



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 826078.

Privacy preserving federated machine learning and blockchaining for reduced cyber risks in a world of distributed healthcare



Deliverable D9.7
“Video explaining the FeatureCloud Platform”

Work Package WP9
“Dissemination, Training and Exploitation”

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Document information

Grant Agreement Number: 826078		Acronym: FeatureCloud	
Full title	Privacy preserving federated machine learning and block chaining for reduced cyber risks in a world of distributed healthcare		
Topic	Toolkit for assessing and reducing cyber risks in hospitals and care centres to protect privacy/data/infrastructures		
Funding scheme	RIA - Research and Innovation action		
Start Date	1 January 2019	Duration	60 months
Project URL	https://featurecloud.eu/		
EU Project Officer	Christos Maramis		
Project Coordinator	Jan Baumbach, University of Hamburg (UHAM)		
Deliverable	9.7 - Video explaining the FeatureCloud Platform		
Work Package	09		
Date of Delivery	Contractual	30.06.2023	Actual 23.05.2023
Nature	Video (websites, patents, filing etc.)	Dissemination Level	PU (public)
Lead Beneficiary	07 - concentris		
Responsible Author	Nina Donner (concentris)		
Keywords	project video, animation-style video, video interviews, Jan Baumbach, Julian Matschinske, Christof Tschohl, FeatureCloud project, federated learning, distributed learning, GDPR, privacy, security, App Store, AI		

History of changes

Version	Date	Contributions	Contributors (name and institution)
V0.1	02/08/2021	First draft of report	Nina Donner (concentris)
V0.2	08/05/2023	Second draft of deliverable report	Nina Donner (concentris)
V0.3	19/05/2023	Edits and comments (internal review)	Christina Saak (UHAM)
V1.0	23/05/2023	Final version for submission to EC	Nina Donner (concentris), Christina Saak (UHAM)

Actual effort in person-months (PMs)

Contributor (name and institution)	Invested resources (deliverable)	Overview of contributions
Nina Donner (concentris)	0.80 PM	<ol style="list-style-type: none"> Supervision of the animation-style project video production (concept development, feedback, fine-tuning, music selection, upload and finalise, writing of both EN and DE subtitles) Supervision and organisation of video production for the 3 video interviews (concept, collection of answers prior to video interview, recording, raw cut, fine cut, animations, intro/extro, music, feedback & edits, upload, finalise)
Tassilo Steinmann (concentris)	0.10 PM	Raw cut of 1 video (video interview with Julian Matschinske)
Nicolas Lupke (concentris)	0.05 PM	EN and DE subtitles of the 3 video interviews
Jan Baumbach (UHAM)	0.05 PM	<ol style="list-style-type: none"> Interview (prep & participation) Feedback on all 4 videos
Nina Wenke (UHAM)	0.01 PM	Feedback & check / approve subtitles
Julian Matschinske (TUM)	0.15 PM	<ol style="list-style-type: none"> Interview (prep & participation) Conceptualisation and voice-over, feedback on animation-style
Julian Späth (TUM)	0.20 PM	Production of the animation-style project video (conceptualisation and implementation)
Christof Tschohl (RI)	0.02 PM	Interview (prep & participation)
Monica Moga (GND)	0.05 PM	Organisation & final check of the RO and HU subtitles of the 3 video interviews

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1 Objectives of the deliverable based on the Description of the Action (DoA)

WP9, Objective 2: Disseminate the results to the scientific community in the academic and healthcare sectors and foster interaction and exchange with the scientific community and the public (Task 2 and 3)

WP9, Task 3: Dissemination for patients and the public

WP9, Deliverable: D9.7 - Video explaining the FeatureCloud Platform (due in month 54)

According to the DoA, more information, i.e., the benefits of the FeatureCloud platform (aka "[App Store](#)") for patients, how to install and run it, and how to configure user rights according to every individual's preferences, was to be provided in a video and embedded in the project website.

2 Executive Summary

This deliverable report summarises the methodology and results of a collaborative effort between work package 9 (WP9) leader (concentris), the coordinating institution (TUM and UHAM, respectively), and project partners RI and GND to produce not only the **main project video** (3 min, animation style) but also **three more in-depth video interviews** with the scientific coordinator Prof. Dr. Jan Baumbach (leader of WP1, WP7, and WP10) from UHAM, legal and security expert Dr. Christof Tschohl (major role in WP2 and WP6 and WP8 leader) from RI, and the lead developer of the [FeatureCloud App Store](#), Julian Matschinske, PhD Candidate at TUM at the time of the interview.

Methodology: The decision to produce four separate videos was based on the identification of four distinct target audiences (1. general public, 2. scientific & healthcare community, 3. patients and owners of primary medical data, and 4. developers). The videos were produced in reporting period 2 (RP2) instead of reporting period 4 (RP4) to gain momentum, followers, and views early on.

Results: A short [animation-style project video](#) was conceptualised and produced to convey the basic idea behind FeatureCloud and to promote the App Store and its features to the general public. In addition, three more in-depth video interviews were prepared, recorded, and produced - the first one ([Interview with Prof. Dr. Jan Baumbach](#)) is targeted towards the scientific and healthcare community, the second one ([Interview with Dr. Christof Tschohl](#)) is targeted towards patients and data owners, and the third one ([Interview with lead developer Julian Matschinske, PhD Candidate](#)) is targeted towards IT specialists and App developers.

Distinctive features: In its introductory statement, the animation-style project video sets the stage for the FeatureCloud App Store in light of the COVID-19 pandemic that has demonstrated the need for worldwide collaboration and accurate analysis of large amounts of biomedical data to enable the fast development of vaccines and treatments. All videos are underlined with theme-matching music and are animated with professionally designed FeatureCloud graphics where supportive to the scientific message or with humorous cartoons wherever lighter illustrations are appropriate.

Progress beyond the state-of-the-art: Two years prior to the contractual delivery date, we produced not only one but four videos explaining the FeatureCloud App Store to biomedical researchers, to patients, to developers, and to the general public. The animation-style project video provides a general overview of the FeatureCloud App Store for the general public. Its primary purpose is to market and promote the FeatureCloud App Store. The three video interviews explain the platform in much more depth, addressing different target audiences or viewer interests. Therefore, the videos go beyond the state-of-the-art because they not only highlight the cutting-edge nature of the FeatureCloud App Store and its unique ability to enable collaborative, federated bioinformatic workflows, but also provide answers to more in-depth questions that FeatureCloud end users (biomedical researchers), data owners (patients), or app contributors (developers) may have.

3 Introduction (Challenge)

The main challenge was to decide on a) how to serve different purposes (marketing versus in-depth information / science communication) and b) how to reach and inform different target audiences best. For marketing purposes, the steering committee (SC) opted for a short and concise animation-style video targeted towards the general public. For viewers with a deeper interest in the FeatureCloud platform, its collaborative potential for biomedical research, its option for external developers to contribute apps, and its legal background, it was crucial to conduct inquisitive interviews from the perspective of 1) biomedical researchers (end users), 2) patients (data owners), as well as 3) developers (app contributors). Because the videos were created during the intense travel restrictions of the COVID-19 pandemic, Zoom-sessions were used to conduct and record the video interviews. Where possible, layman language was used. Where needed, scientific terminology was explained.

4 Methodology

For the three video interviews, all questions were developed and sent to the interviewees one week prior to the date of the scheduled interview to allow for preparation of bullet-point answers and a smooth and fluent interview process. To solve the problem of the relatively low resolution of each Zoom-recording in the video interviews, the Zoom-frame was placed into a high-resolution background setting during production. Nina Donner (concentris) planned the interviews, collected the bullet-point answers, and performed and recorded the video interviews with Jan Baumbach (UHAM), Christof Tschohl (RI), and Julian Matschinske (TUM) in February 2021. The videos then underwent the raw cut (Tassilo Steinmann and Nina Donner from concentris) and fine-cut stages (editing, transitions, animations, music, intro / extro etc.), using the video editing software *Adobe® Premiere Elements*, before they were exported and uploaded to both the concentris YouTube channel as well as the project-specific FeatureCloud YouTube channel. Nicolas Lupke (concentris) wrote the subtitles in English (EN) and German (DE) while Monica Moga (GND) provided additional subtitle translations in Romanian (RO) and Hungarian (HU) for the three video interviews. These additional subtitles were added to the YouTube videos by concentris and checked by GND.

For the animation-style project video, concentris, TUM, and UHAM collaborated to develop the textual and visual script, including moods and emotions. The concept was then implemented by Julian Späth (TUM) and Julian Matschinske (TUM), using the online video animation software “Animaker” (<https://www.animaker.com>). After the first draft had received feedback from Jan Baumbach (UHAM), Nina Wenke (UHAM), Miriam Simon (concentris), and Nina Donner (concentris), it was further edited, completed with matching music and uploaded by Julian Späth (TUM) to the project-specific FeatureCloud YouTube channel. Nina Donner (concentris) then wrote the English (EN) and German (DE) subtitles which were checked by Nina Wenke (UHAM) before publishing the video and subtitles.

Before publishing the four videos, thumbnails were chosen, titles and descriptions written, and the general settings checked for security (“all comments to be checked before public display”) and age-appropriateness (e.g. “not made for kids”). All videos were approved by the project management office (PMO) and the Impact and Innovation Board (IIB). After a last round of edits and corrections by concentris, the videos were published on both channels ([FeatureCloud channel](#) and [concentris channel](#)) and their views and likes monitored and reported. The videos have since been embedded on the project website and on the App Store website. They will be actively promoted and shared on social media after the accompanying consortium manuscript (recently accepted at the *Journal for Medical Internet Research*) has been published.

5 Results

5.1 Animation-Style Project Video

YouTube URL: <https://youtu.be/FLnNvhCUOIQ>
Available subtitles: English (EN) and German (DE)
Publishing date: 22 June 2021 ([FeatureCloud channel](#))
Duration: 3 min 07 sec
Title: Introducing FeatureCloud - Privacy-Aware AI for Healthcare & Biomedical Research

Description:

Access the FeatureCloud App Store: <https://featurecloud.ai>

Build machine learning models without programming know-how and collaborate across institutions without sharing your datasets!

The FeatureCloud App Store is the central product of a 5-year-long, EU-funded research project. Its goal is nothing less than to revolutionize privacy-aware AI for healthcare. The newly fledged App Store enables biomedical researchers to build machine learning models without any programming knowledge and to collaborate without sharing one's datasets. At the same time, it aims to build a community of developers who contribute their own Apps and AI solutions. We offer guidance with templates, tutorial videos, and a manual, and are always open to feedback.

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Production: Julian Späth (video), Julian Matschinske (voice), Nina Donner (concept, subtitles)

Music: "Turning Tide" by Friends with Animals (Epidemic Sound)

Software: <https://www.animaker.com>

<https://featurecloud.eu>

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Figure 1: Thumbnail (preview screenshot) of the project video.

5.2 Video Interview with Prof. Dr. Jan Baumbach

YouTube URL: <https://youtu.be/tPSoTRUTUJ8>
Available subtitles: English (EN), German (DE), Romanian (RO), and Hungarian (HU)
Recording date: 10 February 2021
Publishing date: 21 April 2021 ([concentris channel](#))
19 May 2021 ([FeatureCloud channel](#))
Duration: 5 min 54 sec
Title: FeatureCloud - Privacy-Aware AI for Healthcare
Description:
Access the FeatureCloud App Store: <https://featurecloud.ai>

The FeatureCloud consortium members have set the bar high for themselves: The goal of the 5-year-long, EU-funded research project is nothing less than to revolutionize privacy-aware AI for healthcare! The newly fledged App Store allows biomedical researchers to build machine learning models without programming knowledge, to collaborate with other institutions without sharing one's datasets, and gives developers the chance to contribute and test their own Apps and AI solutions.

In this Zoom-recorded interview from 10 February 2021, the project's scientific coordinator, Prof. Dr. Jan Baumbach from the University of Hamburg in Germany, explains how FeatureCloud's federated and privacy-aware machine learning approach can make both sides happy, patients and biomedical researchers.

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RO and HU subtitles: Gnome Design SRL (<https://gnd.ro>)

DE and EN subtitles: Nicolas Lupke and Nina Donner (<https://www.concentris.de/en>)

<https://featurecloud.eu>

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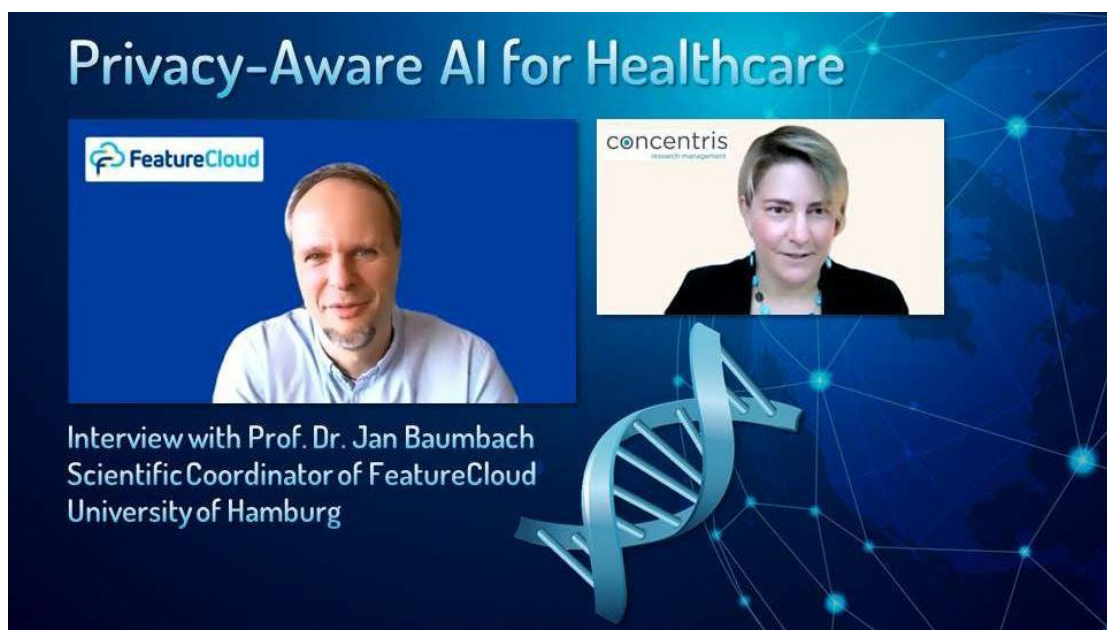


Figure 2: Thumbnail (preview screenshot) of the video interview with Prof. Jan Baumbach.

5.3 Video Interview with Dr. Christof Tschohl

YouTube URL: https://youtu.be/_0Wc0PsoyFo
Available subtitles: English (EN), German (DE), Romanian (RO), and Hungarian (HU)
Recording date: 16 February 2021
Publishing date: 21 April 2021 ([concentris channel](#))
19 May 2021 ([FeatureCloud channel](#))
Duration: 15 min 15 sec
Title: FeatureCloud - Patient Privacy & GDPR Compliance
Description:
Access the FeatureCloud App Store: <https://featurecloud.ai>

The FeatureCloud consortium members have set the bar high for themselves: The goal of the 5-year-long, EU-funded research project is nothing less than to revolutionize privacy-aware AI for healthcare! The newly fledged App Store allows biomedical researchers to build machine learning models without programming knowledge, to collaborate with other institutions without sharing one's datasets, and gives developers the chance to contribute and test their own Apps and AI solutions.

Dr. Christof Tschohl from Research Institute AK & Co KG in Vienna, Austria, is both an IT security expert and a lawyer experienced in the implementation of the privacy-preserving General Data Protection Regulation (GDPR) from May 2018. In this Zoom-recorded interview from 16th February 2021, he answers a broad spectrum of legal, ethical, and philosophical questions around the European GDPR, and explains how FeatureCloud's federated machine learning approach can advance research and save lives while enhancing patient privacy and giving data subjects full control over their medical data.

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RO and HU subtitles: Gnome Design SRL (<https://gnd.ro>)

DE and EN subtitles: Nicolas Lupke and Nina Donner (<https://www.concentris.de/en>)

<https://featurecloud.eu>

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Figure 3: Thumbnail (preview screenshot) of the video interview with Dr. Christof Tschohl.

5.4 Video Interview with lead developer Julian Matschinske

YouTube URL: <https://youtu.be/3l2Prh0IKtg>
Available subtitles: English (EN), German (DE), Romanian (RO), and Hungarian (HU)
Recording date: 09 February 2021
Publishing date: 21 April 2021 ([concentris channel](#))
19 May 2021 ([FeatureCloud channel](#))
Duration: 15 min 01 sec
Title: FeatureCloud - The App Store for Biomedical Research
Description:
Access the FeatureCloud App Store: <https://featurecloud.ai>

The FeatureCloud consortium members have set the bar high for themselves: The goal of the 5-year-long, EU-funded research project is nothing less than to revolutionize privacy-aware AI for healthcare! The newly fledged App Store allows biomedical researchers to build machine learning models without programming knowledge, to collaborate with other institutions without sharing one's datasets, and gives developers the chance to contribute and test their own Apps and AI solutions.

Julian Matschinske, PhD Student at the Technical University of Munich, leads the development of the FeatureCloud App Store. Together with the team around him, he has set up the backend and frontend and optimized its functionality and communication interface. In this Zoom-recorded interview from 9th February 2021, he proudly presents the various features, explains the advantages of FeatureCloud's privacy-aware infrastructure, and invites fellow developers to contribute their own Apps. The App Store already includes many extremely useful federated machine learning Apps for biomedical researchers. Set up a user account and have a look!

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RO and HU subtitles: Gnome Design SRL (<https://gnd.ro>)

DE and EN subtitles: Nicolas Lupke and Nina Donner (<https://www.concentris.de/en>)

<https://featurecloud.eu>

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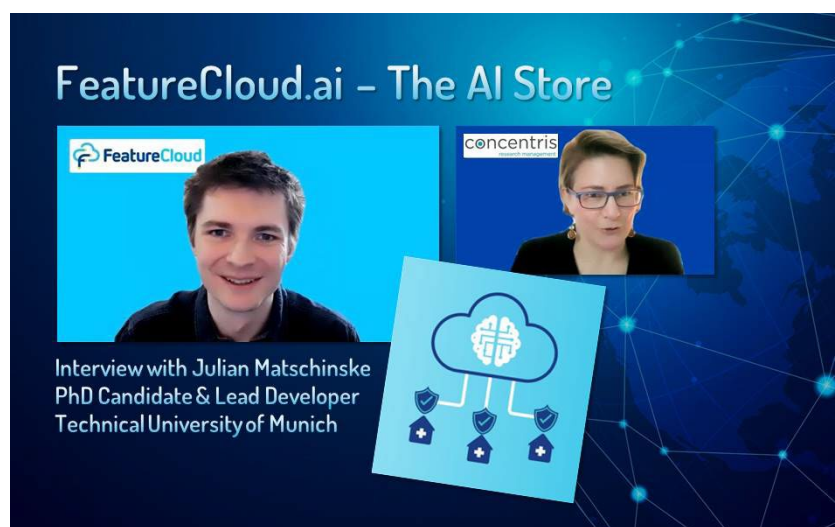
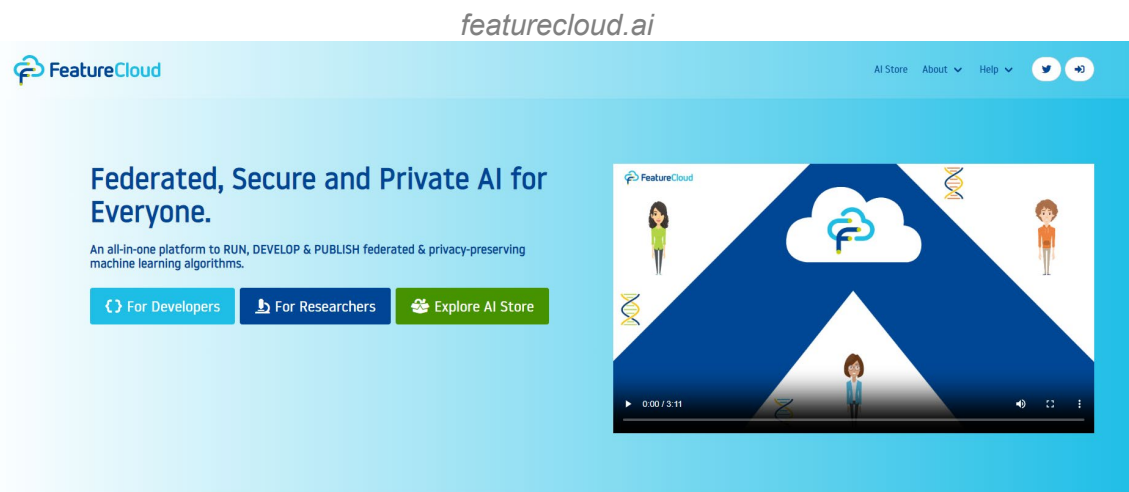
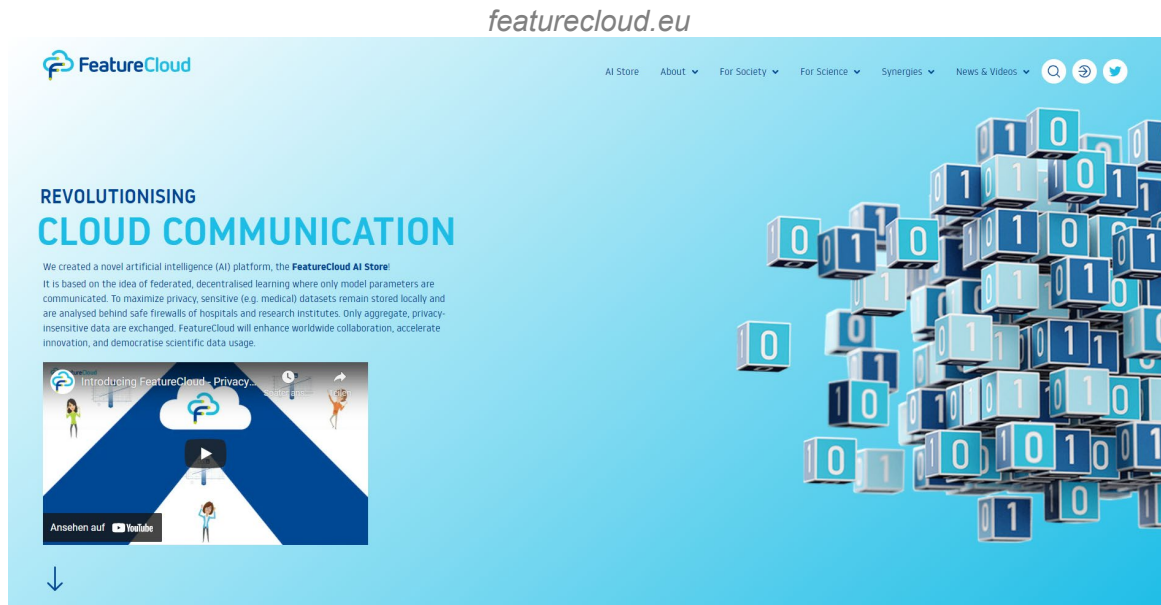


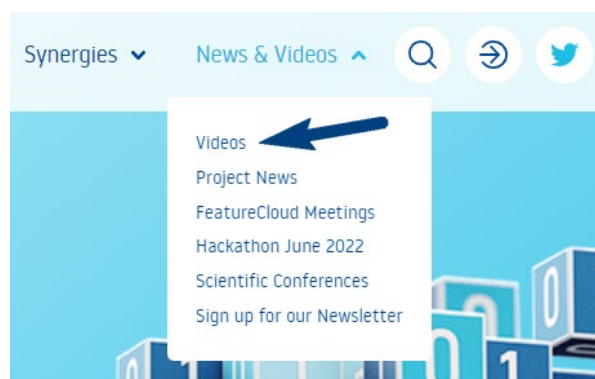
Figure 4: Thumbnail (preview screenshot) of the video interview with Julian Matschinske.

The project video is visible prominently on both the project website (featurecloud.eu) and the App Store website (featurecloud.ai) homepage. See screenshots below:



- Privacy-Preserving AI**
Federated learning, differential privacy and secure multi-party computation enable a privacy-preserving analysis of
- Project Management**
Collaborate across institutions and borders. Build your own workflows, consisting of the federated AIs and train
- AI Store**
Contribute your own federated AI solutions and publish them in our AI Store. With our templates, developing

The video interviews have been placed on the featurecloud.eu subpage "[Videos](#)" under the main menu item "News & Videos" on the project website, see screenshot below:



6 Deviations

No deviations. The videos were published two years in advance, and the accompanying deliverable report is submitted to the European Commission (EC) in time.

7 Conclusion

Although we have not shared the four videos on social media yet, between the two separate channels that were used to publish the videos ([concentris YouTube channel, 381 subscribers](#) vs. the project-specific [FeatureCloud YouTube channel, 29 subscribers](#)), they have already achieved the following key performance indicators (KPIs) by 08 May 2023:

- **836 Views**
- **46 Likes**

The consortium-internal feedback was also quite positive. We therefore consider the overall objective of this deliverable to be achieved and the impact of these videos to be high once we start to actively promote and share them via the project's social media channels.

8 References

- Animation-style project video: <https://youtu.be/FLnNvhCUOIQ>
- Interview with Jan Baumbach: <https://youtu.be/tPSoTRUTUJ8>
- Interview with Christof Tschohl: https://youtu.be/_0Wc0PsoyFo
- Interview with Julian Matschinske: <https://youtu.be/3l2Prh0lKtg>

- FeatureCloud YouTube Channel: https://www.youtube.com/channel/UC_VU1THz8qfOdTuxaYtLOAQ

- FeatureCloud Playlist: <https://youtube.com/playlist?list=PLO8jG2hfQd30lsopMdyG7EJeQi4lk-PIB>

9 Table of acronyms and definitions

AI	artificial intelligence
concentris	concentris research management gmbh
DoA	Description of the Action
EC	European Commission
GND	Gnome Design SRL
IIB	Impact and Innovation Board
KPI	key performance indicator
patients	In this deliverable, we use the term “patients” for all research subjects. In FeatureCloud, we will focus on patients, as this is already the most vulnerable case scenario and this is where most primary data are available to us. Admittedly, some research subjects participate in clinical trials but not as patients but as healthy individuals, usually on a voluntary basis and are therefore not dependent on the physicians who care for them. Thus, to increase readability, we simply refer to them as “patients”.
PMO	project management office
RI	Research Institute AG & Co. KG
RP	reporting period
TUM	Technische Universität München
UHAM	Universität Hamburg
WP	work package