



**SILICON
EUROPE**

THE LEADERS FOR INNOVATIVE ELECTRONICS

***Joining Forces for
European Leader-
ship for Innovative
Electronics***

A 5 Step Joint Action Plan

The Joint Action Plan is the major outcome of the Silicon Europe project, started in 2012. It describes the agreed actions to be taken by the Silicon Europe meta cluster in order to complete the goal of the project: “make Europe the world leader in innovative electronics”.

This document presents the Silicon Europe Joint Action Plan (JAP), which describes the strategy and actions of the Silicon Europe cluster alliance including a concrete implementation roadmap for the next 3 years (2016-2018).

The cluster alliance Silicon Europe is the brand under which the leading micro- and nanoelectronics (MNE) clusters in Europe collaborate to represent, support and promote the companies and organisations belonging to their ecosystem both on European and global level. Silicon Europe acts as intermediary between all the relevant partners from research and academia, public authorities and the industry.

The objectives of the Silicon Europe meta cluster are:

- To unite the leading European micro- and nanoelectronics regional clusters and create transnational business and innovation opportunities between all cluster members and towards applications enabled by micro- and nanoelectronics,
- To become the globally recognised brand for cutting edge micro- and nanoelectronics in Europe,
- To be the recognised voice of the SMEs in the area of micro- and nanoelectronics in Europe.

Silicon Europe supports the European micro- and nanoelectronics industry and provides:

- Improved accessibility to knowledge, markets, facilities, international partners and customers for the cluster members,
- Raised profile of the European MNE industry for higher global competitiveness,
- Increased alignment of innovation policies through Smart Specialisation

Five key strategic themes, which are deemed crucial to the success of the European micro- and nanoelectronics industry in terms of market accessibility, and availability of equity and technology, have been selected:

1. **KNOWLEDGE AND TECHNOLOGY TRANSFER**
2. **SMART SPECIALISATION**
3. **SME FUNDING**
4. **INTERNATIONAL BUSINESS DEVELOPMENT**
5. **PROMOTION OF MICRO- AND NANOELECTRONICS**

The five strategic themes will be addressed through well defined activities to ensure the most complete coverage of the strategic themes.

Implementing the Electronics Strategy for Europe

Today, semiconductors are everywhere. Electronics is the heart for example of tooling machines, mobile communication devices, industry automation, medical technology, and domestic appliances. And about 80 percent of all innovations in a modern car are directly or indirectly depending on semiconductors. Electronic components contribute to the improvement of manufacturing processes and enable new technologies to evolve. There is truly no doubt that micro- and nanoelectronics are a key driver for innovation in nearly all sectors and industrial fields.

Therefore, the European Commission, by designating micro- and nanoelectronics as one of Europe's Key Enabling Technologies, emphasises the tremendous importance of this sector for the development of industry in Europe as well as for the future prosperity of the entire continent.

The European industry has strengths in vertical integrated markets, such as energy, automotive, medical, or security technology. But in the last years, the European semiconductor industry lost market shares: During the 1990s, the European companies increased their share of worldwide semiconductor production up to more than 15 percent. In the last decade, it has been fallen back to below 10 percent.

In May 2013, the European Commission presented An Electronics Strategy for Europe. The Commission announced to invest Euro 100 billion to achieve two objectives: double the value of Europe's micro-chip production and create 250.000 new jobs. It is the aim of European Commission Vice-President Neelie Kroes, to support the industry that the European companies are able to capture up to 60 percent of emerging electronic markets, such as Internet of Things (IoT) or Smart things and services, for example Smart grids, Smart homes. Europe also shall regain its strong presence in mobile and wireless communications and capture 20 percent of the expected growth of these markets.

The way to realise these demanding objectives leads across strengthen Europe's micro- and nanoelectronics clusters. Six renowned European clusters have joined forces to support Europe's reposition as the world's leading centre for innovative electronics. They are the sites that bring together the technological expertise and resources of Europe's leading research institutes and companies in micro- and nanoelectronics.

Silicon Europe unites the strongest European clusters to form a European alliance with access to the most advanced technologies and expertise in all fields of the micro- and nanoelectronics value chain. This "cluster of clusters" stands for an entire new level of transnational collaboration and a combined innovative strength that will significantly contribute to the future competitiveness of the European economy.

Silicon Europe – The alliance of Europe’s leading micro- and nano- electronics clusters

Silicon Europe brings together the technological expertise and resources of Europe’s leading players in micro- and nanoelectronics. Together the about 900 cluster partners of science and industry represent more than 150,000 job among them ground-breaking research organisations, innovative SMEs and global players like Philips, NXP Semiconductors, Globalfoundries, Infineon, STMicroelectronics, Schneider Electric and Thales. This makes Silicon Europe one of the top technology clusters in the world.

Since 2012 six renowned European clusters have joined forces with the objective of bolstering Europe’s position as the world’s leading centre for innovative electronics. These clusters are located in the leading micro- and nanoelectronics regions Saxony (Germany), Rhône-Alpes (France), South and East Netherlands (The Netherlands), Flanders (Belgium) and Carinthia (Austria). Europe’s microelectronic sites are globally recognised for their prowess in developing and using semiconductors and innovative electronics.

The Silicon Europe brand and collaboration is created within the project „Silicon Europe. Developing a leading-edge European micro- and nanoelectronics cluster,” funded as CSA under the 7th Framework Programme, Regions of Knowledge (GA 320004) of the European Union. Within the project, 6 world-class clusters from 5 leading micro- and nanoelectronics regions have collaborated to create an open European collaborative platform to strengthen the leading role of the European semiconductor industry in the global economy and value chain. Based on that work, the members of Silicon Europe have a three year experience in successful collaboration within the cross regional ecosystem facilitating cross regional partnerships and business relations and the-

se clusters. They already gained valuable insights into capabilities, needs and expectations of their members (SME’s) with regards to Internationalisation.

Encouraged by the success of the project the decision was taken to continue the strong cooperation beyond the timeframe of the project, as an association welcoming other European micro- and nanoelectronics clusters and further deepening the partnership to implement the Joint Action Plan.

The Silicon Europe alliance is backed by political support at the local, national and European levels. In designating micro- and nanoelectronics as a key enabling technology and by establishing the multi key enabling technologies pilot lines projects, the European Commission has shown its continuing support for the industry and taken the initiative to develop a project to enable innovative technology to leave the drawing board and to be transformed into marketable products. The partners of Silicon Europe share the vision and the responsibility of the European Commission in supporting businesses in the micro- and nanoelectronics industry in their development and growth, by opening up new markets and opportunities at a global level and by attracting talented individuals to the field.

Currently the following clusters entered into the in Silicon Europe partnership:

- Silicon Saxony (Dresden, Saxony, Germany)
- Minalogic (Grenoble, Rhône-Alpes, France)
- DSP Valley (Leuven, Flanders, Belgium)
- High Tech NL (Eindhoven, South and East Netherlands, The Netherlands)

The associated partner clusters are:

- ME2C (Villach, Carinthia, Austria)
- Business Cluster Semiconductors Netherlands (The Netherlands)

The Silicon Europe Joint Action Plan

A 5 Step Joint Action Plan developed by Silicon Europe

This Joint Action Plan describes five strategic themes that the meta cluster Silicon Europe will focus on in order to support the growth and success of European innovation in micro- and nanoelectronics. These themes are selected on the basis of the analyses performed during the first period of the Silicon Europe Project (2012-2015).

The five strategic themes are:

- 1. KNOWLEDGE AND TECHNOLOGY TRANSFER** – Clusters support exchange throughout Europe
- 2. SMART SPECIALISATION** – R&D along the regional strongholds and markets
- 3. SME FUNDING** – Clusters liaise SMEs to sources of capital
- 4. INTERNATIONAL BUSINESS DEVELOPMENT** – Increase international visibility and consequently detect and create opportunities for the (SME) members
- 5. PROMOTION OF MICRO- AND NANOELECTRONICS** – Communicate at large the indispensable role in to-day's and future society

These five key strategic themes, which are deemed crucial to the success of the European micro- and nanoelectronics industry in terms of market accessibility, and availability of equity and technology, have been selected and will be addressed on a meta cluster level aiming at providing optimum support to the MNE industry at large using “connecting people” as the cluster’s core competence.

STEP 1

1. Knowledge and Technology Transfer

Innovation is largely driven by the creative use of existing knowledge and technology or on knowledge under development. The availability of knowledge and technology to the innovators is of eminent importance. It is for that reason that the European Commission pays great attention to knowledge and technology transfer in Europe.

Based on the regional smart specialisation strategies, Silicon Europe will actively support the transfer of required key technologies, knowledge and also know-how within the field of micro- and nanoelectronics to the European companies.

In the objective of “knowledge and technology transfer” Silicon Europe will take charge of the following activities:

- Technology market fairs where targeted markets will be brought into contact with MNE developers to align their respective roadmaps and also to set-up collaborations,
- Mapping of the knowledge and technology sources,
- Organisation of academic colloquia with a low threshold level for the industry (A2B)
- Support of a human capital actions addressing mobility, education, training, and most importantly promoting the MNE industry as a challenging and rewarding sector for an excellent career,
- Encouraging and supporting the creation and use by SMEs of platforms as field labs, pilot lines and competence centres.

STEP 2

2. Smart Specialisation

Silicon Europe will support to maximise the potential of research, technology and innovation activities along the line of the unique characteristics and assets of each region and country, the idea being to build on one’s strengths and to develop only where a market can be found for. It spurs projects, complementary of Horizon 2020, to be financed under European Regional Development Fund (ERDF) to scale them up.

In the objective of “smart specialisation” Silicon Europe will take charge of the following activities:

- Support in the creation and international use of regional field labs
- Develop new approaches, in order to emphasise on economic transformation and on building interregional value chains.
- Establish a platform for an exchange of experiences and best practices for the implementation of micro- and nanoelectronics based Smart Specialisation strategies throughout the Silicon Europe consortium.
- Support the cross-regional cooperation of both ERDF and regionally funded projects. Support project consortia to match ERDF funds with H2020 projects or vice versa.

STEP 3

3. SME Funding

The Silicon Europe partners will play a crucial role in understanding SMEs' needs, being their voice at local, regional, national and European levels and supporting them in having easier access to public and private funds, needed to generate business- and technological partnerships' opportunities. SMEs need special tailored support in favour of their growth in the broader context of maintaining a strong European microelectronics industry.

In the objective of "SME funding" Silicon Europe will take charge of the following activities:

- Acting as an intermediary between SMEs and different public and private financing opportunities through providing information, networking opportunities and assistance in acquiring the skills needed to access different funds
- Actively contributing to designing SME-friendly funding programmes
- Identification and contacts of accelerators abroad
- Organizing events to attract venture capitalists (VCs)
- Supporting both SMEs and e.g. VCs in judging and appreciating the investment needs and risks

STEP 4

4. International Business Development

Today, the micro- and nanoelectronics industry is a global industry. Many of the MNE companies, whether large enterprises (LE) or SME are part of a global value chain. This means that, in particular for high tech clusters, competition takes place not on a regional nor on a national level but on a global level. Therefore, international business development has become increasingly important to improve the competitiveness of enterprises of all sizes.

In the objective of "international business development" Silicon Europe will take charge of the following activities:

- Support electronics companies, and more in particular, SMEs, to be present in foreign markets either for business or partnerships:
 - Increasing visibility and attractiveness of the European industry abroad at first in Taiwan and in the US, subsequently in other markets (such as up and coming European regions and outside the EU)
 - Support to the implementation of joint innovation projects
 - Support in scouting possible foreign commercial opportunities for the Silicon Europe partner companies
- Attract foreign investment money or actors missing in Europe's value chain

STEP 5

5. Promotion of Micro- and Nanoelectronics

Micro- and nanoelectronics are essential in the realisation of solutions to all societal challenges. Therefore it is of the utmost importance that a broad audience is aware of the role of the European MNE industry. Micro- and nanoelectronics are present in almost all devices and services we use in everyday life, but MNE is hidden and taken for granted to a large extent.

The fact that MNE is taken for granted will have an impact on the number of young people choosing electronics as a career but also on the decision makers when putting priorities on investments and other strategic or support decisions or on large groups that will have to buy chips abroad. Silicon Europe aims to increase awareness of the importance of the micro- and nanotechnology industry in Europe for our society and to show how indispensable the MNE industry is in solving big societal challenges.

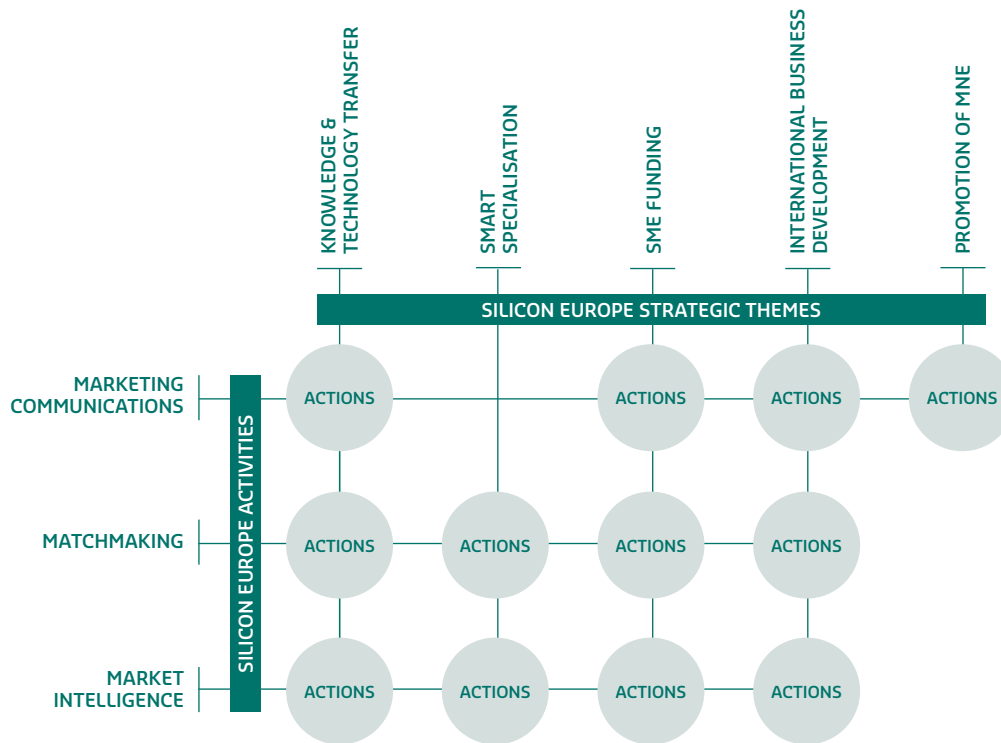
In the objective of “Promotion of Micro- and Nanoelectronics” Silicon Europe will take charge of the following activities:

- Initiating case-studies showing the essential role of MNE, promoting MNE in the whole value chain linked with application and narrated in an accessible way
- Initiating MNE companies to explain the technologies and their value to a broad audience
- Communicating on the strengths of the European MNE industry in Europe and abroad

Silicon Europe can and will facilitate the general communication on micro- and nanoelectronics through encouraging the various dedicated communication channels to publish on MNE and its essential position in today's society. These activities need a thorough marketing communication tool set including a website, stakeholder specific publications, branded presentations and a strategic event calendar mapping the most international industry events. Furthermore the Silicon Europe communication strategy will be backed with a public affairs strategy in order to achieve the objectives of the European MNE industry.



The Silicon Europe activities cover the five strategic themes.



Market Intelligence

- Screening of funding opportunities and dissemination to members (mainly SMEs)
- Explore possibilities for cooperation with application clusters in Europe
- Identify regions and markets relevant for SMEs in the ecosystem
- Identify optional partners, customers or suppliers in foreign markets
- Develop a joint communication and branding strategy towards third regions
- Develop a relationship with foreign regions through a partnership with local cluster organisations or alternative contact parties
- Select conferences and trade fairs that are relevant for SMEs in the Silicon Europe ecosystem

Matchmaking

- Create opportunities for individual companies to find business partners
- Support SMEs on public funding opportunities
- Organise B2B and B2VC events open for the Silicon Europe cluster members
- Open Silicon Europe events to companies from abroad
- Participate in trade missions
- Organise visits of foreign clusters and companies to Europe

Marketing Communication

- Website
- Marketing communication material
- Silicon Europe presence at key events
- Promotion of the European brand Silicon Europe
- Advocacy

The success of Silicon Europe's strategy will result in multiple notable impacts on different levels.

Impact on cluster (organisation) level:

- Improvement of cluster management quality i.e. analytical capacities for market and competitors
- Improvement of knowledge transfer processes within the clusters
- Internationalisation of cross cluster projects (at least 40% of all member companies are expected to be engaged in international activities; the European benchmark is 25%).

Impact on regional level:

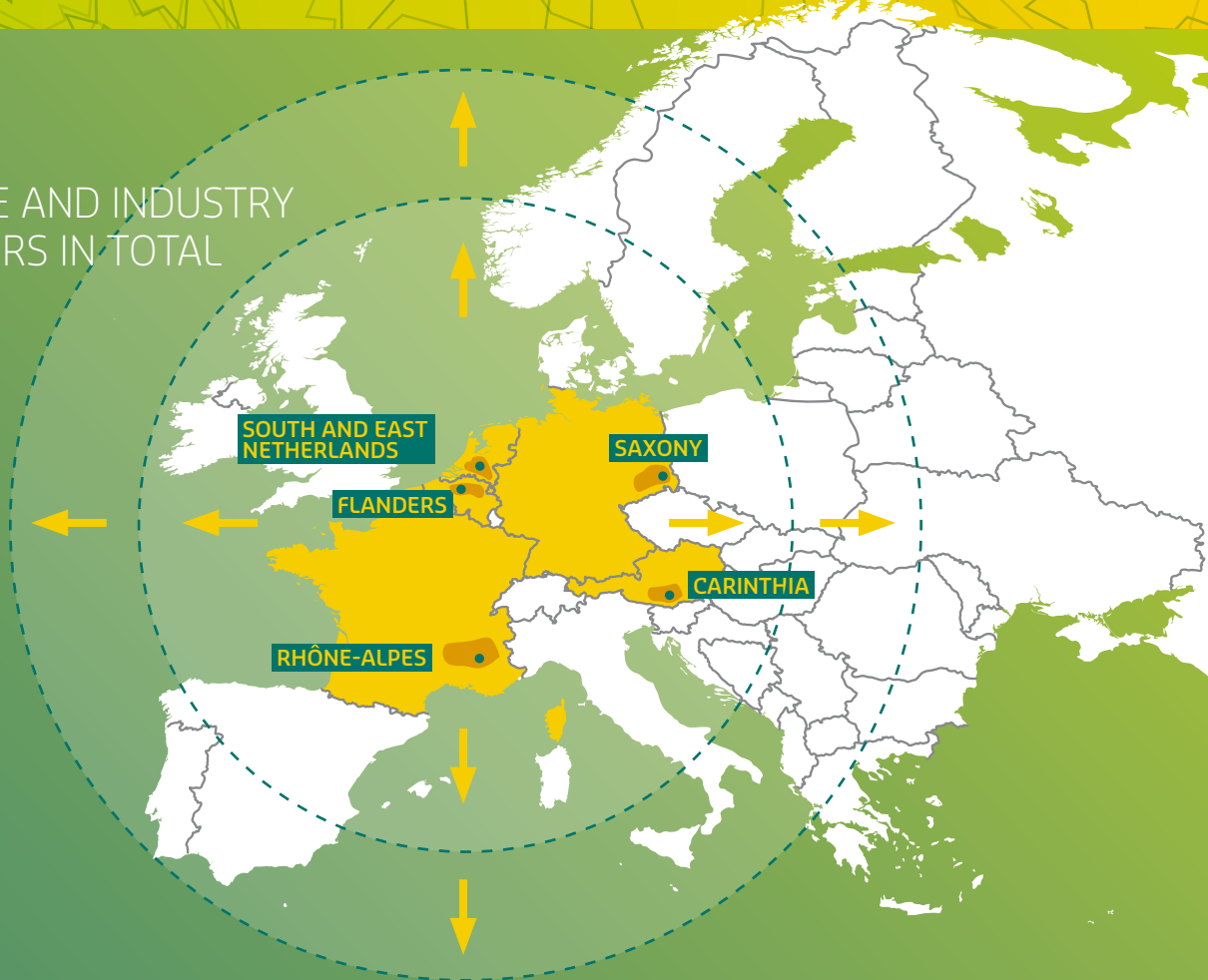
- Effective implementation of smart specialisation strategies, in particular by fostering interregional exchange of best practices
- Bolstering the competitive capacity of Europe by sustainably investments in European lead markets especially on SME level
- Securing regional economic growth and prosperity by strong SME as reliable employers

Impact on European level

- Significant contribution to technical roadmaps related to micro- and nanoelectronics and application areas (i.e. ECSEL MASRIA or the VMS (Vision, Mission strategy) documents by EPOSS, ARTEMIS and ENIAC) in particular with regard to the effective and efficient involvement of SMEs in an international project context
- Securing proper access to SME financing both from public and private sources (i.e. SME friendly funding programme in the framework of EUREKA "PENTA")
- Increasing participation of SME in major funding programmes related to innovation (i.e. Horizon 2020)
- Facilitation of the creation of the demanded world class reference zones and excellence centres (i.e. building new pilot lines)
- Leveraging the opportunities of the key enabling technology MNE by successful cross cluster and cross sectorial cooperation

900

SCIENCE AND INDUSTRY PARTNERS IN TOTAL



Impact on global level

- Increasing of visibility and attractiveness of Europe as a relevant MNE area in the world:
- MNE is contributing 30 bn Euro to Europe's GDP,
- MNE is one of the few industries creating jobs,
- MNE is driving 90% of the innovation in the traditional industries,
- MNE is positioning Europe as worldwide leader in R&D,
- MNE is providing societal solutions via new technologies/applications.
- Forming the critical mass and exploiting the brand value of Silicon Europe as such

Benefits for cluster members

- Silicon Europe as a reliable backbone for strong partner clusters
- Improving SME's access to knowledge and technology and to key infrastructures in the Silicon Europe regions (e.g. pilot plants, living labs, field labs etc.)
- Access to new markets and more potential partners within the meta cluster
- Improving cluster partners image and reputation (i.e. in order to put European MNE back on the map of European industrial purchasing departments)
- Giving new impulses for business development and stimulating cross industry innovations
- Improved access to third party funding for new research projects
- Stimulating a new quality of interdependent collaboration between science and industry partners both on a regional and an European level (i.e. from the idea to the market)
- Strong regional ecosystems benefit from trusting and capable investors and vice versa
- European agenda setting with strong insight into the local ecosystems thanks to the advocating meta cluster



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THE LEADERS FOR *INNOVATIVE ELECTRONICS*

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