

The European Robotics Roadmap

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The European Robotics Roadmap

- Actions under Horizon 2020 are driven by the roadmap.
- What is the Roadmap?
- Where has it come from?
- What does it contain?
- How is it used?

What is the Roadmap?

Two Documents



SRA: High level document

- Wide readership
- Strategy and targets
- Framework of description



MAR: Technical detail

- Updated each year
- Context and detail
- Now available from...

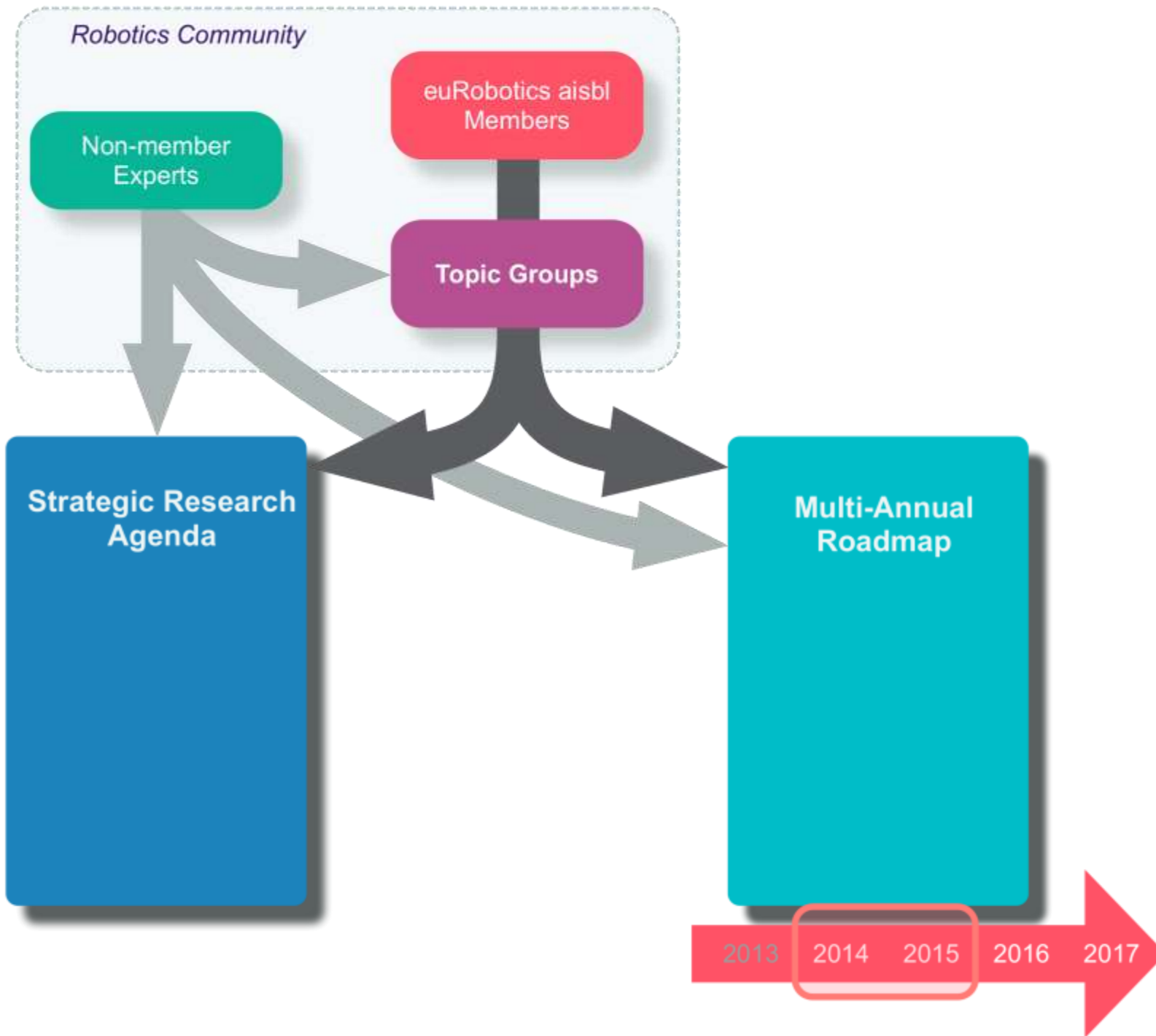
Hyphen!

www.eu-robotics.net

Where has it come from?

euRobotics aisbl





Roadmap Progression

- First Workshop in Leuven (September 2012)
- SRA 0v2 released (February 2013)
- Workshops at ERF 2013 (March 2013)
- SRA 0v3 released (July 2013)
- MAR Workshop Frankfurt (September 2013)
- SRA 0v4 released (October 2013)
- MAR Workshop Brussels (October 2013)
- Initial release Call 1 MAR (January 2014)
- Workshops ERF 2014 (March 2014)
- ...

euRobotics Topic Groups

Aerial Robots

Agriculture

Autonomous Navigation

Benchmarking and Competitions

Bio-Inspired Robots

Civil Robots

Cognitive Systems and AI

Companion Robots

Healthcare

Industrial Robots

Maintenance and Inspection

Marine Robotics

Materials

Mechatronics

Miniaturised Robots

Natural Interaction with Social Robots

Perception

Physical Human Robot Interaction

Systems Engineering

Space Robotics

Telerobotics

Education

Entrepreneurship

Ethical-Legal-Societal Issues

Standardisation

Field/Service Robots in unstructured
Environments

What does it contain?

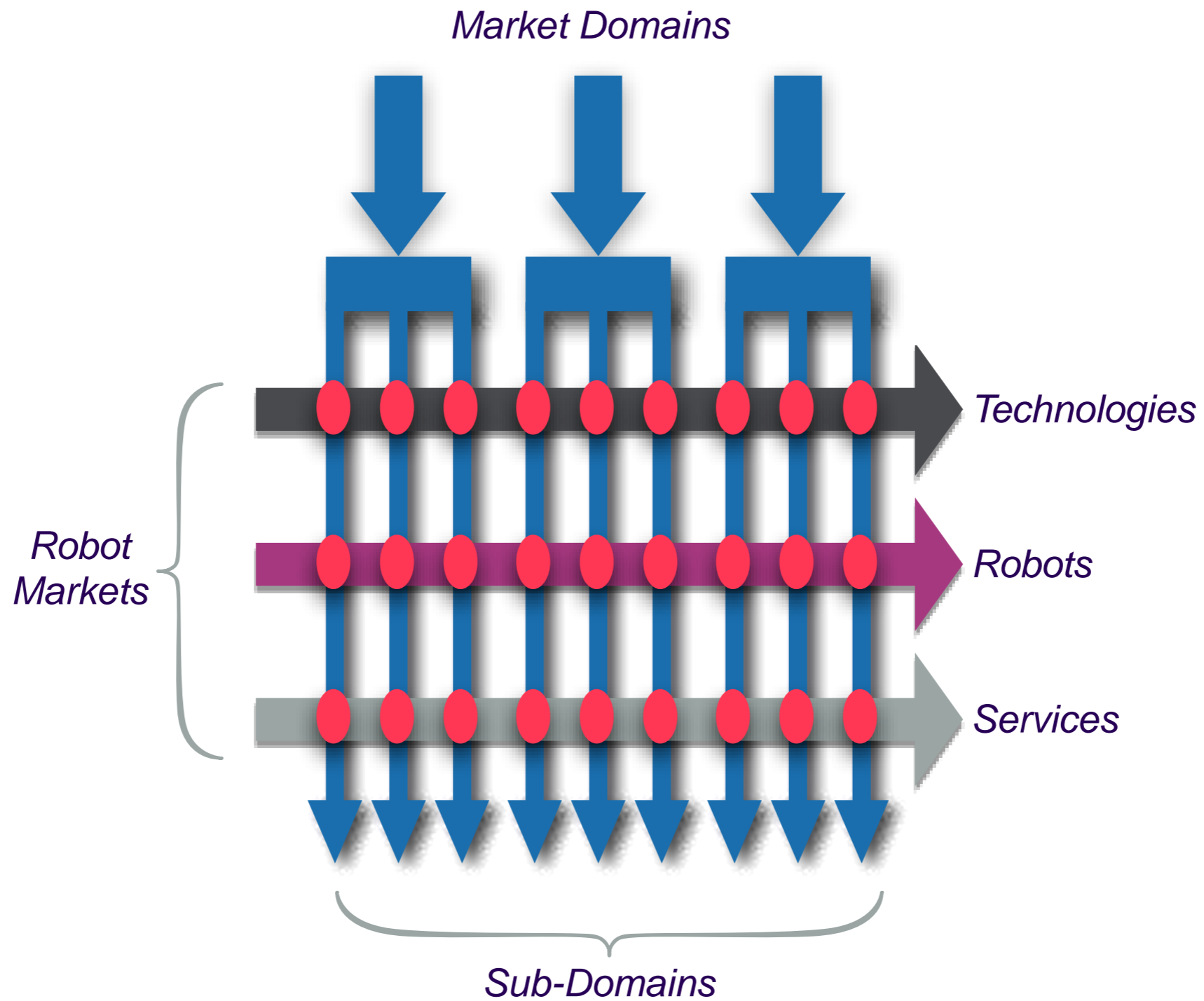
What does it contain?

- The SRA contains
 - a descriptive framework
 - an overview of strategy
 - goals and targets for 2020

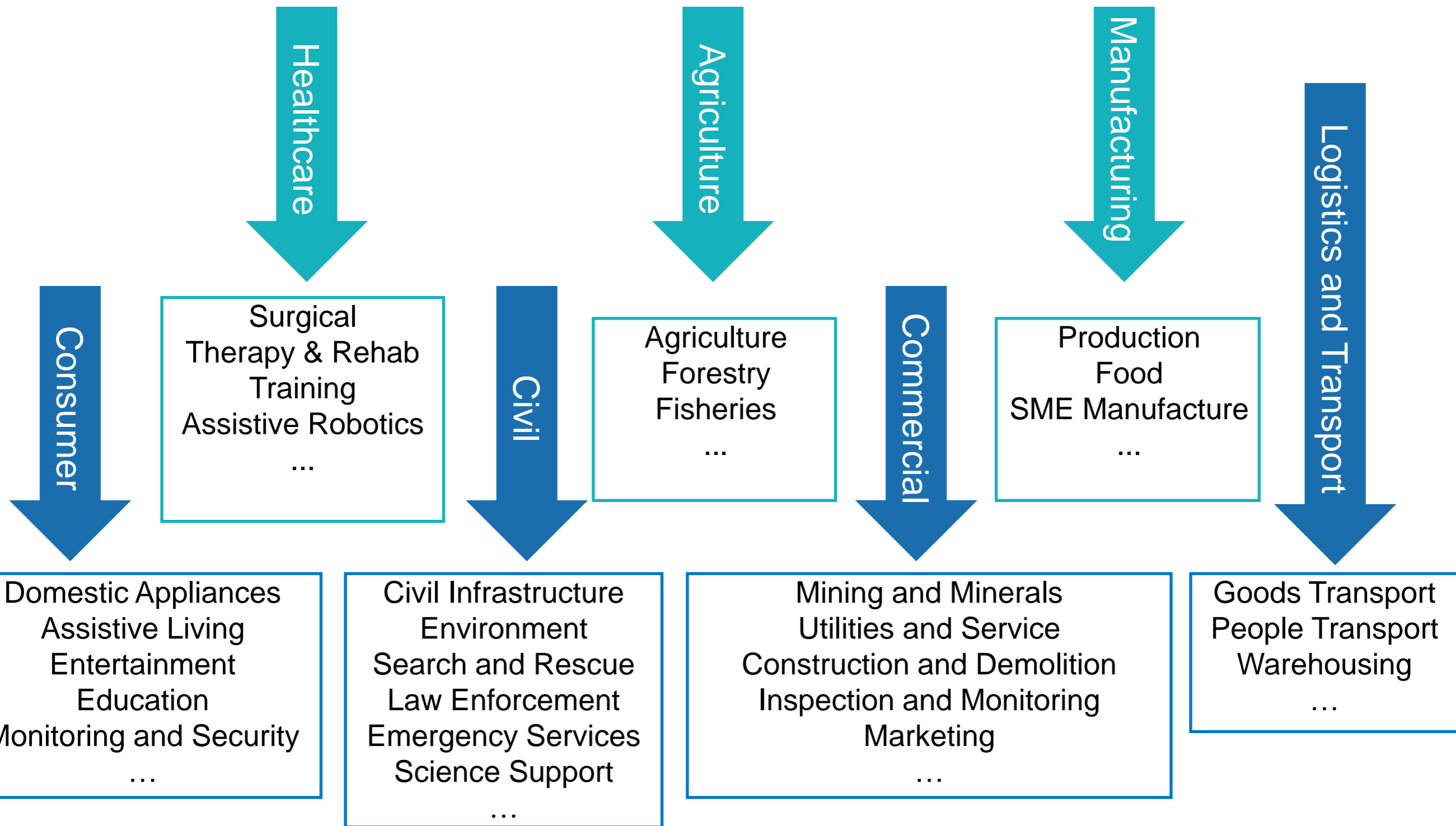
- The MAR contains details of
 - market domains
 - technologies
 - combinations
 - step changes
 - system abilities

DOMAINS

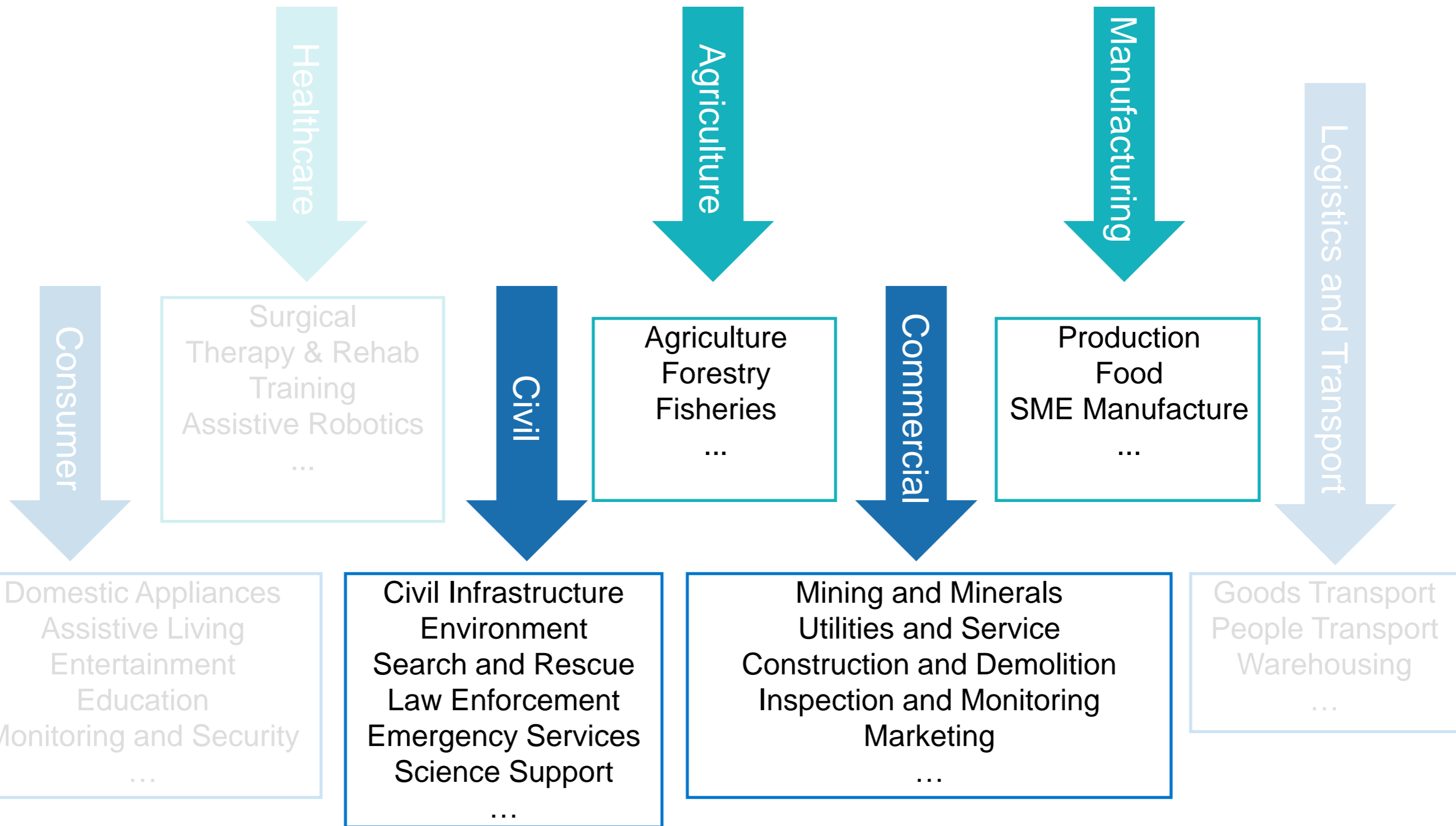
Market domains vs. robot markets



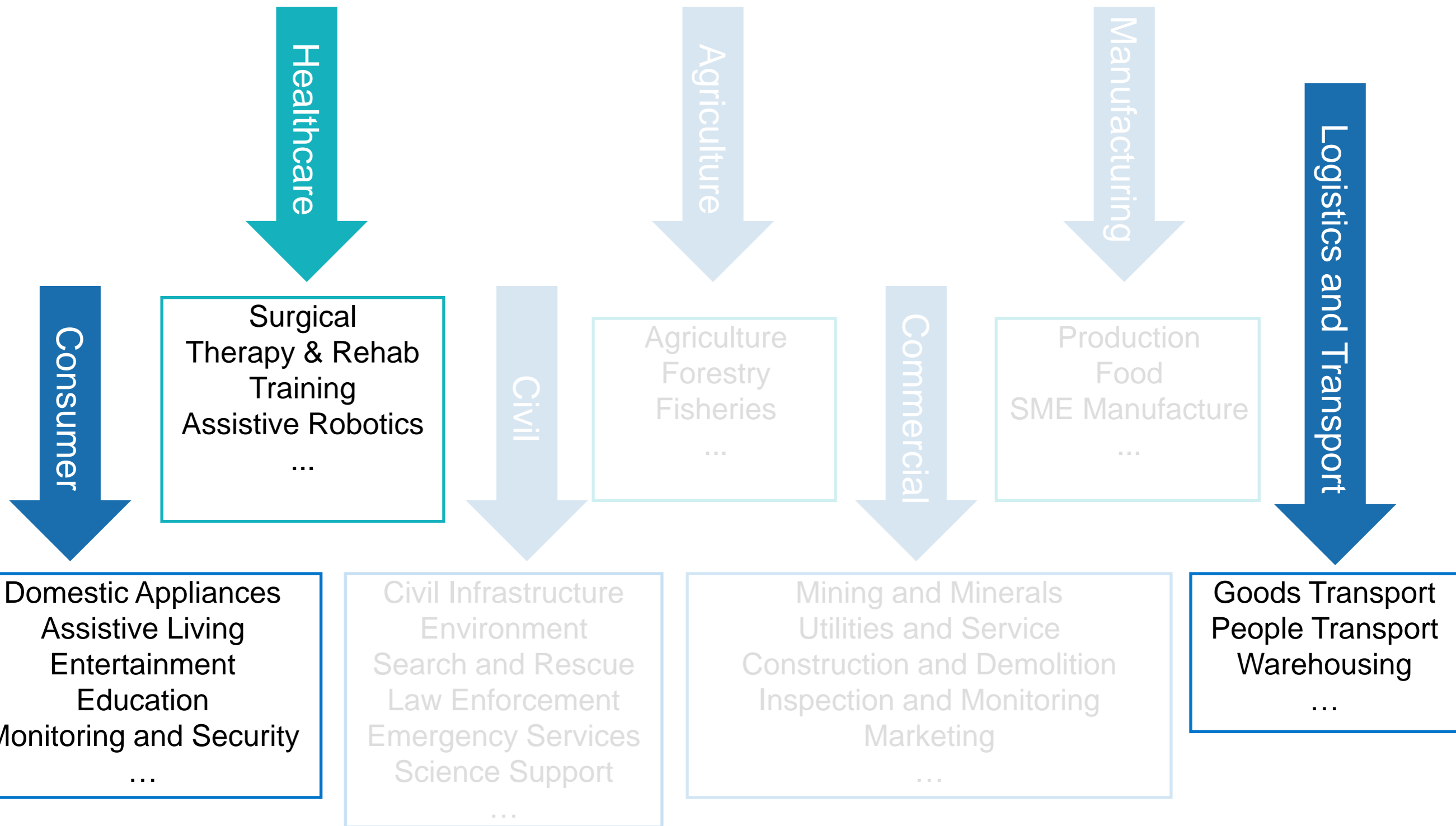
Domains



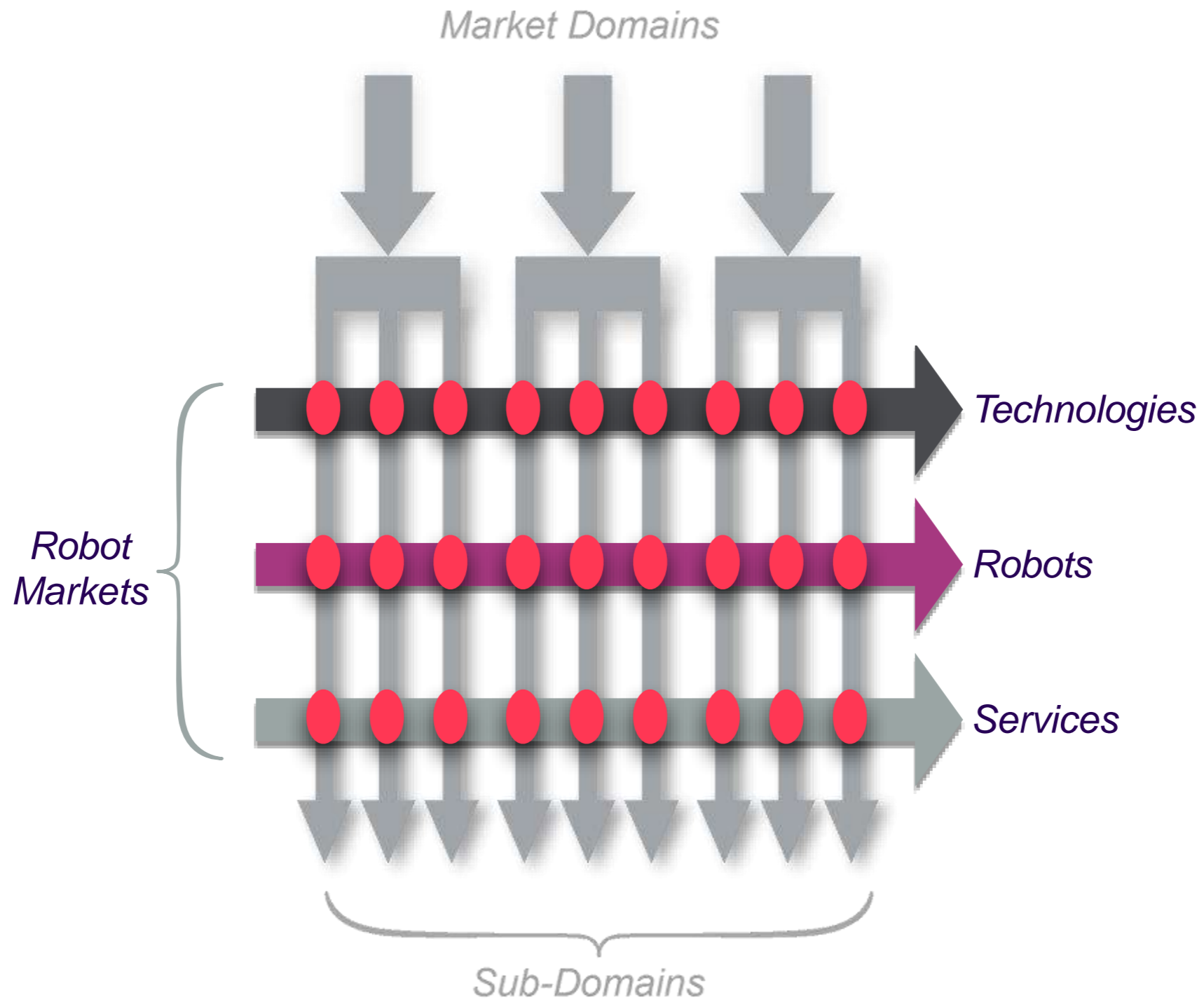
Domains in Call 1 (ICT23)



Domains in Call 2 (ICT24)

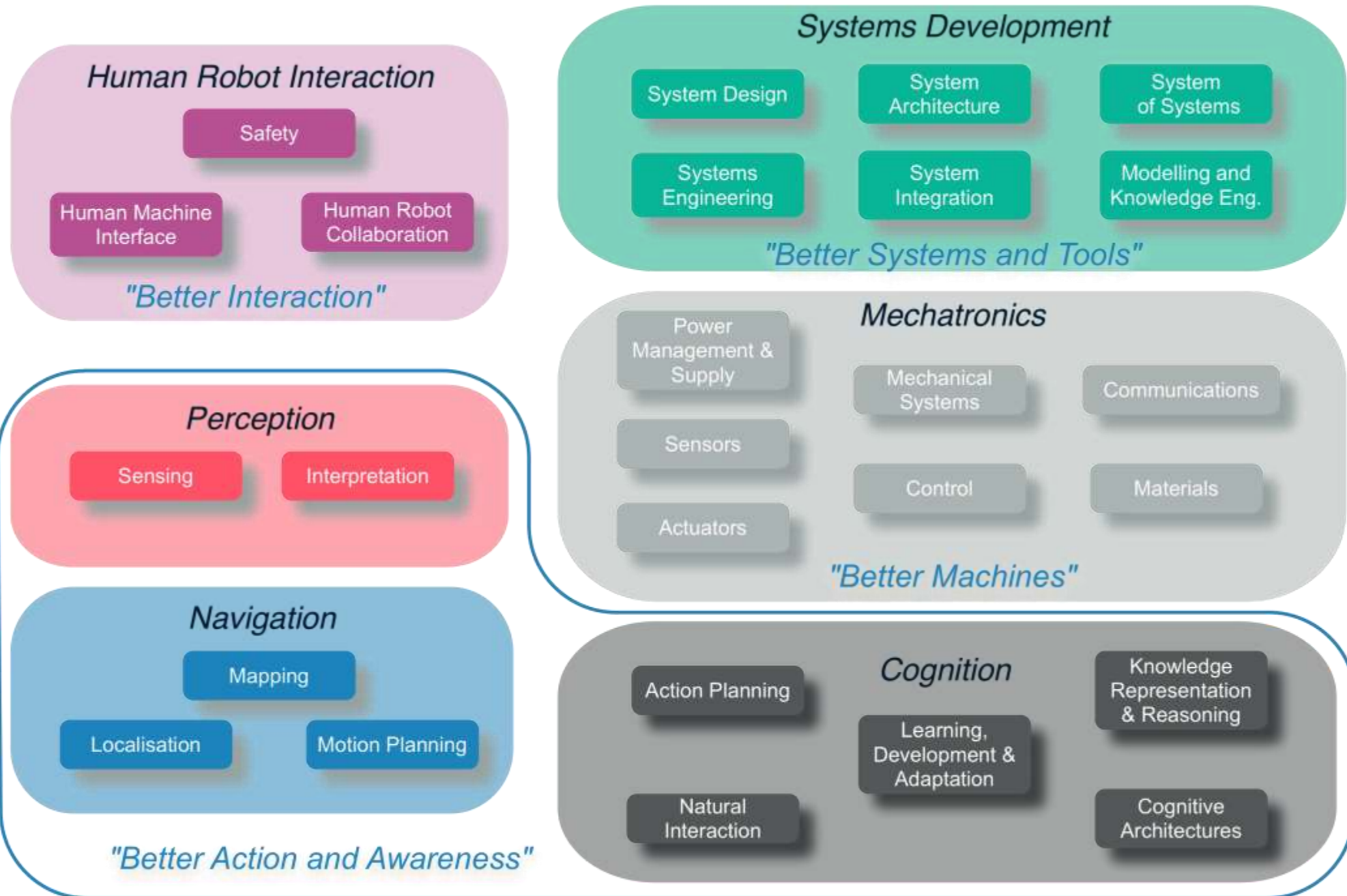


Market domains vs. robot markets



TECHNOLOGIES

Technology Clusters



Domains



Set

Requirements

Drive

Capability

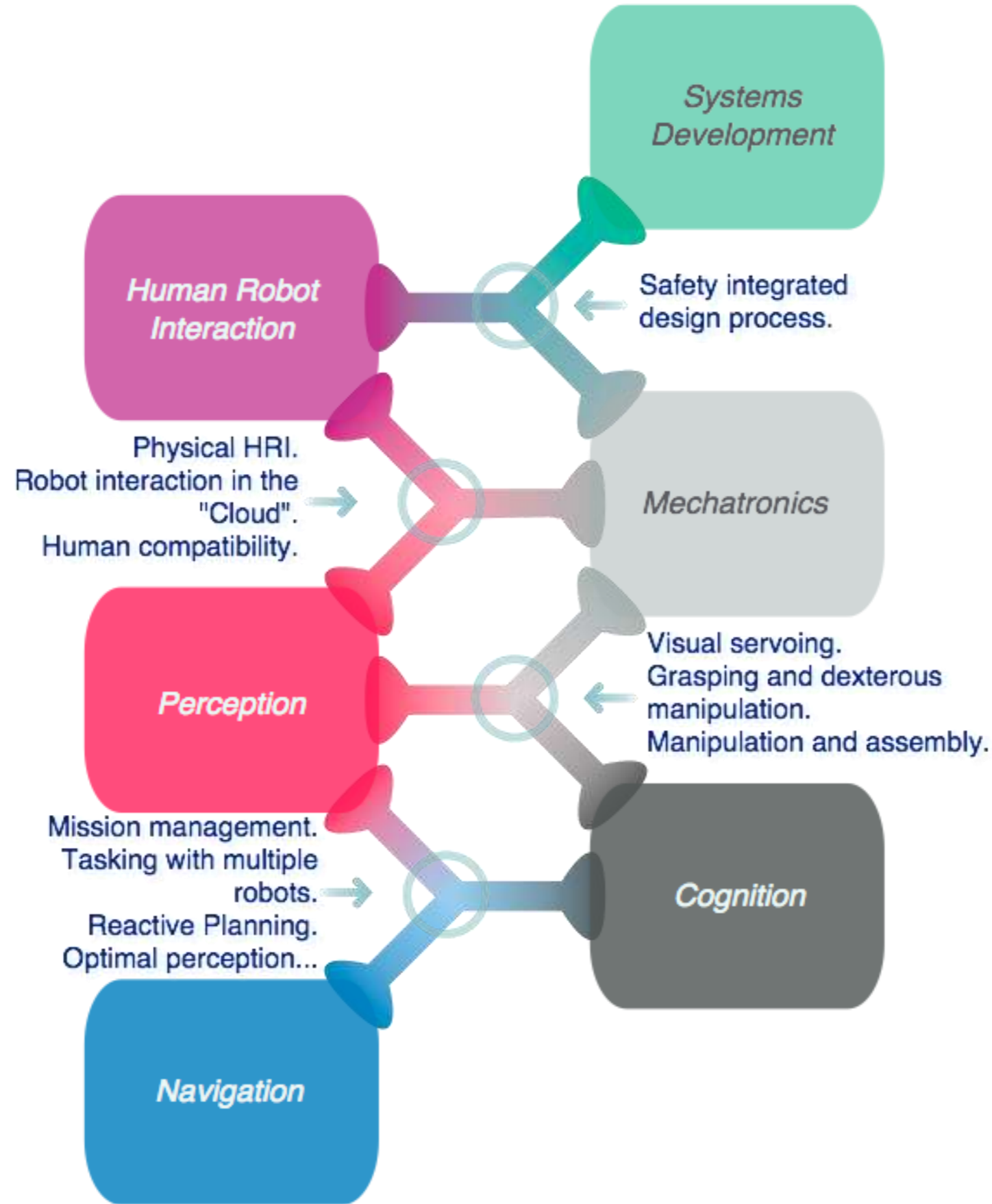
Limits



Provide

Technologies

TECHNOLOGY COMBINATIONS



Technology combinations

- have broad impact
- areas of significant growth and opportunity
- provide step changes in system ability

STEP CHANGES & SYSTEM ABILITIES

Domains



Requirements

Capability



Technologies

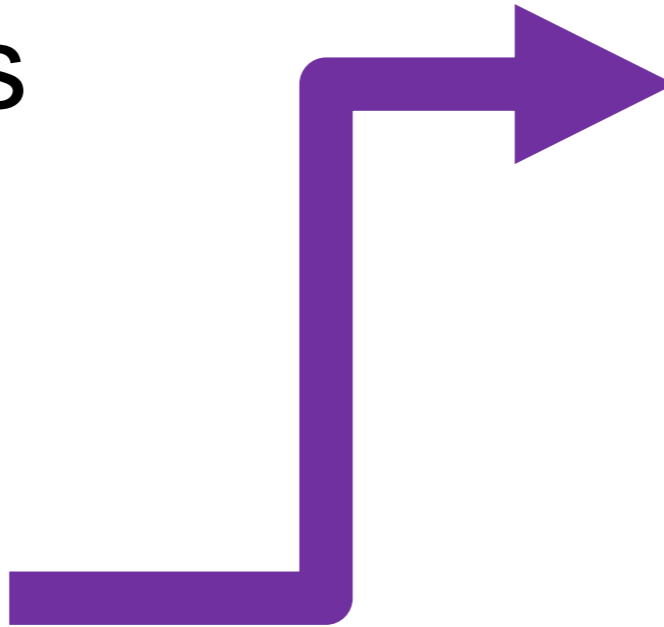
Domains

System Abilities



Technologies

Step Change



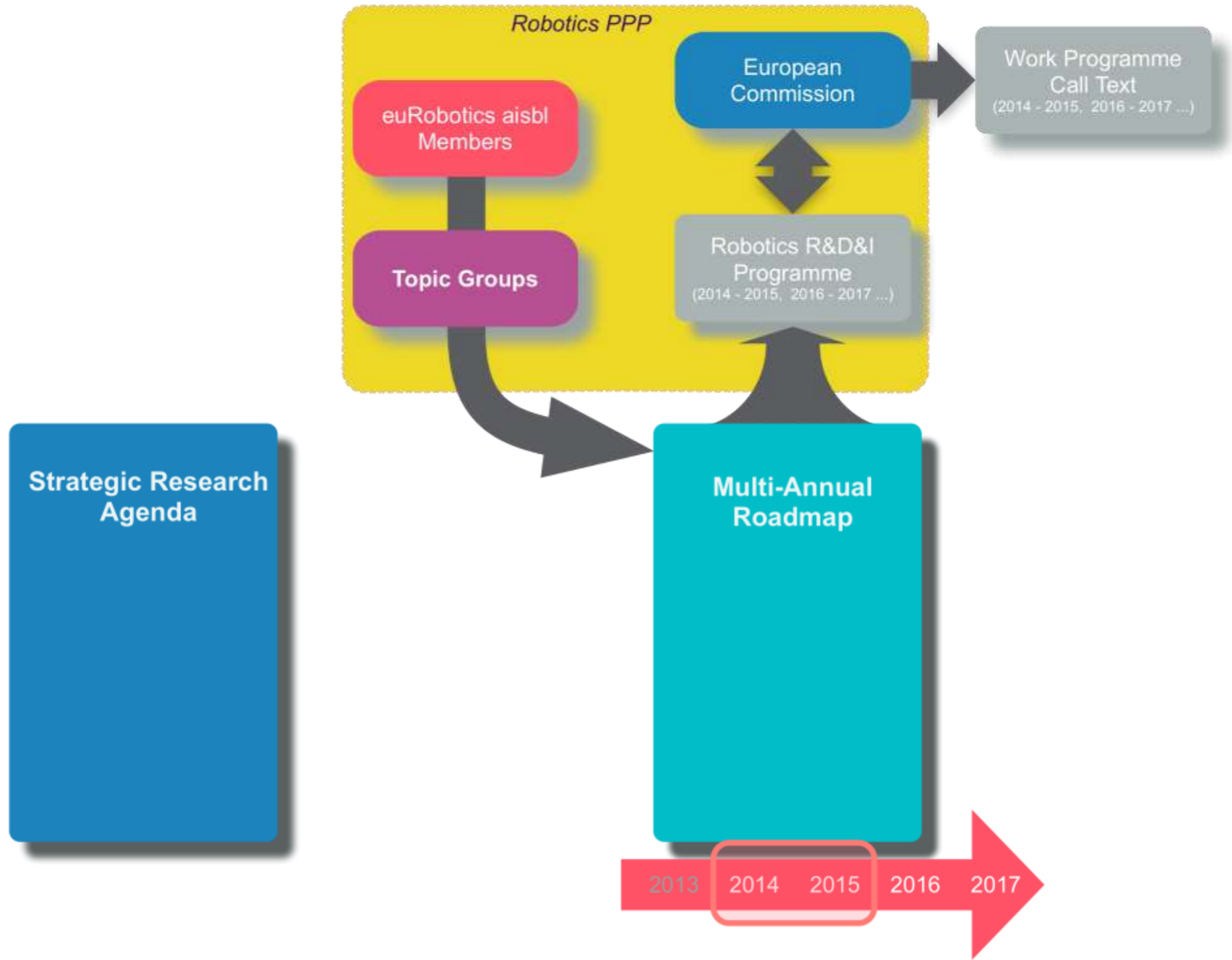
Applications



System Abilities

- Configurability
- Adaptability
- Dependability
- Manipulation Ability
- Motion Capability
- Interaction Capability
- Perception Ability
- Decisional Autonomy
- Cognitive Ability

Where is it used?



RTD to advance **abilities** and **key technologies** relevant for industrial and service robotics

- In terms of **market domains**, the priorities are: **manufacturing, commercial, civil, agriculture**
- The primary goal is to significantly improve the level of industrial and service robotics **abilities** in the context of the above mentioned market domains by addressing: **adaptability, cognitive ability, configurability, decisional autonomy, dependability, flexibility, interaction capability, manipulation ability, motion capability, perception ability.**
- To reach this ambitious goal, **key robotics technologies** need to be advanced in the particular fields of **cognition, human-robot interaction, mechatronics, navigation, perception.** This includes **technology combinations** such as **grasping and dexterous manipulation, physical HRI, mobile manipulation, reactive planning** and other combinations, in particular those that connect the key technologies above.
- To prove the exploitation potential of the results the project outcome is to be shown in **market domain-relevant** demonstrations proving an increased **TRL.**
- It will be essential for the deployment of robots to establish **systems development** processes (from requirement analysis to testing and validation) and to develop techniques and technologies for **system design, engineering, architecture, integration, system of systems, modelling and knowledge engineering** which are applicable across **market domains.**

Using the roadmap

- Read the SRA. (Two hours)
- Understand the terminology used in the Call
 - Technology combination, Ability, Domain etc...
- Use the SRA and MAR as a resource in writing proposals
 - Use the terminology
 - Relate to market impact (in the key domains)
 - Identify project step changes (Ability and Technology)
 - Identify required Ability levels (Applications & Use Cases)
 - Identify TRL progression

Contribute to the next update...

- The SRA and MAR are the result of community action
- You can still get involved
 - Attend The European Robotics Forum (March in Italy)
 - Contribute to Topic Groups
 - Join euRobotics