



Visual Identity

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Table of Contents

Table of Contents2

List of Figures.....3

List of Tables3

Executive Summary4

1 Introduction5

2 Microsoft Word template6

3 Fact Sheet7

4 Video conferencing background9

5 Updates to CoE RAISE’s website10

 5.1 Website header 10

 5.2 Website footer..... 10

 5.3 RAISE Educational Platform..... 10

 5.4 Open Data 11

 5.5 Mobile View 15

6 CoE RAISE Video17

List of Acronyms and Abbreviations.....19

List of Figures

Figure 1: The header and footer area of the CoE RAISE Microsoft Word template	9
Figure 2: CoE RAISE Fact Sheet.....	11
Figure 3: Video conference background image (black)	12
Figure 4: Header of the CoE RAISE website including icons with links to the social media channels on the right side of the navigation menu	13
Figure 5: Footer of the CoE RAISE website including the EU flag and funding information ...	13
Figure 6: The Courses and Events website on the CoE RAISE Educational Platform	14
Figure 7: Screenshot of the Open Data section on CoE RAISE’s website	15
Figure 8: Screenshot of the Open Data website on “Training convolutional neural networks to estimate turbulent sub-grid scale reaction rates”	16
Figure 9: Screenshot of the Open Data website on “Actuated turbulent boundary layer flows”.	17
Figure 10: Screenshots of three mobile views of the CoE RAISE website.....	18
Figure 11: Visitor statistics of the CoE RAISE website across different device types since its publication	19
Figure 12: Scene of the RAISE image video at CERN	21

List of Tables

Table 1: Sequence of clips of the CoE RAISE image video	20
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Executive Summary

This document describes the further development of the visual identity of the European Center of Excellence in Exascale Computing “Research on AI- and Simulation-Based Engineering at Exascale” (CoE RAISE).

The new developments are based on the achievements reported in Month 3 of the project duration in the first Deliverable D6.8 “Visual Identity”, where the RAISE logo, website, social media channels, and first format templates were created. These communication channels and elements enabled the project to be presented to the outside world in a professional manner using various recognition values such as the logo, appealing images, or recognizable colors. Since Month 3, new documents have been created, the website has been revised, and a CoE RAISE image video has been recorded, complementing and extending the previous visual identity of the project.

1 Introduction

The major tasks of Work Package (WP) 6 (Outreach and Services) with respect to Task 6.3 “Dissemination and Communication” of the European Center of Excellence in Exascale Computing “Research on AI- and Simulation-Based Engineering at Exascale” (CoE RAISE) are to:

- Plan, implement, and standardize dissemination and communication activities;
- Prepare tailored material for scientific and industrial stakeholders, and for the wider public;
- Propagate news and publications via RAISE’s Facebook¹, LinkedIn², ResearchGate³, Medium.com⁴, and Twitter⁵ account channels;
- Chose journals and conferences to promote scientific output of RAISE to increase impact; and
- Organize mini-symposia or workshops in relevant conferences to share RAISE research with the Artificial Intelligence (AI) community to produce a video to further enhance the CoE’s visibility.

This document summarizes the Dissemination, Exploitation, and Communication (DEC) activities of Task 6.3 with respect to improvements of the visual identity. It reports on the activities that have happened since the first Deliverable report D6.8, which was submitted in project Month 3 of CoE RAISE. This is the second of two documents reporting on news, changes, extensions, and improvements to the project's visual identity.

In the following, first a new Microsoft Word template is presented in Sec. 2. Section 3 presents a new Fact Sheet document that has been developed for advertisement purposes. Subsequently, Sec. 4 provides information on a background image that can be used for video conferences etc. Section 5 presents new implementations on CoE RAISE’s website⁶. Finally, Sec. 6 describes the recently released CoE RAISE video.

¹ RAISE Facebook <https://www.facebook.com/CoERAISE2021/>

² RAISE LinkedIn <https://www.linkedin.com/company/coe-raise>

³ RAISE ResearchGate <https://www.researchgate.net/project/CoE-RAISE>

⁴ RAISE Medium.com https://medium.com/@raise_info

⁵ RAISE Twitter <https://twitter.com/CoeRaise>

⁶ RAISE website <https://www.coe-raise.eu>

2 Microsoft Word template

A communication portfolio requires to include a template for composing official letters, e.g., for the communication with parties and stakeholders outside of CoE RAISE. For this purpose, an official Microsoft Word template, see Figure 1, has been created and made available for download for the project partners on the Basic Support for Cooperative Work (BSCW) server of Forschungszentrum Jülich GmbH (FZJ) (subfolder CoE RAISE – Templates and Corporate Design – Word Templates)⁷. The template includes the CoE RAISE logo in the upper right corner and mentions the website and the general contact email address raise_info@fz-juelich.de in the footer. It has a simple structure and can be used for any kind of documentation. The colors come from the palette of the logo⁸. It leaves room to personalize the letter by providing sender and recipient information, and space for the letter content. The template has for example been used to provide letters of interest / intend to other parties or projects.

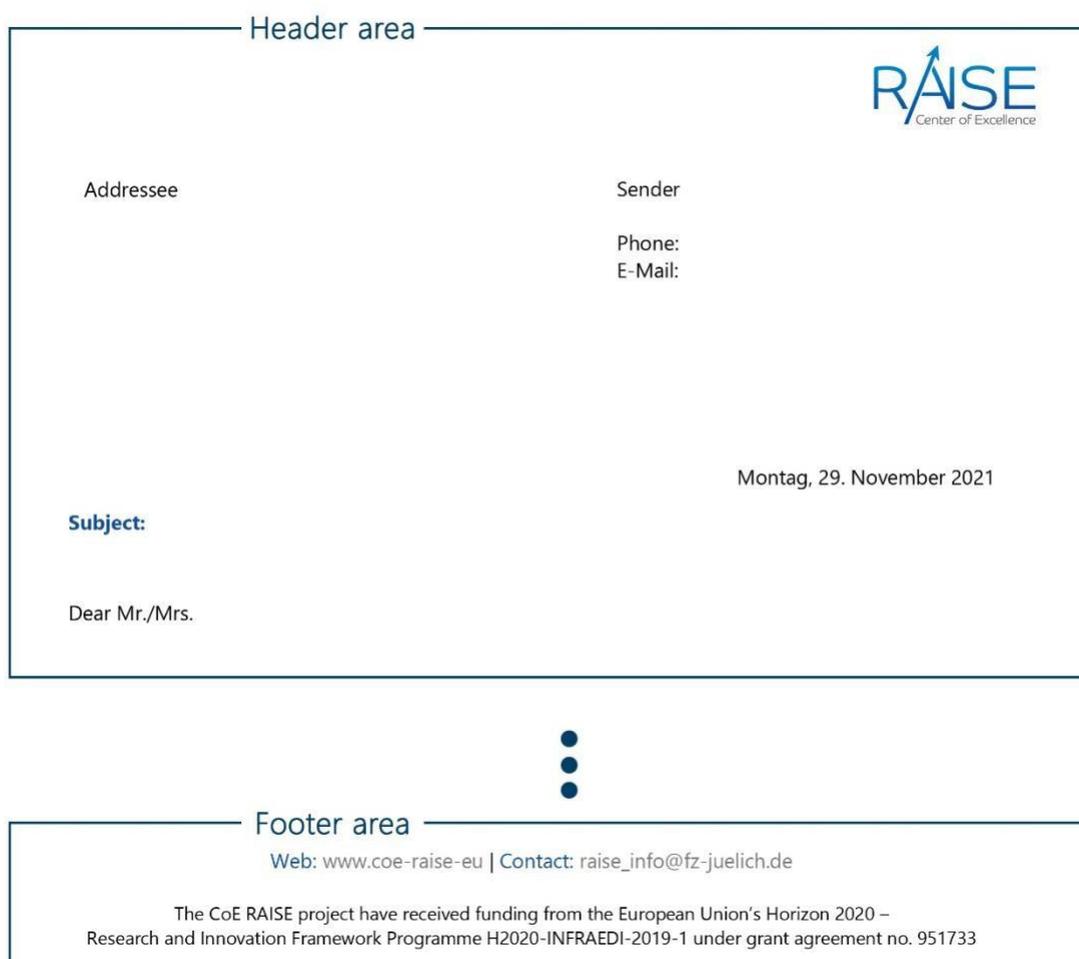


Figure 1: The header and footer area of the CoE RAISE Microsoft Word template.

⁷ BSCW Microsoft Word letter template <https://bscw.zam.kfa-juelich.de/bscw/bscw.cgi/3647134>

⁸ see CoE RAISE Deliverable D6.8 “Visual Identity”

3 Fact Sheet

In order to provide the partners with a document to briefly introduce the project to interested parties, a Fact Sheet has been created, summarizing the main ideas of CoE RAISE. The PDF is also available on the FZJ's BSCW server (subfolder CoE RAISE – Templates and Corporate Design – Fact Sheet)⁹. The document works particularly well as a digital attachment, as it contains many hyperlinks to the CoE RAISE website to retrieve for further content.

Figure 2 shows the document featuring an eye-catcher with the CoE RAISE logo and an appealing picture (which can also be found on CoE RAISE's website). The project is in the first paragraph briefly introduced to the reader before an overview of the research performed in the project is given. For easy comprehension and a visual overview of how the project is structured, icons representing subpages on CoE RAISE's website are provided (*Use-Cases*, *AI at Exascale*, *Reference Codes*, and *Publications*). The information is complemented by brief paragraphs on the *Work Packages* and the *Service Portal & Training*. At the bottom, all partners are listed, as well as contact details and links to the website and social media channels.

⁹ BSCW CoE RAISE Fact Sheet <https://bscw.zam.kfa-juelich.de/bscw/bscw.cgi/3670335>





Drive. Enable. Innovate.

The European Center of Excellence in Exascale Computing "Research on AI- and Simulation-Based Engineering at Exascale" (CoE RAISE) is a project funded by the European Commission under the Horizon 2020 Framework Programme, European research infrastructures (including e-Infrastructures). In RAISE, researchers from science and industry develop novel, scalable Artificial Intelligence technologies towards Exascale along representative use-cases from Engineering and Natural Sciences.

Research

In CoE RAISE, AI and HPC methods are developed along various use cases coming from different domains. CoE RAISE concentrates on scientific developments for compute- and data-driven applications, i.e., HPC codes and workflows from simulation science that deal with solving multi-physics multi-scale problems at large scale and cases that have a strong focus on processing big data in efficient workflows.



Use-Cases



AI at Exascale



Reference Codes



Publications

Work Packages

The core of the technical developments is represented by the activities in the use-case work packages, which are subdivided into Compute-Driven Use-Cases towards Exascale (WP3) and Data-Driven Use-Cases towards Exascale (WP4). Vertically arranged to the use-cases is the work package on AI- and HPC-Cross Methods at Exascale (WP2). WP1 is furthermore the overarching structure to the work packages on Business Development (WP5) and Outreach and Services (WP6).

Service Portal & Training

To enable Europe's industrial and academic sector to further develop and utilize novel HPC-based AI methods, it is mandatory to bridge the expertise developed in CoE RAISE directly to the user communities. This can only be achieved by tailored support, training, and educational activities.

Partners












Contact: coe-raise.eu | raise_info@fz-juelich.de

Follow us: 

Figure 2: CoE RAISE Fact Sheet.

4 Video conferencing background

Due to the SARS-CoV-2 pandemic, most of the exchanges within and outside the project happen via video conferences. To further establish the CoE RAISE brand, background images for such events have been designed, i.e., a black and a blue variant are available for download on FZJ's BSCW server (subfolder CoE RAISE – Templates and Corporate Design – Background-Videoconferences)¹⁰.



Figure 3: Video conference background image (black).

Figure 3 shows the black background image with the key visual of the website, see Deliverable D6.8 of CoE RAISE. In the upper right corner, next to the logo, references to the website and social networks have been placed. The backgrounds have been sent to the partners and they are asked to use them, especially when participating in events outside of CoE RAISE, i.e., to further increase the visibility of the project.

¹⁰ BSCW CoE RAISE VC background images <https://bscw.zam.kfa-juelich.de/bscw/bscw.cgi/3659803>

5 Updates to CoE RAISE's website

Since Deliverable D6.8, which was submitted in project Month 3, there have been a few adjustments and extensions to the website, which, however, do not affect the actual website build. The following reports on these modifications. Section 5.1 and Sec. 5.2 present the updated website header and footer. Subsequently, Sec. 5.3 reports on the RAISE's Education Platform, before Sec. 5.4 and Sec. 5.5 discuss the open data section of the website and the new mobile website view.

5.1 Website header

As the social media channels play a key role in CoE RAISE's communication strategy, the icons of the different channels have now additionally been placed at the top of the website to generate as much attention as possible. Figure 4 shows the website header, where the social media links are placed right next to the navigation menu. As shown in Figure 5, they reappear in the footer of the website.



Figure 4: Header of the CoE RAISE website including icons with links to the social media channels on the right side of the navigation menu.

5.2 Website footer

The EU flag and the funding information have been added to the footer of the website, see Figure 5.



Figure 5: Footer of the CoE RAISE website including the EU flag and funding information.

5.3 RAISE Educational Platform

In the first version of the website, only an overview subpage including information on an upcoming Educational Platform was provided. In the meantime, the partner RTU has

developed this platform¹¹, see Deliverable D6.1, which was due in Month 6 of the project, and the page links to it¹². On this platform, courses currently offered by CoE RAISE and those in the context of, e.g., AI, High-Performance Computing (HPC), or RAISE-relevant research domains are listed. Figure 6 shows a screenshot of this platform, where on the left upcoming events are presented. On the right side, a filter mechanism has been implemented to search and filter for specific topics, fields of research, course languages, formats, and educational levels.

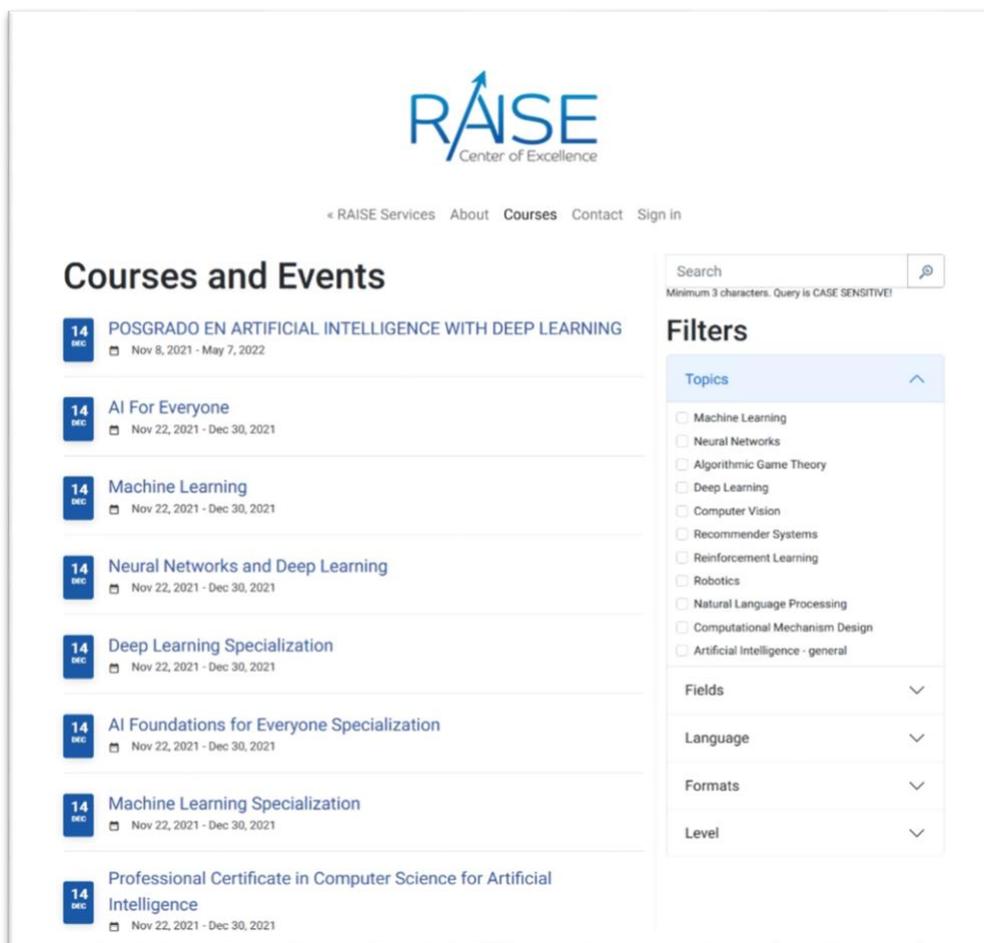


Figure 6: The Courses and Events website on the CoE RAISE Educational Platform.

5.4 Open Data

A major addition to CoE RAISE's website has been included in the *Media* menu. This section now features the *Open Data* subpage¹³ shown in Figure 7.

On this subpage, results and data sets from the use cases are published for downloading and are accessible to everyone. At present, there exists open data for the use cases "AI for turbulent boundary layers"¹⁴ and "AI for data-driven models in reacting flows"¹⁵ of Work Package 3. By clicking on the *Read More* buttons the reader is directed to subpages containing further information, see Figure 8 and Figure 9.

¹¹ CoE RAISE Educational Platform <https://raise.learning.lv>

¹² CoE RAISE Services website <https://www.coe-raise.eu/services>

¹³ CoE RAISE Open Data <https://www.coe-raise.eu/open-data>

¹⁴ Open data actuated boundary layers <https://www.coe-raise.eu/od-tbl>

¹⁵ Open data combustion <https://www.coe-raise.eu/od-combustion>

The screenshot shows the RAISE Center of Excellence website's Open Data section. At the top is the RAISE logo and a navigation menu with links for About, News, Research, Network, Services, Events, and Media. Social media icons for LinkedIn, Twitter, Facebook, ResearchGate, and YouTube are also present. The main heading is "Open Data".

The first data item is titled "Training convolutional neural networks to estimate turbulent sub-grid scale reaction rates". It features a 3D visualization of a turbulent flame structure within a coordinate system (y, z). The structure is divided into three horizontal layers labeled "Burnt", "+ Turbulence", and "Burnt". A "Read more" button is located below the image.

The second data item is titled "Actuated turbulent boundary layer flows". It displays two 3D surface plots of turbulent flow fields. A color scale for the velocity u^* is shown at the bottom left, ranging from -0.040 to 0.040. A "Read more" button is located below the plots.

Figure 7: Screenshot of the Open Data section on CoE RAISE's website.



[About](#) [News](#) [Research](#) [Network](#) [Services](#) [Events](#) [Media](#)

[in](#) [t](#) [f](#) [R](#)

Open Data

Training convolutional neural networks to estimate turbulent sub-grid scale reaction rates

In the combustion community, the determination of the sub-grid scale contribution to the filtered reaction rate in reacting flows Large Eddy Simulation (LES) is an example of closure problem that has been daunting for a long time. CERFACS proposes a new approach for premixed turbulent combustion modeling based on convolutional neural networks by reformulating the problem of subgrid flame surface density estimation as a machine learning task. In order to train a neural network for this task, a Direct Numerical Simulation (DNS) and the equivalent LES obtained by a spatial filtering of this DNS is needed.

- In a first step, two DNS of a methane-air slot burner are run and then filtered to create the training dataset. Models are trained on this data in a supervised manner. In a second step, a new, unseen and more difficult case was used to ensure network capabilities.
- This third DNS is a short-term transient started from the last field of the second DNS, where inlet velocity is doubled, going from 10 to 20 m/s for 1 ms, and then set back to its original value for 2 more ms.

Download (192MB)

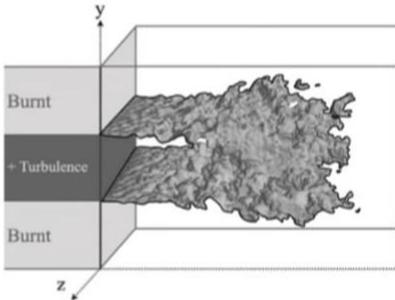


Figure 1: Physical domain used for the DNS. At the inlet, a double hyperbolic tangent profile is used to inject fresh gases in a sheet ≈ 8 mm high, surrounded by a slower coflow of burnt gases. Top-bottom (along y) and left-right (along z) boundaries are periodic. The isosurface is a typical view of $T = 1600$ K for DNS2.

Description of the dataset

Each of the dataset files corresponds to a time step of a simulation and contains 3 fields:

- Filt_8 is the filtered progress variable
- Filt_grad_8 is the DNS field
- Grad_filt_8 is the LES field

Works using this dataset need to cite this manuscript:

Lapeyre, C. J., Misdaris, A., Cazard, N., Veynante, D., & Poinso, T. (2019). Training convolutional neural networks to estimate turbulent sub-grid scale reaction rates. *Combustion and Flame*, 203, 255–264. <https://doi.org/10.1016/j.combustflame.2019.02.019>

Figure 8: Screenshot of the Open Data website on “Training convolutional neural networks to estimate turbulent sub-grid scale reaction rates”.

The screenshot shows the RAISE Center of Excellence website. At the top, the RAISE logo is displayed, followed by navigation links: About, News, Research, Network, Services, Events, Media. Social media icons for LinkedIn, Twitter, Facebook, ResearchGate, and YouTube are also present.

Open Data

Actuated turbulent boundary layer flows

This data collection contains time-series of three-dimensional snapshots for a parametric study of flat plate turbulent boundary layer flow actuated by spanwise traveling transversal surface waves with the goal of friction drag reduction. In the following some details regarding the numerical setup and the structure of the data is given.

[Download full description \(PDF\)](#)

- A full description of the numerical setup and the parametric study is presented in [1].
- The non-actuated turbulent boundary layer flow has a momentum thickness Reynolds number of around $Re\theta=1000$.
- The numerical method discretizes the compressible Navier-Stokes equations at a Mach number of $M = 0.1$, i.e., the flows can be regarded practically incompressible.
- A total of 79 variations of the actuation parameters wavelength, period, and amplitude were considered. To save computational effort shorter wavelengths were partially simulated in domains which are narrower than the maximum wavelength. That is, six different domain widths were considered, therefore there are six different grids, one for each domain width.

Simulation setup

Figure 1: Comparison of the flow structures between (left) the non-actuated reference case and (right) a case with high drag reduction NBD; the contours of the λ_2 -criterion are shown.

Figure 2: Overview of the computational domain of the actuated flat plate. The incoming flow (blue) is created by an synthetic turbulence generation method (STG) [2].

Figure 9: Screenshot of the Open Data website on “Actuated turbulent boundary layer flows”.

Where applicable, the new detailed websites contain the following information:

- A general description of the dataset and the background;
- Simulation setup information;
- A detailed description of the dataset including how it is structured;
- A list of references that need to be cited when the datasets are reused in publications;
- Links to download the datasets including a parameter description and size information; and
- A link to a PDF document containing all these meta data.

It should be noted that the data is stored in a 200TB data project hosted at the Jülich Supercomputing Centre (JSC), FZJ, that was granted for CoE RAISE in 08/2021. All CoE

RAISE participants have access to this project via the JUDOOR platform¹⁶ and `ssh`-¹⁷ (Secure Shell) or Jupyter-JSC-access¹⁸. The data resides on the Jülich Data Access (JUDAC¹⁹) system and is made available via the User Datagram Protocol – File Transfer Protocol (UFTP²⁰). The links to the datasets on the website directly point to compressed and archived files residing on the supercomputing file systems of JSC.

5.5 Mobile View

Websites are nowadays frequently accessed from mobile devices such as smartphones or tablets. Although it is possible to browse desktop versions of websites on mobile devices, navigation is often cumbersome, and the design does not naturally fit the screen of the device.

To also reach the community and stakeholders of CoE RAISE on such devices, and to account for the continuously increasing share of mobile devices used for browsing in general, the previously published RAISE website has been optimized for mobile use, see Figure 10. Figure 11 shows the breakdown of browsing sessions into desktop and mobile accesses. Roughly 75% of the registered accesses since the publication of the website were initiated from desktop environments, i.e., directly from browsers installed on personal computers and laptops. The remaining 25% accesses are coming from mobile devices.

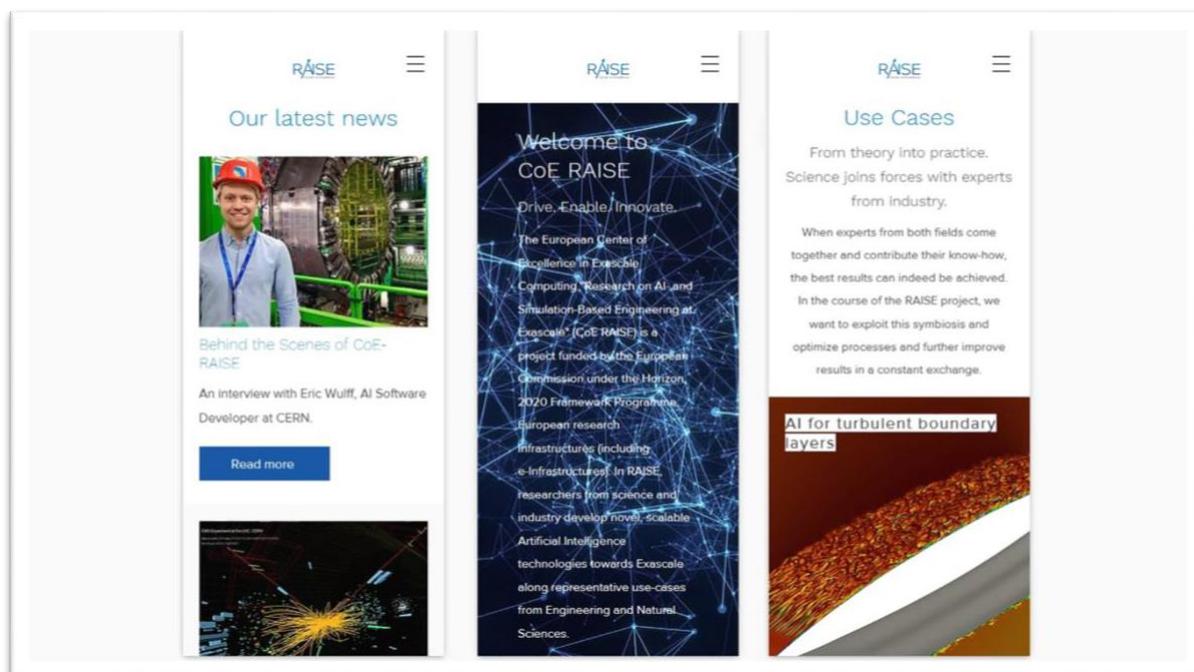


Figure 10: Screenshots of three mobile views of the CoE RAISE website.

¹⁶ JSC JUDOOR <http://judoor.fz-juelich.de>

¹⁷ `ssh`-access at JSC https://www.fz-juelich.de/SharedDocs/FAQs/IAS/JSC/EN/Supercomputers/FAQ_generation_ssh_key.html

¹⁸ Jupyter-JSC <https://jupyter-jsc.fz-juelich.de/>

¹⁹ JUDAC https://www.fz-juelich.de/ias/jsc/EN/Expertise/Datamanagement/JUDAC/JUDAC_node.html

²⁰ UFTP <https://apps.fz-juelich.de/jsc/hps/judac/uftp.html>

Sessions by Device



[See full report](#)

Figure 11: Visitor statistics of the CoE RAISE website across different device types since its publication.

6 CoE RAISE Video

Communicating information via visual media is in many situations more effective. Visual impressions are easier to memorize and catch the viewer's attention easily. That is, many results can be presented better via image material, especially when combined with an audio track (music and/or spoken word).

In order to reach a broad audience, to bring even more attention to the project, a timeless image video has been recorded. This kind of format will be used at least over the next two years to advertise the project, e.g., on events, through the website, and through CoE RAISE's social media channels. In this video, the project is explained on a broad communication level to reach as many people as possible. At the beginning, the Project and Scientific Coordinators give an overview of the project. Then, three scientists explain their work and their use cases. The video closes with a short summary, again by the Project Coordinator. The video is available on the CoE RAISE website as well as on the YouTube channel²¹. The video has been organized and edited by FZJ. Interviews and images material have furthermore been provided by the Barcelona Supercomputing Center (BSC), the European Organisation for Nuclear Research / Organisation Européenne pour la Recherche Nucléaire (CERN), the Cyprus Institute (CYI), Flanders Make VZW (FM), and RWTH Aachen University (RWTH). The following Table 1 summarizes the scenes of the video and Figure 12 provides a snapshot from CERN's contribution.

Time [min:sec]	Content	Contributors
00:00 - 00:05	Intro animation	-
00:05 - 02:10	Introductory words by the Project Coordinator	Andreas Lintermann (FZJ)
02:10 - 04:37	Introductory words from the Scientific Coordinator	Maria Girone (CERN)
04:37 - 05:32	Use-case presentation "Event reconstruction and classification at the CERN HL-LHC"	Maria Girone, Eric Wulff, Christina Bolanou (all CERN)
05:32 - 07:01	Use-case presentation "AI for turbulent boundary layers"	Marcel Aach (FZJ)
07:01 - 08:09	Use-case presentation "AI for wind farm layout optimization"	Guillermo Oyarzun, Guillaume Houzeaux, Beatriz Eguzkitza (all BSC)
08:09 - 08:21	Closing words by the Project Coordinator	Andreas Lintermann (FZJ)
08:21 - 08:33	Outro	-

Table 1: Sequence of clips of the CoE RAISE image video.

²¹ CoE RAISE video on YouTube <https://www.youtube.com/watch?v=W9OCiIFJMxc&t=3s>



Figure 12: Scene of the RAISE image video at CERN.

List of Acronyms and Abbreviations

AI	Artificial Intelligence
BSC	Barcelona Supercomputing Centre, Spain
BSCW	Basic Support for Cooperative Work
CERN	European Organisation for Nuclear Research / Organisation Européenne pour la Recherche Nucléaire, International organization, Switzerland
CoE RAISE	European Center of Excellence in Exascale Computing “Research on AI- and Simulation-Based Engineering at Exascale”
CYI	The Cyprus Institute, Cyprus
DEC	Dissemination, Exploitation, and Communication
EU	European Union
FM	Flanders Make VZW
FZJ	Forschungszentrum Jülich
HPC	High-Performance Computing
JSC	Jülich Supercomputing Centre
JUDAC	Jülich Data Access
ParTec	ParTec AG, Munich, Germany; Linked third Party of FZJ in CoE RAISE
PMT	Project Management Team
RAISE	see CoE RAISE
RTU	Rigas Tehniska Universitate, Latvia
RWTH	RWTH Aachen University, Rheinisch-Westfälische Technische Hochschule Aachen, Germany
SAFRAN	Safran HE, France
SSH	Secure Shell
UFTP	User Datagram Protocol – File Transfer Protocol
WP	Work Package