

Med-tech Product Design

2019





DESIGN THINKING
DEFINED

ABOUT THIS SITE

DESIGN THINKING IN
CONTEXT

DESIGN THINKING
TODAY

DESIGNER'S MINDSET

JOURNEY TO MASTERY

NEW APPLICATIONS

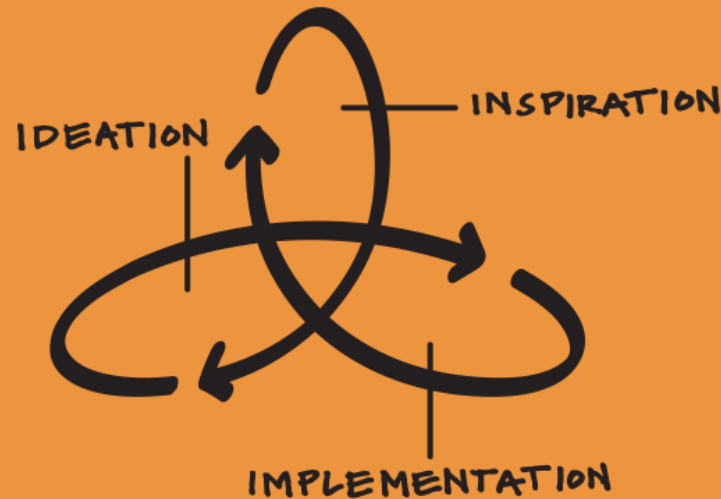
RESOURCES

HISTORY

FAQ

BLOG

applications and utility so that others can practice it, too. Design thinking uses creative activities to foster collaboration and solve problems in human-centered ways. We adopt a “beginner’s mind,” with the intent to remain open and curious, to assume nothing, and to see ambiguity as an opportunity.

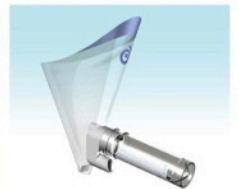


The 3 core activities of design thinking

To think like a designer requires dreaming up wild ideas, taking time to tinker and test, and being willing to fail early and often. The designer’s mindset embraces empathy, optimism, iteration, creativity, and ambiguity. And most critically, design thinking keeps people at the center of every process. A human-centered designer


maddison

Product Design



Designing **Science**

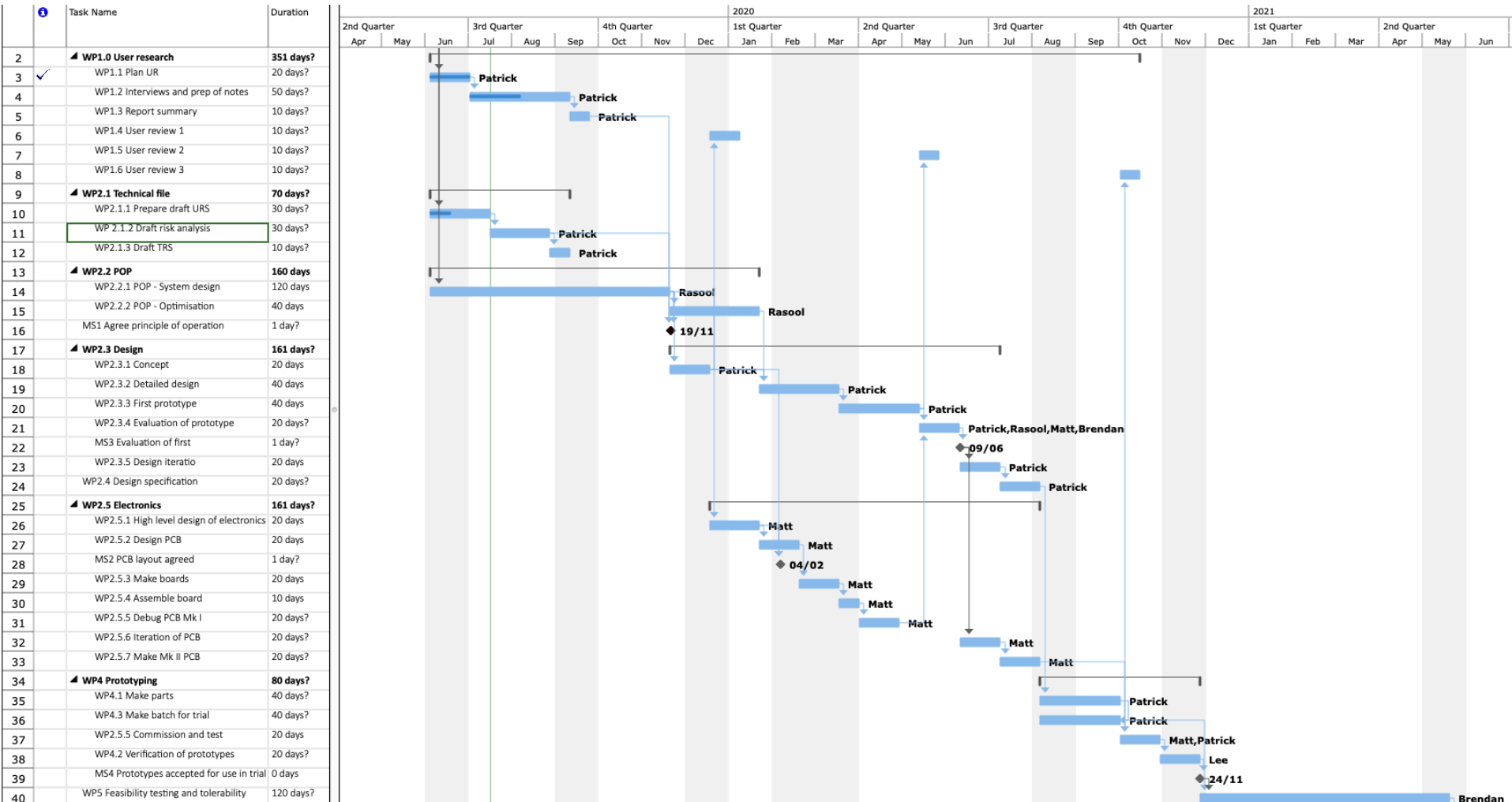
Enhancing Med-Tech Innovation

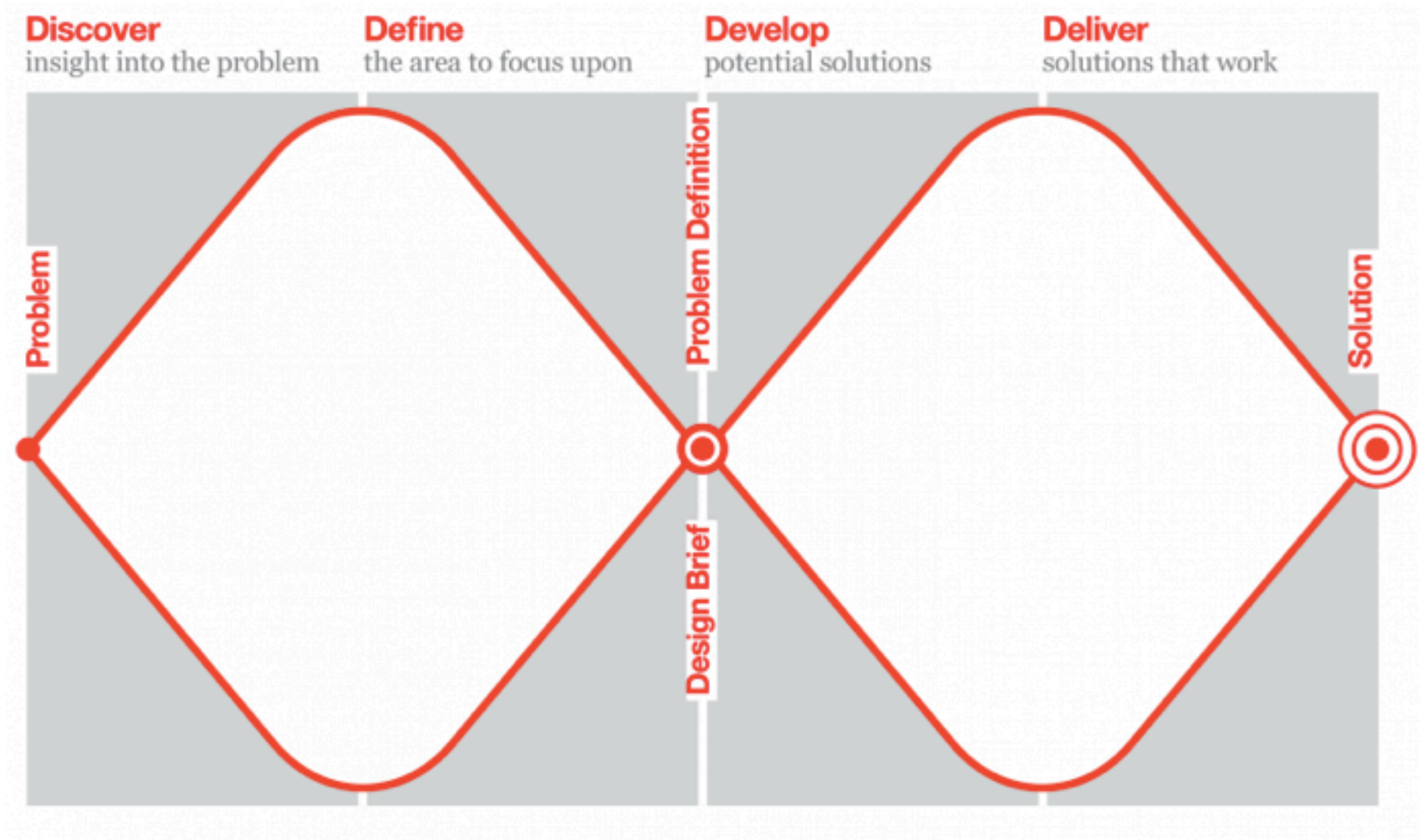


Winston
Churchill

“ Plans are of little importance,
but planning is essential.”

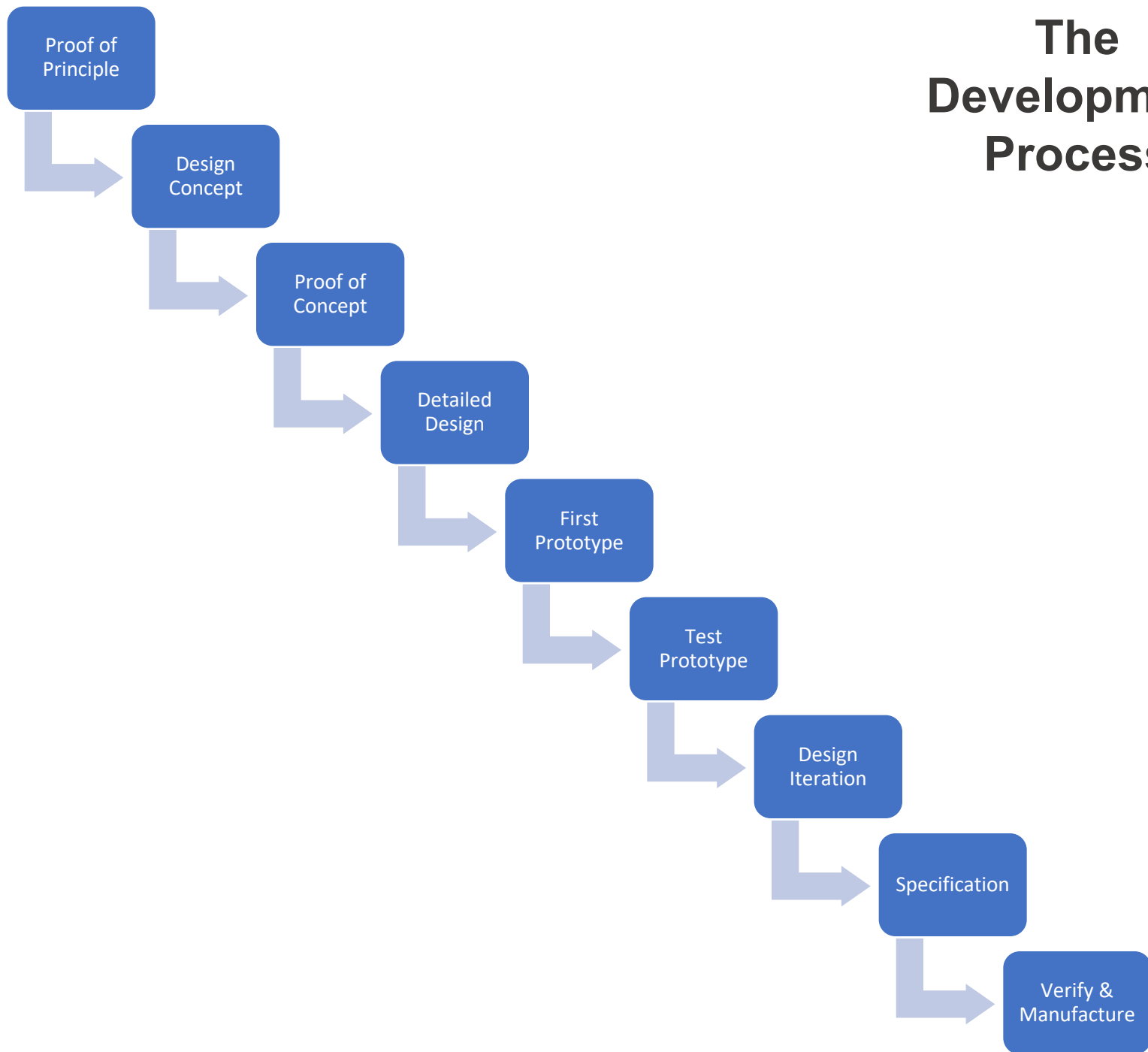
Project Plan





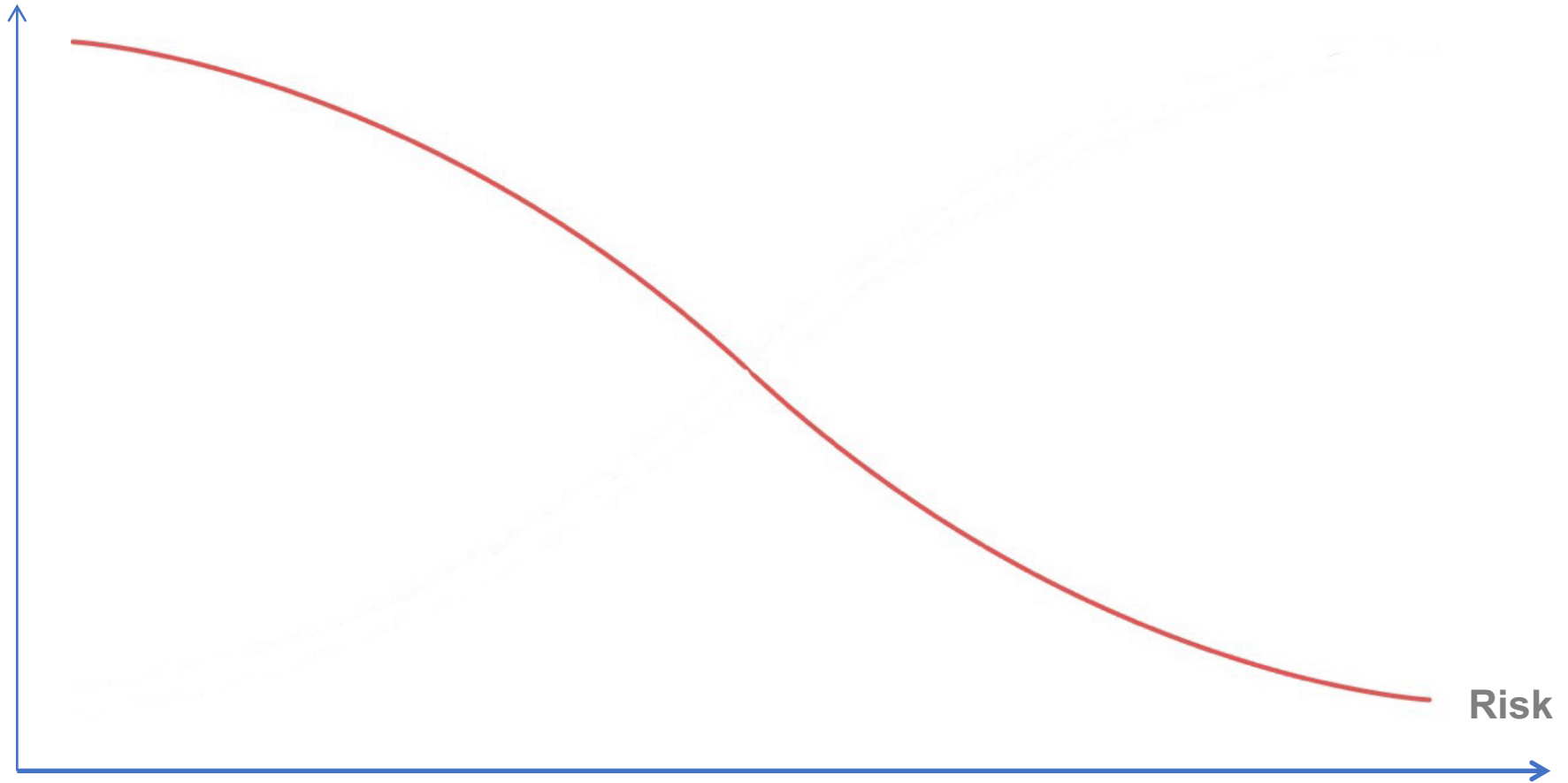
Design Council's Double Diamond, img source:

The Development Process





Risk



Risk

Proof of
Principle

Design
Concept

Proof of
Concept

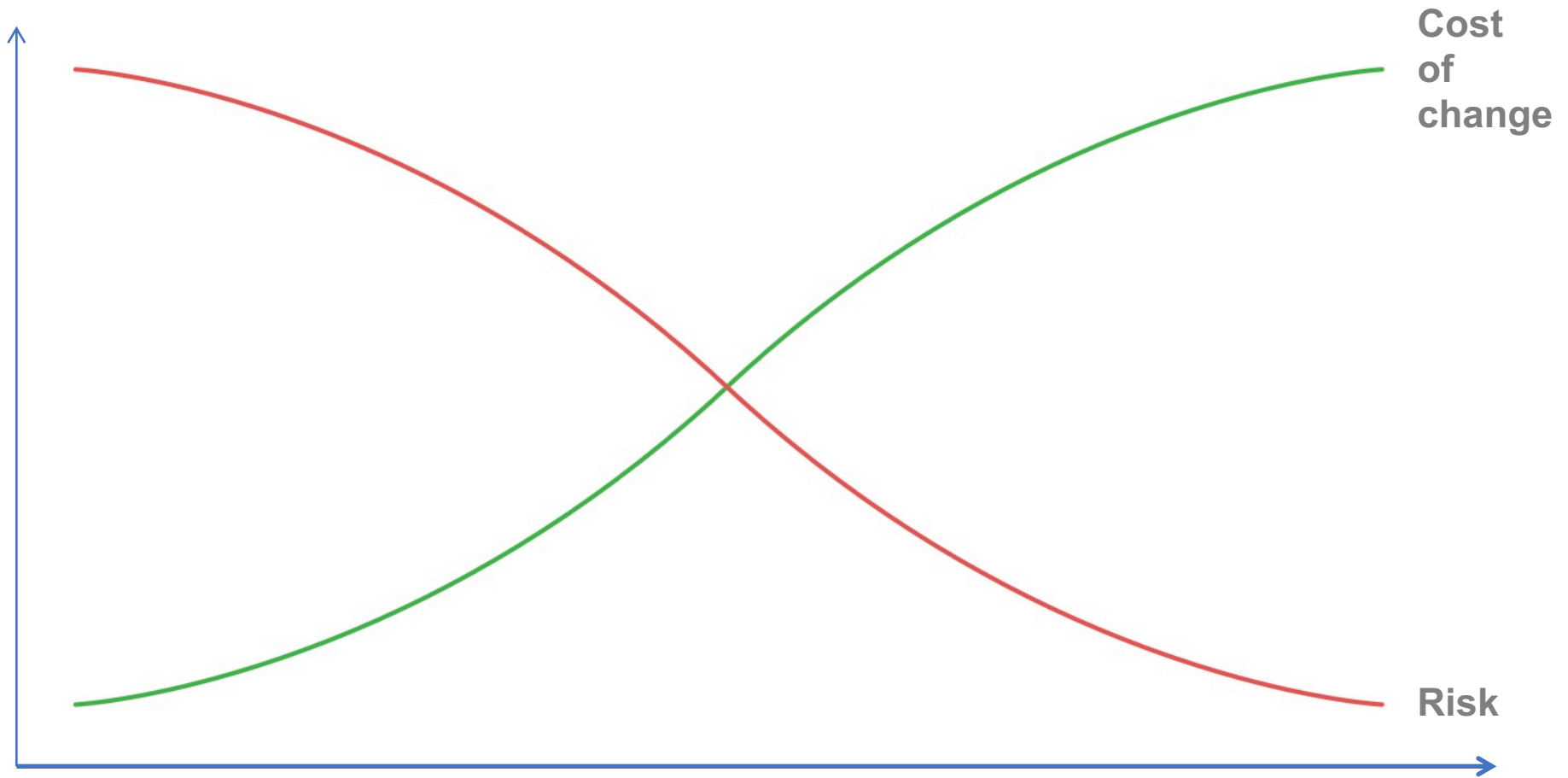
Detailed
Design

First
Prototype

Design Iteration
& Specification

Verify &
Manufacture

Cost of changes



Proof of Principle

Design Concept

Proof of Concept

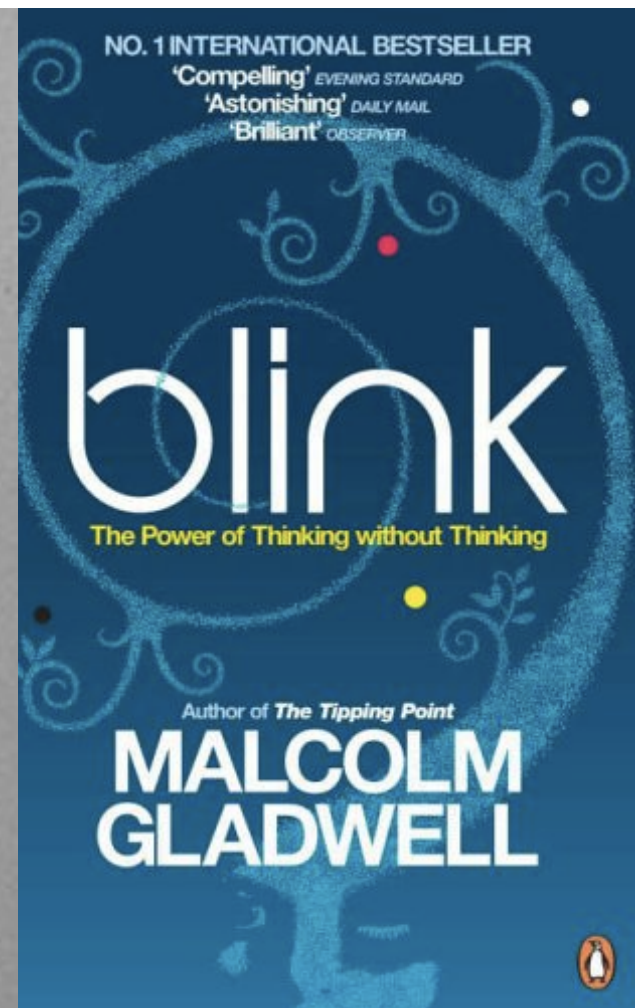
Detailed Design

First Prototype

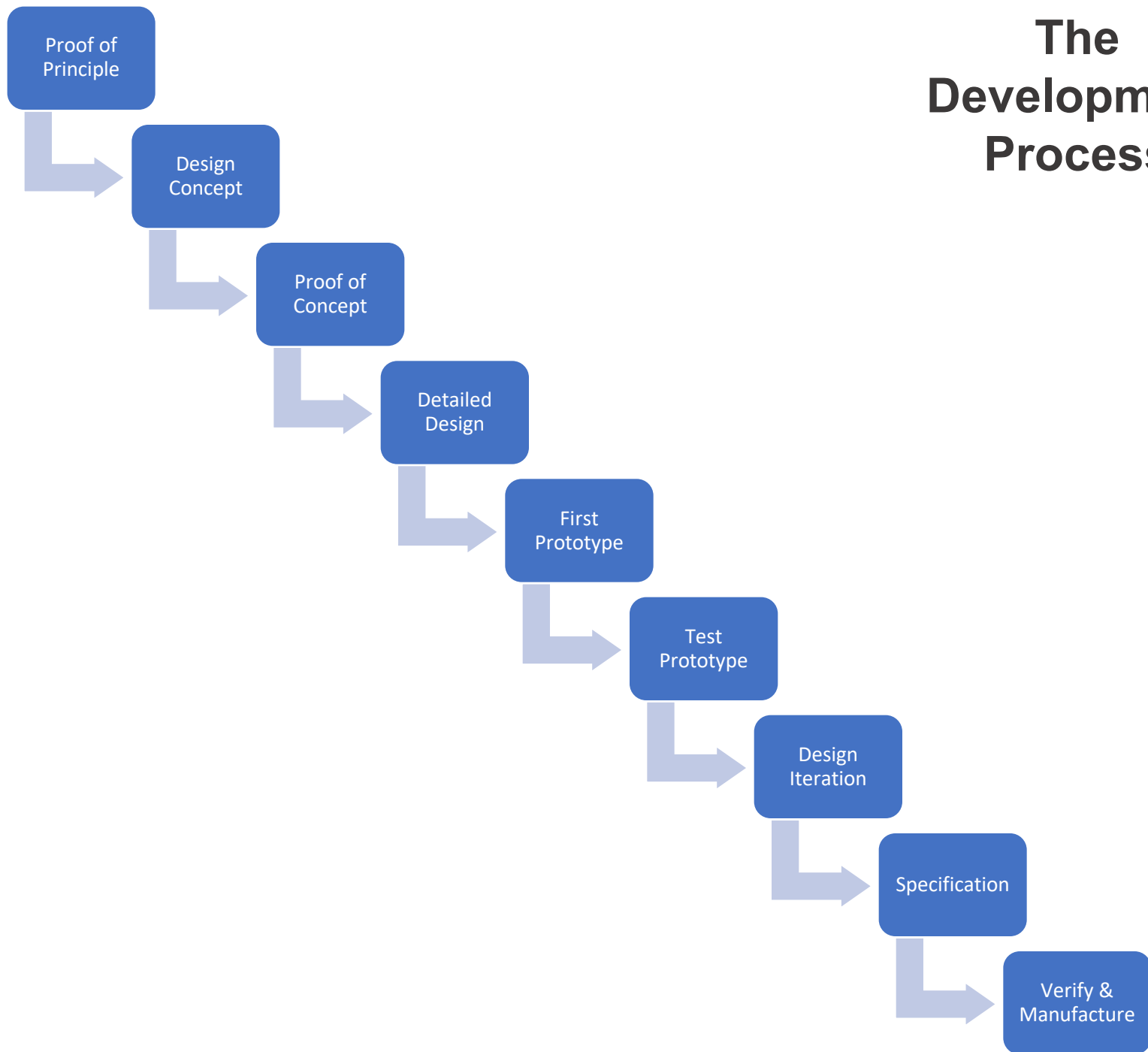
Design Iteration & Specification

Verify & Manufacture

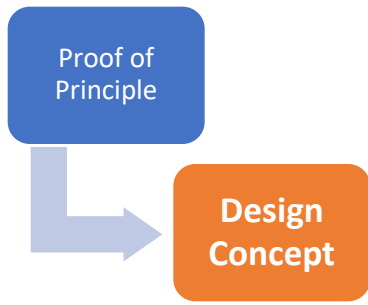




The Development Process

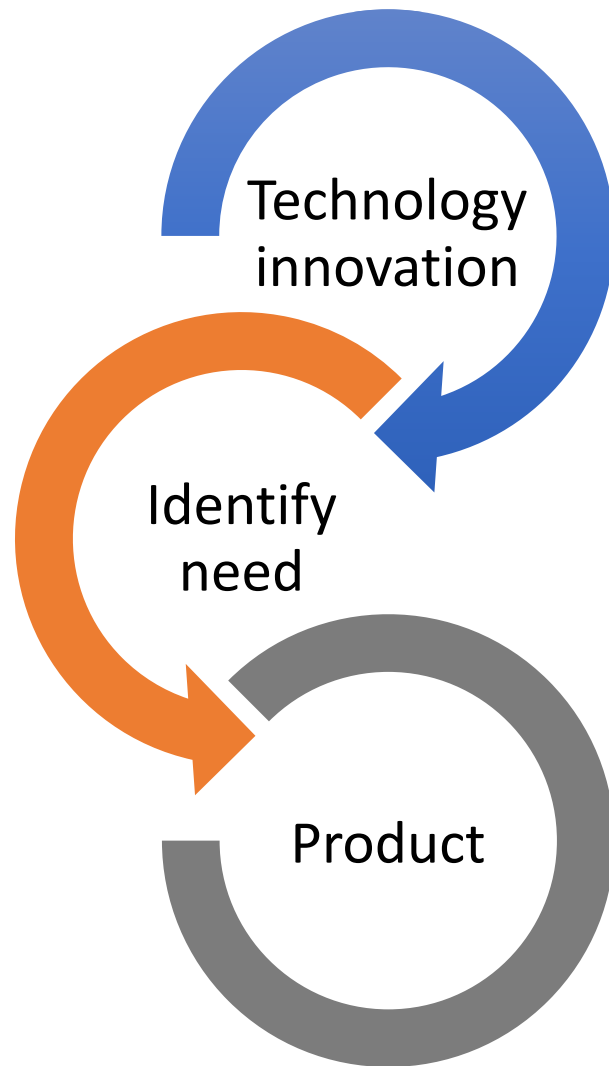


Are basic mechanisms understood?
Is technology optimised?
Can you layout a device?



The Development Process

User research
Explore options
Challenge assumptions



**Technology
'push'**

What is User-centred design?

Design focusing on the needs and requirements of the end user throughout the design process.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Medical devices –

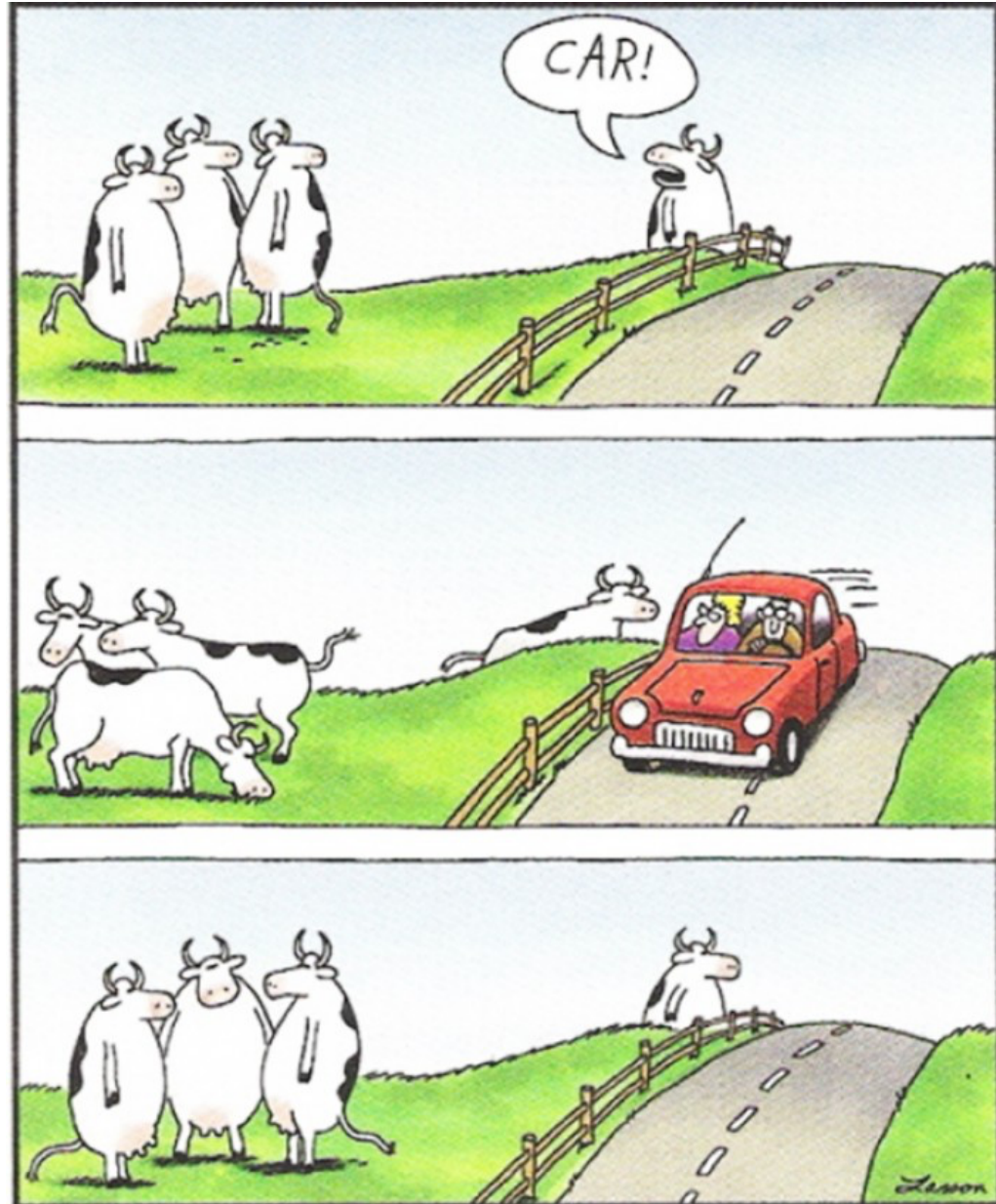
Part 1: Application of usability engineering to medical devices

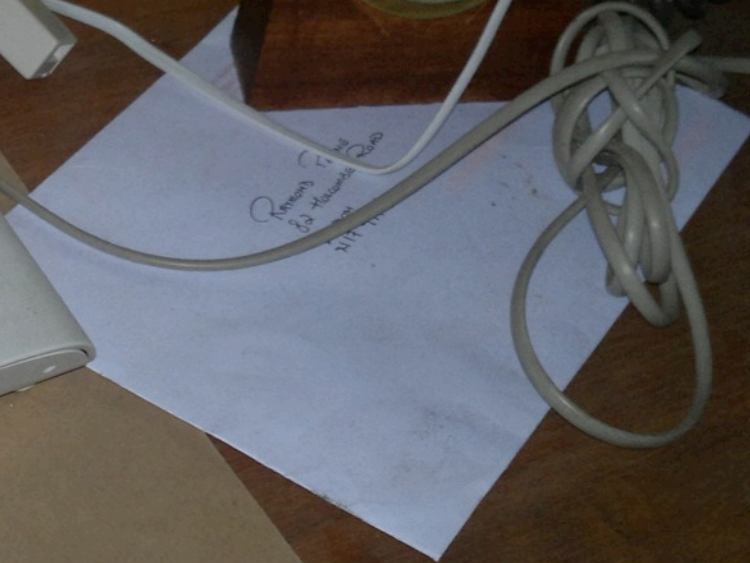
Dispositifs médicaux –

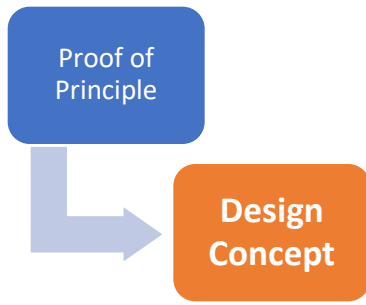
Partie 1: Application de l'ingénierie de l'aptitude à l'utilisation aux dispositifs médicaux

About users...

- Users don't behave as you may expect them to.
- People do not do what they think they do.
- People do not do what they say they do.
- People often cannot tell you what they want, but can tell you what they don't want.

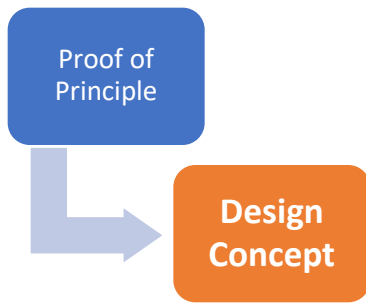






The Development Process

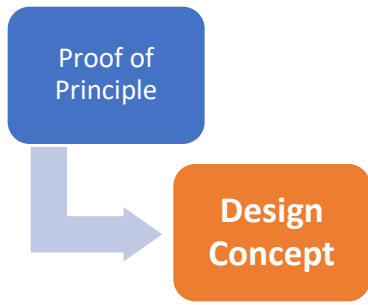
User research
Explore options
Challenge assumptions



The Development Process

User research
Explore options
Challenge assumptions

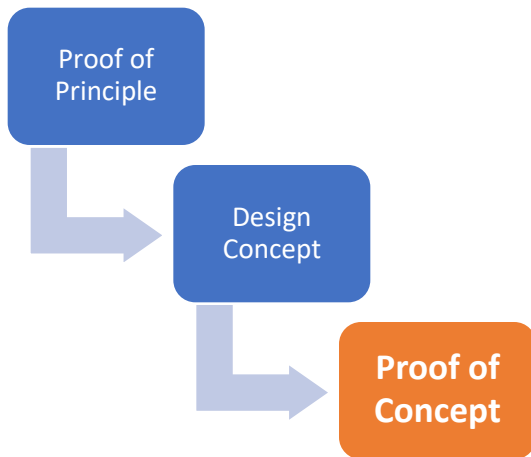
Outlines of Product Specification
Begin Risk Management



The Development Process

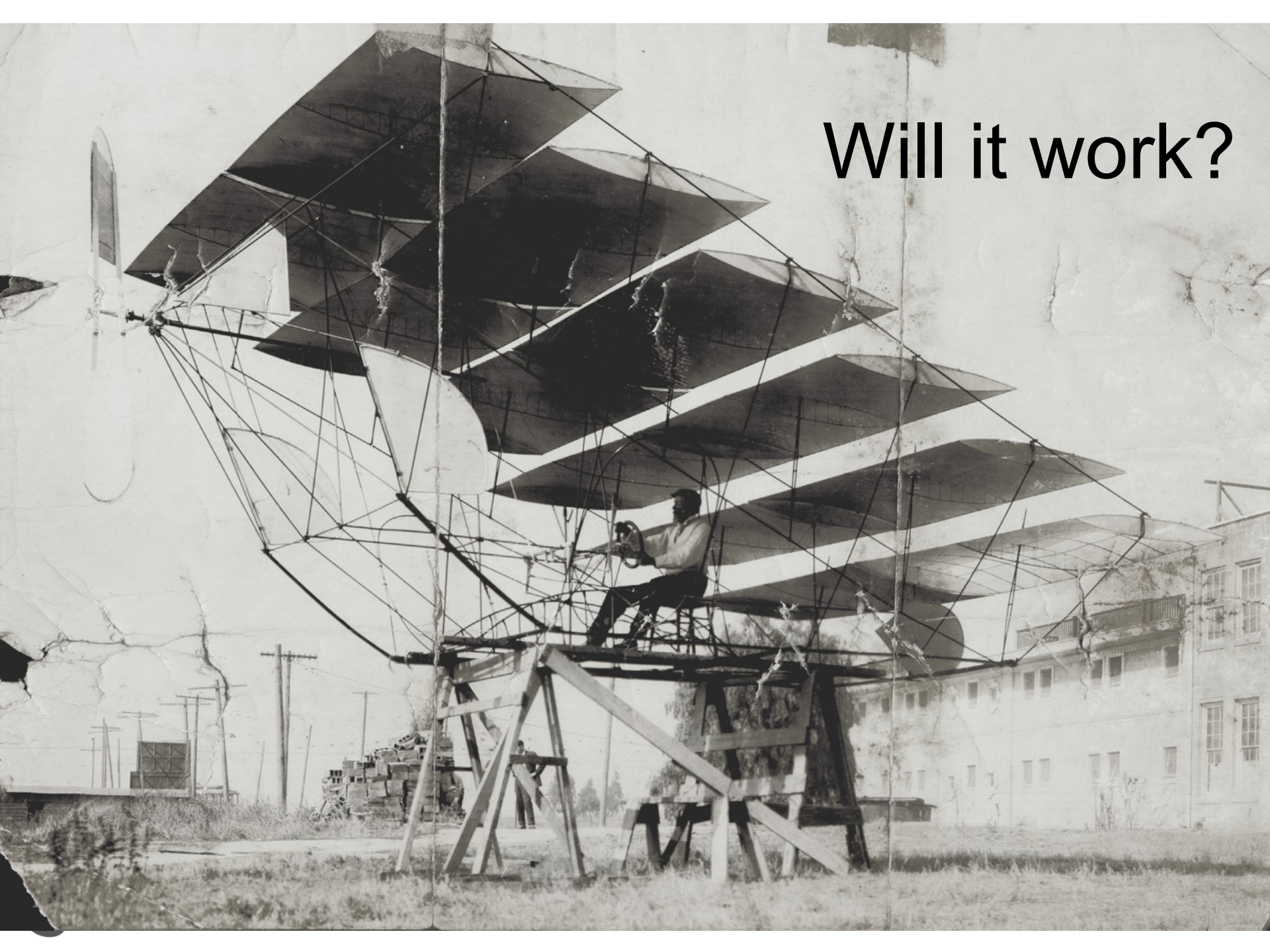
Explore options
Challenge assumptions

The Development Process



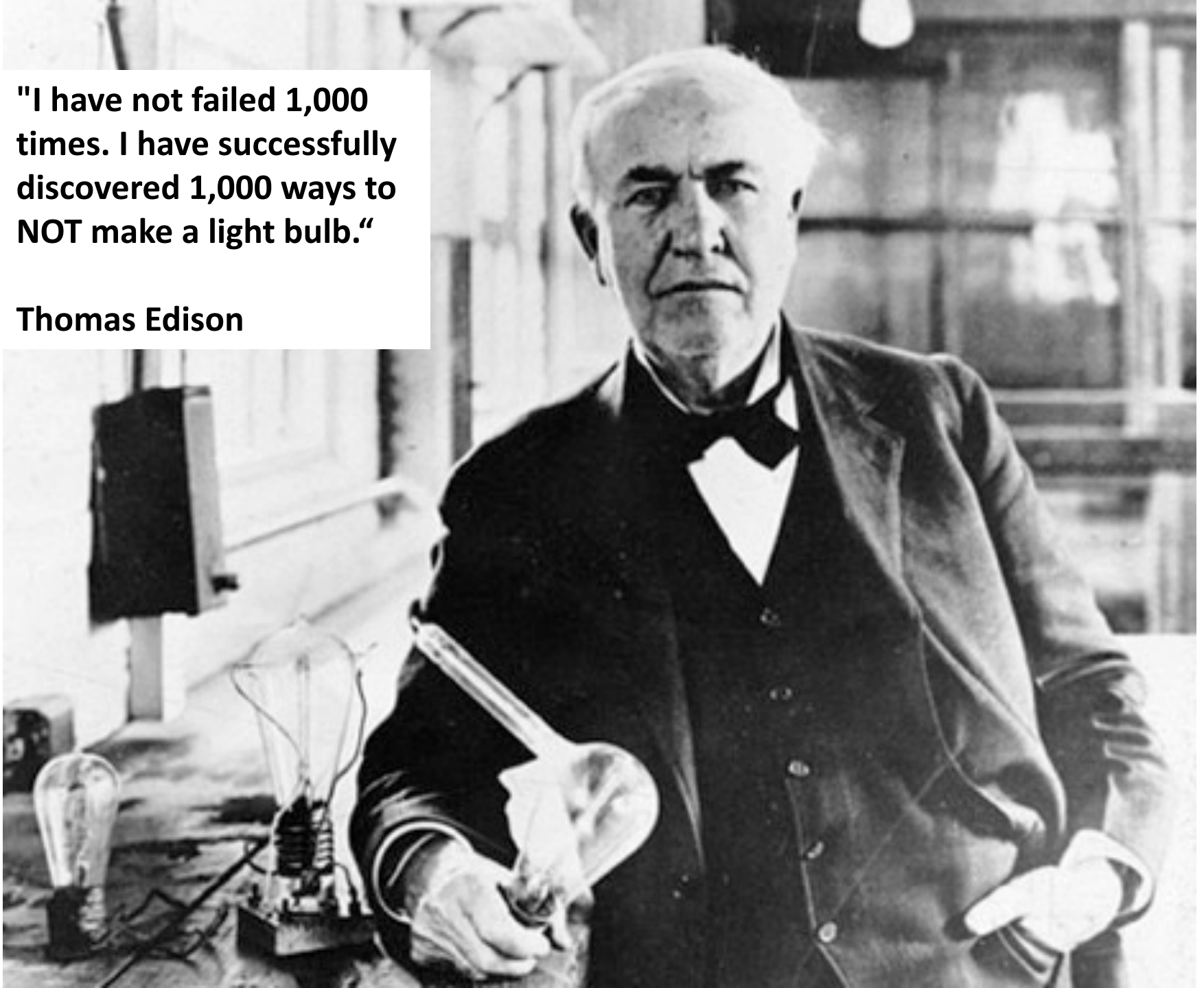
Optimise design
Mitigate technical risk

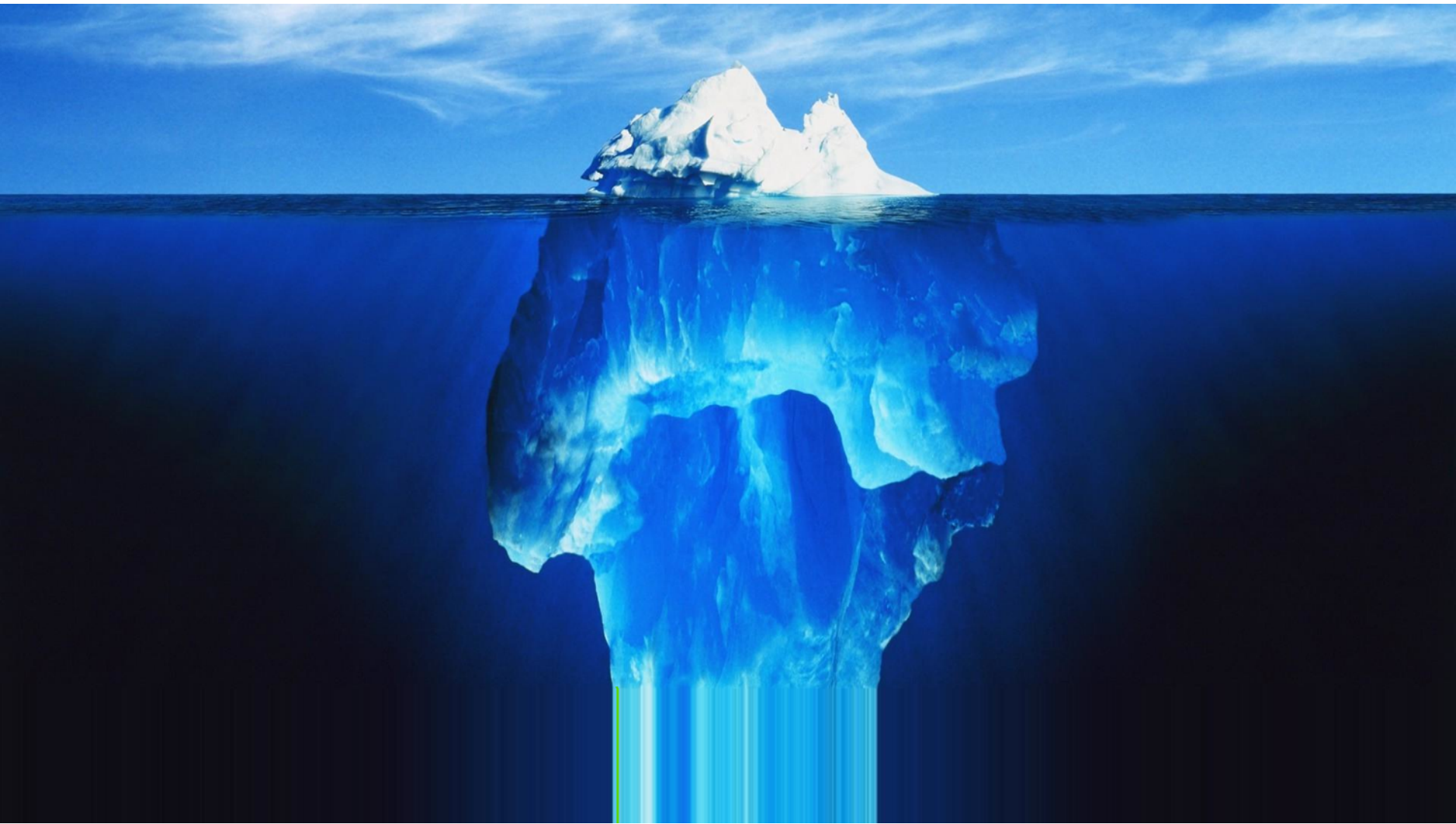
Will it work?



"I have not failed 1,000 times. I have successfully discovered 1,000 ways to NOT make a light bulb."

Thomas Edison







Donald Rumsfeld

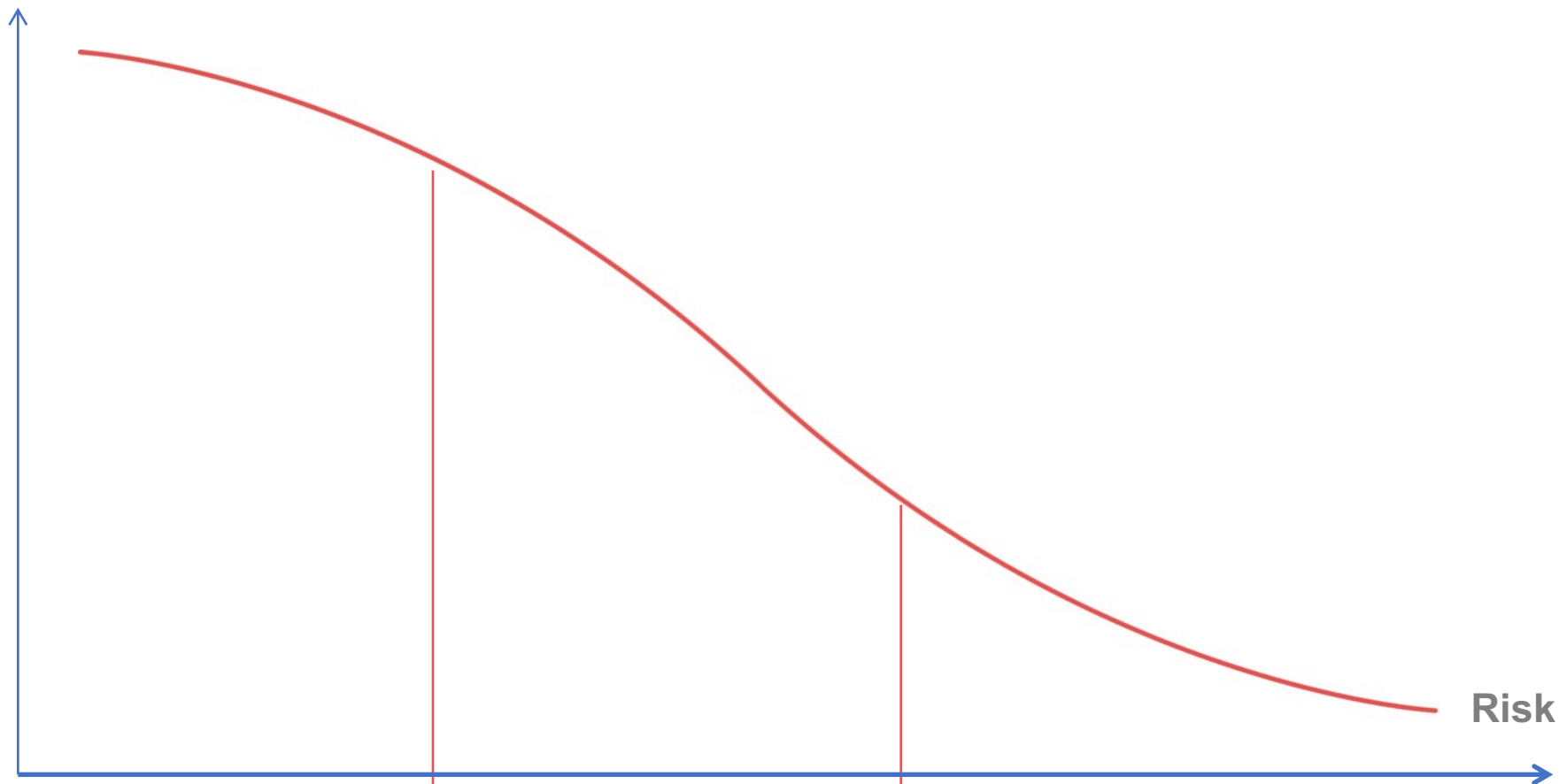
**Secretary of Defence
2001 to 2006**



“[T]here are known
knowns; there are things
we know that we know.

There are known
unknowns; that is to say
there are things that, we
now know we don't know.

But there are also
unknown unknowns –
there are things we do not
know, we don't know. ”



Proof of Principle

Design Concept

Proof of Concept

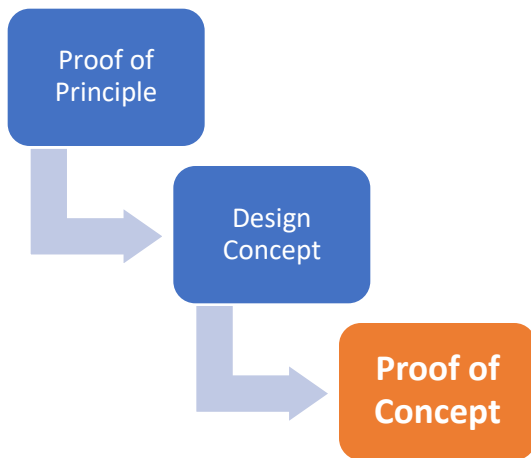
Detailed Design

First Prototype

Design Iteration & Specification

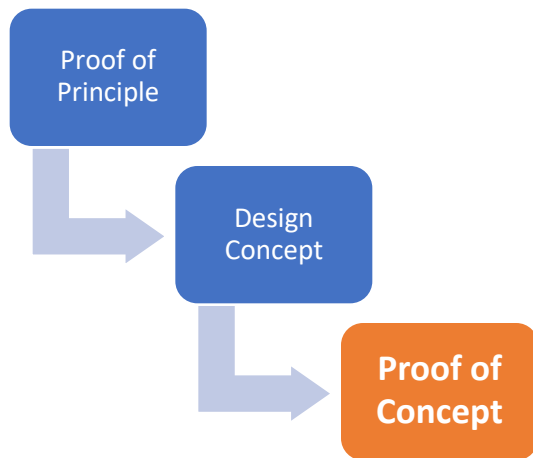
Verify & Manufacture

The Development Process



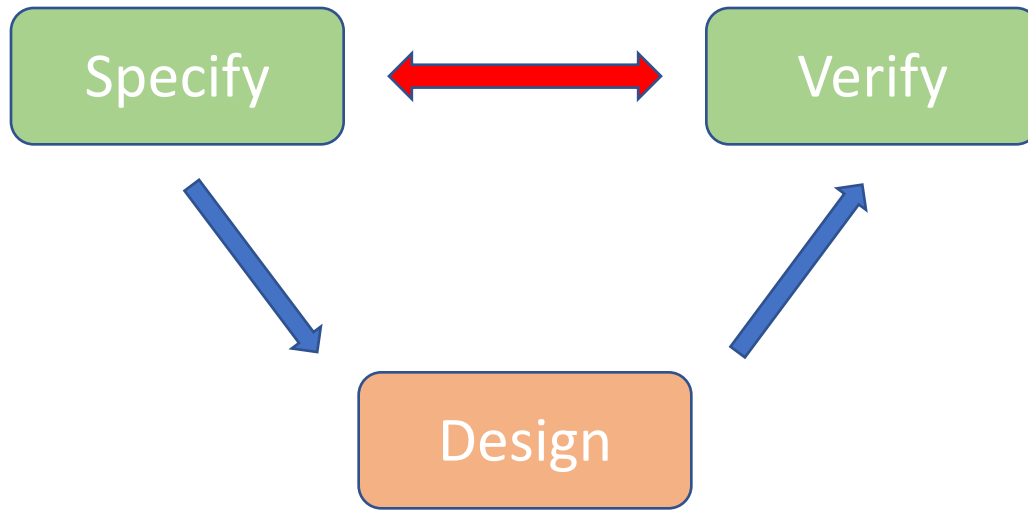
Mitigate technical risk
Optimise design

The Development Process

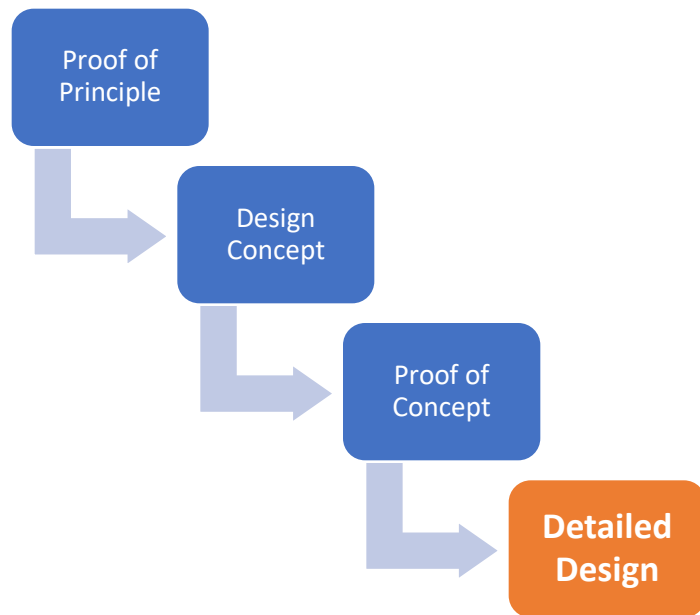


Mitigate technical risk
Optimise design

Review concepts with users
First draft Product Specification
First draft Risk Management

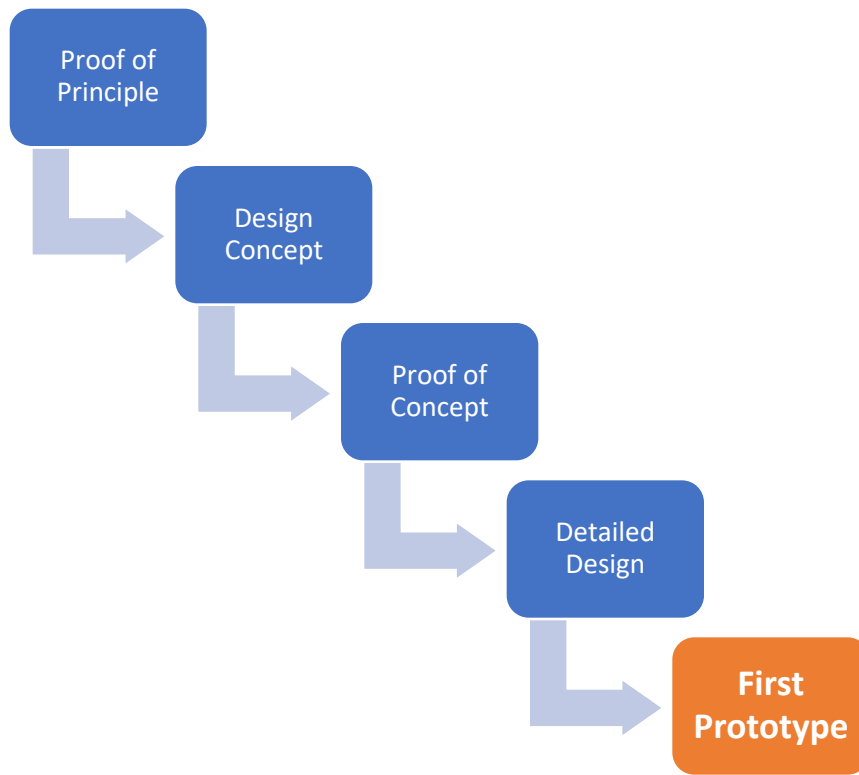


The Development Process



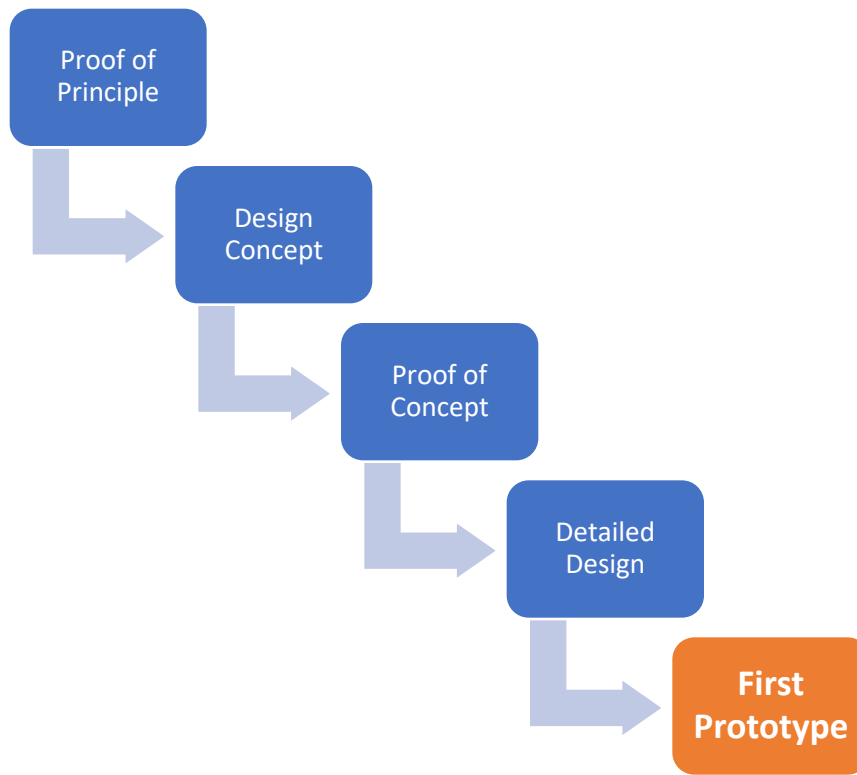
As close to ‘final’ design as possible

The Development Process



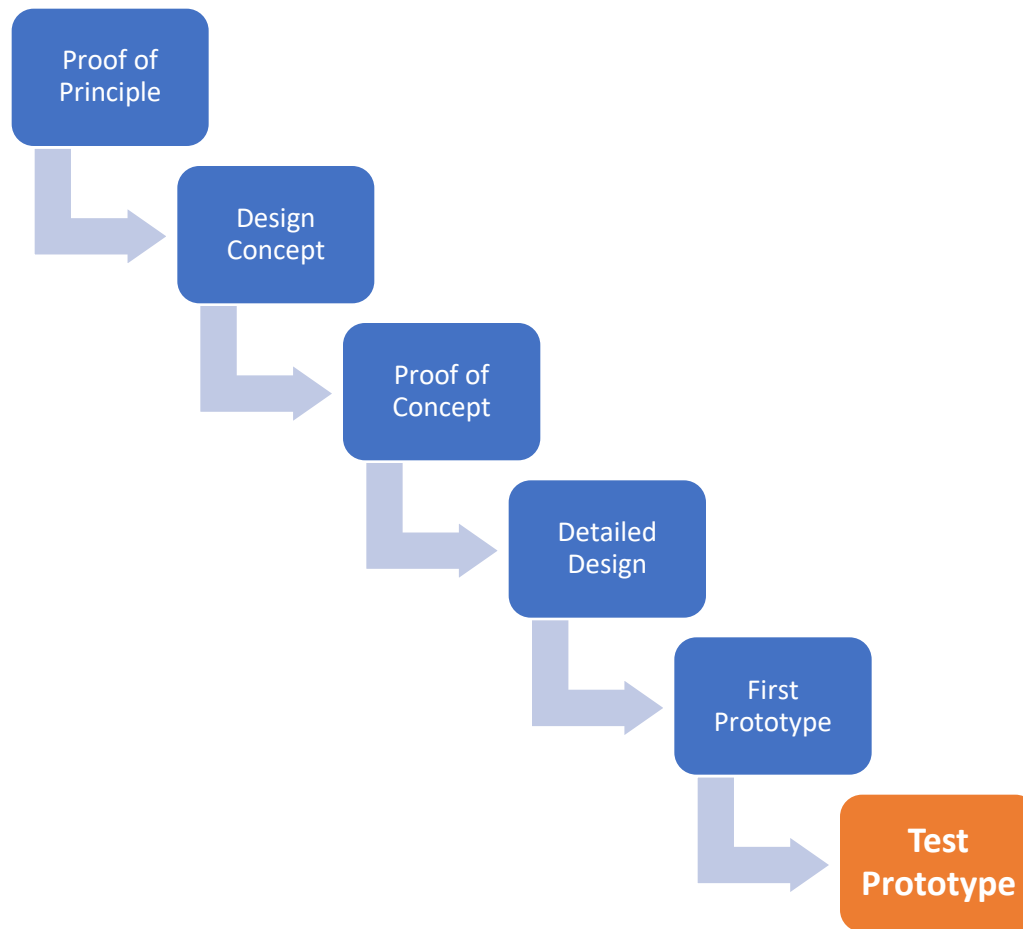
Looks-like
Works-like
NOT made-like

The Development Process



Looks-like
Works-like
NOT made-like

The Development Process



Test and review
Review with users

Review Risk Management

User testing



Inclusive Design Toolkit

Home

Introduction

About users

Process

Tools

Applied to

Contact us



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© Unilever



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© Unilever



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Unilever and Cambridge develop recommendations for Mobile-ready Hero Images.



News highlights

New exclusion calculator enables better assessments for vision and dexterity.

Inclusive design taught in design and technology lessons for secondary schools

Cambridge launches new website for e-commerce image recommendations.

Barclays uses simulation tools to help them become the most inclusive bank.

Cambridge develops new SEE-IT Tool for calculating visual exclusion.

Sheffield Hallam University tests open-ability of food packaging.

Impairment simulator software now freely available.

Anglia Ruskin University uses simulation glasses to examine visual fitness to drive.

Follow us on Twitter @InclDesignTools



What is inclusive design?



Why do inclusive design?



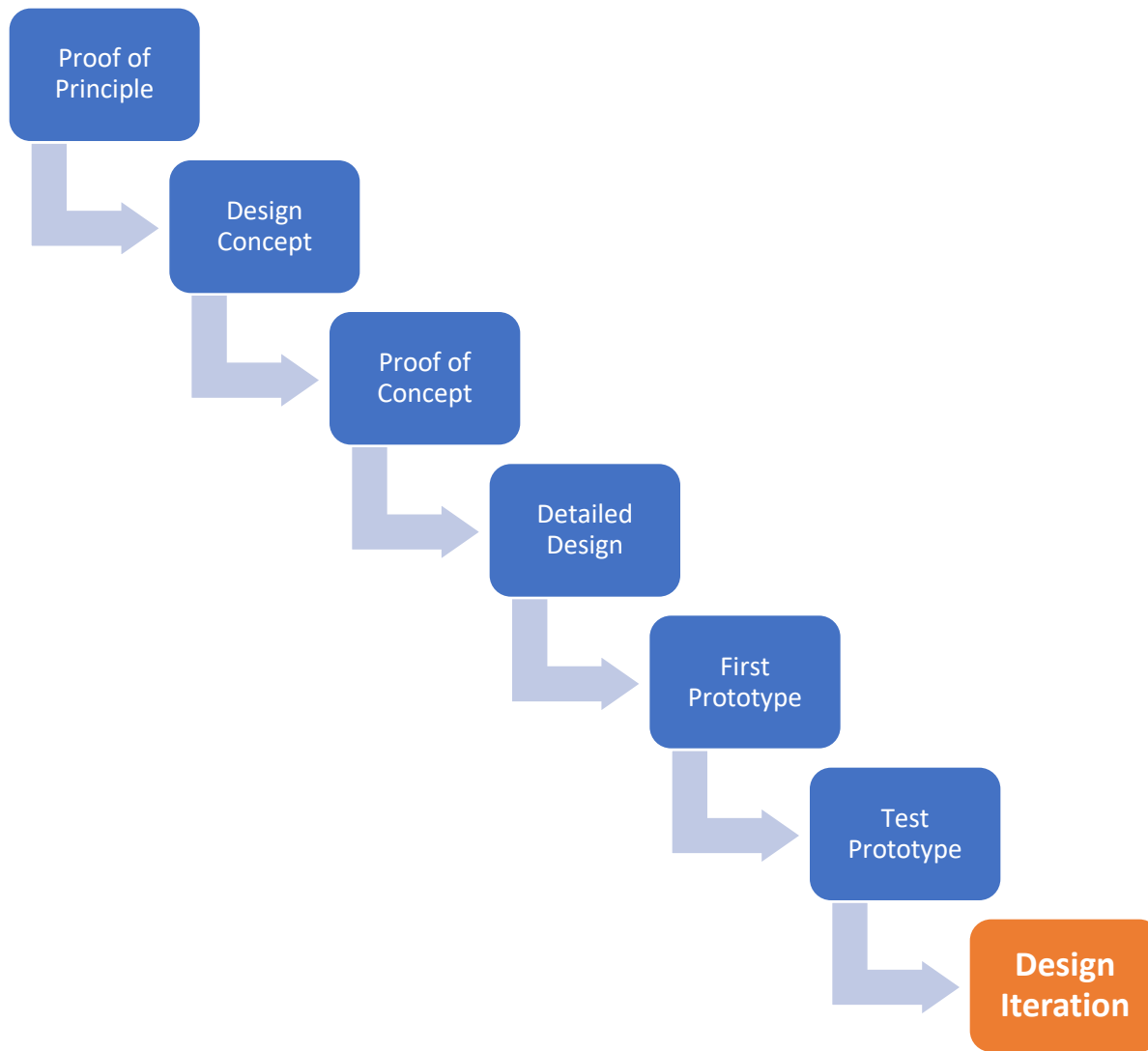
User capabilities and capability loss



The inclusive concept design process

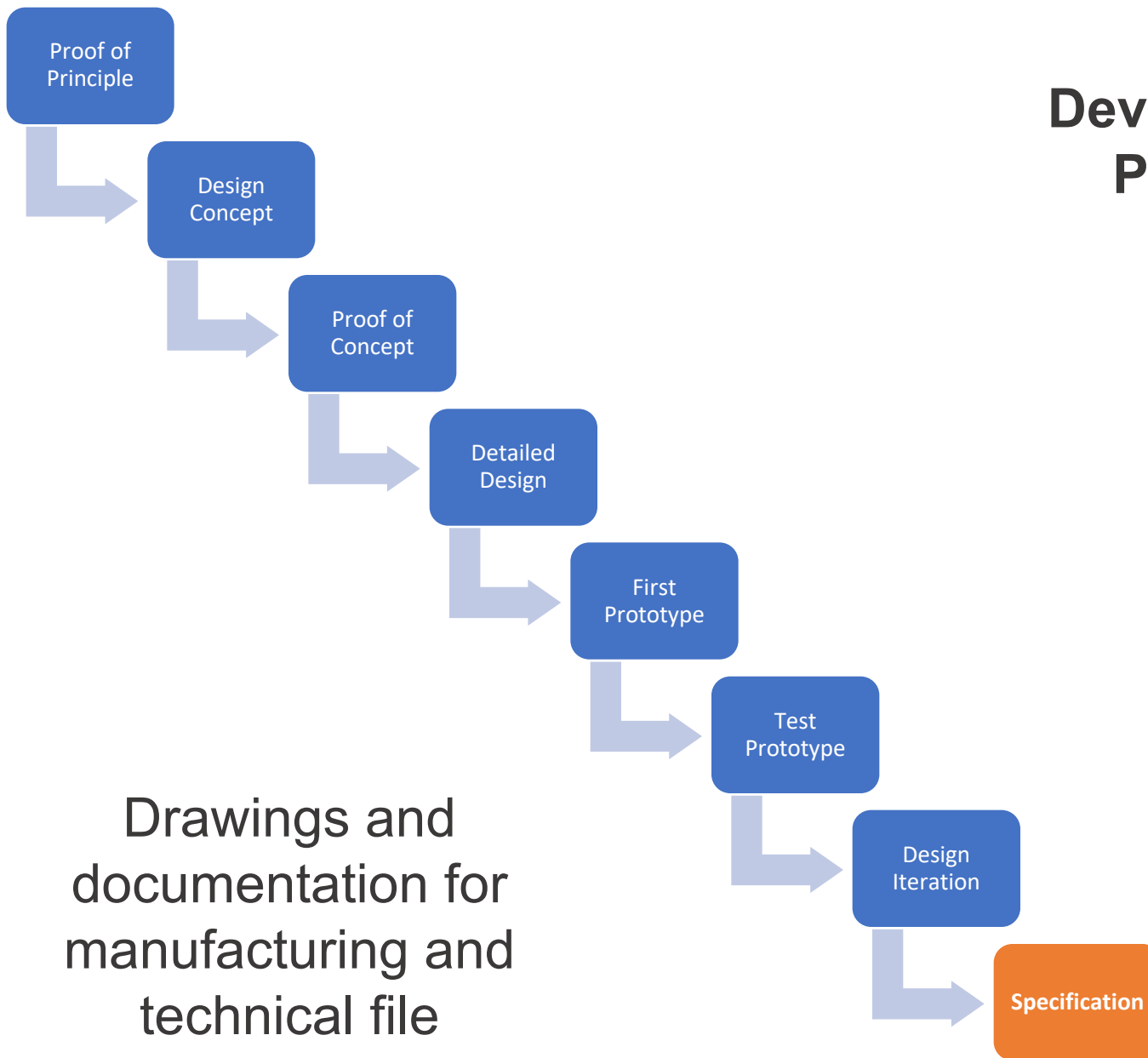


The Development Process



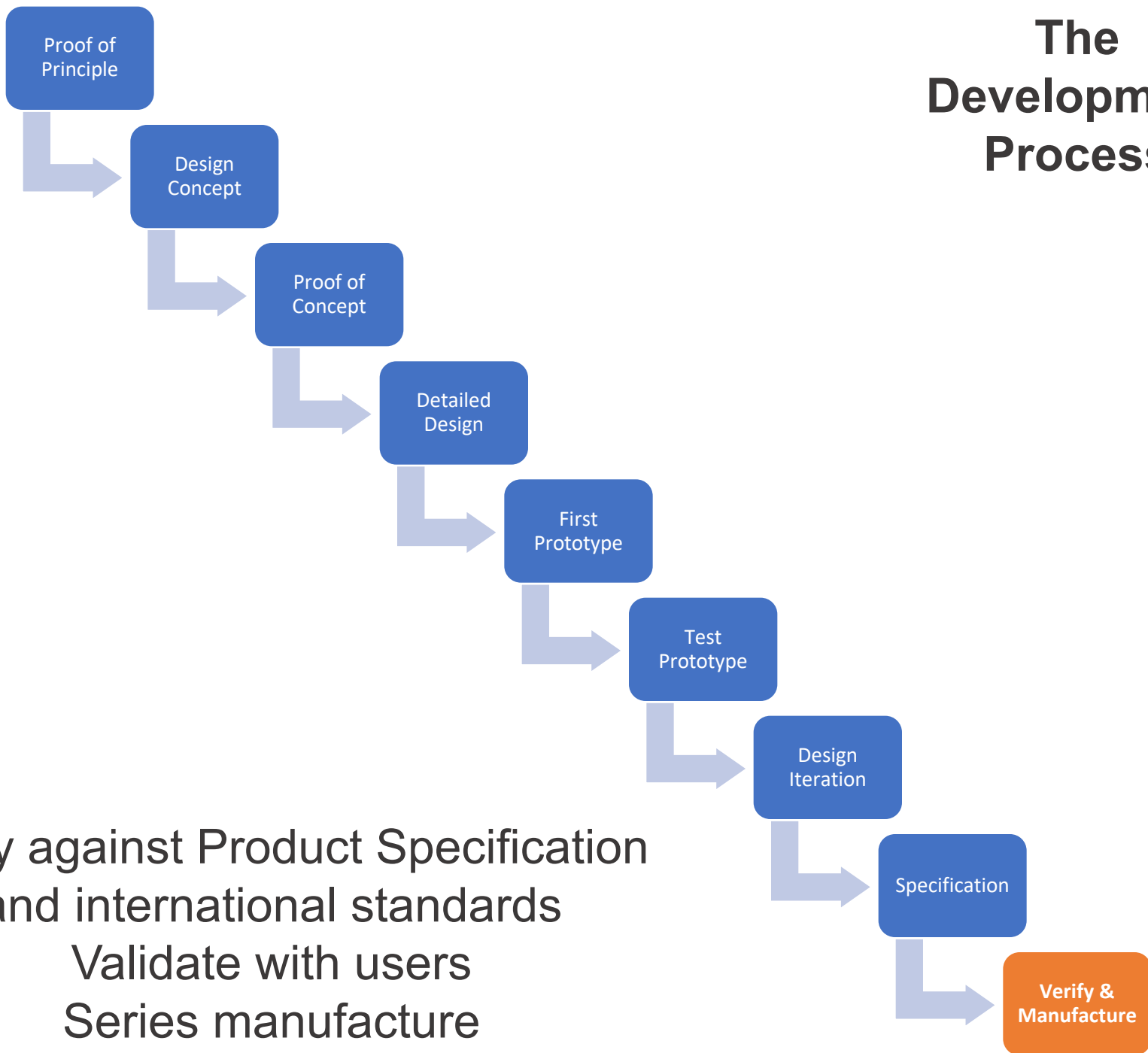
Hopefully relatively minor changes

The Development Process



Drawings and
documentation for
manufacturing and
technical file
Tender

The Development Process



Verify against Product Specification
and international standards

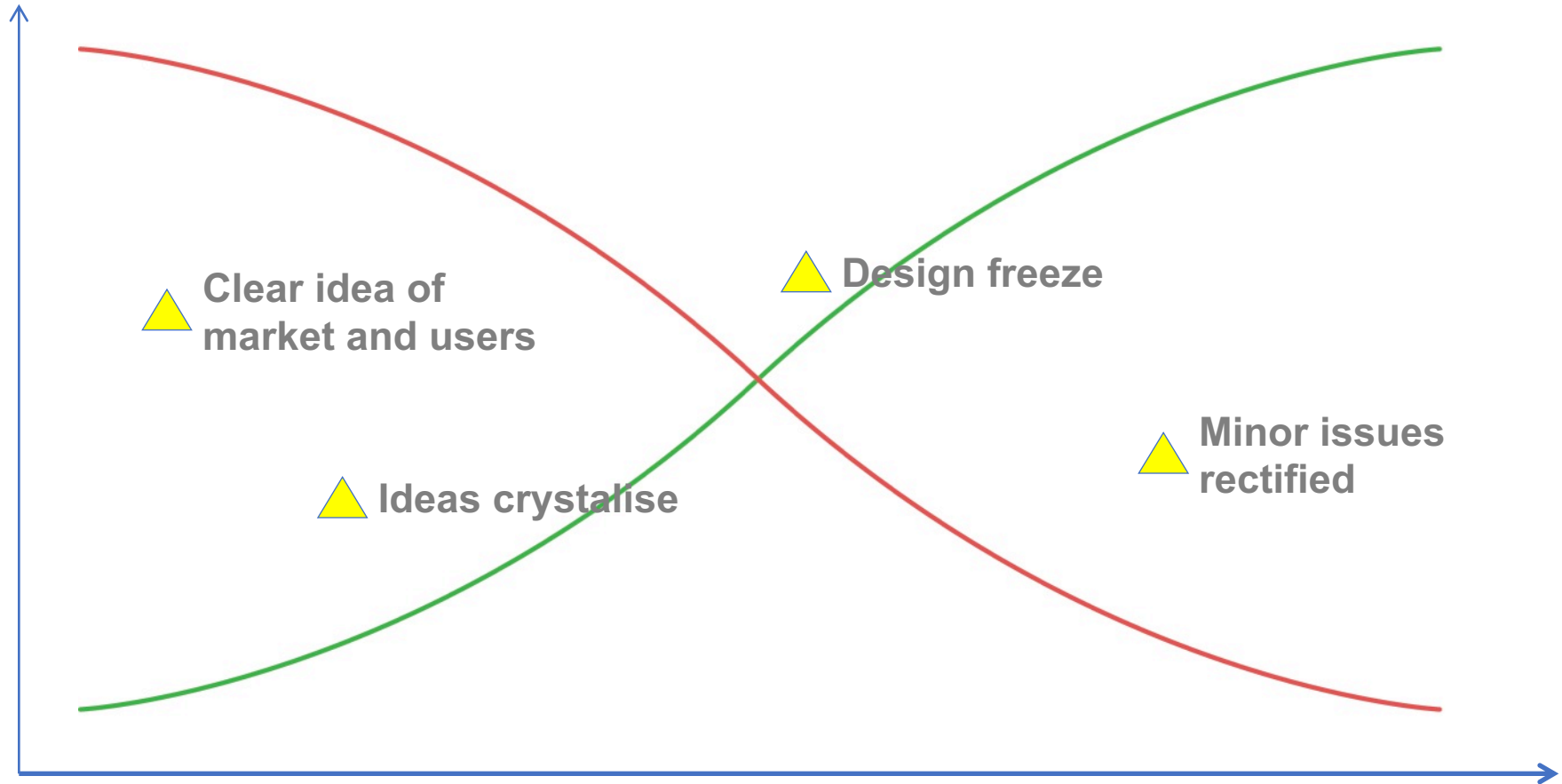
Validate with users
Series manufacture



Name	Date Modified	Size
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What should happen...



Proof of Principle

Design Concept

Proof of Concept

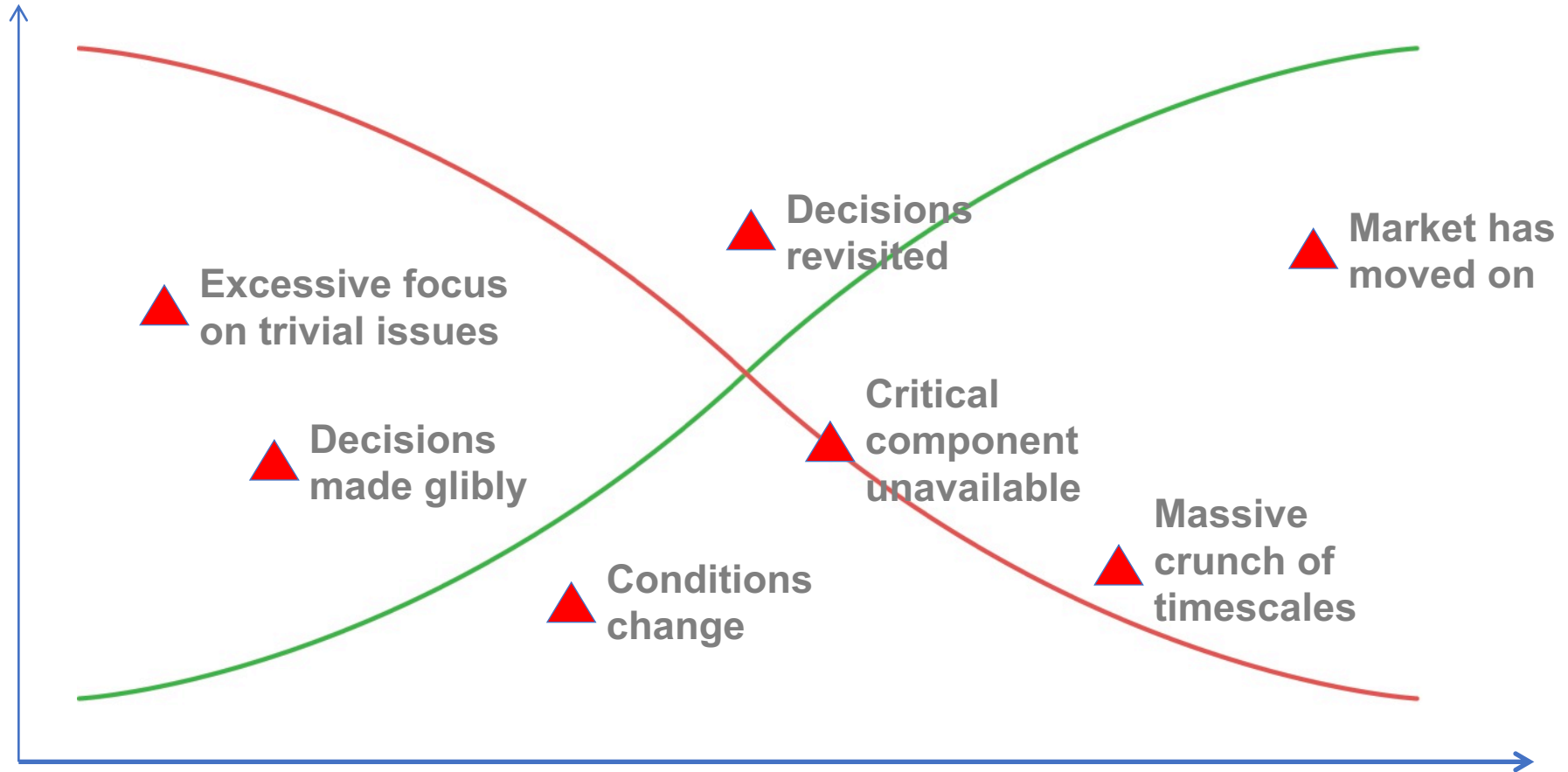
Detailed Design

First Prototype

Design Iteration & Specification

Verify & Manufacture

What tends to happen...



Proof of Principle

Design Concept

Proof of Concept

Detailed Design

First Prototype

Design Iteration & Specification

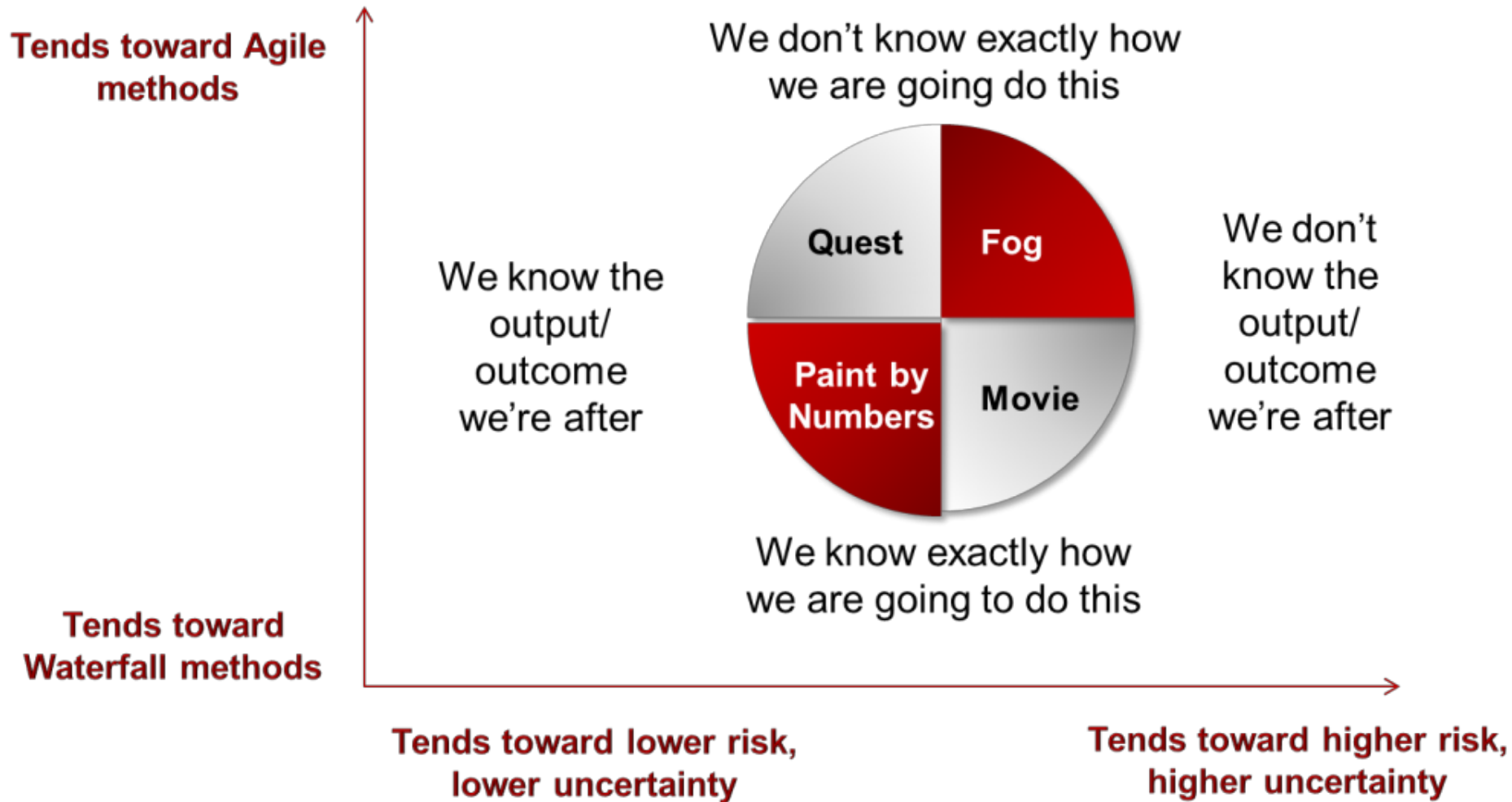
Verify & Manufacture

EDDIE OBENG

FOUNDER, PENTACLE:
THE VIRTUAL BUSINESS SCHOOL









Innovation – mentoring and support for emerging start-ups, workshops

Grant applications – building consortiums

Visualisations – Communicating value of technology

Product design – Devices and GUIs

Prototyping – design evaluation and patient trials

Manufacturing specification

Building supply chain