Product Lifecycle Management
Change driven by Processes & Tools?!
Agenda

- Warm Up: Meet METTLER TOLEDO
- Challenge: Manage Complexity
- Definition: Introduce Product Lifecycle Management
- Approach: Drive Change by Processes and IT-Tools
- Elements: Play the entire range
- Cool Down: Challenge the speaker
METTLER TOLEDO is a global manufacturer and marketer of precision instruments for use in the laboratories, manufacturing, and food retailing.

- Worldwide presence
- 12,000 employees (End of 2011)
- Sales USD 2.309 billion in 2011
Global manufacturing strategy with focused innovation centers
Approx. 5’500 employees in Sales, Marketing, Service & Support in 35 countries
Customer Processes

Solutions to support customer processes

- R&D
- Drug Discovery
- Quality Control
- Logistics
- Retail
- Manufacturing
- Packaging

Customer Benefits
- Accelerate processes
- Improve product quality
- Increase efficiency
- Comply with regulations

Laboratory Solutions
Industrial Solutions
Retail Solutions
Innovation Competencies

1,000 R&D professionals work daily on maintaining our technology lead.
Agenda

- **Warm Up:** Meet METTLER TOLEDO

**Challenge:** Manage Complexity

- **Definition:** Introduce Product Lifecycle Management
- **Approach:** Drive Change by Processes and IT-Tools
- **Elements:** Play the entire range
- **Cool Down:** Challenge the speaker
**Intensive Collaboration and Interactions**

If you look at your R&D organization, which operational models are applied?

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Collaboration</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Pure local R&amp;D Setup</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Primary / secondary Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Please specify:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUM</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

If R&D projects are done in a global collaboration, how is the workload is distributed for a typical R&D project across the following organizations (e.g. MTWT)?

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal R&amp;D of SBU</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R&amp;D on local PO level</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>R&amp;D on remote PO level</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>R&amp;D / Engineering within Component PO (MTLC, MTGE)</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>External Partners for R&amp;D</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SUM</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

If R&D projects are done in a local R&D setup, how is the workload is distributed for a typical R&D project across the following organizations (e.g. MTANA)?

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal R&amp;D of SBU</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R&amp;D on PO level</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>R&amp;D / Engineering within Component PO (MTLC, MTGE)</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>External Partners for R&amp;D</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>SUM</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Processes, structures and IT landscape are not prepared to the new challenges regarding effectiveness and efficiency
Objectives

Value Proposition of Lean Management within PLM:
- Reduce time for non-value adding "activities"
- Free resources for value adding activities
- Decrease effort for standard tasks
- Increase working on competitive advantage

Enable "economies of scale" intelligently within PLM – Without compromising "economies of scope"
Agenda

- Warm Up: Meet METTLER TOLEDO
- Challenge: Manage Complexity

Definition: Introduce Product Lifecycle Management

- Approach: Drive Change by Processes and IT-Tools
- Elements: Play the entire range
- Cool Down: Challenge the speaker
Our Point of View towards PLM

Strategic change initiative to help METTLER TOLEDO achieve the next level of innovation excellence

- Harmonize product-related processes and data around the globe
- Give equal importance to all stages of the product lifecycle
- Increase probability of projects being successful by using consistent practices and procedures throughout the whole product lifecycle

We try to optimize the whole product lifecycle from cradle to grave – and not only bits and pieces within

“Product Lifecycle Management (PLM) is an integrated, information-driven approach comprised of people, processes/practices, and technology to all aspect of a products life, from its design through manufacture – culminating in the product’s removal from service and final disposal. By trading product information for wasted time, energy, and material across the entire organization and into the supply chain, PLM drives the next generation of lean thinking.”

Agenda

- Warm Up: Meet METTLER TOLEDO
- Challenge: Manage Complexity
- Definition: Introduce Product Lifecycle Management

Approach: Drive Change by Processes and IT-Tools

- Elements: Play the entire range
- Cool Down: Challenge the speaker
Enable SBUs to minimize time to money for new solutions & to maximize overall profitability of solutions during their active life.
Focus on Synchronization & Interaction

People transform information into knowledge with which to make decisions.

Data drives cohesive, timely information.

All of the essential activities at any given point during the product lifecycle are developed on a concurrent basis.
A PLM system is a key complementary system that together with an ERP/CRM deliver an overall value proposition.
Agenda

- Warm Up: Meet METTLER TOLEDO
- Challenge: Manage Complexity
- Definition: Introduce Product Lifecycle Management
- Approach: Drive Change by Processes and IT-Tools
- Elements: Play the entire range
- Cool Down: Challenge the speaker
## Structure the Topic in an Holistic Way

<table>
<thead>
<tr>
<th>PLM Vision</th>
<th>Crisp paradigm in operational terms as basis for strengthening individual excellence and personal responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLM Product Types</td>
<td>Holistic and balanced portfolio of complete solutions as basis for products and services meeting customers’ requirements</td>
</tr>
<tr>
<td>PLM Control &amp; Support Processes</td>
<td>Smooth interaction of collective knowledge as basis for technical excellence and competitive advantage</td>
</tr>
<tr>
<td>PLM Value Processes</td>
<td>Lean processes as basis for generating and maintaining a consistent value stream to our customer</td>
</tr>
<tr>
<td>PLM Methods &amp; Tools</td>
<td>Simple and repetitive best practices as basis for learning efficiency and doing effectiveness</td>
</tr>
<tr>
<td>PLM Digital Product Data Backbone</td>
<td>Consistent and complete single source of truth as basis for knowledge sharing and decision making</td>
</tr>
<tr>
<td>PLM Foundation</td>
<td>Highly integrated application landscape as basis for capturing, disseminating and orchestrating product knowledge</td>
</tr>
</tbody>
</table>

---

**PLMVision**

- Crisp paradigm in operational terms as basis for strengthening individual excellence and personal responsibility.

**PLMProductTypes**

- Holistic and balanced portfolio of complete solutions as basis for products and services meeting customers’ requirements.

**PLMControlSupportProcesses**

- Smooth interaction of collective knowledge as basis for technical excellence and competitive advantage.

**PLMValueProcesses**

- Lean processes as basis for generating and maintaining a consistent value stream to our customer.

**PLMMethodsTools**

- Simple and repetitive best practices as basis for learning efficiency and doing effectiveness.

**PLMDigitalProductDataBackbone**

- Consistent and complete single source of truth as basis for knowledge sharing and decision making.

**PLMFoundation**

- Highly integrated application landscape as basis for capturing, disseminating and orchestrating product knowledge.
Understand the Real Needs

PLM Program

Insights from SBU Interviews
Version: A01, 09-Sep-2010

Context of SBU Interviews

- Division Heads have asked PLM Program for a “Step wise approach according to the most imminent needs in the organization and focusing on operational productivity gains”
- Purpose of the SBU Interviews was to understand in the area of PLM
  - Most imminent needs
  - Areas for operational productivity gains
  - Assumed changes in needs based on business strategy and market trends
- Intention was to enable the PLM Program to
  - identify the best opportunities to realize value through PLM as a greatest common denominator across all SBU
  - answer how important the value proposition of PLM as Concept is for MT and where is a consensus about the most imminent needs across all SBU
  - derive which capabilities of PLM as System can satisfy these needs?
  - ensure sustainability of PLM as Daily Business by addressing specific operational productivity gains

Enable PLM Program to identify the best opportunities to realize value through PLM in a pragmatic and sustainable way
PLM Process Framework is a pre-defined route to be traveled in a systematic manner – including discovery and elimination of problems and barriers
- The foundation is that product-related projects achieve their targets regarding time, quality, and cost (magic triangle of project management)
- Top framework for managing all activities and resources to bring a new product or a breakthrough innovation to market that meets customer drivers and supports the business goals
- All product-related projects must follow this Framework
- Due to their commonality, product-related projects rely on continuous improvement of the PLM Process Framework itself
Balance Governance with Support

Operational Units

Global PLM & PLM Framework Team

Support Center

Governance Function

- MTOP
- Instructions/Best Practices
  - Risk Management
  - Collaboration Management
  - Eng. Change Management
  - ...
- Recommendations
  - Risk Log
  - Project Data Sheet
  - Project Health Metrics
  - ...
- Templates
  - Solution Idea
  - Product Vision
  - SCM Concept
  - ...
- Deliverables
- Project Mgmt

Toolbox

Align

Improve

Sustain

Policies

Recommendations

22
Build a Network of Experts & Local Champions

Global PLM / PLM Framework Team

Local PLM Champions

Operational Unit

Developing the building blocks

Transporting and polishing the building blocks

Getting a solid PLM House
Create Value Adding Marketing Material
Drive for Adapting Key Concepts

PLMProcessFramework: Engineering Change Management

Definition
Engineering Change Management (ECM) is the coordinated management and uniform tracking of changes, i.e. collecting ideas or need for product and product related changes, elaborating one or more possible solutions, evaluating them with respect to technical and cost aspects and implementing them with respect to both engineering and manufacturing. It has two main goals: supporting the efficient and effective processing of changes and enabling traceability of changes.

Key Concepts
- All released documents are controlled by ECM, which provides traceability of the change.
- Changes may be major or minor. Minor changes are served by a fast-track process.
  - When deciding if a change is major or minor, it is important to check whether the change is relevant from a perspective of a compliance association or a regulatory agency.
  - If this is the case even a minor change must be 100% traceable.
- There may be different models, depending on the required maturity level, with CMII as the highest level.
- During ECM, integrate early to enable early testing.
- For each product there must be maintained a Compatibility Matrix that details what changes work together and which do not. (e.g., Must use revision “B” main software with option card PCBA revision “D”).

NOTE: For a more detailed description of key concepts please consult the ECM Best Practices & Instructions.

Key Outputs
Engineering Change Notice and directions for implementing same.

Key Outcomes
Outcome of ECM is that changes are implemented if and only if they safeguard:
- Meeting change deadline targets
- Meeting design product budgets
- Achieving product cost targets
- Achieving product lifecycle cost targets
- Achieving product performance objectives
- Achieving product quality goals
- Achieving product compliance goals

Measurements
Time to implement change

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Team</th>
<th>R</th>
<th>A</th>
<th>C</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D / Eng</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Owner</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCM</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAM</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Welcome to the PLM Wiki!

The mission of the PLM Wiki is to provide a common cooperation platform within METTLER TOLEDO to understand and practice a PLM methodology applied to all products throughout their lifecycle while promoting the application of good practices in the execution of the product development and product maintenance processes.

We hope you are finding the changes to the PLM Wiki useful! As always your feedback is welcomed and appreciated.

Please take a moment to fill out our brief survey regarding the PLM Wiki. All responses are anonymous. [http://www.surveymonkey.com/s/RQFWF2H](http://www.surveymonkey.com/s/RQFWF2H)

Take the survey on the go!
Scan the QR code below with your mobile phone to be taken directly to the wiki survey.

The PLM training page is now active! Take a look to see what’s happening in the world of Global PLM training!

Have you taken a look at the new PLM Flowchart? It is a comprehensive guide to the PLM Process Framework.

We are continuously adding terms to the PLM ABC's. Check back often.

We’ve recently added a step-by-step guide to subscribing to an RSS feed for the PLM Wiki. It’s an easy way to stay up to date.

For questions and suggestions relating to the PLM Wiki, please contact:

- Mike Constantine
  [Mike.Constantine@mtc.com](mailto:Mike.Constantine@mtc.com)
- Hilmar Brunn
  [Hilmar.Brunn@mtc.com](mailto:Hilmar.Brunn@mtc.com)

News List:
- PLM Training Concept General Available
- New PLM Flowchart Landing Page
- PLM Wiki goes ISO 9001

Last Year

<table>
<thead>
<tr>
<th>Month</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov</td>
<td>3434</td>
</tr>
<tr>
<td>Dec</td>
<td>2004</td>
</tr>
<tr>
<td>Jan</td>
<td>4275</td>
</tr>
<tr>
<td>Feb</td>
<td>3476</td>
</tr>
<tr>
<td>Mar</td>
<td>3471</td>
</tr>
<tr>
<td>Apr</td>
<td>7442</td>
</tr>
<tr>
<td>May</td>
<td>12072</td>
</tr>
<tr>
<td>Jun</td>
<td>4642</td>
</tr>
<tr>
<td>Jul</td>
<td>5226</td>
</tr>
<tr>
<td>Aug</td>
<td>4912</td>
</tr>
<tr>
<td>Sep</td>
<td>5144</td>
</tr>
<tr>
<td>Oct</td>
<td>508</td>
</tr>
</tbody>
</table>
Be Patient

BE PATIENT
Life Is Never Flat

Be patient. Good things come to those who wait.
Agenda

¬ Warm Up: Meet METTLER TOLEDO

¬ Challenge: Manage Complexity

¬ Definition: Introduce Product Lifecycle Management

¬ Approach: Drive Change by Processes and IT-Tools

¬ Elements: Play the entire range

Cool Down: Challenge the speaker
Challenge the Speaker
Thank You