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Horizon Cloud – The Forum for Strategy Focused Cloud Stakeholders

D2.4: H-CLOUD Community Building and Communication Report (final)

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Abstract

This deliverable presents an overview of the final outcomes of the community building and promotional activities, including the events organisation and participation, conducted by H-CLOUD in the second half of the project and the actions taken to respond to the reviewers advice in the first review. Moreover, it provides an overview of how the communication channels and activities will be taken over and carried forward by H-CLOUD's sister project HUB4CLOUD.

Keywords:

Communication, Community building, Dissemination, Forum, online promotion, social media, events

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Project co-funded by the European Commission in the Horizon Cloud Programme		
Nature of the deliverable:	R*	
Dissemination Level		
PU	Public, fully open, e.g. web	√
CI	Classified, information as referred to in Commission Decision 2001/844/EC	
CO	Confidential to H-CLOUD project and Commission Services	

* R: Document, report (excluding the periodic and final reports)

EXECUTIVE SUMMARY

This deliverable, “H-CLOUD Community Building and Communication Report (final)”, gives an insight into the implemented activities that have been carried out during the second half of the project M13-M27, based on the guidelines and means defined in the deliverable “H-CLOUD Community Building and Communication Strategy and Plan”. It provides an update to the deliverable “H-CLOUD Community Building and Communication Report (interim)” that covered the first half of the project M1-M12 and the later updates of the outreach plan as these were presented in the intermediate Progress Project Review report. This deliverable also reports on the actions taken to respond to the reviewers’ advice we received during the first project review.

The purpose of this deliverable is thereby to:

- Present dissemination and communication results
- Show communication and community building activities that have been implemented, monitored and evaluated by following the defined rules and procedures
- Depict how the methods, tools and promotional material (e.g., project logo, website, printable dissemination material, events, publications) have been used in the project’s dissemination and communication
- Provide a complete overview of the communication activities

Through these means, the H-CLOUD consortium promotes the concept and activities of the project towards a broad range of stakeholders and multipliers, as well as to outreach to the target audiences so they enrol in the ideation and acceleration activities organised or promoted by the consortium.

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ABBREVIATIONS

D	Deliverable
DOA	Description of Action
CC	Cloud Computing
ECC	European Cloud Computing
EC	European Commission
SRIDA	Strategic Research, Innovation and Deployment Agenda
WP	Work Package

1 INTRODUCTION

1.1 Structure of the document

This deliverable “H-CLOUD Community Building and Communication Report (final)” is prepared in the context of **Work Package 2 (WP2) “H-CLOUD Forum”**, which focuses on identifying the relevant stakeholders as well as the preparation of the promotional materials and organising dissemination activities to create a sustainable, informed, and coordinated open Cloud Computing community to remove fragmentation and increase collaboration in Europe and beyond.

The sections of the deliverable at hand are organised in the following manner.

The introductory **Section 1** depicts the vision of H-CLOUD and the fundamental aspects of the community building and communication strategy, including the main objectives, the description of the target audiences and the strategic planning of the envisioned activities.

Section 2 presents the communication and community building achievements during the second year of the H-CLOUD project, including the metrics for the evaluation of these activities.

Section 3 concludes the document, discusses lessons learned during project runtime, and explains how H-CLOUD communication and dissemination channels and activities will be handed-over to and continued by HUB4CLOUD.

1.2 Fundamentals of H-CLOUD’s community building and communication strategy

The main objectives of the H-CLOUD community building and communication strategy are to:

- Communicate and disseminate towards the ongoing Cloud Computing (CC) projects to make them aware of any relevant initiative / news / contents / policy / standard / events, etc., and encourage knowledge transfer, networking, and collaborations.
- Promote the CC projects’ outcomes, best practices, success stories. One key goal for H-CLOUD is to maximise the collective outreach power of the ongoing projects, acting as an amplifier supporting and complementing communication and dissemination efforts across the community for broader impact.
- Ensure broad visibility and promotion of the ECC initiatives and of the H-CLOUD Forum beyond the specific programme borders.

The complete community building and communication strategy is outlined in D2.2. **Based on the reviewers’ feedback during the first project review**, we updated the dissemination messages and actions based on our stakeholders’ needs as indicated below:

- **Cloud technology and service providers.** This group of stakeholders includes a diverse community, spanning from Cloud providers to solutions developers, including Open Source communities.
 - Stakeholders’ Needs:
 - Understand adopters’ challenges and market gaps
 - Influence policies and EC programmes
 - Get insights on future research and technology outcomes
 - Liaise with other stakeholders
 - H-CLOUD value proposition:

- H-CLOUD will provide Cloud technology and service providers with a forum and channels to reach out to stakeholders that will allow them to get insights on adopters' challenges, add relevant strategic directions to respond to such challenges.
- Relevant tools:
 - Presence in the catalogue
 - H-CLOUD Forum
 - Analysis of the adoption challenges (e.g., briefing papers related to that)
 - Strategic directions for Cloud Computing solutions
- **Cloud researchers.** This group includes the variety of researchers working on the different topics linked to Cloud Computing.
 - Stakeholders' Needs:
 - Influence research agendas
 - Find exploitation paths for their research outcomes
 - Liaise with other stakeholders
 - H-CLOUD value proposition:
 - H-CLOUD will provide Cloud researchers with a forum and channels to discuss research priorities, influence research agendas, and reach out potential up-takers of their research outcomes.
 - Relevant tools:
 - Presence in the catalogue & H-CLOUD Forum participation to reach out to up-takers
 - Analysis of the adoption challenges (e.g., briefing papers related to that)
 - Research priorities analysis
- **Cloud solutions adopters.** This group of stakeholders represents the different industrial and public actors that leverage on Cloud Computing solutions to deliver their services and products.
 - Stakeholders' Needs:
 - Influence adoption-related policies
 - Ensure that future solutions match their needs
 - Good practise and adoption path for Cloud solutions
 - Liaise with other stakeholders
 - H-CLOUD value proposition:
 - H-CLOUD will provide Cloud solution adopters with a forum and channels to raise their needs, influence policies to ensure that the market will support such needs, and explore paths to adopt innovative solutions.
 - Relevant tools:
 - Presence in the catalogue as leading adopters
 - H-CLOUD Forum to expose their needs
 - Good practises for innovative Cloud solutions adoption

- Strategic directions for Cloud Computing solutions
- **Policy Makers.** Policy Makers have the role to steer at European, national, and regional level, the regulations linked to Cloud Computing: market regulations, privacy regulations, standardisation policies, etc.
 - Stakeholders' Needs:
 - Get insights on future research and technology outcomes
 - Understand providers and adopters' priorities
 - Liaise with other stakeholders
 - H-CLOUD value proposition:
 - H-CLOUD provides policy makers with an overview of trends, challenges and priorities for the development, deployment, and adoption of Cloud solutions.
 - Relevant tools:
 - H-CLOUD Forum to understand market trends
 - Good practises as inspirations to guide adoption
 - Strategic directions for Cloud Computing policies (green paper)

2 H-CLOUD COMMUNITY BUILDING AND COMMUNICATION ACHIEVEMENTS YEAR 2 (JAN 2021 – MAR 2022)

Following the objectives and planned activities as detailed in D2.1 and in D2.2, H-CLOUD has been involved in several dissemination and communication activities, led by MARTEL (Leader of WP2).

During the period covered by this report (M12 - first half of M27), the consortium initiated and continued the promotion of the H-CLOUD project and its results, mainly including the following:

1. Publishing articles on the project website
2. Promoting project and project related outcomes on the Twitter, LinkedIn, and YouTube account
3. Building and extending the project community
4. Developing and distributing the quarterly H-CLOUD newsletter
5. Organising webinars and workshops for relevant conferences
6. Creating promotional materials including videos and presentations
7. Publishing project publications
8. Organising the main flagship event, Horizon Cloud Summit 2021
9. Collaborating with the EC Cloud and Software Unit in organising two public events

Key Performance Indicators (KPIs) were identified at the beginning of the project to set the expected achievable qualitative and quantitative communication and dissemination targets of H-CLOUD. In this document, we measure the progress and impact of the conducted activities based on these metrics. Table 1 below presents the KPIs and the results achieved until mid M27 for each type of the communication activities.

Measure	Indicators	Target	Currently (M1 - M27)	Source and methodology
Flyers Posters/roll-ups	N. of flyers N. of posters/roll-ups (by the end of the project)	> 4 > 4	1 flyer 1 roll-up	Distribution via participation to and organisation of dedicated events. Electronic distribution via the project website
H-CLOUD Website	N. of unique visitors to the website (average per year)	> 2,500	4,472	News, Publications, Videos, Newsletters, Deliverables, webinars, etc.
H-CLOUD Forum online community	N. of new registered members in the Forum (average per year)	> 150 (y 1) > 300 (y 2)	No numbers available as registration barrier was removed at M12, see section 2.7.	Promotion via all online and offline channels, presentations, newsletters, webinars, periodic promo campaigns

Measure	Indicators	Target	Currently (M1 - M27)	Source and methodology
Social Networks	N. of followers Twitter N. of followers LinkedIn N. of followers YouTube (average new followers per year)	> 700 > 150 > 200	2,114 210 98	Keeping H-CLOUD profiles on such networks active via regular posting and monitoring
e-Newsletter (published every 3 months)	N. of subscribers (by the end of the project)	> 500	432	Recording of subscribers to the electronic newsletter
Videos	N. of videos published on the H-CLOUD YouTube channel and average number of views	4 videos per year and 200 views per video	Total videos: 51 Total views: 4,215	Introduction, informative and educational videos to support awareness creation and stakeholders' engagement
H-CLOUD Summit (one major event per year)	Average number of participants per edition	At least 200 participants	Y1: 340 Y2: 225	Attendance proof, presented material, photos, animation of social media channels, event's reports
Participation to events and presentations	Number of external events partners attended to present H-CLOUD, support the community and increase outreach	At least 20 events and presentations by the end of the project	Y1: 3 Y2: 17	Attendance proof, presented material, photos, animation of social media channels, events' reports
Webinars (at least 6 by the end of the project)	Average number of participants	~ 25-30 participants per webinar	7 (on average 32 participants per webinar)	Attendance proof, video-streaming, presented material, animation of social media channels

Expert consultation workshops	Number of workshops engaging experts in WP3 activities	4 with at least 30 participants for each event	<p>5 Expert consultation workshops in total, broken down in:</p> <p>Workshop 1 = 4 webinars held in April 2020 (22 - 42 webinar participants)</p> <p>Workshop 2 = Session during Horizon Cloud Summit 2020 (~ 50 participants)</p> <p>Workshop 3 = Session during Horizon Cloud Summit 2021 (~ 110 participants)</p> <p>Workshop 4 = 3 consultation workshops held in Sept - Oct 2021 (12 - 23 participants)</p> <p>Workshop 5 = Final consultation webinar in Feb 2022 (19 participants)</p>	Presentations, informative and promotional material, reports
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Table 1: H-CLOUD Communication KPIs

The following Table 2 summarises the Deliverables and Milestones within WP2 that have been achieved by mid-March 2022 (M27).

No.	Name	Lead	Type	Diss' level	Due	Status
D2.1	Project Portal	Martel	OTHER	PU	M02	Submitted M02 (Feb 2020)
D2.2	Community Building and Communication Strategy	Martel	R	PU	M04	Submitted M05 (May 2020)
D2.3	Community Building and Communication Strategy Report	Martel	R	PU	M12	First version submitted M12 (Dec 2020)
D2.4	Community Building and Communication Strategy Report	Martel	R	PU	M27	Second version (current document)
MS2	Landscape creation and Forum bootstrapped	ALL	OTHER	PU	M04	Completed

Table 2: H-CLOUD Communication Deliverables and Milestones

2.1 Project website

H-CLOUD's official web portal (www.h-cloud.eu) is a fully functional web portal that contains comprehensive information on H-CLOUD's aims, objectives and results. It provides easy access to its users about the project's publicly available materials and information on the project activities gathered from the various work packages. The website was set up at the beginning of the project (M1). By the time of writing this report, the website has reached 4,472 unique users, and 19,696 page's views, as indicated in Figure 1:

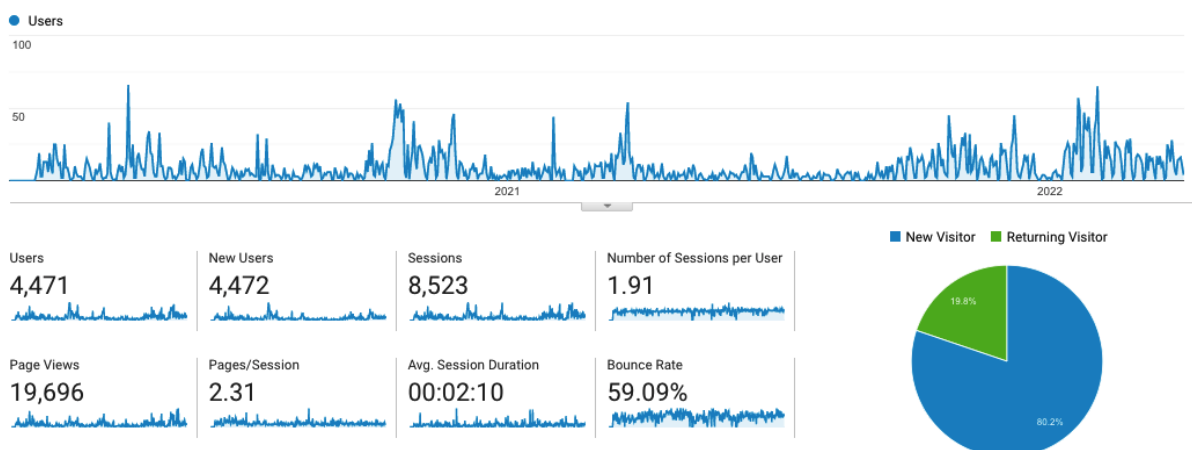


Figure 1: Overview of the h-cloud.eu audience

The peaks on the visits are related to the H-CLOUD events and special communications. In April we achieved an intense campaign for the green paper and the community. In May the first newsletter was sent out and the particularly heavy promotion for the H-CLOUD Summit by the end of October is clearly visible, too.

In the figure below, the most visited pages of the website during the last 10 months.











1.	/		1,751 (14.98%)
2.	/projects/research-innovation/		570 (4.88%)
3.	/events/		556 (4.76%)
4.	/about/		488 (4.18%)
5.	/recommendations/		394 (3.37%)
6.	/event/horizon-europe-information-and-brokerage-session/		387 (3.31%)
7.	/projects/coordination-support/		270 (2.31%)
8.	/news/horizon-europe-information-and-brokerage-session/		248 (2.12%)
9.	/news/		247 (2.11%)
10.	/projects/		226 (1.93%)

Figure 2: Most visited pages of the website

2.1.1 Project website updates

As shown in Figure 4, the project website went through a major update after the first H-CLOUD review, **responding to the comments made by the reviewers**. The website now prominently promotes the project's main outcomes (i.e., the online catalogue, landscape analysis, forum) and clearly communicates the benefits provided by the project. Moreover, it gives an immediate overview of the project's priority areas (i.e., green cloud, cloud edge, cloud federation), actors of the European Cloud Computing Community, relevant policy frameworks, as well as relevant Cloud news, events, and funding opportunities. The pillar page design of the website (i.e., long format landing page) allows for better Search Engine Optimisation (SEO) so that the portal is better identified by search engines as one of the main websites on Cloud Computing in Europe. Since the project website update, H-CLOUD is listed on rank 3 when searching Google for the keywords "Cloud Computing Europe", a search which results in 198,000,000 results, see Figure 3.

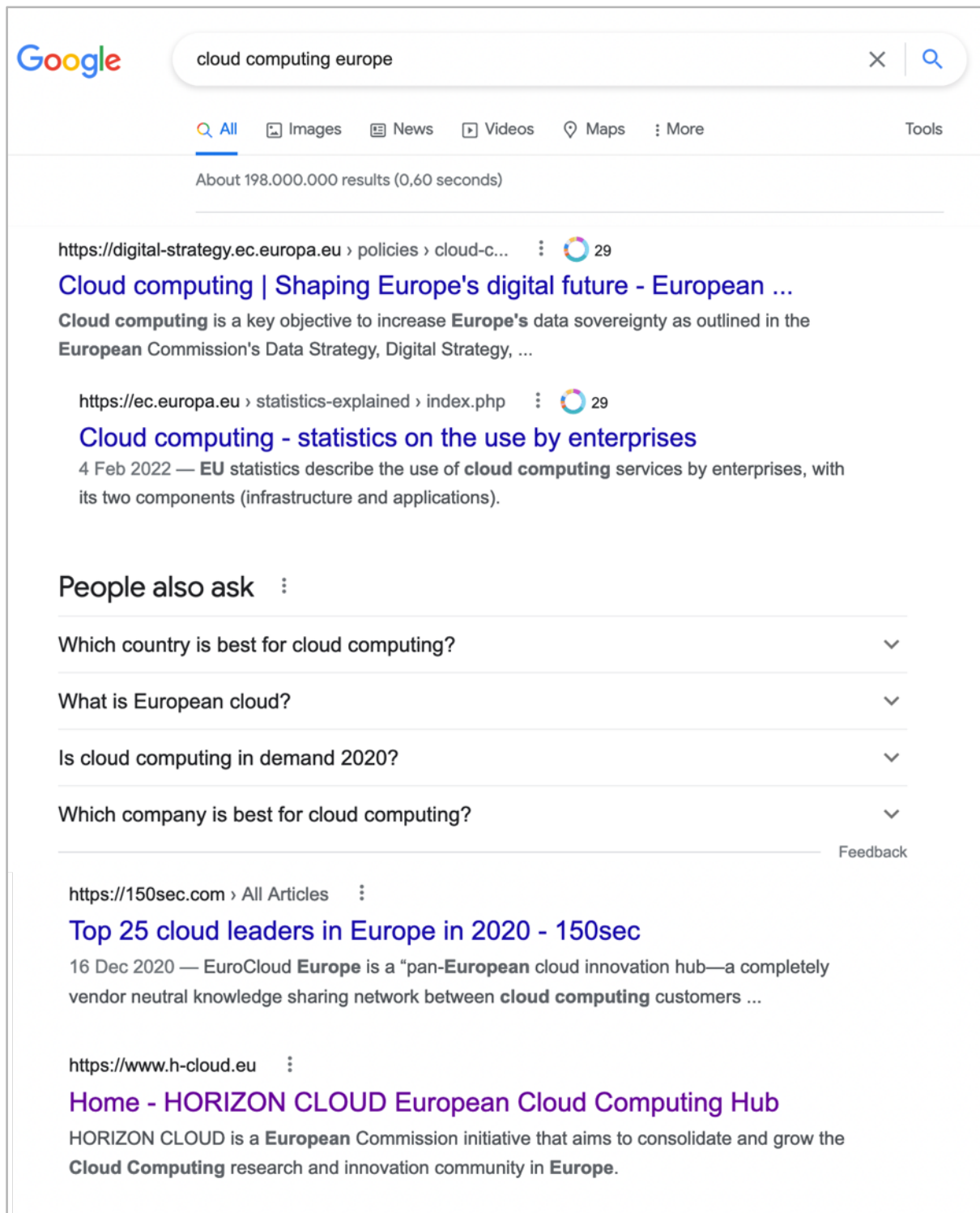


Figure 3: Google Search for the keywords "Cloud Computing Europe"

To navigate the pillar page, a sticky bar has been integrated on the left-hand side that helps visitors to browse the following topics of the landing page:

- **Green Computing:** Gives an overview of H-CLOUD outcomes related to Green Computing.
- **Cloud Edge:** Gives an overview of H-CLOUD outcomes related to Edge Computing.
- **Cloud Federation:** Gives an overview of H-CLOUD outcomes related to Cloud Federation.

- **Join the Community:** Gives an overview of the benefits of the H-CLOUD Forum.
- **Hear from Experts:** Shows video interviews conducted by H-CLOUD's sister CSA HUB4CLOUD with Cloud experts.
- **Cloud Actors:** Gives an overview of the European Cloud Computing Community (e.g., H-CLOUD Online Catalogue, CSAs, RIAs, European Cloud Clusters, European Alliance for Industrial Data, Edge and Cloud, Cloud Associations, etc.)
- **Cloud Challenges:** Highlights challenges identified in the H-CLOUD landscape analysis.
- **Cloud Frameworks:** Gives an overview of relevant Cloud Policy Frameworks
- **Good Cloud Practices:** Gives an overview of good practices identified by H-CLOUD.
- **News:** Includes relevant news items and funding opportunities.
- **Events:** Gives an overview of upcoming events.

In addition, a user-based navigation has been integrated at the top of the page, which points the project's main stakeholders directly to content that might suit their interest.

Finally, the website still has a structure-based navigation on the right-hand side (comparable to the usual menu bars present in websites), which is structured into the following sections:

- **About:** This section provides information H-CLOUD's vision & strategy.
- **Projects:** This page includes an overview of all CC projects at the centre of the Cloud Computing research community in Europe, more details are provided in Section 3.2.2.
- **Get funded:** This page provides an overview of relevant funding opportunities.
- **Cloud Catalogue:** Links directly to the H-CLOUD catalogue.
- **Get funded:** Presents relevant Cloud funding opportunities.
- **Community:** This page provides information on the Cloud Catalogue, the H-CLOUD Forum, as well as Liaised Projects, and other Cloud Initiatives and Associations.
- **What's new:** This section includes H-CLOUD news items, press releases, and newsletters.
- **Events:** This page includes information on past events as well as forthcoming events, organised by the project or where project partners will have a relevant participation (e.g., keynote speech).
- **Resources:** Contains all H-CLOUD publications, deliverables, presentations, promotional materials, videos, and newsletters.
- **Contact:** This page allows visitors to directly contact the project through a dedicated form and it includes links to H-CLOUD's social media channels.

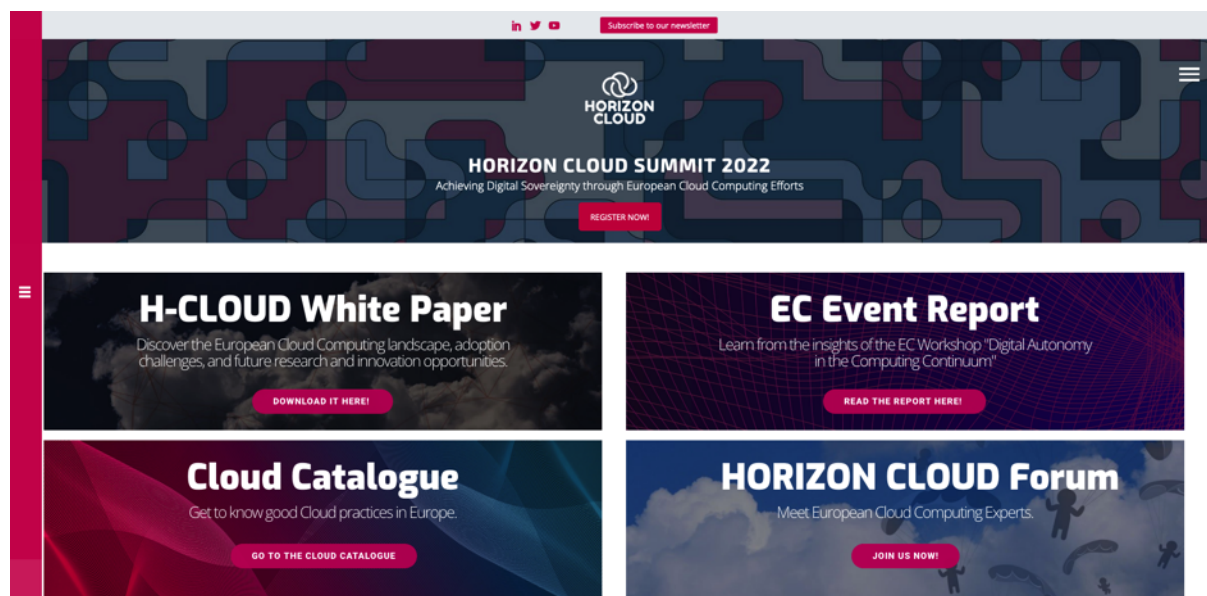


Figure 4: Homepage screenshot

2.2 H-CLOUD Social media channels

Various social networks were established as communication tools in order to promote activities and outputs of the project on a regular basis, while also encouraging a wider discussion on the topics related to CC activities. Until the end of the project, H-CLOUD created an active presence on the most popular social media channels, such as Twitter and LinkedIn and YouTube, which are linked to the project's website.

2.2.1 Twitter

H-CLOUD uses Twitter, as it is a very dynamic social network that covers the news in real-time at a global level. So far, H-CLOUD's Twitter account (@H-CLOUD_Project) has attracted **2,114 followers** (including project partners, similar projects, interested stakeholders, etc) and it has posted **1,859 Tweets**. In terms of reach, H-CLOUD managed to get in touch with a wide audience. For example, in the past three months, H-CLOUD has earned **30,600 impressions**, with an average of **339 impressions** per day. In addition, H-CLOUD follows 253 accounts, mostly projects in similar fields or of approximate nature where partners have been involved. During project run time, H-CLOUD has launched several campaigns to promote project outcomes. Figure 5 shows the current homepage of the H-CLOUD's Twitter account as well as an example of the campaign we launched for promoting the H-CLOUD online catalogue.

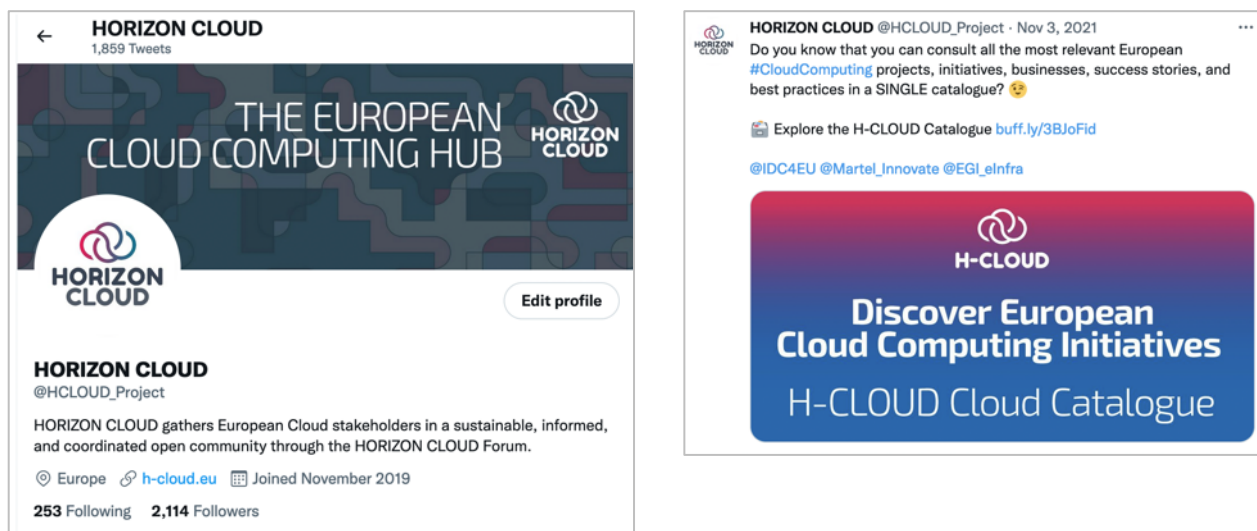


Figure 5: Homepage of the H-CLOUD Twitter account & example campaign

2.2.2 LinkedIn

The H-CLOUD LinkedIn Group (<https://www.linkedin.com/groups/8852793/>) allows reaching a professional audience with more elaborated news and/or specific events highlights. The H-CLOUD LinkedIn group counts at the time of writing (Mid March 2022) **210 members**. Figure 6 shows the current homepage of H-CLOUD's LinkedIn account.

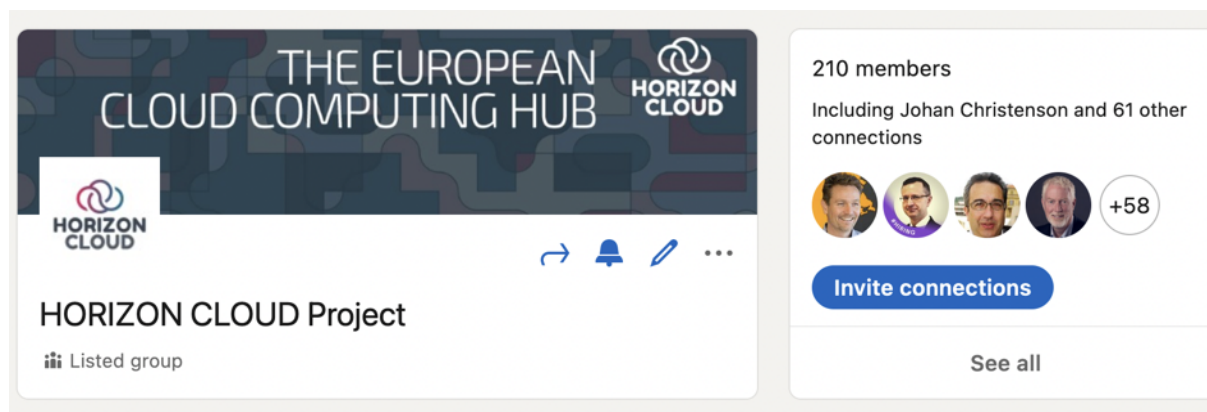


Figure 6: Header of the H-CLOUD LinkedIn group

2.2.3 YouTube

H-CLOUD maintains a YouTube channel to disseminate the H-CLOUD vision, concepts, and objectives by sharing project videos, such as recorded project events with the project's YouTube subscribers, engaged stakeholders and the public. The H-CLOUD YouTube channel has **4,215 views** and features **51 videos** at the time of writing the report. There is a clear peak of views during the promotional campaign of the H-CLOUD Summit 2020, as can be seen in Figure 7.

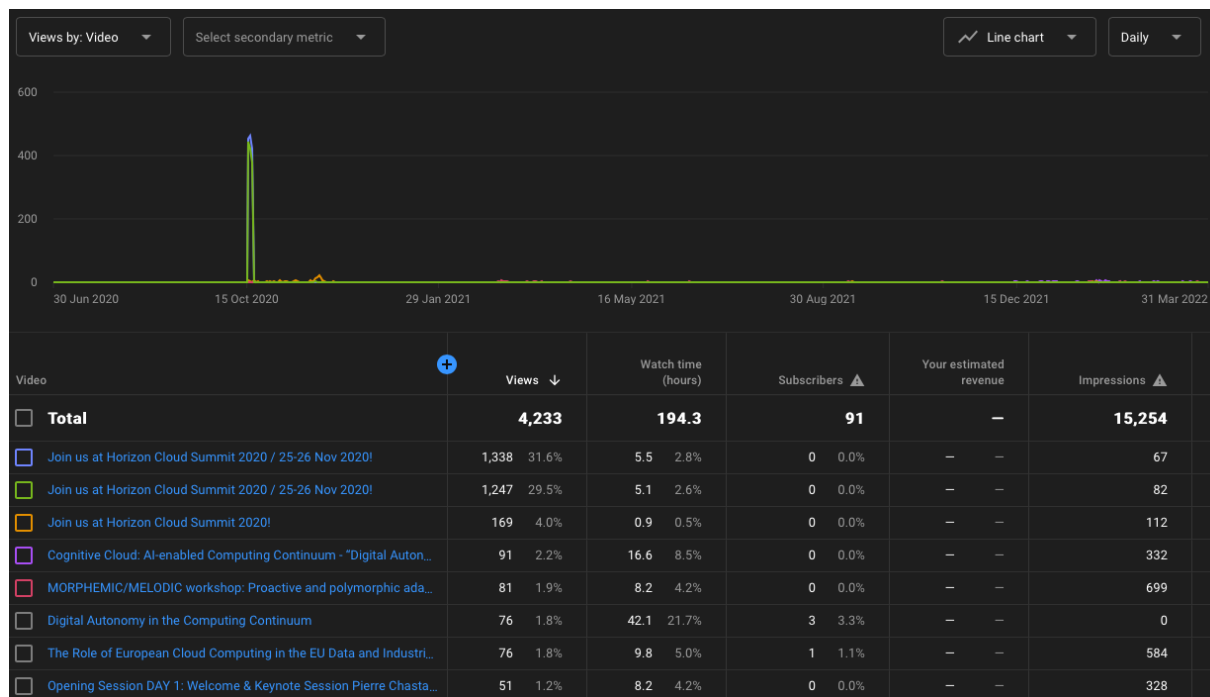


Figure 7: Analytics for the H-CLOUD YouTube account


2.3 H-CLOUD newsletter

H-CLOUD produces e-newsletters on a quarterly basis, which provide regular updates on trends of CC research and innovation practices, project findings and results, future events, as well as news from project partners and stakeholders upon subscription and news availability. All H-CLOUD e-Newsletters are uploaded to the project website. H-CLOUD produced five newsletters in the second year of the project period. So far, 432 people have subscribed to the H-CLOUD newsletter. Table 3 below gives an overview of the newsletter's outreach while Figure 8 presents the newsletter template.


Criteria	Issue 4 Mar 2021	Issue 5 Jul 2021	Issue 6 Oct 2021	Issue 7 Jan 2022	Issue 8 Feb 2022
No. of subscribers	214	239	302	410	423
Total of opens	39.5%	38.9%	44.1%	52.3%	42.8%
Total clicks on links	9.0%	16.2%	8.8%	11.3%	6.8%

Table 3: H-CLOUD Newsletter Outreach by Editions

HORIZON CLOUD Newsletter | [View this email in your browser](#)




**THE EUROPEAN
CLOUD COMPUTING HUB**
NEWSLETTER #8
FEBRUARY 2022




H-CLOUD Survey

Recommendations on Cloud Computing

HAVE YOUR SAY!




h-cloud.eu


H-CLOUD White Paper "Cloud Computing in Europe: Landscape Analysis, Adoption Challenges and Future Research and Innovation Opportunities" - PUBLISHED!
 This white paper helps in defining the priorities for the upcoming European digitalisation programmes, explores the question of how supply and demand can be improved in terms of quality and conditions of use, and therefore increased to boost European innovation in the cloud computing areas. We need your input to help set the priorities that will be included in the final report! Take the survey to rank the priorities.


Take the surveys here

H-CLOUD White Paper Consultation

24 February, 15:00 - 16:30 CET

Final community consultation workshop






REGISTER NOW!

Register Now: Final community consultation workshop
 On 24 February 2022 from 15:00 - 16:30 CET, H-CLOUD is organizing a final community consultation workshop to discuss challenges and opportunities of Cloud Computing for the next EC work programs spanning from research and innovation (Horizon Europe) to deployment (Digital Europe and Connecting Europe Facility 2) of Cloud technologies.

Register here



Technical Community Event

3 March 2022, 14:00 - 16:00 CET

REGISTER NOW

h-cloud.eu

Join our Technical Community Event on 3rd March featuring SmartCLIDE and PHYSICS
 On the 3rd of March, 14:00 - 16:00 CET, Horizon Cloud will host the Technical Community Event during which PHYSICS FaaS and SmartCLIDE projects will cover a range of cloud computing topics spanning across design, deployment and operations. Interested?

Register here

Figure 8: H-CLOUD Newsletter (Feb 2022)

2.4 e-Publications and Videos

During the second half of the H-CLOUD project, we have published several e-publications and weekly news items, as well as more than 38 videos to promote and summarise each of our events, outcomes, and reports.

The [White Paper](#) is one of the main outputs published on H-CLOUD channels in February 2022. It counts **134 downloads** from the website so far. To support the European Commission's work on the definition of priorities for the upcoming European digitalisation programmes, the White Paper explores the question of how supply and demand can be improved in terms of quality and conditions of use, and increased to boost European innovation in the following cloud computing areas:

1. Effective cloud federation models to stimulate the creation of a European public cloud service market leveraging existing capacities;
2. Edge computing, its market growth, and the implications of the edge/cloud infrastructure balance switching from today's 20% data at the network edge and 80% in cloud-based infrastructure to 80% at the network edge and 20% in cloud-based infrastructure;
3. Adoption of green computing principles to the whole lifecycle of Cloud Computing delivery to support the transition toward a carbon-neutral (if not carbon-negative) digital society by 2050.



Figure 9: Title page of the H-CLOUD White Paper

To make the rich content of the White Paper easily accessible to a broad audience, we created the [White Paper Video Series](#), which summarises in a few minutes the main sections of the White Paper in an easy and interactive way. These videos were published over the course of the three

weeks before the final White Paper Consultation workshop in February 2022. Figure 10 gives an overview of the videos, which address the following topics:

1. [Understanding the Basis: Logic Model and Policy Context \(released on 3 Feb\)](#)
2. [Zooming into the Market Context \(released on 7 Feb\)](#)
3. [Pillar 1: Becoming Data Aware \(released on 16 Feb\)](#)
4. [Pillar 2: Becoming Data Driven \(released on 16 Feb\)](#)
5. [Pillar 3: Building a Stronger EU IT Supply Market \(released on 22 Feb\)](#)
6. [Pillar 4: Laying the Foundation for Digital Transformation \(released on 22 Feb\)](#)
7. [Monitoring the Research Landscape \(Released on 24 Feb\)](#)

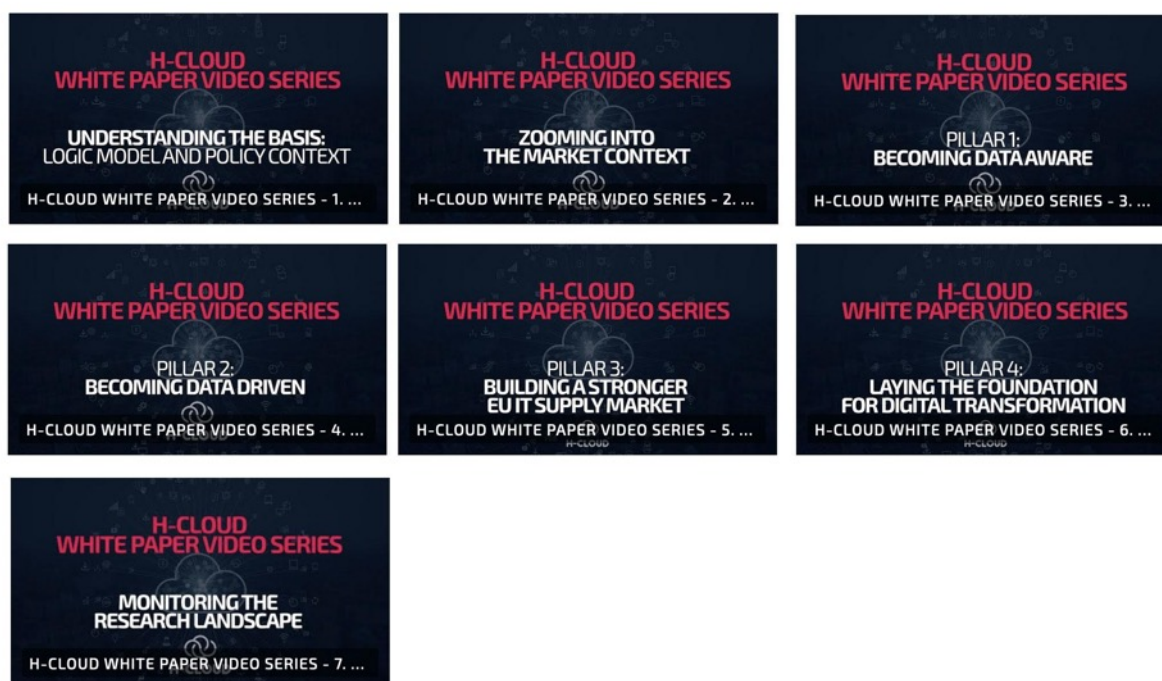


Figure 10. Overview White Paper video series

A second major publication of the project, that was prepared in collaboration with the HUB4CLOUD CSA, is the [Event Report of the “Digital Autonomy in the Computing Continuum” EC Workshop](#). As of March 28, 2022, it counts **89 downloads** from the website. More information on the event itself can be found in section 2.9.1 below. The report is an important publication as it served as the basis for supporting the EC’s Work Programme preparations for 2023-24. You can find the summary and full report [here](#).



Figure 11: Title page of the “Digital Autonomy in the Computing Continuum” Report

All the other materials we created during the second half of the year are available on the [H-CLOUD social media page](#) and on the project website under the following links:

- [Events](#)
- [News](#)
- [Publications](#)
- [Videos](#)

2.5 Open Access Book

H-CLOUD undertook the lead of preparing an open access book with the collaboration of the European Cloud computing community. “The Computing Continuum: Technologies and Applications” book will explore the Computing Continuum through all its dimensions, providing a complete view of the challenges, the technologies underlying it, and its application areas. The book is organised around a well structured set of topics, exploring the Computing Continuum from the infrastructure layer to the data processing one, encompassing key horizontal aspects such as modelling, security, trust, and quality of service. Each chapter follows a common structure: Definition of the specific research area, state of the art, focus on a specific approach, use cases, and future challenges. The book is still under development and should be published before the end of 2022.

2.6 Surveys

Within the scope of the experts' consultation workshops (see Section 2.9), H-CLOUD conducted four **surveys** to encourage the CC community to help prioritise the recommendations H-CLOUD has formulated for the future of Cloud Computing in Europe. The surveys were launched prior to the final Experts' Consultation Workshop in February 2022 and interested stakeholders were asked to watch the corresponding video from the White Paper Video Series (see Section 2.4) and then prioritise the recommendations afterwards. Survey participation was too low to yield significant results, possibly because of the number of recommendations that were presented for ranking and the short run time of the surveys (two weeks). The results of five completed surveys were considered in the final version of the H-CLOUD White Paper. One example of the distributed questionnaires can be found in the Annex.

SURVEY 1: DATA AWARENESS

This survey contains the H-CLOUD recommendations on Data Awareness. Please complete the survey to tell us how you would prioritise these recommendations based on their importance to you and your organisation. Have a look to the video to get some further information about the recommendations.

[Go to Survey 1: Data Awareness](#)



SURVEY 2: DATA DRIVEN TRANSFORMATION

This survey contains the H-CLOUD recommendations on Data Driven Transformation. Please complete the survey to tell us how you would prioritise these recommendations based on their importance to you and your organisation. Have a look to the video to get some further information about the recommendations.

[Go to Survey 2: Data Driven Transformation](#)



SURVEY 3: BUILDING STRONGER EU IT SUPPLY MARKET

This survey contains the H-CLOUD recommendations on building a stronger EU IT Supply Market. Please complete the survey to tell us how you would prioritise these recommendations based on their importance to you and your organisation. Have a look to the video to get some further information about the recommendations.

[Go to Survey 3: Building Stronger EU IT Supply Market](#)



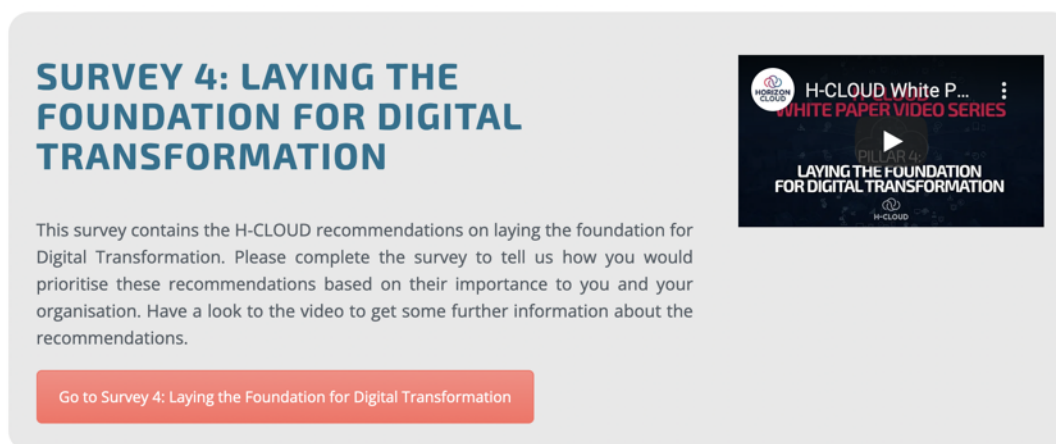


Figure 12: Overview H-CLOUD Recommendations Surveys

2.7 H-CLOUD Forum community platform and ambassadors

The H-CLOUD Forum WP as a whole combines all H-CLOUD communication channels and activities, including the project website, social media channels, community platform, and events, to connect cloud stakeholders, increase awareness and collaboration across different stakeholder groups, provide cross-fertilisation opportunities, and stimulate the adoption of research and innovation outputs to ensure technological sovereignty and global competitiveness of Europe. The H-CLOUD Forum community platform intended to support this aim by providing a software solution, which serves as go-to-point for the ECC community to exchange information.

After the first year of the project, the Forum community platform counted 60 registered users only and we suspected that the Forum registration process could have been a barrier for Forum participation. Therefore, we decided to open the Forum in M12 by removing the registration stage to give interested stakeholders the possibility to access Forum content and participate in discussions there without constraints. Also, this step made it much easier for us to cross-disseminate Forum content via already established social media channels, which we hoped would increase platform uptake, too. After having launched several Forum campaigns (see example of a campaign in Figure 13) and linked directly to the Forum from our H-CLOUD social media channels for a while, we noticed that our efforts did not help in increasing Forum participation. Hence, there must have been other reasons why the community did not take up our offer.



Figure 13: H-CLOUD Forum Promotion Campaign

One reason might be that it is in general very difficult to move audiences to new platforms. This difficulty might have been even more pronounced during the pandemic because people had to adopt several new platforms during a short period of time, as most meetings and events swiftly moved online. This has caused some kind of “platform fatigue” and we suspect this is one of the reasons why the Forum was not adopted widely. In addition to that, it has been shown that existing community networks, such as LinkedIn, are much easier to extend and engage, as many people already have a professional profile there. It is of much more interest to users to be active on already existing networks, because there they can reach some kind of visibility among and position themselves within their own group of followers when being active in the community. Setting up and being active on a new platform takes much more time and effort, and during the busy times we are living in, it is hard to convince people to do that effort. The latter argument is supported by the fact that it was much easier to grow an H-CLOUD LinkedIn group, which currently consists of 210 active members. Finally, another reason for the low engagement on the H-CLOUD community platform might be that Nextcloud, the technical solution that has been chosen to implement the Forum, caused some regular technical trouble during project runtime. While the technical staff of H-CLOUD continuously monitored and updated the platform, the server of Nextcloud was often down, which made it difficult to use the platform.

Despite the deficit of the Forum community platform itself, the Forum aims have still been reached also due to the following extra activities H-CLOUD organised: During our main flagship events (i.e., two EC events and the HORIZON CLOUD Summit) we used the professional event platform Swapcard, which gave event attendees several opportunities to connect. When registering for the event, attendees automatically created a short profile for themselves, which was depicted on the “Attendee” page of the platform. Other attendees could browse these profiles and get in touch with others via an integrated chat function, via an “Event Lounge”, or via (video) meetings they could schedule themselves (see example Figure 14). These functions were available before and during the event and they will remain at our stakeholders’ disposal until at least two years after the event. As Figure 15 shows, this Swapcard community features were used widely.

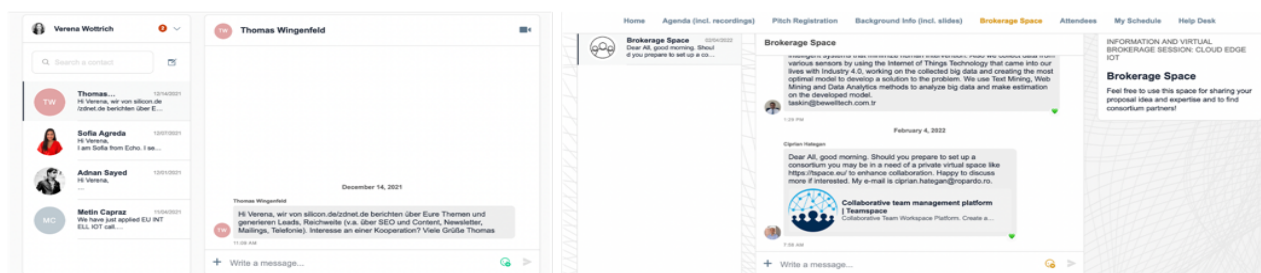


Figure 14: Example Swapcard Networking Features

Networking

TOTAL CONTACTS MADE	CONTACTS MADE PER ACTIVE USER	TOTAL MESSAGES EXCHANGED
90	0.3	392
TOTAL DISCUSSIONS CREATED	TOTAL MEETINGS	VIDEO CALLS
100	18	0

Figure 15: Networking results of the Information and Virtual Brokerage Session on 2 February 2022 hosted on Swapcard.

In addition to that, to further stimulate the conversation among our community, H-CLOUD conducted a round of **expert interviews** with H-CLOUD’s Advisory Board (AB) members in March 2022. During these interviews, our AB members were asked to serve as H-CLOUD ambassadors who share their view on the future of Cloud Computing in Europe within the scope of the blog and interview series

“H-CLOUD Talks”. The blogs and interviews addressed the priorities European industry should tackle in the short term to accelerate digital transformation in Europe. Depending on the preference of the AB members, some interviews were recorded, while others were captured in writing or in blog format. All (video) interviews were shared with an accompanying news item via H-CLOUD’s social media channels. A few interviews will still be published in April. The focus of the social media campaign promoting the interviews lay on encouraging the community to share their view, too. The interview guide can be found in the Annex.

2.8 Promotional materials

Due to the pandemic, events mainly took place virtually, which is why H-CLOUD did not create many printed promotional materials in the second half of the project and focused on online promotional materials. HORIZON CLOUD Summit 2021 was initially planned as a physical event and we designed a roll-up and a flyer for the event, but eventually the materials were not printed as the event moved online at the very last minute. Figure 16 shows the roll-up and flyer we designed for HORIZON CLOUD Summit 2021. An adapted version will be printed for HORIZON CLOUD Summit 2022, which is organised by HUB4CLOUD, the “sister” CSA on 11 – 12 May 2022 at Cloud Expo Europe in Frankfurt.



Figure 16: H-CLOUD bookmark & roll-up

Instead of physical promotional materials, we produced several multimedia assets that were used to promote our events and project outcomes. For our flagship events, we created, for instance,

Communication Packages containing gifs, HTML signatures, social media cards, text blocks, and social media messages that were shared among our Communication Task Force members and the EC to help us promote our efforts. Figure 17 shows an example of one of our Communication Packages.

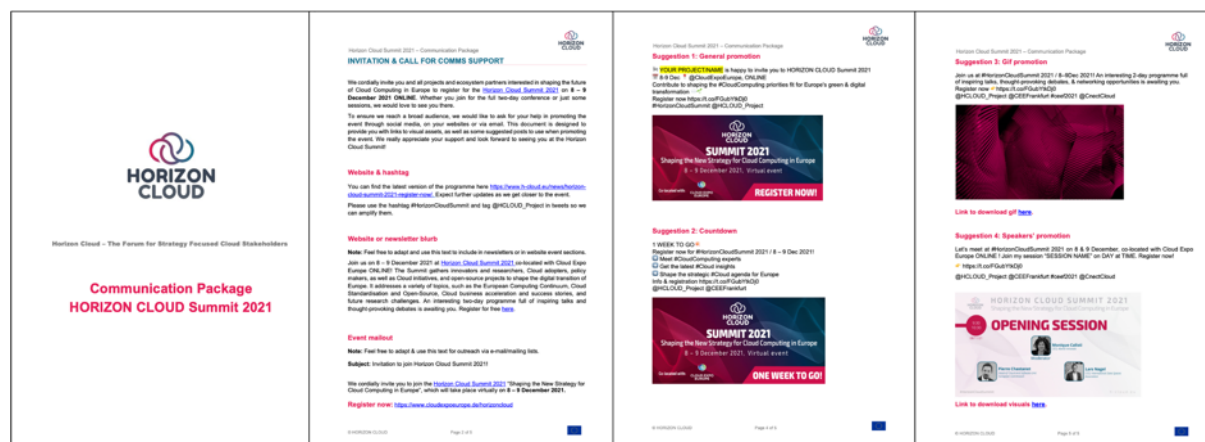


Figure 17: Extracts from HORIZON CLOUD Summit 2021 Communication Package

2.9 Events

H-CLOUD organised and attended several internal and external events aiming to promote and communicate all relevant information of the project. In the second half of the project, H-CLOUD hosted six webinars, attended 17 events, and organised five expert consultation workshops. Moreover, H-CLOUD organised the second edition of its flagship event HORIZON CLOUD Summit as well as two additional high-level events in collaboration with the European Commission's Cloud and Software Unit. All of these events were massively covered on H-CLOUD social media (e.g., live tweeting) and during the big flagship events we used graphical recording for highlighting the topics discussed in an easily accessible and visually appealing way (see example in Figure X).

2.9.1 Events organised by H-CLOUD

2.9.1.1 Events organised in collaboration with the EC Cloud and Software Unit

EC Workshop “Digital Autonomy in the Computing Continuum”

On 11 November 2021, H-CLOUD, in collaboration with the EC, HUB4CLOUD, EU-IoT, and SWForum, organised the virtual workshop “**Digital Autonomy in the Computing Continuum**” ([more information, including recordings and presentations, here](#)). The event gathered 373 researchers, innovators, industrial stakeholders both from the supply and the demand side, SMEs/Start-ups, policy makers, standardisation experts, regulators, as well as relevant initiatives and projects, to exchange views on specific R&I topics, challenges, and opportunities and converge on priorities to guide future investments under Horizon Europe, Destination 3, area “From Cloud to Edge to IoT for European Data”.

The workshop kicked-off with a presentation by European Commission representatives of the new strategy “From Cloud to Edge to IoT for European Data”, which strives to allow European companies to regain leadership in the Data Economy. Hereafter, the event continued with three interactive discussion sessions on the Horizon Europe topics **Cognitive Cloud** (linked to the [2022-DATA-01-02](#) topic in Cluster 4), **Open Source for Digital Autonomy** (connected to the [2022-DIGITAL-EMERGING-01-26](#) topic in Cluster 4), and **Decentralised Intelligence and Swarm Computing** (related to the [2022-DATA-01-03](#) topic in Cluster 4). During the afternoon session, the discussion focused on exchanging views on a strategic European vision for the Computing Continuum and potential R&I priorities for the Work Programme 2023-24 and beyond. All insights and

recommendations of the workshop are summarised in a [short](#) and an [extended version](#) of the event report.

As a follow-up to this workshop, the European Commission invited stakeholders from industry, academia, and innovators to participate in an Information and Virtual Brokerage Session on **2 February 2022, 9:30 am – 12:30 pm CET**, which was organised in collaboration with H-CLOUD, HUB4CLOUD, and EU-IoT.

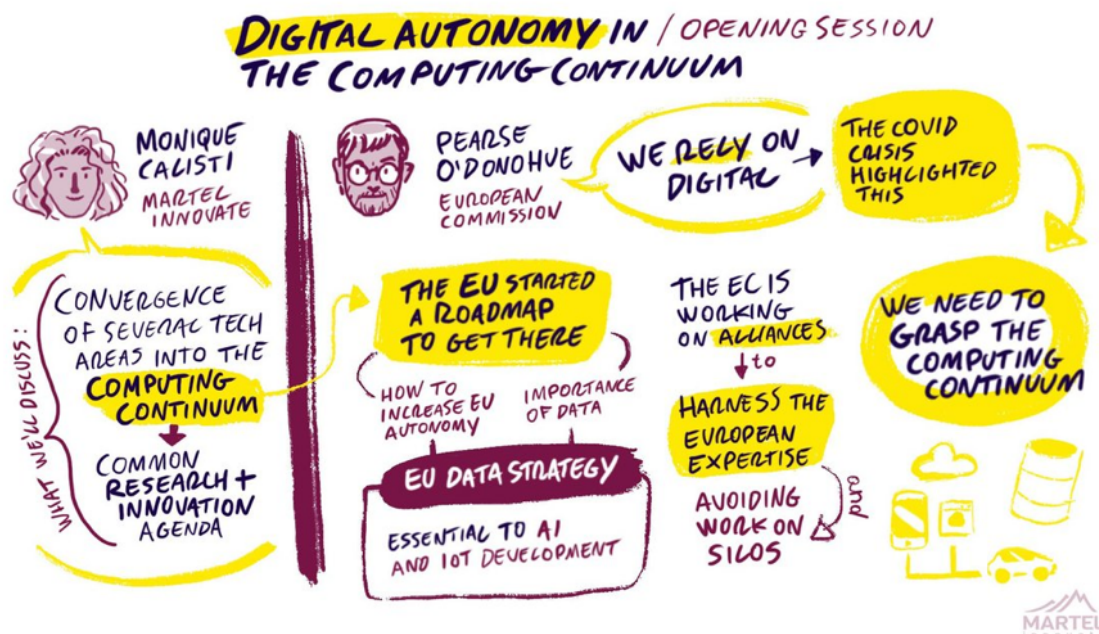
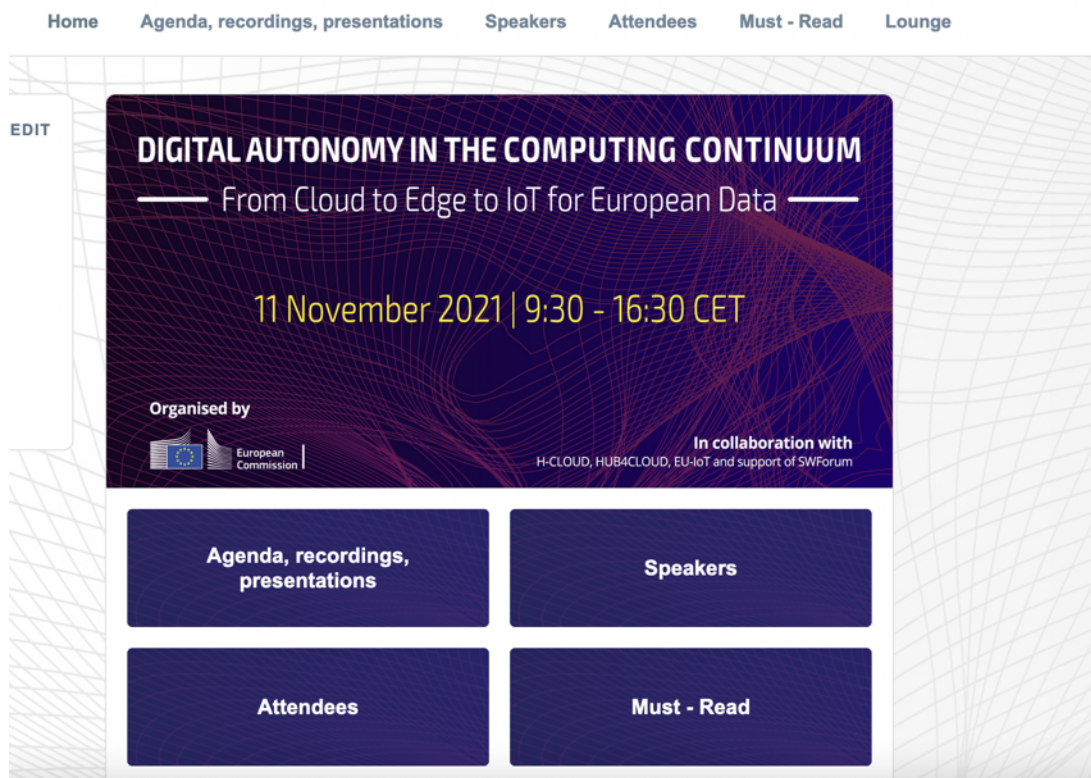


Figure 18: Swapcard Event Platform & Graphical Recording Example "Digital Autonomy in the Computing Continuum" Workshop

EC Workshop “Information and Virtual Brokerage Session on the Horizon Europe Cloud, Edge, IoT 2022 Calls”

On 2 February 2022, H-CLOUD, in collaboration with the EC, HUB4CLOUD and EU-IoT, organised an [Information and Virtual Brokerage Session on the Horizon Europe Cloud, Edge, IoT 2022 Calls](#). The 275 attendees had the opportunity to learn about the three Horizon Europe calls “Cognitive Cloud: AI-enabled computing continuum from Cloud to Edge (RIA)”, “Open source for cloud-based services (RIA)”, and “Programming tools for decentralised intelligence and swarms (RIA)”. Moreover, the event provided participants with a unique opportunity to brainstorm on emerging concepts, pitch concrete ideas, and exchange expertise with leading research organisations and cutting-edge innovators from across the industry.

The event kicked-off with a presentation of Rolf Riemenschneider, Head of Sector IoT, European Commission, introducing the European Data Strategy and the EU Research Agenda from Cloud to Edge to IoT. Then, Maria Tsakali, Programme Officer Cloud and Software Unit, European Commission, Luis Busquets Pérez, Programme Officer Cloud and Software Unit, European Commission, and Jan Komarek, Topic Coordinator IoT Unit, European Commission, presented the Cloud, Edge, IoT Horizon Europe 2022 Calls and gave useful tips regarding the scope and expectations of these calls.

Hereafter, the eight innovators pitched their project ideas and expertise to find potential proposal collaborators. All recordings and presentations can be found [here](#).

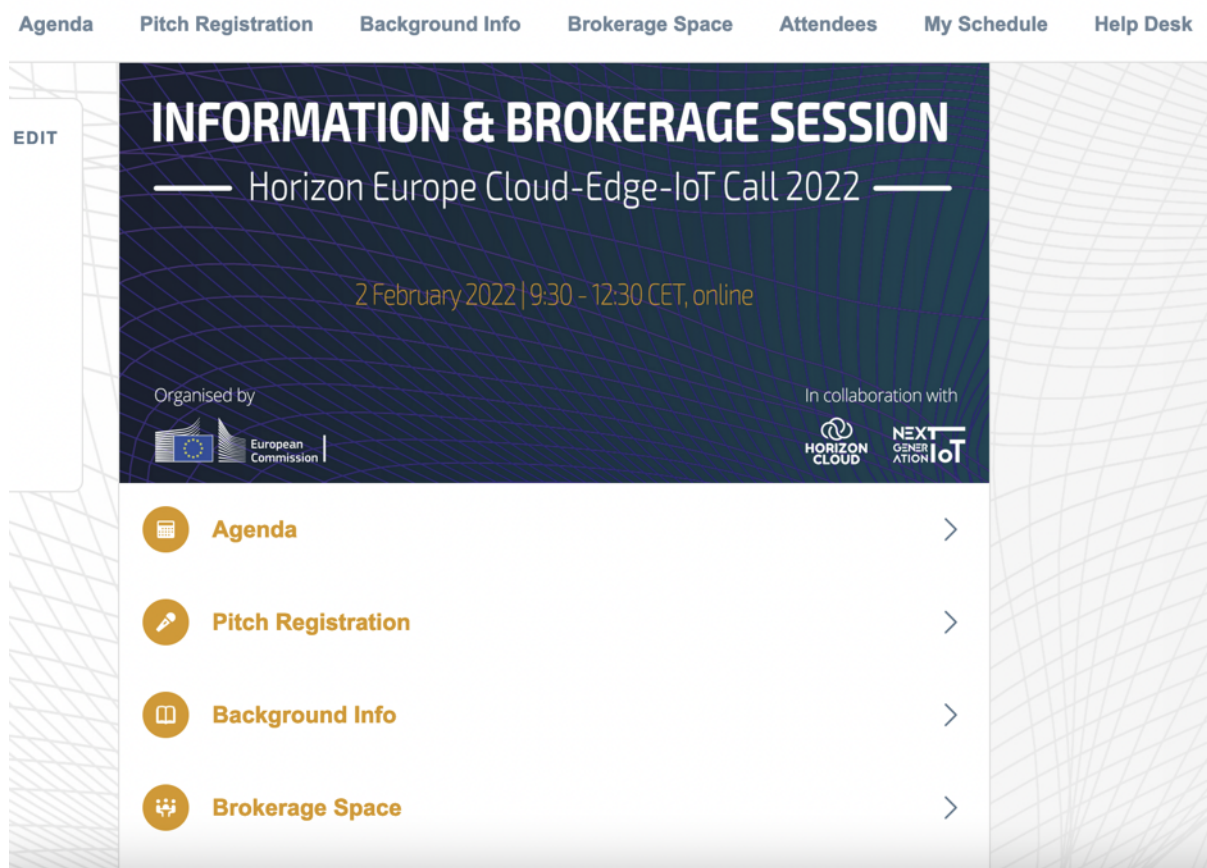


Figure 19: Swapcard Event Platform “Information & Brokerage Session”

HORIZON CLOUD Summit 2021

On 8 – 9 December 2021, H-CLOUD organised the second edition of Horizon Cloud Summit, the flagship event of the HORIZON CLOUD initiative, which is jointly carried out by the H-CLOUD and the HUB4CLOUD CSA. Aim of the Summit was to gather innovators and researchers, Cloud adopters, policy makers, as well as Cloud initiatives, and open-source projects to shape the EU digital transition. Originally planned as a physical event co-located with Cloud Expo Europe, the Summit and the Expo moved online at the very last minute, due to increasing COVID-19 cases in Germany and Europe. Despite the sudden change of location, the Summit was a big success. **A total of 225 participants attended the event and discussed the future of Cloud Computing in Europe with 46 speakers during 8 inspiring sessions.** You can find the recordings of all sessions [here](#).

DAY 1

The first day of the event was moderated by Martel Innovate CEO Monique Calisti. It kicked-off with an opening presentation held by Pierre Chastanet, Head of Cloud and Software Unit of the European Commission, on building the Next Generation Cloud and Edge for EU Businesses and the Public Service. Hereafter, Lars Nagel, CEO of the International Data Spaces Association, spoke on the importance of building European Data Spaces. Then, Mark Dietrich, H-CLOUD partner, and Senior Advisor at the EGI Foundation, introduced the draft of the H-CLOUD White Paper focusing on a Cloud Computing Strategy for Europe.

The event continued then with a High-Profile Panel on the topic of building European Digital Autonomy in the Computing Continuum with the following panelists:

- **Klaus Ottradovetz**, VP Global Service Delivery, ATOS
- **Alban Schmutz**, SVP Public Affairs OVHcloud; Chairman CISPE; GAIA-X cofounder & Deputy interim CTO
- **Maria Barros Weiss**, VP Research Digital Ecosystems, IONOS
- **Geert Machtelinckx**, Business Development and Project Management, Threefold Tech.

In the “Cloud Standardisation and Open-Source for a Robust Digital Cloud Landscape” that followed afterwards, the following panelists discussed trends in Cloud Standardisation and Open-Source with moderator Giovanni Rimassa, CIO of Martel Innovate:

- **Alessandro Perilli**, Senior Director, Automation Strategy, Red Hat
- **Antonio Kung**, CEO, Trialog
- **Rob Gibbon**, Product Manager, Canonical
- **Jesús Luna**, Cloud Security and Certification Expert, Bosch
- **Leire Orue-Echevarria**, Project Director / ICT DivisionTecnalia.

The day ended with an inspiring session introducing success stories, best practises, and use cases from the European Cloud Community. The session was moderated by Carla Arend, Senior Program Director: Lead Analyst, Cloud in Europe, IDC, and the following speakers presented their Cloud innovations:

- **Geert Machtelinckx**, Business Development and Project Management, Threefold Tech
- **Alberto P. Martí**, VP of Open Source Community Relations, OpenNebula
- **Patrizio Dazzi**, Researcher, ISTI-CNR
- **Konstantinos Tserpes**, Associate Professor, Harokopio University of Athens.

DAY 2

After a great first day full of inspiring discussions, the second day of Horizon Cloud Summit, which was moderated by Mark Dietrich, started with a Keynote Session by Klaus Ottradovetz, VP Global Service Delivery, ATOS, on the Future of European Cloud Services.

Hereafter, moderator Lutz Schubert, Head of Research, IOMI University of Ulm, discussed future Cloud Computing research priorities for Europe with an experts panel consisting of:

- **Klaas Wierenga**, Chief Information & Technology Officer. GÉANT
- **Geir Horn**, Head of European ICT Projects, Oslo University
- **Dumitru Roman**, Senior Research Scientist, SINTEF AS
- **Patrick Jauernig**, Researcher, TU Darmstadt.

Focusing more on the Cloud innovators' perspective, the Summit then continued with a panel session on Cloud innovation business acceleration in Europe. Session moderator Enrique Areizaga Sanchez, Project Manager / ICT Division, TECNALIA, led an interesting discussion among:

- **Brendan Rowan**, Managing Consultant, BluSpecs
- **Florian Bogenschütz**, CEO, Wayra
- **Ruben Roex**, Attorney-at-law, Timelex
- **Heinrich Zetlmayer**, CEO, SKAYLINK
- **Julian Fischer**, CEO, anynines GmbH.

Finally, the Summit offered another session on success stories, best practises, and use cases from the European Cloud Community. Moderated by Angele Giuliano, CEO AcrossLimits, the following speakers provided interesting insights:

- **Ricardo Vitorino**, Smart Cities R&I Manager, Ubiwhere
- **Sebastian Geller**, Senior Software and Method Developer, ICON Technology & Process Consulting (ICON)
- **Radu Prodan**, University Professor, University of Klagenfurt, Austria
- **Uwe Herzog**, Programme Manager, Eurescom GmbH.

Horizon Cloud Summit 2022, which will be organised by H-CLOUD's sister project HUB4CLOUD, will take place physically [from 11 – 12 May 2022 at Cloud Expo Europe, Messe Frankfurt, Germany](#).

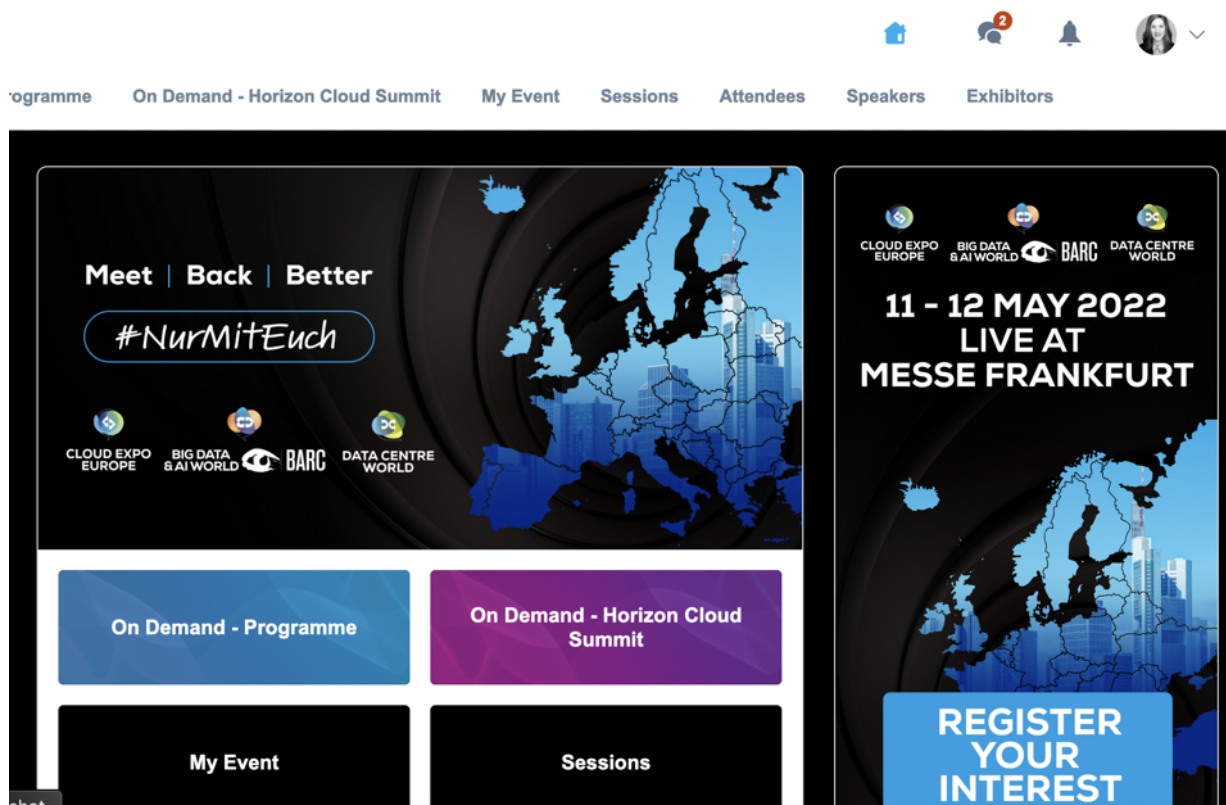


Figure 20: HORIZON CLOUD Summit Virtual Event Platform and Sessions Overview

Title	Thematic focus	Date	Attendees
EC Workshop “Digital Autonomy in the Computing Continuum”	This event gathered ECC stakeholders to exchange views on specific R&I topics, challenges, and opportunities and converge on priorities to guide future investments under Horizon Europe.	11 Nov 2021	373
HORIZON CLOUD Summit 2021 co-located with Cloud Expo Europe	The second edition of H-CLOUD’s flagship event co-located with one of the biggest Cloud Computing events in Europe.	8 – 9 Dec 2021	225
EC Workshop “Information and Virtual Brokerage Session on the Horizon Europe Cloud, Edge, IoT 2022 Calls”	This event introduced the three Cloud, Edge, and IoT Horizon Europe Calls 2022 and gave participants the opportunity to pitch their proposal idea and find consortium partners.	2 Feb 2022	275

Table 4. Overview of H-CLOUD flagship events

2.9.1.2 H-CLOUD webinars

During the second year of the project, H-CLOUD organised six webinars to engage the European Cloud Community. In March 2021, the project kicked-off a webinar series of Technical Community Events for the European Cloud Community. Aim of the event series was to create awareness for and foster synergies and collaboration between European Cloud Projects. European Cloud projects had the chance to propose the topic for the Community Events via the HORIZON CLOUD Forum or during the monthly Communication Task Force meetings. Until the end of the project, H-CLOUD hosted five Technical Community Events in collaboration with its sister CSA HUB4CLOUD. In addition, H-CLOUD organised a webinar on the [H-CLOUD Online Catalogue](#), a knowledge base that was developed during project run time. Table 5 gives an overview of all webinars organised in the second half of the project.

Title	Thematic focus	Date	Attendees
HORIZON CLOUD Technical Community Event Series - Kick-off	This webinar kicked-off the HORIZON CLOUD Technical Community Event series. Five H2020 Cloud projects (i.e., RADON , UNICORE , ACCORDION , PLEDGER , MORPHEMIC) as well as two other stakeholders (i.e., ONEedge , Digital4Planet) from the Cloud ecosystem presented their Cloud initiatives. Topics discussed ranged from Cloud modelling and optimisation to edge computing, Unikernels, DevOps practices, and green Cloud.	23 Mar 2021	72
HORIZON CLOUD Community Event "Open Source Initiatives for Cloud Computing"	During this event, the three Open Source Cloud Initiatives Eclipse Foundation , OpenNebula , and Sovereign Cloud Stack presented their work.	15 June 2021	43
HORIZON CLOUD Community Event "Unleashing the Potential of	The webinar showcased results of the H2020 Cloud projects RAINBOW and PLEDGER . PLEDGER presented the first steps for an	29 Sept 2021	41

Title	Thematic focus	Date	Attendees
Cloud, Fog, and Edge Computing in Europe	intelligent resource management, benchmarking infrastructure providers and taking deployment decisions based not only on availability. RAINBOW demonstrated the advanced features included in the first release of its fog computing platform.		
H-CLOUD Webinar on Online Catalogue "Navigating the European Cloud Community"	The webinar presented the H-CLOUD Online Catalogue , a knowledge base, which curates a plethora of Cloud Computing projects, initiatives, businesses and policies, success stories, and best practices in Europe.	14 Oct 2021	30
HORIZON CLOUD Community Event "Proactive and polymorphic adaptation of multi-cloud deployments"	The webinar showcased results of the H2020 Cloud projects MORPHEMIC and MELODIC . It introduced multi-cloud application modelling, configuration, deployment, and adaptation, including the survey of the existing Cloud Management Platforms (CMP), modelling methods, and languages.	26 Oct 2021	18
HORIZON CLOUD Technical Community Event "Insights of the H2020 projects SmartCLIDE and PHYSICS"	The webinar showcased results of the H2020 Cloud projects SmartCLIDE and PHYSICS . SmartCLIDE presented its vision for a Cloud based integrated development environment, while PHYSICS introduced its architecture, stacks, and design environment.	3 Mar 2022	18

Table 5: Webinars organised in the second half of the project

2.9.1.3 Experts' Consultation Workshops

Due to the COVID-19 pandemic, H-CLOUD continued organising webinars to replace physical experts' workshops. In the second half of the project, H-CLOUD organised **four experts' webinars and used the flagship event HORIZON CLOUD Summit 2021 for discussing the challenges and opportunities of Cloud Computing for the next EU work programmes** spanning from research and innovation (Horizon Europe) to deployment (Digital Europe and Connecting Europe Facility 2) of Cloud technologies. The aim of the webinars and the Summit was to gather feedback on the draft of the H-CLOUD White Paper "Cloud Computing in Europe: Landscape Analysis, Adoption Challenges and Future Research and Innovation Opportunities" developed by the H-CLOUD project and to help H-CLOUD to define future actions. Table X provides an overview of all experts' consultations in the second half of the H-CLOUD project.

The first three consultation workshops took place in September and October 2021 and each of them focused on a dedicated topic and targeted a specific audience, as indicated in Table X. The consultation workshops were very interactive in nature. We used web-based white boards (i.e., Mural boards, see example figure X) to allow participants to comment on existing recommendations, prioritise them, and propose new ones. In order to optimally prepare experts for the workshop, we created a [short video](#) that gave them a quick overview of the findings and recommendations we needed their feedback on, see Figure X. In addition, we shared with them an online version of the White Paper draft, so that they could add their comments directly to the document (see Figure X).



Figure 21: Preparation video for consultation workshops

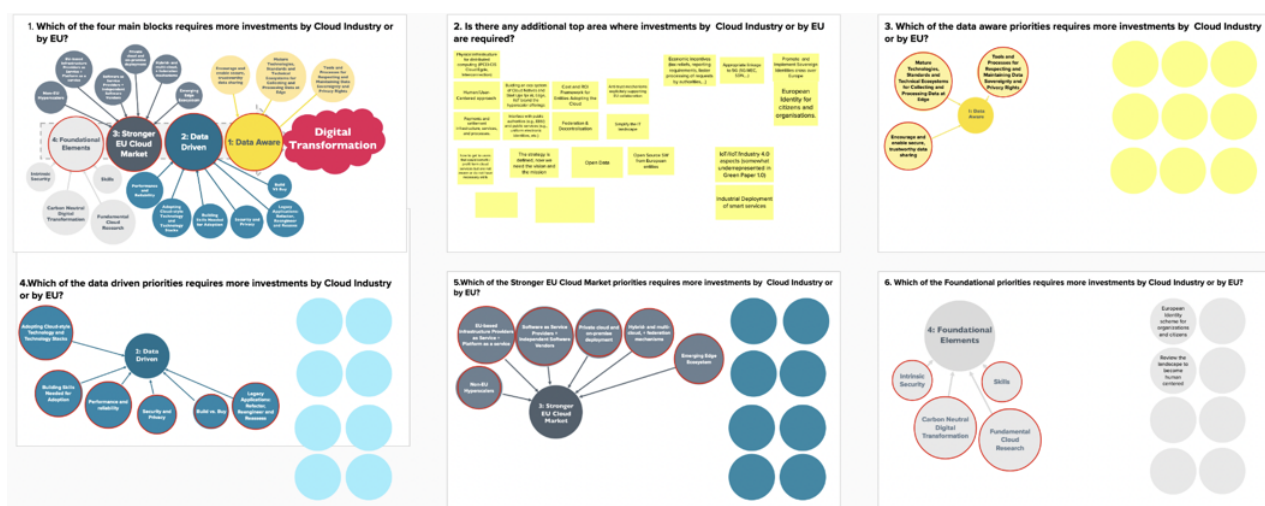


Figure 22: Example Mural board used during the experts' consultations.

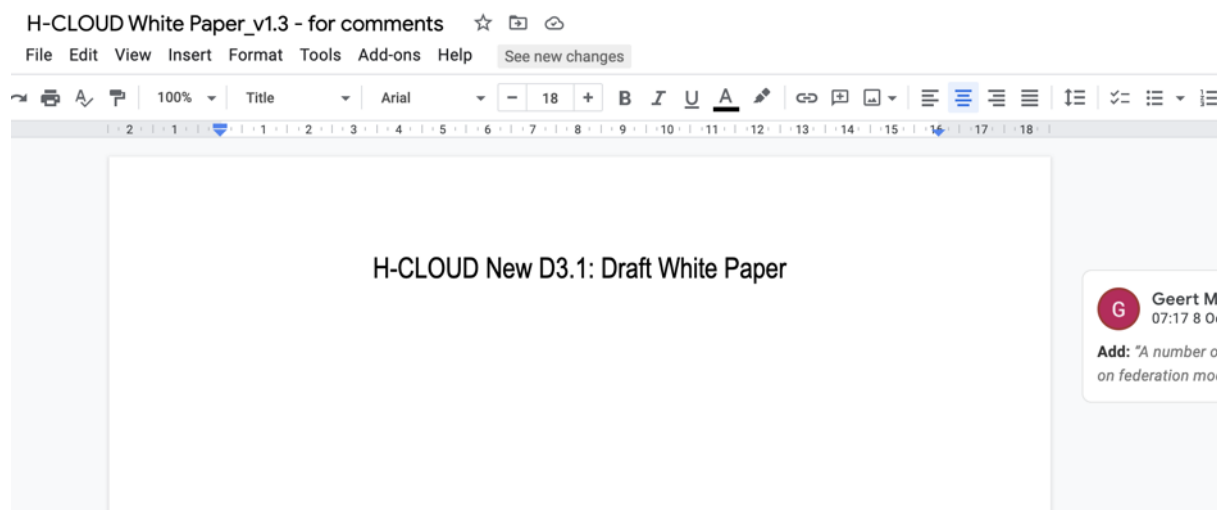


Figure 23: Online White Paper draft for collecting experts' comments and feedback

The HORIZON CLOUD Summit 2021, which was co-located with Cloud Expo Europe, was another opportunity to consult a broader community on the draft of the H-CLOUD White Paper. During the Opening Session of the Summit, H-CLOUD partner Mark Dietrich presented the updated White Paper, including the feedback gathered during the September / October consultations, and encouraged the audience to share their feedback before the next release. Again, the link to the online draft White Paper was shared with the audience so that they could easily provide their comments.

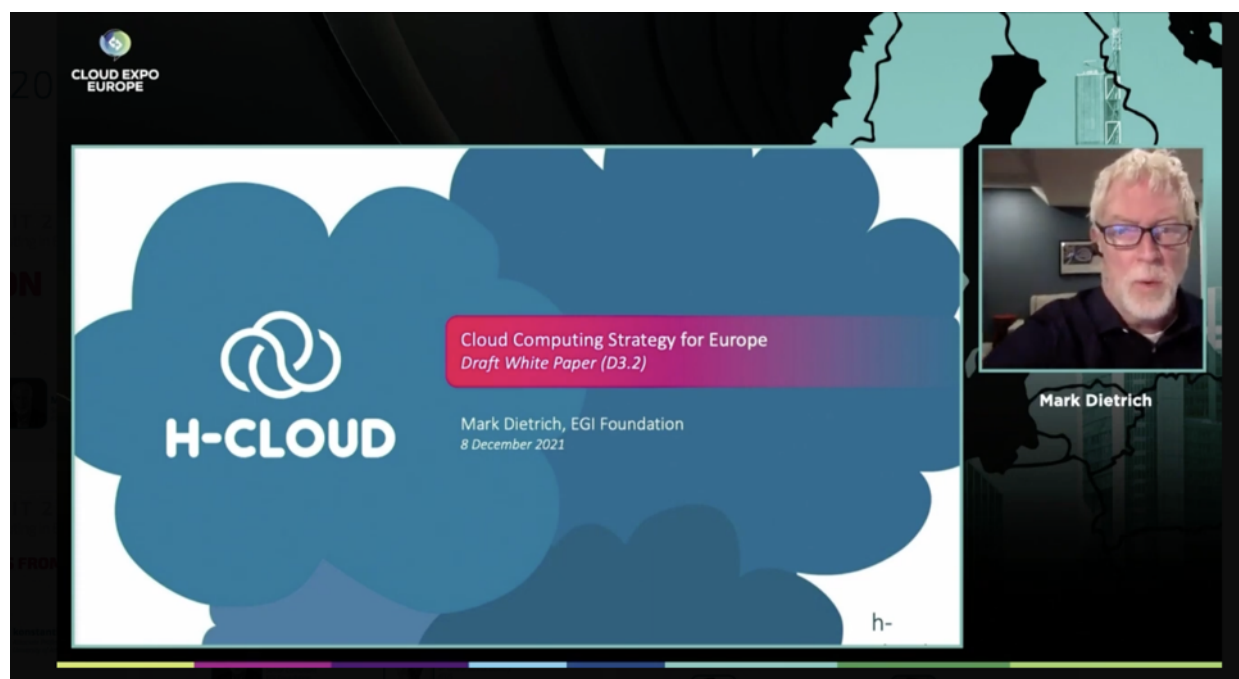


Figure 24: H-CLOUD White Paper presentation during HORIZON CLOUD Summit 2021

The fourth White Paper consultation took place on 24 February 2022. Prior to the consultation, we broadly promoted the White Paper Video Series (see Section 2.5) to give our community easy access to the content of our paper. During the Workshop, H-CLOUD partner Mark Dietrich presented the evolution of the paper during the past consultation rounds, see Figure 24, and gave space to the audience to provide additional feedback.

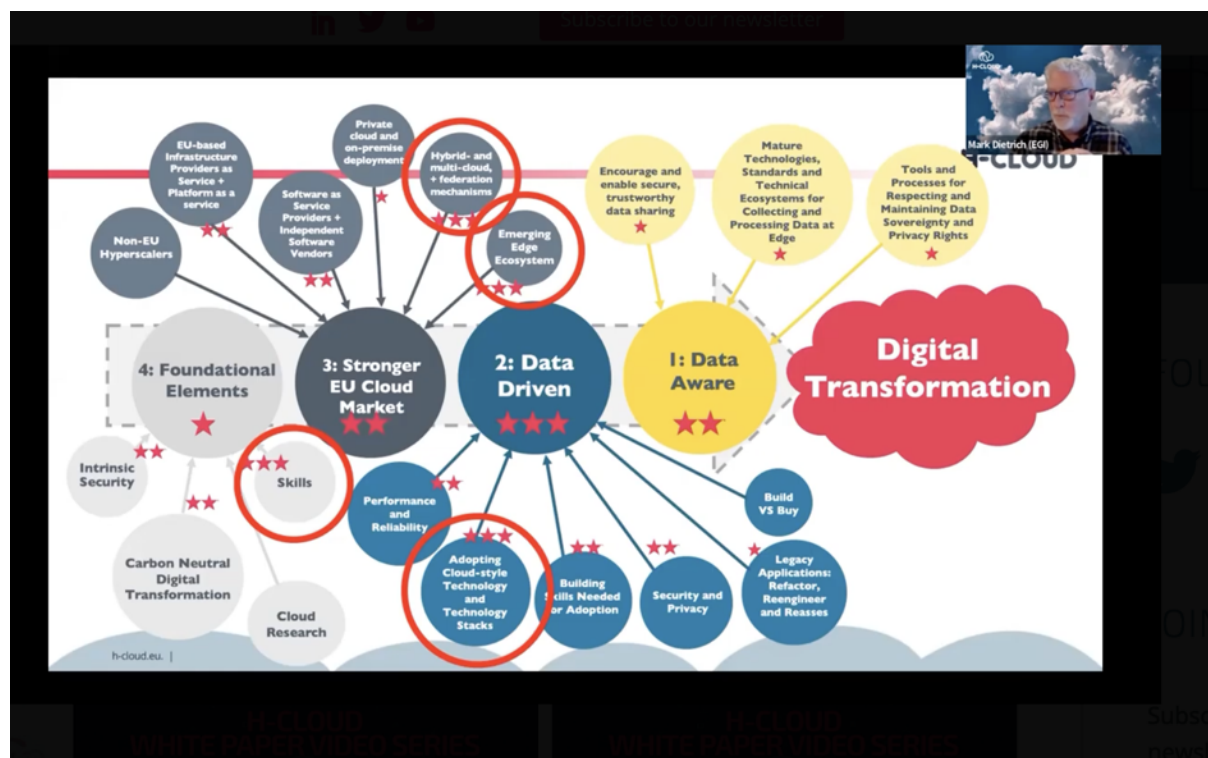


Figure 25: The H-CLOUD Strategic Model presented during the final experts' consultation

Title	Thematic focus	Date	Attendees
H-CLOUD White Paper Consultation: Shaping the European Research Agenda for Cloud Computing (invite-only)	This consultation addressed researchers in the field of Cloud Computing. Most attendees were coordinating or working within one of our Cloud RIAs.	23 Sept 2021	23
H-CLOUD White Paper Consultation: Unleashing Cloud Adoption by SMEs (invite-only)	This consultation targeted European Cloud SMEs.	30 Sept 2021	16
H-CLOUD White Paper Consultation: Supporting European Cloud Providers (invite-only)	This consultation targeted European Cloud providers.	7 Oct 2021	12
H-CLOUD White Paper Consultation during HORIZON CLOUD Summit 2021 (public)	Presentation of the updated version of the White Paper, including recommendations from prior three consultations, and call for feedback from Cloud Expo audience.	8 Dec 2021	110
Final White Paper Consultation Workshop (public)	Presentation of the updated version of the White Paper and feedback gathering from the audience.	24 Feb 2022	19

Table 6: Overview H-CLOUD Experts' Consultation Workshops 2021 – 2022

2.9.2 Events H-CLOUD participated in

H-CLOUD presented at a number of events aiming to promote and communicate, by all relevant means and tools, all relevant information to increase the project's visibility. Participation in events was also an opportunity to increase and strengthen the network of relevant parties interested in becoming part of the audience of the project and intermediaries becoming multipliers of HORIZON CLOUD.

The H-CLOUD representation at the events took place in different ways, including paper or project presentations, simple participation for liaising or networking purposes, workshops organisation or general support of the HORIZON CLOUD related projects. Taking into account that all the events took place in an online format, the use of promotional materials such as brochures, a poster or a roll-up (where relevant) for dissemination purposes was very limited.

A shared Excel sheet template on Google Drive, listing relevant events based on importance and participation was created in order for the project consortium to be able to keep track of the partners' participation and to report about these activities and their impact in the dissemination deliverables as well as on the project website.

During the second half of the project, H-CLOUD participated in 17 external events to interact with the European Cloud community. Table 7 gives an overview of the attended events as well as the level of involvement in these events.

Event title	Organiser	Date	H-CLOUD role	Partner(s) involved
Harnessing the Cloud-Driven Revolution: Trends, Challenges and Opportunities	Advanced Technologies for Industry (ATI) project; commissioned by EASME and DG GROW.	4 Feb 2021	H-CLOUD presentation during event.	ALL
EUOpen4Business - A new compass for SMEs	EC	26 - 28 May 2021	Event attendance and networking.	AL
IDSA Summit 2021	International Data Spaces Association	22 – 23 Jun 2021	Event attendance and networking with other attendees.	EGI
ISC 2021: T-Systems: AI development on Open Telekom Cloud	Open Telekom Cloud	30 Jun 2021	Event attendance and networking with other attendees.	EGI
Information and Virtual Brokerage Session: Horizon Europe 2021 Cloud, Edge, IoT	EC in collaboration with NGIoT	7 July 2021	Event attendance and networking with other attendees.	MARTEL
Stakeholders Workshop: Standards in support of the industrial data value chain	CEN-CENELEC	29 Sept 2021	Invited webinar attendance and networking with other attendees.	EGI
Business Opportunities for the Medtech and Foodtech sector	Palermo University	8 Oct 2021	Event attendance and networking with attendees.	AL

Event title	Organiser	Date	H-CLOUD role	Partner(s) involved
EGI Conference 2021: Beyond the Horizon – Shaping the Digital Future	EGI Foundation	20 Oct 2021	Event attendance and networking with attendees.	MARTEL
Gaia-X Summit 2021	Gaia-X	18 – 19 Nov 2021	Event attendance and networking with attendees.	EGI
BDVA Data Platforms Workshop 1	BDVA	23 Nov 2021	Invited webinar attendance.	EGI
European Big Data Value Forum 2021	BDVA	29 Nov – 3 Dec 2021	H-CLOUD organised a panel session.	ALL
Workshop on a Common European Data Space	EC	2 Dec 2021	Event attendance and networking with attendees.	EGI
Cloud Expo Europe	Closer Still Media	8 – 9 December	H-CLOUD co-located HORIZON CLOUD Summit with this event and attended other Cloud Expo Sessions. H-CLOUD partner Mark Dietrich spoke during the GAIA-X Opening panel.	ALL
FDO Forum - High Level Panel on Future Data Space	FAIR Digital Object Forum	19 Jan 2022	Event attendance.	EGI
Digital Europe: Cloud, Edge and Data Spaces Funding Opportunities Workshop	EC (webinar open to Gaia-X)	28 Jan 2022	Event attendance.	EGI
BDVA Data Platforms Workshop 2	BDVA	1 Feb 2022	Invited webinar attendance.	EGI
DECIDE H2020 workshop: On the road to a successful Energy Community: Identifying and overcoming potential barriers and challenges	DECIDE	15 Feb 2022	Event attendance and networking.	AL

Table 7: List of attended events and level of involvement

2.10 Cooperation and synergies with Cloud Computing projects and other initiatives

One of H-CLOUD's main goals is to create visibility for and connect all CC stakeholders active in Europe. To this end, we were in touch with all active European funded CC projects on a regular basis via different communication channels. We regularly met the communication managers of our RIAs during our monthly **Communication Task Force** meetings. These meetings usually took place on the first Wednesday of a month from 11:00 – 12:00 CET (except during summer breaks). During the whole project runtime of H-CLOUD, we hosted **19 Task Force Meetings**, which usually counted between 10 – 20 attendees on average. The meetings always started with a general HORIZON CLOUD update (e.g., upcoming H-CLOUD meetings and activities) and continued with a tour du table during which all Cloud projects got the chance to share their project updates. Minutes were always taken and H-CLOUD followed-up on any action items (e.g., sharing RIA content via H-CLOUD channels) after the meetings. At the end of the H-CLOUD project and after the HUB4CLOUD RIAs have joined the HORIZON CLOUD initiative, the Communication Task Force currently counts **57 members**.

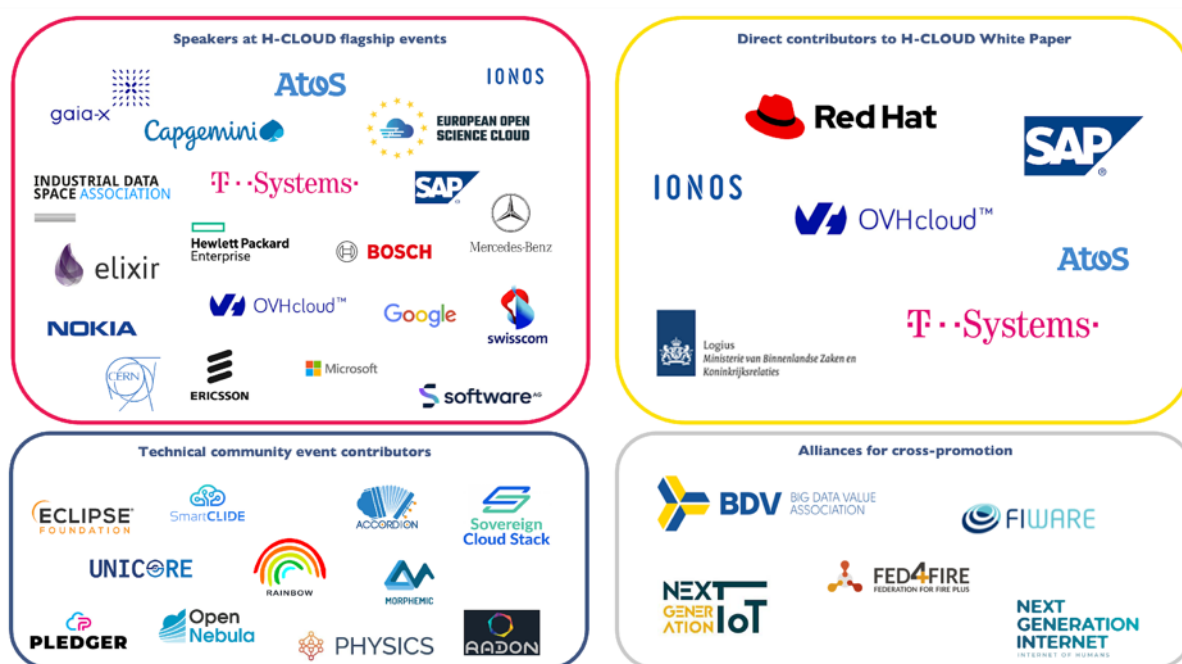


Figure 26: Liaisons with other initiatives

A **mailing list** was established for the Task Force to foster cross dissemination among all members. The Communication Task Force has triggered several inter-project collaborations, such as blog contributions (e.g., for the [Sodalite blog](#)), project collaborations (e.g., [collaboration between SODALITE & RANDON](#)) as well as several joint Technical Community events (see Section 2.9).

In addition to this cooperation with the CC projects, H-CLOUD created many synergies with other Cloud stakeholders on different levels. Figure X highlights some organisations H-CLOUD actively liaised with during project run time. As can be seen in the Figure X, a main collaboration area was speaker placement during events H-CLOUD organised. In the second half of the project, H-CLOUD has successfully placed more than 50 external speakers during its events. Moreover, we had many people from different organisations, which were actively shaping the H-CLOUD White Paper. In addition, we collaborated with different CC stakeholders for our Technical Community events. Finally, we worked together with several Alliances to cross-promote H-CLOUD news, content, and activities via their channels.

3 CONCLUSION, LESSONS LEARNED, AND HANDOVER TO HUB4CLOUD

Running community building and communication activities during two years of a pandemic was a very challenging, yet interesting experience. Even though the H-CLOUD consortium and the EC projects' community (e.g., Cloud RIAs) has never met in person during project runtime, we have managed to set up a trusted working environment in which we did our best to reach our goals despite the challenges around us. During these two years, we had to quickly switch from offline to online mode, especially when it came to event organisation and networking. We learned to use a series of new event organisation platforms and gained a lot of experience with them. In addition, we had to experience that setting up a completely new online community platform is not an easy feat and most likely COVID-19 has made this task even more difficult. We also learned that mobilising our Cloud Community works best via events and meetings. The Communication Task Force was usually very well attended and it helped much in engaging our RIAs in upcoming activities, such as the Community Events. Also, our flagship events HORIZON CLOUD Summit during Cloud Expo Europe and the two additional EC events we organised helped a lot in reaching a broader audience.

Despite the difficult COVID-19 situation, we managed to bring together many European Cloud stakeholders, which supported us heavily in writing the White Paper, expanding knowledge and networks, and promoting European Cloud Computing efforts. Now that H-CLOUD is ending, the consortium is happy to handover all established communication channels and stakeholder networks to our sister CSA HUB4CLOUD, which has heavily supported us already during the past months. HUB4CLOUD will keep H-CLOUD's work alive by taking over the animation of all communication channels. Moreover, HUB4CLOUD will take the lead of the Communication Task Force and Community Events and it will host the third edition of HORIZON CLOUD Summit. Deliverable D2.4 gives a detailed overview of H-CLOUD's sustainability plan, including the exact handover to HUB4CLOUD.

APPENDIX A

Survey Questionnaire

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Informed consent

Welcome to the H-CLOUD Survey, Recommendations on Data Driven Transformation!

Within the context of the European Cloud Computing initiative promoted by the European Commission (EC), the H-CLOUD project is collaborating with the EC and other major European stakeholders to provide strategic guidance and indication on major research priorities and challenges ahead.

To that end, H-CLOUD has formulated a series of recommendations for the future of Cloud Computing in Europe. This survey contains our recommendations on Data Driven Transformation. Please complete the survey to tell us **how you would prioritise these recommendations** based on their importance to you and your organisation. Your input will help set the priorities that will be included in our final report!

If you have any questions about this survey, please do not hesitate to contact us at:

info@h-cloud.eu

Informed consent

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Please note, you can only take part in the survey when you authorise H-CLOUD to process your anonymous data in line with our [H-CLOUD Privacy Policy](#).

Yes No

I voluntarily agree to participate in this survey and authorise H-CLOUD to process the anonymous data I provide.

☐ ☐

THIS BLOCK NEEDS TO BE ADAPTED BASED ON MARK's INPUT

H-CLOUD has formulated specific **deployment related recommendations related to Data Driven Transformation**. Please rank the following (by drag and drop) based on their importance to you and your organisation. You can click on the recommendations to get more information on them.

Items	High priority	Medium priority
<ul style="list-style-type: none"> • Rec 6 First deployments of advanced IaaS/PaaS services 		
<ul style="list-style-type: none"> • Rec 18 Development of open standard/open source cloud software stack. 	Low priority	

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Rec 27

Sector-specific managed databases and custom operating systems, and platforms more generally, for industrialization

-

Rec 26

Managed Databases and custom operating systems for industrialization

-

Rec 38

Examine whether, and the root causes for why, EU IT system integrators are not using EU cloud service providers in project proposals. If confirmed, develop responses to address any bias.

-

Rec 67

Evaluate successful open-standard solutions. There are examples of successful deployment of solutions around open standards, such as FIWARE. These should be evaluated to identify success factors and best practices.

-

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Rec 68

Facilitate/partner in the development of sector-specific SaaS solutions. In each functional area identified in the Legacy Requirement Inventory, coordinate and support the affected community of organisations and potential SaaS providers to develop an awareness of solutions, track early or pilot implementations, and encourage broader adoption.

•

Rec 69

Financial assistance for SMEs transitioning from legacy systems to web / cloud-based solutions. Create a fund to assist with these efforts, perhaps in the form of vouchers, but instead of buying innovations or consulting, they can buy cloud services.

•

Rec 76

Funding for small-scale projects should be provided to enable extended collaboration between security and privacy experts and organisations adopting cloud methodologies.

•

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Rec 92

Provide funding to support initial proof-of-concept cloud implementations with EU IT Suppliers.

•

Rec 90

Pilot coordinated IT development using best practice governance. Support efforts to coordinate development/deployment of IT capabilities using best practice governance identified by the action(s) above.

•

Rec 110

To promote European innovations that can accelerate legacy IT modernization, the EC should stimulate the IT industry and academia to develop legacy-to-cloud migration tool kits that make best practises reusable across member states.

•

Rec 117

Support efforts by EU software developers to create and deploy cloud-native and EU-based application and middleware software.

•

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Rec 118

Set up a parallel structure in InvestEU to support EU-based IT suppliers in their efforts to adopt and deploy innovative cloud-style technologies on behalf of their customers.

•

Rec 119

Set up a structure in InvestEU to support EU-based IT suppliers to mature their offerings, focus their efforts strategically and promote broader adoption of their offerings, for example through supports for client-based proof-of-concept activities.

•

Rec 122

The EC should support the creation of shared service security operations centre (SOC) facilities, perhaps on a sectoral basis, that can provide best practice operational surveillance, threat intelligence and common security information and event management (SIEM) tools.

•

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Rec 170

Funding cloud business and technical skills training programs with a curriculum that covers a mix of Open Source, global supplier and European supplier offerings.

-

Rec 177

Adopt best practices developed for public sector procurement of cloud services, including considering of cloud governance, budgeting mechanisms and definition of “items” to be procured, adaptation to cloud provider business models, understanding the limitations of cloud broker services and research and planning to properly structure any RFP.

-

Rec 190

Accelerate efforts to integrate newer cloud-style technologies (containerization, service mesh, etc.) into their offerings.

-

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Rec 192

Engage and support EU awareness and education campaigns around best practises for security and privacy

-

Rec 196

Increase involvement in Digital Innovation Hubs for cloud technologies

-

Rec 195

Work with customers and across their markets to help organisations implement robust security and privacy practises.

-

Rec 202

Provide support for packaging and migration of on-premise applications (lift and shift) as an initial step toward full IT transformation.

-

Rec 203

Provide tutorials and training for users focused on performance and reliability.

-

Rec 222

Integrate EU-based cloud offerings into cloud-related training activities

-

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•

Rec 226

Cloud native
programming
(provisioning, runtime,
logging).

H-CLOUD has formulated specific **research related recommendations related to Data Driven Transformation**. Please rank the following (by drag and drop) based on their importance to you and your organisation. You can click on the recommendations to get more information on them.

Items	High priority	Medium priority
<u>Rec 18</u> Development of open standard/open source cloud software stack. This could include defining PaaS runtime environment (e.g. Interfaces for monitoring, metering, billing...) as well as standards for northbound interfaces/standards that would foster a shared open ecosystem.		
	Low priority	

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Rec 27

Sector-specific
managed databases
and custom operating
systems, and
platforms more
generally, for
industrialization

Rec 26

Managed Databases
and custom operating
systems for
industrialization

Rec 54

Pan-European data
sharing platforms –
development

Rec 55

Develop procurement
policies that allow
public administrations
to pilot, select and
scale cloud services
in an agile manner.

Rec 71

Fund development of
open source “security”
solutions compliant
with EC requirements
that can be
incorporated by
smaller EU IT suppliers.

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Rec 73

Fund projects including both in IT industry and academia to develop cloud management toolkits based on EU-based infrastructures, that make best practises re-usable across member states

Rec 80

increase funding to, and accountability of, research & innovation projects for external validation and dissemination activities. Funding models should be modernised to incorporate modern agile development approaches with flexible timeframes and objectives.

Rec 82

Legacy Requirement Inventory: Determine legacy requirements across public administration, healthcare, SME and other appropriate sectors.

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Rec 117

Support efforts by EU software developers to create and deploy cloud-native and EU-based application and middleware software.

Rec 120

Support innovative procurement from one or more coordinated cloud initiatives to facilitate market participation for European SMEs.

Rec 167

Incentivize large users (or prospective users) of cloud services to participate in research and innovation projects, and not limit the participation to technology companies, public sector institutions and academic institutions.

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Rec 194

For edge computing, in particular, increase the range of services that can be purchased with a recurring payment model, rather than up-front purchase. This applies primarily to traditional IT hardware suppliers interested in the sale of hardware rather than providing services.

Rec 197

Increase support for customers looking to implement these newer technologies.

Rec 207

Increase the availability of interoperable tools for performance and reliability monitoring.

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Rec 226

Cloud-native programming (provisioning, runtime, logging). Cloud environments offer very powerful tools for scaling individual application components, which enable, for example, different application parts to be scaled differently according to requirements.

H-CLOUD has formulated specific **policy related recommendations related to Data Driven Transformation**. Please rank the following (by drag and drop) based on their importance to you and your organisation. You can click on the recommendations to get more information on them.

Items	High priority	Medium priority
<u>Rec 38</u> Examine whether, and the root causes for why, EU IT system integrators are not using EU cloud service providers in project proposals. If confirmed, develop responses to address any bias.		
	Low priority	

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Rec 50

Create a cloud, edge and data observatory to track cloud and edge technology developments, separate hype from reality and demystify the subject, understand the needs of EU organisations using the cloud or looking to adopt cloud-style methods (e.g. differentiating between large, medium and small enterprises), identify best practices and assist EU organisations in navigating the cloud/edge adoption process.

Rec 53

Design support programmes that find the proper balance between user protection and market regulation to avoid creating barriers for smaller EU IT suppliers.

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Rec 54

Develop and apply new procurement models, e.g. separation of the qualification process and agreement to contract terms, from specific purchasing criteria such as price and quantity.

Rec 55

Develop procurement policies that allow public administrations to pilot, select and scale cloud services in an agile manner. Make procurement policies and cloud services re-usable across member states, as well as making these policies and services accessible by other sectors especially SMEs.

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Rec 58

Document and encourage adoption of best practises for integrating/managing shadow IT (e.g. allow spending up to certain limits, require reporting of spend, review of consolidated shadow IT spending, audit shadow IT for security and privacy).

Rec 60

Encourage award of significant Cloud contracts by public administrations to EU cloud providers

Rec 61

Assemble consortia to agree on common requirements, solicit and qualify multiple potential suppliers and then establish national or regional cloud marketplaces to allow purchasing organisations to select the right product for each requirement.

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Rec 66

Evaluate coordinated public administration IT service efforts. Identify and codify success factors and best practises found in successful regional shared service centres and whole-of-government efforts.

Rec 67

Evaluate successful open-standard solutions. There are examples of successful deployment of solutions around open standards, such as FIWARE. These should be evaluated to identify success factors and best practices.

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Rec 68

Facilitate/partner in the development of sector-specific SaaS solutions. In each functional area identified in the Legacy Requirement Inventory, coordinate and support the affected community of organisations and potential SaaS providers to develop awareness of solutions, track early or pilot implementations, and encourage broader adoption.

Rec 70

Foster collaboration projects between SMEs and vocational educational colleges or universities to stimulate cloud-readiness by SMEs and improve job-readiness of graduates.

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Rec 72

Fund knowledge transfer activities, such as internship and secondment programs, between IT industry and end users of all sizes (starting in public administration).

Rec 74

Fund the creation of a pool of cloud experts that could work freelance at a subsidised or low level cost to give services to SMEs.

Rec 75

Funding for small-scale projects should be provided to enable extended collaboration between experts and organisations adopting cloud methodologies.

Rec 82

Legacy Requirement Inventory: Determine legacy requirements across public administration, healthcare, SME and other appropriate sectors.

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Rec 83

Target the problem of transferring best practices for top experts. The skills of how to operate the tooling can be acquired from anybody

Rec 105

Organize workshops and clinics that allow organisations large and small to bring in experts, on an internship or secondment basis, to help them create robust security and privacy practises, including establishing effective vulnerability and testing regimes.

Rec 112

Fund and support the creation and updating of cloud computing educational programmes and curricula at universities and other appropriate post-secondary institutions.

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Rec 114

Support awareness and education campaigns explaining the shared responsibility model for security and privacy and building understanding and skills within EU organisations regarding their primary responsibility for these issues.

Rec 115

Encourage Member States to create financial incentives for skills development, as well as contributions to open source efforts.

Demographics

You almost reached the end of the questionnaire.

We now would like to ask you a few questions about **the organisation you represent**.

In what sector(s) does your organisation operate primarily? (select all that apply)

- ☐ Green-related sectors, working climate change, recycling, zero- pollution, biodiversity, deforestation and compliance assurance
- ☐ Transport, logistics and personal mobility, including vehicle manufacturing

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- ☐ Healthcare services, life sciences, pharmaceuticals, medical devices, diagnostic and imaging technologies, public health
- ☐ Finance
- ☐ Energy generation, transmission, distribution, storage
- ☐ Agriculture, aquaculture, crops and livestock, food manufacturing, food distribution and retail, including agricultural vehicles and technology
- ☐ Public administration and public services
- ☐ Human resources, professional and skills development and training
- ☐ Information and communication technologies (ICT)
- ☐ Other industrial including manufacturing
- ☐ Other, namely

Please indicate your **specific activities** within the ICT sector. (select all that apply)

- ☐ Computing, storage and networking manufacturers
- ☐ Cloud services providers
- ☐ Software
- ☐ Mobile or fixed line communications products and services (including smartphones)
- ☐ IoT, edge devices, edge service providers
- ☐ Content distribution services
- ☐ Data centre and co-location products and services
- ☐ Value-added reseller
- ☐ System integrator
- ☐ IT security services
- ☐ Cloud broker
- ☐ Standards setting, policy advice
- ☐ Consulting

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☐

Other, namely

Which best describes your current level in your organisation?

- ☐ Owner / Partner
- ☐ Senior Management (CEO / VP / Managing Director)
- ☐ Middle Management (Director / Divisional / Department Head)
- ☐ Front Line Management
- ☐ Experienced: Professional or Non-Management
- ☐ Entry Level
- ☐ Home Based Business Owner
- ☐ Other

How large is your organisation in the EU?

- ☐ Micro (fewer than 10 employees and less than 2 million EUR revenue or total assets)
- ☐ Small (11-50 employees, 2-10 million EUR revenue or total assets)
- ☐ Medium (51-250 employees, 10-50 million EUR revenue, 10-43 million EUR total assets)
- ☐ Large (250-2000 employees, up to 500 million EUR revenue or total assets)
- ☐ Very large (more than 2000 employees, more than 500 million EUR revenue or total assets)

Is your ultimate **parent company** headquartered in the EU?

- ☐ Yes

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☐ No

How would you describe your **involvement with and understanding of** issues related to cloud-based services and technologies?

- ☐ I am involved in technical decisions within my organisation
- ☐ I look at the technology only as much as it relates to my business objectives
- ☐ I am very interested in this technology and follow it very closely
- ☐ I do not follow cloud technologies and hesitate to offer opinions about them
- ☐ Other, namely

Finally, a few questions about yourself.

What is your gender?

- ☐ Male
- ☐ Female
- ☐ Other
- ☐ Prefer not to say

What is your age?

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End

This is the end of the questionnaire. In case you have any remarks concerning this survey, please share them in the text box below.

Otherwise, **click on --> to submit** your completed questionnaire.

Thank you very much for your participation.

Your input is of great value to us!



Funded by the EU's Horizon2020 programme under agreement n° 871920

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Interview Guide AB Interviews

- What do you think are the priorities European industry should tackle in the short term to accelerate digital transformation in Europe?
- What is the role your company is taking into the journey toward digital transformation? How are you contributing to it?
- What actions should the EC promote beyond the current ongoing ones to further accelerate the role of cloud computing in digital transformation?
- How do you see the future of cloud computing in five years from now? What do you think will remain and what would change, according to you, for the end-users?
- What does “digital autonomy for Europe” mean to you? Is this about closing the door to Amazon, Google and Facebook, or something else?