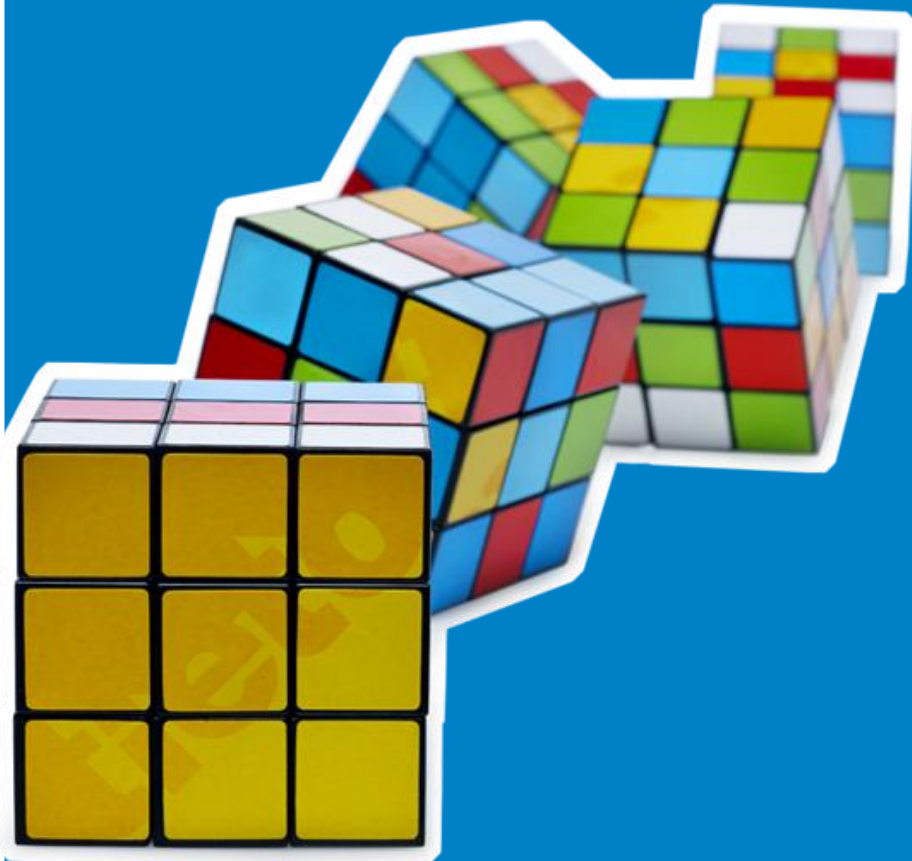# Implementing RIM based software

Pekka Kola

pekka.kola@tieto.com

Case Prosessium

- Due to demand for increased productivity in healthcare, decision of development for a new product for supporting care path driven processes in healthcare was done in Intensium Ltd in 2004

  - The company had background in measuring healthcare processes as well as implementing clinical information systems

- Product development began on middle of 2004

- First version in production on 2006 in Kuopio University hospital (cardiology, open heart surgery)

- Decision to go on to anesthesia market in 2007, first version on production in 2009

- Company was acquired by Tieto corp. in 2010.

- By now several implementations in production (cardiology, heart surgery, orthopedics and perioperative care)
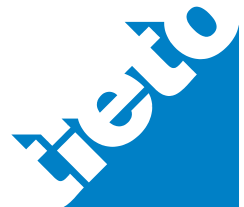
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How to do it

- Lessons learned before
  - It's easier to build a new product with small, dedicated team of professionals than doing it in sideline of big business
  - Traditional project models do not fit to need of rapid development at all – better to focus on customers and product instead of project
  - Doing the information model for healthcare takes time and easily leads to far too narrow and fixed view of the complex healthcare reality
- Being followed HL7 since early 90's (and being got in troubles with document based models) the changes made to reference model around 2001 looked promising
  - Included a model of process
  - Was based on idea of Acts in center of the model (like Activity in workflow models)
  - Abstract but focused on healthcare unlike workflow models
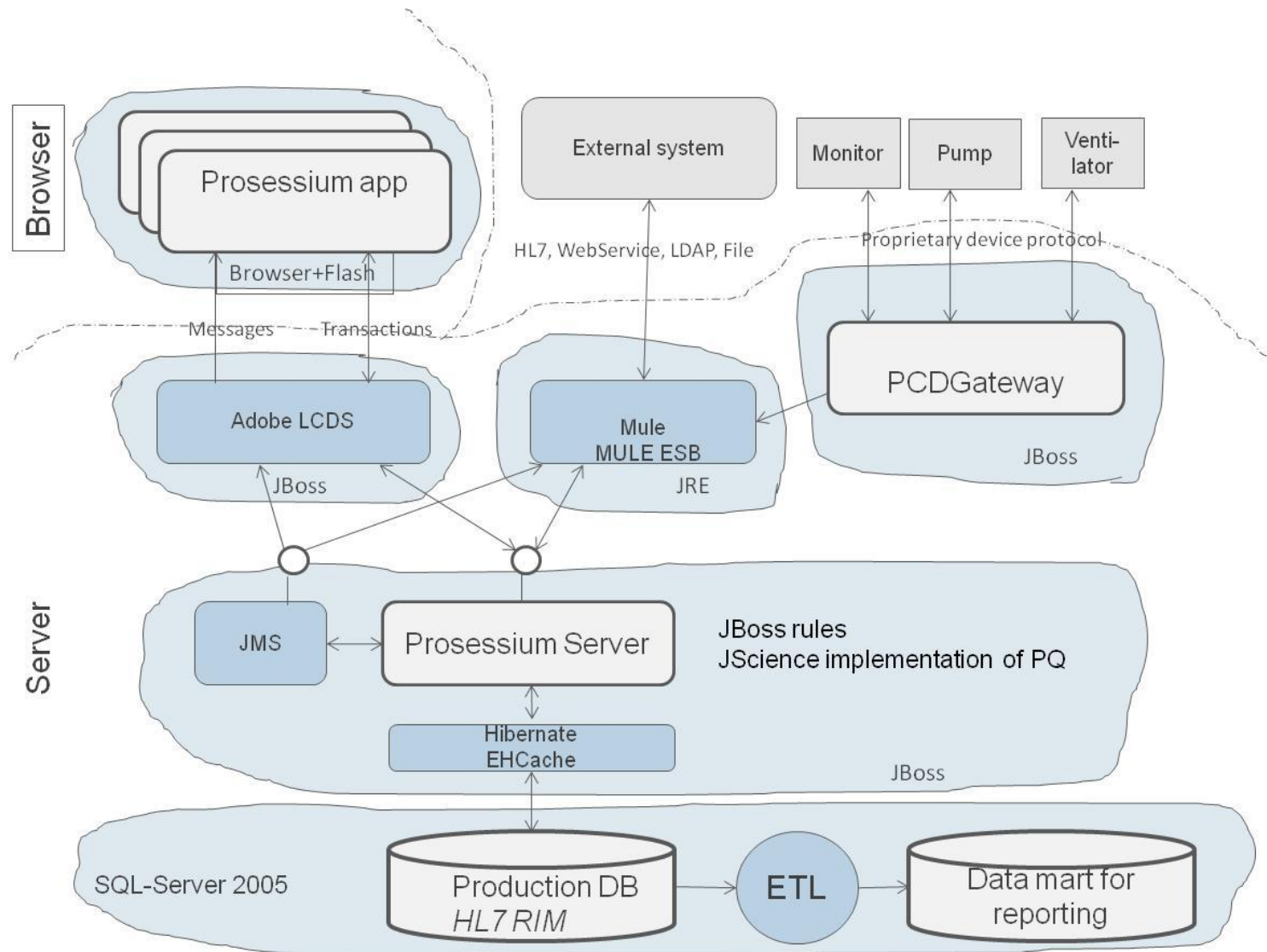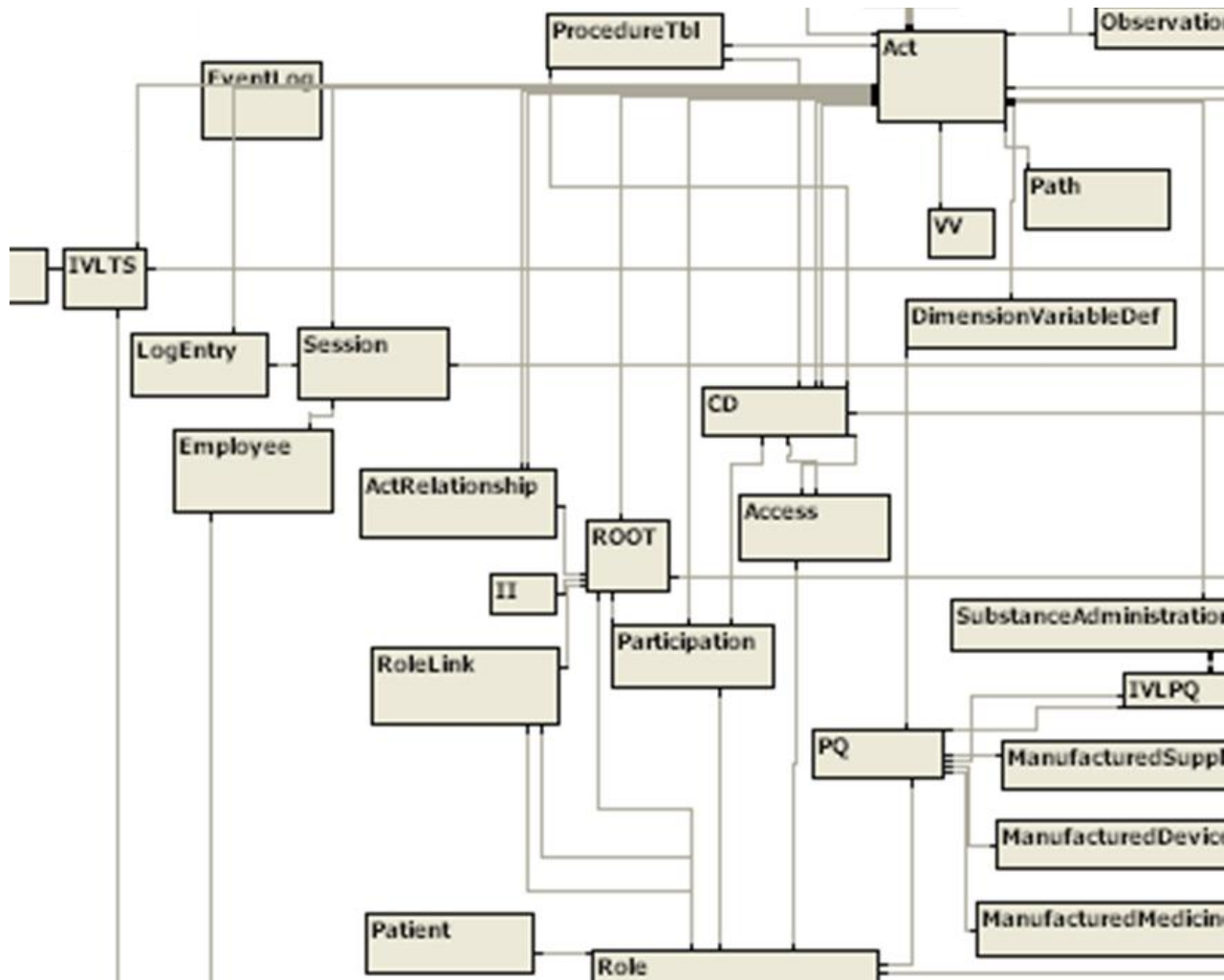
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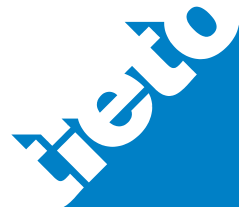
Try and progress

- In first round we thought the way to go is RIM in database, kind of R-MIMs in service level and solution specific DTOs in application level
  - Kind of R-MIM because we didn't have experiment on how to use RIM in practice
  - Lead to two ways to do modeling and caused unnecessary disruption between team members developing the user applications and services
- When development of the second version began, we decided to move to R-MIMs on app level too
  - Moving to critical care area caused re-writing to application level, so why not to do it at the same time
  - Quite some experiment during the proto development
  - Some cleaning was done to db and service models too and data types were implemented to support clinical calculations
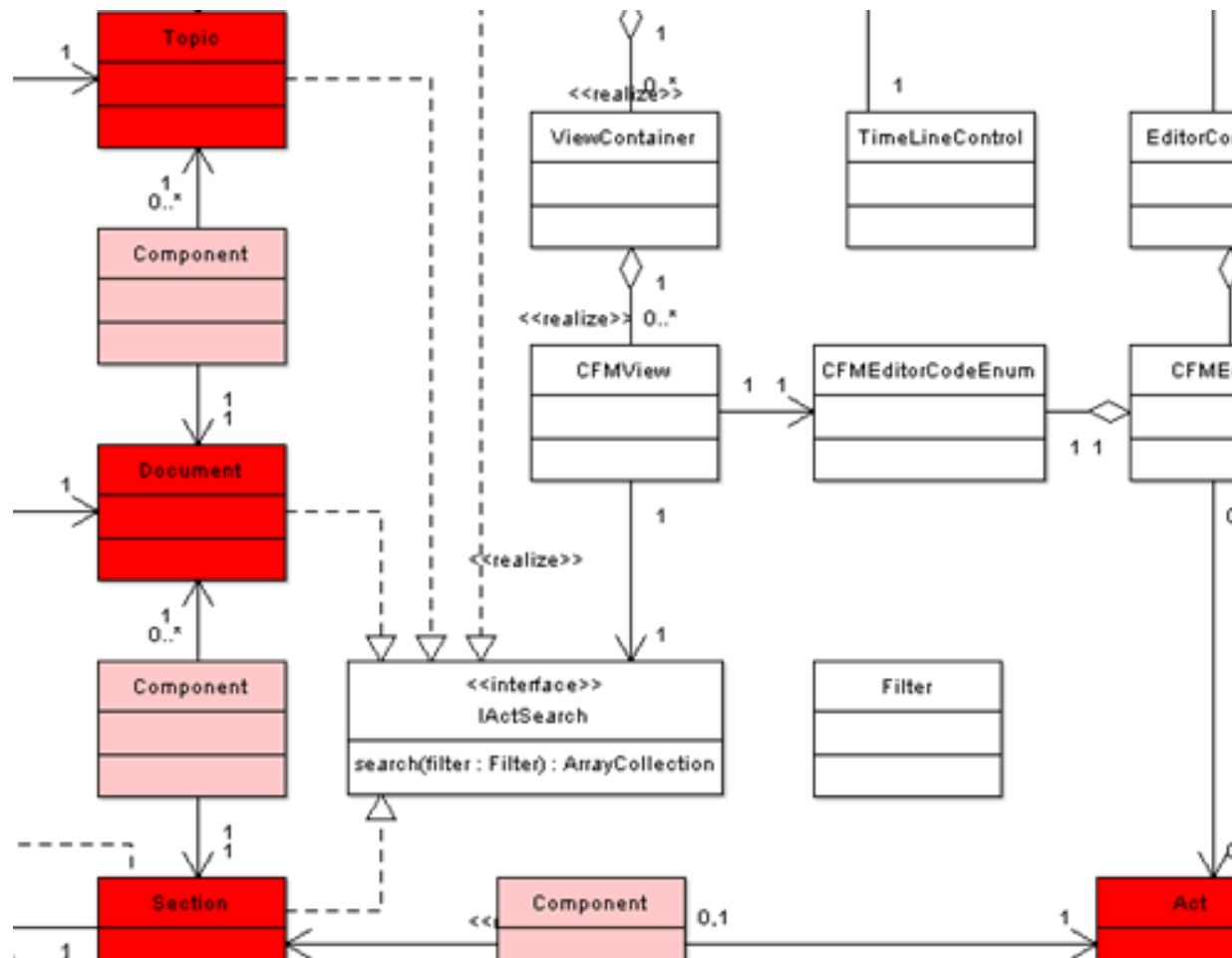 - Workflow engine was replaced with RIM based solution

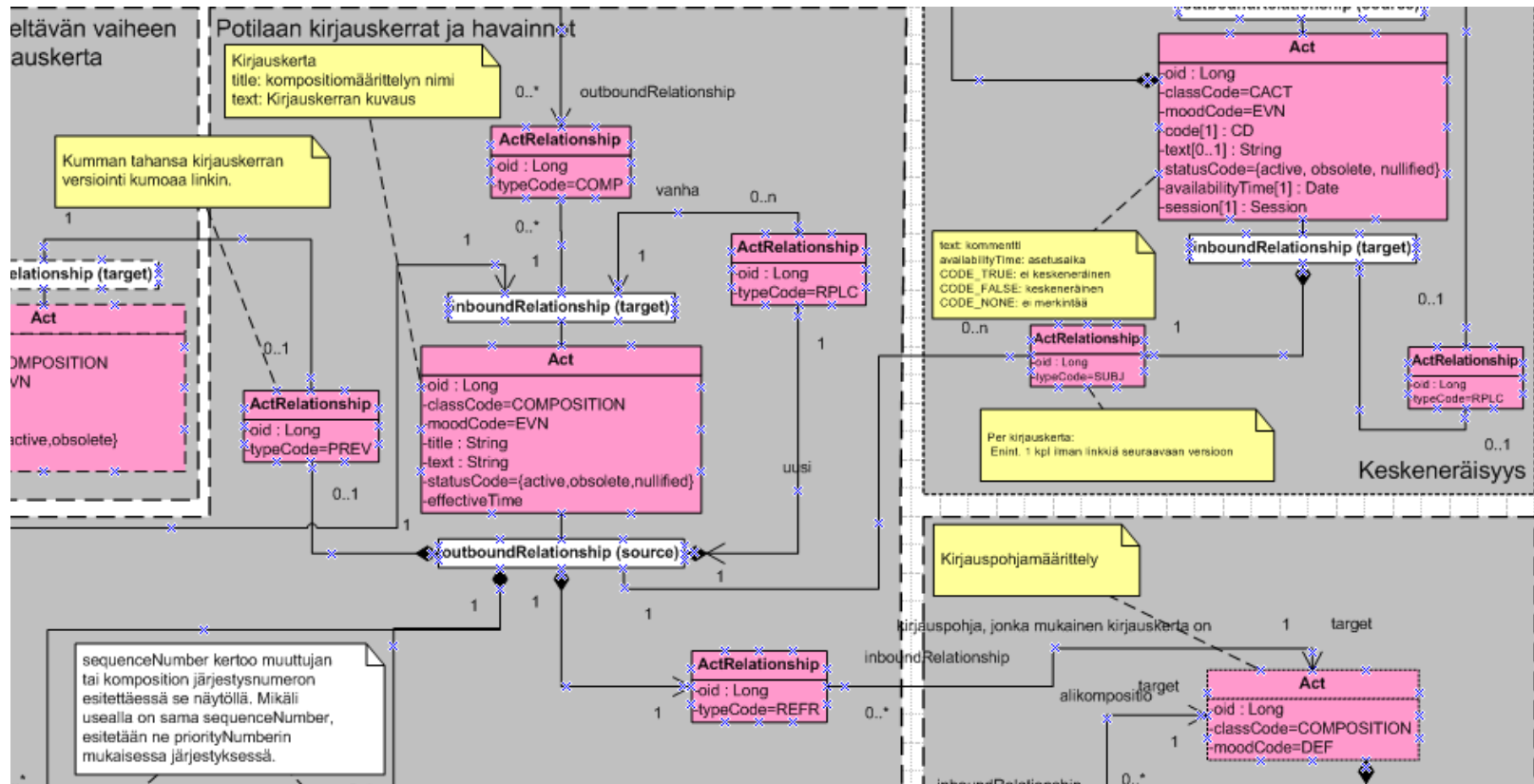   2011-11-14

Prosessium architecture

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Database model

Connecting model to application

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"R-MIM"

Anesthesia solution

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System load in perioperative production

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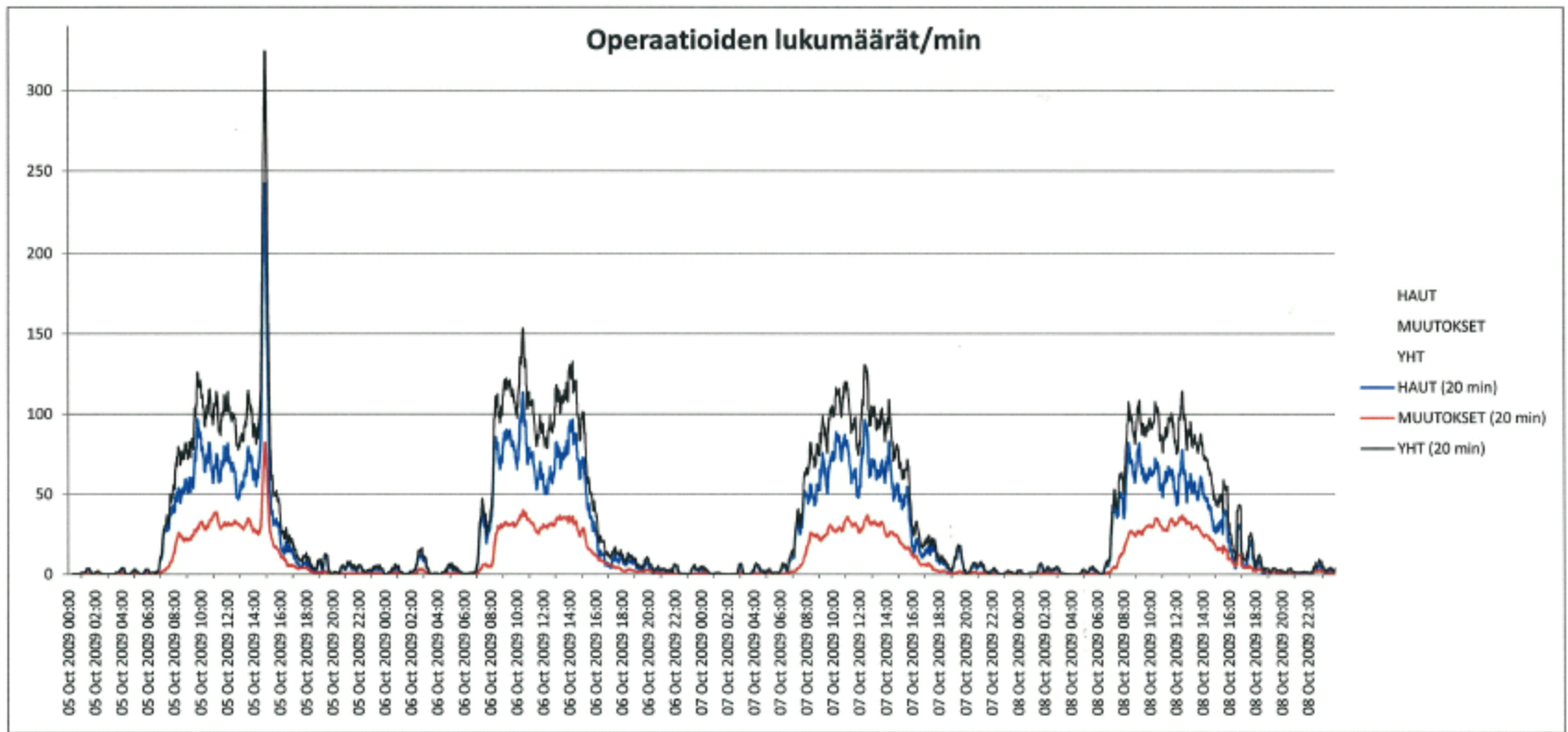
Findings

- It is both technically possible and reasonable from business perspective to implement whole product line on RIM based architecture
- There are, however, few technical issues
    - There are no support for some core ideas in infrastructure (yet?), most needed being the RIM data types.
    - There are impedance mismatch between R-MIM and models of UI components, mostly due the link objects (ActRelationship, Participation) . The same problem applies to general rule engines too. Wrapper between the models is needed to make it easier.
    - Implementing RIM to database easily leads to heavy load on few core tables. Partly caused by missing data types.
- As well as issues related to using the model
    - Whole team have to understand the very basic idea of RIM. Being abstract model it gives the modeler a lot of ways to go (to wrong directions too).
    - It's obvious there is still a lot to do to easy modeling and implementation of models in practice.
    - The best documentation so far has been the ballot material. But the ballots does not cover all anymore.
- And more when you try to use it to renew existing

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Knowledge.
Passion.
Results.

Pekka Kola

Senior solution architect
Tieto, HC&WF
pekka.kola@tieto.com