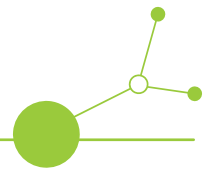# Concept note on joint requirements for an interactive H2CE Collaboration Platform

Version 1

March 2024

Content

1. Project context and background information

This Concept Note represents a basic document, which goal is to frame the development of the interactive H2CE Collaboration Platform as one of the important outputs of the "Empowering H2-ready regions in Central Europe" project (H2CE project). It´s goal is to guide the whole network's methodological background, system of work, including its activities, objectives and communication plan.

> The importance of the project lies in interregional cooperation, which will certainly be further boosted and strengthened by the online H2CE collaboration Platform.

The concept note represents a maximum concept, meaning it encompasses the broadest range of ideas and possibilities, but it does not guarantee the implementation of all features outlined within. This document is not a feasibility study and regarding the actual implementation of features will be subject to further evaluation, feasibility assessments, budget considerations, and stakeholder input.

The decision to develop a new platform within H2CE project dedicated to fostering collaboration among hydrogen stakeholders in the Central European (CE) region stems from a **confluence of factors that highlight the strategic importance of hydrogen in the energy transition and the unique challenges and opportunities present in this specific geographical area.** These important factors are represented among others by:

a) <u>Strategic Importance of Hydrogen:</u>
   - The global shift towards cleaner and more sustainable energy solutions has elevated the importance of hydrogen as one of the key players in decarbonization efforts.
   - Hydrogen is recognized as a versatile and environmentally friendly energy carrier, with the potential to play a pivotal role in sectors such as industry, transportation, and power generation.

b) <u>Regional Potential in Central Europe:</u>
   - The CE region, comprising countries such as Austria, Croatia, Czech Republic, Germany, Italy, Poland and Slovakia possesses significant potential for hydrogen production, distribution, and utilization. In the initial phase of the project in the context of Central Europe, the countries involved in the development of the H2CE platform are primarily envisaged. In the context of the operational phase of the platform, it is more than likely that the platform will be extended to other countries such as Hungary, Slovenia etc.

- The unique industrial landscape and energy infrastructure in the CE region create specific challenges and opportunities that necessitate a tailored approach to hydrogen development.

c) **Need for Collaborative Solutions:**

- Addressing the multifaceted challenges of hydrogen adoption, such as infrastructure development, regulatory frameworks, and market integration, requires a collaborative and multidisciplinary approach.
- Collaboration among stakeholders, including industry players, policymakers, researchers, and investors, is crucial for the efficient development and deployment of hydrogen technologies.

d) **H2CE's Role as a Catalyst:**

- H2CE, will be a player in the region dedicated to advancing hydrogen technologies, is well-positioned to facilitate collaboration and coordinate efforts among diverse stakeholders.
- The organization recognizes the importance of creating a centralized platform that brings together experts, innovators, and decision-makers to collectively address challenges and capitalize on opportunities unique to the CE region.

The overall project objective is to empower public authorities & administration in Central Europe (CE) to integrate hydrogen proactively & sustainably into regional planning & development. This Concept Note represents one of the important piece of the puzzle in the whole process.

The common challenges H2CE is tackling are a smart integration of hydrogen solutions & renewable energies into the regional energy transition to reduce GHG emissions from different sectors. The project focuses on transferable energy planning at local & regional levels for EU regions.

2. Examples of already existing platform and potential for synergies

Online platforms close to the envisaged H2CE platform include[1] various online solutions dedicated to innovative energy trading and sustainability solutions supporting the development of the hydrogen economies and/or specific parts of the hydrogen value chain. These include platforms that connect energy producers, distributors and consumers to optimize energy use and reduce environmental impact. These platforms include e.g. consumption tracking, renewable energy supply mapping and enable environmentally friendly energy trading. Integrated technologies such as these platform help to enable efficient governance and foster transparency in the energy sector. The platforms often focus also on promoting sustainable development and new technologies for green and cost-effective energy solutions.

> We can distinguish platforms that exist purely on the principle of cooperation between partners and do not provide any on-line/interactive solution and platforms that have their own on-line space dedicated for further boost of the goal of their own. The goal of the H2CE Collaboration Platform is to develop an online collaboration environment as a priority at this point.

In following lines, you will find basic examples of both types of the platforms, which can be found in the CE region at the time of closing of text of this Concept Note:

Collaboration Platforms without exclusively dedicated on-line/interactive solutions:

a) Moravian-Silesian Hydrogen Cluster

The Moravian-Silesian Hydrogen Cluster is a collaborative initiative that focuses on advancing hydrogen-related technologies, innovation, and sustainable development within the Moravian-Silesian Region in Czech Republic. As a dynamic platform, the cluster brings together various stakeholders from academia, industry, government, and research institutions to drive the growth of hydrogen-based solutions.

b) Hydrogen Platform of the Ústí Region

The Economic and Social Council of the Ústí Region serves as a pivotal platform for fostering collaboration, dialogue, and cooperation among various stakeholders within the Ústí Region in Czech Republic. Its primary focus lies in addressing economic and social challenges, identifying opportunities for development, and promoting sustainable growth related to the potential of developing the complex hydrogen value chain in the region. Activities incl. Strategic Planning (incl. development and updating the regional hydrogen strategy), Research and Analysis, Partnerships and Networking etc.

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[1] taking into account the CE region

c) The Saxon Competence Center for Hydrogen

A large range of options offers The Saxon Competence Center for Hydrogen, known as "KH2", serves as a central contact point for citizens, municipalities, media, business, and science, where they can address all inquiries related to the production, transportation, storage, and use of hydrogen. Among its main tasks are answering general questions about hydrogen, building awareness and acceptance of hydrogen, and providing information and advice for companies, science, and research on all aspects of hydrogen and financing options. The goal is to build a hydrogen economy across the entire value chain in the Free State of Saxony, further strengthening Saxony's strongholds in research and development, engineering, and existing infrastructure, thus contributing to achieving key climate goals. Saxony thus becomes a leading location for industrial hydrogen technologies, ensuring jobs, creating added value, and supporting climate protection – ecology and economy go hand in hand in the Free State of Saxony, complementing and reinforcing each other.

Collaboration Platforms with exclusively dedicated on-line/interactive solutions

a) Hydrogen Europe

One of the largest Collaboration Platforms is certainly Hydrogen Europe (https://hydrogeneurope.eu/). Hydrogen Europe is a mission to pave the way for the widespread adoption of clean hydrogen, positioning it as a readily available and cost-effective energy carrier and feedstock crucial for fueling Europe's net-zero economy. The organization acts as a unifying force, bringing together a diverse spectrum of stakeholders, ranging from large enterprises to small and medium-sized enterprises, national hydrogen associations, non-governmental organizations, regional public authorities, and other relevant entities committed to advancing clean hydrogen and fuel cell technologies. Hydrogen Europe is dedicated to advocating for policies and initiatives at national, European, and international levels that enhance the market penetration of European hydrogen technologies both domestically and globally. Through the promotion and coordination of research, development, and innovation, the organization aims to foster the growth of reliable clean hydrogen technologies. By serving as the trusted and unified voice of the European hydrogen sector, Hydrogen Europe strives to be the driving force shaping the future direction of the hydrogen industry, contributing to the creation of sustainable jobs and fostering economic growth. Hydrogen Europe currently has approximately 543 members.

This network is constantly expanding. Corporate Members, Non-Profit Members composed of European National Hydrogen and Associations, Non-European National Associations, European Regional Members, Project Members or Global partners.

This screenshot shows the user interface of the "Members Only Area" section of the Hydrogen Europe platform. This exclusive area offers members access to important resources, information and interactions that are key to their engagement and participation in the organization. With its intuitive design and streamlined layout, the platform provides members with a clear and easy-to-use tool for accessing relevant data and engaging in current topics and discussions. This functional and clear structure allows members to quickly find the information they need.
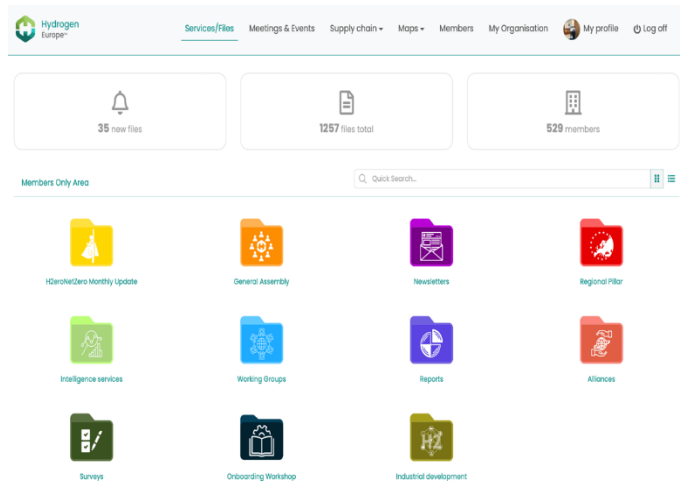
b) <u>National Hydrogen Association of Slovakia</u>

Another sophisticated Collaboration Platform is NVAS (https://nvas.sk), which also, like Hydrogen Europe, has its own Membership Area. The National Hydrogen Association of Slovakia (NVAS) was established in 2015 as a joint initiative of individuals and legal entities with the aim of promoting research, deployment and use of new technologies that actively use hydrogen and fuel cells. Its leadership participated in the preparation of the National Hydrogen Strategy and the Action Plan for the implementation of the hydrogen strategy objectives. It works closely with ministries, particularly the Ministry of Economy, to help its members and partners ensure an appropriate legislative and regulatory environment for building the hydrogen value chain in Slovakia. Main objectives: implementation of best practices within the Slovak Republic, shaping effective public policy and legislation. To be an asset to its members in terms of prompt delivery of news on regulatory decisions, new policies and technologies in the hydrogen and fuel cell sector. Build and share networks of potential business and professional partners.

c) Czech Hydrogen Technology Platform

One of the largest Collaboration Platforms in the Czech Republic is the Czech Hydrogen Technology Platform. On the website, as it was with the already mentioned platforms, there is a Membership section. The Czech Hydrogen Technology Platform (https://www.hytep.cz/) serves as a vital hub for advancing hydrogen-related technologies, research, and innovation within the Czech Republic. As a collaborative initiative, it brings together key stakeholders from academia, industry, government, and research institutions to drive the development and integration of hydrogen solutions. Activities: Research and Innovation, Industry Collaboration, Project Development, etc.

d) Hydrogen Marketplace Brandenburg – "Localiser"

The German Collaboration Platforms certainly include Localiser, which also corresponds to the previous specifics concerning the Membership Zone (https://www.localiser.de/).In the pursuit of sustainable business models centered around hydrogen, Localiser takes a pioneering step with the development of Germany's premier web-based digital hydrogen marketplace. This groundbreaking platform ensures a secure hydrogen supply by providing a data-supported, geo-referenced representation of hydrogen locations across the country. Unveiling a new era in the hydrogen economy, the marketplace not only makes hydrogen demand and production visible but also facilitates seamless transactions and collaborations within the hydrogen sector.

e) Hydrogen Poland

One of the most important Polish platforms is Hydrogen Poland, which offers valuable information on upcoming events related to the hydrogen economy (https://h2poland.com.pl/en/). Hydrogen Poland is an organization of entrepreneurs in the field of hydrogen economy, built from the bottom up based on a strong competence foundation. The main task of Hydrogen Poland is to represent the interests of Polish business at home and internationally. Hydrogen Poland offers a wide range of consulting and training services, supports investment processes in the area of hydrogen technology, and seeks sector synergies to improve project efficiency. The association provides comprehensive support for the legislative process, from public affairs activities to the preparation and opinion of draft laws or other legislation on the process of implementing hydrogen and fuel cell technologies. The association's experts have extensive experience in obtaining investment funds from European funds for the implementation of hydrogen projects in Poland, promoting, supporting and accelerating the implementation of hydrogen and fuel cell ("FCH") technologies in the country, providing expertise and advice to selected entities.

3. Initial draft of framework of activities, information and expert services, tools etc. the new platform will offer

The new collaboration platform within H2CE aims to serve as a nexus for knowledge exchange, best practice sharing, and other wide scope of joint initiatives. By fostering partnerships and promoting innovation, the platform seeks to accelerate the development and integration of hydrogen technologies within the CE region.

In summary, the decision to develop a new collaboration platform within H2CE is driven by the recognition of hydrogen's strategic significance, the specific potential within the CE region, and the imperative for collaborative solutions to address challenges and leverage opportunities. H2CE, through this initiative, seeks to play a role in shaping the future of hydrogen in Central Europe and contributing to the broader global transition towards sustainable energy.

As part of the service proposal for the H2CE online platform, a questionnaire survey was conducted, which was divided into two distinct sectors: private and public. This survey was distributed in collaboration of all the project partners directly to the involved stakeholders in respective regions. The total number of respondents reached 84, with 40 of them responding to questions related to the private sector and 44 respondents providing answers regarding the public sector.
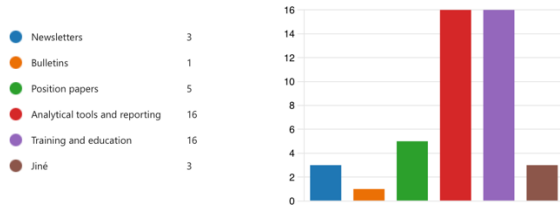
The primary objective of the questionnaire survey was to gather information from respondents regarding the proposed services that the online platform H2CE should offer and provide. The survey comprised of four questions. The first question pertained to the identification of the subject, while the subsequent questions were dedicated towards the services proposed to be part of the platform.

In the course of the questionnaire, respondents were invited to share their insights and preferences regarding the specific services they believe the H2CE platform should encompass. This approach aimed at eliciting valuable feedback to inform the development and refinement of the platform's service offerings. Through a structured inquiry process, the survey sought to not only establish the identity of the participants but also to delve into their expectations and requirements concerning the services provided by the platform. Based on the questionnaire survey and their outputs, the services that the platform should offer are based on the identified needs and preferences of the target audience, ensuring a tailored and user-centric approach to meet their specific requirements and enhance overall satisfaction and engagement with the platform.

Public sector

2. What do you find most interesting about the idea of developing the H2 collaboration platform, potentially the most beneficial for you?

Další podrobnosti

● Newsletters	3
● Bulletins	1
● Position papers	5
● Analytical tools and reporting	16
● Training and education	16
● Jiné	3

Private sector

3. What do you find most interesting about the idea of developing the H2 collaboration platform, potentially the most beneficial for you?
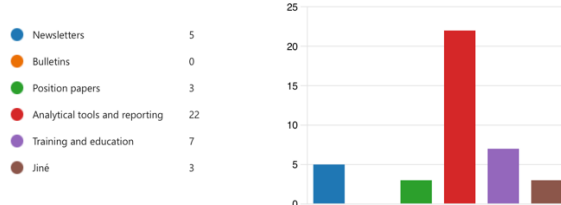
Další podrobnosti

● Newsletters	5
● Bulletins	0
● Position papers	3
● Analytical tools and reporting	22
● Training and education	7
● Jiné	3

The graphics clearly describes that the highest demand from both sectors is predominantly for Analytical Tools and Reporting, as well as Training and Education. This observation underscores a shared priority across the sectors for advanced analytical capabilities and effective reporting mechanisms. Moreover, the emphasis on Training and Education highlights a collective recognition of the importance of skill development and knowledge enhancement within these sectors. This insight can serve as a valuable guide for strategic planning and resource allocation to meet the specific needs and preferences articulated by stakeholders in both sectors.

The development of the new collaboration platform within H2CE is guided by a comprehensive framework of activities, information dissemination, and expert services. Each element is strategically designed to meet the diverse needs of hydrogen stakeholders in the Central European (CE) region, fostering collaboration, knowledge exchange, and project development. The justification for each facet of the framework is outlined below.

In terms of the future functioning of the platform, including its financing, this matter will be adequately reflected in the ongoing development of the H2CE cooperation platform itself.

In following subchapters there is a basic description of each of the envisaged service the platform will offer.

3.1 Regular Newsletters and Ad-Hoc Reports

Periodic newsletters, released semi-annually, will serve as a valuable communication tool, offering stakeholders insightful updates on the most recent advancements in the hydrogen sector. These newsletters play a crucial role in keeping stakeholders abreast of the dynamic landscape of the hydrogen industry. With a specific focus on providing timely information, ad-hoc reports are strategically crafted to delve into critical issues, including but not limited to, changes in hydrogen legislation.

Newsletters will provide timely updates spanning across European and national spheres, ensuring subscribers stay informed about developments on both regional and local fronts, fostering a comprehensive understanding of current affairs.

The justification for this systematic approach lies in its ability to guarantee ongoing awareness among stakeholders. By disseminating periodic newsletters, stakeholders are not only kept informed about the latest industry trends but are also brought up-to-date on significant policy changes and legislative updates pertinent to the hydrogen sector. This continuous flow of information is essential for fostering a comprehensive understanding of the industry's evolving dynamics.

Moreover, the proactive dissemination of ad-hoc reports addresses immediate concerns and emerging challenges, ensuring that stakeholders are well-equipped to navigate complex issues. This proactive approach is pivotal for strategic decision-making, as it empowers stakeholders with the knowledge needed to make informed choices in a rapidly changing environment. **In essence, the combination of periodic newsletters and ad-hoc reports creates a robust information-sharing mechanism.** It establishes a consistent flow of updates that not only informs stakeholders about the present state of the hydrogen industry but also equips them with the insights necessary for making strategic decisions that align with the prevailing trends, policies, and legislative landscape. Establishing a systematic system of regular updates that quickly informs platform members of changes in legislation related to hydrogen projects seems essential for all the hydrogen stakeholders.

These measures include regular newsletters, legislative update emails and a calendar of regular online meetings to discuss current legislative changes.

Within the platform, the newsletter can be directly linked to dedicated interactive discussion forums on the platform where members can discuss current legislative issues. These forums will provide a space for exchange of views, sharing of insights and peer-to-peer advice within the community.

Webinars and Training: Regular webinars and training sessions focused on legislative developments in the hydrogen project space. These events will allow platform members to gain a deeper understanding of current legislative issues and prepare for potential changes.

The proposed activity should be closely linked to the roles of the partners in the project's different regions, as with other proposed activities. They should be able to use their close contact with local hydrogen stakeholders to benefit from possible agreements.

For example, selected representatives of these stakeholders could communicate a certain topic to a wider range of stakeholders for whom the platform is intended. This can be achieved through active communication in the territory and cooperation with local hydrogen stakeholders.

The newsletter content will be sourced from consortium members and existing project partners to ensure a comprehensive and inclusive representation of ongoing activities. In the upcoming phase, a designated coordinating person, yet to be determined, will take charge of consolidating the gathered information. This individual will play a crucial role in assembling, organizing, and synthesizing the diverse updates and insights into a cohesive newsletter. Once compiled, the information will be disseminated through a designated platform, enhancing accessibility for all stakeholders. This collaborative approach ensures that the newsletters reflect the collective progress and contributions of the consortium, fostering transparency and effective communication. The forthcoming establishment of the coordinating role underscores the project's commitment to streamlining information dissemination processes, ultimately facilitating a more streamlined and efficient communication flow within the consortium and beyond.

3.2 Position Papers

The comprehensive approach involves not only the development but also effective communication of expert opinions. This will be achieved through the creation of meticulously crafted position papers, specifically focusing on legislative matters concerning important aspects of hydrogen economics development especially at the European level. These position papers can serve as a beacon of expertise, offering a consolidated viewpoint on intricate legislative issues in the realm of hydrogen economics.

The underlying rationale for this initiative is rooted in the need to foster a harmonized and collective voice from the Central European region. By consolidating expert opinions into position papers, the initiative aims to reach significant influence on policymaking processes at the European level. This concerted effort seeks to advocate for regulatory environments that are conducive to the growth and sustainability of hydrogen-related endeavors. Furthermore, the justification extends beyond mere influence, aiming to promote collaboration among stakeholders. The position papers act as a catalyst for dialogue and cooperation, encouraging stakeholders to align their interests and work collaboratively towards common goals. By presenting a unified stance, the initiative not only contributes to shaping favorable regulations but also cultivates an environment where stakeholders actively engage with one another, fostering a sense of shared responsibility.

In essence, the development and communication of expert opinions through position papers are strategic tools aimed at not only influencing European policymaking but also fostering collaboration among stakeholders.

Position papers will be processed based on the principle of coordinated work of all members of the platform. The methodological patronage of this activity will be ensured at the level of an authorized entity - a member of the project consortium or an authorized group of members of the project consortium. The details will be specified with the further development of the online collaboration platform as such.

3.3 Surveys on Hydrogen Economies

The initiative involves conducting both regular semi-annual surveys and ad-hoc surveys to evaluate the progress of hydrogen economies in both the Central European (CE) region and specific individual regions. This comprehensive approach to surveying aims to capture a holistic view of the evolving landscape, ensuring a thorough assessment of the development of hydrogen economies at both macro and micro levels.

The justification for this systematic surveying approach lies in the invaluable data it generates. The data collected from these surveys serves as a crucial resource for decision-makers, offering a foundation for well-informed and strategic decision-making processes so needed i.a. within any spatial planning activity. By systematically gathering information on the development of hydrogen economies, decision-makers can gain insights into trends, challenges, and opportunities that shape the regional landscape.

Furthermore, these surveys play a pivotal role in identifying growth areas within the hydrogen sector. The data-driven insights derived from the surveys enable stakeholders to pinpoint specific regions or aspects of hydrogen economies that exhibit potential for expansion or improvement. This targeted identification of growth areas is instrumental in directing resources, investments, and efforts towards maximizing positive outcomes. **The strategic importance of these surveys is emphasized by their ability to guide tailored strategic initiatives that align with regional needs. Armed with accurate and up-to-date data, stakeholders can design initiatives and interventions that address the unique challenges and capitalize on the opportunities prevalent in each region.** This tailored approach ensures that strategic endeavors are not only well-informed but also finely tuned to the diverse characteristics and requirements of the Central European region and individual sub-regions.

In summary, the combination of regular and ad-hoc surveys serves as a robust mechanism for evaluating the development of hydrogen economies, providing essential data for decision-making, identifying growth areas, and guiding strategic initiatives tailored to regional nuances.

A future Platform Coordinator, whose role will be defined in the next phase, will lead the surveys to explore the hydrogen economy. These surveys will be strategically targeted at relevant stakeholders and/or specific hydrogen value chain sectors with a focus on obtaining validated information that is essential for the Platform. The Coordinator will design and disseminate surveys to relevant respondents within the hydrogen sector, ensuring a comprehensive understanding of current trends, challenges and opportunities. By engaging key players in the hydrogen economy, the platform aims to gather accurate and timely data to enable informed decision making. The results of the surveys will contribute to shaping the Platform's strategy and facilitate collaboration between hydrogen stakeholders. **This proactive approach to information gathering underlines the Platform's commitment to keep pace with the dynamics of the sector and to foster a robust environment for the exchange of knowledge and expertise in the evolving landscape of the hydrogen economy.**

3.4 Opportunity Exchange Space

The initiative also entails the establishment of a dedicated exchange space designed exclusively for stakeholders involved in hydrogen projects within the Central European (CE) region. This space will serve as a dynamic space where stakeholders can not only showcase their projects but also actively seek potential partners, supporters, and participants in their projects and hydrogen related activities.

The emphasis is on creating a centralized hub that will facilitate meaningful connections and collaborations, ultimately contributing to the advancement of hydrogen initiatives in the CE region.

The justification for this dedicated space lies in its ability to foster collaboration among stakeholders with shared interests. By providing a designated space for project presentation and partnership exploration, the initiative seeks to bridge connections between like-minded entities.

This collaborative approach is instrumental in overcoming potential silos, ensuring that stakeholders with common objectives can join forces, share expertise, and collectively contribute to the success of hydrogen projects. Moreover, the platform can play a crucial role in streamlining project development processes. Stakeholders can use this space to not only showcase their ongoing projects but also to seek relevant support and participation. This streamlined approach accelerates project development timelines by facilitating efficient communication and collaboration, eliminating potential bottlenecks, and fostering a more agile and responsive project ecosystem, also within various spatial planning processes.

The goal of this platform is to maximize the utilization of resources available within the CE region. By creating a centralized space for stakeholders to connect, share resources, and engage in collaborative efforts, the initiative aims to ensure that the collective capabilities and expertise of the stakeholders are harnessed to their full potential. This resource-efficient approach contributes to the overall sustainability and success of hydrogen projects in the CE region.

The effectiveness of Opportunity Exchange Space is conditioned by the effective leadership of the project partners - members of the project consortium, whose role will be through active communication in the territory of the individual regions involved in the project, to communicate the importance of sharing information within this exchange space and at the same time participate in moderating the content of this section so that the exchange of information within it brought the expected effect. The details will be specified with the further development of the online collaboration platform as such.

3.5 Expert Services

As already indicated, the justification for the platform is rooted in its capacity to cultivate a collaborative ecosystem. By connecting experts from the CE region, the initiative taps into a wealth of regional knowledge and experience. This collaborative approach becomes instrumental in enhancing the success rate of hydrogen projects by promoting the exchange of insights, best practices, and lessons learned.

The platform thus becomes a catalyst for shared knowledge and support, fostering an environment where experts collaborate to overcome challenges and optimize project outcomes.

The platform will be designed to leverage regional expertise effectively. By bringing together experts from the CE region, it ensures that the unique insights and experiences of the local context can be integrated into spatial development processes, project development and implementation strategies.

This regional focus enhances the adaptability and relevance of initiatives, aligning them more closely with the specific needs and dynamics of the Central European hydrogen landscape. **In essence, the platform serves as a dynamic connector, not only linking experts within the CE region but also providing a collaborative space where shared knowledge and support are pivotal.** This approach can not only enriches the pool of expertise available for hydrogen projects but also contributes to a more robust and resilient hydrogen ecosystem in the Central European context. By fostering collaboration and leveraging regional expertise, the platform can become a key driver in enhancing the overall success and sustainability of hydrogen initiatives in the CE region.

At the moment, it can be assumed that the role of selected hydrogen stakeholders from individual regions - primarily research organizations, universities and companies that have the relevant knowledge background - will be essential for the development of the platform's expert services. The method of providing expert services and their financing will be the subject of further methodological preparations as part of the further implementation of the H2CE project.

3.6 Hands-On Trainings and Education

In relation to training and educational activities, two basic lines of focus are considered in direct connection with the development of the platform:

a) educational and training activities aimed at developing the skills of stakeholders for the possibility of effective work with the H2CE Collaboration Platform itself

The effectiveness of the platform is conditioned by the ability of its users to use its potential to the maximum extent possible - the platform will thus offer so-called on-boarding meetings, which will have the character of informational and educational activities aimed at acquiring knowledge and skills that will enable users to work with the platform.

The initiative involves the implementation of training sessions, spearheaded by seasoned instructors, with the primary objective of instructing users on the effective utilization of the collaboration platform. These training sessions serve as a crucial component in ensuring that users, whether novice or experienced, can navigate the platform with proficiency.

The justification for these training sessions lies in their capacity to empower users to interact with the platform efficiently. **By providing guidance from experienced instructors, users gain valuable insights into the intricacies of the collaboration platform, allowing them to harness its full potential.**

The emphasis is on equipping users with the necessary skills to engage optimally with the platform, ensuring not only seamless navigation but also proficient information retrieval.

Furthermore, these training sessions play a pivotal role in fostering collaboration among users. A well-informed user base is better positioned to actively participate in collaborative efforts facilitated by the platform. Users, having acquired the skills and knowledge through the training sessions, can engage more meaningfully, contributing to a dynamic and productive collaborative environment.

In essence, the training sessions are a strategic investment in user proficiency, aiming to eliminate potential barriers to effective platform utilization. Empowered users are better equipped to navigate the platform with ease, retrieve information efficiently, and actively engage in collaborative endeavors. This approach ensures that the collaboration platform becomes a facilitator of seamless interactions, enhancing user experience, and ultimately contributing to the success of collaborative initiatives.

On-boarding meetings will be important in the phase of the initial launch of the platform as such, in a longer-term perspective we assume that they will continue to be implemented as needed in direct connection with the number of new stakeholders interested in cooperation in the development of the hydrogen economy in the CE region. Education at this level will be provided primarily from the level of key project partners participating in the development of H2CE Collaboration Platform, incl. partners (jointly) developing its technical background.

b) a wide range of educational, training and workshop opportunities focused on the issue of hydrogen economy development

Knowledge is one of the most important factors for the development of the hydrogen economy. As part of the H2CE Collaboration Platform, efforts will be made to ensure that its users have access to news and information fundamentally influencing the potential of the development of the hydrogen economy. The project partners aim to offer a range of educational and training opportunities through it in the future, which will meet this goal. **The goal is to offer a range of online and in-person educational events that will, among other things, take into account the specific needs and situation of the individual regions involved in the project.** At the same time, representatives of the project consortium can fulfill the role of both technical coordinators of given educational opportunities and their actual providers.

The detail of the format of providing educational and training activities at this level will be the subject of further methodological preparation within the progressing implementation of the H2CE project. It can be assumed, for example, that some important thematic areas could be covered in the future by the active approach of selected hydrogen stakeholders from the CE region - members of the platform, who could actually provide education and training activities for other members of the platform.

3.7 Suggestions and Feedback Mechanism

The user-friendly suggestion and feedback interface of the platform will serve as a pivotal element, providing stakeholders with an easy accessible space to share their suggestions and offer valuable feedback. This inclusive approach is instrumental in fostering an environment where stakeholders actively engage with the platform, contributing to its refinement and evolution.

The justification for implementing such a functionality is rooted in the concept of continuous improvement. By facilitating an open channel for stakeholders to share their insights, suggestions, and feedback, the platform ensures a dynamic and adaptive nature.

This constant influx of user input becomes a driving force behind enhancements to the user experience, allowing the platform to stay responsive to the evolving needs of its user base. The user-friendly interface acts as a conduit for a two-way communication process between the platform and its stakeholders. Stakeholders, be they members or contributors, feel empowered to express their opinions, enabling the platform to gain a comprehensive understanding of user expectations and preferences.

This engagement loop becomes the catalyst for iterative improvements, creating a platform that is not only user-centric but also reflective of the diverse perspectives within the stakeholder community. Moreover, this approach instills a sense of ownership among stakeholders, as they actively contribute to shaping the platform's features and functionalities. **The platform, thus, becomes a collaborative space where user insights are not just valued but actively sought after. This user-driven model aligns with the overarching goal of providing a tailored and effective platform that meets the specific needs of its stakeholders.**

In conclusion, the user-friendly interface of the platform stands as a testament to its commitment to continuous improvement. By embracing stakeholder suggestions and feedback, the platform not only enhances its user experience but also ensures its adaptability to the changing landscape of user requirements, creating a robust and user-centric digital environment.

At its core, this framework is a strategic amalgamation of information dissemination, collaborative tools, and expert services. By integrating these components, the platform evolves into a dynamic ecosystem that operates as a catalyst for progress in the field of hydrogen technologies. The deliberate inclusion of these diverse elements ensures that the platform remains not only relevant but also highly effective in realizing its objectives and making meaningful contributions to the advancement of hydrogen technologies within Central Europe.

The significance of this conceptual framework lies in its ability to provide a comprehensive solution to the multifarious challenges associated with hydrogen development in the CE region. The regular dissemination of newsletters, coupled with ad-hoc reports addressing pivotal changes in hydrogen legislation, ensures that stakeholders are consistently informed. This, in turn, empowers decision-makers with the necessary insights to navigate a rapidly evolving landscape.

The framework's emphasis on the creation and dissemination of common position papers is particularly noteworthy. This strategic initiative facilitates the communication of expert opinions, fostering a collective voice from the CE region. By actively participating in shaping legislative matters related to hydrogen economics at the European level, stakeholders within the CE region can significantly influence policy decisions, paving the way for a more conducive regulatory environment.

Surveys, both regular and ad-hoc, provide a robust mechanism for gauging the pulse of hydrogen economies in the CE region. This data-driven approach ensures that strategic initiatives can be precisely tailored to address the unique challenges and capitalize on the opportunities prevalent in specific regions.

The dedicated opportunity exchange space within the framework serves as a virtual marketplace where stakeholders can present and seek collaboration for their hydrogen projects. This not only expedites project development but also facilitates a seamless exchange of ideas and resources among like-minded entities, ultimately fostering a collaborative ethos within the region.

Moreover, the provision of expert services within the platform engenders a collaborative environment where experts from the CE region can offer and seek support. This interconnected network of expertise not only accelerates the pace of project development but also ensures a higher likelihood of success through shared knowledge and collaborative efforts.

In addition, the hands-on online training sessions led by experienced instructors play a pivotal role in maximizing user engagement. By providing step-by-step guidance on utilizing the platform effectively, these training sessions empower users to navigate the intricate features, interact seamlessly with others, and manage their content efficiently.

A fundamental aspect of the framework is the incorporation of a user-friendly suggestions and feedback mechanism. This interactive feature allows platform users to share their insights, enabling a continuous feedback loop that serves as the bedrock for ongoing improvements. This iterative process ensures that the platform remains adaptive, responsive, and in tune with the evolving needs of its user base.

In conclusion, this conceptual framework is not merely a theoretical construct; it is the operational backbone that propels the H2CE collaboration platform towards its mission. By embracing the synergy of information dissemination, collaborative tools, and expert services, the platform emerges as a dynamic force, poised to play a pivotal role in advancing hydrogen technologies throughout Central Europe

4. Technical background of the envisaged H2CE interactive collaboration platform, technical and methodological requirements

In the following section, several aspects that need to be taken into account when building the technical background for the H2CE Collaboration Platform are presented. Some of the following aspects may change during the development of the platform.

In delving into the technical underpinnings of our project, we emphasize the fundamental need for a robust and scalable platform. To achieve this, we have conceptualized a **sophisticated 3-tier architecture, strategically dividing our system into three layers: presentation, application, and database.**

The first layer, presentation, serves as the user interface, where the system interacts with users. This layer is crucial for ensuring an intuitive and seamless user experience. By focusing on an aesthetically pleasing and user-friendly design, we aim to enhance accessibility and user engagement.

The second layer, application, functions as the brain of the system, managing the business logic and application processing. This layer is designed to accommodate various functionalities, ensuring the platform's adaptability to evolving requirements. Through this layer, we aim to facilitate the efficient execution of tasks and processes, promoting a dynamic and responsive system. That also include User Interface (UI) and User Experience (UX) are integral components of digital design, each playing a crucial role in ensuring the usability and overall satisfaction of users interacting with a product or platform. The user interface refers to the visual elements and interactive components that users directly engage with, encompassing everything from buttons and menus to layouts and color schemes. It serves as the bridge between the user and the underlying functionality of the system, aiming to provide an intuitive and aesthetically pleasing environment for navigation and interaction. A well-designed UI facilitates smooth and efficient user interactions by presenting information in a clear and organized manner, employing familiar design patterns, and utilizing visual cues to guide users through tasks with minimal friction.

The third layer, database, is the repository of information, housing and managing data securely. Adopting a robust database management system ensures the integrity and reliability of stored data. This layer is pivotal for the platform's performance, allowing for seamless retrieval and storage of information.

The 3-tier architecture provides a scalable and maintainable framework. Scalability is crucial for accommodating growth and increasing user loads without compromising performance. Additionally, the modular structure simplifies maintenance processes, allowing for updates and improvements with minimal disruptions.

In alignment with the overarching objective of expediting the growth of hydrogen economies in the targeted regions, the project envisions establishing a platform that fosters inclusivity and collaboration. **A key consideration is the implementation of an open-access model, ensuring that the platform is accessible to a broad audience.** Alternatively, a minimal access threshold, such as mandatory registration (refer to LOCALISER), may be introduced to strike a balance between openness and controlled engagement.

The proposed approach recognizes that certain services, like position papers and webinars, may necessitate a more tailored accessibility framework. Specifically, these resources would be restricted to entities that demonstrate a genuine interest in active participation, as evidenced by their submission of Letters of Intent (LoI). **This deliberate step aims to cultivate a community of committed stakeholders, thereby ensuring that resources requiring a deeper level of engagement are directed towards those who have explicitly expressed their dedication to the initiative.** A very important aspect is also real-time communication tools have become indispensable in today's digital landscape, facilitating seamless collaboration and connection among individuals and teams across different locations. Among the key components of such tools are video conferencing, text chat, audio calls, and virtual whiteboards, each serving distinct purposes in fostering effective communication and collaboration.

This nuanced approach to platform accessibility aligns with the project's commitment to facilitating meaningful collaboration while acknowledging the varying degrees of involvement and interest among potential participants. **By implementing a system that combines openness with targeted engagement, the platform can effectively serve as a dynamic hub for sharing expertise, resources, and insights, driving the collective effort to advance hydrogen economies in the specified regions.**

The technical background should include the following parts:

a) Database

To ensure the robust functioning of the platform, the utilization of a potent and reliable database is paramount. **The chosen database system should possess the capability to efficiently store and process substantial volumes of data.** This ensures that the platform can handle the diverse and dynamic requirements of our users, providing a seamless experience as they interact with the system. Another important aspect are file sharing and collaboration features are essential components of modern productivity tools, enabling teams to work together seamlessly on documents, presentations, spreadsheets, and other digital assets. **These features facilitate efficient collaboration, streamline workflow processes, and enhance productivity by allowing users to upload, share, and collaborate on files in real-time.**

Central to file sharing and collaboration is the ability to upload and share documents securely within a centralized platform. Users can easily upload files, whether they are Word documents, Excel spreadsheets, PowerPoint presentations, or other file formats, making them accessible to collaborators from anywhere with an internet connection. This eliminates the need for cumbersome email attachments or physical file transfers, ensuring that everyone has access to the most up-to-date information.

b) Web server

The accessibility and security of the platform are pivotal components of its success. To achieve this, the platform will be hosted on a reputable web server, such as Apache or Nginx. These servers are renowned for their reliability, scalability, and strong security features, guaranteeing high availability and safeguarding against potential threats or disruptions.

c) Security

The security of the platform is of paramount importance**. Robust measures will be implemented to safeguard against unauthorized access and potential misuse. These measures include the implementation of data encryption, two-factor authentication, and access control mechanisms.** By incorporating these security features, we aim to instill confidence in users regarding the confidentiality and integrity of their data. Security and privacy are paramount considerations in today's digital landscape, particularly when it comes to handling sensitive data and ensuring the protection of users' information.

Effective security and privacy measures are crucial for instilling trust among users and safeguarding against unauthorized access, breaches, and data misuse. Key elements of security and privacy in digital platforms include end-to-end encryption, user authentication and access control, and compliance with data protection regulations.

End-to-end encryption stands as a cornerstone of data security, especially for sensitive information. This encryption method ensures that data is encrypted on the sender's device and decrypted only by the intended recipient, thereby preventing unauthorized access or interception by third parties, including service providers or hackers. By encrypting data at both ends of the communication channel, end-to-end encryption provides a high level of confidentiality and integrity, mitigating the risk of data breaches and unauthorized surveillance.

User authentication and access control mechanisms play a vital role in verifying the identity of users and regulating access to digital resources. These mechanisms typically involve multi-factor authentication, strong password policies, and role-based access control to ensure that only authorized individuals can access sensitive data or perform certain actions within the platform. User authentication not only protects against unauthorized access but also helps trace actions back to specific users, enhancing accountability and security across the platform.

Moreover, compliance with data protection regulations, such as the General Data Protection Regulation (GDPR) in the European Union, is essential for ensuring the privacy rights of users and the lawful processing of personal data. These regulations impose strict requirements on how organizations collect, store, process, and share personal data, including obtaining explicit consent from users, implementing data minimization practices, and providing mechanisms for users to access, rectify, or delete their personal information. By adhering to these regulations, digital platforms demonstrate their commitment to protecting users' privacy rights and mitigating the risk of non-compliance penalties and reputational damage.

d) Multilingual support

To foster inclusivity and accessibility across diverse regions within H2CE, the platform will offer multilingual support. This feature ensures that users, regardless of their linguistic preferences, can engage with the platform in a language that suits them best. It reflects our commitment to creating a platform that transcends language barriers and accommodates the diverse linguistic landscape of our user base.

User-friendliness

The user-friendliness of the platform is a key focus area. Attention will be directed towards crafting an intuitive and clear user interface, ensuring that users can navigate and utilize the platform effortlessly. This emphasis on user-friendliness extends to all aspects of the platform, promoting a positive and engaging experience for users, regardless of their technical proficiency. By prioritizing user-friendly design, we aim to make the platform accessible and appealing to a broad spectrum of users.

e) Project Management Tools

Project management tools have revolutionized the way teams plan, organize, and execute tasks and projects, offering a centralized platform for collaboration and coordination. **Among the key functionalities of these tools are task assignment and tracking, visual project management through Gantt charts or Kanban boards, and deadline reminders and notifications, each contributing to effective project planning and execution.** Task assignment and tracking functionalities allow project managers to allocate tasks to team members, define deadlines, and monitor progress in real-time. By assigning tasks within the project management tool, teams can ensure clarity regarding responsibilities and timelines, avoiding confusion or duplication of effort. Additionally, tracking tools provide visibility into the status of tasks, enabling project managers to identify bottlenecks, address resource constraints, and make informed decisions to keep projects on track.

Visual project management tools, such as Gantt charts or Kanban boards, offer intuitive ways to visualize project timelines, dependencies, and task workflows. Gantt charts provide a timeline view of project tasks, showing start and end dates, task durations, and dependencies between tasks. This visual representation allows teams to identify critical path activities, allocate resources effectively, and adjust timelines as needed. Similarly, Kanban boards offer a visual representation of tasks organized into columns representing different stages of workflow, such as to-do, in progress, and completed. Teams can easily track task progress, prioritize work, and identify bottlenecks by moving tasks across the board.

Furthermore, **deadline reminders and notifications play a crucial role in keeping team members informed and accountable for project milestones and deadlines.** Project management tools can send automated reminders and notifications to team members regarding upcoming deadlines, task assignments, or changes to project timelines.

These notifications serve as gentle prompts to keep team members on track and ensure that no critical deadlines are missed. Additionally, notifications facilitate communication and collaboration among team members, keeping everyone aligned and informed about project progress and updates in real-time.

f) Training and support

Training and support are critical components of ensuring the successful adoption and utilization of software products or services. Effective training and support mechanisms help users navigate complex features, troubleshoot issues, and maximize the value they derive from the software. Two key aspects of training and support are comprehensive user documentation and tutorials, as well as responsive customer support for troubleshooting and assistance. Comprehensive user documentation and tutorials serve as invaluable resources for users to learn how to effectively use the software. User documentation typically includes user manuals, guides, and knowledge bases that provide step-by-step instructions on how to perform various tasks within the software. These resources offer explanations of features, workflows, and best practices, empowering users to navigate the software confidently and independently. Additionally, tutorials provide interactive, hands-on guidance through common tasks or workflows, allowing users to learn at their own pace and acquire new skills efficiently. Well-designed user documentation and tutorials contribute to user self-sufficiency, reduce the need for extensive training sessions, and foster a positive user experience by enabling users to quickly overcome hurdles and accomplish their goals within the software. Responsive customer support plays a crucial role in addressing users' questions, concerns, and technical issues in a timely manner. Whether through email, chat, phone, or ticketing systems, customer support teams are tasked with providing prompt assistance and guidance to users encountering challenges with the software. Responsive customer support involves acknowledging user inquiries promptly, understanding the nature of their issues, and providing effective solutions or workarounds to resolve them. Moreover, customer support teams should possess deep product knowledge, empathy, and patience to effectively communicate with users and guide them through troubleshooting steps or software configurations. By offering reliable and accessible customer support services, software providers demonstrate their commitment to customer satisfaction and retention, building trust and loyalty among users who rely on the software to meet their needs and objectives.

5. Membership in the platform and actions to recruit new stakeholders

Estimated status at the time of the platform activation:

The emerging H2CE project platform will enter into service with 42 members who have already expressed their interest through letters of intent (LOI). This initial support provides a solid foundation for the launch and indicates strong support and interest in the hydrogen economy development in Central Europe. Members who have become involved in this way can serve as ambassadors for the project and instigators for other stakeholders.

Strategies for attracting other stakeholders to join the platform in its operational phase

Partner involvement plays a key role in the dynamics of the H2CE platform. Establishing the platform on a partnership model allows direct outreach to other potential partners who have the potential to become strategic allies in the hydrogen economy development. This strategy not only promotes the development of partnerships, but also allows to attract other actors who share an interest in the hydrogen economy.

Communication with industry is a key aspect of the H2CE strategy. Outreach to industry, energy companies, research institutions and government organizations aims to highlight the benefits of collaboration through H2CE. In this way, a dialogue is created, and partners interested in active participation in the hydrogen economy are actively sought.

The organization of expert workshops and seminars is another key part of the project strategy. These events are aimed at creating opportunities for stakeholders to learn in detail about the H2CE project. Expert discussions and presentations on the hydrogen economy in the region become a key means to effectively engage stakeholders and to raise awareness of the project in professional circles.

6. Proposed actions related to the future sustainability of the activities of the platform incl. ways to its financing

Funding is crucial for the future sustainability of the envisaged platform. Among one of the solutions to this issue, is the introduction of an annual fee that would be paid for access to specific parts of the platform while the basic part of the platform will remain widely free accessible. This issue will be further addressed as part of the phased platform development. Diversified approach is recommended as one funding option. Introducing a subscription model for premium content or advanced features can generate a steady revenue stream. In addition, exploring strategic collaborations with hydrogen-related companies for sponsorships or joint initiatives may be also a viable source of revenue.

In addition, seeking funding from government grants, environmental funds, or international organizations supporting sustainable initiatives could provide critical financial support. Creating a clear value proposition for potential investors and showcasing the positive environmental impact of the platform will be essential to attract funding.

Several key measures and strategies are proposed to ensure the long-term sustainability of the H2CE online platform dedicated to the hydrogen economy. Firstly, the platform should priorities continuous innovation and adaptation to new technologies and market trends within the hydrogen sector. That could bring the positive environmental impact and the platform's potential to drive innovation and collaboration in the hydrogen sector. Regular updates and features reflecting the latest advances will increase the attractiveness of the platform for users and stakeholders. Prioritizing continuous innovation and staying abreast of new technologies and market trends will be key to maintaining the platform's relevance and attractiveness. Secondly, fostering strong partnerships with industry, research institutions and government bodies can contribute significantly to the credibility and relevance of the platform. Collaboration with industry experts and organization's will not only enhance the quality of information and services provided, but also open avenues for potential funding and support.