HORIZON 2020

H2020 - INFRAIA-2020-1

D6.3 Final report on Dissemination, outreach, community building and standardisation

Acronym	SLICES-SC
Project Title	Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies – Starting Community
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Executive summary

The objective of this document is to present and report on the activities in the field of dissemination, outreach, community building and standardisation in the course of SLICES-SC in respect to the strategy defined in D6.1. The deliverable offers a brief summary of the dissemination strategy of SLICES-SC and provides a final update on the achievements and the progress made by the end of the project. It provides an update on the KPIs, elaborates on the different dissemination channels and the various communication materials used for the promotion of the project. Furthermore, the deliverable also presents past events organised by SLICES-SC and third parties as well as the publications created within the scope of the project. Last, D6.3 also covers efforts made towards standardisation and briefly elaborates on relevant topics, standard developing organisations, partners and timeframes to accomplish the standardisation task.

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1. Introduction

1.1. Objective of deliverable

As SLICES-SC approaches its conclusion, D6.3 serves to document the final achievements in the implementation of the SLICES-SC dissemination and communication strategy outlined in D6.1 - Dissemination, Outreach, Community Building, and Standardisation Plan. This deliverable builds directly on D6.1 and D6.2 and reflects the comprehensive efforts undertaken in communication, dissemination, and standardisation in the final phase of the project. It highlights the effectiveness of the project's outreach channels, reviews the events organised by SLICES-SC and its external partners, and provides insights into the advancements made in standardisation initiatives.

1.2. Document structure

The document is divided into the following sections:

- Chapter 1 – Introduction
- Chapter 2 – Dissemination and community building overview
- Chapter 3 – Means and activities
- Chapter 4 – Academic outreach and exploitation
- Chapter 5 – Standardisation
- Chapter 6 – Conclusion
- Chapter 7 – Annex

2. Dissemination and community building overview

2.1. Introduction

In this section, we review the dissemination and communication strategies employed throughout SLICES-SC, highlighting the key performance indicators used to track progress and summarising the overall achievements in dissemination, outreach, community building, and standardisation by the project's conclusion.

The core objectives of the SLICES-SC dissemination and communication plan, as outlined in D6.1, were to establish a strong and recognizable brand identity for SLICES-SC, to ensure wide visibility of the project's outcomes among stakeholders and the broader community, and to support consortium partners in maximising the impact and exploitation of these results.

The final report reflects on how these goals have been met, demonstrating the effectiveness of the strategies in place and their contribution to the overall success of the project.

2.2. Dissemination and communication approach

To ensure the relevance of the information disseminated and to maximize the project's outreach, a collaborative approach involving all project partners was adopted. Initially, individual contributions were requested from each consortium member, but this method proved ineffective in maintaining consistent and impactful communication. As a result, the strategy was revised to adopt a node-based approach, which has significantly enhanced partner engagement in communication activities across both social media and the SLICES blogs.

Custom social media templates were developed to streamline the communication process, allowing partners to easily input their information while maintaining a uniform and cohesive presentation across all platforms. To further improve coordination, partners were grouped into country-specific nodes, with each node consisting of partners from the same country. Currently, there are 16 such country nodes in SLICES-RI.

Within each node, a focal point was designated to coordinate communication efforts, ensuring that contributions are both timely and aligned with the overall strategy. This node-based approach shifts the focus from individual partner contributions to a more collective gathering of information at the national level, thereby increasing the relevance and impact of the content shared. This structure not only enhanced the efficiency of communication but also fostered stronger collaboration and a more unified representation of the project's achievements across different regions.

2.3. Key Performance Indicators

The Key Performance Indicators (KPIs) for outreach activities were established during the proposal phase and encompass several critical areas, such as project documentation, publications, online presence, and events. The table below provides a detailed summary of the communication and dissemination-specific KPIs, as outlined in the Description of Actions.

This KPI table acted as a primary tool for the Work Package and Task Leaders to monitor and assess the effectiveness of communication efforts. Beyond the table, regular conference calls were conducted within WP6 to ensure continuous tracking of progress and to coordinate the communication activities of individual partners. These calls played a crucial role in maintaining alignment and momentum across all outreach initiatives.

2.4. Final status of KPIs

Table 1. Project KPIs

Measure	Target	Status at the end of the project
SLICES-SC brochure (1 with updates every year)	At least 200 per year	SLICES has organised a community of approx. 2000 people, which had been regularly informed about the SLICES activities (mainly electronically).
Posters	2 by the end of SLICES-SC	Two posters (roll-up) created and used in physical presence events (Such as EuCNC 2023 and 2024, IFIP Networking 2024, and SLICES-SC Summer school – OULU (2023) and Lipari (2024), WONS 2024, SLICES Blueprint workshop (2023) and many other events (see below).
Set of high-level materials for policymakers (mission statement, slide deck, brochure)	At least 1 per year	SLICES presentations, SLICES family project leaflet disseminated to SLICES community through the presentations within different events or through SLICES direct mails to the community.
SLICES-SC website	> 1,000 visitors per year	36k website visitors, while 8,1k users *(On 31 Aug. 2024)*
Social networks	> 500	406 Followers (X)

	> 500	715 Followers (LinkedIn)
SLICES Blog	1 per month	19 blog posts 32 news items
Workshops regarding SLICES-SC design and demand organised	6 by the end of the project with at least 30 participants at each event	8 workshops organised in total.* *In the second RP, 3 workshops organised by the project and strong support and contribution to two other workshop organisation. (see section 3.10)
Summer Schools	3 by the end of the project with at least 30 participants at each event	3 summer schools organised in Volos, Greece (July 2022) with more than 50 participants, in Oulu, Finland (June 2023) and Lipari (July 2024) with more than 50 participants.
Industry and Local Info Days	14 by the end of the project & 3 Industry Days (one per year) with at least 30 participants at each event	Total of 14** & 3 industry days*** *** In the second RP, 9 events: local information days and Industry days organised by the project or with strong presence of project members in third party events (see section 3).* *** More info in D5.2.*
Videos	2 videos and >50 views per video	59 videos on the YouTube Channel, with a total of 2648 viewers (on 23 August. 2024).
Scientific publications	At least 5 by the end of the project	The total number of accepted/published journal papers is 8 and the total number of accepted/published conference papers is 28.
Presentations	At least 3 per year	42 presentations in third-party events as presented in section 3.10.2.
Attended external events	At least 6 attended external events during the overall project's duration	50 third party events attended as presented in section 3.10.2. 5 coding events: one hackathon, one spring of code and one code sprint organised and two hands-on by Inria and Eurecom and UTH

3. Dissemination channels and tools reports

3.1. Website

The SLICES-SC website (https://slices-sc.eu/) functioned as the central hub for the project's communication and dissemination efforts. From the outset, the website was instrumental in conveying the project's objectives, activities, and outcomes to a diverse and widespread audience. By serving as a comprehensive and user-friendly resource, it ensured that all aspects of the project were presented with clarity and transparency.

The site featured detailed information about the project's vision, work plan, and infrastructure, alongside a wide array of documents and dissemination materials. This approach not only supported

the project's outreach to the scientific community but also made its insights and achievements accessible to the general public.
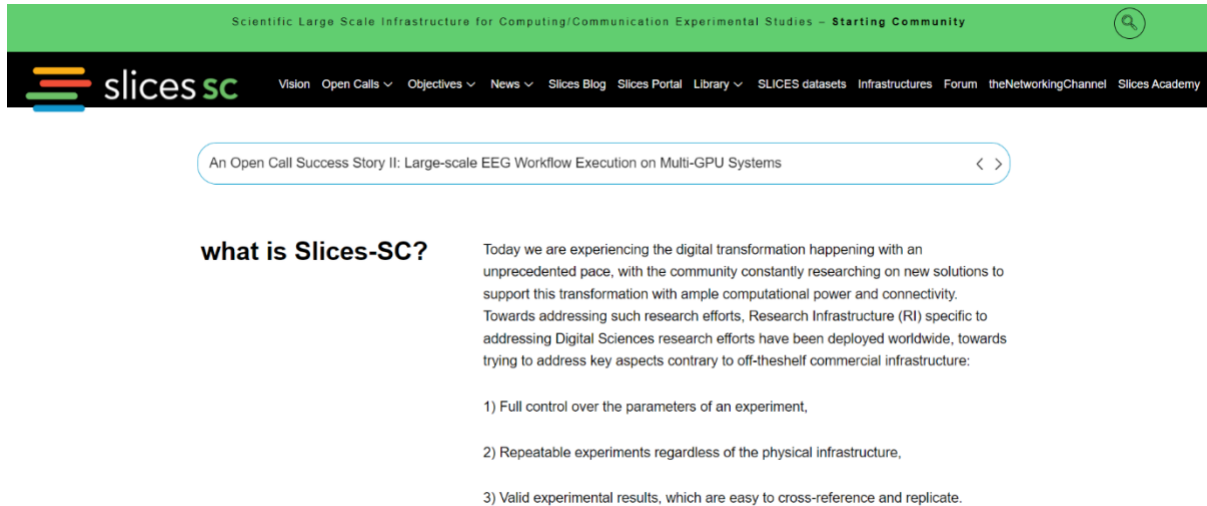

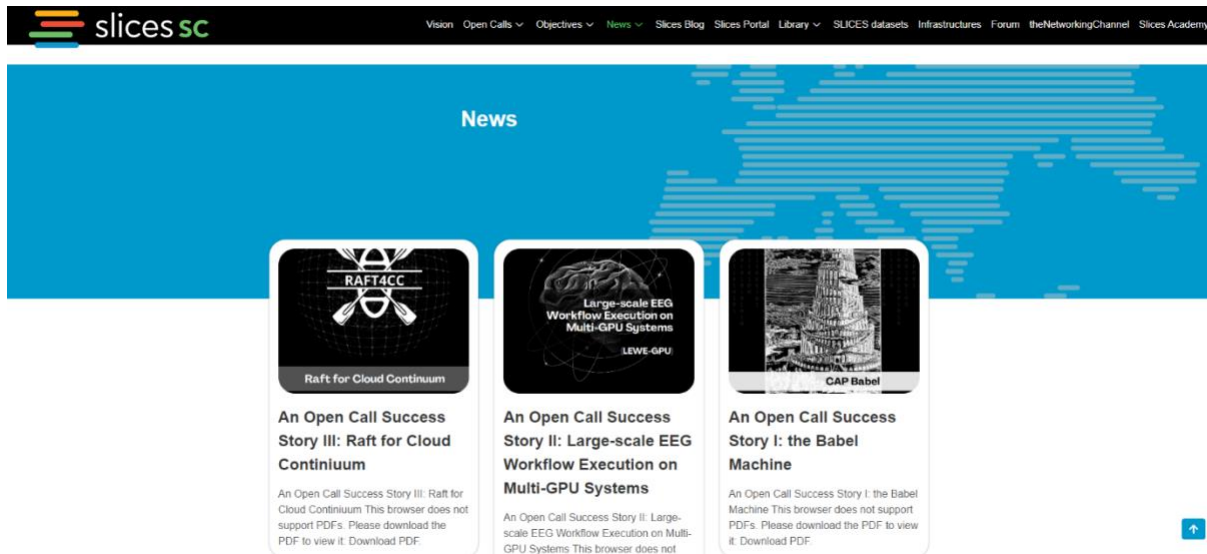
Figure 1. SLICES-SC website – 1

Figure 2. SLICES-SC website – 2
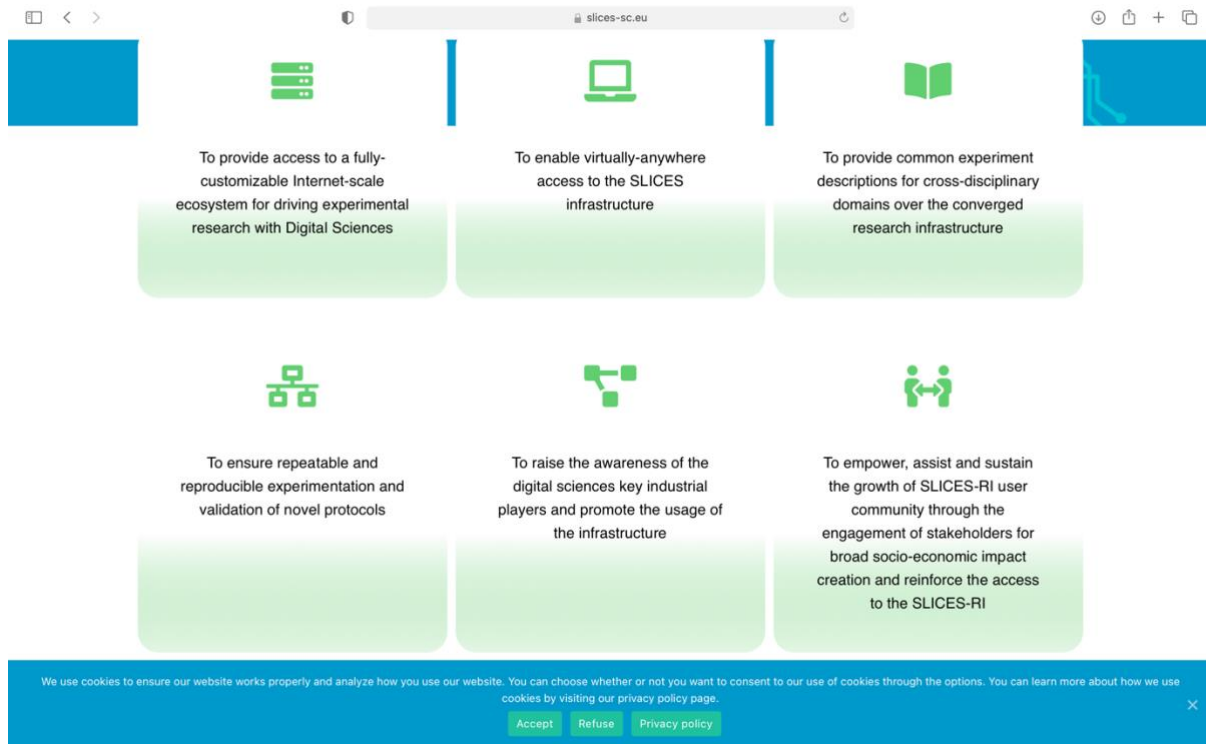
Figure 3. SLICES-SC website – 3

The website has been the cornerstone of SLICES-SC's communication strategy, providing in-depth information on the project's activities, news, and progress. Designed to engage a wide range of stakeholders, it has effectively raised awareness and encouraged active participation. The website's reach has been amplified through strategic promotion across social media, digital and print materials, and various publications, ensuring that its content is accessible and widely disseminated.

Website key numbers and statistics (final)

The statistics on the user behaviour of the SLICES-SC website are depicted in the figures below (covering the period of the second reporting period until August 2024). The website received more than 36k page-views over that period and more than 8,1k users. The various peaks in the number of website visits visible in the figures are very likely linked to project events and milestones. For example, the peaks are related to the organisation of the SLICES-SC workshops (EuCNC & 6G Summit, IFIP Networking 2024 conference, Summer Schools) as depicted clearly in figure 4 covering the period between September 2022 and August 2024.

The statistics on the website visitors also show that the project has good visibility within Europe, as well as in the USA and China. This might reflect a growing interest in the topic of research infrastructure in these regions. Furthermore, events in which SLICES-SC participated or was mentioned could also have led to this broad visibility. Such events included the IoT Week which included a track on transatlantic cooperation with the USA, the Networking Channel webinar series organised by Sorbonne University and Digital Around the World, involving participants from all regions of the world including the USA and China.
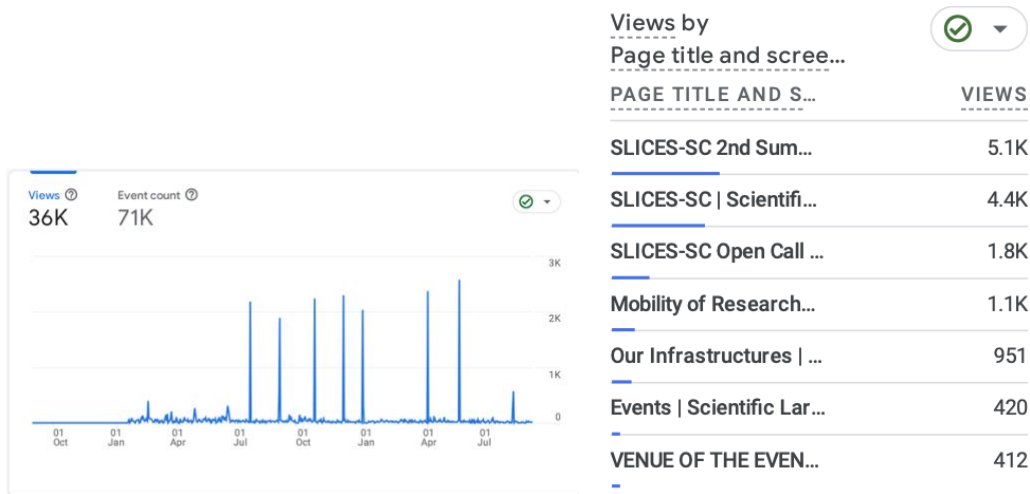
Figure 4. Overview of views
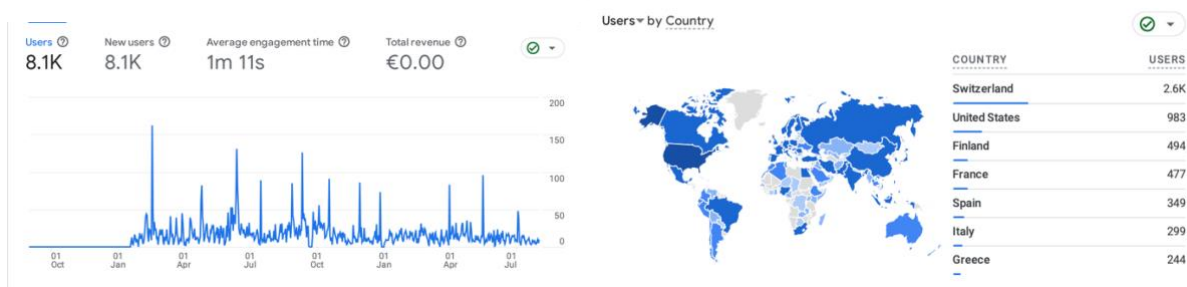
Figure 5. Number of visitors per country

3.2. Stakeholder engagement using a collaborative platform

Following the amendment to the scope of Task 6.2, SLICES-SC was tasked with conducting a comprehensive supply and demand analysis to evaluate the need for a collaborative User Forum within the SLICES project and to explore potential tools for community engagement. On the demand side, a detailed survey was developed and distributed to SLICES-SC partners to identify the key functionalities, features, user motivations, applications, and potential usage scenarios for the proposed User Forum.

Simultaneously, the supply side of the analysis focused on investigating existing collaborative solutions currently available in the market, such as Slack and Mattermost, and comparing these platforms to traditional forums in terms of user experience, functionalities, and data protection.

Based on the insights gained from the survey and the analysis of these existing solutions, this task aimed to determine the most effective strategy for engaging the SLICES community and to take the necessary steps to implement this strategy.

The necessity for a survey emerged from discussions about establishing a forum for SLICES-SC stakeholders, encompassing researchers, universities, research centres, and industry representatives. The purpose was to create a space for these diverse entities to connect and engage with the SLICES-SC team, fostering open communication for questions and feedback. As managing a user forum is a collaborative initiative involving all partners, it is necessary to have the commitment of the partners and that a clear demand on their side is key to having a user forum. Thus, this survey was carried out

to address reservations regarding the need for such a forum, due to already existing communication channels, aiming to gather insights that would guide the decision-making process and ensure alignment with the preferences and concerns of SLICES-SC partners. The survey was exclusively distributed to members of SLICES-SC. A total of 16 participants actively engaged in the survey, providing valuable insights into their preferences, expectations, and concerns.

The survey remained accessible for a specified duration, allowing participants ample time for thoughtful responses. The survey results (see Annex), illustrated in Figures 13 to 22, provided a comprehensive overview of the community's views on existing collaboration methods and their openness to new tools.

The content of the survey, as well as a commentary of the findings are available in the Annex of this deliverable. The findings indicated a general satisfaction with current collaborative methods (Figure 13), with respondents expressing that these approaches were both effective and sufficient. However, there was also a mild interest in exploring the possibility of a new platform, with varied preferences regarding its features and functionalities. For example, one participant suggested the implementation of practical features such as a 'Frequently Asked Questions' tab, while also highlighting the need for secure communication options like private messaging (Figure 16) and robust safety and privacy measures (Figure 20).

The diversity in platform preferences (Figure 15) and the different levels of importance placed on specific features suggested that any new platform would need to be flexible and adaptable to meet a wide range of user needs. Additionally, the survey revealed willingness among respondents to contribute their skills to the platform's development (Figure 21), though the data also suggested that the platform might be used only occasionally, more as a supplementary tool rather than a central part of daily routines (Figure 22).

Based on these insights, it was concluded that rather than developing a new platform, the most effective strategy for the time being would be to focus on strengthening community engagement through existing channels, particularly LinkedIn. LinkedIn is already widely used by the SLICES community and provides a robust platform for interaction and information sharing. To further enhance this engagement, a dedicated LinkedIn private group was created and actively promoted during key events, such as the SLICES Summer School, where public interaction was particularly high.

This approach allowed us to leverage the existing familiarity and functionality of LinkedIn, ensuring that the community remains engaged and that the dissemination of SLICES activities and results is maximised without the need for additional platform development.

3.3. Promotional material

Small booklets, brochures, and flyers were meticulously designed to align with the SLICES-SC visual identity, serving as impactful promotional tools throughout the project's duration. These materials succinctly conveyed essential information about SLICES-SC, highlighting key issues and presenting the innovative solutions the project offered. They were specifically crafted to engage and inform target audiences, making them valuable assets at various events such as meetings, workshops, and conferences.

3.4. Poster

Posters have been highly effective as communication tools at events such as conferences, symposia, workshops, and seminars. SLICES-SC developed an English-language poster (with translations into

local languages when needed) to engage stakeholders and relevant audiences at both project-hosted and external events. These posters provided a clear overview of SLICES-SC through succinct textual and graphical content.

Two distinctive poster designs were created for SLICES-SC, as illustrated in the accompanying figures. These posters were prominently featured at key events, including the Summer School in Oulu, Finland and Lipari, Italy, as well as the EuCNC workshop and booth (2023 and 2024), the SLICES Blueprint workshop in Paris, the WONS 2024 Conference that took place in Chamonix, the IFIP Networking workshop as well as local events organised by the nodes. Their impactful design and content also made them valuable tools for promoting SLICES-SC at future events, ensuring the project's message reached a wide and relevant audience.

Figure 6. Different versions of the SLICES-SC poster

3.5. Leaflet

Leaflets have served as an effective and flexible means of communicating the project's objectives, latest developments, and key findings to a wide range of audiences. Designed to be easily editable and printable by any project partner, these leaflets could be customised in both content and language to suit specific needs. The leaflet introducing the entire SLICES family was created and distributed electronically to the community. This initiative was complemented by a detailed presentation of the SLICES project family, which was also shared widely within the community, further enhancing outreach and engagement.

Figure 7. SLICES-RI leaflet

3.6. Social media

Building a robust social media presence was crucial in representing the consortium members and showcasing the project's results in a unified manner. The primary objectives were to drive traffic to the project website, amplify its content, support communication efforts, and foster engagement within the SLICES-SC communities. To achieve these goals, the project utilised several social media platforms: X (formerly Twitter), YouTube, and LinkedIn, leveraging the same accounts used for SLICES-RI to maximize reach. In addition to the efforts pursued by the project, the partners have also communicated about the project on their own channels.

X[1]: On X, the project shared updates on project-related news and curated relevant articles from other sources related to Digital Research Infrastructures. The target audience included researchers, the general public, scientific and academic communities, businesses, NGOs, technological developers, policymakers, and funding authorities.

The effectiveness of these efforts is illustrated by the social media metrics and community engagement data.

Figure 8. SLICES-RI X Account

YouTube[2]: SLICES-SC leveraged YouTube to promote targeted video content as part of its comprehensive communication strategy. A dedicated social media campaign was developed to highlight the project's achievements, featuring interviews with project partners, updates on progress within the national nodes, and discussions on the significance of the SLICES research infrastructure. These videos were uploaded to the YouTube channel and widely shared across other social media platforms to maximize their reach. In addition to these promotional efforts, the YouTube channel also hosted relevant educational materials, which served as valuable resources for the SLICES Academy, further supporting the project's mission to educate and engage the broader community. The target groups included researchers, the general public, scientific and academic personnel, businesses, NGOs, technological developers, policymakers, funding authorities, and others.

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[1] SLICES-RI X account, https://twitter.com/SLICESRI [Last accessed 6 September 2024].
[2] SLICES-RI YouTube channel, https://www.youtube.com/channel/UCKM15y2D8rRYAnUDjpLsHug/featured [Last accessed 6 September 2024].
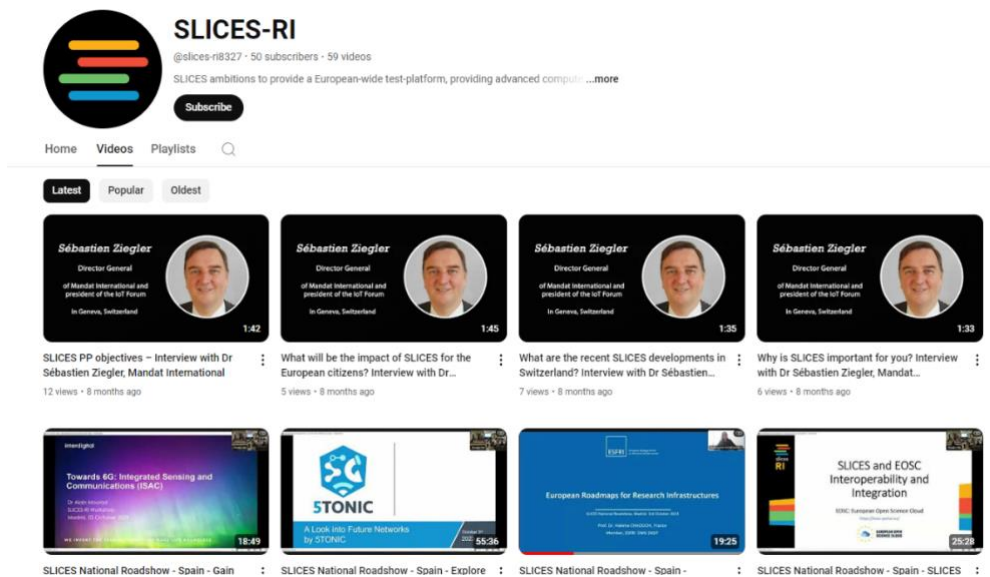
Figure 9. SLICES-RI YouTube Account

LinkedIn:[3] SLICES-SC strategically utilised the SLICES-RI LinkedIn page to promote its activities, events, updates, news, and blogs specific to SLICES-SC, ensuring the community stayed well-informed and engaged. LinkedIn proved to be the most effective platform for fostering community engagement, and as a result, the majority of our communication efforts were focused on this channel. Through regular updates and targeted content, LinkedIn became a key tool in maintaining an active and connected community around SLICES, allowing us to effectively share our progress and achievements with a broad and relevant audience. Between the first and second reporting period, the LinkedIn account showed an increase in followers from 180 (August 2022) to 711 (August 2024).

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[3] SLICES-RI LinkedIn account, https://www.linkedin.com/company/slices-ri [Last accessed 6 September 2024].
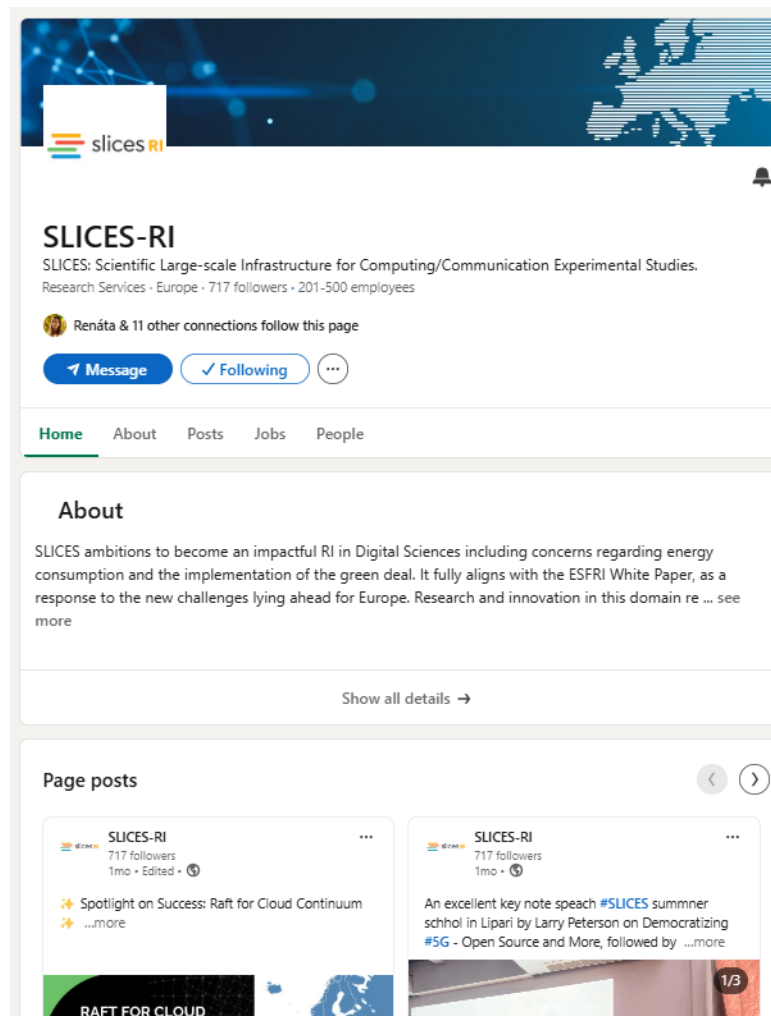
Figure 10. SLICES-RI LinkedIn Account

3.7. SLICES-SC blogs, news posts and newsletters

Scientific blogs have proven to be an effective medium for communicating scientific research results concisely and understandably. Their ability to be easily promoted on various social media channels enhances their reach and impact. Recognising these advantages, we developed the SLICES Blog, which is accessible through the SLICES-RI website and now hosts an extensive collection of posts from our partners.

Throughout the project, we implemented a node approach for communication contributions. To ensure consistent and diverse content, each node was tasked with regular blog posts. This strategy successfully maintained a steady stream of informative and engaging posts, underscoring the overall importance of blogs in disseminating scientific knowledge.

Figure 11. SLICES-SC Blogs and News

In addition to regular blog posts, SLICES-SC actively contributed to the website's content through the publication of press releases in the news section. These press releases were crafted to keep the community informed about ongoing activities, upcoming events, and notable success stories. They served as a vital tool for sharing the project's achievements, providing timely updates on key milestones, and celebrating the progress of the SLICES-SC initiative. By consistently delivering this content, SLICES-SC ensured that stakeholders and the wider community remained engaged and aware of the project's impact and developments.

As part of its communication strategy, SLICES-SC also issued its own newsletters, specifically designed to keep target communities of over 2000 recipients informed about the project's progress and key milestones. These newsletters served as a valuable resource for sharing updates on recent developments, upcoming events, and relevant opportunities. By regularly engaging with stakeholders, the newsletters helped to strengthen community ties and maintain interest in the ongoing activities of SLICES-SC.

3.8. TheNetworkingChannel

The SLICES community has significantly broadened its reach and engagement through the sustained support and management of the NetworkingChannel (https://networkingchannel.eu). Originally launched by the EU Empower CSA to strengthen collaboration between the EU and US on advanced wireless platforms during the COVID-19 pandemic, this channel has evolved into a vital platform for international cooperation. Following the conclusion of EMPOWER in April 2022, the SLICES community assumed responsibility for the NetworkingChannel, leveraging two years of valuable operational experience.

The NetworkingChannel has established itself as a premier venue for EU-US collaboration, especially during the rise of virtual events. It has successfully drawn in the networking community with its high-caliber talks and distinguished speakers, with some events achieving over 1,000 post-event views on YouTube. Now under the SLICES banner, the NetworkingChannel continues to thrive, hosting new events in collaboration with the NSF PAWR Office and ACM SIGCOMM. This initiative not only fosters community building but also supports a global network of over 6,000 members, effectively disseminating SLICES' outcomes and strengthening its international presence.

More details can be found at deliverable D6.4.
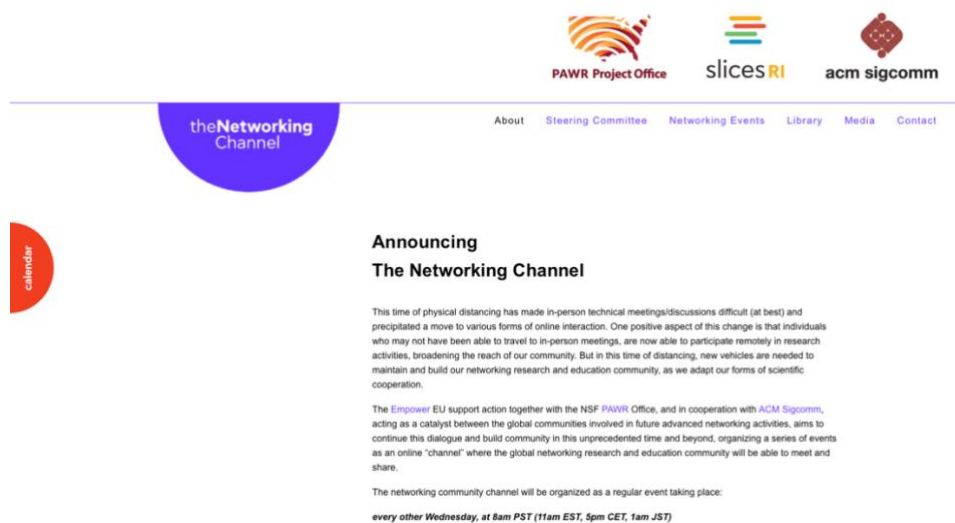
Figure 12. TheNetworkingChannel

The NetworkingChannel has established a consistent schedule of events, held every other Wednesday at 8am PST (11am EST, 5pm CET, 1am JST). These events offer a diverse array of content for the community, including both live and pre-recorded sessions that cover a wide range of topics—from cutting-edge research and experimentation to educational initiatives. The programming includes webinars, panel discussions, tutorials, virtual site visits, keynotes, and other innovative formats designed to foster community interaction.

3.9. Publications of articles

The goal of publishing scientific articles was to foster awareness of the SLICES research infrastructures and its advanced technological developments within the most relevant research communities. The dissemination strategy for SLICES-SC, defined in Deliverable D6.1, identified key journals and conferences for the publication of ideas and results, considering their reputation, quality, and open access options. A dedicated section on the SLICES-SC website (https://slices-sc.eu/dissemination/) was used to list references to all consortium publications and provide access to publications when available. For copyrighted material, the website offered access to the accepted versions of these papers, along with links to the official versions.

As outlined in Section 2.3, the expected number of peer-reviewed papers/articles by the end of the project was set at a minimum of 5, according to the Description of Actions. The project has significantly exceeded this KPI. Below are summary tables listing the articles that were accepted or published during the reporting period, with progressive numbering following the articles already presented in D6.2.

Journal #4[4]	
Relevance to SLICES-SC	100%
Title	Exploring data plane updates on P4 switches with P4Runtime
Authors	Henning Stubbe (TUM), Sebastian Gallenmüller (TUM), Manuel Simon (TUM), Eric Hauser (TUM), Dominik Scholz (TUM), Georg Carle (TUM)
Journal/Publisher	Computer Communications, Elsevier Publisher
DOI/Url	https://doi.org/10.1016/j.comcom.2024.06.020
Volumes and issues	Volume 225, 1 September 2024, Pages 44-53
Main contribution	This work analyses the interaction of a high-performance data plane and different implementations for the control plane. We measured the delay between the initiation of rule updates on the control plane and their application on the data plane. Our measurements show that neglecting the control plane performance may impact network behaviour due to delayed updates, but we also show how to minimize this delay and, thereby, its impact. We have released the

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[4] Three publications in journal were released during the 1st reporting period.

	experiment artefacts of our study including experiment scripts and measurement data.

Journal #5	
Relevance to SLICES-SC	80%
Title	Service-aware real-time slicing for virtualized beyond 5G networks
Authors	Theodoros Tsourdinis (UTH, SU), Ilias Chatzistefanidis (EURECOM), Nikos Makris (UTH), Thanasis Korakis (UTH), Navid Nikaein (EURECOM), Serge Fdida (SU)
Journal/Publisher	Computer Networks , Elsevier Publisher
DOI/Url	https://doi.org/10.1016/j.comnet.2024.110445
Volumes and issues	Volume 247, June 2024, 110445
Main contribution	In this paper, we design and implement a service-aware network managed from the network edge. We utilize and assess various Machine Learning models to classify cellular network traffic flows in the backhaul, aiming to predict their future impact on network load. Leveraging these predictions, the network can proactively and autonomously reallocate slices in the Radio Access Network via programmable APIs, ensuring the demands of the traffic-generating applications are met. Our framework was tested in a real-world environment with realistic traffic scenarios, and the results were evaluated in real-time, down to a granularity of 10ms.

Journal #6	
Relevance to SLICES-SC	80%
Title	Packed to the Brim: Investigating the Impact of Highly Responsive Prefixes on Internet-wide Measurement Campaigns
Authors	Patrick Sattler (TUM), Johannes Zirngibl (TUM), Mattijs Jonker (TUM), Oliver Gasser (TUM), Georg Carle (TUM), and Ralph Holz (TUM)
Journal/Publisher	Proceedings of the ACM on Networking, ACM Publisher
DOI/Url	https://dl.acm.org/doi/abs/10.1145/3629146
Volumes and issues	Volume 1, Article No.: 24, Pages 1 - 21
Main contribution	This paper evaluates IPv4 port scans on a total of 161 ports (142 TCP & 19 UDP ports) from three different vantage points. To account for packet loss and other scanning artefacts, we propose the notion of a new category of prefixes, which we call highly responsive prefixes (HRPs). Our findings show that the share of HRPs can make up 70% of responsive addresses on selected ports. Regarding specific ports, we observe that CDNs contribute to the largest fraction of HRPs on

TCP/80 and TCP/443, while TCP proxies emerge as the primary cause of HRPs on other ports. Our analysis also reveals that application layer handshakes to targets outside HRPs are, depending on the chosen service, up to three times more likely to be successful compared to handshakes with targets located in HRPs.

Journal #7	
Relevance to SLICES-SC	100%
Title	The Past, Present and Future of the ELKH Cloud
Authors	Mihály Héder (SZTAKI), Ernő Rigó (SZTAKI), Dorottya Medgyesi (SZTAKI), Róbert Lovas (SZTAKI), Szabolcs Tenczer (SZTAKI), Ferenc Török (SZTAKI), Attila Farkas (SZTAKI), Márk Emődi (SZTAKI), József Kadlecsik (SZTAKI), György Mező (SZTAKI), Ádám Pintér (SZTAKI), Péter Kacsuk (SZTAKI)
Journal/Publisher	Információs Társadalom XXI, Infonia Foundation Publisher
DOI/Url	https://doi.org/10.22503/inftars.XXII.2022.2.8
Volumes and issues	Volume 1, Article No.: 24, Pages 1 - 21
Main contribution	This review article summarizes the history the Hungarian Scientific Cloud Infrastructure project. This research infrastructure was launched officially on 1 October 2016, funded by the Hungarian Academy of Sciences. With the support of ELKH, the infrastructure's capacity has been substantially boosted; the features and workflows that it offers to scientists were significantly expanded to celebrate the arrival of the year 2022. The article reviews the types of work Hungarian researchers implemented on the infrastructure, thereby providing an overview of the state of cloud-computing enabled science in Hungary.

Journal #8	
Relevance to SLICES-SC	80%
Title	How Low Can You Go? A Limbo Dance for Low-Latency Network Functions
Authors	Sebastian Gallenmüller (TUM), Florian Wiedner (TUM), Johannes Naab (TUM), Georg Carle (TUM)
Journal/Publisher	Journal of Network and Systems Management, Springer Publisher
DOI/Url	https://doi.org/10.1007/s10922-022-09710-3
Volumes and issues	Volume 31, article number 20, (2023)
Main contribution	Latency, predictability, and reliability are distinct qualities realized in real-time systems. Real-time systems often require additional effort using non-standard interfaces, requiring customized software, or

providing low throughput figures. This work picks up the challenge and investigates a single-server network function—a building block for end-to-end low-latency network applications. Assessing reliability and quantifying low latency is equally challenging, as sub-microsecond latency and loss probability leave little room for error. Both, our measurement and the investigated platforms, rely on Linux running on off-the-shelf components. Our paper provides a comprehensive study on the impact of various components on latency and reliability, such as the central processing unit (CPU), the Linux Kernel, the network card, virtualization features, and the networking application itself. We chose Suricata, an intrusion prevention system (IPS), representing a widely deployed, typical network application as our primary subject of investigation.

Conference #6	
Relevance to SLICES-SC	100%
Title	slAIces: an LLM Chatbot for Simplifying Experiments with the SLICES-RI
Authors	Dimitris Kefalas (UTH, SU); Sokratis Christakis (UTH, SU); Serge Fdida (SU); Nikos Makris (UTH); Ilias Syrigos (UTH); Virgilios Passas (UTH); Thanasis Korakis (UTH)
Venue	SLICES WORKSHOP @ IFIP Networking 2024
DOI/Url	https://ieeexplore.ieee.org/document/10619821
Dates and place	Thessaloniki, Greece, 03-06 June 2024
Main contribution	In this work, we introduce slAIces, an LLM-based chatbot specifically designed to ease access to the SLICES-RI. slAIces utilizes the Generative Pre-trained Transformer(GPT) GPT-4 model to create a sophisticated Retrieval Augmented Generation(RAG) system.

Conference #7	
Relevance to SLICES-SC	100%
Title	On the Automated Scaling of User Plane Function for 5G: An Experimental Evaluation
Authors	Sokratis Christakis (UTH); Nikos Makris (UTH); Thanasis Korakis (UTH); Serge Fdida (SU)
Venue	2024 Joint European Conference on Networks and Communications & 6G Summit (EuCNC/6G Summit)
DOI/Url	https://ieeexplore.ieee.org/document/10597110
Dates and place	Antwerp, Belgium, 03-06 June 2024

Main contribution	In this work, we present an innovative algorithm for dynamic management and optimization of 5G network resources within a Kubernetes cluster environment. The algorithm's functionality revolves around monitoring metrics of User Plane Function (UPF) and making real-time decisions on deploying multiple UPFs within the cluster to ensure enhanced network performance and cost optimization.

Conference #8	
Relevance to SLICES-SC	100%
Title	Evaluation of User Plane Function Implementations in Real-World 5G Networks
Authors	Sokratis Christakis (UTH); Nikos Makris (UTH); Thanasis Korakis (UTH); Serge Fdida (SU)
Venue	INFOCOM WORKSHOPS CNERT 2024
DOI/Url	https://ieeexplore.ieee.org/document/10620666
Dates and place	Vancouver, BC, Canada, 20 May 2024
Main contribution	This paper focuses on a system evaluation of different UPF implementations in a real-world 5G environment. Specifically, we deploy and test four distinct 5G networks based on SPGWU-UPF, P4-Switch-UPF, VPP-UPF, and SmartNIC-P4-UPF using the OpenAirInterface 5G framework.

Conference #9	
Relevance to SLICES-SC	100%
Title	Design, Integration and Slicing of non-3GPP DUs in 5G Networks: a Hybrid 5G-DU Approach
Authors	Dimitris Kefalas (UTH, SU); Nikos Makris (UTH); Thanasis Korakis (UTH); Serge Fdida (SU)
Venue	INFOCOM WORKSHOPS CNERT 2024
DOI/Url	https://ieeexplore.ieee.org/document/10620782/authors#authors
Dates and place	Vancouver, BC, Canada, 20 May 2024
Main contribution	This paper presents and implements a 5G hybrid Distributed Unit (DU) architecture, integrating a WiFi DU into real-world 5G networks using the OpenAirInterface (OAI) RAN and 5GCN software. This work also tries to align the WiFi technology with the dynamic and flexible capabilities of 5G such as slicing. The WiFi functionality is extended, in order to support a User-Based Slicing scheme using Software-Defined Networking (SDN) combined with proper exploitation of the

	Type of Service (ToS) field of IP packets to prioritize traffic and manage network resources.

Conference #10	
Relevance to SLICES-SC	50%
Title	Propagating Threat Scores With a TLS Ecosystem Graph Model Derived by Active Measurements
Authors	Markus Sosnowski (TUM), Patrick Sattler (TUM), Johannes Zirngibl (TUM), Tim Betzer (TUM), Georg Carle (TUM)
Venue	Network Traffic Measurement and Analysis Conference (TMA), 2024
DOI/Url	https://tma.ifip.org/2024/wp-content/uploads/sites/13/2024/05/tma2024-final19-2.pdf
Dates and place	Enschede, The Netherlands, June 27 – 30, 2022
Main contribution	This work proposes a graph model of the TLS ecosystem that utilizes the relationships between servers, domains, and certificates. A Probabilistic Threat Propagation (PTP) algorithm is then used to propagate a threat score from existing blocklists to related nodes. We conducted a one-year-long measurement study of 13 monthly active Internet-wide DNS and TLS measurements to evaluate the methodology. The latest measurement found four highly suspicious clusters among the nodes with high threat scores. With the help of optimized thresholds, we identified 557 domains and 11 IP addresses throughout the last year before they were known to be malicious.

Conference #11	
Relevance to SLICES-SC	50%
Title	Shells Bells: Cyber-Physical Anomaly Detection in Data Centers
Authors	Lars Wüstrich (TUM); Sebastian Gallenmüller (TUM); Stephan Günther (TUM); Georg Carle (TUM); Marc-Oliver Pahl (IMT)
Venue	NOMS 2024 - IEEE Network Operations and Management Symposium
DOI/Url	https://ieeexplore.ieee.org/document/10575124/authors#authors
Dates and place	Seoul, Korea, Republic of Korea, 06-10 May 2024
Main contribution	Monitoring the side-channel sound can improve anomaly detection (AD) in data centers (DCs). However, a DC's dense setup results in a composite soundscape which makes it difficult to attribute sounds to individual devices.We propose a novel cyber-physical AD approach that validates device activity in realistic composite audio signals. By leveraging information from management network traffic, we predict changes in the DC soundscape. We use a

	convolutional neural network to compare our predictions with real observations to validate correct device activity and identify anomalies. Our evaluation using data from a real DC environment identifies spoofed and masqueraded activity with an accuracy of 98.62 %.

Conference #12

Relevance to SLICES-SC	100%
Title	RO-Crate for Testbeds: Automated Packaging of Experimental Results
Authors	Eric Hauser (TUM); Sebastian Gallenmüller (TUM); Georg Carle (TUM)
Venue	SLICES Workshop @ IFIP NETWORKING 2024
DOI/Url	https://ieeexplore.ieee.org/document/10619057
Dates and place	Thessaloniki, Greece, 03-06 June 2024
Main contribution	This paper proposes a concept to structure and document the outcome of testbed-hosted experiments. We describe our implementation that packages the results of a specific testbed framework, called plain orchestrating service (pos), in the standardized RO-Crate format and annotates metadata to the result files. The metadata includes information such as authorship, affiliations, software setup, hardware setup, energy consumption, and network topology.

Conference #13

Relevance to SLICES-SC	50%
Title	A Quantum of QUIC: Dissecting Cryptography with Post-Quantum Insights
Authors	Marcel Kempf (TUM), Nikolas Gauder (TUM), Benedikt Jaeger (TUM), Johannes Zirngibl (TUM), Georg Carle (TUM)
Venue	IFIP NETWORKING 2024
DOI/Url	https://ieeexplore.ieee.org/document/10619916
Dates and place	Thessaloniki, Greece, 03-06 June 2024
Main contribution	This paper presents a detailed evaluation of the impact of cryptography on QUIC performance. The high-performance QUIC implementations LSQUIC, quiche, and MsQuic are evaluated under different aspects. We show that QUIC performance increases by 10 to 20 % when removing packet protection. We integrate post-quantum cryptographic algorithms into QUIC, demonstrating its

	feasibility without major changes to the QUIC libraries by using a TLS library that implements post-quantum algorithms.

Conference #14	
Relevance to SLICES-SC	100%
Title	The pos Experiment Controller: Reproducible & Portable Network Experiments
Authors	Henning Stubbe (TUM); Sebastian Gallenmüller (TUM); Georg Carle (TUM)
Venue	19th Wireless On-demand Network systems and Services Conference (WONS'24)
DOI/Url	https://ieeexplore.ieee.org/document/10449532
Dates and place	Chamonix, France, 29-31 January 2024
Main contribution	Previous work introduced the pos framework and methodology, reducing the required effort for reproducible experiments. However, currently, this framework is available solely in a limited set of testbeds. In this work, we extend the proposed framework and, thus, build bridges between existing testbed islands. To showcase our approach and its feasibility, we recreate a well-known experiment on multiple testbeds and compare the results. These results indicate repeatability across testbeds.

Conference #15	
Relevance to SLICES-SC	80%
Title	The Performance of Post-Quantum TLS 1.3
Authors	Markus Sosnowski (TUM), Florian Wiedner (TUM), Eric Hauser (TUM), Lion Steger (TUM), Dimitrios Schoinianakis (TUM), Sebastian Gallenmüller (TUM), and Georg Carle (TUM)
Venue	19th International Conference on emerging Networking EXperiments and Technologies (CoNEXT 2023)
DOI/Url	https://dl.acm.org/doi/10.1145/3624354.3630585
Dates and place	Paris France December 5 - 8, 2023
Main contribution	In this paper different signature algorithms and key agreements (as proposed by the National Institute of Standards and Technology (NIST)) are examined through black- and white-box measurements to get precise handshake latencies and computational costs per participating library. We emulated loss, bandwidth, and delay to analyze constrained environments. Our results reveal that HQC and Kyber are on par with our current state-of-the-art, while Dilithium and Falcon are even faster.

Conference #16	
Relevance to SLICES-SC	80%
Title	Predicting Latency Quantiles using Network Calculus-assisted GNNs
Authors	Max Helm (TUM), Georg Carle (TUM)
Venue	2nd on Graph Neural Networking Workshop 2023
DOI/Url	https://dl.acm.org/doi/10.1145/3630049.3630173
Dates and place	Paris, France, 8 December 2023
Main contribution	Network digital twins commonly rely on Graph Neural Networks (GNNs) as functional models. They typically predict network performance metrics, such as latencies. Most approaches have one of the following restrictions: they use simulated data, predict mean values, or don't utilize formal method results as inputs. We introduce an approach that: (I) relies on data obtained from a hardware testbed, increasing realism, (II) predicts quantiles in addition to means, increasing flexibility and applicability, (III) uses the formal method of network calculus to obtain input features, increasing prediction accuracy. We show that latencies in hardware testbeds can be predicted at different quantiles with median relative errors between 8% and 29% using a simple GNN architecture.

Conference #17	
Relevance to SLICES-SC	100%
Title	Multi-Cluster Orchestration of 5G Experimental Deployments in Kubernetes over High-Speed Fabric
Authors	Ilias Syrigos (UTH); Nikos Makris (UTH); Thanasis Korakis (UTH)
Venue	2023 IEEE Globecom Workshops (GC Wkshps)
DOI/Url	https://ieeexplore.ieee.org/document/10465054
Dates and place	Kuala Lumpur, Malaysia, 04-08 December 2023
Main contribution	In this paper, we suggest employing SUSE Rancher for managing multi-cluster Kubernetes deployments and utilize the Submariner framework in order to securely export services and establish connectivity across clusters. We evaluate the efficacy of such integrated framework and its various configurations over a high-speed networking fabric (up to 25 Gbps) connecting the various clusters and enabling 5G and beyond experimentation.

Conference #18	
Relevance to SLICES-SC	80%
Title	Keeping Up to Date With P4Runtime: An Analysis of Data Plane Updates on P4 Switches

Authors	Henning Stubbe (TUM), Sebastian Gallenmuller (TUM), Manuel Simon (TUM), Eric Hauser (TUM), Dominik Scholz (TUM), Georg Carle (TUM)
Venue	2023 IFIP Networking Conference, IFIP Networking 2023
DOI/Url	https://ieeexplore.ieee.org/document/10186439/
Dates and place	Barcelona, Spain, 12-15 Jun 2023
Main contribution	In this case study, we investigate the control plane of a high-performance P4 switching ASIC. Moreover, we create a measurement methodology to track the delay between the reception of a rule update on the control plane and its actual application on the data plane of a P4 hardware switch. By applying the methodology to said ASIC, we can precisely describe its performance and non-atomicity in updates. Based on our findings, we apply multiple different approaches to optimize control plane latency. Our results highlight the need to consider latency on the control plane proportionate with the increase of achievable data rates

Conference #19	
Relevance to SLICES-SC	100%
Title	DRL-based Service Migration for MEC Cloud-Native 5G and beyond Networks
Authors	Theodoros Tsourdinis (UTH,SU); Nikos Makris (UTH); Serge Fdida (SU); Thanasis Korakis (UTH)
Venue	IEEE 9th International Conference on Network Softwarization (NetSoft 2023)
DOI/Url	https://ieeexplore.ieee.org/document/10175417
Dates and place	Madrid, Spain, 19-23 June 2023
Main contribution	In this work, we start from an entirely virtualized cloud-native 5G network based on the OpenAirInterface platform and develop our architecture for providing seamless live migration of edge services. On top of this infrastructure, we employ a Deep Reinforcement Learning (DRL) approach that is able to proactively relocate services to new edges, subject to the user's multi-cell latency measurements and the workload status of the servers. We evaluate our scheme in a testbed setup by emulating mobility using realistic mobility patterns and workloads from real-world clusters. Our results denote that our scheme is capable sustain low-latency values for the end users, based on their mobility within the serviced region.

Conference #20	
Relevance to SLICES-SC	100%
Title	Which ML model to choose? Experimental Evaluation for a beyond-5G Traffic Steering case
Authors	Ilias Chatzistefanidis (UTH); Nikos Makris (UTH); Virgilios Passas (UTH); Thanasis Korakis (UTH)
Venue	ICC 2023 - IEEE International Conference on Communications
DOI/Url	https://ieeexplore.ieee.org/document/10279485
Dates and place	Rome, Italy, 28 May 2023 - 01 June 2023
Main contribution	In this work, we evaluate a total of 22 different ML modelsfor optimal traffic steering in beyond 5G networks, towards determining the solution that yields the best results in terms of accuracy of predictions, training time, and computational resources. We use a real-world testbed prototype based on OpenAirInterface to evaluate our contributions and use realistic mobility datasets for emulating client mobility. Our results show that the different algorithms can present variations in terms of the achievable throughput, but several can substantially improve the offered wireless network capacity.

Conference #21	
Relevance to SLICES-SC	100%
Title	ML-based Traffic Steering for Heterogeneous Ultra-dense beyond-5G Networks
Authors	Ilias Chatzistefanidis (UTH); Nikos Makris (UTH); Virgilios Passas (UTH); Thanasis Korakis (UTH)
Venue	2023 IEEE Wireless Communications and Networking Conference (WCNC)
DOI/Url	https://ieeexplore.ieee.org/document/10118923
Dates and place	Glasgow, United Kingdom, 26-29 March 2023
Main contribution	In this work, we consider such a case, where network access is provided to the end-users via heterogeneous (3GPP and non-3GPP) Distributed Units (DUs), converging to a single Central Unit (CU), and programmable on the fly with external interfaces. We employ Machine Learning (ML) methods to forecast the Quality of Service (QoS) that a wireless client will get from the network in the near future based on the Channel State Information (CSI) metric. Subsequently, we appropriately steer the traffic over the different heterogeneous DUs for ensuring that the network meets the needs of the UEs. We design, develop, deploy and evaluate our method in a real testbed environment, using emulated mobility. Our results show that the overall throughput of each UE can be drastically improved compared to existing allocation mechanisms.

Conference #22	
Relevance to SLICES-SC	100%
Title	EELAS: Energy Efficient and Latency Aware Scheduling of Cloud-Native ML Workloads
Authors	Ilias Syrigos (UTH); Dimitris Kefalas (UTH); Nikos Makris (UTH); Thanasis Korakis (UTH)
Venue	TASIR Workshop: Testbeds for Advanced Systems Implementation and Research (COMSNETS Workshop)
DOI/Url	https://ieeexplore.ieee.org/document/10041344
Dates and place	Bangalore, India, 03-08 January 2023
Main contribution	For ML inference workloads, provisioning and access latency plays a crucial role in their successful operation. Towards combating these issues, we design, develop, and evaluate our platform for Energy Efficient Latency-Aware Scheduling (EELAS) of workloads. First, we formulate the scheduling problem as an ILP problem, and then we develop a less complex heuristic method that allows the efficient allocation of resources within the continuum. Our EELAS prototype integrates with Kubernetes and can reduce the overall energy consumption of cloud-to-things resources while accounting for latency of ML workloads. Our evaluation in real-world settings reveals significant energy gains for scheduling ML inference tasks, also reachable with the minimum possible latency from far-edge devices.

Conference #23	
Relevance to SLICES-SC	80%
Title	Modeling TCP Performance Using Graph Neural Networks
Authors	Benedikt Jaeger (TUM), Max Helm (TUM), Lars Schwegmann (TUM), Georg Carle (TUM)
Venue	GNNet '22: 1st International Workshop on Graph Neural Networking
DOI/Url	https://doi.org/10.1145/3565473.3569190
Dates and place	Rome, Italy, 06 December 2022
Main contribution	This paper presents a TCP bandwidth and RTT prediction approach that can handle different algorithms and topologies. For this, we utilize Gated Graph Neural Networks and simulated network traffic. We evaluate different encodings of the input data into graphs and how network size, number of flows, and TCP algorithms influence prediction accuracy. Additionally, we quantify the impact of different input features on our models. We show that Graph Neural Networks can be used to model TCP behavior. The resulting models can predict RTT with a median relative error of 2.29% and throughput with an error of 13.31%.

Conference #24	
Relevance to SLICES-SC	100%
Title	Experimental Evaluation of ML Models for Dynamic VNF Autoscaling
Authors	Vasileios Zalokostas-Diplas (UTH); Nikos Makris (UTH); Virgilios Passas (UTH); Thanasis Korakis (UTH)
Venue	2022 IEEE Conference on Standards for Communications and Networking (CSCN)
DOI/Url	https://ieeexplore.ieee.org/document/10051112
Dates and place	Thessaloniki, Greece, 28-30 November 2022
Main contribution	Network Functions Virtualization (NFV) is a key aspect deeply integrated in the latest 5G networks, allowing for the provisioning of elastic resources that adapt in a flexible manner based on the overall network demand. The adoption of NFV architectures is empowered through the evolution of cloud-native and hypervisor tools to support service monitoring, and orchestrate the appropriate decisions for provisioning the scale of the network. Such decisions may directly impact the overall quality of service and experience for users, as well as the energy consumption that the resources use. To this aim, machine learning (ML) - driven optimization for these decisions, relying on inferring the values of future monitored metrics, can assist in deciding proactively on the network scale. In this work, we employ three different candidate solutions (statistical, tree- and CNN-based) for determining the scale of network functions deployed within a cluster of resources, subject to the user demand. We compare and evaluate the different schemes in a real testbed environment, and discuss the benefits of ML-driven optimizations against existing state-of-the-art approaches.

Conference #25	
Relevance to SLICES-SC	100%
Title	Flow-level Tail Latency Estimation and Verification based on Extreme Value Theory
Authors	Max Helm (TUM); Florian Wiedner (TUM); Georg Carle (TUM)
Venue	18th International Conference on Network and Service Management (CNSM 2022)
DOI/Url	https://ieeexplore.ieee.org/document/9964525
Dates and place	Thessaloniki, Greece, 31 October 2022 - 04 November 2022
Main contribution	Modeling extreme latencies in communication networks can contribute information to network planning and flow admission under service level agreements. Extreme Value Theory is such an approach that utilizes real-world measurement data. It is often applied without verifying the resulting model predictions on larger datasets. Here we show that such models can provide accurate

predictions over larger datasets while being applied to 100 random network topologies and configurations. We found that applying derived models with a bounded tail to a twentyfold time period results in a prediction accuracy of 75% for extreme latency exceedances. Furthermore, we show that tail latency quantiles can be predicted on a flow level with median absolute percentage errors ranging from 0.7% to 16.8%. Therefore, we consider this approach to be useful for dimensioning networks under latency-constrained service level agreements.

Poster #1	
Relevance to SLICES-SC	100%
Title	SLICES-RI Plain Orchestrating System (pos)---Reproducible Experiment Workflows by Design
Authors	Sebastian Gallenmüller (TUM), Serge Fdida (SU), Georg Carle (TUM)
Venue	Midscale Experimental Research Infrastructure Forum (MERIF) 2023
DOI/Url	http://www.net.in.tum.de/fileadmin/bibtex/publications/papers/gallenmueller_merif2023.pdf
Dates and place	Boston, MA, USA, May 2023
Main contribution	This poster presents the plain orchestrating service (pos) for the SLICES-RI

In addition to the scientific papers that were published directly from the SLICES-SC partners, it is also worthwhile to point out that the user groups which have accessed the SLICES infrastructures using the Transnational Access scheme, have disseminated the results of the performed experiments through scientific publications. Specifically, seven scientific papers acknowledging the SLICES-SC support have been published by the selected user groups.

3.10. Events

As part of SLICES-SC Networking activities, SLICES members have organised numerous *project events* and actively participated in a wide range of *third-party events* organised by the scientific community, including those supported by the European Commission and other prominent venues. These engagements have significantly elevated the visibility of SLICES, furthering the objective of attracting more users and contributors to the research infrastructure. Below is a detailed description of the dissemination activities undertaken by project members during the reporting period, categorised into the two main types of events.

SLICES-SC partners were actively involved in organising various events to disseminate the project's activities, including:

- **Networking & Engagement Workshops**: These workshops targeted research, academia, interested user communities, and industry stakeholders. They were organised at the project level in different countries, with strong involvement from partners in France (SU/INRIA),

Greece (UTH), Poland (PSNC), Spain (IMDEA), Italy (CNR), Hungary (SZTAKI), and Switzerland (IoT Lan).

- **Local Engagement Events**: Each project partner organised events targeting their local ecosystems, resulting in a total of 14 local events held during the project's timeframe.
- **Webinars**: These webinars were based on the results of joint research activities conducted by SLICES-SC, aiming to present findings to a wider audience. It was planned to organize one or two webinars for each of the Joint Research Activities work packages (WP2 and WP3), with tentative dates set for M18 and M20.
- **Summer Schools**: Three summer schools were held in public spaces, featuring entertainment, demonstrations, expert presentations, and engagements with private and public investors. These took place in July 2022 in Volos, June 2023 in Oulu, and July 2024 in Lipari, Italy.
- **Hackathons**: Three coding events were organised one hackathon on Thought experiments by Inria in Thessaloniki and OAI spring of code by Eurecom in Sophia Antipolis and one code sprint on the SLICES blueprint by Inria in Sophia Antipolis.

3.10.1. Project events

Project Event # 1	
Title	SLICES-SC 2nd Summer School: Efficient wireless communication and computing experimental research in 6G-era
Organizer(s)	UOulu, SU
Partners involved	All SLICES-SC partners
Date	13 – 15 June 2023
Location	Radisson Blu Hotel, Oulu
Category	Summer school
Type of audience	Researchers from academia and Industry
Size of audience	50
Countries addressed	EU
URL	https://slices-sc.eu/events/slices-sc-2nd-summer-school/
Description	The three-day SLICES Summer School in Oulu, Finland introduced and familiarised its participants with the pan-European Scientific Large Scale Infrastructure for Computing/Communication Experimental Studies Research Infrastructure (SLICES-RI), the unique experimental research capabilities it offers, and fostered the skills and knowledge for conducting experiment-based research. Aside from providing an overview of the various communication and computing SLICES-RI, the event gave students a unique opportunity to experiment with some of these infrastructures remotely from their own laptops. Participants received information about best practices in experiment planning and data handling, as well as novel, groundbreaking concepts paving the way beyond 5G towards the 6G communication and computing ecosystem.

Project Event # 2	
Title	SLICES Blueprint Workshop
Organiser(s)	SU
Partners involved	All SLICES-SC partners
Date	18 – 19 September 2023
Location	Paris, France
Category	Workshop
Type of audience	SLICES-RI community
Size of audience	40
Countries addressed	Worldwide
URL	https://slices-sc.eu/slices-sc-partners-convene-in-paris-to-advance-research-infrastructure-blueprint-workshop/
Description	A driving force for SLICES is the creation of a blueprint designed to streamline the harmonisation of hardware and software configurations across various sites and nodes. This unified approach not only fosters seamless interoperability but also serves as a vital resource for testbed owners and operators. Thus, at the heart of this workshop was the unveiling of the second version of the SLICES 5G blueprint, a significant milestone in the project's evolution. The workshop in Paris brought together visionaries and experts in the field, facilitating an enriching exchange of ideas, best practices, and a deeper understanding of the needs within the SLICES Research Infrastructure.

Project Event # 3	
Title	Official presentation of the national Spanish SLICES node
Organiser(s)	UC3M, IMDEA
Partners involved	UC3M, SU
Date	3 October 2023
Location	Madrid, Spain
Category	Official presentation
Type of audience	Researchers working in areas and platforms related to the Spanish SLICES node
Size of audience	~30
Countries addressed	Spain
URL	https://slices-sc.eu/slices-spain-pioneering-european-research-infrastructure-in-madrid/
Description	SLICES-Spain launched the SLICES-ES node. The Universidad Carlos III de Madrid, IMDEA Networks Institute and the Universidad del País Vasco/Euskal Herriko Unibertsitatea are participating in the Spanish SLICES node (SLICES-ES). Specifically, the first infrastructure open to the European scientific community for testing in the field of telecommunications and with a very powerful Internet of Things (IoT) satellite service with Europe-wide coverage will be established in Madrid.

Project Event # 4	
Title	The 17th ACM Workshop on Wireless Network Testbeds, Experimental evaluation & Characterisation (WiNTECH '23)
Organiser(s)	ACM with support from PAWR and SLICES-SC
Partners involved	SU
Date	6 October 2023
Location	Madrid, Spain
Category	Workshop Co-located with ACM MobiCom 2023
Type of audience	Researchers from academia an industry
Size of audience	50
Countries addressed	Worldwide
URL	https://acm-wintech.github.io/2023/program.html
Description	SLICES and PAWR supported the 17th ACM Workshop on Wireless Network Testbeds, Experimental evaluation & Characterisation.
	The workshop fostered discussions on unresolved issues, including new laboratory methodologies, key real-life limitations of wireless technologies that have emerged over the past few years (e.g., mmWave, underwater, 5G, IoT, wearables, and SDN), as well as key challenges facing the wireless networking of the future.
	Serge Fdida, SLICES coordinator made a presentation titled "Design and deployment of SLICES, first sustainable scientific instrument in digital infrastructures".

The 17th ACM Workshop on Wireless Network
Testbeds, Experimental evaluation & Characterization 2023

Madrid, Spain
October 6th, 2023
Co-located with ACM MobiCom 2023

Technically co-sponsored by the PAWR Project Office and by the SLICES-SC program

Project Event # 5	
Title	Plenary meeting of SLICES-FR
Organiser(s)	Inria, SU
Partners involved	Inria, SU, Eurecom
Date	7 – 8 February 2024
Location	Lille, France
Category	Plenary meeting
Type of audience	French researchers and engineers involved in SLICES-FR
Size of audience	50 persons
Countries addressed	France
URL	N/A
Description	Thursday Feb. 8th was the Kick Off meeting of SILECS PEPR Cloud project and plenary meeting of SLICES-FR, French node of the European Research Infrastructure SLICES-RI.

Project Event # 6	
Title	OAI 2024 Spring of Code
Organiser(s)	Eurecom
Partners involved	Inria, SU, UTH, TUM
Date	From 01/04 to 31/05
Location	Sophia Antipolis, France
Category	Code sprint
Type of audience	OAI community
Size of audience	50
Countries addressed	EU
URL	https://slices-sc.eu/events/oai-2024-spring-of-code/
Description	Code and coders are at the heart of open source. The OpenAirInterface Software Alliance (OSA) is proud of its code-developer community and is launching a coding event to enhance its outreach and spread the message to new developers in 5G and next Generation software. This event called "OAI 2024 Spring of Code" presented a unique opportunity for those new to the OAI community, coders, developers, and tech enthusiasts to collaborate and contribute to the OAI code. Candidates selected through a review of the application were hosted at EURECOM/OAI labs in the South of France with financial support of SLICES-RI for a week-long training on OAI 5G and O-RAN technology.

Project Event # 7	
Title	Thought experiments, data and reproducibility for networking and Future G research: Hackathon 2024
Organiser(s)	Inria, UTH
Partners involved	Inria, TUM, SU, UTH, Eurecom, (all SLICES-SC partners in the TPC)
Date	3 June 2024
Location	Thessaloniki, Greece
Category	Hackathon
Type of audience	Researchers from academia an industry
Size of audience	15
Countries addressed	EU
URL	https://networking.ifip.org/2024/index.php/hackathon
Description	SLICES-RI relies on blueprints and their associated support to allow researchers to replicate and extend the work done by the community1. To reach this objective, the blueprints provide a set of replicable tools, software, hardware, and methodologies to make sound experimental research with cutting-edge 5G environments. As such, researchers worldwide can focus on their core research (e.g., testing a new frequency

allocation scheme) and leverage the rest of the infrastructure offered by the community.

Experiments in SLICES are orchestrated by the plain orchestrating service (pos), which manages the experiment itself but also its setup and evaluation. This allows to archive all data and meta-data of experiments to allow sound analysis and reproducibility. The blueprint applies this methodology to deploy a fully-featured 5G network with a cloud-native core and split 7.2 radio access network. The blueprint is flexible enough to allow its deployment in fully virtual environments (e.g., in a public cloud) or with dedicated physical hardware on SLICES premises.

In this hackathon, we planned to bootstrap new software and features for the research community. The objective of the hackathon was to improve blueprint implementations for SLICES, but always in a way that was beneficial beyond SLICES. As such results of the hackathon are not only usable in SLICES but can be beneficial for the entire research community or even broader, independently of SLICES.

Project Event # 8	
Title	Thought experiments, data and reproducibility for networking and Future G research: SLICES Workshop 2024
Organiser(s)	SU, TUM
Partners involved	All SLICES-SC partners in the TPC
Date	3 June 2024
Location	Thessaloniki, Greece
Category	Workshop
Type of audience	Researchers from academia an industry
Size of audience	25
Countries addressed	EU

URL	https://networking.ifip.org/2024/index.php/workshops/slices
Description	Several scientific domains recognize the value of experimentally-driven research and the impact of data sharing. The FAIR (Findable, Accessible, Interoperable, and Reusable) Data Principles were developed to be used as guidelines for data producers and publishers, with regards to data management and stewardship. In addition, the community strongly supports the necessity for reproducibility and several esteemed initiatives have been developed. Unfortunately, very little has been achieved because the incentive is low to produce this extra effort and it does not scale as the burden is not on the authors. This workshop was a place for discussing, tough experiments, platforms, data and reproducibility that could structure and benefit the research community focusing on Future G Networks.

Project Event # 9	
Title	SLICES Code Sprint
Organiser(s)	Inria
Partners involved	Inria, SU, UTH, TUM
Date	24 – 28 June 2024
Location	Sophia Antipolis, France
Category	Code sprint
Type of audience	SLICES-RI partners
Size of audience	10
Countries addressed	EU
URL	https://gitlab.inria.fr/slices-ri
Description	The goals of this code sprint were to: • Restructure the implementation repository(ies)

- Integrate FlexRIC and Submariner into the implementation
- Incorporate the MRS into the implementation
- Deploy an MRS on vwall resources
- Deploy a Submariner on vwall resources
- Restructure documentation to be LLM-friendly
- Monitor metrics from the post-5G BP

These tasks were accomplished during the sprint, resulting in a newly organised repository available at https://gitlab.inria.fr/slices-ri.

Project Event # 10	
Title	SLICES Summer School 2024: Open and programmable 6G networks in the cloud/edge continuum: research challenges and experimentation tools in SLICES Research Infrastructures
Organiser(s)	CNR, SU
Partners involved	All SLICES-SC partners
Date	07 – 13 July 2024
Location	Lipari, Italy
Category	Summer school
Type of audience	Researchers from academia and Industry
Size of audience	50
Countries addressed	EU
URL	https://www.slices-ri.eu/events/slices-summer-school-2024/
Description	The purpose of this Summer School was twofold. The first objective was to provide students with an up-to-date overview of the enabling technologies and fundamental research challenges of upcoming 6G systems and networks, considering the increasing synergies with the cloud-to-edge continuum. Tutorials presented the main technologies and tools for network and distributed systems programming, orchestration, and virtualisation. Lectures and keynotes focused on the theoretical and practical aspects of network sensing, distributed intelligence at the edge, the intersection between AI and networking, and the design of disaggregated programmable networks, highlighting key emerging research topics within the overall framework of 6G networks. The second objective was to introduce students to the tools and methodologies offered by SLICES-RI, the only ESFRI research infrastructure for computer and networking research, for conducting experiment-based research in such cutting-edge areas. The school provided dedicated hands-on training and sessions, allowing students to gain concrete experience through practical projects using SLICES tools.

3.10.2. Third-party events

Third-party Event # 1	
Event Name	IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC 2022)
Partners involved	SU
Organiser(s)	IEEE
Date	12 – 15 September 2022
Location	Online
Event Category	Conference
Event URL	https://pimrc2022.ieee-pimrc.org/
Dissemination type	Participation to Panel 02
Dissemination title	6G Research Infrastructures – what, how and by whom?
Dissemination URL	https://pimrc2022.ieee-pimrc.org/panel02/
Type of audience	Researchers from academia and industry
Countries addressed	Worldwide

Third-party Event # 2	
Event Name	International conference on research infrastructures (ICRI 2022)
Partners involved	SU
Date	19 – 21 October 2022
Location	Brno, Czech Republic
Event Category	Conference
Event URL	https://www.icri2022.cz/
Dissemination type	Attend the conference

Type of audience	Researchers from academia and industry
Countries addressed	Europe

Third-party Event # 3	
Event Name	Beyond 5G International Conference 2022
Partners involved	SU
Organiser(s)	Ministry of Internal Affairs and Communications (MIC) of Japan, and Beyond 5G Promotion Consortium of Japan(B5GPC).
Date	24 – 25 October 2022
Location	Tokyo, Japan
Event Category	Conference
Event URL	https://b5g.jp/en/b5g_inter-conf2022/
Dissemination type	Serge Fdida, Sorbonne Université, was member of the Open RAN Subcommittee.
Type of audience	Researchers from academia and industry
Countries addressed	Japan

Third-party Event # 4	
Event Name	Future Internet: Lessons learned and way forward
Partners involved	SU, Inria
Organiser(s)	SU, Inria
Date	27 – 28 October 2022
Location	Nice, France
Event Category	Workshop
Event URL	N/A
Dissemination type	Presentations
Dissemination title	Professor Serge Fdida: Network as a Science future challenge Dr Walid Dabbous: Experimental Network Research: A Generally Positive Outlook?
Dissemination URL	N/A
Type of audience	Researchers on Future Internet Architecture
Size of audience	15
Countries addressed	France

Third-party Event # 5	
Event Name	GLOBECOM 2022
Partners involved	SU
Organiser(s)	IEEE Globecom
Date	5 December 2022
Location	Rio de Janeiro, Brazil & hybrid
Event Category	Conference
Event URL	https://globecom2022.ieee-globecom.org/
Dissemination type	Industry Panel
Dissemination title	IPA 16: Future G Research Platforms (moderator: Serge Fdida, Sorbonne Université)
Dissemination URL	https://globecom2022.ieee-globecom.org/program/industry-panels#FUTURE%20G%20RESEARCH%20PLATFORMS
Type of audience	Researchers from academia and industry
Countries addressed	Worldwide

Third-party Event # 6	
Event Name	Seminar at RNP (the Brazilian National Education and Research Network)
Partners involved	SU
Organiser(s)	RNP
Date	6 December 2022

Location	Rio de Janeiro, Brazil
Event Category	N/A
Event URL	N/A
Dissemination type	Seminar
Dissemination title	Slices: European Scientific Large-Scale Infrastructure for Computing/Communication Experimental Studies.
Dissemination URL	N/A
Type of audience	National Education and Research Network Researchers and Engineers
Countries addressed	Brazil

Third-party Event # 7	
Event Name	NetworldEurope General Assembly
Partners involved	SU, CNR
Organiser(s)	NetworldEurope
Date	13 December 2022
Location	Online
Event Category	General Assembly including an overall view of NetworldEurope actions, and the status of different impactful initiatives in Europe.
Event URL	https://www.networldeurope.eu/networldeurope-general-assembly-13-december-2022/
Dissemination type	Presentation by Professors Serge Fdida and Andrea Passarella
Dissemination title	The SLICES ESFRI Infrastructure
Dissemination URL	N/A
Type of audience	Stakeholders from Industry, research, SMEs involved in NetworldEurope
Size of audience	~50
Countries addressed	EU

Third-party Event # 8	
Event Name	TASIR workshop in conjuction with 15th International Conference on COMmunication Systems & NETworkS / Comsnets
Partners involved	SU, Inria, TUM, UA, UCLan
Organiser(s)	SU
Date	8 January 2023
Location	Bengaluru, India & hybrid
Event Category	Workshop
Event URL	https://www.comsnets.org/archive/2023/TASIR_workshop.html

Dissemination type	Workshop organisation and two paper presentations
Dissemination title	Paper 1 (Inria): Delay-based Fidelity Monitoring of Distributed Network Emulation Paper 2 (SU, TUM, UA, UCLan): Experimental Research Reproducibility and Experiment Workflow Management
Dissemination URL	Same as above
Type of audience	Researchers from academia and industry
Size of audience	~25
Countries addressed	Worldwide

Third-party Event # 9	
Event Name	WONS'2023
Partners involved	SU
Organiser(s)	University of Brescia
Date	31 January – 1 February 2023
Location	Madonna di Campiglio, Italy
Event Category	Conference
Event URL	https://2023.wons-conference.org/
Dissemination type	Serge Fdida – Chair Session 4
Dissemination URL	https://2023.wons-conference.org/program/
Type of audience	Researchers from academia and industry
Size of audience	40
Countries addressed	Worldwide

Third-party Event # 10	
Event Name	26th Conference on Innovation in Clouds, Internet and Networks (ICIN'23)
Partners involved	SU
Organiser(s)	IEEE
Date	8 March 2023
Location	Paris
Event Category	Conference
Event URL	https://www.icin-conference.org/2023/
Dissemination type	Keynote speech
Dissemination title	SLICES: European Scientific Large-Scale Infrastructure for Computing/Communication Experimental Studies
Dissemination URL	https://www.icin-conference.org/2023/keynotes/

Type of audience	Researchers from academia and industry
Size of audience	~150
Countries addressed	Worldwide

Third-party Event # 11	
Event Name	8th International Conference on Internet of Things, Big Data and Security (IoTBDS 2023)
Partners involved	SU, SZTAKI
Organiser(s)	SZTAKI
Date	21 – 23 April 2023
Location	Prague, Czech Republic, hybrid
Event Category	Launch Ceremony of the enhanced ELKH Cloud. Presentation topics: the results of the ELKH Cloud project, national and international importance of ELKH Cloud, related activities of ESFRI
Event URL	https://iotbds.scitevents.org/?y=2023
Dissemination type	Keynote speech of Professor Serge Fdida
Dissemination title	SLICES: European Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies
Dissemination URL	https://www.insticc.org/node/TechnicalProgram/IoTBDS/2023/presentationDetails/1669
Type of audience	Researchers from academia and industry
Size of audience	~50
Countries addressed	EU

Third-party Event # 12	
Event Name	Midscale Experimental Research Infrastructure Forum (MERIF) 2023
Partners involved	SU, TUM
Organiser(s)	NSF
Date	22 – 24 May 2023
Location	Boston
Event Category	Workshop, liaison between SLICES and US-based testbeds and initiatives
Event URL	https://sites.google.com/a/us-ignite.org/merif-workshop-2020/2023-workshop/
Dissemination type	Presentation
Dissemination title	SLICES-RI Plain Orchestrating System (pos) - Reproducible Experiment Workflows by Design,

Dissemination URL	https://docs.google.com/document/d/1h6kCyNTUeUARiBpId03_JVbBsp MFP3I8/edit
Type of audience	Midscale Experimental Research Infrastructures designers and users
Size of audience	~100
Countries addressed	USA and EU

Third-party Event # 13	
Event Name	IEEE International Conference on High Performance Switching and Routing
Partners involved	Inria, UTH, Eurecom
Organiser(s)	IEEE ComSoc
Date	5 – 7 June 2023
Location	Albuquerque, NM, USA
Event Category	International Conference
Event URL	https://hpsr2023.ieee-hpsr.org/
Dissemination type	Tutorial
Dissemination title	An Overview of a Distributed Post-5G Network Architecture within the EU SLICES-RI Research Infrastructure
Dissemination URL	https://hpsr2023.ieee-hpsr.org/day-1-monday-june-5/
Type of audience	Researchers from academia and Industry
Countries addressed	International

Third-party Event # 14	
Event Name	EuCNC & 6G Summit
Partners involved	SU, UTH
Organiser(s)	European Commission
Date	6 – 9 June 2023
Location	Gothenburg, Sweden
Event Category	Conference
Event URL	https://www.eucnc.eu/2023/www.eucnc.eu/index.html
Dissemination type	Workshop
Dissemination title	Workshop 9: Empowering Transatlantic Platforms for 5G Advanced and 6G Network
Dissemination URL	https://www.eucnc.eu/2023/www.eucnc.eu/programme/workshops/workshop-9/index.html
Type of audience	Researchers from academia and industry
Size of audience	~50

Countries addressed	Worldwide

Third-party Event # 15	
Event Name	PSNC Days 2023 (International conference on projects, activities and initiatives of the Poznan Supercomputing and Networking Center with scientific, social and business partners)
Partners involved	PSNC, SU
Organiser(s)	PSNC
Date	14 September 2023

Location	Poznan
Event Category	Conference
Event URL	https://www.30lat.pcss.pl/14-09/
Dissemination type	Presentation
Dissemination title	Future Internet, 5G and beyond – SLICES RI
Dissemination URL	Same URL
Type of audience	Researchers from academia and industry
Size of audience	100
Countries addressed	Europe

Third-party Event # 16	
Event Name	Hyperconnectivity for European HPC Supercomputers – Feedback from HPC users and providers
Partners involved	UTH
Organiser(s)	EuroHPC
Date	22 November 2023
Location	Online
Event Category	Workshop
Event URL	https://eurohypercon.eu/events/workshop-hyperconnectivity-euhpc-feedback/
Dissemination type	Participation to Panel Discussion by Dr Nikos Makris
Dissemination title	SLICES ESFRI Research Infrastructure in panel discussion "HPC connectivity needs: Current State and Future Vision"
Dissemination URL	#EuroHPC
Type of audience	HPC experts
Countries addressed	Europe

Third-party Event # 17	
Event Name	Academic Salon on High-Performance and Low Latency Networks and Systems
Partners involved	TUM, Inria
Organiser(s)	TUM
Date	30 November – 1 December 2023
Location	Munich, Germany
Event Category	Academic Salon (Research-Industry meeting)
Event URL	https://hedgedoc.net.in.tum.de/s/WvDJfhVdm
Dissemination type	Panel Discussion

Dissemination title	Which Research Infrastructure and Tools foster best scientific Collaborations?
Dissemination URL	https://hedgedoc.net.in.tum.de/s/WvDJfhVdm#Thursday-30112023
Type of audience	Researchers from academia and Industry
Countries addressed	EU

Third-party Event # 18	
Event Name	Workshop 5G/6G Inria
Partners involved	Inria
Organiser(s)	Inria
Date	4 – 5 December 2023
Location	Lyon, France
Event Category	Collaboration Workshop
Dissemination type	Presentation of the SLICES 5G blueprint
Dissemination title	Rethink testbeds with blueprints
Type of audience	Inria and NICT Researchers
Size of audience	30
Countries addressed	France and Japan

Third-party Event # 19	
Event Name	IEEE Global Communications Conference (GLOBECOM'23)
Partners involved	SU
Organiser(s)	IEEE
Date	8 December 2023
Location	Kuala Lumpur, Malaysia
Event Category	Conference
Event URL	https://globecom2023.ieee-globecom.org/
Dissemination type	Workshop
Dissemination title	WS20-1: Future G Experimental Test Platforms for Advanced Systems Implementation and Research (Serge Fdida, Sorbonne Université)
Dissemination URL	https://globecom2023.ieee-globecom.org/program/workshops-program#S1569623028
Type of audience	Researchers from academia and industry
Countries addressed	Worldwide

Third-party Event # 20	
Event Name	AINTEC 2023 (18th Asian Internet Engineering Conference)
Partners involved	SU
Organiser(s)	ACM SIGCOMM
Date	13 December 2023
Location	Hanoi, Vietnam
Event Category	Conference
Event URL	https://interlab.ait.ac.th/aintec2023/
Dissemination type	Invited Presentation
Dissemination title	SLICES: The first Scientific Instrument for Computing/Communication Experimental Studies (Serge Fdida, Sorbonne Université)
Dissemination URL	https://interlab.ait.ac.th/aintec2023/#post-conference
Type of audience	Researchers from academia and industry
Size of audience	NC
Countries addressed	Worldwide

Third-party Event # 21	
Event Name	Wireless On-demand Network systems and Services Conference (WONS 2024)
Partners involved	SU, UTH, Inria, TUM
Organiser(s)	SU, UTH
Date	29 – 31 January 2024
Location	Chamonix, France
Event Category	Conference
Event URL	https://2024.wons-conference.org/
Dissemination types	Conference organisation & Panel and paper presentation
Dissemination title	SU organised the conference with the support and sponsorship of SLICES-SC.
	Panel: Thought experiments towards Future G networks, issues and opportunities, Inria.
	Paper: The Pos Experiment Controller: Reproducible & Portable Network Experiments, TUM.

Dissemination URL	https://2024.wons-conference.org/panels/ and https://2024.wons-conference.org/program/
Type of audience	Academic researchers
Size of audience	45
Countries addressed	Worldwide

Third-party Event # 22	
Event Name	The annual scientific week common to the Electronics and Future Networks Priority Research Program and Equipment (PEPR)
Partners involved	Inria, Eurecom
Organiser(s)	Joint organisation by the Electronics and Future Networks PEPRs
Date	18 – 22 March 2024
Location	Grenoble, France
Event Category	National meeting of researchers involved in the Electronics and Future Networks Priority Research Programs
Event URL	https://peprelecreseaux.sciencesconf.org/
Dissemination type	Demonstration
Dissemination title	5G blueprint demonstration
Dissemination URL	https://peprelecreseaux.sciencesconf.org/resource/page/id/5
Type of audience	Researchers from academia and industry
Size of audience	400
Countries addressed	France

Third-party Event # 23	
Event Name	6G Symposium
Partners involved	UOULU
Organiser(s)	6G World, UOULU
Date	9 – 11 April 2024
Location	Levi, Finland
Event Category	Symposium
Event URL	https://www.6gworld.com/6gsymposium-spring-2024/
Dissemination type	Exhibition booth
Dissemination title	SLICES-RI poster
Dissemination URL	https://slices-sc.eu/slices-participation-at-the-exhibition-of-the-6g-symposium-a-critical-gathering-for-the-future-of-telecommunications/
Type of audience	Researchers from academia and industry, policymakers
Size of audience	~100
Countries addressed	Worldwide

Third-party Event # 24	
Event Name	INFOCOM 2024
Partners involved	Inria, TUM, UTH, Eurecom, SU

Organiser(s)	IEEE
Date	22 May 2024
Location	Vancouver, Canada
Event Category	Conference
Event URL	https://infocom2024.ieee-infocom.org/
Dissemination type	Demonstration
Dissemination title	Blueprint-based reproducible research with the SLICES Research Infrastructure
Dissemination URL	https://infocom2024.ieee-infocom.org/program/postersdemos
Type of audience	Researchers from academia and industry
Size of audience	500+
Countries addressed	International

Third-party Event # 25	
Event Name	27th IEEE ISORC 2024: International Symposium on Object/Component/Service-Oriented Real-Time Distributed Computing
Partners involved	SU
Organiser(s)	University of Pau & Pays de l'Adour (FR), Vanderbilt University (USA) and Goethe University Frankfurt (DE)
Date	22 – 25 May 2024
Location	Carthage, Tunisia
Event Category	Conference
Event URL	https://isorc.github.io/2024/
Dissemination type	Keynote speaker
Dissemination title	Title presentation: "Future Network reproducibility", Serge Fdida, Sorbonne Université
Dissemination URL	Same
Type of audience	Researchers from academia and industry
Size of audience	50
Countries addressed	Worldwide

Third-party Event # 26	
Event Name	Privacy Symposium 2024
Partners involved	MI, IoT Lab
Organiser(s)	MI
Date	10 – 14 June 2024

Location	Venice, Italy
Event Category	Symposium
Event URL	https://privacysymposium.org/
Dissemination type	Sébastien Ziegler, Privacy Symposium Chair
Type of audience	Researchers from academia and industry
Size of audience	1000
Countries addressed	Worldwide

Third-party Event # 27	
Event Name	TNC 2024
Partners involved	Inria, PSNC, SU, UTH
Organiser(s)	GEANT
Date	12 June 2024
Location	Rennes, France
Event Category	Research and education networking conference
Event URL	https://tnc24.geant.org/
Dissemination type	BoF (Birds of a Feather) session
Dissemination title	Integrated Support of Large Scale Research Instruments
Dissemination URL	https://tnc24.geant.org/programme/
Type of audience	Researchers and engineers involved in NRENs
Size of audience	800 (conference), 40 (BoF)
Countries addressed	EU

Third-party Event # 28	
Event Name	TUM Sustainability Day
Partners involved	TUM
Organiser(s)	TUM
Date	12 June 2024
Location	Munich, Germany
Event Category	TUM University Sustainability day
Event URL	https://www.tum.de/en/about-tum/goals-and-values/sustainability/sustainability-day-2024
Dissemination type	Poster Presentation
Dissemination title	Sustainable Digital Research Infrastructures
Dissemination URL	Same
Type of audience	Academia, General public

Size of audience	1000
Countries addressed	Germany

Third-party Event # 29	
Event Name	Annual symposium of Swiss European research infrastructure consortia community 2024
Partners involved	Mandat International
Organiser(s)	Swiss State Secretariat for Education, Research and Innovation (SERI)
Date	20 June 2024
Location	Bern, Switzerland
Event Category	Workshop
Event URL	https://e2-news.ch/en/news/annual-symposium-of-swiss-eric-community
Dissemination type	Attend the workshop for SLICES
Type of audience	Swiss ERICs members
Size of audience	50
Countries addressed	Switzerland

Third-party Event # 30	
Event Name	Centers of Competence / Industry Day 2024
Partners involved	TUM
Organiser(s)	TUM
Date	21 June 2024
Location	Munich, Germany
Event Category	Industry Day
Event URL	https://collab.dvb.bayern/display/TUMtueisecevents/CoC+Industry+Day+2024
Dissemination type	Poster/Demo
Dissemination title	SLICES-DE: A Digital Research Infrastructure for Germany and Europe
Dissemination URL	Same
Type of audience	Researchers from academia and industry
Size of audience	100
Countries addressed	Germany

Third-party Event # 31	
Event Name	Berlin 6G Conference 2024
Partners involved	TUM, SU
Organiser(s)	the 6G Platform Germany
Date	2 – 4 July 2024
Location	Berlin, Germany
Event Category	Conference
Event URL	https://www.6g-plattform.de/berlin-6g-conference/
Dissemination type	Session organisation
Dissemination title	Session on Large Scale Experimentation Facilities
Dissemination URL	Same
Type of audience	Researchers from academia and industry
Size of audience	50
Countries addressed	Worldwide

4. Academic outreach and academic exploitation

The implementation of the SLICES educational and training activities supported the engagement of the stakeholders and the creation of the community. The SLICES training and educational activities are based on an effective support framework for all stakeholders to facilitate their interaction with the SLICES services and tools provided by different means as described in this deliverable. SLICES educational and training activities are including the following:

- SLICES Academy,
- SLICES Summer Schools,
- SLICES Workshops,

- SLICES Hackathons,
- Researchers' Mobility Day
- The Networking Channel

In order to support the uptake of the different SLICES services there is a need for strategic planning, continuous reflection, deployment of innovative tools and resources, and a strong component of capacity building based on different tools. SLICES stakeholders involved in the process of reinventing the numerous opportunities will need to be committed and engaged in the mission they are about to embark on. They will have to receive training and support to evolve in the various fronts of action. Recognition of their efforts should be in place as a motivational factor and finally, the whole professional and user community should be involved to ensure the changes are consolidated and largely adopted.

SLICES consortium discussed and agreed that SLICES Academy enhance the courses and extent its usage and it will continue its operation under SLICES-PP. As discussed, activities like the SLICES Summer Schools, the SLICES Hackathons, the researchers' mobility and theNetworkingChannel will also be continued after the end of the project.

Details on the outreach of educational and training activities are included in Deliverable D6.4.

5. Standardisation

5.1. Overall methodology and strategy for standardisation

This section presents the methodology used for the standardisation strategy in the context of the SLICES-SC project. The methodology consists of the following steps:

1. The deliverable D6.1 mentions the key priorities for Europe in terms of standardisation in the domain of large-scale infrastructures. The Rolling Plan for ICT Standardisation written by the European Commission is the starting point, and the key priorities extracted from the Rolling Plan for ICT Standardisation are presented in the deliverable D6.1.
2. The deliverable D6.1 describes the assets of the project to be considered for the standardisation process;
3. The relevant Standards Developing Organisations (SDOs) which the project needs to collaborate with are presented in the deliverable D6.1;
4. The deliverable D6.1 lists all the lead partners contributing to the standardisation activities in the SLICES-SC;
5. The synthetic strategy for the standardisation is presented in the deliverable D6.1;
6. The results of the standardisation are explained in this document;
7. The takeaways and recommendations concerning the standardisation are presented in the deliverable below.
8. Finally, a conclusion closes the standardisation chapter.

5.2. Standardisation results

The table below lists all the events related to the standardisation attended by the partners of SLICES.

Table 2. Previous events

SDO	Working Group /Study Group	Date	Location
ITU-T	SG11	10-19 May 2023	Virtual and Geneva
		1-10 May 2024	Virtual and Geneva
	FG-TBFxG	14-16 November 2022	Virtual
		27-29 March 2023	Virtual
		3-5 July 2023	Virtual
		8-10 November 2023	Virtual
		14-16 February 2024	Virtual
		10-12 April 2024	Virtual and Sophia Antipolis
	FG-TBFxG Management Meeting	2 February 2023	Virtual
	Digital Transformation Webinar series	21 June 2023	Virtual
ETSI	ISG IPE	25 October 2022	Virtual
		21 November 2022	Virtual
IPv6 Enhanced Council			
		23 May 2023	Virtual
		27 June 2023	Virtual
		27 July 2023	Virtual
		31 August 2023	Virtual
		28 September 2023	Virtual
		22 November 2023	Virtual
		3 April 2024	Virtual
		25 June 2024	Virtual

The ITU-T Focus Group on Testbeds Federations for IMT-2020 and beyond (FG-TBFxG) organised remote meetings to present the progress made on the FG-TBFxG deliverables and to advance them. The main objective of this Focus Group is to harmonise the specifications required to interconnect, integrate and federate different testbeds across the world. To achieve this aim, use cases and requirements linked to testbeds federations were collected and related APIs were specified accordingly. This work done by the FG-TBFxG is based on the Recommendation ITU-T Q.4068 "Open API for interoperable testbed federations", which was elaborated and standardised during the Fed4FIRE+ project. Different topics also related to the SLICES Research Infrastructure were studied and discussed during the different meetings of the Focus Group and in the FG-TBFxG deliverables: the architecture of a testbeds federation, the interconnection between testbeds, the interoperability and the integration at the level of the testbeds, the monitoring and the management of testbeds and research infrastructures, and finally, the creation and the monitoring of any experiments conducted inside a testbeds federation. The FG-TBFxG successfully finished in April 2024. All the outcomes of the Focus Group, including the deliverables and the final progress report, are available online at https://www.itu.int/en/ITU-T/focusgroups/tbfxg/Pages/default.aspx.

A remote meeting dedicated to the management of the ITU-T Focus Group on Testbeds Federations for IMT-2020 and beyond (FG-TBFxG) was organised in February 2023. The main goal of this meeting was to plan the last year of the Focus Group, notably to ensure that the FG-TBFxG deliverables will be available at the end of the Focus Group. The process to submit the final deliverables to ITU-T SG11 was also discussed during this meeting.

Since 2021, ITU is organising and hosting webinars on digital transformation. These webinars are successful: the statistics from the year 2023 show that more than 100 speakers and 2500 participants from at least 75 countries attended the 19 webinars organised in that year. Among these webinars, the episode 27 named "Digital transformation of testing: federated testbeds as a service" presented the work and the initial outcomes of the FG-TBFxG.

Two meetings of the ITU-T SG11 "Signalling requirements, protocols, test specifications and combating counterfeit telecommunication/ICT devices" were organised in May 2023 and May 2024. The first meeting allowed to report the progress made in the FG-TBFxG at the ITU-T SG11 level. For the second meeting, eight proposals to create new work items based on the eight deliverables produced during the lifetime of the FG-TBFxG were submitted and accepted. Through this process, new ITU-T Recommendations based on the eight deliverables can be elaborated and submitted for the future ITU-T SG11 meetings.

SLICES-SC partners also participated to two remote meetings organised and hosted by the ETSI Industry Specification Group (ISG) IPv6 Enhanced Innovations (IPE) at the end of 2022. The interconnection and the interoperability of components and services were discussed in these virtual meetings. An emphasis on the utilisation of IPv6 was of course the main subject, in particular to ensure the scalability, the reliability and the security among the different interconnected services and components. Furthermore, the establishment of test specifications related to IoT devices was studied, notably for 6LoWPAN and 6TiSCH communication protocols. Unhappily, this group stopped its activities at the end of 2022.

To continue the work undertaken by ETSI ISG IPE, it was decided to create the IPv6 Enhanced Council (https://ipv6enhanced.ipv6forum.com/) in 2023. The first meeting of the IPv6 Enhanced Council was held the 23 May 2023, followed by seven virtual meetings.

The contributions of the partners made for the events mentioned above are listed in the table below.

Table 3. Contributions to standardisation

Document Title	Document Type	Submission Date	Organisation	Consortium Contributors
IoT & 6TiSCH presentation	Presentation	25 October 2022	ETSI ISG IPE	MI, IoT Lab
User requirements and reference model for Testbed as a Service	Contribution	14-16 November 2022	ITU-T FG-TBFxG	MI
IoT & 6TiSCH presentation	Presentation	21 November 2022	ETSI ISG IPE	MI, IoT Lab
User requirements and reference model for Testbed as a Service	Contribution	27-29 March 2023	ITU-T FG-TBFxG	MI
Use case "Rapid Resource Deployment for Physical Disaster Scenarios"	Contribution	27-29 March 2023	ITU-T FG-TBFxG	MI
Use case "Smart cities"	Contribution	27-29 March 2023	ITU-T FG-TBFxG	MI
Use case "Automated Construction and Demolition Waste Management using digital twin for buildings	Contribution	27-29 March 2023	ITU-T FG-TBFxG	MI
Use case "imec iLab.t testbeds and the Fed4FIRE federation"	Contribution	27-29 March 2023	ITU-T FG-TBFxG	IMEC

Overview of the federated testbeds framework	Presentation	21 June 2023	ITU	MI
User requirements and reference model for Testbed as a Service	Contribution	3-5 July 2023	ITU-T FG-TBFxG	MI
Suggestion for D3.1, D3.2, D2.2 and improving ITU-T Q.4068	Contribution	3-5 July 2023	ITU-T FG-TBFxG	IMEC
User requirements and reference model for Testbed as a Service	Contribution	8-10 November 2023	ITU-T FG-TBFxG	MI
Federated testbeds taxonomy	Contribution	14-16 February 2024	ITU-T FG-TBFxG	MI
User requirements and reference model for Testbed as a Service	Contribution	10-12 April 2024	ITU-T FG-TBFxG	MI
Proposal to start a new work item ITU-T Q.FTT "Federated testbeds taxonomy"	Contribution	1-10 May 2024	ITU-T SG11	MI
Proposal to start a new work item ITU-T Q.URRM "User requirements and reference model for	Contribution	1-10 May 2024	ITU-T SG11	MI

Testbed as a Service"				
Proposal to start a new work item ITU-T Q.TADIR "Testbed as a Service APIs descriptions and interoperability requirements"	Contribution	1-10 May 2024	ITU-T SG11	MI
Proposal to start a new work item ITU-T Q.ETFRM "Evolution of Testbeds Federations Reference Model"	Contribution	1-10 May 2024	ITU-T SG11	MI

In the context of the activities undertaken in the ETSI Industry Specification Group (ISG) IPv6 Enhanced Innovations (IPE), Mandat International and IoT Lab were in charge to lead and coordinate the work to elaborate a test specification on IoT for the IoT Ready Logo Programme managed by the IPv6 Forum (https://www.ipv6forum.com/). This program is similar to the IPv6 Ready Logo Programme also led by the IPv6 Forum, but specifically designed for the Internet of Things devices. Mandat International and IoT Lab are responsible to report in the ETSI ISG IPE the progress concerning this test specification.

In the ITU-T Focus Group on Testbeds Federations for IMT-2020 and beyond (FG-TBFxG), Mandat International has chaired the Working Group 2 (WG2) on Testbeds as a Service. This Working Group has defined the requirements to deliver a testbed as a service based on the Recommendation ITU-T Q.4068 "Open API for interoperable testbed federations". Furthermore, the work done in this Working Group was focused on the user interface, the services, the remote access to the testbeds through notably dedicated APIs. In the context of the standardisation activities done in the SLICES-SC project, Mandat International has produced a deliverable for the FG-TBFxG Focus Group, which is in fact a technical specification: "D2.1 Technical Specification: User requirements and reference model for Testbed as a Service". This deliverable is specifying the set of APIs for the implementation of the Testbed as Service (TaaS). This deliverable uses some elements described in different SLICES deliverables such as the SLICES-SC deliverable D2.1 "Requirements analysis for exposing the RI". As the process put in place in the TBFxG Focus Group is based on iterative contributions, five versions of the document "D2.1 Technical Specification: User requirements and reference model for Testbed as a Service" was submitted for the different virtual meeting of the Focus Group.

Furthermore, the use cases elaborated in the context of the SLICES-DS project and described in the corresponding deliverable D2.5 "Use case validated" were used as individual contributions for the FG-TBFxG Focus Group meeting held in March 2023. The three use cases are perfect examples illustrating that a testbeds federation or a large research infrastructure is needed to test and validate concrete new ICT developments.

IMEC also provided very useful contributions and inputs during the whole duration of the ITU-T FG-TBFxG Focus Group, notably for the specification of the APIs used to interconnect the different testbeds inside a federation.

A presentation titled "Overview of the federated testbeds framework" was created for the ITU webinar "Digital transformation of testing: federated testbeds as a service". The presentation describes the work done in the FG-TBFxG Focus Group and the related framework to federate testbeds, Several SLICES-SC partners attended this webinar.

A contribution named "Federated testbeds taxonomy" was submitted to the FG-TBFxG Focus Group and tackles the definitions associated to the testbeds federations.

Finally, the eight deliverables produced at the end of the ITU-T Focus Group on Testbeds Federations for IMT-2020 and beyond (FG-TBFxG) were submitted to the ITU-T SG11 to create ITU-T Recommendations through new work item proposals. Four of them were submitted on the behalf of the SLICES-SC project. All the proposals were accepted at the ITU-T SG11 level during the ITU-T SG11 meeting held in May 2024.

5.3. Takeaways and recommendations

At the time of writing, 18 contributions were made to the SDOs; 2 of them are contributions made by several partners. Furthermore, 20 events organised by SDOs were attended by the partners; some events like the ITU-T Focus Group FG-TBFxG were attended by several SLICES-SC partners.

The main recommendation is to continue the activities of standardisation in the SLICES-PP project, notably by contributing to the ITU-T SG11 for the eight new accepted work items. The potential results from the work items in ITU-T SG11 can be new ITU-T Recommendations which can be potentially accepted in 2025. The standardisation activities require several iterations of the contributions before being successfully accepted by the different SDOs, which can take some time outside the time frame of a European project. Furthermore, the standardisation consists also to reuse standards available already in the fields and published by the different SDOs; some of them can be potentially implemented in the upcoming SLICES Research Infrastructure.

6. Conclusion

Deliverable 6.3 provides the final report on the dissemination, outreach, community building, and standardisation efforts of SLICES-SC. These communication activities, closely integrated with dissemination and standardisation initiatives, have been essential throughout the project's duration, influencing all work packages.

This deliverable acted as a comprehensive guide for Consortium members, offering a framework to track and evaluate their communication efforts. It outlines the target audiences, communication channels, tools, activities, and relevant key performance indicators used to measure success.

A multi-channel strategy has been employed for the communication and dissemination of SLICES-SC. The project's website functions as the central hub, offering general information about SLICES-SC and providing access to social media channels, the blogs, and publications. To optimize coordination, a country-based node approach has been implemented for social media and blog contributions, allowing partners within the same country to collaborate effectively on their communication efforts.

Furthermore, awareness about the technical excellence of SLICES-RI is also fostered with the publication of scientific articles. The project has significantly exceeded the expected KPI for scientific the publication of scientific articles since the total number of accepted/published journal papers is 8 and the total number of accepted/published conference papers is 28.

Concerning standardisation, the strategy defined in the first deliverable was put in place with success in the second part of the SLICES-SC project. Good organisation and coordination were achieved for the standardisation activities addressed by SLICES-SC. The current results of standardisation are aligned with the objectives defined in the related KPIs. All the contributions made to the identified SDOs received positive feedback. Finally, the contributions written by the different project partners were successfully approved by the SDOs, in particular for the ITU-T FG-TBFxG.

7. Annex   67

7.1. Methodology

The creation of the survey involved the careful design of a questionnaire, thoughtfully crafted to address key aspects of the proposed collaborative User Forum, ensuring its relevance to the needs of SLICES-SC.

The survey was exclusively distributed to members of SLICES-SC. A total of 16 participants actively engaged in the survey, providing valuable insights into their preferences, expectations, and concerns.

The survey remained accessible for a specified duration, allowing participants ample time for thoughtful responses.

7.2. Survey

5. How would YOU, as SLICES member, use the platform to engage with the research community? Please rank the importance of each from 1-10.

	1	2	3	4	5	6	7	8	9	10
Promote SLICES initiatives and your local node	○	○	○	○	○	○	○	○	○	○
Ask for feedback on research projects	○	○	○	○	○	○	○	○	○	○
Share your own research findings	○	○	○	○	○	○	○	○	○	○
Connect with potential collaborators	○	○	○	○	○	○	○	○	○	○
Connect with local nodes	○	○	○	○	○	○	○	○	○	○
Discuss research topics	○	○	○	○	○	○	○	○	○	○
Discuss industry trends	○	○	○	○	○	○	○	○	○	○
Give researchers the opportunity to seek career advice	○	○	○	○	○	○	○	○	○	○
Engage with users during and after events (including Roadshow, Networking Channel events and Summer Schools)	○	○	○	○	○	○	○	○	○	○

Other (please specify)

6. Would you prefer a platform that allows for private messaging or one that only allows public discussions?

○ Private messaging
○ Public discussions
○ Both
○ I don't need messaging

7. How crucial do you consider the security and privacy features of the platform?

○ Extremely important
○ Moderately important
○ Slightly important
○ Not important at all

8. As SLICES partner, to which of the following topics are YOU ready to contribute on the forum? Please find a non-exhaustive list of topics. If you wish, you can propose additional ones:

☐ Funding opportunities: upcoming funding opportunities related to research infrastructure, sharing tips on grant proposals, and discussing how to secure funding for research infrastructure projects.

☐ Best practices: sharing and discussing best practices for the design, development, and maintenance of research infrastructure.

☐ Technology updates: updates and news about new technologies, software, and hardware that are relevant to research infrastructure.

☐ Data management: best practices and challenges related to data management, including topics like data storage, sharing, and preservation.

☐ Workshops and events: upcoming workshops, conferences, and other events related to research infrastructure.

☐ Feedback and suggestions: collecting feedback and suggestions from researchers who use research infrastructure, which could help guide future development of research infrastructure.

☐ I am not ready to contribute.

Proposed additional topics

9. Realistically, how often do you plan to connect, engage with others and contribute to such a collaborative platform (on Mattermost, Slack or new user forum) ? *

○ Daily
○ Weekly
○ Monthly
○ Occasionally
○ Never

7.3. Results

1. Do you believe that an additional collaborative platform (in addition to the current social media channels, website and newsletter) for stakeholder engagement is necessary in SLICES?

16 Responses

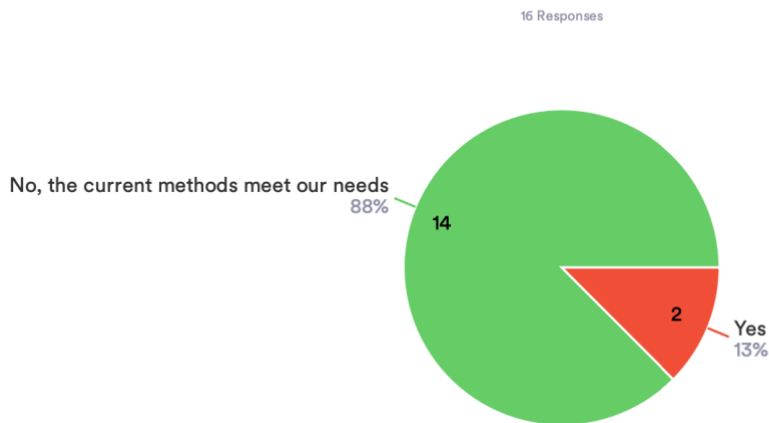No, the current methods meet our needs
88%

14

2

Yes
13%

Figure 13. Question 1

The results of the survey are as follows:

In Figure 13, the primary emphasis is placed on examining whether there is a demand or necessity for a new collaborative platform within the context of SLICES. The data presented in the figure is derived from responses gathered, with a total of 16 individuals participating in the survey or study.

The findings suggest that, based on the responses, 14 out of the 16 participants assert that the current methods and existing collaborative platforms effectively address the needs of the SLICES community. This implies that a substantial majority, represented by 87.5% of the respondents, are of the opinion that the current collaborative tools and approaches are sufficient.

As a result, the conclusion drawn from the data is that there is a prevailing sentiment among the surveyed individuals that the implementation of an additional collaborative platform for SLICES is unnecessary. This insight is valuable in understanding the perceived adequacy of the current systems and can inform decisions regarding resource allocation, development priorities, and strategic planning within the context of collaborative tools for the SLICES community.

2. Do you believe there is a demand from the SLICES research community for an additional collaborative platform to enhance communication with external stakeholders?
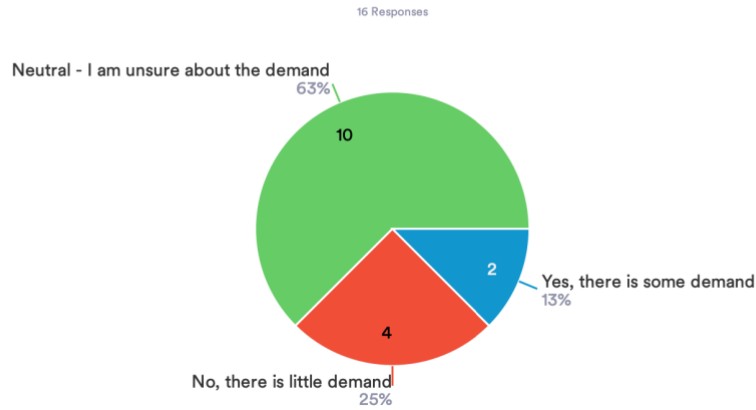
16 Responses

Figure 14. Question 2

In Figure 14, the focus is on assessing the demand for an extra collaborative platform to improve communication with external stakeholders in the SLICES community. Out of 16 respondents, 10 express uncertainties about the need for such a platform, indicating that 62.5% are neither clearly in favour nor against it. This suggests a notable level of indecision among respondents, possibly due to a lack of information on current communication effectiveness or a need for further clarification on the potential benefits of an additional platform. Addressing this uncertainty could involve gathering more data or facilitating discussions to better understand the specific requirements and preferences related to external communication within the SLICES community.

3. If you are open to a platform for stakeholder engagement, which type would you prefer?
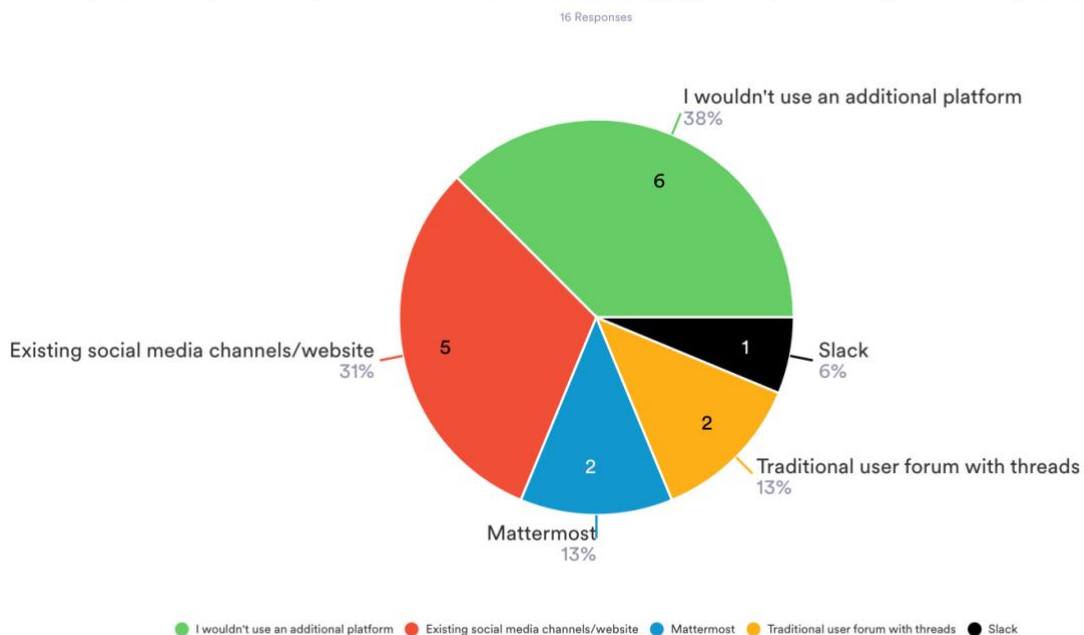
16 Responses

Figure 15. Question 3

In Figure 15, participants were queried about their preferences for an additional platform, specifically choosing between existing social media channels, Stack, Mattermost, or traditional user forums. Out of the 16 respondents, 5 expressed a preference for utilising existing social media channels, while 6 indicated that they would not opt for an additional platform at all.

This data suggests a divided sentiment among respondents, with a slight inclination towards existing social media channels as a favoured choice for those open to adopting a new platform. Simultaneously, a notable portion of respondents seems hesitant, with a slightly higher number leaning towards not wanting an additional platform. These insights provide valuable input for decision-makers, indicating the need for careful consideration of user preferences and potential barriers to adoption when contemplating the introduction of a new collaborative platform within the context of the SLICES community.

Question 4 asks for users to write in their own responses for what additional content they would desire on a potential new platform. One user proposed a 'Frequently Asked Questions' tab.
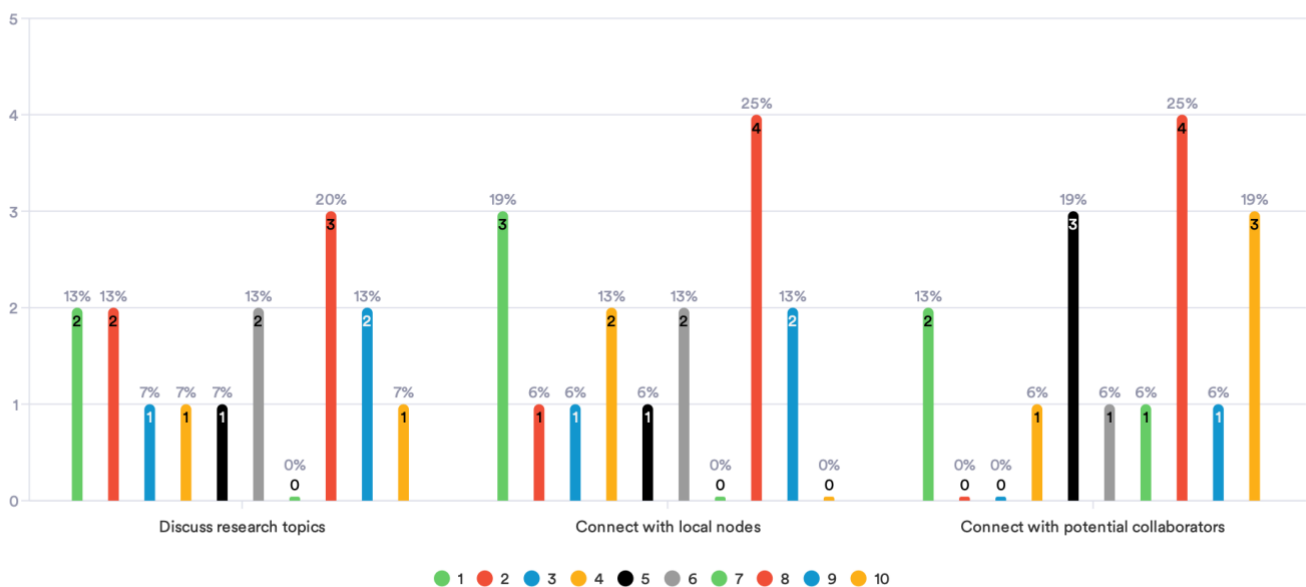

Figure 16. Question 4

Figure 17. Question 5, part 1

5. How would YOU, as SLICES member, use the platform to engage with the research community? Please rank the importance of each from 1-10.
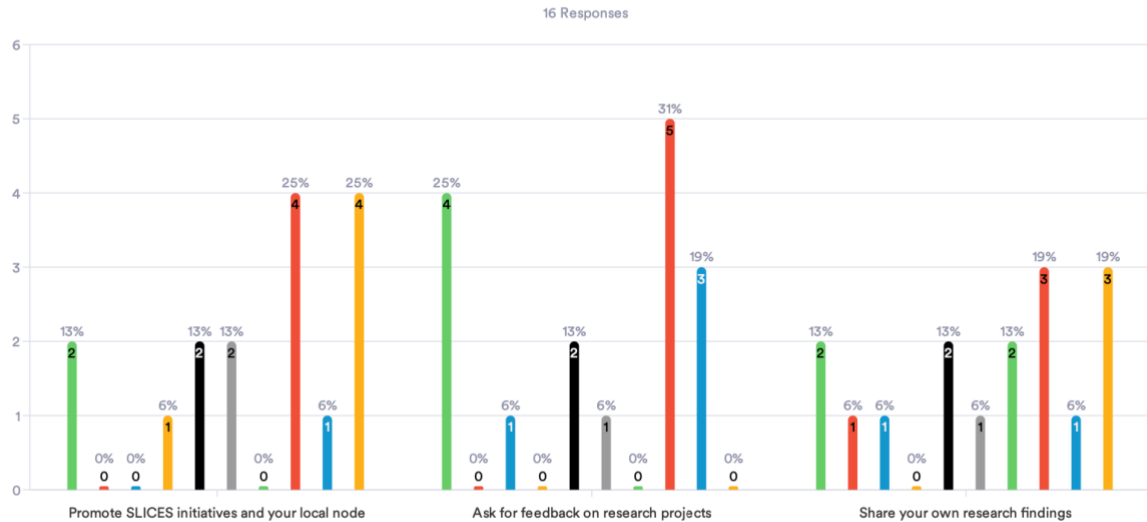

Figure 18. Question 5, part 2

Figures 17-18 explore what members of the SLICES community would use the research platform specifically for and how important they deem each feature/use to be. They rank the importance of each item on a scale of one to ten.

These proposed features were as follows:

- Promote SLICES initiatives and your local node

- Ask for feedback on research projects

- Share your own research findings

- Connect with potential collaborators

- Connect with local nodes

- Discuss research topics

- Discuss industry trends

- Give researchers the opportunity to seek career advice

- Engage with users during and after events

The respondents' feedback highlights the key features deemed most crucial for a new platform. Notably, 'Engage with users during and after events' emerged as highly important, with all but one respondent ranking it above 5 on their importance scale. Impressively, 4 out of 16 participants even rated it at the highest level of 10, underscoring its significance.

Conversely, the feature perceived as least important, as indicated by 6 out of 16 respondents who rated it a 1 on the importance scale, is 'Give researchers the opportunity to seek career advice'. Despite this clear distinction, the overall results exhibit considerable variability, suggesting diverse

perspectives among participants regarding the importance of various platform features. The mixed responses underline the need for a nuanced approach in designing the platform, accommodating a range of preferences and priorities within the SLICES community.

6. Would you prefer a platform that allows for private messaging or one that only allows public discussions?
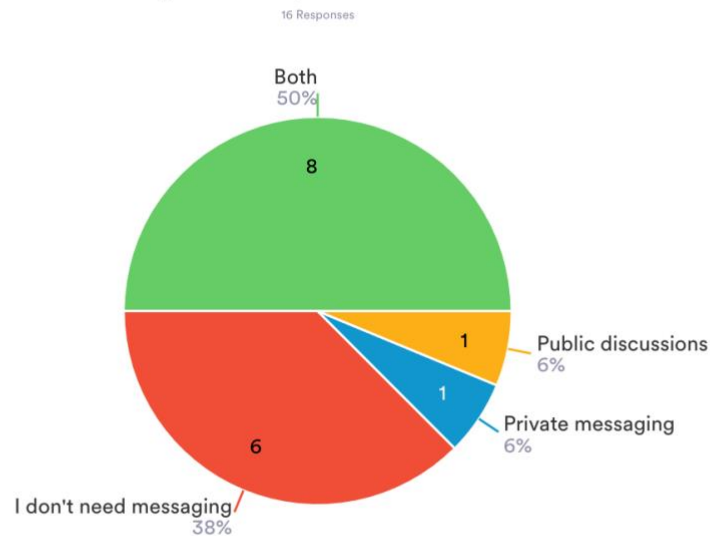
16 Responses

Figure 19. Question 6

In Figure 19, participants were questioned about their preference regarding the availability of private messaging on a platform. The responses indicate a discernible split in preferences among the 16 participants. A majority, comprising 8 out of 16 respondents, express a desire for a platform that combines both private messaging and public discussion features. This suggests that these users value the flexibility of engaging in both one-on-one private conversations and participating in broader public discussions within the same platform.

On the other hand, 6 out of the 16 participants communicated that they do not consider private messaging as a necessary feature for their needs on the platform. This indicates a subgroup of users who prioritise public discussions or other forms of communication over private interactions.

These findings underscore the importance of offering a versatile platform that caters to diverse user preferences. The data suggests that a significant portion of users values the inclusion of private

messaging capabilities, emphasising the need for platforms to balance both private and public communication features to meet the varied communication preferences within the user community.

7. How crucial do you consider the security and privacy features of the platform?
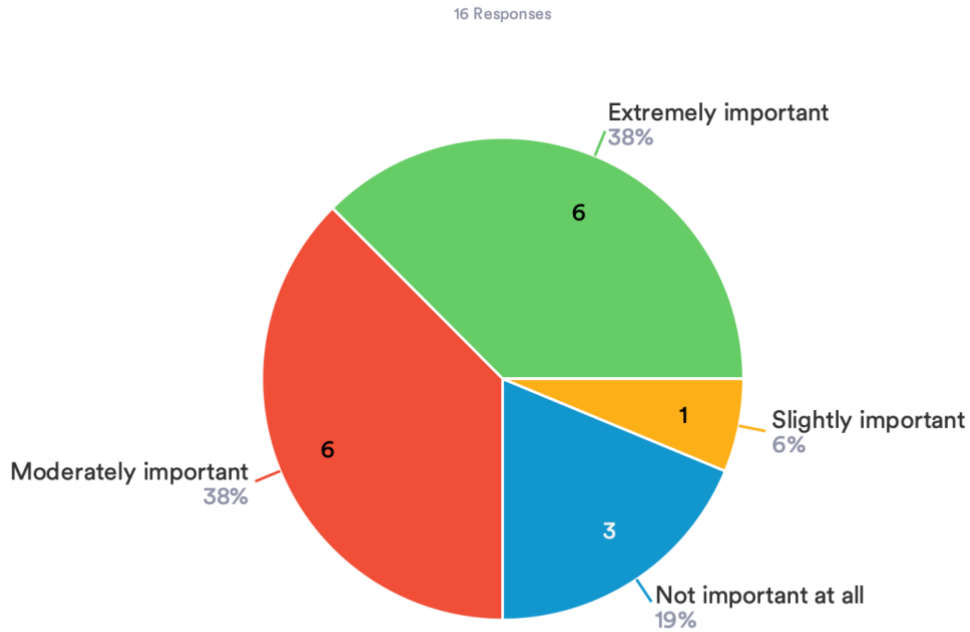
16 Responses

Figure 20. Question 7

Figure 20 explored how crucial SLICES partners consider the safety and privacy features on a potential new platform. 6 out of 16 believe it is moderately important and another 6 out of 16 think it is extremely important. This balanced distribution underscores the collective emphasis on the significance of robust safety and privacy measures within the SLICES community, highlighting the need

for any new platform to prioritise and incorporate effective safeguards to ensure user security and confidentiality.

8. As SLICES partner, to which of the following topics are YOU ready to contribute on the forum?
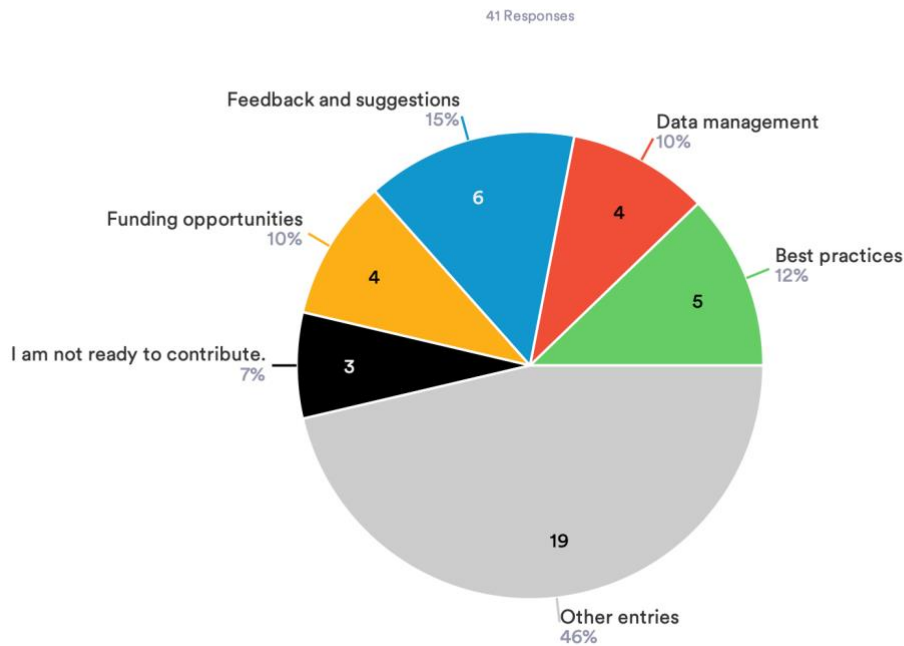
41 Responses

Figure 21. Question 8

Figure 21 asks SLICES partners what they would personally be willing to contribute to a new platform, with the option to select multiple answers. This data reveals a lack of specific consensus, with 16 participants providing unique entries beyond the pre-written response options. 41 responses refers to the amount of inputs, as a question with the ability to select multiple answers, thus is split amongst the 16 participants. This diversity in responses suggests a varied range of potential contributions, indicating that SLICES partners possess a wide array of skills, resources, or ideas that they are willing to bring to the table for the development or enhancement of a new platform.

9. Realistically, how often do you plan to connect, engage with others and contribute to such a collaborative platform (on Mattermost, Slack or new user forum) ?
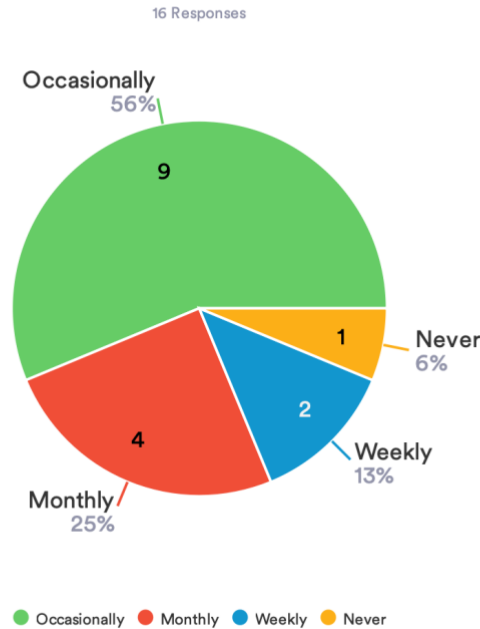

Figure 22. Question 9

In Figure 22, participants were queried about the frequency with which they would use a new collaborative platform, thereby gauging the demand. The responses indicate a range of usage intentions among the 16 respondents. The majority, consisting of 9 out of 16, expressed an intention to use the platform occasionally. In addition, 4 respondents specified a monthly usage frequency, while 2 respondents indicated a weekly usage pattern.

This distribution of responses provides insights into the anticipated engagement levels of the SLICES community with the prospective platform. The prevalence of occasional usage suggests that the platform might serve as a supplementary resource for certain activities rather than a constant and integral part of users' routines. Understanding these usage patterns is crucial for tailoring the platform's features and functionalities to align with the varied needs and preferences of the SLICES community.

7.4. Conclusion

To conclude, the gathered data provides a comprehensive overview of the perspectives and preferences within the SLICES community regarding the potential development of a new collaborative platform. The findings from Figures 13 to 22 reveal a nuanced landscape of opinions.

Respondents generally indicate contentment with existing collaborative methods (Figure 18), the overwhelming sentiment among the surveyed individuals is that the current collaborative methods are perceived as effective and adequate. Yet there is a notable openness to the idea of a new platform, with varying preferences for its features and functionalities, such as a 'Frequently Asked Questions' tab.

The diversity in preferences regarding the type of platform (Figure 15) and the significance placed on features like private messaging (Figure 19) and safety and privacy measures (Figure 20) underscores the need for a flexible and secure platform that can cater to a wide range of user requirements.

Moreover, participants' willingness to contribute diverse skills (Figure 21) highlights the potential for a collaborative and enriched platform development process.

Assessing the varied usage intentions (Figure 22) and the spectrum of importance placed on different features revealed the prevalence of occasional usage suggests that the platform might serve as a supplementary resource for certain activities rather than a constant and integral part of users' routines.

In essence, the data underscores the importance of user-driven design, considering the nuanced preferences, priorities, and contributions of the SLICES community to ensure the successful development and adoption of a collaborative platform that genuinely meets their needs. Further exploration and iterative feedback may be instrumental in refining the platform concept and aligning it closely with the expectations of SLICES partners.