

# From substrates to device integration: European Innovation

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> **Heterogeneous Technology Alliance**  
April 24, 2018



soitec



HTA - 10th year anniversary

## Agenda

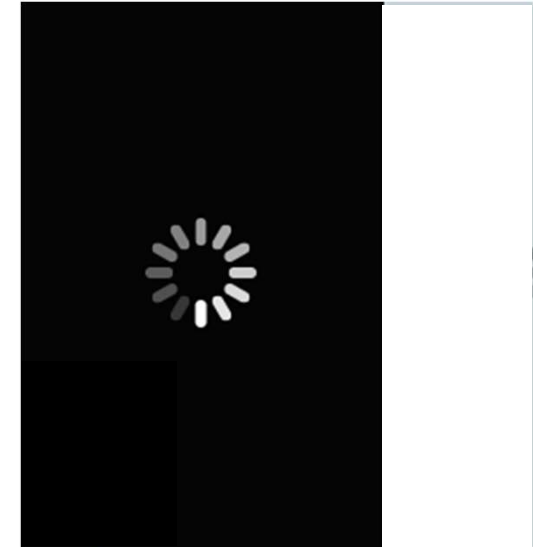
- 1 Industry challenges & opportunities
- 2 Value of substrate engineering
- 3 RF-SOI
- 4 FD-SOI
- 5 Take aways

Brussels, 24 April 2018

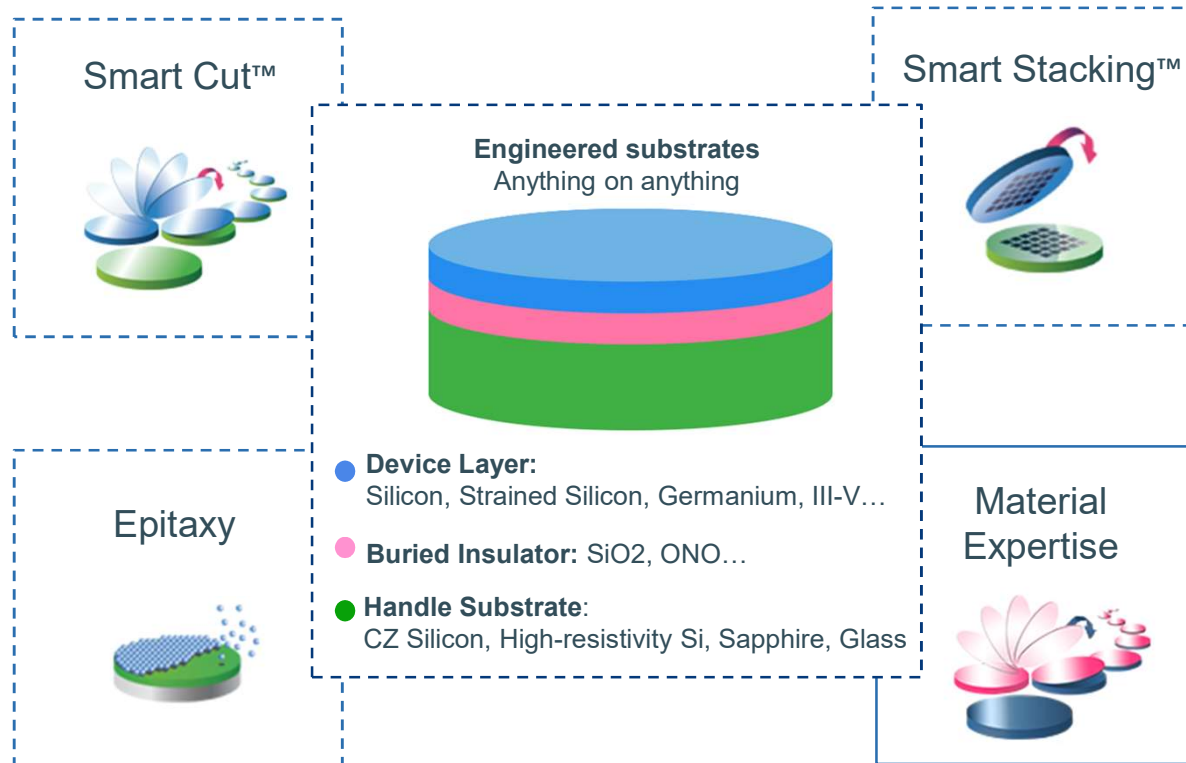
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# Challenges Opportunities for semiconductor innovation

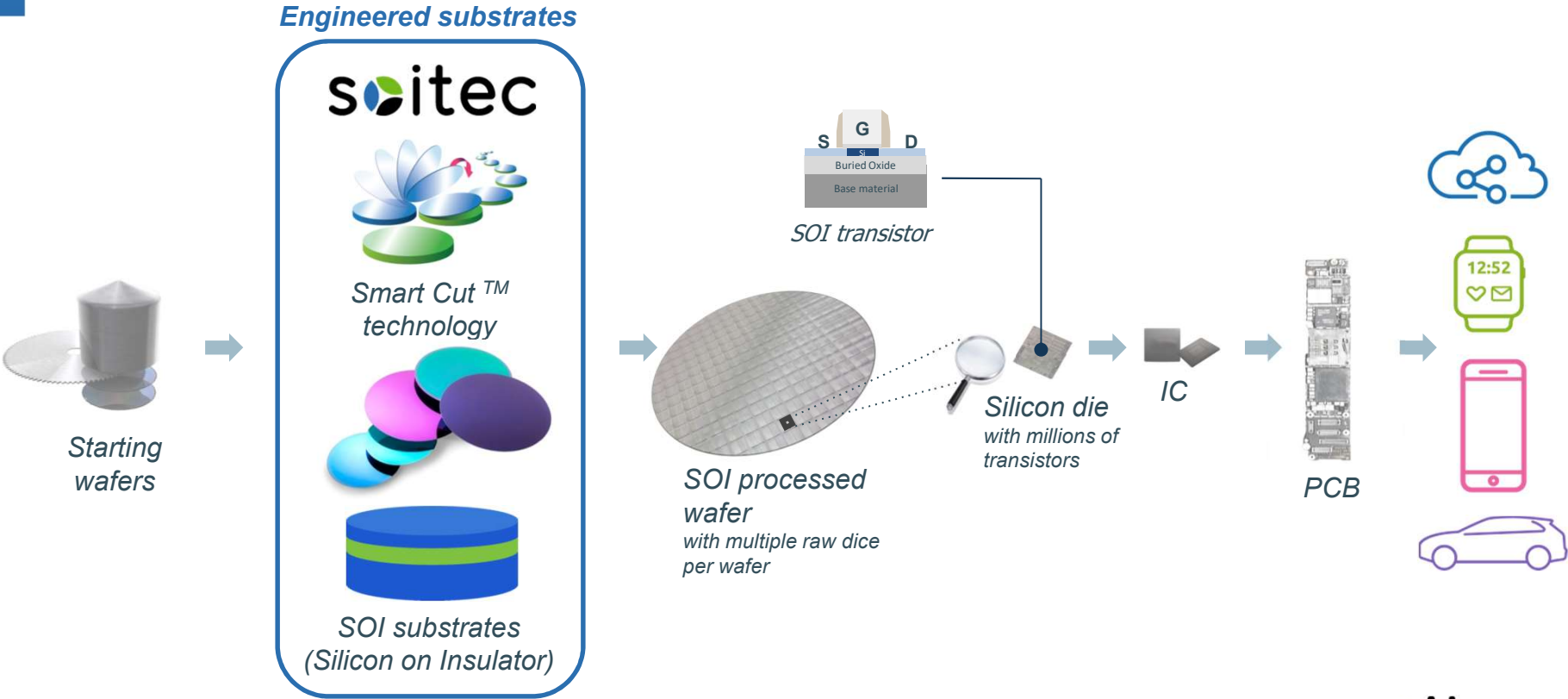


# Device performance differentiation through engineered substrates

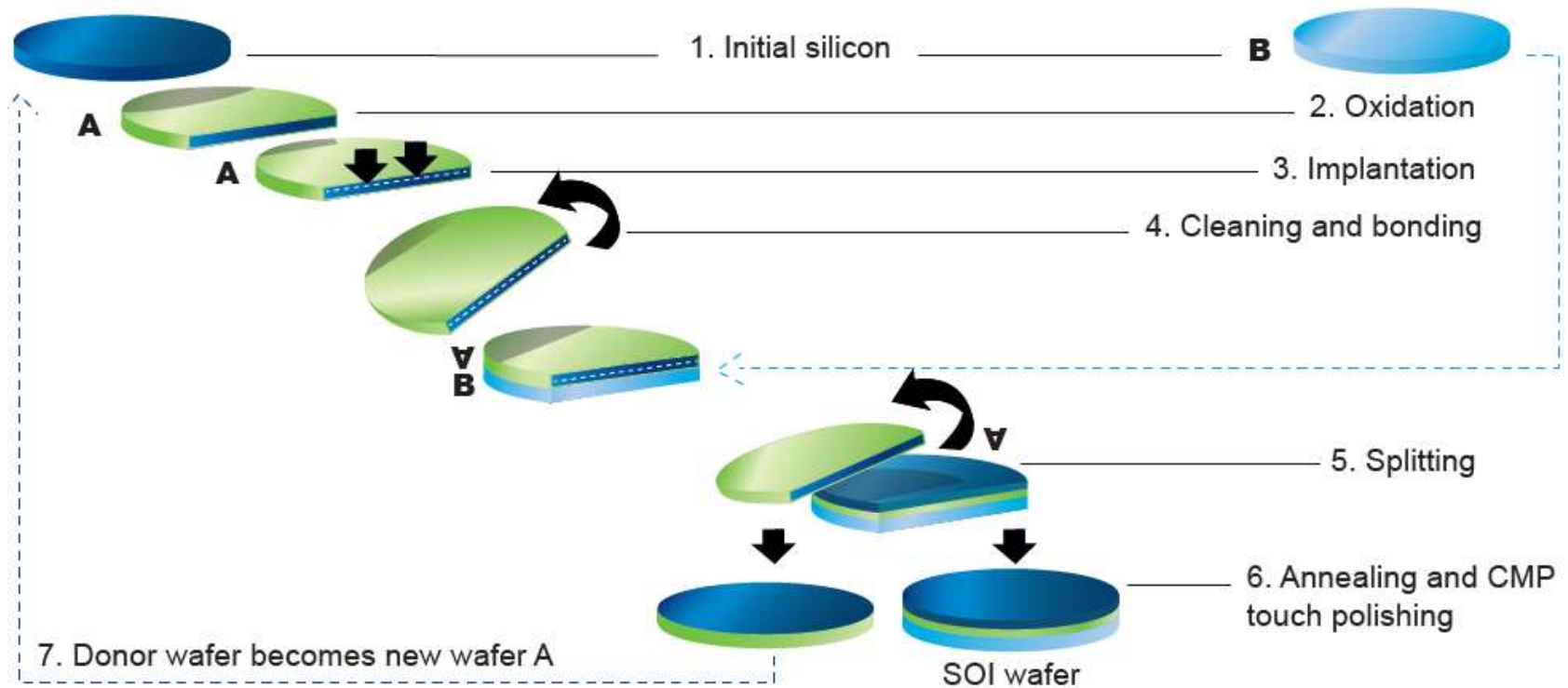




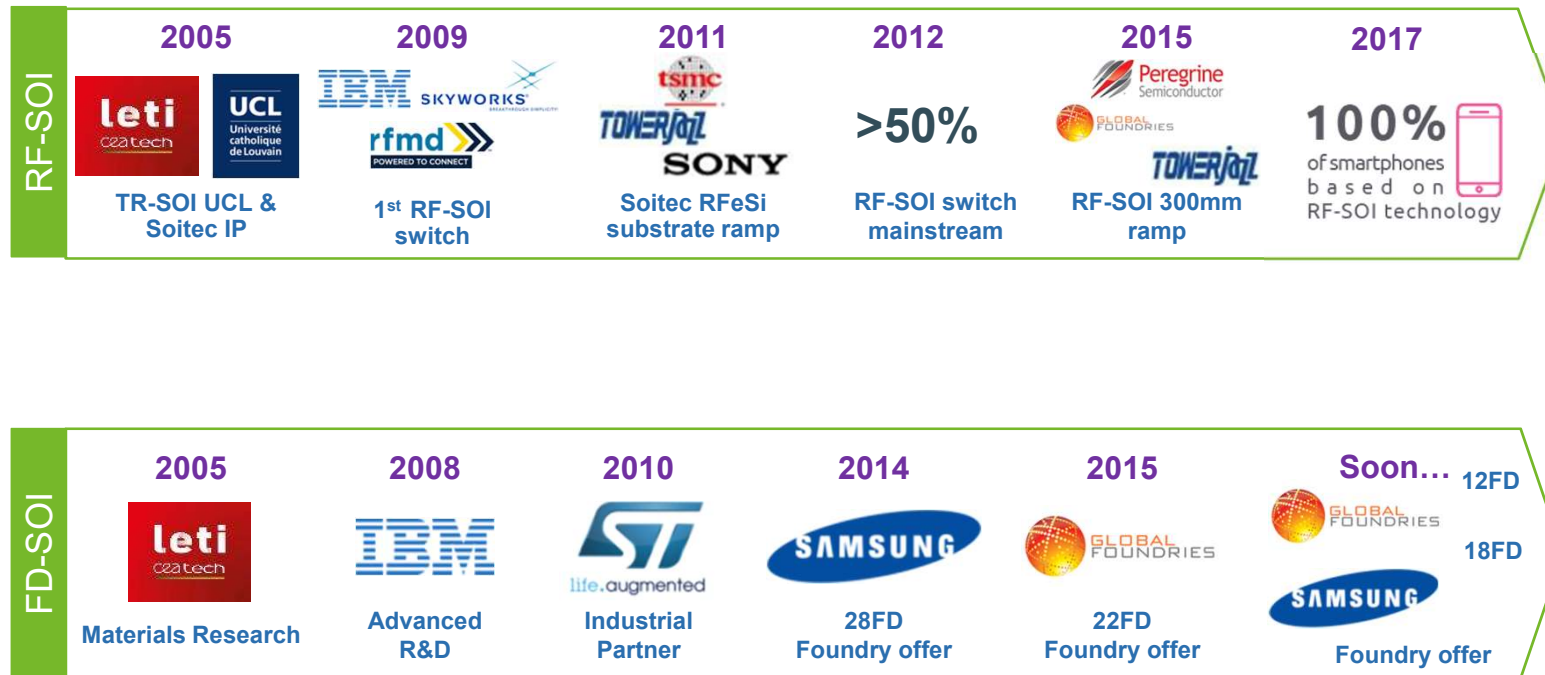
# Soitec in the value chain



# Smart Cut™: Revolutionary Technology



# SOI adoption via Partnerships and Collaborations: From early R&D and technology development to manufacturing





## RF-SOI & FD-SOI: European leadership in innovation

Contribution of many organizations and companies

But

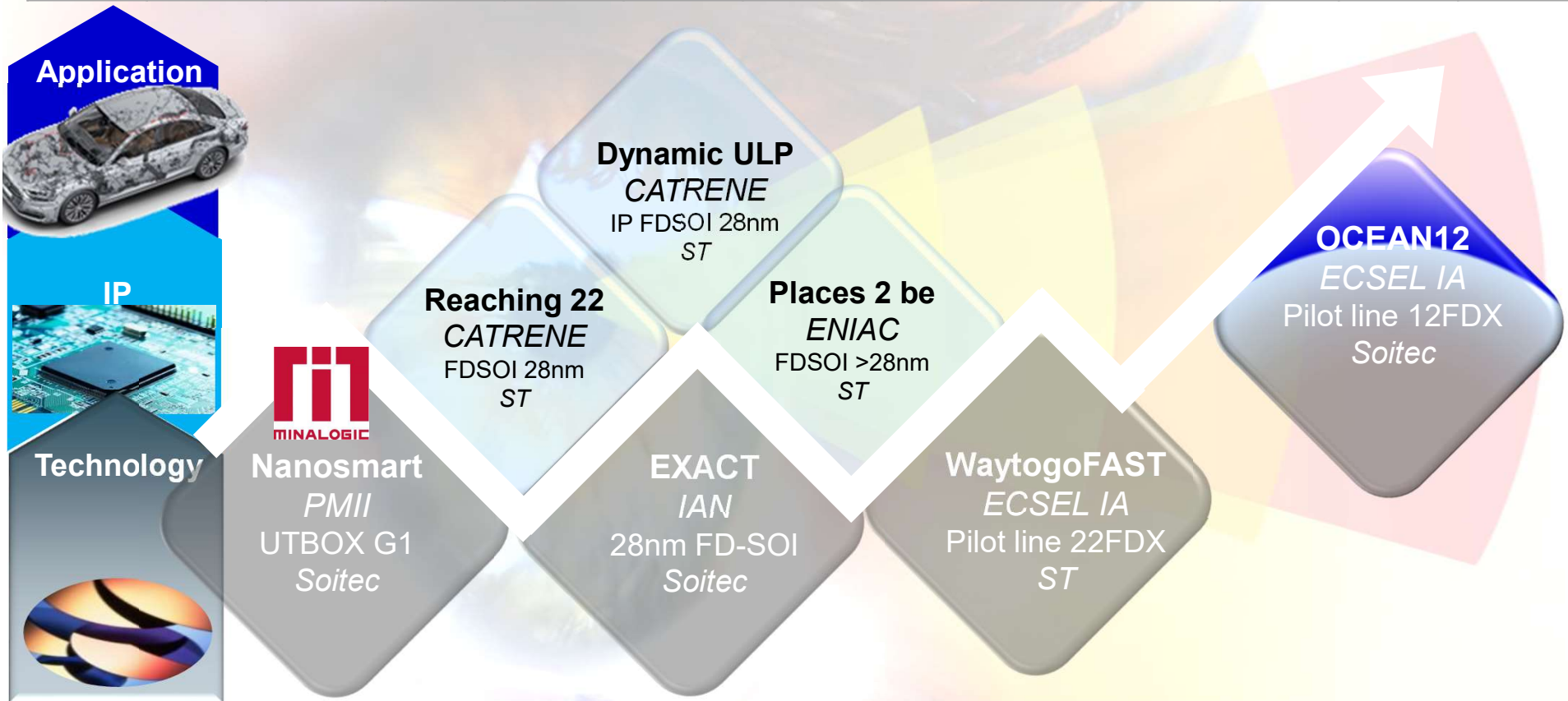
French and EU institutions, RTO and Companies had and have the lead

**National and European Funding made this possible**



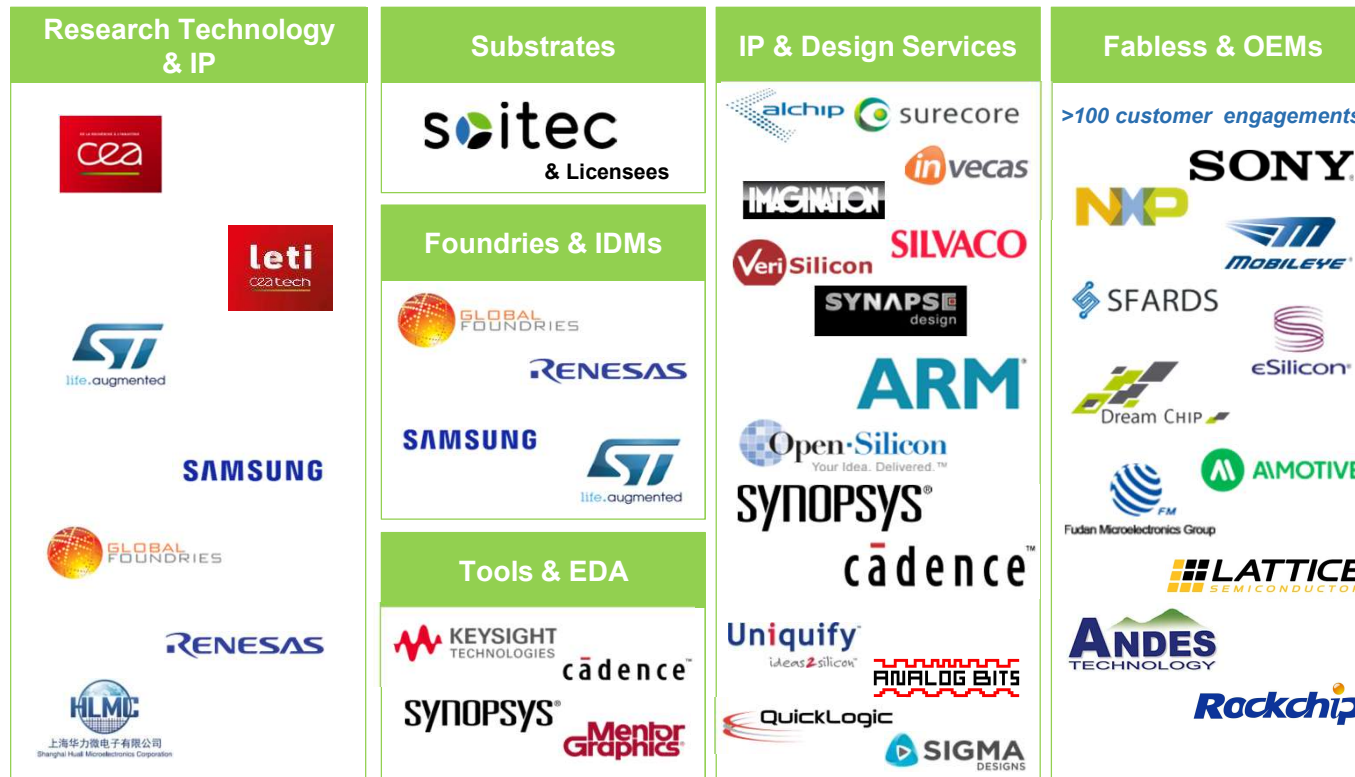
# FD-SOI in Funding programs

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
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# A complete FD-SOI ecosystem in motion

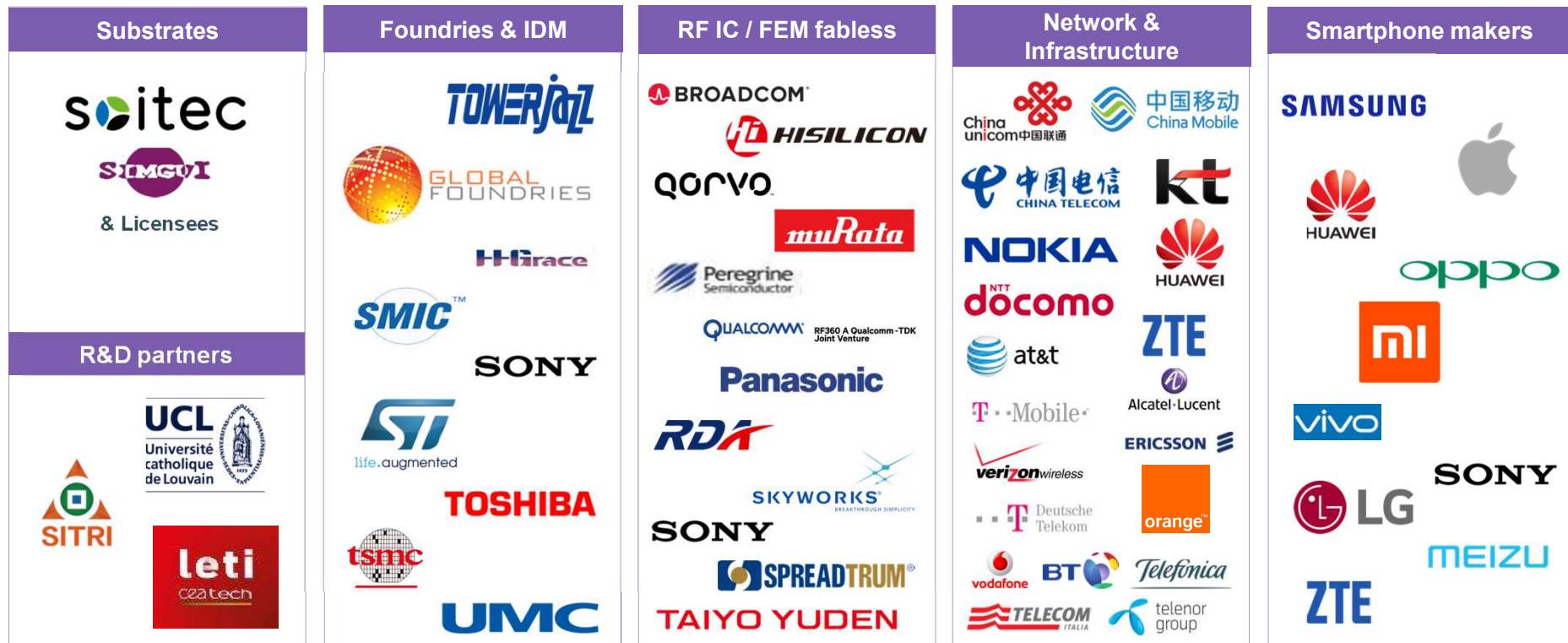


# RF-SOI in Funding programs

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
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# RF-SOI: a standard supported by a complete ecosystem



## SEMI Europe Award 2017: RF-SOI substrate technology



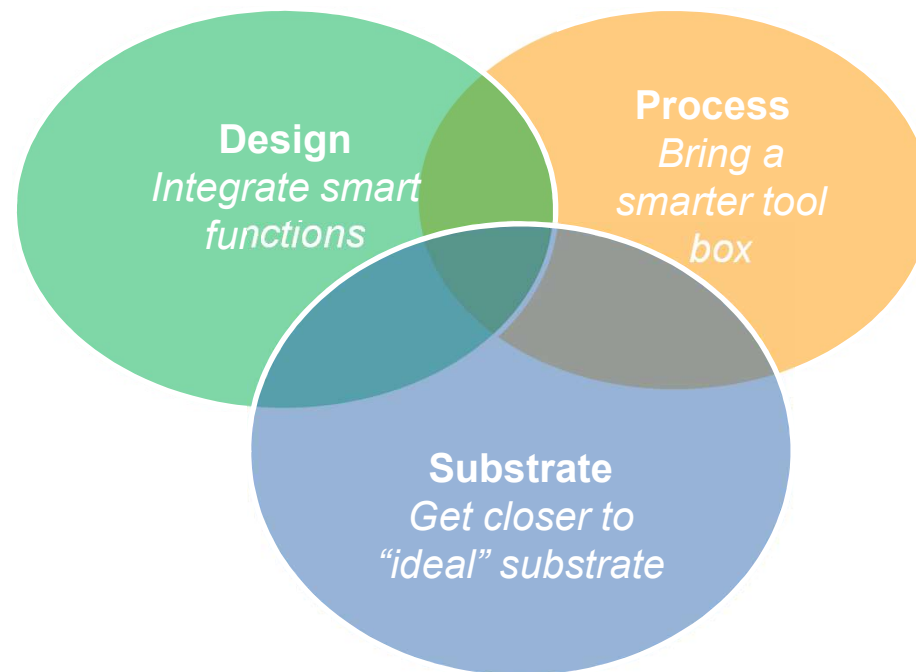
Bernard ASPAR, EVP Communication & Power Business Unit at Soitec  
Jean-Pierre RASKIN, Professor and President of Electrical Engineering  
Department at the Université catholique de Louvain (UCL)

**Soitec** and the **Université Catholique de Louvain (UCL)** received the 2017 European SEMI Award recognizing their seminal work with radio frequency silicon-on-insulator (RF-SOI) substrates at the SEMI Industry Strategy Symposium (ISS Europe 2018) in Dublin on March 6<sup>th</sup> 2018

This award is a great recognition of Soitec's efforts to industrialize RF-SOI and make it an industry standard



## Co-optimization from early R&D phase



*A full eco-system working to meet product specifications*





## Takeaway

**Engineered Substrates represent foundation of advanced electronic circuits**

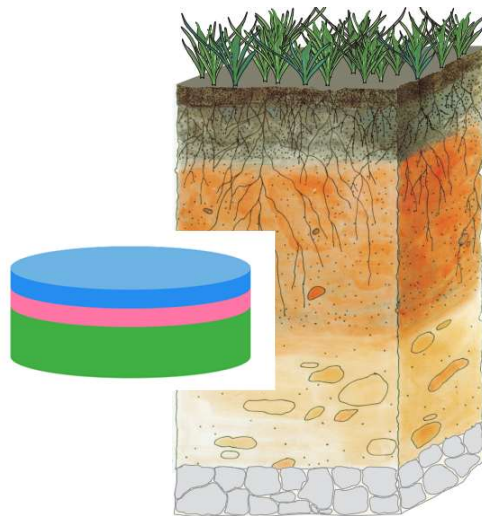
**Soitec's technology roadmap will continue to enable next generation of devices**

**System Design-Technology-Substrate Co-Optimization is required to establish technology standards: collaborative R&D**

**Smart Things Opportunity ahead: 5G, IoT, Automotive, Health & Medical**



## Sourcing value from substrate: learn from the nature



*Soils for Fine Wines*, Robert E. White ISBN-13: 978-0195141023