

# How to Develop a New Product

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The Alternative Board Valley of the Sun



# Steve Jobs Top Product Failures?

- Lisa
- Newton
- NEXT computer
- iTV?



*Exhibit 1: Sales, Profits, and Ideas*  
*“The Best” versus “The Rest” – 1995-2004*

	The “Best”	The “Rest”
% Sales from NPs	47.6%	21.4%
% Profits from NPs	49.1%	21.2%
# Ideas for one success	4.0	9.2

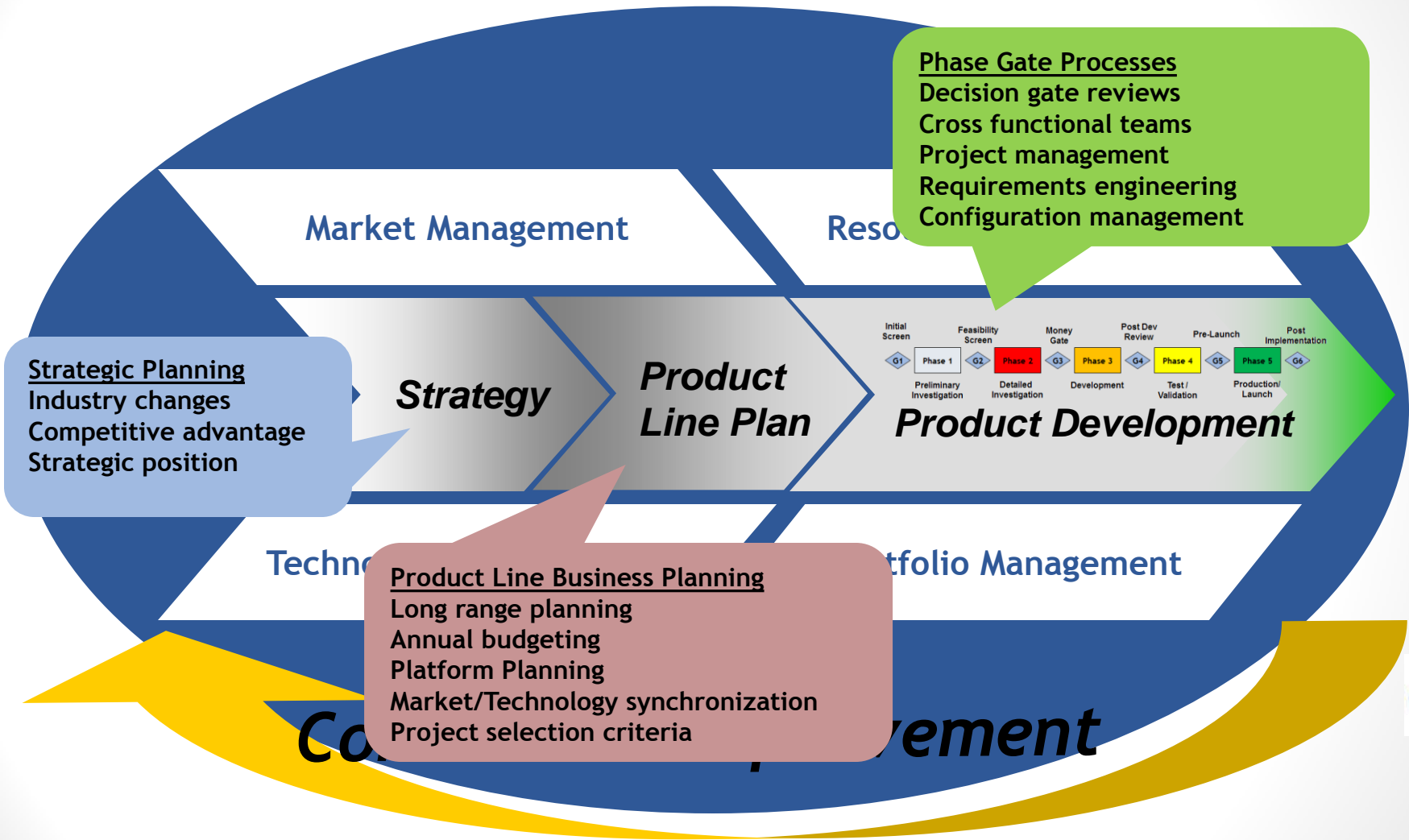
*Exhibit 2A: New-to-the-World Type Projects*  
*“The Best” versus “The Rest” – 1995-2004*

New-to-the-World Projects	1995	2004	Trend
“The Best”	11.0%	11.0%	No Change
“The Rest”	10.0%	7.3%	27% decline

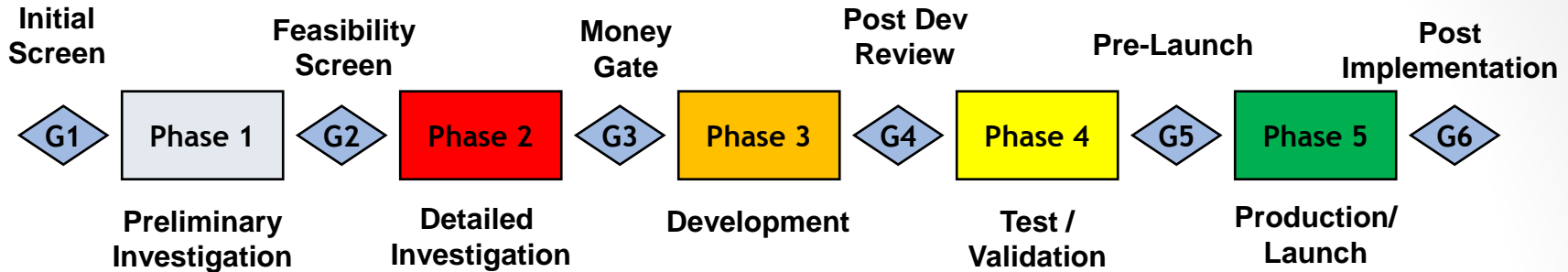
SOURCE: PDMA Foundation 2004 CPAS Study



# Product Innovation: An Integrated Vision



# Product Development Framework



## Phase 1 – Preliminary Investigation

A product or product family opportunity is evaluated on its market, technology and business merits.

## Phase 2 – Detailed Investigation

Sufficient product detail is provided to establish schedule, resource commitments, product and development costs to enable the organization to commit funding and resources.

## Phase 3 - Development

The Product Development Team develops the product to meet its product requirements, verifies that it does so, and validates product quality.

## Phase 4 – Test / Validation

The Product undergoes product, customer, and/or market testing and evaluation for feedback to determine conformance to requirements.

## Phase 5 – Production / Launch

Manufacturing, Sales, Customer Support and Service activities are ramped up to support full product availability across all targeted segments and geographies.



# Product Innovation Charter (PIC)



G1

- **Purpose:** A collaboratively developed document describing product's vision, market, capabilities and business opportunity. Developed for *each* product in a product family.
- **Author(s):** Product Marketing Engineer, with contribution from Requirements Team.
- **Key outcomes:** Preparation for G1. Based on PIC content, materials can be created that describe the product and can be shared with customers
- **Relationship:** PIC translates the product opportunity and business model from the concept into a business plan and high-level product specific requirements.



# Phase 1 – Preliminary Investigation

## *Common Mistakes*

- Too much dependence on market projections
- Focus on profit margins versus strategic fit
- Not enough due diligence on the business case
- Taking on too much risk
  - Market risk and technical risk
  - Home run mentality

*Motorola Iridium*



# Market Requirements Document (MRD)

G2

■ **Purpose:** A collaboratively developed document that describes the product vision, market, capabilities, and business opportunity for the product and serves as the basis for the product requirements.

■ **Contents:**

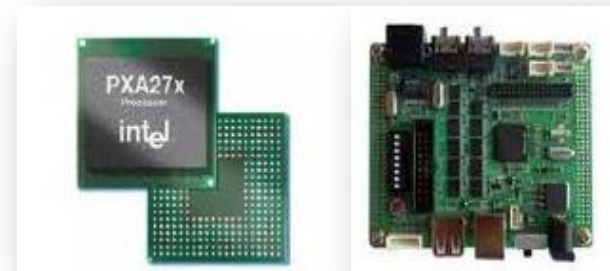
- Rationale and context
  - Business Rationale
  - Platform Context
  - Key performance targets
  - Financial Information
  - Open Issues
- Customer and User Information
- High Level Definition
  - Product Deliverables
  - Architectural Assessment
  - Key Features
- Feasibility and Risk Analysis



## Phase 2 – Detailed Investigation *Common Mistakes*

- Unclear or poorly written requirements
- Scope creep
- Unclear technology and platform intercepts
- Customer commitments with no project planning
- Not mitigating known risks

*Intel XScale microprocessor*



# Product Requirements Document (PRD)

G3

■ **Purpose:** A collaboratively developed document that describes the product feature set, and product requirements in sufficient detail to enable product planning, design, and development.

■ **Prerequisites:** MRD

■ **Contents:**

- Updated MRD
  - Rationale and context
  - Open Issues
  - Customer and User Information
  - High Level Definition
  - Feasibility and Risk Analysis
- Detailed Requirements
  - Configurations
  - Allocated Requirements
  - Detailed Product Requirements
  - Other Requirements



## Phase 3 – Development

### *Common Mistakes*

- Last minute features and requirements
- Not mitigating previous risks
- Overconfidence in schedule commitments
- Domino effect related to resourcing projects
- Ill-defined goals and success criteria
- Resources not available when needed
- Reluctance to kill a project

*Microsoft Kin phone*



# Program Implementation Plan (PIP)

G4

**Purpose:** An execution plan of record for the product throughout the Development, Test and Production Phases.

**Prerequisites:** PRD Approval

## **Contents:**

- **Program Description**
- **PDT Deliverables**
  - Customer Releases
  - Program and Project Internal Documentation
  - Other Deliverables
- **Program Plan of Record**
  - Schedule
  - Key Risks & Plans
  - Costs
  - Headcount Resources
  - Capital and Expense Resources
  - Assumptions, Dependencies, and Constraints
  - Functional Area Plans
  - Quality Targets
- **Organizational Structure and Roles**



# Phase 4 – Test / Validation

## *Common Mistakes*

- Inadequate test plans
- Lack of customer involvement
- Prototype to HVM transition
- Release to production with low yield and quality

*Pontiac Aztek*



# Qualification Report

G5

**Purpose:** Provide a concise summation of the results obtained from all activities used to validate a product's conformance to quality criteria and is used as a basis for production release.

**Prerequisites:** All product validation activities

## **Contents:**

- Summary of product's qualification results
- Significant open risks from quality risk assessment
- Summation of quality issues from production activities
- Review of quality issues found during factory transfer
- Pilot or Production build results
- First Article Inspection results
- Summary results from Verification & Validation activities
- Product implementation status versus product requirement in PRD Usability testing
- Compliance and certification testing
- Test and Test Coverage data
- Open quality issues from Customer Field Trials



# Phase 5 – Production / Launch

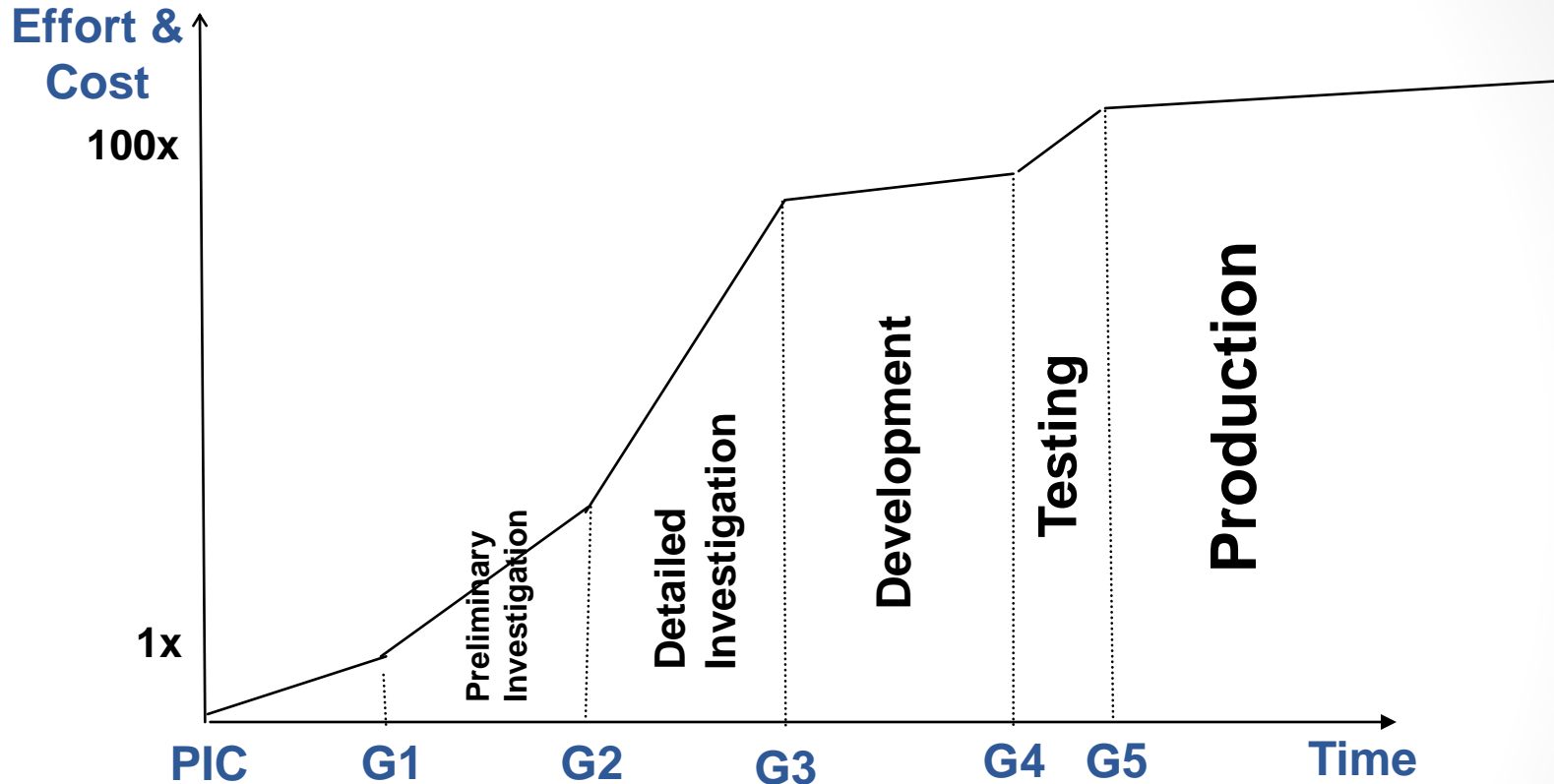
## *Common Mistakes*

- Prototype to HVM transition
- Underfunded marketing
- Poorly managed ecosystem

*Sprint Evo Launch*



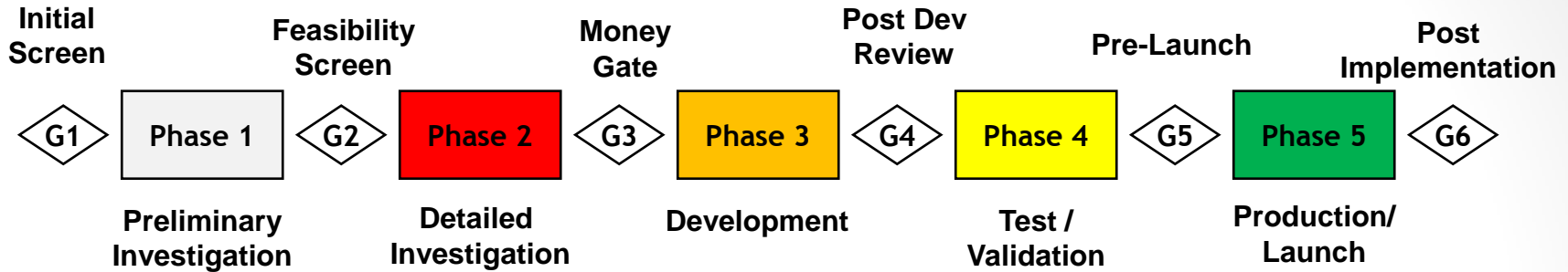
# When Should You Kill a Product?



Risk-based program management makes it easier to give direction or terminate program early - if high risk of failure is identified



# Product Development Key Practices



Platform/Product Integration

Cross Functional Teams

Requirements Engineering

Project Management

Risk Management

Configuration Management

Supplier Collaboration

Technical Solution

Test and Validation



# Overview

- Process is measured in SPOT Diagnostics by nine sets of practice
- The rank order of the impact of these processes on performances is shown below by the strength of the correlation with performance (measured as time compression, cost reduction, quality improvement and product innovation)

- The top three are the strong drivers of performance lead by Requirement Management
- The use of a Model Development Plan is almost as strong a predictor of performance

.60+
Requirements Management
Continuous Process Improvement
Product Design Reviews
.50+
Model Development Plan
.40+
Design Documentation and Conformance
Voice of Customer
.30+
Benchmarking & Industry Analysis
Standard Designs and Parts
0%
Stage-gate Process



# Resources

- Product Development and Management Association (PDMA)  
[www.pdma.org](http://www.pdma.org)
- *The PDMA Handbook of New Product Development, 2<sup>nd</sup>*  
Edition, Ken Kahn, Oct 2004
- *New Product Development For Dummies*, Robin Karol & Beebe  
Nelson, May 2007



# Questions?



*Thank You!*

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