24-11-2023

Deliverable D4.2
Spin-Out Development Report (eduMEET)

Contractual Date:	30-11-2023
Actual Date:	24-11-2023
Grant Agreement No.:	101100680
Work Package:	WP4
Task Item:	Task 5.2
Nature of Deliverable:	R (Report)
Dissemination Level:	PU (Public)
Lead Partner:	PSNC
Document ID:	GN5-1-23-4dc4a0
Authors:	Bartłomiej Idzikowski (PSNC); Maciej Stróżyk (PSNC); Maria Ristkok (EENet of HTM); Jakob Tendel (DFN); Jan Meijer (Sikt)

Abstract

This report documents eduMEET's transition from a project-funded development activity to self-sustaining, community-financed open-source software. It outlines the steps in the spin-out process, together with business case, decisions, lessons learnt, recommendations, and future plans, providing a blueprint for future spin-out candidates.

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Executive Summary

This *Spin-Out Development Report* documents the transformative journey of eduMEET, its transition from a project-funded initiative into a self-sustaining, community-financed open-source software. It also offers a detailed framework that can guide other projects with similar ambitions. This report is a response to the common challenge of making project-driven developments economically viable beyond their initial funding. It summarises past accomplishments, ongoing efforts, and future strategies for collaboration within both the GN*n* project and the community.

eduMEET, a 15-year web-conferencing development, has witnessed growing interest across diverse sectors, indicating its potential for broader application. The spin-out process emphasises key success criteria, collaboration with The Commons Conservancy (TCC), careful Board selection, flexible and varied financial support options, and legal aspects such as trademark and intellectual property transfer. A Memorandum of Understanding plays a vital role in resolving complex legal matters.

eduMEET's journey highlights the need for stability and funding in an unpredictable environment. To secure its sustainability, a flexible, long-term plan is crucial. Collaborative support from GÉANT and the community is essential, ensuring ongoing access to specialised resources such as secure code reviews, legal support, and promotion; infrastructure support, including for a GÉANT eduMEET demonstrator deployment, is also important.

The partnership between GÉANT and TCC provides a firm base for future efforts, opening doors to external funding and attracting new participants. The increasing involvement of non-GN5-1 funding underscores the product's relevance to users.

There is immense potential for building a pan-European web-conferencing infrastructure following the proven eduMEET model, like the successful eduroam federated structure. Key factors in achieving this vision are coordination, legal clarity, financial and sponsorship agreements, and political insight.

A successful spin-out aims to free up project resources for higher-level deployment frameworks, boosting community investment and resources. This establishes a durable base for long-term sustainability, fostering a virtuous cycle of increased awareness, adoption, and investment among various user communities.

This report serves as a blueprint for development projects looking to establish themselves as independent, community-supported entities in an ever-evolving technological landscape, helping to ensure their long-term success, resilience and sustainability. Any new findings arising from the ongoing activities it describes will be incorporated into the action plan and recommendations.

1 Introduction

To ensure that eduMEET, a mature real-time communications web-conferencing solution [eduMEET], can stand on its own without relying on project funding, GN5-1 Work Package 4, Above-the-Net Services, has initiated a "spin-out" process. A key objective of this process is to document the steps and decisions made throughout and serve as a pilot for future spin-out candidates.

Accordingly, this report aims to outline the spin-out development team's experiences towards deriving repeatable steps for future spin-outs, address the familiar challenges associated with sustaining project-funded development after funding ends, and provide a blueprint for success. The spin-out of eduMEET serves as a valuable learning opportunity to guide future spin-outs, providing insights and recommendations for a successful transition while at the same time opening up new possibilities to advance the development of the software.

Today, eduMEET is a web-based open-source software platform with a growing user base. It has a long history, starting in 2008 as part of the eduCONF videoconferencing offering and evolving into a versatile web-conferencing tool. However, this journey presented some challenges, such as finding and retaining developers in a changing National Research and Education Network (NREN) landscape and meeting the expectations of users who mistakenly considered eduMEET to be a full service, instead of a software package.

This report summarises eduMEET's development history and records the transition and spin-out process to date, including some initial choices made around the approach (Section 2). It presents the business case for undertaking the spin-out, covering the rationale, current development effort, and the importance of retaining GÉANT's contribution (Section 3). It outlines next steps and future plans, including development, attracting new users and resources, and promotion (Section 4), and summarises the steps in the spin-out process to facilitate its replication (Section 5). The report concludes with key findings (Section 6). It can hopefully serve as guidance for similar development projects looking to sustain themselves in a constantly changing technological world.

2 eduMEET's Road to Spin-Out

One of the primary objectives of the GN5-1 Above-the-Net Services Work Package (WP4) is to guide the development of the now mature eduMEET software package into a sustainable solution that is no longer dependent on project funding, piloting a structured approach to future similar spin-out processes, and documenting the steps, decisions, and lessons learnt along the way.

To achieve the desired sustainability, legal-administrative frameworks and software governance outside of the project structure were established, supporting community financing for development through building a product ownership and stakeholder/contributor community, as well as providing product management and support for continued software development in an open-source model. The transition process focused on developing the business model alongside the ongoing product development and maintenance. This first pilot spin-out is designed to be agile, reacting to new findings and changing conditions, and documenting lessons learnt throughout.

A key early finding was the existing community experience in working with The Commons Conservancy (TCC) foundation [TCC] to create lightweight non-profit entities able to support community development of similar Programmes (the term TCC prefers to "projects"). TCC's recommendations were followed closely throughout all phases of preparing for the eduMEET transition. In particular, the public statutes for the eduMEET Programme were prepared, with the main purpose of facilitating an open, transparent, and efficient governance process throughout future development of the technology and auxiliary materials within the eduMEET user and development community. Additionally, identification of management roles, including their range of responsibilities, collaboration and impact scopes, were required.

This section presents the details of the spin-out process. To provide contextual background, it begins with a summary of eduMEET's development history.

2.1 eduMEET Development History

Historically, the development of tools to support videoconferencing and web-conferencing communications began as early as the GN2 project (2004–2008), where the eduCONF offering, supporting communications using H.323 and SIP systems, was being developed. With the development of technology and the spread of web-conferencing systems based on web-based real-time communications (WebRTC) technology, the VC Task within successive GN*n* projects moved in this direction, focusing on creating an easy-to-use tool for communication between project teams.

Formally, the development of eduMEET began as part of the GN4-1 project (2015–2016), where WebRTC communication was also a use case of STUN/TURN technology [STUN], [TURN]. Over the course of the GN4-2 project (2016–2020), eduMEET evolved towards a promising web-conferencing engine and its development progressed to provide a private, safe, and cost-effective platform for R&E communities. This scope quickly expanded as eduMEET also started to be used by the performing arts community, due to the high quality of sound and video, and its low latency in transmission.

Currently eduMEET is a software platform for implementing an easy-to-use, secure, affordable web-conferencing service. As open-source software, eduMEET is accessible by developers and integrators who wish

to extend its capabilities or incorporate it within other more complex and integrated solutions. Any modern web browser can display the end-user client interface; no additional software and plugins are needed.

After successful Product Lifecycle Management (PLM) processes [PLM], eduMEET reached the Production Transition Gate (now known as the Enter Production Gate), passing Alpha and Beta phases, including secure code reviews and licences compliance checks. eduMEET has now attained sufficient level of maturity (as production-grade software) and interest from outside the GN5-1 project to consider planning longer-term sustainability in an appropriate open-source governance setting.

Over eduMEET's 15 years of development, the team saw increased interest emerging from quite diverse fields and communities. Of course, the main implementations and plans remain related to the instances supported by European NRENs, but the educational, performing arts, and even military sectors have also shown interest in implementing the solution. Due to eduMEET's "privacy by design" principle, known examples of deployments are not easy to identify. However, for the benefit of this report, a few case studies have been chosen and described below.

- In Italy, GARR manages GARR Meet [GARR Meet], an open national infrastructure that integrates eduMEET instances and other open-source solutions for a wide range of different applications and purposes, such as BigBlueButton [BigBlueButton] open-source virtual classrooms.

- In Nordic countries, NORDUnet is harnessing its expertise by repurposing hardware servers from previous commercial AV solutions to deploy eduMEET, attracting significant interest from institutions.

- PSNC in Poland has deployed a dedicated eduMEET service for the Poznań City Council, used for both local administrative purposes and meeting with city residents. A PIONIER classroom project uses the platform daily, alongside the central service for the PIONIER network. In addition, there are instances in Metropolitan Area Network (MAN) local centres throughout Poland and in several universities, where they are managed by local technicians.

- Finally, thanks to GÉANT's cooperation with institutions in Asia, South America, and Africa (AfricaConnect), eduMEET is attracting interest in various countries around the world. The African UbuntuNet Alliance of Eastern and South African NRENs and the West and Central African Research and Education Network (WACREN) are examples of regional organisations outside Europe that have shown interest in eduMEET on-premises implementation. NORDUnet is an example of such an alliance from Europe and its representatives have also been highly effective in promoting the solutions it has implemented, including outside Europe.

2.2 Transition to Community-Supported Open-Source Software

On one hand, the team is pleased by the interest of such diverse institutions and is convinced there is great untapped potential for wider deployment of eduMEET in the R&E sphere and beyond. On the other hand, once a product has matured enough so that innovation-focused project resources cannot continue as the main (or only) funding, the active and potential user communities can be mobilised to continue the product's development and support out of shared interest. To enable eduMEET to continue serving R&E communities, the appropriate path forward has been defined as building an independent open-source software (OSS) project with direct input from interested stakeholders.

This section describes key elements of the spin-out process, focusing on critical success factors and, in particular, findings and lessons learnt with regard to community governance reference cases, the role and requirements of TCC, financial and sponsorship agreements, and legal aspects.

2.2.1 Spin-Out Development Process

The spin-out process was addressed in several steps, beginning with a description of the criteria by which a successful spin-out would be determined and regardless of the final form this spin-out would take, which was not yet known at the time.

The following success criteria were identified:

1. Continued maintenance and development of the product, to keep it "fresh".
2. Keeping the currently engaged stakeholders active and involved, as anchor contributors.
3. Establishing a sustainable legal entity and governance structure to support future resource management and community building.
4. Clearly described opportunities for new stakeholders to engage and contribute through:
    a. Participation in governance and roadmap steering.
    b. In-kind contribution of resources (developer time, infrastructure, etc.).
    c. Financial contributions.
    d. Partnerships (e.g., integration agreements with other software projects).
5. Awareness campaign to reach potential new stakeholders and clearly communicate the opportunities.
6. Successful community building to engage and maintain relations with these stakeholders

In the case of eduMEET, criteria 1. and 2. were guaranteed by one last round of project funding, while criteria 4–6 are ongoing and will occupy much of M12–M24 of the activity. The most relevant current lessons learnt are on the progress towards the final form of the crucial criterion 3., which includes four primary areas described in detail in the next sections:

1. Reference cases for community governance of services.
2. Identification and selection of third-party organisations (supporting foundation).
3. Financial aspects and sponsorship agreements.
4. Legal aspects.

2.2.1.1 Reference Cases for Community Governance of Services

Preparations for the start of eduMEET's spin-out process were preceded by an analysis of two other solutions that had already gone through a similar process and are currently partially or fully functioning as open-source software or services. Both have similar software origins to eduMEET, and a similar target community and anticipated range of impact.

The first one was FileSender [FileSender], which is a (self-)hosted service that allows people to securely share large files with anyone. In 2016 it was established as the first Programme in The Commons Conservancy (TCC), which provided an administrative framework, took care of the legal and IPR aspects, and provided funding logistics.

The second one was eduVPN [eduVPN], which extends a private network across a public network and enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network, with corresponding isolation, security and trust benefits. eduVPN started in 2015 as a development project at the Dutch research and education network SURF. SURF continues to play a leading role, but currently eduVPN is a Programme under The Commons Conservancy and is also part of the GN5-1 project which is co-funded by the European Union. It has also received funding from the Vietsch

Foundation [Vietsch Fndn], RIPE NCC [RIPE NCC], NORDUnet, NGI Trust [NGI Trust] and the Nlnet Foundation [Nlnet].

Both of these projects use the services of The Commons Conservancy, a not-for-profit foundation focusing on free and open-source projects. Based on the reference case analysis and recommendations received, TCC was selected as a partner to support the spin-out process for eduMEET.

2.2.1.2 Supporting Foundation: The Commons Conservancy

The Commons Conservancy (TCC) [TCC] is a foundation established under the law of the Netherlands in 2016. It describes itself as having an unusual legal infrastructure, which it governs through an intricate system of regulations. By law the whole system is bootstrapped through its statutes, which are more or less standard legal boilerplate for an organisation of its type (however, with noted exceptions) [TCC About]. The Commons Conservancy offers a lightweight and flexible governance infrastructure, a simple, time-saving solution that provides projects with a virtual not-for-profit organisation to run their Programme, an infrastructure for decision making, and, through TCC's partners, the ability to receive tax-friendly donations.

TCC, as an external non-profit organisation for managing the rights of free and open technology development and of associated materials in the interest of global user communities, has defined several phases that need to be carried out to start a collaboration. The mandatory ones are orientation, initiation, setup, and operational. Optional phases, which make the entire process more flexible and future-oriented, are graduation, hibernation, and revival, forking and termination.

Statutes for each Programme define such areas as: purpose, legal status, financial considerations, governance, voting procedure, integrity, licensing policy, and transition into the statutes (i.e. decisions ratified by the signatories when the statutes take effect).

Board Selection

Every Programme within TCC needs to have a Board of Directors, including a Chair of Directors. An appropriate process for the identification, selection, invitation, and confirmation of Board members is important at an early stage of the spin-out procedure.

The Board selection process should be transparent, and potential candidates should be experienced and trusted. Different areas of expertise as well as business backgrounds and the potential impact on various communities are important things to consider. Also, with regard to eduMEET, choosing representatives from various parts of Europe was crucial to understanding diverse needs, requirements and possibilities based on geopolitical aspects.

Every member of the Board is required to sign an agreement – a pledge confirming that they will not act against common TCC obligations and principles.

For the eduMEET spin-out process, the following roles have been identified and assigned to a specific management board member:

- Chair, NREN representative – Claudio Allocchio (GARR).
- GÉANT representative, promotion, GÉANT contact point for educational topics and communities – Gyöngyi Horváth (GÉANT Association).
- NREN representative, technical design – Stefan Otto (Sikt).
- Community representative, technical design – Mészáros Mihály.
- Business management, Nordic NRENs representative, international contacts – Erik Kikkenborg (NORDUnet).

- NREN representative, design, business management, communities contact – Bartłomiej Idzikowski (PSNC).

A Board meetings plan, and definition of further steps, including a roadmap for further development, should be defined at an early stage of this new way of collaborating. Also, potential funding sources need to be analysed and appropriate priorities assigned to each of the defined Board member roles and concrete offers put forward, again – if possible – at an early stage.

2.2.1.3 Financial Aspects and Sponsorship Agreements

With regard to financial support possibilities, different approaches have been identified (both monetary and in-kind). Some of them are described in later sections of this document (e.g. Sections 3.2 and 3.3). However, in general it is important to be open and flexible in this area. Therefore, ways of support that might be explored include (but are not limited to) the following:

- Financial support by NRENs, organisations, companies.
- In-kind support by NRENs, organisations, companies.
- Individual voluntary work.
- GN*n* project support.
- Other projects' support (ongoing and future, eduMEET-oriented and with eduMEET as part of bigger picture).

There are sponsorship options with the aim to support development and maintenance of the eduMEET Programme within The Commons Conservancy. TCC offers the possibility to support these processes by financial funding with a suggested amount of funds. Thanks to this option, additional developers can be hired. The other possibility is in-kind support, which means delegating an employee to work on a project.

This variety reflects the different opportunities for support by each organisation and maps support opportunities to the geographical location of the sponsor. As previous experience has shown, in Europe, western and northern countries are easier to support financially, while eastern and southern countries are easier to support through the secondment of an employee. This flexibility is important to achieve wider support, which includes also individual OSS volunteers.

A future iteration of the governance may allow a donor institution to receive higher priority in relation to the direction of development based on the level of support they give. This might extend to roadmap planning, priority on the implementation of new features, as well as primacy of technical and substantive support.

To attract potential sponsors (mostly financial, but also in-kind), a sponsorship agreement template has been prepared. The agreement parties are the sponsor, TCC and the TCC's financial management unit (Commons Caretakers [Commons_Caretakers]).

2.2.1.4 Legal Aspects

In the context of the legal aspects and preparations for the entire process, certain key points regarding the GÉANT Product Lifecycle Management (PLM) process were identified for eduMEET:

- Transfer of trademarks to TCC.
- Transfer of intellectual property to TCC.
- Provide information about past public funding, including EU grants.

- Introduce a Transfer Out/Retire Gate as a flexible alternative to the traditional End-of-Life Gate in the GÉANT Product Lifecycle Management (PLM) process, allowing eduMEET to be transferred to an appropriate entity for continued support and development.
- The continued benefits of GÉANT's involvement in software development, reviews, and legal support.
- The need for an official document outlining the spin-out process and the parties involved.
- Development of templates for organisations implementing on-premises instances.
- The importance of ensuring licence compatibility for reused elements, such as external libraries.

Identifying this comprehensive legal checklist involved multiple iterations at various stages of the PLM cycle.

Information about public funding (EU grants) during previous phases of eduMEET development is definitely needed and should be published on the official eduMEET website.

The creation and publication of a privacy notice, together with a template that organisations can adapt once they deploy eduMEET, would be good practice. (eduMEET's privacy notice is available at [eduMEET PN].) The main goal of this undertaking is to make the installation and offering of the service by organisations safe from the legal point of view.

Memorandum of Understanding

Based on an analysis of the legal aspects, as well as on the sponsorship options, it is recommended that the use of an additional Memorandum of Understanding (MoU) should be investigated. The main aim of such an MoU is to clarify all legal areas which could cause issues in the future – for example, regarding ownership, intellectual property, or diverse ways of funding across the whole life of the project, including all PLM stages and gates.

Areas which are identified as topics for consideration in a similar agreement between GÉANT and TCC are: trademarks, intellectual property, public funding information, web pages, and mailing lists takeover or further bi-directional support.

However, a case-by-case approach to agreement details should be taken for other spin-out candidates, to reflect their specific situation and legal position.

3 Business Case for eduMEET Spin-Out

Business development is an important part of the eduMEET spin-out, starting from the initial rationale, and is in line with current development efforts, while GÉANT's collective contribution has an extremely high value on many levels.

3.1 Rationale

The motivation behind spinning out eduMEET into an independent open-source software (OSS) lies in addressing the unique challenge of transitioning a project-funded, community-driven development into a more business-focused, self-sustainable model. This shift is necessary to ensure that eduMEET, a mature solution, can thrive independently without relying solely on project funding. As a result, GN5-1 initiated a pilot spin-out process to document the steps and decisions made during this journey and establish a blueprint for similar projects.

The justification for this spin-out is multifaceted. First, there is a scarcity of videoconferencing solutions that prioritise privacy while also accommodating feature and integration requests from the R&E community. Existing commercial solutions and open-source alternatives, such as Jitsi [Jitsi] or BigBlueButton [BigBlueButton], cater to different purposes and user bases, leaving a gap for a solution such as eduMEET. The need to establish an independent OSS project was prompted by the evolving landscape where GN*n* project resources could no longer be the sole source of funding for ongoing development. Instead, active and potential user communities needed to be mobilised to continue supporting eduMEET out of shared interest. This path involved building an autonomous project with direct input from interested stakeholders, focusing on maintaining, evolving, and supporting the software. As described in Section 2.2.1, the spin-out process itself involved the identification of success criteria, including continued product maintenance and development, stakeholder engagement, the establishment of a sustainable legal entity and governance structure, and opportunities for new stakeholders to participate. These criteria were critical in ensuring the success and longevity of eduMEET.

As outlined in Section 2.1, international interest in eduMEET has been growing, with various sectors and communities showing interest in its implementation. This diverse appeal indicates the solution's potential for broader use beyond the realm of European NRENs.

Ultimately, the objective of the spin-out is to create a pan-European web-conferencing infrastructure that is coordinated, legally sound, and supported by agreements and political knowledge. Drawing from the successful model of eduroam [eduroam], which combines local instances to deliver a federated public service, the spin-out aims to free up project resources for higher-level deployment frameworks. This, in turn, can attract a diverse user community, contributing to long-term sustainability and resilience.

In summary, the rationale for the spin-out is the need for sustainability, responsiveness to changing technological landscapes, and the potential for eduMEET to thrive independently, catering to diverse sectors and global users.

3.2 Current Development Effort

At the current stage, the manpower engaged in the eduMEET development process is 5.6 FTE in total. This estimate is based on GN5-1 resources (2.5 FTE) as well as non-GN5-1 resources (3.1 FTE). In the latter case, the

estimated involvement is in-kind and consists of additional work delivered by NORDUnet (1.4 FTE), GARR (0.2 FTE), PSNC (0.8 FTE) as well as OSS volunteers (0.7 FTE).

The relevant WP4 key performance indicator (KPI) in the GN5-1 Technical Annex aims for 60% of eduMEET funding to come from non-GN5-1 sources by M12. At the end of M10, external funding (manpower) oscillates around 55%, including OSS volunteers (GN5-1: 2.5 FTE; non-GN5-1: 3.1 FTE; total: 5.6 FTE; 3.1 of 5.6 FTE = ~55%).

An additional commitment not included in the estimates involves the eduMEET Board of Directors, as well as the delivered infrastructure, which is essential for production, development, test, and, importantly, demonstrator purposes:

- NORDUnet, KIFÜ, Sikt and PSNC for eduMEET.
- Many others for the STUN/TURN infrastructure.

As already mentioned, the external support values quoted are estimates. They are nonetheless quite accurate as they are based on the output from the work and on information obtained from partners, and this is in line with development progress. However, there is no mechanism to control the timing or detailed reporting of this work, due to its voluntary nature.

For comparison, at the end of M6, involvement of external manpower not related to the project was about 50%, including work delivered by OSS volunteers (1.8 of 4.3 FTE + 0.7 FTE by volunteers).

3.3 GÉANT Collective Contribution

Another critical point is to ensure continuing (whether stable or increasing) support of eduMEET within the GN*n* project. Keeping at least the current level of GÉANT collective contribution would be a guarantee for involved organisations of also keeping a stable development of eduMEET, as well as granting access to other important resources. The main examples of these resources are the secure code audits, the licences compatibility check, and the legal assistance (e.g., in determining the scope of policies and agreements). Also, maintaining the collaboration with the marketing team and graphical designers is crucial for eduMEET's promotion and dissemination.

With the existing resources, eduMEET can continue its technical development. But to grow eduMEET into a widely deployed solution (e.g., an NREN-based eduMEET federation) an investment is needed. Based on such federation, eduMEET can truly be developed into a pan-European service, to serve NRENs and related organisations on both national and international levels.

Within GÉANT's contribution, many additional important aspects can also be achieved, such as addressing the GÉANT community on a Chief Technology Officer (CTO) level, reaching out to decision makers via NRENs, and to DevOps communities with stakeholders' support – for setup, operations, and implementation.

Moreover, close collaboration with GÉANT's Special Interest Groups (SIGs) and Task Forces (TFs) is also possible thanks to GÉANT collective contribution, as with:

- SIG-Multimedia: Multimedia Applications.
- TF-EDU: Educational Services and Activities.
- SIG-CISS: Cloud Interoperable Software Stacks.

4 Next Steps and Action Plan

To help ensure the resilience and sustainability of eduMEET, the spin-out development team have identified a number of next steps, involving a development roadmap, a strategy for attracting new users and resources, and communication, promotion and engagement. Each of these is described below.

4.1 Development Roadmap

eduMEET's development roadmap focuses mostly on extending the number of features for both users and administrators. This process will be based on requests from the community and on analysis of similar solutions to achieve appropriate interest.

Continuous adaptation of the software in line with new versions of browsers and new standards is another important aspect. Stability and security of services delivered via eduMEET software packages are also key aspects to attract sufficient resources and increase the number of involved stakeholders.

As part of WP4 Task 5.2 in the GN5-1 project, two more incremental versions of the eduMEET software are planned to be released at 6-month intervals. The first of these two versions will be released in Q2 2024, and another at the end of the project in Q4 2024.

As part of the PLM process, a Transfer Out Gate will take place in the coming months, where GÉANT's governance will review the transfer out evidence. If approved, the WP4 team will action the plan to move eduMEET to its new home.

4.2 Resource Attraction Strategy

By spinning out eduMEET as a community-financed open-source software developed as a Programme of The Commons Conservancy foundation, there is a good chance of attracting new users outside the fields of research and education. More effort is being devoted to awareness of the brand and the product in the core R&E community, while an additional consideration is to offer a possible alternative naming option for applications outside the "edu" field. Delivering the software in a way not solely related to the educational field may positively influence the perception of commercial organisations towards the solution, raising their interest in investing money or human resources in further software development, and showcasing the commercial potential of providing the service. By involving commercial entities and institutions interested in integrating the web-conferencing service into their solutions, there is a chance of initiating the process of broad development of eduMEET's software and acquiring external resources to maintain and develop new functionalities.

4.3 Communications, Promotion and Engagement

As part of the transition process and to increase uptake of eduMEET, activities are also planned to inform the community of users and developers involved in the use and development of eduMEET about the long-term plans to change the structure of its financing, management, and development.

These activities are to be carried out on a wider scale when the latest version of eduMEET v4.0 is released (Q4 2023), bringing many changes and updates to both eduMEET's user interface and to the server side of the software.

The following activities are planned as part of this effort:

- Starting point – Release of the new eduMEET Version 4.0.
- Announcements on the websites (eduMEET and GÉANT) and mailing lists.
- Direct official communications with NRENs, CTOs.
- Trainings for separate groups (DevOps, Admins, Users).
- Promotional activities for users/developers, such as monthly open eduMEET happy hours (provisionally known internally as eduSalut).
- Official announcement of transition to independent open-source software.
- Announcement of search for funding.
- Production and publication of case studies.

The announcement, promotion, and dissemination of eduMEET and the spin-out are crucial, therefore communication channels and target audience have been identified.

5 How to Replicate the Spin-Out Process

The full spin-out process defined and followed for eduMEET can be replicated for other services. The discrete steps are summarised in Table 5.1 below. A relative scale is used to indicate the time required for each step, ranging from a little (+) to a lot (++++). The table also indicates the success criterion (described in Section 2.2.1) to which the step relates, and the team(s) and/or support involved with respect to the eduMEET spin-out.

Ref.	Step	Success Criterion	Time	Team(s) / Support Involved in eduMEET Case
1	Preparation and adjustment of maturity level of the software	1	++++	eduMEET development team
2	Execution of safety tests (with support from appropriate project's Task)	1	++	eduMEET development team + Software audit team
3	Conducting compatibility tests on external software licences	1	++	Software audit team + eduMEET development team
4	Analysis of similar software and its path towards independent OSS	1	+	eduMEET team
5	Identification of external, non-profit organisations for both software development management and financial aspects management	3	+	eduMEET team
6	Analysis of legal aspects relating to transition, such as intellectual property, owned trademarks, public funding, and its requirements in terms of information requirements	3	++	Legal team
7	Detailed analysis of management areas and connected roles (including range of collaboration and impact)	3	++	eduMEET team + Legal team
8	Board selection (basing on abovementioned analysis) and collection of pledges from candidates	2; 3	++	eduMEET team + Legal team
9	Sponsorship agreement template	4	+	eduMEET team + Legal team
10	Creation of privacy notice and appropriate template that organisations can adapt once they deploy service	4	++	eduMEET team + Legal team

Ref.	Step	Success Criterion	Time	Team(s) / Support Involved in eduMEET Case
11	Identification of potential sponsors (both: financial and in-kind)	4; 5	+++	eduMEET team + Legal team
12	Preparation of case studies document for further communication with potential sponsors	2; 4; 5; 6	++	eduMEET team + Marketing team
13	Active communication, using all channels, to promote and disseminate the new type of project management and financing	2; 4; 5; 6	++	eduMEET team + Marketing team

Table 5.1: Steps in the spin-out process

Each software project needs to find its own optimal PLM or maintenance cycle. Moreover, some of the steps in the process will be repeated, such as those related to development, security tests, licence checks and legal analysis (e.g. steps 1, 2, 3, 6, 10 in Table 5.1). Also, the Board selection process will be repeated in the future (step 8), as will looking for sponsorship and stakeholders, and active communication and dissemination (steps 11, 12, 13).

6 Conclusions

This report has described the journey of eduMEET, starting from its historical development, through its maturation as part of the GN*n* project, to the beginnings of its transition to community-financed sustainability as post-project open-source software. It can serve as a guide for similar projects looking to sustain themselves in a constantly changing technological landscape.

eduMEET addresses R&E community requirements not met by other web-conferencing solutions, while also drawing interest from a range of other sectors including the performing arts, both within and outside Europe. It is therefore important to keep eduMEET stable and funded. The support can be uncertain, so a flexible and long-term plan is needed. Support from GÉANT and the community is crucial for sustainability, control, and ongoing access to specialists. Access to GN*n* project resources, such as secure code reviews, legal support, and promotion, is essential for sustainable development. Infrastructure support for a GÉANT eduMEET demonstrator deployment would be highly valuable.

The partnership between GÉANT and The Commons Conservancy provides a solid foundation for the future and offers opportunities for external funding and attracting new participants. The increase of non-GN5-1 funding for eduMEET demonstrates its relevance for users.

There is a real opportunity to build upon the existing eduMEET offering to create a pan-European web-conferencing infrastructure. Ambitious but promising discussions are taking place within the NREN service roadmap process to maximise the chances of success. Coordination, legal aspects, financial and sponsorship agreements, and political knowledge are all crucial in achieving this goal. The existing model of eduroam, consisting of local instances bundled at a higher level to deliver a public service that is more valuable to all because of its federation, serves as an example of an effectively coordinated service.

One of the intended effects of successful spin-out is to free up project resources to invest in developing and coordinating higher-level deployment frameworks for the services in the NREN community, thereby increasing the community investment and resources devoted to sustaining continued development outside the project. This stable support base in turn makes the product more viable and reliable for longer-term plans that any number of external potential users/contributors may be implementing. In the ideal case, this creates a virtuous cycle of awareness, deployment, and investment among a diverse user community, which is the basis for stable and resilient long-term sustainability.

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Glossary

AV	Audio-Visual
CTO	Chief Technology Officer
FTE	Full-Time Equivalent
GN	GÉANT
GN*n*	Any GÉANT project iteration
H.323	A recommendation from the ITU-T that defines the protocols to provide audio-visual communication sessions on any packet network
HTM	Haridus- ja Teadusministeeriumi (Ministry of Education and Research, Republic of Estonia)
IPR	Intellectual Property Rights
ITU-T	International Telecommunication Union Telecommunication Standardisation Sector
KPI	Key Performance Indicator
MAN	Metropolitan Area Network
MoU	Memorandum of Understanding
NAT	Network Address Translator
NGI	Next-Generation Internet
NREN	National Research and Education Network
OSS	Open-Source Software
PLM	Product Lifecycle Management
Q	Quarter
R&E	Research and Education
RIPE NCC	Réseaux IP Européens Network Coordination Centre
SIG	Special Interest Group
SIG-CISS	Special Interest Group on Cloud Interoperable Software Stacks
SIG-Multimedia	Special Interest Group on Multimedia Applications
SIP	Session Initiation Protocol
STUN	Session Traversal Utilities for NAT
TCC	The Commons Conservancy
TF	Task Force
TF_EDU	Task Force on Educational Services and Activities
TURN	Traversal Using Relays around NAT
VC	Videoconference
WACREN	West and Central African Research and Education Network
WebRTC	Web-based Real-Time Communications
WP	Work Package
WP4	Work Package 4 Above-the-Net Services
WP4 Task 5.2	Work Package 4, Task 5 Above-the-Net Service Developments, Sub-Task 2 Spin-Out Development