D9.5 Final Showcase Demonstration

sauce

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Abstract	The final showcase demonstration was a virtual presentation of all the SAUCE partners work held at FMX Spotlight on 14th December 2020. This report explains the purpose and context, and describes the creation of two video's to help showcase the project.
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1.0 14-12-20	document created by Peri Friend
1.1 15-12-20	Version for internal review (14 days before submission date)
1.2 21-12-2020	Revisions in response to review: final versions submitted to Commission

Table of Contents

1   EXECUTIVE SUMMARY

The document describes the efforts of the consortium to disseminate our results in a final showcase demonstration. As we weren't able to disseminate in person; this took the form of two videos: a 3 minute introduction to the project which was used at the beginning of a showcase presentation, as well as a 7 minute video covering the breadth of work achieved, which will be put on the project website and shown at the final showcase meeting.

The showcase presentation took place on Monday 14th December at 18:00 CET and was hosted by FMX Spotlight and shown live on YouTube. The hour and thirty minute presentation was then followed by a 40 minute Q&A in which at least one member of each consortium partner was present.

The document describes how and why we created the video's and the efforts involved in putting the showcase demonstration together.

2   BACKGROUND

The project was due to disseminate results at FMX 2020. Unfortunately due to Covid-19 the conference was cancelled, and the deliverable pushed back to Month 36. Instead of presenting in person, we created a showcase presented at FMX Spotlight. The aim of the FMX spotlight series is to bridge the time between now and FMX 2021, with the aim of creating an interactive space to encounter exciting personalities and explore topics and trends from cutting-edge animation, effects, games, immersive media, production and technology.

Despite not presenting in person, the resulting showcase material and talk will be available via YouTube and our project website, enabling a wider reaching audience over time.

Relation to other deliverables:

This document describes the showcase which disseminates all the results from the previous work packages. It is therefore related to all previous deliverables.

Relation to self assessment

The success indicators for WP9 are:

1. Dissemination and Demonstration: meeting the numerical targets set out in the DoA
2. Industry Exploitation: Early commercial success of the individual business partners incorporating SAUCE technologies into products or services; correct prediction of industry and technology trends.
3. Specification Design and Demonstration: approval by industry experts; submission of a draft standard proposal to a formal standardisation body.

This deliverable works towards the first and second goals as we will use the video's and presentation to disseminate information from SAUCE beyond the project end date. Despite not being able to present in person, we feel that the footage created via the showcase and videos, alongside the downloads section of our project website, successfully meets our criteria to share the success of the project.

3   Showcase Videos

In order to successfully advertise the results of the project beyond the project end date, we decided to create a video, which would be used at the beginning of our showcase demonstration, to summarise the consortium's key achievements. We quickly realised we had too many achievements for just a short introduction video, and so we created two. The second, extended version, to be put on the project website.

Both videos feature short clips provided by the consortium to showcase their work. All aspects of the work was included, and all partners were encouraged to contribute to the extended script.

The project management for the videos was overseen by Foundry, while editing was done by Filmakadamie. The video's were narrated by professional voice artist Gabriella Ashcroft [1]

3.1 Intro to SAUCE video

The intro video is a 3 minute video, it is used at the start of the showcase to introduce the project, as well as advertise the showcase demonstration.

It is also available via YouTube, entitled SAUCE Final Showcase Video [2]

The text for the Intro video is:

SAUCE is a three-year EU Research and Innovation project under the Horizon 2020 scheme. Led by Universitat Pompeu Fabra, the consortium is made up of industrial partners Foundry, DNEG and Disney Research Studios, and university partners Brno University of Technology, Filmakademie Baden-Württemberg, Saarland University and Trinity College Dublin.

SAUCE set out to increase efficiency in the creative sector: be that post production, virtual production or games. We looked at future focused technologies such as light fields, as well as improvements to modern pipelines and specific use cases in crowd and animation that will help the artists and studios of today.

All with the aim of saving time and money for an industry which is constantly being pushed to do things faster, to a higher quality, while remaining cost effective.

The University of Saarland, Brno University of Technology and Trinity College Dublin created an end-to-end light field showcase, recording, processing and transforming light fields. Showcased in the unfolding and unfolding 2.0 productions, produced and edited at Filmakadamie.

As this technology develops, it will become easier and cheaper for productions to take advantage of these new workflows in ways that the SAUCE project has prototyped.

Finding, classifying and storing assets can be a significant challenge in an industry where technology and requirements are constantly advancing. DNEG, Foundry and Disney Research Studios have created a fully extensible and interoperable asset library including asset store, classification and transformation framework as well as machine learning classifiers. This framework means an artist could be anywhere in the world and have fast and easy remote access to this powerful asset reuse pipeline. This was showcased by the LED test carried out by Filmakademie.

IP4EC research group at UPF built tools to maintain colour integrity across different display types, viewing conditions and viewers. They also developed tools that can re-contextualise the colour of assets so that they can be reused in different stylistic projects.

Trinity College Dublin, GTI group at UPF, and DNEG, as well as former partner Ikinema, all focused on improving crowd tools. They did this by adding machine

learning so that crowd agents could interact with the scene, and in different stylistic manners, this work was incorporated into Filmakademie's Virtual production editing tools, or VPET, as well as UPF's web tools. DNEG created a suite of tools to improve the control an artist has over crowd placement and trajectory. These improvements mean that crowd assets can be reused in different contexts.

The SAUCE project is committed to encouraging asset reuse in the creative community and has provided a host of creative commons assets such as the light field element shoot, semantic animation library and free miniature city assets in Love & 50 Megatons, as well as publishing a white paper, describing the consortium's use of smart assets and recommendations for continued development.

The SAUCE project is funded under the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 780470.

3.2 Extended video

The extended video is 15 minutes and more extensively covers all partners work. This video is on the project website to promote the project as a whole and to provide more detailed information after the project finishes for dissemination purposes.

The video is called SAUCE Final Showcase Video is available via YouTube [3] And is posted on the Home page [4] of our project website.

The text for the extended video is:

SAUCE is a three-year EU Research and Innovation project under the Horizon 2020 scheme. The project is led by Universitat Pompeu Fabra. Made up of industrial partners Foundry, DNEG and Disney Research Studios, and university partners Brno University of Technology, Filmakademie Baden-Württemberg, Saarland University and Trinity College Dublin.

SAUCE set out to increase efficiency in the creative sector: be that post production, virtual production or games. We looked at future-focused technologies such as light fields, as well as improvements to modern pipelines and specific use cases that will help the artists and studios of today.

All with the aim of saving time and money for an industry which is constantly being pushed to do things faster, to a higher quality, while remaining cost-effective.

The University of Saarland built a 5D light field camera array with 64 cameras attached to a movable platform, allowing the capture of scenes from different views or angles, with an adjustable depth of field.

Saarland worked closely with the University of Brno to develop ways of processing and calibrating light fields to allow fast previews of the captured imagery, and ensure

the vast amounts of data created by the light field array, could be compressed and utilised efficiently.

Trinity College Dublin created a suite of tools to enhance the quality of the data through denoising and colour correction, as well as to extend their functionality and re-usability with tools such as depth estimation and tilt-shift rendering.

We have showcased light fields being integrated into established 2D pipelines and visualised in 3D, in the Unfolding and Unfolding 2.0 productions, produced and edited by Filmakademie.
As this technology develops, it will become easier and cheaper for productions to take advantage of these new workflows in ways that the SAUCE project has prototyped.

Finding, classifying and storing assets can be a significant challenge in an industry where technology and requirements are constantly advancing. We have created a fully extensible asset library that supports any file type including Universal Scene Description, or USD, and can be extended over time as requirements change. As well as an independent scene server for VPET, Filmakademie's Virtual Production Editing Tools, that uses USD as the exchange and backend format to provide 3D assets to the VPET ecosystem, connecting VPET directly to the production pipeline.

DNEG prototyped a framework and UI that enables ingestion and classification via the plugin architecture. This allows contributors to provide vocabularies and ontologies for different asset types, which other partners can then leverage for classification and search. Once ingested, a transformation plugin architecture can be utilised to transform these assets into new use cases and environments, enabling the asset to be used in new contexts or updating them to whatever format the latest technology dictates.

Foundry is developing the back end of their storyboard tool Flix, into a smart asset storage system which is distributed, scalable and fault-tolerant. It can be used both on-premise and in the cloud. The extensible plugin architecture means any asset can be stored and transformed. The external facing API ensures swift and easy communication with partner tools so that actions can be chained and assets remain versioned and secure.

DNEG's Search and Transformation framework and Foundry's Flix asset store are fully interoperable, which means an artist could be anywhere in the world and have fast and easy remote access to this powerful asset reuse pipeline, showcased by the LED test carried out by Filmakademie.

The asset pipeline is enhanced by plugins which classify or transform assets. Experimentations were done within the consortium to cover a range of potential scenarios:

Disney Research Studios created classification algorithms which have been integrated into the Search and Transformation framework. The algorithms learn from data backups and labelled data to label categories and keywords for smart search automatically..

IP4EC research group at Universitat Pompeu Fabra built tools to maintain colour integrity across different display types, viewing conditions and viewers. They also developed tools that can re-contextualise the colour of assets, so that they can be reused in different stylistic projects.

Trinity College Dublin developed an animation classifier, allowing efficient searching for animations through descriptions of exhibited behaviours. They designed bespoke data structures and data verification methods which mirror parts of DNEG's ingestion and classification framework. This allows crowd behaviour to depend on an encoding of the semantics of the scene. A new scene is prototyped by dropping in an existing crowd and calibrating its behaviour by specifying the semantics of the scene through the interface.

This work is complemented by the GTI group at Universitat Pompeu Fabra who created web-based tools which stylize existing animations of background virtual characters by loading them with emotions. Behaviours of background characters with their own identity can be easily created and modified through graph editing of hybrid behaviour trees, which can interact and adapt to dynamic environments, at defined points of interest. The team also took over work initiated by former project partner IKinema.

A motion capture dataset was recorded and released publicly by Filmakadamie, in collaboration with Universitat Pompeu Fabra and Ikinema. Machine Learning was then applied to learn how a human moves. The resulting neural network is capable of animating a user-directed character in real-time. This has been integrated into VPET to provide an open character streaming protocol. Through the interface you can animate characters in a collaborative and distributed virtual environment, with high-level animation commands being directed on the VPET tablet tools.

DNEG's focus with the help of Trinity College Dublin was to repurpose crowds suitable for high-end film production, into new environments, whilst maintaining complete control over trajectory and minimising the need for re-simulation. They created a suite of tools in VFX software Houdini, for transitions, timing and collision avoidance. For post-process foot step clean-up and terrain adaptation, a full body IK system was implemented and used to realistically place the feet of a character on uneven terrain and stairs

The SAUCE project is committed to encouraging asset reuse in the creative community and has provided a host of creative commons assets such as the light field element shoot, semantic animation library and free miniature city assets in Love

& 50 Megatons, as well as publishing a white paper, describing the consortium's use of smart assets and recommendations for continued development.

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4   Final Showcase at FMX Spotlight

The final showcase took place on Monday 14th December and was hosted by Filmakadamie's FMX Spotlight 2020.

It was advertised on their website and shown live on their YouTube channel.

FMX Spotlight on EU Project SAUCE

9 waiting • Premieres 14 Dec 2020
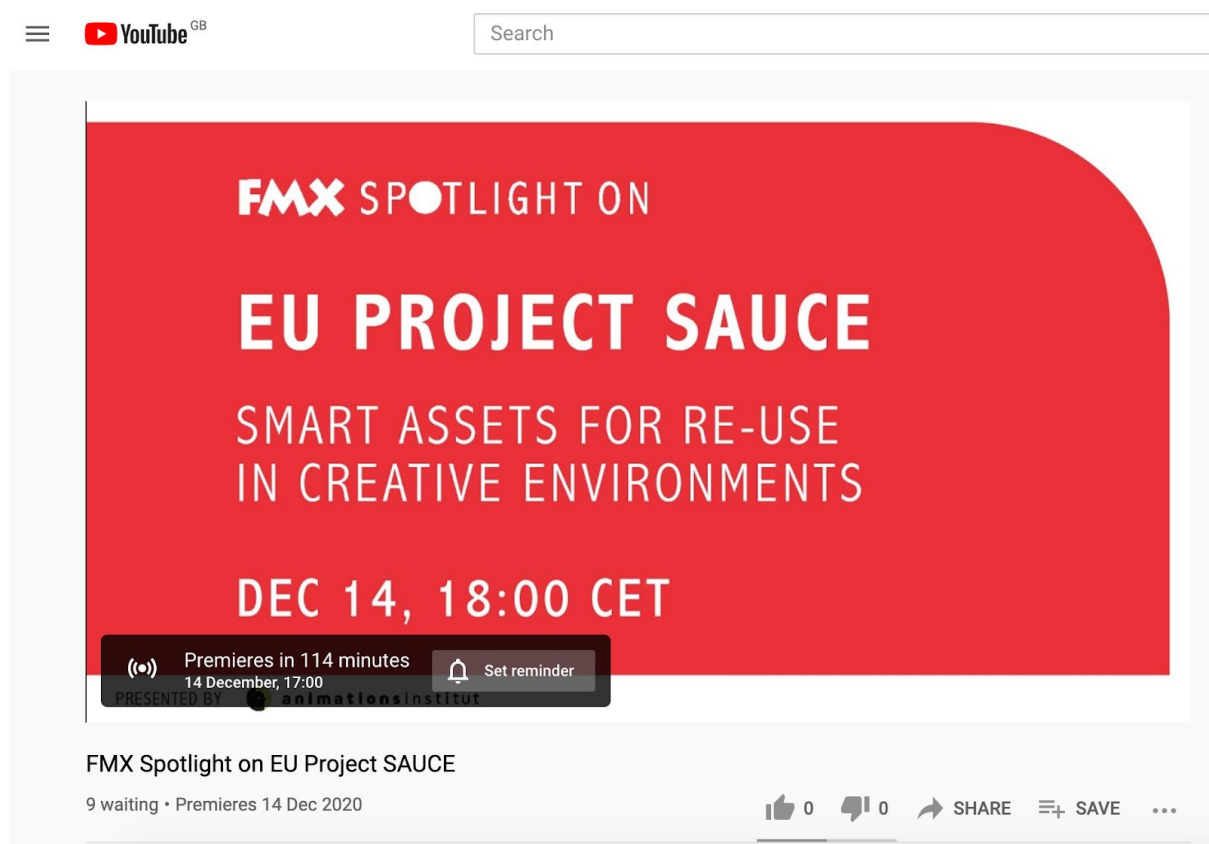
4.1 Preparation

The consortium met every 2 weeks. It was decided that we would go partner by partner, however some consortium members have two different teams both working on independent pieces of work. To create a more unified story, we therefore split some partners so the teams could present at separate points in the showcase.

The final ordering was:

FO   Peri   Introduction to project
USAAR   Thorsten   Light Fields

BUT	Marek	Light Fields
TCD	Martin	Light Fields
FO	Dan	Asset Store
DRS	Hayko	Machine learning
UPF	Trevor	Colour
DNEG	Will	S&T framework
DNEG	Ewan	Crowds
TCD	Pisut & David	Semantic animation & crowds
UPF	David	Semantic animation & crowds
FA	Jonas	Experimental Productions covering all topics

Each partner was asked to provide their showcase material, and it was edited together by Filmakadamie.

The FMX spotlight team advertised the demonstration with three teaser trailers of 25 seconds, showcasing semantic animation, light fields and the asset pipeline, shared via social media channels.

4.2 The showcase

The showcase called FMX Spotlight on EU Project SAUCE [5] went out live on YouTube 14th December 2020. The recording is 1 hour and 30 minutes long and has remained online.
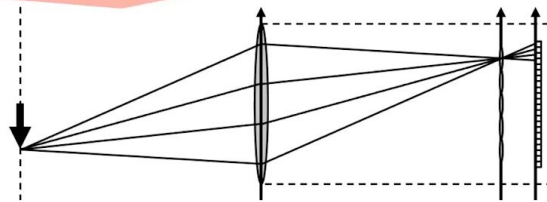
Thorsten Herfet presents University of Saarland light field work.

Martin Alain presents Trinity College Dublin's work on light fields

The showcase is linked to on our project website both on the papers [6] and Technology [7] pages.

4.3 Q&A

The showcase was followed by a Live Q&A over Zoom, with representation from all partners. Viewers were encouraged to ask questions via the YouTube chat function, which were collected and discussed during the Q&A.

Some key questions were:
- What is the "end game" for Sauce? Is the idea that it will be released for people to use? Or a research program that people can use for reference in developing their own pipeline?
- How do you handle edge cases of categories with little training samples when training the machine learning classifications models?
- @William Greenly: How do you deal with missing terms in the WordNet or Wikidata databases? For example WordNet is very poor when it comes to VFX specific words and terms.
- Any connection to Houdini 18.5s new KineFX platform or plans of future implementation? Seems like there's a lot of overlap.
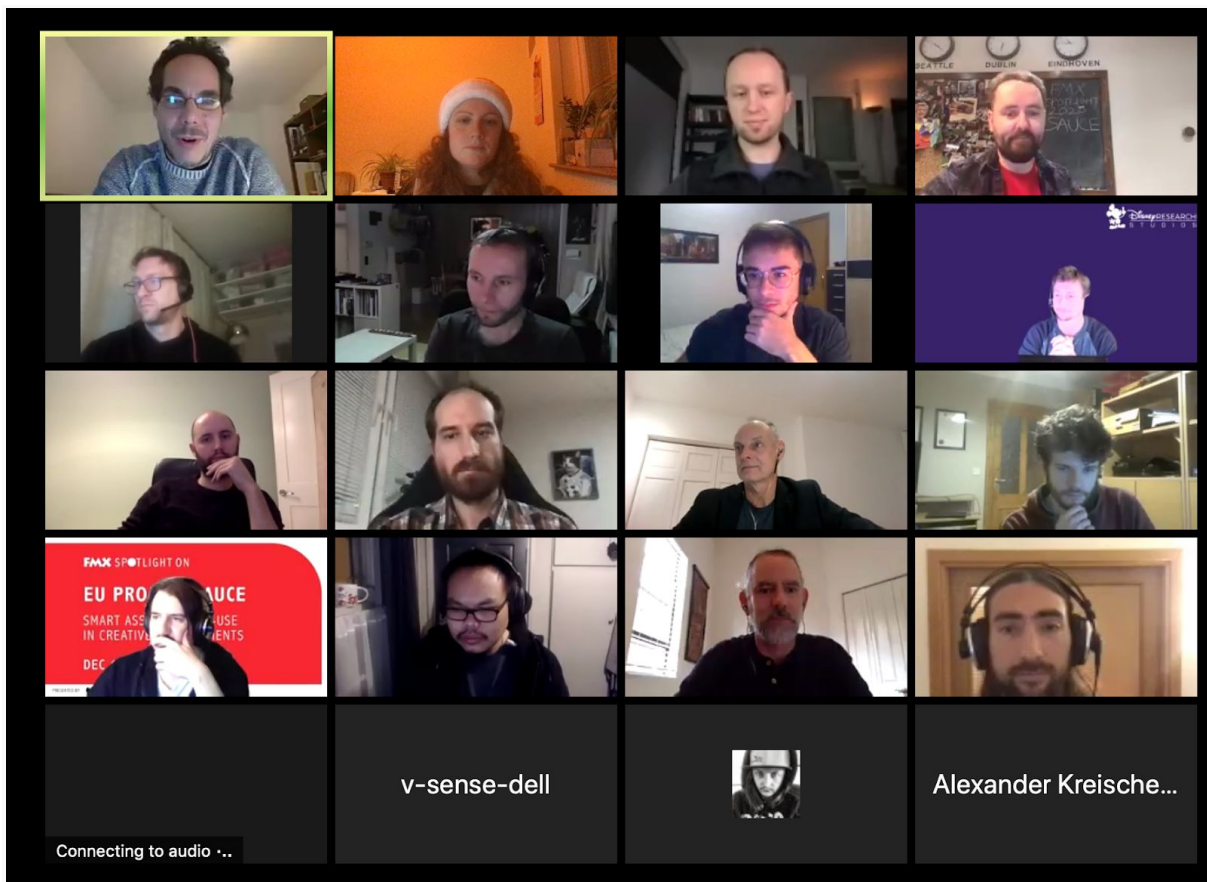
The consortium members in the live Q&A

The live Q&A is being edited and made available via YouTube.

5 Conclusion

While dissemination in person was not possible, we feel that the combination of the online showcase, and the accompanying video's to advertise the project, meet the same objective. While an online demonstration doesn't have the same immediate impact, they provide a longevity that would be otherwise impossible at a live demonstration. Beyond the project end date, the demonstration can be viewed at leisure and as required.

6 Web references

[1] I am Gabriella Ashcroft An actress and voice over artist. [Online] [Available at: http://www.gabriellaashcroft.co.uk/] (Accessed: 15th December 2020)

[2] R&D_Filmakademie (2020) SAUCE Final Showcase Trailer. [Available at: https://youtu.be/NpM_fWv_WdU] (Accessed: 15th December 2020)

[3] R&D_Filmakademie (2020) SAUCE Final Showcase Video. [Available at: https://youtu.be/FB06O5Uzk5Q] Accessed: 15th December 2020)

[4] SAUCE Project [Online] [Available at: https://www.sauceproject.eu/] (Accessed: 15th December 2020)

[5] R&D_Filmakademie (2020) FMX: FMX Spotlight on EU Project SAUCE Available at: https://youtu.be/MVYAHetjUoY (Accessed: 15th December 2020)

[6] SAUCE Papers [Online] Available at: https://www.sauceproject.eu/Docs/Papers (Accessed: 15th December 2020)

[7] SAUCE Technology [Online] Available at: https://www.sauceproject.eu/Technology (Accessed: 15th December 2020)

7 Acronyms and abbreviations

FO: Foundry
DNEG: DNEG (Formerly Double Negative)
USAAR: University of Saarland Informatics Campus
UPF: Universitat Pompeu Fabra
FA: Filmakademie
TCD: Trinity College Dublin
DRZ: Disney Research Zurich
BUT: Brno University of Technology