HORIZON 2020

LE PROGRAMME DE RECHERCHE ET D'INNOVATION DE L'UNION EUROPÉENNE

The French Factory of the Future Research Community and its implication towards EU Research Programs

11 December 2017

D Vanden Abeele
French Ministry of Higher Education, Research and Innovation
NMBP Program Committee Delegate - NCP
FR JRC NCP

HORIZON 2020

2 points on the agenda

Which are the opportunities for collaboration on H2020

The French H2020 Community for Factory of the Future

2 points on the agenda

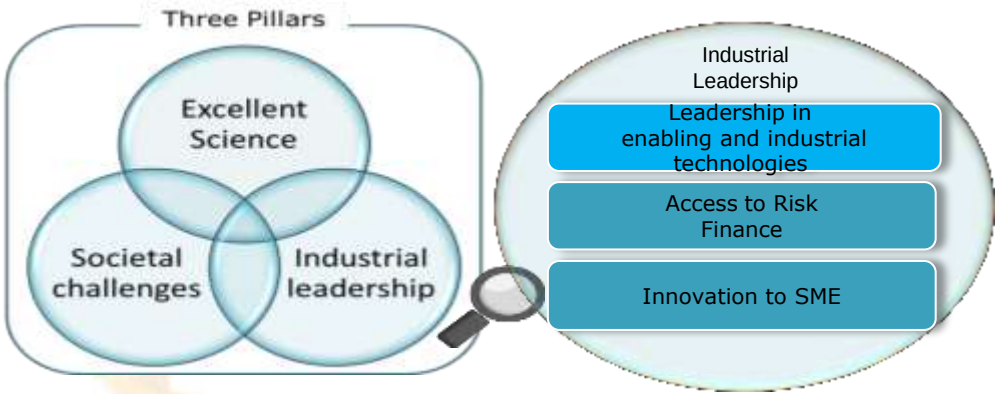
Which are the opportunities for collaboration on H2020

The French H2020 Community for Factory of the Future

R&I Policy Framework

June 2015 → **February 2017** → **June 2017**

Factories of the Future in Horizon 2020

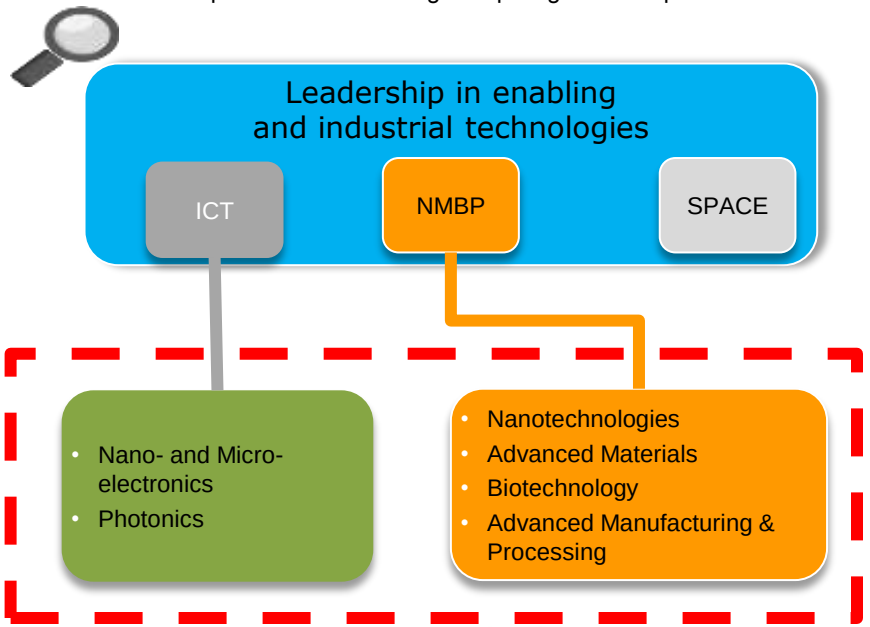


Indicative budget:
75 billion € *

Indicative Budget:
16.5 billion € *

Out of it for NMBP:
3.8 billion € *

Key Enabling Technologies (KETs) areas of key industrial competences determining Europe's global competitiveness

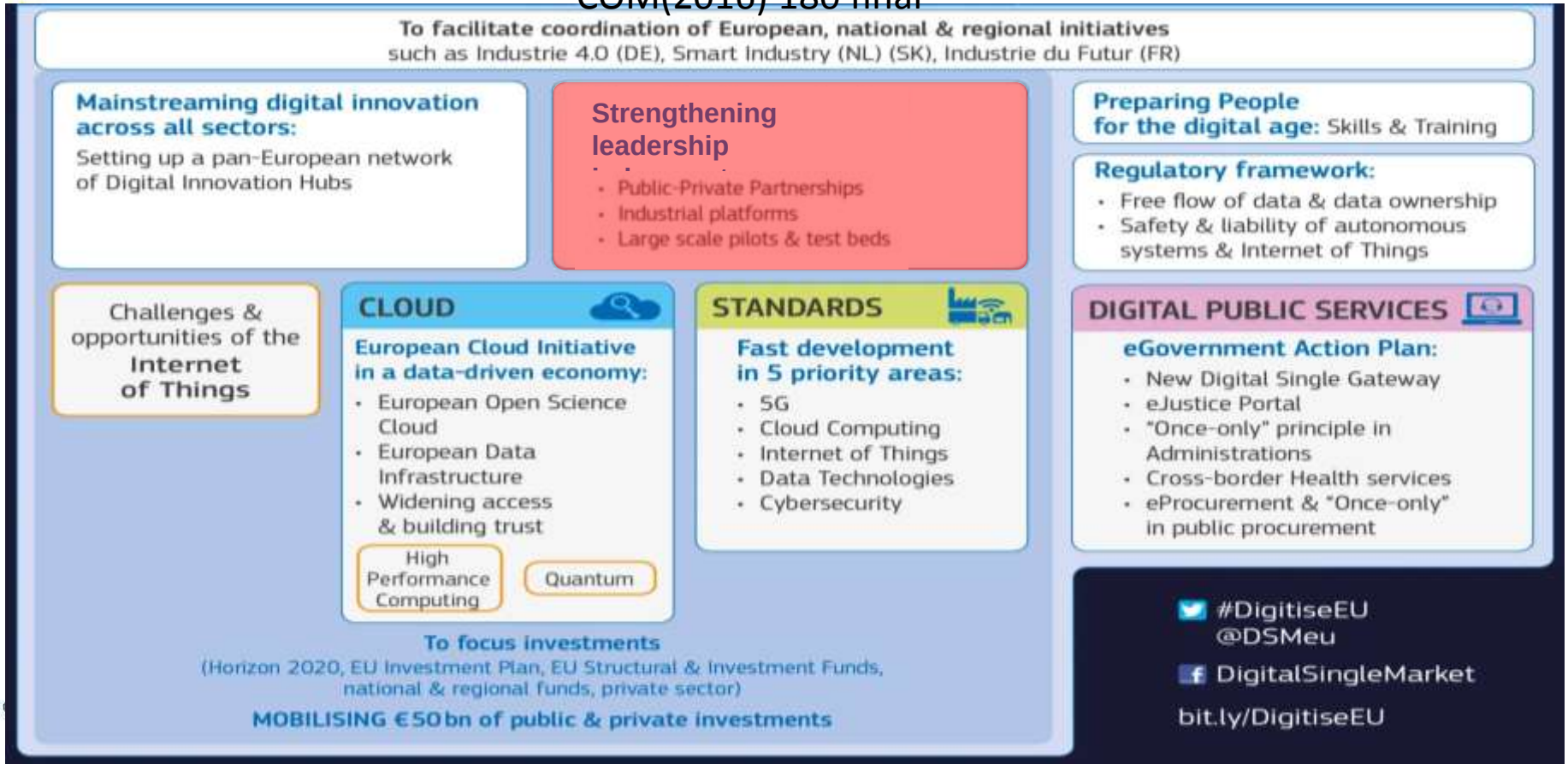


** July 2015 – includes EIT, JRC, "Science with and for Society", "Spreading Excellence / Widening Participation", in addition to three priorities above*

European Commission

Digitising European Industry

COM(2016) 180 final



ICT Work Program 2018-2020

Topics pan-European platform-building and piloting

Digital Manufacturing Platforms

- Agile Value Networks: Lot-size One
- Zero-defect Processes and Products
- Machines & Human Competences
- Sustainable Value Networks

A digital 'plug and produce' online equipment platform for manufacturing

…

Agricultural Digital Integration Platforms

- Optimize farm operations
- High-precision farming

Digital Service Platforms for Rural Economies

…

Smart Hospital of the Future

Smart and Healthy Living at Home

- Healthy & independent living
- Early risk detection and intervention

…

Interoperable and Smart Homes and Grids

Big Data Solutions for Energy

…

Cross-cutting issues, IoT, Big Data, Security…

HORIZON 2020

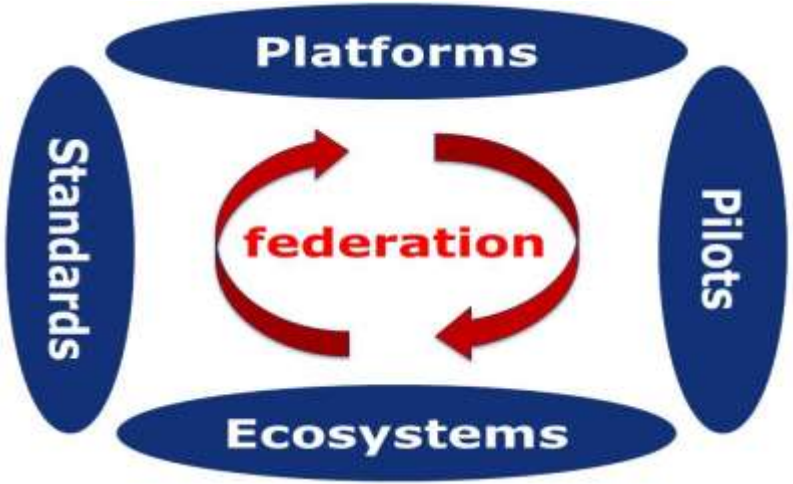
Digital Industrial Platforms

Alignment of R&I efforts

EU actors join forces along common interests
Future global standards & platforms driven by interests of EU actors

Focus investments on:

- Integration of key digital technologies
- Digital industrial platforms, reference architectures, …
- Reference implementations, large-scale piloting, experimentation environments
- Ecosystem building and standardisation



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Digital Industrial Platforms

What do we mean?

✗ *A place or opportunity for public discussion*

e.g. European Platform of National Initiatives

✓ *An operating system that integrates different technologies and various applications and services*

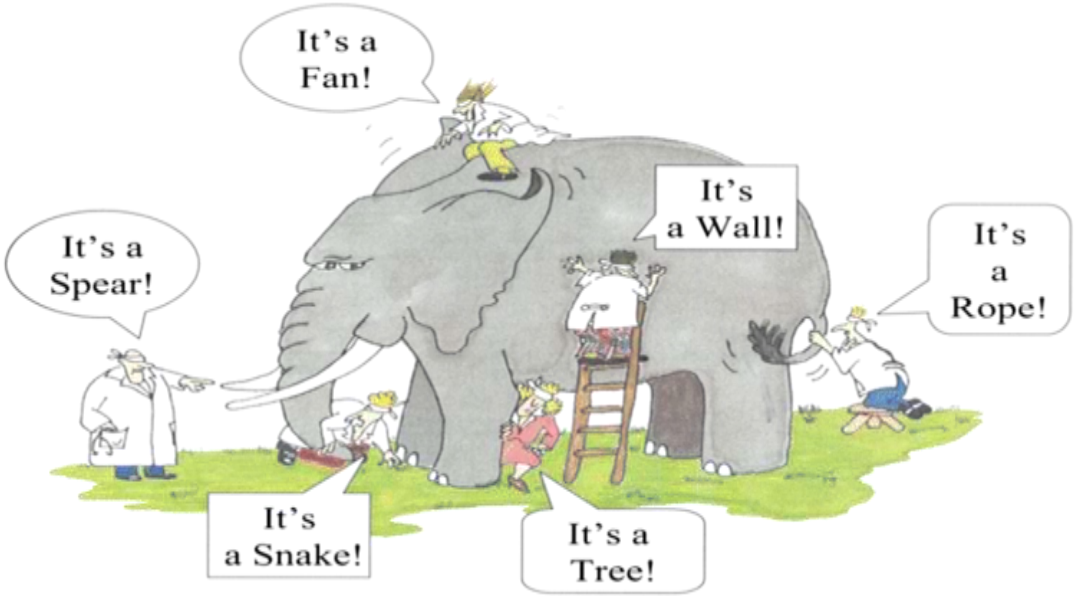
✗ *Online platforms in the consumer world*

e.g. Facebook, Nest, Android

✓ *Industrial platforms in the business world*

In different ways and to varying degrees they may take in:

1) a **community** role
2) an **infrastructure** role
3) a **data** role



HORIZON 2020

Digital Industrial Platforms

Examples

Community-led sector-specific (vertical)

AUTOSAR

ISOBUS

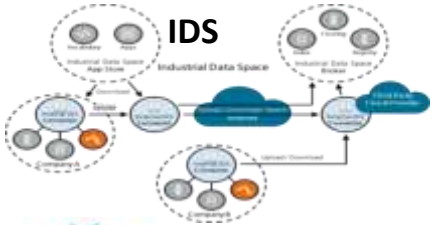
FITMAN

HORIZON 2020

Community-led cross-sector (horizontal)

S3P
SMART, SAFE & SECURE PLATFORM

IDS



CRYSTAL

industrial internet CONSORTIUM

FIWARE

ARROWHEAD

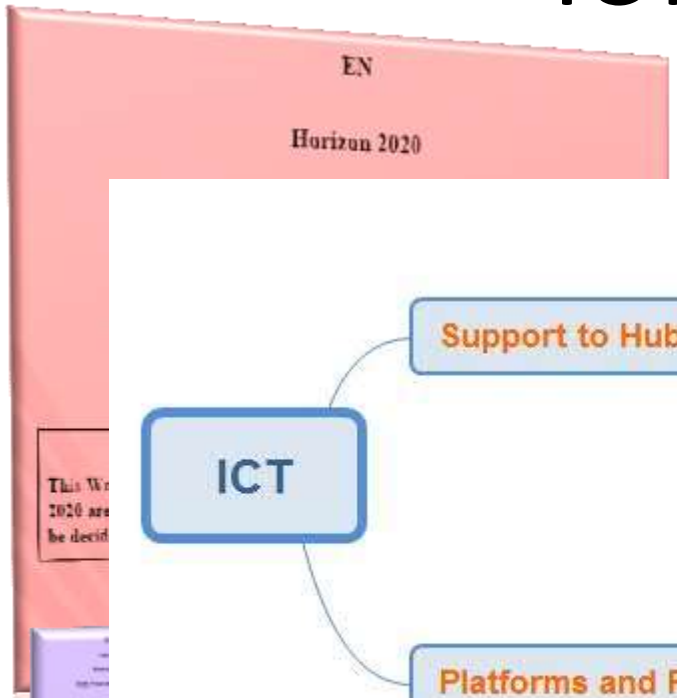
Commercial with open interfaces

Photo: TRUMPF

ADAMOS

DASSAULT SYSTEMES

ICT 2018-2020 WPs



Key topics for 2018-2019

ICT

Support to Hubs

- **DT-ICT-01-2019: Smart Anything Everywhere** — 48 M€
- DT-ICT-02-2018: Robotics - Digital Innovation Hubs (DIH) — 64 M€
- DT-ICT-06-2018: Coordination and Support Activities for Digital Innovation Hub network

Platforms and Pilots

- **DT-ICT-07-2018-2019: Digital Manufacturing Platforms for Connected Smart Factories**
- DT-ICT-08-2019: Agricultural digital integration platforms
- DT-ICT-10-2018-19: Interoperable and smart homes and grids
- DT-ICT-11-2019: Big data solutions for energy
- **DT-ICT-13-2019: Digital Platforms/Pilots Horizontal Activities** — 4 M€

Overall budget of 300 M€ for Hubs

WP 2018 – 2020 - ICT

- Focus area "Digitising and transforming European industry and services" calls for digital innovation hubs (for 300 M€)
  - Consortia should be deeply **rooted** in regional/national DIH
  - **Critical mass** of highly innovative, cross border experiments. At least 50% of the budget should directly benefit SMEs or slightly bigger companies. **Financial Support to Third Parties** may be used.
  - Activities should aim at **long-term sustainability** and include a **business plan** for the digital innovation hubs, a plan to attract investors, to address training and skills development needs and dissemination. Established networks reaching out to SMEs like the Enterprise Europe Network and the NCP network should be used.
  - Selected projects are expected to **collaborate on building** a network of Digital Innovation Hubs, covering most regions in Europe.

NMBP Work Programme 2018-2020

INDUSTRIAL SOLUTION REVOLUTION

Mission 1

FOUNDATIONS FOR TOMORROW's INDUSTRY

- OPEN INNOVATION HUBS
- MATERIALS CHARACTERISATION and COMPUTATIONAL MODELLING
- GOVERNANCE, SCIENCE-BASED RISK ASSESSMENT AND REGULATORY ASPECTS

269 M€

Mission 2

TRANSFORMING EUROPEAN INDUSTRY

- FACTORIES OF THE FUTURE
- BIOTECHNOLOGY
- MEDICAL TECHNOLOGY INNOVATIONS

340 M€

Mission 3

INDUSTRIAL SUSTAINABILITY

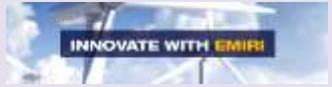
- SPIRE
- CATALYSING THE CIRCULAR ECONOMY
- CLEAN ENERGY THROUGH INNOVATIVE MATERIALS
- CULTURAL HERITAGE
- ENERGY-EFFICIENT BUILDINGS

447 M€

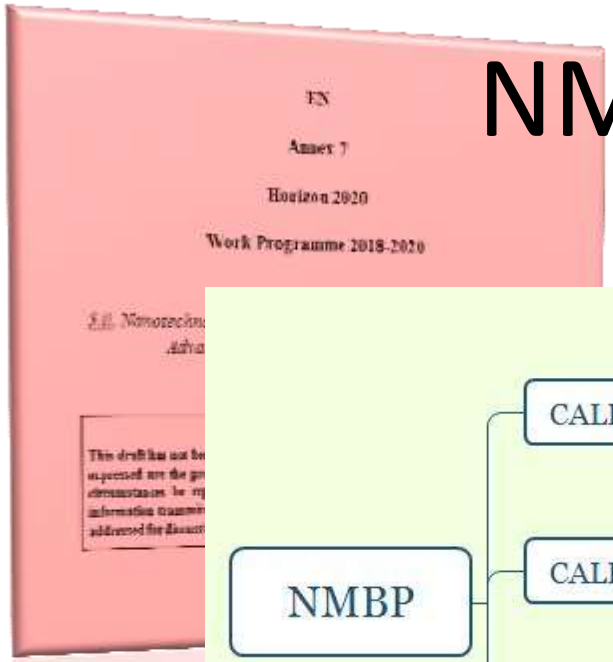
Each orientation is translated into CALL and **EXPECTED IMPACT**

From platforms, etc

(some) Reference Documents



NMBP 2018-2020 WPs

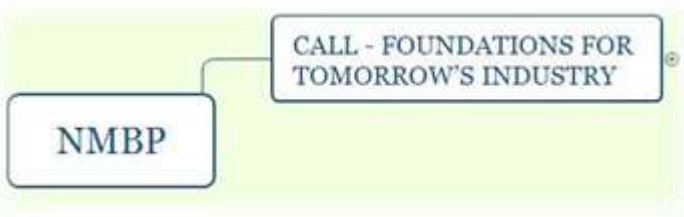


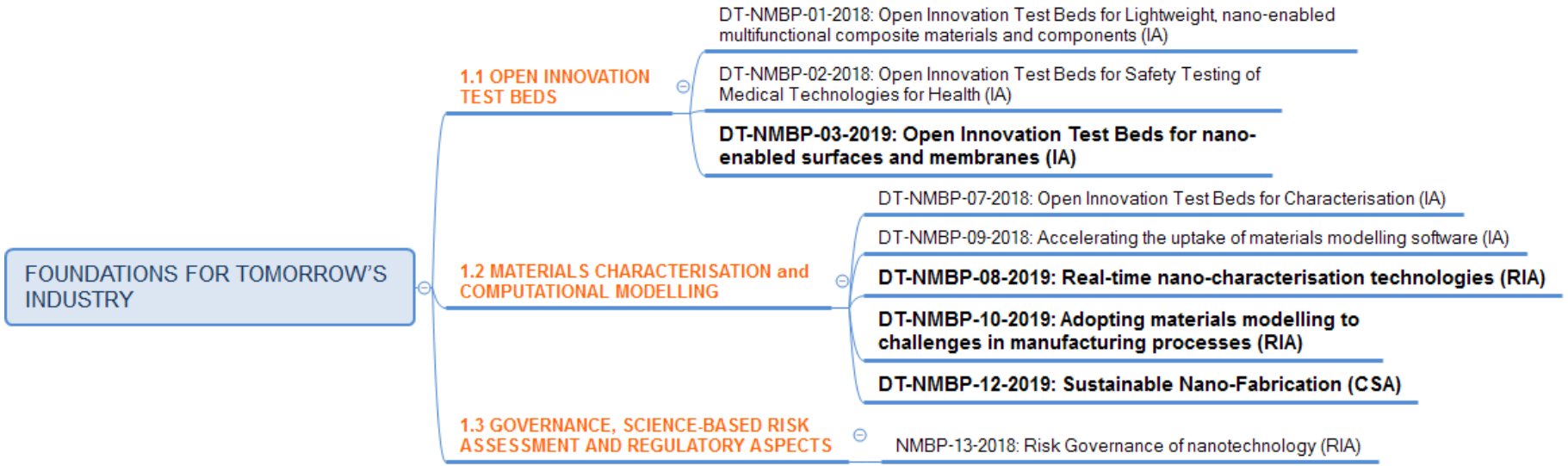
Key elements for 2018-2020

- NMBP
  - CALL - FOUNDATIONS FOR TOMORROW'S INDUSTRY
    - 1.1 OPEN INNOVATION TEST BEDS
    - 1.2 MATERIALS CHARACTERISATION and COMPUTATIONAL MODELLING
    - 1.3 GOVERNANCE, SCIENCE-BASED RISK ASSESSMENT AND REGULATORY ASPECTS
  - CALL - TRANSFORMING EUROPEAN INDUSTRY
    - 2.1. FACTORIES OF THE FUTURE (FOF)
    - 2.2 BIOTECHNOLOGY
    - 2.3. MEDICAL TECHNOLOGY INNOVATIONS
  - CALL - INDUSTRIAL SUSTAINABILITY
    - 3.1. SUSTAINABLE PROCESS INDUSTRY (SPIRE)
    - 3.2. CATALYSING THE CIRCULAR ECONOMY
    - 3.3. CLEAN ENERGY THROUGH INNOVATIVE MATERIALS
    - 3.4. CULTURAL HERITAGE
    - 3.5. ENERGY-EFFICIENT BUILDINGS (EEB)

Important: **Open Innovation Test Beds**

Foundations for tomorrow's Industry 2018-**19**



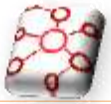


Open Innovation Test Beds

Budget WP
2018=75 M€
2019=50 M€
2020=40 ? M€


Lightweight nano-enabled multifunctional composite materials and components

DT-NMBP-01-2018


Safety Testing of Medical Technologies for Health

DT-NMBP-02-2018


Nano-enabled surfaces and membranes

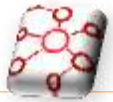
DT-NMBP-03-2019


Bio-based nano-materials and solutions

DT-NMBP-04-2020


Nano-pharmaceuticals production

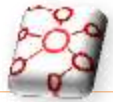
DT-NMBP-06-2020


Functional materials for building envelopes

DT-NMBP-05-2020

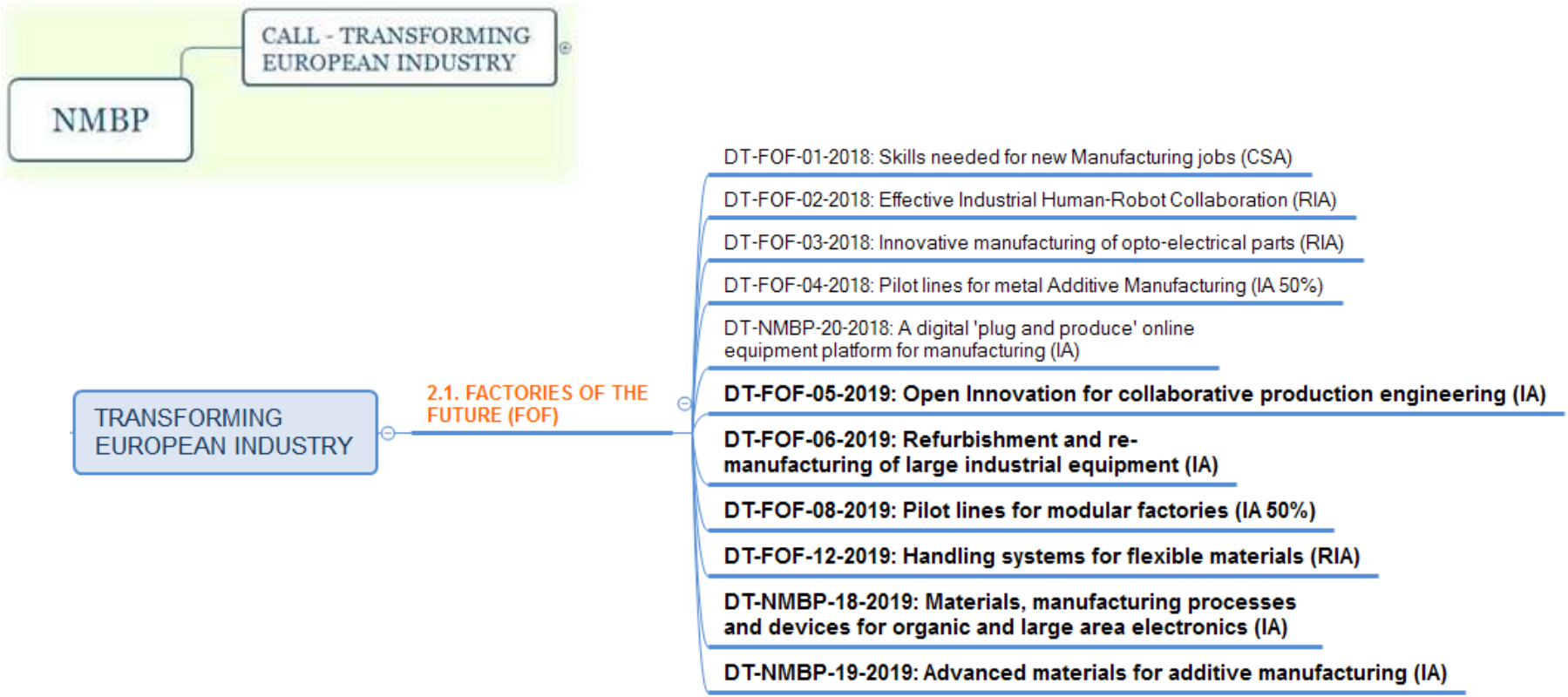

Characterisation

DT-NMBP-07-2018


Materials modelling

DT-NMBP-11-2020

Transforming European Industry 2018-**19**



Industrial sustainability 2018-**19**

- INDUSTRIAL SUSTAINABILITY
  - 3.1. SUSTAINABLE PROCESS INDUSTRY (SPIRE)
    - CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources (IA)
    - CE-SPIRE-03-2018: Energy and resource flexibility in highly energy intensive industries (IA 50%)
    - CE-SPIRE-10-2018: Efficient recycling processes for plastic containing materials (IA)
    - **CE-SPIRE-04-2019: Efficient integrated downstream processes (IA)**
    - **CE-SPIRE-05-2019: Adaptation to variable feedstock through retrofitting (IA 50%)**
    - **DT-SPIRE-06-2019: Digital technologies for improved performance in cognitive production plants (IA)**
  - 3.2. CATALYSING THE CIRCULAR ECONOMY
    - CE-NMBP-24-2018: Catalytic transformation of hydrocarbons (RIA)
    - CE-NMBP-26-2018: Smart plastic materials with intrinsic recycling properties by design (RIA)
    - **CE-NMBP-25-2019: Photocatalytic synthesis (RIA)**
  - 3.3. CLEAN ENERGY THROUGH INNOVATIVE MATERIALS
    - LC-NMBP-30-2018: Materials for future highly performant electrified vehicle batteries (RIA)
    - **LC-NMBP-27-2019: Strengthening EU materials technologies for non-automotive battery storage (RIA)**
    - **LC-NMBP-29-2019: Materials for non-battery based energy storage (RIA)**
    - **LC-NMBP-32-2019: Smart materials, systems and structures for energy harvesting (RIA)**
  - 3.5. ENERGY-EFFICIENT BUILDINGS (EEB)
    - LC-EEB-02-2018: Building information modelling adapted to efficient renovation (RIA)
    - **LC-EEB-01-2019: Integration of energy smart materials in non-residential buildings (IA)**
    - **LC-EEB-03-2019: New developments in plus energy houses (IA)**
    - **LC-EEB-05-2019-20: Integrated storage systems for residential buildings (IA)**
    - LC-EEB-06-2018-20: ICT enabled, sustainable and affordable residential building construction, design to end of life (IA 50%)

Could this be a proposal

- Trend at EC level is to establish communities as network of ecosystems
  - Hubs, Test Beds, Platforms
- Need is to deliver larger impact and transfer knowledge

- 1st proposal at this stage:
  - Investigate into our respective communities who or where are affinities
    - Publish information; Offer e-repository for shared initiatives…
  - Identify the most relevant ecosystems to be candidates to Hub/test Beds/Platforms projects
  - Others!

2 points on the agenda

Which are the opportunities for collaboration on H2020

The French H2020 Community for Factory of the Future

The overall scene

Digital transformation

Industrial modernisation

Innovation-driven ecosystem

Smart Specialisation Platform

Thematic Platforms

From research to market

European Cluster Collaboration Platform

Online platforms

European Commission ***DG-Grow***

European Commission ***DG-Connect***

European Commission ***DG-RTD***

DG-Grow

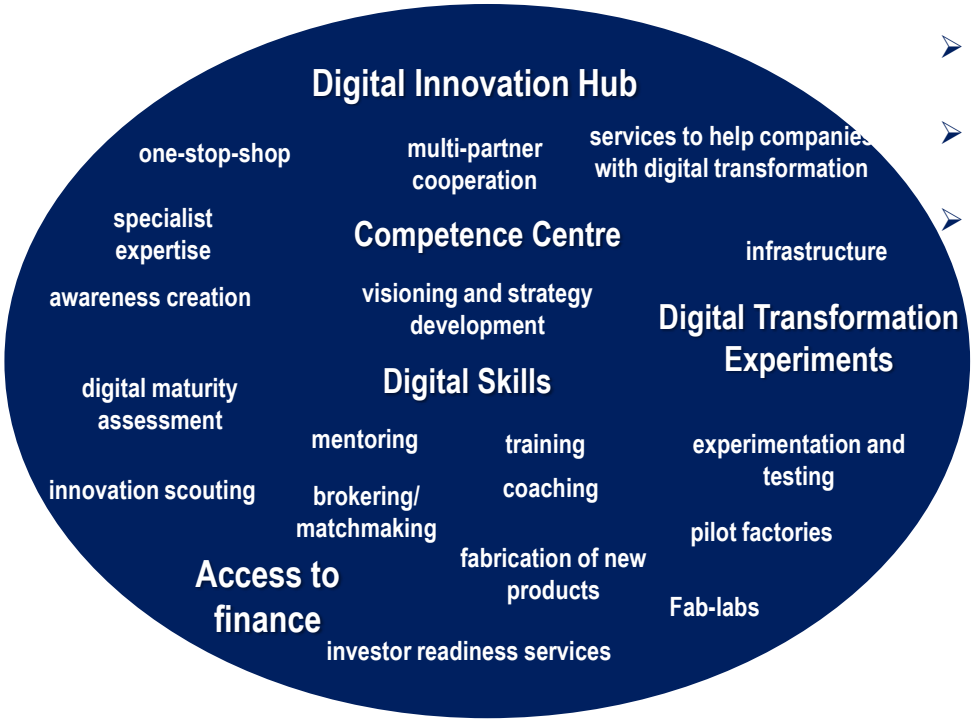
I4MS

Cartography of competencies and services should help 'actors' to find their answer

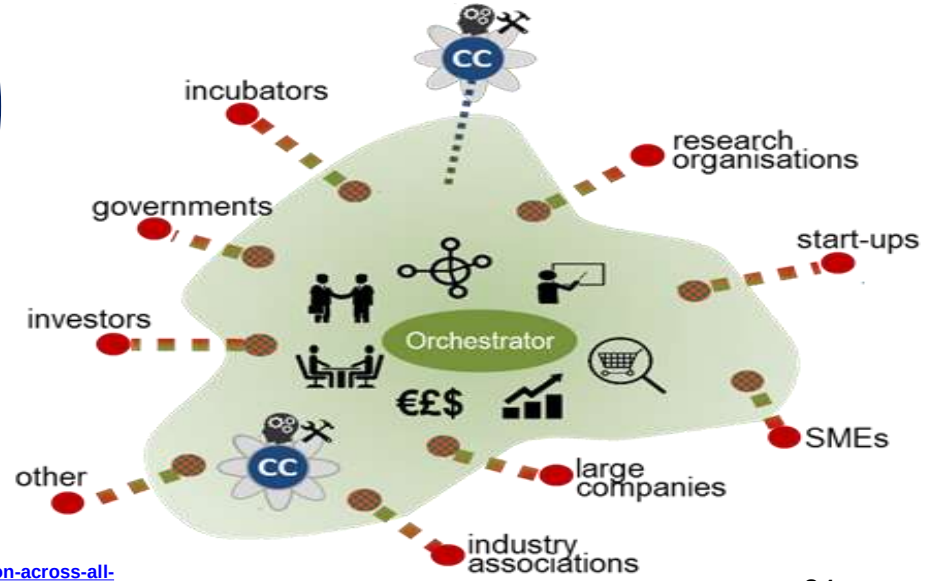
DG-RTD Pilot Li

DG-Connect (temp)

A strategy based on Digital Innovation Hub



- Provide support to **existing industry** to manage their **digital transformation**
- **Competence Centres** are at the **core of DIHs, ecosystem approach**
- **Variable geometries**: technology applications, sector, SME focus, service portfolios, etc
- Provides opportunities for both **ICT users** and **ICT suppliers**



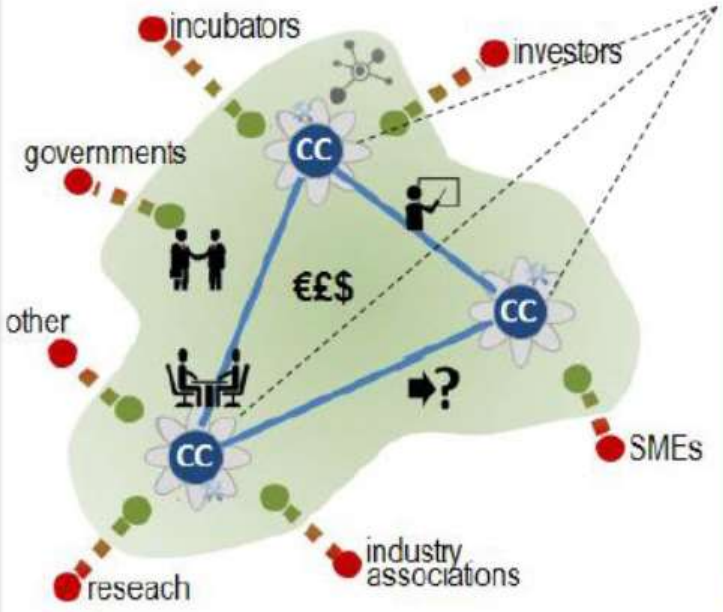
Working Group report on DIHs:

https://ec.europa.eu/futurium/en/content/report-wg1-digital-innovation-hubs-mainstreaming-digital-innovation-across-all-sectors-final

DIH vs. CC

DIGITAL INNOVATION HUB

- Awareness Creation around Digital Technologies
- Innovation Scouting
- Digital Maturity Assessment.
- Visioning and Strategy Development for Businesses:
- Brokering/matchmaking
- Access to Specialist Expertise and Infrastructure
- Mentoring
- Training
- Access to Funding and Investor Readiness Services
- Collaborative Research



COMPETENCE CENTRE

Competences in Digital Technologies

- Provide access to infrastructure and technology platforms
- Provide digitisation and application expertise
- Support experimentation in real-life environments
- Support fabrication of new products
- Demonstrate best practices
- Showcase technologies in pilot factories, fab-labs

Our role for promoting the Communities

- The role of Authorities is to Inform, Influence, Stimulate, Accompagn, Represent, Interface the actors in regard to the European Affairs

- Support such complex interaction model requires to have a structured approach
  - Taking into account the different national initiatives
  - Involving the key stakeholders
  - Based on criteria to guarantee Excellence

Décision was to launch a survey

Objectives and Outputs

- Act as a federator wrt. the DG's Actions

- Deliver

- Promote Infrastructures during the networking actions

Our process

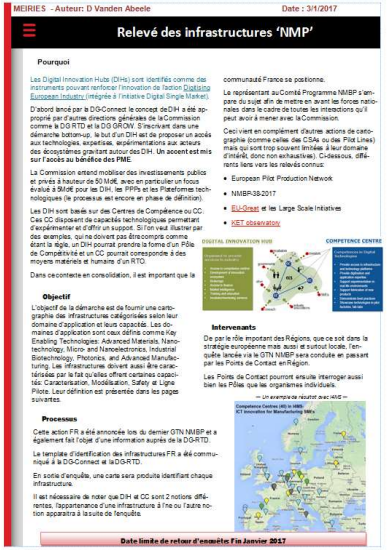
1. The key concern is related to the ***sustainability*** *of such Hubs*
   Importance of the eco-system

2. Proposal was to launch this survey with the strong support of **Regional Interfaces**
   *and communication through GTN **NMBP** and **ICT** (Groupe Thématique National)*

3. To identify the hubs, we have defined criteria related to:

   Identification | General | Services | Ecosystem | Domains

   – Technical matters: NMBP KETs, 'ICT' KETs, NAAM HLG Capabilities
   – Operational characteristics: Sustainability, Outreach, Excellence, …
   – 'Support': consistence with S3


MEIRIES - Auteur: D Vanden Abeele Date : 3/1/2017

Relevé des infrastructures 'NMP'

Pourquoi

Les Digital Innovation Hubs (DIHs) sont identifiés comme des instruments pouvant renforcer l'innovation de fashion Digitising European Industry (intégrée à l'initiative Digital Single Market).

D'abord lancé par la DG-Connect le concept de DIH a été approprié par d'autres directions générales de la Commission comme la DG RTD et la DG GROW. S'inscrivant dans une démarche bottom-up, le but d'un DIH est de proposer un accès aux technologies, expertises, expérimentations aux acteurs des écosystèmes gravitant autour des DIH. Un accent est mis sur l'accès au bénéfice des PME.

La Commission entend mobiliser des investissements publics et privés à hauteur de 50 M€, avec en particulier un focus évalué à 5M€ pour les DIH, les PPPs et les Plateformes technologiques (le process.ai est encore en phase de définition).

Les DIH sont basés sur des Centres de Compétence ou CC: Ces CC disposent de capacités technologiques permettant d'expérimenter et d'offrir un support. Si l'on veut illustrer par des exemples, qui ne doivent pas être compris comme étant la règle, un DIH pourrait prendre la forme d'un Pôle de Compétitivité et un CC pourrait correspondre à des moyens matériels et humains d'un RTO.

Dans ce contexte en consolidation, il est important que la communauté France se positionne.

Le représentant au Comité Programme NMBP s'emparera du sujet afin de mettre en avant les forces nationales dans le cadre de toutes les interactions qu'il peut avoir à mener avec la Commission.

Ceci vient en complément d'autres actions de cartographie (comme celles des CSAs ou des Pilot Lines) mais qui sont trop souvent limitées à leur domaine d'intérêt, donc non exhaustives). Ci-dessous, différents liens vers les relevés connus:

- European Pilot Production Network
- NMBP-38-2017
- EU-Great et les Large Scale Initiatives
- KET observatory

DIGITAL INNOVATION HUB — COMPETENCE CENTRE

Objectif

L'objectif de la démarche est de fournir une cartographie des infrastructures catégorisées selon leur domaine d'application et leurs capacités. Les domaines d'application sont ceux définis comme Key Enabling Technologies: Advanced Materials, Nanotechnology, Micro- and Nanoelectronics, Industrial Biotechnology, Photonics, and Advanced Manufacturing. Les infrastructures doivent aussi être caractérisées par le fait qu'elles offrent certaines capacités: Caractérisation, Modélisation, Safety et Ligne Pilote. Leur définition est présentée dans les pages suivantes.

Intervenants

De par le rôle important des Régions, que ce soit dans la stratégie européenne mais aussi et surtout locale, l'enquête lancée via le GTN NMBP sera conduite en passant par les Points de Contact en Région.

Les Points de Contact pourront ensuite interroger aussi bien les Pôles que les organismes individuels.

Processus

Cette action FR a été annoncée lors du dernier GTN NMBP et a également fait l'objet d'une information auprès de la DG-RTD.

Le template d'identification des infrastructures FR a été communiqué à la DG-Connect et la DG-RTD.

En sortie d'enquête, une carte sera produite identifiant chaque infrastructure.

Il est nécessaire de noter que DIH et CC sont 2 notions différentes, l'appartenance d'une infrastructure à l'une ou l'autre notion apparaîtra à la suite de l'enquête.

Date limite de retour d'enquête Fin Janvier 2017

How

MEIRIES - Auteur: D Vanden Abeele Date : 3/1/2017

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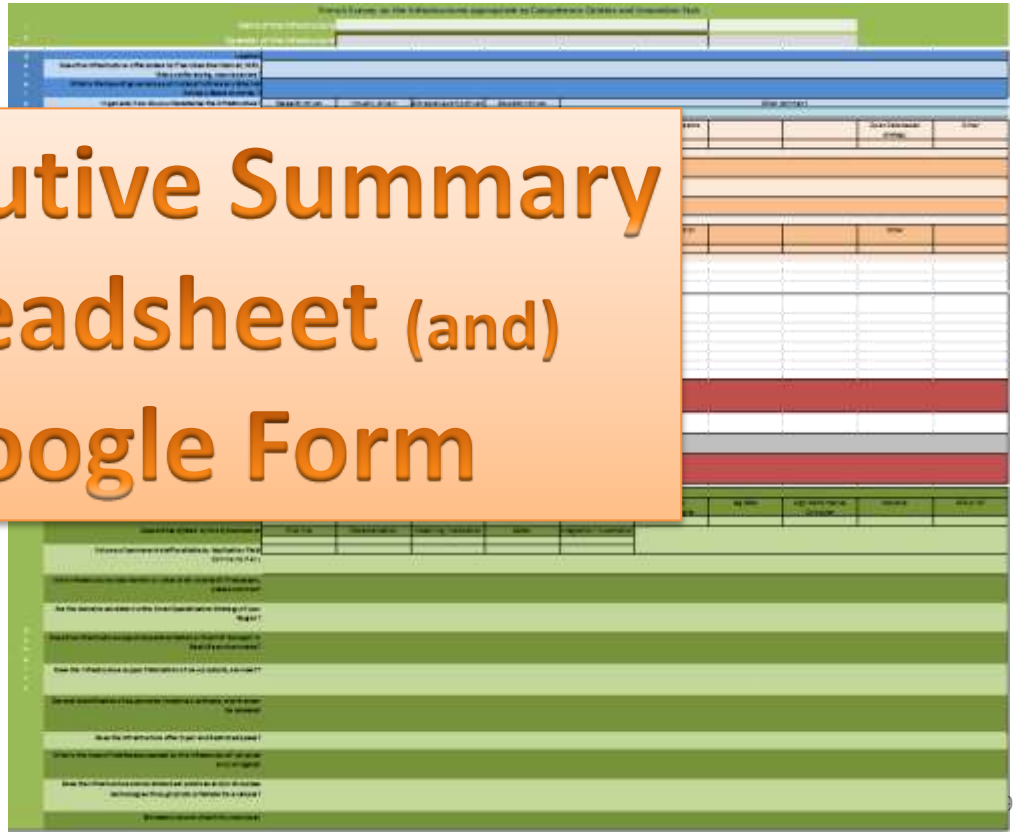
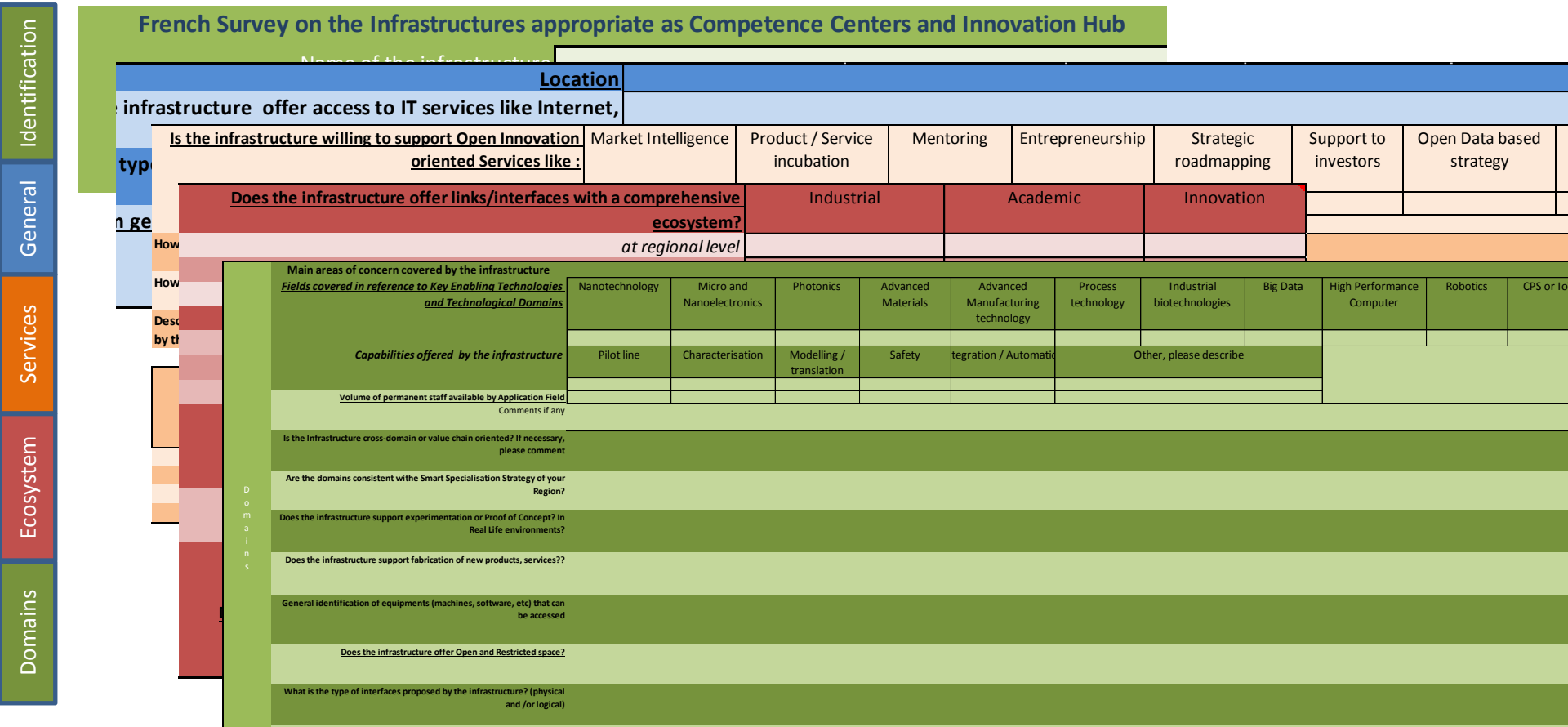
— Un exemple de résultat avec HMS —

Date limite de retour d'enquête: Fin Janvier 2017



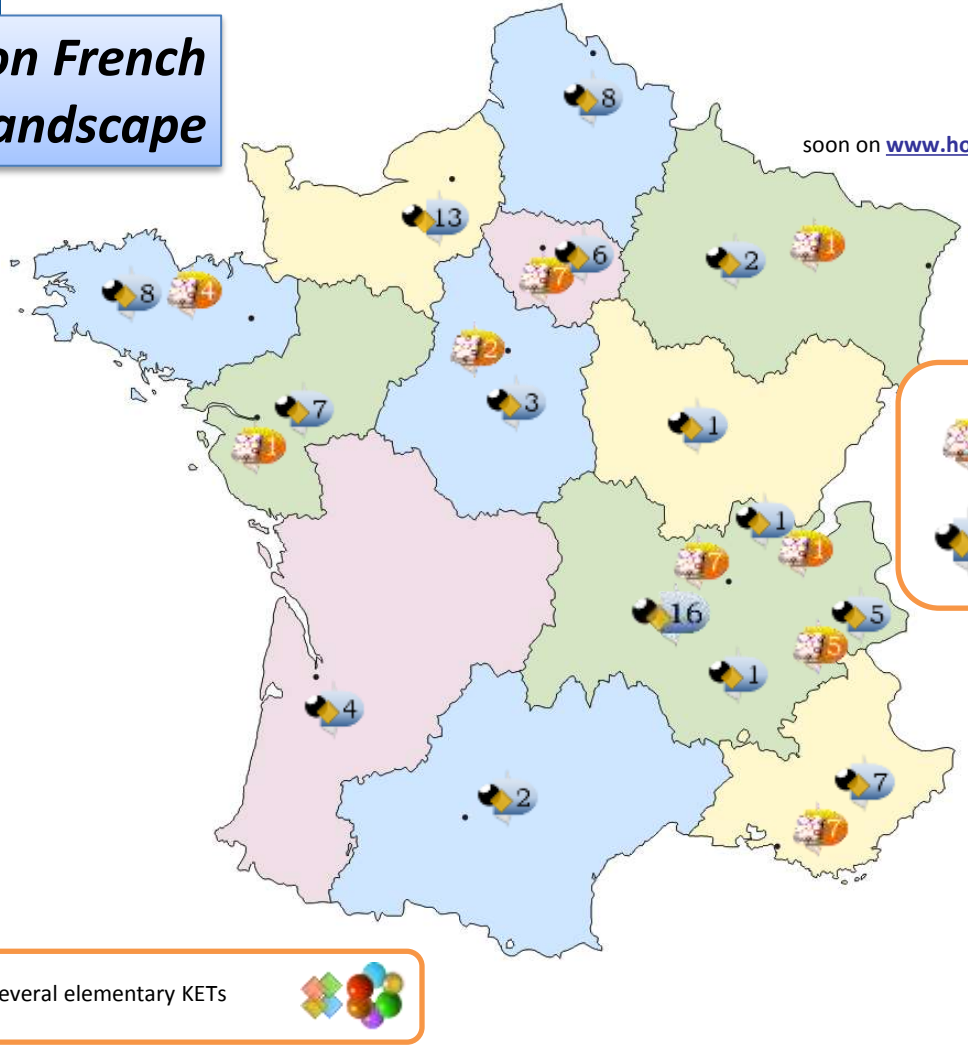
An Executive Summary
A Spreadsheet (and)
A Google Form

Details on Criteria



Overall vision on French infrastructure landscape

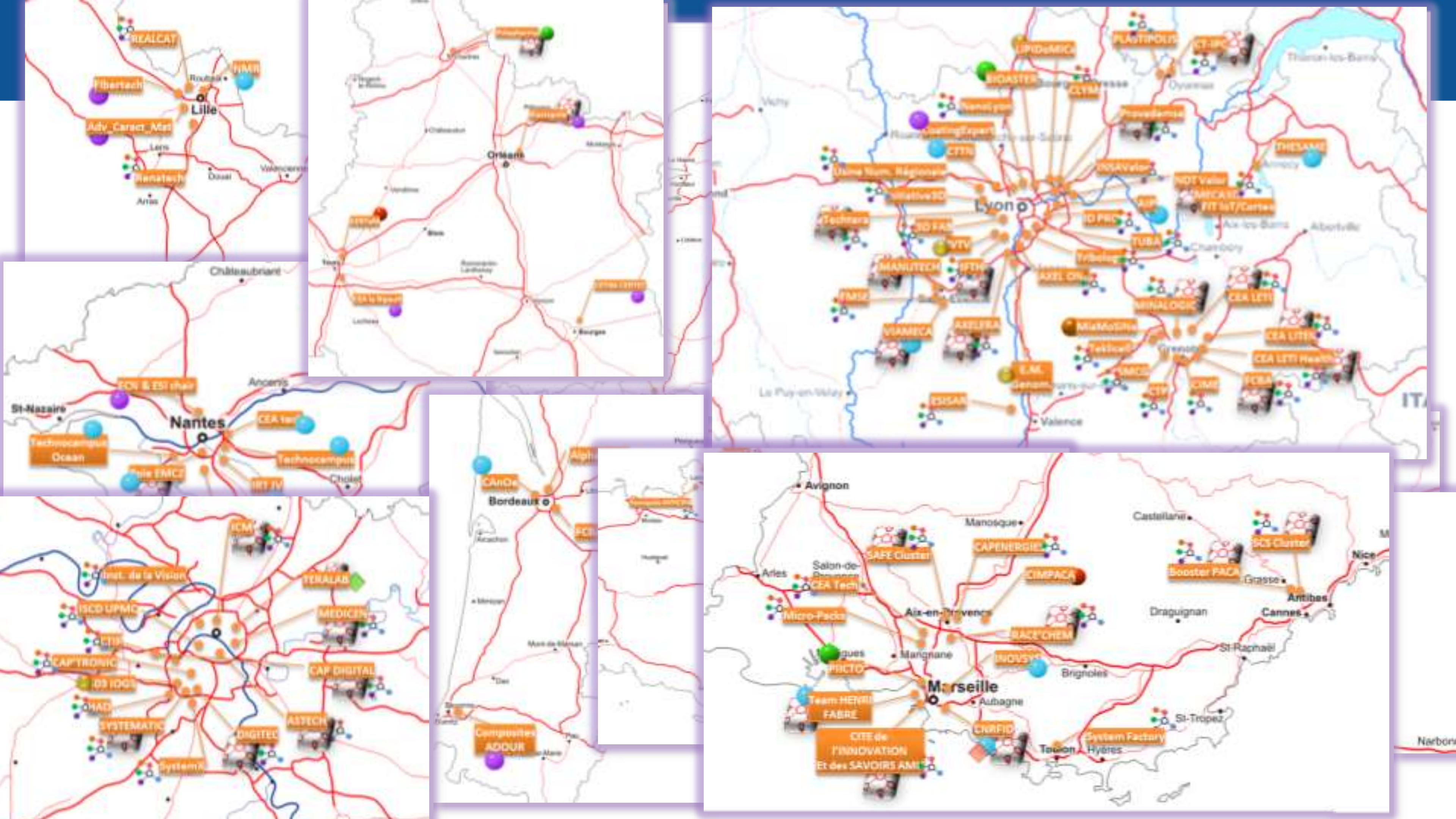
soon on www.horizon2020.gouv.fr



(digital) Innovation Hubs including Competence Centers

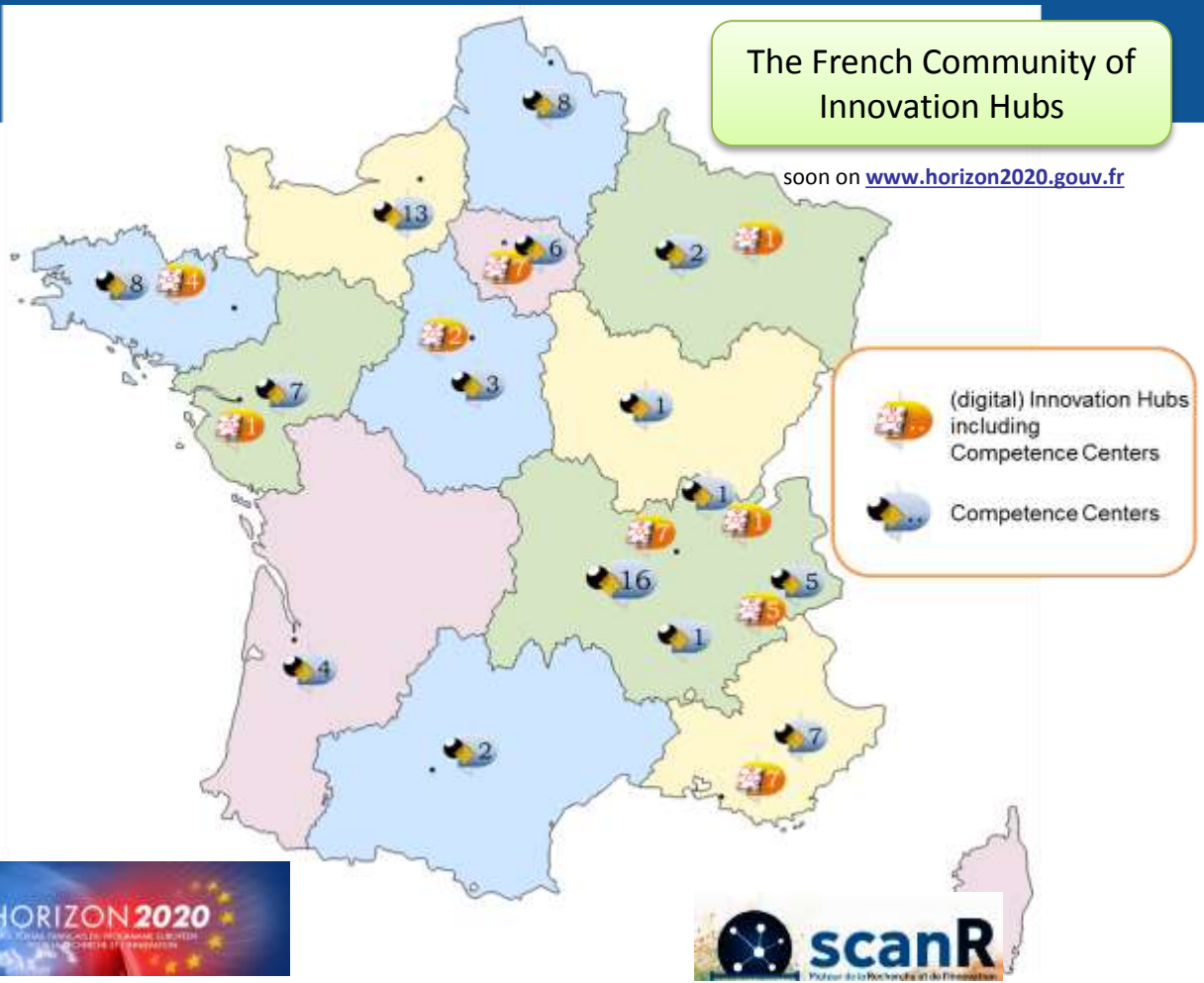
Competence Centers

multiKET means several elementary KETs


REALCAT
Fibertech
HMR
Roubaix
Lille
Adv_Caract_Mat
Lens
Renatech
Douai
Arras
Orléans
Blois
Tours
Bourges
Châteaubriant
St-Nazaire
Nantes
Ancenis
Technocampus Ocean
Technocampus
Cholet
ICM
Inst. de la Vision
TERALAB
ISCD UPMC
MEDICEN
CAPTRONIC
CAP DIGITAL
ASTECH
SYSTEMATIC
DIGITEO
CAnOe
Bordeaux
Arcachon
Composites ADOUR
PLASTIPOLIS
BIOASTER
Thonon-les-Bains
Vichy
Lyon
THESAME
Annecy
MANUTECH
TUBA
Chambéry
Albertville
MINALOGIC
CEA LETI
CEA LITEN
VIAMECA
AXELERA
ESISAR
Le Puy-en-Velay
Valence
Avignon
Manosque
Castellane
Arles
SAFE Cluster
CAPENERGIES
CIMPACA
SCS Cluster
Booster PACA
Grasse
Nice
Antibes
Cannes
Draguignan
CEA Tech
Micro-Packs
Marignane
St-Raphaël
PICTO
Brignoles
Marseille
Aubagne
Team HENRI FABRE
System Factory
Toulon
Hyères
St-Tropez

The French Community of Innovation Hubs

soon on www.horizon2020.gouv.fr



Merci

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