tmforum

TM Forum Specification

TMF699 Sales Management API REST Specification

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Introduction

The following document is the specification of the REST API for Sales Management. It includes the model definition as well as all available operations.
This API provides interfaces for Sales Lead, Sales Opportunity and the other management capabilities to support the sales activities to build relationship with the prospect customer who could be a person or organization that has an interest in the goods and/or services and possibly become the actual customers with one or more subscriptions.

The Lead corresponds to the nominal result of an interaction involving a prospective customer towards one of offers or services. It is the first stage (S) of the SPANCO process.
A prospect could have expressed a commercial interest, or a commercial interest has been detected from his behavior analysis. The Lead Management function enables to collect, evaluate and attribute the leads to the appropriate sales representatives. The lead is an interest concerning an offer family or a product line, or expressed literally during an interaction, possibly further to a marketing campaign, and it must be handled and specified to become an opportunity or an order.
In a nominal way, once the interest towards offers or services is confirmed and the prospective customer clearly identified, then an Opportunity is created. Some sales activities are made by sales team on this opportunity (calls, emails, meetings, quotes, …) to try to turn it into a sale.

SAMPLE USE CASES

Use case 1: A suspect shows interest in a commercial link

| website Login | Commercial link selection | Lead generation |

Use case 2: A suspect asks for information in a trade show

| Prospect shows interest | The prospect gives his IDs | Lead is generated |
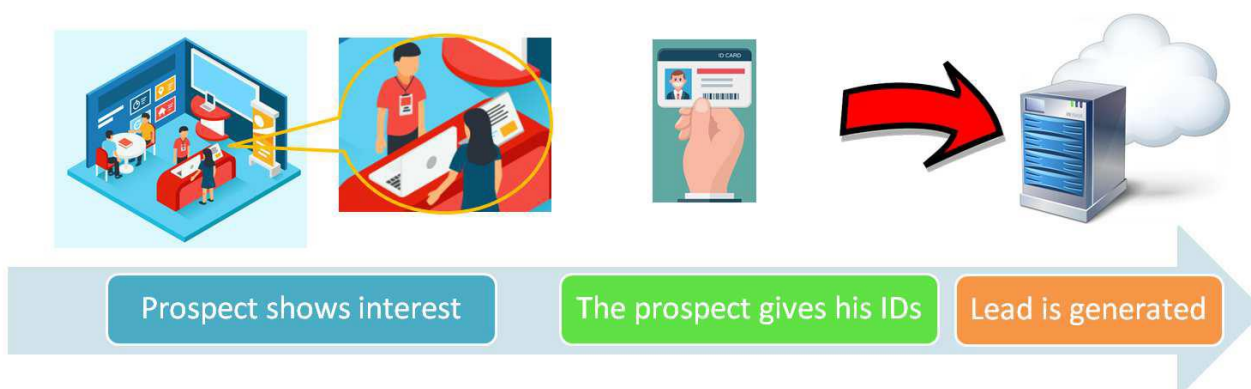
Use case 3: A suspect is the target of a marketing mailing campaign

| E-mail marketing campaign | The prospect cliks on a link or answers the email | Lead is generated |
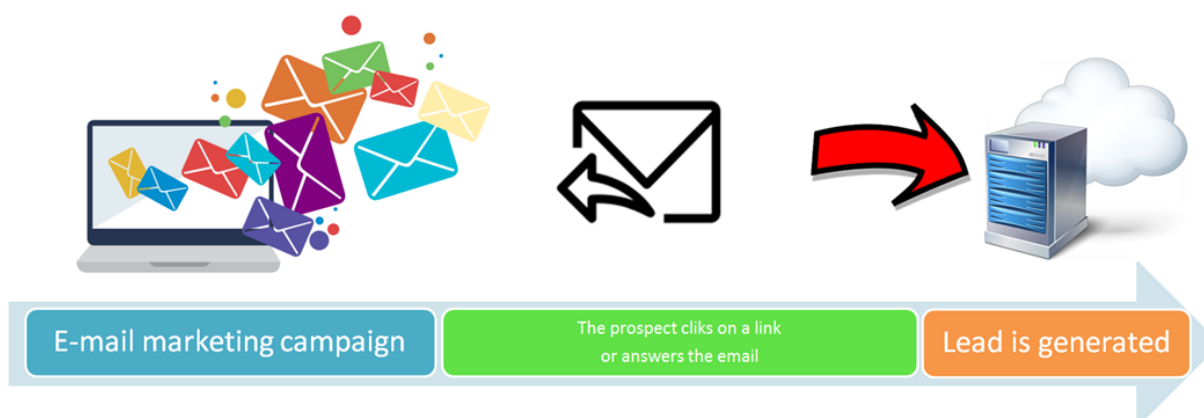
Once the SalesLead is generated, the interest of the prospect (commonly named suspect at the SalesLead level) can be analyzed by marketing and/or sales team.

If the SalesLead makes sense and is worth working on it for sales and marketing teams, it can be qualified into an SalesOpportunity. Once this opportunity is generated, some sales actions (mails, calls, …) can be performed, to turn this opportunity into a sale.

Support of polymorphism and extension patterns

Support of polymorphic collections and types and schema based extension is provided by means of a list of generic meta-attributes that we describe below. Polymorphism in collections occurs when entities inherit from base entities, for instance a CustomerInterest and B2BInterest, inherit properties from the abstract SalesLead entity.

Generic support of polymorphism and pattern extensions is described in the TMF API Guidelines v3.0 Part 2 document.

The @type attribute provides a way to represent the actual class type of an entity. For example, within a list of SalesLead instances some may be instances of CustomerInterest where other could be instances of B2BInterest. The @type gives this information. All resources and sub-resources of this API have a @type attributes that can be provided when this is useful.

The @referredType can be used within reference entities (like for instance a SalesLeadRef object) to explicitly denote the actual entity type of the referred class. Notice that in reference entities the @type, when used, denotes the class type of the reference itself, such as CustomerInterestRef or B2BInterestRef, and not the class type of the referred object. However since reference classes are rarely sub-classed, @type is generally not useful in reference objects.

The @schemaLocation property can be used in resources to allow specifying user-defined properties of an Entity or to specify the expected *characteristics* of an entity.

The @baseType attribute gives a way to provide explicitly the base of class of a given resource that has been extended.

RESOURCE MODEL

Managed Entity and Task Resource Models

Sales Lead resource

A Sales Lead is the identification of a person or organization that has an interest in the goods and/or services provided in the prospect of them becoming Customers with one or more Subscriptions.

Resource model
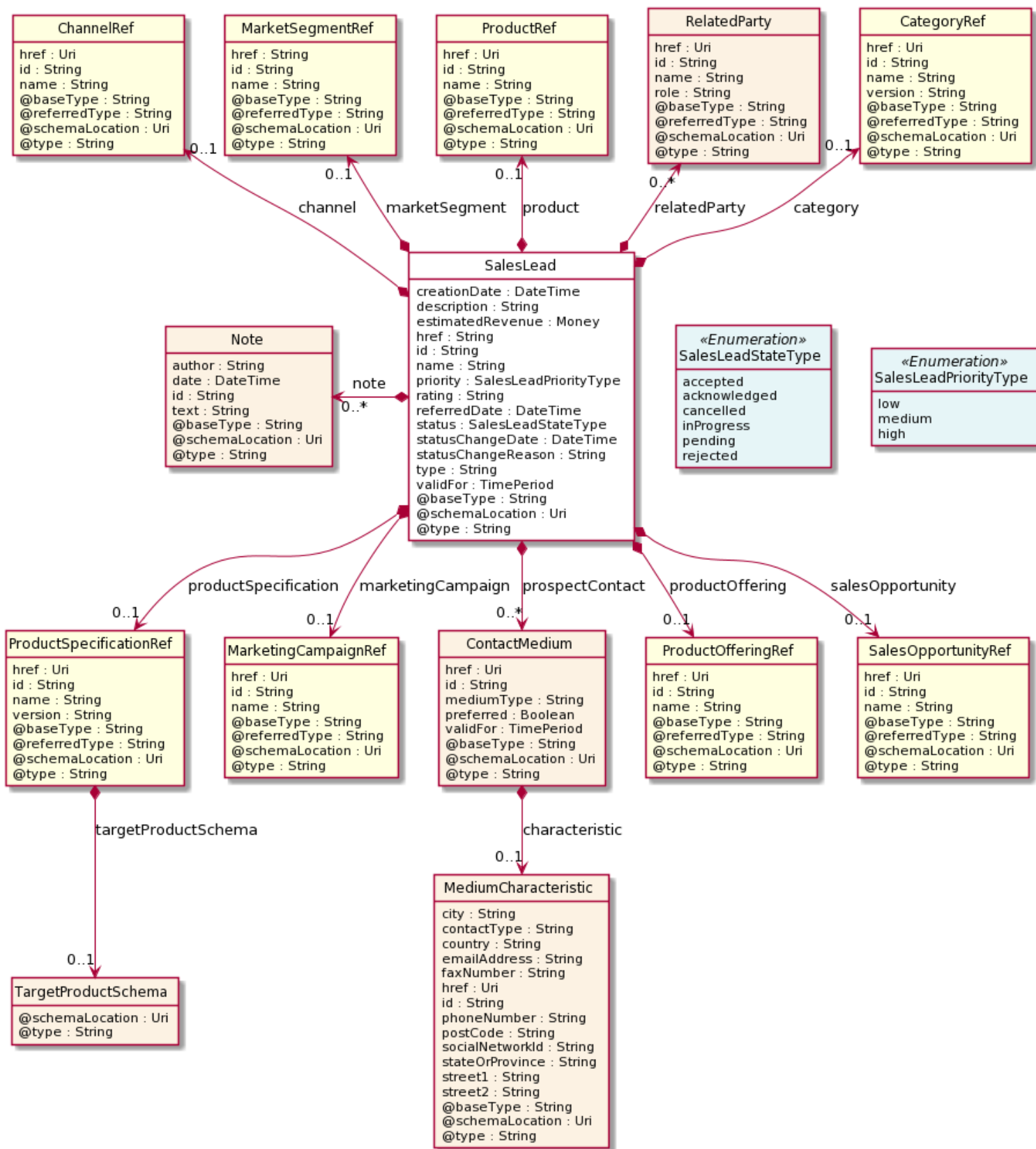
Lifecycle
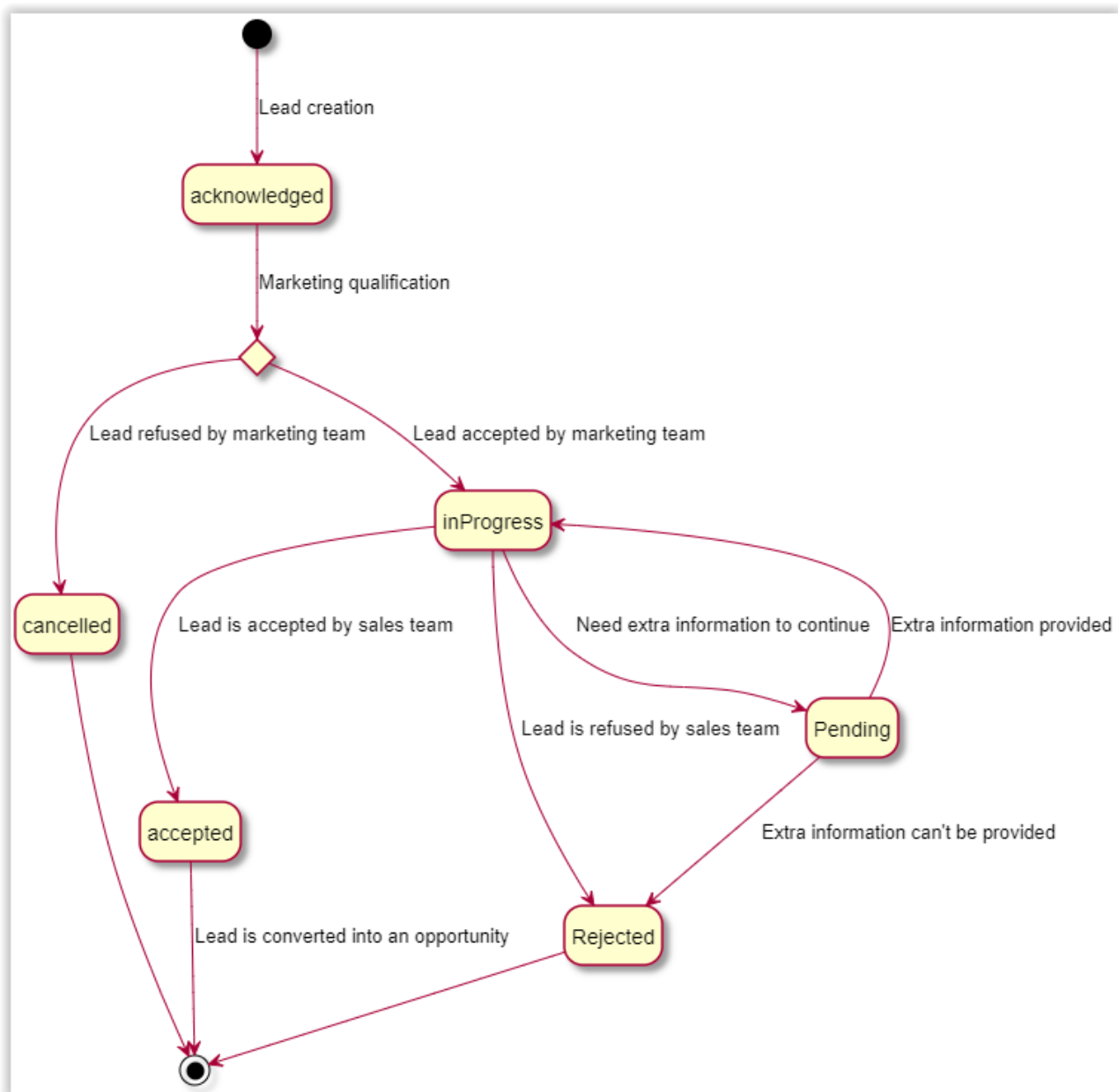
Field descriptions

SalesLead fields

href	A string. Reference of the salesLead.
id	A string. Unique identifier of the salesLead.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.

@type	A string. When sub-classing, this defines the sub-class Extensible name.
category	A category reference (CategoryRef). The category for grouping recommendations.
channel	A channel reference (ChannelRef). The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..
creationDate	A date time (DateTime). Date and time of the salesLead creation.
description	A string. Unique description of the salesLead.
estimatedRevenue	A money (Money). Estimation of the revenue if the salesLead turns into a sale.
href	A string. Reference of the salesLead.
id	A string. Unique identifier of the salesLead.
marketSegment	A market segment reference (MarketSegmentRef). A Market Segment is a grouping of Parties, GeographicAreas, SalesChannels, and so forth. MarketSegments are the target of MarketingCampaigns, ProductOfferings, ProductPromotions, ProductPlacements, and ProductPrograms from both internal and external (Competitors, and other Providers) perspective.
marketingCampaign	A marketing campaign reference (MarketingCampaignRef). Campaign represents the carrier-initiated marketing activity which aims at the better recognition about its brand and offerings by the market.
name	A string. Name of the salesLead.
note	A list of notes (Note [*]). Extra information about a given entity.
priority	A sales lead priority type (SalesLeadPriorityType). Urgency of working this salesOpportunity.
product	A product reference (ProductRef).
productOffering	A product offering reference (ProductOfferingRef). A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.
productSpecification	A product specification reference (ProductSpecificationRef). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.
prospectContact	A list of contact mediums (ContactMedium [*]). Indicates the contact medium that could be used to contact the party.
rating	A string. Identifies the potential of a salesLead for becoming a sale. Usual ratings for

qualified leads are: hot, warm, cold.

referredDate	A date time (DateTime). Date when the prospect information was received (for example, from a trade show).
relatedParty	A list of related parties (RelatedParty [*]). Related Entity reference. A related party defines party or party role linked to a specific entity.
salesOpportunity	A sales opportunity reference (SalesOpportunityRef). Sales Opportunity is an 'opportunity' to generate revenue from a Sales Account or Sales Lead. Opportunities are the pending deals that need to be tracked and on which Sales Team plans and executes Sales Activities (Events and Tasks).
status	A sales lead state type (SalesLeadStateType). Valid values for the lifecycle state of a salesLead resource.
statusChangeDate	A date time (DateTime). Date and time of the last update.
statusChangeReason	A string. Reason why the status has changed.
type	A string. Indicates the nature of the salesLead.
validFor	A time period. The period for which the salesLead is valid.

ContactMedium sub-resource

Indicates the contact medium that could be used to contact the party.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
characteristic	A medium characteristic (MediumCharacteristic). Any additional characteristic(s) of this contact medium.
mediumType	A string. Type of the contact medium, such as: email address, telephone number, postal address.
preferred	A boolean. If true, indicates that is the preferred contact medium.
validFor	A time period. The time period that the contact medium is valid for.

MediumCharacteristic sub-resource

Describes the contact medium characteristics that could be used to contact a party (an individual or an organization).

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
city	A string. The city.
contactType	A string. The type of contact, for example: phone number such as mobile, fixed home, fixed office. postal address such as shipping instalation….
country	A string. The country.
emailAddress	A string. Full email address in standard format.
faxNumber	A string. The fax number of the contact.
phoneNumber	A string. The primary phone number of the contact.
postCode	A string. Postcode.
socialNetworkId	A string. Identifier as a member of a social network.
stateOrProvince	A string. State or province.
street1	A string. Describes the street.
street2	A string. Complementary street description.

Money sub-resource

A base / value business entity used to represent money.

unit	A string. Currency (ISO4217 norm uses 3 letters to define the currency).
value	A float. A signed floating point number, the meaning of the sign is according to the context of the API that uses this Data type.

Note sub-resource

Extra information about a given entity.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
author	A string. Author of the note.
date	A date time (DateTime). Date of the note.
id	A string. Identifier of the note within its containing entity.
text	A string. Text of the note.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

TargetProductSchema sub-resource

The reference object to the schema and type of target product which is described by product specification.

@schemaLocation	An uri (Uri). This field provides a link to the schema describing the target product.
@type	A string. Class type of the target product.

CategoryRef relationship

The category for grouping recommendations.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
version	A string. Category version.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

MarketSegmentRef relationship

provides references to the corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.

href	A string. Reference of the market segment.
id	A string. Unique identifier of the market segment.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. (Class) type of the referred market segment.

name   A string. Name of the market segment.

MarketingCampaignRef relationship

MarketingCampaign reference. Marketing campaign represents the carrier-initiated marketing activity which aims at the better recognition about its brand and offerings by the market.

@referredType   A string. The actual type of the target instance when needed for disambiguation.

name   A string. Name of the related entity.

href   An uri (Uri). Hyperlink reference.

id   A string. unique identifier.

@baseType   A string. When sub-classing, this defines the super-class.

@schemaLocation   An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.

@type   A string. When sub-classing, this defines the sub-class Extensible name.

ProductOfferingRef relationship

ProductOffering reference. A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

@referredType   A string. The actual type of the target instance when needed for disambiguation.

name   A string. Name of the related entity.

href   An uri (Uri). Hyperlink reference.

id   A string. unique identifier.

@baseType   A string. When sub-classing, this defines the super-class.

@schemaLocation   An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.

@type   A string. When sub-classing, this defines the sub-class Extensible name.

ProductRef relationship

@referredType   A string. The actual type of the target instance when needed for disambiguation.

name   A string. Name of the related entity.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

ProductSpecificationRef relationship

Product specification reference: A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
targetProductSchema	A target product schema (TargetProductSchema). A target product schema reference. The reference object to the schema and type of target product which is described by product specification.
version	A string. Version of the product specification.

SalesOpportunityRef relationship

Sales Opportunity is an 'opportunity' to generate revenue from a Sales Account or Sales Lead. Opportunities are the pending deals that need to be tracked and on which Sales Team plans and executes Sales Activities (Events and Tasks). .

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.

@baseType   A string. When sub-classing, this defines the super-class.

@schemaLocation   An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.

@type   A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

We provide below the json representation of an example of a 'SalesLead' resource object

```
{
    "id": "123",
    "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
    "@type": "SalesLead",
    "creationDate": "2019-01-19T12:27:59.123Z",
    "description": "salesLead generated by a clic on a commercial link",
    "name": "Campaign 17 salesLead 7852",
    "priority": "medium",
    "rating": "hot",
    "referredDate": "2019-01-19T12:27:59.123Z",
    "status": "inProgress",
    "statusChangeDate": "2019-01-25T15:53:29.961Z",
    "statusChangeReason": "Lead accepted by marketing team",
    "type": "advertisingLink",
    "category": {
        "id": "15",
        "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/category/15",
        "name": "PersonnalBankAccount"
    },
    "channel": {
        "id": "1",
        "name": "www.orange.fr"
    },
    "estimatedRevenue": {
        "unit": "EUR",
        "value": 1200
    },
    "marketSegment": {
        "id": "657",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketSegment/657",
        "name": "Active youngs market segment"
    },
    "marketingCampaign": {
        "id": "21",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketingCampaign/21",
        "name": "January 2019 campaign for Orange Bank"
    },
    "note": [
        {
            "author": "Saul Goodman",
            "date": "2019-01-22T15:53:29.961Z",
            "text": "Customer with a very good credit profile"
        }
```

```
  ],
  "product": {
    "id": "7321",
    "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/product/7321"
  },
  "productOffering": {
    "id": "42",
    "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
    "name": "Gold Credit Card"
  },
  "prospectContact": [
    {
      "preferred": false,
      "mediumType": "email",
      "validFor": {
        "startDateTime": "2017-03-15T07:49:25.246Z"
      },
      "characteristic": {
        "emailAddress": "gustavo.fring@mail.com"
      }
    },
    {
      "preferred": true,
      "mediumType": "phone",
      "validFor": {
        "startDateTime": "2017-03-15T07:49:25.246Z"
      },
      "characteristic": {
        "phoneNumber": "+33607080910"
      }
    },
    {
      "preferred": false,
      "mediumType": "postal address",
      "validFor": {
        "startDateTime": "2017-03-15T07:49:25.246Z"
      },
      "characteristic": {
        "street1": "Rue de Provence",
        "postCode": "75001",
        "city": "Paris",
        "country": "France"
      }
    }
  ],
  "relatedParty": [
    {
      "id": "127",
      "href": "https://serverRoot/tmf-api/partyManagement/v1/party/127",
      "name": "Walter White",
      "role": "marketing team",
      "@referredType": "individual"
    },
    {
      "id": "475",
```

```
        "href": "https://serverRoot/tmf-api/partyManagement/v1/party/475",
        "name": "Saul Goodman",
        "role": "sales team",
        "@referredType": "individual"
      }
  ],
  "salesOpportunity": {
      "id": "7894325",
      "href": "https://serverRoot/tmf-api/marketingManagement/v4/salesOpportunity/7894325",
      "name": "GoBank account"
  },
  "validFor": {
      "startDateTime": "2019-01-19T12:27:59.123Z",
      "endDateTime": "2019-02-19T12:27:59.123Z"
  }
}
```

Sales Opportunity resource

An opportunity represents a confirmed interest on a product you plan to sale. Once the Opportunity is created, some salesTasks can be done by sales team members, in order to turn the opportunity into a sale .

Resource model
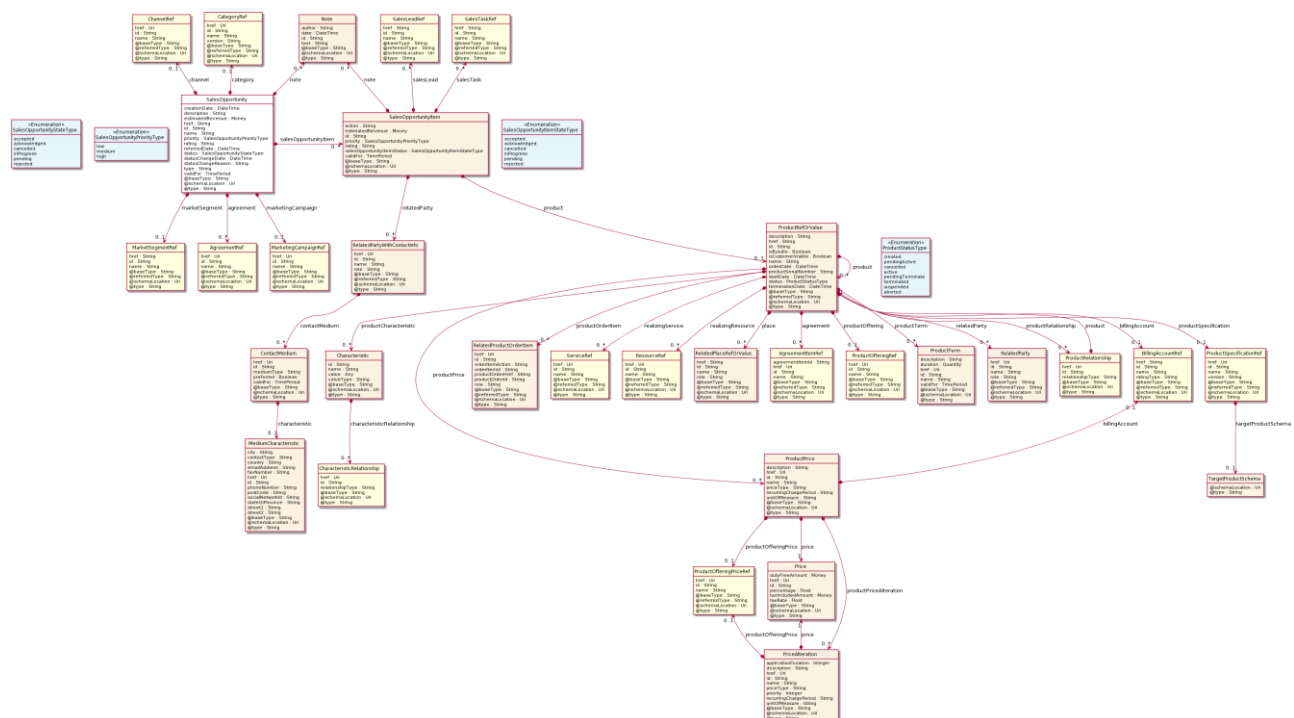
Field descriptions

SalesOpportunity fields

href   A string. Reference of the SalesOpportunity.

id	A string. Unique identifier of the SalesOpportunity.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
agreement	A list of agreement references (AgreementRef [*]). An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.
category	A category reference (CategoryRef). The category for grouping recommendations.
channel	A channel reference (ChannelRef). The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..
creationDate	A date time (DateTime). Date and time of the SalesOpportunity creation.
description	A string. Unique description of the SalesOpportunity.
estimatedRevenue	A money (Money). Estimation of the revenue if the SalesOpportunity turns into a sale.
href	A string. Reference of the SalesOpportunity.
id	A string. Unique identifier of the SalesOpportunity.
marketSegment	A market segment reference (MarketSegmentRef). A Market Segment is a grouping of Parties, GeographicAreas, SalesChannels, and so forth. MarketSegments are the target of MarketingCampaigns, ProductOfferings, ProductPromotions, ProductPlacements, and ProductPrograms from both internal and external (Competitors, and other Providers) perspective.
marketingCampaign	A marketing campaign reference (MarketingCampaignRef). Campaign represents the carrier-initiated marketing activity which aims at the better recognition about its brand and offerings by the market.
name	A string. Name of the SalesOpportunity.
note	A list of notes (Note [*]). Extra information about a given entity.
priority	A sales opportunity priority type (SalesOpportunityPriorityType). Urgency of working this Sales Opportunity.
rating	A string. Identifies the potential of a SalesOpportunity for becoming a sale. Usual

ratings for qualified leads are: hot, warm, cold.

referredDate	A date time (DateTime). Date when the prospect information was received (for example, from a trade show).
salesOpportunityItem	A list of sales opportunity items (SalesOpportunityItem [*]). An opportunity represents a confirmed interest on a product you plan to sale. Once the Opportunity is created, some salesTasks can be done by sales team members, in order to turn the opportunity into a sale.
status	A sales opportunity state type (SalesOpportunityStateType). Valid values for the lifecycle state of a salesLead resource.
statusChangeDate	A date time (DateTime). Date and time of the last update.
statusChangeReason	A string. Reason why the status has changed.
type	A string. Indicates the nature of the SalesOpportunity.
validFor	A time period. The period for which the SalesOpportunity is valid.

Characteristic sub-resource

Describes a given characteristic of an object or entity through a name/value pair.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
characteristicRelationship	A list of characteristic relationships (CharacteristicRelationship [*]). Another Characteristic that is related to the current Characteristic.
id	A string. Unique identifier of the characteristic.
name	A string. Name of the characteristic.
value	An any (Any). The value of the characteristic.
valueType	A string. Data type of the value of the characteristic.

CharacteristicRelationship sub-resource

Another Characteristic that is related to the current Characteristic.

href	An uri (Uri). Hyperlink reference.
id	A string. Unique identifier of the characteristic.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
relationshipType	A string. The type of relationship.

ContactMedium sub-resource

Indicates the contact medium that could be used to contact the party.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
characteristic	A medium characteristic (MediumCharacteristic). Any additional characteristic(s) of this contact medium.
mediumType	A string. Type of the contact medium, such as: email address, telephone number, postal address.
preferred	A boolean. If true, indicates that is the preferred contact medium.
validFor	A time period. The time period that the contact medium is valid for.

MediumCharacteristic sub-resource

Describes the contact medium characteristics that could be used to contact a party (an individual or an organization).

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

city	A string. The city.
contactType	A string. The type of contact, for example: phone number such as mobile, fixed home, fixed office. postal address such as shipping instalation….
country	A string. The country.
emailAddress	A string. Full email address in standard format.
faxNumber	A string. The fax number of the contact.
phoneNumber	A string. The primary phone number of the contact.
postCode	A string. Postcode.
socialNetworkId	A string. Identifier as a member of a social network.
stateOrProvince	A string. State or province.
street1	A string. Describes the street.
street2	A string. Complementary street description.

Money sub-resource

A base / value business entity used to represent money.

unit	A string. Currency (ISO4217 norm uses 3 letters to define the currency).
value	A float. A signed floating point number, the meaning of the sign is according to the context of the API that uses this Data type.

Note sub-resource

Extra information about a given entity.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
author	A string. Author of the note.
date	A date time (DateTime). Date of the note.
id	A string. Identifier of the note within its containing entity.
text	A string. Text of the note.

Price sub-resource

Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
dutyFreeAmount	A money (Money). All taxes excluded amount (expressed in the given currency).
percentage	A float. Percentage to apply for ProdOfferPriceAlteration.
taxIncludedAmount	A money (Money). All taxes included amount (expressed in the given currency).
taxRate	A float. Tax rate.

PriceAlteration sub-resource

Is an amount, usually of money, that modifies the price charged for an order item.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
applicationDuration	An integer. Duration during which the alteration applies on the order item price (for instance 2 months free of charge for the recurring charge).
description	A string. A narrative that explains in detail the semantics of this order item price alteration.
name	A string. Name of the order item price alteration.
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.
priceType	A string. A category that describes the price such as recurring, one time and usage.
priority	An integer. Priority level for applying this alteration among all the defined alterations

on the order item price.

productOfferingPrice	A product offering price reference (ProductOfferingPriceRef). ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.
recurringChargePeriod	A string. Could be month, week...
unitOfMeasure	A string. Could be minutes, GB...

ProductPrice sub-resource

An amount, usually of money, that represents the actual price paid by a Customer for a purchase, a rent or a lease of a Product. The price is valid for a defined period of time.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
billingAccount	A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.
description	A string. A narrative that explains in detail the semantics of this product price.
name	A string. A short descriptive name such as "Subscription price".
price	A price (Price). Provides all amounts (tax included, duty free, tax rate), used currency and percentage to apply for Price Alteration.
priceType	A string. A category that describes the price, such as recurring, discount, allowance, penalty, and so forth.
productOfferingPrice	A product offering price reference (ProductOfferingPriceRef). ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.
productPriceAlteration	A list of price alterations (PriceAlteration [*]). Is an amount, usually of money, that modifies the price charged for an order item.
recurringChargePeriod	A string. Could be month, week...
unitOfMeasure	A string. Could be minutes, GB...

ProductRefOrValue sub-resource

A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the product. It could be the same as the name of the product offering.
href	A string. Reference of the product.
id	A string. Unique identifier of the product.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
description	A string. Is the description of the product. It could be copied from the description of the Product Offering.
isBundle	A boolean. If true, the product is a ProductBundle which is an instantiation of a BundledProductOffering. If false, the product is a ProductComponent which is an instantiation of a SimpleProductOffering.
isCustomerVisible	A boolean. If true, the product is visible by the customer.
orderDate	A date time (DateTime). Is the date when the product was ordered.
productSerialNumber	A string. Is the serial number for the product. This is typically applicable to tangible products e.g. Broadband Router.
startDate	A date time (DateTime). Is the date from which the product starts.
terminationDate	A date time (DateTime). Is the date when the product was terminated.
agreement	A list of agreement item references (AgreementItemRef [*]). Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.
billingAccount	A billing account reference (BillingAccountRef). A BillingAccount is a detailed description of a bill structure.

place	A list of related place ref or values (RelatedPlaceRefOrValue [*]). Related Entity reference. A related place defines a place described by reference or by value linked to a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the place entity and not the RelatedPlaceRefOrValue class itself.
product	A list of product ref or values (ProductRefOrValue [*]). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
productCharacteristic	A list of characteristics (Characteristic [*]). Describes a given characteristic of an object or entity through a name/value pair.
productOffering	A product offering reference (ProductOfferingRef). A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.
productOrderItem	A list of related product order items (RelatedProductOrderItem [*]). RelatedProductOrderItem (ProductOrder item) .The product order item which triggered product creation/change/termination.
productPrice	A list of product prices (ProductPrice [*]). An amount, usually of money, that represents the actual price paid by a Customer for a purchase, a rent or a lease of a Product. The price is valid for a defined period of time.
productRelationship	A list of product relationships (ProductRelationship [*]). Linked products to the one instantiate, such as [bundled] if the product is a bundle and you want to describe the bundled products inside this bundle; [reliesOn] if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) [targets] or [isTargeted] (depending on the way of expressing the link) for any other kind of links that may be useful.
productSpecification	A product specification reference (ProductSpecificationRef). A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.
productTerm	A list of product terms (ProductTerm [*]). Description of a productTerm linked to this product. This represent a commitment with a duration.
realizingResource	A list of resource references (ResourceRef [*]).
realizingService	A list of service references (ServiceRef [*]). for when Service is used by other entities.
relatedParty	A list of related parties (RelatedParty [*]). Related Entity reference. A related party defines party or party role linked to a specific entity.

| status | A product status type (ProductStatusType). Is the lifecycle status of the product. |

ProductRelationship sub-resource

Linked products to the one instantiate, such as [bundled] if the product is a bundle and you want to describe the bundled products inside this bundle; [reliesOn] if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) [targets] or [isTargeted] (depending on the way of expressing the link) for any other kind of links that may be useful.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
product	A product ref or value (ProductRefOrValue). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
relationshipType	A string. Type of the product relationship, such as [bundled] if the product is a bundle and you want to describe the bundled products inside this bundle; [reliesOn] if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product) [targets] or [isTargeted] (depending on the way of expressing the link) for any other kind of links that may be useful.

ProductTerm sub-resource

Description of a productTerm linked to this product. This represent a commitment with a duration.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
description	A string. Description of the productTerm.
duration	A quantity (Quantity). Duration of the productTerm.

name	A string. Name of the productTerm.
validFor	A time period. productTerm validity period.

Quantity sub-resource

An amount in a given unit.

amount	A float. Numeric value in a given unit.
units	A string. Unit.

RelatedParty sub-resource

Related Entity reference. A related party defines party or party role linked to a specific entity.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string. Role played by the related party.

RelatedPartyWithContactInfo sub-resource

Related party specialization that includes contact information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
role	A string. Role played by the related party.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.

@type	A string. When sub-classing, this defines the sub-class Extensible name.
contactMedium	A list of contact mediums (ContactMedium [*]). Indicates the contact medium that could be used to contact the party.

RelatedPlaceRefOrValue sub-resource

Related Entity reference. A related place defines a place described by reference or by value linked to a specific entity. The polymorphic attributes @type, @schemaLocation & @referredType are related to the place entity and not the RelatedPlaceRefOrValue class itself.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. A user-friendly name for the place, such as [Paris Store], [London Store], [Main Home].
href	A string. Unique reference of the place.
id	A string. Unique identifier of the place.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
role	A string.

RelatedProductOrderItem sub-resource

RelatedProductOrderItem (ProductOrder item) .The product order item which triggered product creation/change/termination.

href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
orderItemAction	A string. Action of the order item for this product.
orderItemId	A string. Identifier of the order item where the product was managed.

productOrderHref	A string. Reference of the related entity.
productOrderId	A string. Unique identifier of a related entity.
role	A string. role of the product order item for this product.

SalesOpportunityItem sub-resource

An opportunity represents a confirmed interest on a product you plan to sale. Once the Opportunity is created, some salesTasks can be done by sales team members, in order to turn the opportunity into a sale .

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
action	A string. Action to be performed on this sales opportunity item.
estimatedRevenue	A money (Money). Estimation of the revenue if the SalesOpportunity turns into a sale.
id	A string. Identifier (index) of the SalesOpportunityItem.
note	A list of notes (Note [*]). Extra information about a given entity.
priority	A sales opportunity priority type (SalesOpportunityPriorityType). Urgency of working this Sales Opportunity.
product	A product ref or value (ProductRefOrValue). A product to be created defined by value or existing defined by reference. The polymorphic attributes @type, @schemaLocation & @referredType are related to the product entity and not the RelatedProductRefOrValue class itself.
rating	A string. Identifies the potential of a SalesOpportunity for becoming a sale. Usual ratings for qualified leads are: hot, warm, cold.
relatedParty	A list of related party with contact infos (RelatedPartyWithContactInfo [*]). Related party specialization that includes contact information.
salesLead	A list of sales lead references (SalesLeadRef [*]). provides references to the corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.
salesOpportunityItemStatus	A sales opportunity item state type (SalesOpportunityItemStateType). Valid values for the lifecycle state of a salesLead resource.
salesTask	A list of sales task references (SalesTaskRef [*]). provides references to the

corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.

validFor   A time period. The period for which the SalesOpportunity is valid.

TargetProductSchema sub-resource

The reference object to the schema and type of target product which is described by product specification.

@schemaLocation   An uri (Uri). This field provides a link to the schema describing the target product.

@type   A string. Class type of the target product.

AgreementItemRef relationship

Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.

@referredType   A string. The actual type of the target instance when needed for disambiguation.

name   A string. Name of the related entity.

href   An uri (Uri). Hyperlink reference.

id   A string. unique identifier.

@baseType   A string. When sub-classing, this defines the super-class.

@schemaLocation   An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.

@type   A string. When sub-classing, this defines the sub-class Extensible name.

agreementItemId   A string. Identifier of the agreement.

AgreementRef relationship

Agreement reference. An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.

@referredType   A string. The actual type of the target instance when needed for disambiguation.

name   A string. Name of the agreement.

href   An uri (Uri). Hyperlink reference.

id   A string. unique identifier.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

BillingAccountRef relationship

BillingAccount reference. A BillingAccount is a detailed description of a bill structure.

href	A string. Reference of the billing account.
id	A string. Unique identifier of the billing account.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the billing account.
ratingType	A string. Indicates whether the account follows a specific payment option such as prepaid or postpaid.

CategoryRef relationship

The category for grouping recommendations.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
version	A string. Category version.

ChannelRef relationship

The channel to which the resource reference to. e.g. channel for selling product offerings, channel for opening a trouble ticket etc..

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the channel.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

MarketSegmentRef relationship

provides references to the corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.

href	A string. Reference of the market segment.
id	A string. Unique identifier of the market segment.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. (Class) type of the referred market segment.
name	A string. Name of the market segment.

MarketingCampaignRef relationship

MarketingCampaign reference. Marketing campaign represents the carrier-initiated marketing activity which aims at the better recognition about its brand and offerings by the market.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.

@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

ProductOfferingPriceRef relationship

ProductPriceOffering reference. An amount, usually of money, that is asked for or allowed when a ProductOffering is bought, rented, or leased.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

ProductOfferingRef relationship

ProductOffering reference. A product offering represents entities that are orderable from the provider of the catalog, this resource includes pricing information.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

ProductSpecificationRef relationship

Product specification reference: A ProductSpecification is a detailed description of a tangible or intangible object made available externally in the form of a ProductOffering to customers or other parties playing a party role.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
targetProductSchema	A target product schema (TargetProductSchema). A target product schema reference. The reference object to the schema and type of target product which is described by product specification.
version	A string. Version of the product specification.

ResourceRef relationship

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

SalesLeadRef relationship

provides references to the corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.

href	A string. Reference of the market segment.
id	A string. Unique identifier of the market segment.
@baseType	A string. When sub-classing, this defines the super-class.

@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. (Class) type of the referred market segment.
name	A string. Name of the market segment.

SalesTaskRef relationship

provides references to the corresponding market segment as target of product offerings. A market segment is grouping of Parties, GeographicAreas, SalesChannels, and so forth.

href	A string. Reference of the market segment.
id	A string. Unique identifier of the market segment.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.
@referredType	A string. (Class) type of the referred market segment.
name	A string. Name of the market segment.

ServiceRef relationship

Service reference, for when Service is used by other entities.

@referredType	A string. The actual type of the target instance when needed for disambiguation.
name	A string. Name of the related entity.
href	An uri (Uri). Hyperlink reference.
id	A string. unique identifier.
@baseType	A string. When sub-classing, this defines the super-class.
@schemaLocation	An uri (Uri). A URI to a JSON-Schema file that defines additional attributes and relationships.
@type	A string. When sub-classing, this defines the sub-class Extensible name.

Json representation sample

We provide below the json representation of an example of a 'SalesOpportunity' resource object

tmforum

```json
{
  "id": "7894325",
  "href": "https://serverRoot/tmf-api/sales/v4/salesOpportunity/7894325",
  "name": "GoBank account",
  "creationDate": "2022-03-30T12:27:59.123Z",
  "rating": "hot",
  "status": "inProgress",
  "estimatedRevenue": {
    "unit": "EUR",
    "value": 1200
  },
  "validFor": {
    "startDateTime": "2022-03-30T12:27:59.123Z",
    "endDateTime": "2022-04-30T12:27:59.123Z"
  },
  "salesOpportunityItem": [
    {
      "id": "100",
      "action": "add",
      "rating": "hot",
      "priority": "high",
      "relatedParty": [
        {
          "id": "3556",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/3556",
          "name": "Gustavo Fring",
          "role": "prospect",
          "@referredType": "Individual",
          "contactMedium": [
            {
              "id": "5436546",
              "mediumType": "phoneNumber",
              "preferred": false,
              "characteristic": {
                "phoneNumber": "0102030405"
              }
            },
            {
              "id": "16546546256",
              "mediumType": "email",
              "preferred": true,
              "characteristic": {
                "emailAddress": "gustavo.fring@mail.com"
              }
            }
          ]
        },
        {
          "id": "127",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
          "name": "Walter White",
          "role": "marketing team",
          "@referredType": "Individual"
        },
        {
```

```
            "id": "475",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
            "name": "Saul Goodman",
            "role": "sales team",
            "@referredType": "Individual"
          }
        ],
        "salesLead": [
          {
            "id": "123",
            "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
            "name": "Campaign 17 salesLead 7852"
          }
        ],
        "salesTask": [
          {
            "id": "7321-0a6f",
            "href": "https://serverRoot/tmf-api/sales/v4/salesTask/7321-0a6f",
            "name": "Prospect called by Saul Goodman"
          },
          {
            "id": "6dc1-41ca",
            "href": "https://serverRoot/tmf-api/sales/v4/salesTask/6dc1-41ca",
            "name": "Contract sent to prospect by email"
          }
        ],
        "validFor": {
          "startDateTime": "2022-03-30T12:27:59.123Z",
          "endDateTime": "2022-04-30T12:27:59.123Z"
        },
        "product": {
          "productOffering": {
            "id": "42",
            "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
            "name": "Gold Credit Card"
          }
        }
      },
      {
        "id": "200",
        "action": "add",
        "rating": "hot",
        "priority": "high",
        "relatedParty": [
          {
            "id": "3556",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/3556",
            "name": "Gustavo Fring",
            "role": "prospect",
            "@referredType": "Individual",
            "contactMedium": [
              {
                "id": "5436546",
                "mediumType": "phoneNumber",
                "preferred": false,
```

```
                    "characteristic": {
                        "phoneNumber": "0102030405"
                    }
                },
                {
                    "id": "16546546256",
                    "mediumType": "email",
                    "preferred": true,
                    "characteristic": {
                        "emailAddress": "gustavo.fring@mail.com"
                    }
                }
            ]
        },
        {
            "id": "127",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
            "name": "Walter White",
            "role": "marketing team",
            "@referredType": "Individual"
        },
        {
            "id": "475",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
            "name": "Saul Goodman",
            "role": "sales team",
            "@referredType": "Individual"
        }
    ],
    "validFor": {
        "startDateTime": "2022-03-30T12:27:59.123Z",
        "endDateTime": "2022-04-30T12:27:59.123Z"
    },
    "product": {
        "productOffering": {
            "id": "632",
            "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/632",
            "name": "Credit Card insurance"
        }
    }
}
        ]
    }
```

Notification Resource Models

8 notifications are defined for this API

Notifications related to SalesLead:
   - SalesLeadCreateEvent
   - SalesLeadAttributeValueChangeEvent

- SalesLeadStateChangeEvent
- SalesLeadDeleteEvent

Notifications related to SalesOpportunity:
- SalesOpportunityCreateEvent
- SalesOpportunityAttributeValueChangeEvent
- SalesOpportunityStateChangeEvent
- SalesOpportunityDeleteEvent

The notification structure for all notifications in this API follow the pattern depicted by the figure below.
A notification event resource (depicted by "SpecificEvent" placeholder) is a sub class of a generic Event structure containing at least an id of the event occurrence (eventId), an event timestamp (eventTime), and the name of the resource (eventType).
This notification structure owns an event payload structure ("SpecificEventPayload" placeholder) linked to the resource concerned by the notification using the resource name as access field ("resourceName" placeholder).
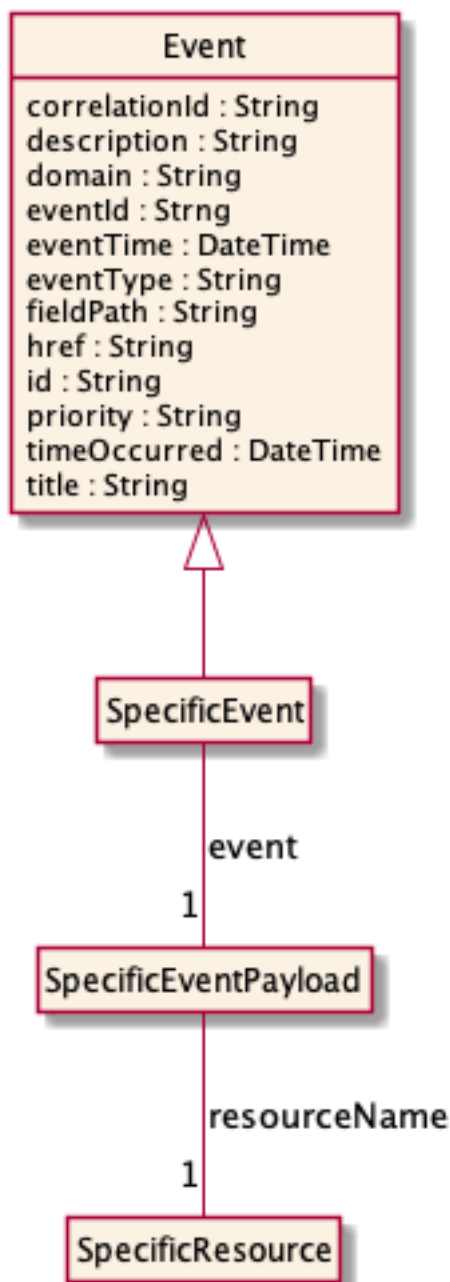
Sales Lead Create Event

Notification SalesLeadCreateEvent case for resource SalesLead

Json representation sample

We provide below the json representation of an example of a 'SalesLeadCreateEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"SalesLeadCreateEvent",
     "event": {
```

```
    "salesLead" :
        {-- SEE SalesLead RESOURCE SAMPLE --}
    }
}
```

Sales Lead Attribute Value Change Event

Notification SalesLeadAttributeValueChangeEvent case for resource SalesLead

Json representation sample

We provide below the json representation of an example of a 'SalesLeadAttributeValueChangeEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"SalesLeadAttributeValueChangeEvent",
     "event": {
       "salesLead" :
           {-- SEE SalesLead RESOURCE SAMPLE --}
    }
}
```

Sales Lead State Change Event

Notification SalesLeadStateChangeEvent case for resource SalesLead

Json representation sample

We provide below the json representation of an example of a 'SalesLeadStateChangeEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"SalesLeadStateChangeEvent",
     "event": {
       "salesLead" :
           {-- SEE SalesLead RESOURCE SAMPLE --}
    }
}
```

Sales Lead Delete Event

Notification SalesLeadDeleteEvent case for resource SalesLead

Json representation sample

We provide below the json representation of an example of a 'SalesLeadDeleteEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"SalesLeadDeleteEvent",
    "event": {
        "salesLead" :
            {-- SEE SalesLead RESOURCE SAMPLE --}
    }
}
```

Sales Opportunity Create Event

Notification SalesOpportunityCreateEvent case for resource SalesOpportunity

Json representation sample

We provide below the json representation of an example of a 'SalesOpportunityCreateEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"SalesOpportunityCreateEvent",
    "event": {
        "salesOpportunity" :
            {-- SEE SalesOpportunity RESOURCE SAMPLE --}
    }
}
```

Sales Opportunity Attribute Value Change Event

Notification SalesOpportunityAttributeValueChangeEvent case for resource SalesOpportunity

Json representation sample

We provide below the json representation of an example of a 'SalesOpportunityAttributeValueChangeEvent' notification event object

```
{
    "eventId":"00001",
    "eventTime":"2015-11-16T16:42:25-04:00",
    "eventType":"SalesOpportunityAttributeValueChangeEvent",
    "event": {
        "salesOpportunity" :
            {-- SEE SalesOpportunity RESOURCE SAMPLE --}
    }
}
```

Sales Opportunity State Change Event

Notification SalesOpportunityStateChangeEvent case for resource SalesOpportunity

Json representation sample

We provide below the json representation of an example of a 'SalesOpportunityStateChangeEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"SalesOpportunityStateChangeEvent",
   "event": {
      "salesOpportunity" :
         {-- SEE SalesOpportunity RESOURCE SAMPLE --}
   }
}
```

Sales Opportunity Delete Event

Notification SalesOpportunityDeleteEvent case for resource SalesOpportunity

Json representation sample

We provide below the json representation of an example of a 'SalesOpportunityDeleteEvent' notification event object

```
{
   "eventId":"00001",
   "eventTime":"2015-11-16T16:42:25-04:00",
   "eventType":"SalesOpportunityDeleteEvent",
   "event": {
      "salesOpportunity" :
         {-- SEE SalesOpportunity RESOURCE SAMPLE --}
   }
}
```

API OPERATIONS

Remember the following Uniform Contract:

Operation on Entities	Uniform API Operation	Description
Query Entities	GET Resource	GET must be used to retrieve a representation of a resource.
Create Entity	POST Resource	POST must be used to create a new resource
Partial Update of an Entity	PATCH Resource	PATCH must be used to partially update a resource
Remove an Entity	DELETE Resource	DELETE must be used to remove a resource

Filtering and attribute selection rules are described in the TMF REST Design Guidelines.

Notifications are also described in a subsequent section.

Operations on Sales Lead

List sales leads

```
GET /salesLead?fields=...&{filtering}
```

Description

This operation list sales lead entities.
Attribute selection is enabled for all first level attributes.
Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's an example of a request for retrieving a list of sales leads. The given criteria is the id of the customer Gustavo Fring with the following selected attributes: id, name, description and status.

Request

```
GET /tmf-api/sales/v4/salesLead?fields=id,name,description,status&relatedParty.id=94587
Accept: application/json
```

Response

```
200

[
  {
    "id": "123",
    "name": "Campaign 17 salesLead 7852",
    "description": "salesLead generated by a clic on a commercial link",
    "status": "inProgress"
  },
  {
    "id": "456",
    "name": "Web site request 123456",
    "description": "salesLead generated by a clic on a commercial link",
    "status": "inProgress"
  }
]
```

Retrieve sales lead

`GET /salesLead/{id}?fields=...&{filtering}`

Description

This operation retrieves a sales lead entity.
Attribute selection is enabled for all first level attributes.
Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's a sample of a request for retrieving a sales lead.

Request

```
GET /tmf-api/sales/v4/salesLead/123
```

Accept: application/json

Response

```
200

{
    "id": "123",
    "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
    "@type": "SalesLead",
    "creationDate": "2019-01-19T12:27:59.123Z",
    "description": "salesLead generated by a clic on a commercial link",
    "name": "Campaign 17 salesLead 7852",
    "priority": "medium",
    "rating": "hot",
    "referredDate": "2019-01-19T12:27:59.123Z",
    "status": "inProgress",
    "statusChangeDate": "2019-01-25T15:53:29.961Z",
    "statusChangeReason": "Lead accepted by marketing team",
    "type": "advertisingLink",
    "category": {
        "id": "15",
        "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/category/15",
        "name": "PersonnalBankAccount"
    },
    "channel": {
        "id": "1",
        "name": "www.orange.fr"
    },
    "estimatedRevenue": {
        "unit": "EUR",
        "value": 1200
    },
    "marketSegment": {
        "id": "657",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketSegment/657",
        "name": "Active youngs market segment"
    },
    "marketingCampaign": {
        "id": "21",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketingCampaign/21",
        "name": "January 2019 campaign for Orange Bank"
    },
    "note": [
        {
            "author": "Saul Goodman",
            "date": "2019-01-22T15:53:29.961Z",
            "text": "Customer with a very good credit profile"
        }
    ],
    "product": {
        "id": "7321",
```

```
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/product/7321"
    },
    "productOffering": {
      "id": "42",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
      "name": "Gold Credit Card"
    },
    "prospectContact": [
      {
        "preferred": false,
        "mediumType": "email",
        "validFor": {
          "startDateTime": "2017-03-15T07:49:25.246Z"
        },
        "characteristic": {
          "emailAddress": "gustavo.fring@mail.com"
        }
      },
      {
        "preferred": true,
        "mediumType": "phone",
        "validFor": {
          "startDateTime": "2017-03-15T07:49:25.246Z"
        },
        "characteristic": {
          "phoneNumber": "+33607080910"
        }
      },
      {
        "preferred": false,
        "mediumType": "postal address",
        "validFor": {
          "startDateTime": "2017-03-15T07:49:25.246Z"
        },
        "characteristic": {
          "street1": "Rue de Provence",
          "postCode": "75001",
          "city": "Paris",
          "country": "France"
        }
      }
    ],
    "relatedParty": [
      {
        "id": "127",
        "href": "https://serverRoot/tmf-api/partyManagement/v1/party/127",
        "name": "Walter White",
        "role": "marketing team",
        "@referredType": "individual"
      },
      {
        "id": "475",
        "href": "https://serverRoot/tmf-api/partyManagement/v1/party/475",
        "name": "Saul Goodman",
```

```
            "role": "sales team",
            "@referredType": "individual"
        }
    ],
    "salesOpportunity": {
        "id": "7894325",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/salesOpportunity/7894325",
        "name": "GoBank account"
    },
    "validFor": {
        "startDateTime": "2019-01-19T12:27:59.123Z",
        "endDateTime": "2019-02-19T12:27:59.123Z"
    }
}
```

Create sales lead

POST /salesLead

Description

This operation creates a sales lead entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a SalesLead, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
name	

Non Mandatory Attributes	Rule
@baseType	
@schemaLocation	
@type	
category	
channel	
creationDate	
description	
estimatedRevenue	
marketSegment	
marketingCampaign	
note	
priority	
product	
productOffering	
productSpecification	

prospectContact	
rating	
referredDate	
relatedParty	
salesOpportunity	
status	
statusChangeDate	
statusChangeReason	
type	
validFor	

Usage Samples

Here's an example of a request for creating a sales lead resource.

Request

```
POST /tmf-api/sales/v4/salesLead
Content-Type: application/json

{
    "name": "Campaign 17 salesLead 7852",
    "description": "salesLead generated by a clic on a commercial link",
    "referredDate": "2019-01-19T12:27:59.123Z",
    "type": "advertisingLink",
    "rating": "hot",
    "priority": "medium",
    "estimatedRevenue": {
        "unit": "EUR",
        "value": 1200
    },
    "validFor": {
        "startDateTime": "2019-01-19T12:27:59.123Z",
        "endDateTime": "2019-02-19T12:27:59.123Z"
    },
    "marketSegment": {
        "id": "657",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketSegment/657",
        "name": "Active youngs market segment"
    },
    "marketingCampaign": {
        "id": "21",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketingCampaign/21",
        "name": "January 2019 campaign for Orange Bank"
    },
    "channel": {
        "id": "1",
        "name": "online channel"
    },
    "productOffering": {
```

```
      "id": "42",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
      "name": "Gold Credit Card"
    },
    "relatedParty": [
      {
        "id": "127",
        "href": "https://serverRoot/tmf-api/partyManagement/v1/party/127",
        "name": "Walter White",
        "role": "marketing team",
        "@referredType": "individual"
      },
      {
        "id": "475",
        "href": "https://serverRoot/tmf-api/partyManagement/v1/party/475",
        "name": "Saul Goodman",
        "role": "sales team",
        "@referredType": "individual"
      }
    ],
    "prospectContact": [
      {
        "preferred": false,
        "mediumType": "email",
        "validFor": {
          "startDateTime": "2017-03-15T07:49:25.246Z"
        },
        "characteristic": {
          "emailAddress": "gustavo.fring@mail.com"
        }
      },
      {
        "preferred": true,
        "mediumType": "phone",
        "validFor": {
          "startDateTime": "2017-03-15T07:49:25.246Z"
        },
        "characteristic": {
          "phoneNumber": "+33607080910"
        }
      },
      {
        "preferred": false,
        "mediumType": "postal address",
        "validFor": {
          "startDateTime": "2017-03-15T07:49:25.246Z"
        },
        "characteristic": {
          "street1": "Rue de Provence",
          "postCode": "75001",
          "city": "Paris",
          "country": "France"
        }
      }
```

```
    ],
    "category": {
      "id": "15",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/category/15",
      "name": "PersonnalBankAccount"
    },
    "salesOpportunity": {
      "id": "7894325",
      "href": "https://serverRoot/tmf-api/marketingManagement/v4/salesOpportunity/7894325",
      "name": "GoBank account"
    },
    "product": {
      "id": "7321",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/product/7321"
    },
    "note": [
      {
        "author": "Saul Goodman",
        "date": "2019-01-22T15:53:29.961Z",
        "text": "Customer with a very good credit profile"
      }
    ]
}
```

Response

201

```
{
  "id": "123",
  "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
  "@type": "SalesLead",
  "name": "Campaign 17 salesLead 7852",
  "description": "salesLead generated by a clic on a commercial link",
  "status": "acknowledged",
  "statusChangeDate": "2019-01-25T15:53:29.961Z",
  "creationDate": "2019-01-19T12:27:59.123Z",
  "referredDate": "2019-01-19T12:27:59.123Z",
  "statusChangeReason": "Lead created",
  "type": "advertisingLink",
  "rating": "hot",
  "priority": "medium",
  "estimatedRevenue": {
    "unit": "EUR",
    "value": 1200
  },
  "validFor": {
    "startDateTime": "2019-01-19T12:27:59.123Z",
    "endDateTime": "2019-02-19T12:27:59.123Z"
  },
  "marketSegment": {
    "id": "657",
```

```
      "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketSegment/657",
      "name": "Active youngs market segment"
   },
   "marketingCampaign": {
      "id": "21",
      "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketingCampaign/21",
      "name": "January 2019 campaign for Orange Bank"
   },
   "channel": {
      "id": "1",
      "name": "online channel"
   },
   "productOffering": {
      "id": "42",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
      "name": "Gold Credit Card"
   },
   "relatedParty": [
      {
         "id": "127",
         "href": "https://serverRoot/tmf-api/partyManagement/v1/party/127",
         "name": "Walter White",
         "role": "marketing team",
         "@referredType": "individual"
      },
      {
         "id": "475",
         "href": "https://serverRoot/tmf-api/partyManagement/v1/party/475",
         "name": "Saul Goodman",
         "role": "sales team",
         "@referredType": "individual"
      }
   ],
   "prospectContact": [
      {
         "preferred": false,
         "mediumType": "email",
         "validFor": {
            "startDateTime": "2017-03-15T07:49:25.246Z"
         },
         "characteristic": {
            "emailAddress": "gustavo.fring@mail.com"
         }
      },
      {
         "preferred": true,
         "mediumType": "phone",
         "validFor": {
            "startDateTime": "2017-03-15T07:49:25.246Z"
         },
         "characteristic": {
            "phoneNumber": "+33607080910"
         }
      },
```

```
      {
        "preferred": false,
        "mediumType": "postal address",
        "validFor": {
          "startDateTime": "2017-03-15T07:49:25.246Z"
        },
        "characteristic": {
          "street1": "Rue de Provence",
          "postCode": "75001",
          "city": "Paris",
          "country": "France"
        }
      }
    ],
    "category": {
      "id": "15",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/category/15",
      "name": "PersonnalBankAccount"
    },
    "salesOpportunity": {
      "id": "7894325",
      "href": "https://serverRoot/tmf-api/marketingManagement/v4/salesOpportunity/7894325",
      "name": "GoBank account"
    },
    "product": {
      "id": "7321",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/product/7321"
    },
    "note": [
      {
        "author": "Saul Goodman",
        "date": "2019-01-22T15:53:29.961Z",
        "text": "Customer with a very good credit profile"
      }
    ]
}
```

Patch sales lead

PATCH /salesLead/{id}

Description

This operation allows partial updates of a sales lead entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
@baseType	
@schemaLocation	
@type	
category	
channel	
description	
estimatedRevenue	
marketSegment	
marketingCampaign	
name	
note	
priority	
product	
productOffering	
productSpecification	
prospectContact	
rating	
referredDate	
relatedParty	
salesOpportunity	
status	
statusChangeDate	
statusChangeReason	
type	
validFor	

Non Patchable Attributes	Rule
id	
href	
creationDate	

Usage Samples

Here is an example of a request for patching a sales lead. In this example, a new status is set, together with a change reason.

Request
PATCH /tmf-api/sales/v4/salesLead/123 Content-Type: application/merge-patch+json

```
{
    "status": "pending",
    "statusChangeReason": "Lead needs extra information to continue the process"
}
```

Response

200

```
{
    "id": "123",
    "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
    "@type": "SalesLead",
    "name": "Campaign 17 salesLead 7852",
    "description": "salesLead generated by a clic on a commercial link",
    "status": "pending",
    "statusChangeDate": "2019-01-26T14:12:54.349Z",
    "creationDate": "2019-01-19T12:27:59.123Z",
    "referredDate": "2019-01-19T12:27:59.123Z",
    "statusChangeReason": "Lead needs extra information to continue the process",
    "type": "advertisingLink",
    "rating": "hot",
    "priority": "medium",
    "estimatedRevenue": {
        "unit": "EUR",
        "value": 1200
    },
    "validFor": {
        "startDateTime": "2019-01-19T12:27:59.123Z",
        "endDateTime": "2019-02-19T12:27:59.123Z"
    },
    "marketSegment": {
        "id": "657",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketSegment/657",
        "name": "Active youngs market segment"
    },
    "marketingCampaign": {
        "id": "21",
        "href": "https://serverRoot/tmf-api/marketingManagement/v4/marketingCampaign/21",
        "name": "January 2019 campaign for Orange Bank"
    },
    "channel": {
        "id": "1",
        "name": "online channel"
    },
    "productOffering": {
        "id": "42",
        "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
        "name": "Gold Credit Card"
    },
    "relatedParty": [
```

```
          {
            "id": "127",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/party/127",
            "name": "Walter White",
            "role": "marketing team",
            "@referredType": "individual"
          },
          {
            "id": "475",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/party/475",
            "name": "Saul Goodman",
            "role": "sales team",
            "@referredType": "individual"
          }
        ],
        "prospectContact": [
          {
            "preferred": false,
            "mediumType": "email",
            "validFor": {
              "startDateTime": "2017-03-15T07:49:25.246Z"
            },
            "characteristic": {
              "emailAddress": "gustavo.fring@mail.com"
            }
          },
          {
            "preferred": true,
            "mediumType": "phone",
            "validFor": {
              "startDateTime": "2017-03-15T07:49:25.246Z"
            },
            "characteristic": {
              "phoneNumber": "+33607080910"
            }
          },
          {
            "preferred": false,
            "mediumType": "postal address",
            "validFor": {
              "startDateTime": "2017-03-15T07:49:25.246Z"
            },
            "characteristic": {
              "street1": "Rue de Provence",
              "postCode": "75001",
              "city": "Paris",
              "country": "France"
            }
          }
        ],
        "category": {
          "id": "15",
          "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/category/15",
          "name": "PersonnalBankAccount"
```

```
    },
    "salesOpportunity": {
      "id": "7894325",
      "href": "https://serverRoot/tmf-api/marketingManagement/v4/salesOpportunity/7894325",
      "name": "GoBank account"
    },
    "product": {
      "id": "7321",
      "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/product/7321"
    },
    "note": [
      {
        "author": "Saul Goodman",
        "date": "2019-01-22T15:53:29.961Z",
        "text": "Customer with a very good credit profile"
      }
    ]
}
```

Delete sales lead

DELETE /salesLead/{id}

Description

This operation deletes a sales lead entity.

Usage Samples

Here's an example of a request for deleting a sales Lead.

Request
DELETE /tmf-api/sales/v4/salesLead/123
Response
204

Operations on Sales Opportunity

List sales opportunities

GET /salesOpportunity?fields=...&{filtering}

Description

This operation list sales opportunity entities.

Attribute selection is enabled for all first level attributes.

Filtering may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's an example of a request for retrieving a list of sales opportunities. The given criteria is the id of the customer and its role.

Request
GET /tmf-api/sales/v4/salesOpportunity?fields=id,name,status&status=inProgress Accept: application/json

Response

200
 	
[
  {
    "id": "10c2-41bf",
    "name": "GoBank account",
    "status": "inProgress"
  },
  {
    "id": "960a-ab1b",
    "name": "Fiber access for small office",
    "status": "inProgress"
  },
  {
    "id": "9611-b01c",
    "name": "Firewall solution",
    "status": "inProgress"
  },
  {
    "id": "e21c-fc20",
    "name": "Mobile fleet",
    "status": "inProgress"
  }
]

Retrieve sales opportunity

GET /salesOpportunity/{id}?fields=...&{filtering}

Description

This operation retrieves a sales opportunity entity.

Attribute selection is enabled for all first level attributes.

Filtering on sub-resources may be available depending on the compliance level supported by an implementation.

Usage Samples

Here's a sample of a request for retrieving a sales opportunity.

Request
GET /tmf-api/sales/v4/salesOpportunity/7894325 Accept: application/json

Response

```
200

{
  "id": "7894325",
  "href": "https://serverRoot/tmf-api/sales/v4/salesOpportunity/7894325",
  "name": "GoBank account",
  "creationDate": "2022-03-30T12:27:59.123Z",
  "rating": "hot",
  "status": "inProgress",
  "estimatedRevenue": {
    "unit": "EUR",
    "value": 1200
  },
  "validFor": {
    "startDateTime": "2022-03-30T12:27:59.123Z",
    "endDateTime": "2022-04-30T12:27:59.123Z"
  },
  "salesOpportunityItem": [
    {
      "id": "100",
      "action": "add",
      "rating": "hot",
      "priority": "medium",
      "relatedParty": [
        {
          "id": "94587",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
          "name": "Gustavo Fring",
```

```
            "role": "prospect",
            "@referredType": "Individual",
            "contactMedium": [
              {
                "id": "5436546",
                "mediumType": "phoneNumber",
                "preferred": false,
                "characteristic": {
                    "phoneNumber": "0102030405"
                }
              },
              {
                "id": "16546546256",
                "mediumType": "email",
                "preferred": true,
                "characteristic": {
                    "emailAddress": "gustavo.fring@mail.com"
                }
              }
            ]
          },
          {
            "id": "127",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
            "name": "Walter White",
            "role": "marketing team",
            "@referredType": "Individual"
          },
          {
            "id": "475",
            "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
            "name": "Saul Goodman",
            "role": "sales team",
            "@referredType": "Individual"
          }
        ],
        "salesLead": [
          {
            "id": "123",
            "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
            "name": "Campaign 17 salesLead 7852"
          }
        ],
        "salesTask": [
          {
            "id": "7321-0a6f",
            "href": "https://serverRoot/tmf-api/sales/v4/salesTask/7321-0a6f",
            "name": "Prospect called by Saul Goodman"
          },
          {
            "id": "6dc1-41ca",
            "href": "https://serverRoot/tmf-api/sales/v4/salesTask/6dc1-41ca",
            "name": "Contract sent to prospect by email"
          }
```

```
      ],
      "validFor": {
        "startDateTime": "2022-03-30T12:27:59.123Z",
        "endDateTime": "2022-04-30T12:27:59.123Z"
      },
      "product": {
        "productOffering": {
          "id": "42",
          "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
          "name": "Gold Credit Card"
        }
      }
    },
    {
      "id": "200",
      "action": "add",
      "rating": "hot",
      "priority": "medium",
      "relatedParty": [
        {
          "id": "94587",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
          "name": "Gustavo Fring",
          "role": "prospect",
          "@referredType": "Individual",
          "contactMedium": [
            {
              "id": "5436546",
              "mediumType": "phoneNumber",
              "preferred": false,
              "characteristic": {
                "phoneNumber": "0102030405"
              }
            },
            {
              "id": "16546546256",
              "mediumType": "email",
              "preferred": true,
              "characteristic": {
                "emailAddress": "gustavo.fring@mail.com"
              }
            }
          ]
        },
        {
          "id": "127",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
          "name": "Walter White",
          "role": "marketing team",
          "@referredType": "Individual"
        },
        {
          "id": "475",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
```

```
            "name": "Saul Goodman",
            "role": "sales team",
            "@referredType": "Individual"
          }
        ],
        "validFor": {
          "startDateTime": "2022-03-30T12:27:59.123Z",
          "endDateTime": "2022-04-30T12:27:59.123Z"
        },
        "product": {
          "productOffering": {
            "id": "42",
            "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
            "name": "Gold Credit Card"
          }
        }
      }
    }
  ]
}
```

Create sales opportunity

POST /salesOpportunity

Description

This operation creates a sales opportunity entity.

Mandatory and Non Mandatory Attributes

The following tables provide the list of mandatory and non mandatory attributes when creating a SalesOpportunity, including any possible rule conditions and applicable default values. Notice that it is up to an implementer to add additional mandatory attributes.

Mandatory Attributes	Rule
name	

Non Mandatory Attributes	Rule
@baseType	
@schemaLocation	
@type	
agreement	
category	
channel	
creationDate	
description	
estimatedRevenue	
marketSegment	
marketingCampaign	

note	
priority	
rating	
referredDate	
salesOpportunityItem	
status	
statusChangeDate	
statusChangeReason	
type	
validFor	

Usage Samples

Here's an example of a request for creating a sales opportunity resource.

Request

```
POST /tmf-api/sales/v4/salesOpportunity
Content-Type: application/json

{
   "name": "GoBank account",
   "rating": "hot",
   "priority": "high",
   "estimatedRevenue": {
      "unit": "EUR",
      "value": 1200
   },
   "salesOpportunityItem": [
      {
         "id": "100",
         "action": "add",
         "rating": "hot",
         "priority": "high",
         "relatedParty": [
            {
               "id": "94587",
               "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
               "name": "Gustavo Fring",
               "role": "prospect",
               "@referredType": "Individual",
               "contactMedium": [
                  {
                     "id": "5436546",
                     "mediumType": "phoneNumber",
                     "preferred": false,
                     "characteristic": {
                        "phoneNumber": "0102030405"
                     }
                  },
```

```
                      {
                        "id": "16546546256",
                        "mediumType": "email",
                        "preferred": true,
                        "characteristic": {
                          "emailAddress": "gustavo.fring@mail.com"
                        }
                      }
                    ]
                  },
                  {
                    "id": "127",
                    "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
                    "name": "Walter White",
                    "role": "marketing team",
                    "@referredType": "Individual"
                  },
                  {
                    "id": "475",
                    "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
                    "name": "Saul Goodman",
                    "role": "sales team",
                    "@referredType": "Individual"
                  }
                ],
                "salesLead": [
                  {
                    "id": "123",
                    "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
                    "name": "Campaign 17 salesLead 7852"
                  }
                ],
                "validFor": {
                  "startDateTime": "2022-03-30T12:27:59.123Z",
                  "endDateTime": "2022-04-30T12:27:59.123Z"
                },
                "product": {
                  "productOffering": {
                    "id": "42",
                    "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
                    "name": "Gold Credit Card"
                  }
                }
              },
              {
                "id": "200",
                "action": "add",
                "rating": "hot",
                "priority": "high",
                "relatedParty": [
                  {
                    "id": "94587",
                    "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
                    "name": "Gustavo Fring",
```

```json
              "role": "prospect",
              "@referredType": "Individual",
              "contactMedium": [
                {
                  "id": "5436546",
                  "mediumType": "phoneNumber",
                  "preferred": false,
                  "characteristic": {
                    "phoneNumber": "0102030405"
                  }
                },
                {
                  "id": "16546546256",
                  "mediumType": "email",
                  "preferred": true,
                  "characteristic": {
                    "emailAddress": "gustavo.fring@mail.com"
                  }
                }
              ]
            },
            {
              "id": "127",
              "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
              "name": "Walter White",
              "role": "marketing team",
              "@referredType": "Individual"
            },
            {
              "id": "475",
              "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
              "name": "Saul Goodman",
              "role": "sales team",
              "@referredType": "Individual"
            }
          ],
          "validFor": {
            "startDateTime": "2022-03-30T12:27:59.123Z",
            "endDateTime": "2022-04-30T12:27:59.123Z"
          },
          "product": {
            "productOffering": {
              "id": "632",
              "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/632",
              "name": "Credit Card insurance"
            }
          }
        }
      }
    ]
}
```

Response

```
201

{
    "id": "7894325",
    "href": "https://serverRoot/tmf-api/sales/v4/salesOpportunity/7894325",
    "name": "GoBank account",
    "creationDate": "2022-03-30T12:27:59.123Z",
    "rating": "hot",
    "priority": "high",
    "status": "inProgress",
    "estimatedRevenue": {
        "unit": "EUR",
        "value": 1200
    },
    "validFor": {
        "startDateTime": "2022-03-30T12:27:59.123Z",
        "endDateTime": "2022-04-30T12:27:59.123Z"
    },
    "salesOpportunityItem": [
        {
            "id": "100",
            "action": "add",
            "rating": "hot",
            "salesOpportunityItemStatus": "acknowledged",
            "priority": "high",
            "relatedParty": [
                {
                    "id": "94587",
                    "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
                    "name": "Gustavo Fring",
                    "role": "prospect",
                    "@referredType": "Individual",
                    "contactMedium": [
                        {
                            "id": "5436546",
                            "mediumType": "phoneNumber",
                            "preferred": false,
                            "characteristic": {
                                "phoneNumber": "0102030405"
                            }
                        },
                        {
                            "id": "16546546256",
                            "mediumType": "email",
                            "preferred": true,
                            "characteristic": {
                                "emailAddress": "gustavo.fring@mail.com"
                            }
                        }
                    ]
                },
                {
                    "id": "127",
```

```
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
          "name": "Walter White",
          "role": "marketing team",
          "@referredType": "Individual"
        },
        {
          "id": "475",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
          "name": "Saul Goodman",
          "role": "sales team",
          "@referredType": "Individual"
        }
      ],
      "salesLead": [
        {
          "id": "123",
          "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
          "name": "Campaign 17 salesLead 7852"
        }
      ],
      "validFor": {
        "startDateTime": "2022-03-30T12:27:59.123Z",
        "endDateTime": "2022-04-30T12:27:59.123Z"
      },
      "product": {
        "productOffering": {
          "id": "42",
          "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
          "name": "Gold Credit Card"
        }
      }
    },
    {
      "id": "200",
      "action": "add",
      "rating": "hot",
      "salesOpportunityItemStatus": "acknowledged",
      "priority": "high",
      "relatedParty": [
        {
          "id": "94587",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
          "name": "Gustavo Fring",
          "role": "prospect",
          "@referredType": "Individual",
          "contactMedium": [
            {
              "id": "5436546",
              "mediumType": "phoneNumber",
              "preferred": false,
              "characteristic": {
                "phoneNumber": "0102030405"
              }
            },
```

```
                    {
                        "id": "16546546256",
                        "mediumType": "email",
                        "preferred": true,
                        "characteristic": {
                            "emailAddress": "gustavo.fring@mail.com"
                        }
                    }
                ]
            },
            {
                "id": "127",
                "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
                "name": "Walter White",
                "role": "marketing team",
                "@referredType": "Individual"
            },
            {
                "id": "475",
                "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
                "name": "Saul Goodman",
                "role": "sales team",
                "@referredType": "Individual"
            }
        ],
        "validFor": {
            "startDateTime": "2022-03-30T12:27:59.123Z",
            "endDateTime": "2022-04-30T12:27:59.123Z"
        },
        "product": {
            "productOffering": {
                "id": "632",
                "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/632",
                "name": "Credit Card insurance"
            }
        }
    }
  ]
}
```

Patch sales opportunity

PATCH /salesOpportunity/{id}

Description

This operation allows partial updates of a sales opportunity entity. Support of json/merge (https://tools.ietf.org/html/rfc7386) is mandatory, support of json/patch (http://tools.ietf.org/html/rfc5789) is optional.

Note: If the update operation yields to the creation of sub-resources or relationships, the same rules concerning

mandatory sub-resource attributes and default value settings in the POST operation applies to the PATCH operation. Hence these tables are not repeated here.

Patchable and Non Patchable Attributes

The tables below provide the list of patchable and non patchable attributes, including constraint rules on their usage.

Patchable Attributes	Rule
@baseType	
@schemaLocation	
@type	
agreement	
category	
channel	
description	
estimatedRevenue	
marketSegment	
marketingCampaign	
name	
note	
priority	
rating	
referredDate	
salesOpportunityItem	
status	
statusChangeDate	
statusChangeReason	
type	
validFor	

Non Patchable Attributes	Rule
id	
href	
creationDate	

Usage Samples

Here's an example of a request for patching a sales opportunity. In this example, the status of the resource is set to pending.

Request

```
PATCH /tmf-api/sales/v4/salesOpportunity/7894325
Content-Type: application/merge-patch+json
```

```
{
    "status": "pending",
    "statusChangeReason": "SalesOpportunity needs extra information to continue the process"
}
```

Response

```
200

{
    "id": "7894325",
    "href": "https://serverRoot/tmf-api/sales/v4/salesOpportunity/7894325",
    "name": "GoBank account",
    "creationDate": "2022-03-30T12:27:59.123Z",
    "rating": "hot",
    "priority": "high",
    "status": "pending",
    "statusChangeReason": "SalesOpportunity needs extra information to continue the process",
    "estimatedRevenue": {
        "unit": "EUR",
        "value": 1200
    },
    "validFor": {
        "startDateTime": "2022-03-30T12:27:59.123Z",
        "endDateTime": "2022-04-30T12:27:59.123Z"
    },
    "salesOpportunityItem": [
        {
            "id": "100",
            "action": "add",
            "rating": "hot",
            "salesOpportunityItemStatus": "acknowledged",
            "priority": "high",
            "relatedParty": [
                {
                    "id": "94587",
                    "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
                    "name": "Gustavo Fring",
                    "role": "prospect",
                    "@referredType": "Individual",
                    "contactMedium": [
                        {
                            "id": "5436546",
                            "mediumType": "phoneNumber",
                            "preferred": false,
                            "characteristic": {
                                "phoneNumber": "0102030405"
                            }
                        },
                        {
                            "id": "16546546256",
                            "mediumType": "email",
```

```
              "preferred": true,
              "characteristic": {
                "emailAddress": "gustavo.fring@mail.com"
              }
            }
          ]
        },
        {
          "id": "127",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
          "name": "Walter White",
          "role": "marketing team",
          "@referredType": "Individual"
        },
        {
          "id": "475",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
          "name": "Saul Goodman",
          "role": "sales team",
          "@referredType": "Individual"
        }
      ],
      "salesLead": [
        {
          "id": "123",
          "href": "https://serverRoot/tmf-api/sales/v4/salesLead/123",
          "name": "Campaign 17 salesLead 7852"
        }
      ],
      "validFor": {
        "startDateTime": "2022-03-30T12:27:59.123Z",
        "endDateTime": "2022-04-30T12:27:59.123Z"
      },
      "product": {
        "productOffering": {
          "id": "42",
          "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/42",
          "name": "Gold Credit Card"
        }
      }
    },
    {
      "id": "200",
      "action": "add",
      "rating": "hot",
      "salesOpportunityItemStatus": "acknowledged",
      "priority": "high",
      "relatedParty": [
        {
          "id": "94587",
          "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/94587",
          "name": "Gustavo Fring",
          "role": "prospect",
          "@referredType": "Individual",
```

```
        "contactMedium": [
          {
            "id": "5436546",
            "mediumType": "phoneNumber",
            "preferred": false,
            "characteristic": {
              "phoneNumber": "0102030405"
            }
          },
          {
            "id": "16546546256",
            "mediumType": "email",
            "preferred": true,
            "characteristic": {
              "emailAddress": "gustavo.fring@mail.com"
            }
          }
        ]
      },
      {
        "id": "127",
        "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/127",
        "name": "Walter White",
        "role": "marketing team",
        "@referredType": "Individual"
      },
      {
        "id": "475",
        "href": "https://serverRoot/tmf-api/partyManagement/v1/individual/475",
        "name": "Saul Goodman",
        "role": "sales team",
        "@referredType": "Individual"
      }
    ],
    "validFor": {
      "startDateTime": "2022-03-30T12:27:59.123Z",
      "endDateTime": "2022-04-30T12:27:59.123Z"
    },
    "product": {
      "productOffering": {
        "id": "632",
        "href": "https://serverRoot/tmf-api/productCatalogManagement/v4/productOffering/632",
        "name": "Credit Card insurance"
      }
    }
  }
 ]
}
```

Delete sales opportunity

DELETE /salesOpportunity/{id}

Description

This operation deletes a sales opportunity entity.

Usage Samples

Here's an example of a request for deleting a sales opportunity.

Request
DELETE /tmf-api/sales/v4/salesOpportunity/7894325
Response
204

API NOTIFICATIONS

For every single of operation on the entities use the following templates and provide sample REST notification POST calls.

It is assumed that the Pub/Sub uses the Register and UnRegister mechanisms described in the REST Guidelines reproduced below.

Register listener

POST /hub

Description

Sets the communication endpoint address the service instance must use to deliver information about its health state, execution state, failures and metrics. Subsequent POST calls will be rejected by the service if it does not support multiple listeners. In this case DELETE /api/hub/{id} must be called before an endpoint can be created again.

Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 409 if request is not successful.

Usage Samples

Here's an example of a request for registering a listener.

Request
POST /api/hub Accept: application/json {"callback": "http://in.listener.com"}
Response
201 Content-Type: application/json Location: /api/hub/42 {"id":"42","callback":"http://in.listener.com","query":null}

Unregister listener

DELETE /hub/{id}

Description

Clears the communication endpoint address that was set by creating the Hub..

Behavior

Returns HTTP/1.1 status code 204 if the request was successful.

Returns HTTP/1.1 status code 404 if the resource is not found.

Usage Samples

Here's an example of a request for un-registering a listener.

Request
DELETE /api/hub/42 Accept: application/json
Response
204

Publish Event to listener

POST /client/listener

Description

Clears the communication endpoint address that was set by creating the Hub.

Provides to a registered listener the description of the event that was raised. The /client/listener url is the callback url passed when registering the listener.

Behavior

Returns HTTP/1.1 status code 201 if the service is able to set the configuration.

Usage Samples

Here's an example of a notification received by the listener. In this example "EVENT TYPE" should be replaced by one of the notification types supported by this API (see Notification resources Models section) and EVENT BODY refers to the data structure of the given notification type.

Request

POST /client/listener
Accept: application/json
 	
{
   "event": {
        EVENT BODY
     },
   "eventType": "EVENT_TYPE"
}

Response
201

For detailed examples on the general TM Forum notification mechanism, see the TMF REST Design Guidelines.

Acknowledgements

Version History

Release Number	Date	Release led by:	Description
Release 4.0.0	18/06/2019	Pierre Gauthier TM Forum pgauthier@tmforum.org Grégoire Laurent gregoire.laurent@orange.com Ludovic Robert ludovic.robert@orange.com Sophie Bouleau sophie.bouleau@orange.com	First Release of this API *Nota: the version 4.0 is assigned to all the APIs delivered in the release 19.0*
Release 4.1.0	05/04/2022	Pierre Gauthier TM Forum pgauthier@tmforum.org Grégoire Laurent gregoire.laurent@orange.com Ludovic Robert ludovic.robert@orange.com	Adding SalesOpportunity resource

Release History

Release Number	Date	Release led by:	Description
Release 19.0	18/06/2019	Pierre Gauthier TM Forum pgauthier@tmforum.org Grégoire Laurent gregoire.laurent@orange.com Ludovic Robert ludovic.robert@orange.com Sophie Bouleau sophie.bouleau@orange.com	Version 4.0 of the API REST *Nota: the version 4.0 is assigned to all the APIs delivered in the release 19.0*

Release 22.0	05/04/2022	Pierre Gauthier TM Forum pgauthier@tmforum.org Grégoire Laurent gregoire.laurent@orange.com Ludovic Robert ludovic.robert@orange.com	Version 4.1 of the API REST