

What is the problem?

- For close to two thirds of managers in industry:
 - The *Return on Investment* in digital innovations is difficult to assess upfront.
 - Have problems with trusting the technology
 - Are not sure about the maturity of latest technologies (Big data, AI, robotics,..)
 - Are not clear about compatibility/interoperability with legacy systems.
 - Are afraid of being locked in with one vendor
- Percentage is higher for SMEs
- Clear need to "test and experiment before engaging in digital innovation"

- Make latest digital technologies available for all industry anywhere in Europe
 - Test, experiment products, processes, business models
- Through networks of "digital innovation hubs"
 - Based on "Competence centres" (RTOs*, University labs,...)
 - Complementary expertise to offer one stop shop
- Targeting notably SMEs, start-ups, non-tech industry,...
- Stimulating a wave of bottom-up digital innovations
 - across regions and in all industrial sectors

*RTO: Research & Technology Organisation

Netherlands Field Labs



Mittelstand-Digital



La FRENCH TECH



European Factories of the Future PPP

I4MS

ECHORD++



FIWARE iHubs



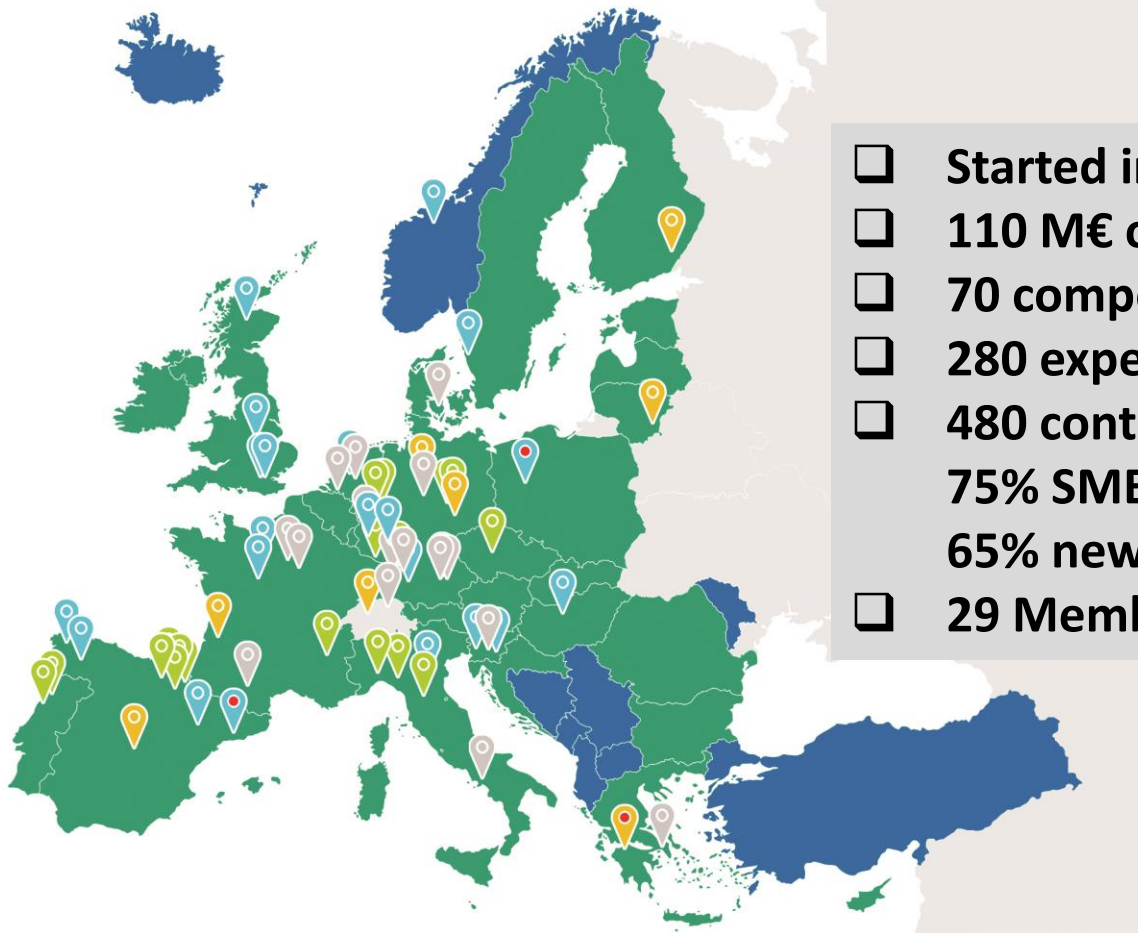
VANGUARD INITIATIVE

Building on and expanding successful actions

Example: ICT Innovation for Manufacturing SMEs

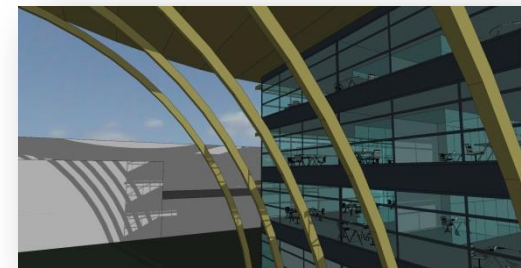
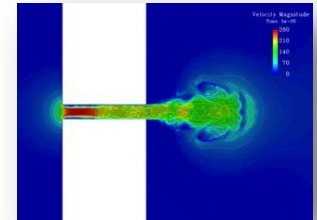
I4MS

Factories of the Future PPP



- Started in 2014
- 110 M€ of EU funding - 11 networks
- 70 competence centres
- 280 experiments: 75% cross-border
- 480 contractors/340 industrial:
75% SMEs and mid-caps, 50% users,
65% new in EU R&I Programmes
- 29 Members States + Ass. Countries

- **Goal:** Provide SMEs with easy and cost-effective access to **advanced simulation, visualisation and data analytics**
- **How:** provide expertise, tools and means to tap into a European Cloud of HPC resources & software applications
- 16 innovation hubs – 94 experiments so far
- Fortissimo 1+2: €26m >100 SMEs



Cloud-based CFD simulation for hypercars

- CFD aerodynamics simulation needed - but in house HPC resources not affordable
Solution: Cloud-based pay-per-use HPC
- Impressive results
 - 30% saving in design costs plus 50% reduction in wind tunnel and physical testing
 - Development savings of €90K per year
 - 30% decrease in time to market
- **250k€ Funding**
 - **4M€ benefit to company over 5 years using cloud-based Pay-per-use HPC and simulation software**



Partners:

End-user SME: KOENIGSEGG – SE
ISV-SME: ICONCFD – UK
HPC centre: CINECA – IT
HPC centre: EPCC - UK

Tailor made shoes for customers with feet anomalies

- 3D insole scan & design is processed on HPC resources via the cloud
 - Paving the way for 3D printing of soles/shoes in the back-shop in Europe
- **Benefits for the shoe industry:**
 - No need for specialised CAD knowledge
 - No hassle with SW licenses
 - Immediate validation and perfect fit
- **Benefits for the customer:**
 - Faster availability of the shoe
 - Lower cost for special shoes
- **250k€ Funding**
 - **Tripling Base Protection's turnover within 3 years**

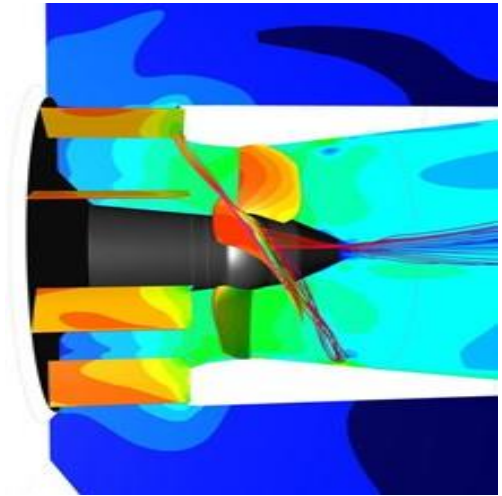


Partners:

End-user SME: BASE PROTECTION – IT
End user SME: PODOACTIVA -ES
Technology provider SME: INGECON - ES

HPC Cloud Simulation for Green Energy

- CFD simulation on cloud-based HPC
 - reduces the design time by 2/3
 - while increasing accuracy by 10 at **affordable cost**
- Results:
 - Renewable energy becomes more competitive
 - Plant owner gains 200k€/y (40MW turbine)
 - Lower energy cost for the citizens
- **250k€ Funding**
 - **Several jobs created**
 - Enormous boost of the competitive position**



Partners:

End-user SME: STELLBA – DE
ISV-SME: NUMECA – BE
ISV-SME: JOTNE – NO
HPC centre - SME: ARCTUR - SLO

Energy saving drying processes enabled by an **innovative smart sensor system**

- Freeze drying – most gentle method to conserve materials under harsh temperature conditions (-60 degrees)
- 20% energy savings
- Revenue increase of SMEs: 2M€/5 years

Partners:

End-user SME: Martin Christ GmbH – DE

End-User SME: Technolab GmbH – DE

Tech provider: Swerea IVF – SE

Tech provider: Hahn-Schickard – DE

Tech provider: CIS – DE

Tech provider: IPHT – DE

Tech provider SME: IL Metronic - DE

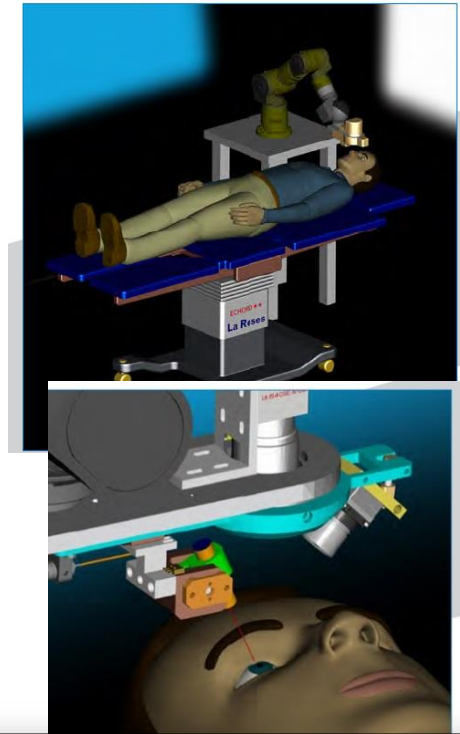
Innovation in products: Green asparagus harvesting robot

- Robotics for precision farming
 - Cost effective robotic solutions, reducing costs & waste
 - Addressing lack of workers problem
- Results:
 - Integration and testing of full systems
 - Increasing detection and harvesting rate
- **<300 K€ funding**
 - Competitive positioning in a large market
 - Reduce hard physical efforts for workers
 - Reduce cost of harvesting which is today one third of total cost



Partners in experiment:
Strauss Verpackung (DE)
C Wright &son LTD (UK)
Univ. of Bremen (DE)

- Laser assisted robotics surgery
 - Vision guided robotic for all-laser corneal transplantation
- Results:
 - Robotic arm with laser light for the welding site in the eye
 - Increasing efficacy and precision by 150 %
- **<300 K€ funding**
 - Impact on several types of surgery
 - Neurosurgery, Spinal surgery, Urology, Eye surgery



Partners in experiment:
Ekymed SPA (IT)
CNR (IT)
Fastenica (IT)
Partners in ECHORD ++:
TUM (DE), CEA (FR), Bristol
robotics lab (UK), UPC (ES)
Univ. of Pisa (IT)



The way forward: "Upscaling" and networking EU-wide digital innovation hubs

- **Member states, regions:** Build-up and strengthen national and regional structures of digital innovation hubs
 - Innovation programmes
 - Structural funds, ESIF: Smart specialisation..
 - Access to finance (e.g. KfW, BPI, EFSI , ...)
- **European Commission:** Complementary focused measures
 - Map of competences, best practices, demonstrators,...
 - Pan-European network of Digital Innovation Hubs (DIH)
 - Support for cross-border innovation experiments (I4MS, ...)
 - Preparatory measures for DIHs in less developed regions
- **Financing**
 - 500 M€ for network of Innovation Hubs in Horizon 2020
→ 5 B€ regional and national funding including when possible ESIF,..