

Operations Management

Design and Innovation

Agenda for Today

- ⦿ Design
- ⦿ Innovation
- ⦿ New Product Development

- ⦿ Future of Operations
- ⦿ Supply Chain Management






Why is design so important?

Design Council Survey.....

- Design helps businesses connect strongly with their customers
- 90% of businesses growing rapidly say design is significant to them, only 26% of static companies say the same.
- Design reduces costs by making processes more efficient. It can also reduce the time to market for new products and services.
- Almost 70 per cent of companies seeing design as integral have developed new products and services in the last three years, compared to only a third of businesses overall.
- Companies who were 'effective users of design' had financial performances 200% better than average.

What is Design?

- A concept  The understanding of the nature, use and value of the service or product;
- A package  The group of 'component' products and services that provide those benefits defined in the concept;
- A process  The way in which the component products and services will be created and delivered.

What is innovation?

“Companies achieve competitive advantage through acts of innovation. They approach innovation in its broadest sense, including both new technologies and new ways of doing things.”

Michael Porter

“An innovative business is one which lives and breathes ‘outside the box’. It is not just good ideas, it is a combination of good ideas, motivated staff and an instinctive understanding of what your customer wants.”

Richard Branson

“Innovation is the successful exploitation of new ideas”

UK Department of Trade and Industry

“Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or service. It is capable of being presented as a discipline, capable of being learned, capable of being practised.”

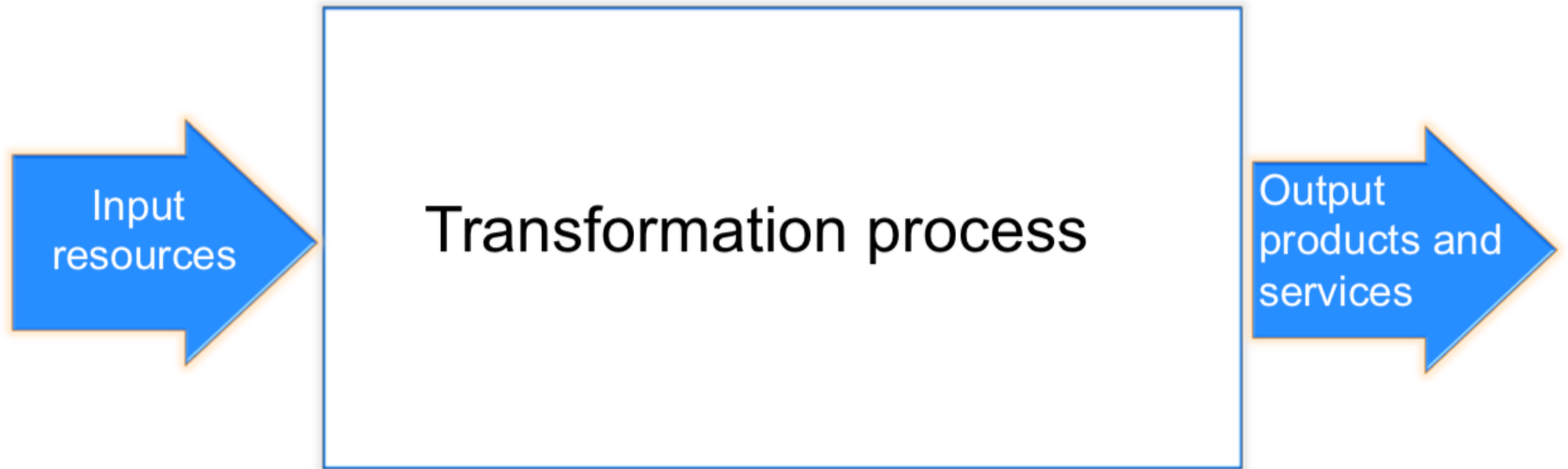
Peter Drucker

Design, NPD/NSD and Innovation

- ◎ There are different approaches to design
 - Technology push
 - Open innovation
 - Design driven
 - Disruptive
- ◎ NPD stage is where **design** creates **innovation**
- ◎ Stage-gate model
- ◎ There are different types of innovation;
4Ps



Positioning Innovation and Design in NSD/NPD Process: Key Summary of the topic



Why is Design important?

- Aesthetics
- Usability (learnability)
- Functionality

Different Design Approaches

- Technology push
- Open innovation
- Design driven

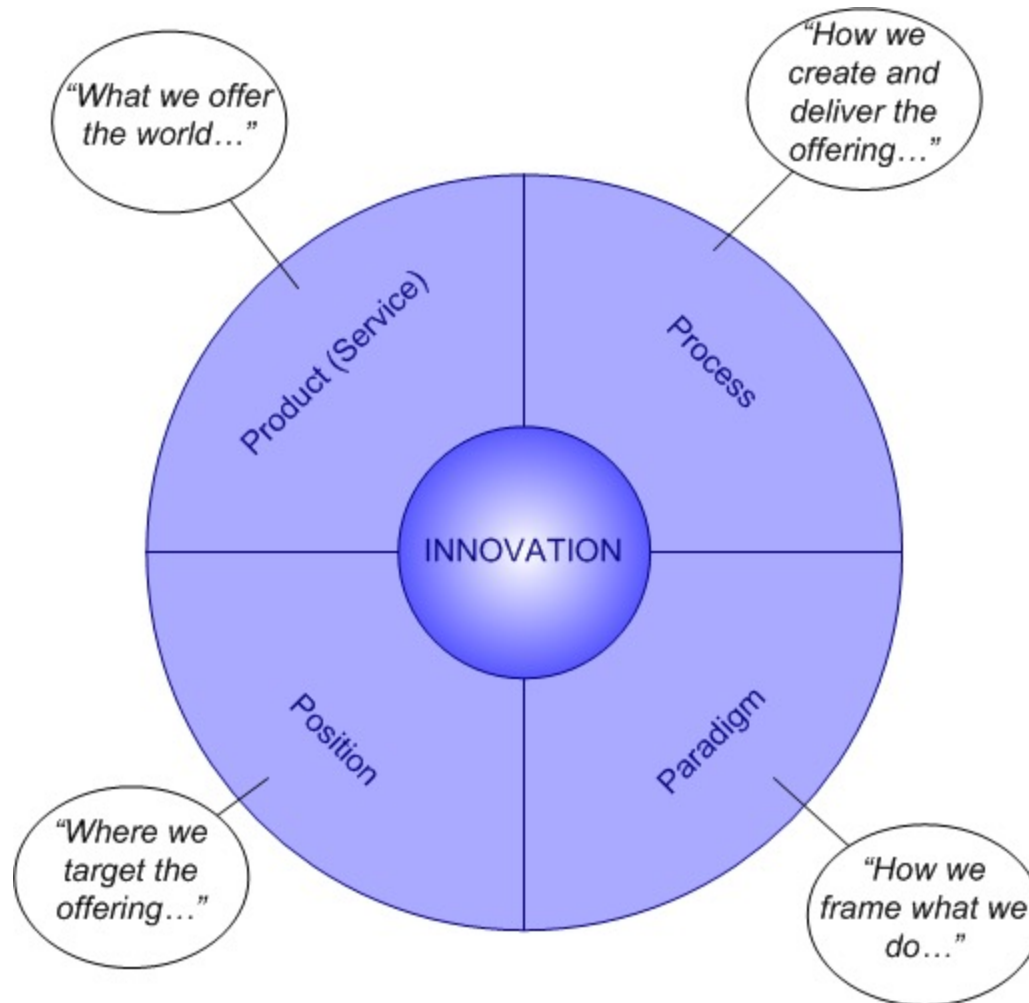
How to design?

- Stage Gate Model

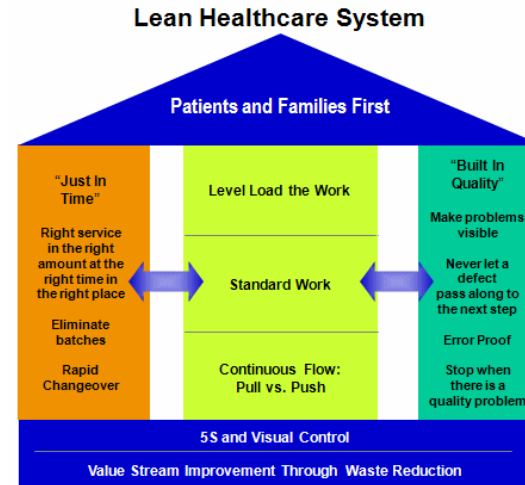
Innovation Types?

- 4Ps
- Radical vs. Incremental

There are different types of Innovation: 4Ps of innovation



Product/Process/Position/Paradigm?



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Xerox – Document Management



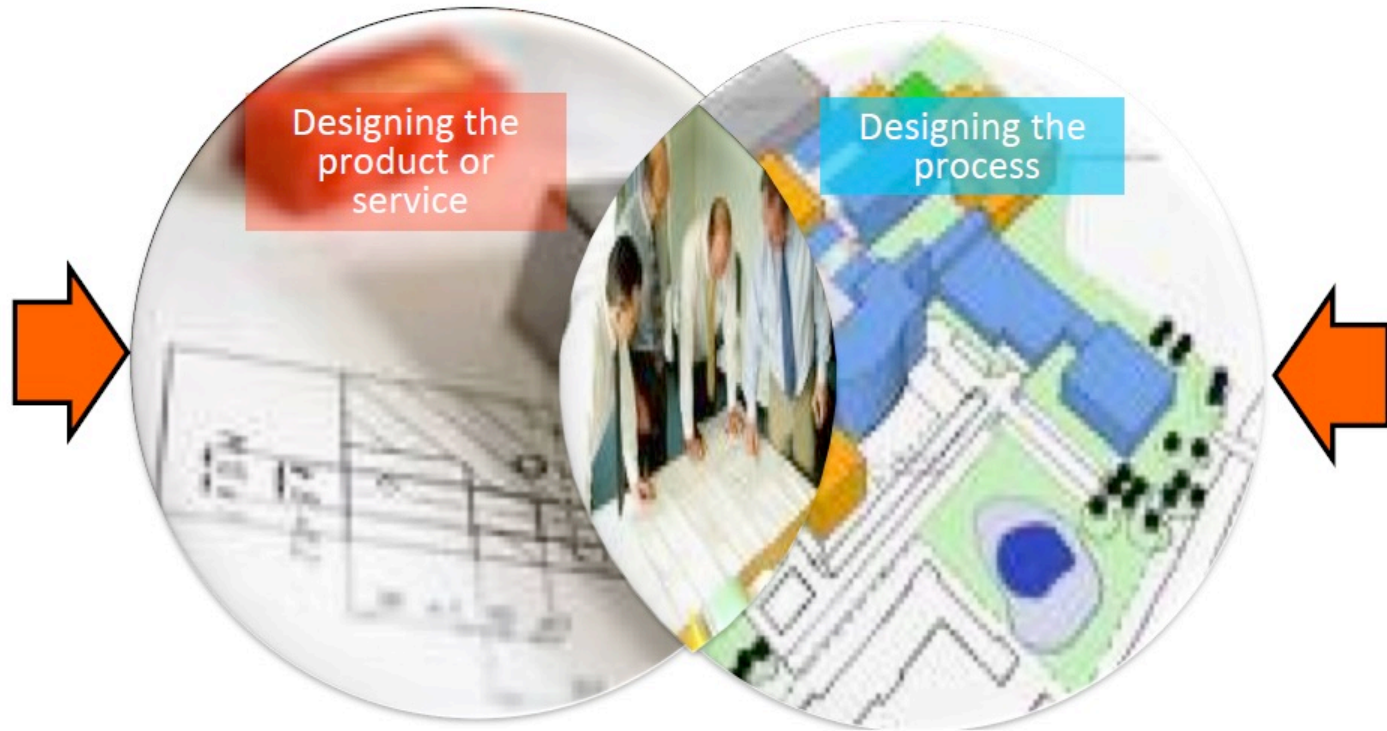
Paradigm innovation can also be called business model innovation

<http://www.bbc.co.uk/news/business-37716210>

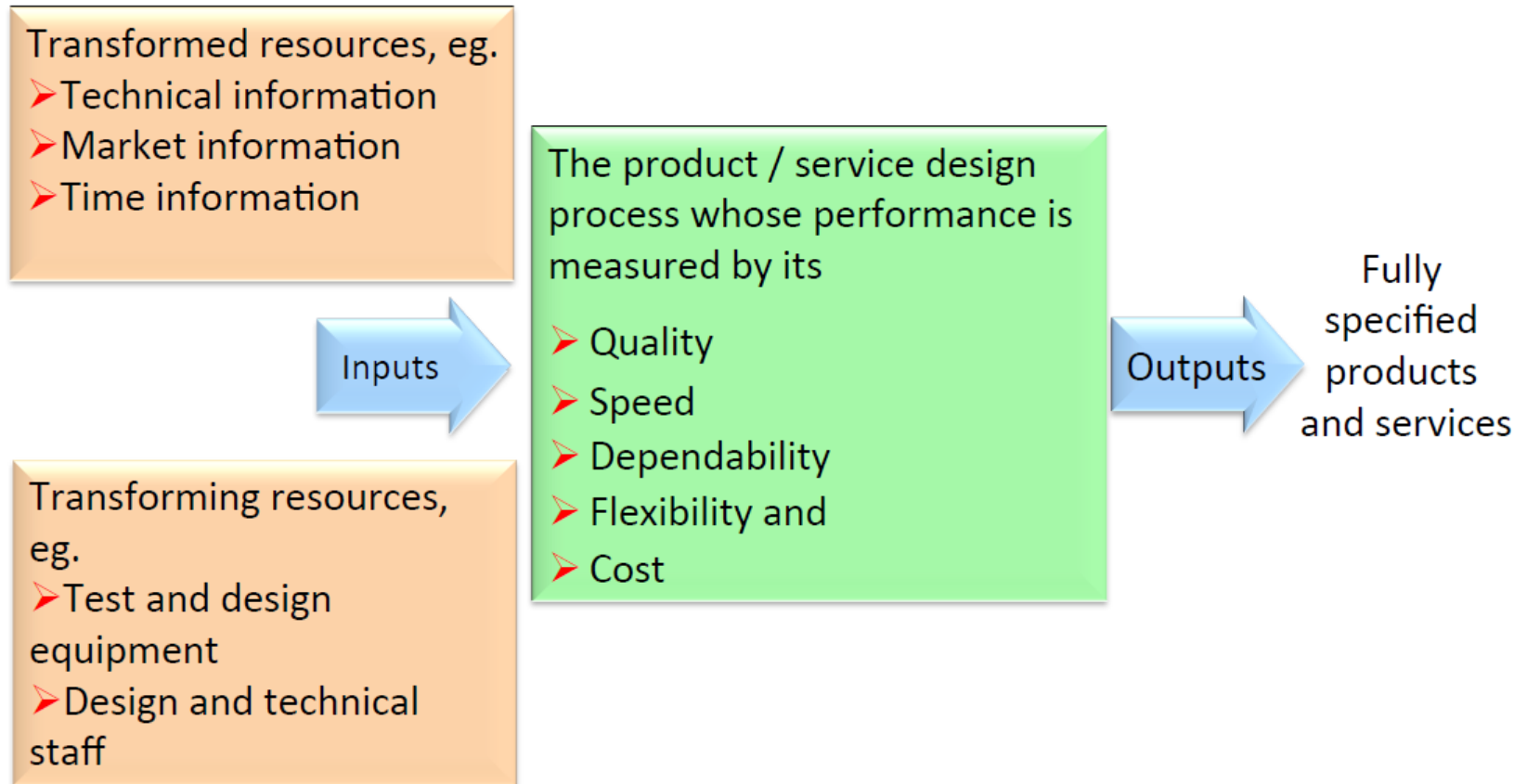
More Paradigm Innovations

- **HPs Managed Print Services**
- **Cisco Solutions**
- **Philips lightning solutions (Pay per Lux)**

Product and process design are interrelated



The product/service design activity is a process



Why is design important?

Aesthetics - materials, colour, shape, size and proportion



Why is design important?

Functionality - “Form follows function” (Louie Sullivan, 1896)

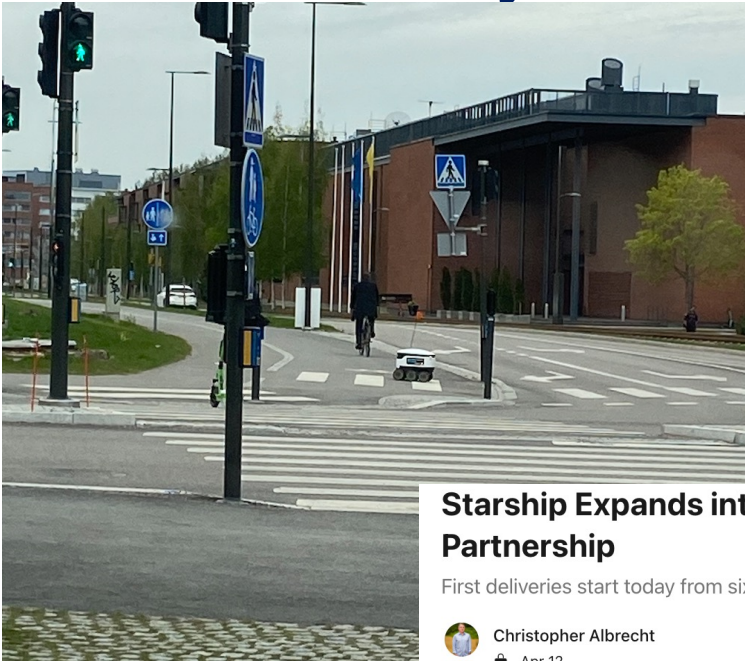


Why is design important?

Usability - ease of use and learnability of a human-made object



Why is design important?



Starship Expands into Finland with Alepa Partnership

First deliveries start today from six stores in Espoo.



Christopher Albrecht

Apr 12

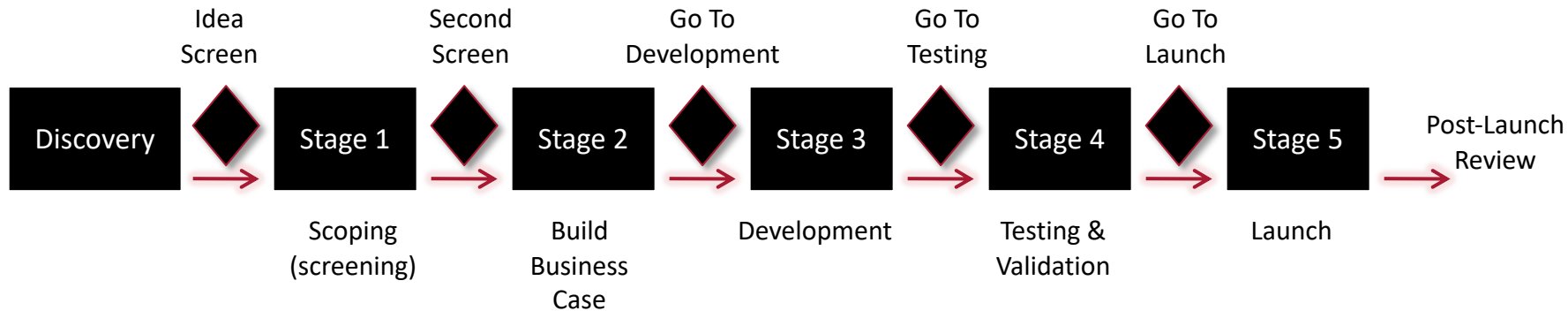


The New Product Development process

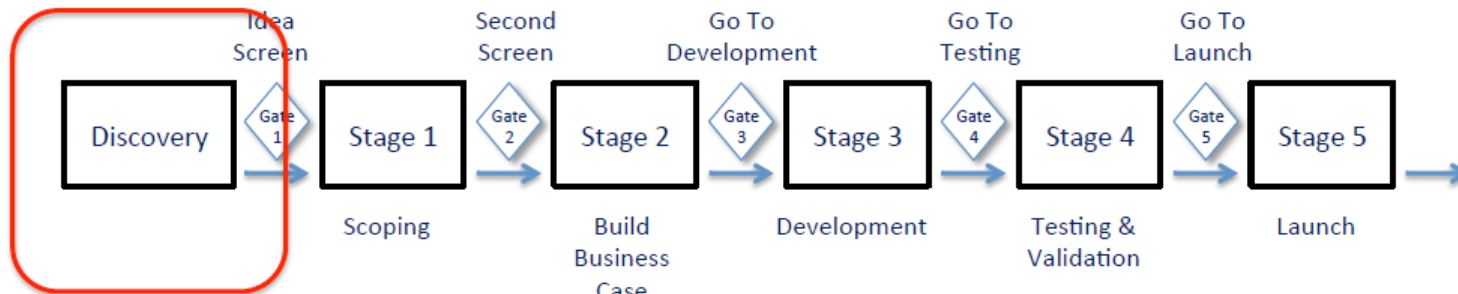
The NPD process is aimed at bringing a new product to the market. Main phases (in series or in parallel):

- Idea Generation - 'fuzzy front end'
- Idea Screening - eliminate unsound concepts prior to devoting resources to them
- Concept Development and Testing - Develop the marketing and engineering details (feature specification)
- Final stages - Launch

Stage-Gate Model

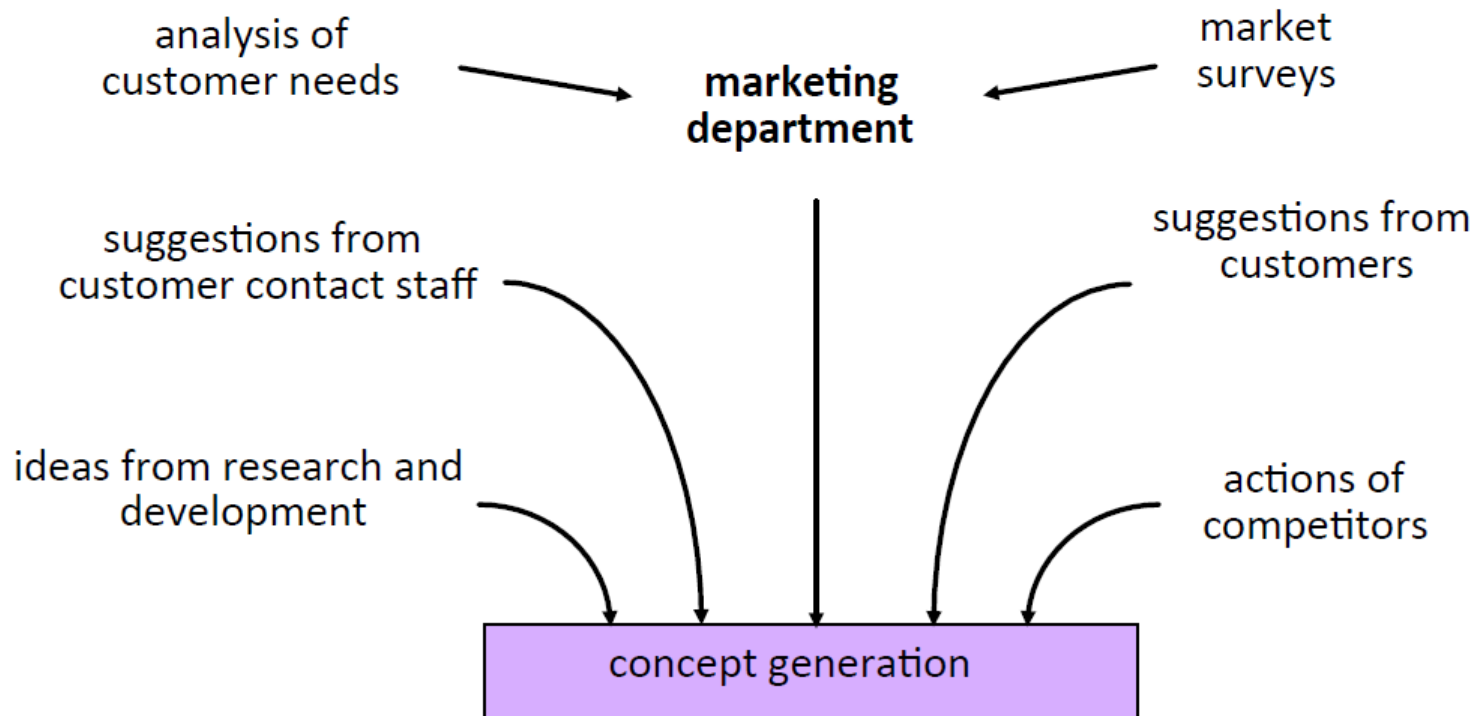


Key Design Issues	<ul style="list-style-type: none"> - Explore concepts, opportunities - Ideation and imagination - Identify users' high level wants and needs - Inspiration from other products 	<ul style="list-style-type: none"> - Narrow down ideas whilst keeping creative flair alive - Rating of concepts and selection - Specification and definition of needs - Talk with other functions, establish barriers 	<ul style="list-style-type: none"> - Plausibility of design - Justify product idea and costing - Design specification - Discussing ideas and research made 	<ul style="list-style-type: none"> - Develop concepts and work on aesthetics - Create prototype of final concept – Model, CAD - Working with shop floor, resolve issues - Take into account all discussions made from previous meetings 	<ul style="list-style-type: none"> - Create test plans - Resolve issues - Possible revise and refine design - Prototyping - Present to an audience to see if it meets the needs 	<ul style="list-style-type: none"> - Get brand right - Presentation and exhibition - Final check of layout, materials and lighting - Communicate design effectively through illustration
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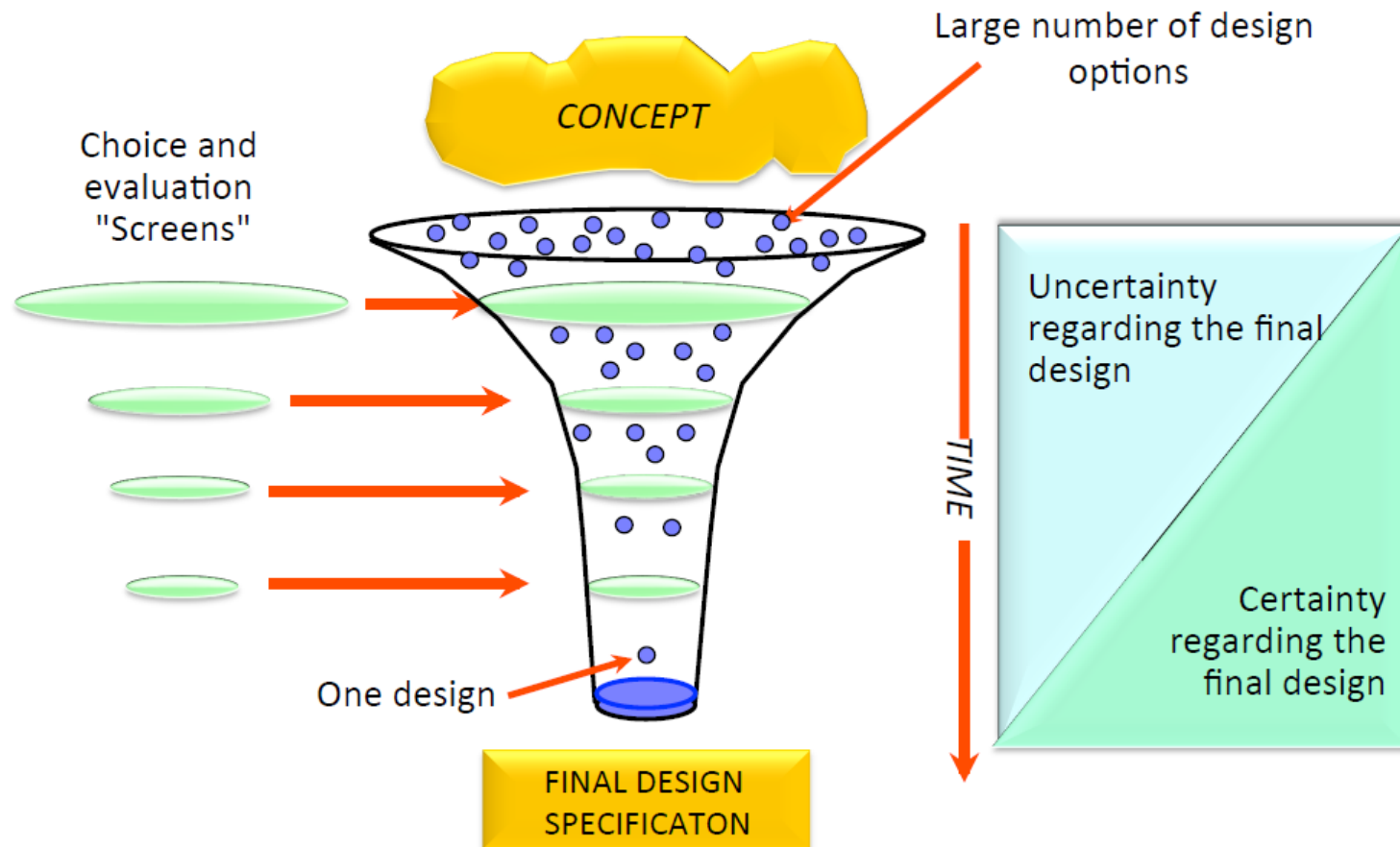
Internal sources

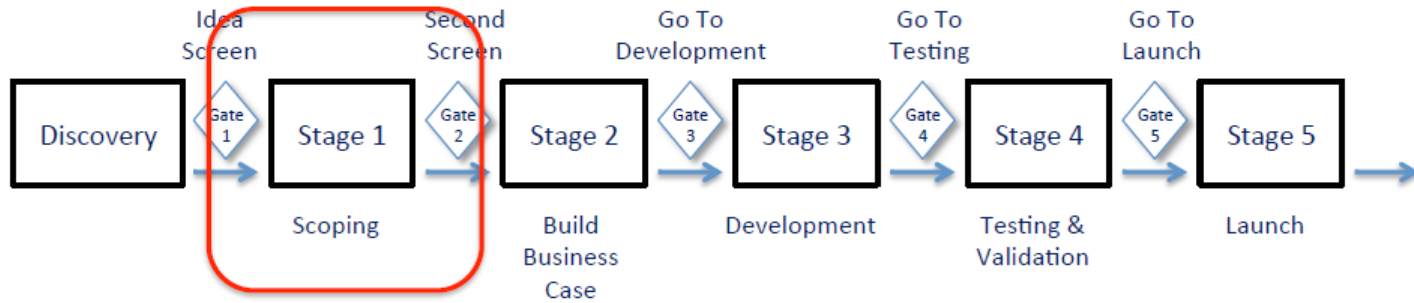
External sources



Discovery of ideas...

The design 'funnel'



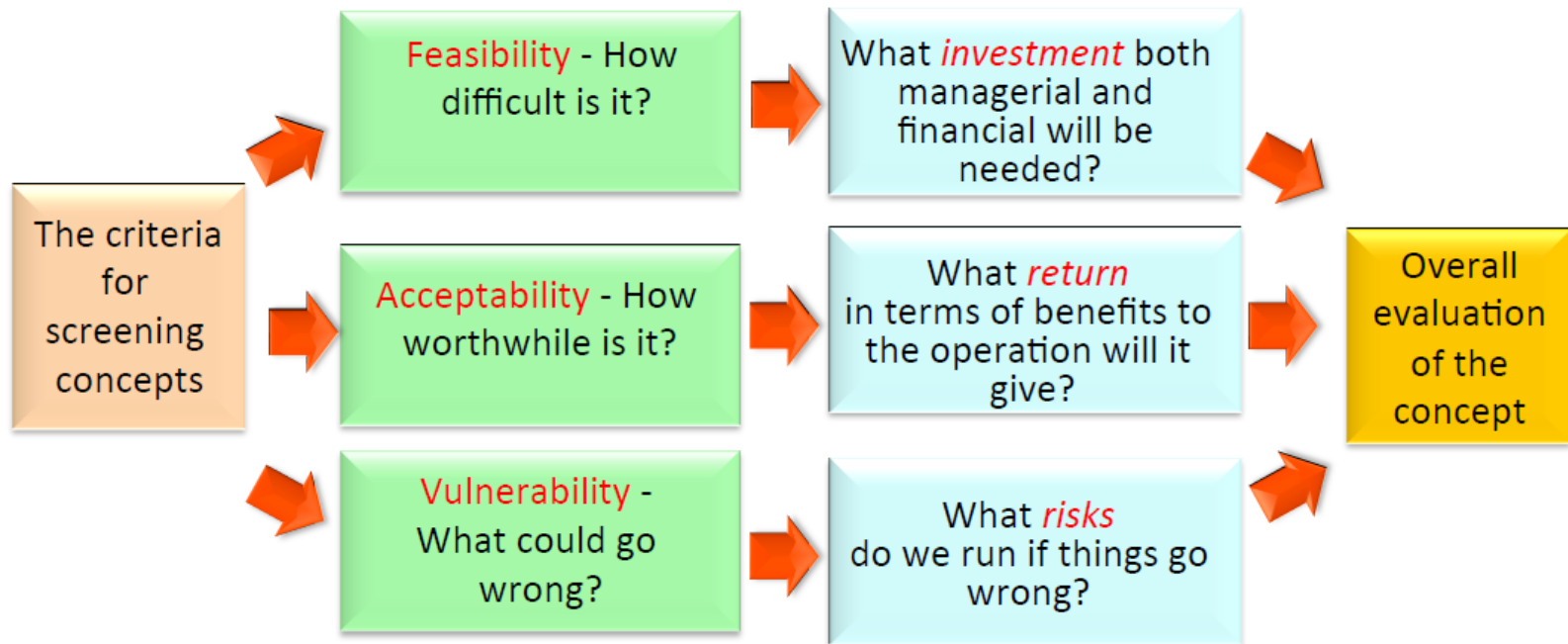


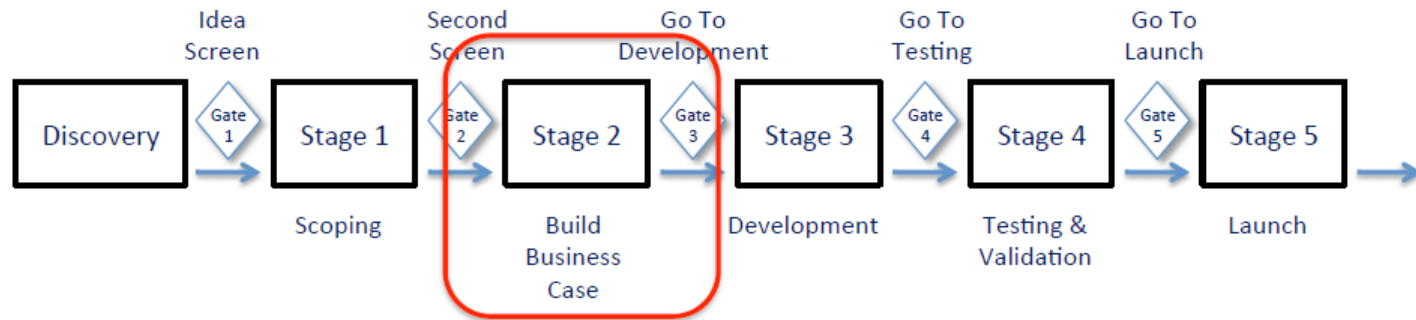
- **Feasibility of design option – can we do it?**
 - Do we have the **skills** (quality of resources)
 - Do we have the **organizational capacity** (quantity of resources)
 - Do we have the **financial resources** to cope with this option

- **Acceptability of design option – do we want to do it?**
 - Does the option **satisfy the performance criteria** which the design is trying to achieve?
 - Will our **customers want** it?
 - Does the option gave a satisfactory **financial return**?

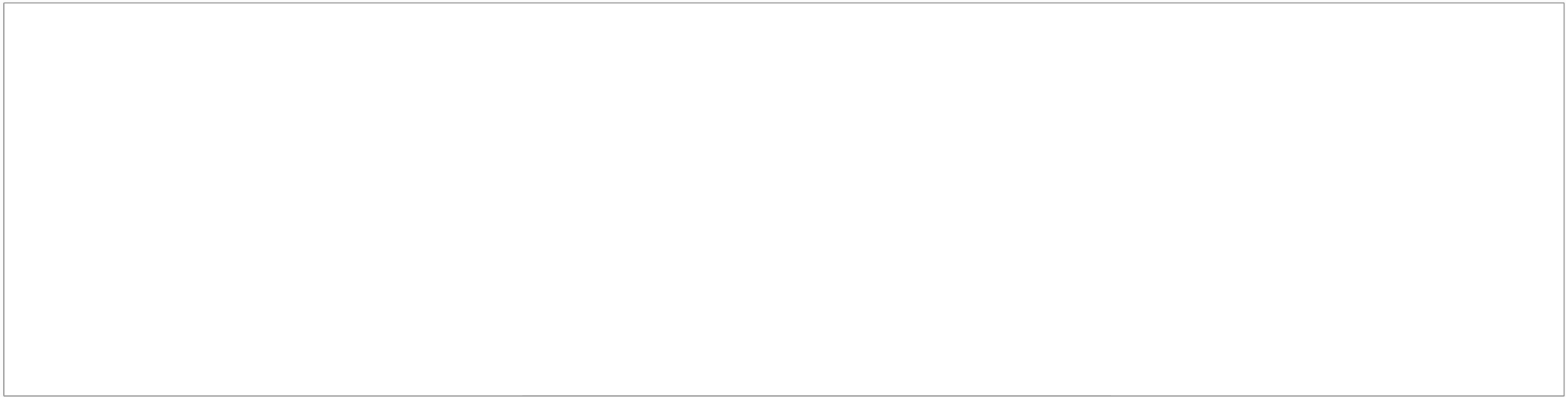
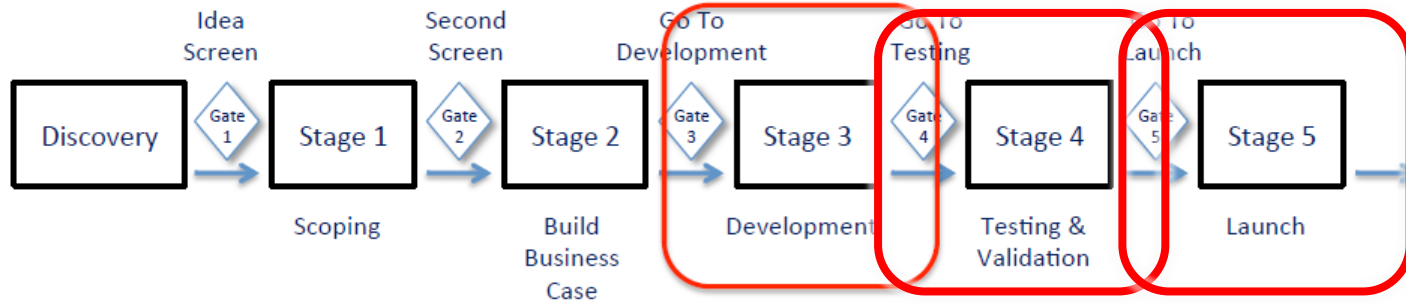
- **Vulnerability of design option – do we want to take the risk?**
 - Do we understand the **full consequences of adopting** the option?
 - Being pessimistic, **what could go wrong** if we adopt the option?

Broad categories of evaluation criteria for assessing concepts





- Specify the components of the package
- Define the process to create the package



Design and Stage-Gate

Problems:

- **lack of flexibility and a poor reaction to market changes** (Chhatpar, 2007)
- **Stage-Gate may inhibit companies from achieving radical innovation** (Goffin and Micheli, 2010)
- **The presence of a multitude of stakeholder throughout the process might cause a lack of continuity, hence resulting in a loss of intent or momentum** (Petrie, 2008).

Different Design approaches

- Technology push: *driven by new technology*
- Market pull: *driven by market demands, user centred*
- Open innovation: *involving various stakeholders in the design process*
- Design-driven: *driven by aesthetics, functionality and usability*

Different approaches to Design and Innovation

1- Technological innovation

<http://www.youtube.com/watch?v=AMgeNjXtYx4&feature=fvwrel>

Dyson

2- Open innovation

http://www.youtube.com/watch?v=_7mMToRIAs

A. G. Lafley, Former Chairman & CEO, P&G

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Discussion

- Technology push: *driven by new technology*
- Market pull: *driven by market demands, user centred*
- Open innovation: *involving various stakeholders in the design process*
- Design-driven: *driven by aesthetics, functionality and usability*

Disruptive (or radical) innovation: *changes the meaning of competition and disrupts the industry*

Incremental innovation: *is small, modular change that takes place slowly over time, and allows for a gradual development of the product and its marketplace.*

What is the design approach in the following examples of innovation? Are they incremental or radical innovations?



Alessi bird kettle

iPhone

ANNOUNCED: Jan. 9, 2007
RELEASED: June 29, 2007

KEY FEATURES:
3.5-inch diagonal screen;
320 x 480 pixels at 163 ppi;
2-megapixel camera

PRICE: 4GB model, \$499;
8GB version, \$599 (with
a two-year contract)

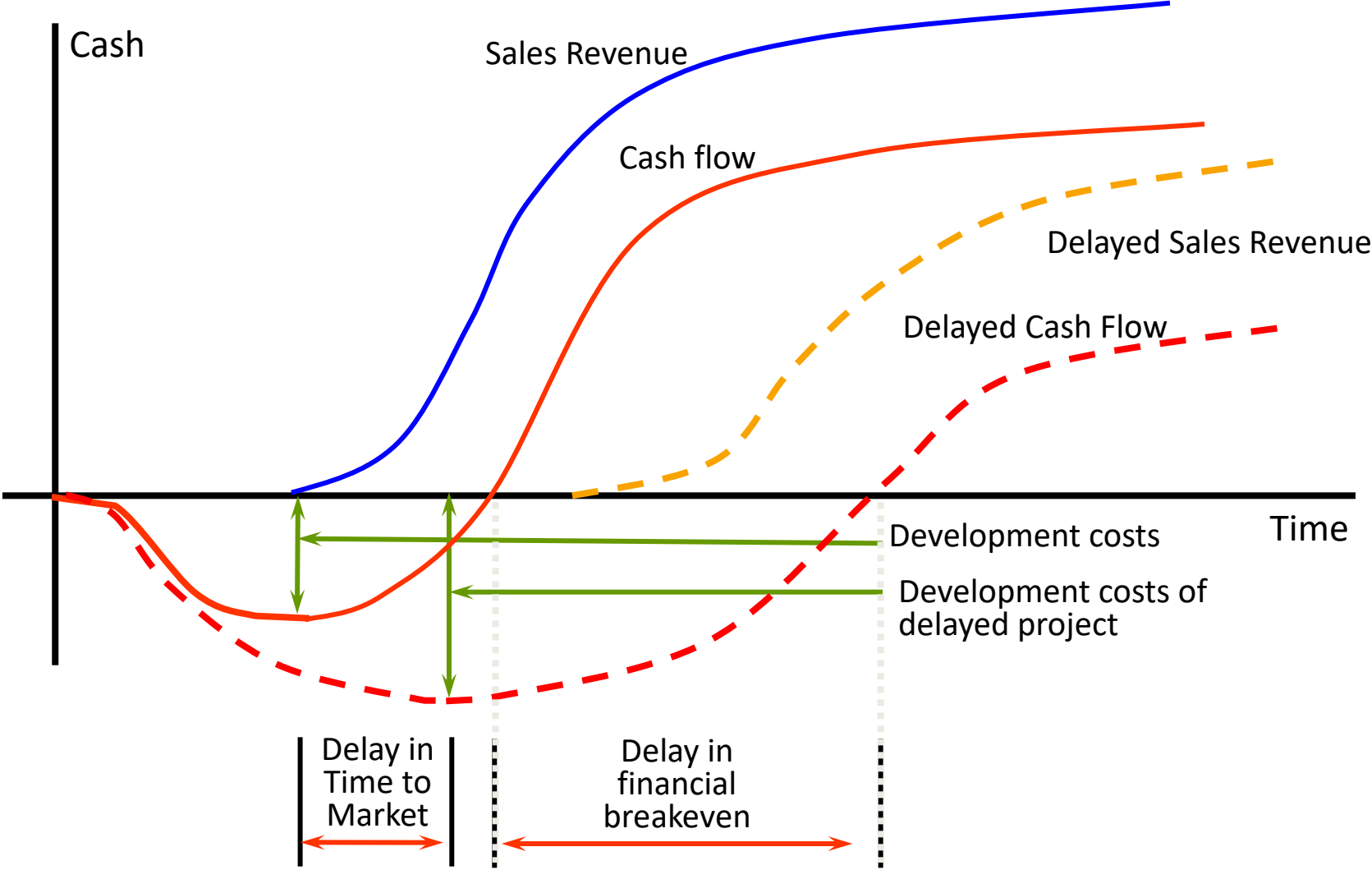
A side view of the iPhone showing its slim profile and a front view showing the multi-touch interface with various app icons like Text, Calendar, Photos, Camera, YouTube, Stocks, Maps, Weather, Clock, Calculator, Notes, Settings, iTunes, Phone, Mail, Safari, and iPod.

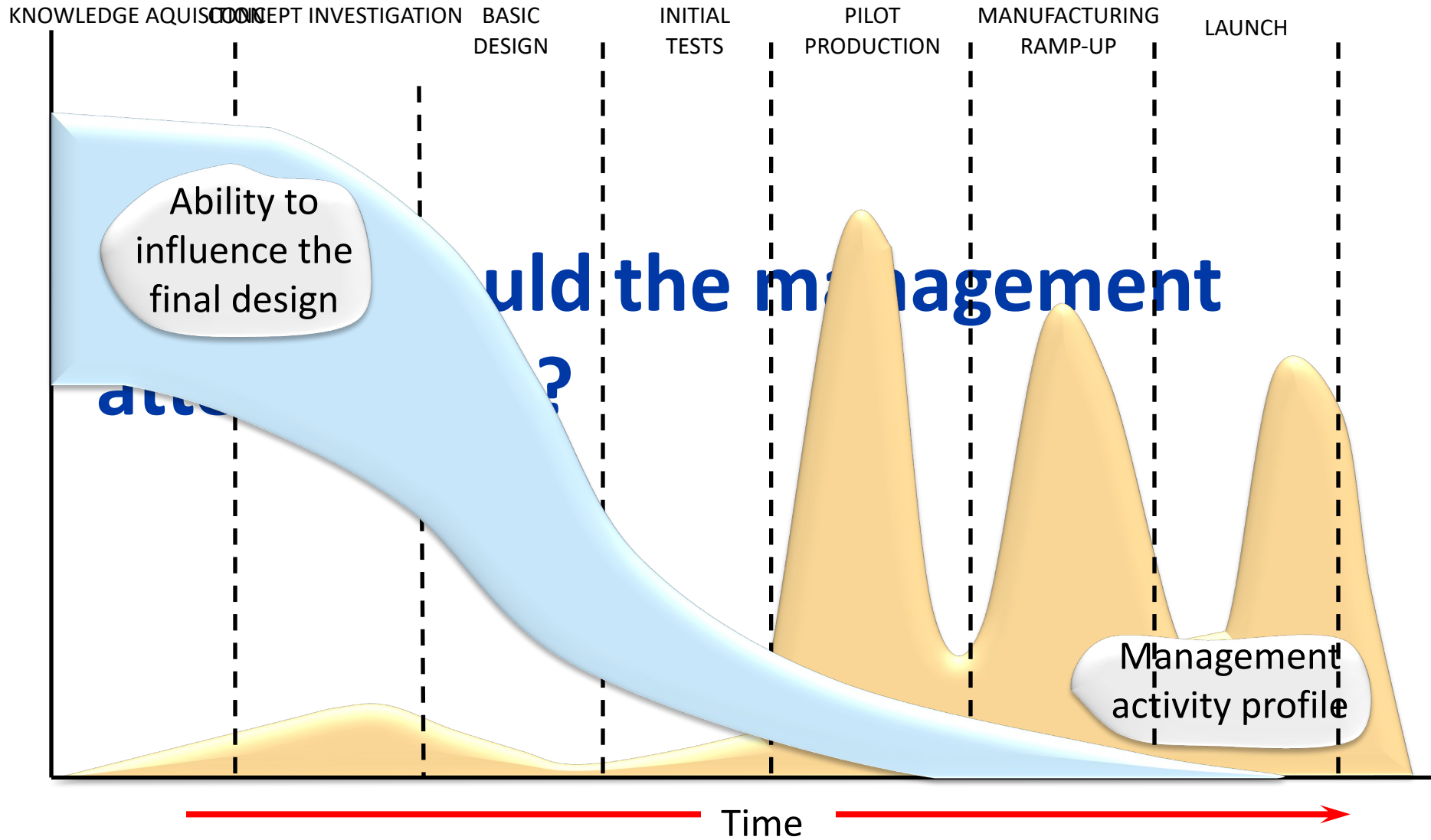


- ⦿ Not a structured process followed, but trial-and-error
- ⦿ Design-driven & disruptive service innovation: Airbnb radically innovated the meaning of home rentals and travel accommodation industry by introducing a new means of trading and swapping space

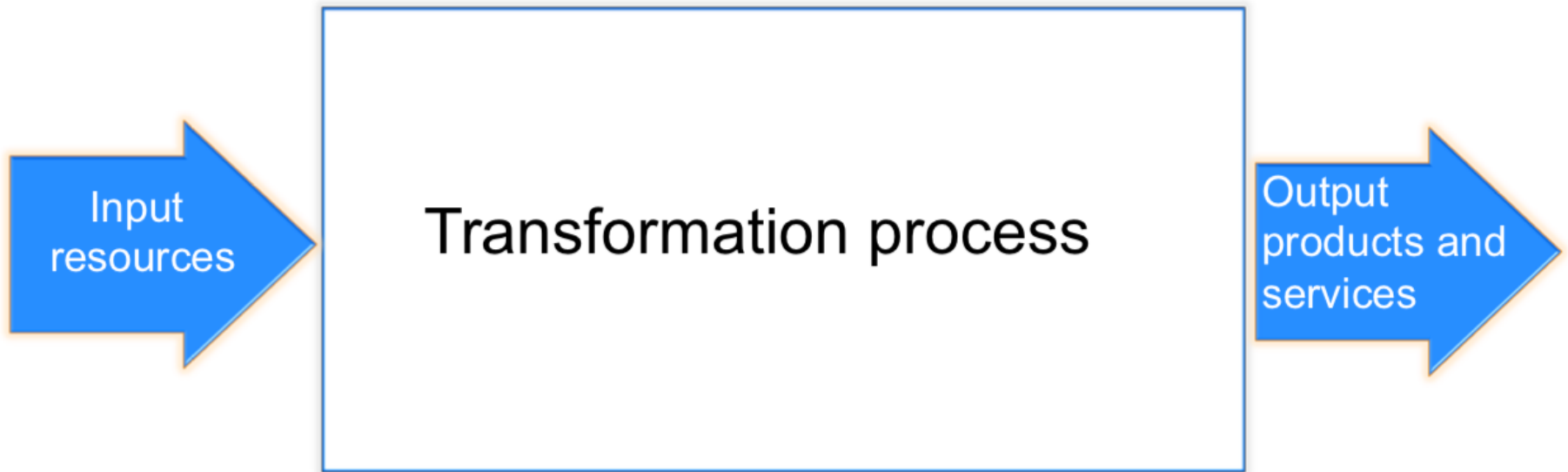
Complete the rest of the examples by looking at their design approach to create innovation....

Delays in the 'Time to Market' disproportionately delays the financial breakeven point





Summary of Product/Service Design topic



Why is Design important?

- Aesthetics
- Usability (learnability)
- Functionality

Different Design Approaches

- Technology push
- Open innovation
- Design driven

How to design?

- Stage Gate Model

Innovation Types?

- 4Ps
- Radical vs. Incremental

Summary

- ⦿ There are different types of innovation; 4Ps
- ⦿ Incremental vs. Disruptive (radical) innovation
- ⦿ Product and process design are interrelated
- ⦿ Design activity is a process
- ⦿ NPD stage is where **design** creates innovation
- ⦿ Stage-gate model
- ⦿ There are different approaches to design
 - Technology push
 - Open innovation
 - Design driven

