



SiNANO-NEREID Workshop:

Towards a new NanoElectronics Roadmap for Europe

Leuven, September 11th, 2017

General Presentation



NEREID

H2020 ICT-CSA: Micro- and Nano-Electronics Technologies
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Grenoble INP/CNRS, Coordinator of Nereid

ESSDERC-ESSCIRC, September 11, 2017

Title : *NanoElectronics Roadmap for Europe:
Identification and Dissemination*



Why a new roadmap for Europe?

- New killer applications beyond computing
 - From computers to **communications and networked applications**;
 - From “Scaling and associated technologies” to “**Enabling technologies**”;
- European industry focusing on **application driven** technologies



- New technologies, new physical effects
- New, **unforeseeable markets**
- No single Figure of Merit

New road mapping methodology taking into account **EU needs**

- **Starting from 1) applications ,2) techno**
- Medium and Long term
- Covering the full supply chain



NEREID: Partners

No	Name	Short name
1	INSTITUT POLYTECHNIQUE DE GRENOBLE	INP GRENOBLE
2	INSTITUT SINANO ASSOCIATION	SINANO
3	edacentrum GmbH	EDAC
4	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	EPFL
5	FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV	Fraunhofer
6	FUNDACIO INSTITUT CATALA DE NANOCIENCIA I NANOTECNOLOGIA	ICN2
7	INTERUNIVERSITAIR MICRO-ELECTRONICACENTRUM IMEC VZW	IMEC



No	Name	Short name
8	CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LA NANOELETRONICA	IUNET
9	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	CEA
10	POLITECNICO DI TORINO	POLITO
11	UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK	Tyndall-UCC
12	Teknologian tutkimuskeskus VTT Oy	VTT
13	AENEAS	AENEAS



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NEREID: WPs & Industrial co-Leaders

WP	Description	WP Leaders	Industrial co-leaders
WP1	Management	1 - INP Grenoble	AENEAS
WP2	Beyond CMOS	12 – VTT	IBM Zurich
WP3	Advanced Logic and Connectivity	7 – IMEC	STMicroelectronics
WP4	Functional diversification	9 – CEA	Infineon (Smart Energy) NXP (Smart Sensors)
WP5	System Design & Heterogeneous Integration	10 – Polito	Infineon
WP6	Equipment & Manufacturing Science	5 – Fraunhofer	ASMI (Equipments) STMicroelectronics (Manufacturing)
WP7	Communication & Dissemination	2 – EDAC	AENEAS
WP8	Coordination with roadmap initiatives	4 - EPFL	



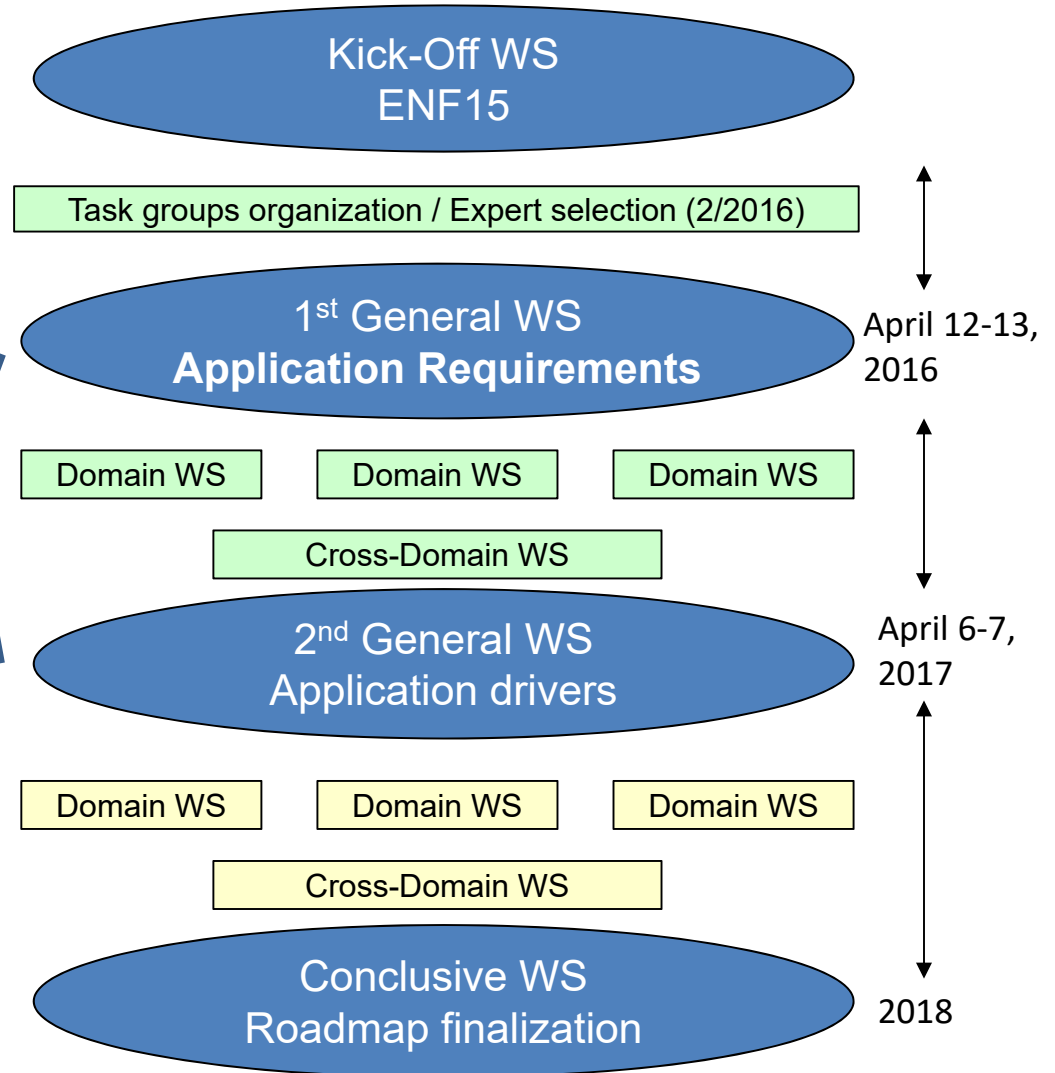
NEREID Roadmap flow



- From European application needs to specific technical workshops

- Automotive
- Medical
- Security
- Energy
- Industrial
- IoT
- Mobile convergence

- Large participation of (>100 !) experts (internal, external ; application, technology) from leading European academic and industrial institutions in Workshops



Method: Top-down and Bottom-up approach

Top-down (GW):

General
WS

Expected applications evolution vs time: Energy, Automotive, Medical/Life science, Security, IoT/Smart connected objects, Mobile convergence, Digital Manufacturing (Low power, ...)

Which function ?
Performance evolution vs time of generic function (e.g. Sensing, Computation, Communication, Energy management/harvesting) ?

Needed evolution vs time of different possible underlying technologies

Bottom-up (DW):

Domain WS

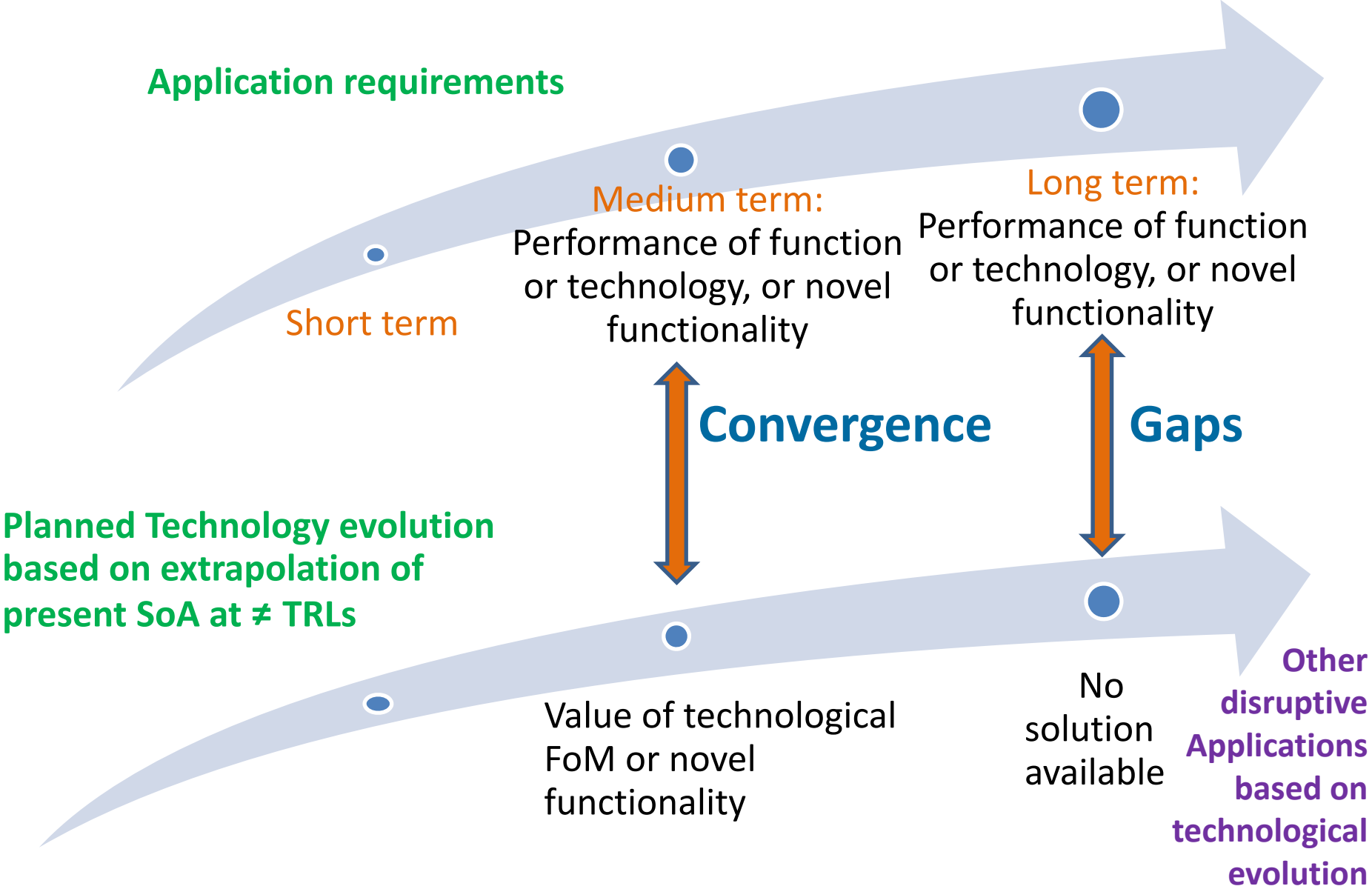
Future Technologies availability vs time

Which technology can satisfy the required function performance for each application, including possible gaps: refinement of analysis

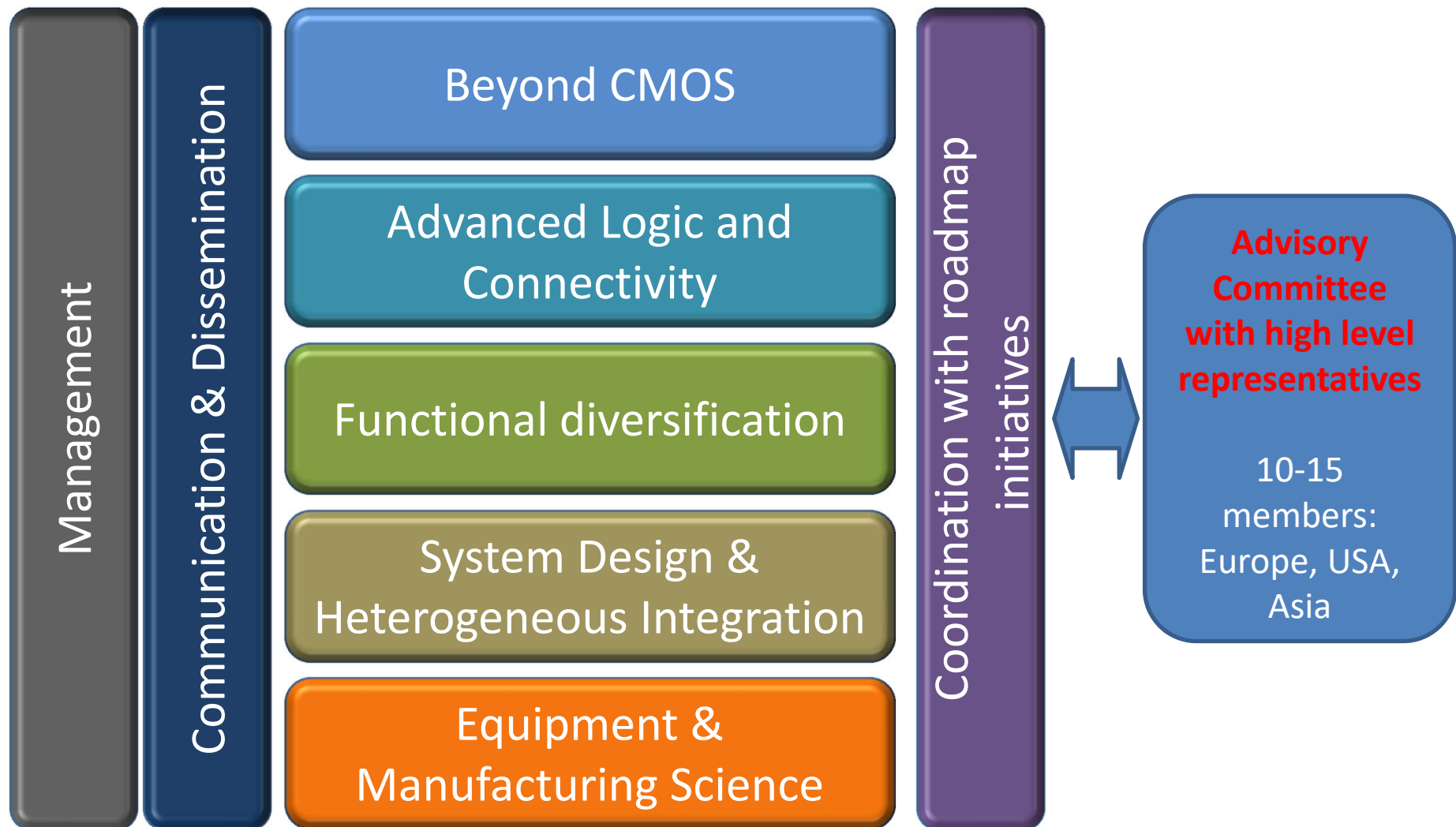
Additional ideas for future products and applications



Preliminary Roadmap



NEREID Structure and coordination with **other regions**



Next Steps

- **September 2017: Mid-term Roadmap available** on: <https://www.nereid-h2020.eu/>
=> Don't hesitate to contact us if you have any question or comment
- Other **dissemination events** of the mid-term Roadmap (EF ECS'2017, ...)
- Organization of **last Domain/Cross-Domain Workshops** in all the Tasks/WPs
- Interaction with **IRDS** and **ECS Strategic Research Agenda/ECSEL MASRIA**
- Organization of the **3rd General Workshop** (June 2018, Italy) for the presentation and discussion of the draft of the final Roadmap
- **M36 (Nov. 2018): final Roadmap**



**A fruitful European and International
collaboration has been established and
will be strengthened in NEREID during 3
years targeting a **very important
Roadmap for the EU****

Thank you !

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