evolve

Leading the Big Data Revolution

Big data, a big opportunity for growth and innovation

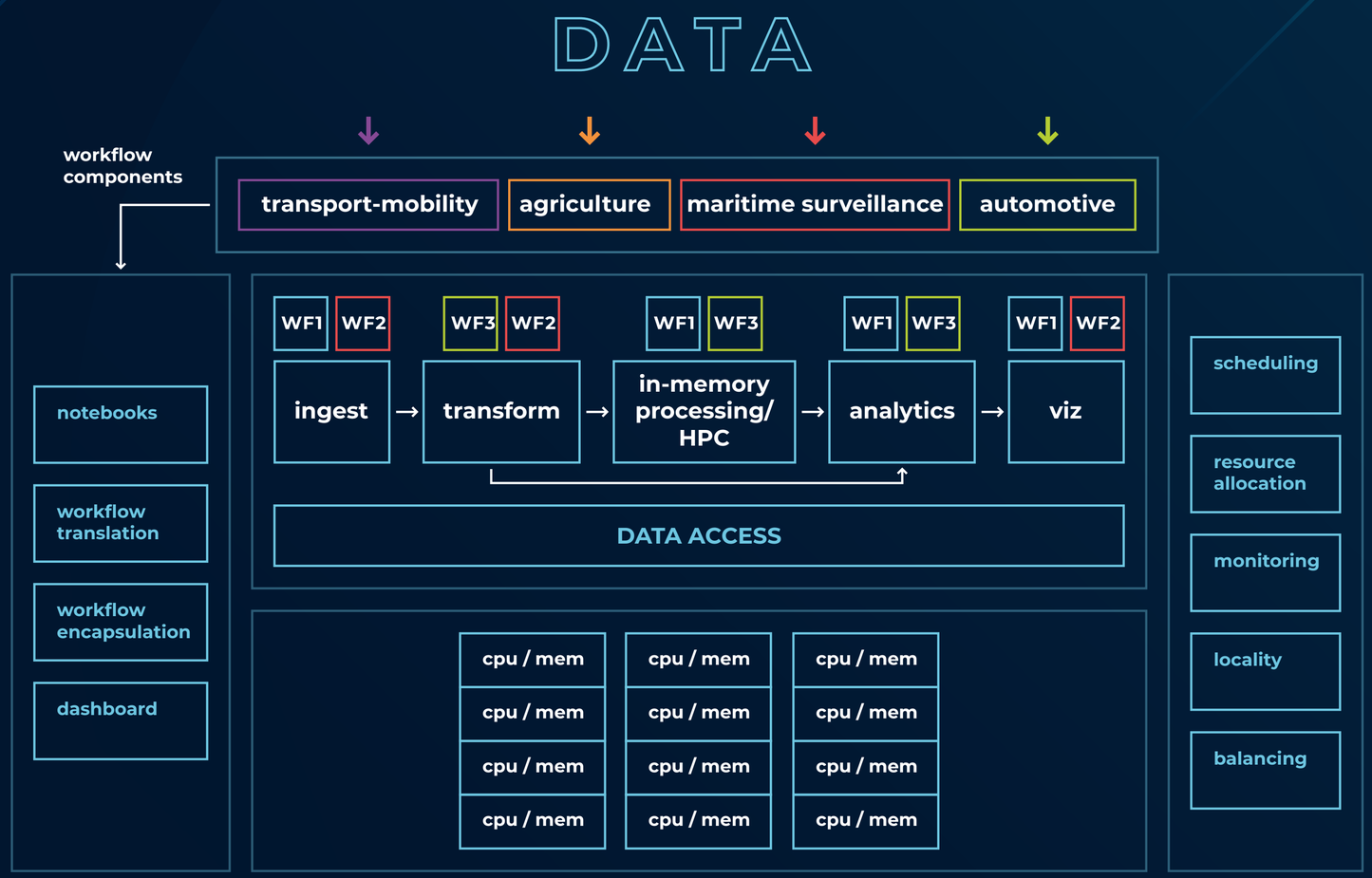
As data becomes the centre of innovation in modern economy and society, we start to face new challenges and limitations. Although tremendous progress has happened over the past several years on increasing productivity for data processing over commodity systems and providing new services with Big Data and Cloud technologies, the projected data deluge brings business, consumers, and the society in general at a new frontier: how can we process massive data that require demanding computation?

Creating new data-intensive services in terms of dataset size and data processing is an onerous and costly process that requires deep expertise. It requires high performance beyond what commodity systems can achieve, describing business logic typically by writing applications code, complex software stacks that are hard to deploy and maintain, and the need to use dedicated, per application, testbeds for achieving the desired performance levels. However, most organisations today lack these resources and the associated expertise.

EVOLVE is addressing these issues as it offers new (High Performance Computing) HPC-enabled capabilities in data analytics for processing massive and demanding datasets without requiring extensive IT expertise.

Leading the Big Data Revolution

At the centre of EVOLVE lies an advanced HPC-enabled testbed that is able to process unprecedented dataset sizes and to deal with heavy computation, while allowing shared, secure, and easy deployment, access, and use.



EVOLVE's testbed is a concrete step in bringing together features from the Big Data, High Performance Computing (HPC) and Cloud worlds, directly contributing to their convergence.

HPC

An advanced computing platform with HPC features and systems software.

Big Data

A versatile big data processing stack for end-to-end workflows.

Cloud

Ease of deployment, access, and use in a shared manner, while addressing data protection.

Evolve's **testbed** is based on:

Advanced Computing Platform

The main aspects of EVOLVES's hardware platform are its large scale, fast interconnect and memory. EVOLVE core architectural contribution is harnessing accelerators. The testbed will support accelerated nodes by GPU, FGPA and specialised processors.

Storage Subsystem Architecture

In EVOLVE the storage is envisioned as a tiered architecture. The storage subsystem uses a shared Infinite Memory Engine (IME) and fast local "non-volatile memory express" storage devices. Storage will be extended with advanced data protection, compression an encryption features.

Safety & Ease of Deployment, Access & Use:

EVOLVE will provide shared access to the testbed for improving productivity and Total Cost of Ownership (TCO). Cloud native technology will be used for the deployment of containerised high performance applications. End-to-end encryption will ensure safety and privacy.

End-to-end Workflows

EVOLVE is using end-to-end workflows that express full data-processing pipelines, including data ingest from external sources with time constraints. The Extract-Transfom-Load process will be fully supported for all pilot applications.

Versatile Software Stack

To realize workflows, EVOLVE is providing a versatile software stack that employs existing data processing engines that have proven flexibility and breadth of applicability.

Performance

Reduced turn-around time for domain-experts, industry (large and SMEs) and end-users.

Experts

Increased productivity when designing new products and services, by processing large datasets.

Businesses

Reduced capital and operational costs for acquiring and maintaining computing infrastructure.

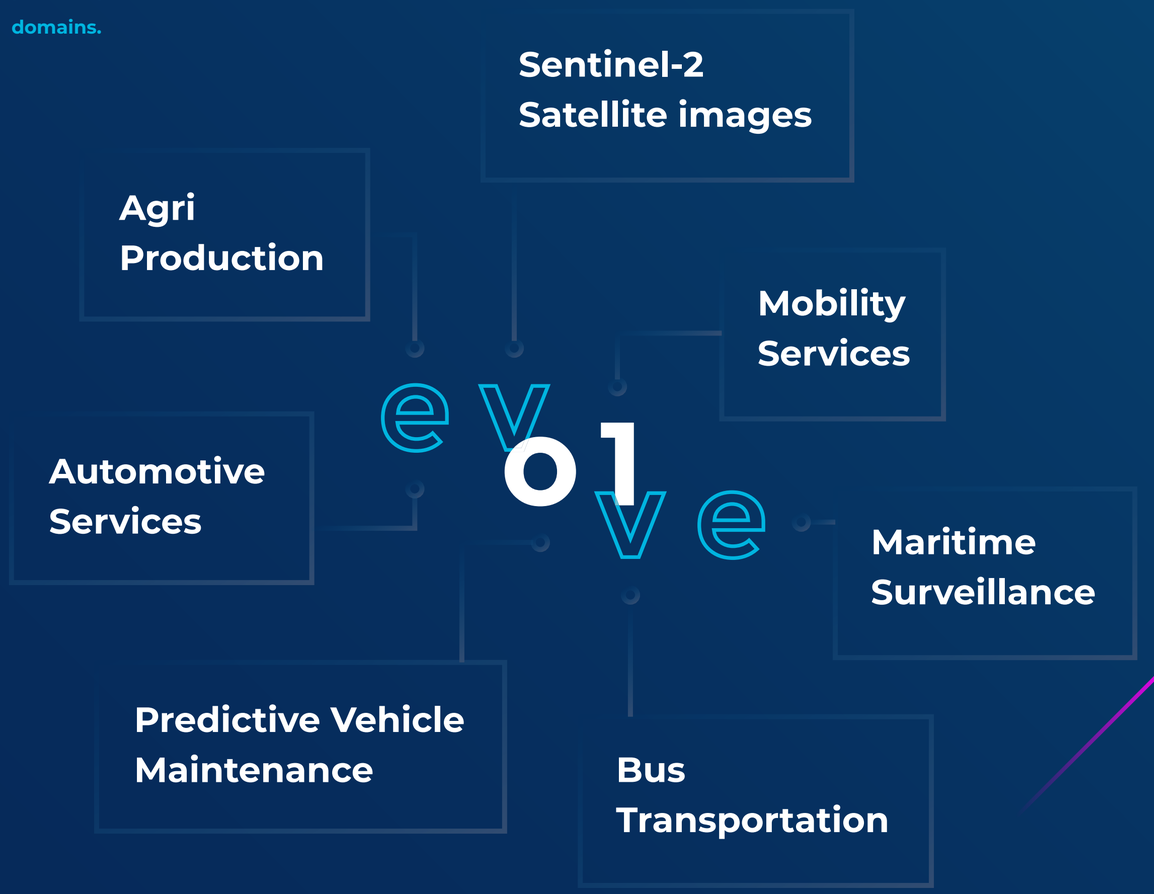
Society

Accelerated innovation via faster design and deployment of innovative services that unleash creativity.

7 Pilots & Domains

putting EVOLVE's testbed into practice

The benefits of EVOLVE's testbed will be demonstrated through pilots implemented in seven domains.



In all cases, domain experts are working on models that provide accurate predictions, data processing and validation techniques over massive datasets and have the potential to improve substantially the efficiency of existing or introduce new services in the respective domains.

When technology meets social needs

EVOLVE will use technologies in markets where data capability is already the source of disruption, or is the turn point of being disrupted, these markets, used as case studies in EVOLVE, are socially critical for European citizens, like mobility (autonomous vehicle, ground mass transportation, maritime transport), agriculture and urban planning.

EVOLVE is not a pure technology project but frames itself in the more global perspective of data ownership in an open society

. Jean-Thomas Acquaviva, DDN Storage .
coordinator of the EVOLVE Project

Consortium

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www.ddn.com

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Follow us on:

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