Enterprises Thinking!

Mapping collaborative technologies for organizational workflows

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Accra, Ghana
15th of Feb. 2011
Scope of the presentation

- FIR
  - Who we are and
  - what we do

- ACTIVE project
  - Enterprise
  - Process types and scope
  - Some thoughts on Incentives
FIR in the Network with its partner institutes

RWTH Aachen
- founded in 1870
- 30,000 students
- 5,000 students in Mechanical Engineering

Institute for Industrial Management (FIR)
- founded in 1954
- 140 employees
  (approx. 45 scientific employees)

Laboratories of Machine Tools and Production Engineering (WZL)
- founded in 1906
- 600 employees
  (approx. 160 scientific employees)

Fraunhofer Institute for Production Technologies (IPT)
- founded in 1980
- 340 employees
  (approx. 60 scientific employees)
FIR Organisational Map

Information Management
- Information Logistics
- Information Technologies
- Competence Center Electronic Commerce

Service Management
- Service Engineering
- Lean Services
- Community Management
- Competence Center Maintenance

Production Management
- Supply Chain Design
- Order management
- Logistic Management
- Competence Center IT-Management

Smart Object Innovation Lab

Service Science Innovation Lab

ERP Innovation Lab
RWTH Aachen Campus  2 Areas – up to 19 Cluster

Legend: UHSM Communication = Ultra High-Speed Mobile Communication

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The clusters

- **Cluster Definition:**
  - Long Term Topic, > 5 years.
  - Strong acceptance from industrial partners
  - Intensive exchange between research results and industrial approval
  - Minimum 3 research chairs (Professors) and minimum 10 industrial partners
  - Each starting with min. 10000 m², 300 employees

sketch: rha reicher haase + associierte, Aachen

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Events and Activities

Key events and activities

- ICE Conference 2011
- Executive MBA for technology managers
- Service Engineering Forum - Aachener Dienstleistungsforum
- ERP days – Industrial forum
- AIT days – Industrial forum
- RWTH-Certificate Course Chief Logistic-Manager
- RWTH-Certificate Course Chief RFID-Manager
- RWTH-Certificate Course Chief Service-Manager
ACTIVE
Knowledge Activated Enterprise
Target group

Organizational Structures
Operational Structures
Information Structures
Knowledge workers

Enterprise
Organizational community

User role identification → Org. processes identification → Application placement
= Harmonisation of organisational processes and application impact
Two complementary perspectives

- **CIO**
  - Too many upcoming technologies
  - No readily available approach to measure the value and impact

- **Knowledge worker**
  - Technology savvy profiles
  - Exposure, skill, experience, towards judgment to use new technologies
  - Understanding the needs of the processes

- **Role**
  - Decision support
  - Visibility in processes
  - Accountability based on value and impact

![Diagram showing Business process loop, Business optimization loop, and Prediction & Planning loop connections]

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Collaborative Technologies

Inter-Enterprise

Professional network

Static workflow

Structured data

Intra-Enterprise

Social network

Informal work

Unstructured data

Formal

Informal

Customized representation based on MIT-EIA 2004; Linß 1995; Kaib 2002
Collaborative Technologies

- **Formal**
  - Professional network
  - Static workflow
  - Structured data

- **Informal**
  - Social network
  - Informal work
  - Unstructured data

Sb = Collaborative workflow
Sa = Dynamic workflow

Customized representation based on MIT-EIA 2004; Linß 1995; Kaib 2002
Context levels

Core Business Process

Information system

Pool of flexi-services

Data Backbone

Data source

Core business context

Task context

Activity context

Action context
Construct of the framework (EVEKS)

Selection and Classification

- Quantitative measures
- Qualitative benefits

Individual component level

(Invtrinsic value)

Selection & classification

- Identify functionalities
- Generate value drivers

Assessing & calculating value

- Determine interfaces
- Assess actual impact

Organization level

(Extrinsic value)

Organizational strategy

Integration strategy

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EVEKS framework

Identify & isolate functionalities
Generate value drivers
Determine interfaces
Access value
Derive integration strategy

Selection criteria
Application functionalities

List of all KM supporting functionalities
Dictionary of benefit drivers and relevant domains
Matrix of interfaces between key parameters and domains
Intrinsic value: Qualitative & quantitative measures
Predictive extrinsic value measures and their impact

Quantitative (€)
Cost model:
Benefit model:

Qualitative (% weight)

Selection criteria
Application functionalities

List of all KM supporting functionalities
Dictionary of benefit drivers and relevant domains
Matrix of interfaces between key parameters and domains
Intrinsic value: Qualitative & quantitative measures
Predictive extrinsic value measures and their impact

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# Description of pillars

<table>
<thead>
<tr>
<th>Identify &amp; isolate functionalities</th>
<th>Generate value drivers</th>
<th>Determine interfaces</th>
<th>Access value</th>
<th>Derive integration strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify domain specific application functionalities</td>
<td>Isolate the relevant domain specific benefit drivers and align with each functionality</td>
<td>Identify interfaces between benefit drivers, task level processes, and business level processes</td>
<td>Assign quantitative values to the drivers</td>
<td>Develop overall process to task and IT system to task landscapes</td>
</tr>
</tbody>
</table>

**Analyses**
- Identify domain specific application functionalities
- Isolate the relevant domain specific benefit drivers and align with each functionality
- Identify interfaces between benefit drivers, task level processes, and business level processes
- Assign quantitative values to the drivers
- Develop overall process to task and IT system to task landscapes

**Measures**
- Catalogue of requirement classification
- Meta-study on relevant benefit drivers
- Expert interviews
- Task descriptions
- Alternative flow
- Cost model
- Benefit model
- Assessment tool for impact
- Knowledge representation table
- Reorganization charts

**Outcome**
- List of all KM supporting functionalities
- Dictionary of benefit drivers and relevant domains
- Matrix of interfaces between parameters and domains
- Intrinsic value: Qualitative & quantitative measures
- Predictive extrinsic value measures and their impact

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Collaboration

Nonaka 1994

Spender 1996 & Lam 1997

Individual

Enterprise relevant

Shared

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Knowledge Spheres

Knowledge spheres

Potentials  Supporters  Experts  Contributors

Tie model from McAfee 2009

None  Potential  Weak  Strong
Workflows, Business Processes, Knowledge Process

- **Workflow** is a finite set of sequential/parallel activities triggered by events.*

- **Business Process** is a collection of sequential/parallel activities necessary for processing of economically relevant objects.*

- **Knowledge Process** is a collection of loosely defined and ramified activities (actions) necessary for processing of user relevant data.

<table>
<thead>
<tr>
<th>Business Process</th>
<th>Informal Knowledge Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal</strong></td>
<td>Business-goal driven</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>Enterprise</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>Static</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Formal</td>
</tr>
<tr>
<td><strong>Guided</strong></td>
<td>Externally Coordinated</td>
</tr>
<tr>
<td><strong>Analyzed</strong></td>
<td>Monitored, Analyzed, Optimized</td>
</tr>
<tr>
<td><strong>User-goal driven</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Individual</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ramified</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Informal</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ad-hoc/ Spontaneous</strong></td>
<td></td>
</tr>
</tbody>
</table>

*taken from: Computer/Supported Coorperative Work, Uwe m. Borghoff and Johann H. Schlichter, Springer, 2000
Active nodes are specialists that define the process dynamics and can only have an interface to the Enterprise knowledge portals.

Dumb nodes are non-specialists and are information/data pushers and these roles may be incorporated into the enterprise information systems.

External nodes are specialists in a sub-process level and therefore should be considered while designing the enterprise information systems.
Active nodes are specialists that define the process dynamics and can only have an interface to the Enterprise knowledge portals.

Dumb nodes are non-specialists and are information/data pushers and these roles may be incorporated into the enterprise information systems.

External nodes are specialists in a sub-process level and therefore should be considered while designing the enterprise information systems.
Process: Conventional perspective

- **Formal Business processes**
  - High repetition rate
  - Standardized
  - Defined roles

- **Informal Processes**
  - Scope of user or small team
  - Repetition rate is low
  - Depend on skill, experience, and judgment of the knowledge worker
  - Can not be formalized
  - Dynamic in time and scope
  - Can not be directly traced to the product value

Supported by ERP, CRM…

Not supported by conventional systems
Process: Spectrum blend

Isolating the formal and informal tasks

Identifying the semi-formal tasks

Identifying and segregating the semi-formal tasks
Process: Relevant perspective

- **Semi-formal**
  - Scope of mid to large teams
  - Repetition rate is low to medium
  - Depend on domain relevant skill, experience, and judgment of the knowledge worker

- **Known sequential tasks therefore can be formalized at execution time**
- **Can be directly traced to the product value**

**Processes and workflows**

- **Rate of occurrence**
  - Supported by ERP, CRM…
  - Formal
  - Semi-Formal
  - Informal

- **Use of Knowledge**
  - Captured & supported through HCPM tools (Bluekiwi, Blueprint…)
  - Supported by action based activities monitoring tools (Contextify, Lizzon…)

**Standardised Flow diagrams**
- Dynamic flow diagrams
- Events and Actions

**Execution**
- Planning
- Decision
**Formal Business**
- High repetition rate
- Standardized or fully automated
- Defined roles and skills

**Semi-formal**
- Scope of user or small teams
- Repetition rate is low
- Depend on skill, experience, and judgment of the knowledge worker

**Informal**
- Scope of user
- Repetition rate is low
- Depend on skill, experience, and judgment of the knowledge worker
Process: consolidated overview

Rate of occurrence

Formal tasks
Informal tasks

Formal tasks
Semi-formal
Informal tasks

Formal tasks
Informal tasks

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Technology classification

Rate of occurrence

Use of Knowledge

Use
Develop
Share
Store

- Use
- Develop
- Share
- Store

Business conception stage
Main focus:
- Operation
- Execution
Modelling:
- Standardised flow diagrams

Pre-execution or execution
Main focus:
- Tactic
- Planning
Modelling:
- Dynamic flow diagrams

Execution or post-execution feedback
Main focus:
- Strategy
- Decision
Modelling:
- Events and Actions
  (Artful processes)
Task Profiles

Skil: Required Level of Skill
Knw: Required Knowledge
Fraq: Frequency of Execution
Src: Need for Knowledge Sources
Scp: Scope of Task
Seq: Sequence of Activities

Aggregate
Breakdown

Process Profiles

Informal Task
Semi-Formal Task
Formal Task
100% of a Process
10%  30%  60%
Breakdown and aggregate

10% 60%

30%

Processes/Task level

Business level

Aggregate Breakdown 100% of a processes

Service

Production

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Project task scenarios

Scenario 1
Set and declared timeline
Scenario 2
Expected/planned timeline
Scenario 3
Cut-off point

- Formal task
- Semi-formal task
- Informal task

Task duration
Transitional border
Research proposal FSI

Identifying calls
Setting up Teams
Sketching ideas
Writing proposal
Submitting proposal
Value estimation

Develop estimates of cost and benefit for the different categories in the framework

- Quantitative (Cost and Benefits meta-measures)
  - Capital assets based direct and indirect costs and benefits (ROI)
  - Time based cost and benefit factors (booking time)
  - Productivity based costs and benefit measures* (output threshold)

- Qualitative (Benefits)
  - Participation and involvement'
  - Satisfaction
  - Adoption (Take-up)'
  - Innovation rate (Success rate*)
  - Privacy
  - Autonomy
  - …

Quantitative aspect:
Cost = Investment*
Benefits = savings

Qualitative aspect:
Cost = Negative impact
Benefits = Positive impact

Value based on end user and economic measure for organization
## Cost and benefits

<table>
<thead>
<tr>
<th>Private</th>
<th>Wider economic</th>
<th>Wider community</th>
<th>Wider social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private costs are the</td>
<td>Non-appropriable private externality</td>
<td>Educated citizens</td>
<td>Pseudo externalities</td>
</tr>
<tr>
<td>resource costs</td>
<td>Externality</td>
<td>Informed democracy and freedom of expression</td>
<td>Asset price changes (if already captured</td>
</tr>
<tr>
<td>Private benefits include:</td>
<td>Security and Policy</td>
<td>Cultural understanding</td>
<td>under private cost-benefit)</td>
</tr>
<tr>
<td>(i) Saving time doing</td>
<td>Network effect</td>
<td>Belonging to a community and inclusion</td>
<td>Employment effects</td>
</tr>
<tr>
<td>what one would do</td>
<td>Competition in domain</td>
<td>Privacy</td>
<td>“Competitiveness”</td>
</tr>
<tr>
<td>anyway</td>
<td>Resilience, adaptability</td>
<td>Social capital, resilience</td>
<td></td>
</tr>
<tr>
<td>(ii) Doing more of</td>
<td>and policy options</td>
<td>and trust</td>
<td></td>
</tr>
<tr>
<td>existing things</td>
<td>Excess burden of options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii) New things and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>transformations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Two thoughts

“Visionary leaders run the risk of overriding the ideas of the brilliant people around them.”

Changing the culture by facilitating the use and adoption of the technology.

"People who have a vision should go see a doctor."

“At any Cost!”
Organizational consideration

- Complex business structures
- Size of the companies
- Age of the company
- Different leadership styles
- Average knowledge worker’s age and education level (gender)
- Density ratio of the knowledge worker per completed transaction
- Deadline driven workflows and teams
- Adaption of current and future IT infrastructure
- Collaboration opportunities and channels

“All perspectives considered"
System consideration

- Provide content at the launch of the community
- Stage the roll-out of the incentive mechanism and plan ahead for revisions
- Moderate and governance through management
- Monitor and evaluate over time
- Encourage users to tailor their functionality
- Take account of the domain and context of use
- The role of empathy and trust and its relationship with motivation

“All perspectives considered"
Some Statistics

Increases Work Performance

- Incentive programs increase work performance an average of 22%.
- Team-based incentives are credited with improving performance by 45%. - Source: The Incentive Research Foundation, 2002.

Recognition is a Strong Motivator

- A survey of over 2,000 workers has found that 80% of employees said that praise and recognition motivates them to do a better job. - Source: Gallup, 2006
- 74% of employees say that being recognized by their managers for doing good work is very or extremely important. Source: Nelson, 2006

Rewarding Employees

- The use of rewards was the single highest predictor of "organizational climate," which in turn had a direct correlation with financial results. - Source: Harvard Business Review 2000
- Companies that reward their employees for being innovative increase their revenues by 2.5% and their profit margins by 2%. Source: IBM Global Business Consulting CEO Survey, 2006
- 50% of companies reward their employees with gifts for prizes at their farewell party with only 27% reward and recognise a job well done during their employ. - Source: Red Balloon Day, Australian Pleasure Survey, 2004

'Engaged' Employees

- Active reward and recognition programs and strong communication channels are seen to be of greater benefit to employees than increases in salary, additional training, and bonuses. - Source: Yahoo Finance, 2005
- A survey of 1,500 Australian workers revealed that 20% of employees are ‘actively disengaged’ at work with an estimated cost to business of A$31.5 billion.
- Less than 30 per cent of actively disengaged employees are planning to stay with their current employer over the next 12 months. In contrast, only 18 percent of Australian workers are ‘engaged’ – working with passion and feeling connected to their employer – and delivering high levels of productivity, profitability and customer service. - Source, Gallup Organisation, 2005
- 85% of employees say their morale declines significantly after spending six months on the job. - Source: Sirota Survey Intelligence, 2007
Best organizational incentive

- A good running system!

Don’t be…
Best individual’s incentive

- A good running system!
Meda ase!

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