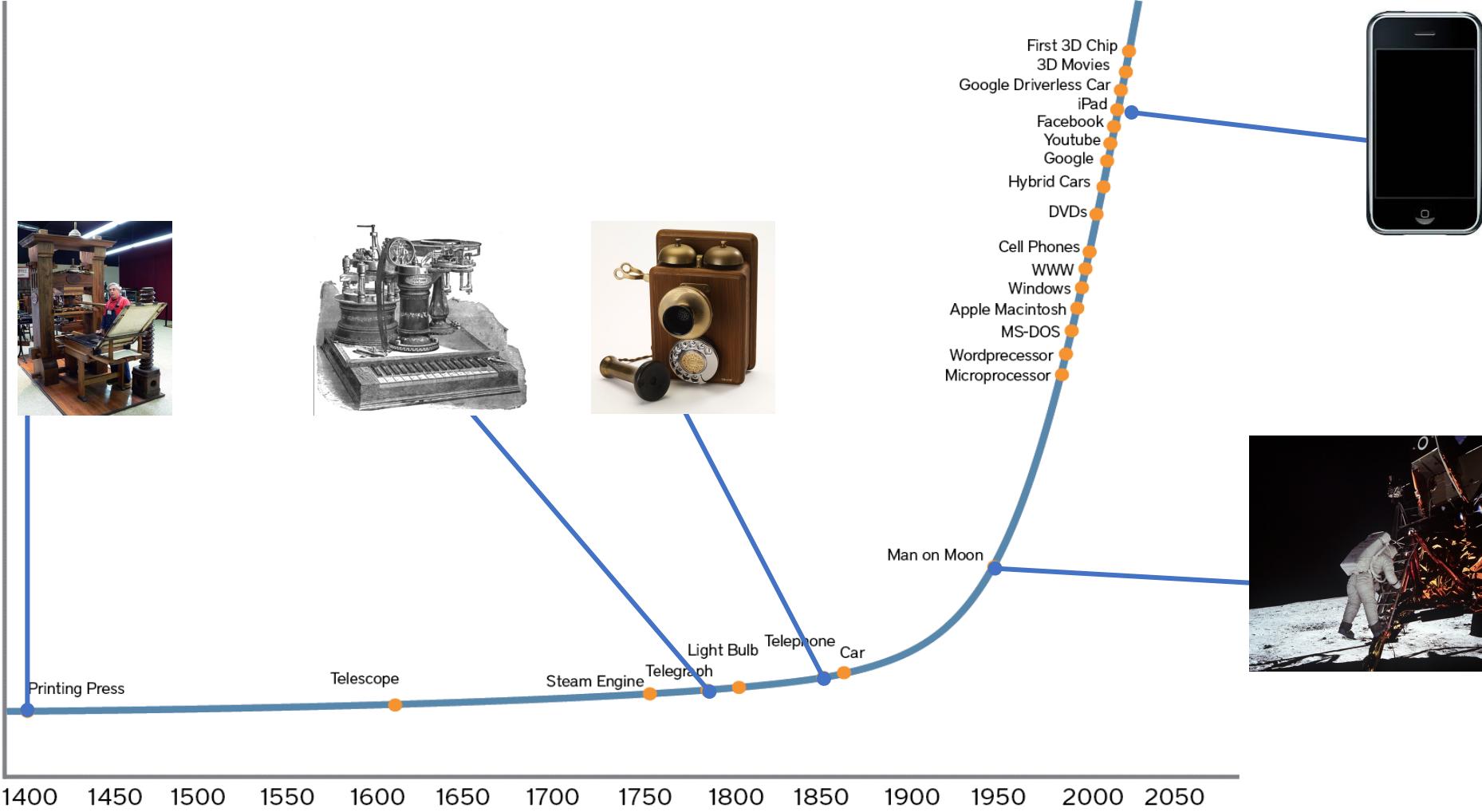




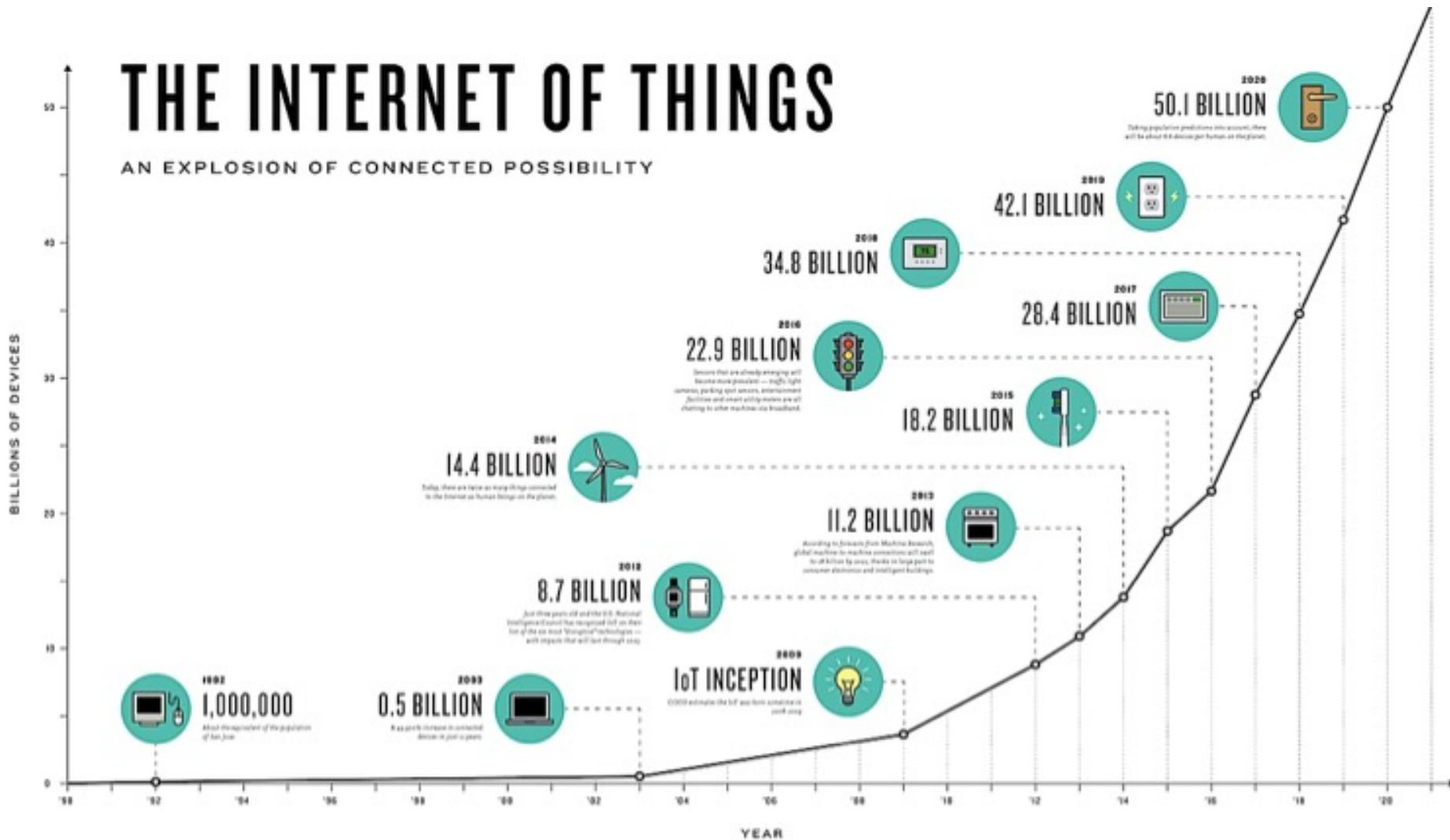
Developing & Validating Business Models

Prof Nico Adams
Optus Chair of Digital Innovation and IoT

Change Cadence



(Industrial) Internet of Things



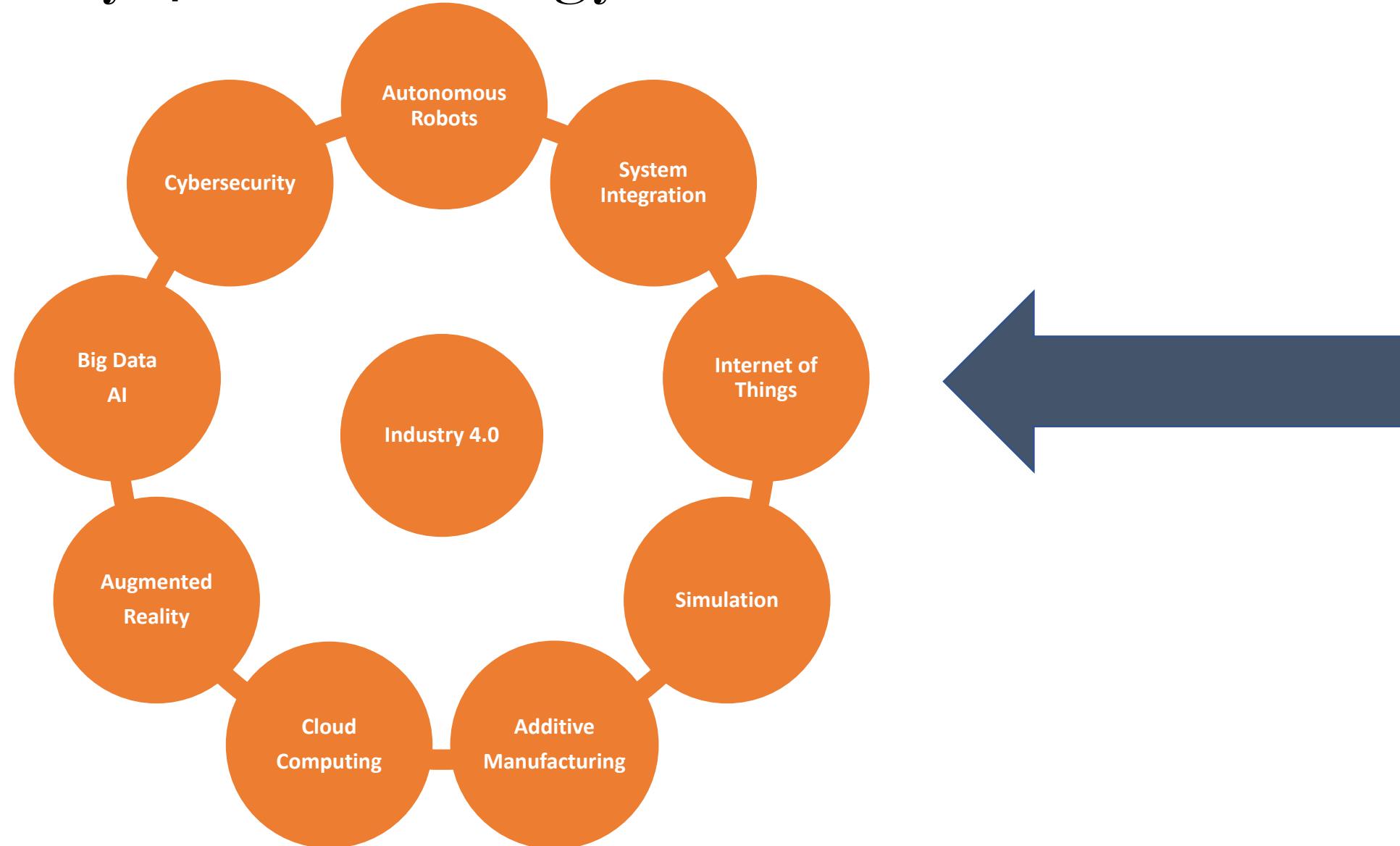
5.5 million new devices/day

200 billion new devices By 2020



Drivers of Change – Digital Technologies

Industry 4.0 Technology Set



Key Drivers of BMI



IIoT

- 200 billion connected devices
- Exponential growth in sensing
- USD 1.4 trillion + by 2021



Co-/Ro-botics

- Shift human workers to higher value added tasks
- Human/robot collaboration
- USD 225 billion + by 2021



Data Analytics/AI

- Decision making
- Generative AI
- Cognitively complex tasks
- USD 45 billion + by 2021



Computing

- Continued exponential increase in computing power

Eight Drivers of Industry 4.0



Asset Utilisation

- Predictive maintenance
- Avoidance of unplanned downtime
- OEE

Labour

- Reduce waiting time
- Increase speed of operations for workers
- Reduce Task Complexity
- Reduce strain

Inventories

- Reduce excess supply in stock
- Improved Demand Planning
- Production Levelling

Quality

- Avoidance of Rework
- Process Stabilisation
- Root cause analysis in real time

Supply & Demand Match

- Improve accuracy of demand forecasting
- Improved production planning
- Better inventory management

Time to Market

- Better customer insights through smart products
- Faster prototyping and feedback loops
- Digital Prototyping
- Open Innovation

Service and Aftersales

- Predictive Maintenance
- Product Service Systems
- Business Model Innovation

Resource & Process

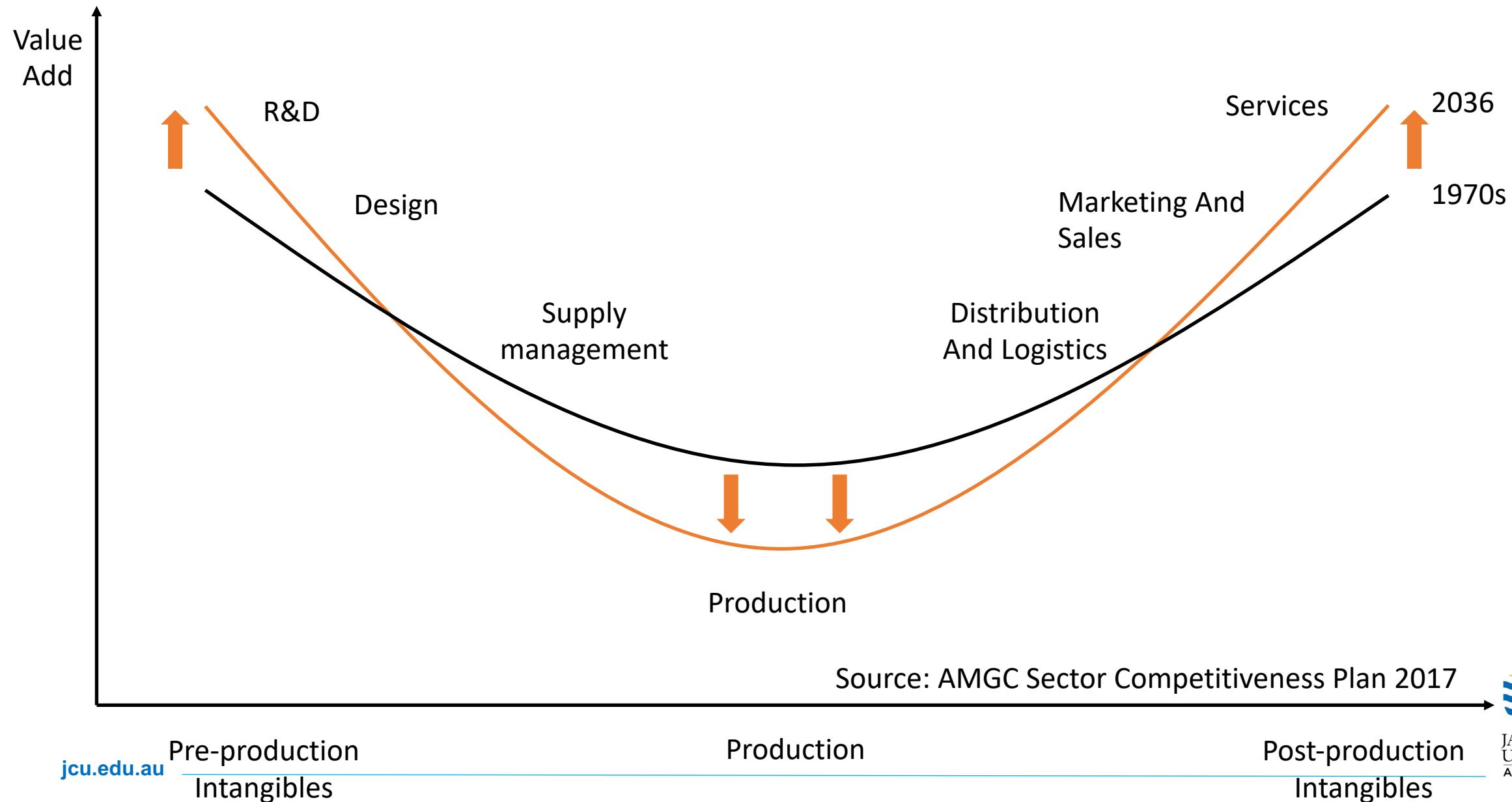
- Process Definition and Optimisation
- Waste Avoidance
- Sustainability
- Circularity

IIoT/Industry 4.0 Drives Business Model Innovation

Creating & Capturing Value

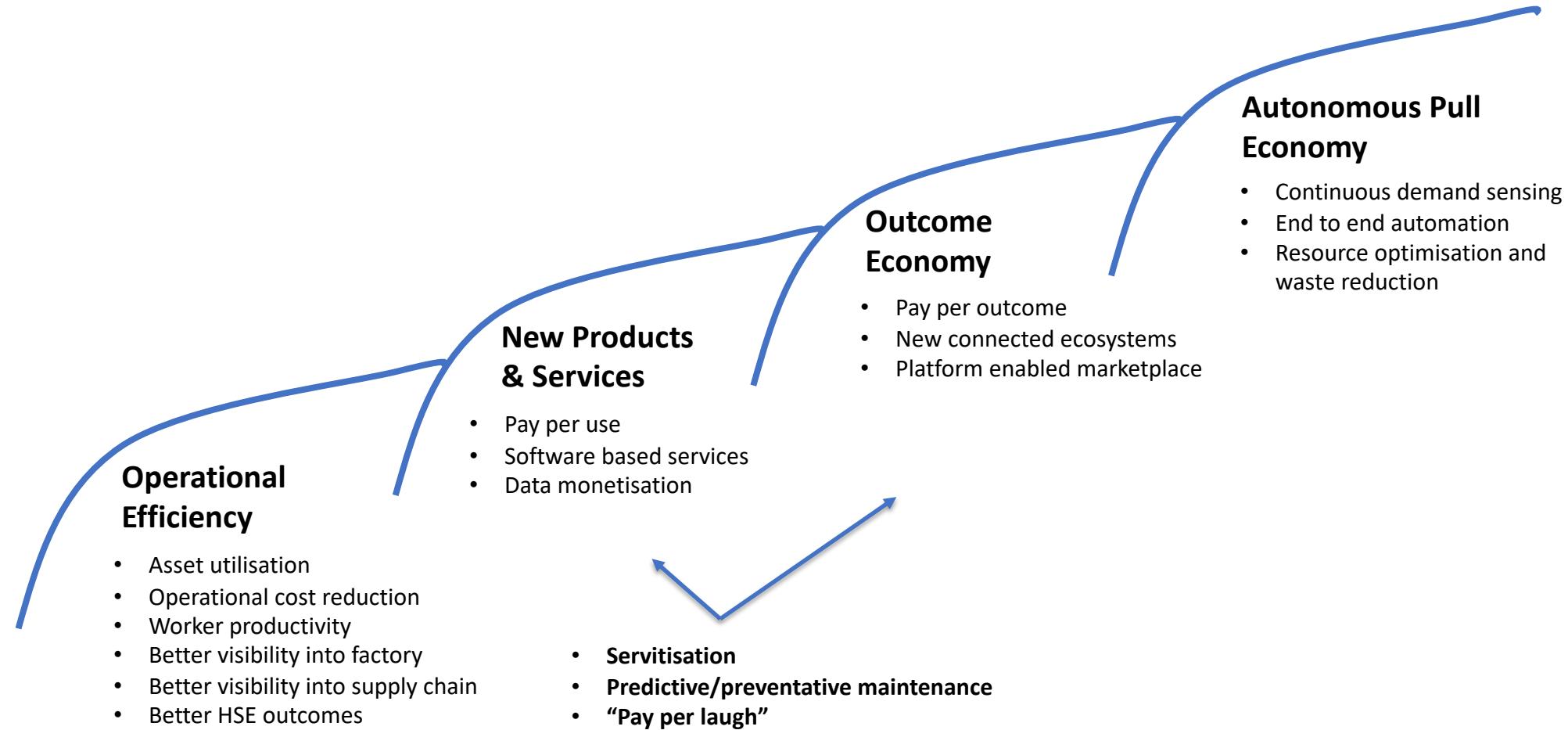
		Traditional (Manufacturing) Mindset	Digital (Manufacturing) Mindset
Value Creation	Customer Needs	Service existing needs , reactive	Address real time + emergent needs in a predictive manner
	Offering	Product obsolescence as a function of time	Product refresh via software update, partial physical upgrade, synergistic
	Role of Data	Single data point to define future products	Use data to create product experience , enable services, synergies with other systems
Value Capture	Profit Creation	Sell the next/more of product	Enable recurring revenue
	Control Points	IP ownership, brand, commodity advantage	Personalisation, context, network effects
	Capability	Use existing core competence, resources and processes	Systems thinking , multi-sided markets, platforms

The Smiling Curve



JAMES COOK
UNIVERSITY
AUSTRALIA

BMI in Manufacturing through Industry 4.0



Servitisation Case Study: Smartline



https://www.smartlinemedical.com/s/Cabinets_-Catalogue-v201906.pdf

Smart Endoscope drying and storage cabinets

- Real time monitoring of drying process, connection and airflow
- Smart ergonomics

CleanPath Digital Platform

- Remotely monitor the performance of sterilization equipment
- Monitoring as a service

Outcome Economy Case Study: Teatreneu Barcelona

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Open mic Comedy

Pay-per-laugh: the comedy club that charges punters having fun

Reportedly a riposte to the Spanish government's tax on theatre tickets, one Barcelona club's gimmick could be the harbinger of the comedy apocalypse

Brian Logan
Wed 15 Oct 2014 02.49 AEDT

16   



Right, that'll be 30 euro cents from each of you. Photograph: Alamy

It's the world we live in: every human activity broken down into measurable chunks, everything made quantifiable, the easier to be priced, packaged and sold. So why should comedy be spared? But still, this story has the air of a belated (or early) April Fool. Is there really a theatre in Barcelona that's set up a pay-per-laugh scheme for comedy audiences? Are standup punters really being charged every time they crack a smile?



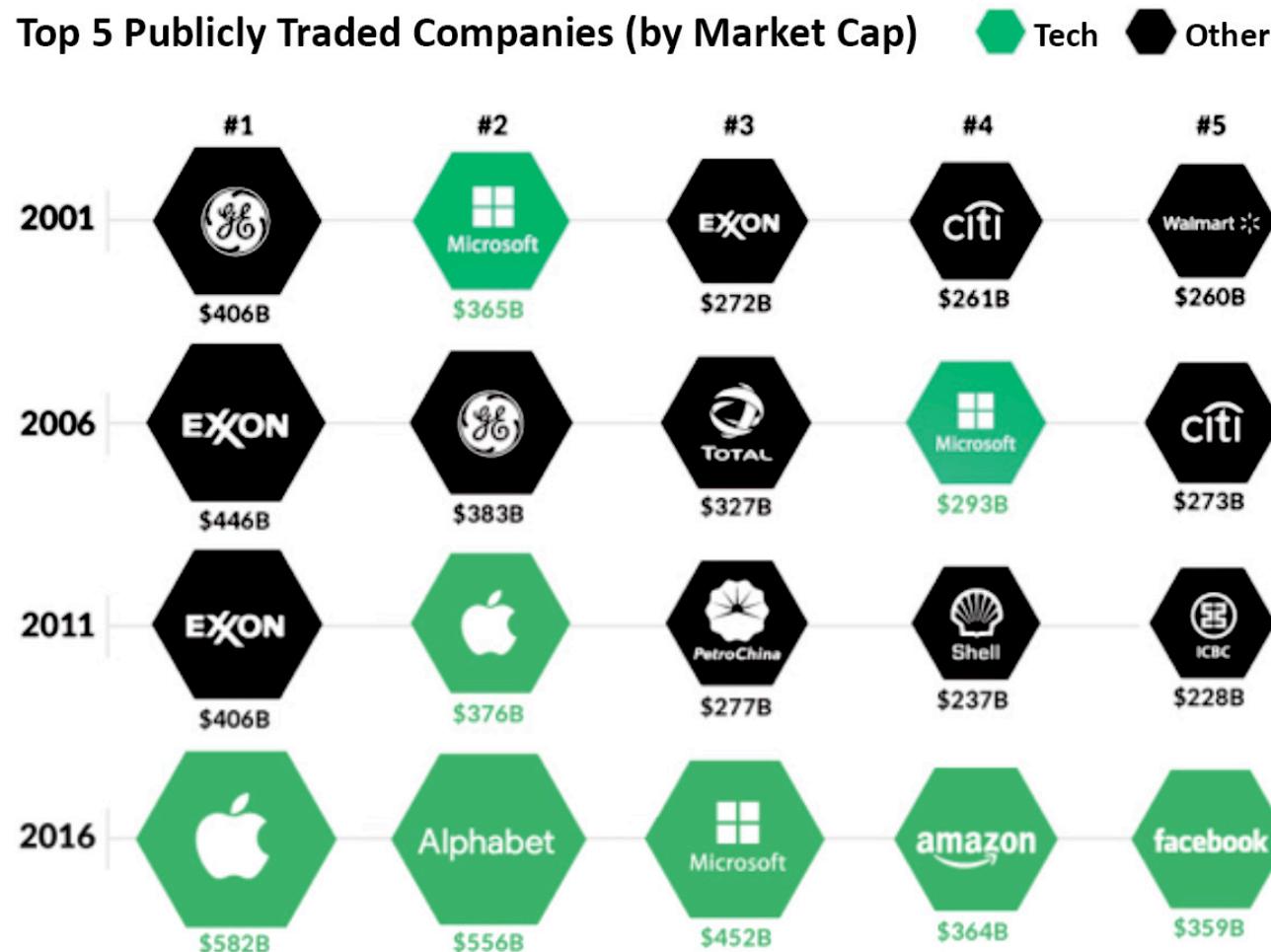
[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)

Outcome Economy Case Study: Rolls Royce



[This Photo](#) by Unknown Author is licensed under [CC BY](#)

Products > Services > Platforms



Source: Adrian Turner, Data61

Three Kinds of Fit....

Product-Business Model Fit

- You have evidence that you can deliver your value proposition repeatably
- You have evidence you can deliver your value proposition at scale

Product-Market Fit

- You have evidence that your value proposition prototype is creating value for customers
- You are starting to get traction in the market

Problem-Solution Fit

- You have evidence of a problem customers care about
- You have a value proposition prototype



The Ingredients of a Business Model

Def(Company)

A business organization, which sells a product or service in exchange for revenue and profit.

Def(Business Model)

A business model describes the rationale of **how** an organization
creates, delivers and **captures value**.

New Product/Process/Service

For an existing company

You need to **describe** the rationale of **how** an the new

product/process/service **creates, delivers** and **captures**

value for the company

The Ingredients of a Business Model

Customer Segment

Key Resources

Value Proposition

Key Activities

Channels

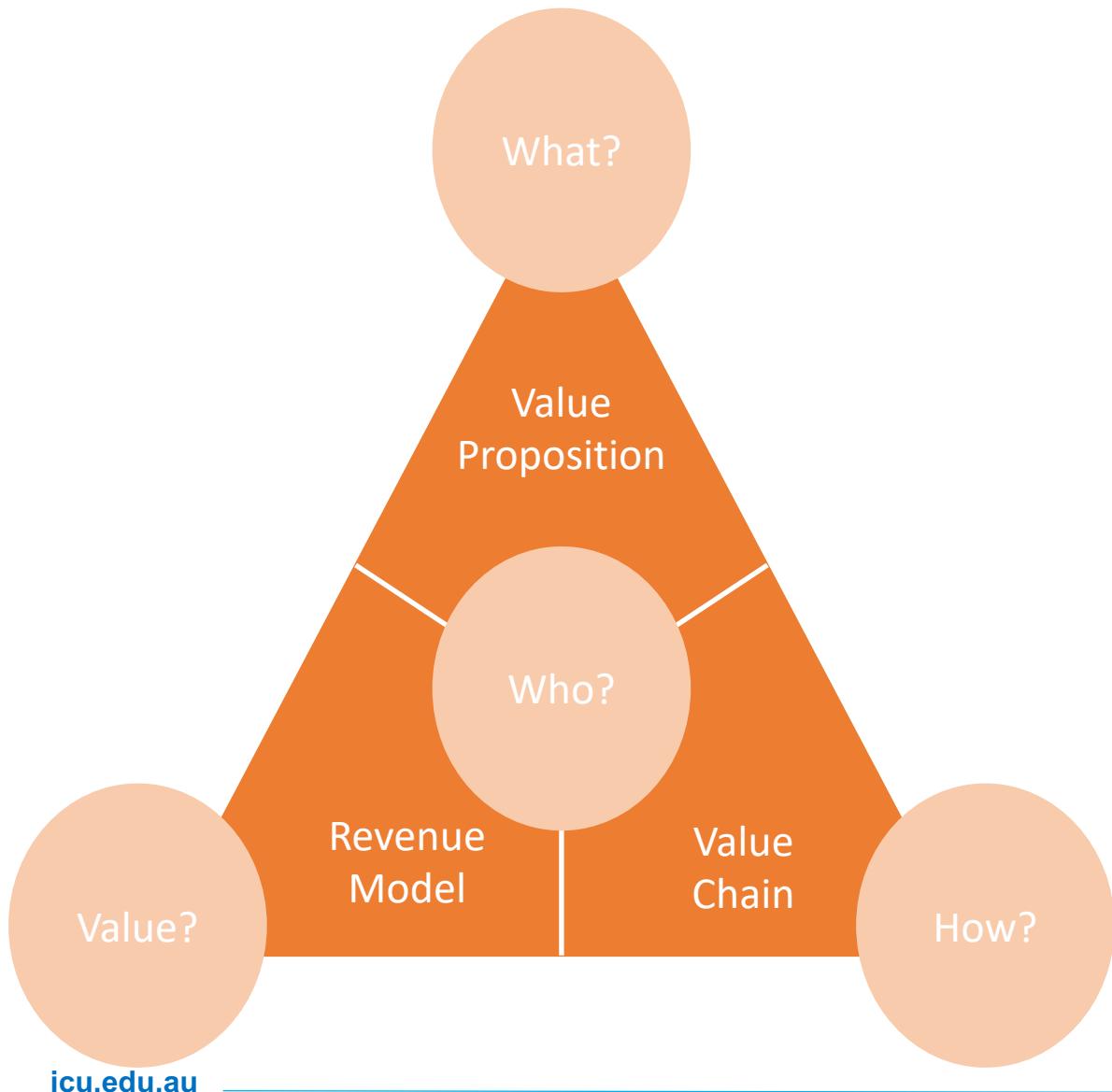
Key Partnerships

Customer Relationships

Cost Structure

Revenue Streams

St Gallen Business Model Navigator



Who

- Who is the customer?

What

- What the customer values
- Bundle of products and services valued by the customer

How

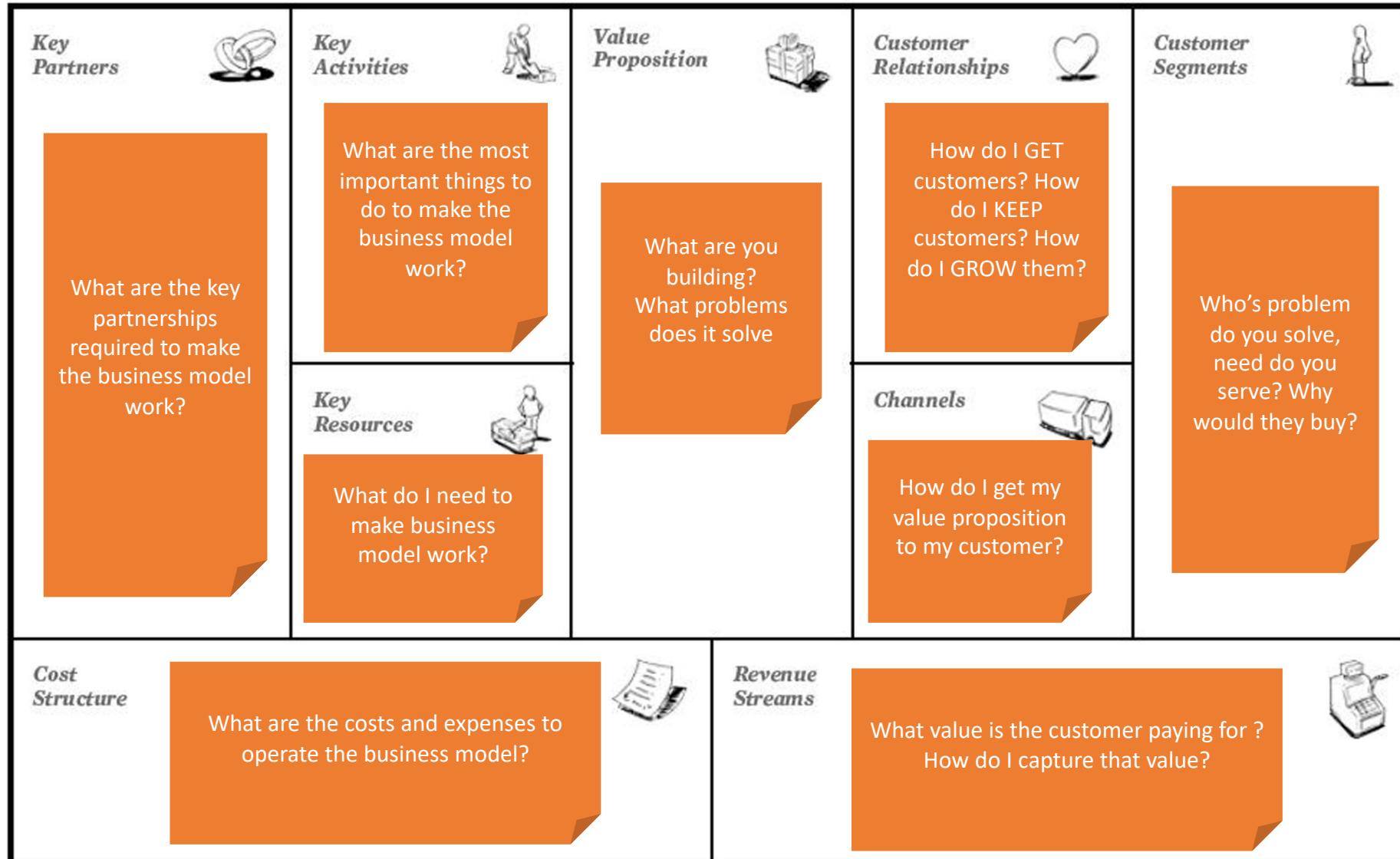
- How to build the value proposition
- How to distribute the value proposition

Value

- Why is the business model financially viable?
- Cost structure
- Revenue Mechanism

<https://businessmodelnavigator.com/>

Business Model Canvas



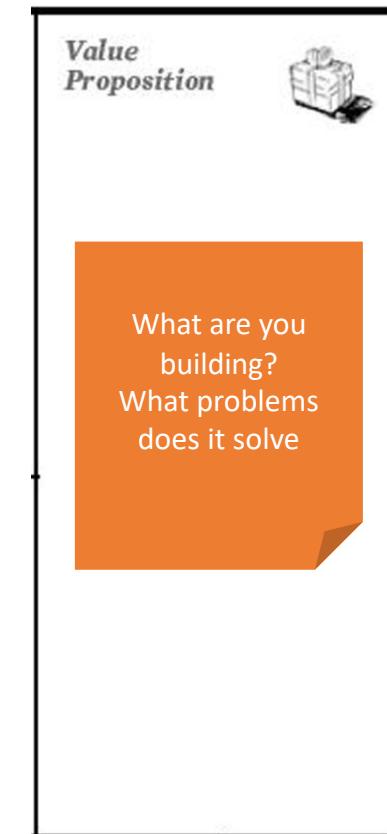
Deep dive - Customer Segment

- Their needs require and justify a distinct offer
 - *Mass market*
 - *Niche market*
 - *Segmented market*
 - *Diversified market*
 - *Multisided market*
- They are reached through different distribution channels
- They require different types of relationships
- They have substantially different profitabilities
- They are willing to pay for different aspects of the offer



Deep dive - Value Proposition

- What value do we deliver to the customer
- Which one of our customer's problems are we helping to solve?
- Which customer needs are we satisfying
- What bundles of products and services are we offering to each customer segment?



Designing Great Value Propositions

Understanding your customer

Def(Value Proposition)

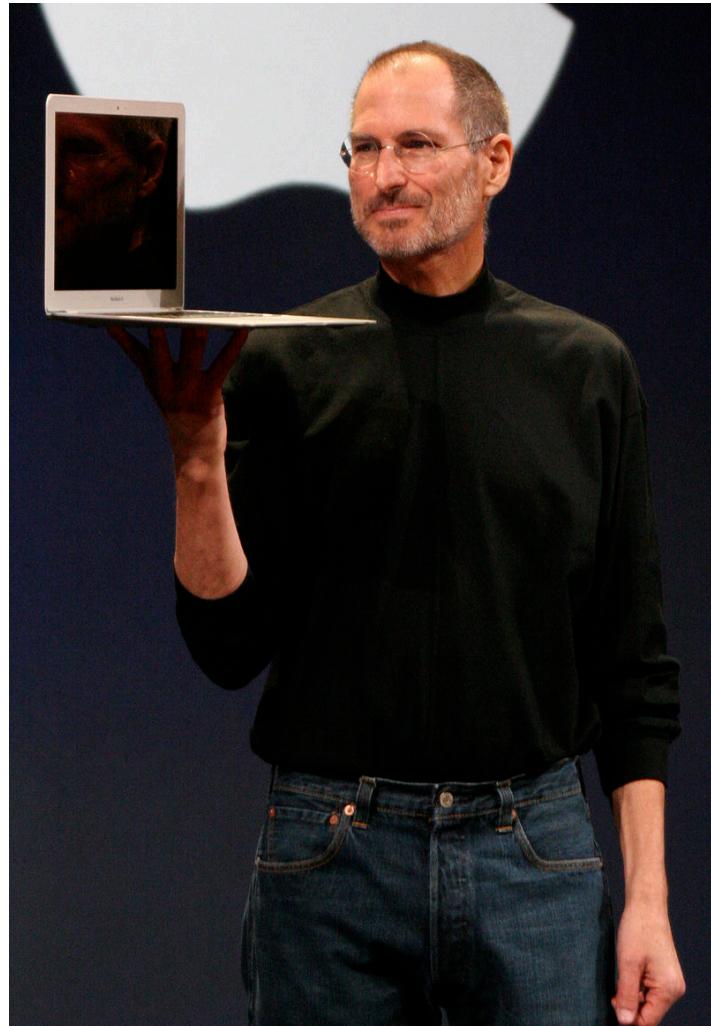
...describes the **benefits** customers can expect from your products and services....

Asking people what they want



“If I had **asked**
people what they
wanted, they would have
said: **faster**
horses...”

People don't know what they want....



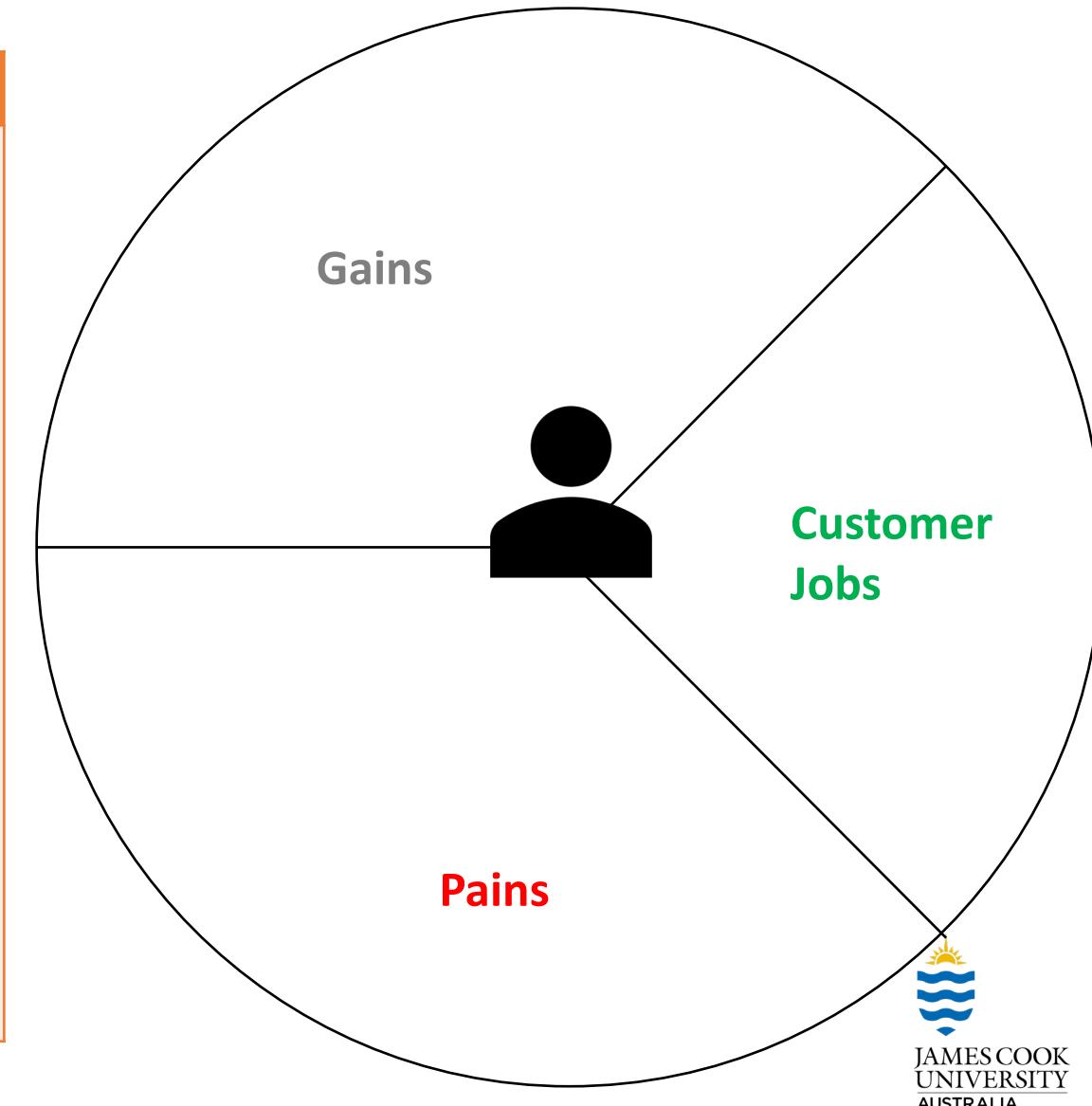
“People **don’t know**
what they want until
you **show it to them.**

That’s why I never rely on marketing research.

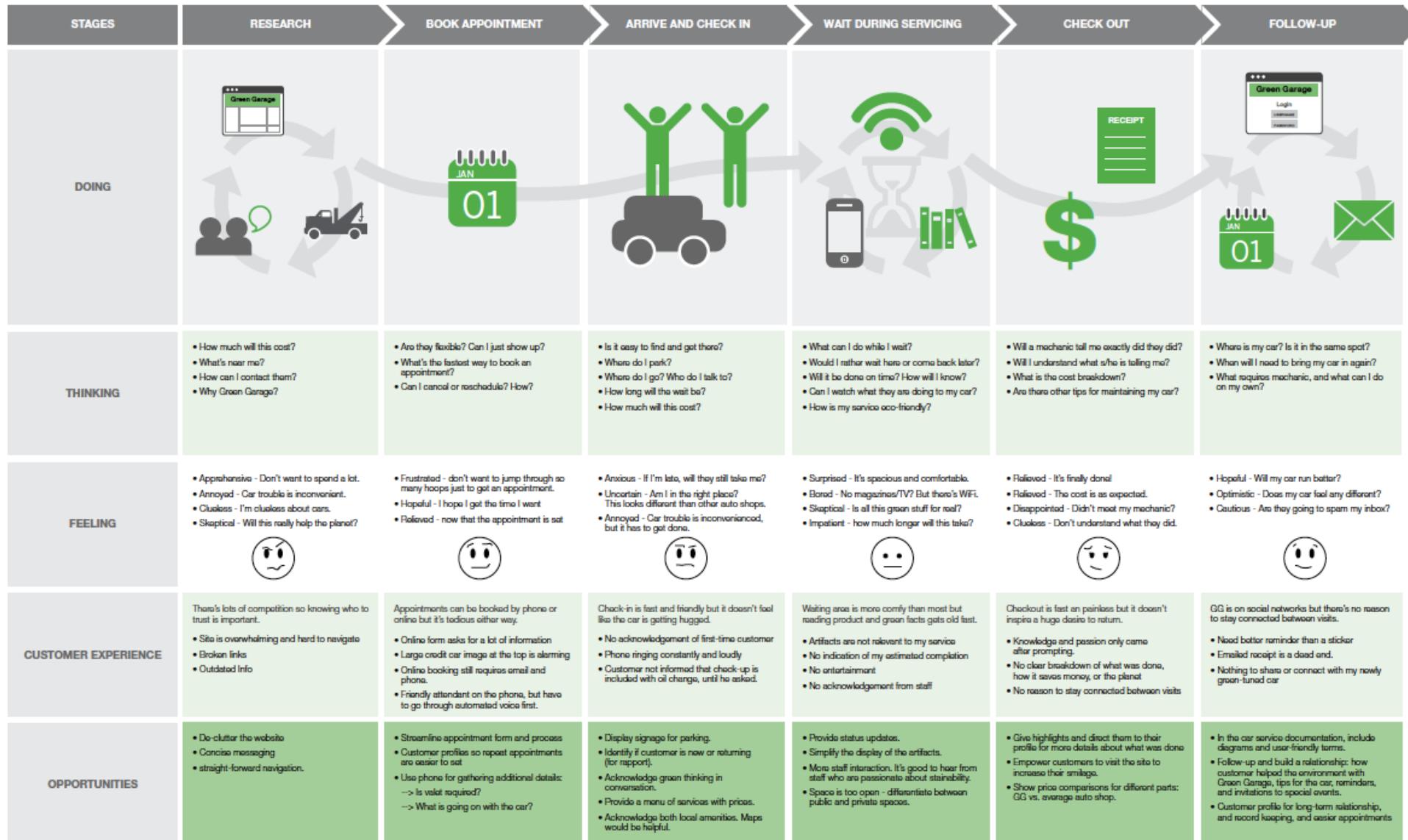
Our task is to ” **read things**
that are not yet
on the page.”

Customer Understanding

Gain	Pains	Jobs
Required Gains	Undesired Outcomes	Functional Jobs <ul style="list-style-type: none">• Write a report• Mow the lawn
	<ul style="list-style-type: none">• “Solution doesn’t work well”• “I look bad doing this”• “I feel bad” doing this	Social Jobs <ul style="list-style-type: none">• Gain status• Perception
Expected Gains	Obstacles	Personal Jobs <ul style="list-style-type: none">• Feel good• Feel secure• Peace of Mind
	<ul style="list-style-type: none">• “I lack the time to do this”• “I can’t afford any of the existing solutions”	Supporting Jobs <ul style="list-style-type: none">• Buyer of value• Creator of value• Transfer of value
Desired Gains	Risks	
	<ul style="list-style-type: none">• “A security breach would be a disaster”• “I might lose credibility”	
Unexpected Gains		
	<ul style="list-style-type: none">• Touch screen in smartphone	



Customer Journey Mapping



Customer Gains Trigger Questions

- Which savings would make your customers happy? Which savings in terms of time, money, and effort would they value?
- What quality levels do they expect, and what would they wish for more or less of?
- How do current value propositions delight your customers? Which specific features do they enjoy? What performance and quality do they expect?
- What would make your customers' jobs or lives easier? Could there be a flatter learning curve, more services, or lower costs of ownership?
- What positive social consequences do your customers desire? What makes them look good? What increases their power or their status?
- What are customers looking for most? Are they searching for good design, guarantees, specific or more features?
- What do customers dream about? What do they aspire to achieve, or what would be a big relief to them?
- How do your customers measure success and failure? How do they gauge performance or cost?
- What would increase your customers' likelihood of adopting a value proposition? Do they desire lower cost, less investment, lower risk, or better quality?

Customer Pains Trigger Questions

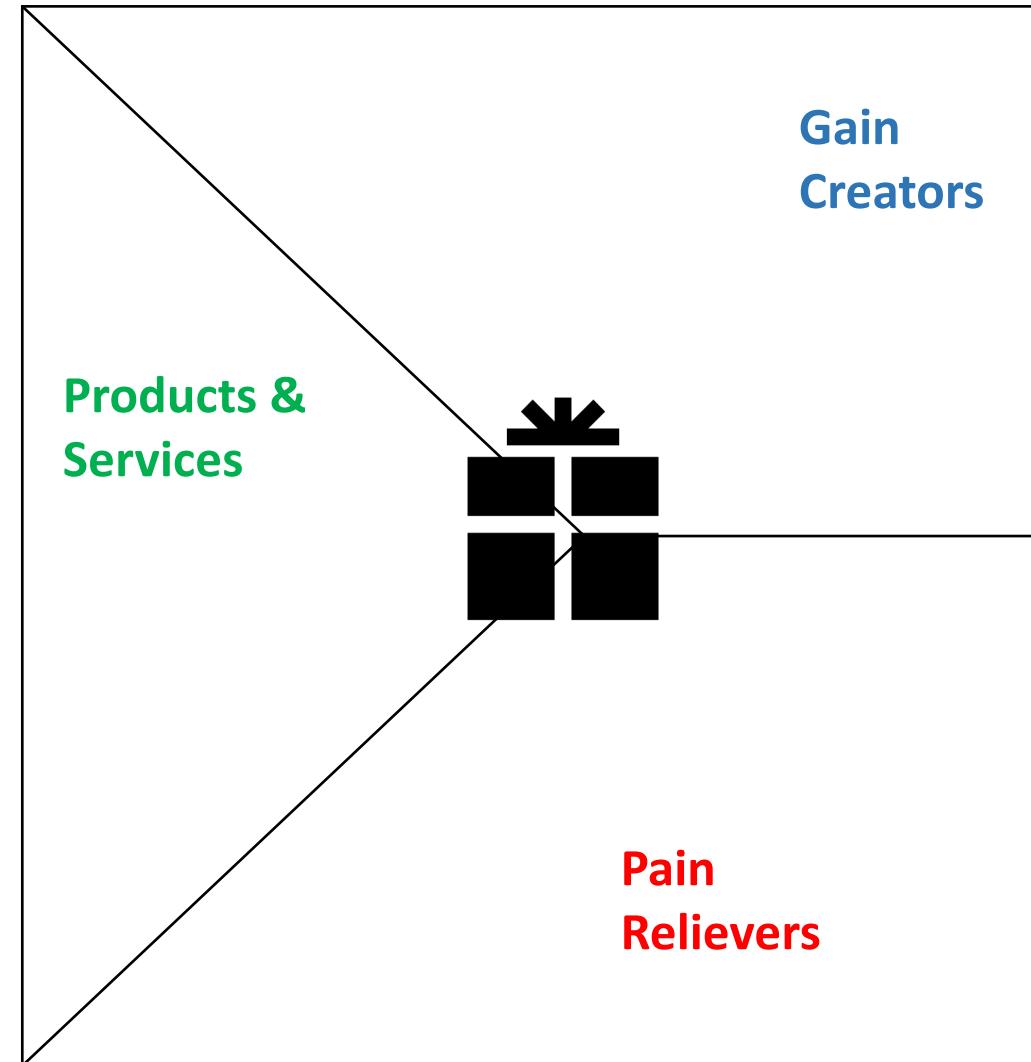
- How do your customers define too costly? Takes a lot of time, costs too much money, or requires substantial efforts?
- What makes your customers feel bad? What are their frustrations, annoyances, or things that give them a headache?
- How are current value propositions under performing for your customers? Which features are they missing? Are there performance issues that annoy them or malfunctions they cite?
- What are the main difficulties and challenges your customers encounter? Do they understand how things work, have difficulties getting certain things done, or resist particular jobs for specific reasons?
- What negative social consequences do your customers encounter or fear? Are they afraid of a loss of face, power, trust, or status?
- What risks do your customers fear? Are they afraid of financial, social or technical risks, or are they asking themselves what could go wrong?
- What's keeping your customers awake at night? What are their big issues, concerns, and worries?
- What common mistakes do your customers make? Are they using a solution the wrong way?
- What barriers are keeping your customers from adopting a value proposition? Are there upfront investment costs, a steep learning curve, or other obstacles preventing adoption?

Customer Jobs Trigger Questions

- What is the one thing that your customer couldn't live without accomplishing? What are the stepping stones that could help your customer achieve this key job?
- What are the different contexts that your customers might be in? How do their activities and goals change depending on these different contexts?
- What does your customer need to accomplish that involves interaction with others?
- What tasks are your customers trying to perform in their work or personal life? What functional problems are your customers trying to solve?
- Are there problems that you think customers have that they may not even be aware of?
- What emotional needs are your customers trying to satisfy? What jobs, if completed, would give the user a sense of self-satisfaction?
- How does your customer want to be perceived by others? What can your customer do to help themselves be perceived this way?
- How does your customer want to feel? What does your customer need to do to feel this way?
- Track your customer's interaction with a product or service throughout its lifespan. What supporting jobs surface throughout this life cycle? Does the user switch roles throughout this process?

Value Proposition Canvas Pt 1

Gain Creators	Describe how your products and services create customer gains
Pain Relievers	Describe how your products and services alleviate customer pains
Products & Services	This is a list of all products and services a value proposition is built around.



Customer Gain Creator Trigger Questions

- Which savings would make your customers happy? Which savings in terms of time, money, and effort would they value?
- What quality levels do they expect, and what would they wish for more or less of?
- How do current value propositions delight your customers? Which specific features do they enjoy? What performance and quality do they expect?
- What would make your customers' jobs or lives easier? Could there be a flatter learning curve, more services, or lower costs of ownership?
- What positive social consequences do your customers desire? What makes them look good? What increases their power or their status?
- What are customers looking for most? Are they searching for good design, guarantees, specific or more features?
- What do customers dream about? What do they aspire to achieve, or what would be a big relief to them?
- How do your customers measure success and failure? How do they gauge performance or cost?
- What would increase your customers' likelihood of adopting a value proposition? Do they desire lower cost, less investment, lower risk, or better quality?

Customer Pain Reliever Trigger Questions

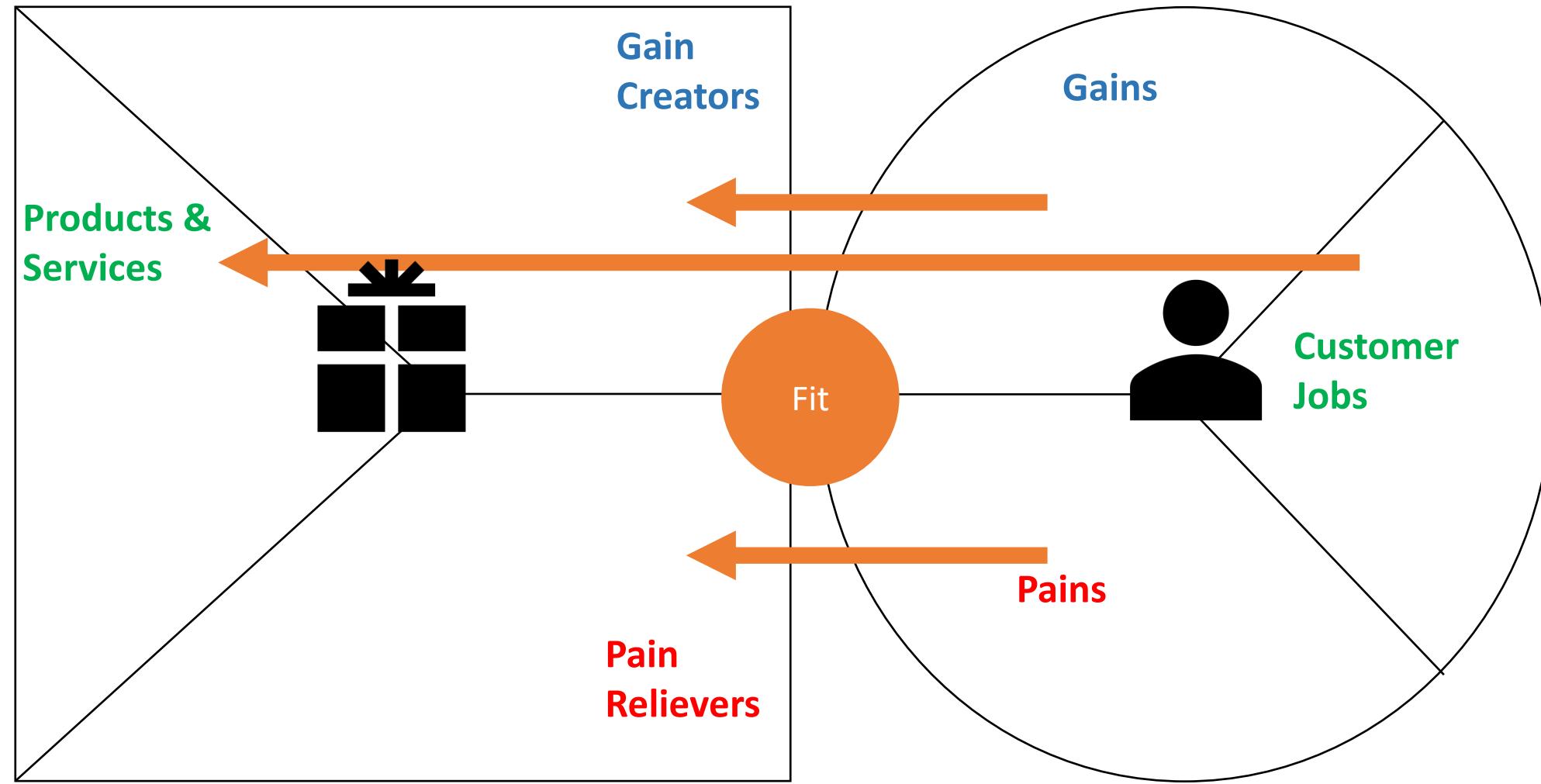
Could our products....

- ... produce savings? In terms of time, money, or efforts.
- ... make your customers feel better? By killing frustrations, annoyances, and other things that give customers a headache.
- ... fix under-performing solutions? By introducing new features, better performance, or enhanced quality.
- ... put an end to difficulties and challenges your customers encounter? By making things easier or eliminating obstacles.
- ... wipe out negative social consequences your customers encounter or fear? In terms of loss of face or lost power, trust, or status.
- ... eliminate risks your customers fear? In terms of financial, social, technical risks, or things that could potentially go wrong.
- ... help your customers better sleep at night? By addressing significant issues, diminishing concerns, or eliminating worries.
- ... limit or eradicate common mistakes customers make? By helping them use a solution the right way.
- ... eliminate barriers that are keeping your customer from adopting value propositions? Introducing lower or no upfront investment costs, a flatter learning curve, or eliminating other obstacles preventing adoption.

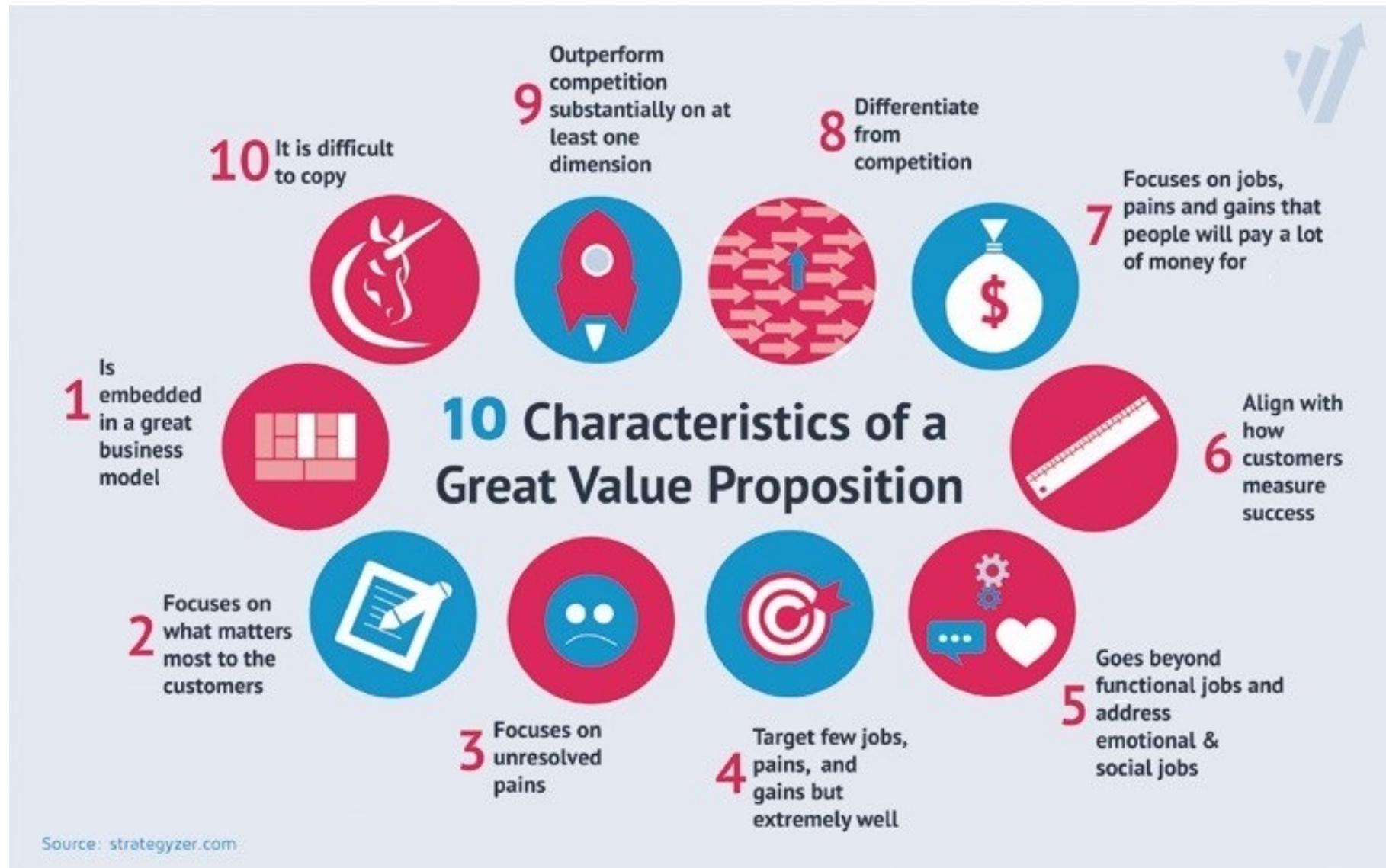
Customer Context Trigger Questions

- Which savings would make your customers happy? Which savings in terms of time, money, and effort would they value?
- What quality levels do they expect, and what would they wish for more or less of?
- How do current value propositions delight your customers? Which specific features do they enjoy? What performance and quality do they expect?
- What would make your customers' jobs or lives easier? Could there be a flatter learning curve, more services, or lower costs of ownership?
- What positive social consequences do your customers desire? What makes them look good? What increases their power or their status?
- What are customers looking for most? Are they searching for good design, guarantees, specific or more features?
- What do customers dream about? What do they aspire to achieve, or what would be a big relief to them?
- How do your customers measure success and failure? How do they gauge performance or cost?
- What would increase your customers' likelihood of adopting a value proposition? Do they desire lower cost, less investment, lower risk, or better quality?

Fit



Characteristics of Great Value Propositions

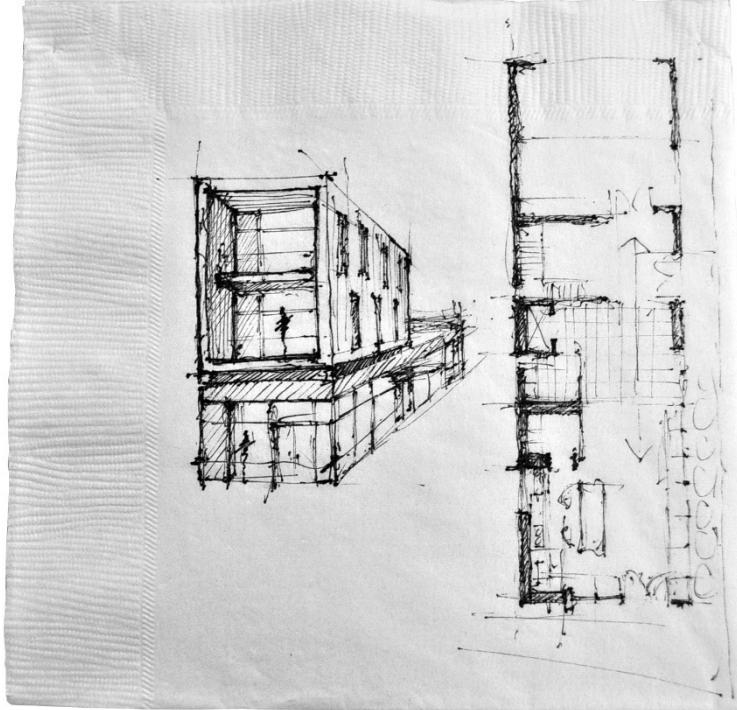


Designing great value propositions for Industry 4.0

Def(Prototyping)

The practice of **building quick, inexpensive and rough study models, to learn about the desirability, feasibility, and viability of alternative value proposition and business models.**

Prototyping Tools

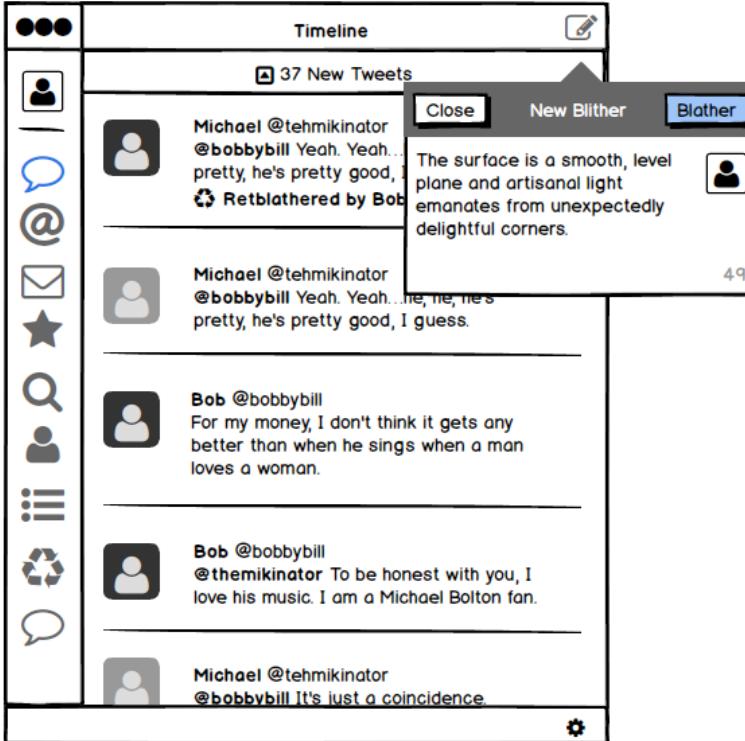


Napkin Sketch

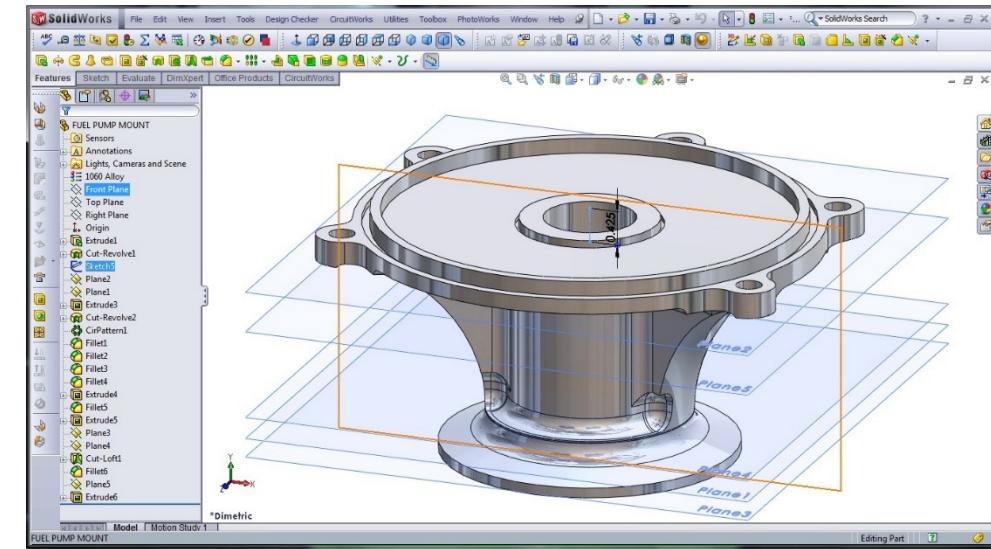
For [target customer segment]
Who wants/needs [a compelling reason to buy]
The [product name] is a [product category]
That provides [these key benefits]
Unlike the [main competitor]
The [product name][provides these key differentiators]

Product Positioning Statement

Prototyping Tools

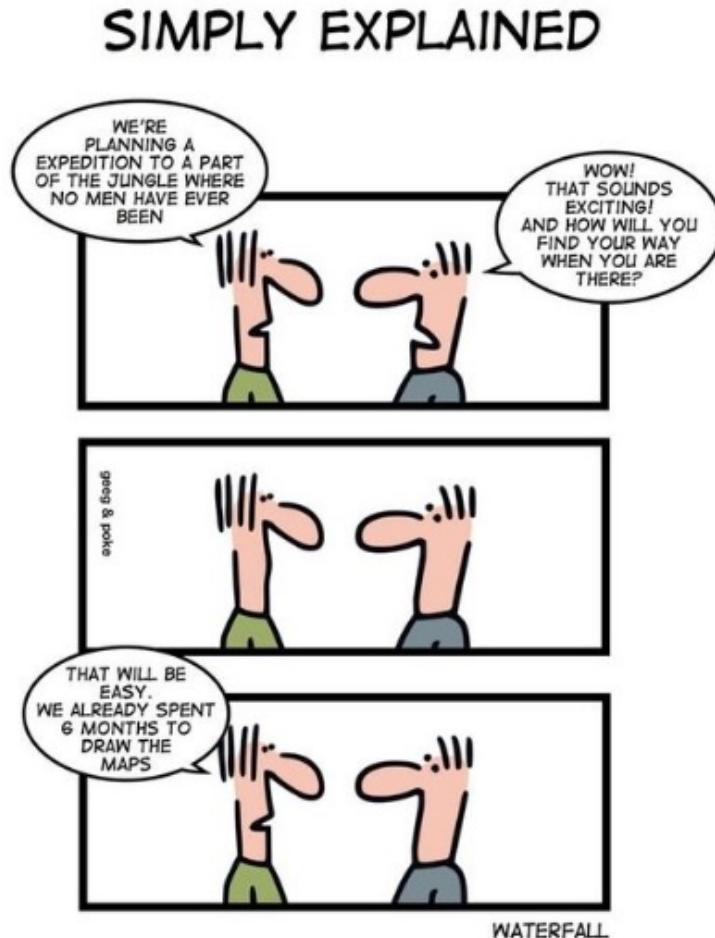


Mockups

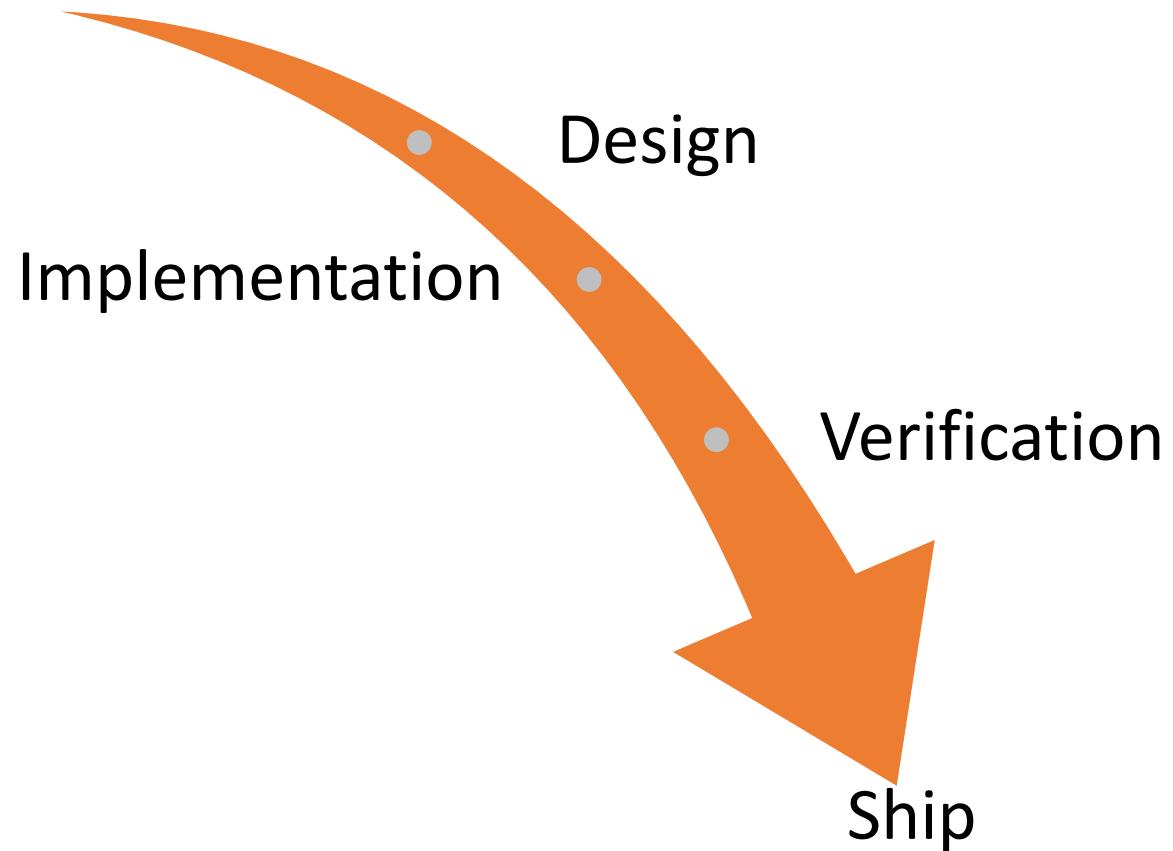


Digital Models

Avoid Waterfalls



Requirements Engineering



Prototyping Tools

Don't build a product like this. You only discover if you have succeeded at the end.



Instead start with something basic and gather feedback as you get more complex.



Minimum Viable Product

Validation is Critical

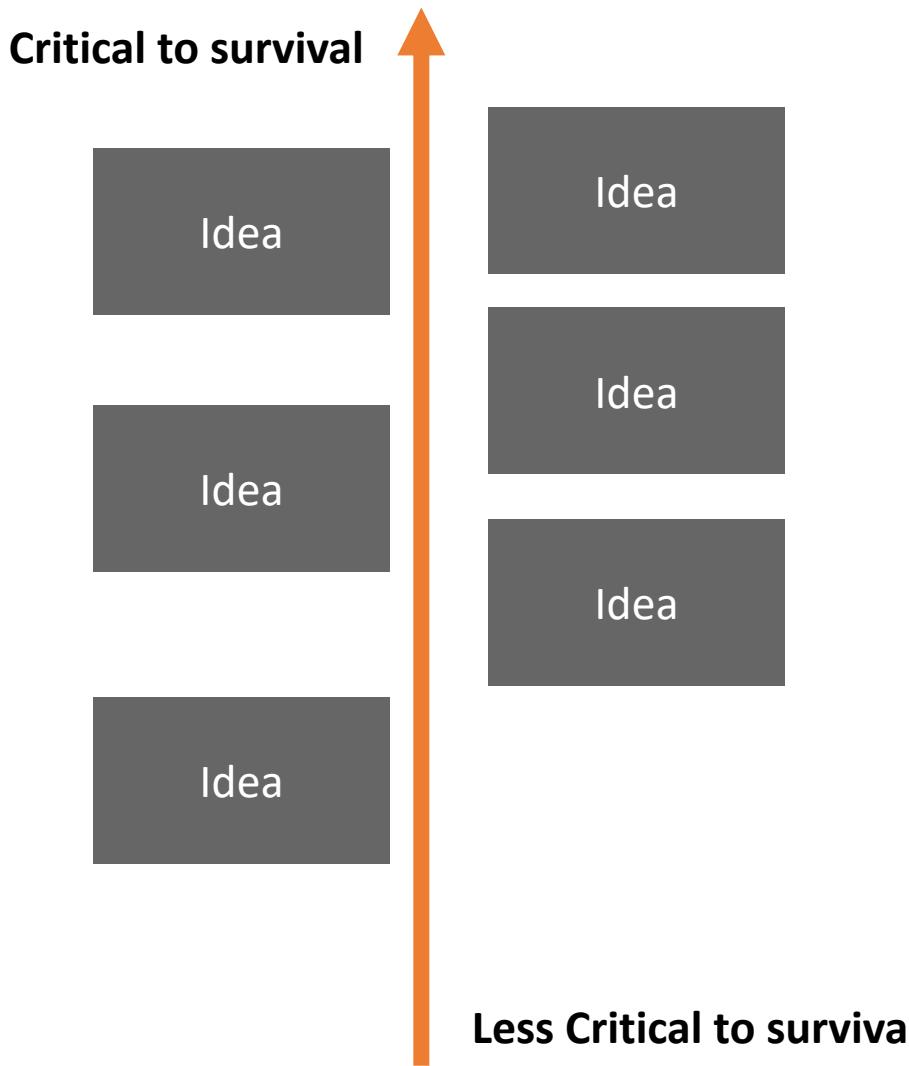
No business model/value proposition
survives first contact with customer....so
this is a **hypothesis**....

There Are No Facts in this Room.....



- Leave the building to...
 - Talk to customers...
 - Talk to partners...
 - Talk to vendors...
 - Conduct experiments...
 - Run tests..
 - Get data...

Validation – Business Killers



Define & Document Experiments

Test Card  **Strategyzer**

Test Name	Deadline
Assigned to	Duration

STEP 1: HYPOTHESIS
We believe that

Critical:


STEP 2: TEST
To verify that, we will

Test Cost:
 Data Reliability:

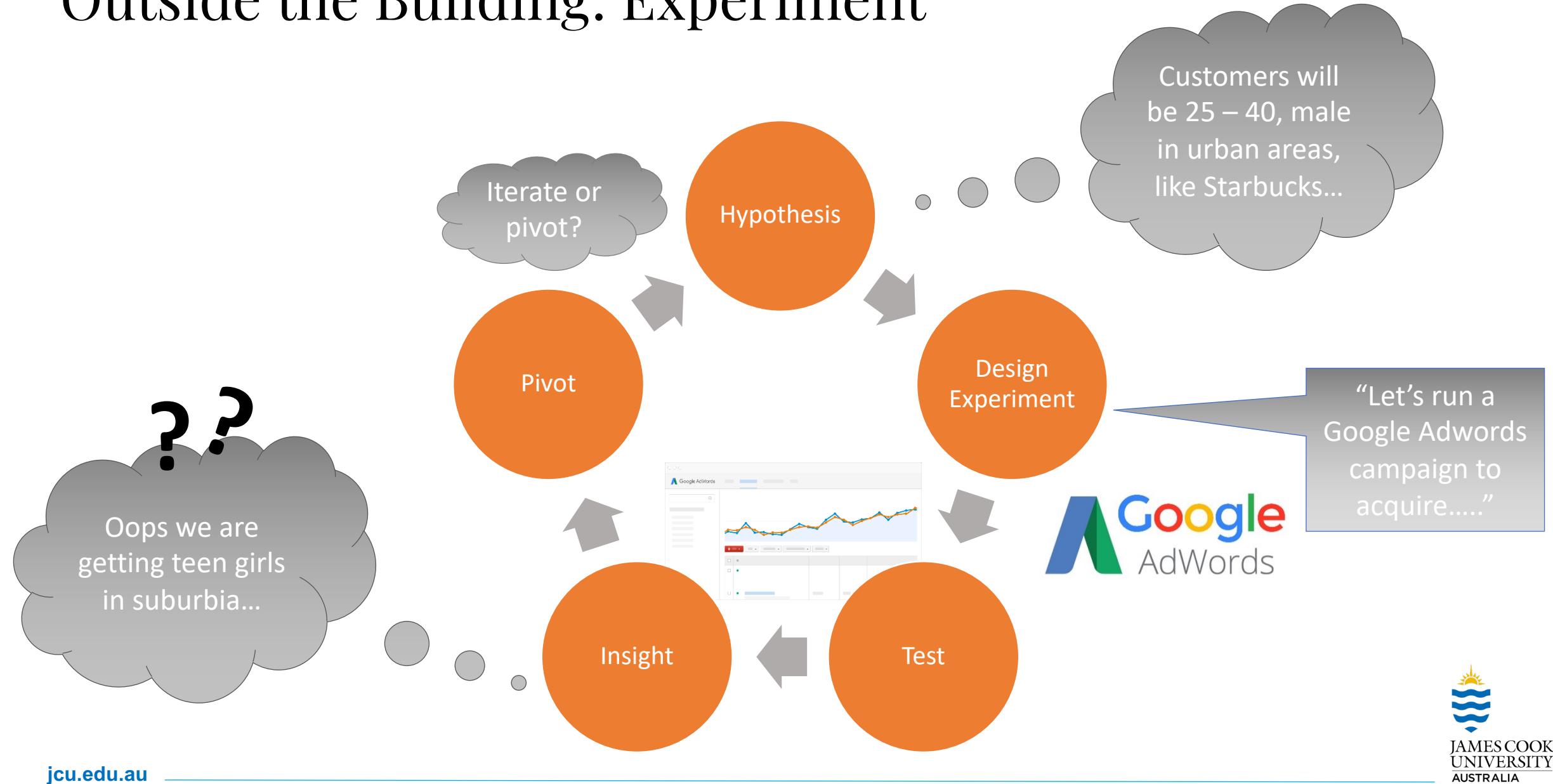

STEP 3: METRIC
And measure

Time Required:


STEP 4: CRITERIA
We are right if

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Outside the Building: Experiment



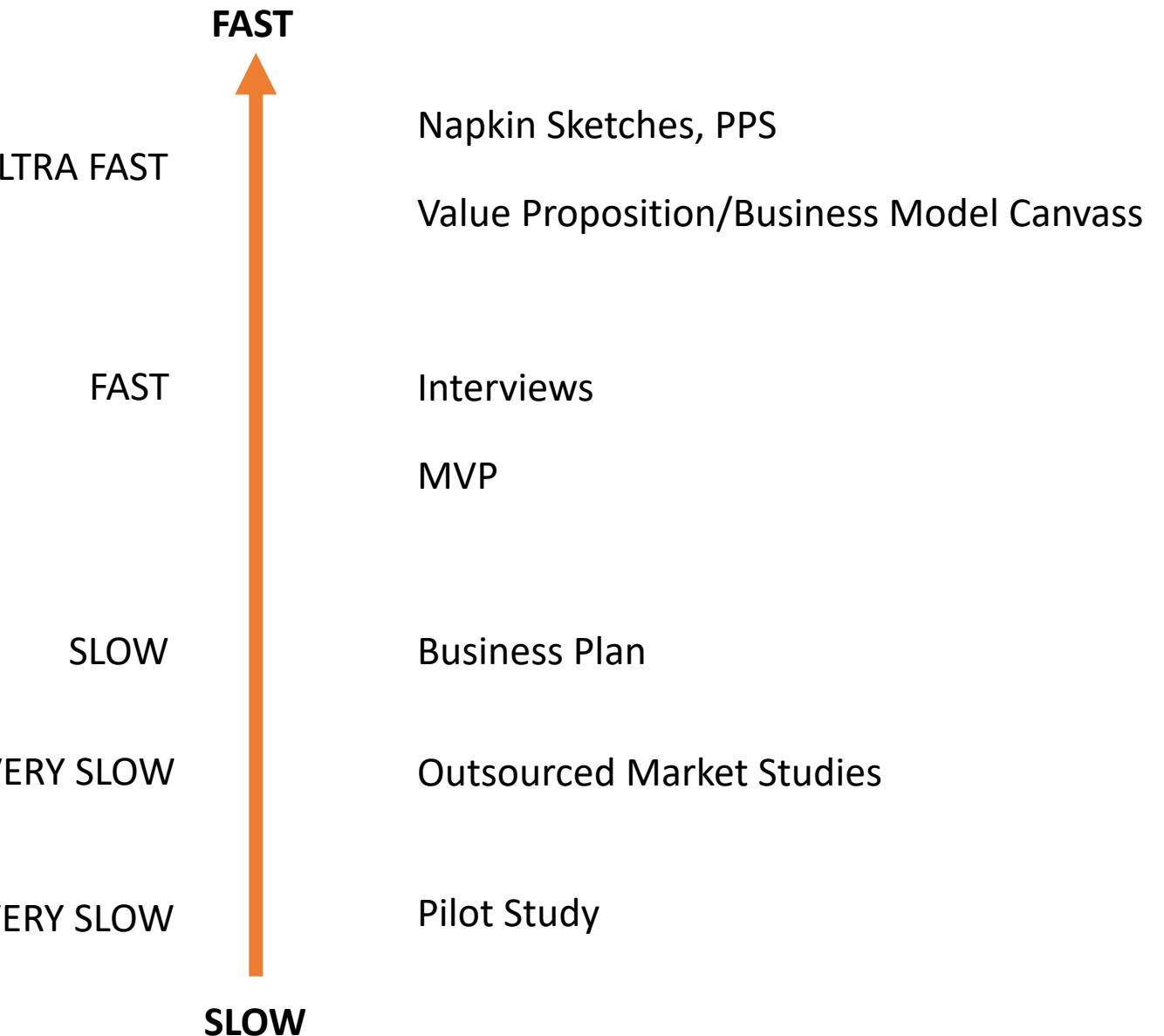
Define & Document Learnings

Learning Card  **Strategyzer**

Insight Name	Date of Learning
Person Responsible	
STEP 1: HYPOTHESIS We believed that	
STEP 2: OBSERVATION We observed	
Data Reliability: 	
STEP 3: LEARNINGS AND INSIGHTS From that we learned that	
Action Required: <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
STEP 4: DECISIONS AND ACTIONS Therefore, we will	

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Speed of Learning



Rest of the Canvas

Customer Relationships/Channels

Channels

- Through which channels do our customers want to be reached?
 - Salesforce?
 - Web sales
 - Own stores?
 - Partner stores?
 - Wholesaler?
- How are we reaching them now?
- How are our channels integrated?
- Which ones work best?
- Which ones are the most cost-efficient?
- How are we integrating them with customer routines?



Customer relationships

- What type of relationship does each of our customer segments expect us to establish and maintain with them?
- Which ones have we established?
- How costly are they?
- How are they integrated with the rest of our business model?

Key Activities/Key Resources

Key Activities

- Production
- Problem Solving
- Platform/Network
- What key activities do our value propositions require?
- What key activities do our distribution channels require?
- What key activities do our customer relationships require?
- What key activities do our revenue streams require?



Key Resources

- Physical
- Intellectual
- Human
- Financial
- What key resources do our value propositions require?
- What key resources do our distribution channels require?
- What key resources do our customer relationships require?
- What key resources do our revenue streams require?

Key partners

Key Partners

- Who are our key partners
- Who are our key suppliers?
- Which key resources are we acquiring from our partners?
- Which key activities do partners perform?

Think about

Optimisation and economy of scale

Reduction of risk and uncertainty

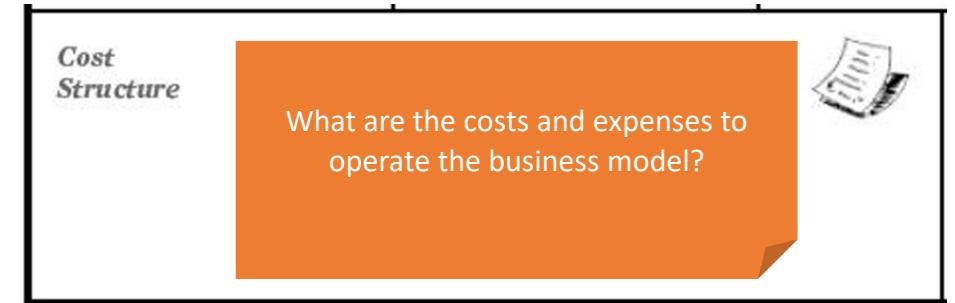
Acquisition of particular resources and activities



Cost structure

Cost Structure

- What are the most important costs inherent in our business model?
 - Cost driven
 - Leanest possible operation
 - Value driven
 - Less concerned with cost
 - More focussed on value creation
- Which Key Resources are most expensive?
- Which Key Activities are most expensive?



Cost Structure Characteristics

- Fixed costs
- Variable costs
- Economies of scale
- Economies of scope

Revenue stream

Revenue Stream

- What value are our customers really willing to pay for?
 - Asset sale?
 - Usage fee?
 - Subscription fee?
 - Lending/Renting/Leasing
 - Licencing?
 - Outcomes?
- For what do they currently pay?
- How are they currently paying?
- How would they prefer to pay?
- How much does each revenue stream contribute to overall revenues?

Revenue Streams

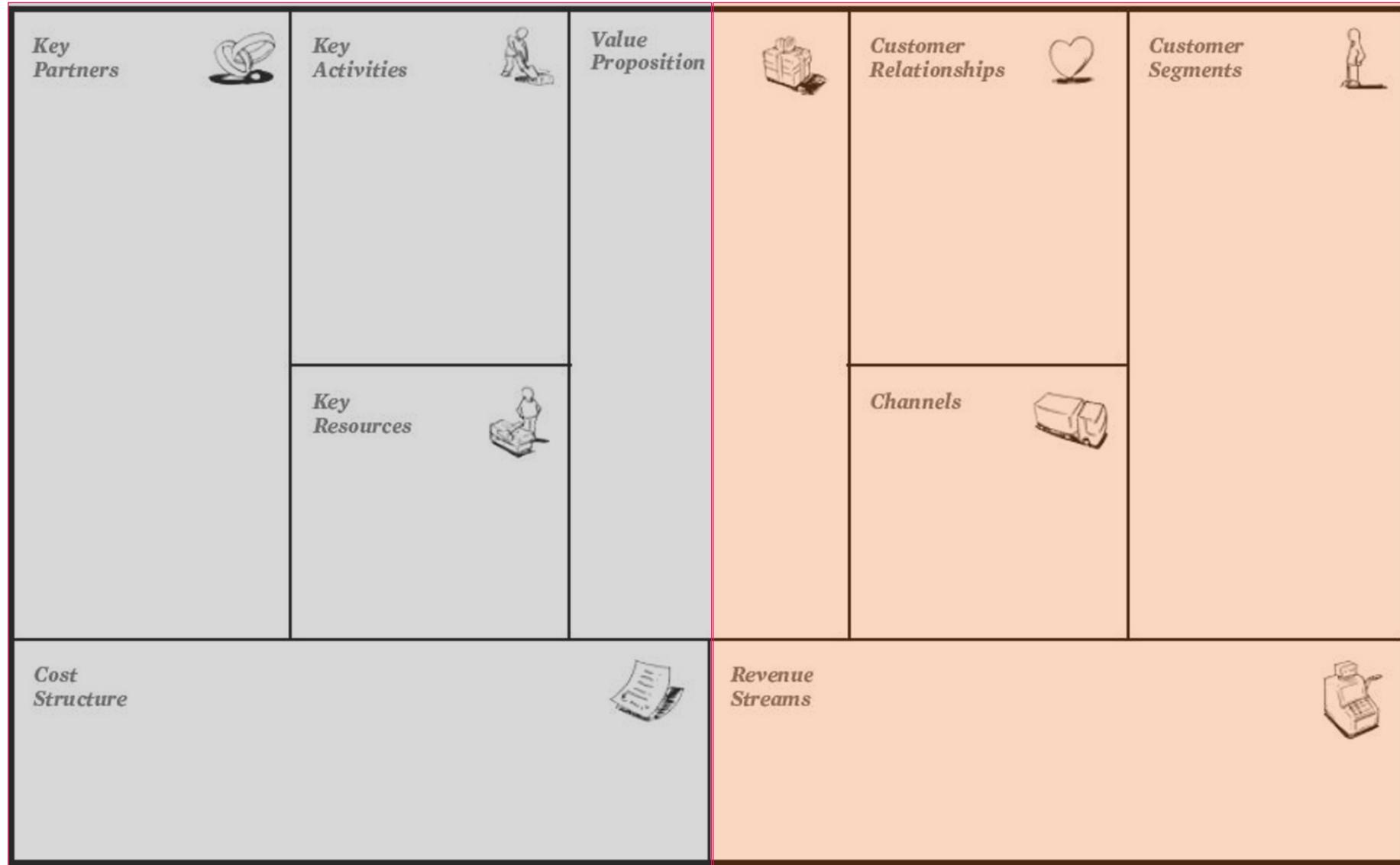
What value is the customer paying for ?
How do I capture that value?



Two Halves...

“Back of House”

“Front of House”



Validating Business Models

Define & Document Experiments

Test Card  **Strategyzer**

Test Name	Deadline
Assigned to	Duration

STEP 1: HYPOTHESIS
We believe that

Critical:


STEP 2: TEST
To verify that, we will

Test Cost:
 Data Reliability:


STEP 3: METRIC
And measure

Time Required:


STEP 4: CRITERIA
We are right if

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Define & Document Learnings

Learning Card  **Strategyzer**

Insight Name	Date of Learning
Person Responsible	
STEP 1: HYPOTHESIS We believed that	
STEP 2: OBSERVATION We observed	
Data Reliability: 	
STEP 3: LEARNINGS AND INSIGHTS From that we learned that	
Action Required: <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
STEP 4: DECISIONS AND ACTIONS Therefore, we will	

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Case Studies

Case Study: Cleaning as a Service



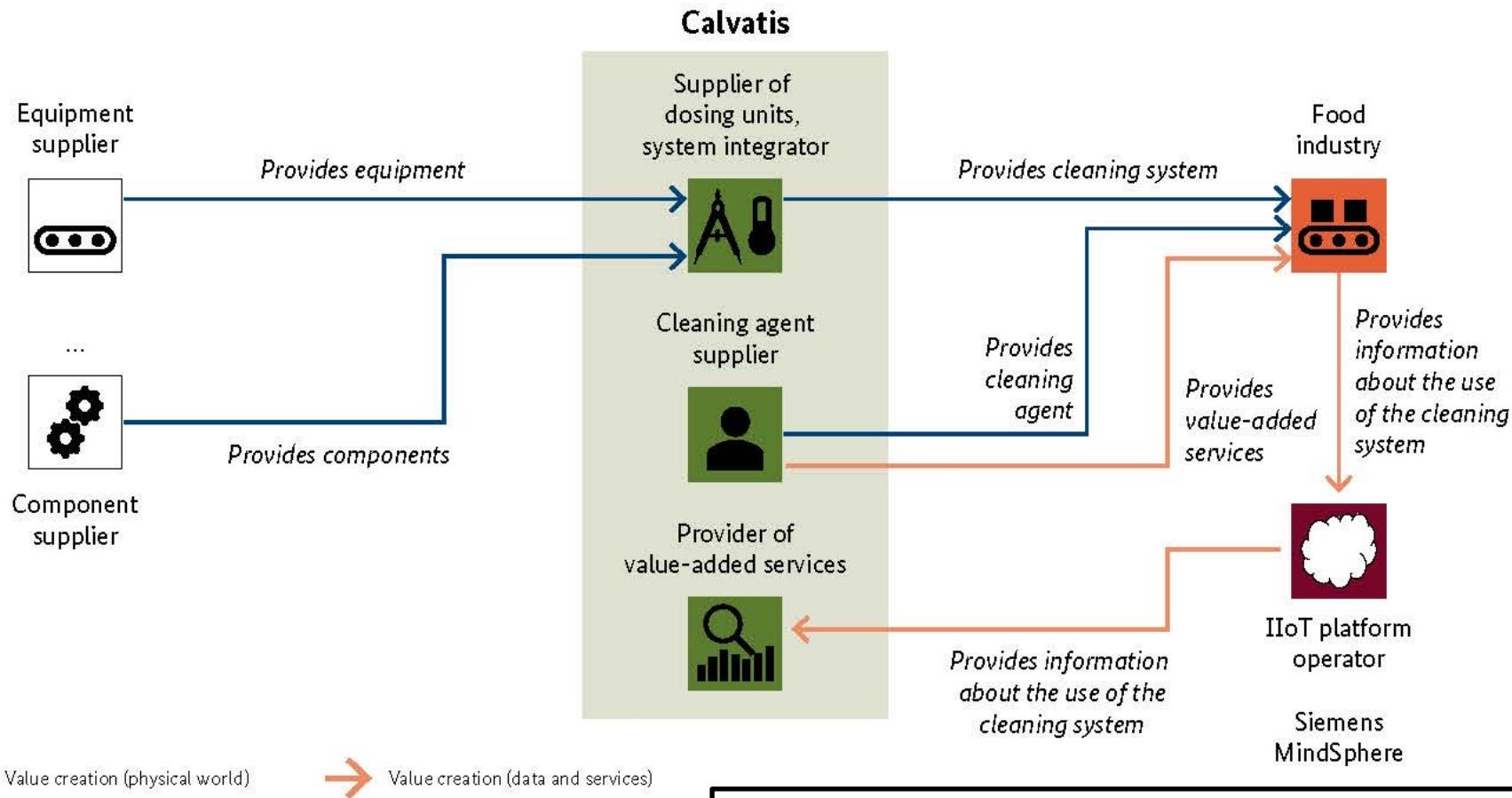
- Traditionally Supplier of Cleaning Products to Industry
- Centrally manage cleaning systems in production plants of a food retailer
- Manage system performance and provide maintenance as a service
- Implement IoT solution on short project timeline
- Reduce operational costs
- Improve cleaning system quality



Industry 4.0 Driven Business Model Innovation

- Reduced downtime by 10 percent
- Reduced use of consumables by six percent
- Installed the first cloud-based monitoring of washing lines less than six weeks after first consultation
- Executed additional projects in a fast “copy-and-paste” manner at three other customer locations
- Enabled a new service business model

Case Study: cleaning as a service

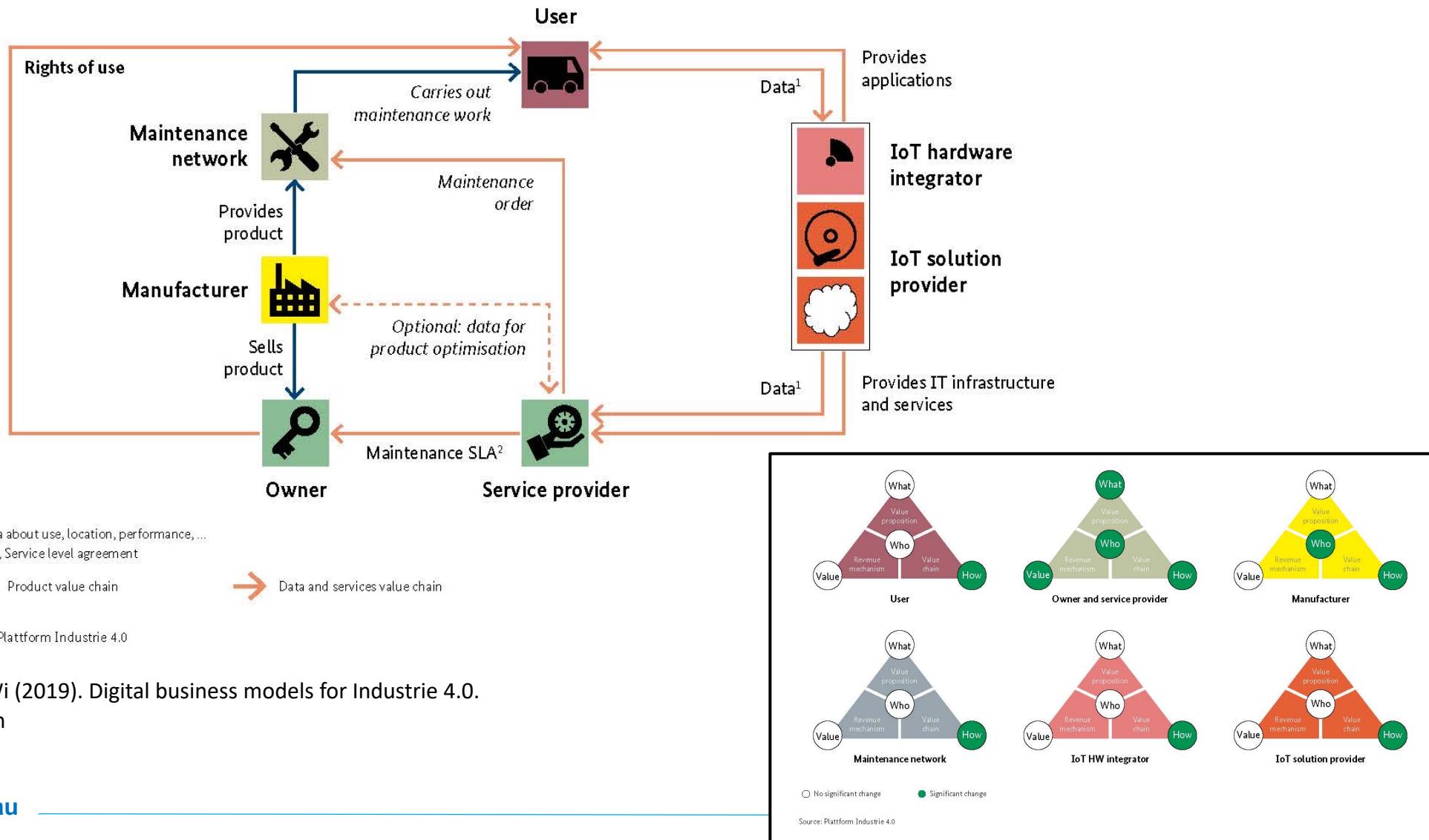


Source: Plattform Industrie 4.0

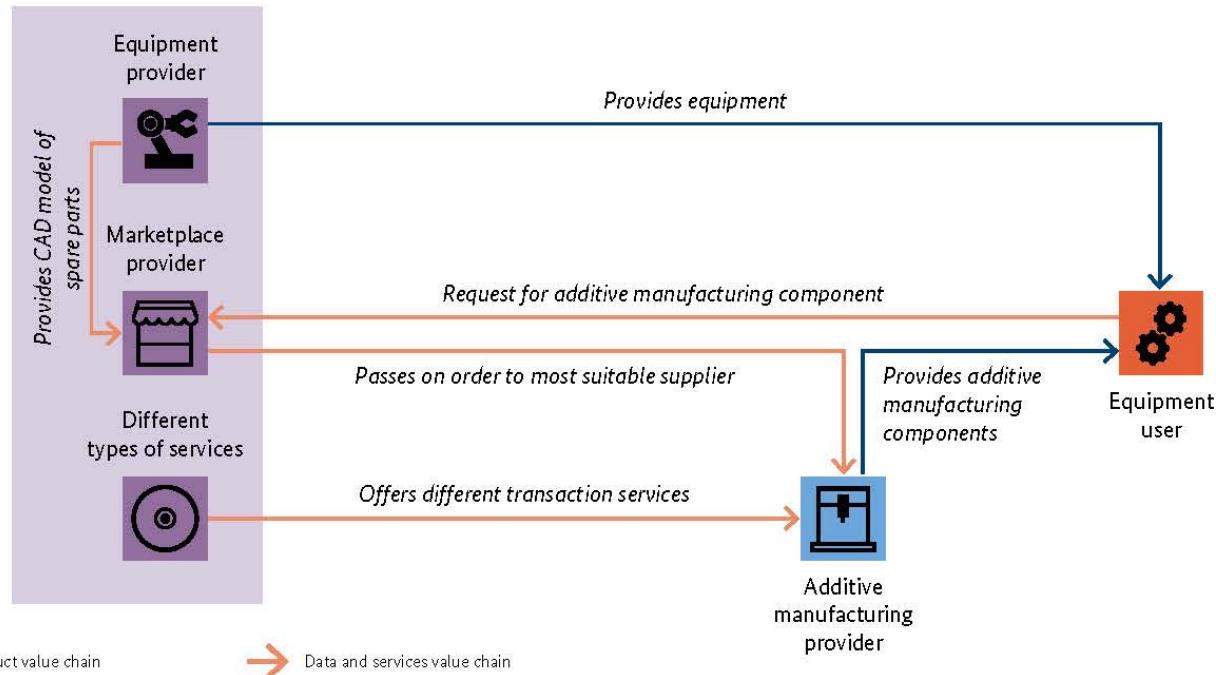
BMWi (2019). Digital business models for Industrie 4.0.
Berlin



CASE Study: Michelin Tires as a Service

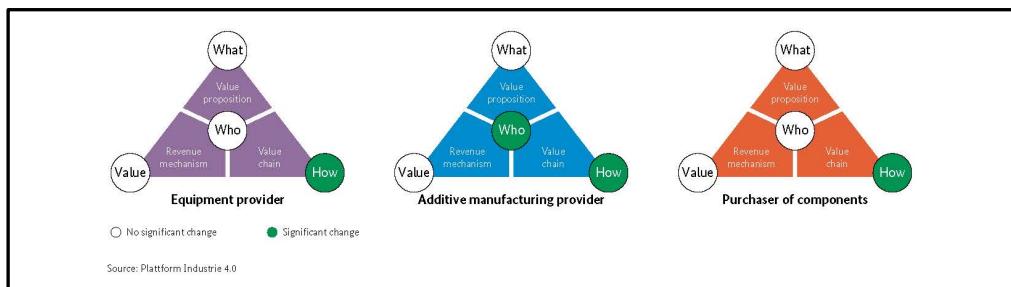


CASE Study: CLOSED DIGITAL MARKETPLACE – DMG MORI



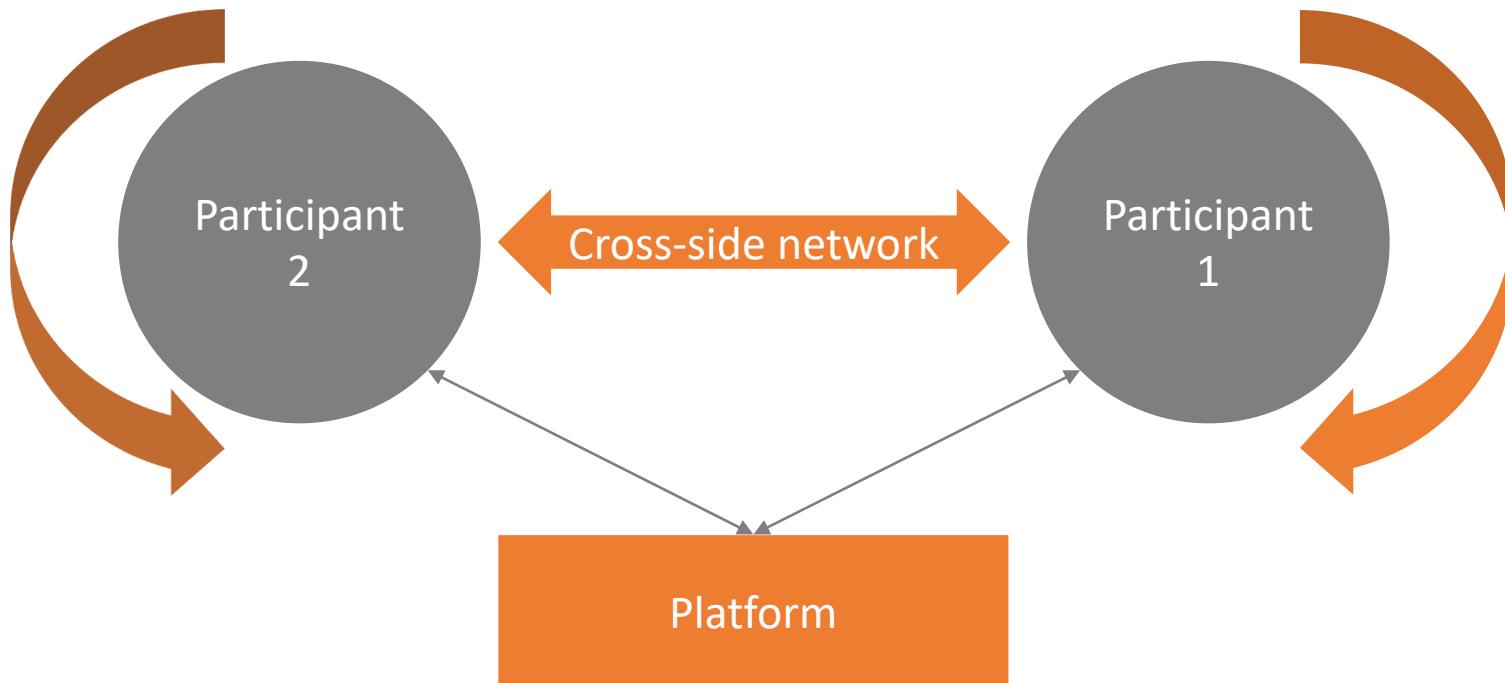
Source: Plattform Industrie 4.0

- Spare parts via additive manufacturing can be ordered via DMG-MORI operated platform
- Platform automatically selects contractor based on:
 - Ability to manufacture
 - Physical proximity to customer
- Further services
 - Certification
 - E-Commerce



Multisided Markets

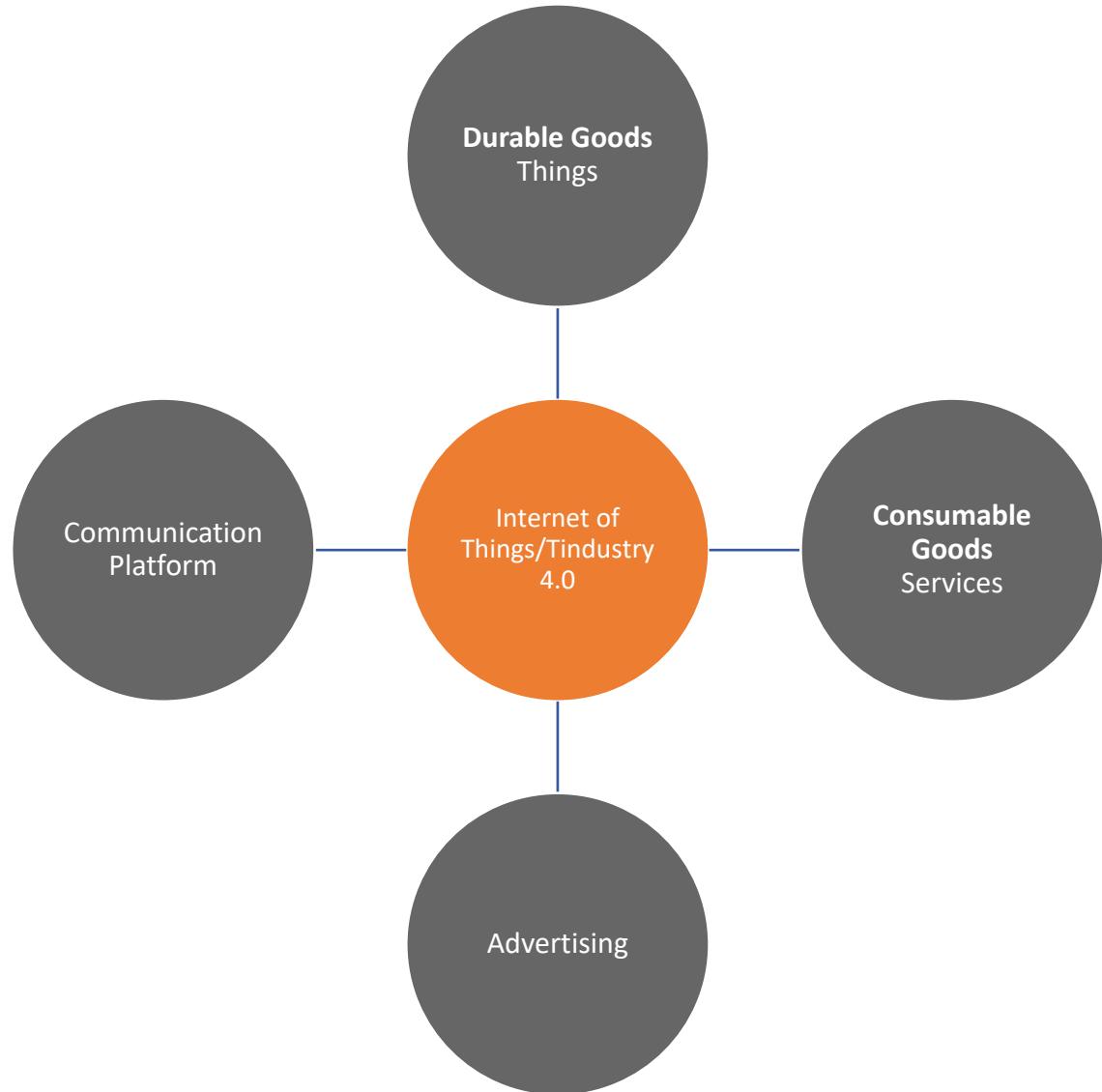
Multisided Markets



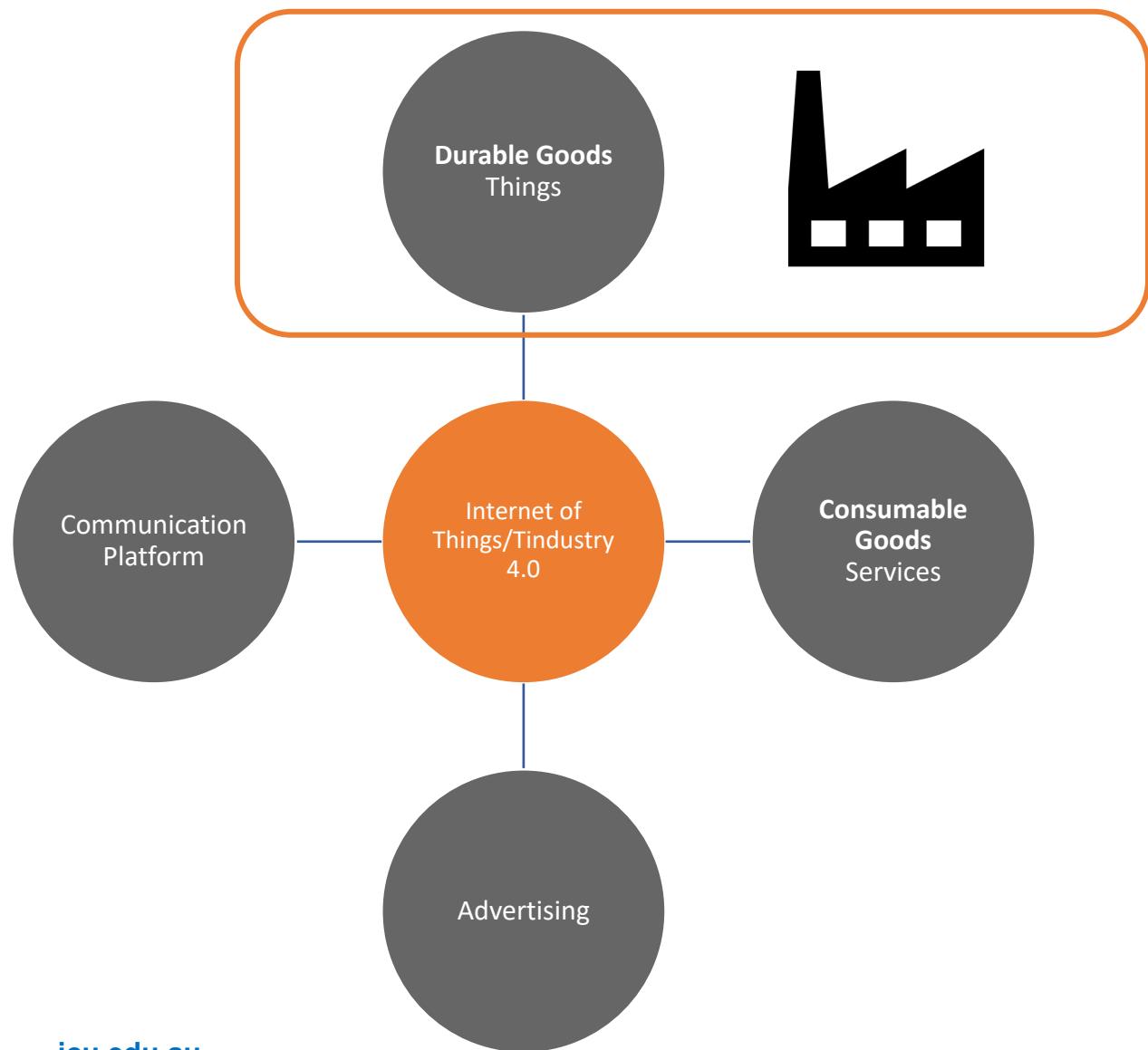
- Need of intermediary to match two participants in a market in a more efficient way
- Intermediary typically minimises cost
 - Reducing transaction cost
 - Avoiding duplication
- Makes exchanges possible that would be impossible or difficult to create without them
- Creating value for both users
- Typically distinct user groups
- Typically one group has a preference regarding the number of users in the other group
- e.g. Ebay, Taobao buyers and sellers

For more info: https://en.wikipedia.org/wiki/Two-sided_market
jcu.edu.au

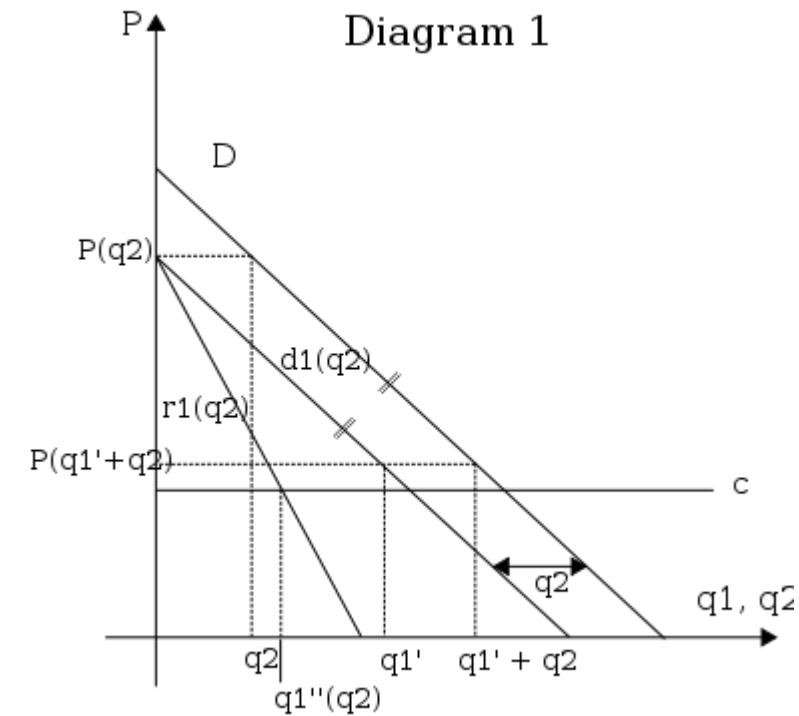
Digital Market Places



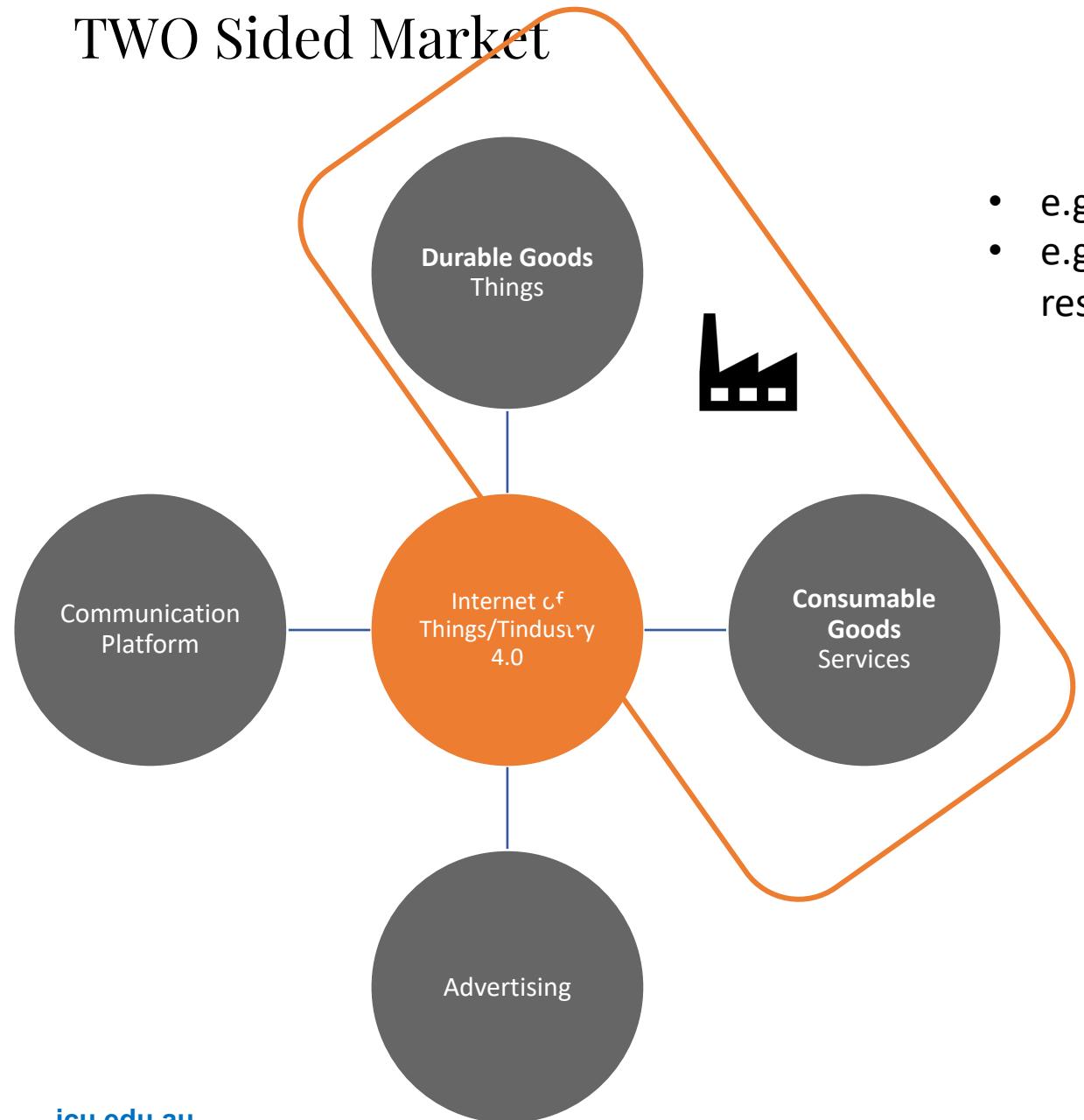
Single-Sided Market



- e.g. Samsung sells me a smart fridge



TWO Sided Market



- e.g. Samsung sells me a smart fridge
- e.g. Samsung partners with Coles to automatically restock my fridge

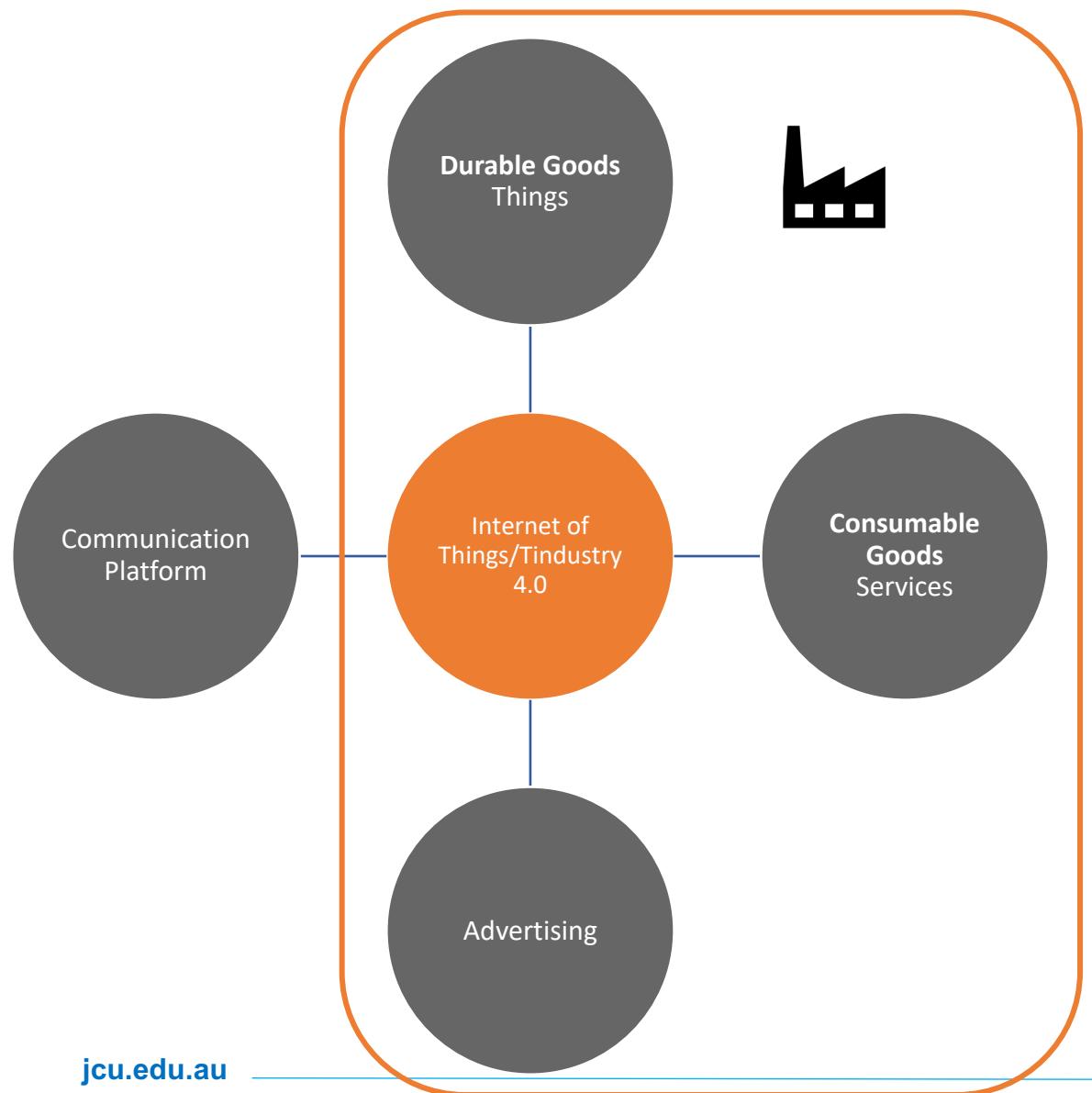
Advantages

- Creates value for both sides
- Allocation of value is more complex than for single-sided markets

Disadvantages

- Getting the pricing right
- Successful platforms tend to be monopolistic
- Development by overlapping platform
- High chance of government intervention

Three Sided Market



- e.g. Samsung sells me a smart fridge
- e.g. Samsung partners with Coles to automatically restock my fridge
- e.g. Samsung allows Coles or Amazon to make product recommendations

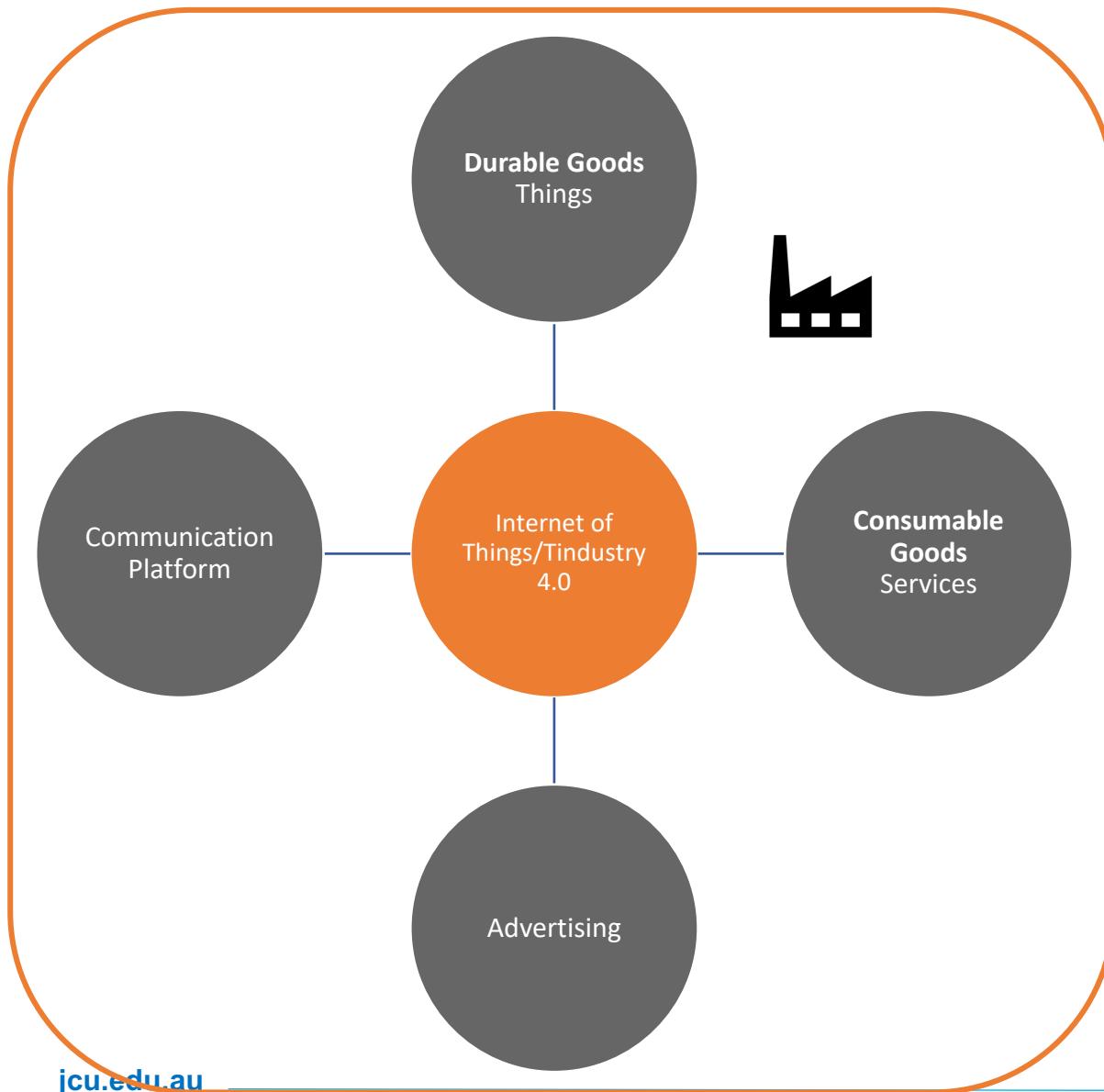
Advantages

- Creates value for three sides
- Allocation of value is even more complex than for single-sided markets

Disadvantages

- Getting the pricing right even more difficult
- Increased role of cross platform competition
- Anti-monopoly lobbying by competitors

Four Sided Market



- e.g. Samsung sells me a smart fridge
- e.g. Samsung partners with Coles to automatically restock my fridge
- e.g. Samsung allows Coles and Amazon to advertise on my smart fridge
- e.g. Samsung controls the communications network

Advantages

- Creates value for all sides – maximises externalities
- Innovative pricing policies
- Market dominance

Disadvantages

- Anti-monopoly lobbying by competitors
- Market inefficiencies
- Anti-trust regulations