METIS

MicroElectronics, Training Industry and Skills

Presentation of the **METIS** project

Eracon 2020

November 2020

Co-funded by the Erasmus+ Programme of the European Union

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Agenda

I) Presentation of METIS

II) METIS achievements in 2020

III) Next steps in 2021-2022

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Brief overview of the METIS project:

- METIS = MicroElectronics Training Industry and Skills
- A Sector Skills Alliance, co-funded by Erasmus+
- Implementing a strategic approach to sectoral cooperation on skills
- Aiming to bridge the microelectronics skills gap
- 4-year project: November 2019 – October 2023
- Budget: EUR 4,000,000

- 19 partners from 13 countries, coordinated by SEMI Europe

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The METIS Consortium

Coordinated by semi

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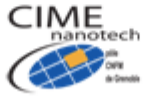
METIS associated Partners



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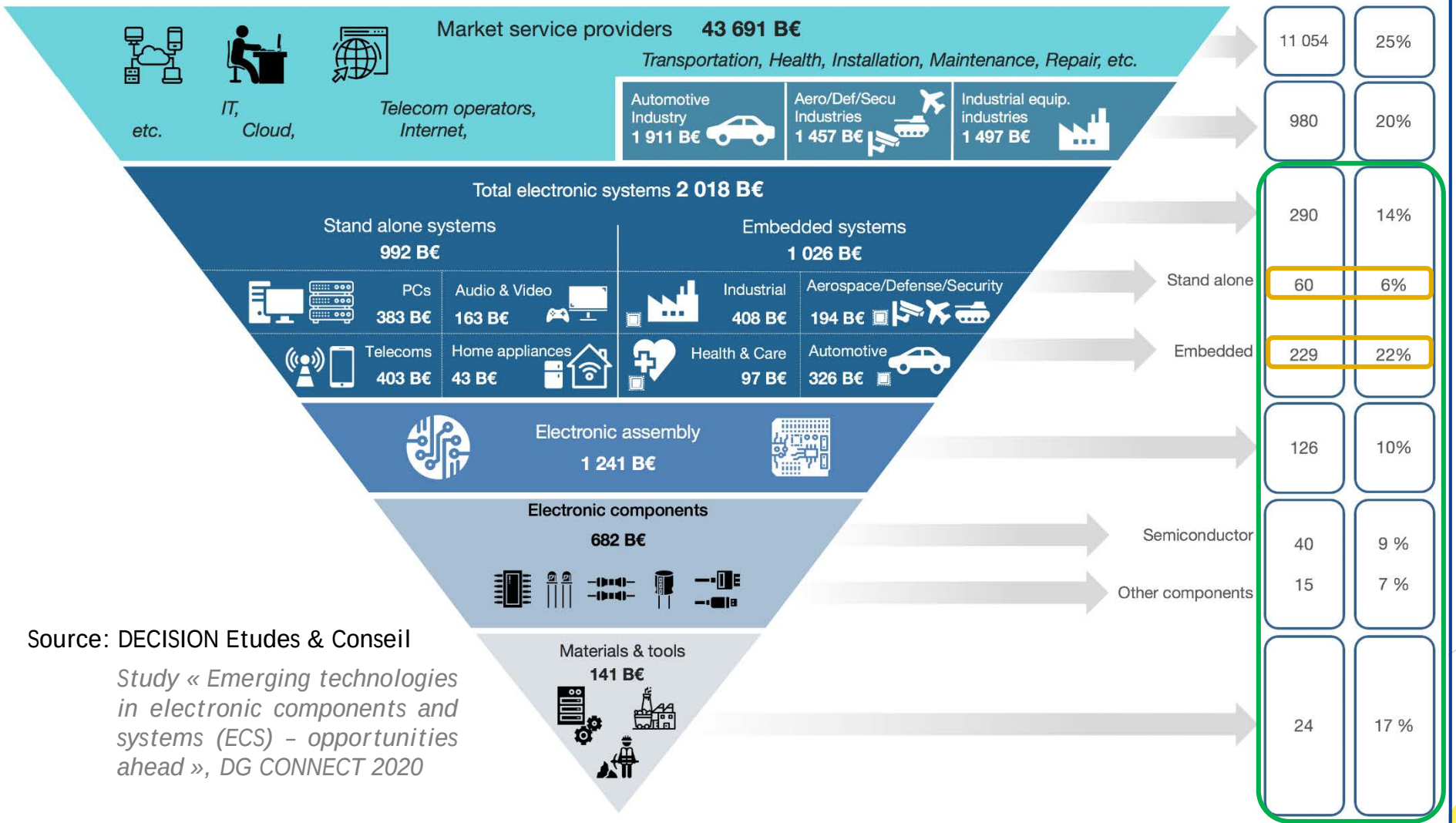
Context - Introduction on the electronics industry

Global Electronic Components & Systems (ECS) value chain in 2018



Source: DECISION Etudes & Conseil

Study « Emerging technologies in electronic components and systems (ECS) – opportunities ahead », DG CONNECT 2020

Europe

Europe accounts for [redacted] of the world electronics systems production in terms of location of the production.

Yet, Europe is specialized in Embedded/professional systems ([redacted] of the world production).

The production of microelectronics in Europe ~[redacted]

Europe

The electronics industry represent [redacted] employees in Europe...

...of which [redacted] in microelectronics.

The METIS project

- The EU microelectronics sector needs to overcome severe skills shortages
- Fast-changing technological landscape

=> Necessity to [redacted]

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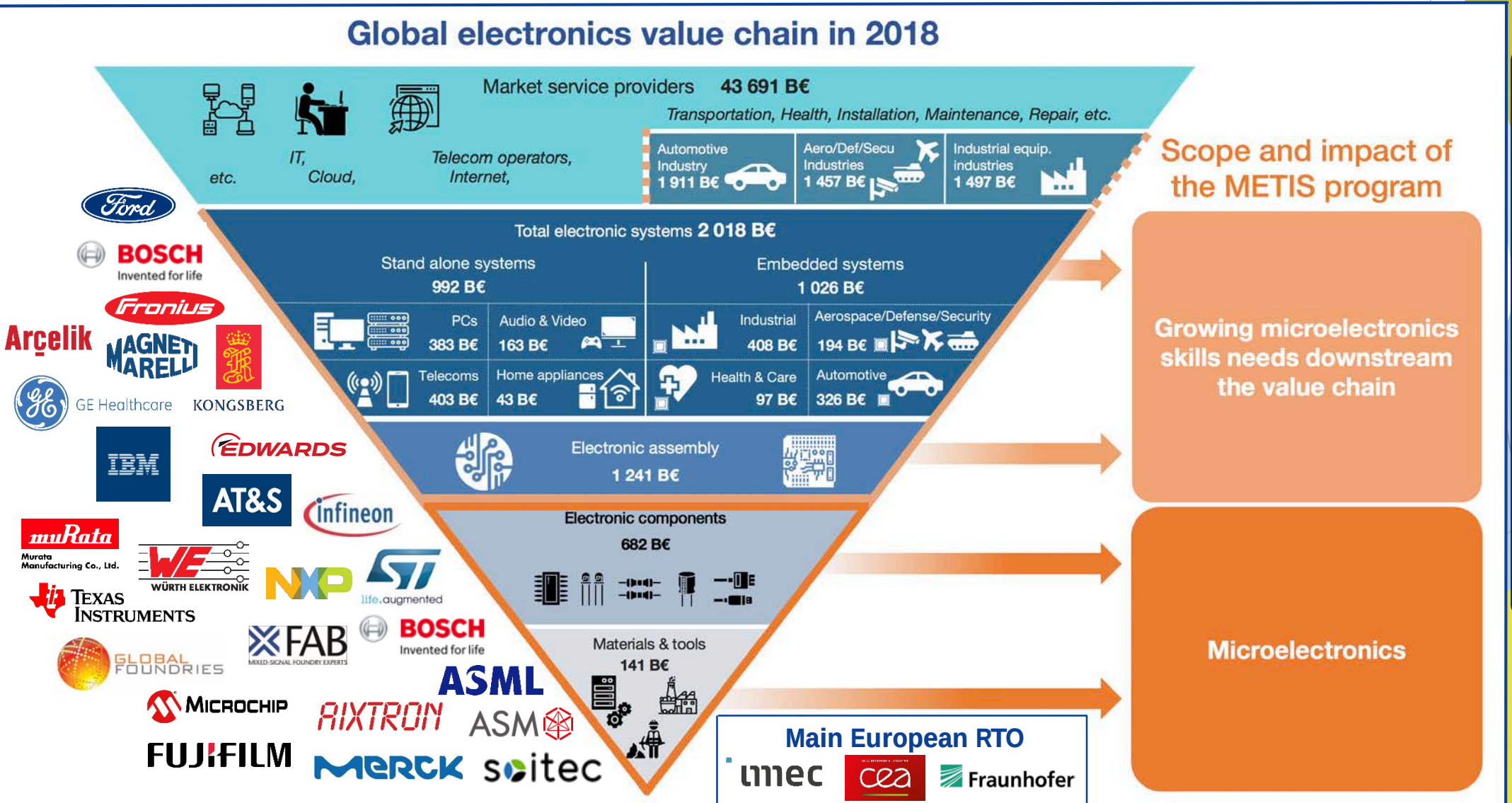
Scope of METIS - MicroElectronics Training, Industry and Skills



A consortium involving the entire microelectronics value chain

Most of the European leaders across the microelectronics value chain have participated to METIS WP2...

...as well as the main Research and Technology Organizations (RTO)...

...and many global leaders, often with large activities in Europe.

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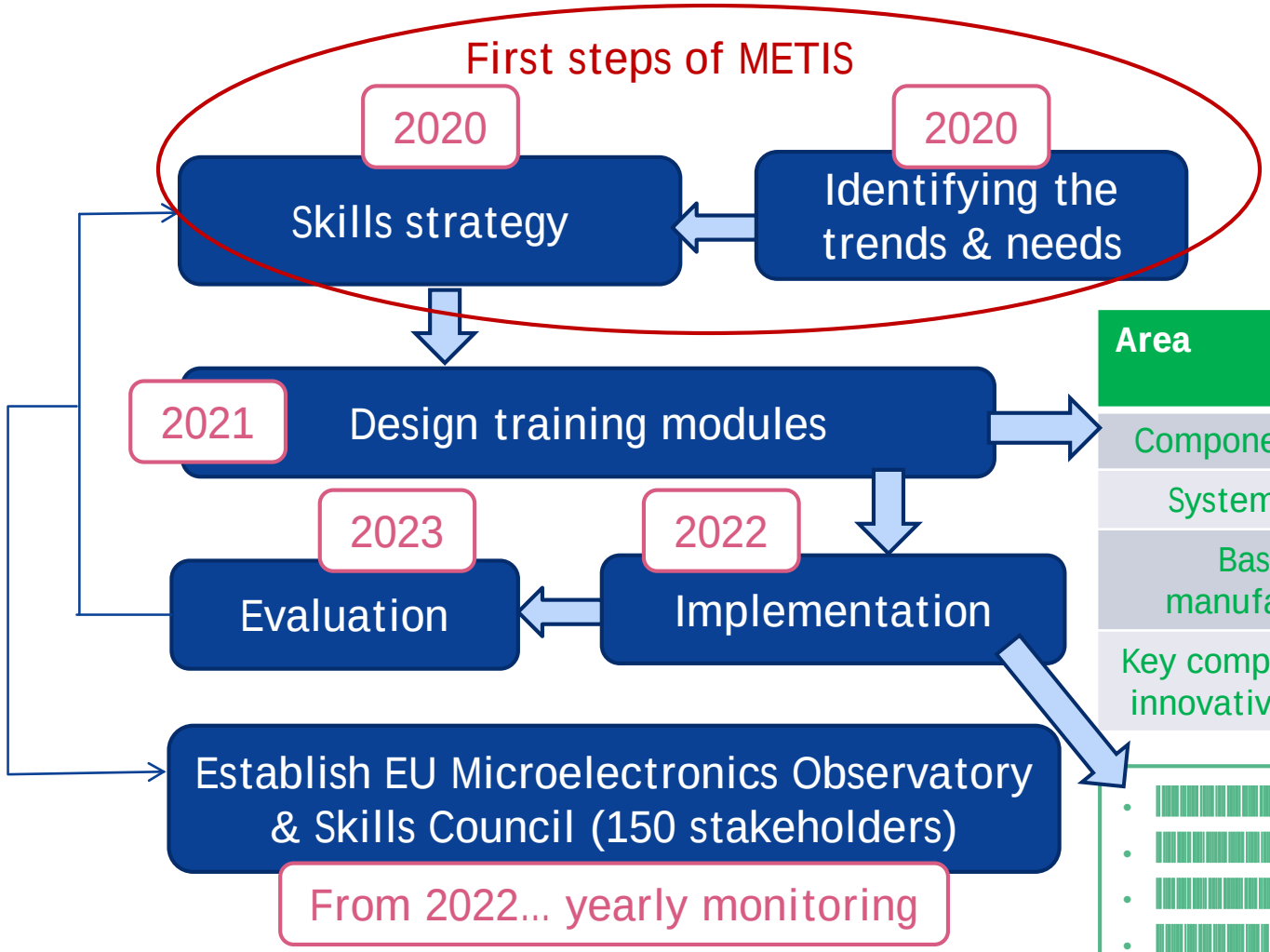
Global overview of METIS - 2019 to 2023



Area	Total Duration (hours)	# of Modules	EQF
Component Design	300	10	4 to 6
System Design	400	13	4 to 6
Basic of manufacturing	300	10	4 to 6
Key competencies & innovative thinking	100	10	5 to 7

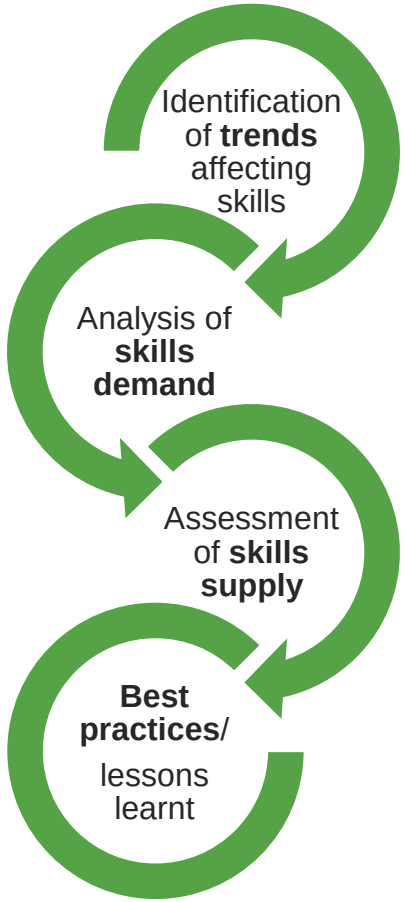
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Identifying the trends & needs (2020): Methodology

10 Focus Groups

50 Structured Interviews

Online survey (>150 answers)



Definition of occupational profiles

- Using the European Skills, Competences, Qualifications and Occupations classification (ESCO)
- Refining of already existing occupational profiles
- Definition of new profiles**: 4 new profiles**

Foresight scenarios for skills development

- Horizon: 2030

Action Plan

- Actionable measures
- Timeline
- Expected impact

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Organisations participating in the METIS project

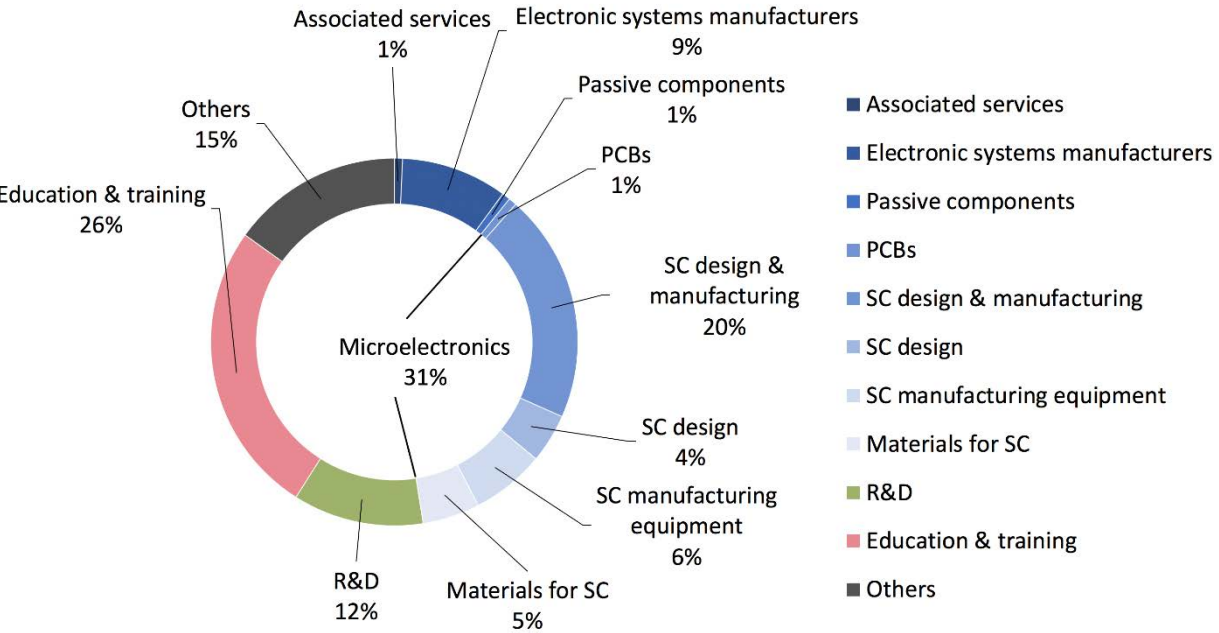
So far in total,

We have engaged [redacted] stakeholders

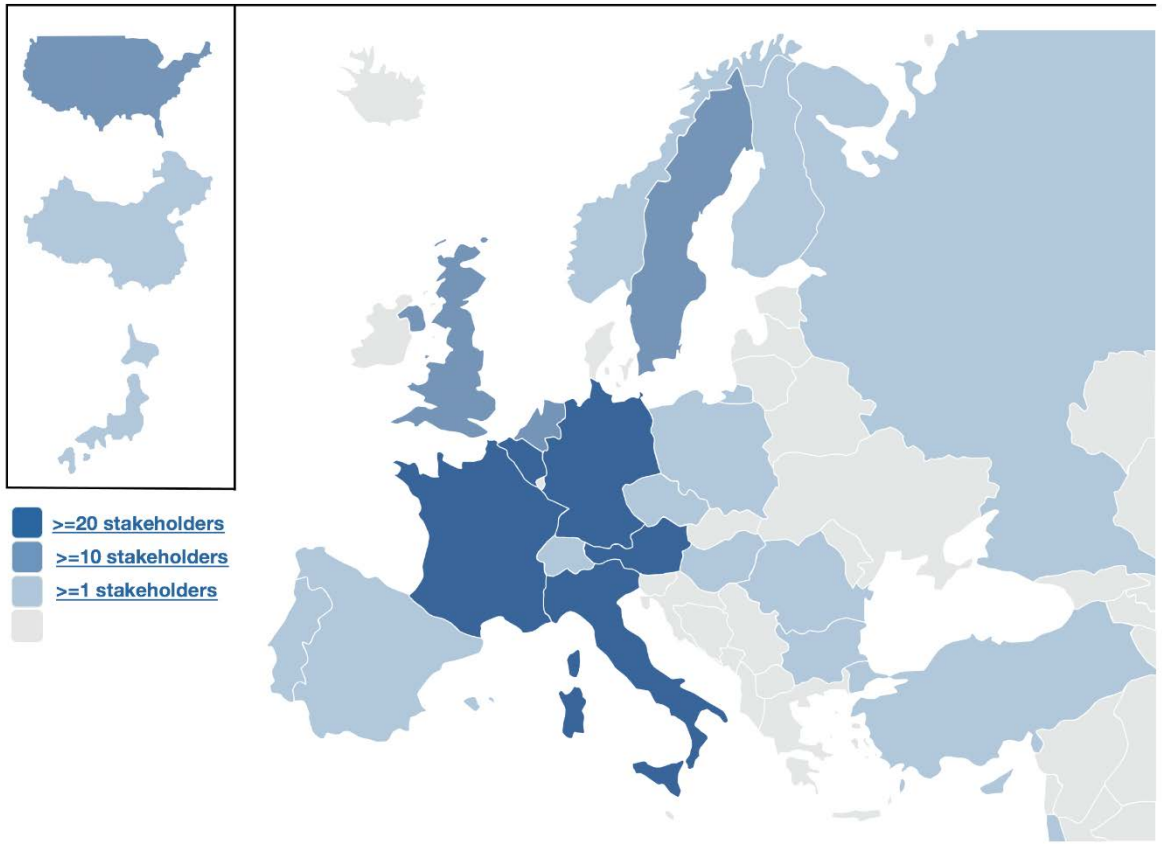
of [redacted] organisations

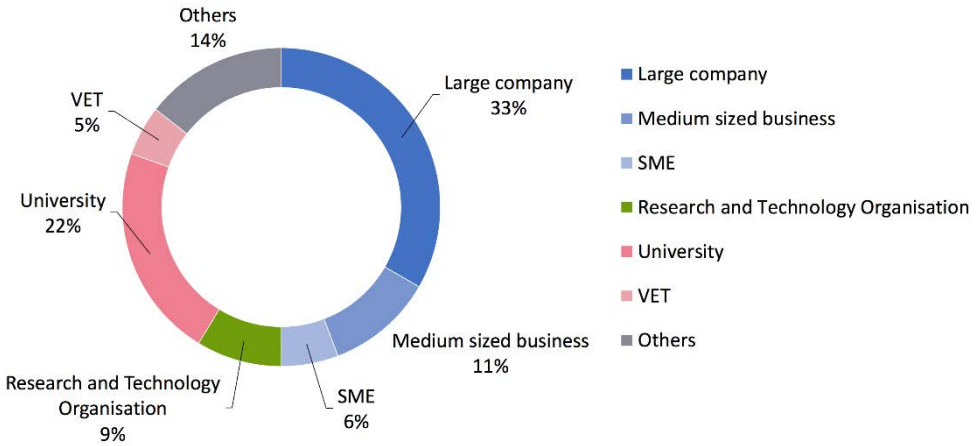
[redacted] That is more than the average of the sector in Europe

The entire electronics value chain involved



Map – Stakeholders engaged in METIS so far





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We have carried out 10 Focus Groups to address specific issues linked to microelectronics skills needs

N°	Focus Groups Themes	Participants	Goal
1	Materials for semiconductors	JSR Micro / SEMI / Semilab / Okmetic / Graphenea…	Microelectronics skills issues from the point of view of materials companies
2	Semiconductor manufacturing equipment	Tokyo Electron / Edwards / EMD / SEMI / Dresden Chip Academy…	Microelectronics skills issues from the point of view of semiconductor manufacturing equipment companies
3	Semiconductor manufacturing	Bosch / X-Fab / Infineon / STMicroelectronics…	Microelectronics skills issues from the point of view of semiconductor manufacturing companies
4	Semiconductor design	Infineon / NXP/ Bosch / IMEC / TU Graz…	Microelectronics skills issues from the point of view of semiconductor design companies
5	Edge AI	IMEC / Fraunhofer / SEMI…	How and when will/is Edge AI lead to new skills requirements in Microelectronics?
6	Microelectronics & automotive	Infineon / Automotive Lightning / MetaSystem/ IAL FVG…	Impact of automotive innovations on microelectronics skills needs (ADAS, electrification of powertrains, etc.)
7	Industry 4.0	BME / Institute of Electron Technology / Vienna University of Technology…	New skills needs in electronics manufacturing in view of industry 4.0
8	Validation of education	CIMEA / TU Sofia / TU Graz / IMEC / SBH Sudost…	Good practices developed within Erasmus+ projects / Assessing differences among national education & training systems
9	EU Policy perspective	DG GROW / DG EMPL / DG CONNECT / DG RTD…	EU policy and microelectronics
10	Diversity in Electronics	WiTEC / Lund University / CNRS…	The place of women and other under-represented groups in Electronics

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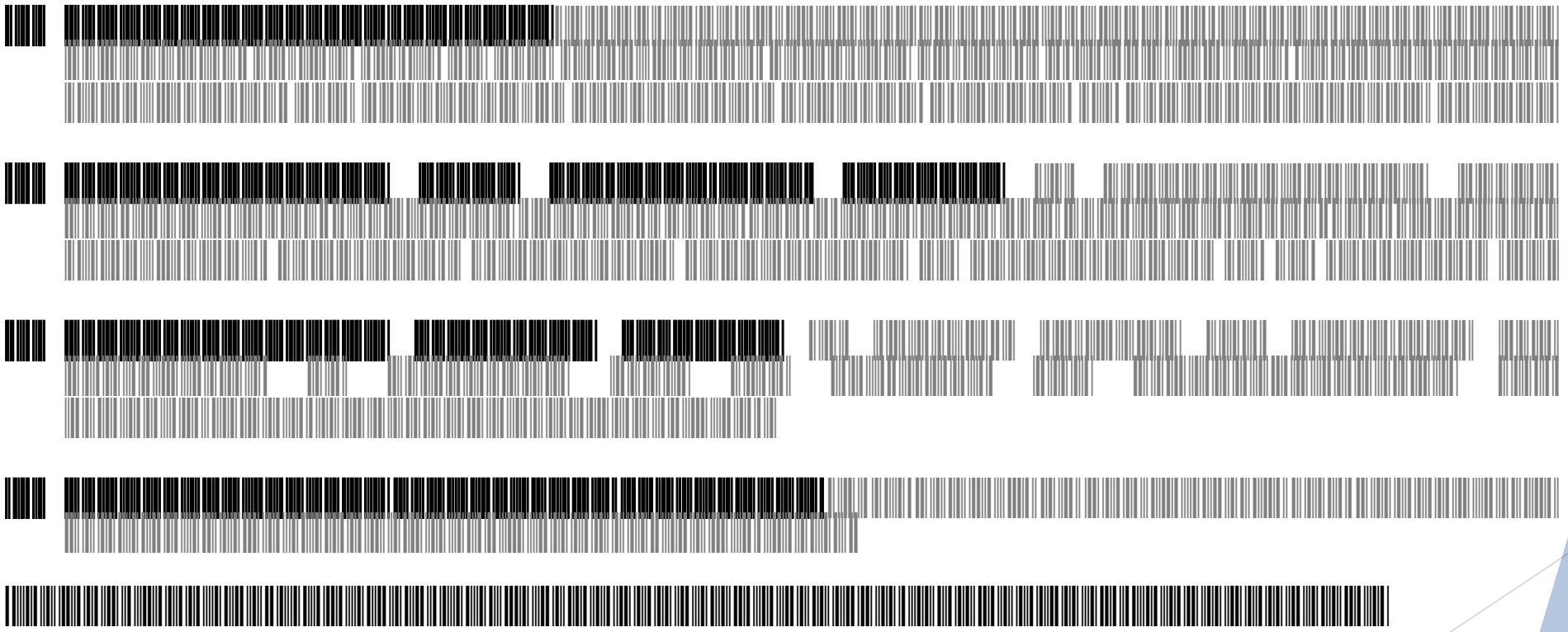
We have proposed 4 new ESCO profiles linked to microelectronics



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Publication of the METIS Skills Strategy (January 2021)

A) Identify trends, challenges and opportunities

- Identification of the main employment trends over the past decade
- Mismatches between offer and demand on the European microelectronics job market
- Initiatives to be benchmarked (HR, policy, etc.)
- Country analyses: European specificities, regional specificities

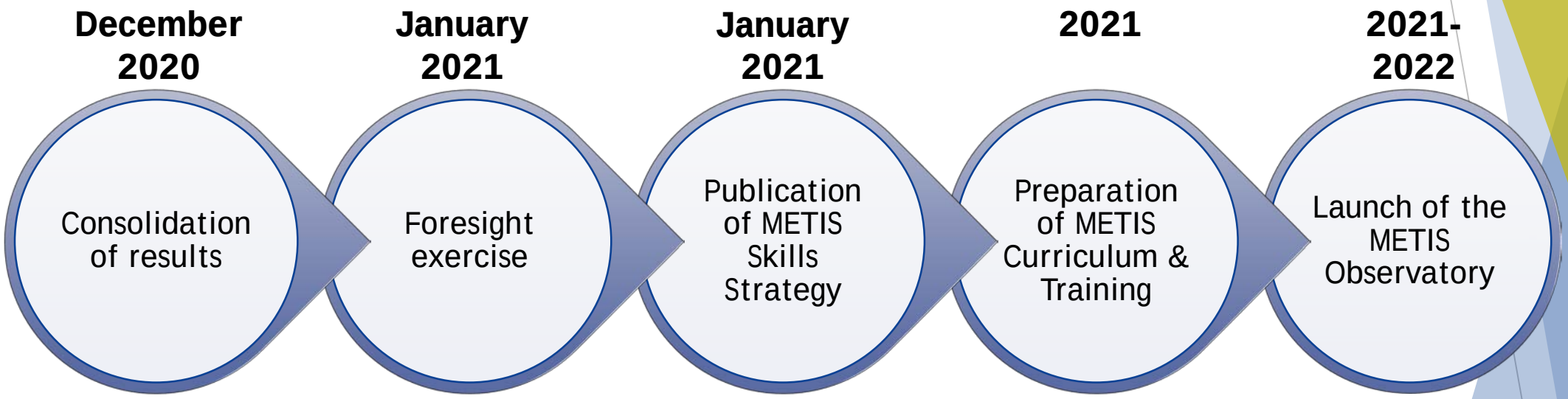
B) Anticipate skills and occupational profiles

- Identification of the most needed microelectronics job profiles and skills
- Identification of the main emerging microelectronics job profiles and skills
- Identification of the main shortages regarding microelectronics job profiles and skills
- Identification of the emerging technologies and markets impacting job profiles and skills (I4.0, Automotive innovations, etc.)
- Description of the key job profiles: Associated main skills, emerging skills, EQF levels, duration to fill positions, etc.
- Microelectronics ESCO profiles
  - Assessment of existing ESCO profiles in microelectronics
  - Identification of possible new ESCO profiles and proposal of 4 new ESCO profiles
- Diversity in electronics

C) Skills strategy

- Policy recommendations

Next steps 2020-2022: Overview



Preliminary results based on interviews, focus groups and questionnaire

- Online Workshop, to present the results and collect feedbacks
- Any stakeholder invited to join

- Based on interviews, focus groups, questionnaire and foresight exercise
- The Strategy will be reviewed and updated yearly

- Topics: component design / system design / manufacturing / transversal skills
- "Test rounds" in all industry and educational partners

- Permanent governance structure, updating the skills strategy
- Any stakeholder invited to join

Observatory and Skills Council (2021-2022)

- Permanent governance structures
- Anticipation of industry and skills development trends
- Improving METIS Training and Curriculum
- Thematic groups (e.g. circular economy, gender)
- Any stakeholder welcome to join

semi

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THE HIGH-TECH NETWORK

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Thank you for your attention!

For more information,

visit http://www.metis4skills.eu

or contact Yanying Li, Senior Manager Collaborative Projects, SEMI (yli@semi.org)

or contact Léo Saint-Martin, Associate Consultant, DECISION Etudes & Conseil (saint-martin@decision.eu.)

Follow METIS4Skills!