Events and Annotations

The Events menu allows searching and visualising events and annotations performed in the different objects (e.g. plants, sensors, experiments) declared in the information system.

Different filters can be applied based on `Dates`, `Type`, `Description` of events or the `Concern` or `Alias` object (Fig. 1). As an example, searching for plant 795 (having the URI `m3p:/arch/2017/c17000795`) in the **Concern** box, results in seven different events describing:

- `oevv:Sowing` => sowing pf the plant
- `oevv:Thinning` => installation of plant tutors
- `oevv:Fertilization` => fertilizer application
- `oeev:Stacking` => installation of plant tutors
- `oevv:MoveTo` => displacement event
- `oevv:StuckPlant` => an incident ocurred during imaging
- `oevv:Harvesting` => harvesting of the plant

🚩 Events

Date Range

Start Date	and	End Date

[Refresh]

Showing **1-7** of 7 items.

#	Type	Description	Concern	Alias	Date of Event	
	event ⌄			795		
1	oeev:StuckPlant	Plant blocked during imaging (15/5/17 7h). Measured biomass = 406g	m3p:/arch /2017/c17000795	0795/DZ_PG_33/ZM4353 /WW/Rep_4/14_15 /ARCH2017-03-30	2017-05-15T12:00:00+01:00T02:30:45+02:00	👁
2	oeev:Harvesting	Harvesting of the plant	m3p:/arch /2017/c17000795	0795/DZ_PG_33/ZM4353 /WW/Rep_4/14_15 /ARCH2017-03-30	2017-05-15T12:00:00+01:00	👁
3	oeev:Fertilization	Addition of 4 g of fertiliser per pot	m3p:/arch /2017/c17000795	0795/DZ_PG_33/ZM4353 /WW/Rep_4/14_15 /ARCH2017-03-30	2017-04-27T12:00:00+01:00	👁
4	oeev:Staking	Installation of plant tutors (83 g)	m3p:/arch /2017/c17000795	0795/DZ_PG_33/ZM4353 /WW/Rep_4/14_15 /ARCH2017-03-30	2017-04-18T12:00:00+01:00	👁
5	oeev:Thinning	Thinning to 1 plant per pot	m3p:/arch /2017/c17000795	0795/DZ_PG_33/ZM4353 /WW/Rep_4/14_15 /ARCH2017-03-30	2017-04-13T12:00:00+01:00	👁
6	oeev:Sowing	Sowing at PHENOARCH platform	m3p:/arch /2017/c17000795	0795/DZ_PG_33/ZM4353 /WW/Rep_4/14_15 /ARCH2017-03-30	2017-04-06T12:00:00+01:00	👁
7	oeev:MoveTo	Arrival at PHENOARCH platform	m3p:/arch /2017/c17000795	0795/DZ_PG_33/ZM4353 /WW/Rep_4/14_15 /ARCH2017-03-30	2017-04-06T12:00:00+01:00	👁

Detailed information of each event can be displayed including **RDF triples** (Fig. 2). For instance the event `http://www.phenome-fppn.fr/id/event/5878e232-c4b8-4fb8-b705-1988540dcfd2` describing the `Harvesting` of plant 795 is formulated as:

where is of type harvesting (**rdf:type**), concerns plant 795 (**event:concern**), and has and associated time stamp (**time:hasTime**). Details of the timings of the event (**time:inXSDDateTimeStamp**) and its annotation are described in Fig. 3 as:

The harvesting event http://www.phenome-fppn.fr/id/event/5878e232-c4b8-4fb8-b7051988540dcfd2 concerning the plant 795 is associated to the annotation http://www.phenomefppn.fr/id/annotation/f3fb3f7c-b4a0-4531-b3de-5cfd8b4b2b28 `via **oa:hasTarget**. Details of the annotation, such as the type **oa:Annotation**, the **oa:bodyValue** '*Harvesting of the plant*' and the time that event was annotated (**dcterms:created**) and the person who did the annotation (**dcterms:creator**) are described below (Fig. 4):

Annotations

Annotations are mainly guided by the **OEEv ontology** and the **Web Annotation Data Model** that allows annotating any object declared in the system and assigning motivation and purpose attributes to annotations (e.g. oa:describing, oa:identifying, oa:linking, oa: replying, etc.).

```
'http://www.w3.org/ns/oa#describing' => 'oa:describing',
'http://www.w3.org/ns/oa#identifying' => 'oa:identifying',
'http://www.w3.org/ns/oa#moderating' => 'oa:moderating',
'http://www.w3.org/ns/oa#assessing' => 'oa:assessing',
'http://www.w3.org/ns/oa#bookmarking' => 'oa:bookmarking',
'http://www.w3.org/ns/oa#classifying' => 'oa:classifying',
'http://www.w3.org/ns/oa#commenting' => 'oa:commenting',
'http://www.w3.org/ns/oa#editing' => 'oa:editing',
'http://www.w3.org/ns/oa#highlighting' => 'oa:highlighting',
'http://www.w3.org/ns/oa#linking' => 'oa:linking',
'http://www.w3.org/ns/oa#questioning' => 'oa:questioning',
'http://www.w3.org/ns/oa#replying' => 'oa:replying',
'http://www.w3.org/ns/oa#tagging' => 'oa:tagging',
```

Annotation
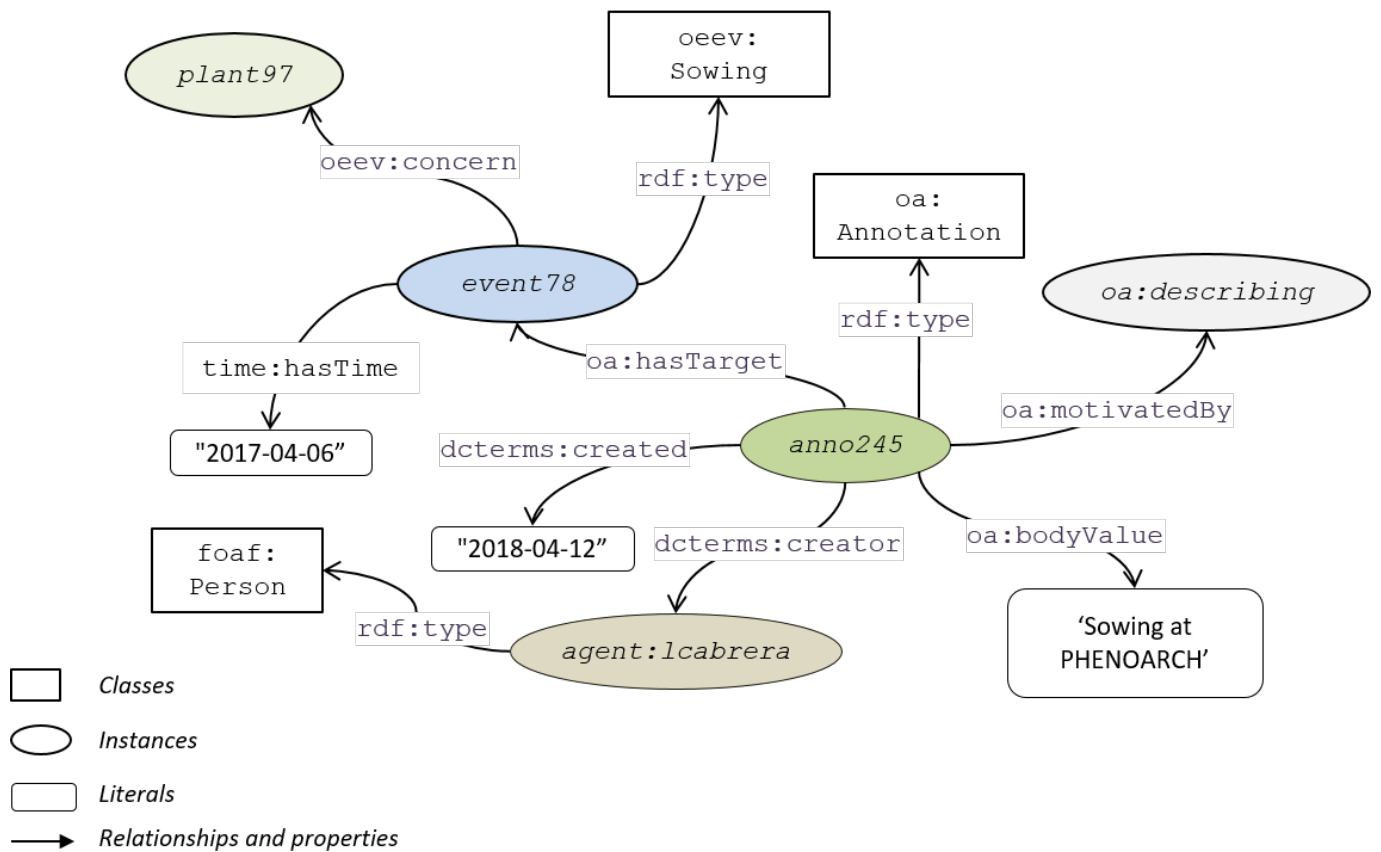
Dublin Core and foaf specifications such as *dcterms:created*, *dcterms:creator*, *foaf:Agent* are also used. For instance, the agent *agent:Lcabrera*, is a *Person* member of the group *PHENOARCH-ADMIN* that has a number of attributes such as *firstName*, *LastName*, *mbox*, etc. The Agent *agent:Lcabrera* is the author (dcterms:creator) of the annotation#245 (Fig. 6).

Agent
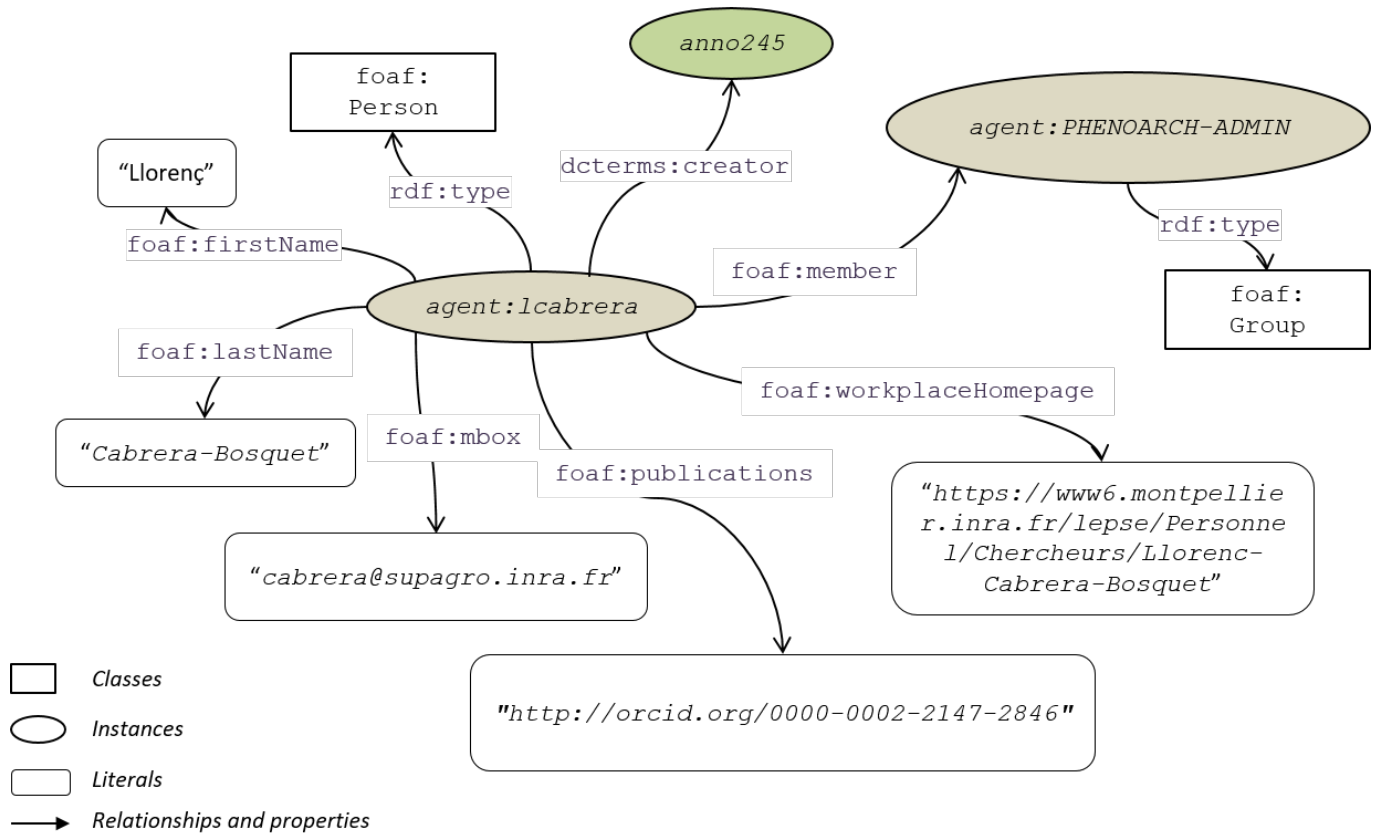
The different prefixes stand for:
- oeev: <http://www.phenome-fppn.fr/vocabulary/2018/oeev#>
- oa: <http://www.w3.org/ns/oa#>
- foaf: <http://xmlns.com/foaf/spec/>
- rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
- time: <http://www.w3.org/2006/time#>
- dcterms: <http://purl.org/dc/terms/>
- agent: <http://www.phenome-fppn.fr/id/agent/>

Annotations and events can be added into any object (e.g. plant, device, experiment, event) by clicking on the **add annotation** and **add event** buttons present in the different menus:

Use cases

Lodging of plot

The following semantic graph represents how **OEEv** ontology si used for representing a lodging event associated to **_plot97_** (Fig. 7).

In the example presented here, the **_event54_** that concerns **_plot97_** is of type **_Lodging_** and occurred the **"2017-06-29"**. **_event356_** is associated to the **_ann4807_** which is of type **_Annotation_** and is motivated by describing (**_oa:describing_**). This annotation, has a creator (**_Agent1_**), a date of annotation (**"2017-08-10"**) and a body value describing the event (**"Plots lodged after the storm"**).

Lodging of a plot
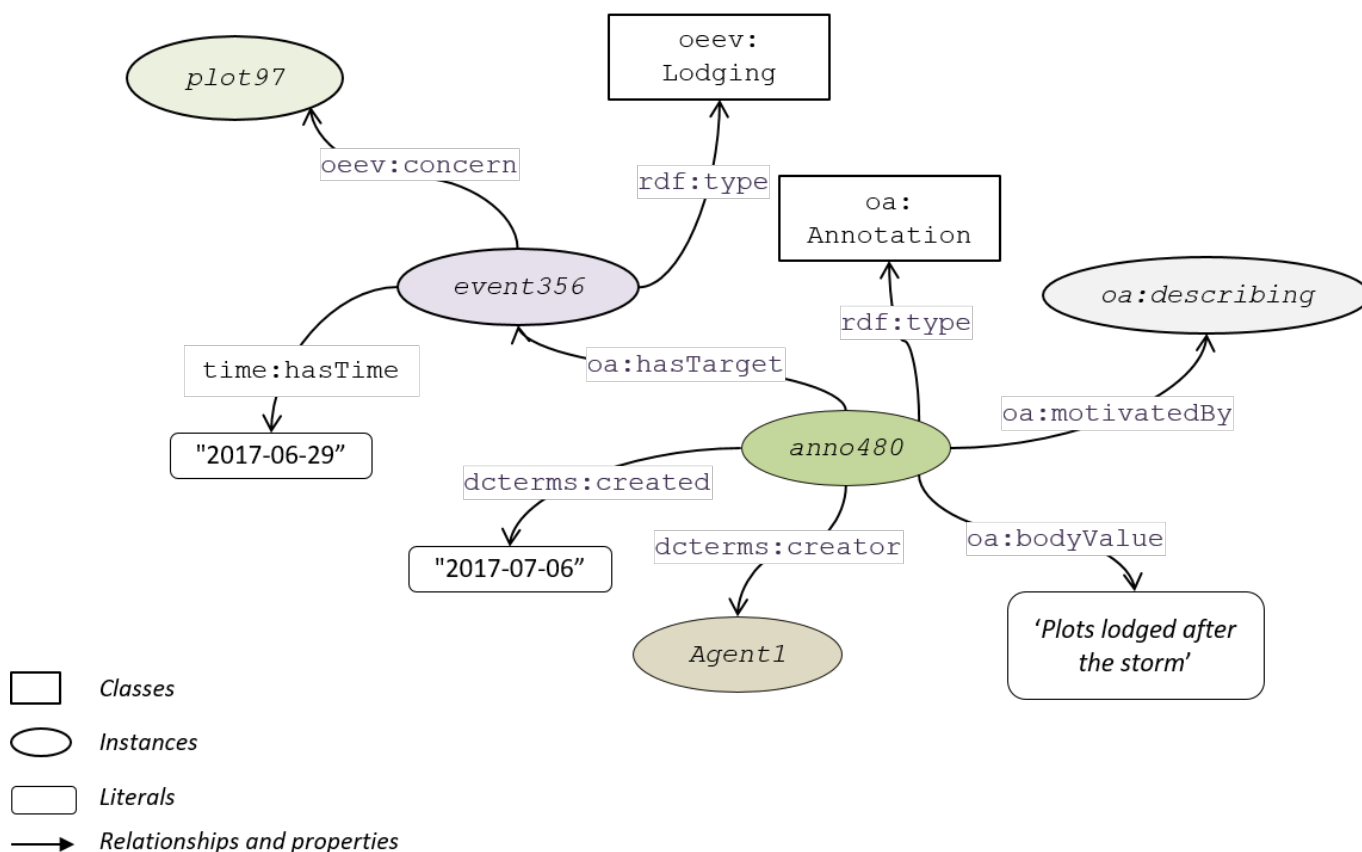
- Instances are depicted as coloured ellipses.
- Classes are depicted as white rectangles.
- Literals are depicted as white lozenges.
- Relationships and properties are depicted as black lines.

For better legibility objects are labelled with shortened alias names rather than using full URIs:

- ***plot97***: http://www.phenome-fppn.fr/diaphen/2017/o17000097 ***Agent1***: http://www.phenome-
- fppn.fr/id/agent/rchapuis ***event356***: http://www.phenome-fppn.fr/id/event/cafa1c09-2cbf-409f-
- 82f9-9f20496e3eb9 ***anno480***: http://www.phenome-fppn.fr/id/annotation/469bca50-10f9-4deb-
- 9b3a-6ae7476306cb

Note that not all objects and events associated to ***plot97*** are represented in this graph. Fulls details can be found in the PHIS user interface by searching for plot 97 in the different menus (e.g. **Events**, **Scientific objects**).

The event can be displayed in the web user interface by filtering by lodging and plot97 in the Events menu. Further information can be displayed by clicking on the `Browse Triplestore` button:

Plant blocked in imaging cabin

The following semantic graph represents how **OEEv** ontology is used for representing an incident during imaging acquisition associated to ***plant795*** (Fig. 10).

In the example presented here, the ***event849*** that concerns ***plant795*** is of type ***PlantStuck*** and occurred the **"2017-05-15"**. ***event849*** is associated to the ***anno86*** which is of type ***Annotation*** and is motivated by describing (***oa:describing***). This annotation, has a creator (***Agent2***), a date of annotation (**"2017-05-26"**) and a body value describing the event (**"Fallen plant during imaging"**).

Plant stuck in cabin
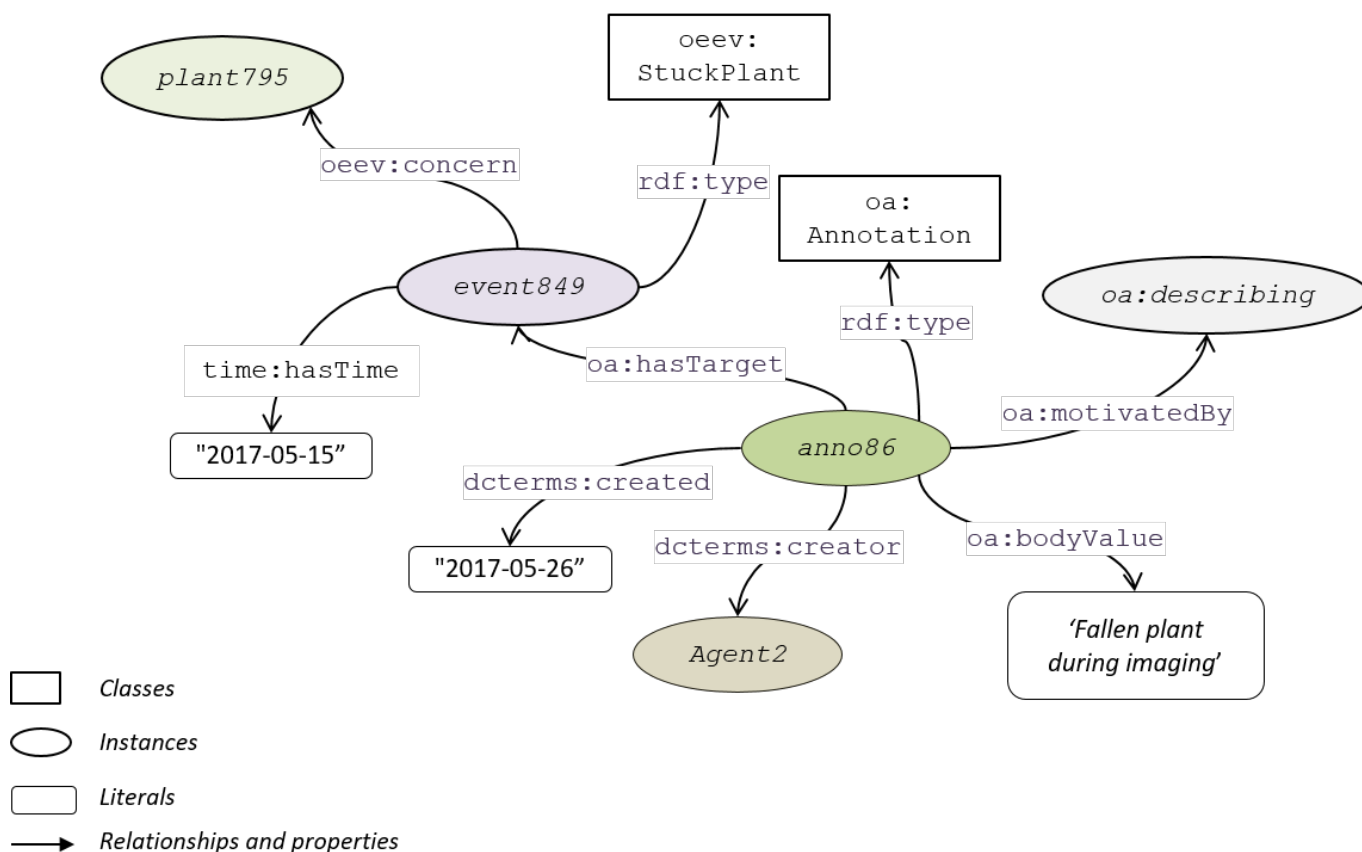
- Instances are depicted as coloured ellipses.
- Classes are depicted as white rectangles.
- Literals are depicted as white lozenges.
- Relationships and properties are depicted as black lines.

For better legibility objects are labelled with shortened alias names rather than using full URIs:

- **plant795**: http://www.phenome-fppn.fr/m3p/arch/2017/c17000795 **Agents**:
- http://www.phenome-fppn.fr/id/agent/lcabrera **event849**: http://www.phenome-
- fppn.fr/id/event/bcbb7240-34bc-4bc3-8ff3-31911e4b6aa7 **anno86**: http://www.phenome-
- fppn.fr/id/annotation:4aac3076-b542-4f6e-92e1-9d350dd3eec5

Note that not all objects and events associated to **plant795** are represented in this graph. Fulls details can be found in the PHIS user interface by searching for plant 97 in the different menus (e.g. **Events**, **Scientific objects**).

Suspected seed contamination

The following semantic graph represents how **OEEv** ontology is used for annotating an annomaly detected during data processing (i.e. suspected seed contamination) (Fig. 11).

The **anno338** which is of type **Annotation** and is motivated by tagging (**oa:tagging**) has as target **plant816**. The **anno338** has a creator (**Agent2**), a date of annotation (**"2018-05-17 11:02:39"**) and a body value describing the event (**"Suspected seed contamination"**).

Expert annotation during data processing

- Instances are depicted as coloured ellipses.
- Classes are depicted as white rectangles.
- Literals are depicted as white lozenges.
- Relationships and properties are depicted as black lines.

For better legibility objects are labelled with shortened alias names rather than using full URIs:

- **plant816**: http://www.phenome-fppn.fr/m3p/arch/2017/c17000816
- **Agent2**: http://www.phenome-fppn.fr/id/agent/lcabrera
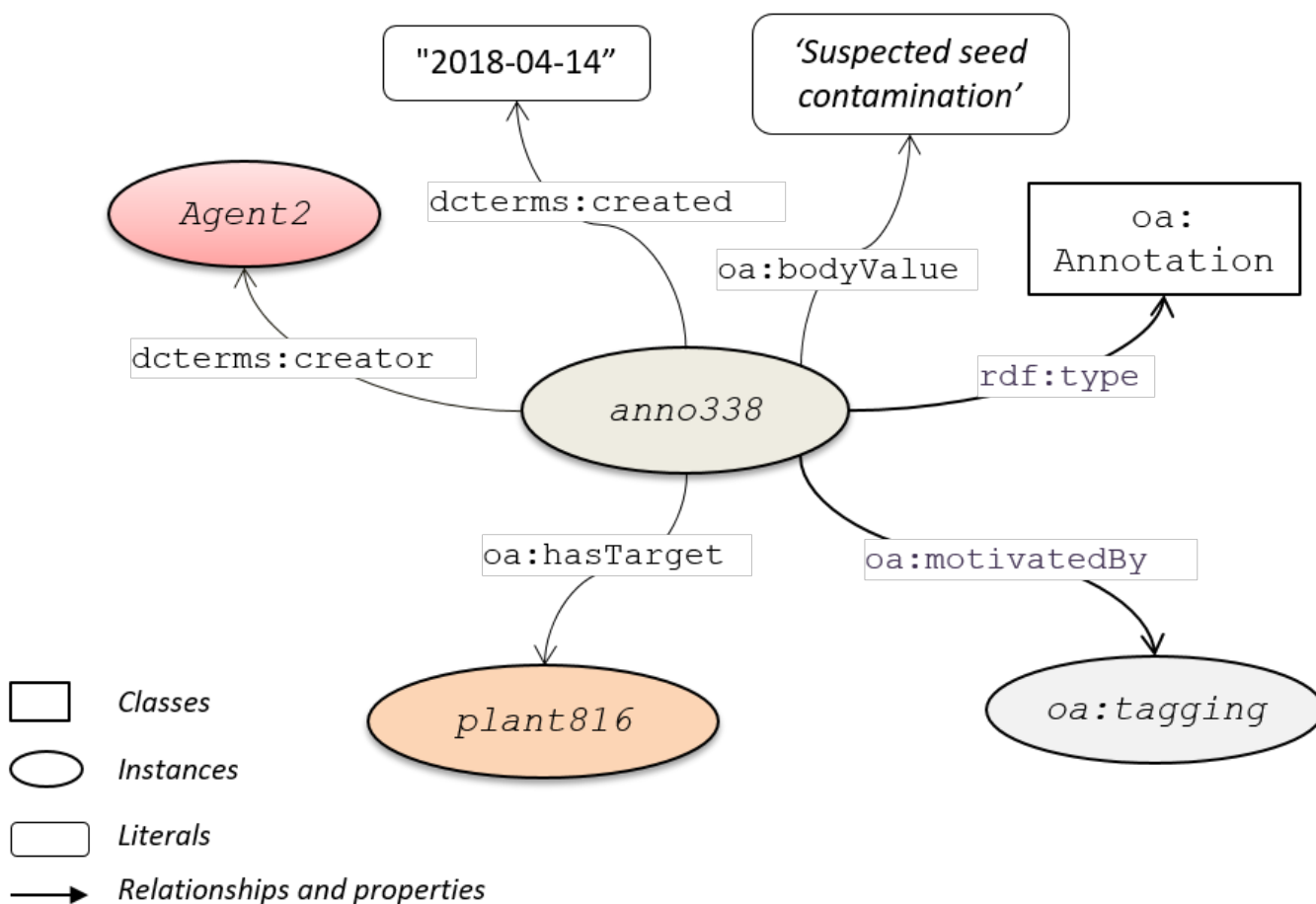- **anno338**: http://www.phenome-fppn.fr/id/annotation/5b0bd064452b1

Note that not all objects and events associated to **plant816** are represented in this graph. Fulls details can be found in the PHIS user interface by searching for plant 97 in the different menus (e.g. **Events**, **Scientific objects**).

Camera Dysfunction

In this example the target is a RGB camera that suffered a dysfunction (Fig. 12):

Camera dysfunction
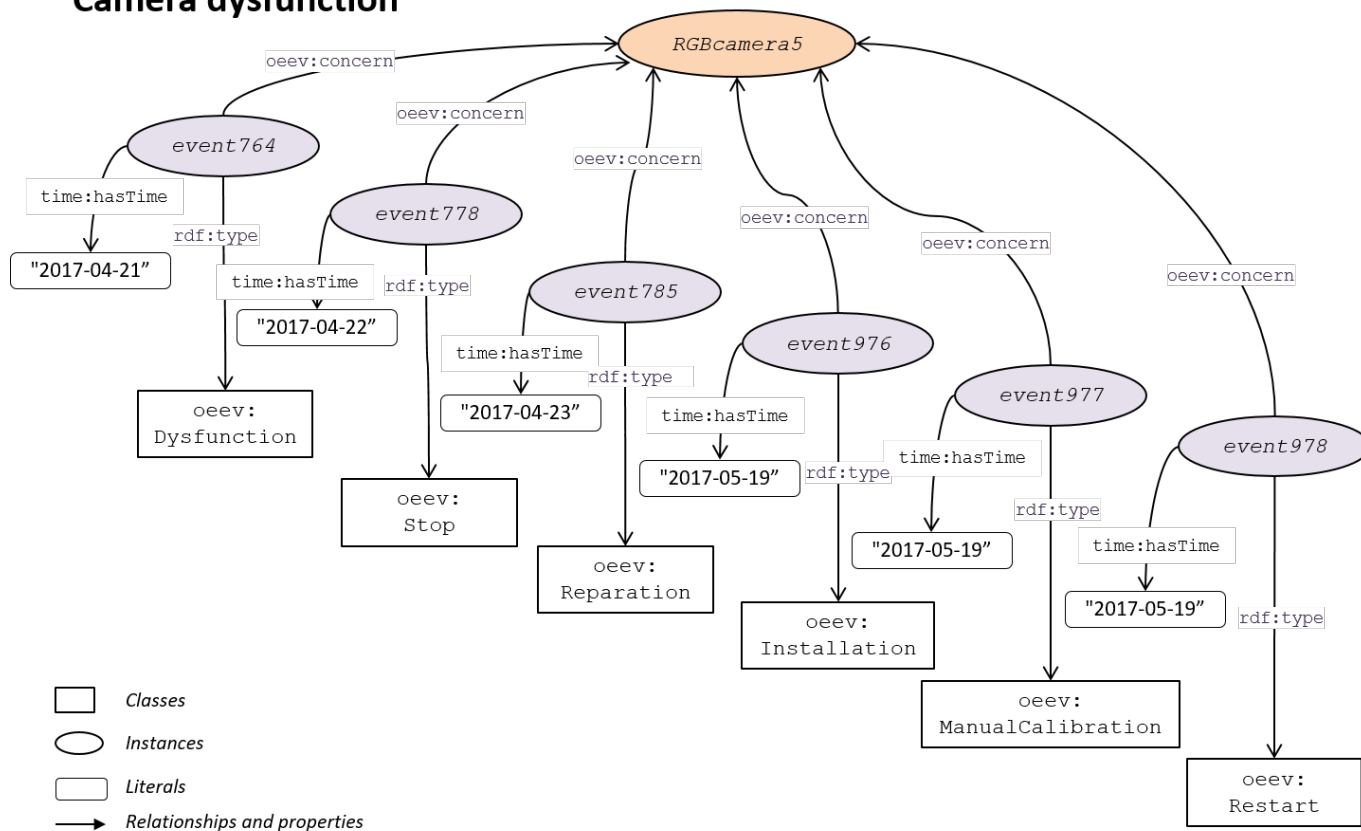
As represenetd in the semantic graph the **RGBcamera5** suffered as **Dysfucntion** the "2017-04-21". The "2017-04-22", image acquisition was stopped in cabin 5 as represented with the event **Stop**. The "2017-04-23" the camera was sent to the factory for **Reparation**. The "2017-05-19", the repaired camera was reinstalled and calibrated before being put in service again, as represented by the **Installation**, **ManualCalibration** and **Restart** events.

For better legibility objects are labelled with shortened alias names rather than using full URIs:

- **RGBcamera5**: http://www.phenome-fppn.fr/m3p/arch/2018/ac180011 **event764**:
- http://www.phenome-fppn.fr/id/event/dda84a5e-8783-4f60-8d80-d5a3ccb36b25 **event778**:
- http://www.phenome-fppn.fr/id/event/8be63f29-b3ba-4d0a-b40b-775d6119b167
- **event785**: http://www.phenome-fppn.fr/id/event/39a5a56a-bec8-4a35-a4dc-35d9c13b480f
- **event976**: http://www.phenome-fppn.fr/id/event/2ed84816-516f-4621-b7b9-face4acf7de4
- **event977**: http://www.phenome-fppn.fr/id/event/2ed6d628-c076-42d1-b8ba-014eaade4701
- **event978**: http://www.phenome-fppn.fr/id/event/05dc3267-9cce-4bce-8175-a7b2e04d663f

Only event types and dates are represented. Full details can be consulted online in the Events or Device menu by searching for *camera* or http://www.phenome-fppn.fr/m3p/arch/2018/ac180011 (Fig. 13).

Events

#	Type	Description	Concern	Alias	Date of Event
	event ▾		/ac180011		
1	oeev:ManualCalibration	Calibration	m3p:/arch/2018/ac180011	camera_top_5	2017-10-31T12:00:00+01:00
2	oeev:Restart	Restart image acquistion in cabin 5	m3p:/arch/2018/ac180011	camera_top_5	2017-05-19T12:00:00+01:00
3	oeev:ManualCalibration	Calibration	m3p:/arch/2018/ac180011	camera_top_5	2017-05-19T12:00:00+01:00
4	oeev:Installation	Installation of repaired top camera on cabin 5	m3p:/arch/2018/ac180011	camera_top_5	2017-05-19T12:00:00+01:00
5	oeev:Reparation	Camera sent to factory	m3p:/arch/2018/ac180011	camera_top_5	2017-04-23T12:00:00+01:00
6	oeev:Stop	Stop image acquistion in cabin 5	m3p:/arch/2018/ac180011	camera_top_5	2017-04-22T12:00:00+01:00
7	oeev:Dysfunction	Top camera cabin 5 dysfunctioning	m3p:/arch/2018/ac180011	camera_top_5	2017-04-21T12:00:00+01:00
8	oeev:Start	In service date	m3p:/arch/2018/ac180011	camera_top_5	2016-04-01T12:00:00+01:00

Leaf Sampling

In this example, the sapmling of a leaf of plant 60 is represented (Fig. 14):
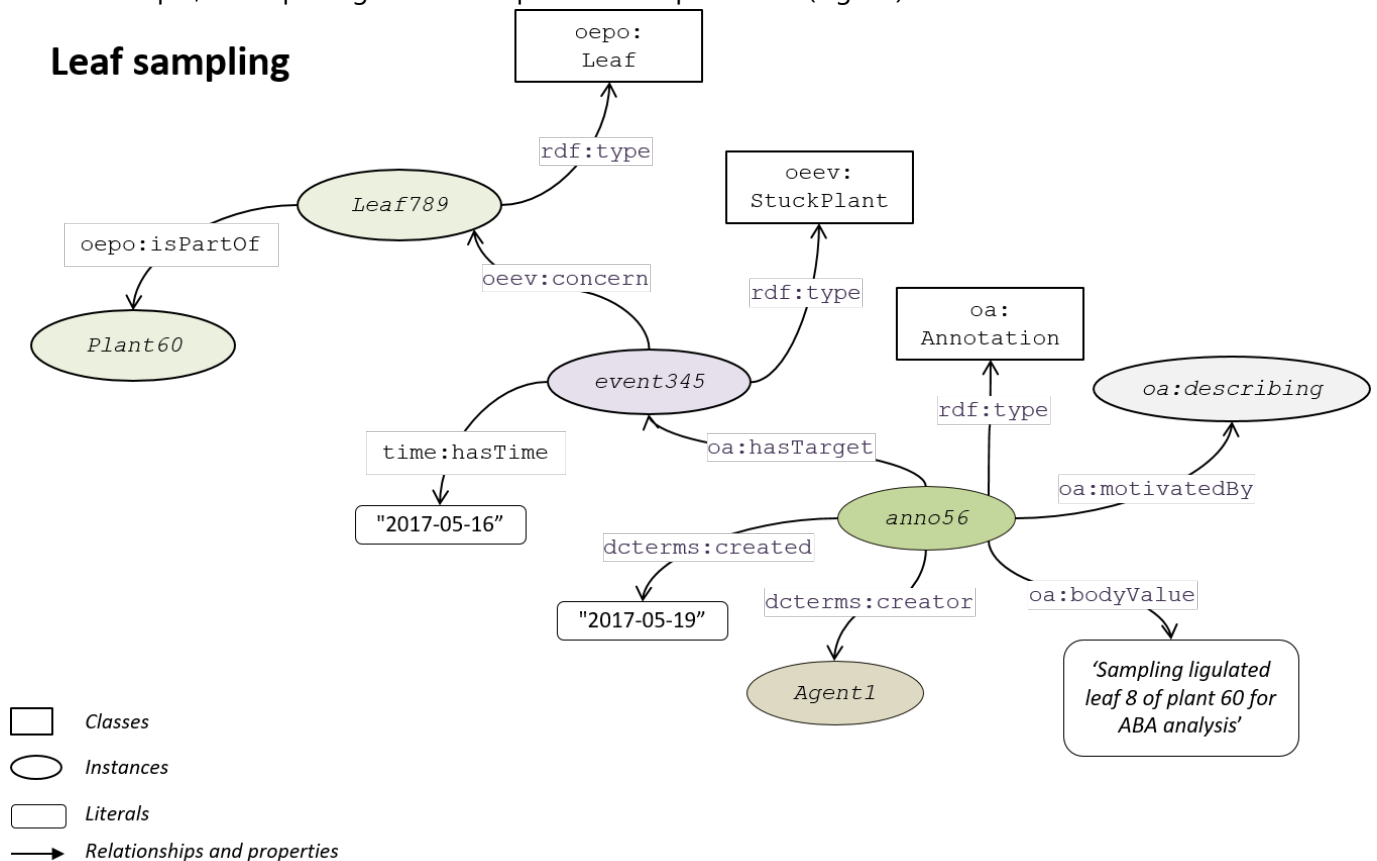
The real example concerning leaf http://www.phenome-fppn.fr/m3p/arch/2017/lc17000060 can be consulted online by searching for sampling events in the Events menu:

Events

Date Range

Start Date	and	End Date

Refresh

Showing **1-1** of **1** item.

#	Type	Description	Concern	Alias	Date of Event	
	sampling ▾			60		
1	oeev:Sampling	Sampling ligulated leaf 8 of plant 60 for ABA analysis	m3p:/arch /2017/lc17000060	0060/DZ_PG_27/ZM4354/WD/Veg_1 /01_60/8/ARCH2017-03-30	2017-05-16T12:00:00+01:00 10:51	👁

http://www.phenome-fppn.fr/id/event/b020e89f-3ac7-4eee-baa0-70c3cbec30ce

Add annotation   Browse Triplestore

Type	oeev:Sampling
Description	Sampling ligulated leaf 8 of plant 60 for ABA analysis
Author	http://www.phenome-fppn.fr/id/agent/lcabrera
Date of Event	2017-05-16T12:00:00+01:00 10:51
Concern	m3p:/arch/2017/lc17000060
Alias	0060/DZ_PG_27/ZM4354/WD/Veg_1/01_60/8/ARCH2017-03-30