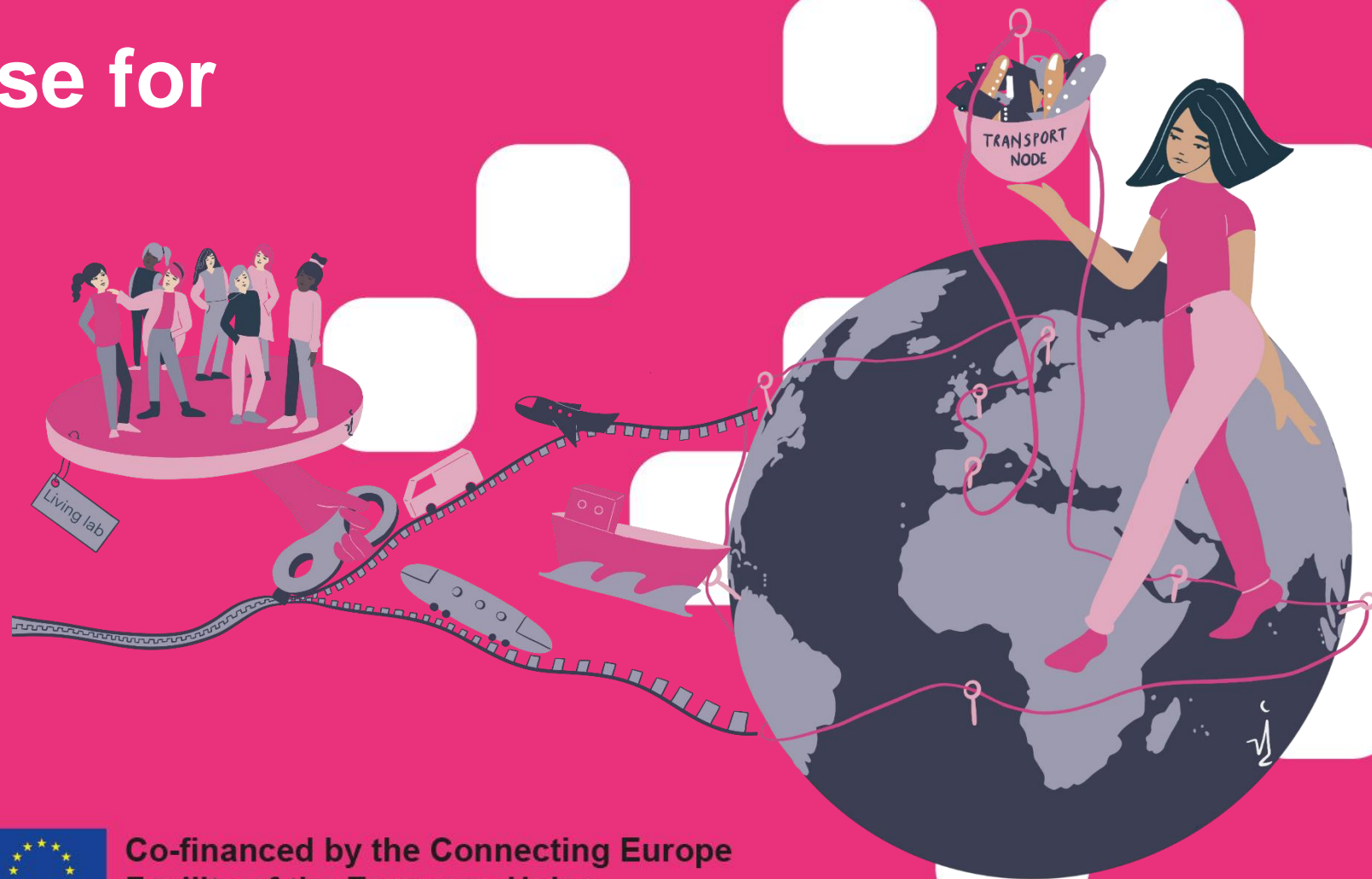


# Semantic Treehouse for FEDeRATED

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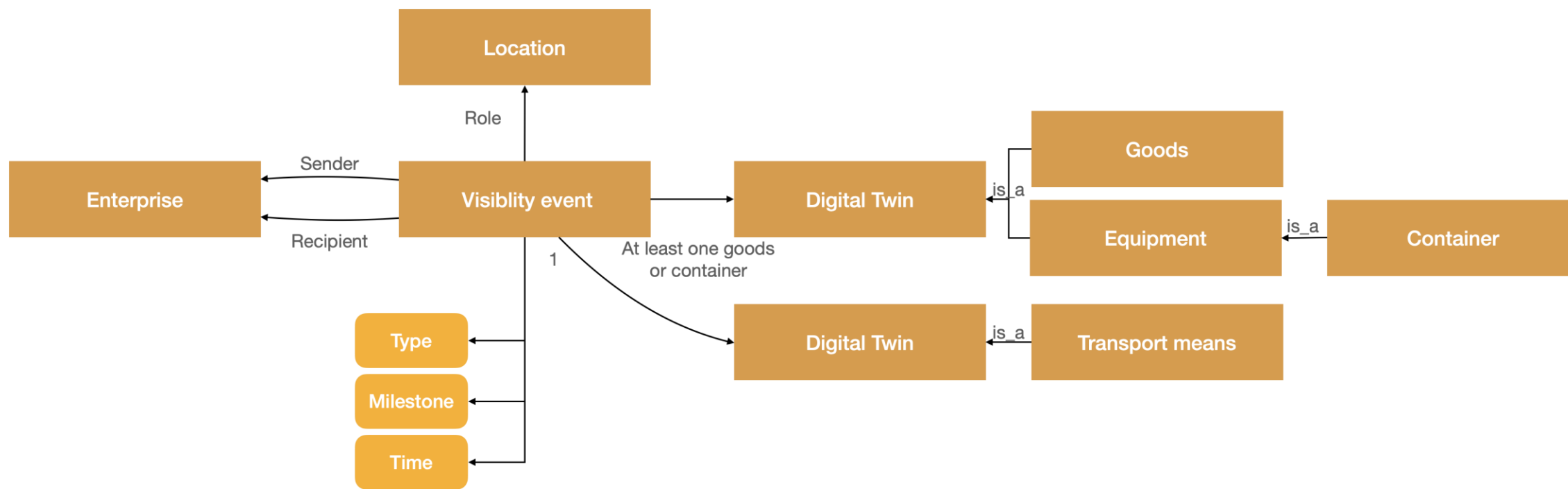
Co-financed by the Connecting Europe  
Facility of the European Union

# Agenda



1. Create message models (leveraging existent ontologies – FEDeRATED)
2. Uploading ontologies to Semantic Treehouse
3. Registration





# 1.0.1 Goal of creating message models - editing

## Feature 1:

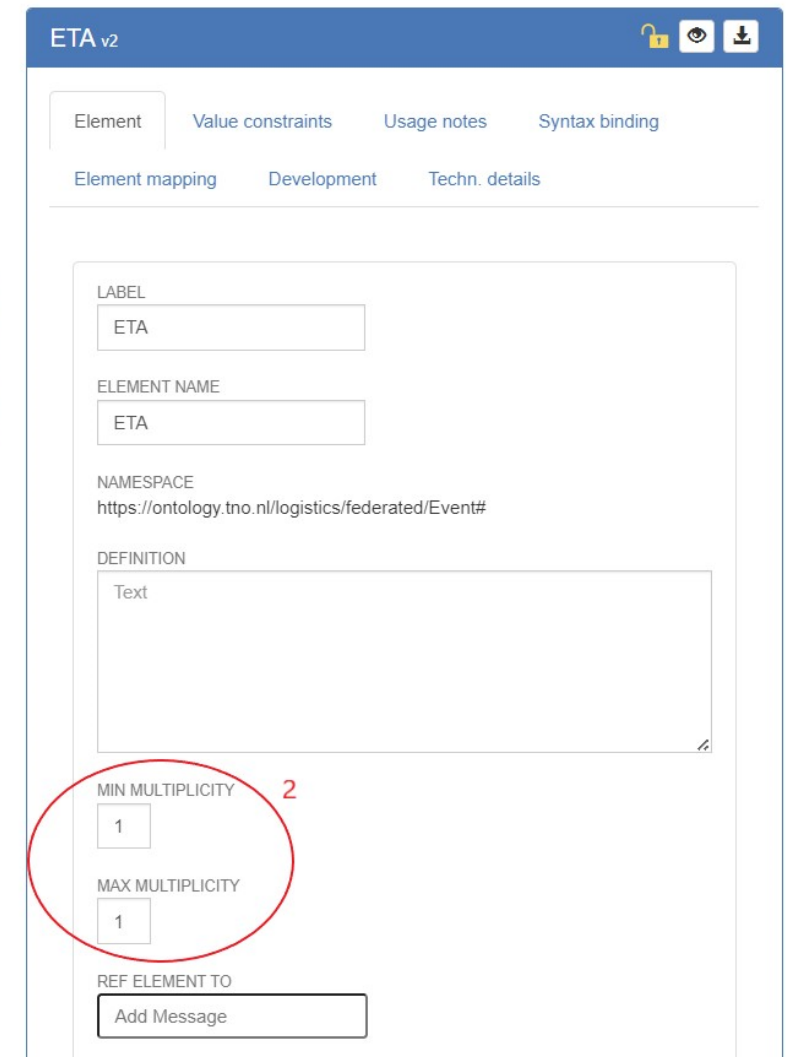
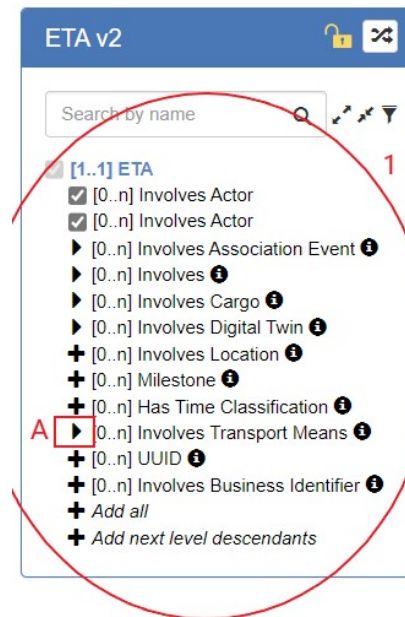
Select the attributes of the base class you want to include in the message model

### Subfeature A:

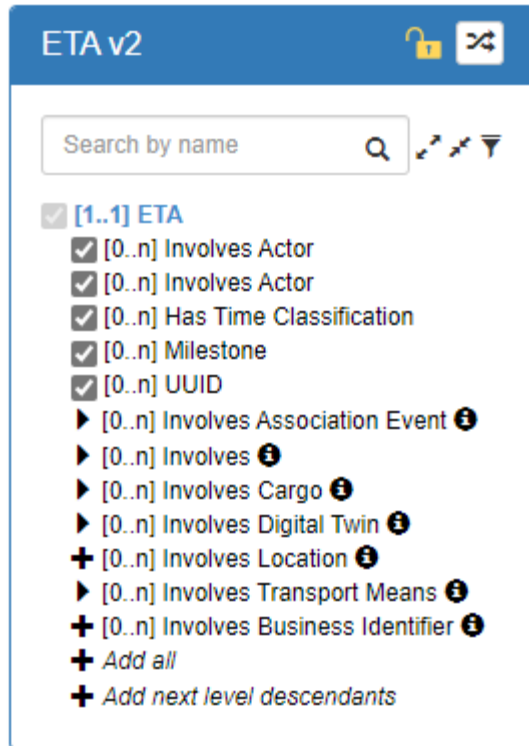
You can select between the subclasses or the class itself which to include

## Feature 2:

Selecting the minimum and maximum multiplicity => this will impact the integration results



# 1.0.1 Feature 1 impact on OpenAPI & SHACL (1)



...

components:

schemas:

ETA:

title: 'ETA version 2'

description: 'Generated by Semantic Treehouse on 2023-10-18T08:29:49+02:00'

additionalProperties: false

properties:

UUID:

items:

type: string

type: array

involvesActor:

items:

type: object

type: array

involvesTimeClassification:

items:

type: object

type: array

involvesMilestone:

items:

type: object

type: array

type: object



# 1.0.1 Feature 1 impact on OpenAPI & SHACL (2)

## ✓ [1..1] ETA





- ▼ ✓ [0..n] Involves Digital Twin
  - ✓ [0..n] Container Number
  - ✓ [0..n] Gross Mass
  - ✓ [0..n] UUID
  - ✓ [0..n] Container Type
- ▼ ✓ [0..n] Involves Digital Twin
  - ✓ [0..n] Truck License Plate
  - ✓ [0..n] Transport Means Nationality
  - ✓ [0..n] VIN
  - ✓ [0..n] UUID
- ▼ ✓ [0..n] Involves Location
  - ✓ [0..n] Business Location has role
  - ▼ ✓ [0..n] Business Location Involves L
    - ✓ [0..n] latitude
    - ✓ [0..n] longitude
    - ✓ [0..n] name
    - ✓ [0..n] External Identifier
    - ✓ [0..n] LOCODE
- ▶ [0..n] Involves ⓘ
- + [0..n] Involves Actor ⓘ
- + [0..n] Milestone ⓘ
- + [0..n] Has Time Classification ⓘ
- ▶ [0..n] Involves Transport Means ⓘ
- + [0..n] UUID ⓘ
- + [0..n] Involves Business Identifier ⓘ
- + Add all
- + Add next level descendants

```
properties:
  involvesDigitalTwin:
    items:
      additionalProperties: false
      properties:
        truckLicensePlate:
          items:
            type: string
          type: array
        hasTransportmeansNationality:
          items:
            type: string
          type: array
        hasVIN:
          items:
            type: integer
          type: array
        UUID:
          items:
            type: string
          type: array
        type: object
      type: array
    involvesLocation:
      items:
        additionalProperties: false
        properties:
          involvesPlace:
            items:
              additionalProperties: false
              properties: { latitude: { items: { type: number }, type: array }, externalIdentifier: { items: { type: string }, type: array }, longitude: {
items: { type: number }, type: array }, name: { items: { type: string }, type: array }, locode: { items: { type: string }, type: array } }
            type: object
          type: array
          locationRole:
            items:
              type: object
            type: array
          type: object
        type: array
      type: object
```



# 1.0.1 Feature 2 impact on OpenAPI & SHACL


ETA v3

☒ [1..1] ETA

☒ [0..n] Involves Digital Twin

☒ [1..1] UUID

 Add next level descendants

☒ [0..n] Involves Digital Twin

☒ [0..n] Involves Location

UUID v3

Element

Value cc

[Techn. details](#)

LABEL

UUID

ELEMENT NAME

UUID

NAMESPACE

https://ontology.tno.r

DEFINITION

Every event has a

MIN MULTIPLICITY

1

MAX MULTIPLICITY

1

schemas:

ETA:

title: 'ETA version 3'

description: 'Generated by Semantic Treehouse on 2023-10-18T08:59:53+02:00'

required:

- UUID

additionalProperties: false

properties:

involvesDigitalTwin:

items:



# 1.0.2 Goal of creating message models - export

## Options for export:

- OpenAPI Specification
- RDF example + SHACL
- XML example message model
- JSON schema, JSON example

Step 1: Data model version

Step 2: Message specification

Step 3: Summary & export

Configure your Semantic API using the following output

[XML syntax](#) [JSON syntax](#) [RDF syntax](#) [CSV syntax](#) [OpenAPI Specification syntax](#)

Open API Specification

☒ YAML ☐ JSON

Message Example

```
openapi: 3.0.0
info:
  title: ETA
  version: '2'
  description: 'This OAS Specification was generated by Semantic Treeh
servers:
  -
    url: 'https://example.org/api/v1'
    description: 'The Example API server.'
paths:
  /ETA:
    post:
      tags:
        - ETA
      summary: 'Create a resource of type ETA.'
```

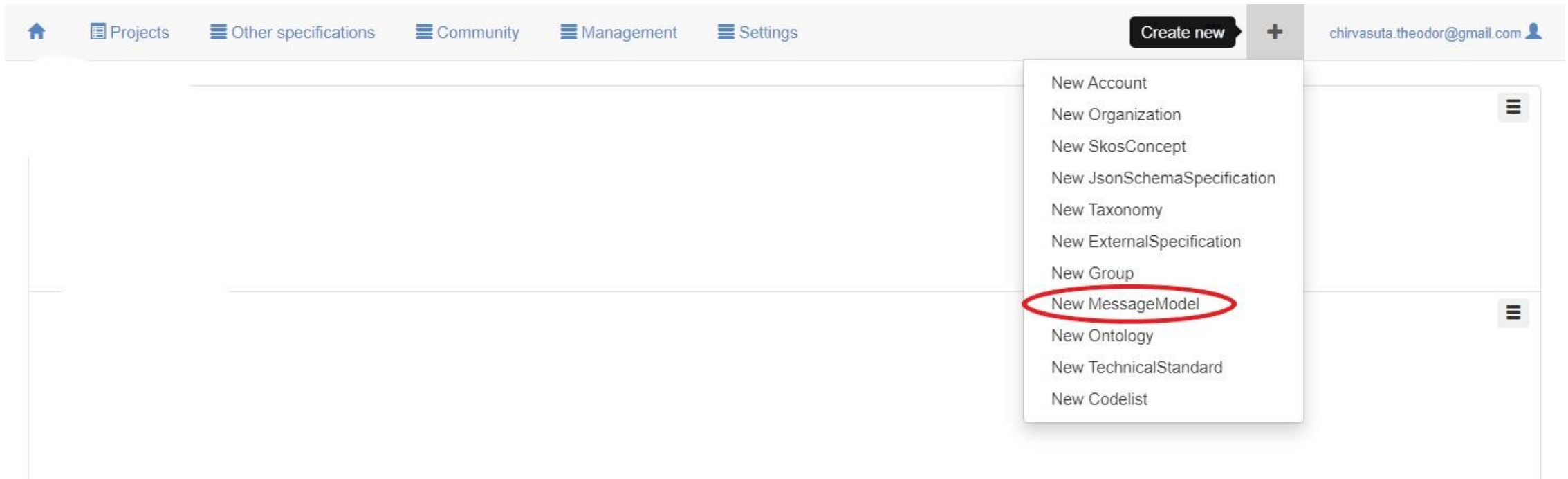
```
{
  "involvesActor": [
    {}
  ]
}
```





# 1.1. Creating message models in STH

Message models in STH = Events



## 1.2. Creating message models in STH



1. Give the message model a name (in our example ETA)
2. Same name from 1
3. Project for now only FEDeRATED, maybe in the future everyone will have their own project
4. Create a new version of message model

A screenshot of the STH (Software Tool Hub) interface for creating a new message model. The interface is divided into several sections: 'Value' (with a text input field), 'TITLE' (with a text input field), 'PROJECT' (with a dropdown menu showing 'Add Project'), 'ICON' (with a text input field), 'ICONFILE' (with a text input field and a button 'Add existing FileObject'), 'Upload new FileObject:' (with a 'Choose Files' button and 'No file chosen' text), 'SHORT DESCRIPTION' (with a large text area), 'DESCRIPTION' (with 'View' and 'Write' buttons), and 'VERSIONS' (with a table header and a green plus icon). The 'VERSIONS' section includes a table with columns: 'Version', 'Version id', 'Status', 'Locked', 'Published', and 'Highlighted'. A green plus icon is circled in red, and a green plus icon is shown below it. To the right of the interface, there are four numbered instructions: 1. Give it a name, 2. Same name from 1., 3. Select FEDeRATED (might be only option), and 4. Click the green + for new version.

Value

1. Give it a name

TITLE

Value

2. Same name from 1.

PROJECT

Add Project

3. Select FEDeRATED (might be only option)

ICON

Value

ICONFILE

Add existing FileObject

Upload new FileObject:

Choose Files No file chosen

SHORT DESCRIPTION

Text

DESCRIPTION

View Write

VERSIONS

Version Version id Status Locked Published Highlighted

4. Click the green + for new version



# 1.3. Creating message models in STH

## Edit message model version

Version mngt Release notes **Message model** Namespaces Validator syntax Documentation Acknowledgements

Click here for the message model screen

SPECIFICATION  
ShowcaseKnowHow

VERSION ID

Value

Give it a version ID

STATUS

Value

PUBLISHED

☐

If you want others to see it, tick this box

HIGHLIGHTED

☐

PUBLICATION DATE

dd-mm-yyyy



LOCK NOTE

Locking a version will lock all elements. Unlocking single elements is possible after unlocking this version

LOCKED

☐

SUCCESSOR OF

Add SpecVersion

BACKWARD COMPATIBLE?

☐

## 1.4. Creating message models in STH



At this step we mention which ontology our message model is going to use  
Currently there exists JSON Schema support  
– based on demand we can have another workshop for the schema as well

Clicking on New Message will prompt a new subscreen below

IMPORT ONTOLOGIES

Add OntologyVersion

IMPORT JSON SCHEMAS

Add JsonSchemaSpecVersio

MESSAGE DEFINITION

New Message



# 1.5. Creating message models in STH



## MESSAGE DEFINITION

MESSAGE NAME

Value

1. Give it a name

BASED ON CLASS (FULL URI)

Value

2. Input the URI of the base class (in showcase we used Event)

JSON POINTER TO ROOT (IN CASE OF JSON SCHEMA)

Text

NAMESPACE URI

Value

3. Input the URI of the namespace (in showcase we used the Event FEDeRATED namespace)

PREDECESSOR

Add Element

SYNTAX BINDING (OLD STYLE)

Add Message

MAPPINGS (NEW STYLE)

New MessageMapping

Cancel

In our demo:

CLASS FULL URI =

<https://ontology.tno.nl/logistics/federated/Event#PrimitiveEvent>

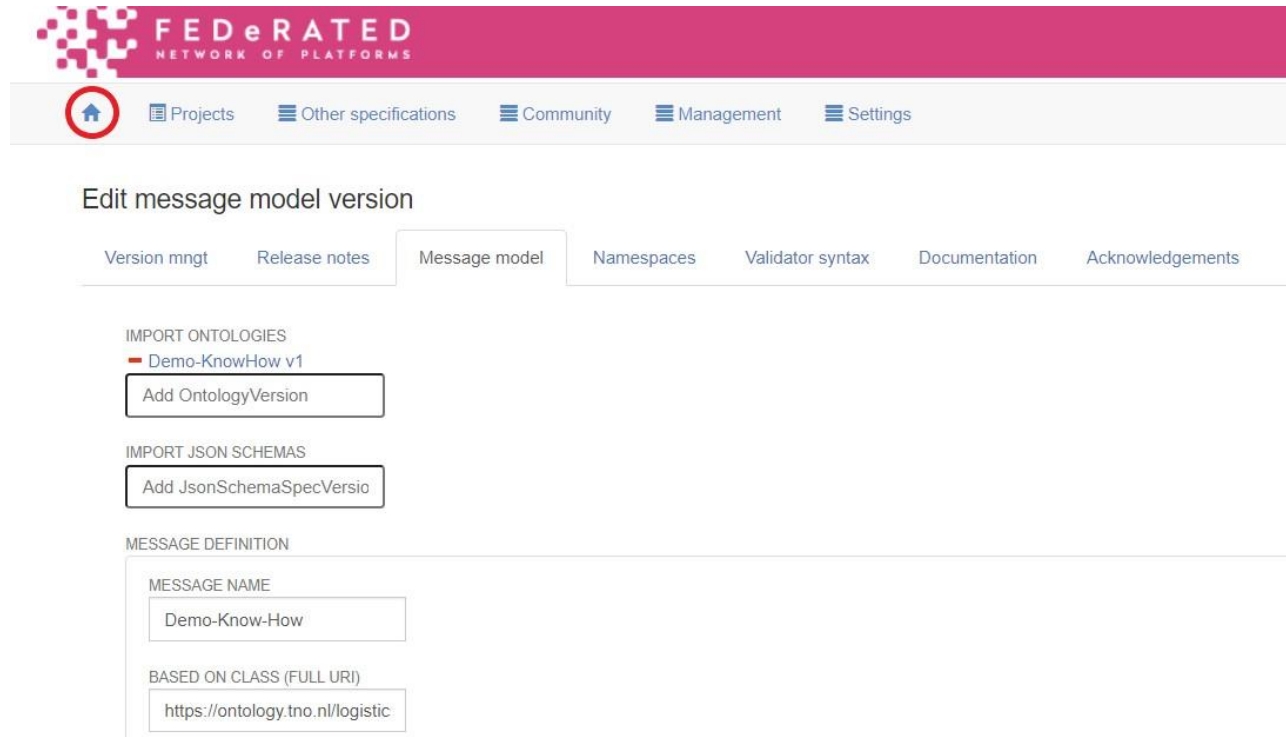
NAMESPACE URI =

<https://ontology.tno.nl/logistics/federated/Event#>



## 1.6. Creating message models in STH

To start editing the message model click the home icon in the dashboard

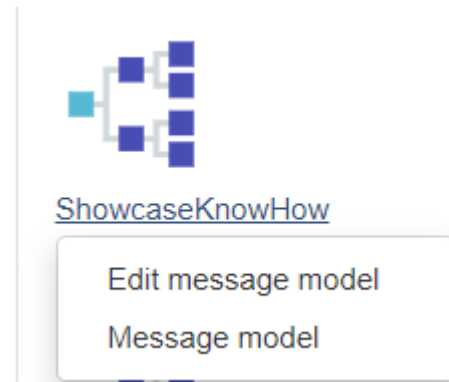


The screenshot shows the FEDeRATED NETWORK OF PLATFORMS dashboard. The top navigation bar includes a home icon (circled in red), Projects, Other specifications, Community, Management, and Settings. The main content area is titled 'Edit message model version' and features several tabs: Version mngt, Release notes, Message model (selected), Namespaces, Validator syntax, Documentation, and Acknowledgements. Under the 'Message model' tab, there are sections for 'IMPORT ONTOLOGIES' (with a sub-item 'Demo-KnowHow v1' and an 'Add OntologyVersion' button), 'IMPORT JSON SCHEMAS' (with an 'Add JsonSchemaSpecVersio' button), and 'MESSAGE DEFINITION'. The 'MESSAGE DEFINITION' section contains two input fields: 'MESSAGE NAME' with the value 'Demo-Know-How' and 'BASED ON CLASS (FULL URI)' with the value 'https://ontology.tno.nl/logistic'.



## 1.7 Creating message models in STH

Scroll down until you find your message model, then click it, you will be prompted with these 2 options  
Click on “Edit message model”



Click on the text below Message Model, above the pictogram

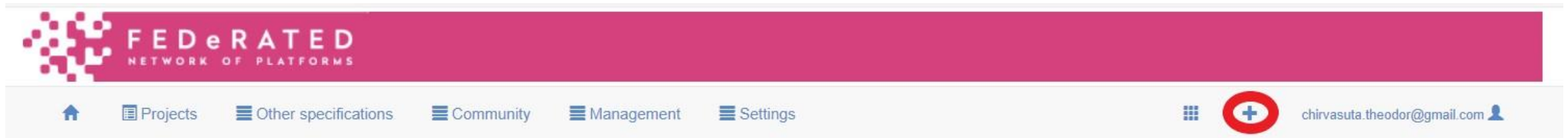
VERSIONS								
Version ▼	Status	Message model	Locked	Published	Highlighted	Publication date		
			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	09-10-2023		



## 2.1. Upload your ontology on STH



Click on the + sign from the dashboard at the top of the window, to the left of your email address

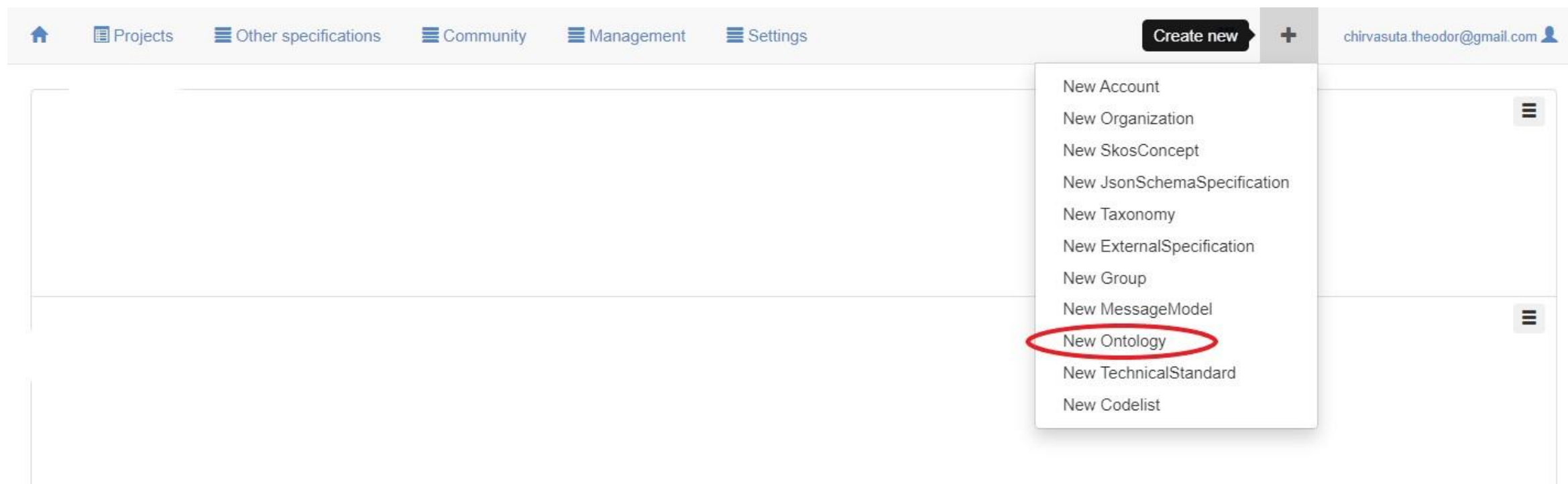




## 2.2. Upload your ontology on STH

Select from the drop-down menu “New Ontology”

*You might not have all the possible options shown below, that is not an issue!*



## 2.3. Upload your ontology on STH

Edit ontology model

SPECIFICATION

Value

1. Give it a name

TITLE

Value

2. Same name from 1.

PROJECT

Add Project

3. Select FEDeRATED (might be only option)

ICON

Value

ICONFILE

Add existing FileObject

Upload new FileObject:

Choose Files No file chosen

SHORT DESCRIPTION

Text

DESCRIPTION

View Write

VERSIONS

Version Version id ▼ Status Locked Published Highlighted

+


+

4. Click the green + for new version



## 2.3.1. Upload your ontology on STH

Give it a version number, if everything went well you will have this green background

VERSIONS						
Version	Version id ▼	Status	Locked	Published	Highlighted	+
Demo-KnowHow v1	1	Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
						+

Then click the given name under version



## 2.4. Upload your ontology on STH

Edit ontology version

Version mngt

Release notes

Ontology

Used by

Acknowledgements

SPECIFICATION  
Demo-KnowHow

VERSION ID

1

STATUS

Value

LOCKED

☐

PUBLISHED

☐

HIGHLIGHTED

☐

PUBLICATION DATE

dd-mm-yyyy



SUCCESSOR OF

Add SpecVersion

BACKWARD COMPATIBLE?

☐

Click here to see the ttl  
of the ontology

Tick this box to make your  
ontology visible to others



## 2.5. Upload your ontology on STH



Once you have clicked the “Ontology” tab, you will be prompted with screen

Here you can copy paste your ontology

And that’s it! Congratulations, you have uploaded your first ontology!

Edit ontology version

Version mngt

Release notes

Ontology

Used by

Acknowledgements

Text



### 3. Time for you to build yourself - Registration



1. Log in at: [Semantic Treehouse \(federatedplatforms.eu\)](https://federatedplatforms.eu)
2. Email me ([theodor.chirvasuta@tno.nl](mailto:theodor.chirvasuta@tno.nl)) stating the email you have used  
Include in the email also if you only want to view ontologies & message models or if you also want to modify them and create your own

