



# TERALAB

Data Science for Europe



# BOOST YOUR COMPANY'S BIG DATA & AI INITIATIVES

## OPEN INNOVATION

Reinforce & enlarge your data community with startups and partners through challenges in a neutral environment

## EDUCATION & STUDENTS

Interact with students and create opportunities by working on real data & use cases

## COLLABORATIVE RESEARCH

Connect your R&D teams with research labs to emphasize your data innovation

### SANDBOX



TOOLS



DATA



INFRASTRUCTURE



SECURITY

Up to 15TB Ram – 520 cores  
400 TB Storage

## TERALAB A TRUSTED R&I BIG DATA & AI PLATFORM

### SERVICES



LEGAL



ANALYTICS



ARCHITECTURE



RESEARCH

TeraLab staff +  
Startups & academics

### TRUSTED & SOVEREIGN

- Adaptive security level
- Stated control facilities
- No private shareholders
- No conflict of interests

### A NON-PROFIT PRICING

- Pre-established priced
- NO hidden cost
- ~80% market price

### EASY TRANSITION

Your setup in TeraLab



Your setup in your datacenter

### SUCCESS STORIES

More than 50 projects hosted !



# UP TO 50 DATA INNOVATION PROJECTS SUPPORTED TO DATE



## Collaborative Research

IMT:

- CAP (~10 use cases – ITEA)
- Square Predict (InsurancePIA)
- Speed Data (e-Commerce – PIA)
- Geolytics (Mobility – PIA)
- Norm-Atis (Mobility – ANR)
- LASIE (IA)
- O Wendelinia (Energie)
- iiBD (publishing)
- AlgoFab (IA)
- ADMIRR (Data Gouvernance)
- PULSE (Health)
- BnF (Logs)
- IFREMER (Images satellites)
- ACEP Trylive (Logs)
- DILA: Dashboard Enterprise (e gouvernement)
- DJEPVA : Data Asso (e gouvernement)
- E Logistique (logistic)
- M4P ( e Santé)
- MIDIH 4.0 (H2020, factory of the future)
- Boost 4.0 ( H2020, factory of the future)
- Data Musée(IA)

## Open Innovation

IMT

- 1 Confidentiel (assurance privée)
- Santéclair (Fraude optique)
- La Poste Colis (Fraude)
- Big Data Challenges avec Cap Digital
  - AXA, VINCI, ERDF, NATIXIS
- D4D : challenge Orange in Africa (smart City – Green)
- Pole Emploi
- Epidemium (Santé)
- RATP (logistique)
- ELM Leblanc-Bosh (smart manufacturing)

## Education

IMT

- Projets étudiants ENSAE
- Projets des étudiants du master Big Data de Telecom ParisTech
- Master computer Science Telecom Bretagne
- Ecole centrale Lille
- Institut des actuaires
- Formation continue pour Allianz (Telecom Evolution)
- Ecole des Mines Saint Etienne

# TERALAB : AN INSTANTIATION OF EUROPEAN “I SPACES” INITIATIVES FROM BDVA

Who are iSpaces:

- iSpaces have established themselves as trusted, secure, neutral and sovereign pre-competitive BigData-Experimenting-Hubs, with as main mission to help drive Big Data entrepreneurship and Big Data technology adoption in their local industry ecosystem
- By connecting large-industry (often owners of BigData or reaching out for creative BigData services), SME’s + Startups (aiming to develop new solutions and to validate novel business concepts) and Academia (providing access to State-of-the Art tools & skills), a new pre-competitive Big Data innovation instrument was created for these local industrial ecosystems

*TeraLab as been granted a silver label from the Big Data Value Association*



**Labelled iSpaces**, beyond exchange of good practice, **form a Europe-wide federation**, in order to foster trans-boundary data innovation

COUNTRY	ENTITY NAME	THEMATICS										
		industry 4.0	Smart Logistics & Transport	Smart Retail	Smart Cities	Smart Health	Smart Agriculture	Energy	Creative Industries	Insurance	Earth Observation	E Government
DE	IDS-Fraunhofer	X										
ES	Eurecat		X									
FR	TeraLab	X	X			X		X	X	X	X	
DE	SDIL	X			X	X		X				
AT	KNOW	X				X						
SE	SICS	X				X		X				

# THEY TRUSTED US !



Sector	Number of project started						Number of Organizations reached (Estimate)						
	2014	2015	2016	2017	Total	Research Org	Educ Org	Startups	SME	Large groups	Gov Entities	Total	
	Logistics/Manufacturing	2	1	2	6	11	26	0	9	25	16	0	76
Cybersecurity/Privacy	1	1	1	3	6	2	0	1	1	1	1	6	
e gov		1	2	3	6	6	0	7	0	0	6	19	
Health/Environment	1	1	2	1	5	6	0	0	4	3	5	18	
IA	1	1	2	2	6	8	0	0	4	1	0	13	
e Mobility	1	2		3	6	9	0	0	5	5	0	19	
e commerce		1	1	2	4	5	0	1	3	2	2	13	
Insurance, FinTech, Legal Tech	2	1		1	4	2	0	9	1	4	0	16	
Education	1	1	2	2	6	0	9	0	0	0	0	9	
TOTAL	9	10	12	23	54	64	9	27	43	32	14	189	



## Data Innovation Community engagement

Large network of Data Owners ,Data Users and Data Innovators

## Support to Use case Formalization

## Support to architecture specifications

## Support to legal and regulatory provisions for your project

## Support to security specifications

Trusted sovereign neutral platform to host your data and technical development

**“From proof of concept to proof of ROI” contribution to valorization and industrialization of project results**

# INDUSTRIAL DATA SPACE

- Data sovereignty
- Decentralized data management
- Data economy
- Value creation
- Easy linkage of data
- Trust
- Secure data supply chain
- Data governance

Trusted Distributed  
Cooperation  
Consortium\*  
Platform (private  
blockchain)

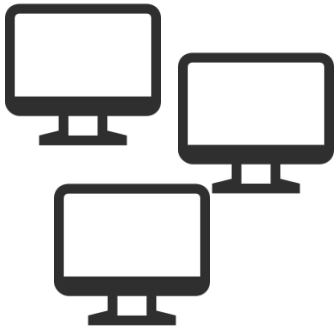
## Research and Experimentation

- Sovereign, Trusted, Neutral
- Analytics expertise
- Linked data expertise
- Security and governance expertise

Data Exchange & Governance

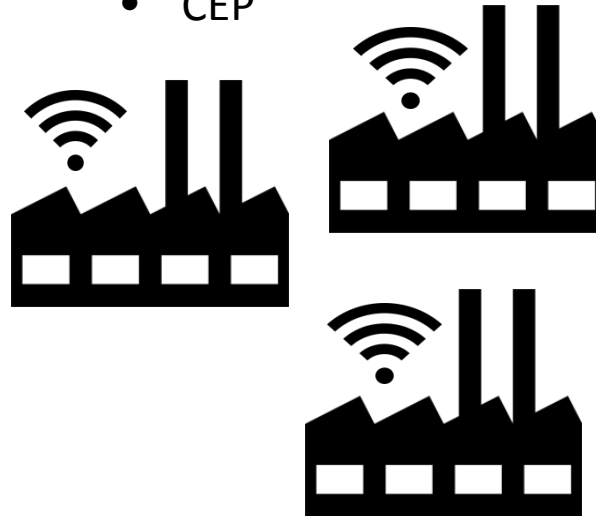
## Design and Simulation

- CAD
- CAE
- Simulation



## Manufacturing

- ERP
- SCADA
- CEP



## Product in Life

- Maintenance data
- Real Time data



# TERALAB IN H2020 PPPs

Health , Smart City, Food, e Government



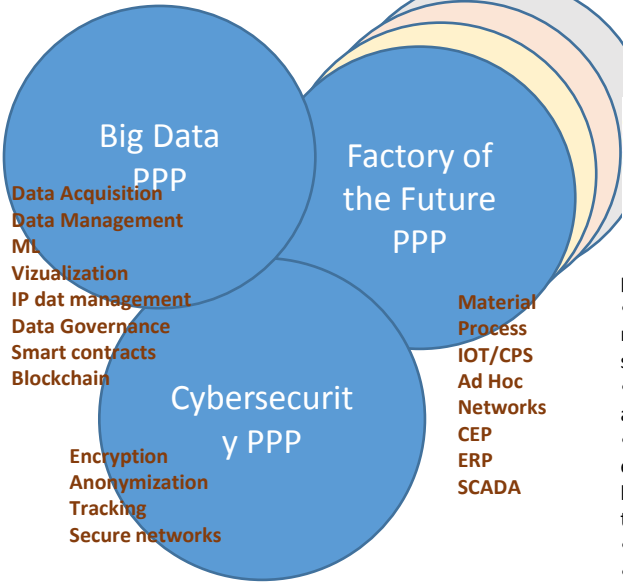
**Boost European Big Data Value research, development and innovation and to foster a positive perception of Big Data Value.**



One of the 4 reference Platform for Big Data Innovation Space



Contribution to BOOST project



- Foster and protect from cyber threats the growth of the European Digital Single Market;
- Develop the cybersecurity market in Europe and the growth of a competitive cybersecurity and ICT industry, with an increased market position;
- Develop and implement cybersecurity solutions for the critical steps of trusted supply chains, in sectoral applications



- high-tech manufacturing processes,
- adaptive and smart manufacturing equipment and systems,
- resource-efficient factory design, and data management;
- collaborative and mobile enterprises, networked factories linking dynamically supply chains to local production;
- human-centred manufacturing
- customer-focused manufacturing: linking products and processes to innovative



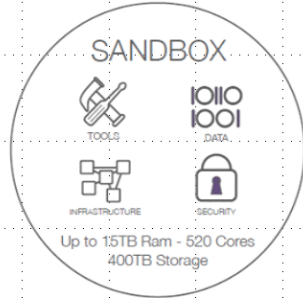
Contribution to MIDIH project



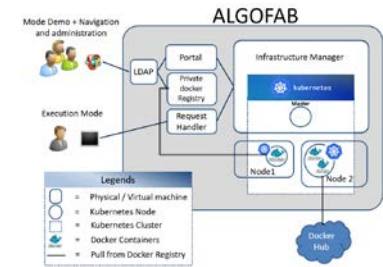
# STATE OF THE ART, AND BEYOND



## APACHE Suite, Open source



## Algofab : a ready to use IA toolbox



## In Memory analytics



## Block Chain POC

A) Application: contrat d'accès  
Paramétrage du contrat d'accès smart contract  
Gestion des clés c'accès  
Traçabilité  
Audit

B) Données cryptées  
Sur Teralab pour la maquette  
Toute options ouvertes pour le passage à l'échelle



C) Operateur de consensus  
Vérification du contrat d'accès  
Fourniture des clés

Emulation sur 12 Serveurs  
Possibilité de tester plusieurs algo  
Options passage à l'échelle  
• Déploiement au sein d'un consortium  
• Operateurs commerciaux  
• Open type ethereum

## Deep Learning



3x Faster  
Celle Performance

CPU	
GPU	1x
GPU	3x
GPU	4x
GPU	5x
GPU	6x
GPU	7x
GPU	8x
GPU	9x
GPU	10x
GPU	11x
GPU	12x
GPU	13x
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GPU	96x
GPU	97x
GPU	98x
GPU	99x
GPU	100x

- INFRASTRUCTURE
- Pour la maquette de service applicatif : 2 serveurs Debian Desktop ( pour la maquette de service) de 16GO 4 cœurs
  - Pour l'émulation des serveurs de l'opérateur consensus : 4 autres serveurs des 8Go et 2 cœurs, 4 autres de 4Go et 1 seul cœur, et 4 entre encore de 2Go et 1 cœur.
  - Toutes les machines ont accès à internet, au niveau de la taille disque min 40Go sur chacune, et 500Go sur les 2 serveurs de 16GO.
  - Procédure installation : Docker

# TOWARD TRUSTED AI DATA MARKETPLACE & DISTRIBUTED DATA SHARING

AI algorithms have been around for quite a while , they are improving everyday  
Major breakthrough is the availability to collect and manage huge amount of data.

Beyond GO game and speech recognition this is now the entire socioeconomic world who will need to share and access data in trusted, secure, sovereign and technically state of the art platforms.

Socioeconomic world will need Trusted Data Market places to fuel the power of AI  
IMT capitalizes on TeraLab: precompetitive platform ;

TeraLab provide a set of “data trust technologies” to experimenters

- **Trusted isolated managed workspaces**
- **« Personal health data » homologation**
- **Novel Encryptions methods**
- **Data Watermarking Technologies**
- **Smart Contracts and notarization for data exchange**