ITT

Integrated Management System & CMMI

CMMI Symposium

November 2010

Philip Hohn
Value Based Product Development
Process Manager
ITT ES
Phillip.Hohn@itt.com

Steven Axelband
Consultant
Value Based Product Development
Director (retired)
ITT Defense
Steven.Axelband@,msn.com

Engineered for life

Integrated Management System
"Leading Our Business with Purpose"

Value Based Management Establishes Business Strategies

Value Based Product Development Transforms Strategies Into Product Development Tactics

- Stage Gate
  - Executive direction
  - Resource allocation
- Nimba Value Model focus on Customer Value
- System Engineering
- CMMI best practice processes

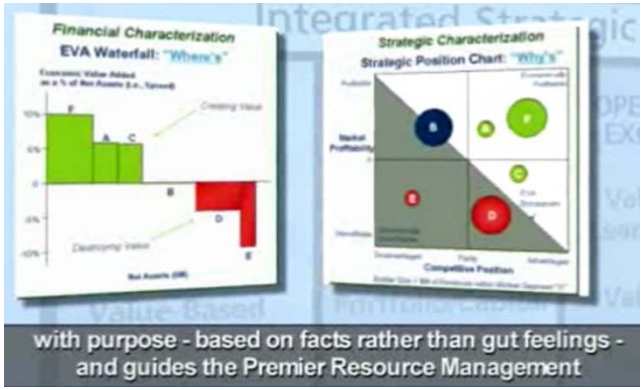
Value Based Lean Six Sigma

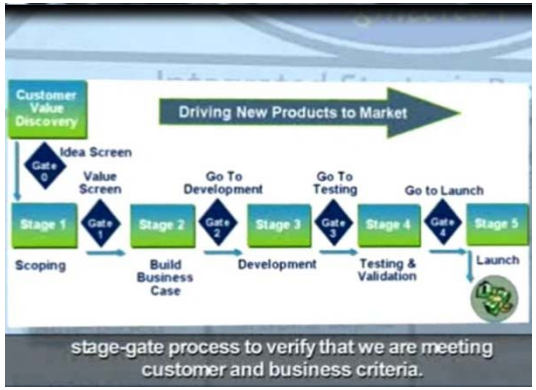
- Measurement and Continuous Improvement

CMMI Best Practices Execute VBPD/VBM Policies

ITT Integrated Management System (IMS)

IMS Video Screen shots





CMMI is our Framework for Product Development Within Our IMS Business Framework

IMS Drives CMMI Best Practices Embedded in VBPD

Integrated Strategic Processes			
PROFITABLE GROWTH	**RESOURCE OPTIMIZATION**	**OPERATIONAL EXCELLENCE**	**LEADERSHIP & LEARNING**
Value-Based Management	Premier Resource Management	Value-Based Lean Six Sigma	Value-Based Leadership Development
Value-Based Product Development	Portfolio Capital Allocation	Value-Based Goal Department	Partnership for Performance

IMS Drives Process Measurement and Improvement Embedded in VBLSS

- CMMI for Development (CMMI-DEV) provides a comprehensive integrated solution for development and maintenance activities applied to products and services
- CMMI® (Capability Maturity Model® Integration) is a process improvement maturity model for the development of products and services.

Nimba Value Arrow

IMS and CMMI

- **IMS** is an "…integrated, interdependent and iterative framework, guiding our strategic decision making, resource allocation, operational excellence and leadership"
- **CMMI** "processes are planned and executed in accordance with policy; the projects employ skilled people who have adequate resources to produce controlled outputs"
- **IMS** "…guides what we do, measures how well we execute, and creates options for doing even better"

  "…we embrace the use of the ITT Management System in a disciplined way"
- **CMMI** "…processes are well characterized and understood, and are described in standards, procedures, tools, and methods

VBM and Strategic Planning Focuses Value Based Product Development (VBPD)

Integrated Strategic Processes			
PROFITABLE GROWTH	RESOURCE OPTIMIZATION	OPERATIONAL EXCELLENCE	LEADERSHIP & LEARNING
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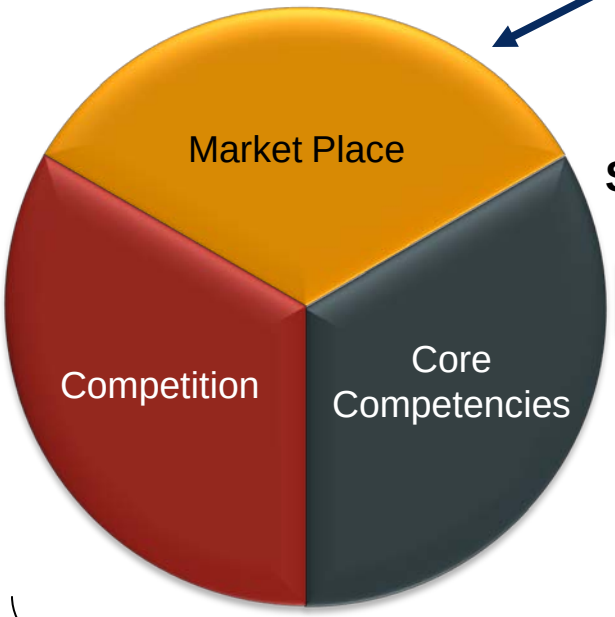
Strategic Analysis



Key Growth Strategies

Where To Invest

Action Plan for Growth

Mergers Acquisitions Divestitures

VBPD

New Products with Unrivaled Customer Value

Lasting Value via Corporate Portfolio Management

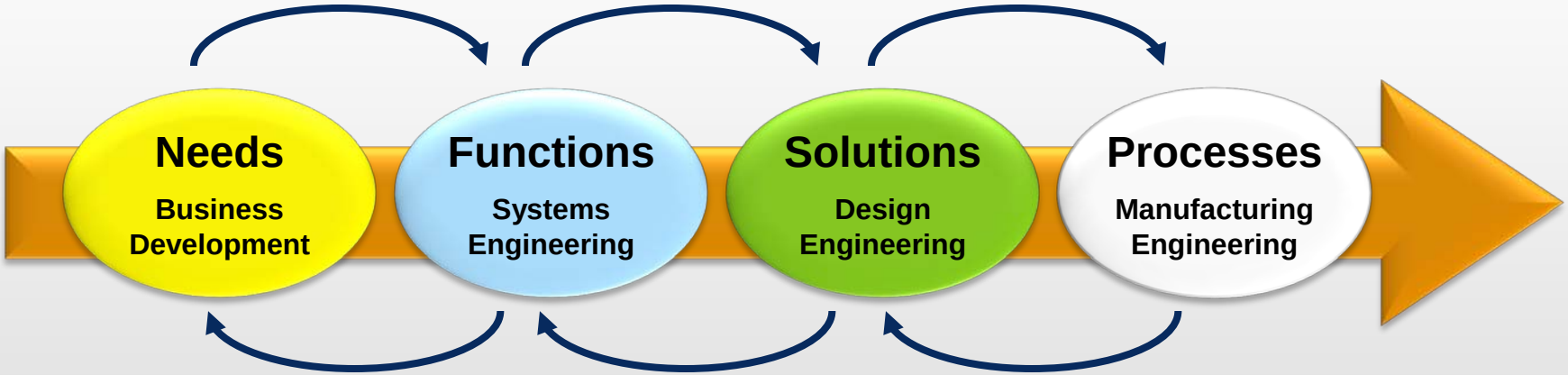
Sustainable Profitable Growth

VBM Strategy Development

Develops Product Development Strategies to Address Customer Needs

Nimba Value Arrow

VBPD Uses the Nimba Value Model to Focus Product Development on Customer Value



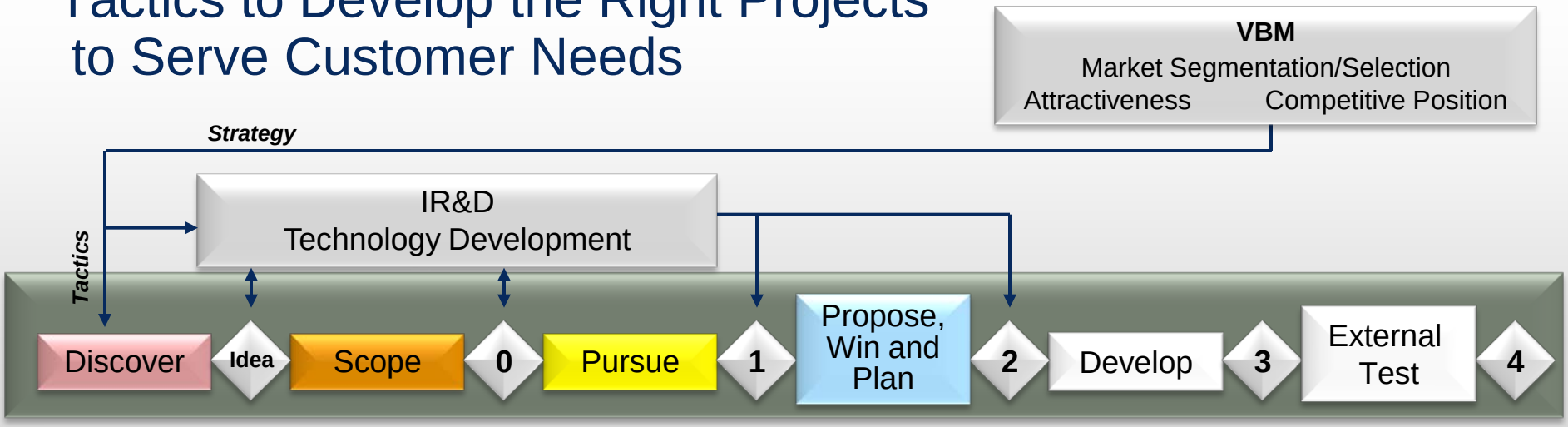
Functions Satisfy Customer Needs

Solutions Provide Functions

Processes Produce Solutions

VBPD Focuses Products and Services on Customer Value

Stage Gate Within VPBD Transforms Strategy into Tactics to Develop the Right Projects to Serve Customer Needs



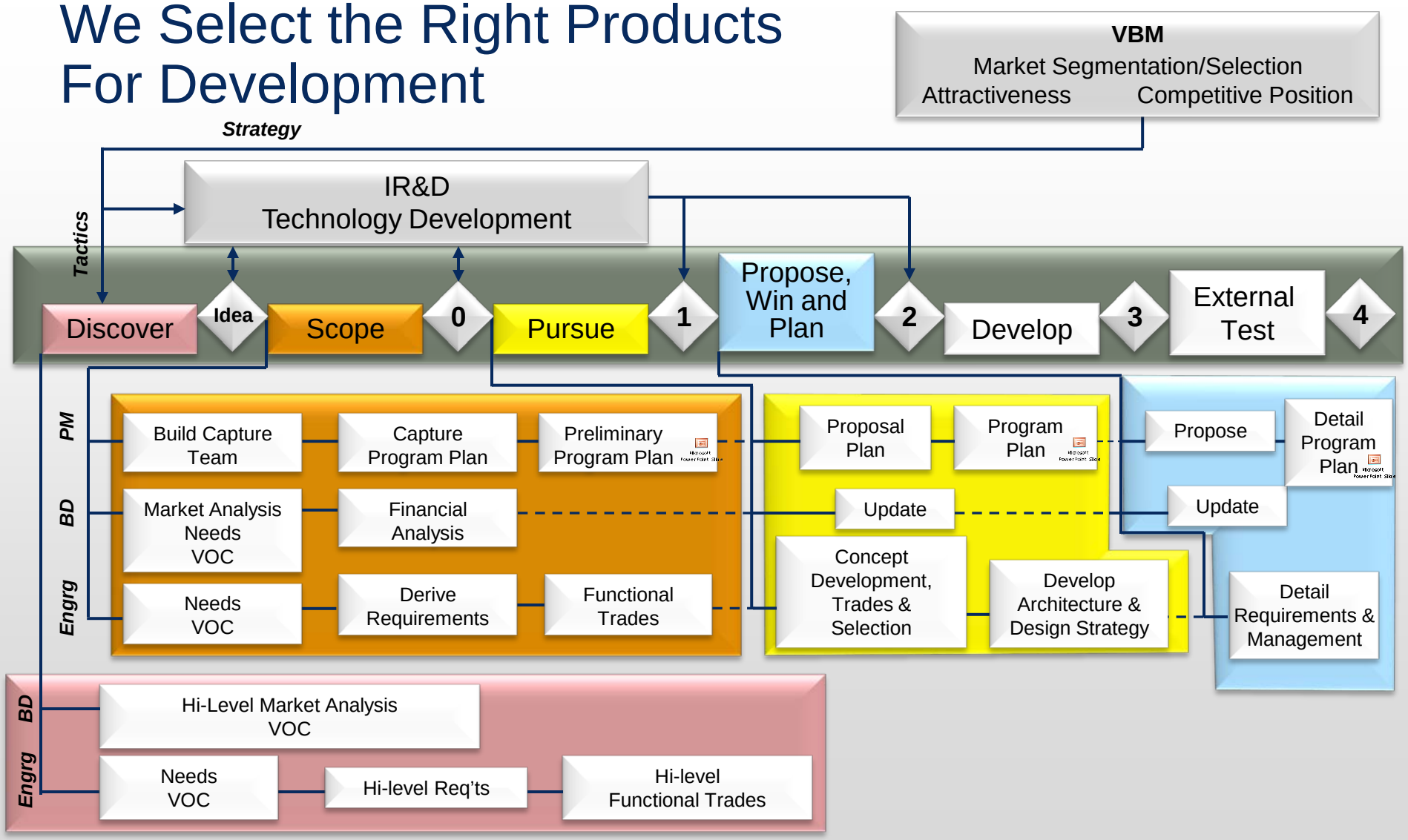
Stage Activities develops data required for gate decisions

This is a model *Stage-Gate* process for new Defense Product Development. It is ITT Defense policy that each Value Center adapts a *Stage-Gate* tailored for their business.

Defense policies imbedded in this process is to establish a process that incorporates "best-in-class" practices for focusing resources on finding, qualifying, pursuing and winning opportunities by:

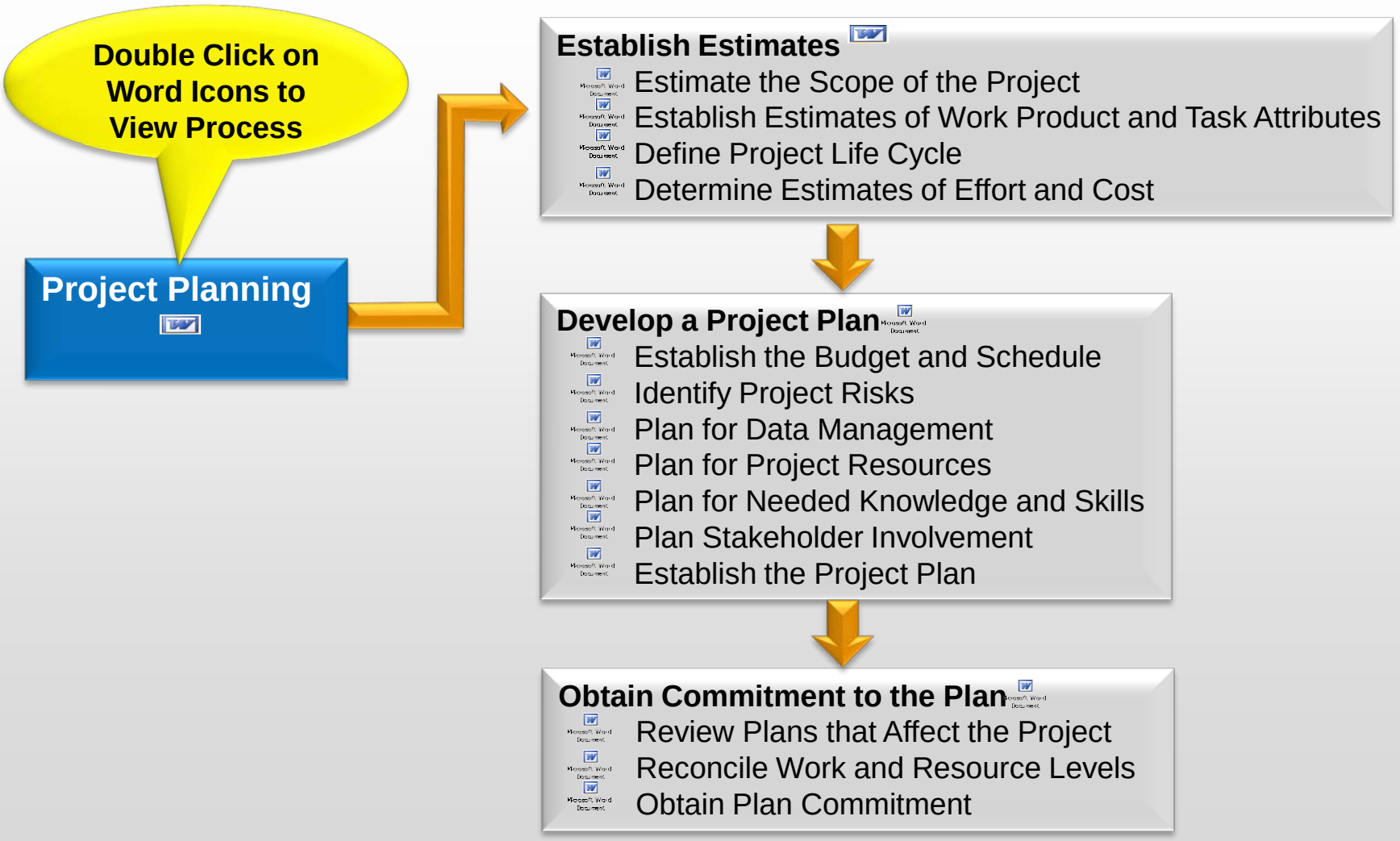
- Focusing on Gate and Milestone decisions and the information required for the decision
- Coupling resource allocation and expenditures to milestone decisions

Stage Gate Within VPBD Ensures We Select the Right Products For Development

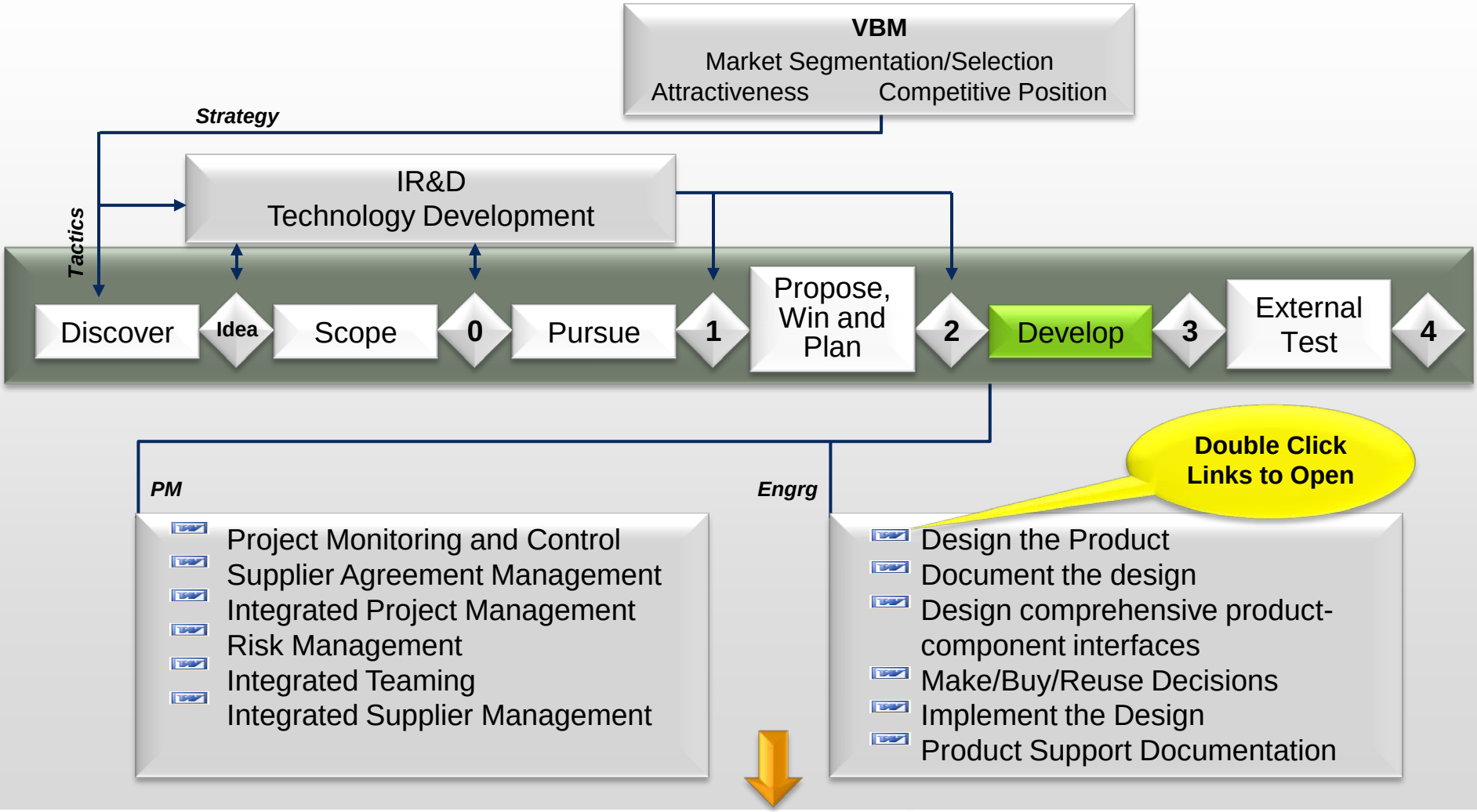


Nimba Value Arrow

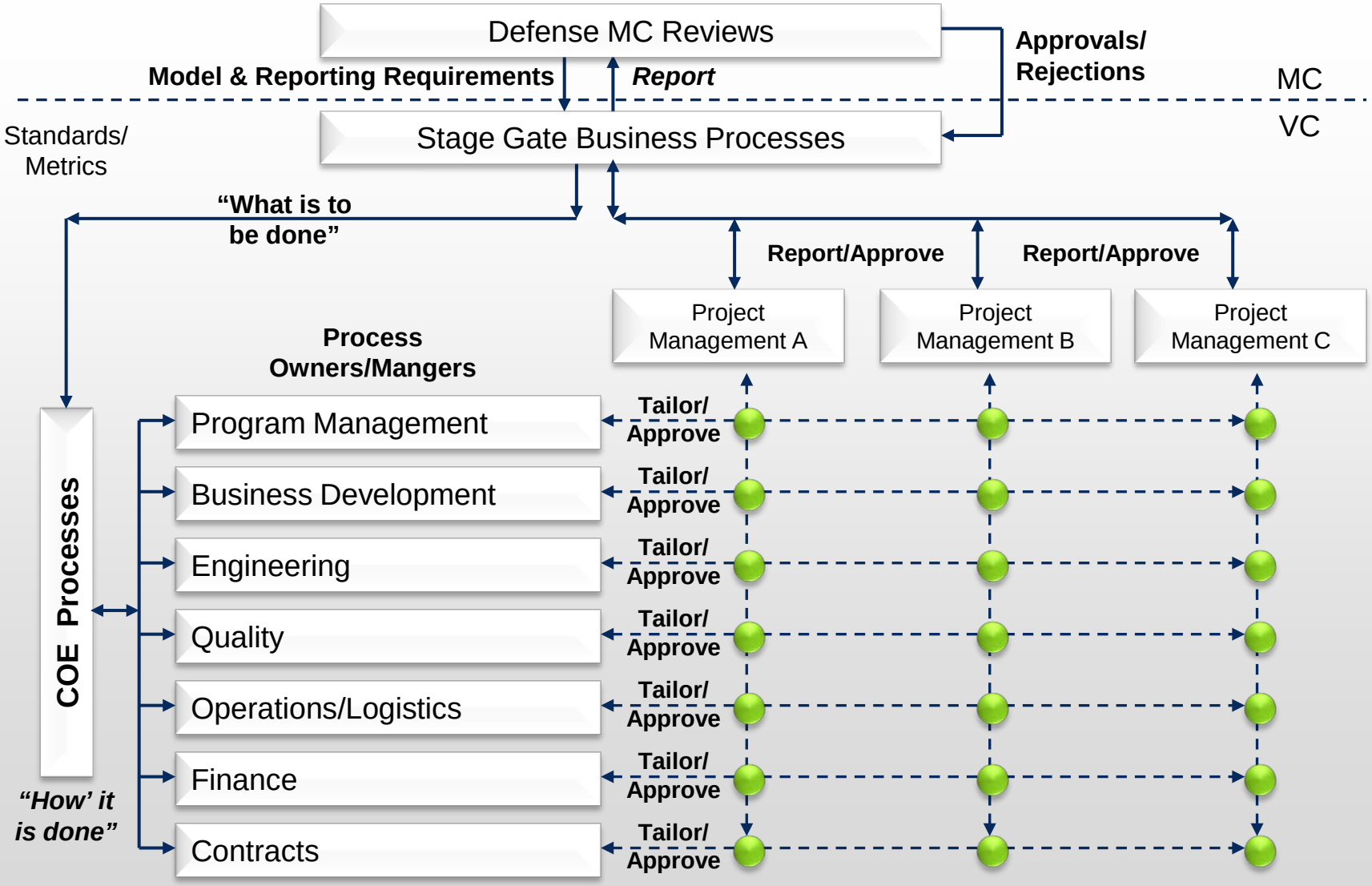
Apply CMMI Best Practices to Develop the Project Plan



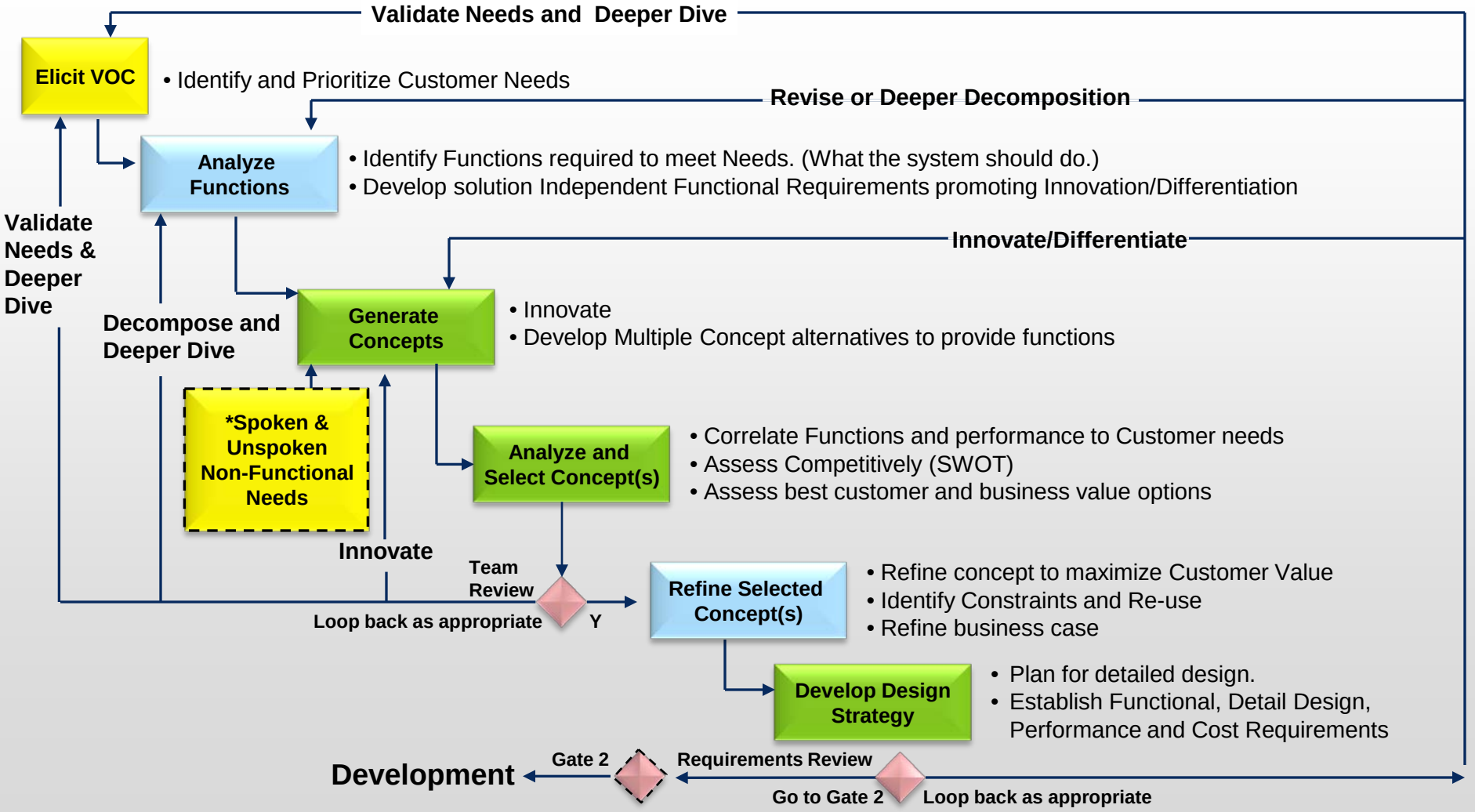
Stage Gate Ensures We Apply CMMI Best Practices to Develop the Product Right



Processes are Tailored to the Project



VBPD VOC to Concept Creation and Differentiation Through Functional Analysis

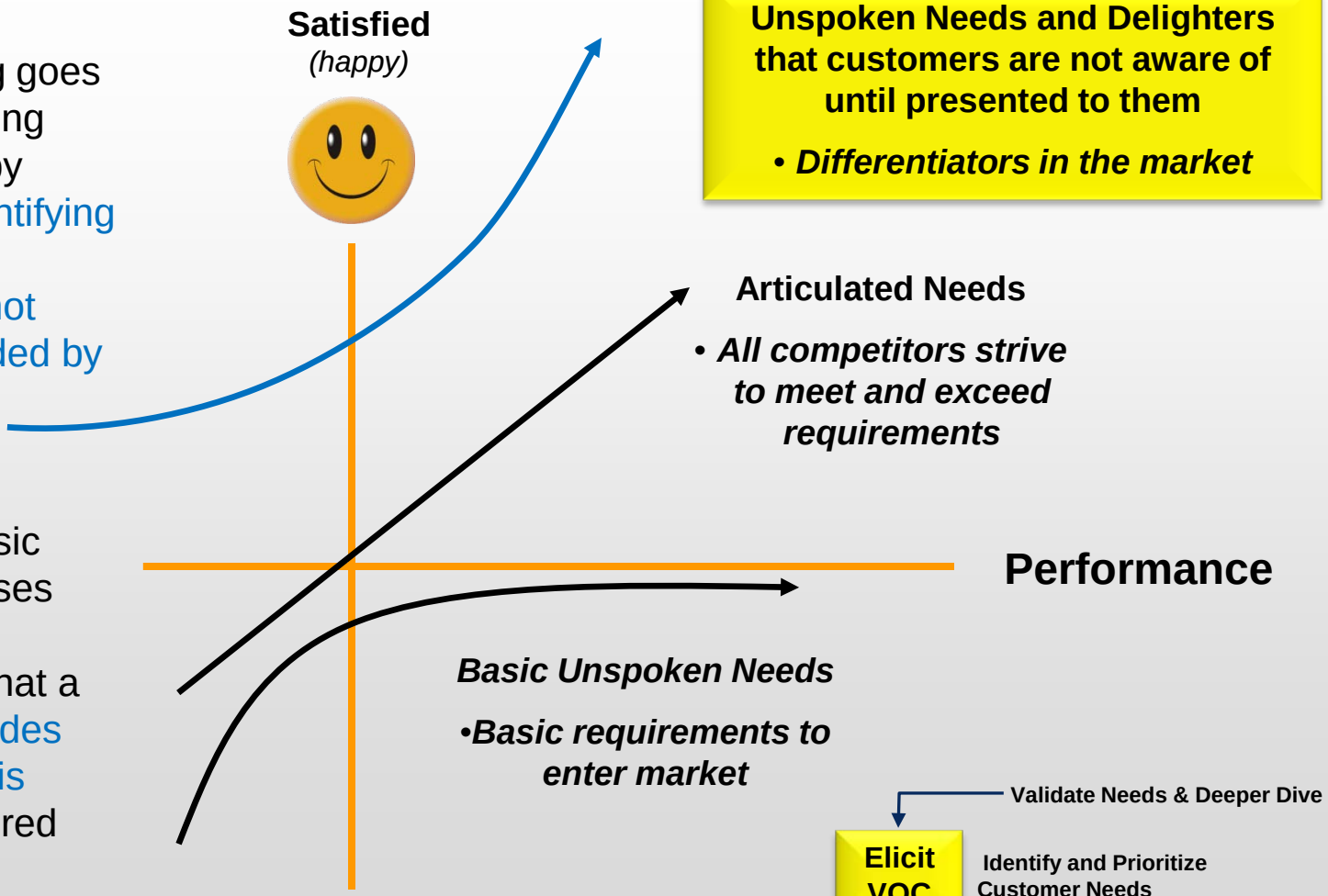


Nimba Value Arrow

VBPD Kano Analysis of Needs

CMMI: Eliciting goes beyond collecting requirements by proactively identifying additional requirements not explicitly provided by customers

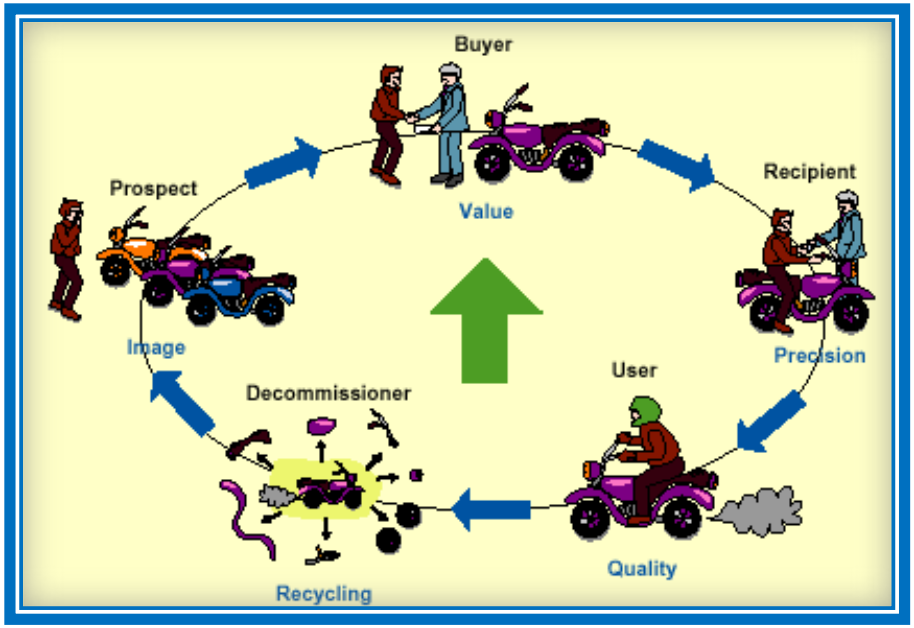
CMMI: The basic activity addresses the receipt of requirements that a customer provides to define what is needed or desired



Nimba Value Arrow

VBPD Consider All Stakeholders in the Product Life Cycle

CMMI: … these requirements address the needs of relevant stakeholders, including those pertinent to various product life-cycle phases



Taken from "NIMBA Value Model" Chapter 17 page 12

The Customer Value focus changes during the product life cycle.

- Prospects are attracted with image
- Customer value is important to buyers
- Recipients value precision in accuracy in response to purchase specifications
- User values quality and performance
- End of Life Decommissioners value recycling to simplify work

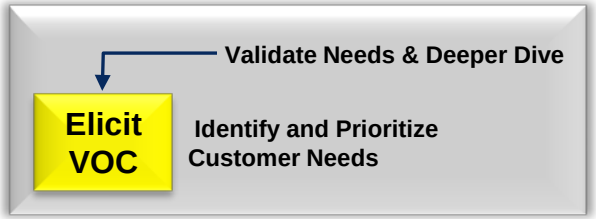
VBPD: Needs are Opportunities Which Should Be Articulated:

- In the language of the customer, not the language of the designers
- In the domain of the customer, not the domain of the product

CMMI: The customer requirements may be expressed in the customer's terms and may be non-technical descriptions.

VBPD: Independent of a solution (or even the possibility of a solution)

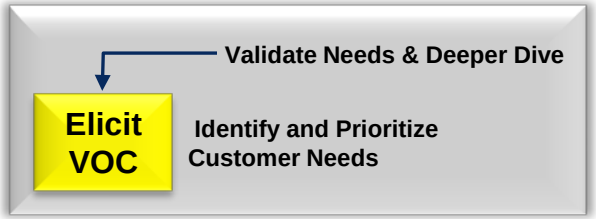
- As a "need to" ….(do something); not as a "need for" … something
  - A "need for" something implies a solution
- Characterize desired outcome



VBPD: To Ensure Unrivaled Customer Value in Product Development, Needs Must Be:

- Identified
  - *"You can observe a lot just by watching."*
- Translated into clear, concise and measurable technical requirements
  - *"You've got to be very careful if you don't know where you are going because you might not get there."*

CMMI: The stakeholder needs, expectations, constraints, interfaces, operational concepts, and product concepts are analyzed, harmonized, refined, and elaborated for translation into a set of customer requirements.

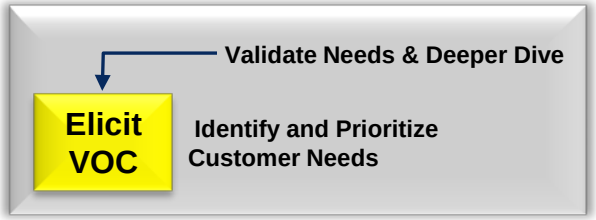


VBPD: Needs, Functions and Customer Value Should Drive Concept Selection

"No amount of architectural or detailed design rigor can make up for an inferior concept selection"

CMMI: Requirements are the basis for design. The development of requirements includes the following activities:

- *Elicitation, analysis, validation, and communication of customer needs, expectations, and constraints to obtain customer requirements that constitute an understanding of what will satisfy stakeholders*

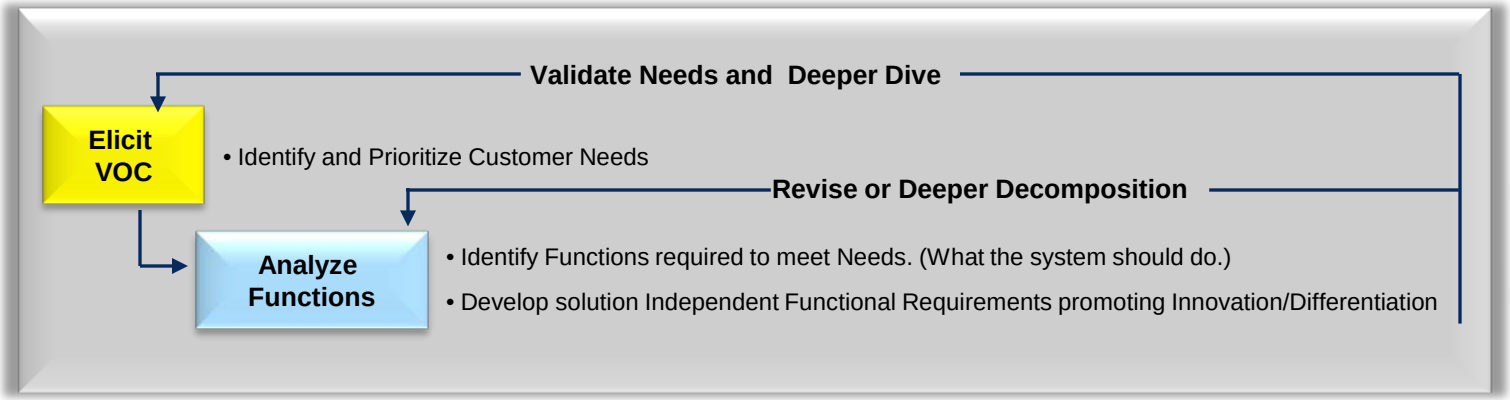


Nimba Value Arrow

Functional Analysis

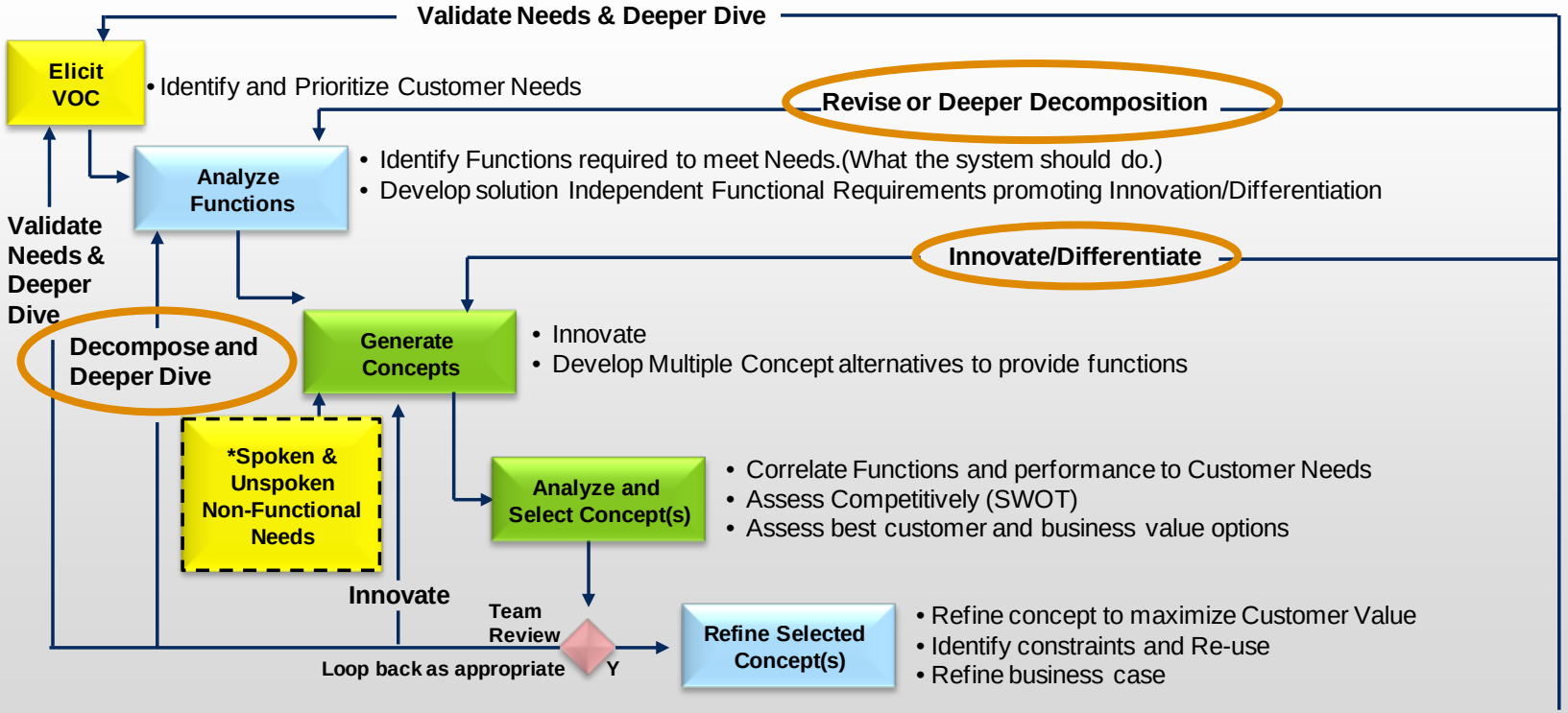
VBPD: “to capture the intended behavior of the system”… to satisfy the customer’s “need to do something”

CMMI: The definition of functionality, also referred to as “functional analysis,” is the description of *what the product is intended to do.*



Nimba Value Arrow

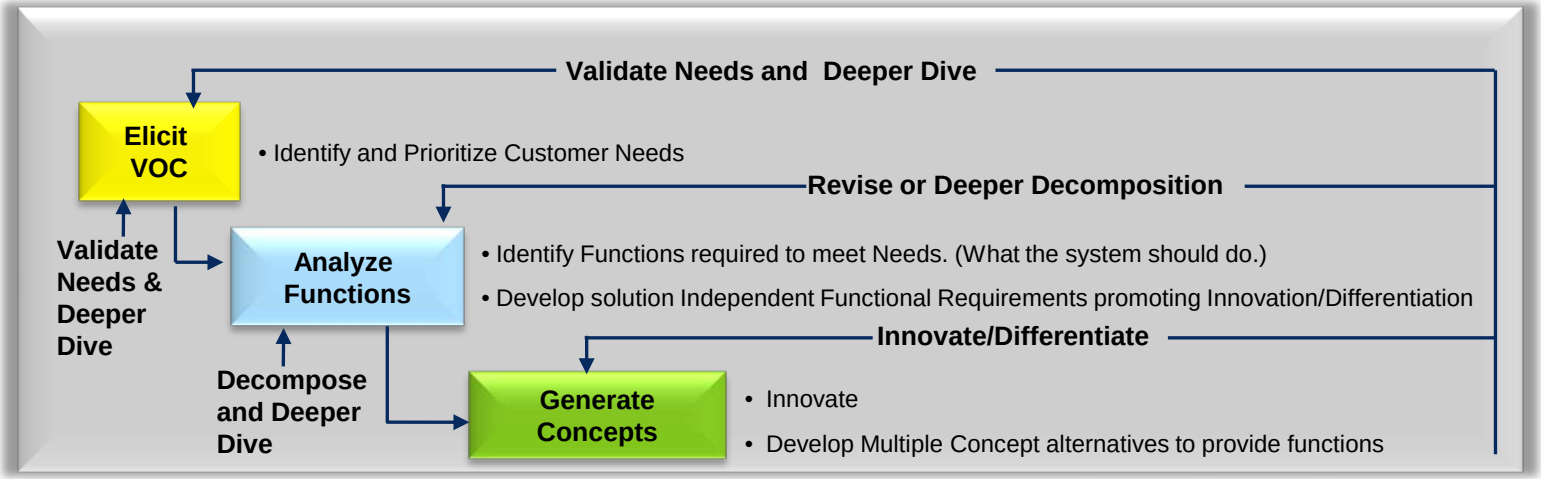
Recursive and Iterative Functional Analysis and Concepts
VBPD Concept Development



CMMI Analyses occur recursively at successively more detailed layers of a product's architecture until sufficient detail is available to enable detailed design, acquisition, and testing of the product to proceed. As a result of the analysis of requirements and the operational concept … concept(s) produces more derived requirements

Nimba Value Arrow

Functional Analysis Drive Solutions and Identifies Interface Requirements



VBPD

Functional Analysis

…Moves our focus from outside the system and what the system is intended to do …to inside the system and begin to specify how it will accomplish its intent

CMMI

Interfaces between functions (or between objects) are identified. *Functional interfaces may drive the development of alternative solutions*

Nimba Value Arrow

USE Cases

VBPD … Study the desired behavior of the product before a solution is developed

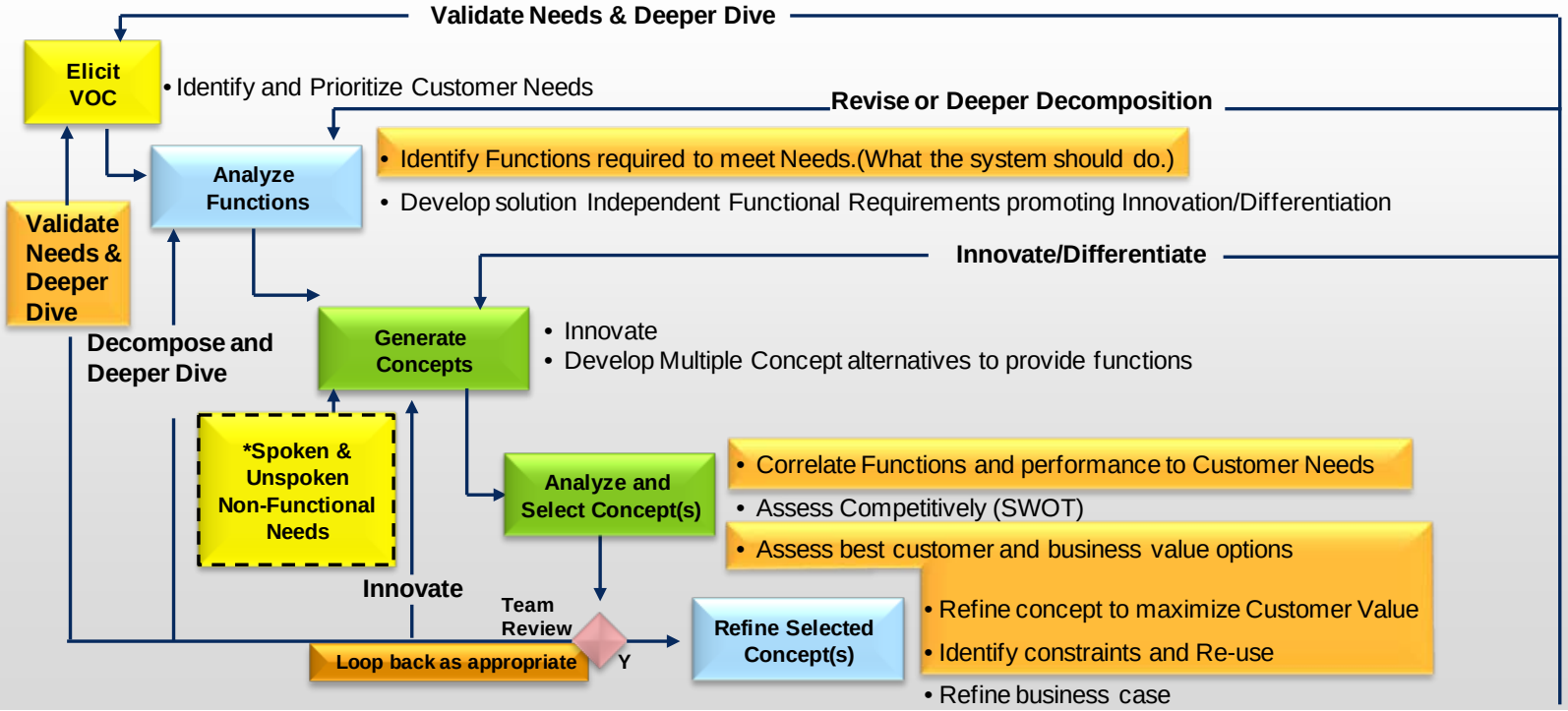
CMMI …Typical Work Products

- Timeline analyses of product-component interactions
- *Use cases*

Analyses are performed to determine what impact the intended operational environment will have on the ability to satisfy the stakeholders' needs, expectations, constraints, and interfaces.

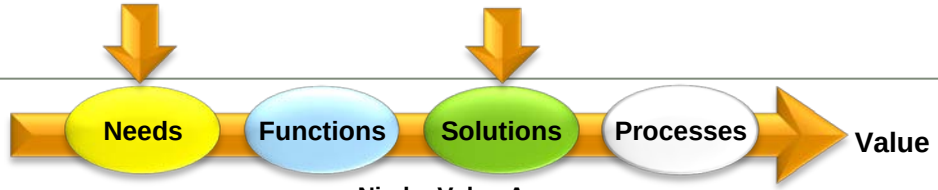
Nimba Value Arrow

Analyze and Validate Requirements
VBPD Concept Development



CMMI – The objectives of the analyses are to determine candidate requirements for product concepts that will *satisfy stakeholder needs,* expectations, and constraints; and then translate these *concepts* into requirements

Requirements are validated to increase the probability that the resulting product will perform as intended in the use environment.



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