

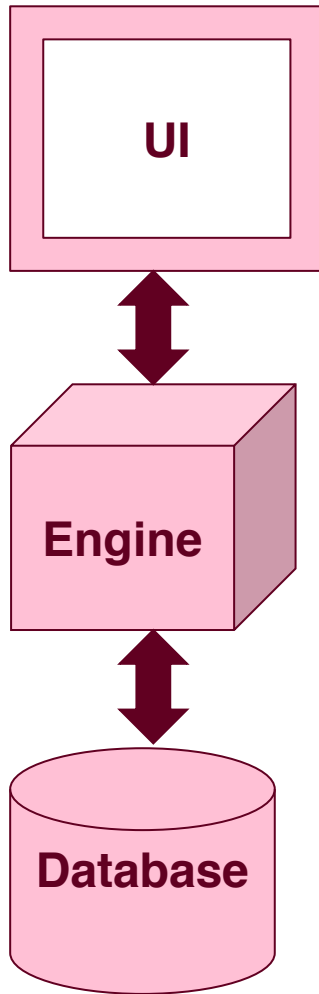


21071 **DBL Information Systems**
Kick-Off

Dirk Fahland

TU **e** Technische Universiteit
Eindhoven
University of Technology
Where innovation starts

Information Systems?



- Networks of hardware and **software** that people and organizations use to **collect, filter, process, create, and distribute data.**
- Bridges **business** and **computer science** ... to study various business models and related algorithmic processes.

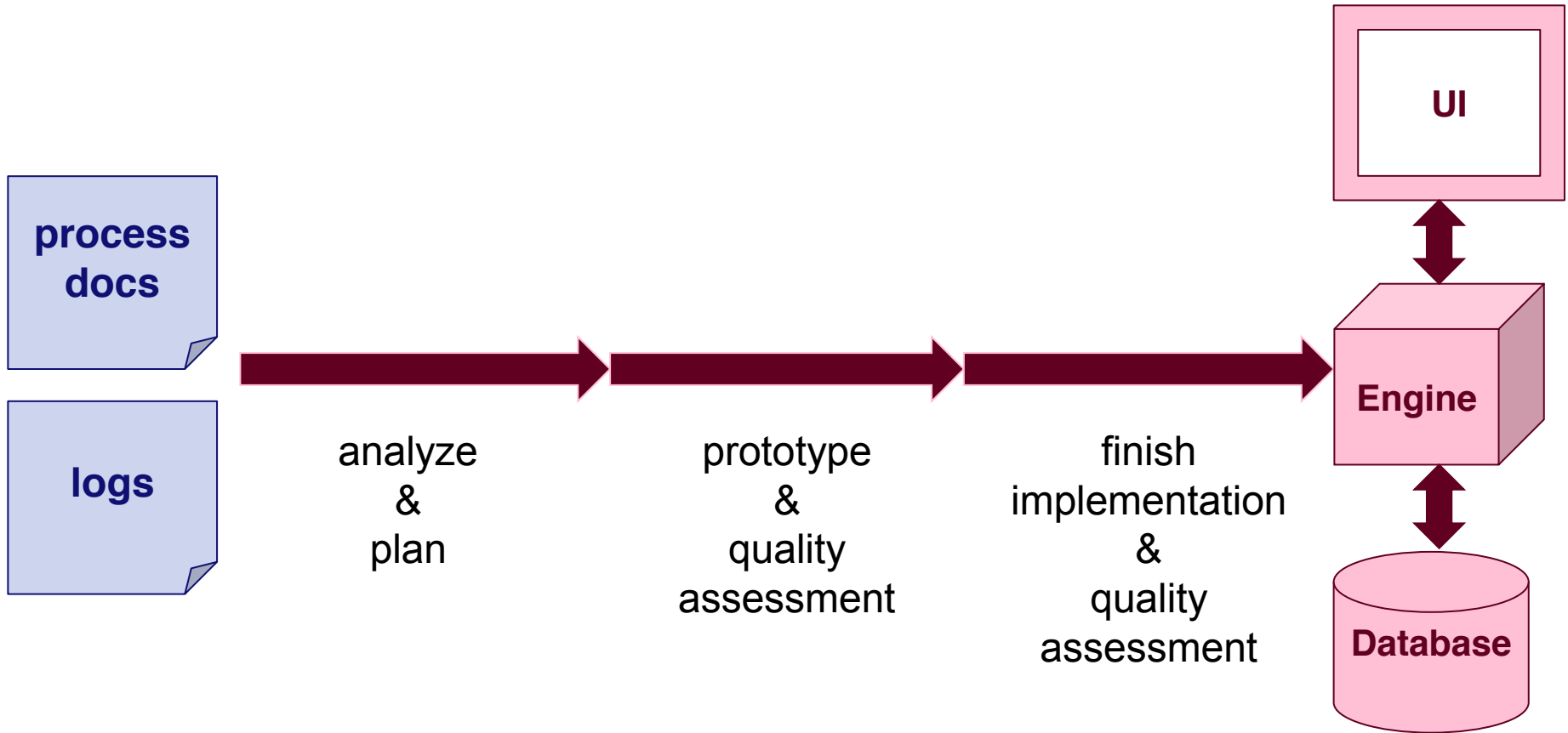
Building an Information System

Cost and time to set up an
Enterprise Resource Planning System?

Outline

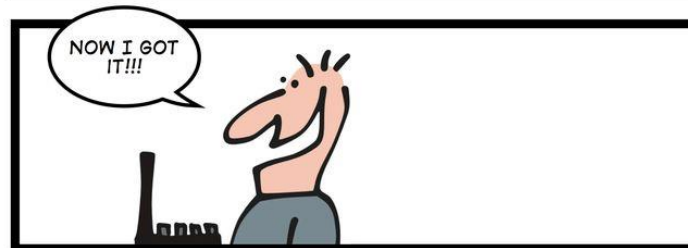
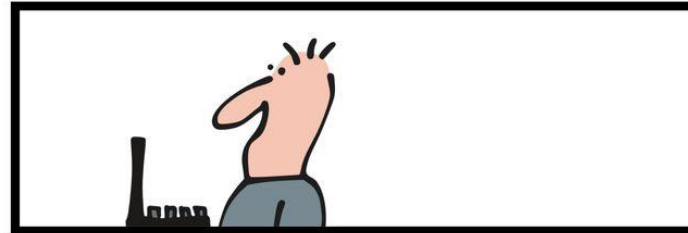
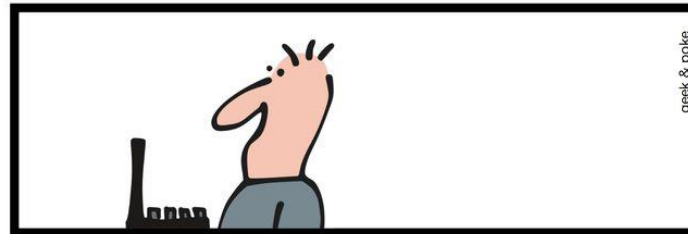
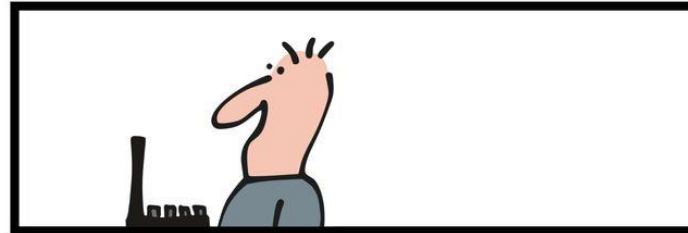
- Information Systems
- **Objectives of this Course**
- The Assignment
- Organizational Matters
- Getting Started

IS Re-Design Project



Objectives of this Course

ON THE VERY LAST DAY
OF A VERY LONG IT PROJECT



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What you get

- Process documentation
 - processes from purchases and sales
 - Process models (control-flow perspective)
 - textual description of how the process owners run the process (or how they think they did)
- Log files
 - contain traces of past executions (what really happened) of some processes
- How to analyze?
 - read, understand, and “play” the processes
 - Process Mining software to analyze logs

A light blue square icon with a folded bottom-right corner, containing the text "process docs" in dark blue.

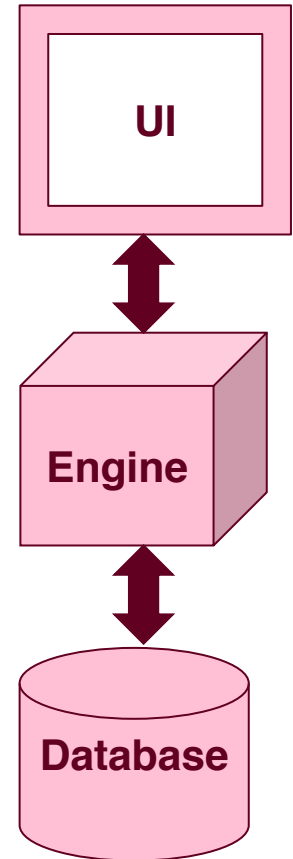
process
docs

A light blue square icon with a folded bottom-right corner, containing the text "logs" in dark blue.

logs

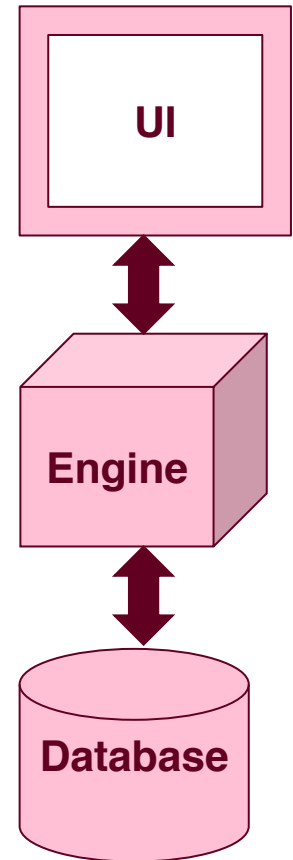
System Architecture

- **Activiti process engine**
 - executes processes from process models
 - web-application shows forms to display and enter data (forms generated from process models)
 - + extensions to query data from a database and to change contents of a database (using SQL)
- **MySQL Database**



What you build

- Data model of the application
 - tables, attributes, relations, ...
- Process models of the application
 - extend control-flow models provided in the documentation with **data-flow perspective**
= annotate activities with SQL
- Implement resource perspective in the engine
 - users, roles, ...
- **Testing scenarios to assess quality of your implementation**



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Software

■ Process Analysis Phase

- Process Mining Tools
 - *ProM6* www.promtools.org/prom6
with packages *DottedChart*, *Fuzzy*
 - Fluxicon *Disco* www.fluxicon.com

■ Implementation Phase

- *Activiti Process Engine* with SQL Extensions
(running as Tomcat servlet)
- *MySQL database*
- all provided in a *Virtualbox* VM Imag
- **will be made available on Wednesday 24-04-2013**

Where to find...

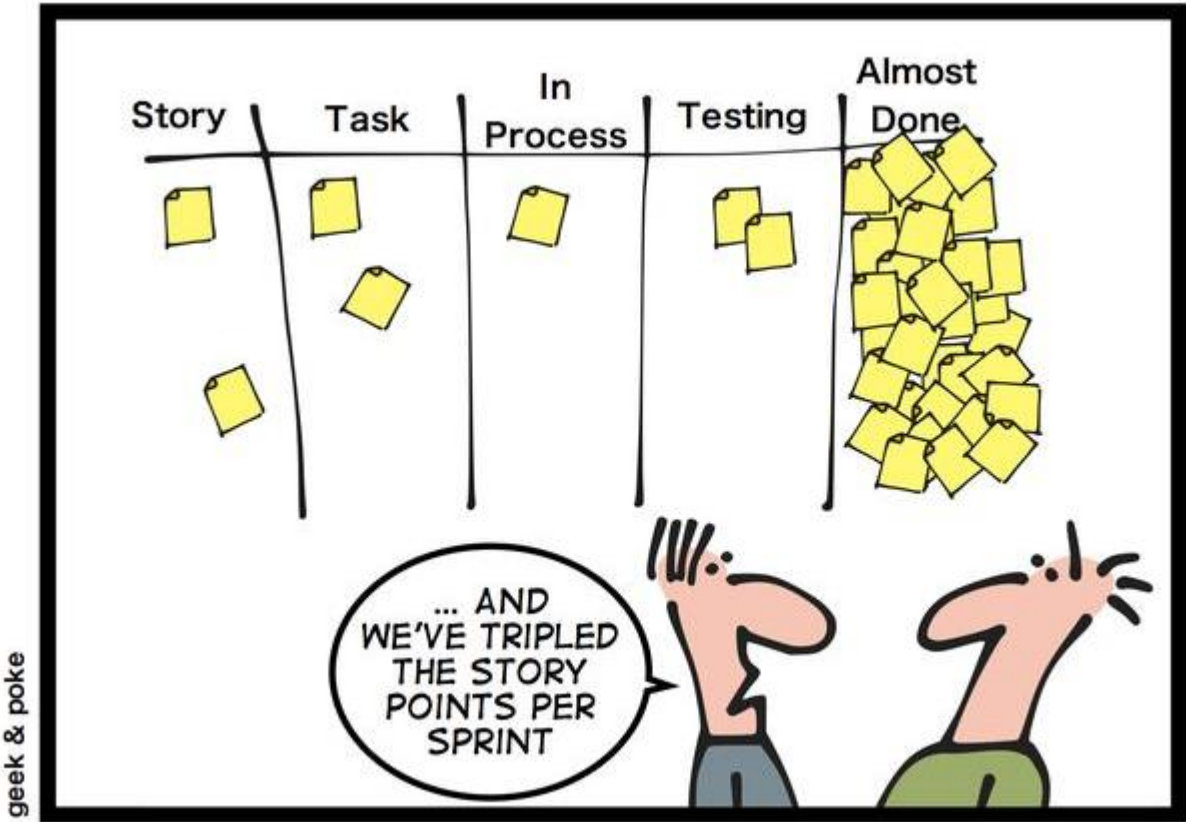
- Study Guide & Process Documentation → OASE
- Software → Links on OASE
- Tutorials → Links on OASE
- FAQ (Questions asked by you) → Forum in OASE
- Technical Support → Forum in OASE
- anything else → Forum in OASE

- or on www.win.tue.nl/~dfahland/courses/2io71/

Groups & Group Meetings

- 11 groups of 5-6 students
- each group has one tutor
 - will guide group through the project
 - 2 meetings per week (~1 hour each)
 - short presentation on progress, problems, approach, ...
 - questions by tutor, discussion with tutor
 - meetings scheduled in agreement with tutor
- each group has a group workspace in OASE

Track your tasks



Tutors

- groups 1-4
 - E.O. Sabelnikova (e.sabelnikova@student.tue.nl)
- groups 5-8
 - K. Traganos (k.traganos@student.tue.nl)
- groups 9-11
 - tbd / D. Fahland

Rooms

- working in OGO rooms (see Study Guide)
 - Mon, Tue, Wed afternoon
 - Thu, Fri mornings
- rules for OGO rooms
 - keep rooms tidy and clean
 - eating is officially not allowed in the rooms, this will be tolerated as long as **NOTHING** is left behind (leftover foods, dishes, cups, ...)
 - each group has one reserved room for the allocated times
 - if someone else is in the room: **kindly** ask them to respect your reservation
 - at other times, rooms can be used by anyone on first come/first serve basis

Milestones & Presentations

- 1st intermediate presentation: **process analysis**
 - your analysis how the process works
 - problems with the process, potentials for improvements
 - your approach to solve this and a plan of action
 - 10 mins + 10mins discussion
- 2nd intermediate presentation: **prototype**
 - working prototype for “core functionality”
 - testing scenarios that document that your prototype addresses the analyzed problems
 - 10 mins + 10mins discussion
- will be scheduled during your regular meeting hours

Final Presentation

- takes place Friday, 21st June 2013
(final report is due Thursday 20th June 2013)
- in front of other groups
- your results of the project
 - analysis
 - implementation
 - quality and how you certify it
 - 20mins presentation + 5mins discussion
- the best group gets an award

Grading

- Phase 1
 - Document “Process Analysis” (5 pages) 5%
 - Presentation 5%
- Phase 2
 - Prototype Implementation 5%
 - Presentation 5%
- Phase 3
 - Final Implementation 20%
 - Final Report 30%
 - Final Presentation 20%
 - Your personal logbook (must be present)
- peer assessment 5%
- tutor assessment 5%

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Using ProM6

- download from www.promtools.org/prom6
- run **Package Manager** (ProMPM)
 - install **DottedChart, Fuzzy**

Log Inspection

The screenshot displays the ProM 6 software interface. At the top, the title bar reads "ProM UITopia" and "ProM 6". Below the title bar, there is a "Workspace" header with an "import..." button. The main area is divided into a left sidebar, a central workspace, and a right-hand panel.

Left Sidebar: Contains four filter buttons: "All" (cylinder icon), "Favorites" (star icon), "Imported" (download icon), and "Selection" (list icon).

Central Workspace: Features a "sort by" dropdown menu with options for refresh, play, and "ABC". Below this, two items are listed:

- Dotted Chart Analysis** (Dotted Chart Model) with a star icon.
- Log Requisition to Receipt** (Event Log) is highlighted in green, with a star icon and a right-pointing arrow.

Right-hand Panel: Displays details for the selected "Log Requisition to Receipt" event log:

- Log Requisition to Receipt** (Event Log)
- created about 14 hours ago
- imported

Below the details are several interactive buttons:

- A row of icons: a yellow star, a green eye, a play button, and a close button (X).
- A "View resource" button.
- A "Show parents" button with a left-pointing arrow and a tree icon.
- A "Show children" button with a right-pointing arrow and a tree icon.
- An "Export to disk" button with a download icon.

Log Inspection

- shows individual cases, events, and attributes

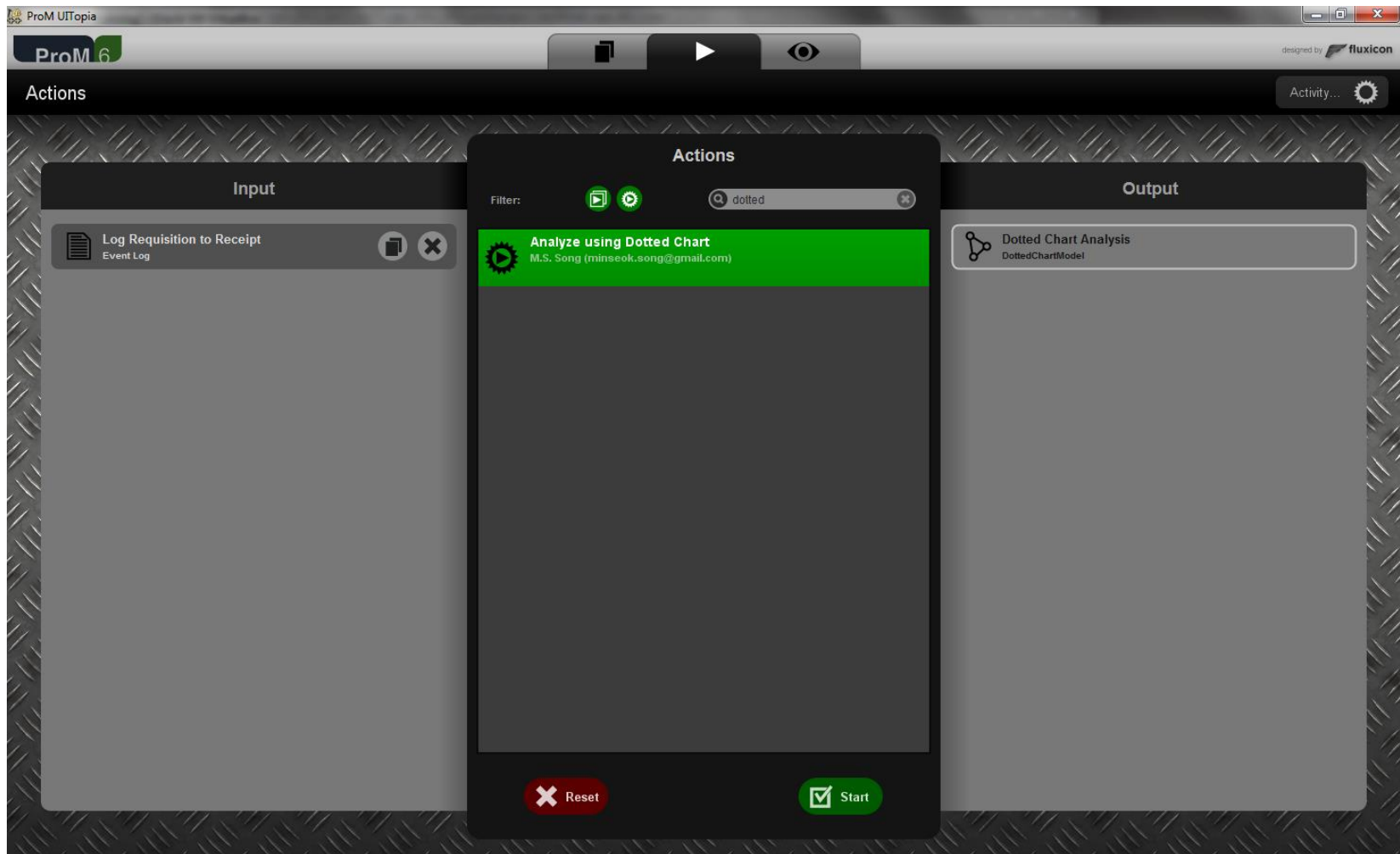
The screenshot displays the ProM 6 Log Inspector interface. The title bar reads "Log Requisition to Receipt". The interface is divided into several sections:

- Left Sidebar:** Contains navigation icons for "Dashboard", "Inspector", and "Summary".
- Log Inspector Panel:** Has tabs for "Log inspector", "Browser", "Explorer", and "Log Attributes".
- Instances List:** A vertical list of instance IDs from 0 to 133. Instance 106 is highlighted in red.
- Event Log:** A table of events for instance 106, which has 21 events. The events are:

Event ID	Event Name	Actor	Timestamp
0			
1			
10			
100			
101			
102			
103			
104			
105			
106	REQ_create_requisition	#1 @Tim	14.07.2012 03:39:14.216
107	REQ_create_requisition	#2 @Tim	14.07.2012 03:40:14.216
108			
109			
11			
110			
111			
112			
113			
114	REQ_create_requisition	#3 @Tim	14.07.2012 03:41:14.216
115			
116			
117			
118			
119			
12			
120			
121			
122			
123			
124			
125			
126			
127			
128			
129			
13			
130			
131			
132			
133			
...			
- Attributes Panel:** Shows "Attributes for event 5" with the following details:
 - concept:name: REQ_manage_requisi
 - items: ["Nail", "Screw", "Saw", "File"]
 - org:resource: Sandra
 - time:timestamp: 2012-07-14T03:44:1

Dotted Chart Analysis

- Import Log file, Run “Analyze using Dotted Chart”



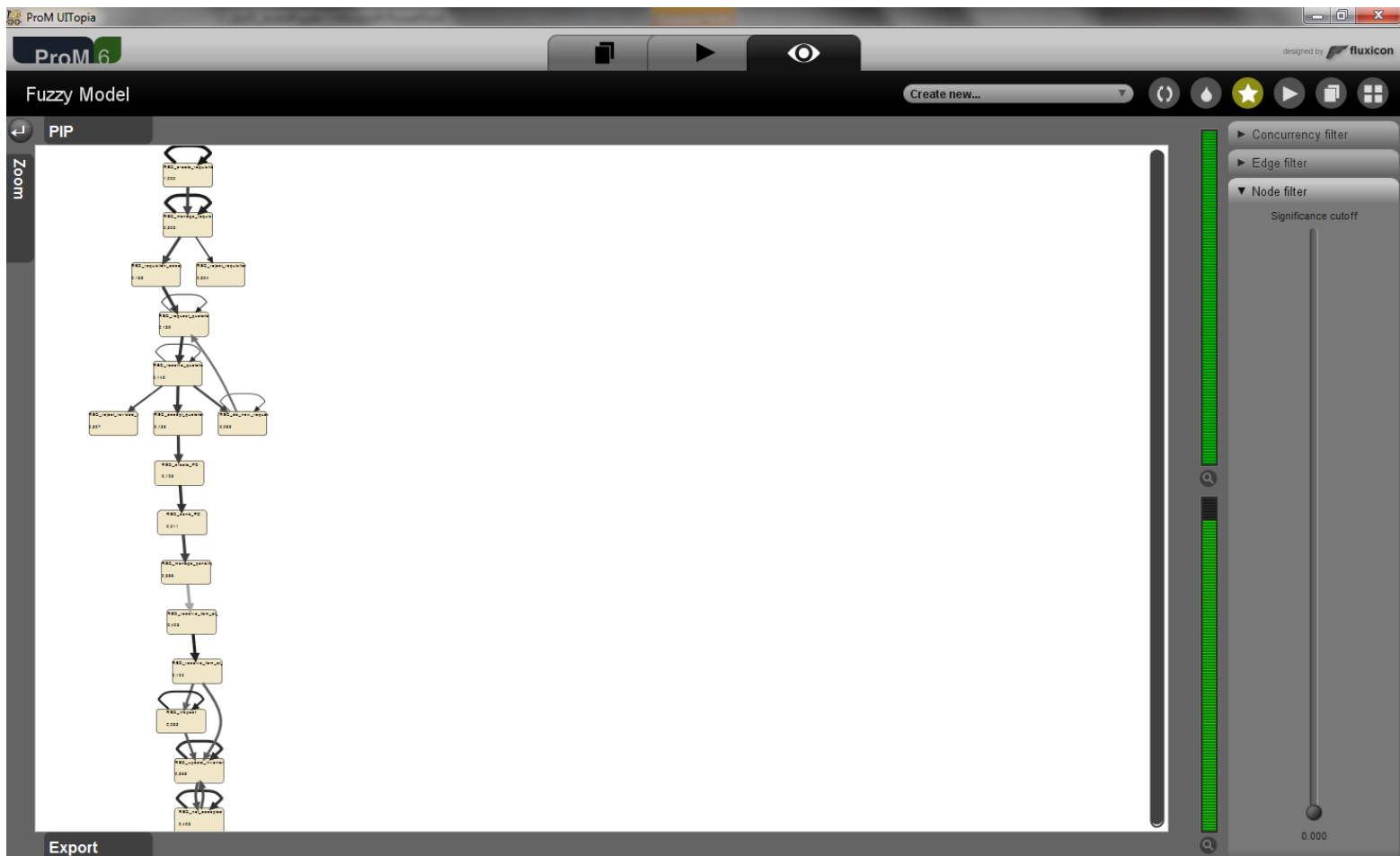
Dotted Chart Analysis

- use controls the left to inspect the log



Fuzzy Miner

- import log, run “Mine for a Fuzzy Model”, use standard settings, inspect abstract process model



Fuzzy Animation

- use Fuzzy Model created by Fuzzy Miner
- and run “Select Best Fuzzy Instance”
- take the result the original log and run “Animate Event Log in Fuzzy Instance”

Wrap-Up

- IS redesign project
- start from process documentation (models, text, logs)
- build a new information system in a model-driven approach (data model, process models)
- three phases
 1. process analysis and project planning
 2. prototype development and testing
 3. completing implementation and quality testing
- final presentation & report

Questions?



Dirk Fahland

Good Luck and Enjoy!

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