

# ANYLOGIC CONFERENCE

Berlin, 13 December 2012

AnyLogic Conference

**13** December  
2012

Hotel Intercontinental,  
Berlin, Germany

# MODELLING PAYMENTS BACK OFFICE PROCESSES

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# Fair Dynamics Consulting

- We are a management consulting company that help the customers to **improve their decision making process**.
- We combine a **general consultancy** approach, based on methods and practices, with the most distinctive aspect which is **decision modeling & simulation**.
- The typical areas we are involved in, are Strategic and Operative Planning, Resources Rightsizing, Performances Improvement, especially addressed to:
  - Supply Chain systems;
  - Processes and Organizations Analysis
- Fair Dynamics was set up by a group of consultants with long and proven experience, former managers and academics, supported by experienced professional. FD is located in Milano (ITA) and often work in collaboration with DSE Consulting, Leicester (UK).

## ACADEMICS PARTNERS



## MAIN CUSTOMERS

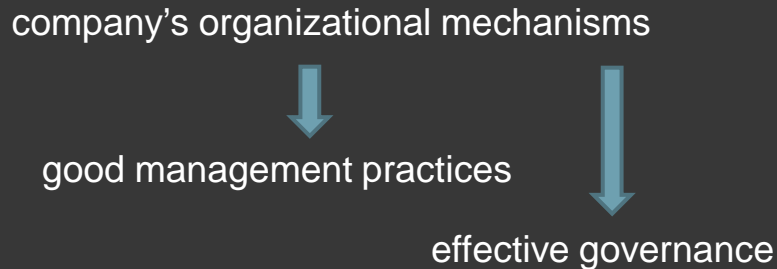


## TECHNOLOGY PARTNERS



The Case:  
Modeling Payments Process at Bank of Italy

# THE BUSINESS REQUIREMENTS



Since 2008, the crisis of financial system push the actor to **increase the governance**

Innovation for must-growing and ever-growing operational **efficiency** and **effectiveness** should be a company's driving force.

**Modeling** can be a **key** instrument for innovation.

# THE BUSINESS REQUIREMENTS

## Business model

- > “as is” snapshot model current state of the business process
- > “to be” model the process or the organization as it should become.

## Goals:

- > to check the soundness of existing processes and information systems
- > to decide whether minor or substantial modifications are needed.

# Process modelling tools

Main goals:

- > To identify organizational errors through diagrammatic presentations
- > To model and refine the business processes and choices.
- > To make possible the execution of “what-if” scenarios.

# THE CASE STUDY

## The domestic payments back-office process

*registration of the operation*

*checking of the confirmations*

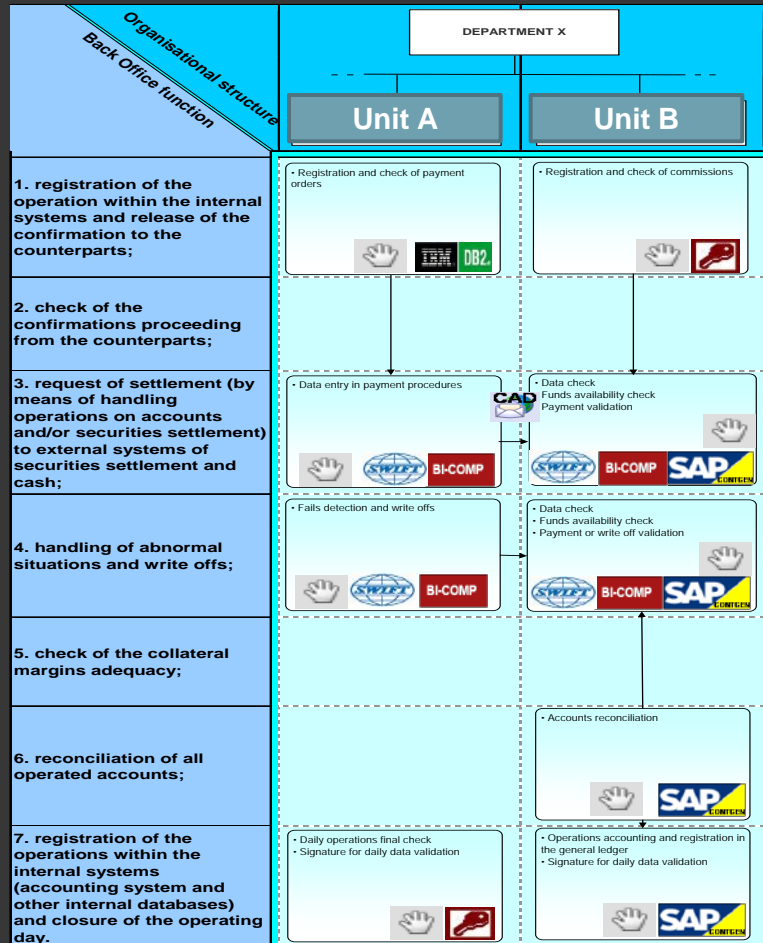
*request for settlement*

*handling of abnormal situations*

*reconciliation of all accounts with movements*

*registration of the operations*

# Domestic credit transfers (1)





# GOAL OF THE MODELLING EXERCISE

to verify the effect of employees' absence on the process completion time

to verify the effect of stress situations on the process completion time and on the employee utilization ratio

to investigate the possible advantages arising from an organizational variation

# SOME TECHNICAL CONSIDERATIONS

Commonly used business process modelling and simulation techniques for administrative processes

Discrete-event  
(process based)  
Modelling

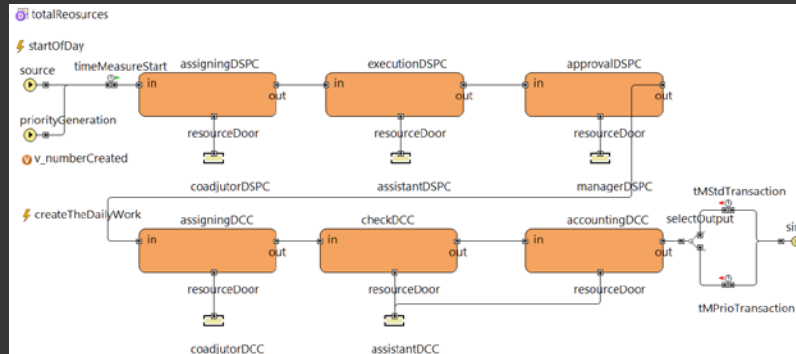
System Dynamics  
Modelling

Typical when coping with structured and well defined flows of activities, volume drivers, working times, lag times, capacities, human roles, expected disruptions, ...

# SOME TECHNICAL CONSIDERATIONS

**PROCESS MODELING**  
 (AnyLogic Enterprise Library)

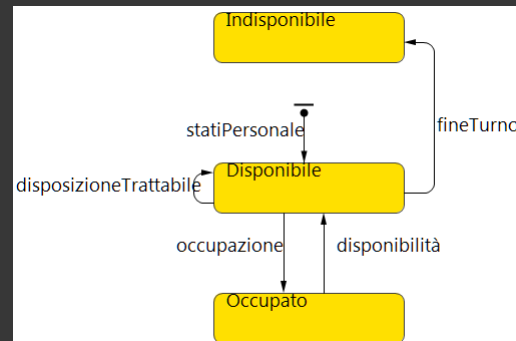
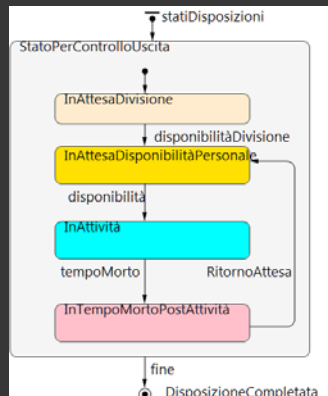
Discrete-event  
 (process based)  
 Modelling



VS

**ABMS**  
 (AnyLogic Stetecharts)

Agent-Based  
 Modelling and  
 Simulation (ABMS)



# THE OUTCOMES

Discrete-event  
(process based)  
Modelling

VS

Agent-Based  
Modelling and  
Simulation (ABMS)

➤ Numerical results are the same !

➤ ABMS approach:

AGENTS: each single payment (transaction items), employees (classes), organization units. Based on each agent's state chart.

Shorter implementation times ( more compact and elegant)

Easier to cope with some practical situations as “shift change”.

# THE SIMULATION OUTCOMES

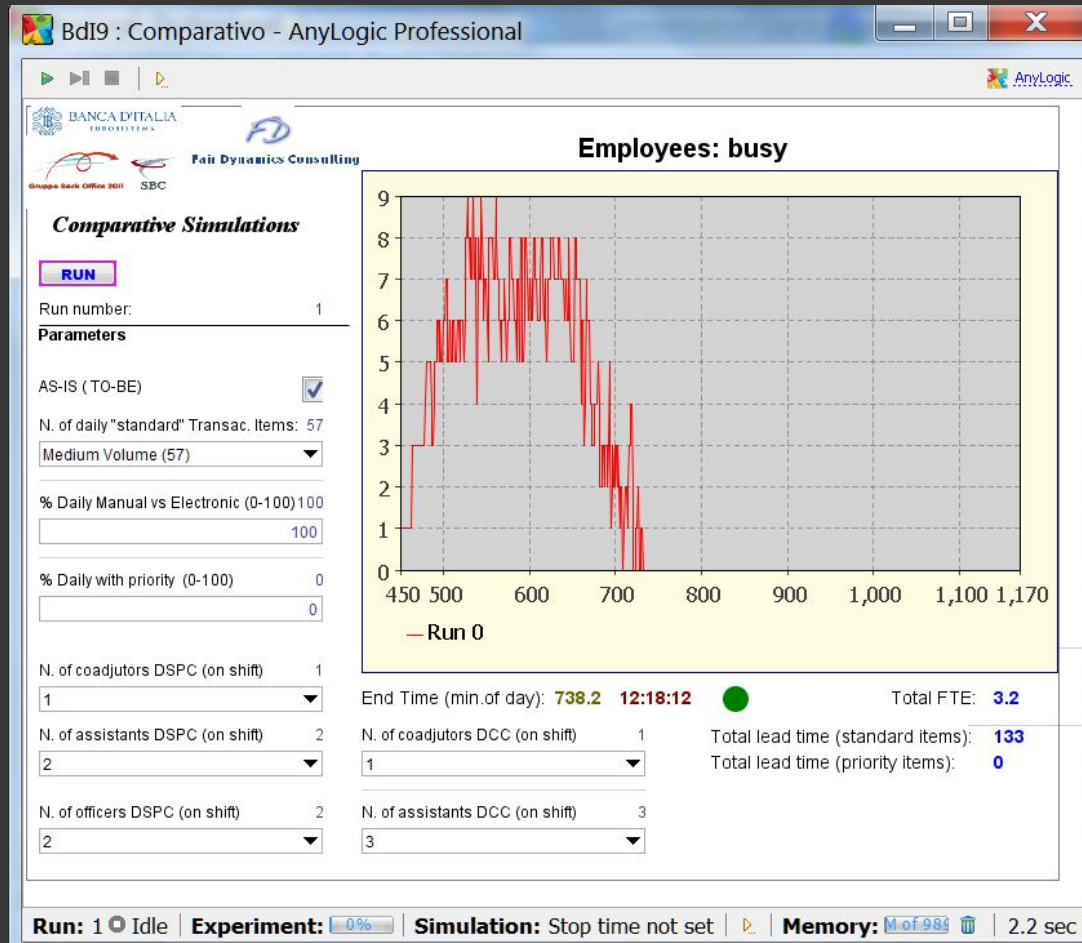
AS-IS Normal Activity

AS-IS Absence of employees

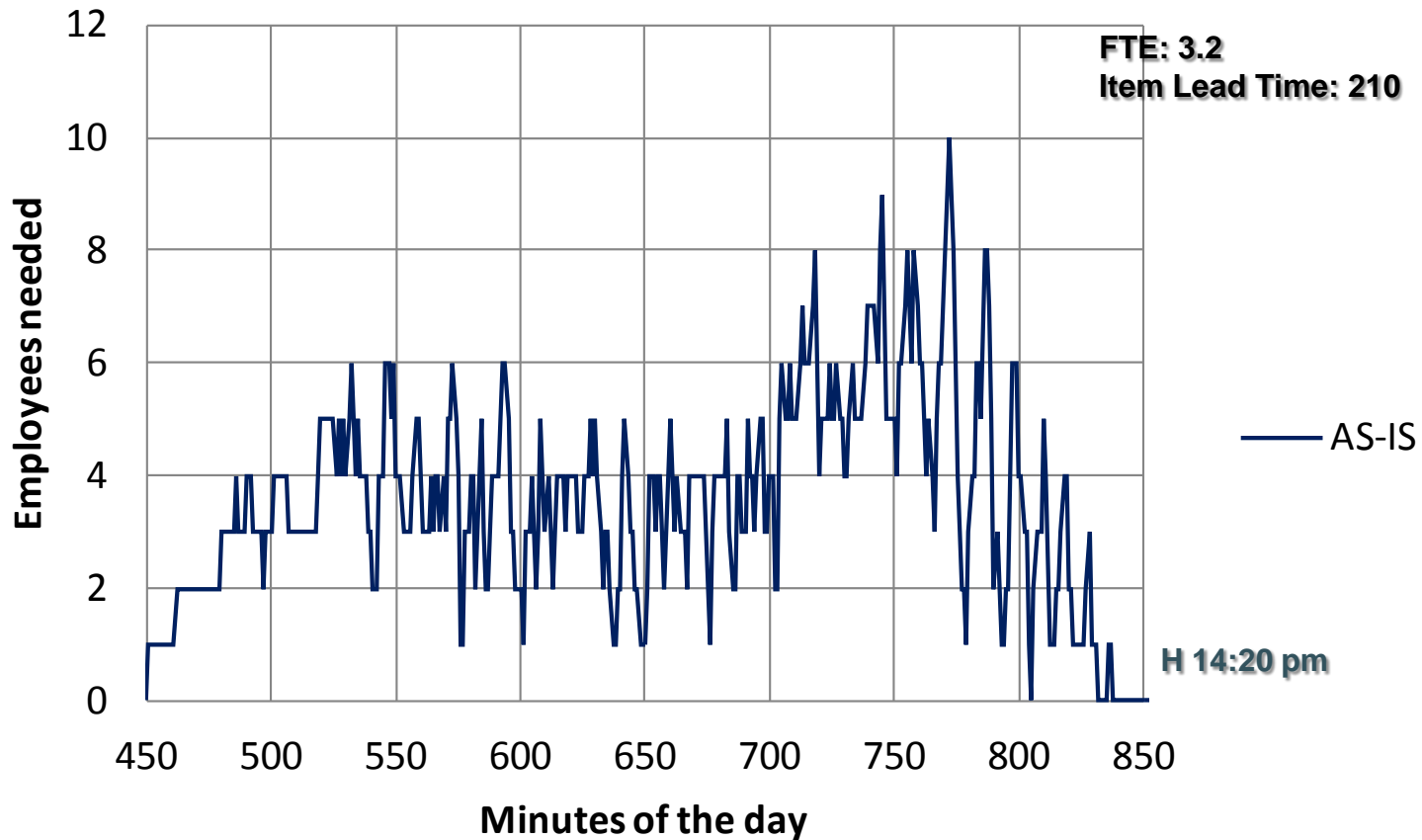
AS-IS Abnormal activity

TO-BE: time performances with a merger of the 2 Units

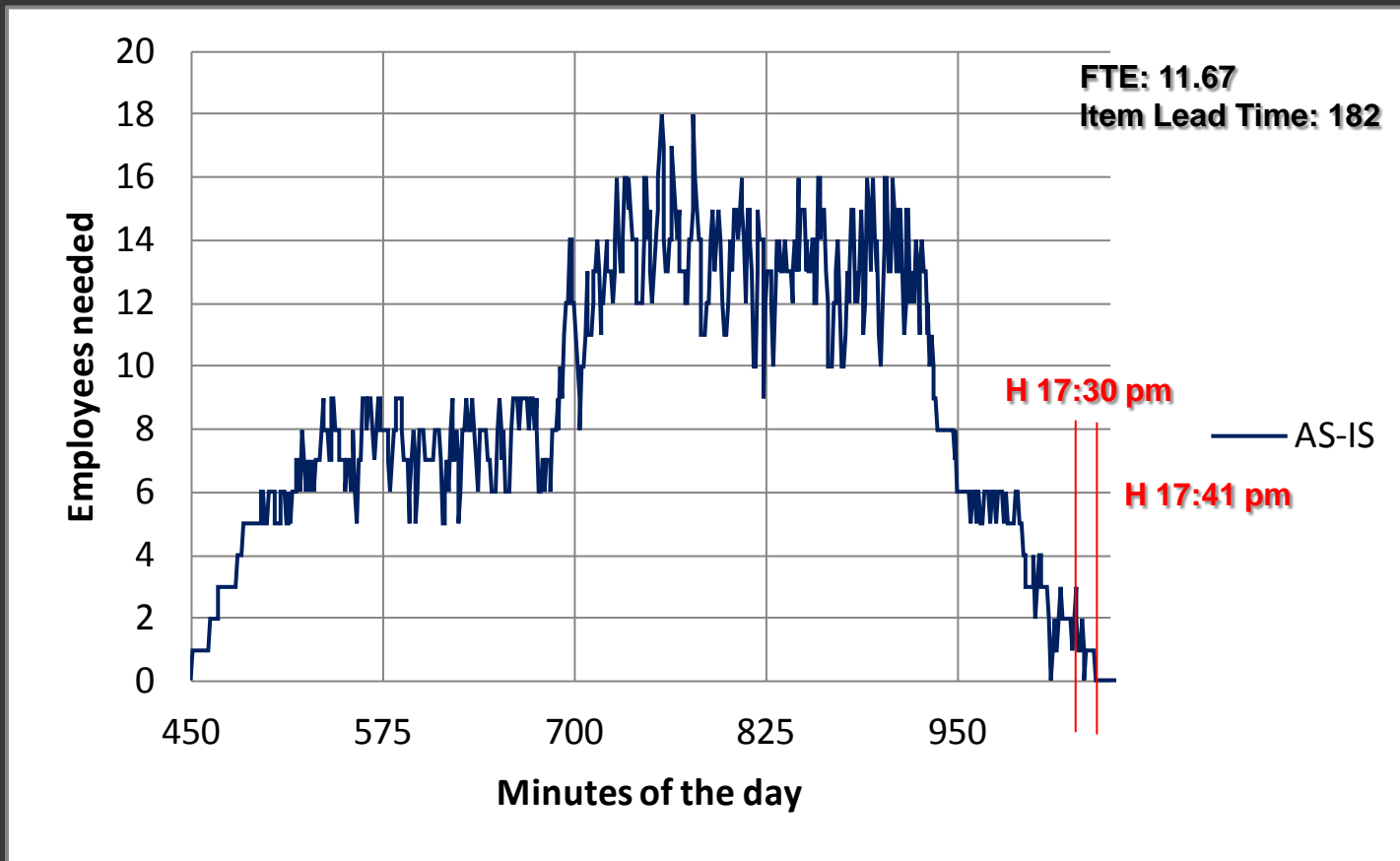
# A. AS-IS Normal Activity



## B. AS-IS Absence of employees



## C. AS-IS Abnormal activity



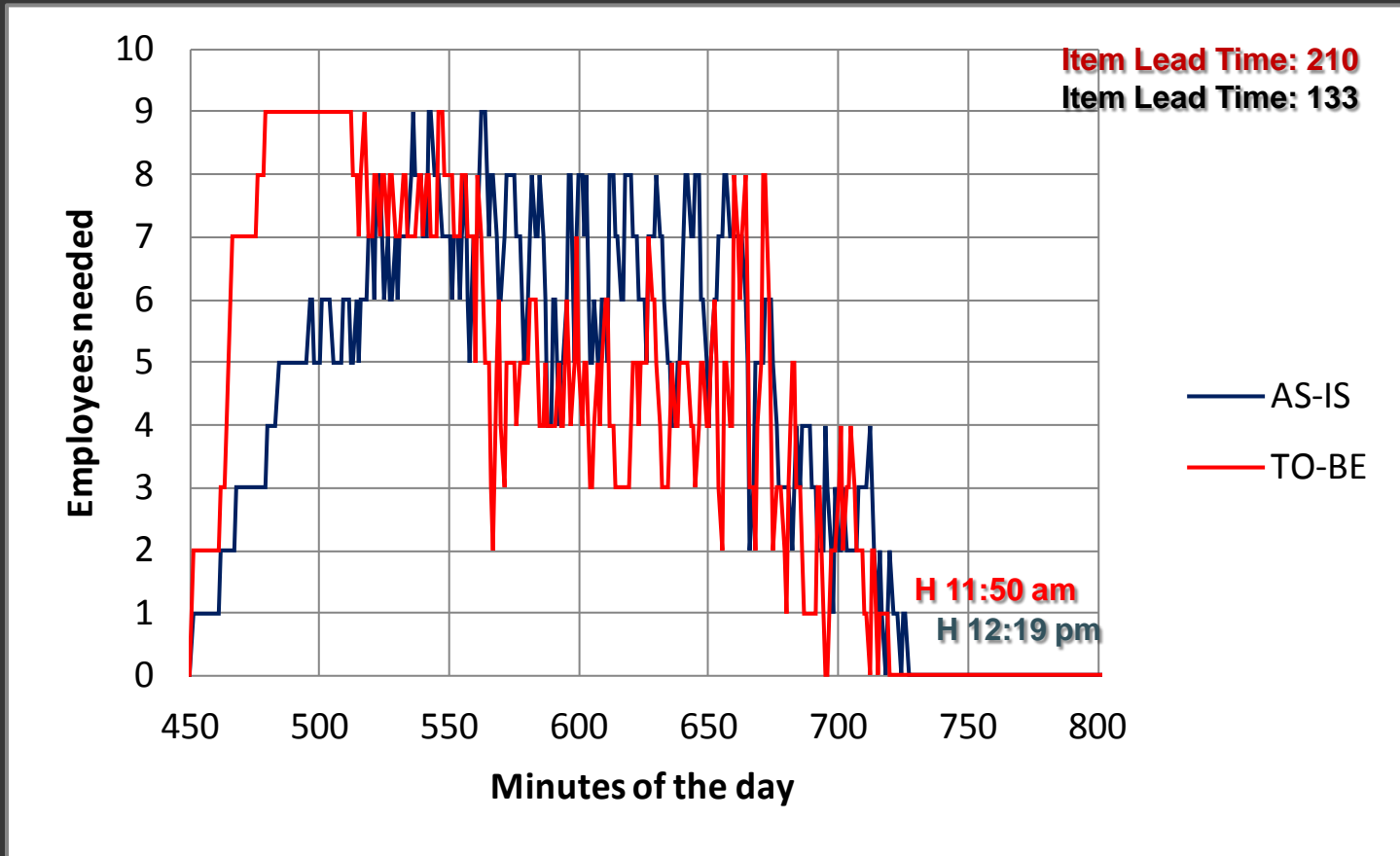


## D. TO-BE activity

The run reproduces what happens over a normal working day with a possible merger of the 2 Organizational Units.

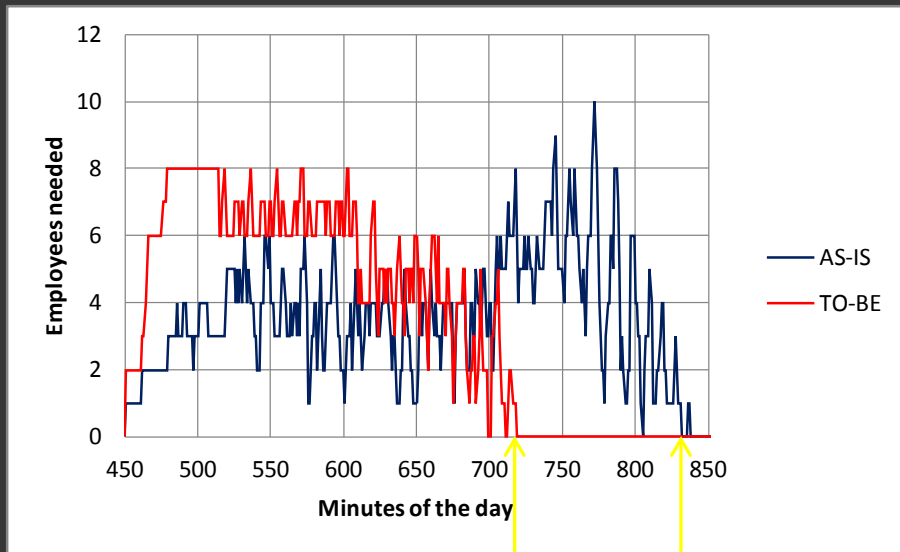
# D. TO-BE activity

## Normal Activity



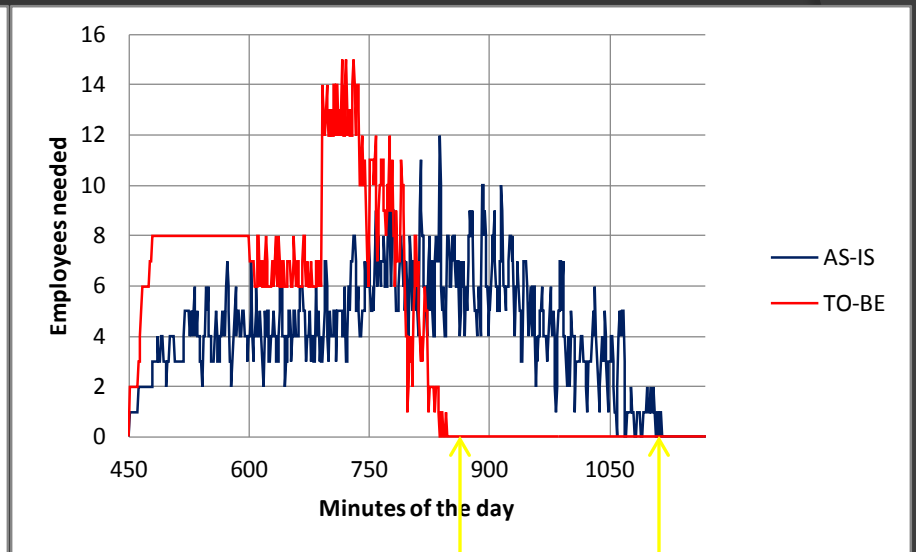
# D. TO-BE activity

## Absence of employees



H 12:00 pm

H 14:00 pm



H 13:00 pm

H 18:00 pm

*double volume of payments*

# RESULTS

Merger main advantages:

- an evident increase in the productivity of the whole process
- a sensible reduction of operational risks
- a reasonable reduction of the people "burn-out" threshold

# CONCLUSIONS

modelling and simulation techniques make it possible to:

- assess the existing situation quantitatively
- solicit new ideas for modifications and changes
- verify and quantify different hypotheses figured out "on paper"
- explore new possibilities by looking at "what happens beyond yonder"
- show and understand counter-intuitive situations
- demonstrate the validity of assumptions quantitatively

Thank you for the kind attention