

# Hands-on Session

**Let's get started!**



# Step 1 - Inspect Data

Open **PurchasingExample.csv** file in python/pandas (or Excel) and inspect its contents

- Every row corresponds to one event
- You find information on Case IDs, Activities, Start and end times, Resources, Roles

## Step 2 - Import Data

Load **PurchasingExample.csv** in Disco

Assign columns as follows:

- Case ID → Case ID
- Start and Complete Timestamp → Timestamp
- Activity → Activity
- Resource → Resource
- Role → Other

Click 'Start import'

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Enterprise  
anne@fluxicon.com

Disco

Case ID  
column is used

Case

	Case ID	Start Timestamp	Complete Timestamp	Activity	Resource	Role
1	1	2011/01/01 00:00:00.000	2011/01/01 00:37:00.000	Create Purchase Requisition	Kim Passa	Requester
2	2	2011/01/01 00:16:00.000	2011/01/01 00:29:00.000	Create Purchase Requisition	Immanuel Karagianni	Requester
3	3	2011/01/01 02:23:00.000	2011/01/01 03:03:00.000	Create Purchase Requisition	Kim Passa	Requester
4	1	2011/01/01 05:37:00.000	2011/01/01 05:45:00.000	Create Request for Quotation	Kim Passa	Requester
5	1	2011/01/01 06:41:00.000	2011/01/01 06:55:00.000	Analyze Request for Quotation	Karel de Groot	Purchasing Agent
6	2	2011/01/01 08:16:00.000	2011/01/01 08:26:00.000	Create Request for Quotation	Alberto Duport	Requester
7	4	2011/01/01 08:39:00.000	2011/01/01 09:00:00.000	Create Purchase Requisition	Fjodor Kowalski	Requester
8	2	2011/01/01 09:34:00.000	2011/01/01 09:38:00.000	Analyze Request for Quotation	Karel de Groot	Purchasing Agent
9	5	2011/01/01 09:49:00.000	2011/01/01 10:35:00.000	Create Purchase Requisition	Esmana Liubiata	Requester
10	2	2011/01/01 10:16:00.000	2011/01/01 10:21:00.000	Amend Request for Quotation	Christian Francois	Requester
11	2	2011/01/01 11:15:00.000	2011/01/01 11:48:00.000	Analyze Request for Quotation	Magdalena Predutta	Purchasing Agent
12	6	2011/01/01 11:20:00.000	2011/01/01 11:37:00.000	Create Purchase Requisition	Christian Francois	Requester
13	1	2011/01/01 11:43:00.000	2011/01/01 12:09:00.000	Send Request for Quotation to Supplier	Karel de Groot	Purchasing Agent
14	1	2011/01/01 12:32:00.000	2011/01/01 16:03:00.000	Create Quotation comparison Map	Magdalena Predutta	Purchasing Agent
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26	4	2011/01/01 18:56:00.000	2011/01/01 18:58:00.000	Create Request for Quotation	Heinz Gutschmidt	Requester Manager
27	8	2011/01/01 19:04:00.000	2011/01/01 19:27:00.000	Analyze Request for Quotation	Francois de Perrier	Purchasing Agent
28	6	2011/01/01 19:47:00.000	2011/01/01 19:55:00.000	Amend Request for Quotation	Penn Osterwalder	Requester
29	4	2011/01/01 19:58:00.000	2011/01/01 20:18:00.000	Analyze Request for Quotation	Francois de Perrier	Purchasing Agent

Cancel File encoding: UTF-8 ☒ Use quotes  ☒ Ready to start import.

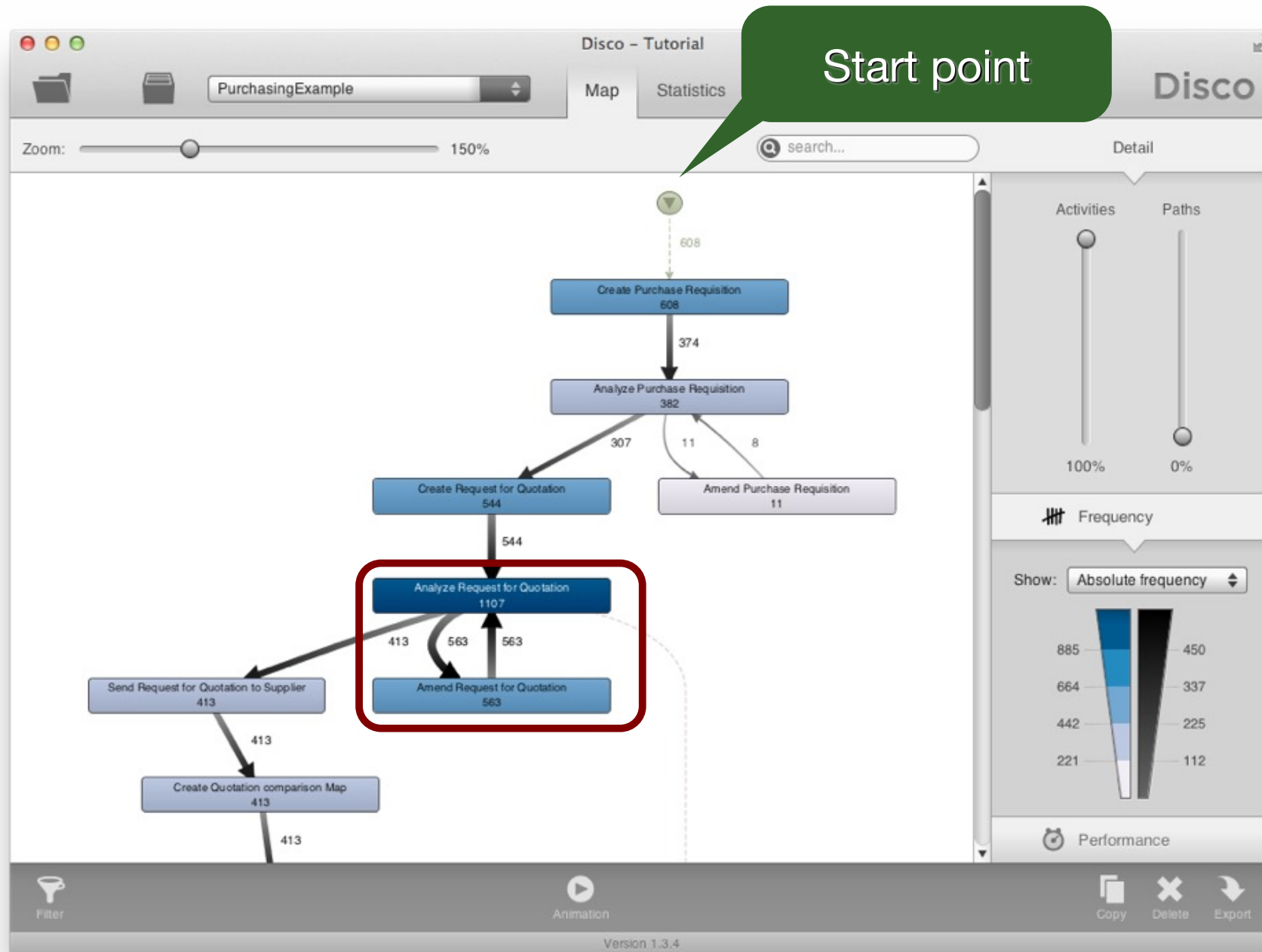
# Step 3 - Inspect Process

Look at the resulting process model

- Numbers in rectangles are activity frequencies
- Number at arcs is frequency of connection

→ You see the main process flows

- All 608 cases start with activity 'Create Purchase Requisition'
- Lots of changes were made (amendments)!

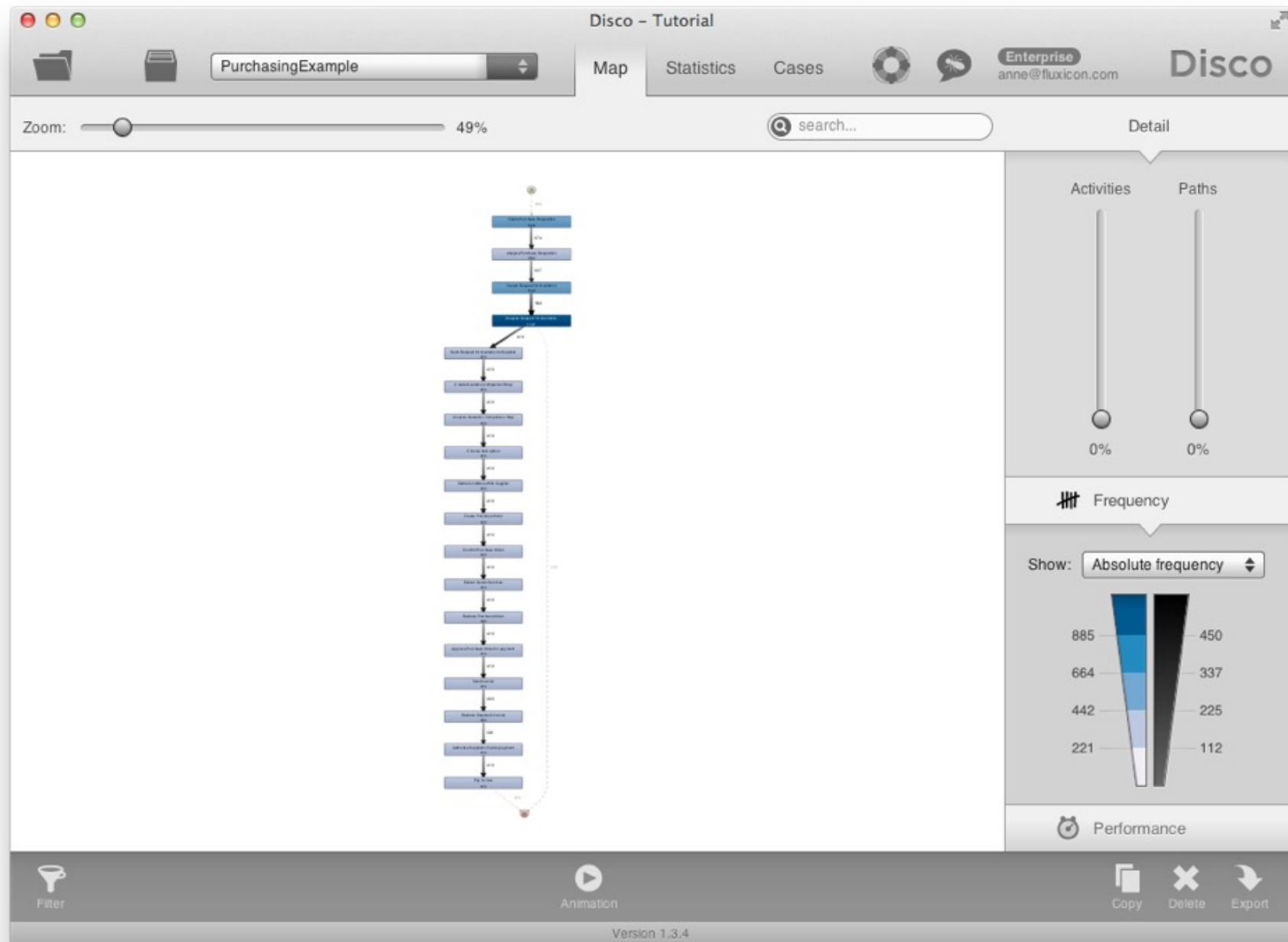


## Step 3 - Inspect Process

It's important to be able to adjust the level of detail for the process map

Move up the 'Activities' slider down to lowest position (0%)

- Only the activities from the most frequent process variant are shown



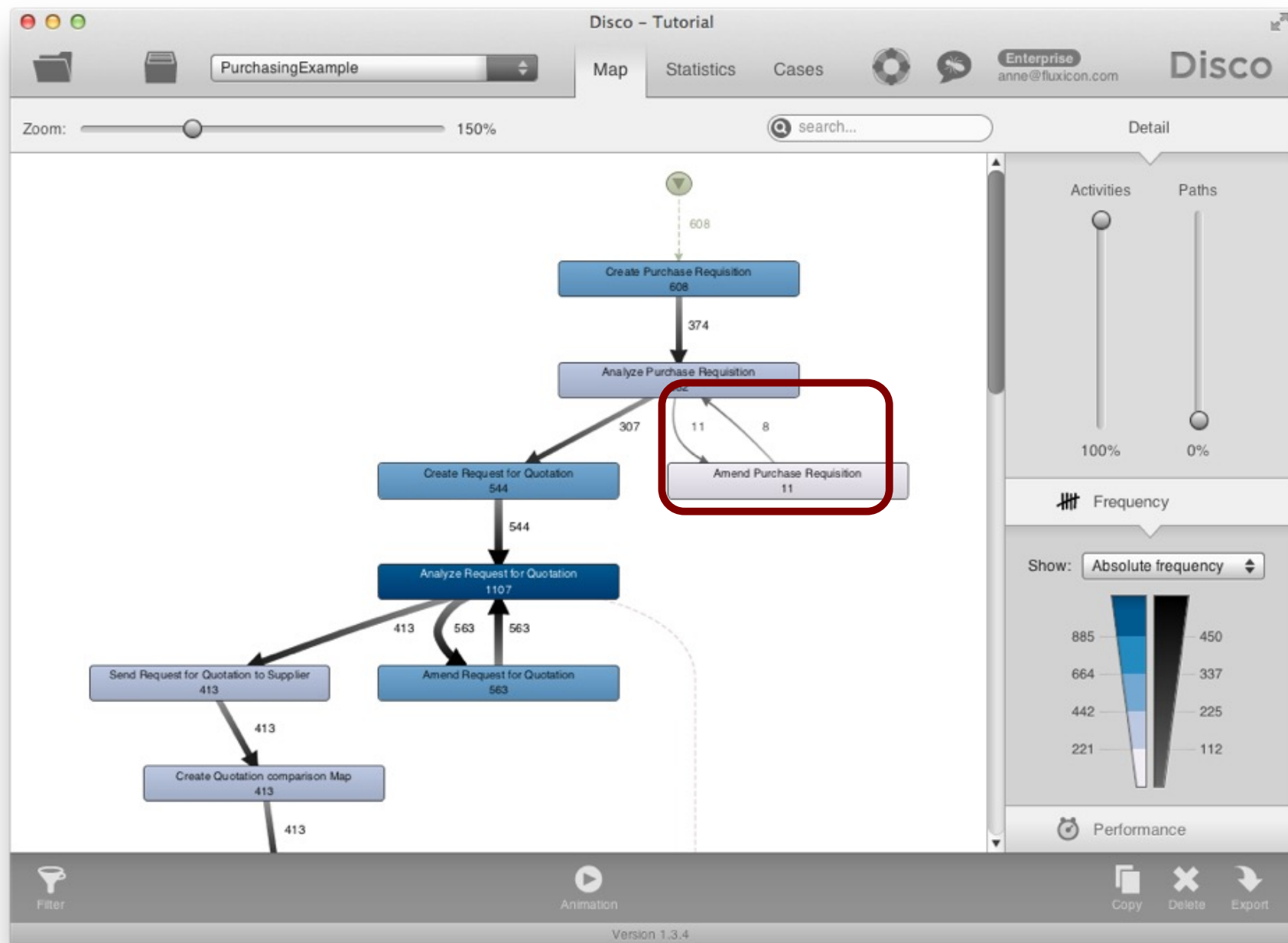


## Step 3 - Inspect Process

Gradually move the 'Activities' slider up to 100% again until all activities are shown

- Even infrequent activities such as 'Amend Purchase Requisition' are shown

You'll notice that 11 cases are flowing in to 'Amend Purchase Requisition' but only 8 are moving out - Where are the other 3?

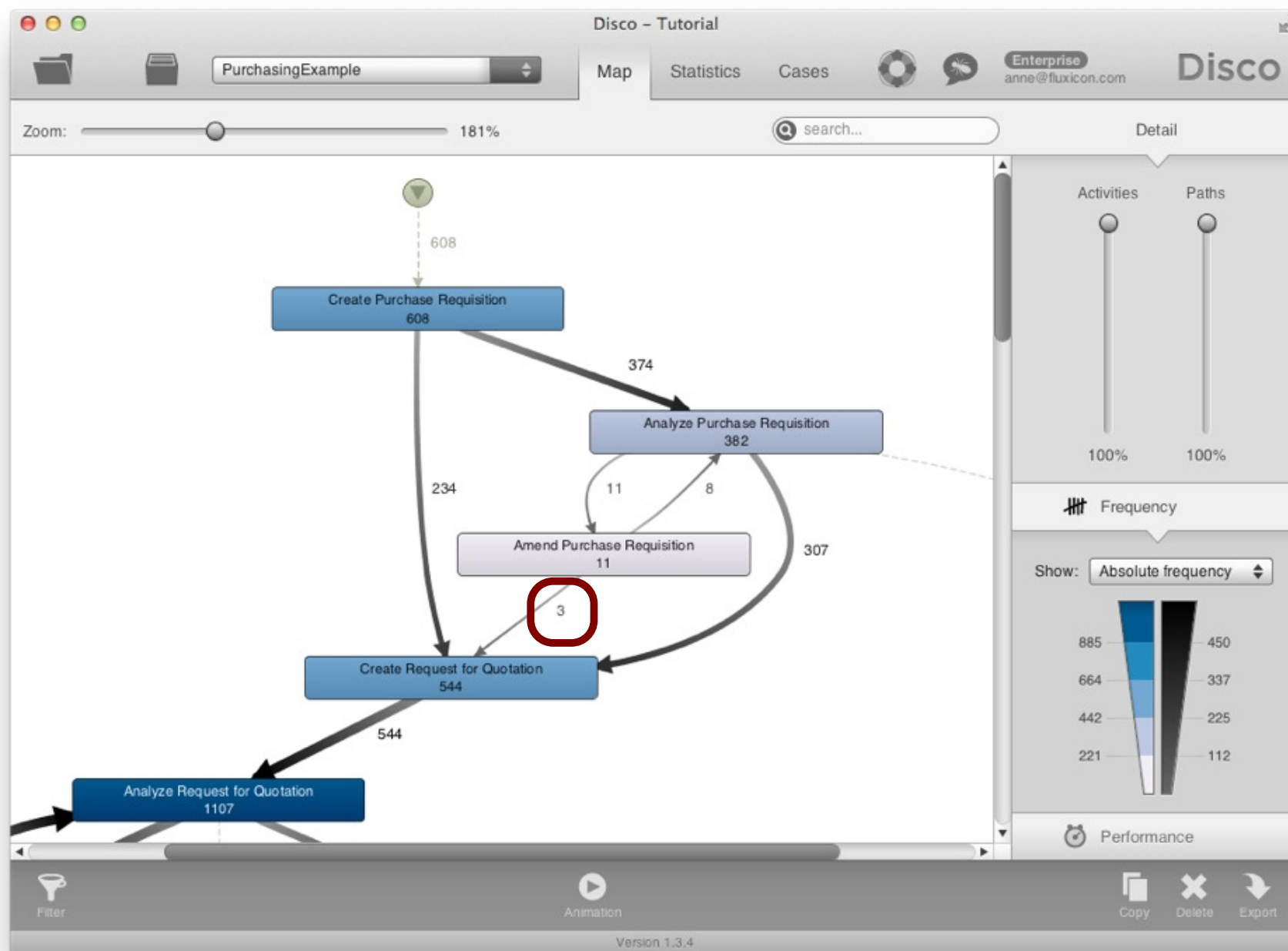


## Step 3 - Inspect Process

Move up the 'Paths' slider up to the top

You now see a 100% detailed picture of the executed process

- The 3 missing cases move from 'Amend Purchase Requisition' to 'Create Request for Quotation'

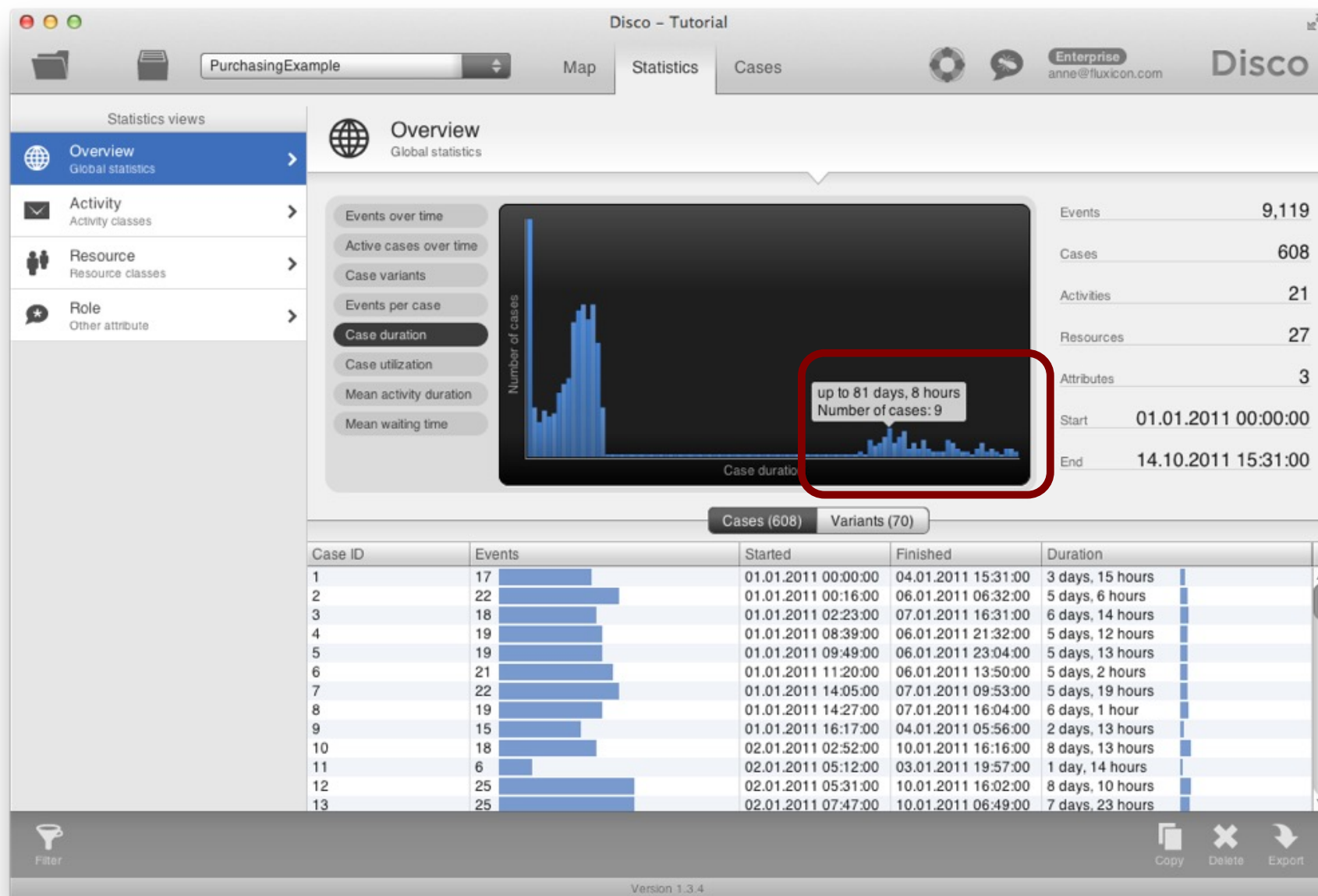


## Step 4 - Inspect Statistics

Look at 'Statistics' tab to see 'Overview' information about the event log

- 9,119 events were recorded for 608 cases
- Timeframe is January - October 2011

The 'Case duration' is typically up to 15 or 16 days, but some cases take very long (more than 70 or 80 days!)



# Step 5 - Inspect Cases

Select 'Cases' tab to inspect variants and individual service instances

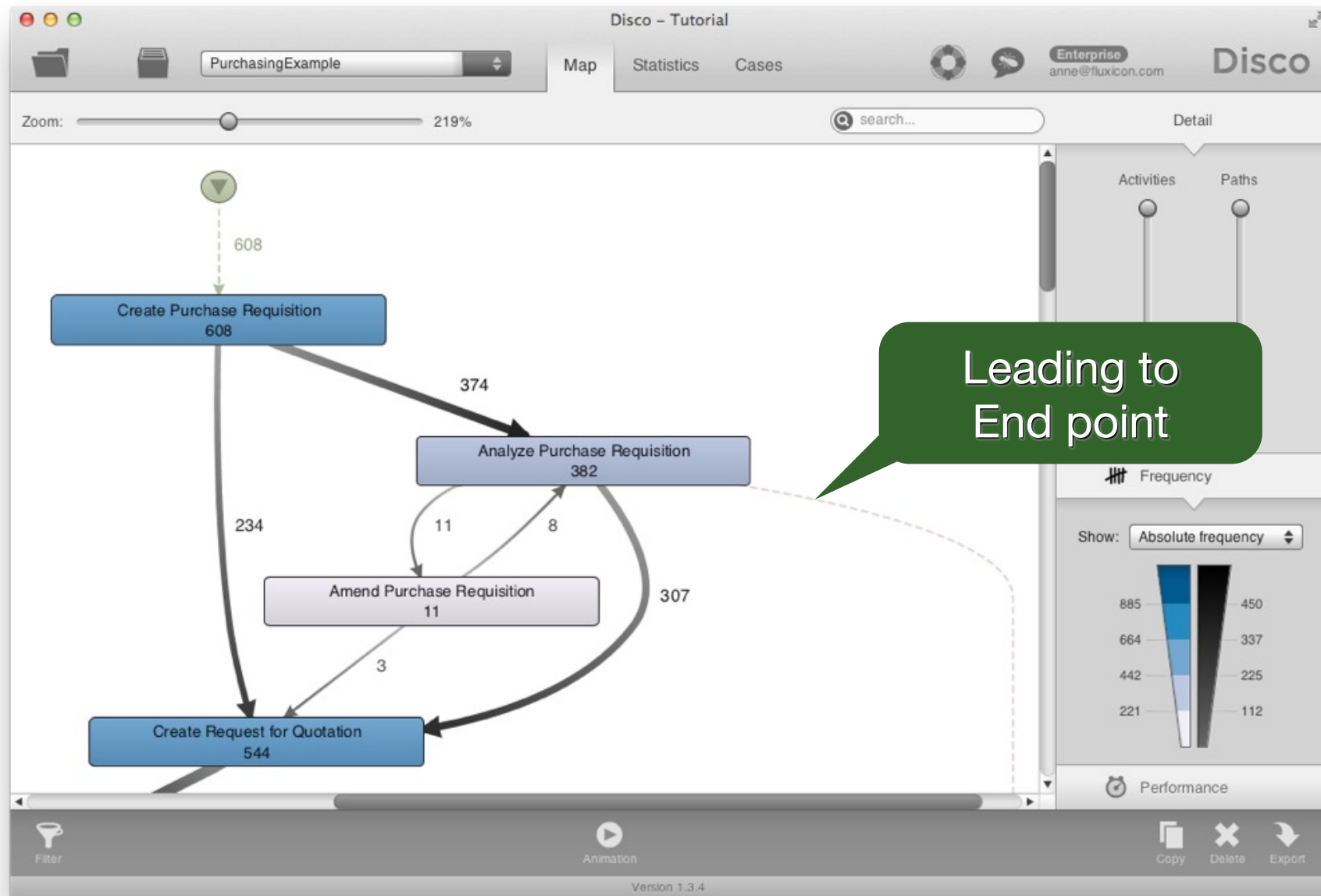
- The third most frequent process variant ends after 'Analyze Purchase Requisition' (ca. 10.36% of all cases follow this pattern)

→ Why are so many requests abrupted?

- Do people not know what they can buy?
- We can find this back in the process map, too







# Results so far...

## Original Questions:

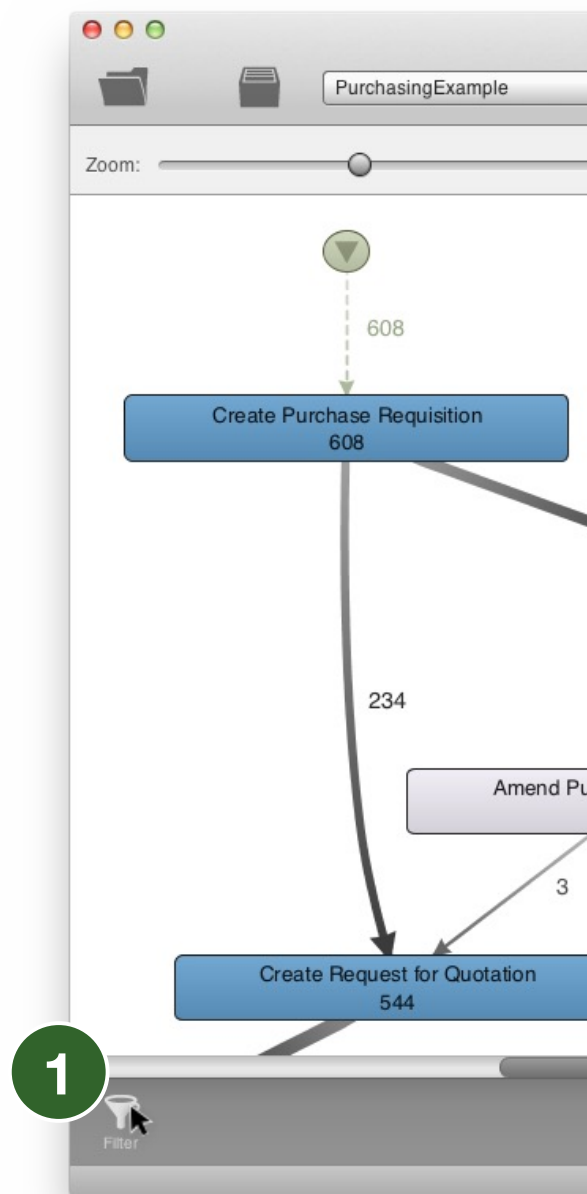
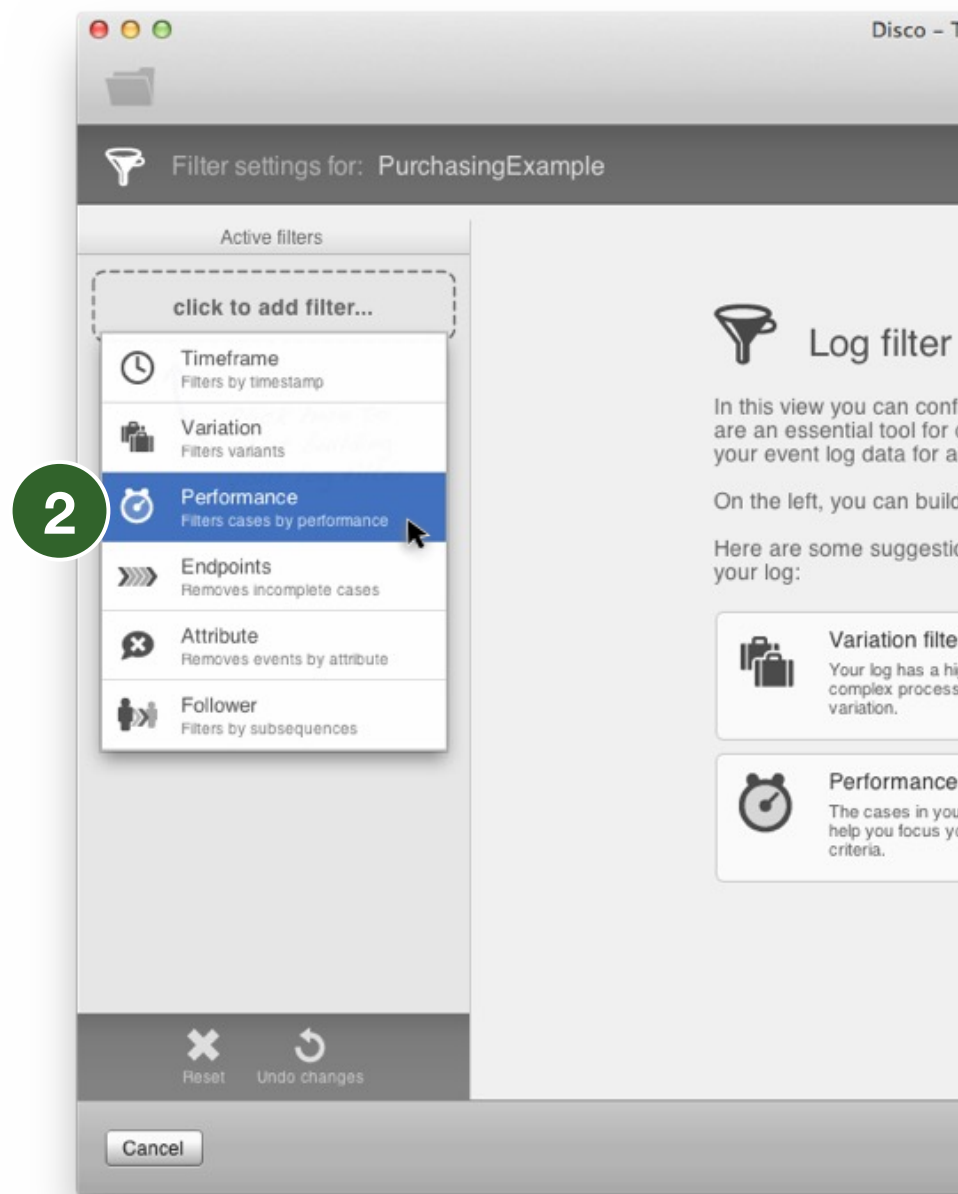
- ✓ 1. How does the process actually look like?
  - Objective process map discovered
  - Lots of amendments and stopped requests:  
Update of purchasing guidelines needed
2. Are there deviations from the prescribed process?
3. Do we meet the performance targets?
  - Not by all (some take longer than 21 days):  
Is there a bottleneck in the process? -> **Next**

## Step 6 - Filter on Performance

Click on the Filter symbol in the lower left corner and add a Performance filter

- Select 21 days as lower boundary
- You'll see that ca. 15% of the purchase orders take longer than 21 days

Press 'Apply filter' to focus only on those cases that take longer than 21 days

The image shows the 'Filter settings for: PurchasingExample' dialog. The 'Active filters' section is empty, with a button 'click to add filter...'. A list of filter types is shown on the left, with 'Performance' selected (indicated by a green circle with the number '2' and a mouse cursor). The filter types are:

- Timeframe: Filters by timestamp
- Variation: Filters variants
- Performance: Filters cases by performance**
- Endpoints: Removes incomplete cases
- Attribute: Removes events by attribute
- Follower: Filters by subsequences

On the right, there is a 'Log filter' section with a funnel icon and text: 'In this view you can configure filters to filter your event log data for analysis. On the left, you can build your filter. Here are some suggestions for your log:'. Below this are two suggestions:

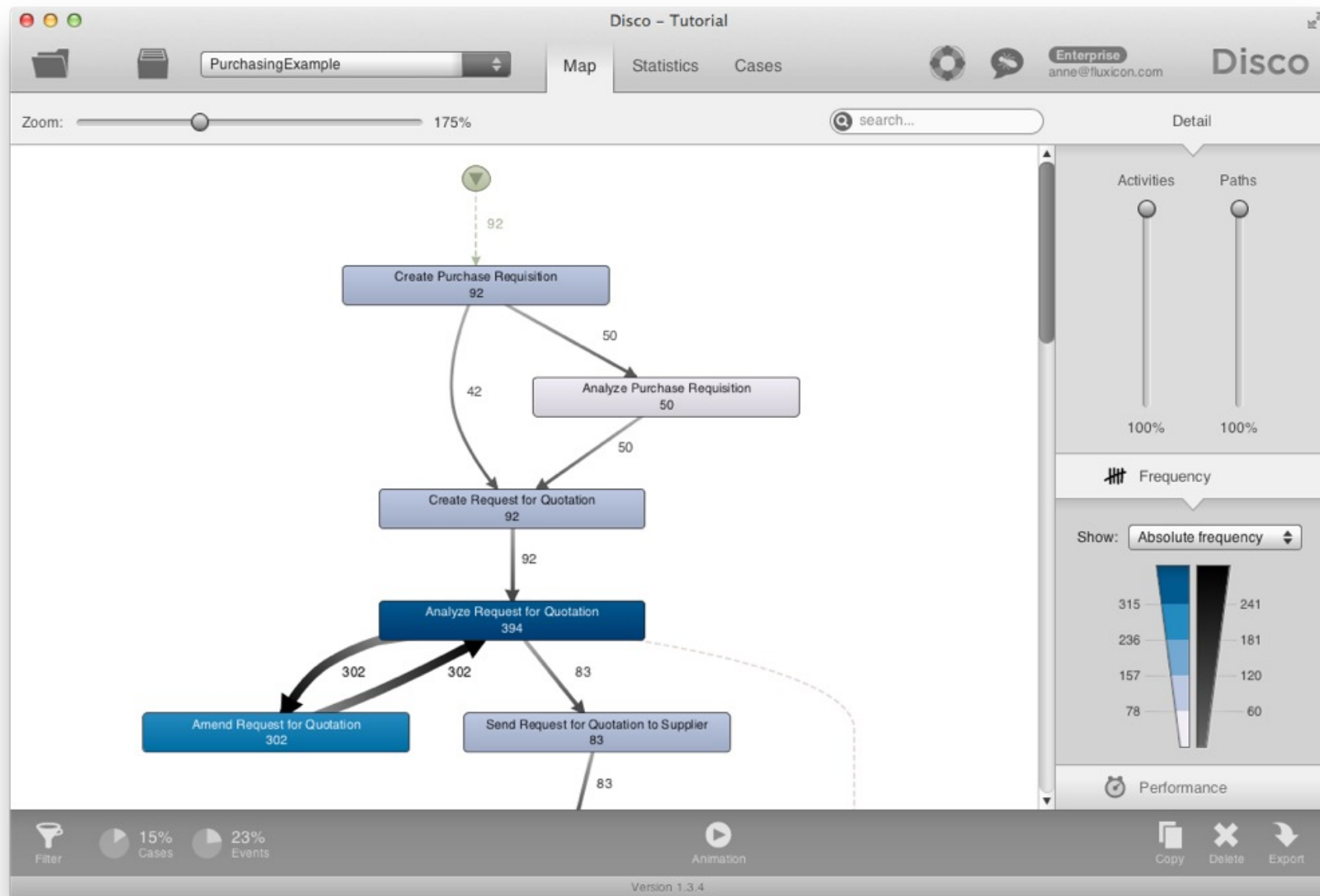
- Variation filter:** Your log has a high complex process variation.
- Performance filter:** The cases in your log help you focus your analysis on specific criteria.

At the bottom, there are buttons for 'Reset' (with a close icon), 'Undo changes' (with a refresh icon), and 'Cancel'.

## Step 7 - Spot Bottlenecks

The filtered process map shows the process flow for the 92 (15%) 'slow' cases

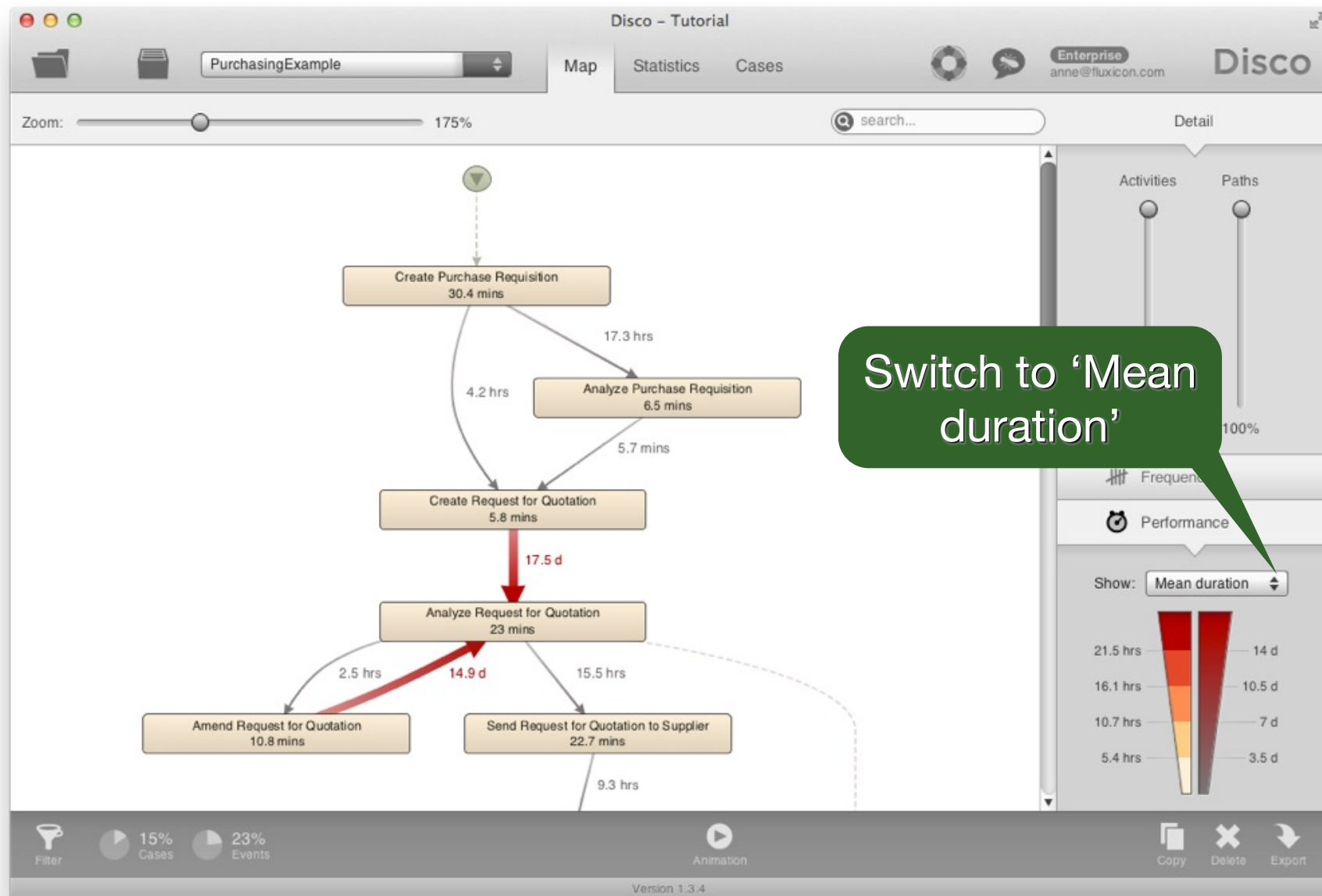
- On average 3 amendments per case!
  - 92 cases, 302 amendments...



# Step 7b - Spot Bottlenecks

## Switch to 'Performance' view

- 'Total duration' shows the high-impact areas
- Switch to 'Mean duration':
  - On average it takes **more than 14 days** to return from the rework loop to the normal process
  - What about min and max duration?





# Step 8 - Animate Process

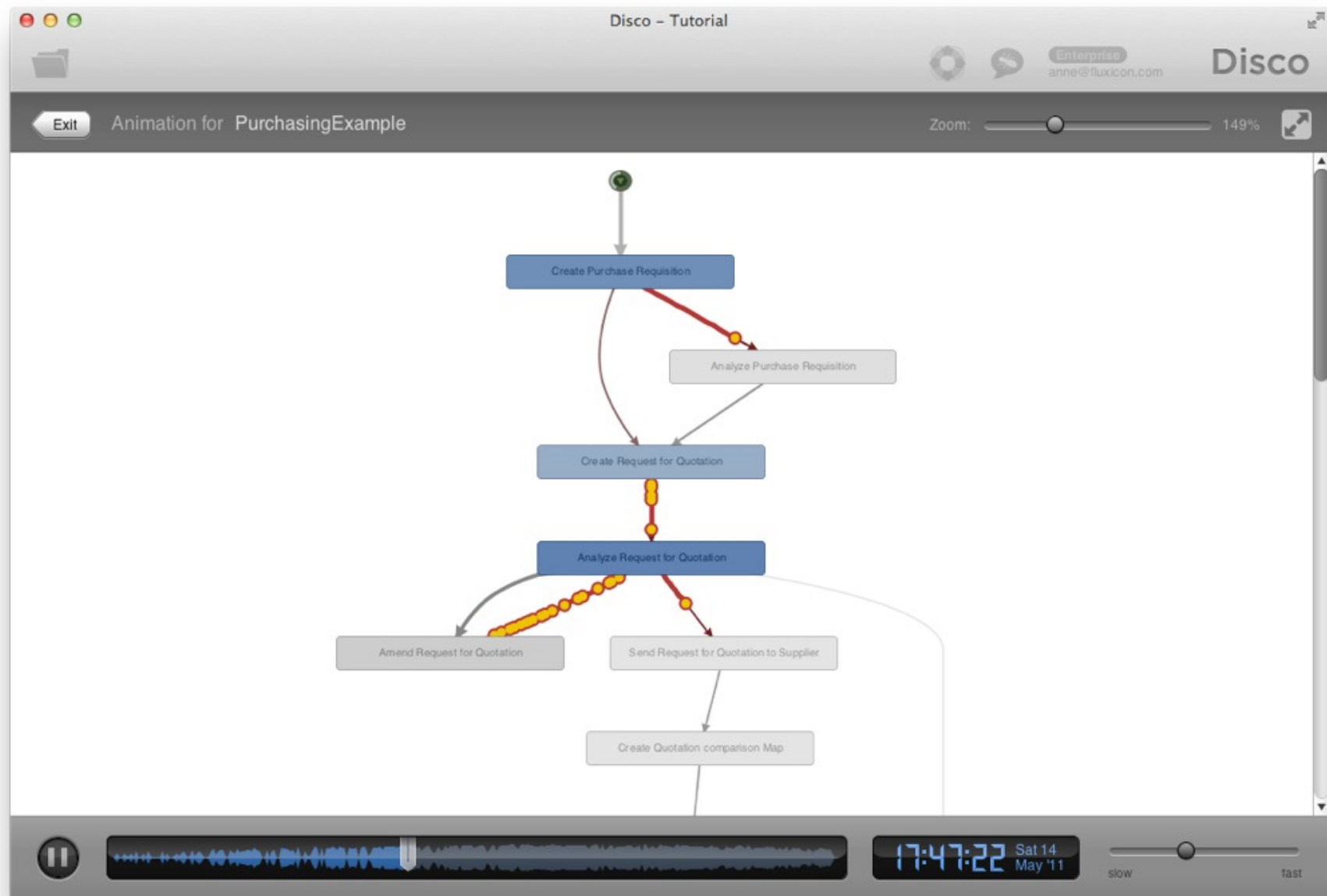
Visualize bottleneck:

Press ► button to start animation

Observe how purchase orders move through the process

Drag needle to the end of the timeline

- observe how the most used paths get thicker and thicker

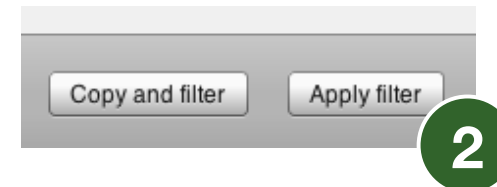
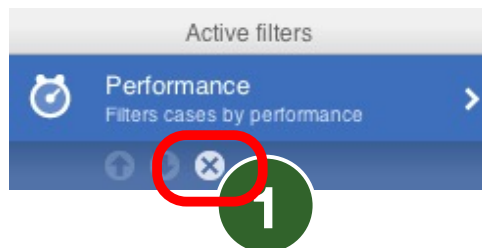


# Results so far...

- ✓ 1. How does the process actually look like?
  - Objective process map discovered
  - Lots of amendments and stopped requests:  
**Update of purchasing guidelines needed**
- 2. Are there deviations from the prescribed process? -> **Next**
- ✓ 3. Do we meet the performance targets?
  - Not by all (some take longer than 21 days)
  - The 'Analyze Request for Quotation' activity is a huge bottleneck: **Process change is needed**

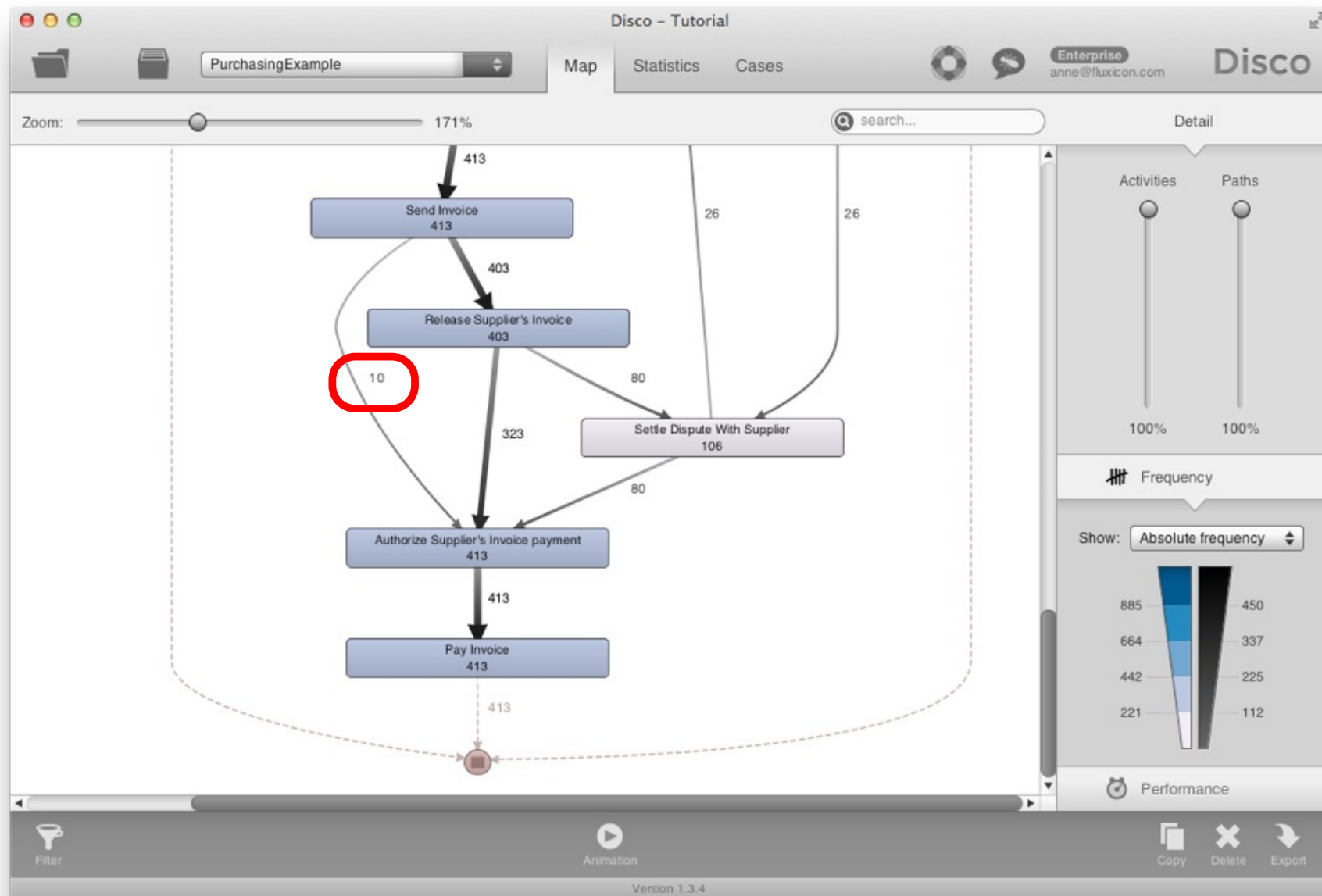
## Step 9 - Compliance Check

Exit the animation, return to Filter settings, and remove performance filter



Switch back to Frequency Map view and scroll to end of the process

- 10 cases skip the mandatory 'Release Supplier's Invoice' activity!



## Step 9 - Compliance Check

**Drill down:** Click on the path from 'Send invoice' to 'Authorize Supplier's Invoice payment' and press 'Filter this path...'

**Switch to Cases view to see the 10 cases**

- Actionable result: We can either change the operational system to prevent the violation or provide targeted training

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PurchasingExample

Map Statistics Cases

Enterprise  
anne@fluxicon.com

Disco

Zoom: 171%

search...

Detail

Activities Paths

100% 100%

Frequency

Send Invoice →  
Authorize Supplier's Invoice payment

Frequency

Absolute frequency	10
Case frequency	10
Max. repetitions	1

Performance

Total duration	6 d
Mean duration	14.4 hrs
Max. duration	14.7 hrs

Filter this path...

Shortcut to filter this path

Frequency

View: Absolute frequency

885	450
664	337
442	225
221	112

Performance

Filter Animation Copy Delete Export

Version 1.3.4

# Results so far...

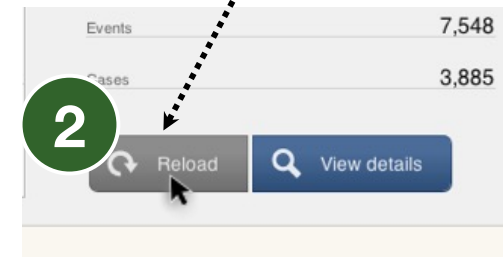
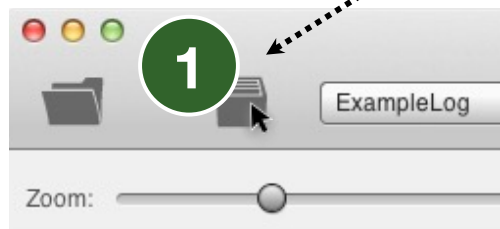
- ✓ 1. How does the process actually look like?
  - Objective process map discovered
  - Lots of amendments and stopped requests:  
Update of purchasing guidelines needed
- ✓ 2. Are there deviations from the prescribed process? -> Yes, training or system change needed
- ✓ 3. Do we meet the performance targets?
  - Not by all (some take longer than 21 days)
  - The 'Analyze Request for Quotation' activity is a huge bottleneck: Process change is needed



# Step 10 - Organizational View

Last Step: We seek an alternative view on the data to visualize the organizational flow

Go to 'Project view' and press 'Reload':



Set 'Activity' column to 'Other' and configure 'Role' column as 'Activity'

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Enterprise  
anne@fluxicon.com

Disco

Role

☒ column is used

Activity

Name: Role

	Case ID	Start Timestamp	Complete Timestamp	Activity	Resource	Role
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Cancel File encoding: UTF-8 ☒ Use quotes ☒ Ready to start import. Start import

# Step 10 - Organizational View

Instead of the activity flow, we are now looking at how the process moves through different *roles* in the organization

- Inefficiencies can often be found at the borders of organizational units
- Clearly, the Purchasing agents are causing the biggest delays in the process!

