Value Chain Analysis

Early Stage Product Assessment for High Tech SMEs

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Problem: Not enough Success

- Small & Medium Enterprises (SMEs) = 80% of Med Tech Companies in Europe
- Failure rate of ~90%!

Why do they fail?

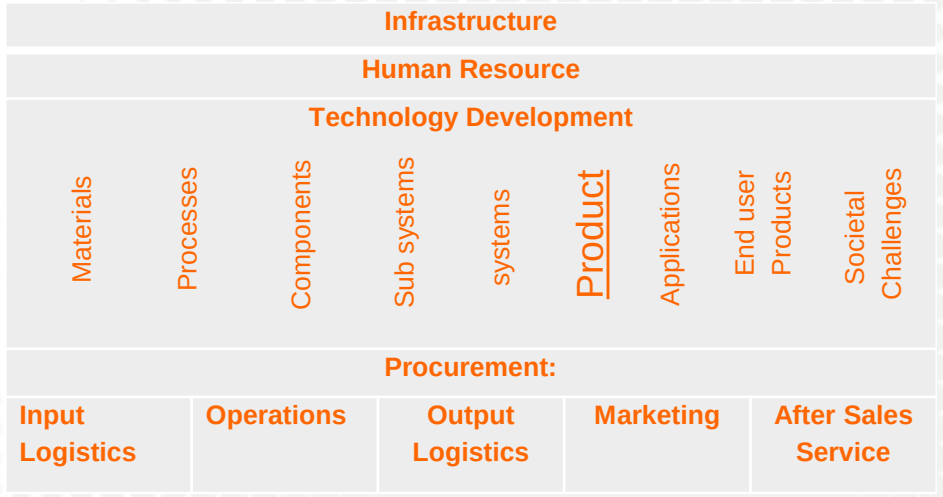
they cannot find a Product-Market fit before the money runs out!

Crossing the Valley of Death
Find a Shortcut…

- Value Chain Analysis helps:
  - Find the Market Fit in Advance
  - Be Disruptive: Unique Value Chains are hard to compete against
  - Determine best stakeholders (Customers and Suppliers)
  - Systematically Spot Gaps & opportunities

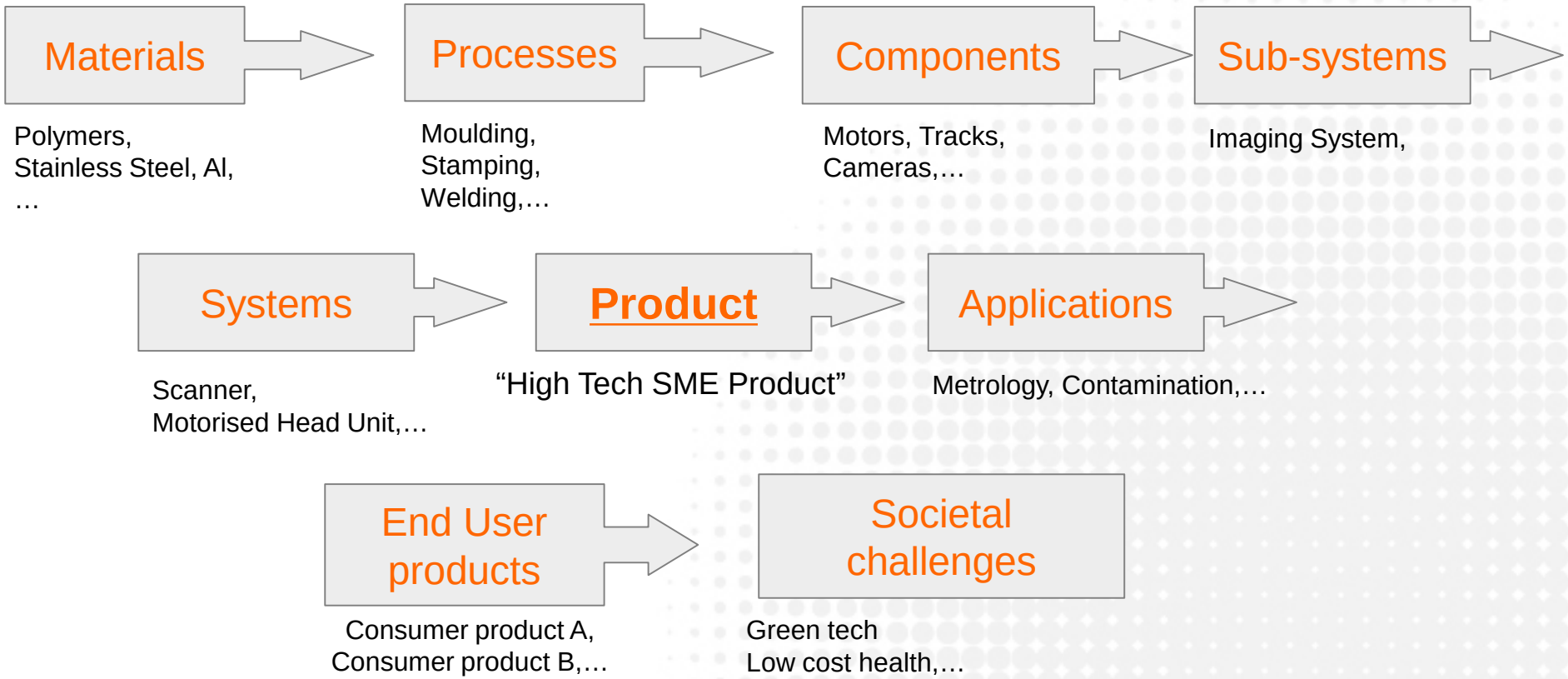
What is a value chain?

- What is a value chain?
  - Chain of activities which give rise to value
- Value in SMEs arise from different sources
  - focus on the **technology** part of the value chain

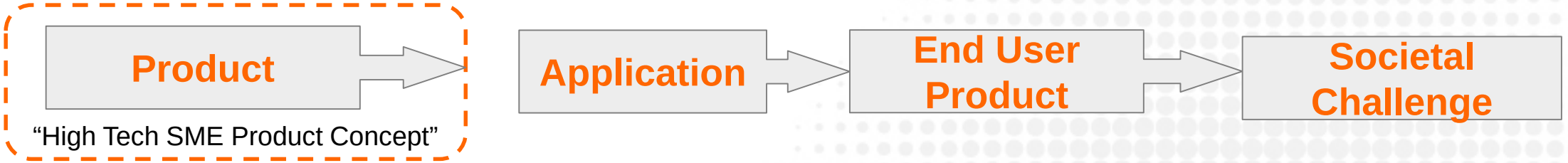


A 'Traditional' Value Chain

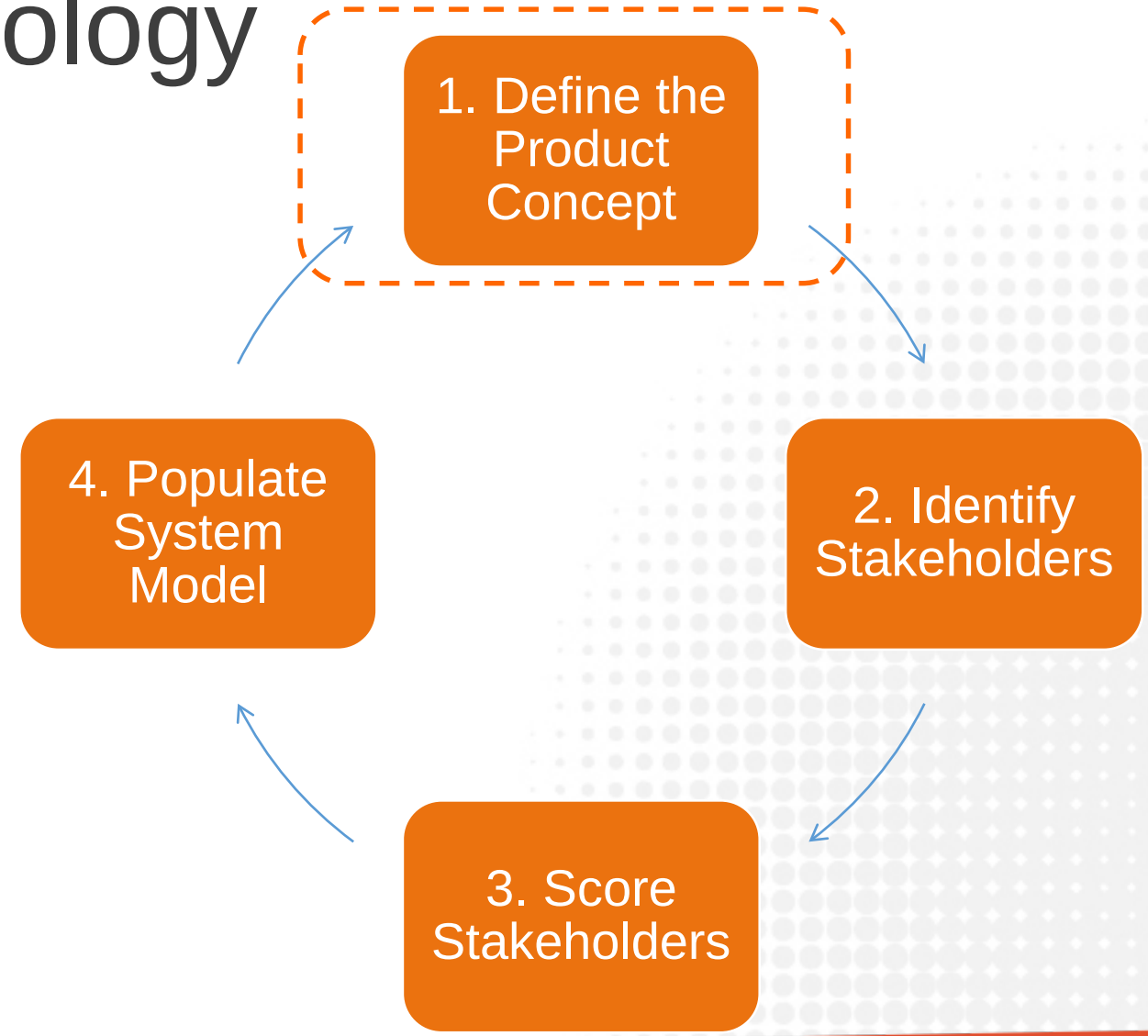
Product Focused Technical Value Chain



Product Market side Value Chain

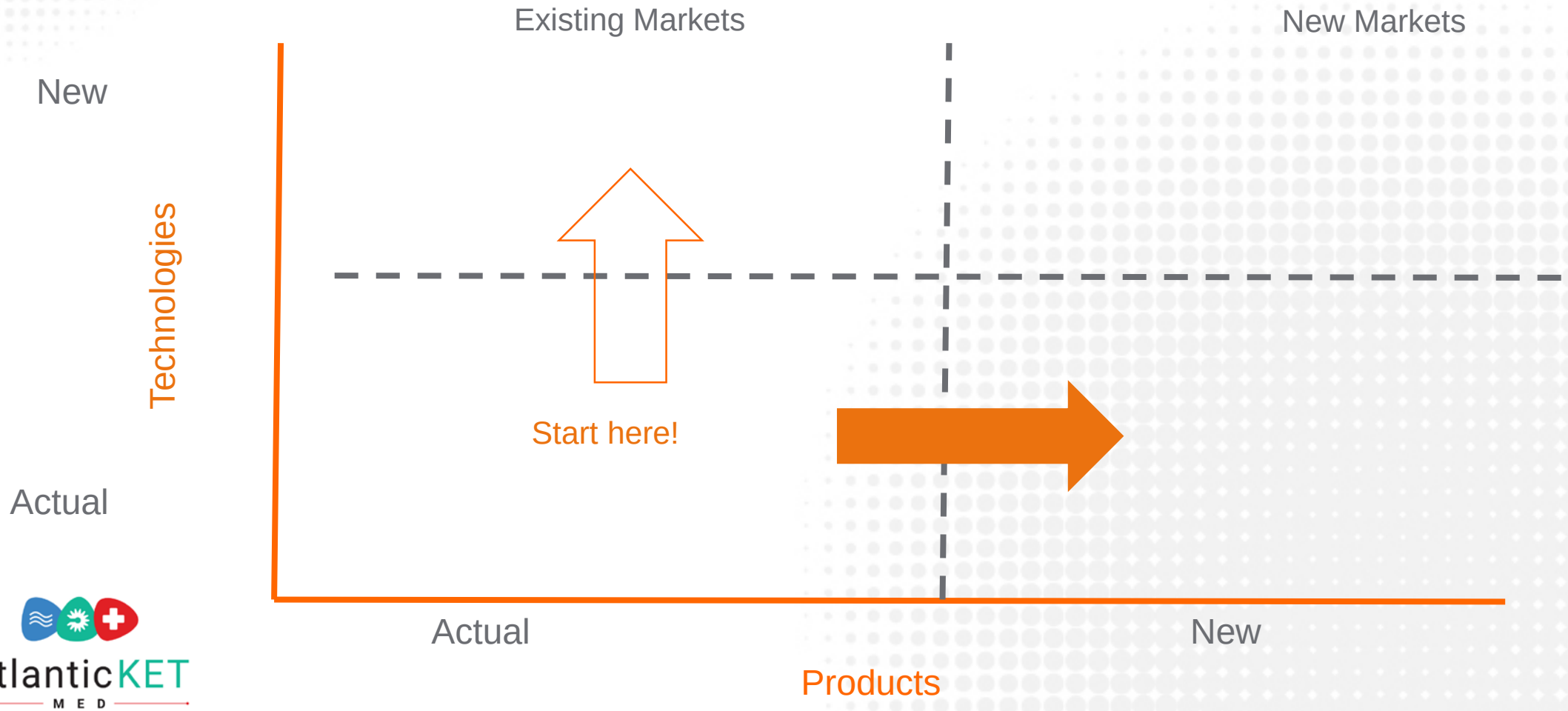


Overview: Value Chain Analysis Methodology



What is the Product ?

Exercise 1: Define in terms of Company and Market

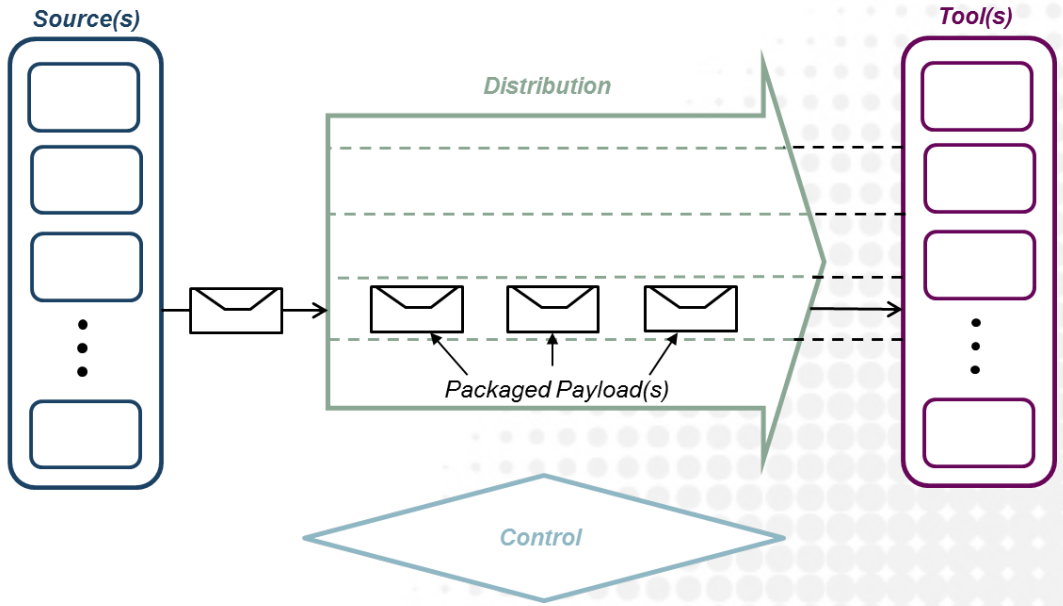


What is the Product ?

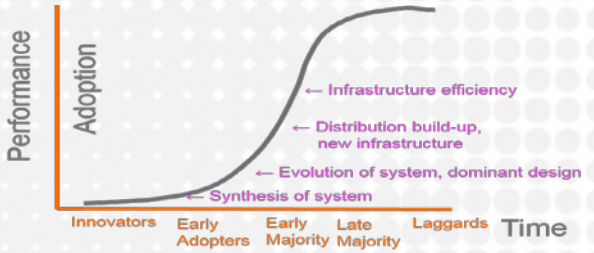
Exercise 2: Explore the Product ‘System’

Mature Model of essential Elements for scalability

Consider which aspects are internal and which are external



More Questions to ask:
Technology Readiness Level?
Innovation Potential?
Unique Selling Point?

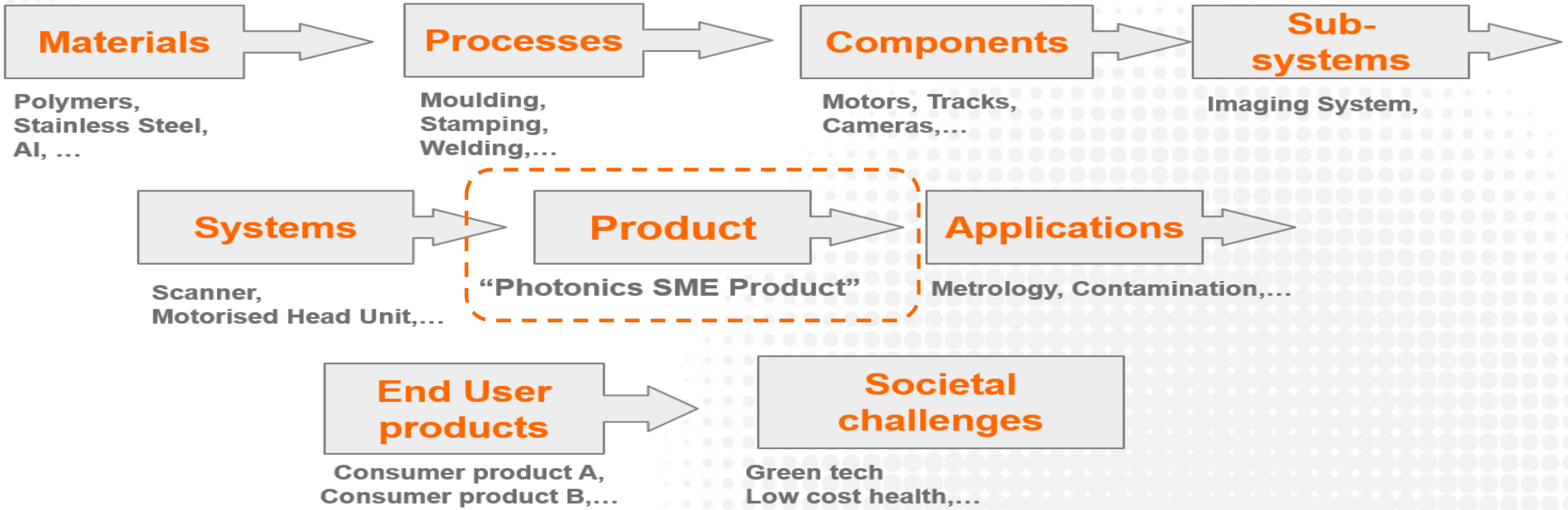


System Model enables S curve growth

Reference
[1] Scalable Innovation, Shteyn & Shtein, CRC Press

What is the Product ?

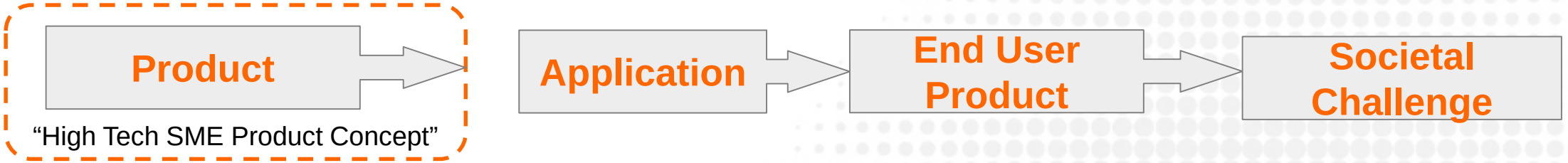
Exercise 3: Define the Value Chain



The value chain is centred on the photonics product

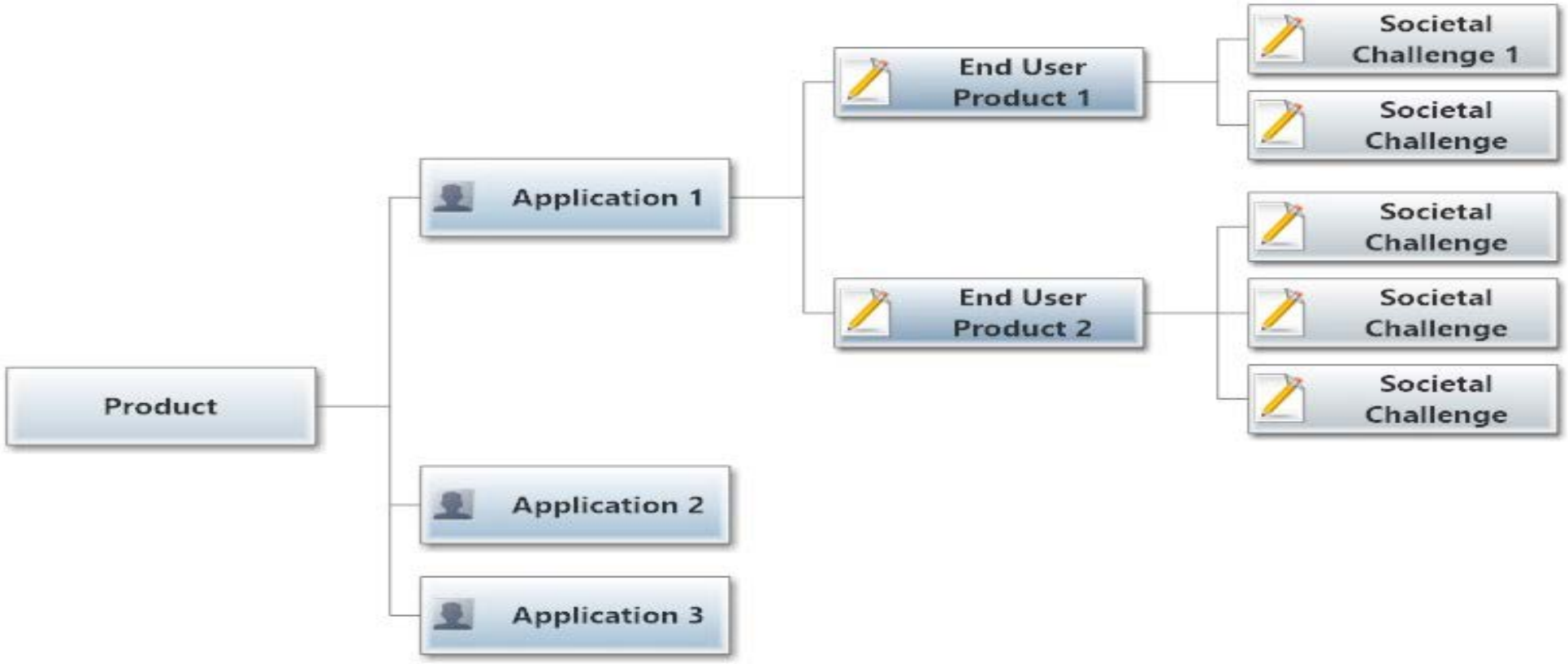
What is the Product ?

Exercise 3: Define the Value Chain – Market Side



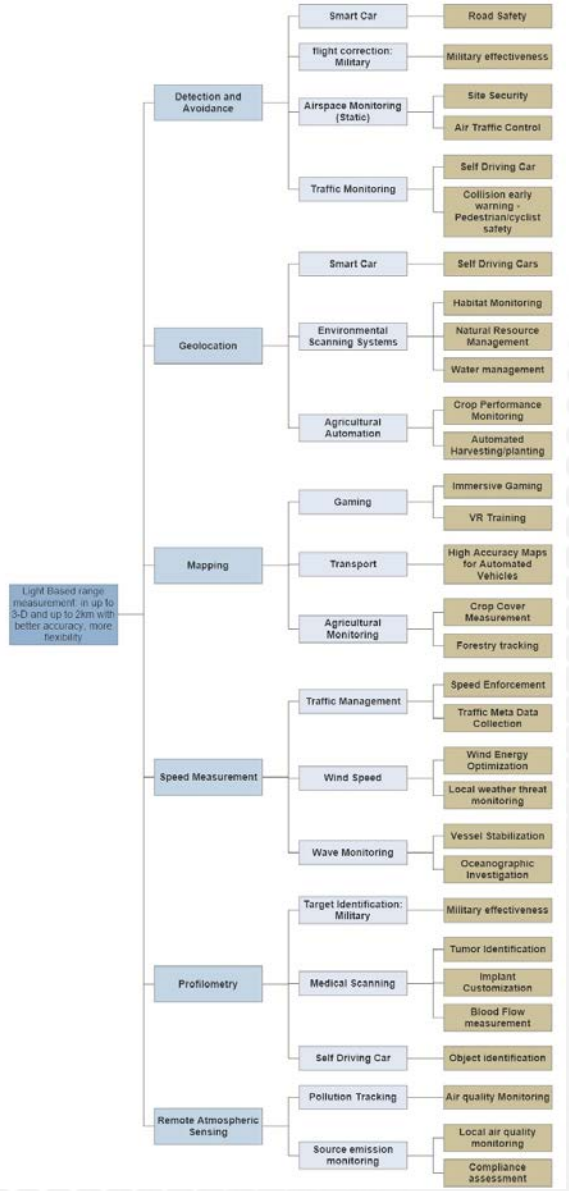
What is the Product ?

Exercise 3: Define the Value Chain



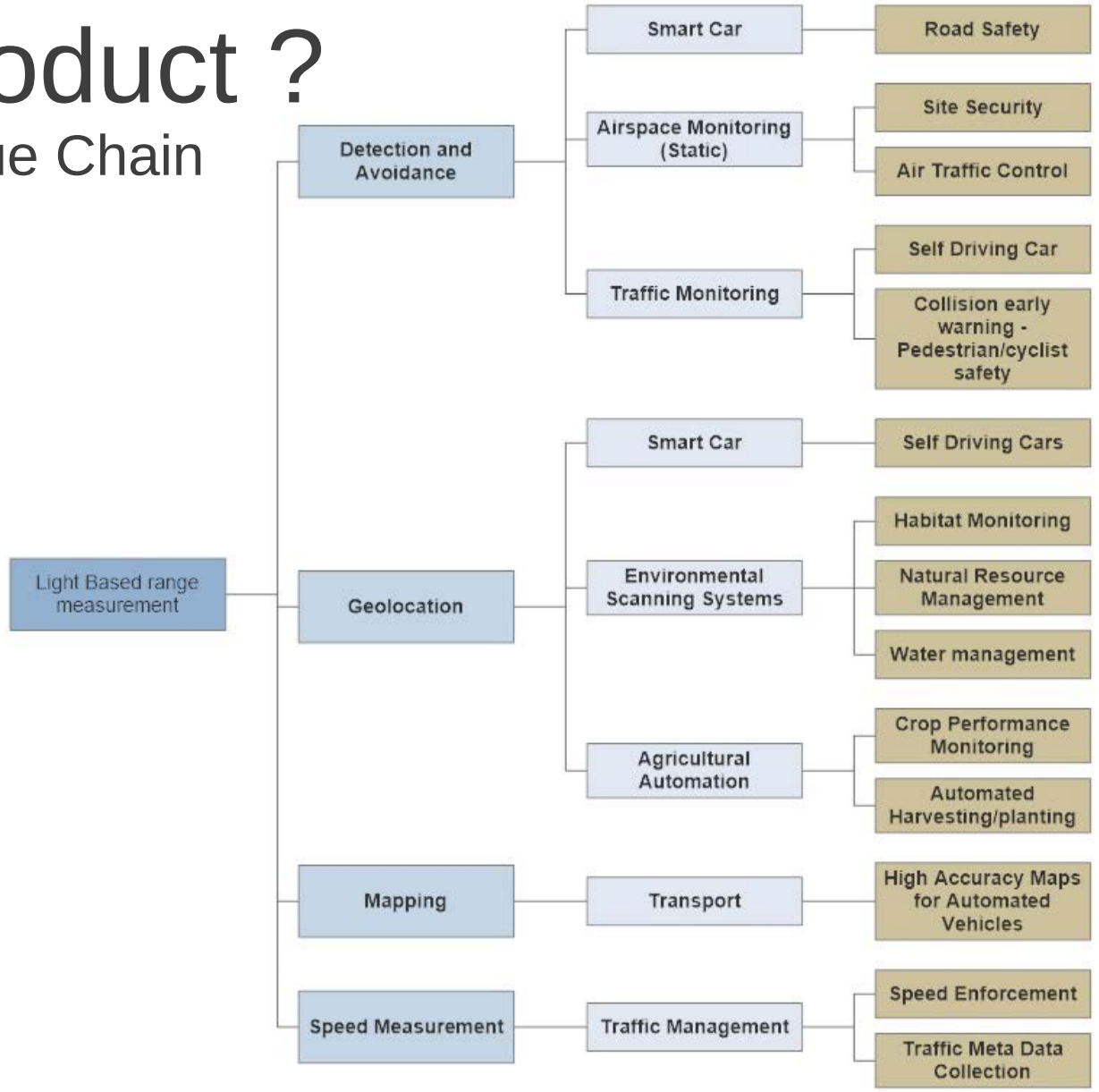
What is the Product ?

Exercise 3: Define the Value Chain

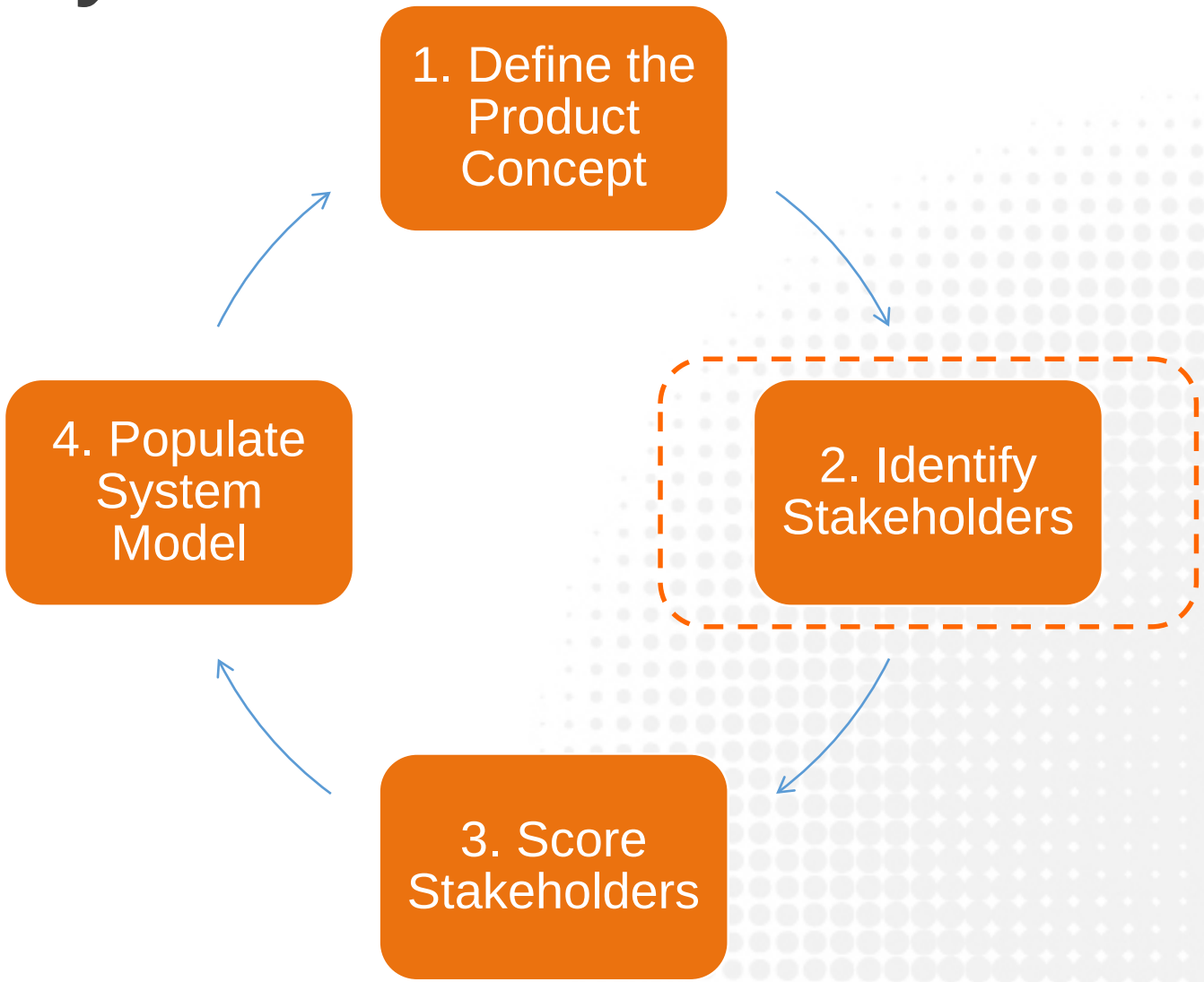


What is the Product ?

Exercise 3: Define the Value Chain



2. Identify Stakeholders



A Representative Sub-Set

- Impossible to assess all possible Stakeholders
  - Need to restrict the search
- Identify Sectors and Regions to target
- Extract lists of relevant companies

Sector Targeting: Stakeholder Database

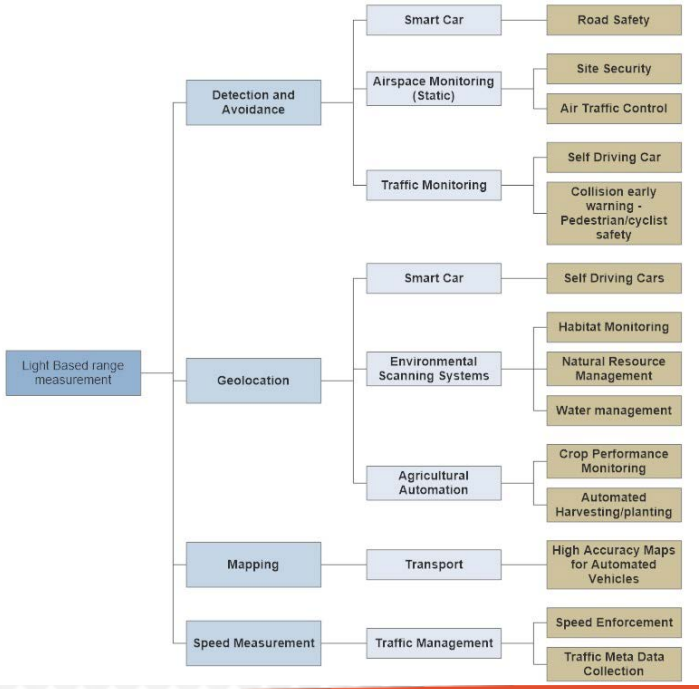
- Start with Clusters – Engageable, Relevant, Region Specific

  Cluster Observatory, European Secretariat for Cluster Analysis
- E.G. For Lidar: Automotive, Green Energy, Security, Marine Region =Europe – Concentrated on project member companies
- Extract Data - Use free online tools:
  - Note Parse – Extracts hyperlinks from Text
  - Link Grabber – Plugin Extracts links from webpages
  - Copy All URLs – Plugin Converts open Tabs to list of Hyperlinks
- Capture web addresses in a spreadsheet

Sector Targeting: Custom Search Engines

- cse.google.com
  - Build a search engine that only looks at specific websites
  - Find the websites through: Industry Clusters, RTOs, Educational Institutes, Enterprise Boards, Regional Development Authorities, Company Databases,….

- Use the Value Chain terms in the CSE



Value Proposition: Litmus Test

Weak Value Proposition = Not a Stakeholder

SME's
High Tech Product

Downstream
Stakeholder

Value to the Stakeholder?

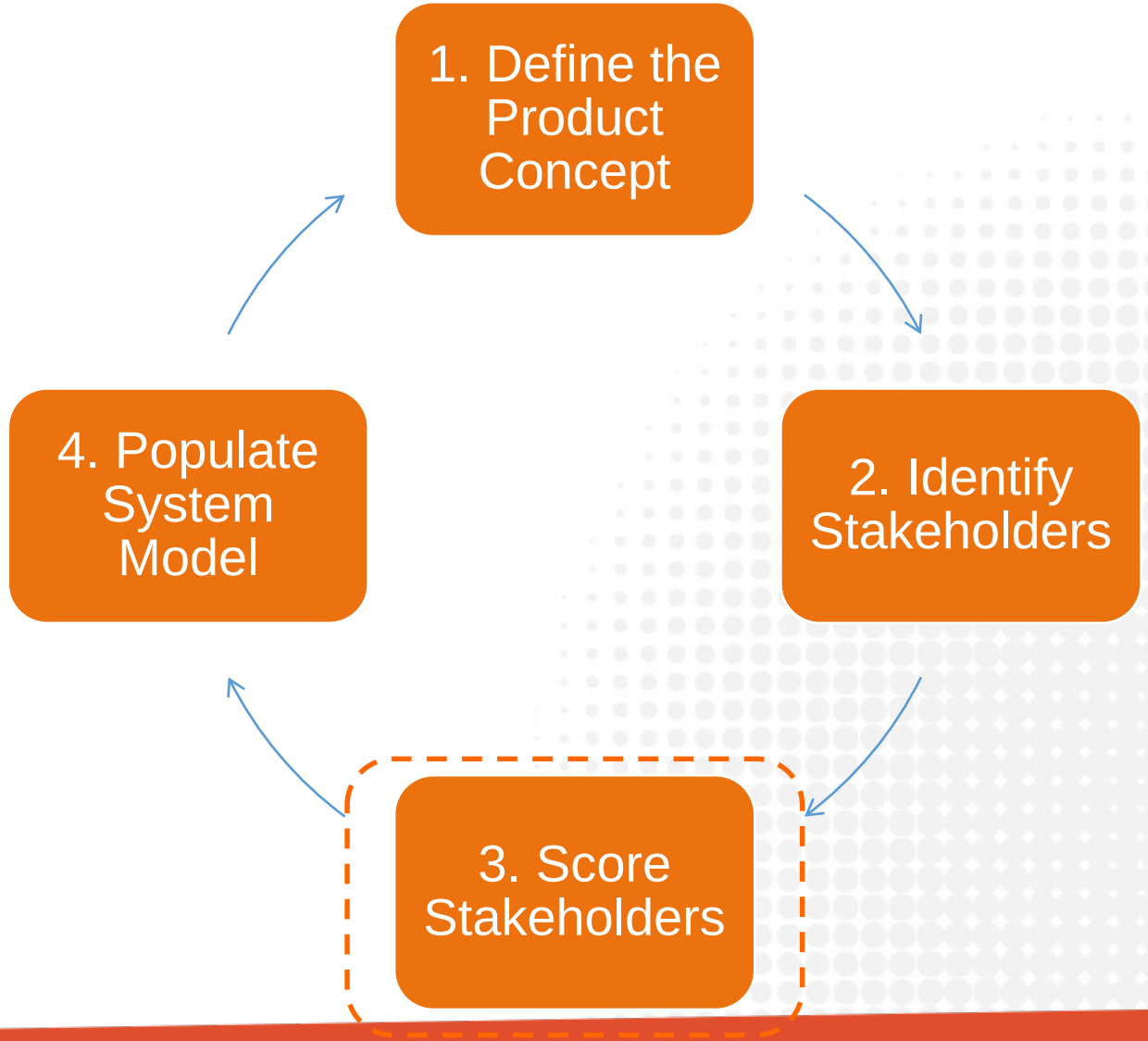
Value Proposition: Use the Product Definition to inform this

Keep it Simple

Keep it relevant

The specific value proposition is core to stakeholder – stakeholder interactions

3. Score the Stakeholders



Numerical score for Stakeholders
Ask Simple Questions

- Stakeholder Basics:
  - Related Activity?
    - Is the Stakeholder aligned with the SME? Yes/Maybe/No = 3/2/1
    - Will Stakeholder growth and development help SME and vice versa?
  - Conflicted?
    - Involved with competition? Likely to usurp SME themselves?
  - Engageable?
    - Easy path to working relationship – Partner company, Cluster Member, or no connection
  - Working Relationship?
    - Existing connection are most easily leveraged

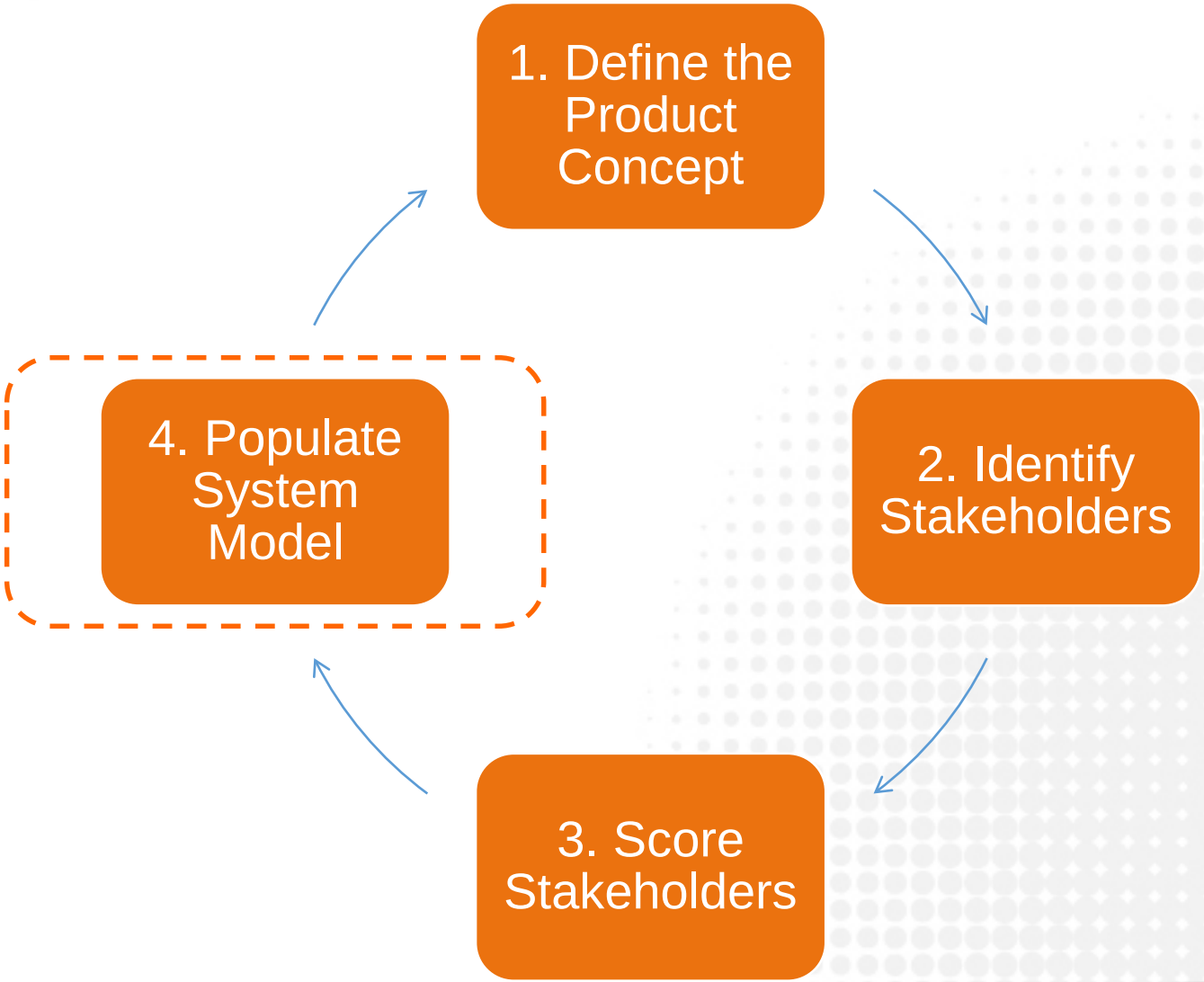
Best Estimate: TRL

- Estimate the TRL of the Product for that Stakeholder
  - Use best guess for TRL
  - Based on Value Proposition
  - Low Score is bad – we want stakeholder using the Product in an advanced state
  - Too high Score is bad also – Fully developed TRL limits potential for Growth
  - Maximum Score for TRL – 8, Qualified

Best Estimate: Innovation Potential

- Innovation Potential:
  - How much is the technology **suddenly possible** ?
  - Does the Stakeholder have the resources to prototype and develop?
  - Does the stakeholder have sufficient expertise to exploit the Product?
  - Where is the technology on the S-Curve?
  - Is the innovation **desperately needed**?
  - How accessible is the market that exists for the proposed development?
  - How readily available are a creative crowd of first adopters?
  - How accessible are markets of a multitude

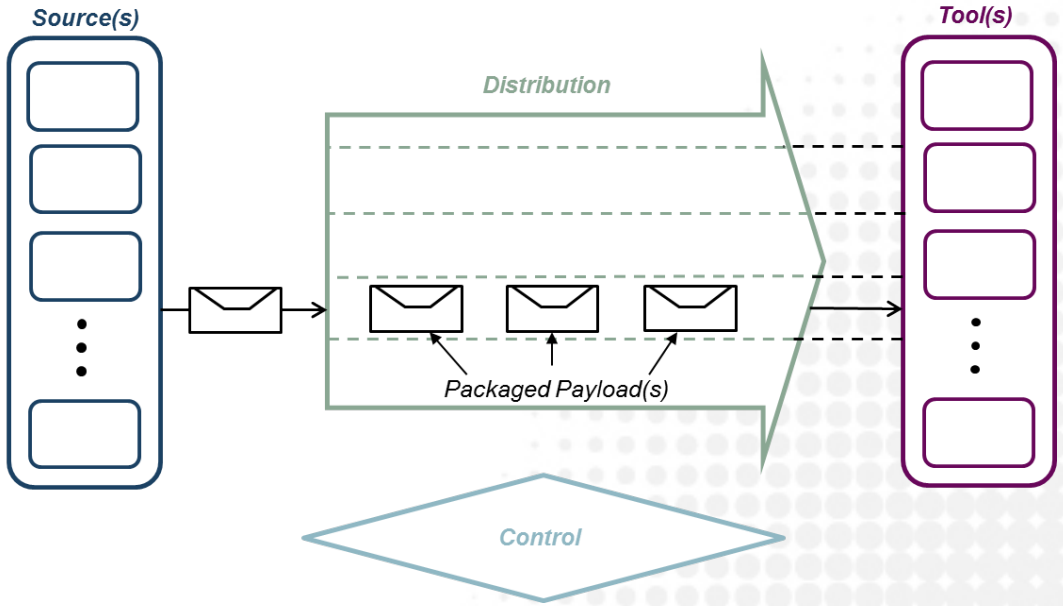
4. Populate the System Model



Place top Stakeholders into the System Model

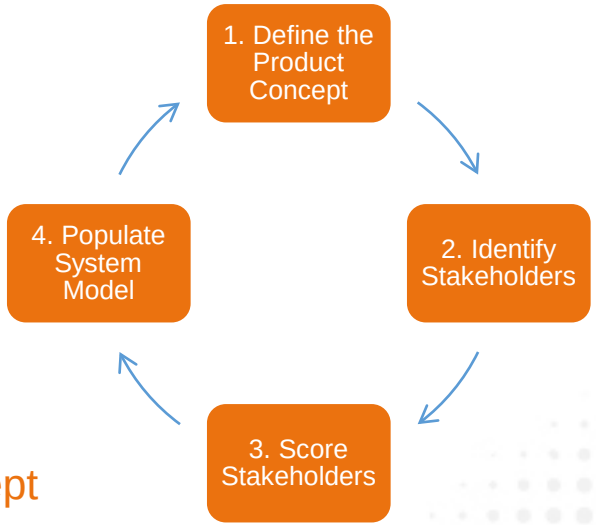
Provide as many options as possible

Model of essential Elements for future scalability



Are there Gaps? How do we fill them?
Exercise is an effective form of debriefing and sets the SME up to exploit results

Results

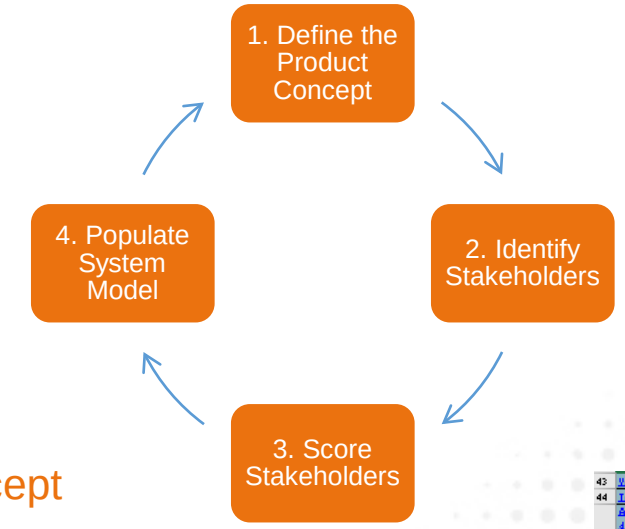


- Early Stage Assessment of new product concept
- High Tech SME gets to know the new field of application
- Determine the value of the product concept in the new field of application.
- Direction for future R&D activities by the high tech SME
- Well developed System Model for Scalable Growth
- Populated Route to Market

takeholder/Buye	Linked to?	Activity Type	Value Proposition	System Model	Overall Score
Bosch	Smart Car - Detection and Avoidance	Connected Car develoer	Price, features, resolution	Tool, Control, Distribution	7.91
Daimler	Smart Car - Detection and Avoidance	Car Manufacturer	Price, features, resolution	Tool, Control, Distribution	7.91
Gemalto	Smart Car - Detection and Avoidance	Smart Car Connectivity	Price, features, resolution	Tool, Control, Distribution	7.91
IBM	Smart Car - Detection and Avoidance	Traffic Management	Price, features, resolution	Tool, Control, Distribution	7.91
Siemens	Smart Car - Detection and Avoidance	Parking Management	Price, features, resolution	Tool, Control, Distribution	7.91
ZTE	Smart Car - Detection and Avoidance	smart car location and con	Price, features, resolution	Tool	7.86
Leica Geosystems	High Accuracy Maps - Transport	Reality Capture	Added Functionality, Accu	Tool	7.8
Trimble	High Accuracy Maps - Transport	Direct Georeferencing	Real Time Mapping	Tool	7.8
Continental	Agricultural automation - Geolocation	Autonomous Vehicles	Price, features, resolution	Tool	7.77
Matrix Vision	Agricultural automation - Geolocation	Autonomous Vehicles	Price, features, resolution	Tool	7.77
Smartcar, Inc	Smart Car - Detection and Avoidance	Smart Car Connectivity	Price, features, resolution	Control, Distribution	7.72
Keopsys	Environmental Scanning Systems - Geolocatio	3D Scanning	Price, features, resolution	Tool, Control, Distribution	7.66
lasercomponents	Speed Measurement	Automotive Automation	Price, features, resolution	Tool	7.66
Thales	Airspace monitoring - Detection and Avoidance	Aerospace Security	Price, features, resolution	Tool, Control, Distribution	7.66
Applus+ IDIADA	Road Safety - Smart Car	Automotive Engineering	Improved Vehicle Automati	Tool	7.55
Continental	Automated Harvesting/ Planting - Agricultural A	Agricultural Automation	Added Functionality, Accu	Tool	7.55
Continental	Road Safety - Smart Car	Automotive Parts Manufac	Improved Vehicle Automati	Tool	7.55
Daimler	Road Safety - Smart Car	Automotive Manufacturer	Improved Vehicle Automati	Tool	7.55
3D Laser Mapping	Environmental Scanning Systems - Geolocatio	3D Scanning	Price, features, resolution	Tool	7.52
3dsystems	Environmental Scanning Systems - Geolocatio	3D Production	Price, features, resolution	Tool	7.52
Leica Geosystems	Environmental Scanning Systems - Geolocatio	3D Scanning	Price, features, resolution	Tool	7.52
Leica Geosystems	Mapping	3D Mapping	Price, features, resolution	Tool	7.52
renishaw	Mapping	Mine & Quarry Mapping	Price, features, resolution	Tool	7.52
Riegl	Environmental Scanning Systems - Geolocatio	3D Scanning	Price, features, resolution	Tool	7.52
Bosch	Smart Car - Geolocation	Connected Car develoer	Price, features, resolution	Tool, Control, Distribution	7.41

Introduction | Innovation Potential Analysis | Product | Application | End-User Product | Societal Challenge | Co

Results



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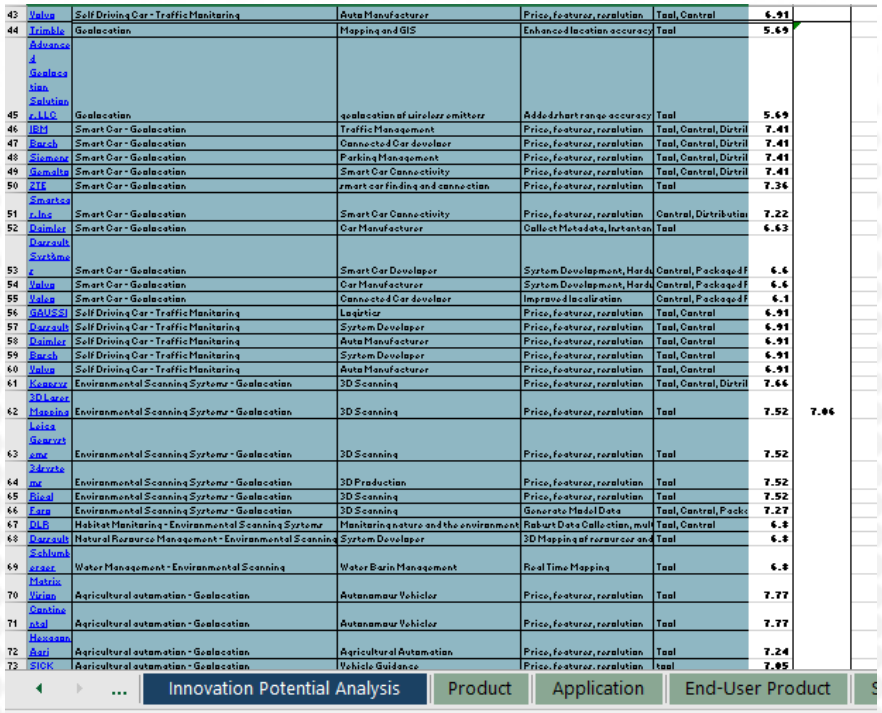


43	Valeo	Self Driving Car - Traffic Monitoring	Auto Manufacturer	Price, features, resolution	Tool, Control	6.91	
44	Trimble	Geolocation	Mapping and GIS	Enhanced location accuracy	Tool	5.69	
45	Advanced Geolocation Solutions, LLC	Geolocation	geolocation of wireless emitters	Added chart range accuracy	Tool	5.69	
46	IBM	Smart Car - Geolocation	Traffic Management	Price, features, resolution	Tool, Control, Distril	7.41	
47	Bosch	Smart Car - Geolocation	Connected Car developer	Price, features, resolution	Tool, Control, Distril	7.41	
48	Siemens	Smart Car - Geolocation	Parking Management	Price, features, resolution	Tool, Control, Distril	7.41	
49	Gemalto	Smart Car - Geolocation	Smart Car Connectivity	Price, features, resolution	Tool, Control, Distril	7.41	
50	ZTE	Smart Car - Geolocation	smart car finding and connection	Price, features, resolution	Tool	7.36	
51	Smartcar, Inc	Smart Car - Geolocation	Smart Car Connectivity	Price, features, resolution	Control, Distribution	7.22	
52	Daimler	Smart Car - Geolocation	Car Manufacturer	Collect Metadata, Instanton	Tool	6.63	
53	Darrault Systèmes	Smart Car - Geolocation	Smart Car Developer	System Development, Hard	Control, Package D	6.6	
54	Valeo	Smart Car - Geolocation	Car Manufacturer	System Development, Hard	Control, Package D	6.6	
55	Valeo	Smart Car - Geolocation	Connected Car developer	Improved localization	Control, Package D	6.1	
56	GAUSSIN	Self Driving Car - Traffic Monitoring	Logistics	Price, features, resolution	Tool, Control	6.91	
57	Darrault	Self Driving Car - Traffic Monitoring	System Developer	Price, features, resolution	Tool, Control	6.91	
58	Daimler	Self Driving Car - Traffic Monitoring	Auto Manufacturer	Price, features, resolution	Tool, Control	6.91	
59	Bosch	Self Driving Car - Traffic Monitoring	System Developer	Price, features, resolution	Tool, Control	6.91	
60	Valeo	Self Driving Car - Traffic Monitoring	Auto Manufacturer	Price, features, resolution	Tool, Control	6.91	
61	Kenevo	Environmental Scanning Systems - Geolocation	3D Scanning	Price, features, resolution	Tool, Control, Distril	7.66	
62	3D Laser Mapping	Environmental Scanning Systems - Geolocation	3D Scanning	Price, features, resolution	Tool	7.52	7.06
63	Leica Geosystems	Environmental Scanning Systems - Geolocation	3D Scanning	Price, features, resolution	Tool	7.52	
64	3dsystems	Environmental Scanning Systems - Geolocation	3D Production	Price, features, resolution	Tool	7.52	
65	Riegl	Environmental Scanning Systems - Geolocation	3D Scanning	Price, features, resolution	Tool	7.52	
66	Faro	Environmental Scanning Systems - Geolocation	3D Scanning	Generate Model Data	Tool, Control, Packa	7.27	
67	DLR	Habitat Monitoring - Environmental Scanning Systems	Monitoring nature and the environment	Robust Data Collection, mult	Tool, Control	6.8	
68	Darrault	Natural Resource Management - Environmental Scanning	System Developer	3D Mapping of resources and	Tool	6.8	
69	Schlumberger	Water Management - Environmental Scanning	Water Basin Management	Real Time Mapping	Tool	6.8	
70	Matrix Vision	Agricultural automation - Geolocation	Autonomous Vehicles	Price, features, resolution	Tool	7.77	
71	Continental	Agricultural automation - Geolocation	Autonomous Vehicles	Price, features, resolution	Tool	7.77	
72	Hexagon Agri	Agricultural automation - Geolocation	Agricultural Automation	Price, features, resolution	Tool	7.24	
73	SICK	Agricultural automation - Geolocation	Vehicle Guidance	Price, features, resolution	Tool	7.05	

... Innovation Potential Analysis | Product | Application | End-User Product

Interreg
Atlantic Area
European Regional Development Fund

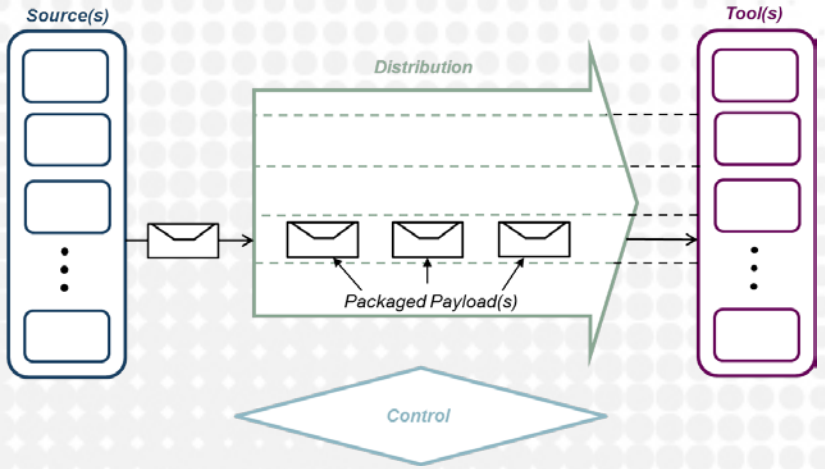
Thank You!

AtlanticKET
MED

NUI Galway
OÉ Gaillimh

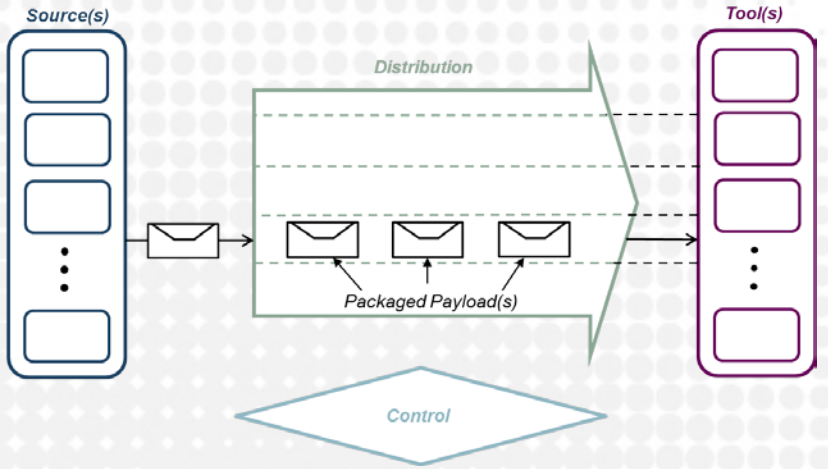
The System Model

- **Market = Goods and Services Trade** = *Mass, Energy, Information* Exchange
- *Mass, Energy, Information* originates at '**Source**' (exchangeable format)
- *Mass, Energy, Information* used/transformed at '**Tool**' (useable format)
- *Mass, Energy, Information* travel (Space or Time) via '**Distribution**'
- *Mass, Energy, Information* formatted for use by Tool is '**Packaged Payload**'
- *Mass, Energy, Information* interactions ensured by '**Control**'

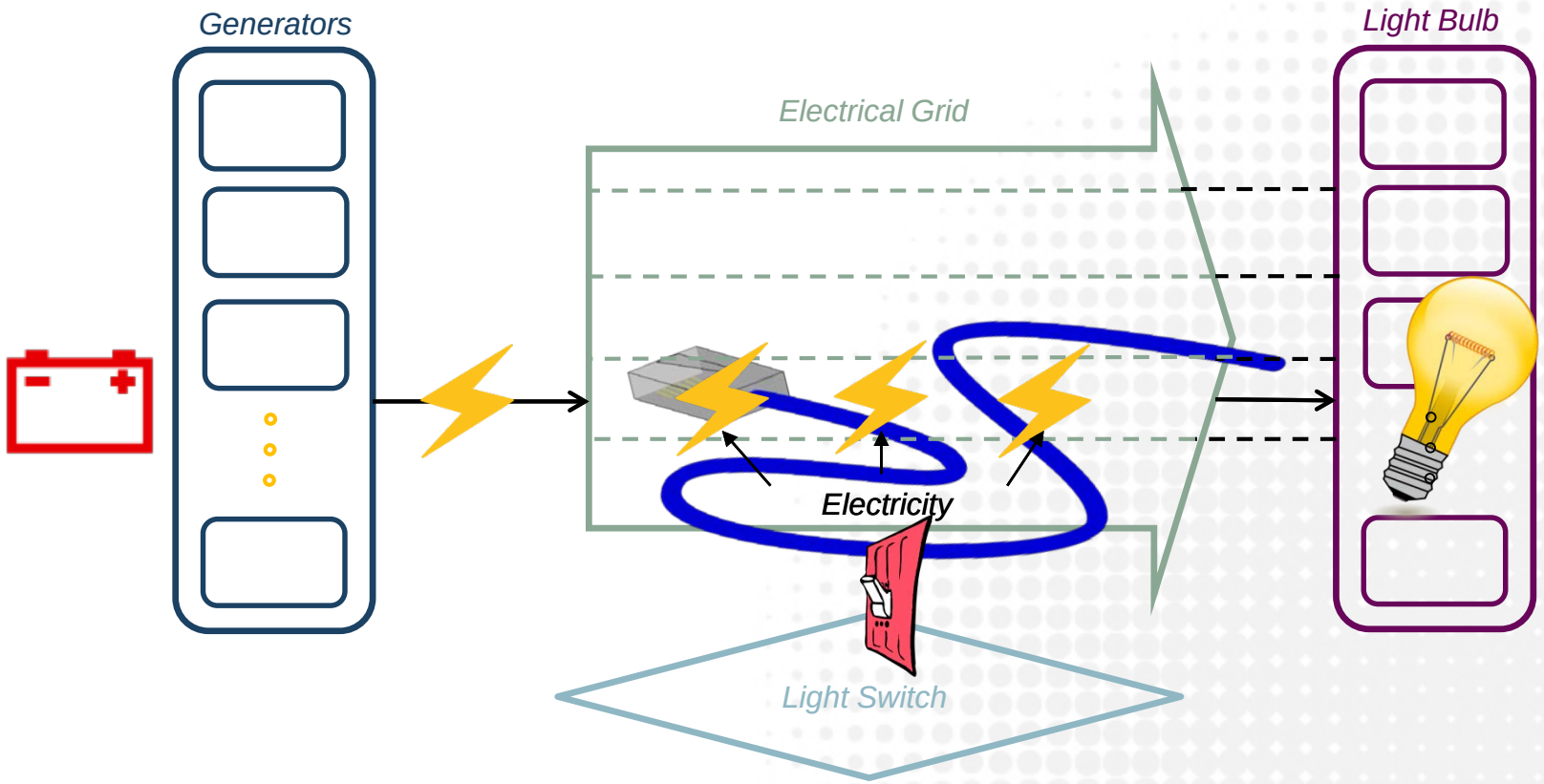


The System Model

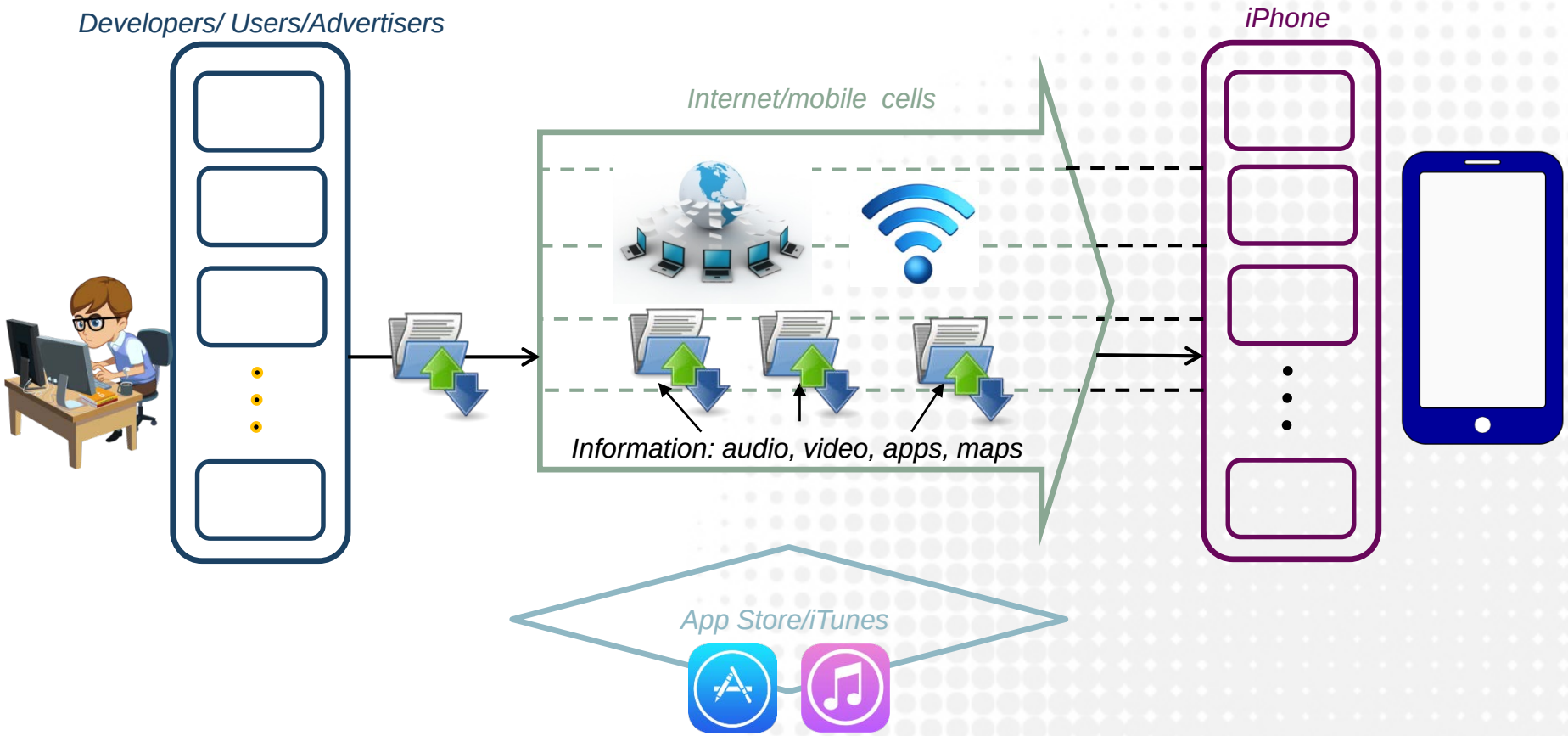
- Product = '**Tool**'
- '**Source**' = Essential Elements for the operation of the Product
- '**Distribution**' = Pathway between Essential Element and Product
- '**Packaged Payload**' = Essential Element in format that Product can use
- '**Control**' = Controls Essential Element and Product interaction



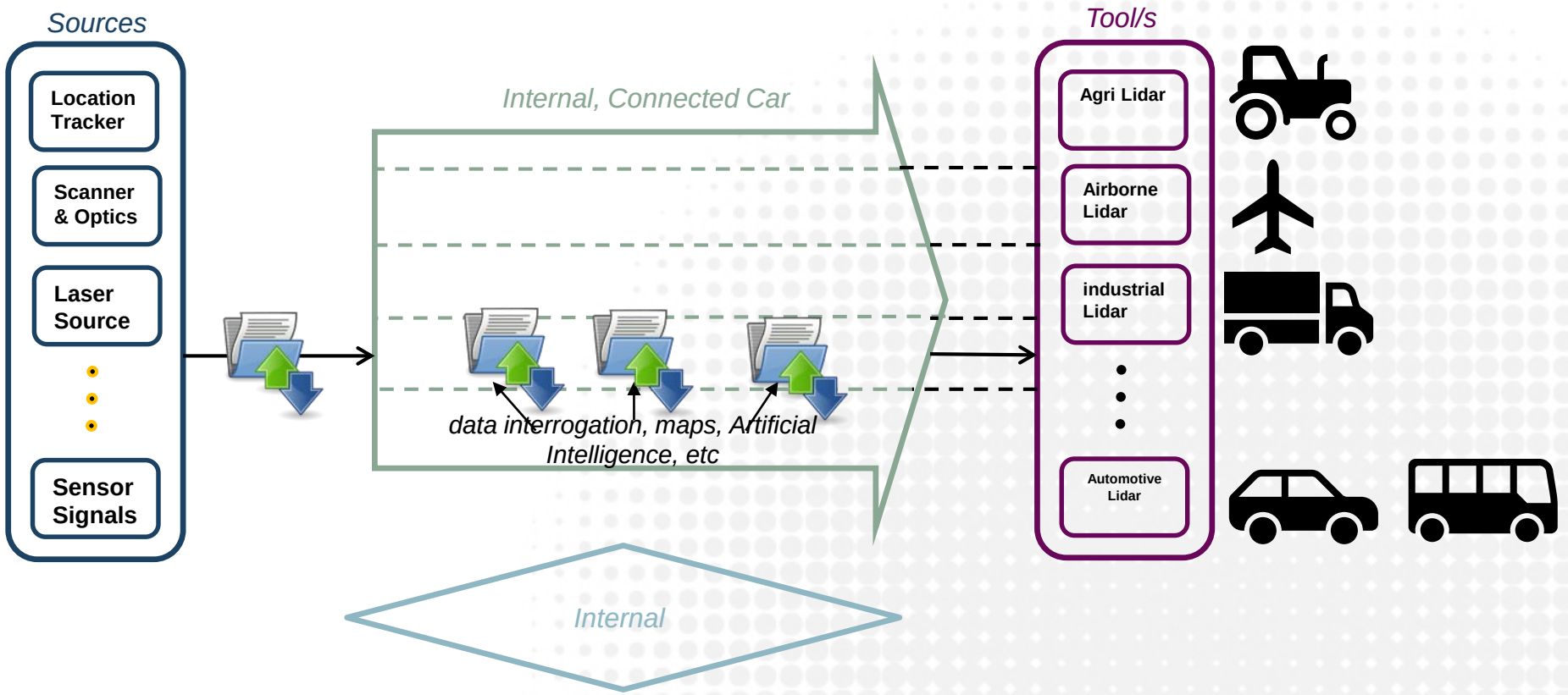
System Model: Example 1, Light Bulb



System Model: Example 2, iPhone



System Model: Example 3, Lidar



Product TRLs

- Estimate the Projected Internal TRL for the Product and each Application etc.
- Score provides weighting for subsequent stakeholder scoring
- Max TRL provides max weighting – We want to market Product at highest TRL