Design for Environment Needs a Collaborative Approach

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About the Presenter

Chad Hawkinson is currently the Director of High Technology Market Strategy for PTC. Prior to PTC, Chad held a variety of roles in high tech electronics manufacturing and supply chain software application development, including product management roles at Intel. Chad has lectured at Northeastern University in Boston in high technology operations management, and holds a Bachelor of Science degree in engineering from Virginia Tech and an MBA from the MIT Sloan School of Management.

Session Objectives

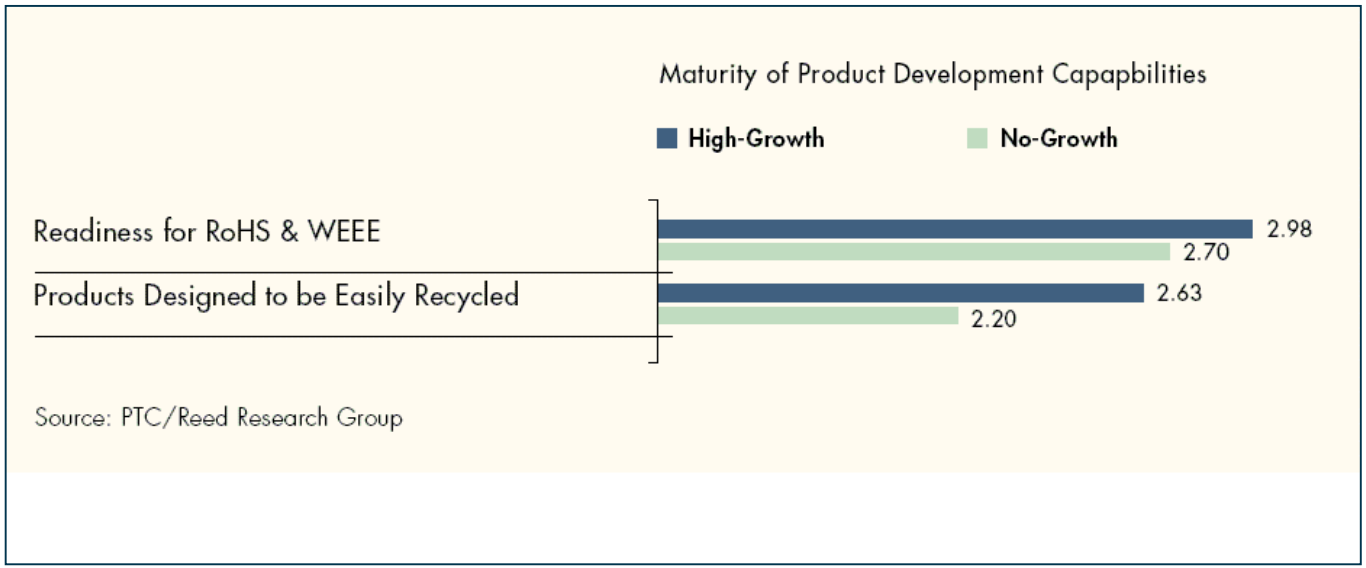
1. **Best Practices for collaboration with suppliers & partners during compliance**

2. **Design for Environment & Collaboration (case study)**

3. **Certification – Documenting Supply Chain Collaborations**

High Growth Co.'s Have Invested in Collaboration and Designer Visibility Tools, Enabling Better Design for Environment Capabilities

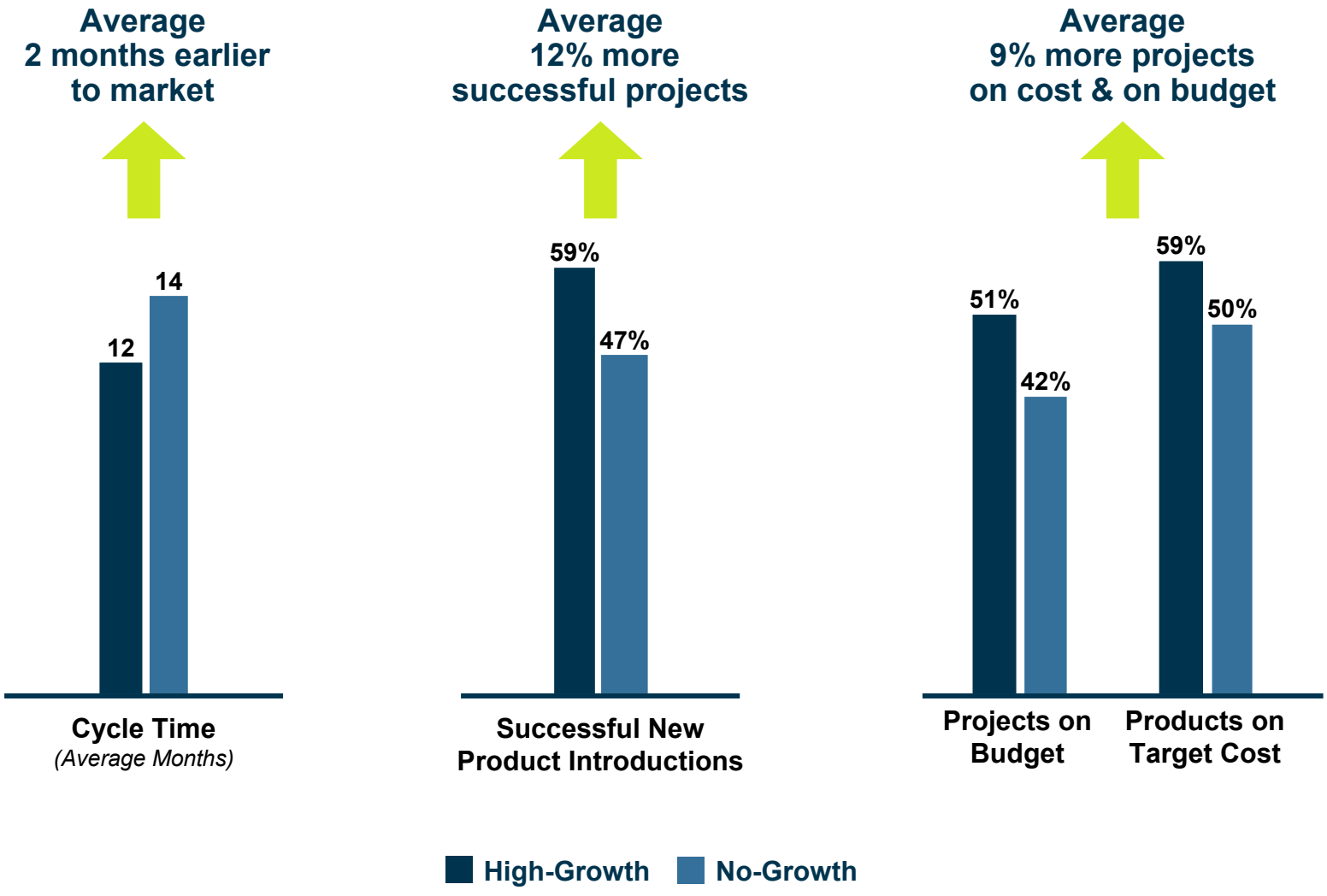
- **Available on www.ptc.com/go/report**
- **Finding: High growth companies release twice the new products while investing LESS in R&D (10% vs. 16%)**
- **Differentiation in 3 R&D capabilities is the reason:**
  - –Early designer access to enterprise and supply chain data
  - –Standardized internal and external collaboration
  - –Product planning tools and practices



200+ executives participated in survey across US and Asia

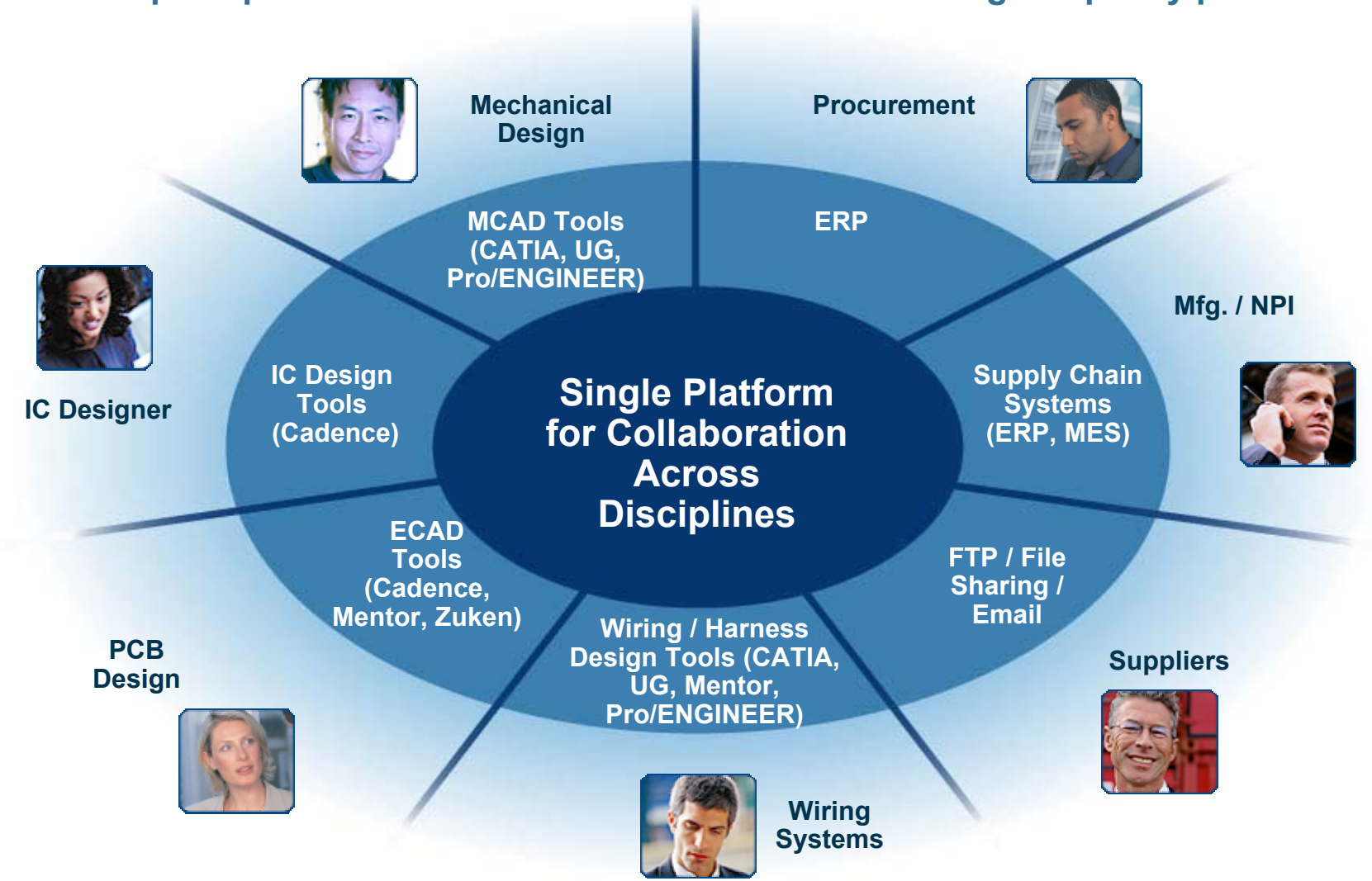
Top 500 Electronics Companies

Same Capabilities That Differentiate in Environmental Compliance Allow Leaders to Outperform on Multiple Dimensions



Leaders Focus on Connecting the Enterprise

Cross-Discipline processes lead to faster time-to-market of higher quality products.



Environmental Regulations Highlight Some of the Key Component Selection Issues in Design Today

Difficult to find the right parts

- 25% of engineer's time is spent looking for information (source: Electronics & High Tech Product Development Benchmark, PTC, 2005)
- Lack of standardized categorization and search capabilities

Flawed new part introduction processes

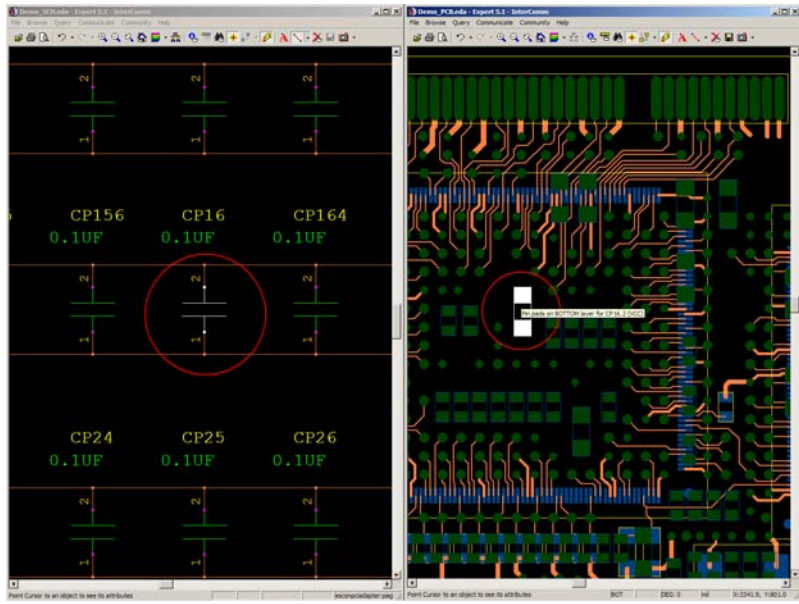
- Procurement, engineering, librarians, etc. not all connected
- Lack of enforcement of processes

Inaccurate or out-of-date data in ECAD libraries

- No way to know which data is out of date
- Designers aren't always notified when a change occurs to library data

Undefined or untracked AML information

- How does an engineer define an AML?
- How is the AML enforced?



PLM Enables Early Designer Access to Supply Chain & Enterprise Data

Easy access to robust component information during design:

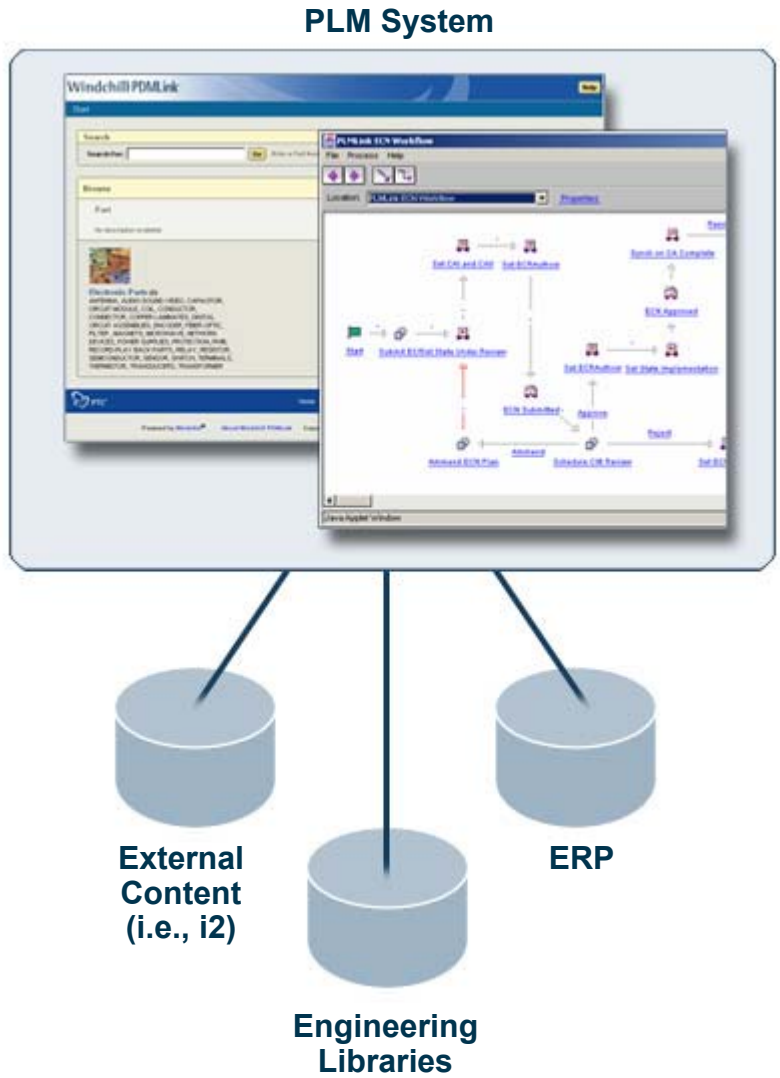
- Quickly find parts and in-depth information with Windchill Classification & Reuse
- Extract data from multiple sources, e.g., ERP
- Find and manage AVL / AML information

Synchronize disparate sources of data:

- Standardize new part introduction workflows
- Ensure libraries stay in synch with master systems
- Reduce redundant part creation

Check to ensure designers used the right parts:

- Validate BOM for compliance before release to manufacturing
- Identify part selection issues upon check-in



Allows Designers to View Supply Chain Information During Design

Allowing Engineers to View Critical Supply Chain Information at Time of Part Selection

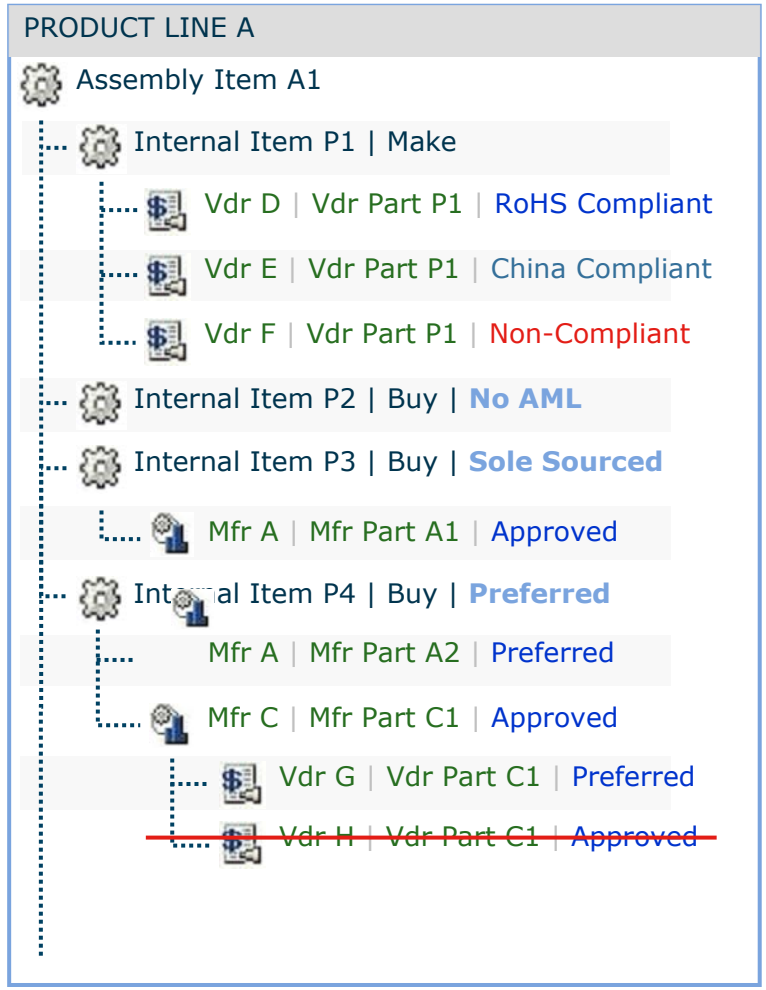
Manufacturer and Vendor Parts

- Functional characteristics
- Environmental regulatory compliance
- Cost & availability, datasheets, PCNs, EOLs

Approved Manufacturer List (AML) Management

Approved Vendor List (AVL) Management

Part Preferences / Compliance with Multiple Standards



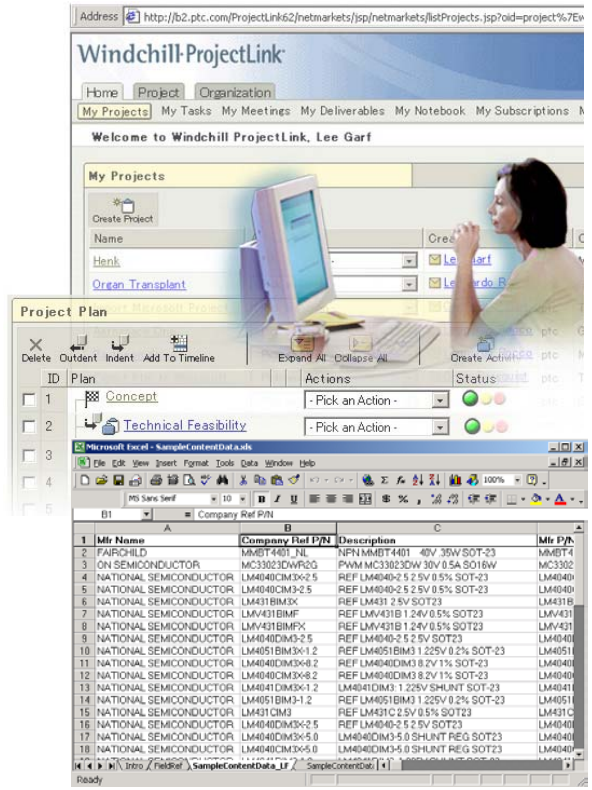
Need to Support Multiple Methods of Gaining Information from Suppliers

Secure, Web-Based Collaboration with Suppliers

- Private “projects” to allow suppliers to submit and view data
- Track progress of supplier data gathering
- Suppliers can enter data directly into system, supported by review and approval processes

Multiple Ways to Get Data from Suppliers

- Custom Excel-based upload capabilities
- IPC 1752 (-1 and –2)
- RosettaNet
- JGPSSI
- External content services (i.e., i2)
- Etc.



PLM Allows Primax to Support Environmental Regulatory Compliance (WEEE/RoHS)

Company Background

- Primax was established in Taiwan in 1984 and is a leading, global solution provider for information, electronics and consumer products

Single system to track all component data

- Content (PPM, %, etc.) of regulated substances for each component
- Green part / RoHS compliance status and classification

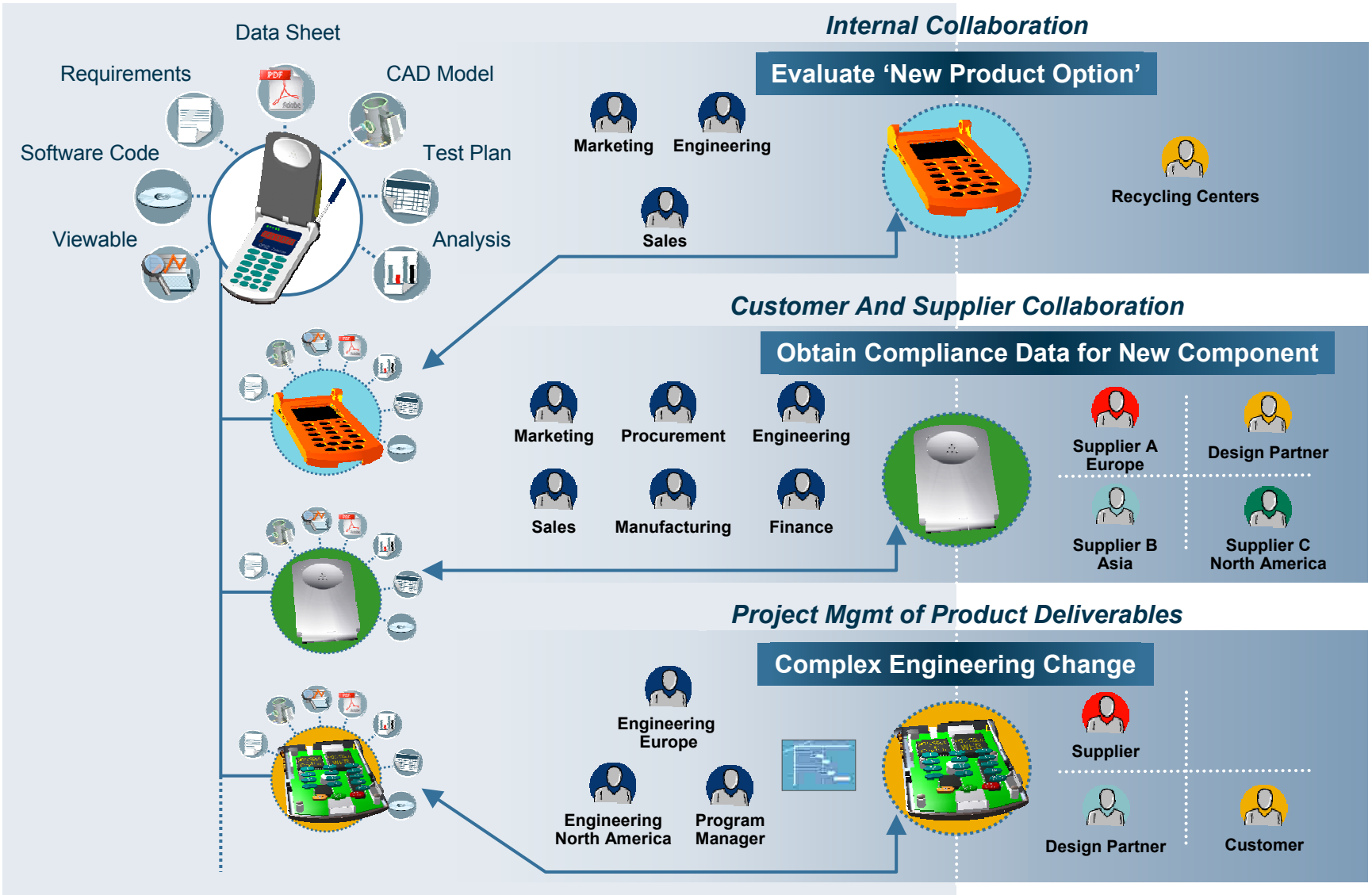
Compliance reporting & product roll-ups

- Overall regulated substance content at the product or subassembly level (PPM, %, etc.)
- Visual indicators as to component status within the BOM (Green, RoHS, etc.)

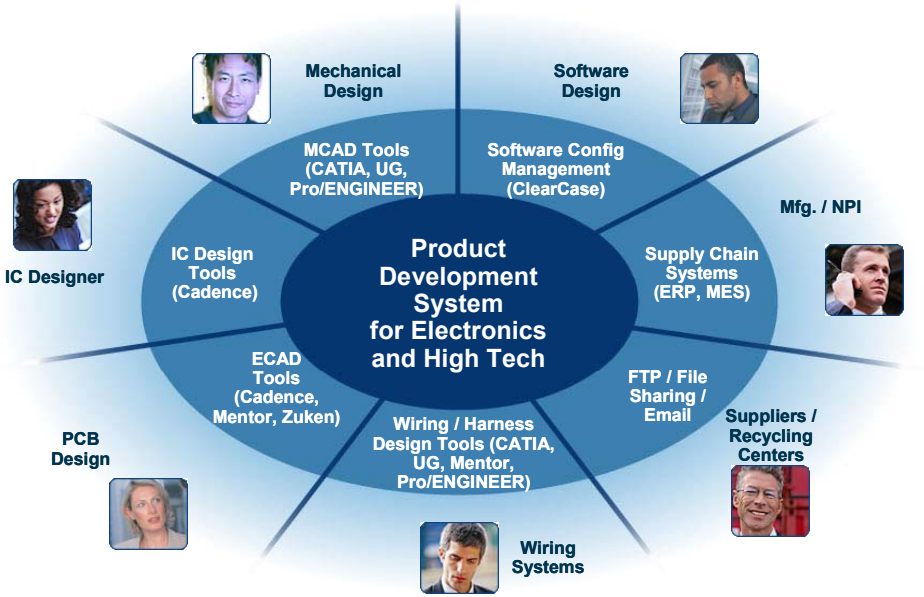
Management / support processes

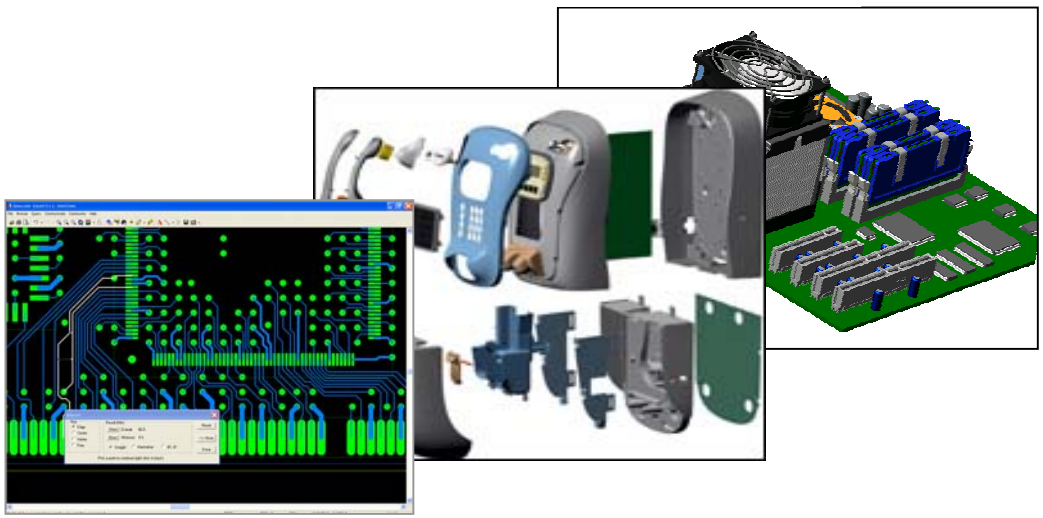
- Change management around component compliance status
- Support customer information / certification requests

PLM Can Enable Standardized Collaboration with Suppliers, Partners, Recycling Centers, etc. Throughout Design Process



Successful Design for Environment (esp. WEEE Compliance) Requires Strong Collaboration Capabilities





PTC's design, visualization and collaboration tools optimize design for disassembly

- Allows companies to achieve cost benefits of recycling / reuse
- Successful companies collaborate with recycling centers during design to ensure ease of disassembly
- Embracing WEEE can lead to significant market advantages

Case Study: Design for Environment

Company Background:

- Leading electronics manufacturer in Japan of wide variety of products ranging from televisions to washing machines to industrial equipment.

Challenge:

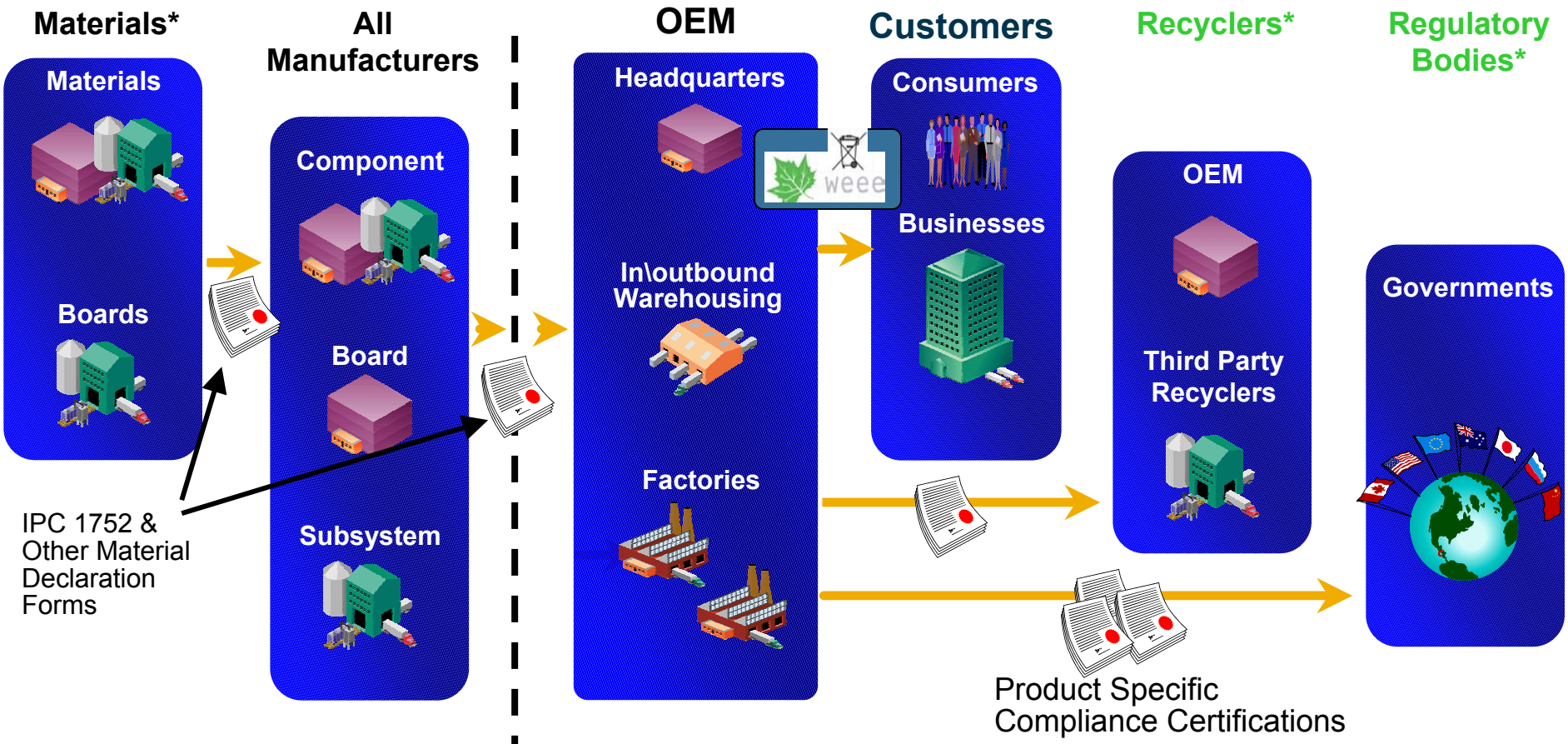
- Save cost in materials through greater recycling
- Improve efficiency of recycling
- Build awareness of company's forward-thinking environmental policies

Response:

- Collaborate with recycling centers during early-stage product design
- Build products with an eye towards recouping cost / materials through recycling

Video – Design for Environment

Material & Environmental Compliance Information flow (macro view)



It's important to consider information needed by each member in the information chain

PTC Acquired Arbortext July, 2005, Enabling Enterprise Publishing to Be Tied to Environmental Regulatory Compliance

PTC Helping High Tech Companies Win with Superior Products

- Pro/ENGINEER is the **3D MCAD market share leader** for electronics companies
- Over **3,000 electronics co.'s** use PTC solutions
- **Top 30** electronics and high tech companies by revenue use PTC solutions
- **Hundreds of high tech co.'s** use Windchill

LG

SAMSUNG

Delivering PLM-Based Environmental Regulatory Compliance Solutions

- Industry-Leading Windchill PLM Solutions
- Arbortext for Compliance Reporting and documentation
- Pro/ENGINEER & ProductView for Design For Environment / Disassembly

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Questions?