F77B7]" .
ies:usesServicesAt rdfs:comment "A visits relationship between a ResponsibleActor and a Location where they use services - e.g. banking, shopping, etc.. Note: more often than not, this will be a statement of regular/occasional use, so the instance of the ResponsibleActorState should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, inLocation would generally be used." .
ies:usesServicesAt rdfs:subPropertyOf ies:visits .
ies:UsuallyParked rdf:type rdfs:Class .
ies:UsuallyParked sparx:guid "{FCE0D994-4838-48fa-A274-57DB092A2960}" .
ies:UsuallyParked rdfs:comment "A temporal state of a Vehicle which is the fusion of all its Parked statesExamples: * A car that is usually parked in Acacia Avenue* A ship that regularly docks at Dover* An aircraft that regularly resides in a private hangar" .
ies:UsuallyParked rdfs:subClassOf ies:VehicleState .
ies:UsuallyParked rdfs:subClassOf ies:DiscontinuousState .
ies:vafNumber rdf:type owl:DatatypeProperty .
ies:vafNumber sparx:guid "(6DEB576-59E6-4645-9566-65EC62A36330)" .
ies:vafNumber rdfs:comment "The Visa Application Form (VAF) number." .
ies:vafNumber rdfs:subPropertyOf ies:attribute .
ies:vafNumber rdfs:domain ies:TravelVisa .
ies:validFromDate rdf:type owl:ObjectProperty .
ies:validFromDate sparx:guid "{6ACC2ACC-46F2-4a02-A3E7-D16BE8EB723B}" .
ies:validFromDate rdfs:comment "The date that the respective IdentityDocument or Ticket is valid from." .
ies:validFromDate rdfs:subPropertyOf ies:relationship .
ies:validFromDate rdf:type ies:IdentityDocument .
ies:validFromDate rdfs:domain ies:PaymentArtefact .
ies:validFromDate rdfs:domain ies:TravelTicket .
ies:validFromDate rdfs:range ies:ParticularPeriod .
ies:validToDate rdf:type owl:ObjectProperty .
ies:validToDate sparx:guid "{680F737D-A8AB-4410-9F1D-FAD7BDC98447}" .
ies:validToDate rdfs:comment "The date that the respective IdentityDocument or Ticket is valid to." .
ies:validToDate rdfs:subPropertyOf ies:relationship .
ies:validToDate rdfs:domain ies:IdentityDocument .
ies:validToDate rdfs:domain ies:PaymentArtefact .
ies:validToDate rdfs:domain ies:TravelTicket .
ies:validToDate rdfs:range ies:ParticularPeriod .
ies:valueInAmperes rdf:type rdfs:Class .
ies:valueInAmperes sparx:guid "(0C682BA6-23AB-459c-B8FF-A114AA27650B)" .
ies:valueInAmperes rdfs:comment "A StandardMeasureValue for ElectricCurrent in amperes" .
ies:valueInAmperes rdfs:subClassOf ies:StandardMeasureValue .
ies:valueInCandela rdf:type rdfs:Class .
ies:valueInCandela sparx:guid "(391F91E4-768F-406c-A344-CC3331ABE2AC)" .
ies:valueInCandela rdfs:comment "A StandardMeasureValue for LuminousIntensity in candela" .
ies:valueInKelvin rdf:type rdfs:Class .
ies:valueInKelvin sparx:guid "{32097C4D-A0FB-4024-BDB8-8E899DDCF217}" .

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ies:ValueInKelvin rdfs:comment "A StandardMeasureValue for Temperature in kelvin" .
 ies:ValueInKelvin rdfs:subClassOf ies:StandardMeasureValue .
 ies:ValueInKilograms rdf:type rdfs:Class .
 ies:ValueInKilograms sparx:guid "{E7A9BC2D-85E2-4999-90DC-B76C9CB57C42}" .
 ies:ValueInKilograms rdfs:comment "A StandardMeasureValue for Mass in kilograms" .
 ies:ValueInKilograms rdfs:subClassOf ies:StandardMeasureValue .
 ies:ValueInMetres rdf:type rdfs:Class .
 ies:ValueInMetres sparx:guid "{C8D4C3CB-16C2-44a7-B709-35CEBF219BF0}" .
 ies:ValueInMetres rdfs:comment "A StandardMeasureValue for Length in metres" .
 ies:ValueInMetres rdfs:subClassOf ies:StandardMeasureValue .
 ies:ValueInMoles rdf:type rdfs:Class .
 ies:ValueInMoles sparx:guid "{943CA047-F259-4181-BF04-F6D54065AAD4}" .
 ies:ValueInMoles rdfs:comment "A StandardMeasureValue for AmountOfSubstance in moles" .
 ies:ValueInMoles rdfs:subClassOf ies:StandardMeasureValue .
 ies:ValueInSeconds rdf:type rdfs:Class .
 ies:ValueInSeconds sparx:guid "{E485D394-B9D7-40b6-BD44-E5970B2118BD}" .
 ies:ValueInSeconds rdfs:comment "A StandardMeasureValue for Duration in seconds" .
 ies:ValueInSeconds rdfs:subClassOf ies:StandardMeasureValue .
 ies:Vehicle rdf:type rdfs:Class .
 ies:Vehicle sparx:guid "{3B916F09-F3F4-43e9-9C84-99009C685396}" .
 ies:Vehicle rdfs:comment "An Asset that is means of transportation e.g. car, aircraft, ship" .
 ies:Vehicle rdfs:subClassOf ies:Device .
 ies:Vehicle rdfs:subClassOf ies:VehicleState .
 ies:VehicleController rdf:type rdfs:Class .
 ies:VehicleController sparx:guid "{93A816A9-EB7B-4250-8A1A-8919488029A7}" .
 ies:VehicleController rdfs:comment "A PersonInTransit where the Person is in control of the Transite.g. driver of a car, pilot of plane, captain of a ship" .
 ies:VehicleController rdfs:subClassOf ies:PersonInTransit .
 ies:VehicleIdentificationNumber rdf:type rdfs:Class .
 ies:VehicleIdentificationNumber sparx:guid "{AC9AB7B0-6C38-4b08-B2B9-CAA8486F0F4B}" .
 ies:VehicleIdentificationNumber rdfs:comment "VIN Vehicle Identification Number.For road vehicles this is often directly referred to as the VIN, but this can also be applied in a generic fashion to other vehicle types.ISO 3833 for road vehicles (17-digits)" .
 ies:VehicleIdentificationNumber rdfs:subClassOf ies:Identifier .
 ies:VehicleName rdf:type rdfs:Class .
 ies:VehicleName sparx:guid "{9D24B4BE-2AD4-42d6-A906-8F6EFDA23EC5}" .
 ies:VehicleName rdfs:comment "The Name of the respective Vehicle (if applicable) often this only applies to ships/boats. Examples:The Saucy SueThe Bountiful Blumpkin" .
 ies:VehicleName rdfs:subClassOf ies:Identifier .
 ies:VehicleState rdf:type rdfs:Class .
 ies:VehicleState sparx:guid "{D3275233-7381-483e-B2D2-77F13D73A52E}" .
 ies:VehicleState rdfs:comment "A temporal state of a Vehicle" .
 ies:VehicleState rdfs:subClassOf ies:AssetState .
 ies:VehicleUsed rdf:type rdfs:Class .
 ies:VehicleUsed sparx:guid "{2202F5B0-DF49-4db5-A8F9-31FC2CC89005}" .
 ies:VehicleUsed rdfs:comment "An EventParticipant in which a Vehicle is used to transport Entities" .
 ies:VehicleUsed rdfs:subClassOf ies:EventParticipant .
 ies:venueStatedOnTicket rdf:type owl:ObjectProperty .
 ies:venueStatedOnTicket sparx:guid "{3345AECA-925E-4bfc-820E-2294D5921E71}" .
 ies:venueStatedOnTicket rdfs:comment "The venue of the event the Ticket is for.Note: venues change, and the actual event may not run at the stated venue." .
 ies:venueStatedOnTicket rdfs:subPropertyOf ies:relationship .
 ies:venueStatedOnTicket rdfs:domain ies:EntertainmentTicket .
 ies:venueStatedOnTicket rdfs:range ies:Facility .
 ies:VersionNumber rdf:type rdfs:Class .
 ies:VersionNumber sparx:guid "{E4C44F5B-5D57-4283-B985-5A2DA87BF212}" .
 ies:VersionNumber rdfs:comment "The number or code that identifies the version of something" .
 ies:VersionNumber rdfs:subClassOf ies:Identifier .
 ies:versionOf rdf:type owl:ObjectProperty .
 ies:versionOf sparx:guid "{C01F47A2-F545-4fac-A707-469AD32FBF94}" .
 ies:versionOf rdfs:comment "A relationship between a VersionOfDocument and the WorkOfDocumentation it is a version of." .
 ies:versionOf rdf:subPropertyOf rdfs:subClassOf .
 ies:versionOf rdf:subPropertyOf ies:relationship .
 ies:versionOf rdf:range ies:WorkOfDocumentation .
 ies:versionOf rdf:domain ies:VersionOfDocument .
 ies:VersionOfDocument rdf:type rdfs:Class .
 ies:VersionOfDocument sparx:guid "{ADB16761-4981-4476-BC53-2843587D1C02}" .
 ies:VersionOfDocument rdfs:comment "A WorkOfDocumentation and a TimeBoundedClass that is a versionOf a WorkOfDocumentation" .
 ies:VersionOfDocument rdfs:subClassOf ies:WorkOfDocumentation .
 ies:VersionOfDocument rdfs:subClassOf ies:TimeBoundedClass .
 ies:Victim rdf:type rdfs:Class .
 ies:Victim sparx:guid "{3B47FC00-E7D1-4b2b-BC07-C96D3F07ABC3}" .
 ies:Victim rdfs:comment "An EventParticipant where a ResponsibleActor is the victim of a CriminalActivity" .
 ies:Victim rdfs:subClassOf ies:EventParticipant .
 ies:VideoConference rdf:type rdfs:Class .
 ies:VideoConference sparx:guid "{1ED09A3D-7EE9-4b7a-8F0B-8590023C9F81}" .
 ies:VideoConference rdfs:comment "A TeleConference where parties communicate over video (with audio)" .
 ies:VideoConference rdfs:subClassOf ies:TeleConference .
 ies:Visiting rdf:type rdfs:Class .
 ies:Visiting sparx:guid "{EB558A61-8725-40d0-B87D-D6AA1FC27C89}" .
 ies:Visiting rdfs:comment "A temporal state of a ResponsibleActorNote: this is the superclass of ResponsibleActor (the whole life person or organisation) because the whole-life state is just a special case of a ResponsibleActorState. This pattern is true for all states. " .
 ies:Visiting rdfs:subClassOf ies:ResponsibleActorState .
 ies:Visiting rdfs:subClassOf ies:EventParticipant .
 ies:visits rdf:type owl:ObjectProperty .
 ies:visits sparx:guid "{92FC2C35-D40B-4393-BA0B-88849743FEB6}" .
 ies:visits rdfs:comment "A Relationship and inInLocation between a ResponsibleActor and a Location they visit.Note: more often than not, this will be a statement of occasional visiting, so the instance of the ResponsibleActorState should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, inInLocation would generally be used." .
 ies:visits rdfs:subPropertyOf ies:inInLocation .
 ies:visits rdfs:range ies:Location .
 ies:visits rdfs:domain ies:ResponsibleActorState .
 ies:VoiceCall rdf:type rdfs:Class .
 ies:VoiceCall sparx:guid "{f186E39F-A251-4b84-85E9-577C7290F6D9}" .
 ies:VoiceCall rdfs:comment "An InteractiveCommunication by voice" .
 ies:VoiceCall rdfs:subClassOf ies:InteractiveCommunication .
 ies:VoipAccount rdf:type rdfs:Class .
 ies:VoipAccount sparx:guid "{2D88231F-0673-4788-AE41-3F52A3702A2B}" .
 ies:VoipAccount rdfs:comment "A TelephoneAccount where the voice communication is over IP. This may also include video communication, screen sharing, etc. " .
 ies:VoipAccount rdfs:subClassOf ies:TelephoneAccount .
 ies:VoipAccount rdfs:subClassOf ies:OnlineAccount .
 ies:VotingAttendee rdf:type rdfs:Class .
 ies:VotingAttendee sparx:guid "{B94FF143-3681-41eb-8264-D3E85C558EFC}" .
 ies:VotingAttendee rdfs:comment "When a Government has voting rights at a Summit" .
 ies:War rdf:type rdfs:Class .
 ies:War sparx:guid "{D4F568F5-7BC4-489d-94BC-AE1305E5C0C2}" .

ies:War rdfs:comment "A Disagreement where at least one party has declared war" .
 ies:War rdfs:subClassOf ies:Disagreement .
 ies:War rdfs:subClassOf ies:EndToEndActivity .
 ies:Warrant rdf:type rdfs:Class .
 ies:Warrant sparx:guid "{4CADC884A-1EA7-473d-9881-8B76EBF8526F}" .
 ies:Warrant rdfs:comment "An AuthorisationDocument that provides legal permission, usually for something that would be considered illegal or intrusive otherwise" .
 ies:Warrant rdfs:subClassOf ies:AuthorisationDocument .
 ies:Warranty rdf:type rdfs:Class .
 ies:Warranty sparx:guid "{CA2023C6-1677-4d24-A1E6-22BC4D595E6F}" .
 ies:Warranty rdfs:comment "An EndToEndAuthorisation where the process involves legal warrants. " .
 ies:Warranty rdfs:subClassOf ies:EndToEndAuthorisation .
 ies:wasAuthorisedBy rdf:type owl:ObjectProperty .
 ies:wasAuthorisedBy sparx:guid "{7A58C9AD-C198-4a61-8244-DE5BBC591416}" .
 ies:wasAuthorisedBy rdfs:comment "A relationship to the Organisation that was the authorising agency for the IdentityDocument" .
 ies:wasAuthorisedBy rdfs:subPropertyOf ies:relationship .
 ies:wasAuthorisedBy rdfs:domain ies:IdentityDocument .
 ies:wasAuthorisedBy rdfs:range ies:Organisation .
 ies:WeaponLocation rdf:type rdfs:Class .
 ies:WeaponLocation sparx:guid "{B513F008-E527-4548-8453-D905775E3A4F}" .
 ies:WeaponLocation rdfs:subClassOf ies:EventParticipant .
 ies:Webpage rdf:type rdfs:Class .
 ies:Webpage sparx:guid "{79098C74-E063-4c45-886D-D0B88A48E954}" .
 ies:Webpage rdfs:comment "An OnlineArtifact that is a page on the web." .
 ies:Webpage rdfs:subClassOf ies:OnlineArtifact .
 ies:WebResource rdf:type rdfs:Class .
 ies:WebResource sparx:guid "{46D508B4-F1CC-45d7-9E4B-BAB43C88D82A}" .
 ies:WebResource rdfs:comment "Any http presence on the web" .
 ies:WebResource rdfs:subClassOf ies:Entity .
 ies:WebResource rdfs:subClassOf ies:WebResourceState .
 ies:WebResourceState rdf:type rdfs:Class .
 ies:WebResourceState sparx:guid "{3BE61CCF-DCD0-411d-9D43-5DEABF8381F2}" .
 ies:WebResourceState rdfs:comment "A temporal state of an WebResource" .
 ies:WebResourceState rdfs:subClassOf ies:State .
 ies:What3words rdf:type rdfs:Class .
 ies:What3words sparx:guid "{B2262900-BF01-4691-8DE1-46A726A6D1CB}" .
 ies:What3words rdfs:comment "A GeoIdentity that is a what3words Location specifier(see what3words.com)" .
 ies:What3words rdfs:subClassOf ies:GeoIdentity .
 ies:WinningCandidate rdf:type rdfs:Class .
 ies:WinningCandidate sparx:guid "{9FC35E2C-3D28-4f21-8FF7-3BAA51860958}" .
 ies:WinningCandidate rdfs:comment "The Person who won the Election" .
 ies:WinningCandidate rdfs:subClassOf ies:ElectoralCandidate .
 ies:WithdrawFromSale rdf:type rdfs:Class .
 ies:WithdrawFromSale sparx:guid "{9416F72A-9BF9-4c99-839C-76905F02B63B}" .
 ies:WithdrawFromSale rdfs:comment "A TradeEvent where a type of entity is withdrawn from sale" .
 ies:WithdrawFromSale rdfs:subClassOf ies:TradeEvent .
 ies:Witness rdf:type rdfs:Class .
 ies:Witness sparx:guid "{9c9ED058-4B85-43d0-A311-FF7A532ED6D6}" .
 ies:Witness rdfs:comment "A Persons role as a witness in a trial" .
 ies:Witness rdfs:subClassOf ies:ActiveEventParticipant .
 ies:Witness rdfs:subClassOf ies:PersonState .
 ies:WorkOfDocumentation rdf:type rdfs:Class .
 ies:WorkOfDocumentation sparx:guid "{F0B48978-D4E4-45a4-8238-091A5B714D82}" .
 ies:WorkOfDocumentation rdfs:comment "A Representation that is the general case of a document - i.e. War and Peace as opposed to My copy of War and Peace" .
 ies:WorkOfDocumentation rdfs:subClassOf ies:ClassOfIndividualDocument .
 ies:worksAt rdf:type owl:ObjectProperty .
 ies:worksAt sparx:guid "{55161540-8869-4af9-B159-51857E0B0BDB}" .
 ies:worksAt rdfs:comment "A visits relationship between a ResponsibleActor and a Location they work in.Note: more often than not, this will be a statement of occasional presence, so the instance of the ResponsibleActorState should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous presence, but in that case, inlocation would generally be used." .
 ies:worksAt rdfs:subPropertyOf ies:visits .
 ies:worksFor rdf:type owl:ObjectProperty .
 ies:worksFor sparx:guid "{181AAC84-26CE-4531-AC32-A73B8FD8B858}" .
 ies:worksFor rdfs:comment "A Relationship between a ResponsibleActor (range - employer) and a ResponsibleActorState (domain- employed) that indicates one works for the other.In the case where the work is occasional / ad-hoc (i.e. there isn't an ongoing work contract) then the instance of the ResponsibleActorState should also be an instance of DiscontinuousState" .
 ies:worksFor rdfs:subPropertyOf ies:relationship .
 ies:worksFor rdfs:domain ies:ResponsibleActorState .
 ies:worksFor rdfs:range ies:ResponsibleActor .
 ies:worksWith rdf:type owl:ObjectProperty .
 ies:worksWith sparx:guid "{25DD07E3-2500-4b9b-AF50-446EEC927AD2}" .
 ies:worksWith rdfs:comment "A Relationship between two ResponsibleActor Entities that indicates one works with the other.In the case where the work is occasional / ad-hoc (i.e. there isn't an ongoing job) then the instance of the ResponsibleActorState should also be an instance of DiscontinuousStateNote: this relationship should only be used when it is not known who the two people work for (in which case create an organisation and used employedBy) or when the working relationship is rather loose - e.g. in cases of criminal cooperation." .
 ies:worksWith rdfs:subPropertyOf ies:relationship .
 ies:worksWith rdf:type rdfs:range ies:Person .
 ies:worksWith rdfs:domain ies:PersonState .
 ies:worshipsAt rdf:type owl:ObjectProperty .
 ies:worshipsAt sparx:guid "{475617C7-BEE3-4c5e-8749-9386B68A8DA5}" .
 ies:worshipsAt rdfs:comment "A visits relationship between a ResponsibleActor and a Location where they undertake religious worshipNote: more often than not, this will be a statement of regular/occasional worship, so the instance of the ResponsibleActorState should also be an instance of DiscontinuousState. In rarer occasions, it may be used to highlight a single, continuous visit, but in that case, inlocation would generally be used." .
 ies:worshipsAt rdfs:subPropertyOf ies:visits .
 ies:pluriverse rdf:type ies:Element .
 ies:pluriverse sparx:guid "{D3AA70B6-BA62-459a-B3F8-C504C2AF6A0B}" .
 ies:pluriverse rdfs:comment "An instance of Element which is the sum of all possible worlds including everything in those worlds. Put another way, this is everything in our world and everything in all possible worlds." .