



NATO Core Data Framework Architecture

15 Oct 2019 20:08:05

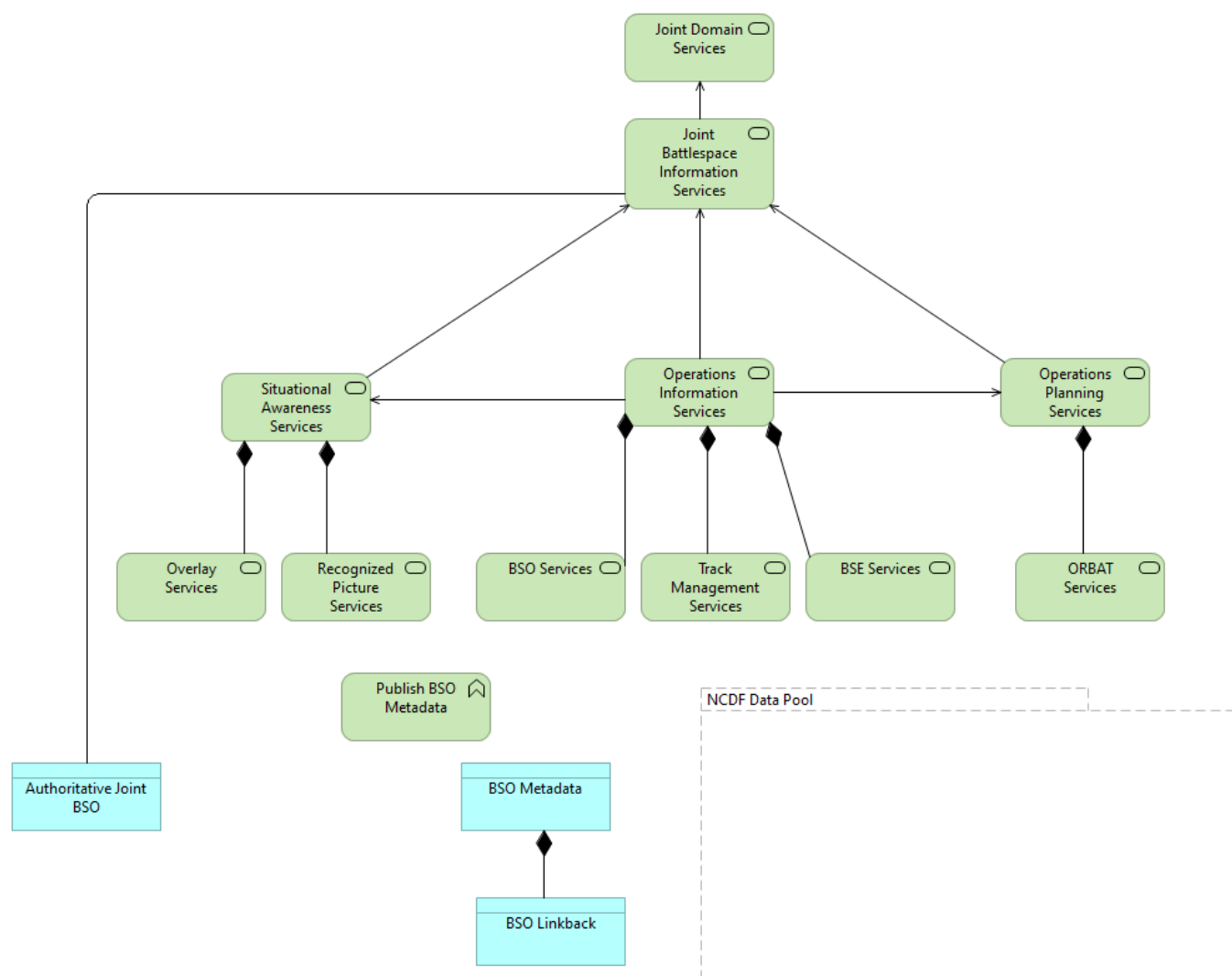


Purpose

Views

C3T Joint Battlespace Information Services

No viewpoint



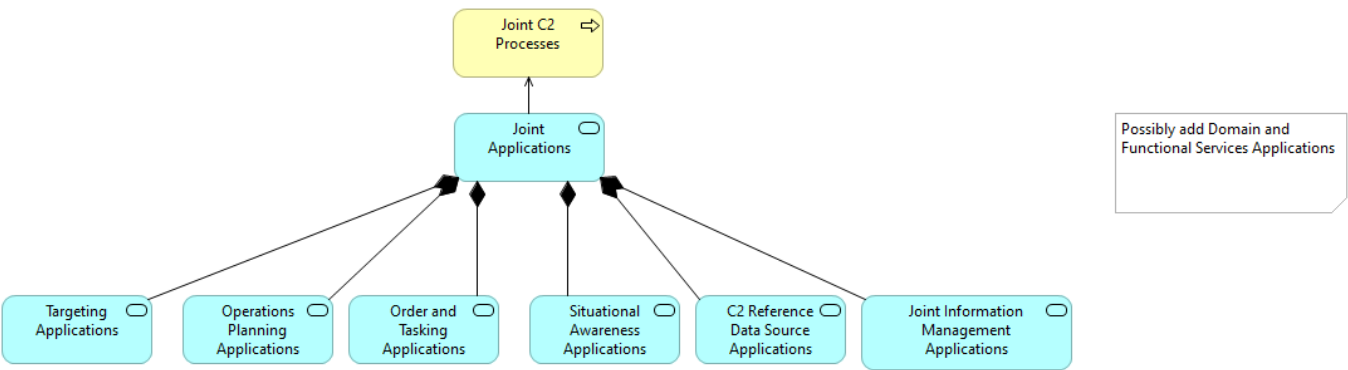
Elements

Element	Type
Authoritative Joint BSO	Data Object
BSE Services	Technology Service
BSO Linkback	Data Object
BSO Metadata	Data Object
BSO Services	Technology Service
Joint Battlespace Information Services	Technology Service
Joint Domain Services	Technology Service
NCDF Data Pool	Grouping
Operations Information Services	Technology Service
Operations Planning Services	Technology Service
ORBAT Services	Technology Service
Overlay Services	Technology Service

Element	Type
Publish BSO Metadata	Technology Function
Recognized Picture Services	Technology Service
Situational Awareness Services	Technology Service
Track Management Services	Technology Service

C3T Joint C2 Applications

No viewpoint

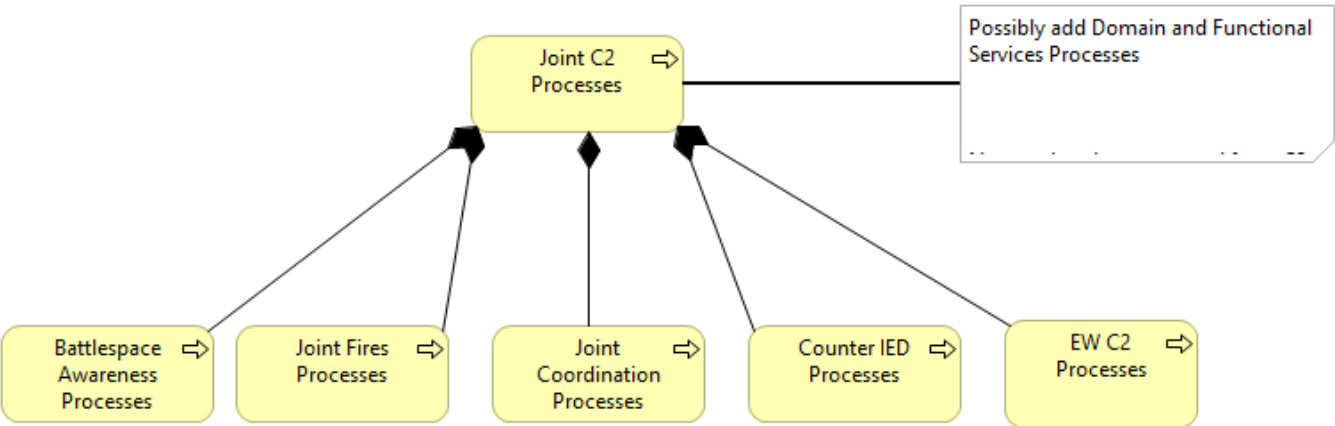


Elements

Element	Type
C2 Reference Data Source Applications	Application Service
Joint Applications	Application Service
Joint C2 Processes	Business Process
Joint Information Management Applications	Application Service
Operations Planning Applications	Application Service
Order and Tasking Applications	Application Service
Situational Awareness Applications	Application Service
Targeting Applications	Application Service

C3T Joint C2 Processes

No viewpoint



Documentation

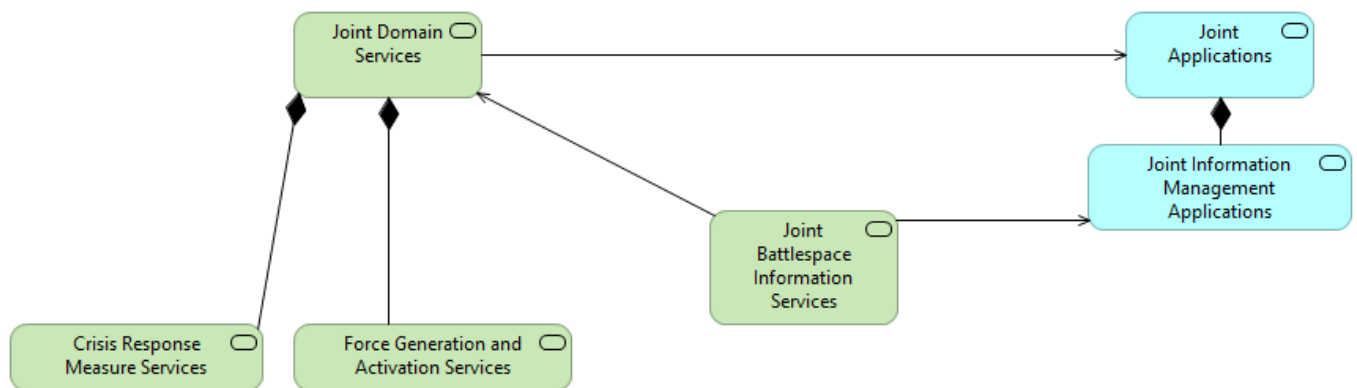
Derived from C3 Taxonomy

Elements

Element	Type
Battlespace Awareness Processes	Business Process
Counter IED Processes	Business Process
EW C2 Processes	Business Process
Joint C2 Processes	Business Process
Joint Coordination Processes	Business Process
Joint Fires Processes	Business Process

C3T Joint Domain Services

No viewpoint

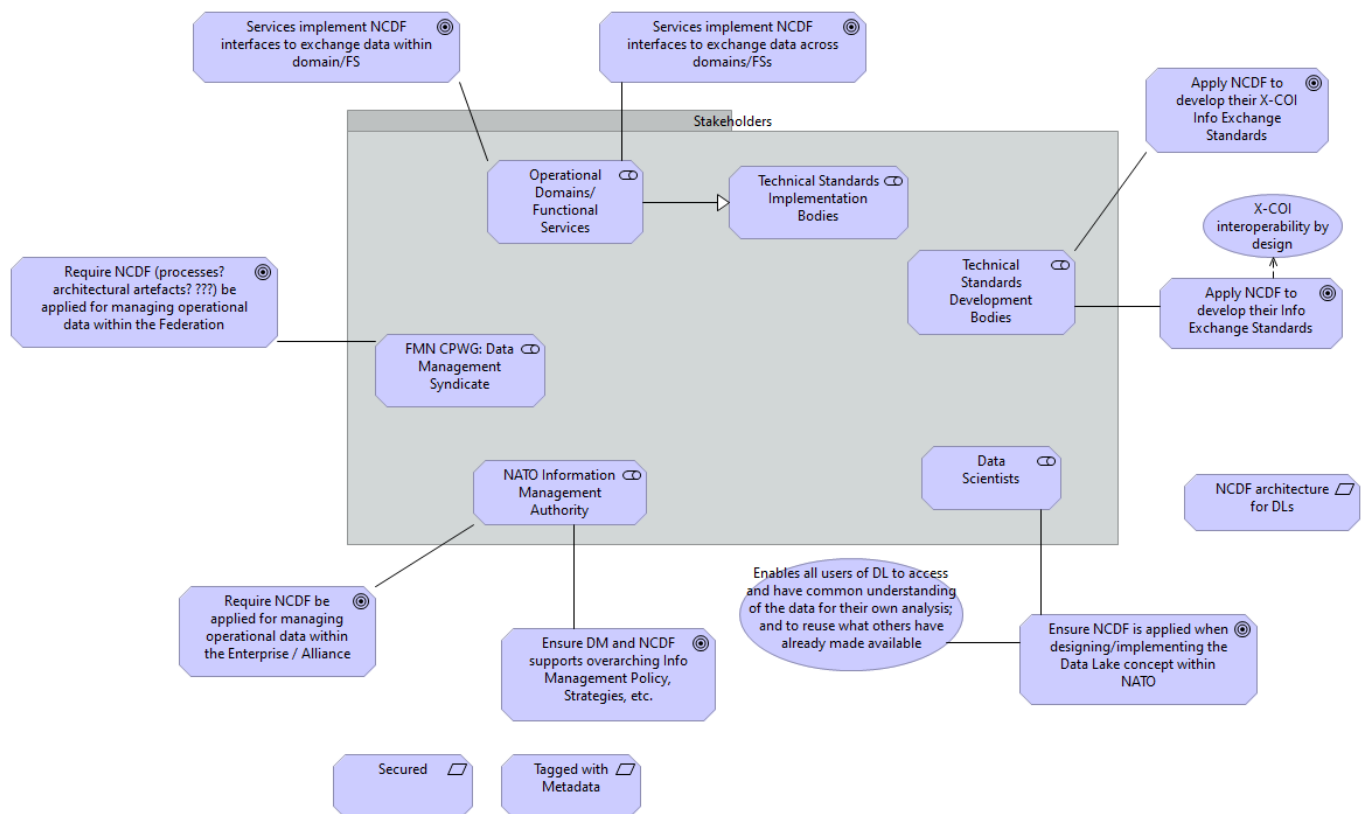


Elements

Element	Type
Crisis Response Measure Services	Technology Service
Force Generation and Activation Services	Technology Service
Joint Applications	Application Service
Joint Battlespace Information Services	Technology Service
Joint Domain Services	Technology Service
Joint Information Management Applications	Application Service

DM CaT Business Strategy C2

No viewpoint



Documentation

NIMROD: NATO Information Management, Registration, and Operational Data Platform

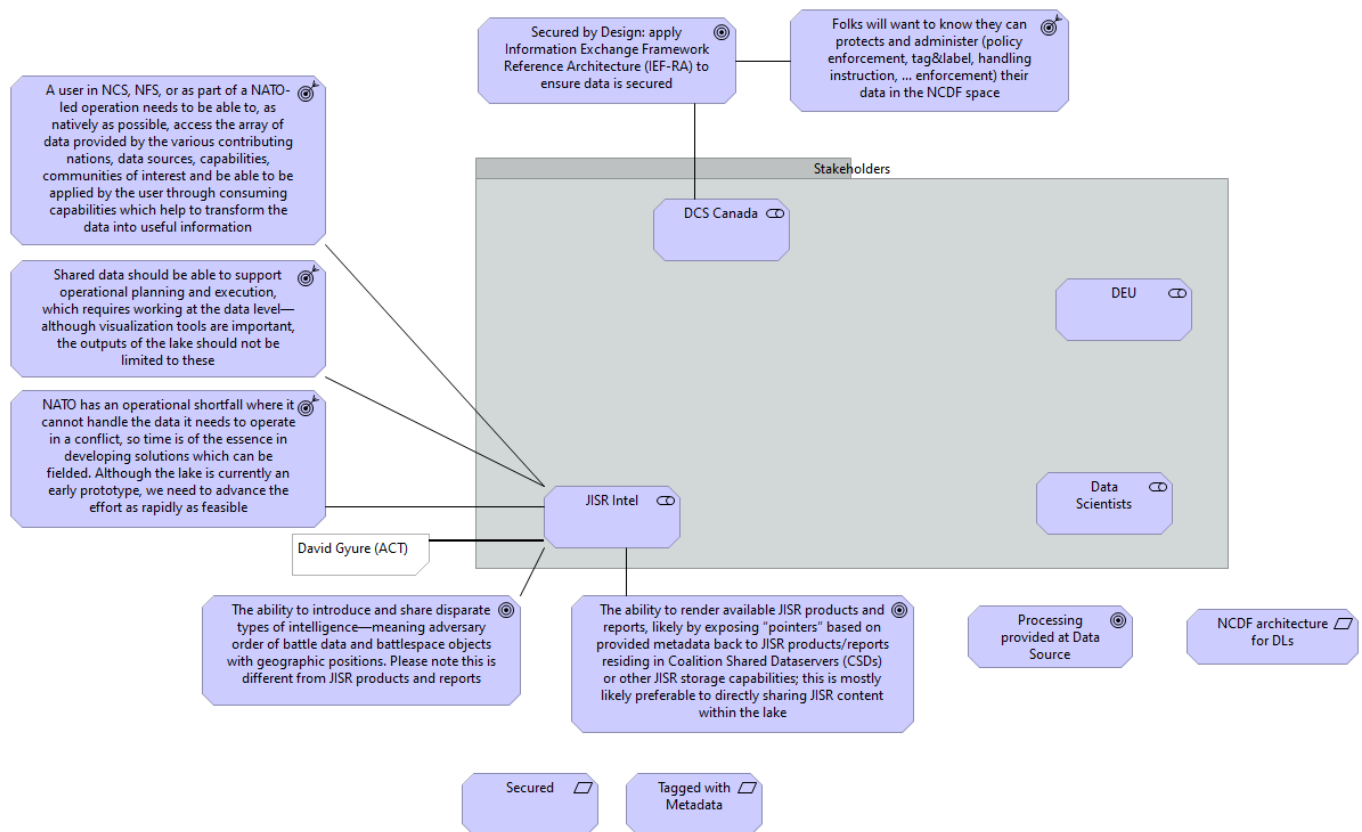
Elements

Element	Type
Apply NCDF to develop their Info Exchange Standards	Goal
Apply NCDF to develop their X-COI Info Exchange Standards	Goal
Data Scientists	Stakeholder
Enables all users of DL to access and have common understanding of the data for their own analysis; and to reuse what others have already made available	Value
Ensure DM and NCDF supports overarching Info Management Policy, Strategies, etc.	Goal
Ensure NCDF is applied when designing/implementing the Data Lake concept within NATO	Goal
FMN CPWG: Data Management Syndicate	Stakeholder
NATO Information Management Authority	Stakeholder
NCDF architecture for DLs	Requirement
Operational Domains/Functional Services	Stakeholder

Element	Type
Require NCDF (processes? architectural artefacts? ???) be applied for managing operational data within the Federation	Goal
Require NCDF be applied for managing operational data within the Enterprise / Alliance	Goal
Secured	Requirement
Services implement NCDF interfaces to exchange data across domains/FSs	Goal
Services implement NCDF interfaces to exchange data within domain/FS	Goal
Tagged with Metadata	Requirement
Technical Standards Development Bodies	Stakeholder
Technical Standards Implementation Bodies	Stakeholder
X-COI interoperability by design	Value

NCDF Data Lake 2020 Business Strategy Inputs C2

No viewpoint



Documentation

NIMROD: NATO Information Management, Registration, and Operational Data Platform

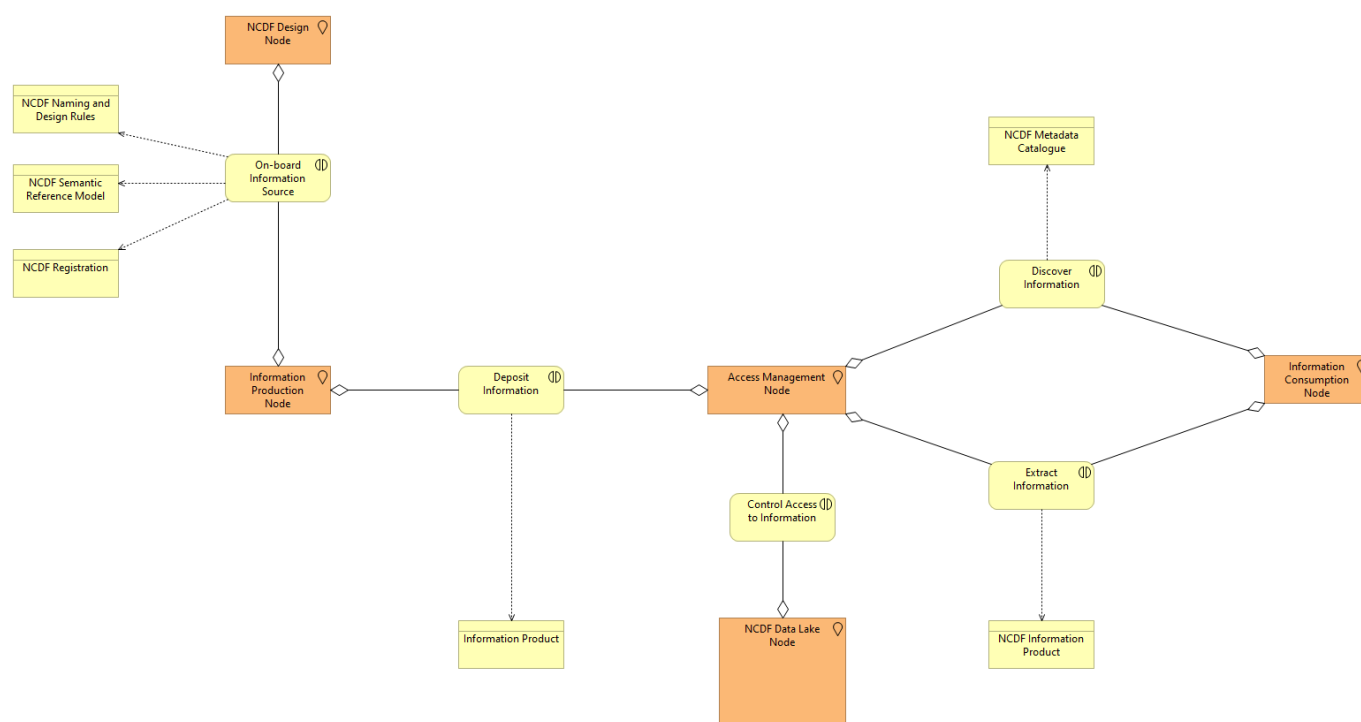
Elements

Element	Type
A user in NCS, NFS, or as part of a NATO-led operation needs to be able to, as natively as possible, access the array of data provided by the various contributing nations, data sources, capabilities, communities of interest and be able to be applied by the user through consuming capabilities which help to transform the data into useful information	Outcome
Data Scientists	Stakeholder
DCS Canada	Stakeholder
DEU	Stakeholder
Folks will want to know they can protect and administer (policy enforcement, tag&label, handling instruction, ... enforcement) their data in the NCDF space	Outcome
JISR Intel	Stakeholder
NATO has an operational shortfall where it cannot handle the data it needs to operate in a conflict, so time is of the essence in developing solutions	Outcome

Element	Type
which can be fielded. Although the lake is currently an early prototype, we need to advance the effort as rapidly as feasible	
NCDF architecture for DLs	Requirement
Processing provided at Data Source	Goal
Secured	Requirement
Secured by Design: apply Information Exchange Framework Reference Architecture (IEF-RA) to ensure data is secured	Goal
Shared data should be able to support operational planning and execution, which requires working at the data level—although visualization tools are important, the outputs of the lake should not be limited to these	Outcome
Tagged with Metadata	Requirement
The ability to introduce and share disparate types of intelligence—meaning adversary order of battle data and battlespace objects with geographic positions. Please note this is different from JISR products and reports	Goal
The ability to render available JISR products and reports, likely by exposing “pointers” based on provided metadata back to JISR products/reports residing in Coalition Shared Dataservers (CSDs) or other JISR storage capabilities; this is mostly likely preferable to directly sharing JISR content within the lake	Goal

NCDF Data Lake L2.0

No viewpoint

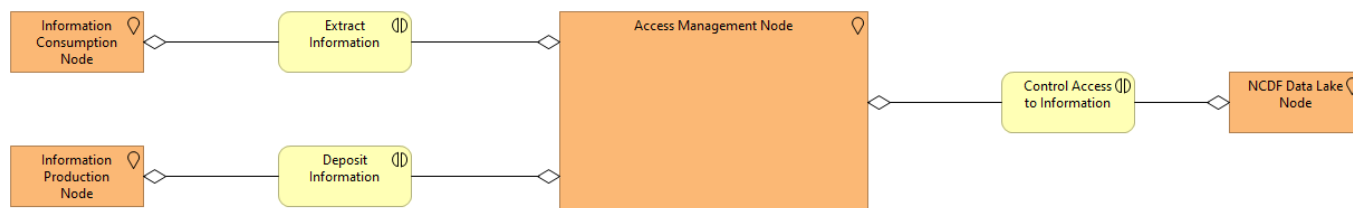


Elements

Element	Type
Access Management Node	Location
Control Access to Information	Business Interaction
Deposit Information	Business Interaction
Discover Information	Business Interaction
Extract Information	Business Interaction
Information Consumption Node	Location
Information Product	Business Object
Information Production Node	Location
NCDF Data Lake Node	Location
NCDF Design Node	Location
NCDF Information Product	Business Object
NCDF Metadata Catalogue	Business Object
NCDF Naming and Design Rules	Business Object
NCDF Registration	Business Object
NCDF Semantic Reference Model	Business Object
On-board Information Source	Business Interaction

NCDF Data Lake L2.1 DCS

No viewpoint

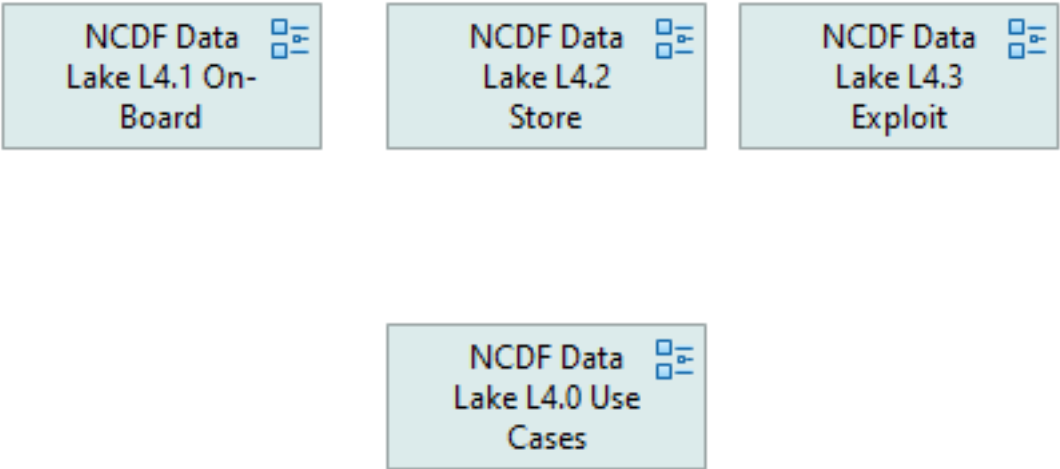


Elements

Element	Type
Access Management Node	Location
Control Access to Information	Business Interaction
Deposit Information	Business Interaction
Extract Information	Business Interaction
Information Consumption Node	Location
Information Production Node	Location
NCDF Data Lake Node	Location

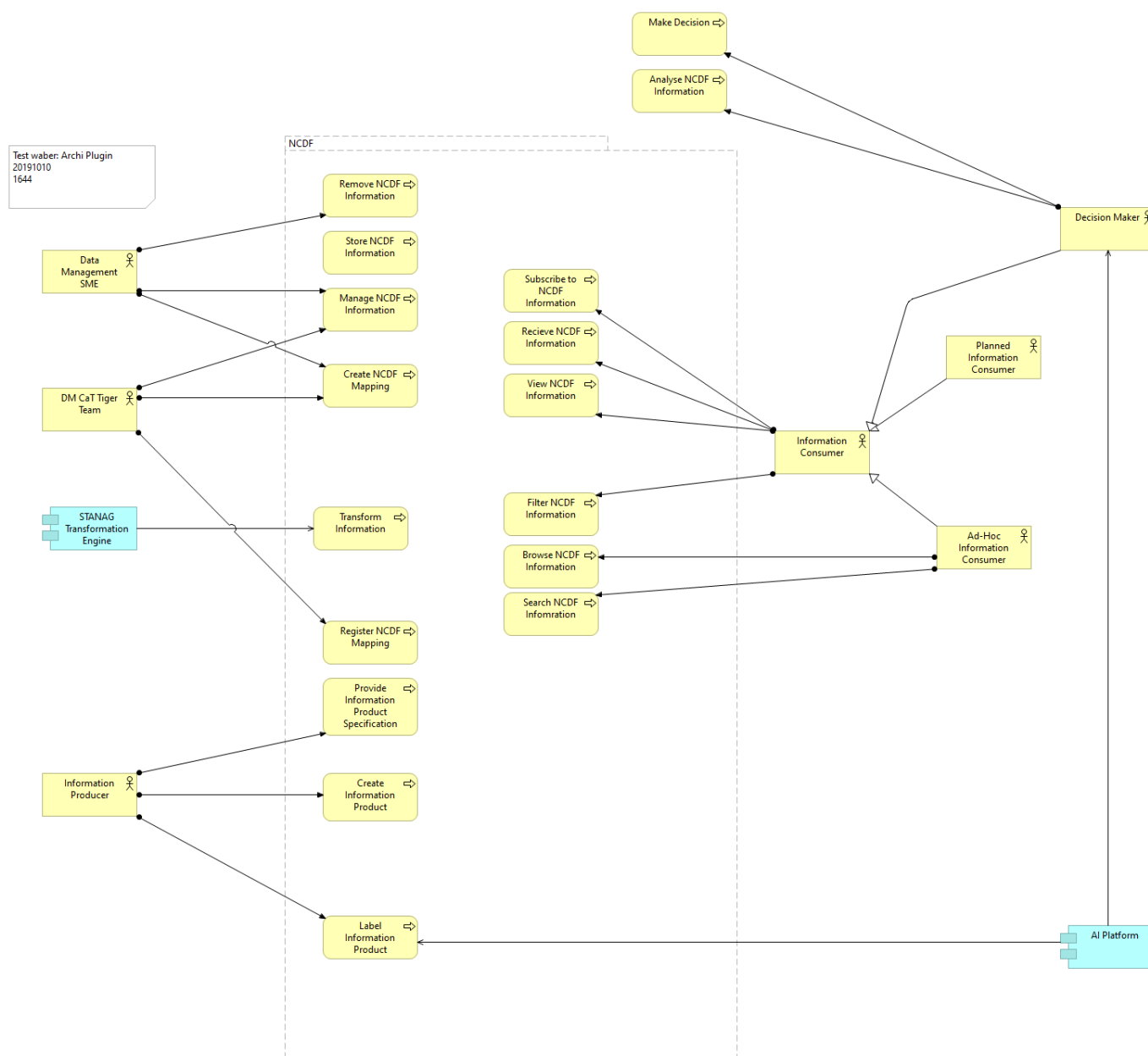
NCDF Data Lake L4 Overall

No viewpoint



NCDF Data Lake L4.0 Use Cases

No viewpoint



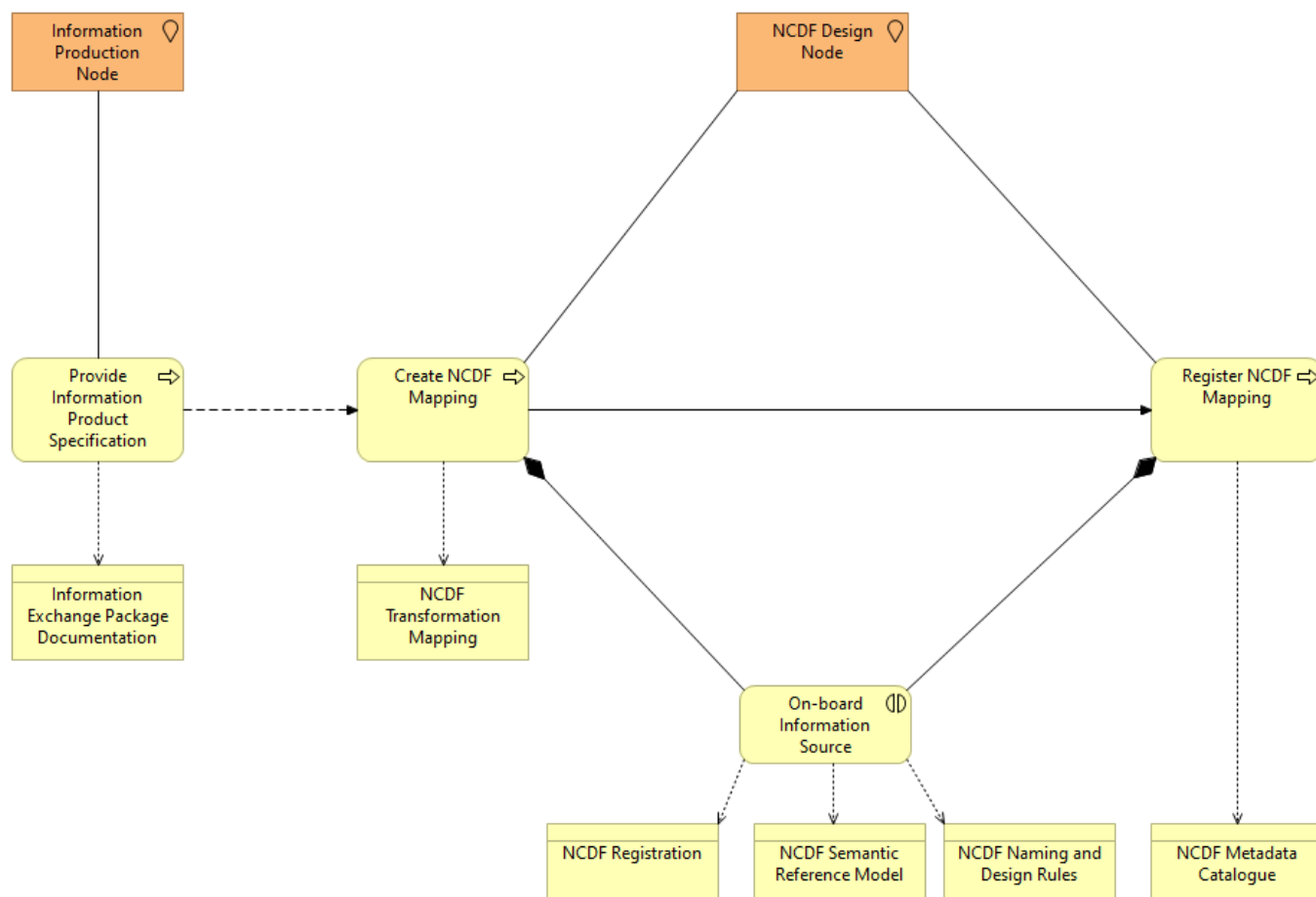
Elements

Element	Type
Ad-Hoc Information Consumer	Business Actor
AI Platform	Application Component
Analyse NCDF Information	Business Process
Browse NCDF Information	Business Process
Create Information Product	Business Process
Create NCDF Mapping	Business Process
Data Management SME	Business Actor
Decision Maker	Business Actor
DM CaT Tiger Team	Business Actor
Filter NCDF Information	Business Process

Element	Type
Information Consumer	Business Actor
Information Producer	Business Actor
Label Information Product	Business Process
Make Decision	Business Process
Manage NCDF Information	Business Process
NCDF	Grouping
Planned Information Consumer	Business Actor
Provide Information Product Specification	Business Process
Recieve NCDF Information	Business Process
Register NCDF Mapping	Business Process
Remove NCDF Information	Business Process
Search NCDF Infomration	Business Process
STANAG Transformation Engine	Application Component
Store NCDF Information	Business Process
Subscribe to NCDF Information	Business Process
Transform Information	Business Process
View NCDF Information	Business Process

NCDF Data Lake L4.1 On-Board

No viewpoint

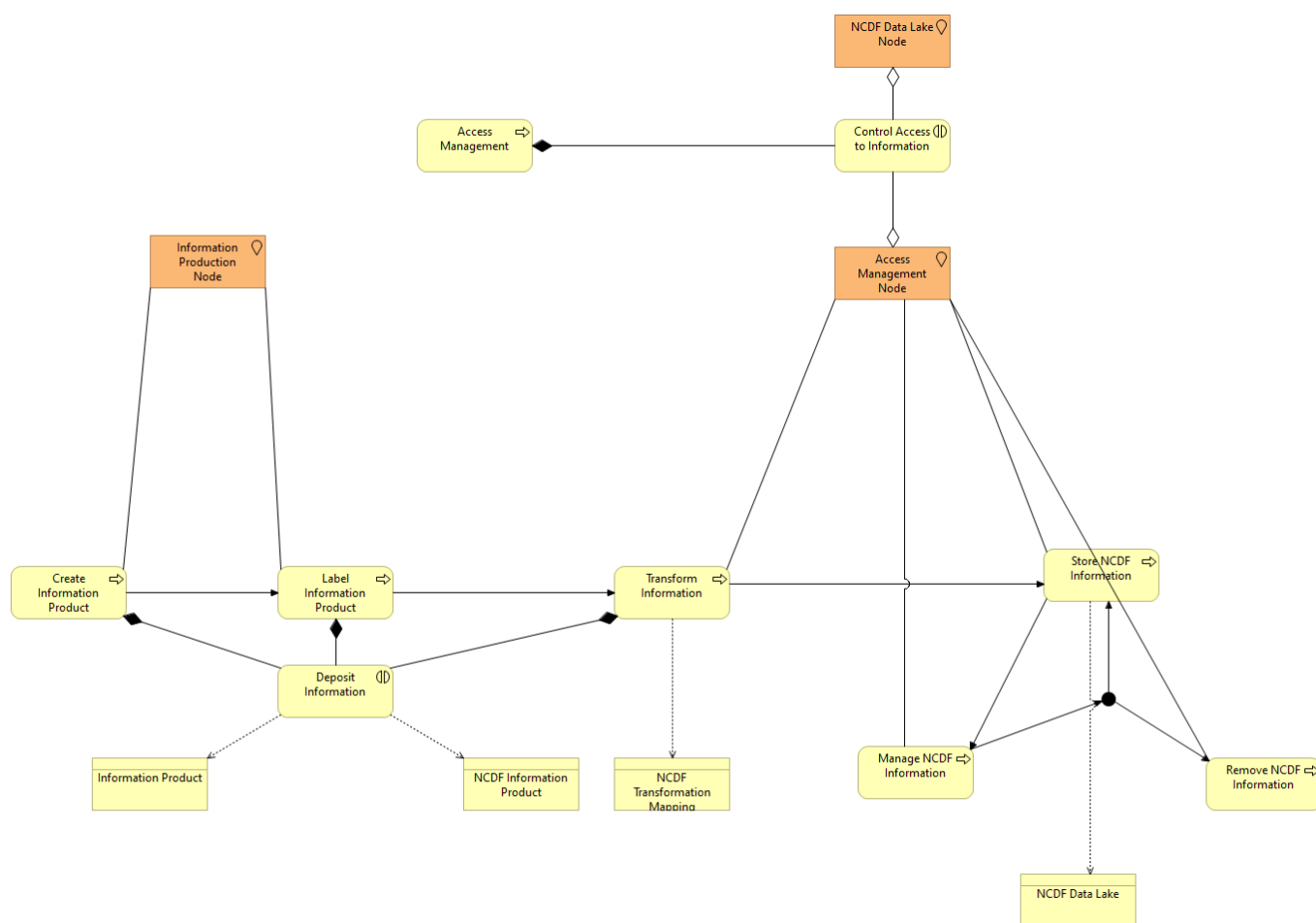


Elements

Element	Type
Create NCDF Mapping	Business Process
Information Exchange Package Documentation	Business Object
Information Production Node	Location
NCDF Design Node	Location
NCDF Metadata Catalogue	Business Object
NCDF Naming and Design Rules	Business Object
NCDF Registration	Business Object
NCDF Semantic Reference Model	Business Object
NCDF Transformation Mapping	Business Object
On-board Information Source	Business Interaction
Provide Information Product Specification	Business Process
Register NCDF Mapping	Business Process

NCDF Data Lake L4.2 Store

No viewpoint



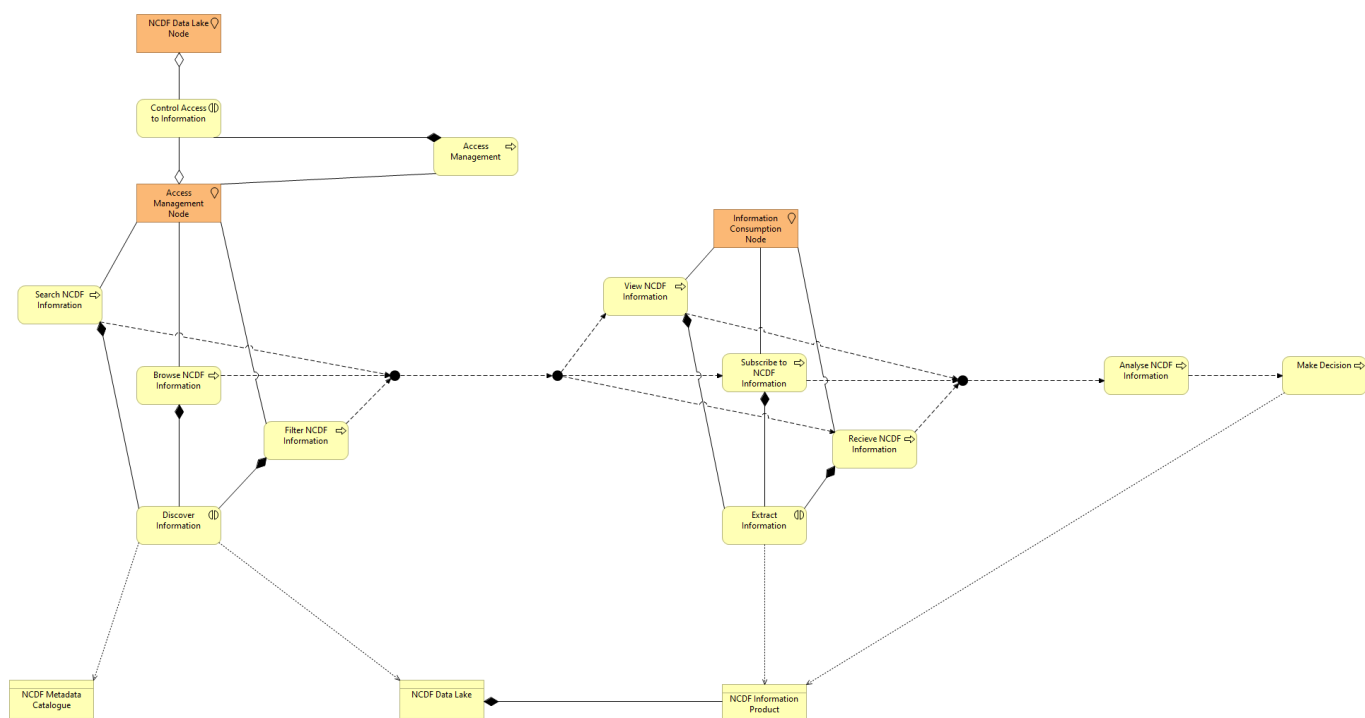
Elements

Element	Type
Access Management	Business Process
Access Management Node	Location
Control Access to Information	Business Interaction
Create Information Product	Business Process
Deposit Information	Business Interaction
Information Product	Business Object
Information Production Node	Location
Junction	Junction
Label Information Product	Business Process
Manage NCDF Information	Business Process
NCDF Data Lake	Business Object
NCDF Data Lake Node	Location
NCDF Information Product	Business Object
NCDF Transformation Mapping	Business Object
Remove NCDF Information	Business Process
Store NCDF Information	Business Process
Transform Information	Business Process



NCDF Data Lake L4.3 Exploit

No viewpoint



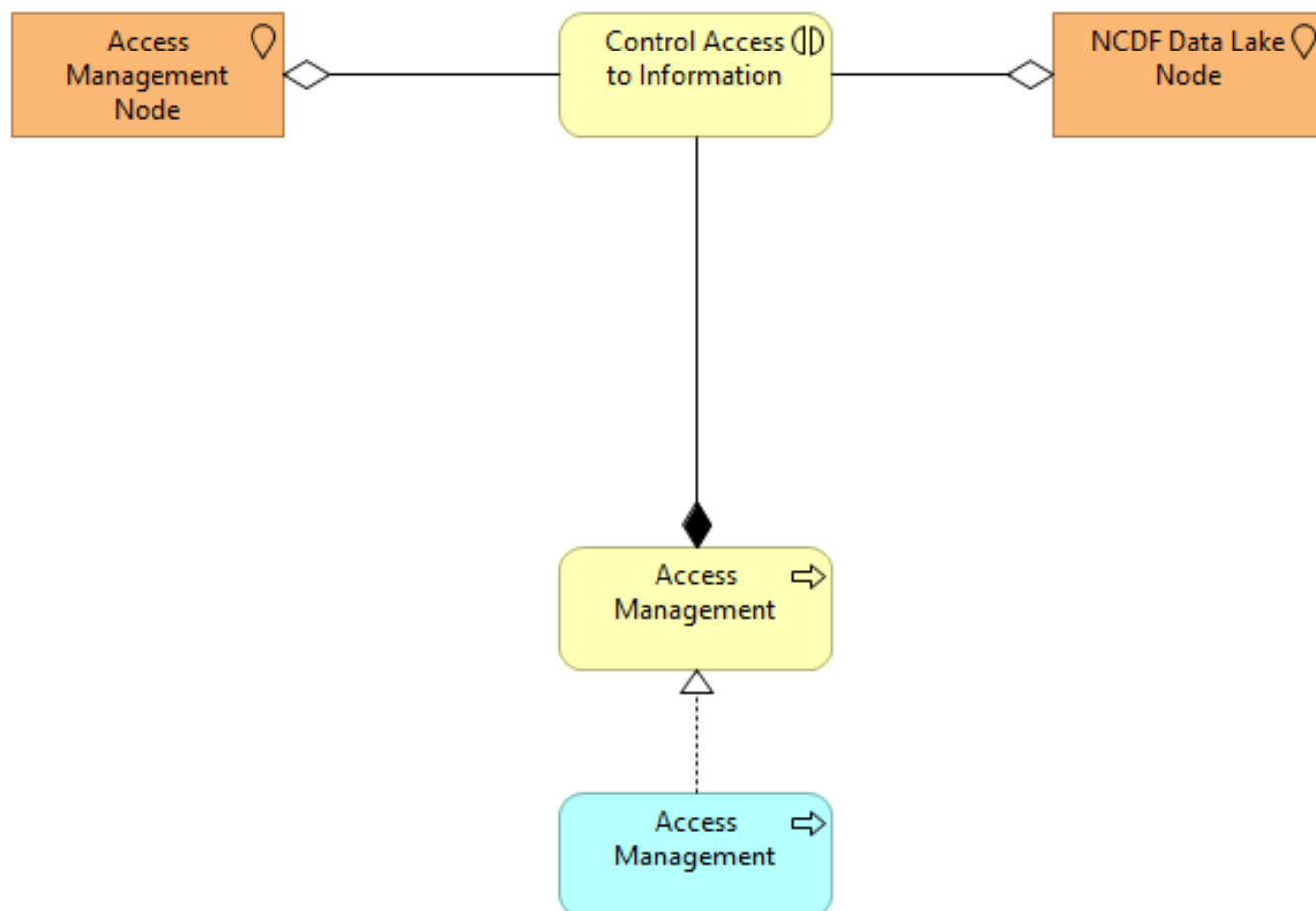
Elements

Element	Type
Access Management	Business Process
Access Management Node	Location
Analyse NCDF Information	Business Process
Browse NCDF Information	Business Process
Control Access to Information	Business Interaction
Discover Information	Business Interaction
Extract Information	Business Interaction
Filter NCDF Information	Business Process
Information Consumption Node	Location
Junction	Junction
Junction	Junction
Junction	Junction
Make Decision	Business Process
NCDF Data Lake	Business Object
NCDF Data Lake Node	Location
NCDF Information Product	Business Object
NCDF Metadata Catalogue	Business Object
Recieve NCDF Information	Business Process
Search NCDF Infomration	Business Process
Subscribe to NCDF Information	Business Process
View NCDF Information	Business Process



NCDF Data Lake L4.4 Access Control

No viewpoint

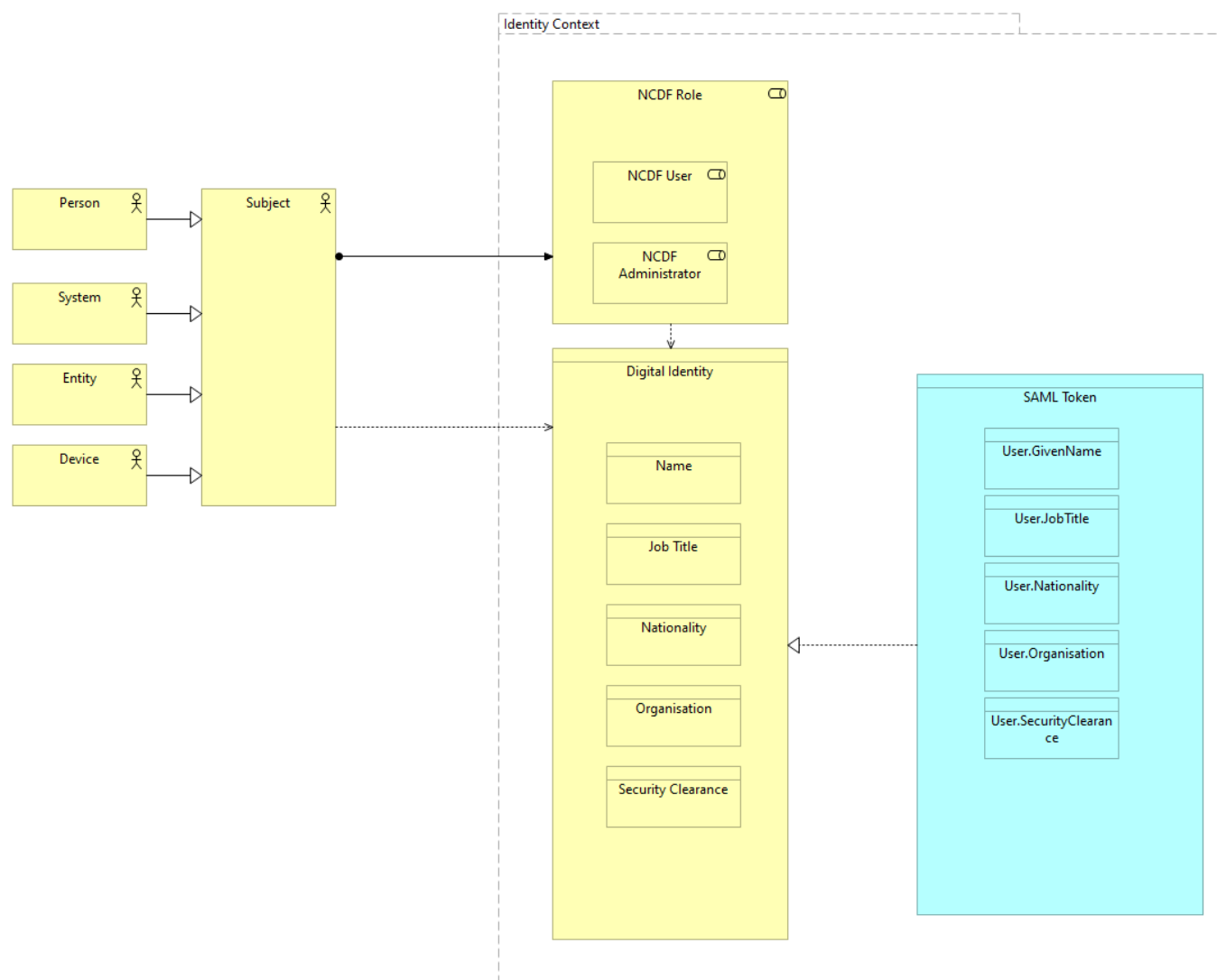


Elements

Element	Type
Access Management	Business Process
Access Management	Application Process
Access Management Node	Location
Control Access to Information	Business Interaction
NCDF Data Lake Node	Location

NCDF Data Lake L7 Digital Identity

No viewpoint



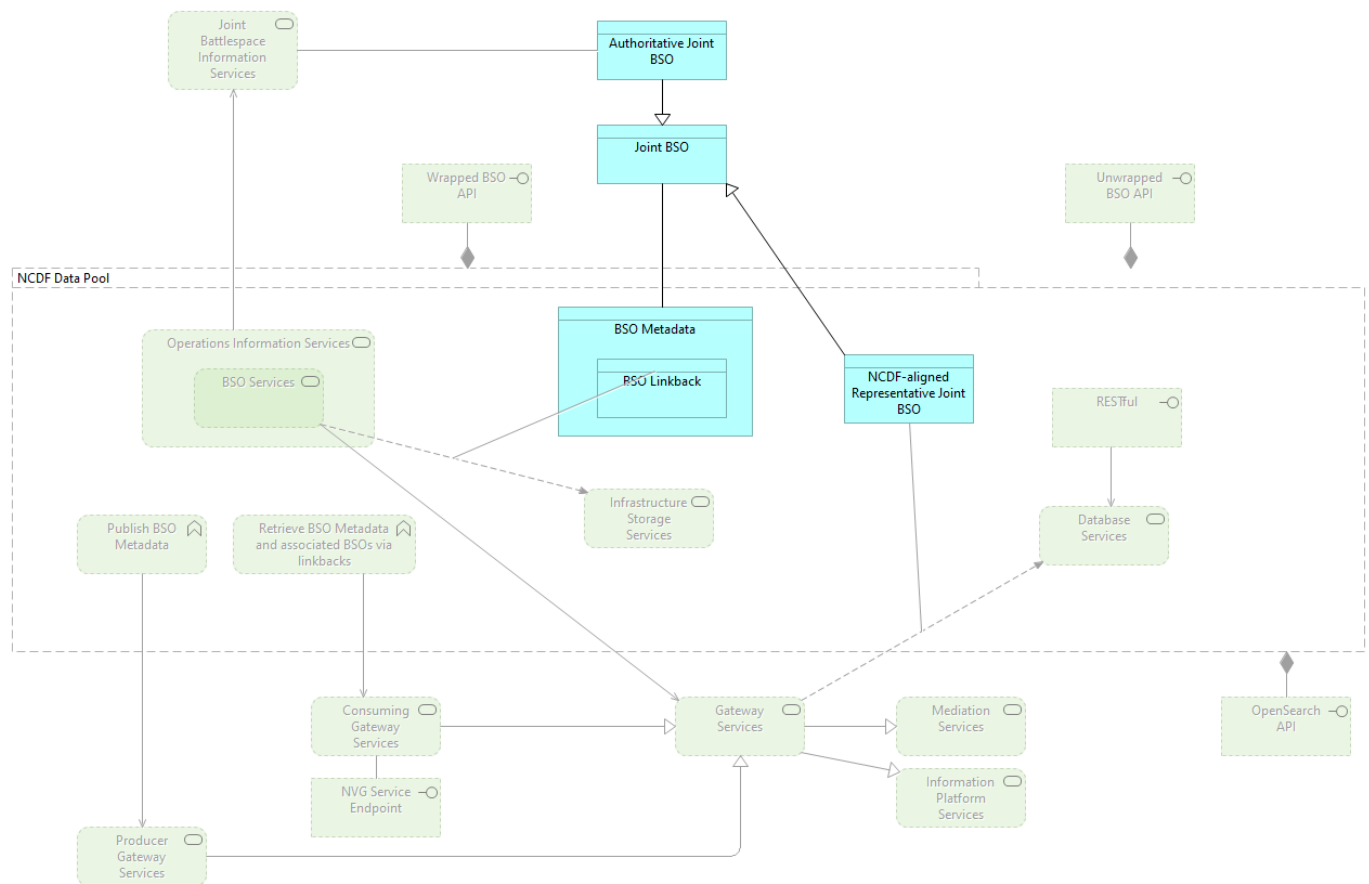
Elements

Element	Type
Device	Business Actor
Digital Identity	Business Object
Entity	Business Actor
Identity Context	Grouping
Job Title	Business Object
Name	Business Object
Nationality	Business Object
NCDF Administrator	Business Role
NCDF Role	Business Role
NCDF User	Business Role
Organisation	Business Object
Person	Business Actor
SAML Token	Data Object
Security Clearance	Business Object

Element	Type
Subject	Business Actor
System	Business Actor
User.GivenName	Data Object
User.JobTitle	Data Object
User.Nationality	Data Object
User.Organisation	Data Object
User.SecurityClearance	Data Object

NCDF Data Lake P3 2019

Application Cooperation viewpoint

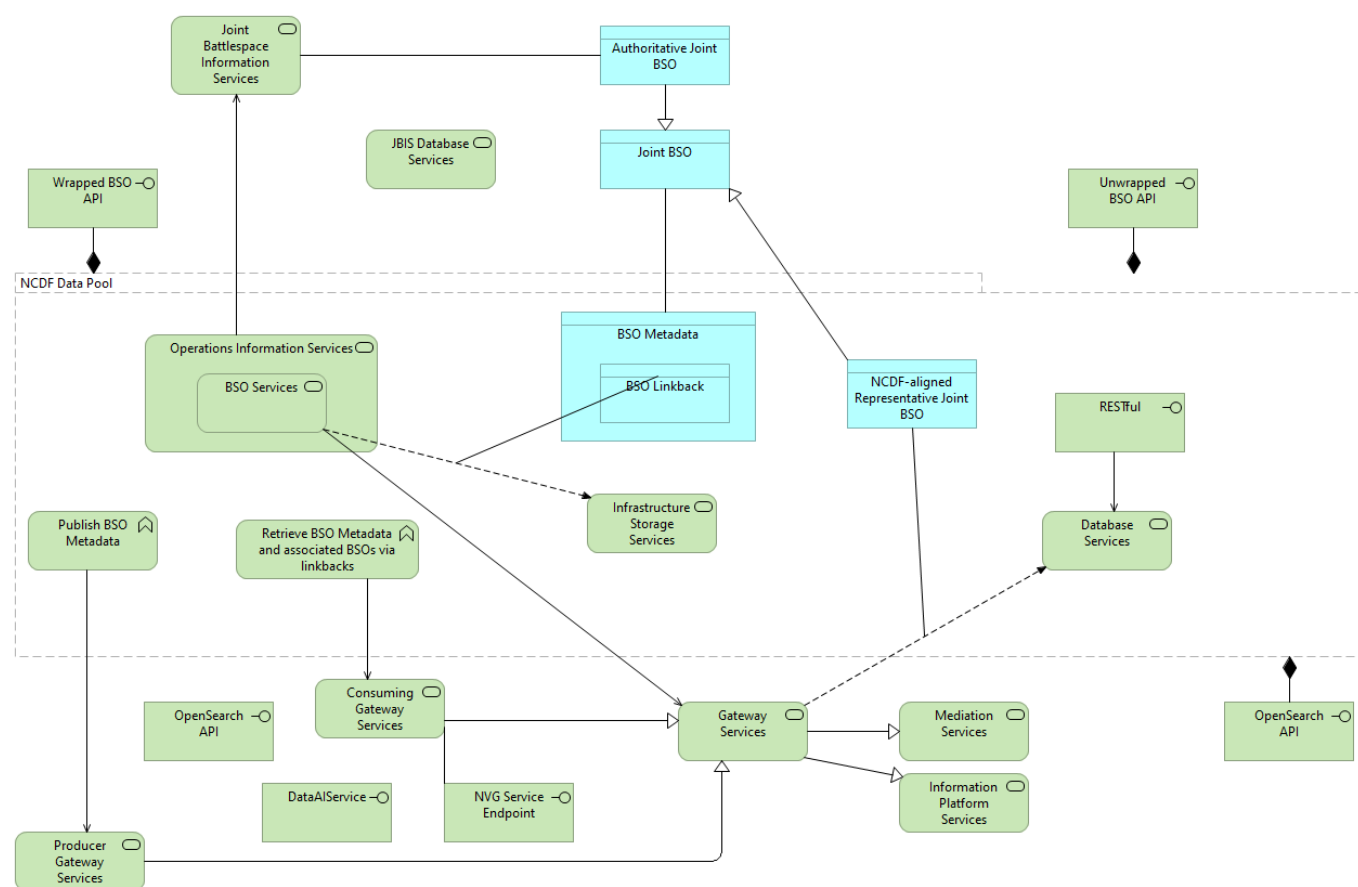


Elements

Element	Type
Authoritative Joint BSO	Data Object
BSO Linkback	Data Object
BSO Metadata	Data Object
BSO Services	Technology Service
Consuming Gateway Services	Technology Service
Database Services	Technology Service
Gateway Services	Technology Service
Information Platform Services	Technology Service
Infrastructure Storage Services	Technology Service
Joint Battlespace Information Services	Technology Service
Joint BSO	Data Object
Mediation Services	Technology Service
NCDF Data Pool	Grouping
NCDF-aligned Representative Joint BSO	Data Object
NVG Service Endpoint	Technology Interface
OpenSearch API	Technology Interface
Operations Information Services	Technology Service
Producer Gateway Services	Technology Service

Element	Type
Publish BSO Metadata	Technology Function
RESTful	Technology Interface
Retrieve BSO Metadata and associated BSOs via linkbacks	Technology Function
Unwrapped BSO API	Technology Interface
Wrapped BSO API	Technology Interface

No viewpoint

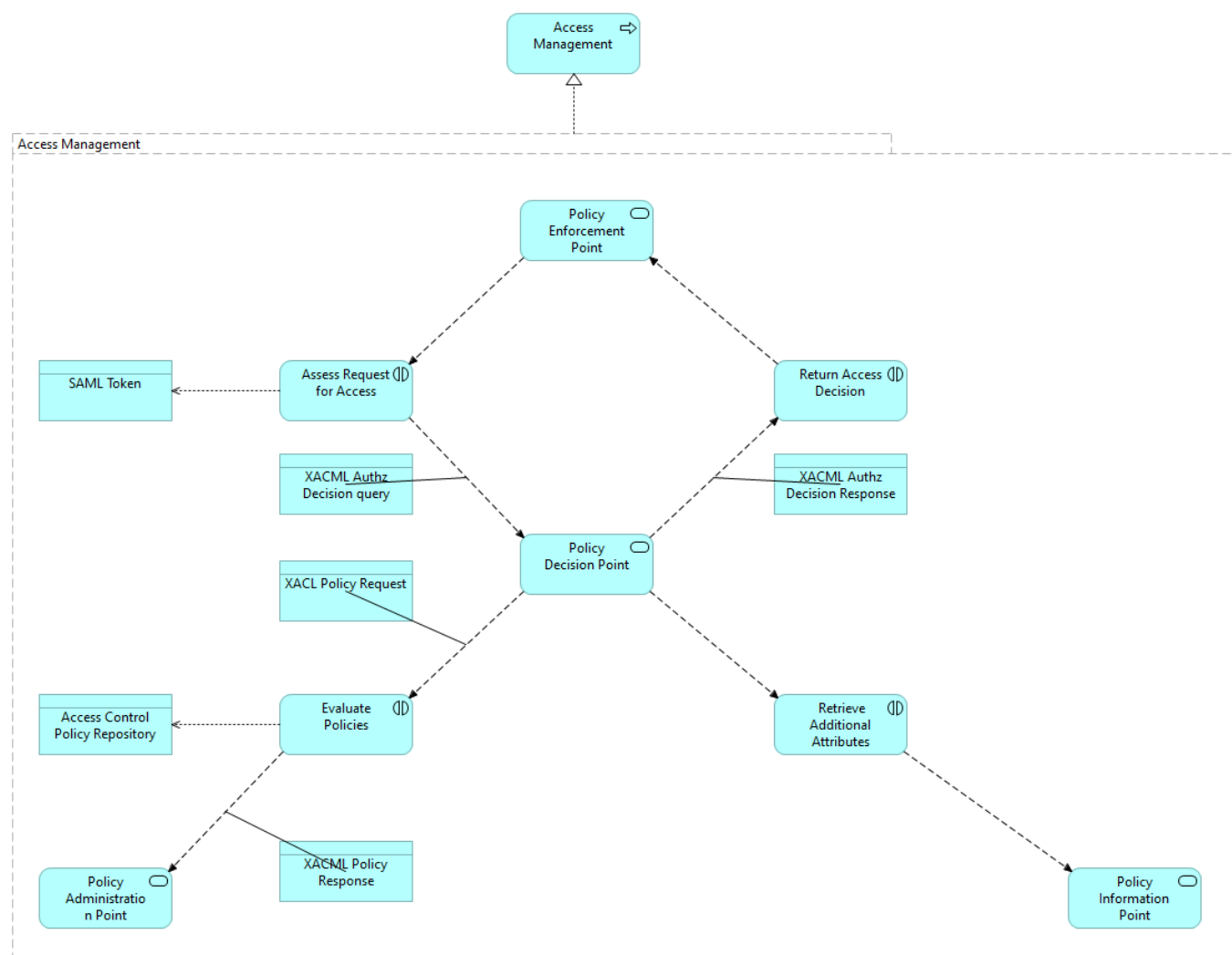


Elements

Element	Type
Authoritative Joint BSO	Data Object
BSO Linkback	Data Object
BSO Metadata	Data Object
BSO Services	Technology Service
Consuming Gateway Services	Technology Service
DataAIService	Technology Interface
Database Services	Technology Service
Gateway Services	Technology Service
Information Platform Services	Technology Service
Infrastructure Storage Services	Technology Service
JBIS Database Services	Technology Service
Joint Battlespace Information Services	Technology Service
Joint BSO	Data Object
Mediation Services	Technology Service
NCDF Data Pool	Grouping
NCDF-aligned Representative Joint BSO	Data Object
NVG Service Endpoint	Technology Interface
OpenSearch API	Technology Interface


Element	Type
OpenSearch API	Technology Interface
Operations Information Services	Technology Service
Producer Gateway Services	Technology Service
Publish BSO Metadata	Technology Function
RESTful	Technology Interface
Retrieve BSO Metadata and associated BSOs via linkbacks	Technology Function
Unwrapped BSO API	Technology Interface
Wrapped BSO API	Technology Interface

No viewpoint



Elements

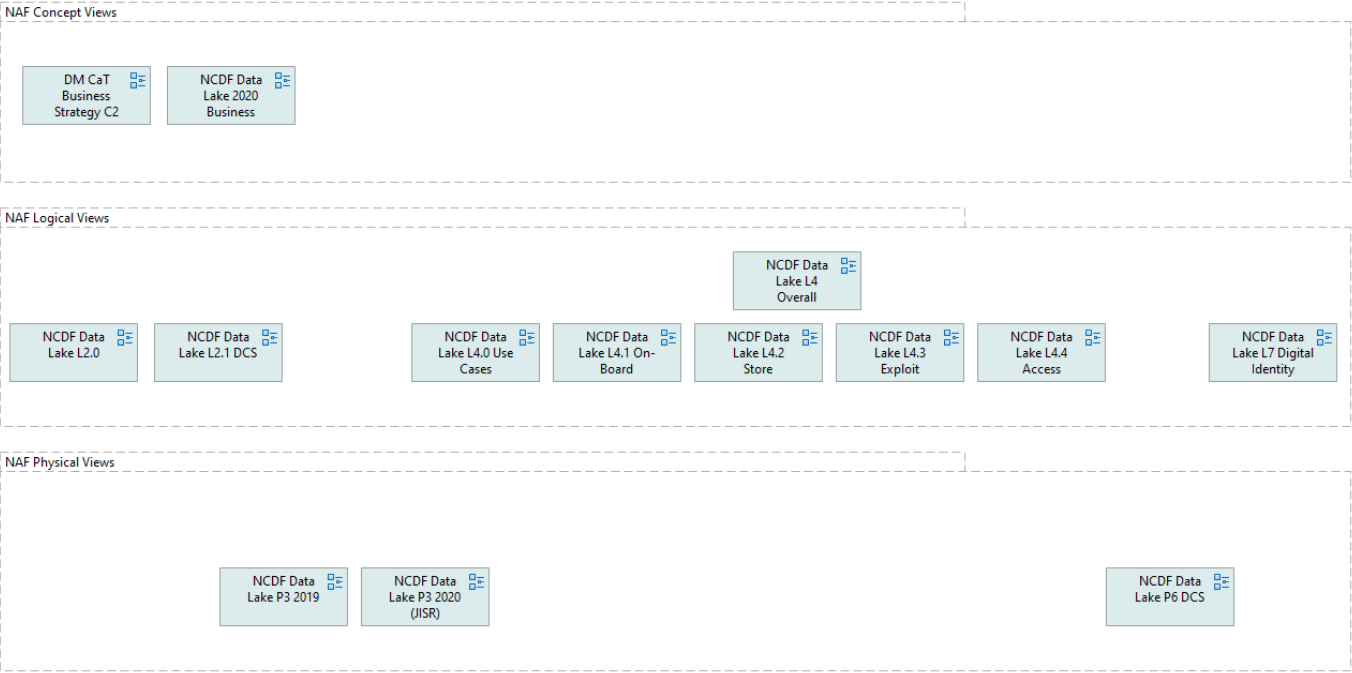
Element	Type
Access Control Policy Repository	Data Object
Access Management	Application Process
Access Management	Grouping
Assess Request for Access	Application Interaction
Evaluate Policies	Application Interaction
Policy Administration Point	Application Service
Policy Decision Point	Application Service
Policy Enforcement Point	Application Service
Policy Information Point	Application Service
Retrieve Additional Attributes	Application Interaction
Return Access Decision	Application Interaction
SAML Token	Data Object
XACL Policy Request	Data Object
XACML Authz Decision query	Data Object
XACML Authz Decision Response	Data Object



Element	Type
XACML Policy Response	Data Object

NCDF Views Overview

No viewpoint



Elements

Element	Type
NAF Concept Views	Grouping
NAF Logical Views	Grouping
NAF Physical Views	Grouping

Business Layer

Access Management

Type	Business Process
-------------	------------------

Ad-Hoc Information Consumer

Type	Business Actor
-------------	----------------

Analyse NCDF Information

Type	Business Process
-------------	------------------

Battlespace Awareness Processes

Type	Business Process
-------------	------------------

Browse NCDF Information

Type	Business Process
-------------	------------------

Control Access to Information

Type	Business Interaction
-------------	----------------------

Counter IED Processes

Type	Business Process
-------------	------------------

Create Information Product

Type	Business Process
-------------	------------------

Create NCDF Mapping

Type	Business Process
-------------	------------------

Data Management SME

Type	Business Actor
-------------	----------------

Decision Maker

Type	Business Actor
-------------	----------------

Deposit Information

Type	Business Interaction
-------------	----------------------

Device

Type	Business Actor
-------------	----------------

Digital Identity

Type	Business Object
-------------	-----------------

NIST special publication 800-63-3 (Grassi, Garcia, & Fenton, 2017) provides this definition: “Identity: An attribute or set of attributes that uniquely describe a subject within a given context”. Elsewhere, it says “[a] digital identity is the unique representation of a subject engaged in an online transaction. A digital identity is always unique in the context of a digital service, but does not necessarily need to uniquely identify the subject in all contexts.”

Windley (2008) has something similar to say: “A digital identity contains data that uniquely describes a person or thing (called the subject or entity in the language of digital identity) but also contains information about the subject’s relationships to other entities.”

Ben Ayed (2014) shows that “Thus, identity is defined as a collection of data about subject that represent attributes, preferences, and traits, so in parallel, in the digital world a person’s identity is typically referred to as their digital identity.”

We can combine the definitions and observations from these sources to obtain a workable definition:

Digital identity:

A unique representation of a subject interacting with digital services. It entails data (an identity attribute, or set thereof) which uniquely describes that subject within a given context (although it needn’t uniquely describe that subject in all contexts).

Discover Information

Type	Business Interaction
-------------	----------------------

DM CaT Tiger Team

Type	Business Actor
-------------	----------------

Entity

Type	Business Actor
-------------	----------------

EW C2 Processes

Type	Business Process
-------------	------------------

Extract Information

Type	Business Interaction
-------------	----------------------

Filter NCDF Information

Type	Business Process
-------------	------------------

Information Consumer

Type	Business Actor
-------------	----------------

Information Exchange Package Documentation

Type	Business Object
-------------	-----------------

Information Producer

Type	Business Actor
-------------	----------------

Information Product

Type	Business Object
-------------	-----------------

Job Title

Type	Business Object
-------------	-----------------

Joint C2 Processes

Type	Business Process
-------------	------------------

Joint Coordination Processes

Type	Business Process
-------------	------------------

Joint Fires Processes

Type	Business Process
-------------	------------------

Label Information Product

Type	Business Process
-------------	------------------

Make Decision

Type	Business Process
-------------	------------------

Manage NCDF Information

Type	Business Process
-------------	------------------

Name

Type	Business Object
-------------	-----------------

The definitions for Subject and for Digital identity, when taken together, support the notion that any subject can be uniquely identified, using an identity attribute, or set thereof. Note, however, that this requires another definition: that of the identity attribute. NIST special publication 800-63-3 (Grassi, Garcia, & Fenton, 2017) has this to say: "Attribute: a quality or characteristic ascribed to someone or something". That's not specific enough, but we can augment this by inserting "subject" instead of "someone or something", and add the idea of identification. The result is the following:

Identity attribute:

A quality or characteristic ascribed to a subject, and suitable to distinguish an individual subject from other subjects within a given context.

Nationality

Type	Business Object
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NCDF Administrator

Type	Business Role
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NCDF Data Lake

Type	Business Object
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NCDF Information Product

Type	Business Object
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NCDF Metadata Catalogue

Type	Business Object
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NCDF Naming and Design Rules

Type	Business Object
-------------	-----------------

NCDF Registration

Type	Business Object
-------------	-----------------

NCDF Role

Type	Business Role
-------------	---------------

a subject's identity within an identity context is closely related to that subject's interacting with the information systems within that context. And therefore that subject's identity attributes are as well. Now if we investigate the interaction between subject and information systems, then we recognize that this interaction is usually explicitly designed: the information systems serve the subject, in a way that support that subject within the identity concept. And how this serving should take form can be captured by the role that the subject is playing in their interaction with the information systems. Thus, we need a concept that can represent that role; the label could be something like "Interaction role". A definition for this concept:

Interaction role:

The responsibility that a subject has, or role that a subject plays, in the interaction with the information systems in a single identity context.

NCDF Semantic Reference Model

Type	Business Object
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NCDF Transformation Mapping

Type	Business Object
-------------	-----------------

NCDF User

Type	Business Role
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On-board Information Source

Type	Business Interaction
-------------	----------------------

Organisation

Type	Business Object
-------------	-----------------

Person

Type	Business Actor
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Planned Information Consumer

Type	Business Actor
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Provide Information Product Specification

Type	Business Process
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Recieve NCDF Information

Type	Business Process
-------------	------------------

Register NCDF Mapping

Type	Business Process
-------------	------------------

Remove NCDF Information

Type	Business Process
-------------	------------------

Search NCDF Infomration

Type	Business Process
-------------	------------------

Security Clearance

Type	Business Object
-------------	-----------------

Store NCDF Information

Type	Business Process
-------------	------------------

Subject

Type	Business Actor
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An ICT system can interact with digital services, in the form of machine-to-machine communications, which would require that system to be properly identified. Clearly, an IT system such as a web server is not a person. In the literature concerned with Identity & Access Management, this is readily recognized. Here, usually the term “Subject” is being used. A definition for Subject given in NIST special publication 800-63-3 (Grassi, Garcia, & Fenton, 2017) is: “A person, organization, device, hardware, network, software, or service.” I would like to note that in this definition, device and hardware appear to be synonyms, and a network could either be seen as a service, or as a type of device. The Subject is a concept of type Actor, but it can be specialized into Person, Entity, System or Device. All are Business actors, as all are entities capable of performing behaviour.

Subscribe to NCDF Information

Type	Business Process
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System

Type	Business Actor
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Transform Information

Type	Business Process
------	------------------

View NCDF Information

Type	Business Process
------	------------------

Application Layer

Access Control Policy Repository

Type	Data Object
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Access Management

Type	Application Process
-------------	---------------------

AI Platform

Type	Application Component
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Assess Request for Access

Type	Application Interaction
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Authoritative Joint BSO

Type	Data Object
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BSO Linkback

Type	Data Object
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BSO Metadata

Type	Data Object
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C2 Reference Data Source Applications

Type	Application Service
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Evaluate Policies

Type	Application Interaction
-------------	-------------------------

Joint Applications

Type	Application Service
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Joint BSO

Type	Data Object
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Joint Information Management Applications

Type	Application Service
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The Joint Information Management Application enables users to manage information throughout joint operations planning and execution.

NCDF-aligned Representative Joint BSO

Type	Data Object
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Operations Planning Applications

Type	Application Service
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Order and Tasking Applications

Type	Application Service
-------------	---------------------

Policy Administration Point

Type	Application Service
-------------	---------------------

Policy Decision Point

Type	Application Service
-------------	---------------------

Policy Enforcement Point

Type	Application Service
-------------	---------------------

Policy Information Point

Type	Application Service
-------------	---------------------

Retrieve Additional Attributes

Type	Application Interaction
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Return Access Decision

Type	Application Interaction
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SAML Token

Type	Data Object
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digital identities that John and Jane have at the mentioned organizations are recorded in the ICT systems in the form of “accounts”, and given what we’ve defined for digital identities as abstract concepts, the definition of the more concrete concept “account” is relatively easy:

Account:

The unique technical representation of a digital identity within an information system context, which contains at a minimum those identity attributes that are both relevant to all information systems within that context, and correspond to the represented digital identity.

When creating a model for an Account, this definition can guide us in several ways. Since the Account is a technical representation of something that we’ve modelled as a Business object, it stands to reason that Account is a Data object, and it’s related to Digital identity by means of the realization relation. And since the account must “contain” the values of the identity attributes of the Digital identity, it must be composed of a number of “Account attributes”, some of which must realize all the different (relevant) identity attributes that define the Digital identity.

Situational Awareness Applications

Type	Application Service
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STANAG Transformation Engine

Type	Application Component
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Targeting Applications

Type	Application Service
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User.GivenName

Type	Data Object
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User.JobTitle

Type	Data Object
-------------	-------------

User.Nationality

Type	Data Object
-------------	-------------

User.Organisation

Type	Data Object
-------------	-------------

User.SecurityClearance

Type	Data Object
-------------	-------------

XACL Policy Request

Type	Data Object
-------------	-------------

XACML Authz Decision query

Type	Data Object
-------------	-------------

XACML Authz Decision Response

Type	Data Object
-------------	-------------

XACML Policy Response

Type	Data Object
-------------	-------------

Technology & Physical Layer

BSE Services

Type	Technology Service
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BSO Services

Type	Technology Service
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Consuming Gateway Services

Type	Technology Service
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Crisis Response Measure Services

Type	Technology Service
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DataAIService

Type	Technology Interface
-------------	----------------------

Database Services

Type	Technology Service
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Force Generation and Activation Services

Type	Technology Service
-------------	--------------------

Gateway Services

Type	Technology Service
-------------	--------------------

Information Platform Services

Type	Technology Service
-------------	--------------------

Infrastructure Storage Services

Type	Technology Service
-------------	--------------------

JBIS Database Services

Type	Technology Service
-------------	--------------------

Joint Battlespace Information Services

Type	Technology Service
-------------	--------------------

Joint Domain Services

Type	Technology Service
-------------	--------------------

Mediation Services

Type	Technology Service
-------------	--------------------

Message Oriented Middleware Services

Type	Technology Service
-------------	--------------------

NVG Service Endpoint

Type	Technology Interface
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OpenSearch API

Type	Technology Interface
-------------	----------------------

OpenSearch API

Type	Technology Interface
-------------	----------------------

Operations Information Services

Type	Technology Service
-------------	--------------------

"new" name for Battlespace Information Services

Operations Planning Services

Type	Technology Service
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ORBAT Services

Type	Technology Service
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Overlay Services

Type	Technology Service
-------------	--------------------

Producer Gateway Services

Type	Technology Service
-------------	--------------------

Publish BSO Metadata

Type	Technology Function
-------------	---------------------

Recognized Picture Services

Type	Technology Service
-------------	--------------------

RESTful

Type	Technology Interface
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Retrieve BSO Metadata and associated BSOs via linkbacks

Type	Technology Function
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Situational Awareness Services

Type	Technology Service
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Track Management Services

Type	Technology Service
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Unwrapped BSO API

Type	Technology Interface
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Wrapped BSO API

Type	Technology Interface
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Motivation

A user in NCS, NFS, or as part of a NATO-led operation needs to be able to, as natively as possible, access the array of data provided by the various contributing nations, data sources, capabilities, communities of interest and be able to be applied by the user through consuming capabilities which help to transform the data into useful information

Type	Outcome
------	---------

Apply NCDF to develop their Info Exchange Standards

Type	Goal
------	------

Secondary Goal

Apply NCDF to develop their X-COI Info Exchange Standards

Type	Goal
------	------

Main Goal

Data Scientists

Type	Stakeholder
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DCS Canada

Type	Stakeholder
------	-------------

DEU

Type	Stakeholder
------	-------------

Enables all users of DL to access and have common understanding of the data for their own analysis; and to reuse what others have already made available

Type	Value
------	-------

Ensure DM and NCDF supports overarching Info Management Policy, Strategies, etc.

Type	Goal
------	------

Ensure NCDF is applied when designing/implementing the Data Lake concept within NATO

Type	Goal
------	------

FMN CPWG: Data Management Syndicate

Type	Stakeholder
------	-------------

Folks will want to know they can protect and administer (policy enforcement, tag&label, handling instruction, ... enforcement) their data in the NCDF space

Type	Outcome
JISR Intel	
Type	Stakeholder
NATO has an operational shortfall where it cannot handle the data it needs to operate in a conflict, so time is of the essence in developing solutions which can be fielded. Although the lake is currently an early prototype, we need to advance the effort as rapidly as feasible	
Type	Outcome
NATO Information Management Authority	
Type	Stakeholder
NCDF architecture for DLs	
Type	Requirement
Operational Domains/Functional Services	
Type	Stakeholder
Processing provided at Data Source	
Type	Goal
Require NCDF (processes? architectural artefacts? ???) be applied for managing operational data within the Federation	
Type	Goal
Require NCDF be applied for managing operational data within the Enterprise / Alliance	
Type	Goal
Secured	
Type	Requirement
Secured by Design: apply Information Exchange Framework Reference Architecture (IEF-RA) to ensure data is secured	
Type	Goal
Services implement NCDF interfaces to exchange data across domains/FSs	
Type	Goal
Services implement NCDF interfaces to exchange data within domain/FS	
Type	Goal

Shared data should be able to support operational planning and execution, which requires working at the data level—although visualization tools are important, the outputs of the lake should not be limited to these

Type	Outcome
------	---------

Tagged with Metadata

Type	Requirement
------	-------------

Technical Standards Development Bodies

Type	Stakeholder
------	-------------

Technical Standards Implementation Bodies

Type	Stakeholder
------	-------------

The ability to introduce and share disparate types of intelligence—meaning adversary order of battle data and battlespace objects with geographic positions. Please note this is different from JISR products and reports

Type	Goal
------	------

The ability to render available JISR products and reports, likely by exposing “pointers” based on provided metadata back to JISR products/reports residing in Coalition Shared Dataservers (CSDs) or other JISR storage capabilities; this is mostly likely preferable to directly sharing JISR content within the lake

Type	Goal
------	------

X-COI interoperability by design

Type	Value
------	-------

Other

Access Management

Type	Grouping
------	----------

Access Management Node

Type	Location
------	----------

Identity Context

Type	Grouping
------	----------

Identity context:

A logical grouping of information system concepts, among which a particular set of digital identities is generally recognized and their contained identity attributes are meaningful.

Information Consumption Node

Type	Location
------	----------

Information Production Node

Type	Location
------	----------

Junction

Type	Junction
------	----------

Junction

Type	Junction
------	----------

Junction

Type	Junction
------	----------

Junction

Type	Junction
------	----------

NAF Concept Views

Type	Grouping
------	----------

NAF Logical Views

Type	Grouping
------	----------

NAF Physical Views

Type	Grouping
------	----------

NCDF

Type	Grouping
------	----------

NCDF Data Lake Node

Type	Location
------	----------

NCDF Data Pool

Type	Grouping
------	----------

NCDF Design Node

Type	Location
------	----------

Relations

Access relation

Type	Access relation
Source	Make Decision
Target	NCDF Information Product

Access relation

Type	Access relation
Source	Provide Information Product Specification
Target	Information Exchange Package Documentation

Access relation

Type	Access relation
Source	On-board Information Source
Target	NCDF Semantic Reference Model

Access relation

Type	Access relation
Source	Discover Information
Target	NCDF Metadata Catalogue

Access relation

Type	Access relation
Source	Deposit Information
Target	Information Product

Access relation

Type	Access relation
Source	On-board Information Source
Target	NCDF Registration

Access relation

Type	Access relation
Source	Deposit Information
Target	NCDF Information Product

Access relation

Type	Access relation
Source	Discover Information
Target	NCDF Data Lake

Access relation

Type	Access relation
-------------	-----------------

Source	On-board Information Source
Target	NCDF Naming and Design Rules

Access relation

Type	Access relation
Source	Register NCDF Mapping
Target	NCDF Metadata Catalogue

Access relation

Type	Access relation
Source	Extract Information
Target	NCDF Information Product

Access relation

Type	Access relation
Source	Store NCDF Information
Target	NCDF Data Lake

Access relation

Type	Access relation
Source	Create NCDF Mapping
Target	NCDF Transformation Mapping

Access relation

Type	Access relation
Source	Transform Information
Target	NCDF Transformation Mapping

Aggregation relation

Type	Aggregation relation
Source	Access Management Node
Target	Discover Information

Aggregation relation

Type	Aggregation relation
Source	Information Consumption Node
Target	Discover Information

Aggregation relation

Type	Aggregation relation
Source	Information Consumption Node
Target	Extract Information

Aggregation relation

Type	Aggregation relation
Source	Information Production Node
Target	On-board Information Source

Aggregation relation

Type	Aggregation relation
Source	Access Management Node
Target	Extract Information

Aggregation relation

Type	Aggregation relation
Source	NCDF Design Node
Target	On-board Information Source

Aggregation relation

Type	Aggregation relation
Source	Access Management Node
Target	Deposit Information

Aggregation relation

Type	Aggregation relation
Source	Information Production Node
Target	Deposit Information

Assignment relation

Type	Assignment relation
Source	DM CaT Tiger Team
Target	Manage NCDF Information

Assignment relation

Type	Assignment relation
Source	Information Consumer
Target	Recieve NCDF Information

Assignment relation

Type	Assignment relation
Source	DM CaT Tiger Team
Target	Create NCDF Mapping

Assignment relation

Type	Assignment relation
Source	Information Producer
Target	Create Information Product

Assignment relation

Type	Assignment relation
Source	Information Consumer
Target	View NCDF Information

Assignment relation

Type	Assignment relation
Source	Data Management SME
Target	Create NCDF Mapping

Assignment relation

Type	Assignment relation
Source	Ad-Hoc Information Consumer
Target	Search NCDF Information

Assignment relation

Type	Assignment relation
Source	Decision Maker
Target	Analyse NCDF Information

Assignment relation

Type	Assignment relation
Source	Information Producer
Target	Provide Information Product Specification

Assignment relation

Type	Assignment relation
Source	Information Producer
Target	Label Information Product

Assignment relation

Type	Assignment relation
Source	Ad-Hoc Information Consumer
Target	Browse NCDF Information

Assignment relation

Type	Assignment relation
Source	Information Consumer
Target	Subscribe to NCDF Information

Assignment relation

Type	Assignment relation
Source	DM CaT Tiger Team

Target	Register NCDF Mapping
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Assignment relation

Type	Assignment relation
Source	Data Management SME
Target	Remove NCDF Information

Assignment relation

Type	Assignment relation
Source	Decision Maker
Target	Make Decision

Assignment relation

Type	Assignment relation
Source	Data Management SME
Target	Manage NCDF Information

Assignment relation

Type	Assignment relation
Source	Information Consumer
Target	Filter NCDF Information

Association relation

Type	Association relation
Source	Access Management Node
Target	Filter NCDF Information

Association relation

Type	Association relation
Source	Access Management Node
Target	Transform Information

Association relation

Type	Association relation
Source	Access Management Node
Target	Manage NCDF Information

Association relation

Type	Association relation
Source	Access Management Node
Target	Remove NCDF Information

Association relation

Type	Association relation
-------------	----------------------

Source	Information Consumption Node
Target	View NCDF Information

Association relation

Type	Association relation
Source	Access Management Node
Target	Browse NCDF Information

Association relation

Type	Association relation
Source	Access Management Node
Target	Store NCDF Information

Association relation

Type	Association relation
Source	Information Production Node
Target	Label Information Product

Association relation

Type	Association relation
Source	Information Production Node
Target	Create Information Product

Association relation

Type	Association relation
Source	Access Management Node
Target	Search NCDF Infomration

Association relation

Type	Association relation
Source	NCDF Design Node
Target	Register NCDF Mapping

Association relation

Type	Association relation
Source	Information Production Node
Target	Provide Information Product Specification

Association relation

Type	Association relation
Source	NCDF Design Node
Target	Create NCDF Mapping

Association relation

Type	Association relation
Source	Information Consumption Node
Target	Subscribe to NCDF Information

Association relation

Type	Association relation
Source	Information Consumption Node
Target	Recieve NCDF Information

Association relation

Type	Association relation
Source	Data Scientists
	Ensure NCDF is applied when designing/implementing the Data Lake concept within NATO

Association relation

Type	Association relation
Source	Operational Domains/Functional Services
	Services implement NCDF interfaces to exchange data across domains/FSs

Association relation

Type	Association relation
Source	Technical Standards Development Bodies
Target	Apply NCDF to develop their Info Exchange Standards

Association relation

Type	Association relation
Source	FMN CPWG: Data Management Syndicate
	Require NCDF (processes? architectural artefacts? ???) be applied for managing operational data within the Federation

Association relation

Type	Association relation
Source	JISR Intel
	The ability to introduce and share disparate types of intelligence—meaning adversary order of battle data and battlespace objects with geographic positions. Please note this is different from JISR products and reports

Association relation

Type	Association relation
Source	Secured by Design: apply Information Exchange Framework Reference Architecture (IEF-RA) to ensure data is secured
	Folks will want to know they can protects and administer (policy enforcement, tag&label, handling instruction, ... enforcement) their

data in the NCDF space

Association relation

Type	Association relation
Source	Operational Domains/Functional Services
	Services implement NCDF interfaces to exchange data within domain/FS

Association relation

Type	Association relation
Source	JISR Intel
	NATO has an operational shortfall where it cannot handle the data it needs to operate in a conflict, so time is of the essence in developing solutions which can be fielded. Although the lake is currently an early prototype, we need to advance the effort as rapidly as feasible

Association relation

Type	Association relation
Source	Ensure NCDF is applied when designing/implementing the Data Lake concept within NATO
	Enables all users of DL to access and have common understanding of the data for their own analysis; and to reuse what others have already made available

Association relation

Type	Association relation
Source	JISR Intel
	Shared data should be able to support operational planning and execution, which requires working at the data level—although visualization tools are important, the outputs of the lake should not be limited to these

Association relation

Type	Association relation
Source	NATO Information Management Authority
	Require NCDF be applied for managing operational data within the Enterprise / Alliance

Association relation

Type	Association relation
Source	Technical Standards Development Bodies
Target	Apply NCDF to develop their X-COI Info Exchange Standards

Association relation

Type	Association relation
Source	JISR Intel
	The ability to render available JISR products and reports, likely by exposing “pointers” based on provided metadata back to JISR

products/reports residing in Coalition Shared Dataservers (CSDs) or other JISR storage capabilities; this is mostly likely preferable to directly sharing JISR content within the lake

Association relation

Type	Association relation
Source	JISR Intel A user in NCS, NFS, or as part of a NATO-led operation needs to be able to, as natively as possible, access the array of data provided by the various contributing nations, data sources, capabilities, communities of interest and be able to be applied by the user through consuming capabilities which help to transform the data into useful information

Association relation

Type	Association relation
Source	NATO Information Management Authority Ensure DM and NCDF supports overarching Info Management Policy, Strategies, etc.

Association relation

Type	Association relation
Source	DCS Canada Secured by Design: apply Information Exchange Framework Reference Architecture (IEF-RA) to ensure data is secured

Association relation

Type	Association relation
Source	BSO Metadata
Target	null

Association relation

Type	Association relation
Source	Joint BSO
Target	BSO Metadata

Association relation

Type	Association relation
Source	NCDF-aligned Representative Joint BSO
Target	null

Association relation

Type	Association relation
Source	Joint Battlespace Information Services
Target	Authoritative Joint BSO

Association relation

Type	Association relation
-------------	----------------------

Source	NVG Service Endpoint
Target	Consuming Gateway Services

Composition relation

Type	Composition relation
Source	Recieve NCDF Information
Target	Extract Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Browse NCDF Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Create NCDF Mapping

Composition relation

Type	Composition relation
Source	NCDF
Target	Filter NCDF Information

Composition relation

Type	Composition relation
Source	View NCDF Information
Target	Extract Information

Composition relation

Type	Composition relation
Source	Transform Information
Target	Deposit Information

Composition relation

Type	Composition relation
Source	Label Information Product
Target	Deposit Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Create Information Product

Composition relation

Type	Composition relation
Source	Subscribe to NCDF Information
Target	Extract Information

Composition relation

Type	Composition relation
Source	NCDF
Target	View NCDF Information

Composition relation

Type	Composition relation
Source	Create Information Product
Target	Deposit Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Transform Information

Composition relation

Type	Composition relation
Source	Create NCDF Mapping
Target	On-board Information Source

Composition relation

Type	Composition relation
Source	NCDF
Target	Provide Information Product Specification

Composition relation

Type	Composition relation
Source	Browse NCDF Information
Target	Discover Information

Composition relation

Type	Composition relation
Source	Search NCDF Information
Target	Discover Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Receive NCDF Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Store NCDF Information

Composition relation

Type	Composition relation
Source	Register NCDF Mapping
Target	On-board Information Source

Composition relation

Type	Composition relation
Source	NCDF
Target	Manage NCDF Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Subscribe to NCDF Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Label Information Product

Composition relation

Type	Composition relation
Source	NCDF
Target	Register NCDF Mapping

Composition relation

Type	Composition relation
Source	Filter NCDF Information
Target	Discover Information

Composition relation

Type	Composition relation
Source	NCDF
Target	Search NCDF Information

Composition relation

Type	Composition relation
Source	NCDF Data Lake

Target	NCDF Information Product
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Composition relation

Type	Composition relation
Source	NCDF
Target	Remove NCDF Information

Composition relation

Type	Composition relation
Source	NCDF Data Pool
Target	RESTful

Composition relation

Type	Composition relation
Source	NCDF Data Pool
Target	OpenSearch API

Composition relation

Type	Composition relation
Source	NCDF Data Pool
Target	Operations Information Services

Composition relation

Type	Composition relation
Source	NCDF Data Pool
Target	Publish BSO Metadata

Composition relation

Type	Composition relation
Source	NCDF Data Pool
Target	Unwrapped BSO API

Composition relation

Type	Composition relation
Source	NCDF Data Pool
Target	Infrastructure Storage Services

Composition relation

Type	Composition relation
Source	NCDF Data Pool
Target	Wrapped BSO API

Composition relation

Type	Composition relation
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Source	NCDF Data Pool
Target	Database Services

Composition relation

Type	Composition relation
Source	Joint Applications
Target	Order and Tasking Applications

Composition relation

Type	Composition relation
Source	Joint Applications
Target	Operations Planning Applications

Composition relation

Type	Composition relation
Source	BSO Metadata
Target	BSO Linkback

Composition relation

Type	Composition relation
Source	Joint Applications
Target	C2 Reference Data Source Applications

Composition relation

Type	Composition relation
Source	Joint Applications
Target	Joint Information Management Applications

Composition relation

Type	Composition relation
Source	Joint Applications
Target	Targeting Applications

Composition relation

Type	Composition relation
Source	Joint Applications
Target	Situational Awareness Applications

Composition relation

Type	Composition relation
Source	Joint C2 Processes
Target	Counter IED Processes

Composition relation

Type	Composition relation
Source	Joint C2 Processes
Target	Joint Fires Processes

Composition relation

Type	Composition relation
Source	Joint C2 Processes
Target	Joint Coordination Processes

Composition relation

Type	Composition relation
Source	Joint C2 Processes
Target	Battlespace Awareness Processes

Composition relation

Type	Composition relation
Source	Joint C2 Processes
Target	EW C2 Processes

Composition relation

Type	Composition relation
Source	Operations Information Services
Target	Track Management Services

Composition relation

Type	Composition relation
Source	Operations Planning Services
Target	ORBAT Services

Composition relation

Type	Composition relation
Source	Operations Information Services
Target	BSO Services

Composition relation

Type	Composition relation
Source	Joint Domain Services
Target	Force Generation and Activation Services

Composition relation

Type	Composition relation
Source	Situational Awareness Services
Target	Overlay Services

Composition relation

Type	Composition relation
Source	Situational Awareness Services
Target	Recognized Picture Services

Composition relation

Type	Composition relation
Source	Operations Information Services
Target	BSE Services

Composition relation

Type	Composition relation
Source	Joint Domain Services
Target	Crisis Response Measure Services

Flow relation

Type	Flow relation
Source	Junction
Target	Recieve NCDF Information

Flow relation

Type	Flow relation
Source	Filter NCDF Information
Target	Junction

Flow relation

Type	Flow relation
Source	Junction
Target	Analyse NCDF Information

Flow relation

Type	Flow relation
Source	Junction
Target	View NCDF Information

Flow relation

Type	Flow relation
Source	Junction
Target	Junction

Flow relation

Type	Flow relation
Source	View NCDF Information

Target	Junction
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Flow relation

Type	Flow relation
Source	Browse NCDF Information
Target	Junction

Flow relation

Type	Flow relation
Source	Subscribe to NCDF Information
Target	Junction

Flow relation

Type	Flow relation
Source	Analyse NCDF Information
Target	Make Decision

Flow relation

Type	Flow relation
Source	Recieve NCDF Information
Target	Junction

Flow relation

Type	Flow relation
Source	Search NCDF Infomration
Target	Junction

Flow relation

Type	Flow relation
Source	Provide Information Product Specification
Target	Create NCDF Mapping

Flow relation

Type	Flow relation
Source	Junction
Target	Subscribe to NCDF Information

Flow relation

Type	Flow relation
Source	BSO Services
Target	Infrastructure Storage Services

Flow relation

Type	Flow relation
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Source	Gateway Services
Target	Database Services

Influence relation

Type	Influence relation
Source	Apply NCDF to develop their Info Exchange Standards
Target	X-COI interoperability by design

Serving relation

Type	Serving relation
Source	AI Platform
Target	Label Information Product

Serving relation

Type	Serving relation
Source	STANAG Transformation Engine
Target	Transform Information

Serving relation

Type	Serving relation
Source	AI Platform
Target	Decision Maker

Serving relation

Type	Serving relation
Source	Joint Applications
Target	Joint C2 Processes

Serving relation

Type	Serving relation
Source	Joint Battlespace Information Services
Target	Joint Information Management Applications

Serving relation

Type	Serving relation
Source	Retrieve BSO Metadata and associated BSOs via linkbacks
Target	Consuming Gateway Services

Serving relation

Type	Serving relation
Source	Situational Awareness Services
Target	Joint Battlespace Information Services

Serving relation

Type	Serving relation
Source	Joint Battlespace Information Services
Target	Joint Domain Services

Serving relation

Type	Serving relation
Source	Joint Domain Services
Target	Joint Applications

Serving relation

Type	Serving relation
Source	Operations Planning Services
Target	Joint Battlespace Information Services

Serving relation

Type	Serving relation
Source	Operations Information Services
Target	Situational Awareness Services

Serving relation

Type	Serving relation
Source	Joint Battlespace Information Services
Target	Joint Domain Services

Serving relation

Type	Serving relation
Source	Publish BSO Metadata
Target	Producer Gateway Services

Serving relation

Type	Serving relation
Source	Operations Information Services
Target	Joint Battlespace Information Services

Serving relation

Type	Serving relation
Source	Operations Information Services
Target	Operations Planning Services

Serving relation

Type	Serving relation
Source	RESTful
Target	Database Services

Serving relation

Type	Serving relation
Source	BSO Services
Target	Gateway Services

Specialization relation

Type	Specialization relation
Source	Planned Information Consumer
Target	Information Consumer

Specialization relation

Type	Specialization relation
Source	Decision Maker
Target	Information Consumer

Specialization relation

Type	Specialization relation
Source	Ad-Hoc Information Consumer
Target	Information Consumer

Specialization relation

Type	Specialization relation
Source	Operational Domains/Functional Services
Target	Technical Standards Implementation Bodies

Specialization relation

Type	Specialization relation
Source	NCDF-aligned Representative Joint BSO
Target	Joint BSO

Specialization relation

Type	Specialization relation
Source	Authoritative Joint BSO
Target	Joint BSO

Specialization relation

Type	Specialization relation
Source	Gateway Services
Target	Information Platform Services

Specialization relation

Type	Specialization relation
Source	Consuming Gateway Services

Target	Gateway Services
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Specialization relation

Type	Specialization relation
Source	Gateway Services
Target	Mediation Services

Specialization relation

Type	Specialization relation
Source	Producer Gateway Services
Target	Gateway Services

Triggering relation

Type	Triggering relation
Source	Store NCDF Information
Target	Manage NCDF Information

Triggering relation

Type	Triggering relation
Source	Junction
Target	Remove NCDF Information

Triggering relation

Type	Triggering relation
Source	Junction
Target	Store NCDF Information

Triggering relation

Type	Triggering relation
Source	Transform Information
Target	Store NCDF Information

Triggering relation

Type	Triggering relation
Source	Create NCDF Mapping
Target	Register NCDF Mapping

Triggering relation

Type	Triggering relation
Source	Create Information Product
Target	Label Information Product

Triggering relation

Type	Triggering relation
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Source	Manage NCDF Information
Target	Junction

Triggering relation

Type	Triggering relation
Source	Label Information Product
Target	Transform Information

Specialization relation

Type	Specialization relation
Source	Person
Target	Subject

Specialization relation

Type	Specialization relation
Source	Entity
Target	Subject

Specialization relation

Type	Specialization relation
Source	System
Target	Subject

Specialization relation

Type	Specialization relation
Source	Device
Target	Subject

Composition relation

Type	Composition relation
Source	Digital Identity
Target	Name

Composition relation

Type	Composition relation
Source	SAML Token
Target	User.GivenName

Realization relation

Type	Realization relation
Source	SAML Token
Target	Digital Identity

Realization relation

Type	Realization relation
Source	User.GivenName
Target	Name

Access relation

Type	Access relation
Source	NCDF Role
Target	Digital Identity

Assignment relation

Type	Assignment relation
Source	Subject
Target	NCDF Role

Access relation

Type	Access relation
Source	Subject
Target	Digital Identity

Composition relation

Type	Composition relation
Source	Identity Context
Target	SAML Token

Composition relation

Type	Composition relation
Source	Identity Context
Target	Name

Composition relation

Type	Composition relation
Source	Identity Context
Target	Digital Identity

Composition relation

Type	Composition relation
Source	Identity Context
Target	User.GivenName

Composition relation

Type	Composition relation
Source	Identity Context
Target	NCDF Role

Composition relation

Type	Composition relation
Source	NCDF Role
Target	NCDF Administrator

Composition relation

Type	Composition relation
Source	NCDF Role
Target	NCDF User

Composition relation

Type	Composition relation
Source	Digital Identity
Target	Security Clearance

Composition relation

Type	Composition relation
Source	Digital Identity
Target	Nationality

Composition relation

Type	Composition relation
Source	Digital Identity
Target	Organisation

Composition relation

Type	Composition relation
Source	Digital Identity
Target	Job Title

Composition relation

Type	Composition relation
Source	SAML Token
Target	User.SecurityClearance

Composition relation

Type	Composition relation
Source	SAML Token
Target	User.Nationality

Composition relation

Type	Composition relation
Source	SAML Token

Target	User.Organisation
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Composition relation

Type	Composition relation
Source	SAML Token
Target	User.JobTitle

Aggregation relation

Type	Aggregation relation
Source	Access Management Node
Target	Control Access to Information

Aggregation relation

Type	Aggregation relation
Source	NCDF Data Lake Node
Target	Control Access to Information

Composition relation

Type	Composition relation
Source	Access Management
Target	Control Access to Information

Association relation

Type	Association relation
Source	Access Management Node
Target	Access Management

Realization relation

Type	Realization relation
Source	Access Management
Target	Access Management

Flow relation

Type	Flow relation
Source	Evaluate Policies
Target	Policy Administration Point

Flow relation

Type	Flow relation
Source	Policy Decision Point
Target	Evaluate Policies

Flow relation

Type	Flow relation
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Source	Policy Decision Point
Target	Retrieve Additional Attributes

Flow relation

Type	Flow relation
Source	Retrieve Additional Attributes
Target	Policy Information Point

Flow relation

Type	Flow relation
Source	Policy Enforcement Point
Target	Assess Request for Access

Flow relation

Type	Flow relation
Source	Assess Request for Access
Target	Policy Decision Point

Flow relation

Type	Flow relation
Source	Policy Decision Point
Target	Return Access Decision

Flow relation

Type	Flow relation
Source	Return Access Decision
Target	Policy Enforcement Point

Access relation

Type	Access relation
Source	Assess Request for Access
Target	SAML Token

Composition relation

Type	Composition relation
Source	Access Management
Target	Policy Enforcement Point

Composition relation

Type	Composition relation
Source	Access Management
Target	Retrieve Additional Attributes

Composition relation

Type	Composition relation
Source	Access Management
Target	Return Access Decision

Composition relation

Type	Composition relation
Source	Access Management
Target	Assess Request for Access

Composition relation

Type	Composition relation
Source	Access Management
Target	Policy Information Point

Composition relation

Type	Composition relation
Source	Access Management
Target	Evaluate Policies

Composition relation

Type	Composition relation
Source	Access Management
Target	SAML Token

Composition relation

Type	Composition relation
Source	Access Management
Target	Policy Decision Point

Composition relation

Type	Composition relation
Source	Access Management
Target	Policy Administration Point

Realization relation

Type	Realization relation
Source	Access Management
Target	Access Management

Composition relation

Type	Composition relation
Source	Access Management
Target	Access Control Policy Repository

Access relation

Type	Access relation
Source	Evaluate Policies
Target	Access Control Policy Repository

Composition relation

Type	Composition relation
Source	Access Management
Target	XACL Policy Request

Association relation

Type	Association relation
Source	XACL Policy Request
Target	null

Composition relation

Type	Composition relation
Source	Access Management
Target	XACML Policy Response

Association relation

Type	Association relation
Source	XACML Policy Response
Target	null

Composition relation

Type	Composition relation
Source	Access Management
Target	XACML Authz Decision query

Association relation

Type	Association relation
Source	XACML Authz Decision query
Target	null

Composition relation

Type	Composition relation
Source	Access Management
Target	XACML Authz Decision Response

Association relation

Type	Association relation
Source	XACML Authz Decision Response

Target	null
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