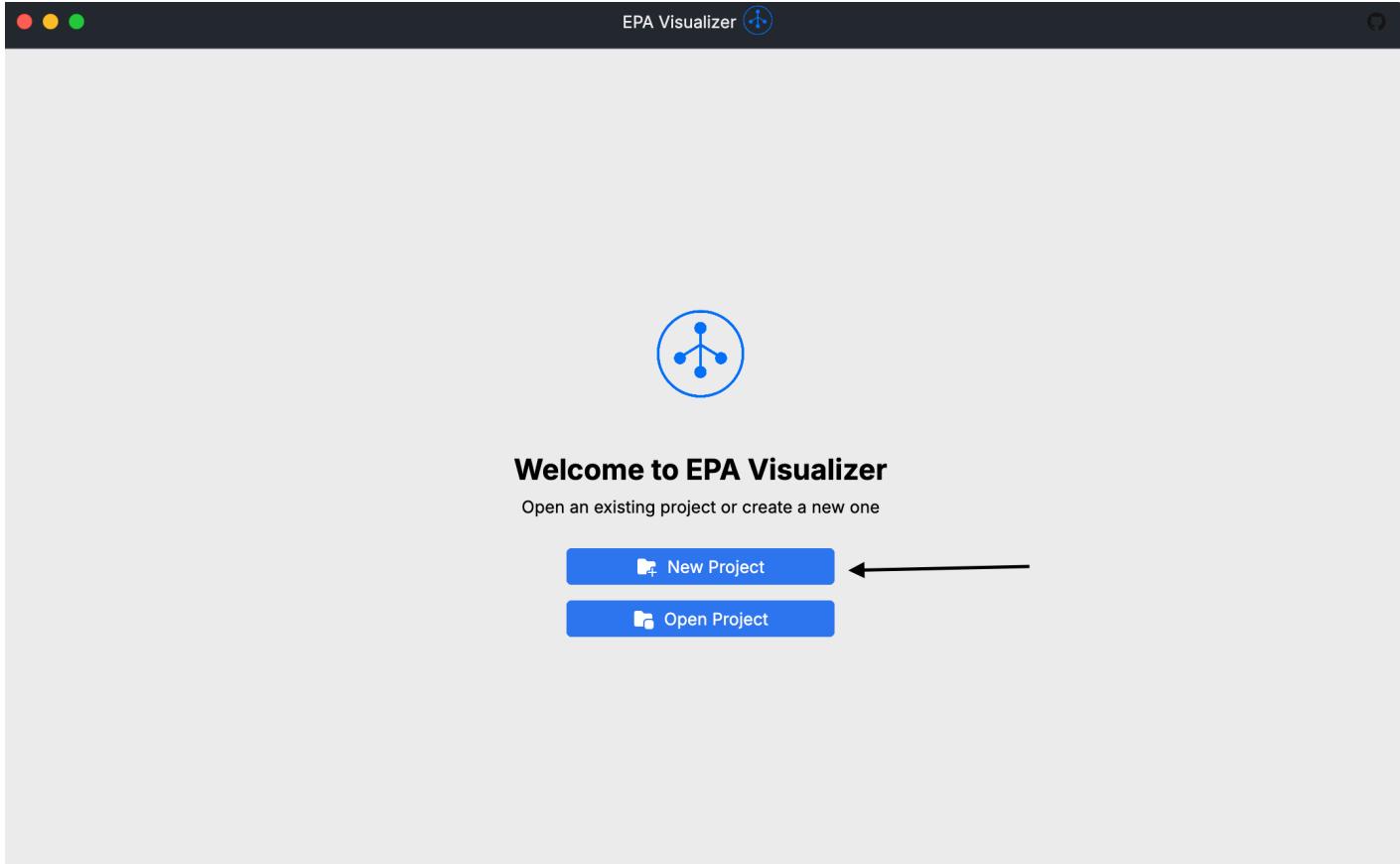


Slide Deck Combined

1. Create A New Project

1. New Project Button



2. Enter a project Name and press "Next"

3. Select a Eventlog-File (xes or .xes.gz) by either dragging and dropping the file in the area or by clicking the highlighted area and selecting a Eventlog-File in the File-Selector. Continue with "Next"



Create New Project

Project Info Select XES Select Mapper Choose Location Create

Select XES event log file



Click to select XES file or drag and drop a XES file

Previous

Next

Cancel

4. Select the appropriate event log mapper for the chosen Eventlog-File.

Create New Project

Project Info  Select XES  Select Mapper 

Select Event Log Mapper

→[Select Event Log Mapper:

Sample

Sample

Challenge Offer 2017

Challenge 2017

Challenge 2018



Note: The Event Log Mapper is relevant to transform the raw xes-event format into a format usable by the application. When the wrong mapper is selected here the transformation might fail entirely or produce wrong results.

5. By clicking in the selected area choose a location where the project (the event log file and the configuration should be saved)

Create New Project

Project Info  Select XES  Select Mapper  Choose Location 

Choose project location



Click to select folder

Previous

Next

6. Verify the configuration and Create and open the project by clicking "create project"

Create New Project

Project Info  Select XES  Select Mapper  Choose Location  Create 

Review and create project

Project Summary

Name: BPI Challange 2017-Offer

XES File: BPI Challenge 2017 - Offer log.xes.gz

Mapper: Challenge Offer 2017

Location: /Users/moritzlindner/Desktop

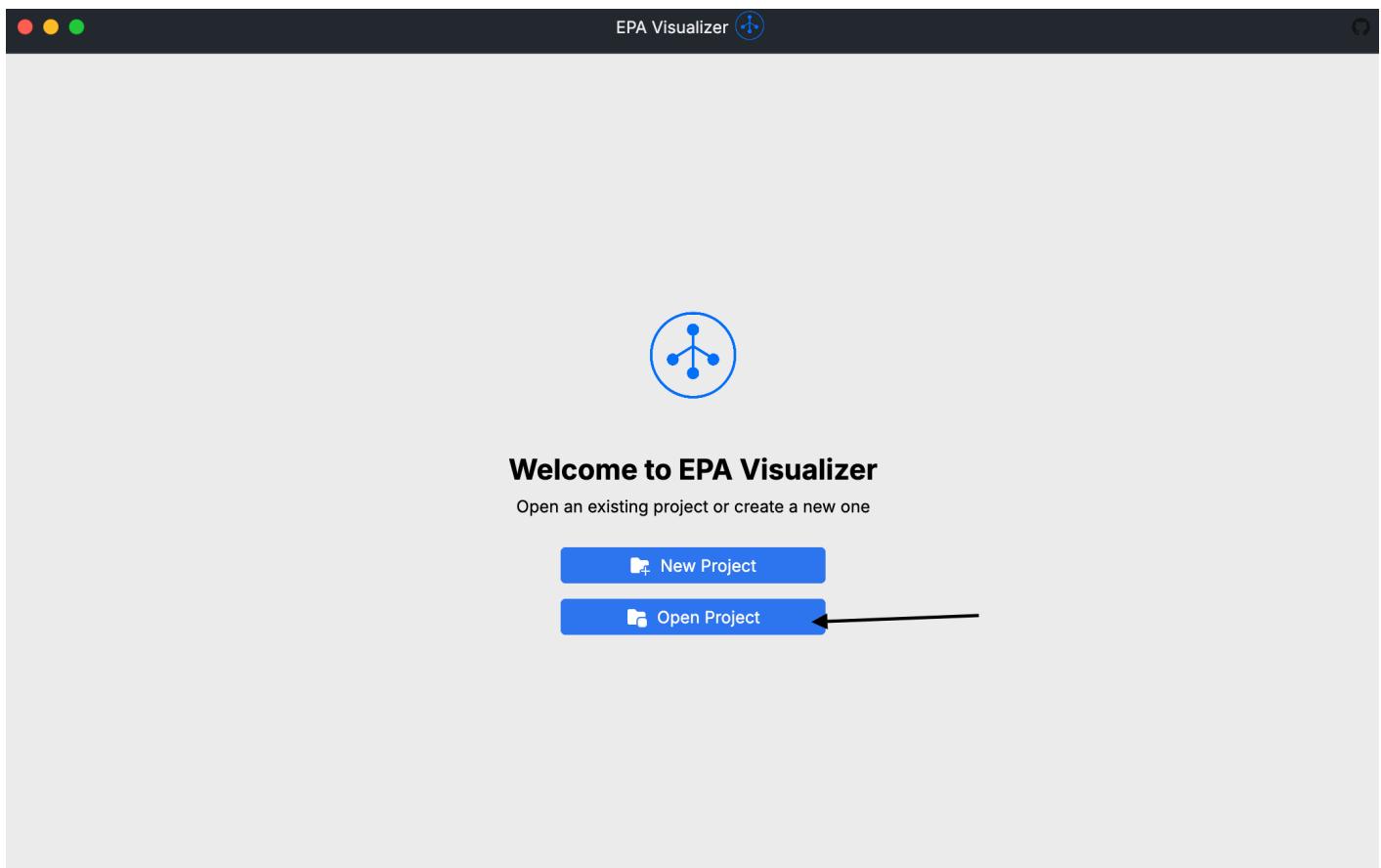
Final Path: /Users/moritzlindner/Desktop/BPI Challange 2017-Offer

Previous

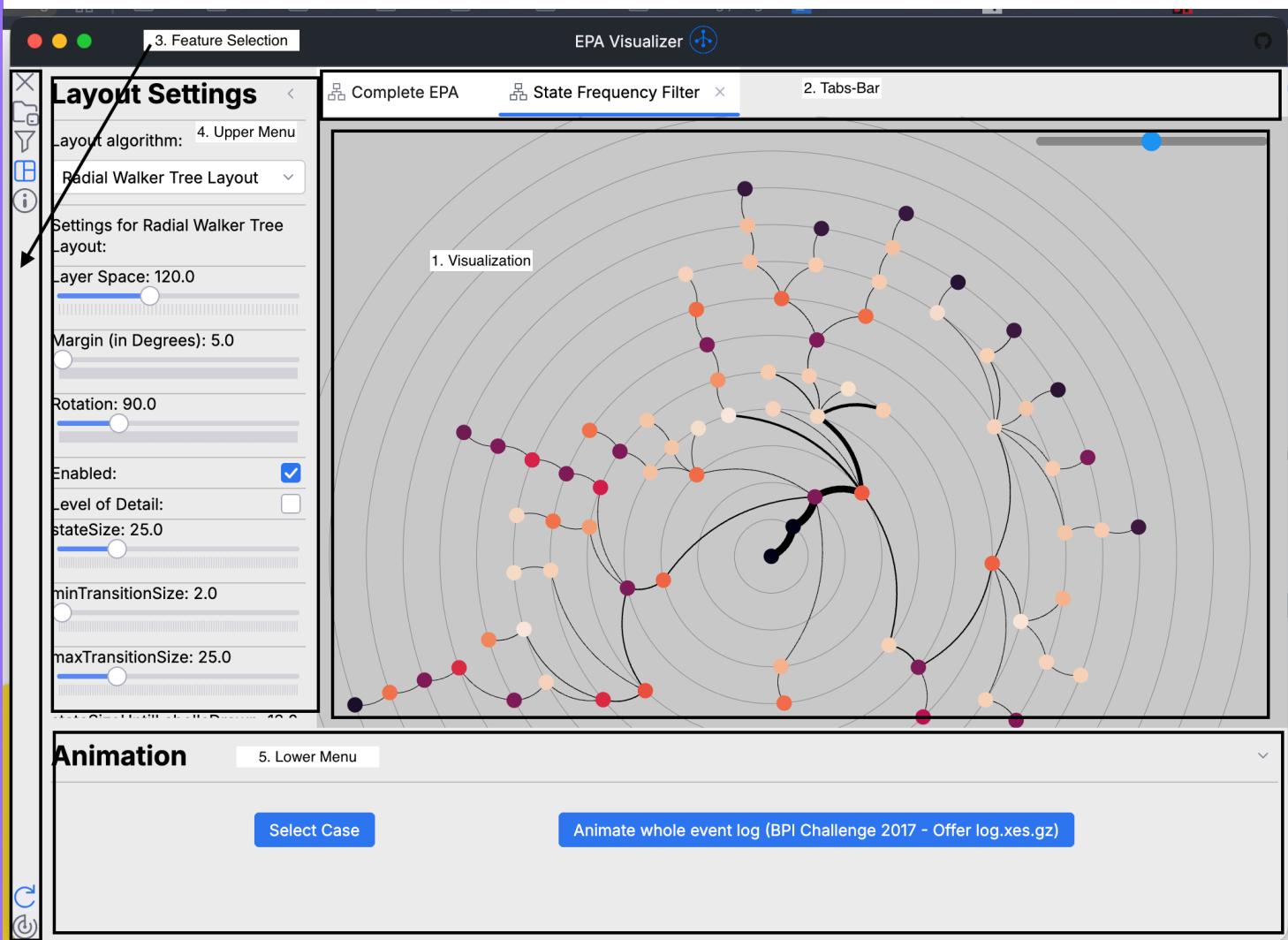
Create Project

2. Open A existing Project

1. Click "Open Project" and in the directory selector select the directory in which the project was saved



3. Programm UI-Overview



1. Visualization:

The menu shows the rendered EPA-Visulization

2. Tabs-Bar:

When using the program the originally constructed EPA can be transformed by filtering it.

All created EPAs are visible and selectable here. Each tab can be closed, copied or opened in a new window to get a read only view of the EPAs visualization.

3. Feature Selection:

The bar show all available programs. When selecting one it will open in either 4. Upper Menu (when selecting one of the 4 programs on the top) or in the 5. Lower Menu (when selecting one of the 2 programs from the lower part of the bar)

The following programs are available (from top to bottom):

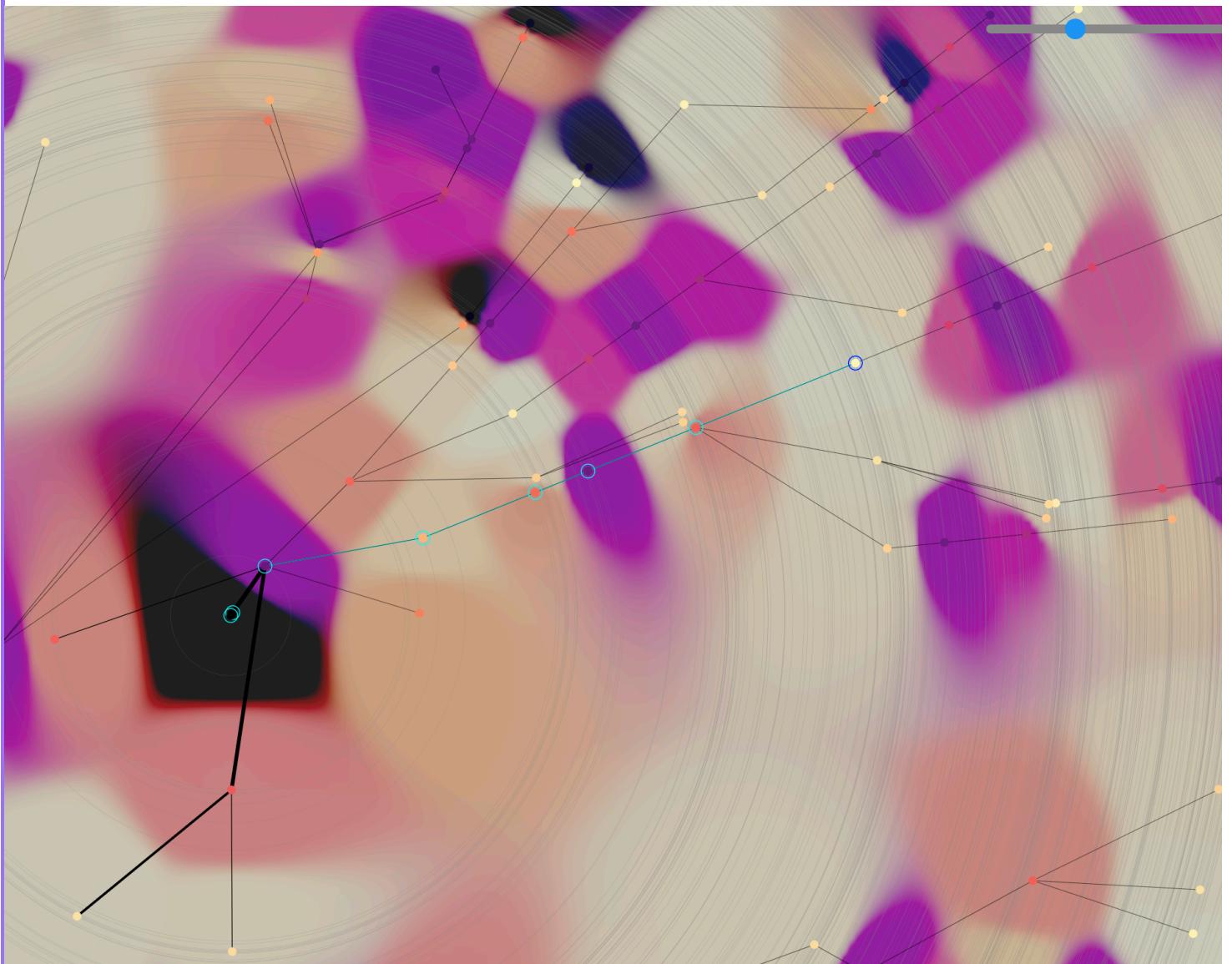
Top:

1. "Close": Closes the project and opens the Main Menu
2. "Project Settings": Reconfigure the selected mapper
3. "Filter Settings": Configure and apply filters
4. "Layout Settings": Configure and apply a layout to change the visualization
5. "State-Details": View details of the in the visualization selected UI

Bottom:

6. "Animation": See how individual traces or the whole event log runs through the visualization
7. "Statistics": See statistics for the complete epa and if available the epa in the currently selected tab.

4. Visualization



The visualization can be interacted with through several ways.

It can be zoom in and out and panned.

Each state can be clicked in order to highlight the path from root to the current state. The selected state is also the one presented in the "State Details"-Menu (see [7. State Details](#))

The top right indicates the current zoom level.

Depending on the zoom level state names will be shown or not shown.

5. Filter

A filter can be applied by 1. selecting the type of filter from the dropdown. 2. Configuring the filter followed by clicking the "Add"-Button (3).

New filters (0)

The screenshot shows a user interface for creating new filters. At the top left is a dropdown menu labeled "State Frequency". To its right is a "Min:" input field containing "0.00%" with a small "1" box above it. Next is a "Max:" input field containing "100.00%" with a small "2" box above it. To the right of these is an "Add" button with a plus sign icon, accompanied by a small "3" box. Below these controls is a table listing various filter configurations:

Filter Type	Value
root:	100.0000%
O_Create Offer:	100.0000%
O_Created:	100.0000%
O_Sent (mail an:	87.1116%
O_Returned:	52.6580%
O_Accepted:	38.0844%
O_Cancelled:	23.0093%
O_Created:	10.9842%
O_Create Offer:	10.9842%
O_Created:	10.2796%
O_Create Offer:	10.2796%
O_Sent (mail an:	9.4449%
O_Sent (mail an:	8.8387%
O_Refused:	8.4579%

This will put the prepared filter into the highlighted area containing "new filters". It is not applied yet!

If required further filter can be added which will also be shown here.

When a filter is not applied yet it can be removed by clicking the "trash"-icon.

To apply the filters click the "Create filtered EPA in new tab".

New filters (1)

The screenshot shows the same interface after a filter has been applied. The dropdown menu now says "Select new filter". Below it is a list containing a single item: "State Frequency Filter Filter 1". To the right of this list is a small trash bin icon. At the bottom of the screen is a large blue button with white text that reads "Create filtered EPA in new tab" with a circular arrow icon to its right.

The application provides 5 Types of filters. They will be shortly explained here:

Chain Compression

- When enabled the filter combines chains of states meaning subparts of the EPA where states have exactly one outgoing transition ("A" → "B" → "C" will become "ABC")

Filter Settings

Active filters (0)

New filters (0)

Chain Compression



Add

Enable Chain-Compression:

Create filtered EPA in new tab

Partition Frequency

- This filter can remove infrequent partitions from the epa. Each partitions frequency is shown. By moving the slider partitions will be "crossed out" and will be removed when applying the filter.

Filter Settings

Active filters (0)

New filters (0)

Partition Frequency

Add 

Min: 0.00%
Max: 100.00%
Threshold: 0.82%

Partition 0:	100.00%
Partition 27:	38.08%
Partition 11:	22.64%
Partition 24:	8.46%
Partition 17:	3.74%
Partition 29:	2.55%
Partition 38:	2.55%
Partition 78:	2.13%
Partition 25:	1.99%
Partition 39:	1.44%
Partition 28:	1.09%
Partition 35:	0.77%
Partition 46:	0.63%
Partition 22:	0.56%
Partition 41:	0.43%

State Frequency

- same as partition frequency but for states

Filter Settings

Active filters (0)

New filters (0)

State Frequency

Add 

Min: 0.00%
 Max: 100.00%
 Threshold: 7.18%



root:	100.0000%
O_Create Offer:	100.0000%
O_Created:	100.0000%
O_Sent (mail an:	87.1116%
O_Returned:	52.6580%
O_Accepted:	38.0844%
O_Cancelled:	23.0093%
O_Created:	10.9842%
O_Create Offer:	10.9842%
O_Created:	10.2796%
O_Create Offer:	10.2796%
O_Sent (mail an:	9.4449%
O_Sent (mail an:	8.8387%
O_Refused:	8.4579%
O_Sent (mail an:	7.9152%
O_Returned:	5.4968%
O_Create Offer:	3.9830%
O_Created:	3.9830%
O_Cancelled:	3.7323%
O_Accepted:	3.7323%
O_Returned:	3.6656%
O_Cancelled:	2.7579%

activity filter

- specific Activities can be removed from the epa.
- Be aware this will remove all children after the specific activity. (So removing C from A → B → C → D → E will result in A → B)

Filter Settings



Active filters (0)



New filters (0)



Activity



Add

- | | |
|--------------------------|-------------------------------------|
| O_Sent (online only) | <input checked="" type="checkbox"/> |
| O_Returned | <input checked="" type="checkbox"/> |
| O_Sent (mail and online) | <input checked="" type="checkbox"/> |
| O_Create Offer | <input type="checkbox"/> |
| O_Refused | <input checked="" type="checkbox"/> |
| O_Created | <input checked="" type="checkbox"/> |
| O_Cancelled | <input checked="" type="checkbox"/> |
| O_Accepted | <input checked="" type="checkbox"/> |

6. Layout

Each of the available layout has several, sometimes unique, configuration options. As there are many layouts with many unique settings. Not all will be explain in this guid.

Layout Settings



Layout algorithm:

Cycle-Time Radial Layout



Settings for Cycle-Time Radial Layout:

Enabled:



Level of Detail:



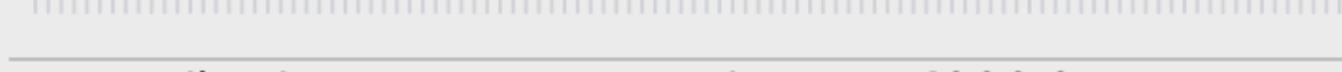
Margin (in Degrees): 5.0



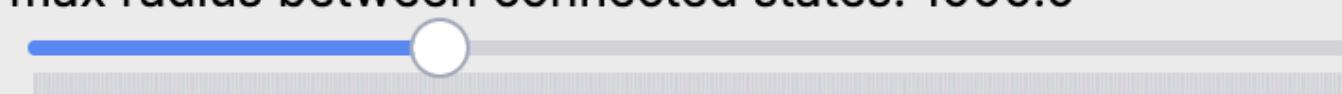
Rotation: 0.0



min radius between connected states: 10.0



max radius between connected states: 1000.0



stateSize: 25.0



minTransitionSize: 2.0



maxTransitionSize: 25.0



stateSizeUntilLabelsDrawn: 13.0



transitionDrawMode:

QUADRATIC_BEZIER

Color Palette:

rocket

Export visualization as PNG

Update Layout

Layout Algorithms:

All available layouts are selectable here. When selecting one the appropriate parameters are presented below:

Settings Shared Between (almost all layouts):

- Enabled: When disabled the visualization doesn't get rendered which can be useful when the EPA is too large to be drawn with good performance.
- Level of Detail: When enabled states with low frequency are not drawn when the zoom level is far outside to avoid visual clutter
- minTransitionSize, maxTransitionSize: The size of transitions is determined by how often the transition is taken in the event log. The min size determines the size used at the lower end and the max size is the size used at the upper end
- stateSizeUntilLabelsAreDrawn: Configure at which size state labels will be drawn (larger → drawn earlier / higher zoom level)
- transitionDrawMode: several draw modes are available for the transitions between the states:
 - NONE: transitions are not drawn
 - QUADRATIC_BEZIER: a bezier is drawn between the states
 - LINE: a direct line is drawn between the states
- Color Palette: Different Color Palettes can be chosen. The palette is used to color states based on the cycle time. The left part of the palette indicate fast cycle time and the right side indicate slow times. The dropdown menu shows a preview of the palette and the name. The palette is also used in the heat map which is only available in the "Angle-Similarity, Depth-Time RadialLayout"

Available Layouts and important settings

- Walker Layout
- Direct Angular Placement (Radial Layout)
- (Parallel) Readable Tree Layout:
 - initialization: 2 Modes are available for this Layout. "Compact" which creates a layout focused on compactness and "Edge Length" which creates a layout where the distance between the edges depends on the actual cycle time

- iterations: as the layout uses a force directed approach the number of iterations must be set here to configure how often the algorithm will be applied. Warning this can drastically increase the amount of time it takes to create the layout (depending on the amount of elements)
- minEdgeLength, maxEdgeLength: edge length is determined by cycle time in this layout. minEdgeLength and maxEdgeLength determine the min and max distance between the states
- *_FORCE_: 3 Parameters are present to configure the force directed improvements algorithm. The algorithm tries to ensure no label overlap, accurate edge length and generally a good utilization of space. Each parameter configures how strong the algorithm will try to improve the given optimization goal

- State Clustering Layout:

- This layout creates a highdimensional feature space (embedding) from all states and uses UMAP to create a 2d representation of the space thereby showing similarity between different states:
- Use *: by disabling a use * property it will be removed from the embedding thereby not being used in the similarity

- Partition Clustering Layout

- This layout creates a highdimensional feature space (embedding) from all partitions and uses UMAP to create a 2d representation of the space thereby showing similarity between different states:
- Use *: by disabling a use * property it will be removed from the embedding thereby not being used in the similarity

- Partition-Similarity-based Radial Layout:

- This layout creates a highdimensional feature space (embedding) from all partitions and uses UMAP to create a 1d representation of the space along a circle. Meaning similar partitions will be placed more closely to each other in the resulting radial layout

- Cycle-Time Radial Layout:

- This radial layout places the states on radii depending on its cycle time
- min/max radius between connected states: determined by cycle time in this layout. minE radius and max radius determine the in the visualization actual used distance for this.

- Angle-Similarity, Depth-Time Radial-Layout

- This layout combines "Cycle-Time Radial Layout" and "Partition-Similarity-based Radial Tree Layout"

7. State Details

As explained in [4. Visualization](#) individual cases can be clicked in the visualization.

If a case is selected this menu will show many different details for the selected state:

At the top the name of the state is displayed. Pressing the "target" icon on the right side will focus the state in the visualization.

O_Returned



Details

Details shows some general information for the state

Details

Activity	O_Returned
Partition	17
Depth	7
Events	1,732
Traces	1,732
(Normalized) Frequency	5.5%
Cycle Time	8d 7h

Transitions

Transition shows the incoming and outgoing transitions of the current state.

Pressing one of the listed states will result in that state being highlighted thereby allowing you to navigate through the epa.

Transitions

Incoming (1)

O_Sent (mail and online)

Outgoing (5)

O_Cancelled

O_Accepted

O_Refused

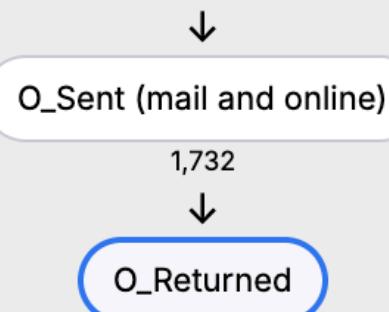
O_Create Offer

O_Returned

Path from root

Path from root shows the path from root to this state and the amount of events for each transition in this path. Each state is also clickable / navigateable

Path from Root



Traces

Traces shows each trace belonging to the state. Each trace can be expanded showing each event of the trace with its timestamp. The even(s) at the state will be bold.

Traces

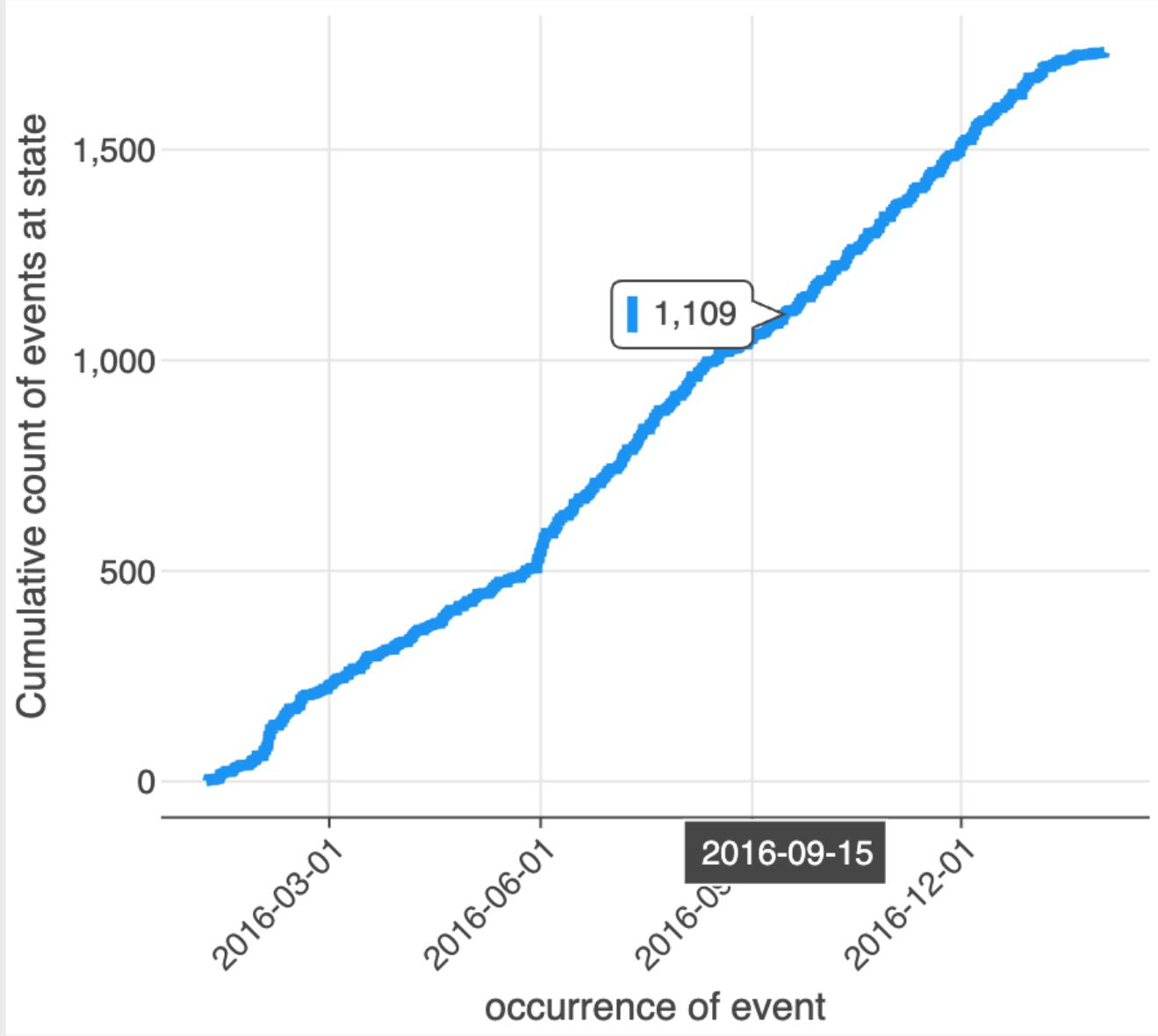
Trace: Application_1096831814

- 1: O_Create Offer at 04.01.2016 13:51:08
- 2: O_Created at 04.01.2016 13:51:10
- 3: O_Sent (mail and online) at 04.01.2016 13:51:20
- 4: O_Create Offer at 06.01.2016 11:09:39
- 5: O_Created at 06.01.2016 11:09:40

Cumulative Events

Shows a graph indicating the amount of events "recieved" at the state for the given timestamp.

Cumulative Events

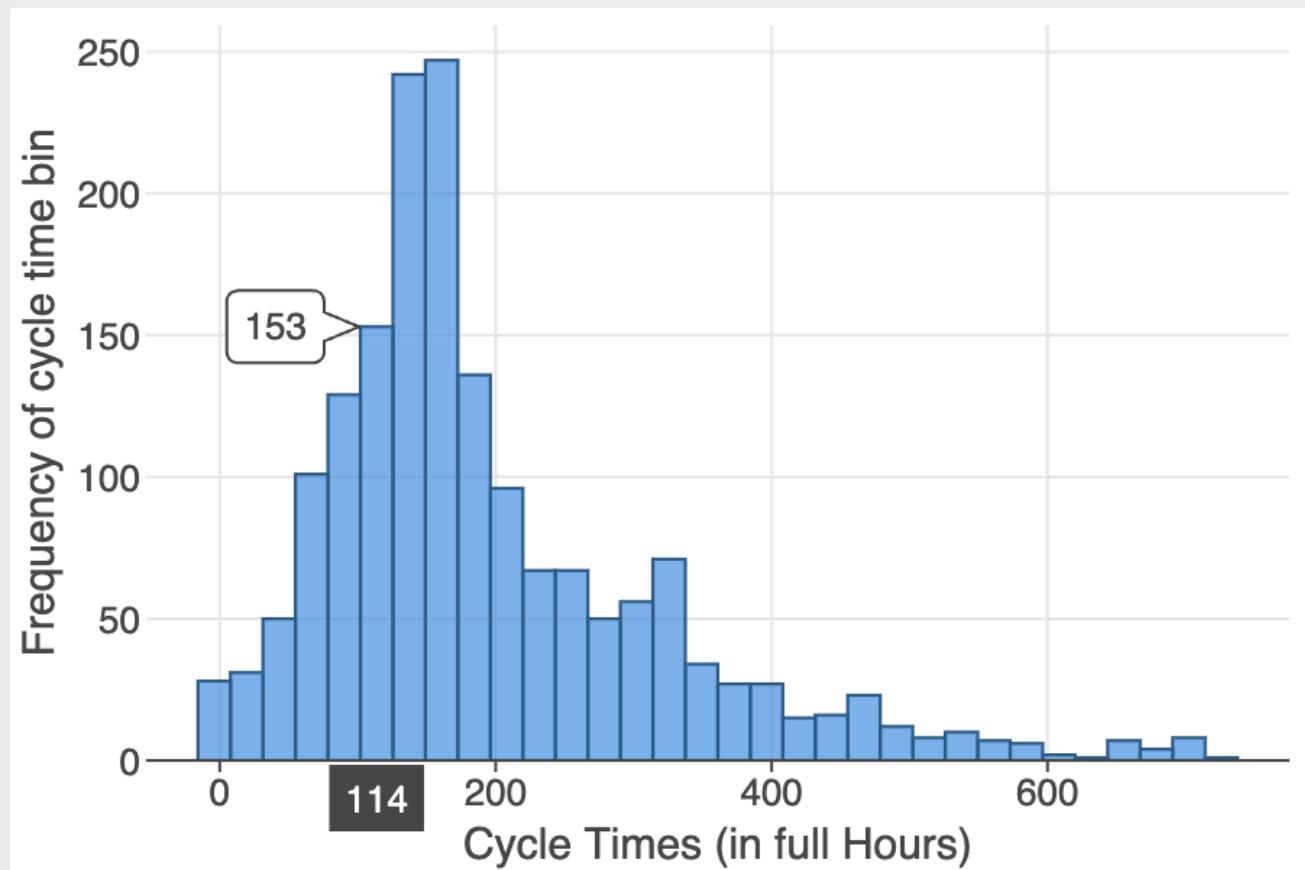


Cycle Time Histogram

Shows not only the cycle time (which is a average of all) but also also a histogram of the present cycle times at the state.

Cycle Time Histogram

^



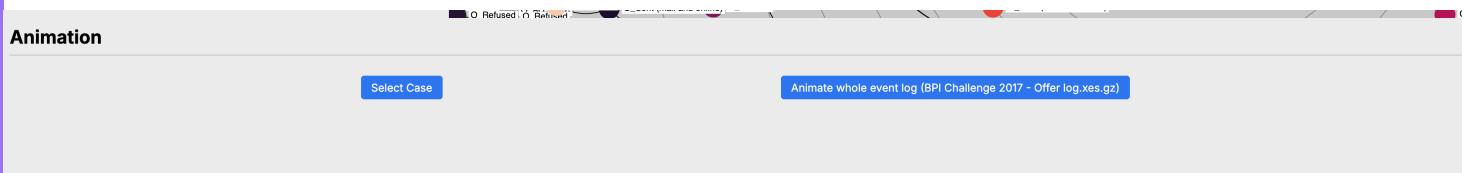
7m
Min

8d 7h
Average

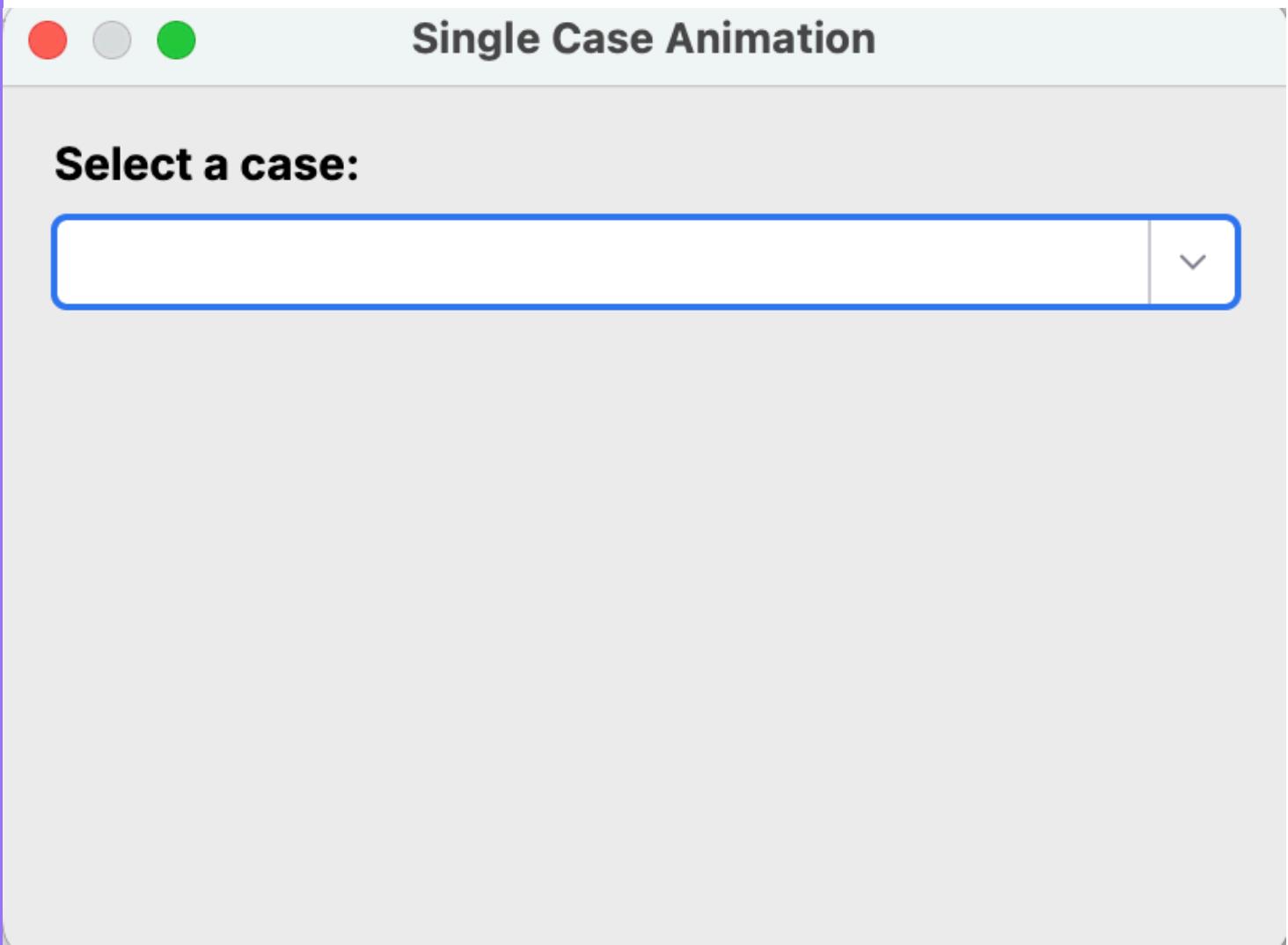
30d 2h
Max

8. Animation

Single-Case animation

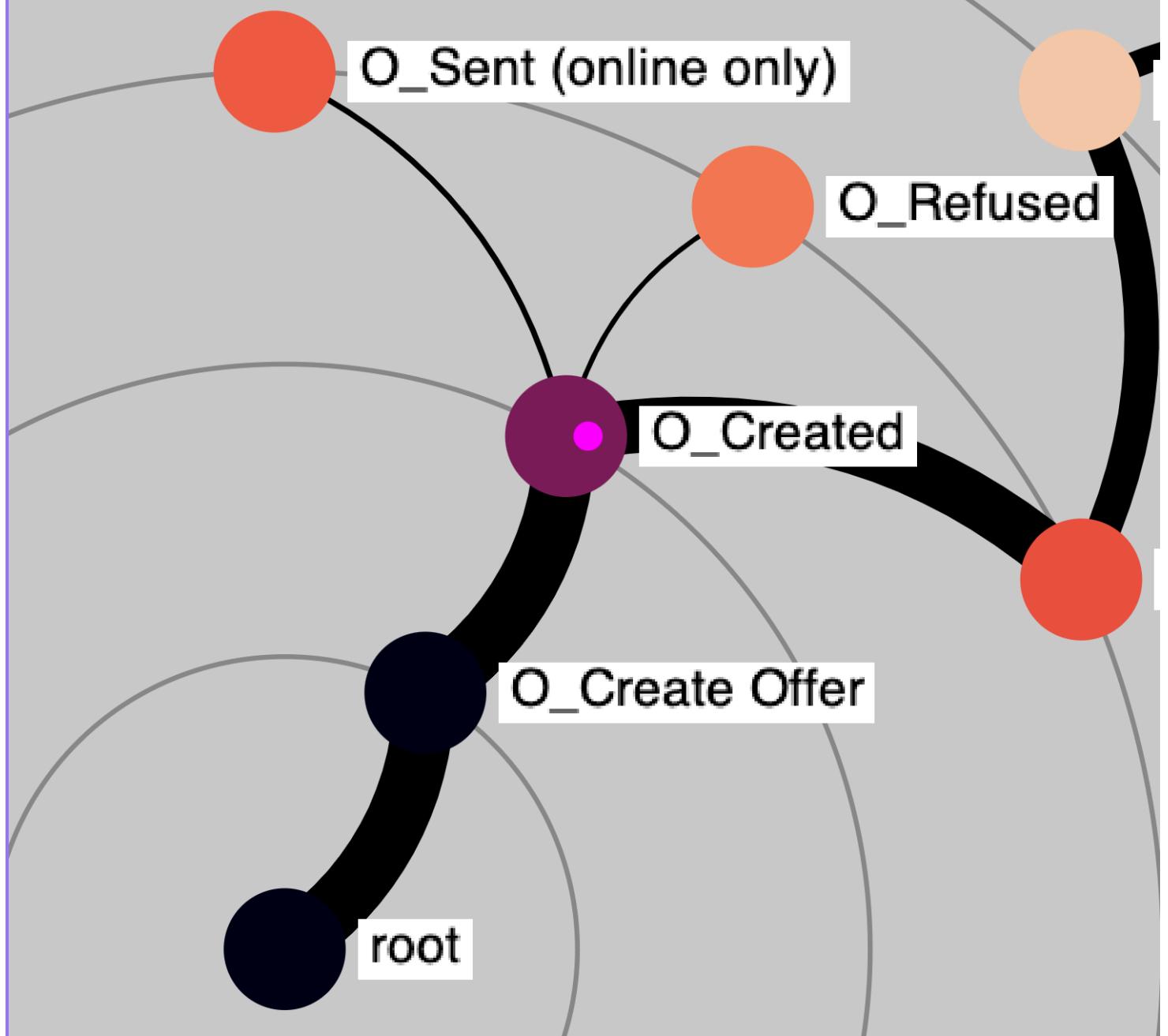


Click "Select Case"



Choose a case from the dropdown menu!

In the lower bar a slider appears which can be used to move the case through time.
A small dot will appear indicating the state of the epa at this event.



Animation

Select Case

Case: Application_1000339879

Whole Log Animation

Animation

Select Case

Animate whole event log (BPI Challenge 2017 - Offer log.xes.gz)

Click "animate whole event log"

Animation

Start: 02.01.2016 10:17:05

Current: 01.01.1970 01:00:00

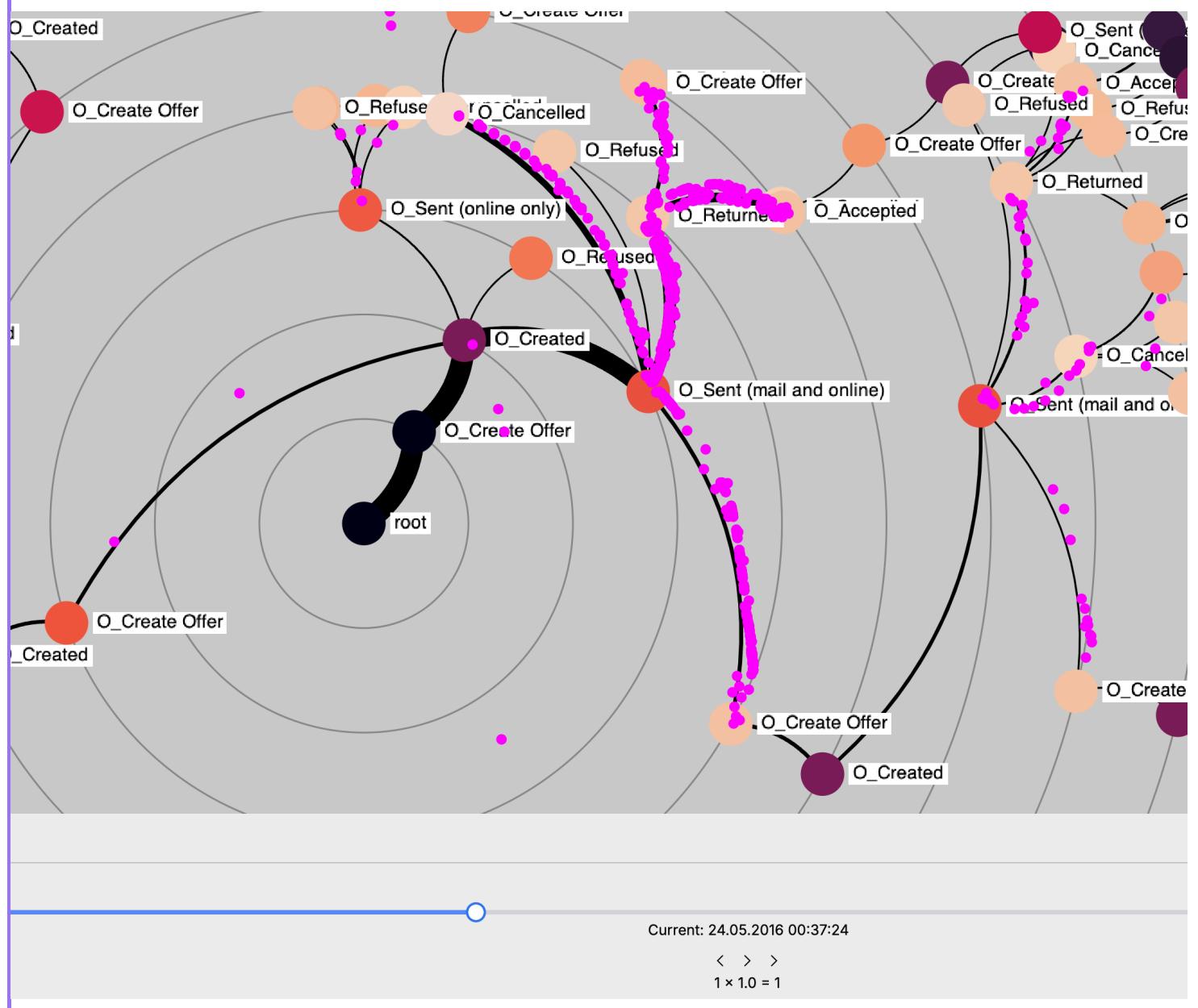
End: 01.02.2017 12:23:42

< > >
1 × 1.0 = 1

A slider will appear. It can be dragged to move the animation through time (first event in log to last).
The current time is indicated in the middle.

The animation can also be played back by pressing the "play" button in the center.

During each point in time the visualization will show all positions of each case at this point in time:



9. Statistics

Statistics shows several key numbers regarding the epa. On the left side the "root"/original EPAs numbers will be shown. The right side presents numbers based on the currently opened epa.

Statistics

Root EPA		State Frequency Filter EPA	
Events:	193,849	Events:	175,454
States:	4,602	O_Create Offer:	69
Traces:	31,509	O_Created:	42,995
Partitions:	824	O_Sent (mail and on:	39,707
Activities:	8	Activities:	23,305
Transitions:	4,601	Transitions:	8
Eventlog:		Eventlog:	68
First Event:	02.01.2016 10:17:05	First Event:	02.01.2016 10:17:05
Last Event:	01.02.2017 12:23:42	Last Event:	01.02.2017 12:23:42