

**Pilot Research Study
Measuring the Impact of
Product Lifecycle Management:
An Assessment Model and Metrics Framework
Module 20**

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**EDUCATION
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Introduction

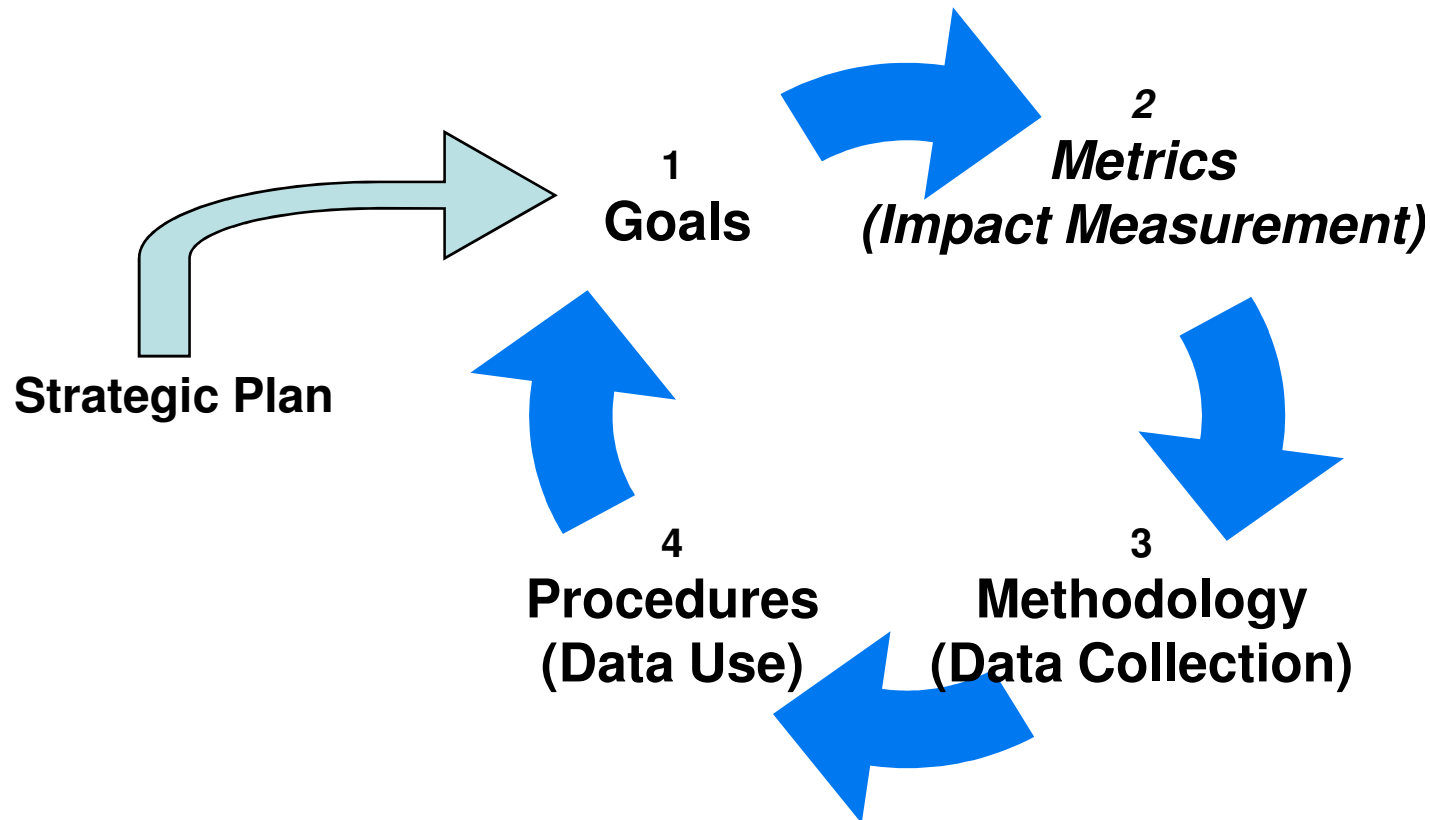
- Measure the impact of PLM
 - How well are we PLMing?
 - Can we enhance the traceability of our PLM investments?

PLM Metrics Project

- Define an Assessment Process
- Define a Metrics Framework

Assessment Model

PLM Assessment Process Model



Metrics Framework

PLM/Lean Thinking Savings due to *Waste Reduction*

- To all aspect of a product's life
 - *Plan/design*
 - *Build*
 - *Support*
 - *Removal/dispose*

- Integrated, information-driven approach to reducing wastes associated with
 - *Time*
 - *Energy*
 - *Materials*

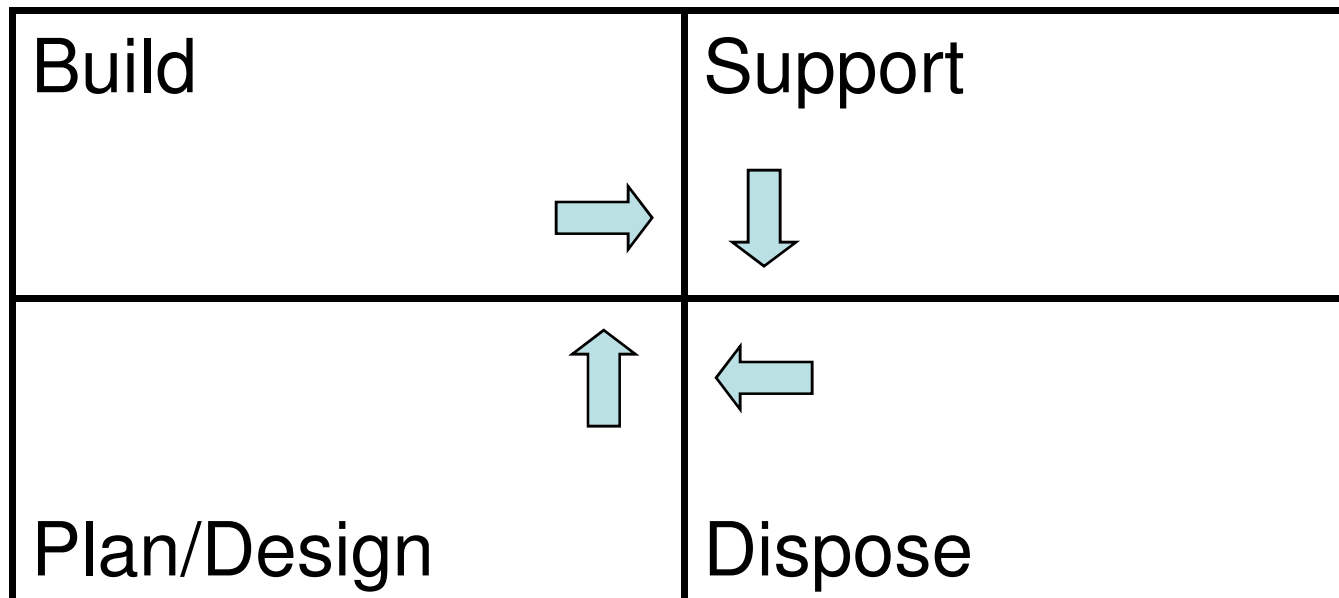
- Across
 - *People*
 - *Processes and practices*
 - *Technology*

PLM – Next Generation Lean Revenue Generation due to *Innovation*

- Provides opportunities to reallocate captured resources toward *innovation*
 - *Functionality*
 - *Quality*

- Across
 - *Product*
 - *Process*

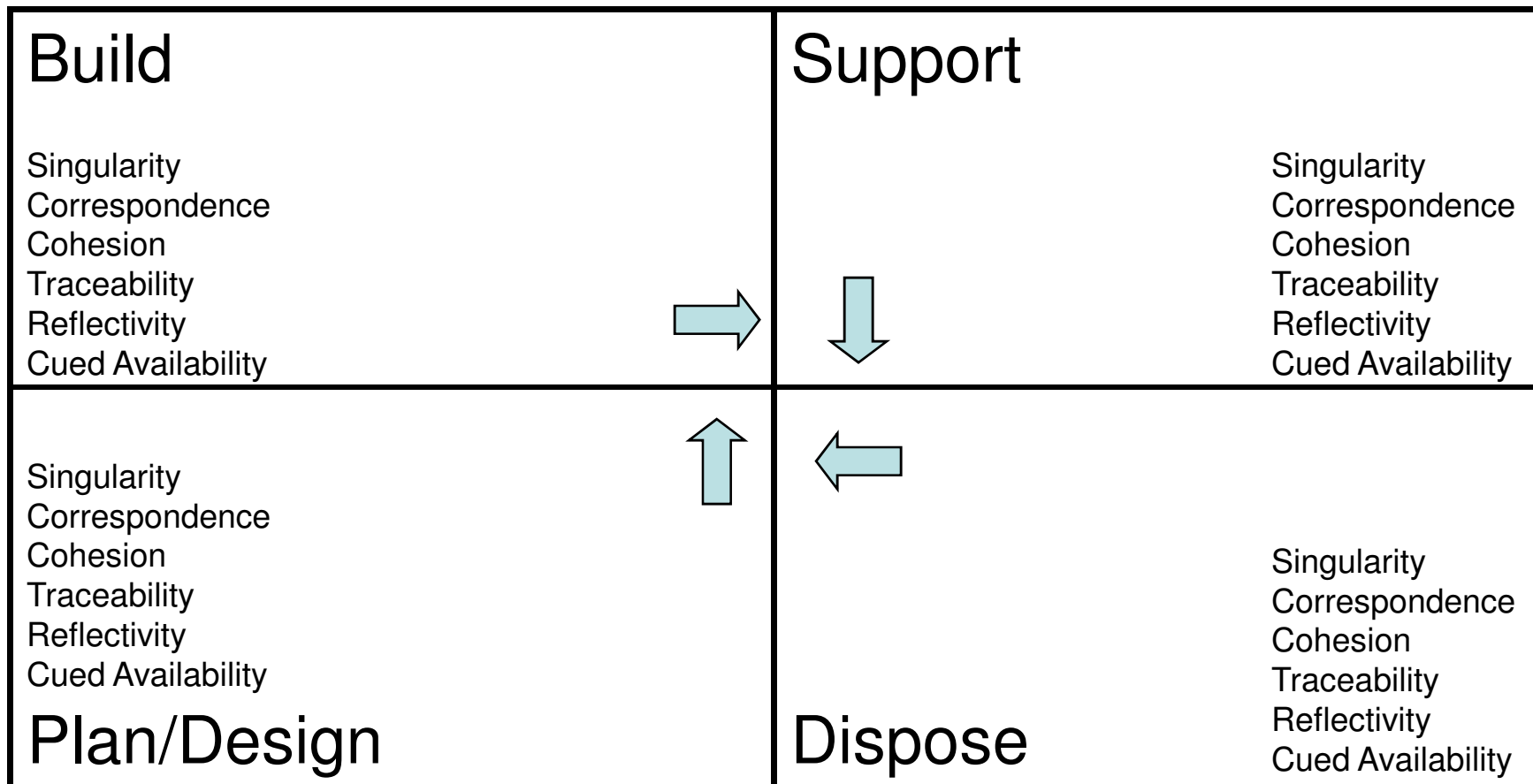
Product's Lifecycle



Information Characteristics About a Product/Process

- **Singularity** – unique and controlling version of the information
- **Correspondence** – link between actual and virtual representation
- **Cohesion** – integration of various views/schematics/descriptions
- **Traceability** – chronological ordering of all documents through time
- **Reflectivity** – changes in virtual representation reflect actual changes and vice-versa
- **Cued Availability** – having the right information available when needed

Information Characteristics Reflected in PLM Metrics



Waste Reduction Framework (per phase)

PLM Elements	People	Process/Practices	Technology
Waste/Reallocation Components			
Time			
Energy			
Materials			

Plan/Design Phase Waste Reduction Metrics

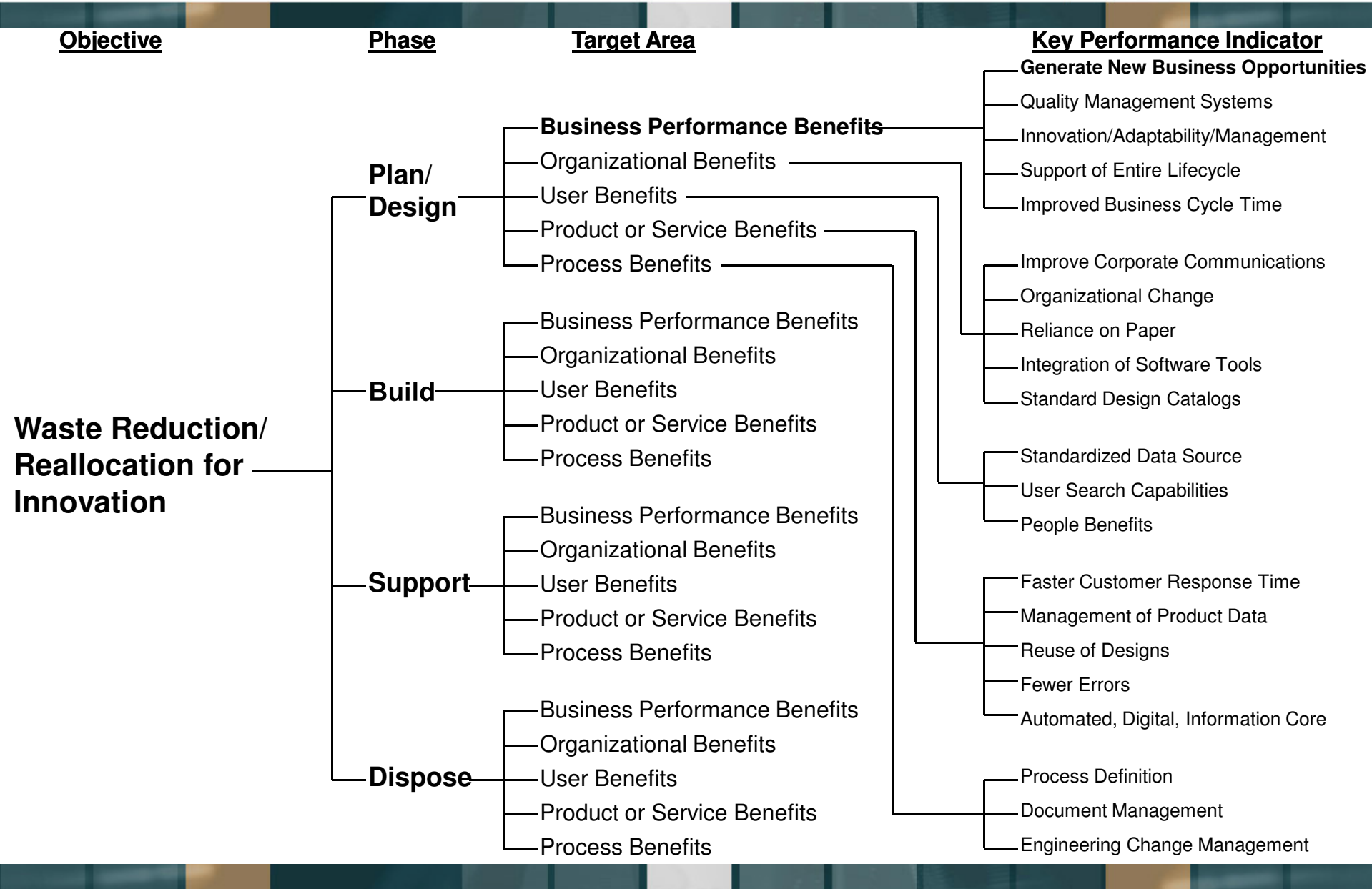
PLM Elements	People	Process/Practices	Technology
Waste Components			
Time	<ul style="list-style-type: none"> Time to locate information 	<ul style="list-style-type: none"> Number of times designs are reused 	
Energy	<ul style="list-style-type: none"> Amount of energy used to support face to face meetings 	<ul style="list-style-type: none"> Amount of energy required to sustain a manufacturing line 	<ul style="list-style-type: none"> Amount of energy spent in distribution of parts to sub-assemblies
Materials		<ul style="list-style-type: none"> Amount of inventory 	<ul style="list-style-type: none"> Number of times raw material is delivered correctly

Innovation Framework (per phase)

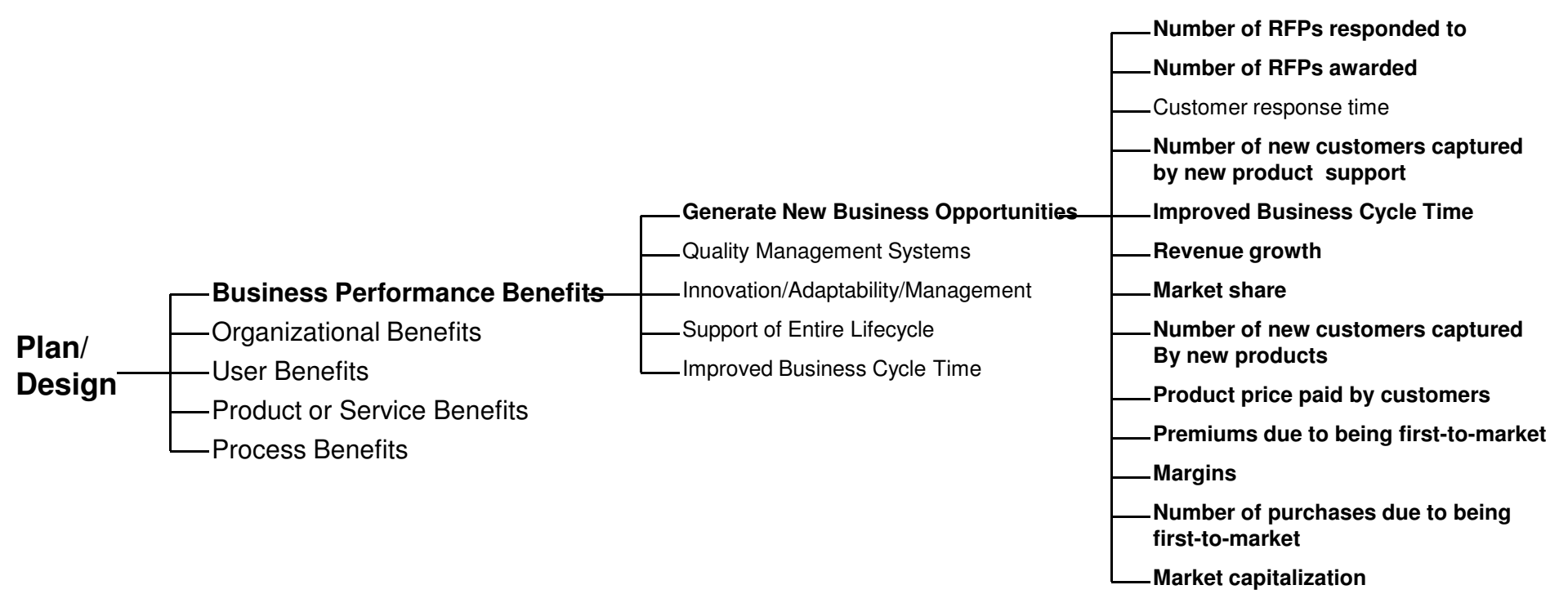
	Product	Process
PLM Elements		
Innovation Components		
Functionality		
Quality		

Plan/Design Phase Innovation Metrics

PLM Elements	Product	Process
Innovation Components		
Functionality	<ul style="list-style-type: none"> • Number of new features 	<ul style="list-style-type: none"> • Improved process capabilities
Quality	<ul style="list-style-type: none"> • Improved quality • Number of and costs of warranty problems • Number and costs of liability problems 	<ul style="list-style-type: none"> • Better Quality Management Systems



<u>Phase</u>	<u>Target Area</u>	<u>Key Performance Indicator</u>	<u>Metric</u>
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Summary

Past, Present, Future

- **Past**
 - Reviewed PLM Literature
 - Conducted Focus Groups
 - Interviewed Industry Experts
 - Developed PLM Assessment Model
 - Developed PLM Framework
- **Present**
 - Creating Metric Model
 - Identifying Metrics
 - Creating Self-Assessment Metric Survey
 - Testing and Revising Metric Survey
- **Future**
 - Conduct Survey Assessment
 - Data Analysis
 - Case Study Results and Conclusions
 - Publications, grants, consulting
 - Develop Diagnostic Tool

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