Product Lifecycle Management

Unit-I

Defining PLM

Product Lifecycle Management (PLM) is an integrated, information driven approach to all aspects of a product's life from its design inception, through its manufacture, deployment and maintenance, and culminating in its removal from service and final disposal.

Source: University of Michigan PLM Development Consortium

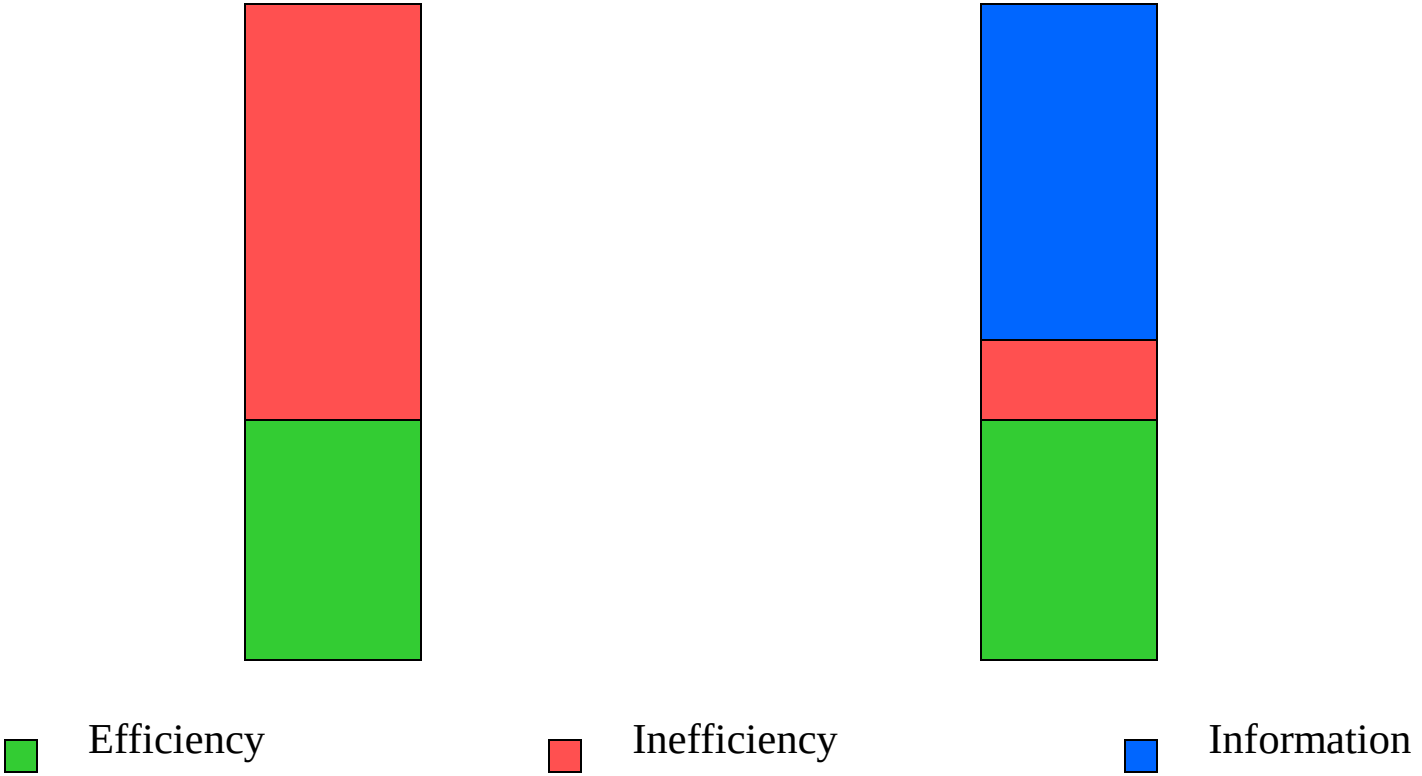
PLM: Defining a New Acronym

Product lifecycle management is an integrated, information-driven approach to all aspects of a product's life, from its design through manufacture, deployment and maintenance—culminating in the product's removal from service and final disposal. PLM software suites enable accessing, updating, manipulating and reasoning about product information that is being produced in a fragmented and distributed environment. Another definition of PLM is the integration of business systems to manage a product's life cycle.

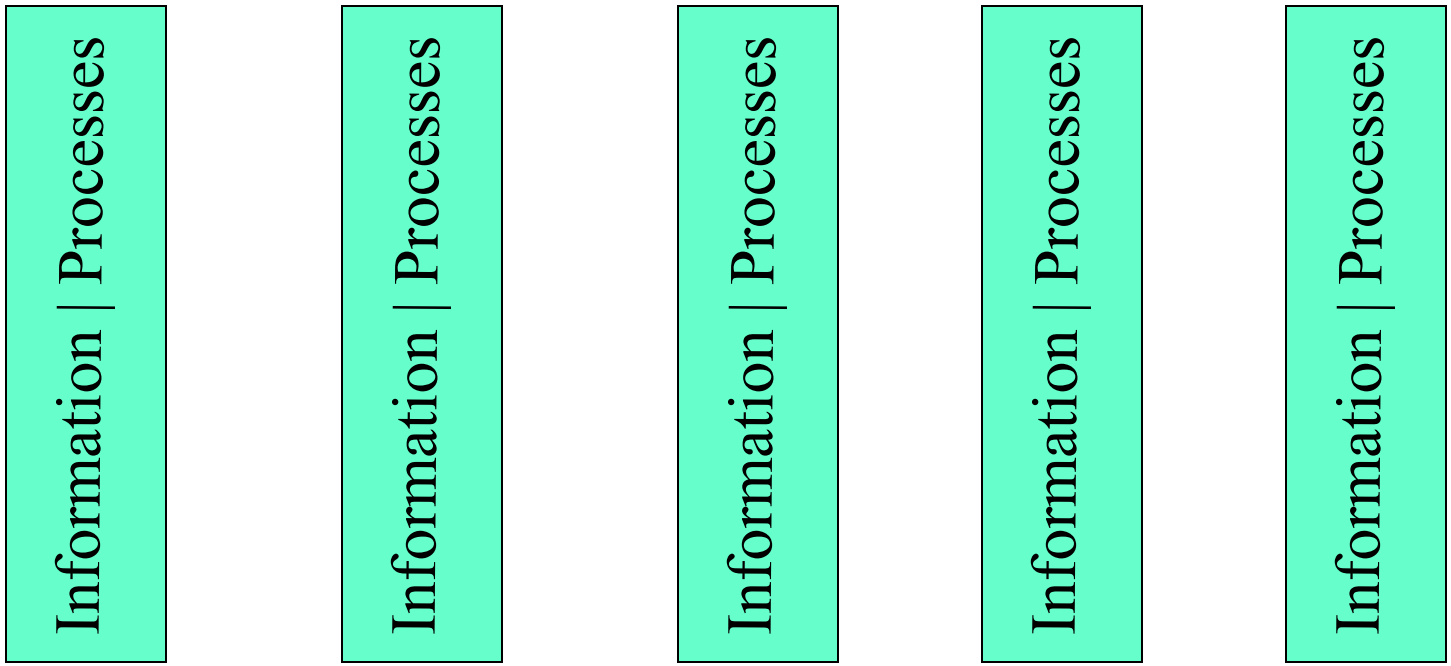
SOURCES: UNIVERSITY OF MICHIGAN PLM DEVELOPMENT CONSORTIUM, ARC ADVISORY GROUP

Stackpole, B. (2003, May 15, 2003). There's a New App in Town. *CIO*.

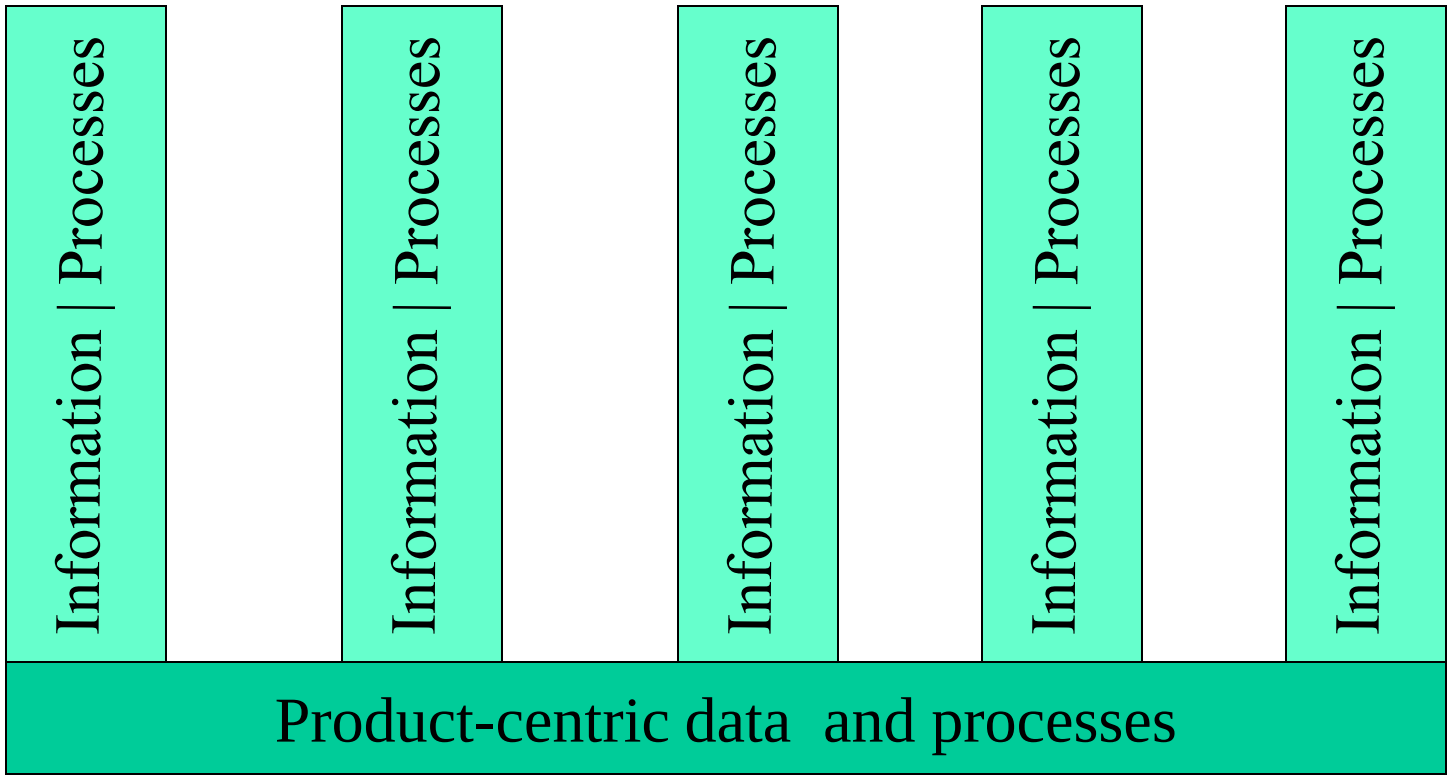
Information As Time, Energy, Material Trade-off



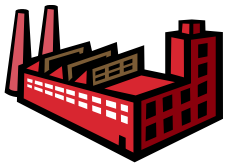
Current Information Model



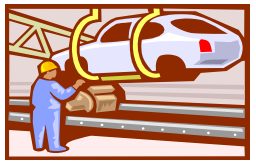
PLM Information Model



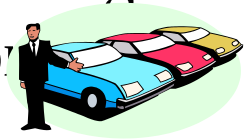
PLM Model



Manufacturing Engineering



Manufacturing & Production



Sales & Distribution

Maintenance & Repair

Disposal & Recycling

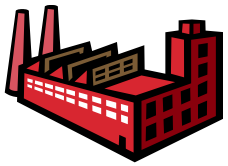
Requirements Analysis & Planning

Concept Eng & Prototyping

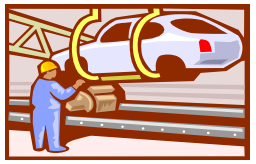
Product Engineering

Info Core

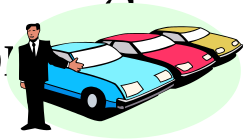
PLM Model
Back to the Future



Manufacturing Engineering



Manufacturing & Production



Sales & Distribution

Maintenance & Repair

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Requirements Analysis & Planning

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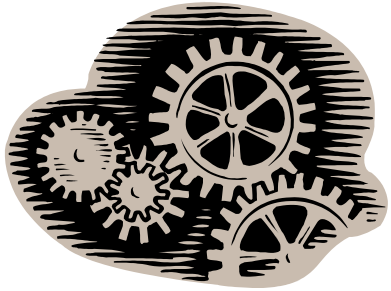
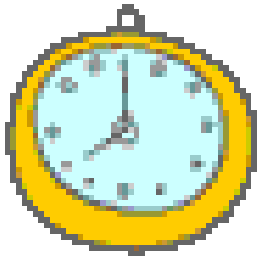
Product Engineering

Fundamental Changes Driving PLM

- Scale
- Complexity
- Cycle times





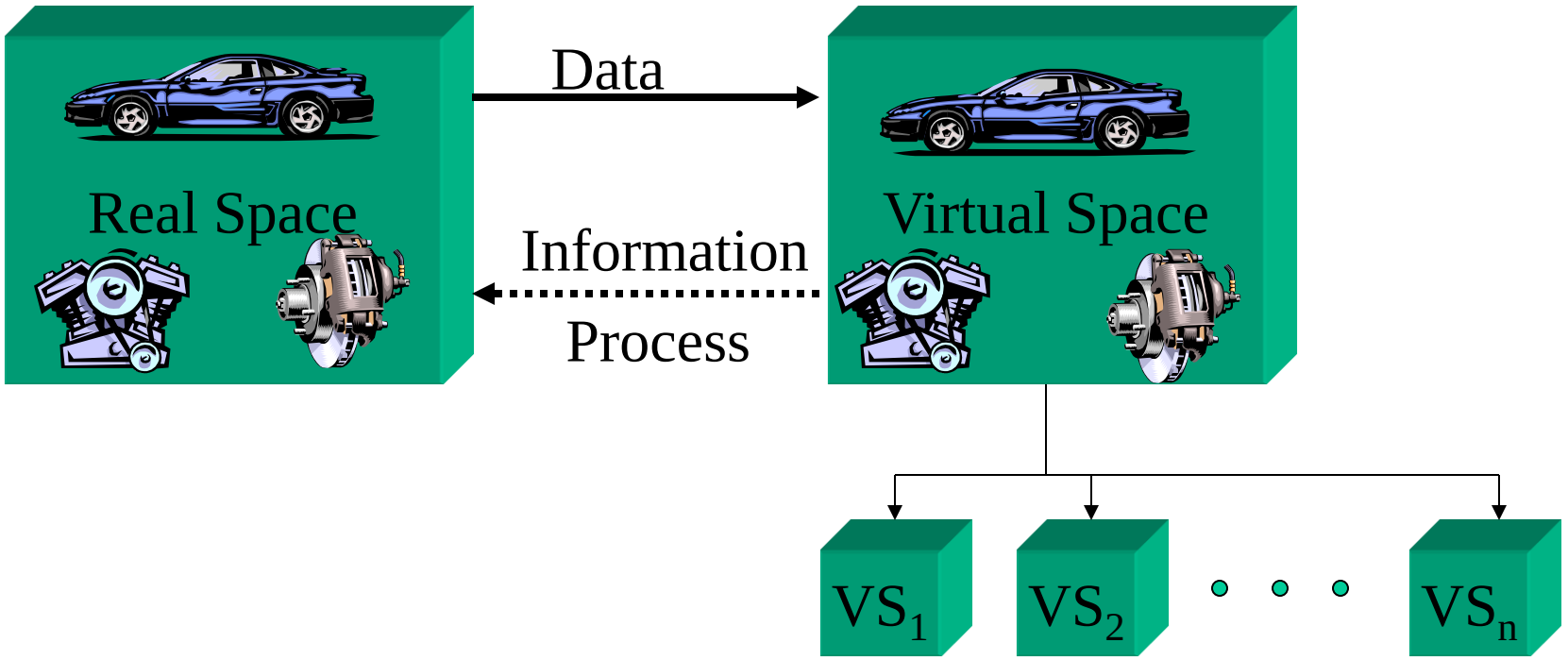
Social Issues Driving PLM

- Privacy
- Security
- Ownership
- Regulatory
- Education and training

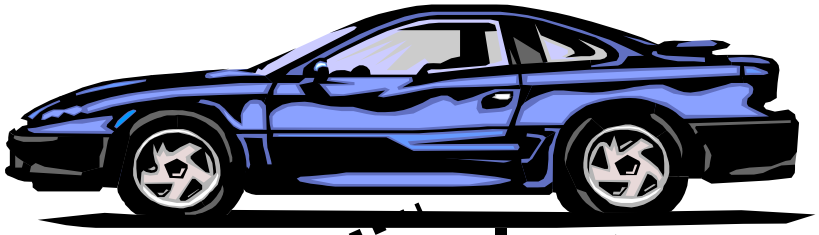
PLM Enables Designing to a Requirement

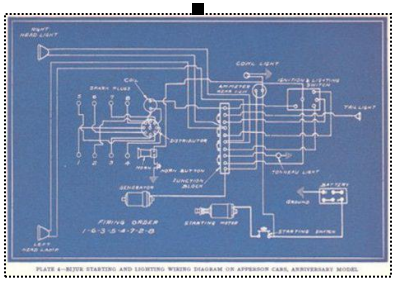
- Engineers design to a functional requirement
- Requirements are imperfectly mapped to specifications
- Issues
  - Gaps between intended and actual functionality
  - Over-engineered solutions
  - Unintended functionality (features or bugs)

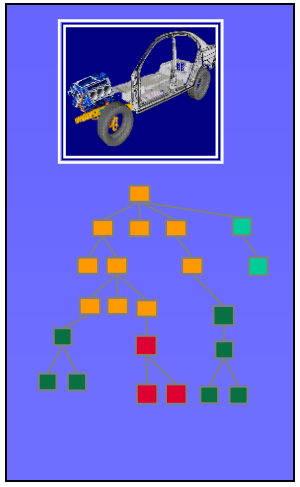
Conceptual Ideal for PLM Information Mirroring



Different Views for Different Functions





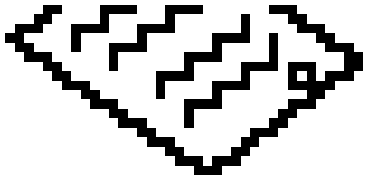


Status of Today's Product Information

- Siloed
- Ad-hoc
- Duplicative
- Inconsistent

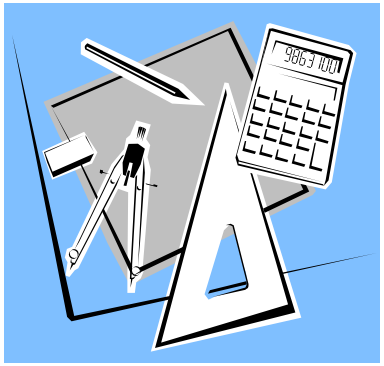
PLM Information Characteristics

- Singularity
- Correspondence
- Cohesion
- Traceability

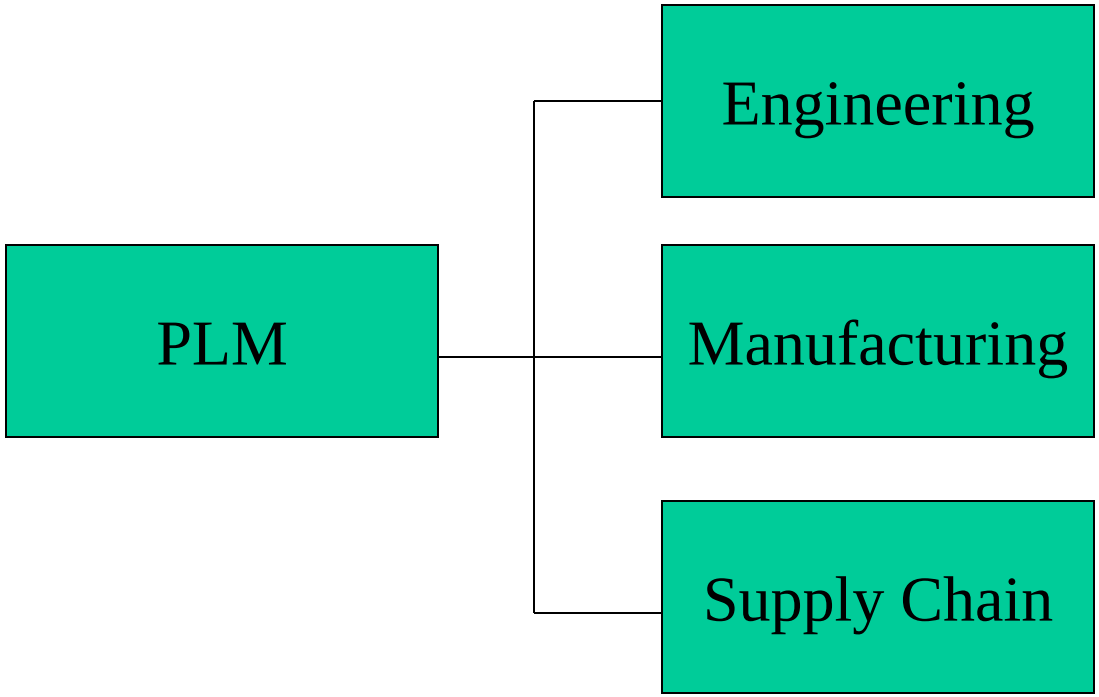


PLM Functions

- Engineering vaulting
- Part classification and reuse
- Collaborative design
- Product structuring
- Process / cost management



Example: Part Numbering



PLM – Outside the Factory Door

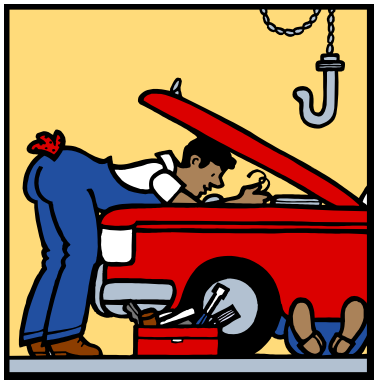
- Product distribution
- Sales and delivery
- Maintenance and repair
- Disposal and recycling

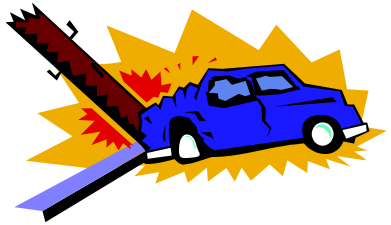
Why Extend PLM?

- Source of cost reductions
- Information feedback and feed forward
- Complete initiatives begun at earlier stages
- Potential for improved customer satisfaction

Source of Cost Reductions

- Costs do not stop at factory door
- Examples of information impacting costs
  - Faulty production
  - Warranty
  - Product liability





PLM Development Consortium

MichiganEngineering

Technology

The New York Times ON THE WEB

October 30, 1999

Toshiba to Spend $1 Billion to Settle Laptop Lawsuit

By ANDREW POLLACK

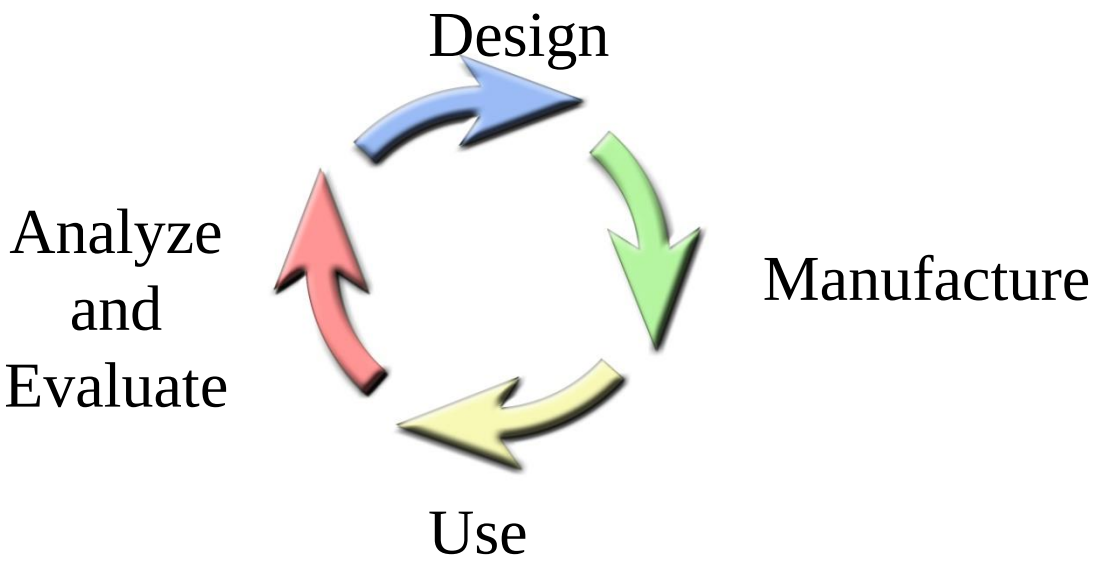
LOS ANGELES -- Toshiba Corp. said Friday that it will spend about $1 billion to settle a class action lawsuit brought by two people charging that the world's leading maker of laptop computers sold 5 million defective machines in the United States since 1987.

Quality Control is a Proxy for Performance

- QC is based on causality theory not performance
- QC feedback loops are remote and incomplete
- Warranty and survey data is biased and/or flawed
- Need in-service integrated data

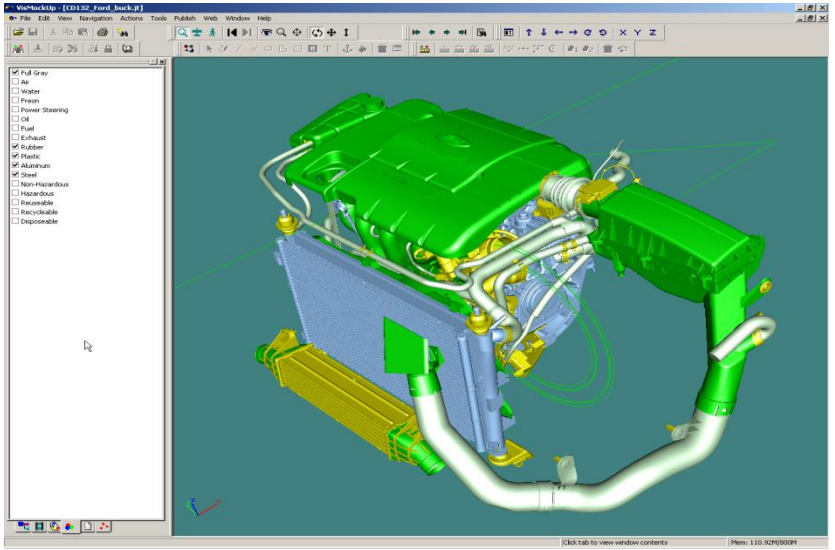
Information Feedback and Feed Forward

- Feedback design changes
- Feedback manufacturing changes
- Feed forward to new designs



Completing Initiatives

- Design function objectives
- Quality control continuation
- Disposal and recycling verification



Screen Source: EDS