



# Overview of New Product Development

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**Australian Institute for Commercialisation**





# Structure of presentation

1. Product development in the context of innovation
2. Product development processes
3. Management issues – getting back to basics



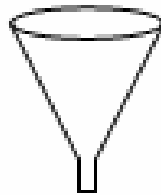
# Why is the AIC talking about PD?

- **The AIC delivers services using its networks and experience that:**
  - **facilitate collaboration**
    - TechFast, Technology clinics
  - **enhance innovation**
    - market research, IP management advice, Commercialisation Bootcamps
  - **accelerate the commercialisation of IP** that our clients have created
    - ICT commercialisation brokerage
- **All of these are part of product development!**



# What is Innovation?

- Innovation is the practical application of new ideas and concepts into something of value in the marketplace, whether it is a new product, service, process or organisational system.



## INPUT

Ideas, Concepts  
Observations

SCREENING  
EVALUATION  
IMPLEMENTATION

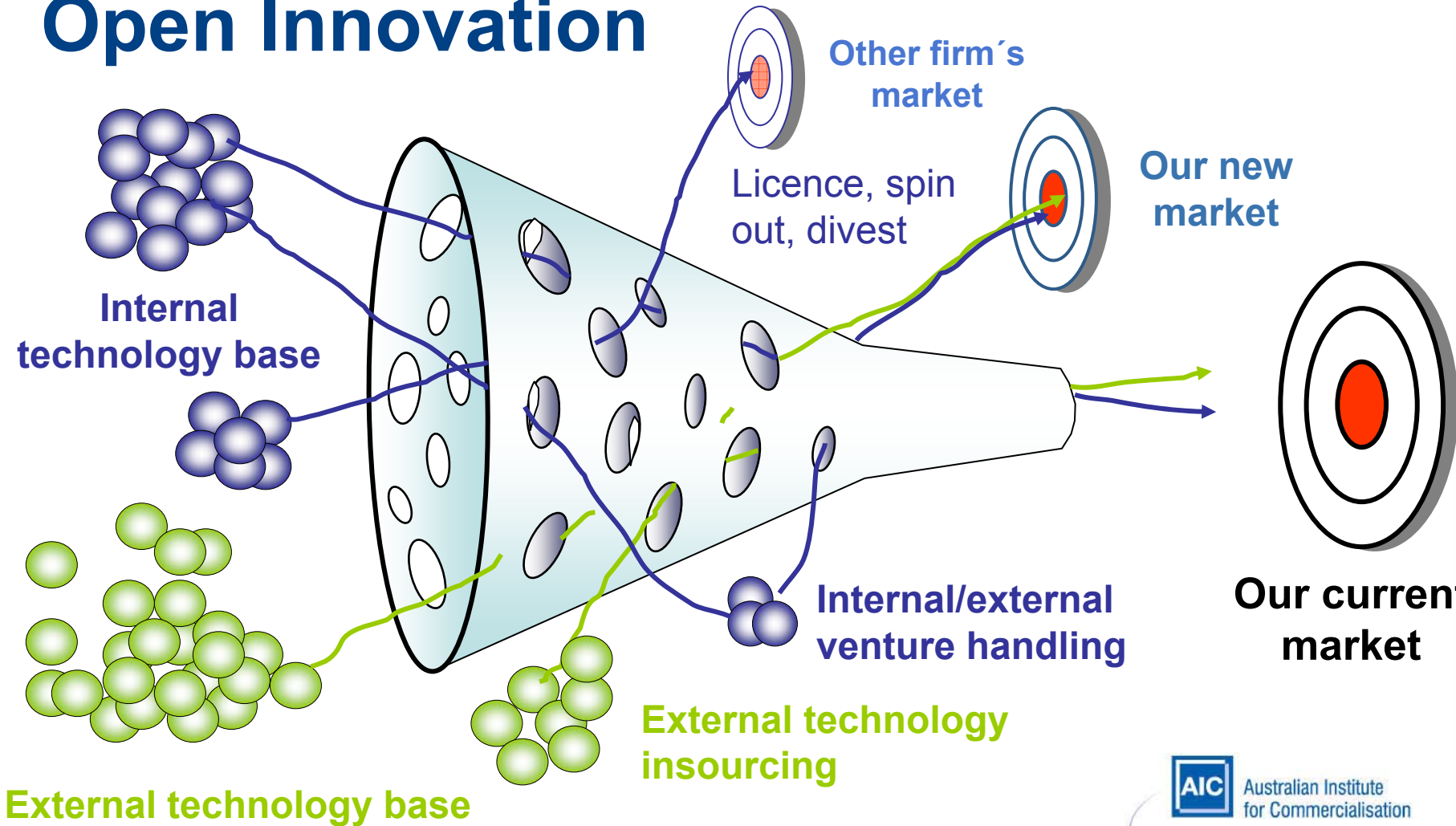
## OUTPUT

New  
Value





# Open Innovation



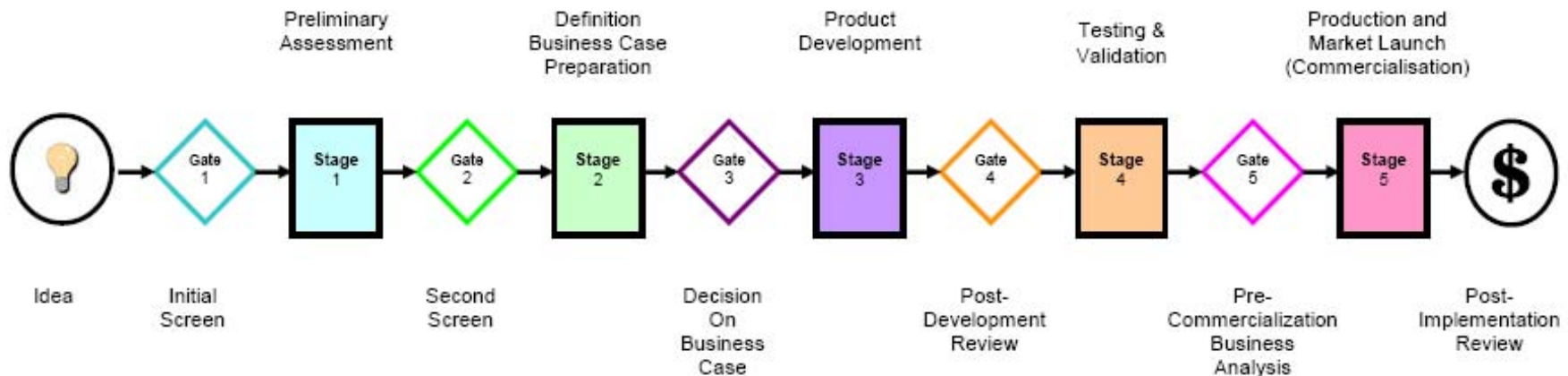
Source: Prof Henry Chesbrough UC Berkeley, *Open Innovation: Renewing Growth from Industrial R&D*, 10th Annual Innovation Convergence, Minneapolis Sept 27, 2004



# Four Types of Innovation

## 1 Product Innovation

- New products or services
- Enhancing existing products
- Technological innovation





# Four Types of Innovation

## ② Process Innovation

- improving processes within the organisation-  
business process innovation
- e.g. operations, HRM, finance, better way of  
communicating, knowledge management system
- focus on improving organisational effectiveness and  
efficiency



# Four Types of Innovation

## 3 Marketing Innovation

- related to the marketing functions of promotion, pricing and distribution
- product related (eg. packaging, advertising)
- creating a new market or marketing system e.g. Amazon.com
- many products were invented before their time





# Four Types of Innovation

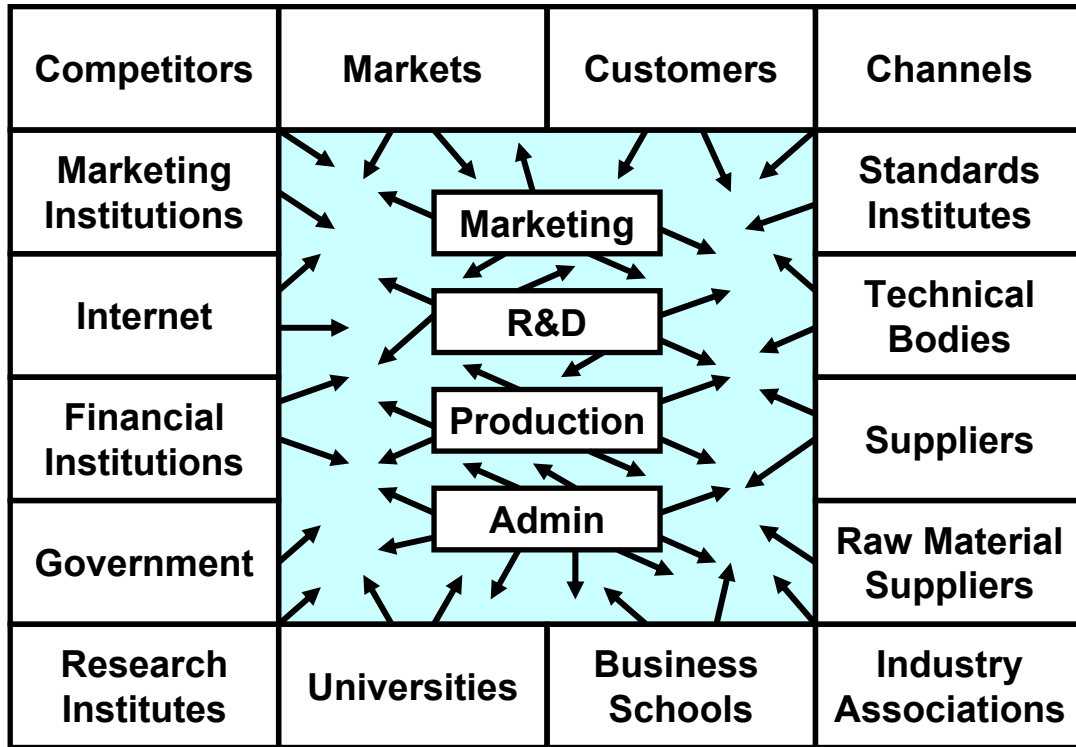
## 4 Management Innovation

- the way the organisation is managed
- e.g. organisational structure, leadership, work environment, culture
- cross functional work teams - team-based decision making approach
- Business Model Innovation



# Sources of Product Opportunities

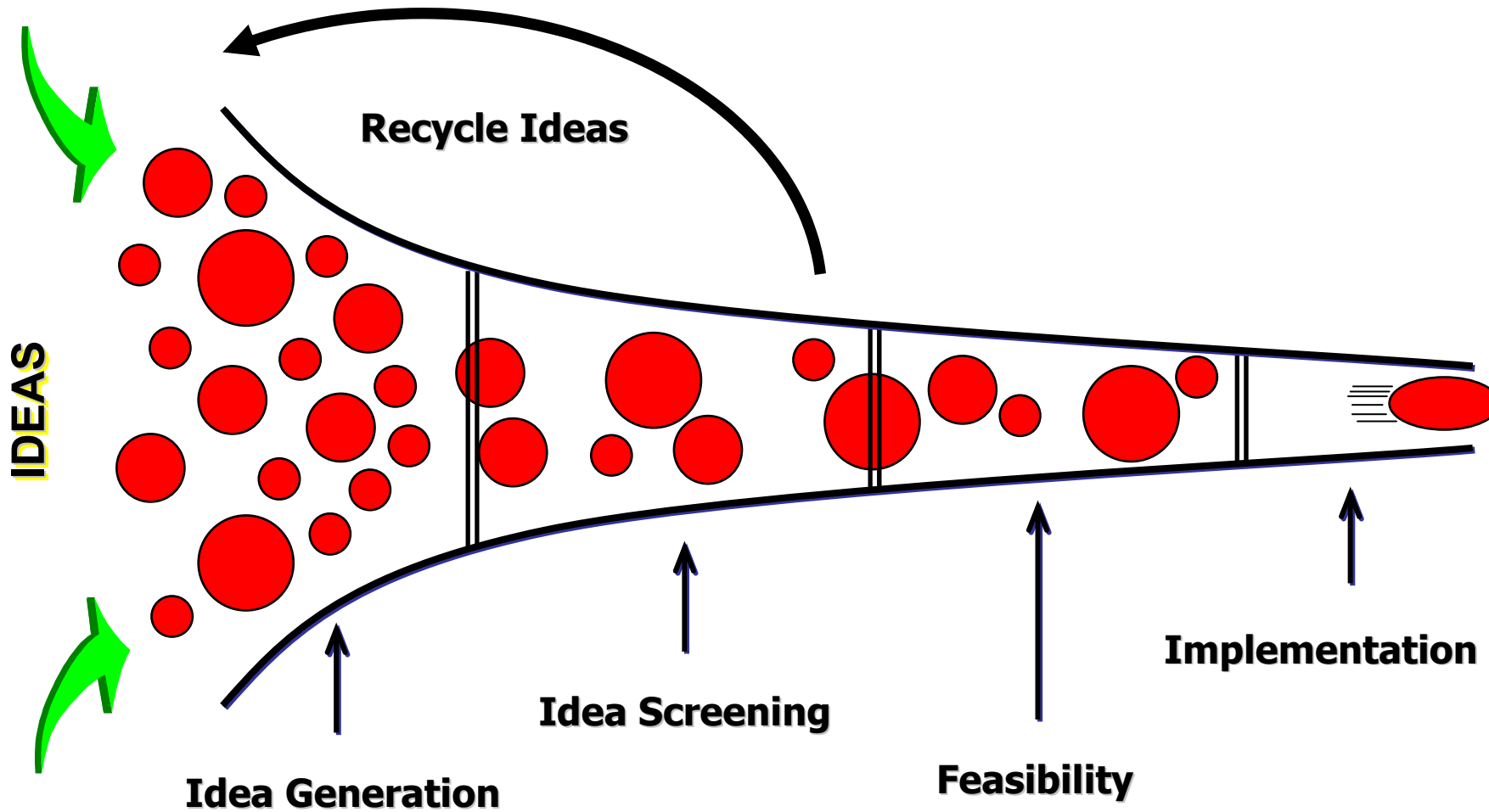
↑ MARKET PULL ↑



↑ TECHNOLOGY/PRODUCT PUSH ↑

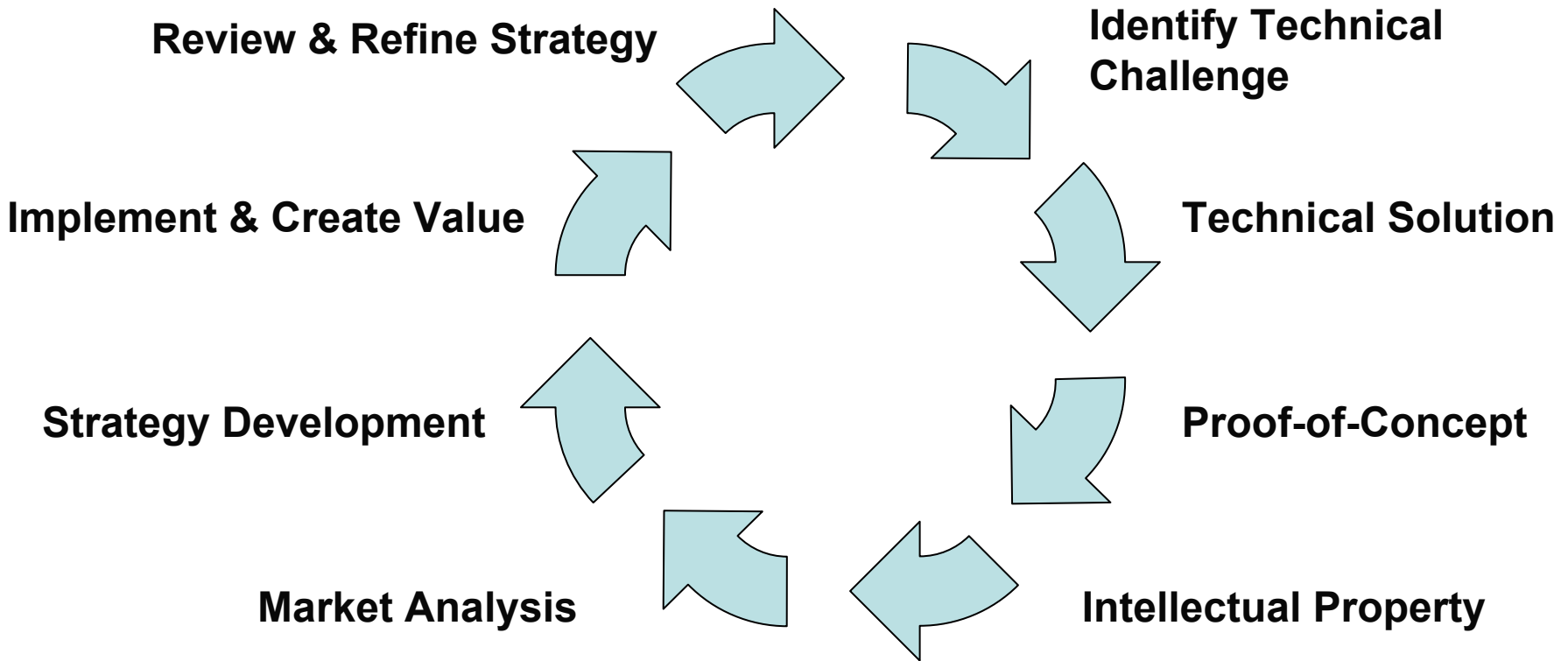


# Idea Funnelling



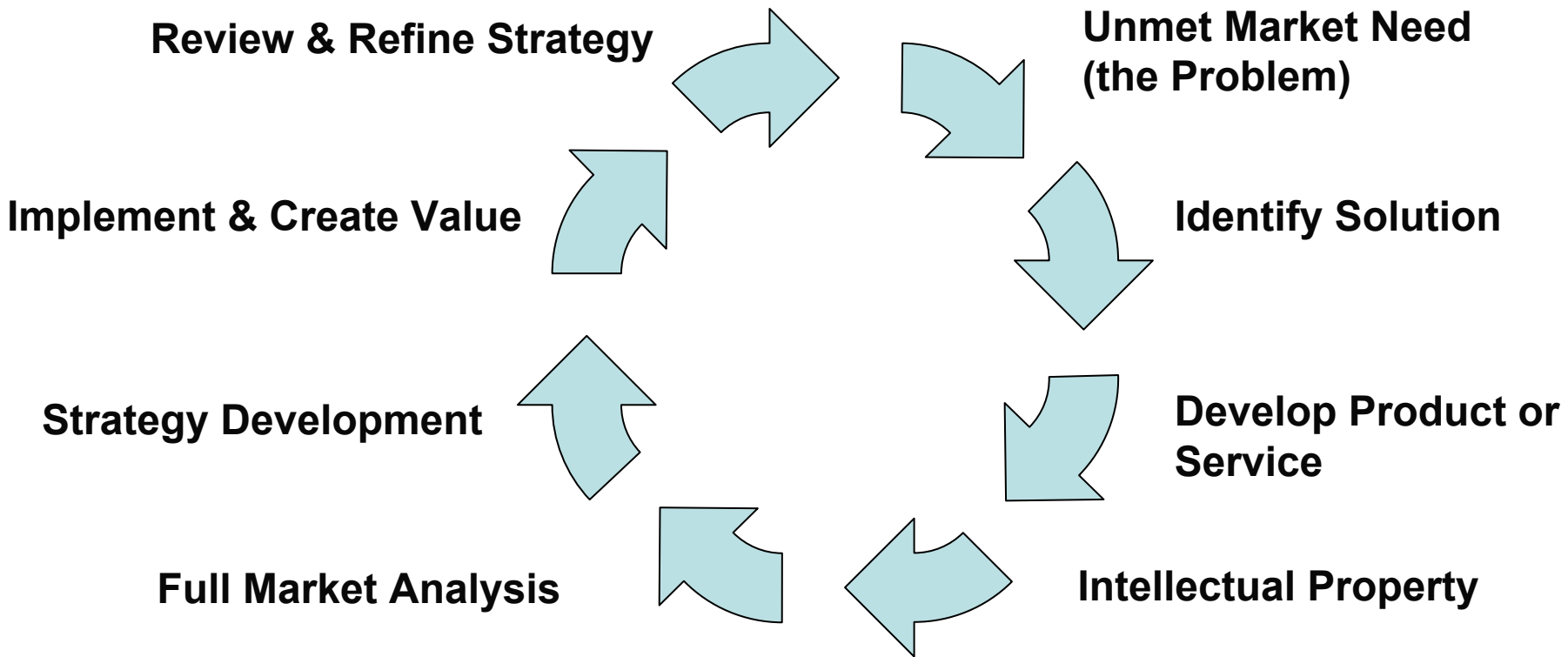


# Technology Driven





# Market Driven





# Importance of New Product Development (NPD)

- Critical to the growth and survival of organisations
- Source of steady stream of cashflow for organisations
- Satisfies the needs and wants of customers
- Provides a competitive advantage
- Allows organisations to adapt and diversify

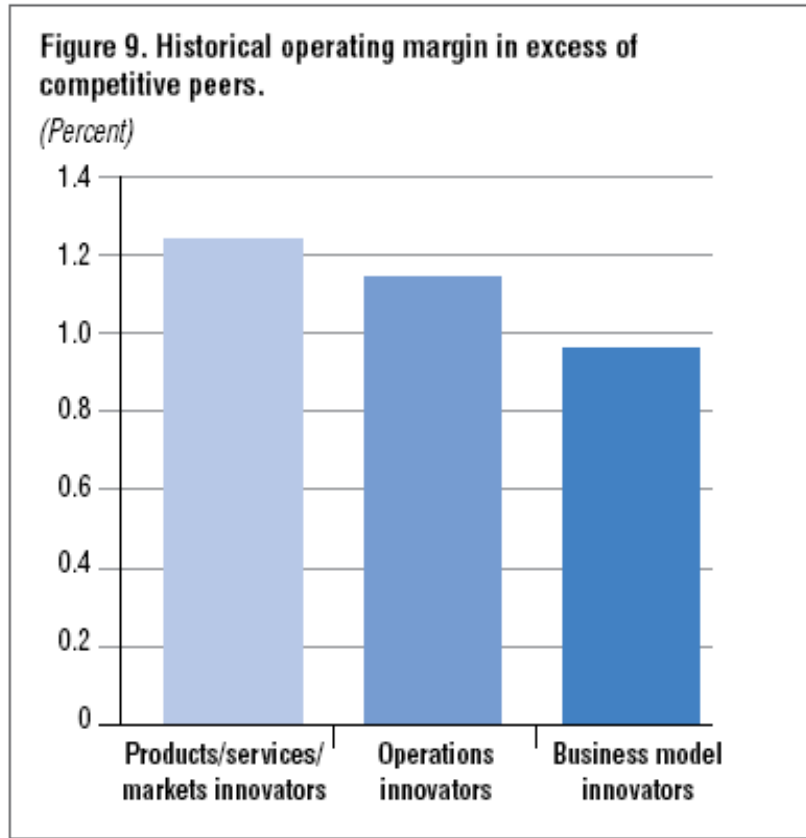


# The importance of innovation to the firm

- **Australian data (IPRIA)**
  - The 30 of the top 50 R&D spenders for whom 5-year data was available spent four times the national average on R&D per revenue. Their return on shareholders funds was 17.1% compared with 7.7% for Australia's top 1000 enterprises.
- **Global data (Boston Consulting Group Innovation Survey)**
  - The 25 most innovative companies had a median annualised return of 14.3% from 1996 through 2005, a full 300 basis points better than that of the S&P Global 1200 median
  - Innovators increased median profit margins by 3.4% per year over ten years, compared with 0.4% for the median



# Innovation matters!



Source: IBM Global CEO Survey, "Expanding the Innovation horizon" July 2006



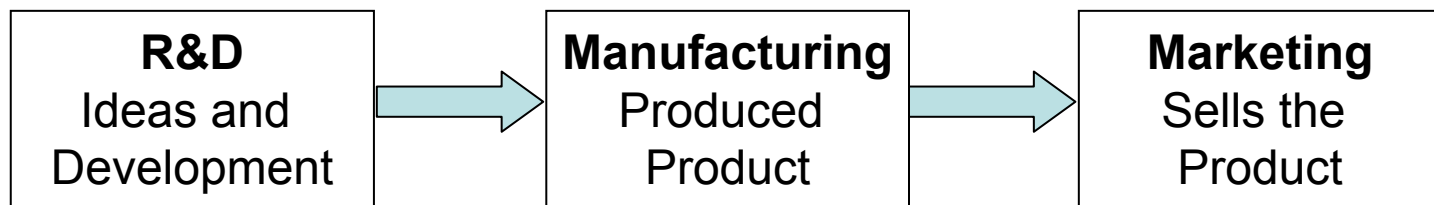




# Product Development Processes

## 1. First Generation Processes

- NASA's Phased review process – activities broken down into different phases
- Similar to the departmental staged model – “pass the parcel”



- Independent functions – no integration
- Can still be successful if customer needs are understood and met



# Product Development Processes

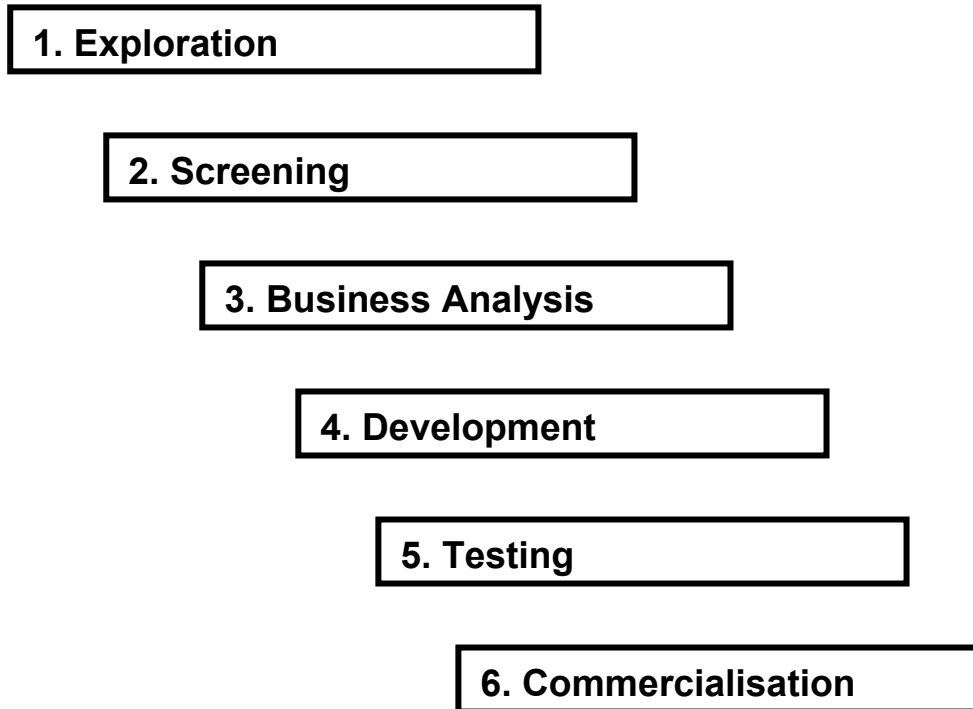
## 2. Second Generation Processes

- Staged based models
- Functions integrated across the process
- Examples include:
  - Booz-Allen Hamilton's simple 6 step NPD process
  - Crawford's 6 step process
  - Cooper's 7 stage model
  - Cooper and Kleinschmidt's stage gate



# Examples of Second Generation NPD Processes

## Booz-Allen Hamilton Process





# Examples of Second Generation NPD Processes

## Crawford's Process

1. New Product Planning

2. Idea Generation

3. Screening and Evaluation

4. Technical Development

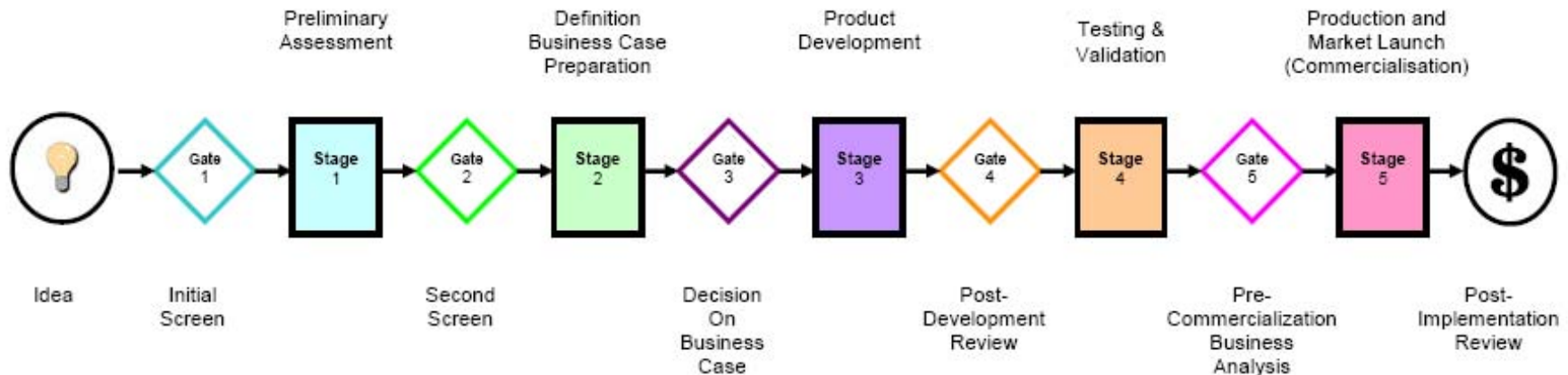
5. Market appraisal

6. Launch



# Examples of Second Generation NPD Processes

Cooper and Kleinschmidt's Stage Gate process





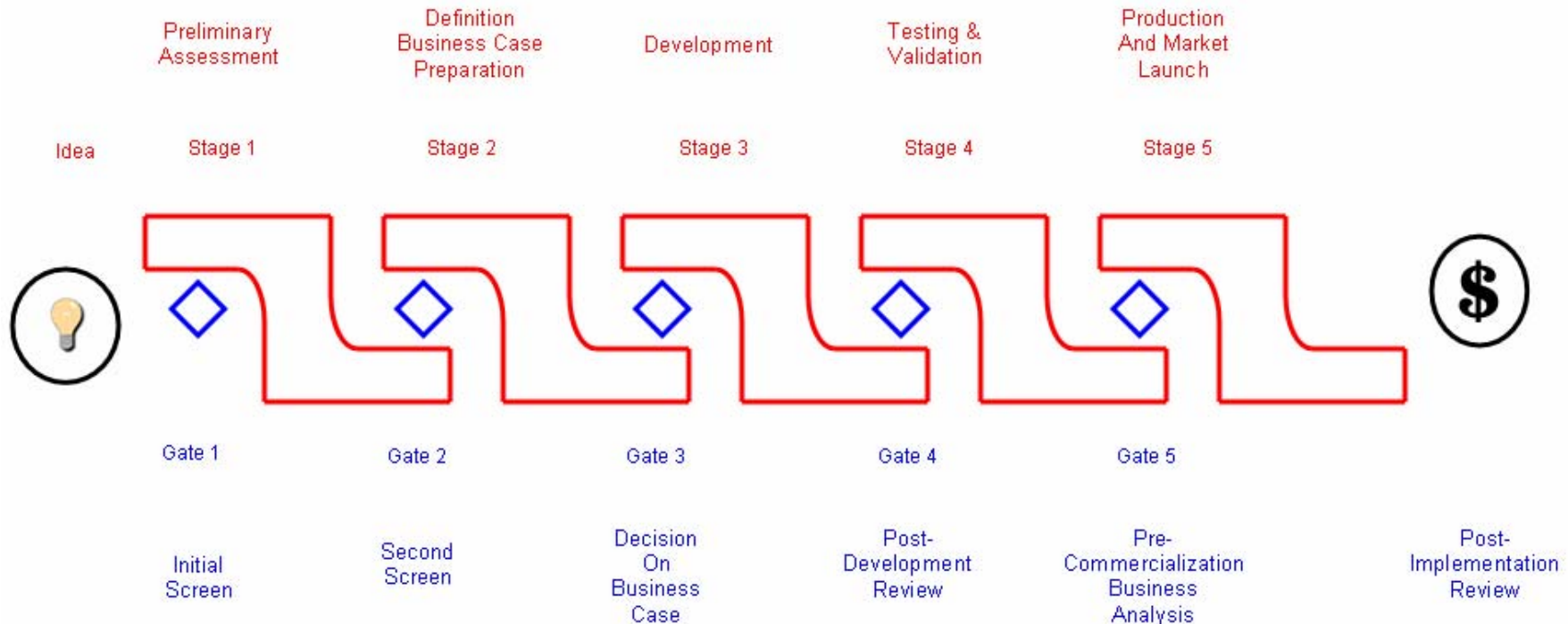
# Product Development Processes

## 3. Third Generation Processes

- Balancing speed to market with the thoroughness of information
- Concurrent engineering or rapid prototyping processes
- Characteristics include:
  - Fluidity in the stages, often overlapping
  - Fuzzy gates
  - Focused resources on most promising products in the portfolio
  - Flexibility to adapt



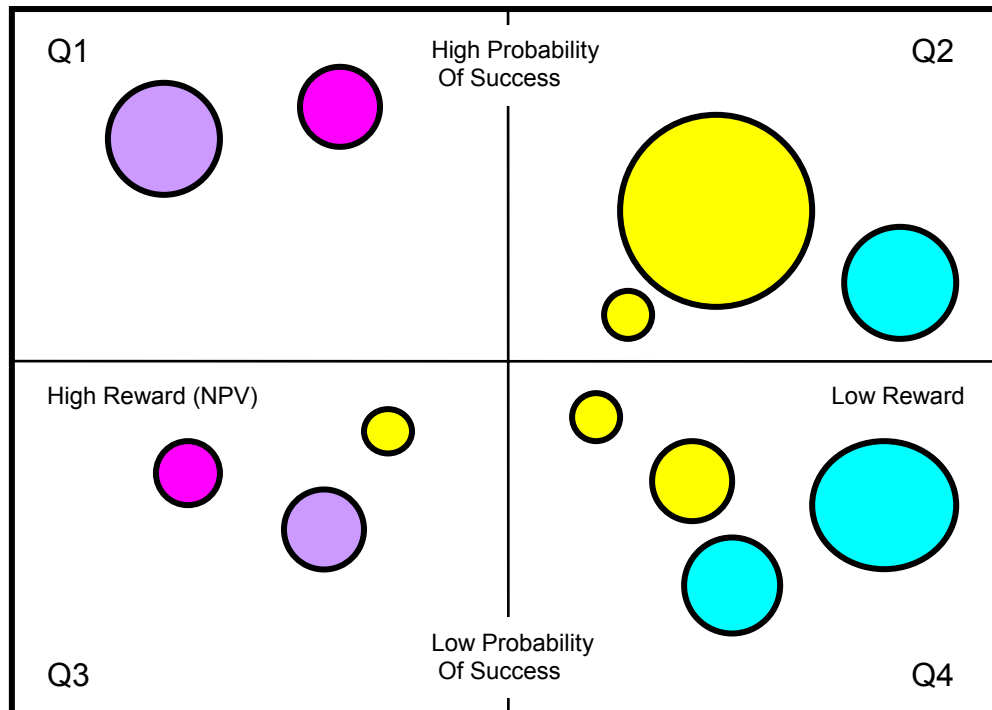
# Example of Third Generation NPD Processes





# Portfolio Management

Organisational tool to focus resources on the most promising product opportunities.








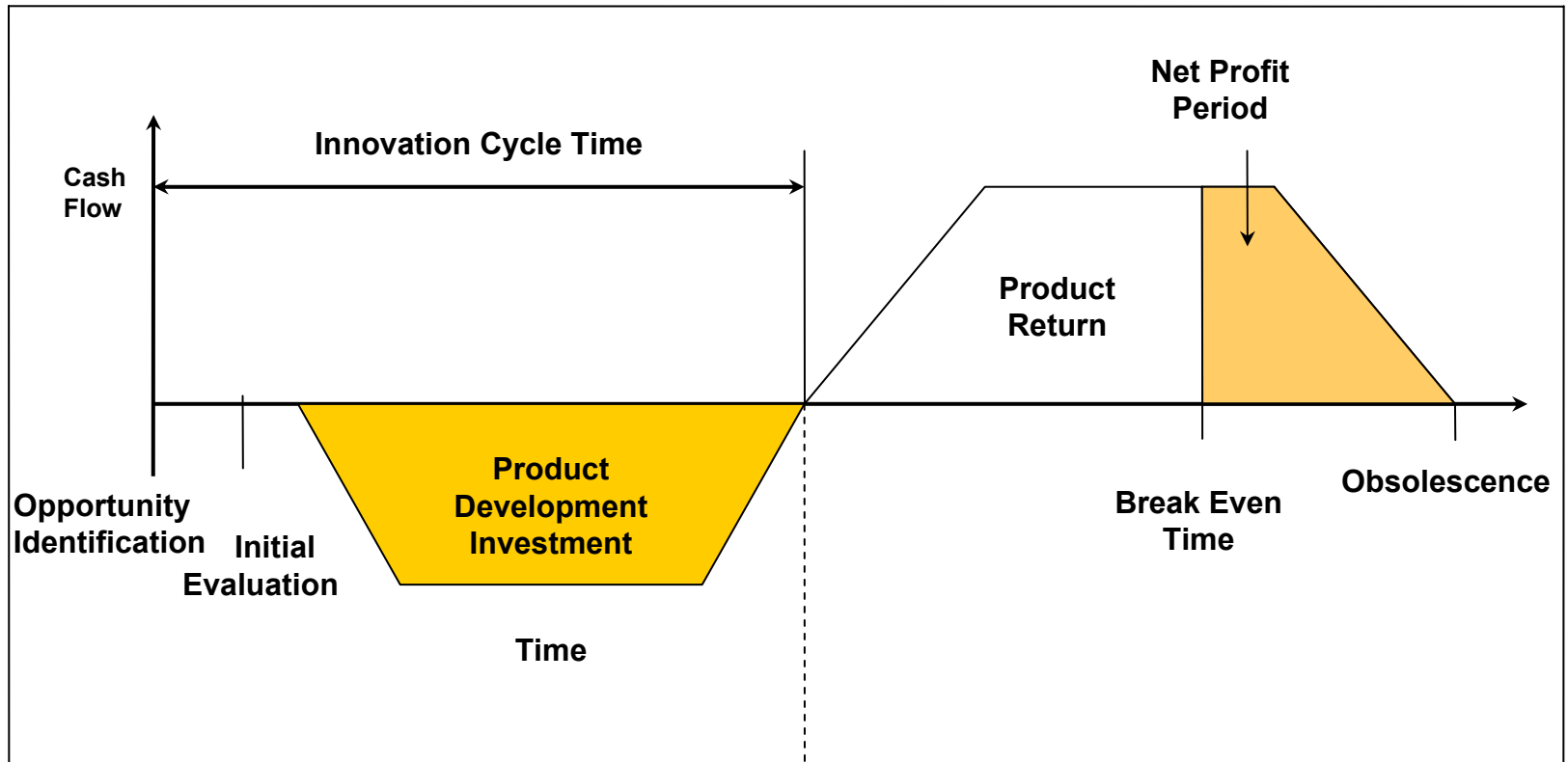
# Evaluating New Product Opportunities

- Parallel activities

Technology/ Product	Intellectual Property	Market
<ol style="list-style-type: none"> <li><b>1.</b> Summary of the Invention</li> <li><b>2.</b> Literature Review</li> <li><b>3.</b> Requirement Specification</li> <li><b>4.</b> Research &amp; Development Plan</li> <li><b>5.</b> Competitive Advantage</li> </ol>	<ol style="list-style-type: none"> <li><b>1.</b> Disclosure</li> <li><b>2.</b> IP Ownership</li> <li><b>3.</b> Novelty / Patentability</li> <li><b>4.</b> IP Search</li> <li><b>5.</b> Freedom to Operate</li> <li><b>6.</b> Enforceability</li> </ol>	<ol style="list-style-type: none"> <li><b>1.</b> Addressable Market Need</li> <li><b>2.</b> Industry Structure</li> <li><b>3.</b> Customer</li> <li><b>4.</b> Competitor</li> <li><b>5.</b> Value Proposition</li> </ol> <div data-bbox="1401 1152 1783 1330" style="text-align: right;">  <p>AIC Australian Institute for Commercialisation</p> <p>→ ideas → opportunities → outcomes →</p> </div>



# Product Development Lifecycle



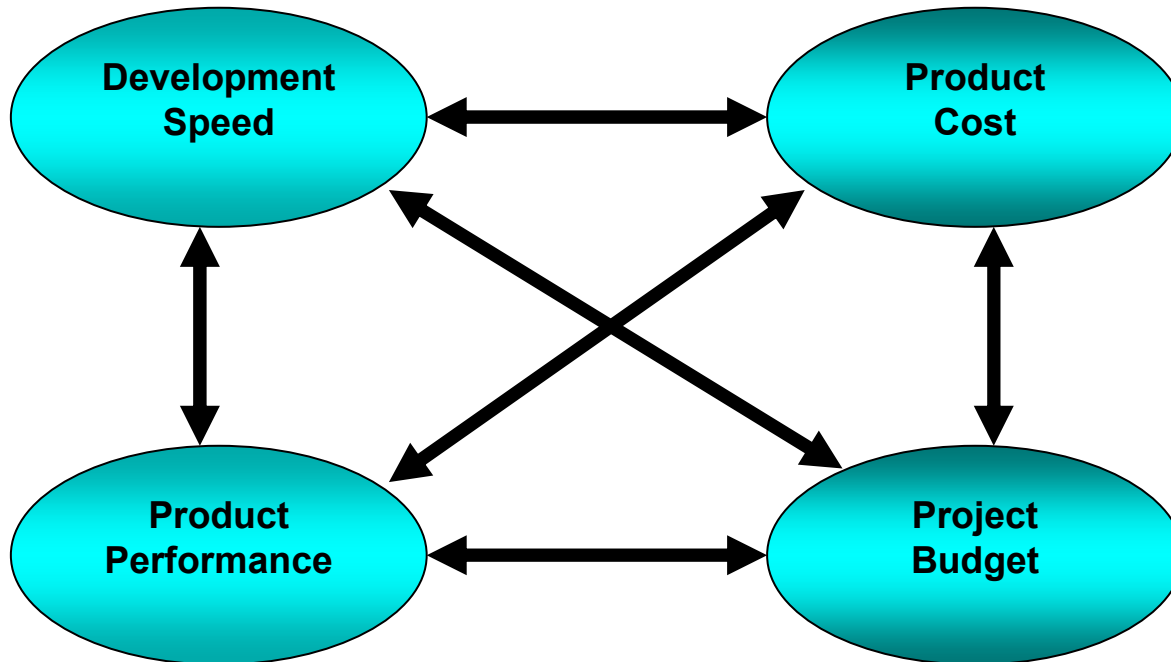


# Innovation Speed

- Developing products faster offers a number of advantages
  - Increased profits and sales
  - Beat the competition to market
  - Maintain market leadership
  - Responsive to changing markets, styles and technologies



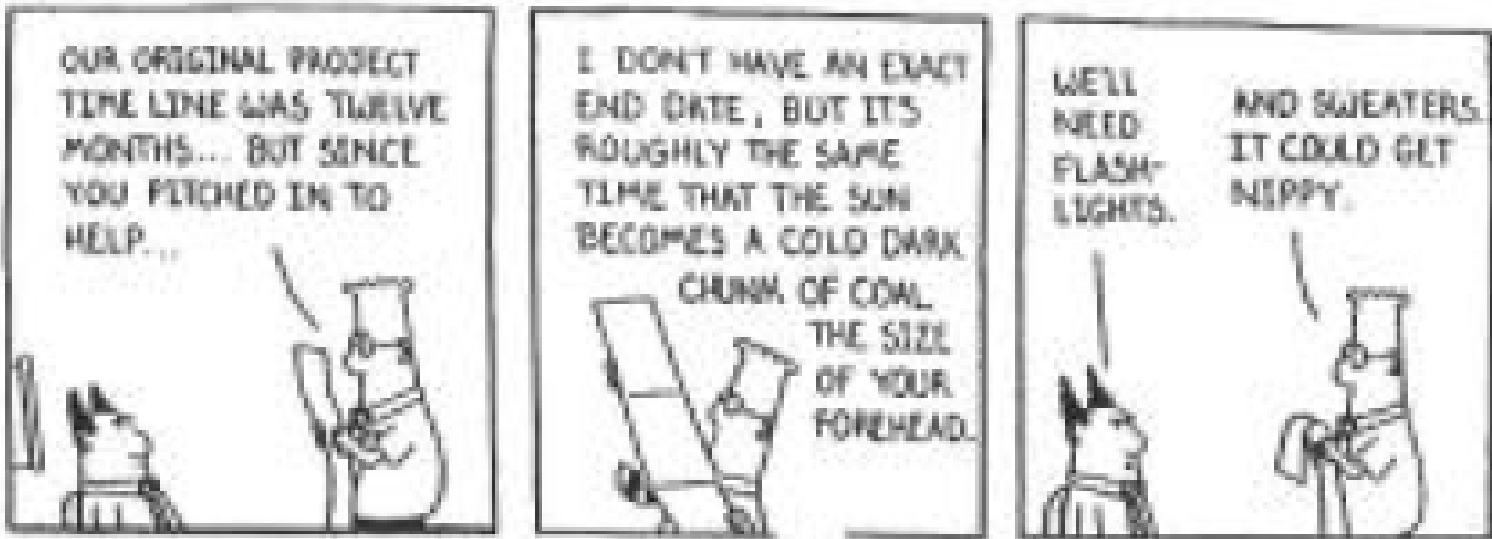
# Product Development Trade Offs



Source: Smith and Reinersten; Developing Products in Half the Time

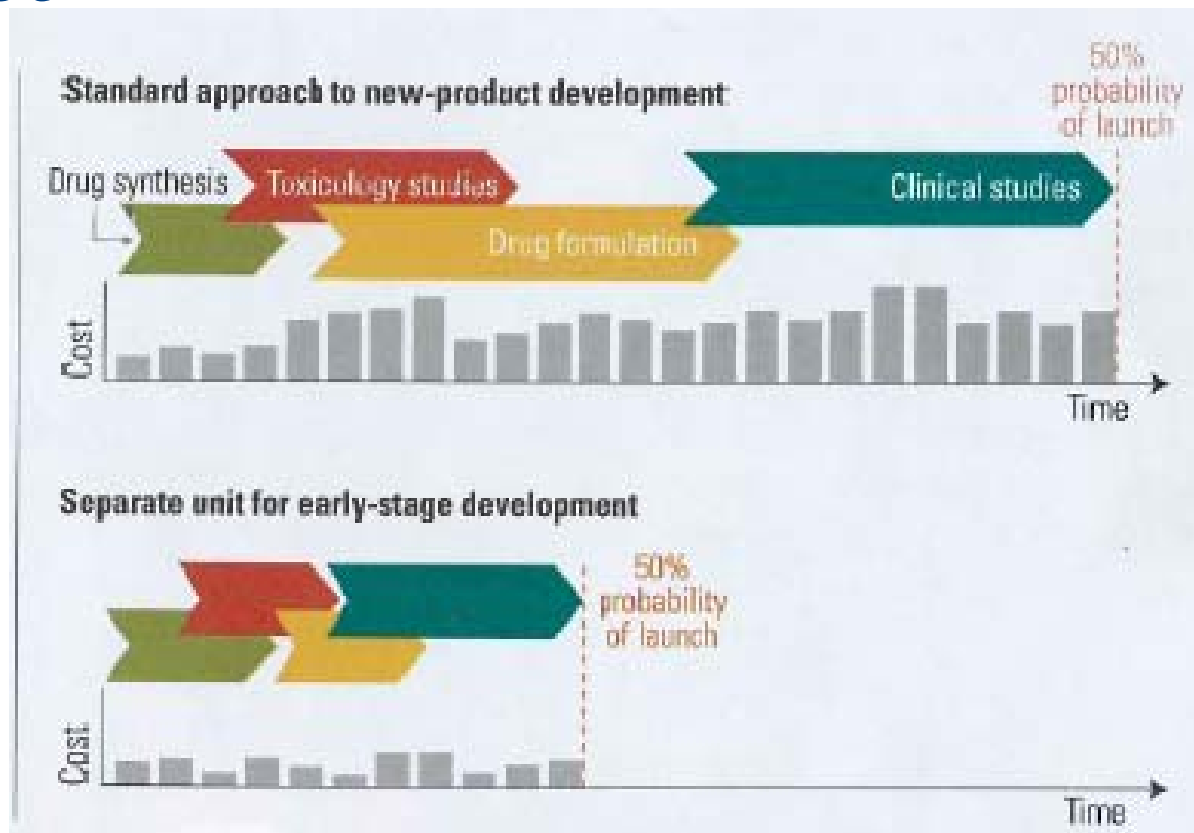


# The management dilemma of PD





# Experimental design to reduce time to market



Source: Harvard Business Review, E. Bonabeau et al, "A more rational approach to new product development" March 2008



# Segmenting PD into “truth-seeking” and “success seeking” phases

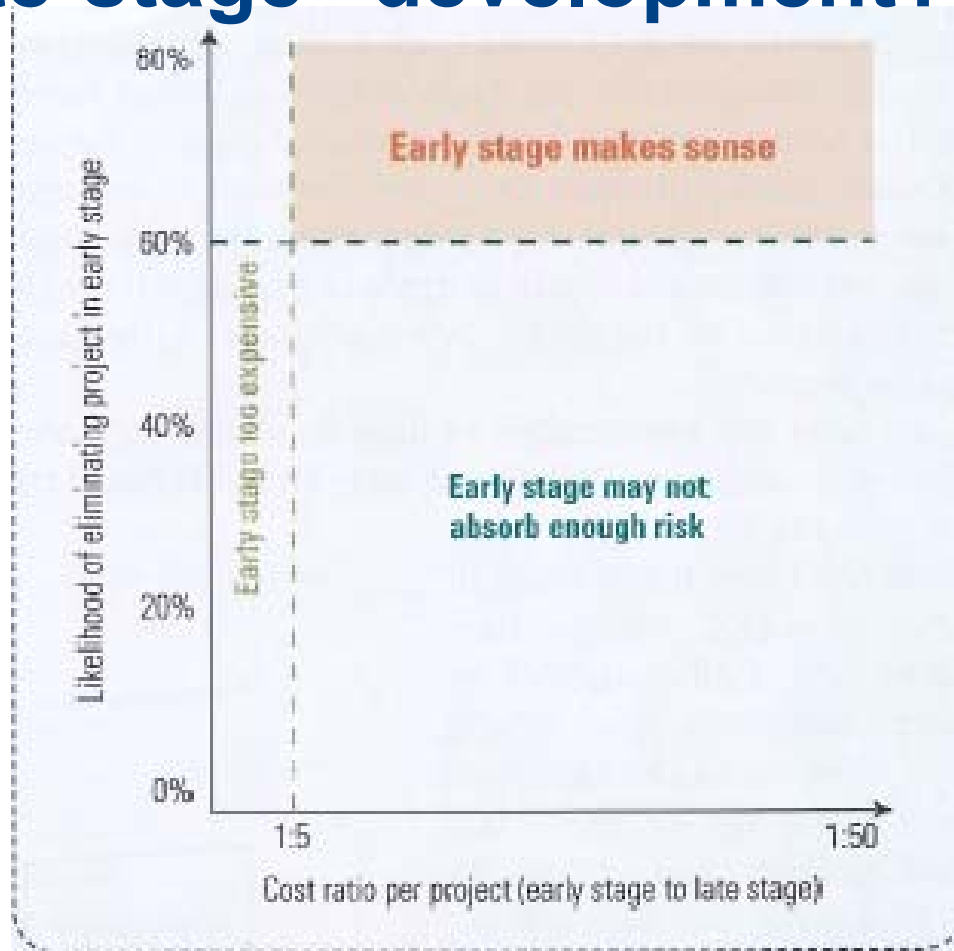
Early	Late
<b>Organizational Goal</b>	
Seek truth	Seek success
<b>Organizational Strength</b>	
Establish novel products' promise or lack thereof	Take products to market
<b>Organizational Approach</b>	
Reduce risk	Maximize value
Maintain loyalty to the experiment	Maintain loyalty to the product
Focus on scientific method	Focus on commercialization
Operate with low fixed costs, low capital requirement	Operate with high fixed costs, high capital requirement
Work in small, experiment-based teams	Work in large, product-based teams
Emphasize testing	Emphasize refining

Source: Harvard Business Review, E. Bonabeau et al, "A more rational approach to new product development" March 2008





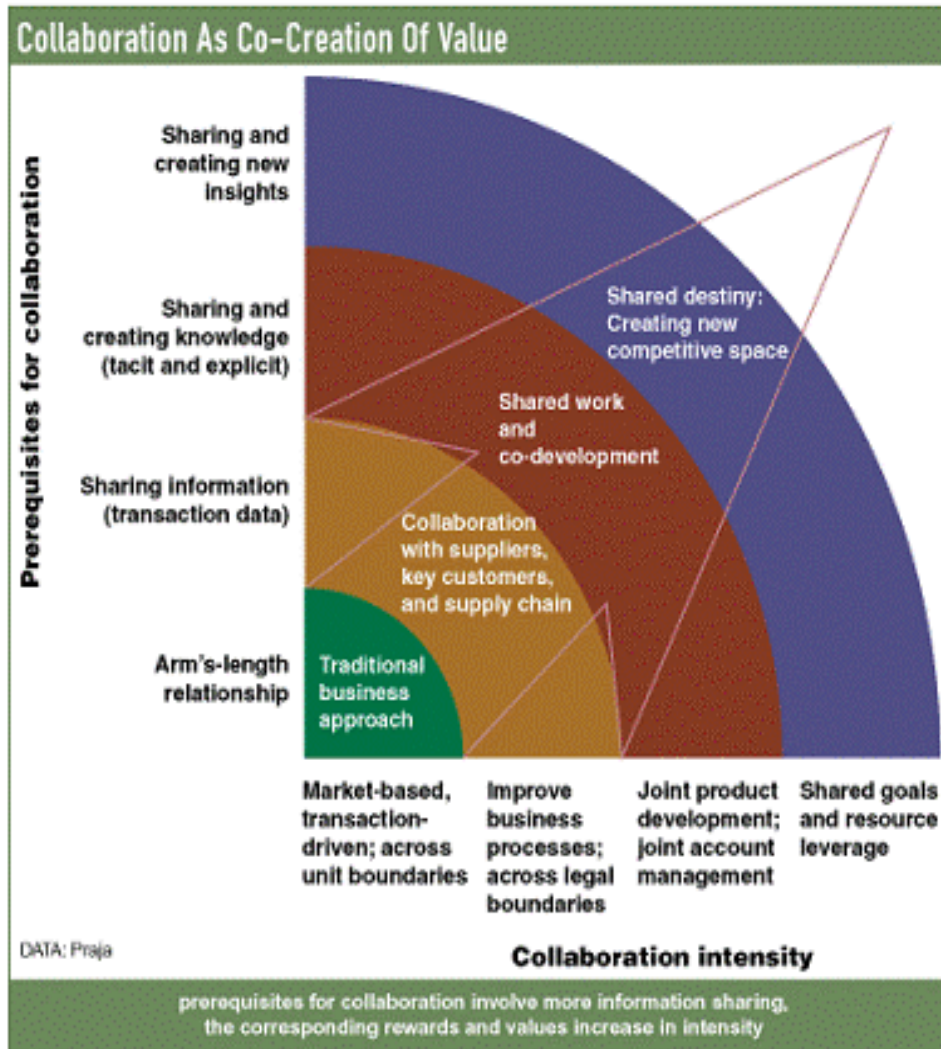
# When should “early-stage” be separated from “late-stage” development?







# Collaboration – Driving Speed to Market





# Examples of Successful NPD

Innovation	Source
3M Post-It Notes Scotchguard	Art Fry - Failed glue Patsy Sherman – Spill in the laboratory
Velcro	George de Mestral - Observation in nature
Apple iPod	Steve Jobs – Marketing innovation
Microsoft Windows	Bill Gates – standardised operating system





## Summary – some take home thoughts

- New product (or service) development is the lifeblood of organisations
  - Innovation requires Board leadership
- Successful product development processes focus on
  - the customer
    - value decision = function (brand, price, performance)
  - time to market
  - fast failure
- Incentive systems need to reward both “truth” and “success” at the appropriate point in the process



# Questions?

## Our website is [www.ausicom.com](http://www.ausicom.com)

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