How to eat the elephant
Journey with Fusion Lifecycle

Steve Howse
Program Manager Spirax

Saoirse Colgan
Implementation Consultant
Key Messages

How to Eat an Elephant
Content

- Intro to Sxs
- Background, why SxS needed PLM
- How to eat the elephant (how we defined the scope)
- Project Structure
- Implementations
- Lessons learnt
Our global coverage and expansion

• 77 operating units* in 43 countries

* Operating units include operating companies, branches and Associate, at time of publication

New operating companies, 2011-2016:
• Asepco, USA (WMFTG)
• Austria (WMFTG)
• BioPure, UK (WMFTG)
• Chile (SxS) (WMFTG)
• Colombia (SxS)
• Egypt (SxS)
• Flow Smart, USA (WMFTG)
• India (SxS) (WMFTG)
• Indonesia (SxS)
• Japan (WMFTG)
• Middle East (SxS)
• Netherlands (SxS)
• Peru (SxS)
• Philippines (SxS)
• Poland (WMFTG)
• Russia (WMFTG)
• Singapore (WMFTG)
• Taiwan (WMFTG)
• Vietnam (SxS)

New territories opened for direct sales, 2011-2016:
• Algeria
• Cambodia
• Ivory Coast
• Jordan
• Kazakhstan
• Myanmar

Serving customers in over 110 countries
Steam industry dynamics

- Widely used in most industrial processes

<table>
<thead>
<tr>
<th>Steam is a preferred heat transfer fluid</th>
<th>Used in most manufacturing processes</th>
<th>Steady market growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>High energy content</td>
<td>Heating and curing in most manufacturing processes</td>
<td>Industrial production and GDP key market drivers</td>
</tr>
<tr>
<td>Easy to control – temperature proportional to pressure</td>
<td>Also used for space heating, sterilisation and humidification</td>
<td>Energy costs</td>
</tr>
<tr>
<td>Environmentally safe – clean and sterile</td>
<td></td>
<td>High replacement demand</td>
</tr>
</tbody>
</table>

Business resiliency from diversity of revenue generation, high percentage of replacement products and small maintenance-led projects for plant and energy efficiency.
Plant-wide applications

- **Broad product range**

  Our product range includes: steam traps; pressure and temperature control valves; condensate recovery pumps; strainers; separators; humidifiers; flow meters; and boiler controls.

  Pre-fabricated engineered packages for heat transfer & recovery and clean steam generation.

  We are a one-stop shop for industrial and commercial steam systems.
## Our diverse markets

<table>
<thead>
<tr>
<th>Industry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food</strong></td>
<td>Steam is widely used in the production of packaged foods for blanching, cooking, baking, packaging, cleaning and sterilising. Our pumps and associated equipment are used to meter ingredients, deliver food to process lines and treat process waste.</td>
</tr>
<tr>
<td><strong>Beverage</strong></td>
<td>Steam is essential for brewing and distilling processes. It is used to protect product quality and flavour, and ensure compliance with industry standards. Pumps are used to transfer fruit, juice, concentrates, yeast and other additives.</td>
</tr>
<tr>
<td><strong>Pharma/Biopharm</strong></td>
<td>Clean steam reduces the risk of product and process contamination, and our peristaltic pumps, valves and single-use components enable precise flow control and fluid isolation in the Pharmaceutical and Biopharmaceutical industries.</td>
</tr>
<tr>
<td><strong>OEM Machinery</strong></td>
<td>Original Equipment Manufacturers (OEMs) are companies that build and supply machines for use in industry. Our activities with OEMs vary from simple product supply to advising on machine performance improvements and design.</td>
</tr>
<tr>
<td><strong>Oil &amp; Petrochemical</strong></td>
<td>Our steam system products and services enable optimum performance in steam and condensate systems, and reduce energy use during oil and petrochemical production.</td>
</tr>
<tr>
<td><strong>Healthcare</strong></td>
<td>Steam is used in hospitals and clinics for space heating, hot water production, humidification and sterilisation. Pumps and associated equipment are used in the manufacture of products for the Healthcare industry.</td>
</tr>
<tr>
<td><strong>Chemical</strong></td>
<td>Steam is widely used as an energy source in chemical production and product processing, while our pumps are used to safely and accurately transfer and dose critical chemical components.</td>
</tr>
<tr>
<td><strong>Buildings (HVAC)</strong></td>
<td>Our steam products are used to provide space heating, humidification and hot water to create comfortable working conditions for employees and visitors in public and private buildings.</td>
</tr>
<tr>
<td><strong>Water &amp; Wastewater</strong></td>
<td>Peristaltic pumps are used to accurately dose chemicals during water treatment processes and efficiently transfer viscous and abrasive slurries.</td>
</tr>
<tr>
<td><strong>Mining &amp; Precious Metal Processing</strong></td>
<td>Peristaltic pumps reduce water, energy and chemical use and increase reliability and productivity while moving and processing highly abrasive ores and slurries.</td>
</tr>
<tr>
<td><strong>Pulp &amp; Paper</strong></td>
<td>Our steam and pump products facilitate the accurate control of critical processes, such as washing, bleaching, dyeing, drying and finishing, in the manufacture of paper and a wide range of domestic and industrial tissues.</td>
</tr>
<tr>
<td><strong>Power Generation</strong></td>
<td>Superheated steam is an ideal fluid to transfer chemical energy in fuel into electrical energy through steam turbines. Steam is also used to distribute and re-use waste heat formed during the power generation process.</td>
</tr>
</tbody>
</table>
Why the need for PLM
A broad product range and distributed manufacture network has made a complex landscape

- 550 Product Groups
- 100,000+ finished products
- 600,000+ item codes
- 89+ unconnected information repositories (in UK alone)
- 7 Product Development Centres
- 37 Operating Companies
- 12 Manufacturing / Configuration Centres

New processes, organisation and a technology platform is required to manage this complexity
Do we have a common understanding

“So, we agree on the definition: It's a car!!”
How to eat the elephant - scope definition
Financial justification was hard and therefore pulled in many areas to make the business case.

We soon realised the centre core would be a tough foundation to deliver and drive many changes we had not considered.
Product Record Hub,
From chaos to clarity in......

We have recognised our data is not very well defined, so we are prioritising. But we have learnt what’s important.
Quality Management
Standard solution group wide for reporting quality issues

Quality management can stand alone, and will show if your company really needs PLM.
Engineering Change
A focus on basic change and alignment of functional responsibility.

We have recognised a long and progressive road map is necessary to fully lock down and control all aspects of design and manufacturing.
THINK BIG
START small
Project Structure
Clear, concise documentation, are vital to help engagement on complex topic’s
PLM planning overview. The complexity of the PLM project is being managed at 3 ‘synced’ levels (from work-stream plan through to task delivery).

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>EXAMPLE DOC</th>
<th>PURPOSE</th>
<th>FORMAT</th>
</tr>
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</table>
| HIGH      | Program Overview | • Exec communication.  
• Exec tracking of key business benefit milestones.  
• Communications with wider business. | PowerPoint slide (1 page) |
| MID       | Program Plan       | • Resource allocation.  
• Resource utilisation.  
• Project pace setting.  
• Ensures timely delivery. | Microsoft Project plan (700+ lines) |
| DETAILED  | PLM Build Manager | • Tracking of detailed work-stream deliverables.  
• Mini stage-gate reviews.  
• Storage of work-stream deliverable documentation. | Managed in PLM itself (Autodesk Fusion Lifecycle workspace) |
PLM Governance structure overview. 3 ‘synced’ levels, each meeting monthly.

1. Executive Steering Committee
   - Sponsor: Ashok D’Sa
     - Position: Group Business Development Director
   - Chairperson: Simon Sprackling
     - Position: Head of Group P Mgt & Ind. Mgt.
   - Members:
     - Ian Farnworth: Group Supply Chain Director
     - Sheldon Banks: Divisional Director
     - Jeremy Butterfield: Group IS Director
     - Byron Thomas: Steam Finance Director

2. Operational Board
   - Chairperson: Steve Dewfall
     - Position: Group R&D Manager
   - Members:
     - Stephen Howse: PLM Programme Manager
     - Paul Oakley: Supply Leader
     - TBA: Supply Leader
     - TBA: Group Function

3. Workstream Groups
   - Chairperson: Simon Sprackling
     - Position: Head of Group P Mgt & Ind. Mgt.
   - Members:
     - Ian McGlashan: Process Authority - Eng. Change
     - Neil Poynton: Process Authority - Part Record
     - Alun Barnett: Process Authority - Quality

Executive Steering Committee
- Ratify key Project decisions.
- Exec tracking of key business benefit milestones

Operational Board
- Agrees priorities, ratifies roadmaps, resolves conflicts.
- Agrees resources and sets pace, manages impact

Workstream Boards
- Sets the standards, roadmaps deployment.
- Agrees and drives changes through the org.
- Delivers benefit on behalf of the business

Start small but think big
‘Engineering Change’ Work Stream Board. Each work-stream will have its own operational board.
Workspace Map

8 Sites

Pick List w/spawning
Relationships Tab
FLC as an aid to deployment

This transition is used when information has been submitted for reference to the Process team.
Quality as a quick win

- Less training
- Low configuration complexity
- Little data requirements
- Strong advocates
- High visibility with valued reporting
- Early delivery builds trust
Repeatable play – Lessons Learnt Early
Visibility

- NCR by Source
- NCR Raised by Users
- All NCs By Part Code
- TSH usage
- Workspace by State
- CAPA by user

Date Raised
Workspace Type
Created by

Part Code
“Any fool can know. The point is to understand.”

Albert Einstein
Lessons Learnt
Takeaway Messages

- All work streams needed a road map.
- Structural org changes take time.
- Use FLC to justify the need for PLM.
- FLC has no magic button to fix org problems.
- The bigger prizes will take time
Quality

Key Learnings

• More quality problems than most people expected.
• Range of issues is broad and finding a silver bullet is not simple.
• Org structure did not support continual improvement
• Quality measures today focus on £ scrap and this does not necessarily drive a “quality culture”.

Eng Change

Key Learnings

• Concept of Design authority not clear today.
• Currently decision are being made without appropriate consultation or authority.
• Doing full engineering change will be a lot more work than what we do today.
• Manufacturing controls are not considered as changes, these should be brought under control in the future.

Data

Key Learnings

• Insufficient consistency with our data or documents between sites.
• Too many gaps in our data.
• Too much knowledge in long serving employees
• Lack of clarity as to who owns data today.
• Range of PLM benefits require a broad range of data (not easy to do 80/20).
My personal Goal of PLM is

“right Person,
right Responsibility,
right Data,
right Decision”
Start your journey with conviction,

Are you gonna eat that?

I’m hungry, so I’m gonna at least try

You can’t eat a whole elephant

I would really rather you didn’t

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