

Autopoietic Cognitive Edge-cloud Services

Deliverable 6.1 ACES Brochure and Public Website

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D6.1 – ACES Brochure and Public Website

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The ACES consortium consists of the following partners:

No	Partner Organisation Name	Abbreviation	Country
1	INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES, INVESTIGACAO E DESENVOLVIMENTO EM LISBOA	INESC ID	PT
2	HIRO MICRODATACENTERS B.V	HIRO	NL
3	TECHNISCHE UNIVERSITAT DARMSTADT	TUD	DE
4	LAKESIDE LABS GMBH	LAKE	AT
5	UNIVERZA V LJUBLJANI	UL	SI
6	UNIVERSIDAD POLITECNICA DE MADRID	UPM	ES
7	MARTEL GMBH	MAR	CH
8	SCUOLA UNIVERSITARIA PROFESSIONALE DELLA SVIZZERA ITALIANA	IDSIA	CH
9	INDEPENDENT POWER TRANSMISSION OPERATOR SA	IPTO	EL
10	DATAPOWER SRL	DP	IT
11	SIXSQ SA	SIXSQ	CH

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Executive Summary

This document constitutes a preliminary report on the brand developed for the Horizon Europe project ACES. The purpose of this document is to present the latest version of the preliminary brochure and the public website, which will be in turn enriched following the input of the project partners.

1. Introduction

The brochure and public website are a first set of resources for the dissemination and communication of the Horizon Europe project ACES. The production of a branding starter pack is justified by the need to begin communication activities at early stages of the project timeline in a coherent way with the forthcoming efforts. The complete set of resources for dissemination and communication activities is include in D6.2, the 1st Communication, Networking Plan, Dissemination Strategy Report.

2. Website of the project ACES

The Horizon Europe project ACES establishes its online presence through a website: <https://www.aces-edge.eu>. This will be akin to a single point of contact for all information related to ACES project and a pivotal channel for communication and dissemination of the project's activities, findings, and results. Additionally, it will offer the opportunity to stakeholders to follow the developments throughout the project duration and subscribe to the project's newsletter.

2.1 Structure of the website

The first version of the website structure includes:

- Home page
- About
 - Description of the project
 - The Pillars
 - The Partners
- Pilots
 - Downloads
- News

The **Home page** provides an overview of the project and functions as a link to the other sections of the website. The other sections dive deeper into the project. The **About** section includes a page that describes the project's context, the issues addressed, the solution advanced, and the specific objectives of ACES. Additionally, it includes a page about the consortium partners, with a small presentation and brief description. Finally, it includes a page on the governance of the project, including a description of the work packages and the leadership team (i.e., project's coordinator, dissemination manager, PMO, etc.). The section about the **Pilots** gives access to the three use cases of ACES. The current version of the website offers a high-level overview of the pilots, since these will be designed in detail only after the completion of the general blueprint. This section is likely to be the object of the first website update. Finally, we have the **Downloads** and the **News** sections. Note that the News section is not yet part of the first structure of the website (albeit is part of the stage website) because there are no news/articles available yet, as we are just in its preliminary stages. Further, there is a button "Join Us" which opens a contact form used to engage with relevant stakeholders.

The following figures illustrate the Website look and feel.

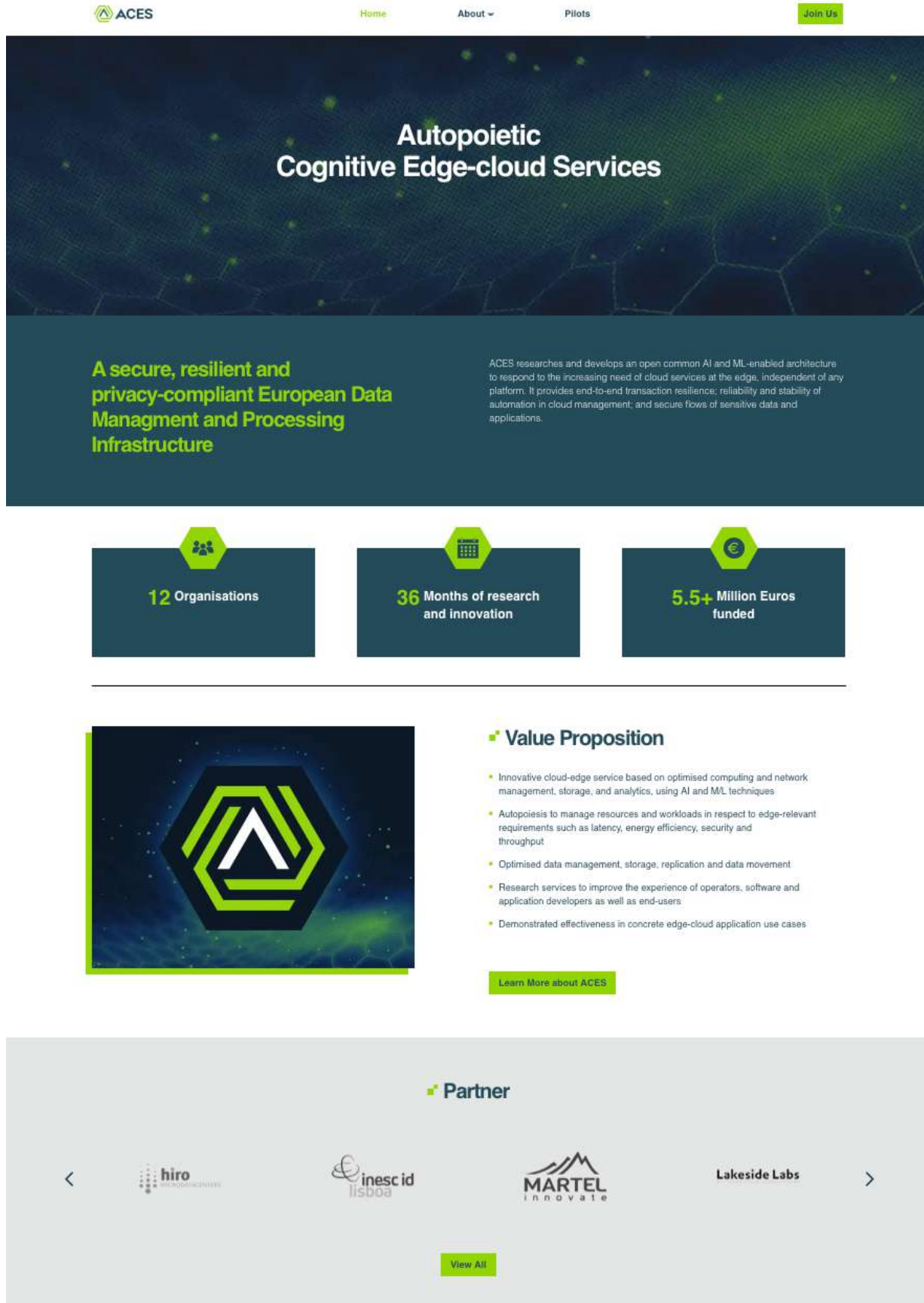


Figure 1 – Home page – first section

Use Cases

- 

Autopoietic edge-cloud data and application service platform
- 

Management agents and tools for awareness; AI and M-L enabled tools to handle workload, service and resource management, data and policy management, telemetry and monitoring
- 

Autopoietic agents for service and throughput stability in challenging service scenarios in terms of workload placement, service and resource management, data and policy handling

The Use Cases test and demonstrate the effectiveness and generalisability of the ACES design and technological solutions. They are based on three real-life application scenarios that take advantage of cognitive edge services with different levels of autonomy and, actionability within the services, the edge service stack and the hardware. These use case will develop dedicated and, geographically distributed edge cloud to demonstrate its effectiveness and efficiency to technologists and end-users and they will be documented appropriately to prove the transferability to other industries and sectors.

[Discover the ACES pilots](#)

Become one of ACES stakeholders

[Join Us](#)

Receive our updates

(about every two weeks)


[Privacy Policy](#)



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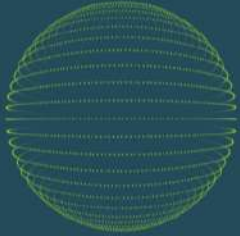
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Figure 2 - Home page - second section

ACES Home About Pilots Join Us

Description of the project

Home > Description of the project



About Us

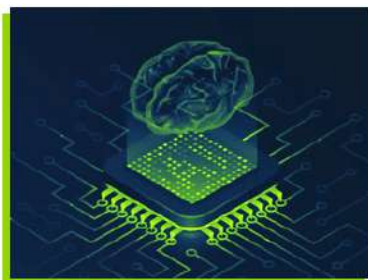
ACES is a three-year research and innovation project funded under the Horizon Europe Framework Programme, Programme HORIZON-CL4-2022-DATA-01, project ID: 101093126. It is promoted by a consortium of 12 organisations, small and medium businesses, research and technology institutions, academia and industry who are leaders in computer engineering, smart manufacturing, public policy, technological development, innovation management, business information system, security and public administrations clusters.

Context and issues

ACES undertakes research and technological innovation to respond to the increasing need of edge-cloud computing and data management and the demand of edge services. ACES edge-cloud data and application services have the potential to enable a new infrastructure model, capable of guaranteeing end-to-end transaction resilience.

The ACES solution provides autonomy and self-regulating mechanisms that provide systems stability, locally and edge-wide. The requirements include the need for a horizontal flow of data and applications between sites as well as tackling issues of bandwidth, energy efficiency, security, and privacy.

Furthermore, the autonomous operations on the platform need to be clearly explainable to operators, application developers and end-users and low-overhead is required in terms of costs, latency, energy, labour.



The solution offered by ACES

ACES will provide an edge-services cloud with hierarchical intelligence, specifically autopoiesis and cognitive behaviours to manage and automate the platform.

These solutions include: Autopoiesis-based edge-services cloud; awareness tools, AI/ML agents for workload placement, service and resource management, data and policy management, telemetry and monitoring; Autopoiesis agents to safeguard stability in situations of extreme load and complexity; Swarm technology-based methodology and implementation for orchestration of resources; Edge-wide workload placement and optimization; App store for classification, storage, sharing and rating of AI models used in ACES.

Key Outcomes



Figure 3 - Description of the project section one

Impact

The aim of ACES is to develop a distributed, opportunistic, collaborative, heterogeneous, self-managed, self-organizing edge services environment, primarily edge-to-edge and secondly on the edge-to-cloud continuum.

The expected impacts of this implementation are:

- Improved placement of Europe in the delivery of secured edge-cloud service platforms in the global scenario
- A reinforced capability of Europe to have available technical, computational and data transmission means to manage urgent societal challenges
- Availability of more effective technologies and tools to manage distributed cloud systems at the edge

More specific impacts of ACES concern:

- the energy sector, facilitating the transition towards a system capable of optimising the relationship between supply and demand and the integration of sustainable energy sources
- the more general impact on the European Green Deal, driving the concept of smart infrastructure and decentralised energy production
- impact on sustainable development goals



Become one of ACES stakeholders

[Join Us](#)



Receive our updates
(about every two weeks)

Your E-mail:



 [Privacy Policy](#)

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Figure 4 – Description of the project section two

Home
About
Pilots
Join Us

The pillars

Home > The pillars

The pillars of ACES

Develop a new modular edge services platform

ACES develops a modular edge-services cloud which will support multiple architectural patterns for creating ad-hoc edge clouds in one site, and across multiple sites. The autopoiesis enables an autonomous configuration, orchestration and management collecting metrics and generating knowledge that intelligent agents use to execute edge-services and cloud requirements such as energy efficiency, availability, scalability, latency, data centrality, security and data protection. The event-driven data-centric architecture will be designed to have high levels of automation and autonomy and supports human operator control.

Creating specific workload management modules

The ACES solution builds on six modules: edge resource collaboration, service deployment, resource clustering at scale, workload placement, network control, workload optimization, in the view to optimize the data management, data storage, data replication.

Optimize the data management, data storage, data replication

The ACES project will provide a distributed storage framework that has "knowledge" of the location of data in several ways: physical location of the data within the edge and across the different edge locations. Personal data will be linked to the current location the user is accessing ACES services from. ACES will develop and deploy data migration and replication solutions to enhance the reliability from some of the ad-hoc resources employed at the edge. Metadata about the data access requests will be logged into a distributed ledger (blockchain). Various access authorizations will grant different control over access to data and data placement on edge systems to ensure privacy. Range of services to be produced: Distributed storage and data movement; Data life cycle management for the edge; Data slicing and management at scale; Telemetry; Edge acceleration; AI security.

ACES improves the experience of operators, end-users and developers by providing specific research services

ACES aims to develop a set of tools for ACES platform operators to check ai/ml models against existing ones. Such set of tools for software developers address two areas: networking and observability; and offer distributed transaction monitoring, performance and latency optimization, root cause analysis, service dependency analysis, distributed context propagation. The following services will be developed in aces: application store; application monitoring; network function synthesis; visualisation of workload placement and orchestration.

Test and demonstrate the effectiveness and generality of ACES by evaluating three real-life use cases of cognitive edge-services

Three different use-cases that are generic enough to be found in and representative for similar use-cases in other industry sectors. Use case 1: Market place & distribution dedicated to the energy grid. Use case 2: Distributed Process Management of the electric market management; Use-case 3: An IoT based Asset Monitoring and Management the introduction of Advanced Metering Infrastructure data along with data from grid-edge sensors and GIS systems has allowed for faster outage detection, accurate outage prediction and more reliable investment planning.

Become one of ACES stakeholders

Join Us

Receive our updates

(about every two weeks)

Submit

Privacy Policy

Figure 5 - The Pillars of ACES

The screenshot shows the ACES website header with navigation links: Home, About, Pilots, and a prominent 'Join Us' button. Below the header is a grid of nine partner logos, each with its name underneath in a dark blue bar. The partners are: Lakeside Labs, Politécnica, University of Ljubljana, IPTO (Independent Power Transmission Operator), Sixsq, Datapower Consulting, Technische Universität Darmstadt, and Idsia Supsi. The bottom-right cell in the grid is empty.

A dark blue banner with a network diagram background. The text reads 'Become one of ACES stakeholders' in white, with a yellow 'Join Us' button centered below it.

A dark blue banner for a newsletter sign-up. It features the text 'Receive our updates' in yellow, followed by '(about every two weeks)' in white. To the right is a white input field labeled 'Your E-mail' and a yellow 'Submit' button.

The footer section includes the ACES logo and a 'Privacy Policy' link on the left. In the center, it states: 'This project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement No. 101093126 (HORIZON-CL4-2022-DATA-01-02)'. On the right are social media icons for LinkedIn, Twitter, and YouTube. At the bottom center, it says 'Copyright 2023 © ACES. All right reserved.'

Figure 6 - The ACES Partnership

2.2 Analytics

For the analytics of the traffic on the website, a GDPR-compliant tool was chosen, Matomo Analytics, which guarantees that collected data is never used for marketing or any other third-party purposes. The data owner retains the full ownership and control over data, knowing exactly which data is used for what purposes.

Matomo Analytics keeps all the data locally and does not share them with any third entity. It is a powerful open source tool, consistently with its name, which means “honesty” in Japanese.

The analytical tool of choice offers:

- Web and mobile analytics
- Conversion Optimization features (Heatmaps, Session Recording, AB Testing, Funnels, Form Analytics)
- Visitor Profiles
- Tag Manager
- No data limits
- No data sampling
- White label reporting and custom designed interface

The site has recently gone online, therefore there is no data yet to be presented in the dashboards.

A few screenshots are presented next to show the data and indicators provided, which will support the analysis and assessment of the KPIs indicated in the ACES proposal.

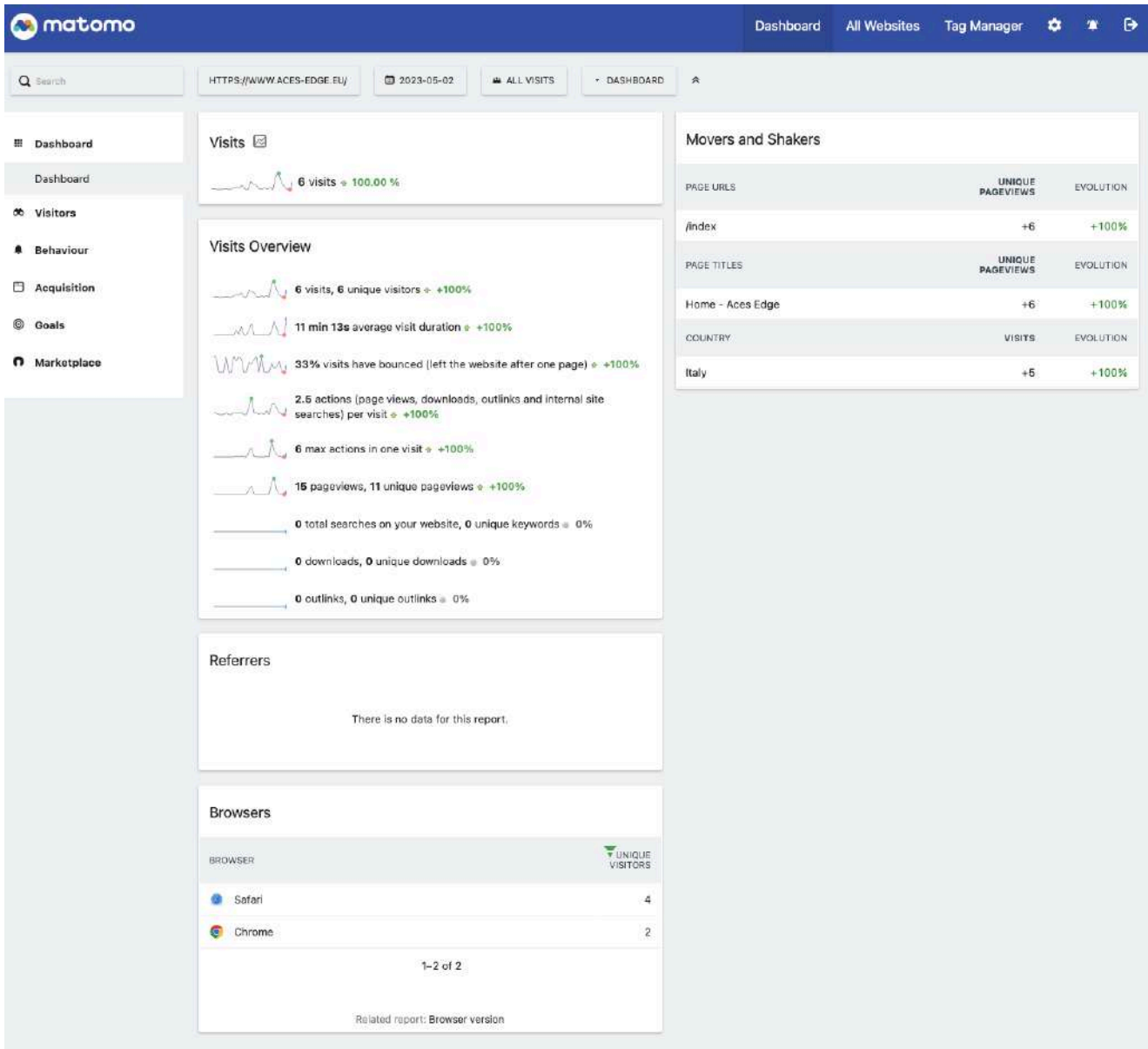


Figure 7 - Web Analytics Dashboard

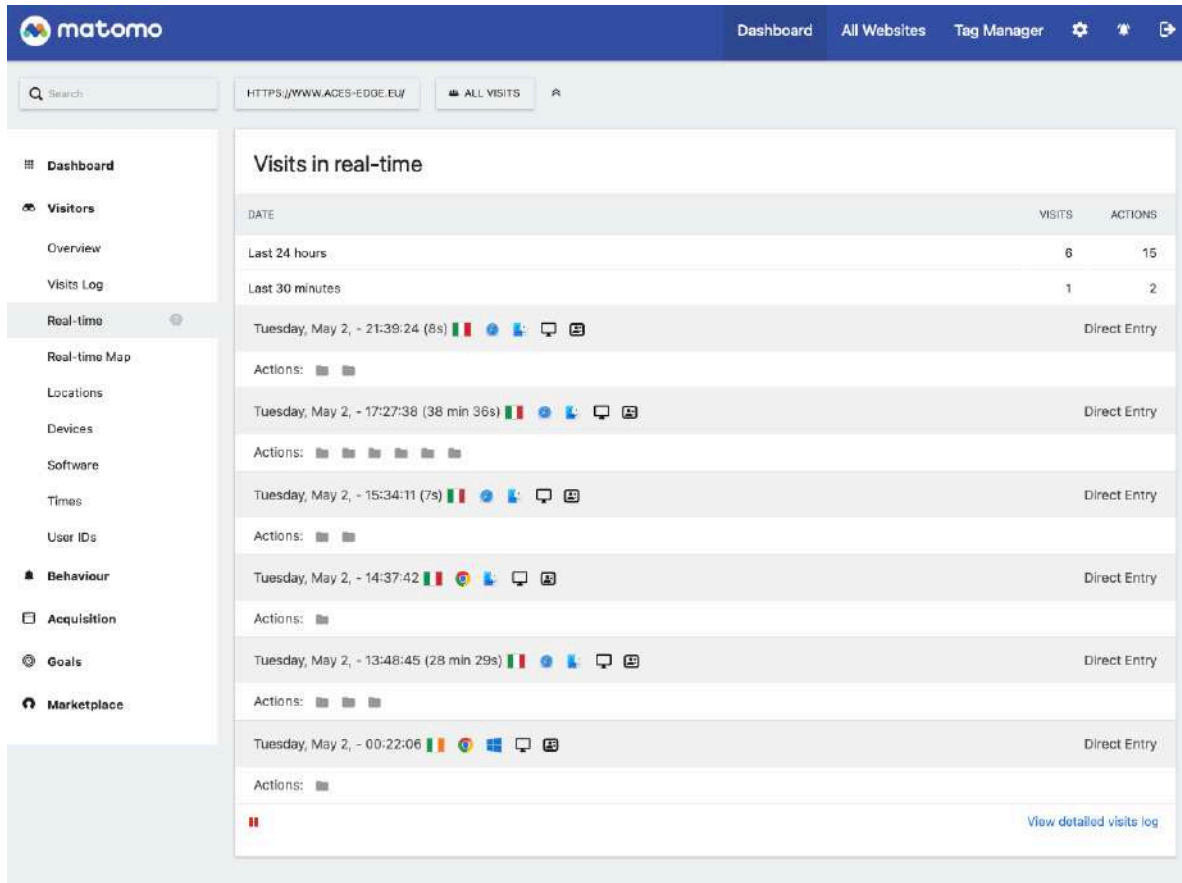


Figure 8 - Visits in real-time

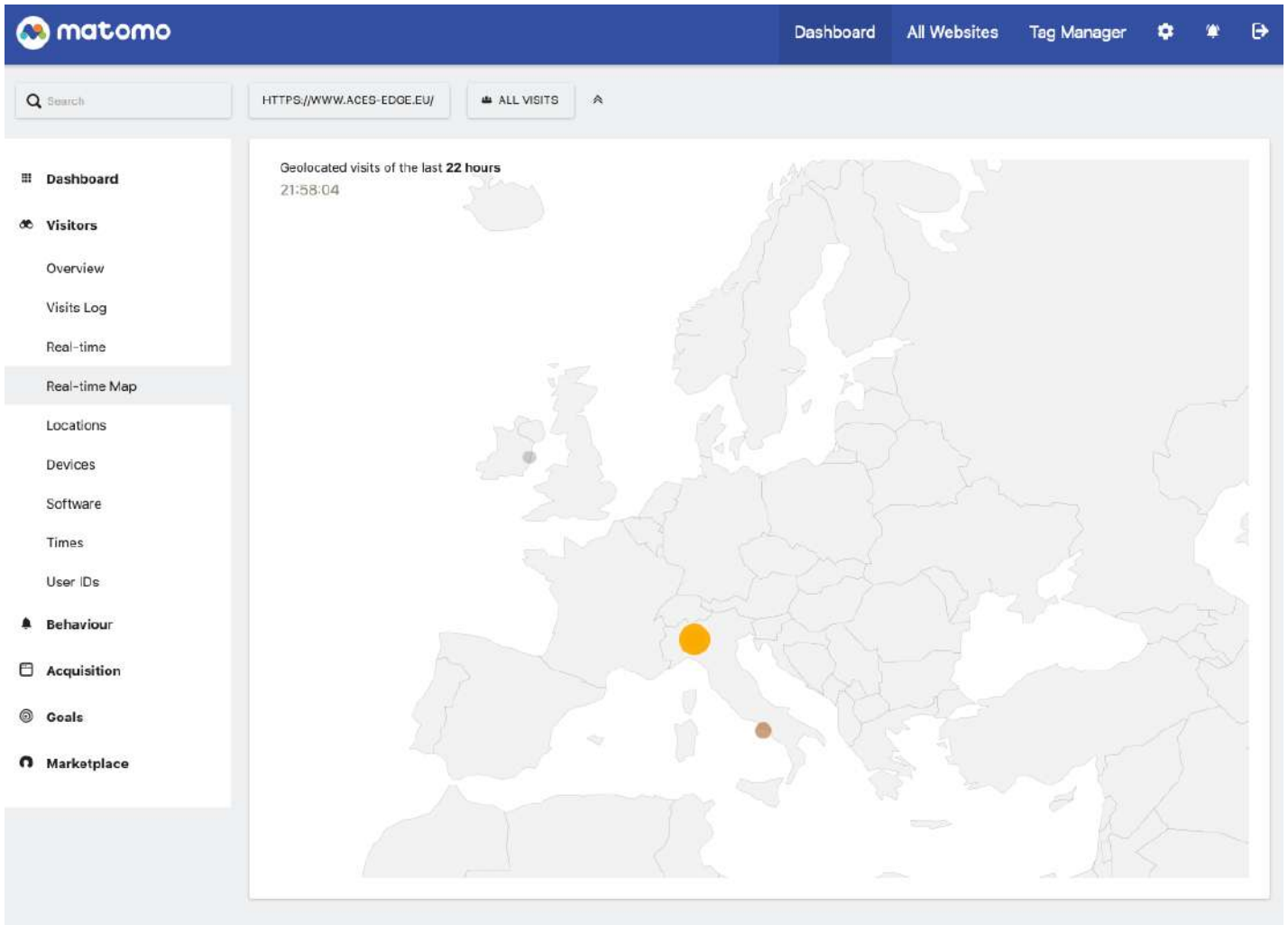


Figure 9 - Real Time Map of traffic

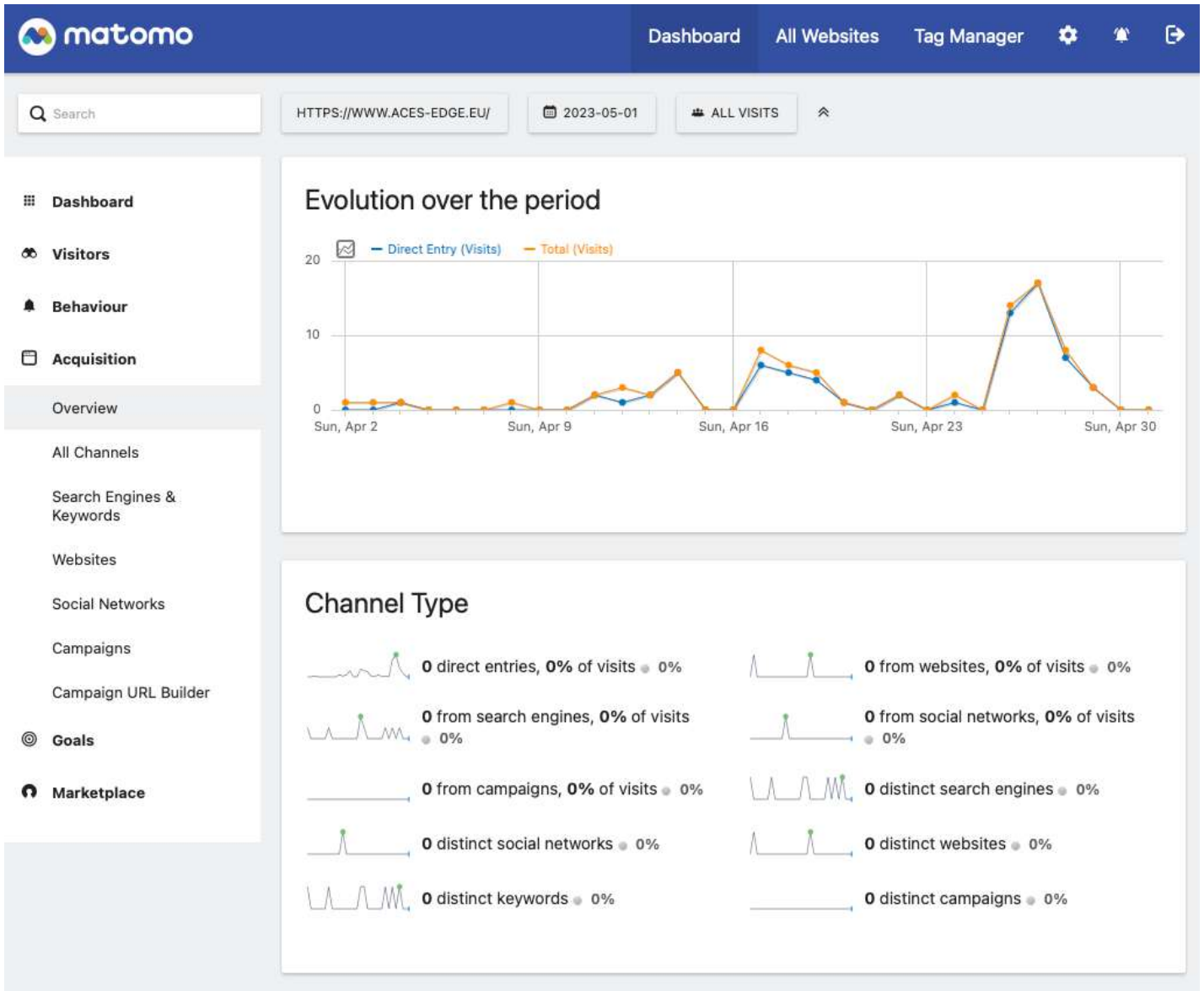


Figure 10 - Acquisition: Monitoring over the period

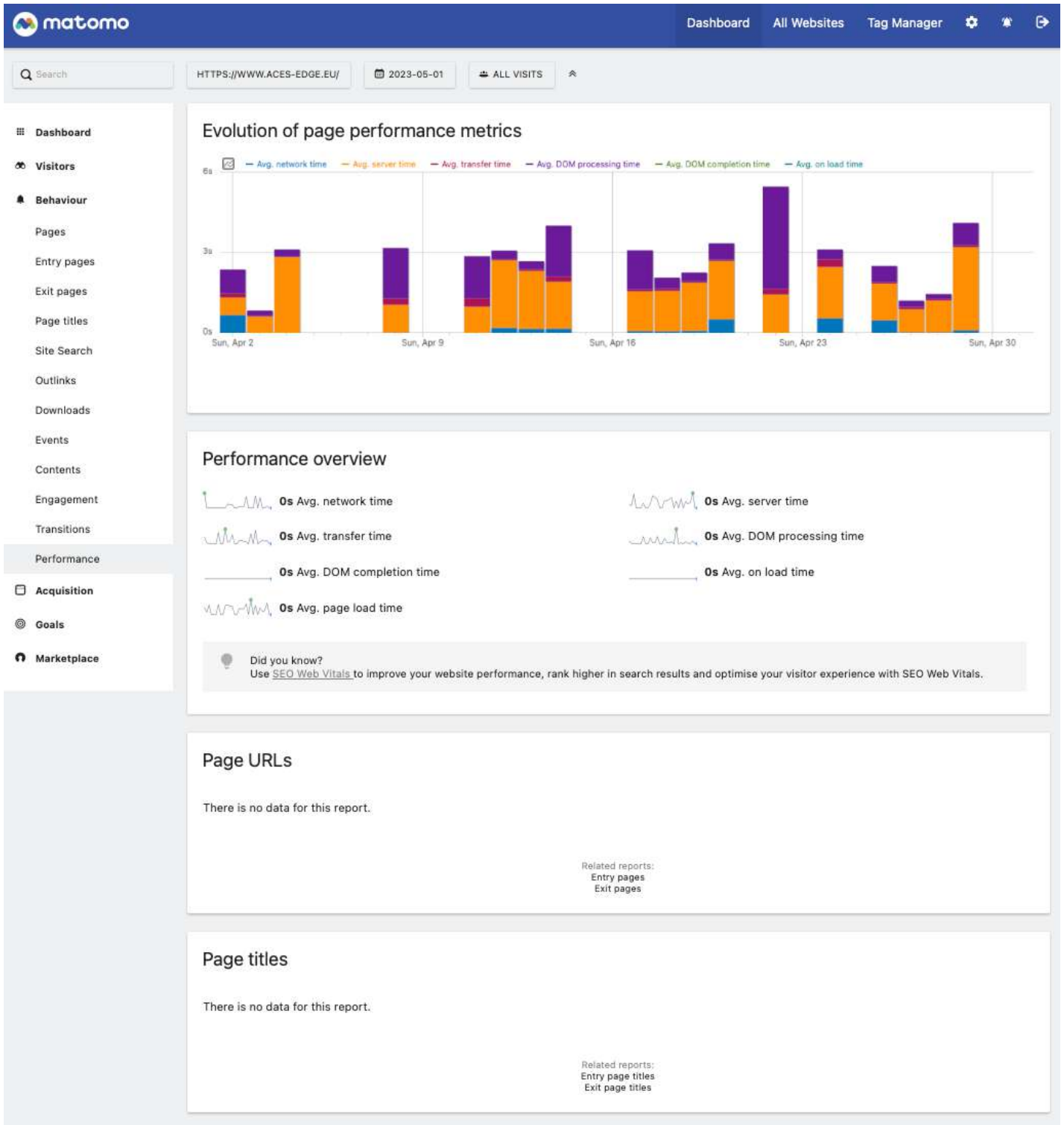


Figure 11 - Evolution of page performance metrics

3. Project brochure

The current version of the brochure is shown in the following figures.



Figure 12 – Brochure (page 1)

12
Organization

36
Months of research and innovation

5.5+
Million Euros funded



About Us

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Context and issues

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Solution

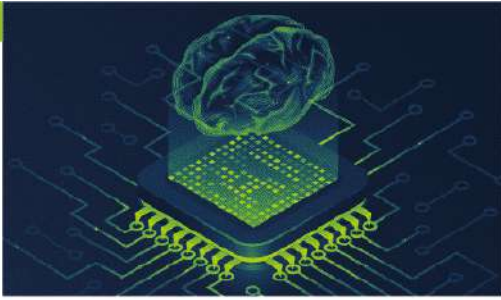
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These solutions include: Autopoiesis-based edge-services cloud; awareness tools, A/ML agents for workload placement, service and resource management, data and policy management, telemetry and monitoring; Autopoiesis agents to safeguard stability in situations of extreme load and complexity; Swarm technology-based methodology and implementation for orchestration of resources; Edge-wide workload placement and optimization; App store for classification, storage, sharing and rating of AI models used in ACES.

Value Proposition

- Innovative cloud-edge service based on optimised computing and network management, storage, and analytics, using AI and ML techniques.
- Autopoiesis to manage resources and workloads in respect to edge-relevant requirements such as latency, energy efficiency, security and throughput.
- Optimised data management, storage, replication and data movement.
- Research services to improve the experience of operators, software and application developers as well as end-users.
- Demonstrated effectiveness in concrete edge-cloud application use cases.

Figure 13 – Brochure (page 2-3)



Impact

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- the more general impact on the European Green Deal, driving the concept of smart infrastructure and decentralised energy production
- Impact on sustainable development goals

Key Outcomes

- 
 Autopoietic edge-cloud data and application service platform
- 
 Management agents and tools for awareness; AI and M-L enabled tools to handle workload, service and resource management, data and policy management, telemetry and monitoring workload placement
- 
 Agents that maintain stability under conditions of extreme complexity and load
- 
 Swarm technology-based solutions for orchestration of resources in the edge and policy handling
- 
 Edge-wide workload placement and optimization service
- 
 App store for ACES AI models classification, storage, sharing and rating

Use cases

The Use Cases test and demonstrate the effectiveness and generalisability of the ACES design and technological solutions. They are based on three real-life application scenarios that take advantage of cognitive edge services with different levels of autonomy and actionability within the services, the edge service stack and the hardware. These use case will develop dedicated and, geographically distributed edge cloud to demonstrate its effectiveness and efficiency to technologists and end-users and they will be documented appropriately to prove the transferability to other industries and sectors.

- (UC1) Market place and asset distribution
- (UC2) Distributed process management
- (UC3) IoT based asset monitoring and management

Figure 14– Brochure (page 4-5)



Figure 15- Brochure (page 6-7)



Figure 16– Brochure (page 8)

The brochure is intended to be printed and distributed mainly in such format, that is mainly electronically. In case it shall be deemed necessary, the brochure will be printed and distributed at every public event organised by the project consortium and ideally also attended by at least one of the partners. The brochure combines an appealing aesthetic on its external side with rich information on the internal side. The content aims to help the reader build a clear understanding of the problem identified by the project and the envisioned solution. The brochure highlights the real-life scenarios where this problem can be witnessed and addressed.

Before printing the brochure physically, the texts will be updated according to the outcomes of the blueprint development workshop.

4. Conclusions

The present document is a report on the development of the brochure and the public website for the Horizon Europe project ACES. With this regard, this report shows the brochure designed for ACES and provides an overview of the designing process. Additionally, it introduces the first version of the website showcasing some of its components and design elements. The next steps in the realm of dissemination and communication activities are the development of a strategy for dissemination and communication in cooperation with the consortium (e.g., synergies with other initiatives, events and publications planned), a review of the materials produced so far that includes feedback from the consortium and accessibility controls, and the full roll-out of communication activities. Specifically, D6.2 contains the communication, networking plan, and dissemination strategy.

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