



Finally installed – and then?

The difference between successful and unsuccessful PLM introductions.

Vector Congress, Stuttgart, 07. October 2008  
Dr. Christof Ebert, Managing Director  
Vector Consulting Services

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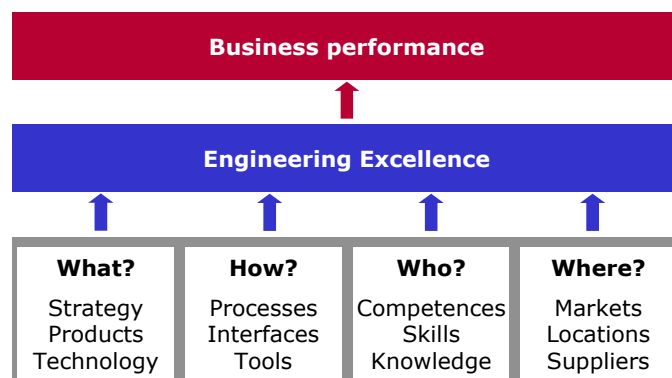
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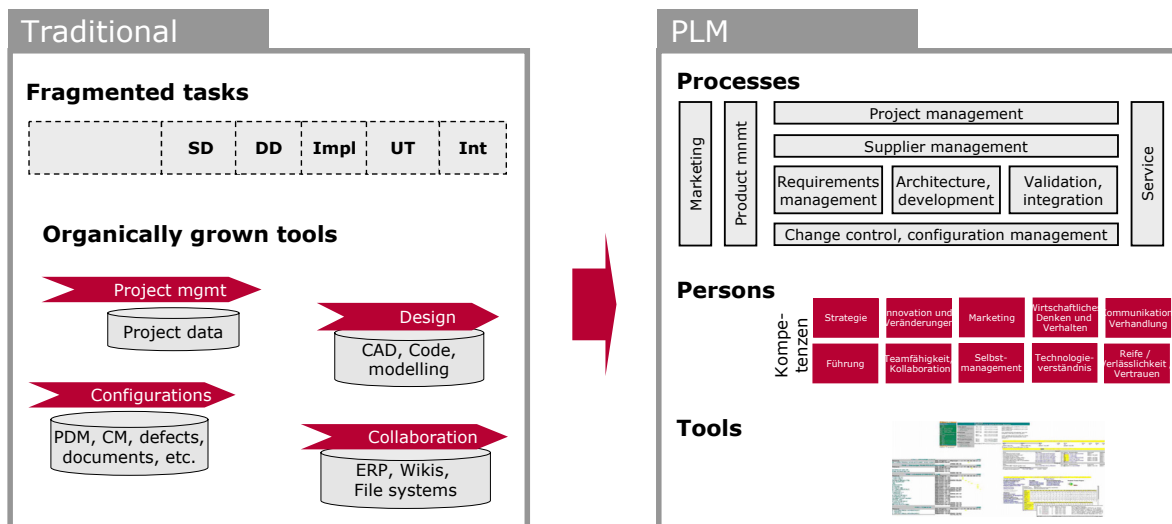
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# Agenda

- ❑ Motivation: What is the value of PLM?
- ❑ PLM Introduction
  - ❑ Principles
  - ❑ Praxis
- ❑ Conclusions

## PLM: Connecting processes, persons and tools



- ❑ Isolated unconnected processes
- ❑ Manual data exchange
- ❑ Rework, inconsistencies, no reuse, inefficiencies

- ❑ Federation of processes and supporting tools with clear responsibilities
- ❑ Efficiency, consistency, quality, employee motivation

## Benefits of PLM

Systematic PLM combines processes, persons and tools across the entire life-cycle and thus achieves improvements in cycle time, efficiency, quality – and thus cost reduction.

- ❑ Standardization  
Mandatory “referential processes” and “referential data”
- ❑ Accountability  
Clear responsibilities, roles, interfaces across the entire organization and to suppliers
- ❑ Consistency  
Reuse of data and documents
- ❑ Automation  
Simplified data exchange and automated work flows
- ❑ Efficiency  
Easier retrieval of data and management of dependencies

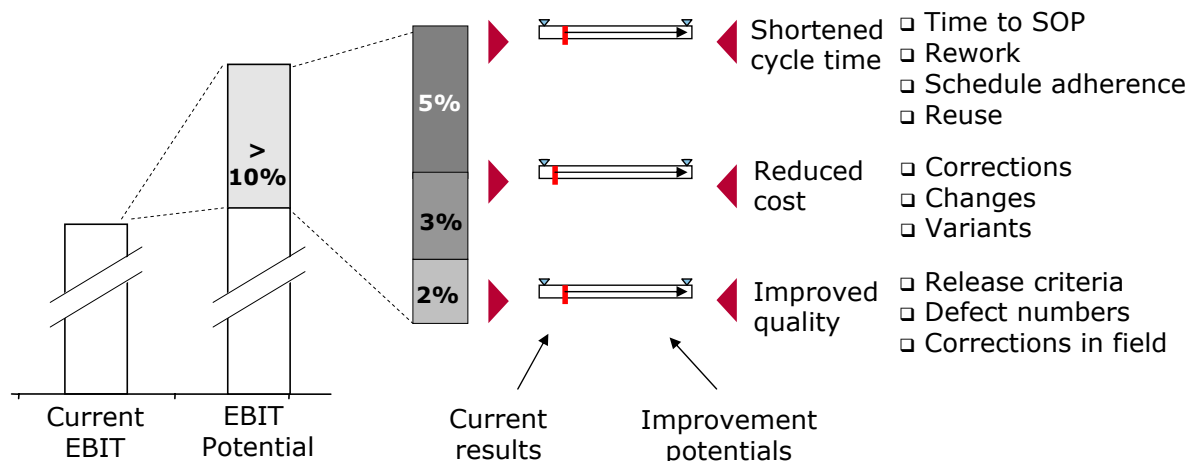
Agree concrete improvement objectives already in the concept phase.  
Measure usefulness and usability as of deployment.

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## PLM Benchmarking

### PLM EBIT potentials (conservative)



#### Assumptions:

- ❑ Average E/E engineering in globally distributed sites
- ❑ PLM introduction without further parallel change initiatives
- ❑ Engineering, supplier and management processes and IT architecture are optimized towards business processes

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# Process productivity = Processes + Persons + Tools

Productivity improvement in percent with performance before the changes as baseline

Strong process focus with living processes

High

+ 8%	+ 20%
0	+ 2%

Low

High

Tools support, IT infrastructure

Source: London School of Economics with McKinsey: Does IT improve performance? June 2005. Based upon 100 organizations in USA and Europe that have been interviewed.

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## Case study PLM introduction – Finally installed ... (1)

### ❑ Objectives

- ❑ Document management tool shall be introduced for faster and distributed document access.
- ❑ Standardized tool
- ❑ 10% cost reduction

+ Top down initiative

+ Standardization

– Overly generic goals

### ❑ Approach

- ❑ Project team with engineers under lead of IT project manager
- ❑ Tools suppliers present their tools
- ❑ Decision and procurement of the new tool
- ❑ Rudimentary business case but without any measurements such as effort, defect types, durations for tasks
- ❑ Configuration of the workflows based on the available tools functionality

+ Employees included, usage of experiences

– Tool-driven PLM without process focus

– Lack of measurements

– Artificial processes based entirely on available tools

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## Case study PLM introduction – Finally installed ... (2)

### ❑ Deployment

- ❑ Estimation of benefits: Effort for document retrieval before and after
- ❑ Data migration
- ❑ Training for all users
- ❑ Usage is demanded

+ Estimation of potentials

– Training alone will not drive behavioral changes

+ Defined commitments

### ❑ Results

- ❑ Efficiency improvements were not achieved
- ❑ Engineers are working in two parallel worlds, namely their legacy tools and the new document management
- ❑ Overhead instead of improvements

– No capitalization of achieved results in operational business

– Dissatisfaction

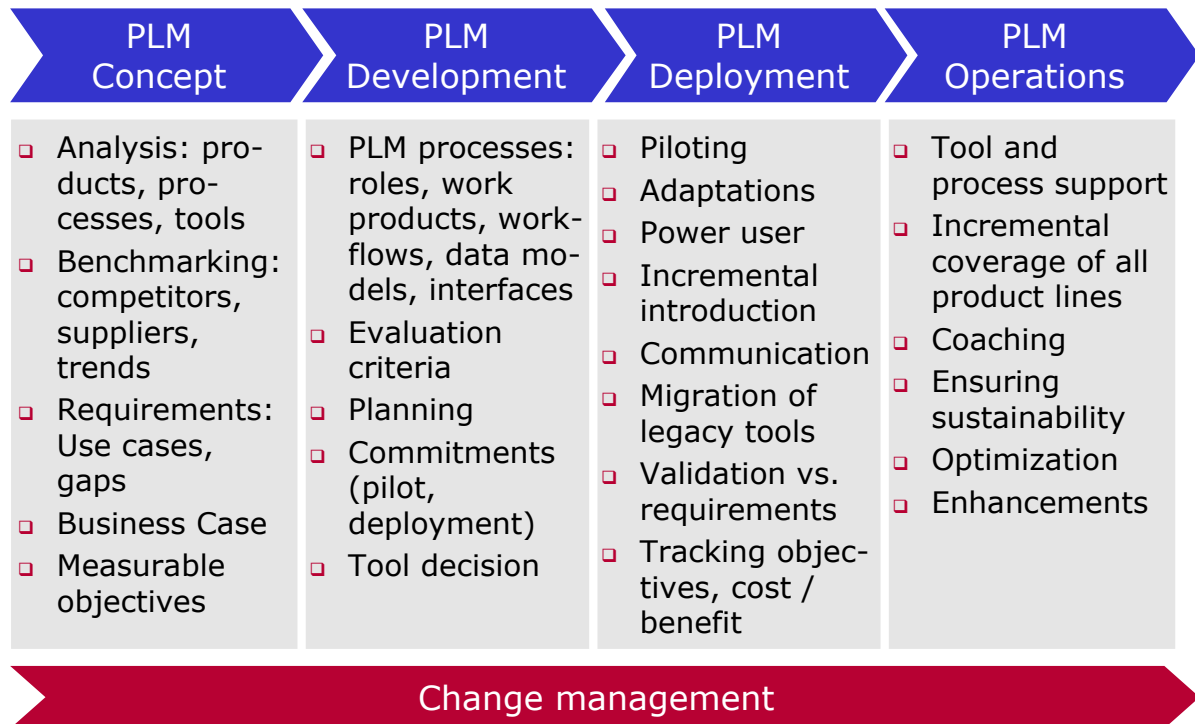
Is there a better way?

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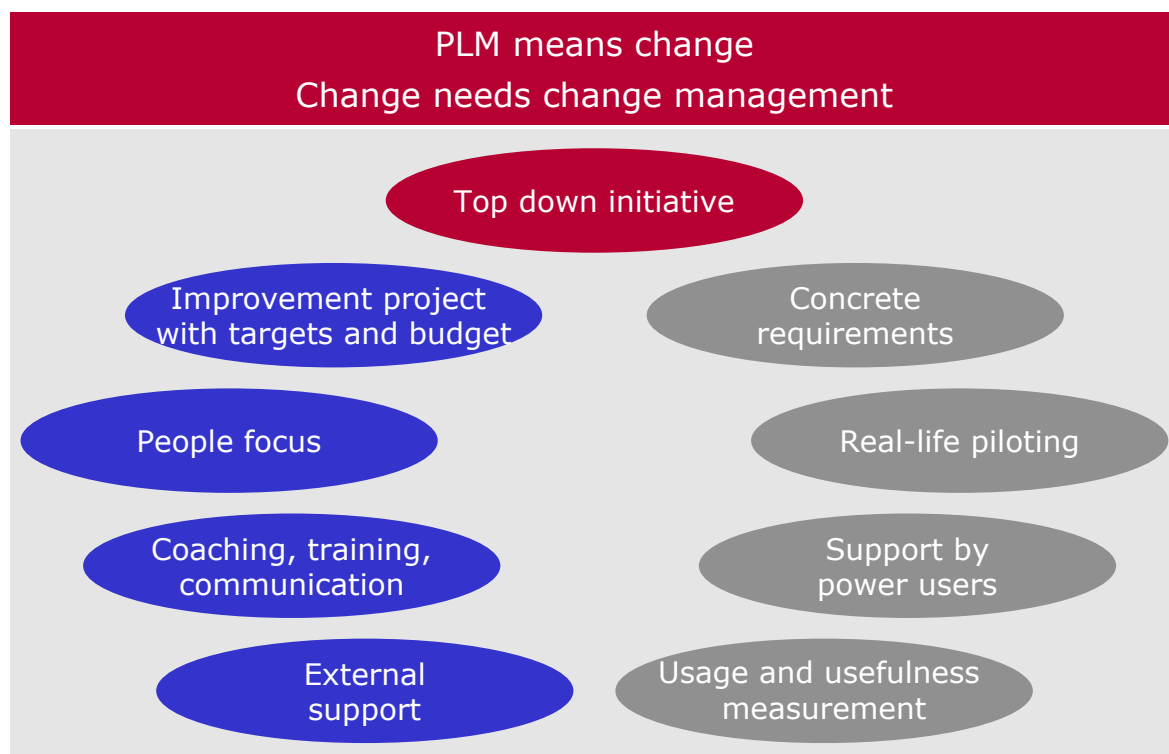
## Vector: Change model for successful PLM introduction



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## Change management during PLM introduction



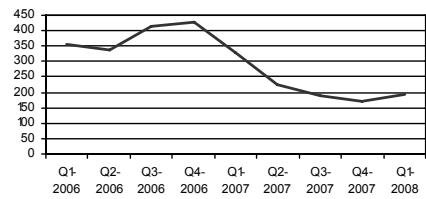
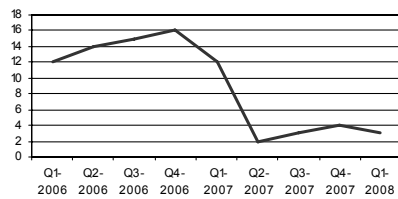
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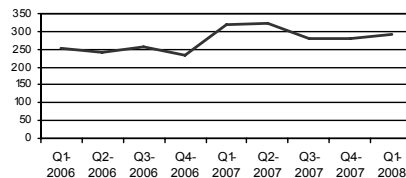
# Measuring usage and usefulness

Example: Requirements engineering processes and tool support

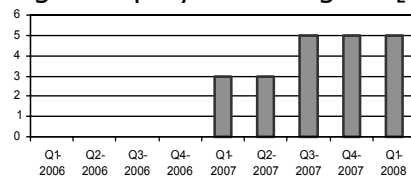
Usefulness: Customer complaints [number], rework [PD]



Cost: Effort for requirements engineering [PD]



Usage: Deployment degree [number of changes deployed]



# Typical problems and solutions

## Processes

New processes are not used

Reliable commitments with users (e.g., pilot agreements, usage agreements)

Cost reduction potentials are not reached

Agree and budget for cost reduction objectives

Complexity growth results in refusing the change

Consider realistic project size and layout in planning and pilots (e.g., small projects)

## Persons

Changes are not accepted

Power users define and follow the new processes and train colleagues on the job

## Tools

Legacy and new tools don't integrate

Use real data and real-life use cases to validate tools

Insufficient performance

Verify actual performance needs, define SLAs with providers, test scalability

Error-prone data migration

Improve data quality before tool migration



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## Case study PLM introduction – Proactively manage change

- ❑ PLM concept
  - ❑ Standardized document management shall be introduced for E/E development for faster and distributed data access
  - ❑ 10% cost reduction, spread on activities and influencing factors: 3% reduction through more reuse, 4% reduction by less defects in specs, 3% reduction by less inconsistencies during changes
- ❑ PLM development
  - ❑ Project team with internal users under the (project) lead of a E/E project managers
  - ❑ Process analysis and solution concept
  - ❑ Measurements and benchmarks to make objectives more concrete
  - ❑ Objectives and project cost are directly budgeted in the annual budgets of business units
  - ❑ Tools selection criteria, evaluation and decision

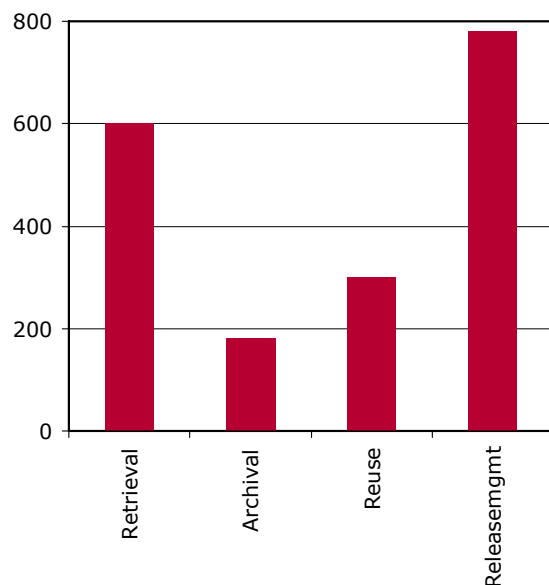
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## Case study PLM introduction – Lower process cost through PLM

- ❑ PLM deployment
  - ❑ Change management, work groups, training, planning with the engineering projects
  - ❑ Incremental introduction of the document management system
  - ❑ Operational use is mandatory for engineers
  - ❑ Usefulness measurements with immediate corrections
- ❑ Results
  - ❑ Processes and tools are useful and used
  - ❑ Engineers are using the new PLM environment and feel the benefits
  - ❑ Engineering expenses have been effectively reduced

Effort reduction [PD/year]



Engineering unit with 300 persons,  
Sum of all savings: 1860 PD/year, ca. 9 PY,  
3% cost reduction through reuse

Source: Vector Consulting Services 2007

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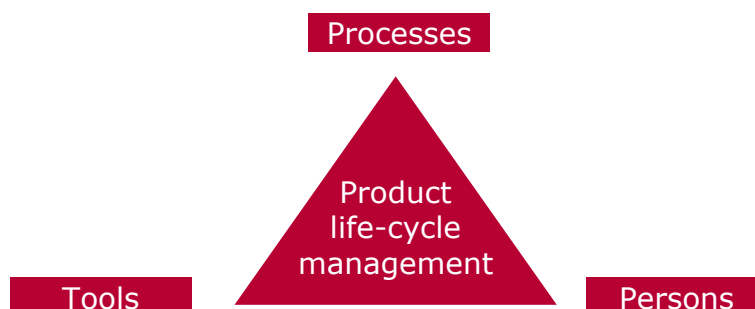


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## PLM Success Factors

- ❑ PLM concept: First the process then the tools, but not dogmatic; concrete objectives are agreed
- ❑ PLM development: Tools evaluation under realistic conditions: tools adaptation only with agreed requirements
- ❑ PLM deployment: Validation before usage; piloting; change management, coaching, training, power users
- ❑ PLM operations: Support, continuous improvement





Thank you for your attention.

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