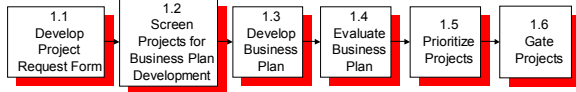


**Stage 1:
Forward Project Planning**



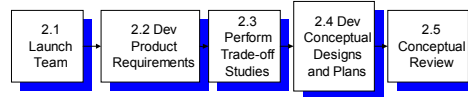
Key Objectives:
 Develop business plans for worthy ideas.
 Evaluate business plans to approve or reject projects.
 Prioritize projects against active and planned projects.
 Release projects only when sufficient resources are available.

**GATE
DELIVERABLES**

Approved Business Plan
 Gate 1 Signatures

Gate 1

**Stage 2:
Project Planning and Conceptual Design**

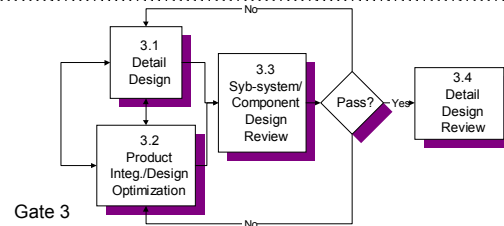


Key Objectives:
 Establish complete product requirements early - freeze for rest of process.
 Perform trade-off studies to allow greater improvements and cost reductions in the design.
 Develop conceptual drawings and layouts - freeze before detailing to improve integration and reduce rework.

Project Cost Documents
 Project Metrics Dashboard
 Product Cost Documents
 Product Requirements
 Master / Detailed Program Schedule
 Conceptual Design Drawings/Layouts
 OM, NMD, QA, LCS Plans
 Prelim. Struct. and Stab. Analysis
 Gate 2 Signatures

Gate 2

**Stage 3:
Detail Design, Costing, Product Integration and Optimization**



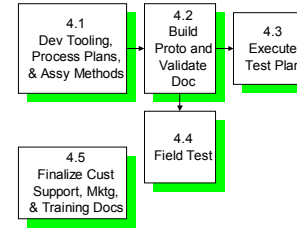
Key Objectives:
 Generate all necessary detail, assembly, installation and specification drawings.
 Perform product integration evaluations to optimize design.
 Develop product and process plans (Test, QA, LCS, Mktg, OM) concurrently.

Detailed Product Spec
 Detail, Assembly, Installation and Specification Drawings
 Bill of Material
 Detailed Dev. Test Plan
 Final OM Plan / Prelim Doc
 Final QA Plan / Prelim Doc
 Final LCS Plan / Prelim Doc
 Final NMD Plan / Prelim Doc
 Gate 3 Signatures

Gate 3

**Stage 4:
Prototype Build and Test**

Key Objectives:
 Develop tooling, process plans and assembly methods.
 Build Prototype.
 Validate the design to determine if it meets requirements.

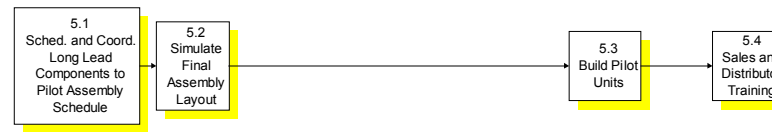


Prototype Units Completed
 Structural and Stability Tests Completed
 Mandatory Audits Closed
 Product Documentation Revised/Updated
 Updated Business Plan
 Updated Operator and Safety Manual
 Gate 4 Signatures

Gate 4

**Stage 5:
Pilot Build and Final Documentation**

Key Objectives:
 Train personnel.
 Build pilot units.
 Validate the production process.

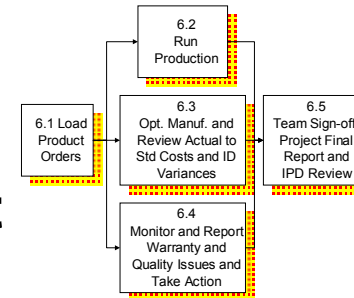


Mandatory Audits Closed
 Pilot Units Completed
 Finalized Product Doc
 Finalized Manuals and Parts List
 Updated Business Plan
 Marketing Literature
 Product Training Materials
 Gate 5 Signatures

Gate 5

**Stage 6:
Production**

Key Objectives:
 Transfer design to full scale production on factory floor.
 Monitor problems and accuracy of standards.



Lessons Learned Report
 Project Completion and Sign-Off



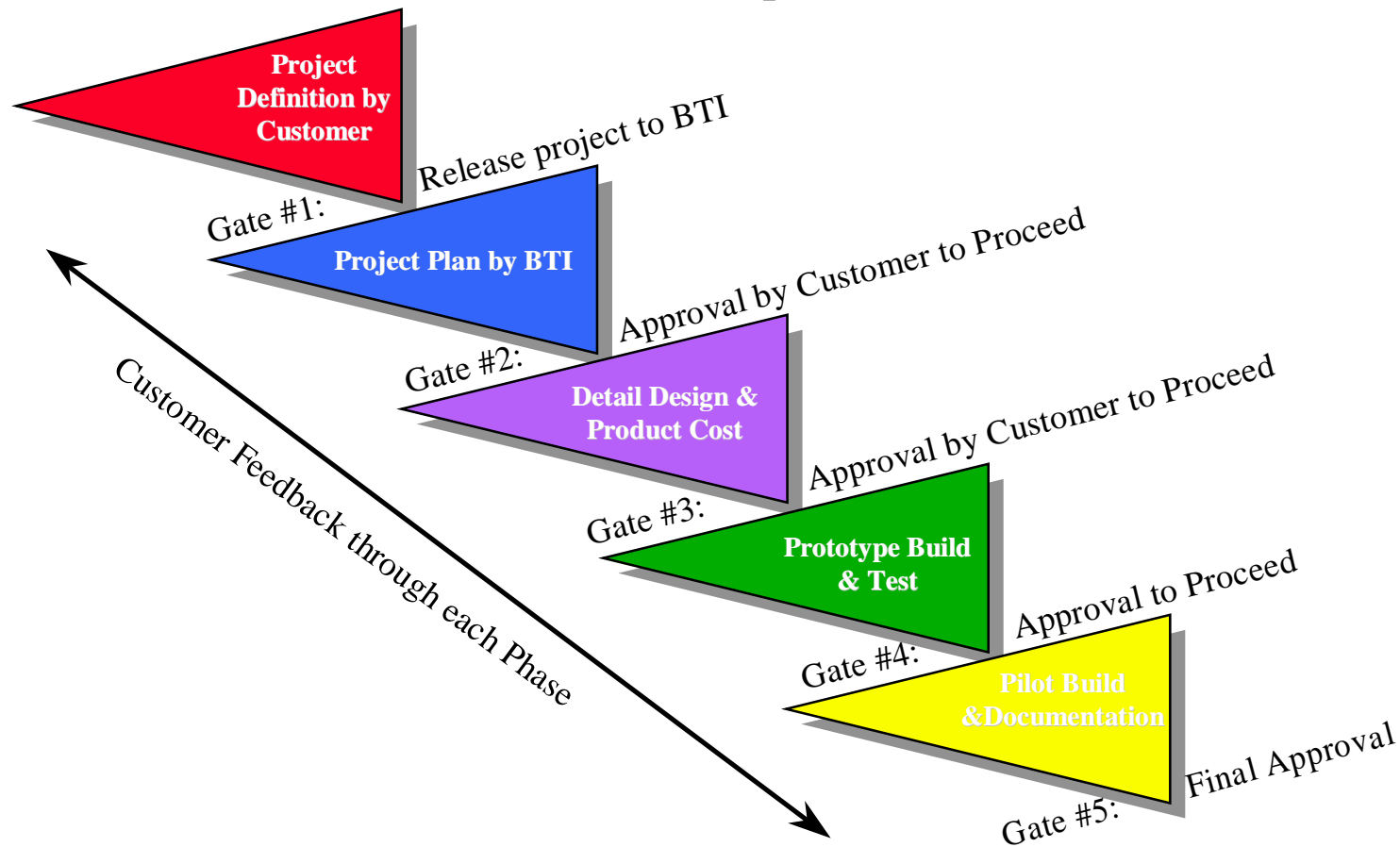
Integrated Product Development

IPD Schematic

Time

Integrated Product Development

(An Extension of your Product Development Process)



Approval Gates

Gate #1- Release to BTI to start Project Plan Stage

Gate #2- Approval of Project Plan to start Detail Design

Gate #3- Approval of Design and Product Cost to start Prototyping

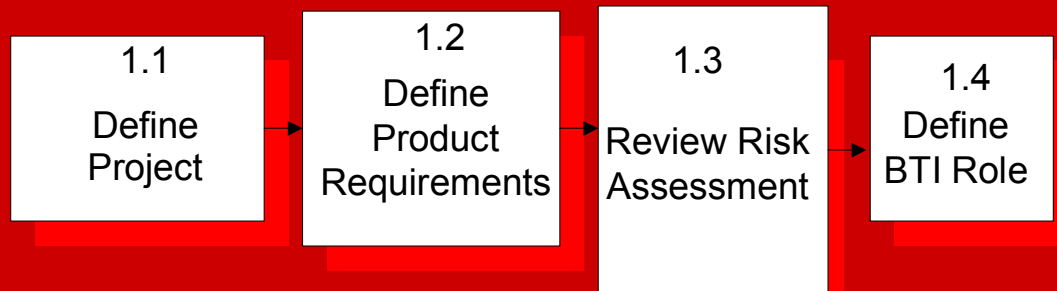
Gate #4- Approval of Proto Build and Test to start Final Documentation and Pilot Build

Gate #5- Approval to Proceed to Production Phase

Revision: 1

Date: 04/15/2002

Stage 1: Project Definition by Customer



Key Objectives:

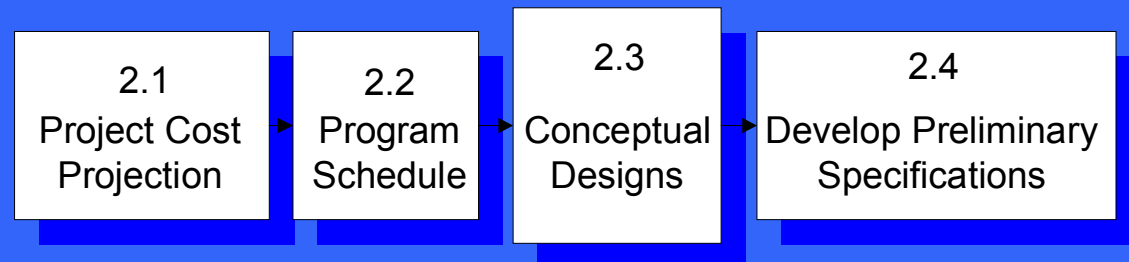
Product Requirements – performance, regulatory compliance, human factors, environmental factors, etc.

Assignment of Key point of contact and method of contact and method of communication with customer.

- Gate Deliverables:
- Approval of project
 - Contract or Purchase Order

Gate 1: Release project to BTI

Stage 2: Project Plan by BTI



Key Objectives:

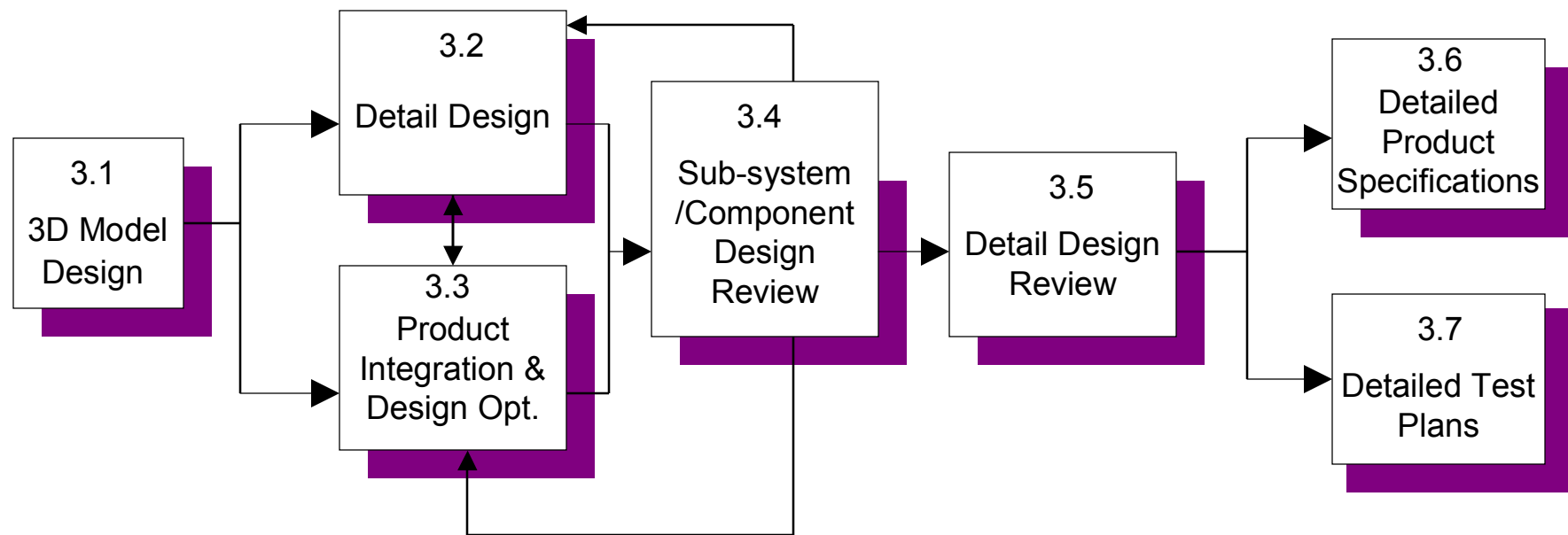
Establish complete product requirements early - freeze for rest of process.

Develop conceptual drawings and layouts - freeze before detailing to improve integration and reduce rework.

Gate Deliverables: • Project Cost
• Program Schedule • Conceptual Design Drawings
• Preliminary Specifications

Gate 2: Approval of Project Plan

Stage 3: Detail Design and Product Costing



Key Objectives:

Generate 3D model from concept

Generate all necessary detail, assembly, installation and specification drawings

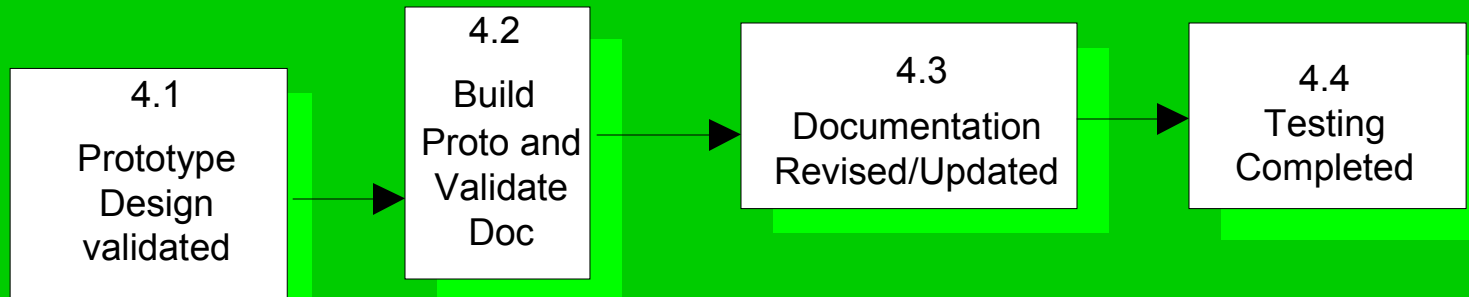
Perform product integration evaluations to optimize design.

Gate Deliverables:

- Detail, Assembly, Installation & Specification Drawings
- Bills of Material
- Detailed Product Specification
- Detailed Test Plan

Gate 3: Approval of Detail Design and Product Cost

Stage 4: Prototype Build and Test



Key Objectives:

Build Prototype

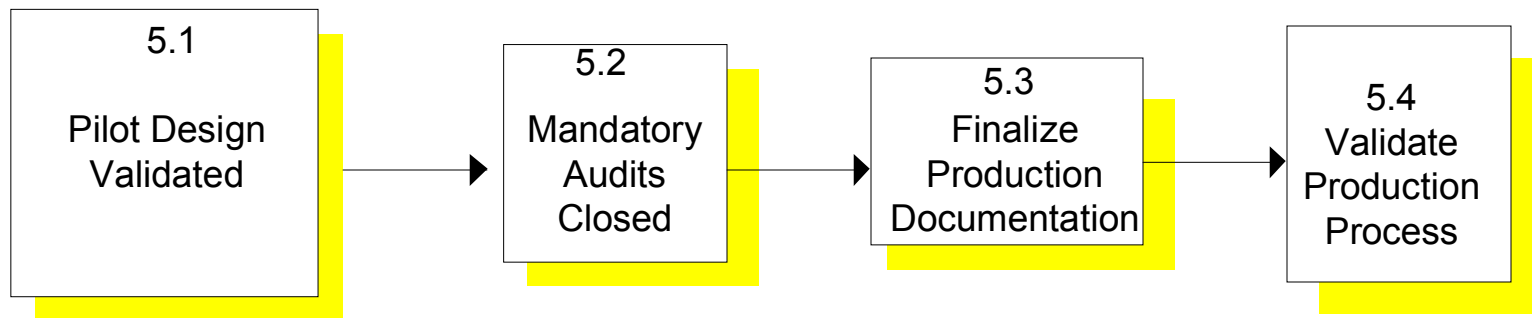
Incorporate Mandatory Audits

Validate the design to determine if it meets requirements

- Gate Deliverables:
- Prototype Unit(s) completed
 - Structural & Stability Tests completed
 - Mandatory Audits closed
 - Product Documentation Revised/Updated

Gate 4: Approval of Prototype Build and Test Program

Stage 5: Pilot Build and Documentation



Key Objectives:
Validate Engineering Documentation
Build pilot units – check DFMA standard
Validate the production process.

- Gate Deliverables:
- Mandatory Audits closed
 - Pilot Unit(s) completed
 - Finalized Product Documentation

Gate 5: Final Customer Approval