

Innovations stemming from EVOLVE

evolve

Leading the Big Data
Revolution



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825061



Introduction to EVOLVE


Bringing together the HPC, Big Data and Cloud worlds



The **High-Performance Computing** world brings high focus on hardware and software designed to drastically improve application performance: iops, code acceleration, highly parallelized algorithms, bare metal optimization are paramount to HPC applications. However, this highly specialized domain is not easily accessible to SMEs and require very specific skills not affordable to all application domains.

The **Big Data** world brings a versatile and heterogeneous treatment of zettabytes of data with streams, pictures, videos or audio files and huge databases. Big Data leader use processes integrated in automatized workflows designed to extract the most value out of large datasets. But, these still lack the specialization and optimizations that HPC can offer to applications.

The **Cloud** world provides virtualized environments taking advantage of a hidden infrastructure: experts can concentrate on their domain application problems while DevOps can optimize the running environment. The possibility to use multi-tier subscription to services running on very efficient infrastructure allow SMEs to benefit from high-end hardware and optimizations tailored to their needs. But application from the Cloud are not necessarily designed to scale well in Data and compute time and can benefit from the expertise of HPC and Big Data.



What if we could benefit from the best of these worlds?

The EVOLVE Platform combines the expertise of HPC, Big Data and Cloud users
to bring an affordable and efficient platform for applications.



The advantages of EVOLVE

Reduce Time to Market for new products and services powered by HPC

Development and operational costs are reduced

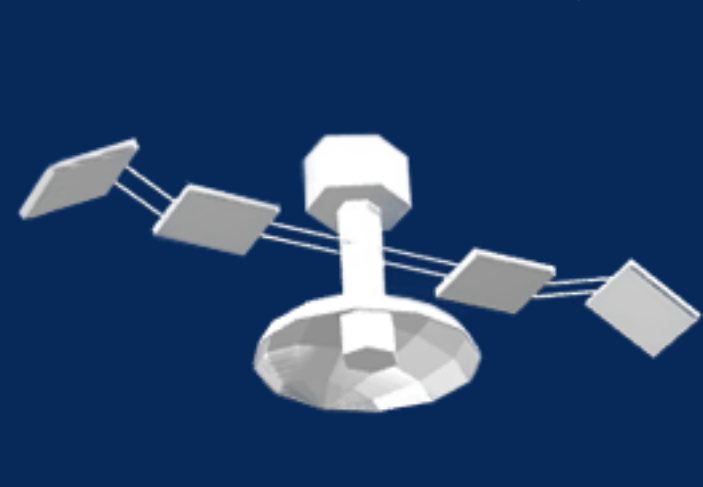
Benefit from greater performances with Big Data Analytics

Easy to deploy, easy to maintain, easy to use

Completely secure and private



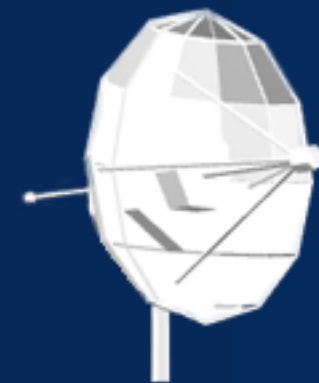
EVOLVE demonstrates its value proposition in the following domains:



Radiometric correction and change detection on Sentinel-2 satellite images.



Optimizing **agricultural production** yield using numerical models and massive historic data (through CybeleTech's numerical simulation and machine learning technologies).



Data-assisted automotive service development.



Automotive data-driven services for vehicle predictive maintenance.



Maritime surveillance at scale and high accuracy, by using massive observation and domain-specific data (using Space Hellas' massive data from satellites and other sensors).



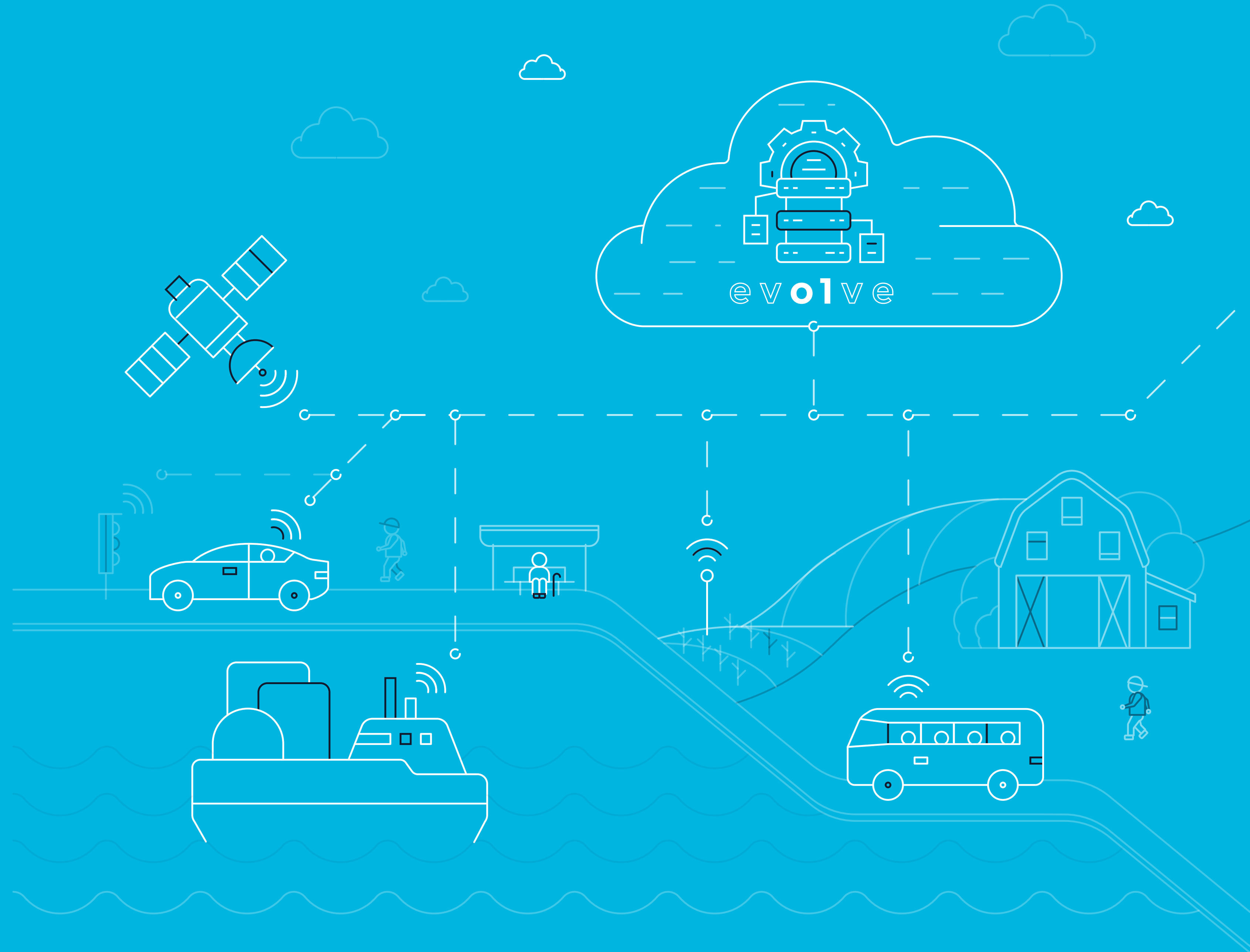
Improvement of public bus services that dominate transportation in Europe.



Advanced vehicle routing algorithms and mobility services optimization.

Our experts are there to understand your needs and improve the platform based on your use cases. You can gain a great competitive advantage by having a platform that scales seamlessly with your datasets. We provide you with performance analysis tools on your application during the project, see your performance grow with each improvement on the platform.

Be part of EVOLVE-Ecosystem



Main innovation for commercialisation

The platform built for the Evolve project represents a point of convergence of the HPC with Big Data and Artificial Intelligence as well as an opening to the cloud. The hardware and software technologies assembled on this platform according to a specific architecture will obviously be re-used for the design of future HPC systems by ATOS/Bull S.A.S who is a global leader in digital transformation and a European leader in HPC.



**Figure 1: EVOLVE Platform
at Atos/Bull Headquarters**

Further innovations

As a whole, EVOLVE delivered a new testbed for data processing that can be deployed in public or private setups. In addition, certain components of the software have particular interest for certain sub-sectors of the industry or certain application domains.

In the next chapters we describe the list of the other commercialization opportunities stemming from the EVOLVE project and the related strategies for commercialization that are associated with each innovation. The project partner(s) best placed to take a particular innovation to the market is also identified.

AccelIX: Hardware and software architectures to support a scalable and interoperable integration of computing acceleration technologies



Karvdash: High-productivity and performance software stack for data science on Kubernetes



Datashim: frictionless access to data for containerized applications



Argus: Holistic performance monitoring system for heterogeneous platform



Skynet: An Adaptive Resource Allocator for Datacentre workloads



VizCon: Visualization and Contextualization Micro-Service



Acritas: Maritime Surveillance Platform



Celso Mobility Dashboard: Real-time Public Transportation Monitoring



Cybel: Imagery for crop detection in agricultural environment



iKube: Interference-aware container orchestrator for application placement on contended Kubernetes clusters



SPARKLE: End-to-end Deep Learning Performance Modeling of Spark In-Memory analytics



Earth Observer: Change detection tool for Earth Observation Sentinel-2 data products



ParsiDetect: Scalable pattern detection in parsimonious streams of sensor measurements



MemoPort: Fully transparent use of real time compression in protocols for remote storage to accelerate transfer of data between clouds and data centers





Hardware and software architectures to support a scalable and interoperable integration of computing acceleration technologies

owner: Bull SAS

Optimal exploitation of Hardware accelerators implies a rethinking of hardware architecture, communication protocols (e.g. cache coherence, memory consistency) and integration within the software stack. Evolve contributes a small part to this big scheme:

- GPU/FPGA-based acceleration (hardware integration, communication interface, synthesis and programming models);
- Interaction and cooperation between acceleration technologies (GPU vs FPGA vs TPU);
- AI-oriented software stack (from the hardware abstraction layer up to AI frameworks).

Features of the Innovation:

Type of innovation:
Significantly improved product

Level of innovation:
Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:
Introduced as new to the market

Main users of the innovation:
Current customers

Market maturity:
Emerging. There's a growing demand and few offerings are available

Market competition:
Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:
Expanding to more markets

Time for commercialisation after project ends:
1-3 years

Other markets for this innovation:
None

Contribution to UN Sustainable Development Goals (SDG):
SDG 9 - Industry, Innovation, and Infrastructure:

- 9.1 - Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
- 9.4 - By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
- 9.5 - Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

SDG 17 - Partnerships for the Goals:

- 17.8 - Technology - ully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology



High-productivity and performance software stack for data science on Kubernetes

owner: FORTH, Sunlight.io

Karvdash is a frontend for facilitating data science on Kubernetes. It provides a web-based graphical user interface to coordinate accesses to the platform, orchestrate service execution in containers from pre-defined templates (including Zeppelin and Jupyter notebooks), and interact with collections of data that are automatically attached to application containers when launched; all in a secure manner. Zeppelin notebooks embed a custom EVOLVE-specific interpreter, for simplifying the definition and deployment of workflows.

Karvdash exploits the available infrastructure and extends the software stack towards the user, imposing a specific usage methodology, which has been tailored to high-performance Big Data analytics applications.

Features of the Innovation:

Type of innovation:

New product

Level of innovation:

Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:

Introduced as new to the market

Main users of the innovation:

New customers

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:

Investor introductions (FORTH, Sunlight.io), expanding to more markets (Sunlight.io), partnership with other SME(s) (FORTH, Sunlight.io), partnership with large corporates (FORTH, Sunlight.io)

Time for commercialisation after project ends:

1-3 years

Other markets for this innovation:

None

Contribution to UN Sustainable Development Goals (SDG):

No. It is a technology innovation, with indirect social impacts that do not map to one of the predefined Societal Challenges.



Frictionless access to data for containerized applications

owner:
IBM Research Europe - Dublin

The Datashim adds the dataset abstraction in Kubernetes as a point of reference to an S3 or NFS data source. Containerized applications do not need to know any detail about the data source and just reference its mnemonic name.

Datashim takes care of all the details of making sure credentials are valid, mounting the data source and attaching to containers, decoupling users of data from the maintenance of the data lifecycle.

Features of the Innovation:

Type of innovation:

New product

Level of innovation:

Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:

No exploitation planned. The exploitation is let to the open source community

Main users of the innovation:

New customers

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Patchy, no major players

Needs to fulfil market potential:

Expanding to more markets

Time for commercialisation after project ends:

1-3 years

Other markets for this innovation:

None

Contribution to UN Sustainable Development Goals (SDG):

Not relevant to any Societal Challenge. It is a technology innovation, with indirect social impacts that do not map to one of the predefined Societal Challenges.

More information available at:

<https://lfaidata.foundation/projects/datashim/>



Holistic performance monitoring system for heterogeneous platforms

owner: Bull SAS, DDN

Monitoring the performance of a heterogeneous system requires the ability to probe the usage of different resources from a variety of technologies and display meaningful metrics to assess performance of the whole solution. Leveraging an existing open-source project, Prometheus, the innovation proposes new connectors and exposes new API to existing products in order to build a comprehensive dashboard of the performance of the system.

Features of the Innovation:

Type of innovation:

Significantly improved product

Level of innovation:

Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:

Only deployed as new to the organisation/company (new internal processes implemented, etc.)

Main users of the innovation:

New and current customers

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:

Expanding to more markets (Bull and DDN); Partnership with large corporates (DDN)

Time for commercialisation after project ends:

1-3 years

Other markets for this innovation:

Yes

Contribution to UN Sustainable Development Goals (SDG):

SDG 9 - Industry, Innovation, and Infrastructure:

- 9.5 - Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.



An Adaptive Resource Allocator for Datacentre Workloads

owner: FORTH

Skynet is a Kubernetes scheduler, which given Performance Level Objectives (PLOs) for applications, dynamically monitors their performance and adjusts allocated resources at runtime.

Our experiments with popular industry services, both in local datacentres and in cloud deployments, show that Skynet allows Kubernetes to decrease the amount of unused resources by 200%, while it reduces PLO violations by 300%.

Features of the Innovation:

Type of innovation:

New product

Level of innovation:

Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:

Introduced as new to the market

Main users of the innovation:

New customers

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:

Investor introductions, biz plan development, partnerships with other SME(s), partnerships with large corporates

Time for commercialisation after project ends:

1-3 years

Other markets for this innovation:

None

Contribution to UN Sustainable Development Goals (SDG):

Not relevant to any Societal Challenge. It is a technology innovation, with indirect social impacts that do not map to one of the predefined Societal Challenges.



Visualization and Contextualization Micro-Service

owner: webLyzard technology

The EVOLVE Visualization and Contextualization Service and the corresponding visual analytics dashboard help analysts to explore big data repositories across multiple metadata dimensions. Special emphasis has been placed on the temporal and geographic dimensions, both in terms of rendering statistical data as well as the ability to put results in the context of the public debate (e.g., news outlets, social media, stakeholder Websites).

Features of the Innovation:

Type of innovation:

Significantly improved product

Level of innovation:

Highly innovative through automated contextualization and classification to integrate structured and unstructured big data

Commercial exploitation:

Introduced as new to the market

Main users of the innovation:

Corporate decision makers, federal agencies as well as application developers who want to integrate visualizations into their solutions

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:

Investor introductions, biz plan development, expanding to more markets, partnership with large corporates

Time for commercialisation after project ends:

Less than 1 year

Other markets for this innovation:

Yes

Contribution to UN Sustainable Development Goals (SDG):

Yes. Contribution to UN Sustainable Development Goals (SDG): Relevant across a wide range of SDGs (see www.weblyzard.com/unep-live), particularly #8, #9, #13 and #17.



Visualization and Contextualization Micro-Service

owner: webLyzard technology

The EVOLVE Visualization and Contextualization Service and the corresponding visual analytics dashboard help analysts to explore big data repositories across multiple metadata dimensions. Special emphasis has been placed on the temporal and geographic dimensions, both in terms of rendering statistical data as well as the ability to put results in the context of the public debate (e.g., news outlets, social media, stakeholder Websites).

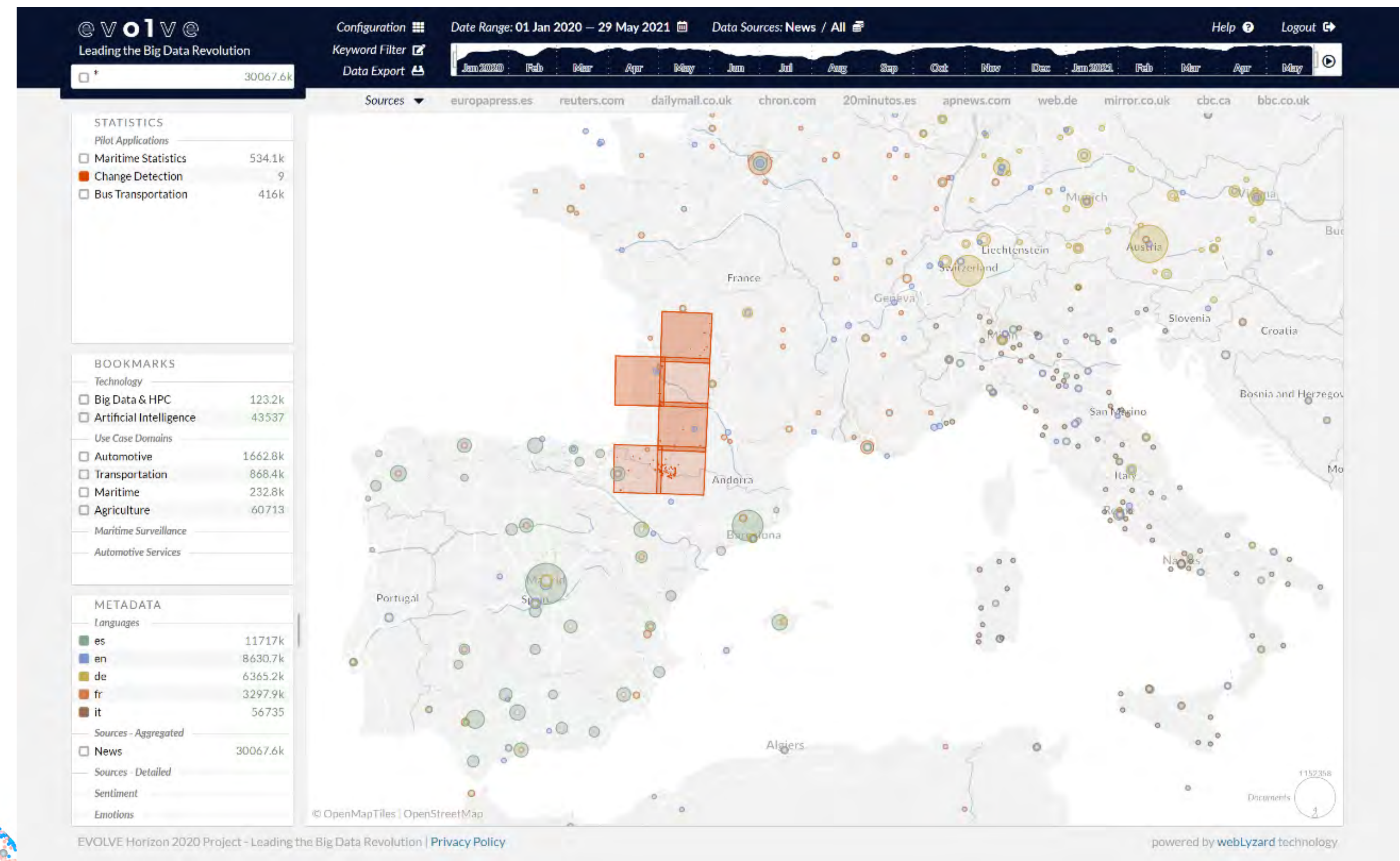


Figure 1. Screenshot of the EVOLVE Visual Analytics Dashboard



Maritime Surveillance Platform

owner: Space Hellas S.A.

The EVOLVE maritime surveillance platform is a composite software application which combines and analyses information from multiple sources, such as satellite images, AIS data and radar tracks, in order to augment the maritime situational picture.

Features of the Innovation:

Type of innovation:

Significantly improved product

Level of innovation:

Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:

Introduced as new to the market

Main users of the innovation:

Current customers

Market maturity:

Mature. The market is already supplied with many products of the type proposed

Market competition:

Several major players with strong competencies, infrastructure and offerings

Needs to fulfil market potential:

Biz plan development, expanding to more markets

Time for commercialisation after project ends:

Less than 1 year

Other markets for this innovation:

None

Contribution to UN Sustainable Development Goals (SDG):

SDG 16 - Peace, Justice and Strong Institutions:

- 16.1 - Significantly reduce all forms of violence and related death rates everywhere
- 16.4 - By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime

Real-time Public Transportation Monitoring

owner: MemEx Srl

Through the technologies and the innovative solutions implemented in EVOLVE project, MemEx aims to obtain an innovative tool which allows to the Public Transport operators to have information concerning both the traffic congestion on PT network and the PT service. Thanks to the solutions and high computational resources of EVOLVE platform the travel time and related delays will be estimated in a real time way.

Features of the Innovation:

Type of innovation:

Significantly improved product

Level of innovation:

Very innovative

Commercial exploitation:

Only deployed as new to the organisation/company (new internal processes implemented, etc.)

Main users of the innovation:

New customers

Market maturity:

Emerging: There is a growing demand and few offerings are available

Market competition:

Patchy, no major players

Needs to fulfil market potential:

Investor introductions, partnerships with large corporates

Time for commercialisation after project ends:

1-3 years

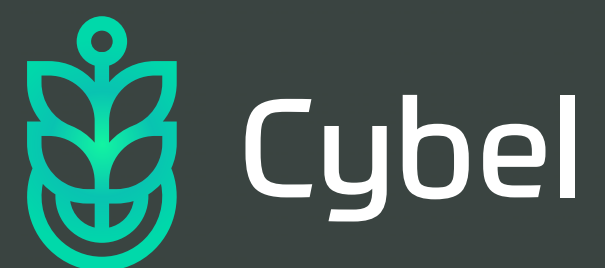
Other markets for this innovation:

None

Contribution to UN Sustainable Development Goals (SDG):

SDG 9 - Industry, Innovation, and Infrastructure:

- 9.5 - Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending



Imagery for crop detection in agricultural environment

owner: CybeleTech

The objective is to deploy deep learning algorithms to detect the agricultural crop in place at a given geographical point. This technology helps cooperatives to better organize and prepare harvests and stock management.

Features of the Innovation:

Type of innovation:

Significantly improved service (except consulting services)

Level of innovation:

Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:

Introduced as new to the market

Main users of the innovation:

New customers

Market maturity:

Emerging: There is a growing demand and few offerings are available

Market competition:

Several major players with strong competencies, infrastructure and offerings

Needs to fulfil market potential:

Investor readiness training, investor introductions, expanding to more markets, partnerships with large corporates

Time for commercialisation after project ends:

Less than 1 year

Other markets for this innovation:

Edge, Fog, Cloud Computing

Contribution to UN Sustainable Development Goals (SDG):

SDG 2 – Zero Hunger

- 2.4 - By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality and public and private research and development spending



Interference-aware container orchestrator for application placement on contended Kubernetes clusters

owner:
ICCS

iKube is an interference-aware custom scheduler for Kubernetes, able to efficiently place applications on a cluster of available machines. Using a universal approach for every kind of workload behaviour and duration, iKube aims to maximize resource utilization and minimize application execution delays provoked by interference phenomena. Compared to prior works, we use low-level metrics, which describe micro-architectural events, capable of providing useful information in terms of the resource under contention, namely the origin of a system's inability to serve workloads' needs efficiently.

Features of the Innovation:

Type of innovation:

Significantly improved product

Level of innovation:

Some distinct, probably minor, improvements over existing products

Commercial exploitation:

Only deployed as new to the organisation/company (new internal processes implemented, etc.)

Main users of the innovation:

NA

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Several major players with strong competencies, infrastructure and offerings

Needs to fulfil market potential:

Investor readiness training, Investor introductions, Mentoring or Coaching

Time for commercialisation after project ends:

1-3 years

Other markets for this innovation:

None

Contribution to UN Sustainable Development Goals (SDG):

SDG 9 – Industry, Innovation, and Infrastructure



End-to-end Deep Learning Performance Modeling of Spark In-Memory analytics

owner :
ICCS

Apache Spark is a unified analytics engine for big data and machine learning workloads. Spark exposes more than 150 parameters that can be tuned to alter the configuration of several aspects of the engine itself, which in turn affect the performance of deployed applications. However, analysing and exploring the impact of various configurations on the performance of Spark applications and also examining the inter-correlation between different parameters is a painful procedure for developers, due to i) the high-dimensional configuration space, ii) the huge, cumulative, running time required and iii) the time required to comprehend in depth the purpose of each parameter.

Sparkle tackles this challenge by providing a parameter auto-tuning framework for Spark in-memory analytics. It relies on deep learning techniques to model performance of Spark application's and utilizes a genetic optimization algorithm to efficiently traverse through the parameter search space efficiently.

Features of the Innovation:

Type of innovation:

Significantly improved service (except consulting services)

Level of innovation:

Innovative but could be difficult to convert customers

Commercial exploitation:

Only deployed as new to the organisation/company (new internal processes implemented, etc.)

Main users of the innovation:

NA

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:

Investor introductions, Expanding to more markets, Incubation/Startup accelerator

Time for commercialisation after project ends:

Less than 1 year

Other markets for this innovation:

Yes

Contribution to UN Sustainable Development Goals (SDG):

Not relevant to any SDG



Change detection tool for Earth
Observation Sentinel-2 data products

owner :
THALES ALENIA SPACE FRANCE SAS

The change detection tool provides generic change detection maps for pairs of time-consecutive Sentinel-2 images that represent exactly the same field of view.

To do this, Sentinel-2 images are first projected into a more representative feature space thanks to a trained neural network model, and then, the distance metric between a couple of images in this space is calculated in order to generate the change detection maps.

Features of the Innovation:

Type of innovation:

New service

Level of innovation:

Innovative but could be difficult to convert customers

Commercial exploitation:

Introduced as new to the market

Main users of the innovation:

New customers

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:

Expanding to more markets, Executive Training

Time for commercialisation after project ends:

Less than 1 year

Other markets for this innovation:

Yes



Change detection tool for Earth Observation Sentinel-2 data products

owner :
THALES ALENIA SPACE FRANCE SAS

The change detection tool provides generic change detection maps for pairs of time-consecutive Sentinel-2 images that represent exactly the same field of view.

To do this, Sentinel-2 images are first projected into a more representative feature space thanks to a trained neural network model, and then, the distance metric between a couple of images in this space is calculated in order to generate the change detection maps.

Features of the Innovation:

Contribution to UN Sustainable Development Goals (SDG):

SDG 2 - Zero Hunger: 2.4 - By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality | SDG 3 - Good Health and Well-being: 3.9 - By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination | SDG 6 - Clean Water and Sanitation: 6.3 - By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally | SDG 9 - Industry, Innovation, and Infrastructure: 9.1 - Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all | SDG 11 - Sustainable

Cities and Communities: 11.1 - By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums; 11.3 - By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries; 11.4 - Strengthen efforts to protect and safeguard the world's cultural and natural heritage; 11.7 - By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities | SDG 12 - Responsible Consumption and Production: 12.2 - By 2030, achieve the sustainable management and efficient use of natural resources | SDG 13 - Climate Action: 13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries | SDG 15 - Life On Land: 15.3 - By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world; 15.4 - By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development



Scalable pattern detection in parsimonious streams of sensor measurements

owner: VIRTUAL VEHICLE
RESEARCH GMBH

When searching for rare patterns in measurement data, huge amounts of data must be examined. A large part of the data is processed in vain because it does not contain the patterns sought. Our innovation offers a scalable method to examine parsimonious data streams (low volume & frequency) with little computational effort for segments that contain the pattern with high probability. Only these segments are examined with more precise methods for the presence of the pattern and eventually stored.

Features of the Innovation:

Type of innovation:

Significantly improved process

Level of innovation:

Obviously innovative and easily appreciated advantages to customer

Commercial exploitation:

Only deployed as new to the organisation/company (new internal processes implemented, etc.)

Main users of the innovation:

New and current customers

Market maturity:

Emerging: There is a growing demand and few offerings are available

Market competition:

Several major players with strong competencies, infrastructure and offerings

Needs to fulfil market potential:

Investor readiness training; Investor introductions; Partnership with large corporates

Time for commercialisation after project ends:

1-3 years

Other markets for this innovation:

Yes. All organizations that collect time series data independent from their industrial sector

Contribution to UN Sustainable Development Goals (SDG):

Not relevant to any Societal Challenge. Applicable to all types of organizations that collect time series data independent from their industrial sector / application domain



Fully transparent use of real time compression in protocols for remote storage to accelerate transfer of data between clouds and data centers

owner:
MemoScale AS

Transmission of data can become a bottleneck in workflows when data is stored on a location separate from where it is being processed. This problem is alleviated by making sure all data being sent is fully compressed with optimal compression algorithms. The MemoPort software compresses all the data being sent, and decompresses it on the receiving side. The compression is performed in real time and integration is transparent supporting the S3 transmission protocol on both sides of the connection.

Features of the Innovation:

Type of innovation:

Significantly improved product

Level of innovation:

Some distinct, probably minor, improvements over existing products

Commercial exploitation:

Introduced as new to the market (commercial exploitation)

Main users of the innovation:

New customers

Market maturity:

Emerging. There's a growing demand and few offerings are available

Market competition:

Established competition but none with a proposition like the one under investigation

Needs to fulfil market potential:

Expanding to more markets; Partnership with large corporates

Time for commercialisation after project ends:

1-3 years

Other markets for this innovation:

Yes. Autonomous cars

Contribution to UN Sustainable Development Goals (SDG):

SDG 9 - Industry, Innovation, and Infrastructure:

- 9.1 - Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all;
- 9.4 - By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities;
- 9.5 - Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

SDG 17 - Partnerships for the Goals:

- 17.8 - Technology - fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology

According to the European Commission's Innovation Radar¹, the EVOLVE project “shows a high potential for innovation, with concrete examples that are expected to make it to the market in 1-3 years”.

¹The Innovation Radar is a European Commission initiative to identify high potential innovations and innovators in EU-funded research and innovation projects. It's goal is to allow every citizen, public official, professional and business person to discover the outputs of EU innovation funding and give them a chance to seek out innovators who could follow in the footsteps of companies such as Skype, TomTom, ARM Holdings, all of whom received EU funding in their early days. This platform is a first step to achieving such ambitions by making information about EU-funded innovations from high-quality projects visible and accessible to the public via the Innovation Radar platform (<https://www.innoradar.eu/>) .

Be part of EVOLVE Ecosystem

The EVOLVE ecosystem aims to establish and nurture a network that will empower open innovation based on the platform that the evolve project is building. The EVOLVE ecosystem brings together all the policy makers, research organizations, engineers, developers and companies acting as end-users that are actively working on the fields of high-performance computing, big data and cloud.

The EVOLVE ecosystem will also facilitate innovative enterprises (large industries, SMEs, creative start-ups and university students – bachelor, master, PhD level) to develop and test their novel solutions.

Check the advantages of being part of the network and apply for membership



Consortium



DDN STORAGE
www.ddn.com



BULL
www.atos.net



IBM
www.ibm.com



FORTH
www.ics.forth.gr



Sunlight
www.sunlight.io



Institute of communications and computer systems
www.microlab.ntua.gr



MemoScale
www.memoscale.com



webLyzard technology
www.weblyzard.com



LOBA
www.loba.pt



Thales Alenia Space
www.thalesgroup.com



Space Hellas
www.space.gr



CybeleTech
www.cybeletech.com



Neurocom Luxembourg
www.neurocom.eu



MemEX
www.memexitaly.it



Tiemme SPA
www.tiemmespa.it



Virtual Vehicle
www.v2c2.at



AVL List GmbH
www.avl.com



BMW AG
www.bmw.com



KOOLA
www.koola.io

Follow us on:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825061

Follow the project
www.evolve-h2020.eu