

# Tracking and Analysis of Business Processes in a Pathology Department

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June 8, 2012



## Outline

- 1 Background
- 2 Material & Methods
- 3 Results
- 4 Discussion



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# Digital Pathology

- Introduction of Virtual Microscopy in routine and teleconsultation - availability of digitalized core information: the slide
- Requisite for Integration: Automatic Digitalisation
- Automatic Assignment of cases and WSI
- Tracking of processes: slides in lab, cases in department

# Tasks of process modeling

- Kommunikation Pathology Departement, IT & vendors
- Analysis of Processes - improvement, impact
- Knowledge management
- Education

# Business processes in Pathology

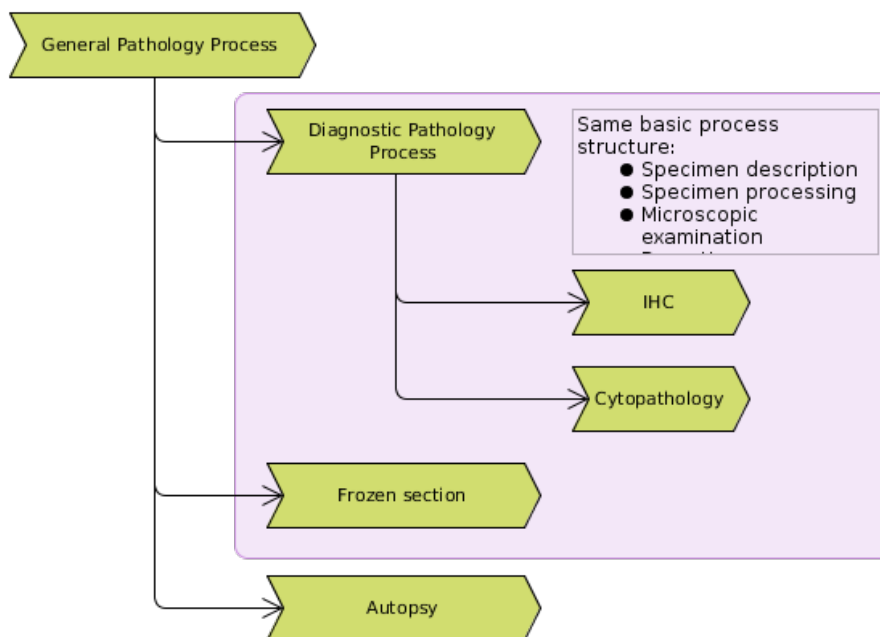
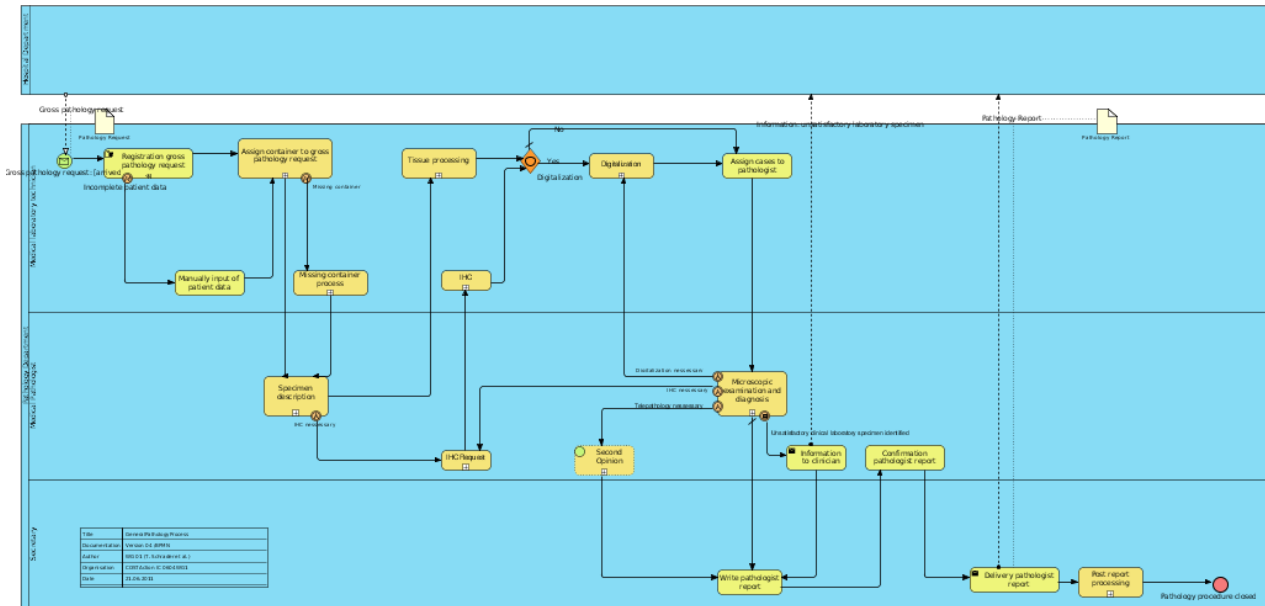


Figure: Result of COST Action IC0604

# General diagnostic process in Pathology



# Project: Process tracking in a Pathology Department

## Aims:

- Tracking of cases in a diagnostic process
- Analysis of Process model
  - Stability of process and model
  - Reasons for deviations

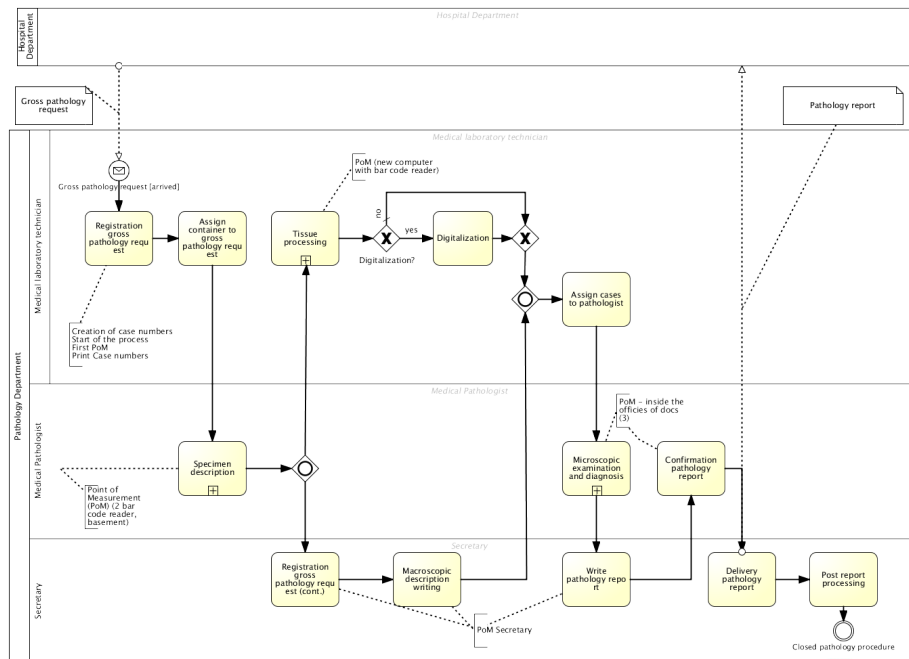
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# Material & Methods

- Location: Departement of Pathology, City Hospital Brandenburg
- Observation time: May 2011 - December 2011
- Measurements: Barcode-Readers at Points of Measurement
- Process modeling: Visual Paradigm
- Process modeling and -integration: Signavio Process Editor (Signavio)
- Tracking: Nomic-Software (Innocon Systems)

# Points of Measurement



# Points of Measurement

- Registration (begin)
- Specimen description (begin/end)
- Laboratory (end)
- Microscopy (begin)
- Macro writing (begin)
- Report writing (begin)
- Confirmation (begin)

# Nomic - Signavio Interaction

- 1 Usage of barcode reader
- 2 Timestamp with PoM-Id
- 3 Comparison - expected step in process and PoM-ID
- 4 Mark wrong or right process flow

Comment: no interaction with PLIS

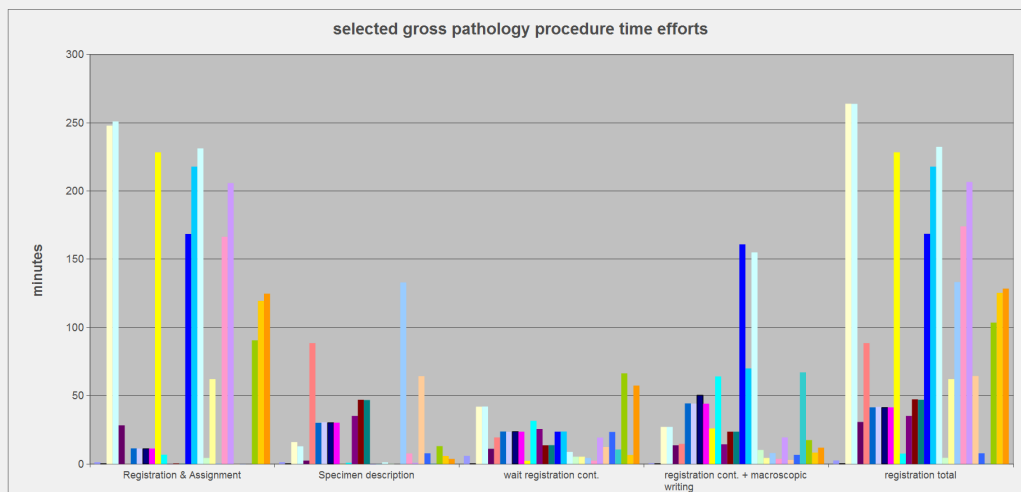
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# Process Analysis

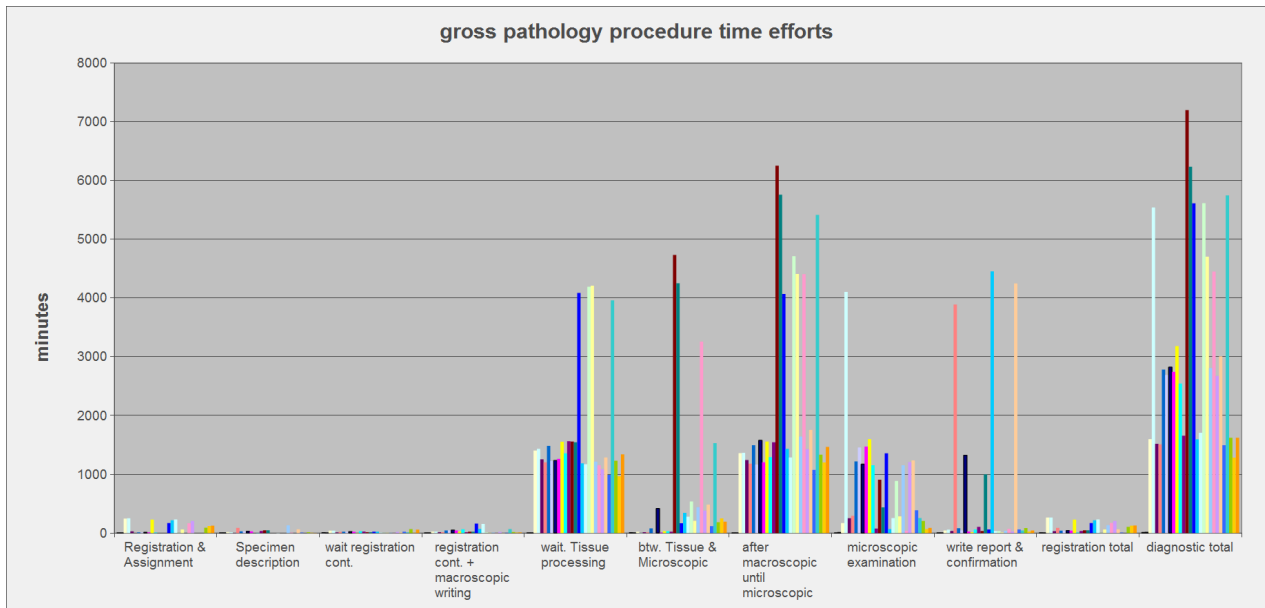
- First Analysis after two months:
  - Number of cases: 1653
  - Number of process errors: 98,5 %
- Problems
  - Logic of process tracking - more flexibility necessary -
  - Usage of barcode reader
  - Experimental limitations
- Final Analysis
  - Number of process errors: < 1 %

## Detail process analysis: registration & specimen description





# Process analysis: general process



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# Conditions

- Essential integration of Barcode and Barcode reader (level: pathology request/report, slide, WSI)
- Essential Interaction of PLIS, tracking software (Nomic) and Process modeling tool (Signavio)
  - Exchange of tracking information
  - Analysis of data
  - Business process monitoring

# Problems

- Usage of Barcode reader
- Flexibility and adaptability of tracking software

# Conclusion

- Tracked process data with valuable information
- Process models as requisite for analysis, tracking and simulation
- Very close integration of tracking, analysis and reporting in pathology processes