

21-09-2022

## Deliverable D3.7

### NREN Satisfaction Survey

#### Deliverable D3.7

Contractual Date:	31-08-2022
Actual Date:	21-09-2022
Grant Agreement No.:	856726
Work Package	WP3
Task Item:	Task 3
Nature of Deliverable:	R (Report)
Dissemination Level:	PU (Public)
Lead Partner:	GÉANT Association
Document ID:	GN4-3-22-70B394
Authors:	Daniel Wüstenberg (GÉANT Association)

© GÉANT Association on behalf of the GN4-3 project.

The research leading to these results has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 856726 (GN4-3).

#### Abstract

This deliverable presents the results and analysis of the ninth NREN Satisfaction Survey carried out in March and April 2022, covering the GÉANT organisation, the GÉANT (GN4-3/GN4-3N) project, the GÉANT network and network operation, the GÉANT service portfolio, and GÉANT collaboration and community activities. The survey objectives were to assess satisfaction with GÉANT's activities; assess the importance of and satisfaction with specific aspects, products and services; help GÉANT to better understand the community's needs; and determine how and where to focus future efforts.

# Table of Contents

Executive Summary	1
1 Introduction	3
2 Objectives, Scope, Structure and Methodology	4
2.1 Objectives	4
2.2 Scope	4
2.3 Structure	4
2.4 Methodology	5
2.4.1 Follow-Up Activities	6
3 Response Rate and Respondents	7
3.1 Response Rate	7
3.2 Organisational Function of Respondents	8
4 Results	9
4.1 GÉANT Organisation (GÉANT Association)	9
4.1.1 GÉANT's Key Activities	10
4.1.2 GEANT's Key Functions	11
4.1.3 Interactions with GÉANT	12
4.1.4 General Confidence in GÉANT	13
4.2 GÉANT Project (GN4-3/GN4-3N)	14
4.3 GÉANT Network and Network Operation	16
4.4 GÉANT's Service Portfolio	18
4.4.1 Overall Service Portfolio	20
4.4.2 Network-Based Services	21
4.4.3 T&I Services	23
4.4.4 Security Services	24
4.4.5 Cloud Services	25
4.4.6 Procurement	26
4.4.7 Software Packages	27
4.4.8 Services Summary	29
4.5 Collaboration and Community Activities	30
4.6 Comments	33
5 Conclusions	37
Appendix A Survey Response Details	39
A.1 GÉANT Organisation	40

A.2	GÉANT Project	45
A.3	GÉANT Network and Network Operation	46
A.4	Services	49
A.5	Collaboration and Community Activities	67
A.6	Comments	70
	References	87
	Glossary	87

## Table of Figures

Figure 4.1: Importance of key activities	10
Figure 4.2: Satisfaction ratings for key activities	11
Figure 4.3: Satisfaction ratings for GÉANT's key functions	12
Figure 4.4: Interactions with GÉANT	13
Figure 4.5: Confidence in GÉANT's ability to serve its members in the best possible way	14
Figure 4.6: Satisfaction with the management of the GÉANT (GN4-3/GN4-3N) project	15
Figure 4.7: Perceived quality of the GÉANT network	16
Figure 4.8: Satisfaction levels with the security of GÉANT's network	18
Figure 4.9: How GÉANT's service portfolio meets the NRENs' needs in terms of range and quality of services 2021 and 2022	20
Figure 4.10: Perceived quality of network-based services (1)	22
Figure 4.11: Perceived quality of network-based services (2)	22
Figure 4.12: Perceived quality of T&I services	24
Figure 4.13: Perceived quality of GÉANT's security services	25
Figure 4.14: Perceived quality of cloud services	26
Figure 4.15: Where would NRENs like to see GÉANT focusing its procurement efforts?	27
Figure 4.16: Perceived quality of software packages promoted by GÉANT	29
Figure 4.17: Perceived quality of all services	30
Figure 4.18: Participation in collaboration and community activities	31
Figure 4.19: Importance of collaboration and community activities	32
Figure 4.20: Perceived quality of collaboration and community activities	33
Figure 4.21: Overview of comments provided by NRENs across the survey	35

# Table of Tables

Table 3.1: Satisfaction Survey response rates from 2019 to 2022	7
Table 4.1: Service categories, services and questions asked	19
Table 4.2: Correlation between usage, importance and perceived quality for network-based services	21
Table 4.3: Correlation between usage, importance and perceived quality for T&I services	23
Table 4.4: Correlation between usage, importance and perceived quality for security services	24
Table 4.5: Correlation between usage, importance and perceived quality for cloud services	25
Table 4.6: Software packages and questions asked	27
Table 4.7: Correlation between usage and perceived quality for software packages	28
Table 4.8: Perceived quality by service area	30
Table 4.9: Categories used in the analysis of comments	34
Table A.1: Importance of GÉANT organisation key activities 2019–2022	40
Table A.2: Satisfaction with GÉANT organisation activities 2019–2022	41
Table A.3: Confidence in GÉANT’s ability to serve its members 2019–2022	42
Table A.4: Rating of primary GÉANT functions 2019–2022	43
Table A.5: Satisfaction with GÉANT interactions 2019–2022	44
Table A.6: Satisfaction with the management of the GÉANT project 2019–2022	45
Table A.7: Rating of the GÉANT network 2019–2022	46
Table A.8: Rating of the GÉANT Operations Centre 2019–2022	47
Table A.9: Service upgrades 2019–2022	47
Table A.10: Perceived quality of service upgrades 2019–2022	48
Table A.11: Network security 2019–2022	48
Table A.12: Usage of GÉANT’s network-based services 2019–2022 (1)	49
Table A.13: Importance of GÉANT’s network-based services 2019–2022 (1)	50
Table A.14: Perceived quality of GÉANT’s network-based services 2019–2022 (1)	51
Table A.15: Usage of GÉANT’s network-based services 2019–2022 (2)	52
Table A.16: Importance of GÉANT’s network-based services 2019–2022 (2)	53
Table A.17: Perceived quality of GÉANT’s network-based services 2019–2022 (2)	54
Table A.18: Usage of GÉANT’s T&I services 2019–2022	55
Table A.19: Importance of GÉANT’s T&I services 2019–2022	56
Table A.20: Perceived quality of GÉANT’s T&I services 2019–2022	57
Table A.21: Adoption likelihood of InAcademia	58
Table A.22: InAcademia – policy adoption towards commercial serivces	58
Table A.23: Usage of GÉANT’s security services 2019–2022	59
Table A.24: : Importance of GÉANT’s security services 2019–2022	60

Table A.25: Perceived quality of GÉANT's security services 2019–2022	61
Table A.26: Usage of GÉANT's cloud services 2019–2022	62
Table A.27: Importance of GÉANT's cloud services 2019–2022	62
Table A.28: Perceived quality of GÉANT's cloud services 2019–2022	63
Table A.29: Usage of software packages 2021–2022	63
Table A.30: Perceived quality of software packages 2021–2022	64
Table A.31: Use of software packages by NRENs' users	64
Table A.32: Focus of GÉANT's procurement efforts	65
Table A.33: Reasons for not using GÉANT's procurement services	65
Table A.34: Quality of GÉANT's service portfolio 2019–2022	66
Table A.35: Participation in GÉANT's community events 2019–2022	67
Table A.36: Importance of GÉANT's community events 2019–2022	68
Table A.37: Perceived quality of GÉANT's community events 2019–2022	69
Table A.38: Use cases for the NREN Compendium 2019–2022	70
Table A.39: All comments, showing related NREN, question and categorisation	86

## Executive Summary

The 2022 GÉANT National Research and Education Network (NREN) Satisfaction Survey carried out and managed by GN4-3 Work Package 3 User and Stakeholder Engagement, Task 1 (Partner Relations and Engagement) and Task 3 (Stakeholder Insights), was the ninth since the Satisfaction Survey initiative began in 2012. The objectives of this and previous surveys were to assess satisfaction with GÉANT's activities; assess the importance of and satisfaction with specific aspects, products and services; help GÉANT to better understand the community's needs; and determine how and where to focus future efforts. The survey covered five key areas: the GÉANT organisation, the GÉANT (GN4-3/GN4-3N) project, GÉANT network and network operation, the GÉANT service portfolio, and GÉANT collaboration and community activities.

Each NREN was asked to provide one set of responses, to measure the satisfaction of the organisation as a whole. Following discussions with the teams responsible for each subject area, the questions were changed slightly compared with previous years, while maintaining enough continuity to enable comparison with earlier results and identification of trends.

Of the 45 NRENs invited to participate in the survey, 33 returned responses. This continues a decrease in response rate (from 91% in 2019 to 73% in 2022) over the last three survey iterations. In addition to a number of NREN-specific factors outside the control of the Stakeholder Insights Task, the lower response rate to this year's survey likely owes much to a combination of the Easter holiday season and "survey fatigue", factors that will be taken into account for future surveys. Of the 33 NRENs, 20 charged executive-level personnel with answering the survey; 9 respondents came from a background of managing external relations and 4 from the network department.

As an overall assessment, satisfaction has remained stable at a high level across all areas covered by the survey. Any detectable trends across the last three surveys have been mostly positive: among the 16 cases where a trend could be identified, 13 trends were positive; 10 of these concerned GÉANT activities (project work and GÉANT's functions).

Specific highlights among the survey results include:

- The GÉANT Project Planning Committee role in GN5-1 Framework Partnership Agreement preparation was valued.
- Increased confidence in GÉANT to provide value to its members.
- GÉANT's activities in promoting the community to the EC are considered to be excellent by a high proportion of members. This is especially important with regard to supporting pan-EU strategic topics (the "Big 5": HPC, Quantum, Intercontinental, GNx, EOSC).
- Satisfaction with General Assembly effectiveness has improved for three consecutive surveys, rewarding the efforts to respond to repeated criticism.

- The number and quality of comments indicate active engagement despite the lower response rate.

Key takeaways from the survey include the following:

- While critical comments about transparency and communication with and within the community are clearly no indication of a systematic problem in this area, they are an important reminder that information flow needs constant attention.
- To reduce the survey load on NRENs, the Satisfaction Survey will be carried out every other year in future.

Actions taken:

- Bilateral follow-up meetings with members to qualify feedback.
- Follow-up contact with non-responding NRENs to enquire about their reasons for not participating.
- Service feedback has been shared with the service teams.

While the results show that GÉANT's members are in general satisfied, GÉANT acts in a dynamic environment where changes are happening all the time. This means that the needs and views of the GÉANT community must be regularly monitored and taken into account, and the Satisfaction Survey remains a valuable tool to do so.

## 1 Introduction

The National Research and Education Network (NREN) Satisfaction Survey is a survey carried out among GÉANT's members and associates to ask them about their use of the services that GÉANT provides and their perception of the quality of those services and of GÉANT's activities on behalf of the community. The survey is an important quality control tool for GÉANT: while it is not the only feedback channel that provides GÉANT with information from the NRENs, it is unique as it concentrates the answers of all NRENs about a large number of different areas in a way that other channels do not.

The 2022 NREN Satisfaction Survey was carried out and managed by GN4-3 Work Package 3 User and Stakeholder Engagement, Task 1 (Partner Relations and Engagement) and Task 3 (Stakeholder Insights). It was the ninth Satisfaction Survey since 2012.

This document gives an overview of the survey objectives, scope, structure and methodology (Section 2) and of the response rate and respondents (Section 3), followed by a presentation of the survey results by question area (Section 4) and a brief conclusion (Section 5). The Results section aims to extract and summarise the most salient results, which inevitably leaves out some details. More details can be found in Appendix A, which contains all the responses of the last three surveys (2019, 2021, 2022) that were carried out using the same methodology.

## 2 Objectives, Scope, Structure and Methodology

### 2.1 Objectives

The objectives of this and previous NREN Satisfaction Surveys were to:

- Assess satisfaction with GÉANT's activities.
- Assess the importance of and satisfaction with specific aspects, products and services.
- Help GÉANT to better understand the community's needs.
- Determine how and where to focus future efforts.

### 2.2 Scope

The goal was to assess and measure GÉANT NREN satisfaction over five key areas of activity:

- GÉANT organisation.
- GÉANT (GN4-3/GN4-3N) project.
- GÉANT network and network operation.
- GÉANT service portfolio.
- GÉANT collaboration and community activities.

The survey also included a number of open questions that invited respondents to suggest improvements that would help GÉANT to better serve their NREN and some that were intended to explore the market chances of some services (InAcademia, procurement), which deviates slightly from the main theme of the Satisfaction Survey.

### 2.3 Structure

The survey comprised 27 questions of which the first two (Q1–Q2) were about identifying the NREN and the person in charge of the survey. Of the remaining 25 questions, 4 covered GÉANT as an organisation (Q3–Q6), 1 the GÉANT (GN4-3/GN4-3N) project (Q7), 7 the network and network operation (Q8–Q14), 10 GÉANT's service portfolio (Q15–Q24) and 2 the collaboration and community

activities organised by GÉANT (Q25–Q26). The last question (Q27) asked for general comments, thoughts, and suggestions.

Most questions that asked about GÉANT's activities or services had sub-questions that asked about three different aspects: usage (typically: Does your NREN use service X / participate in activity Y?), importance (How important is this activity/service for your NREN?), and perceived quality (How satisfied are you with this activity/service?). In some cases, usage was omitted: some services are used by default and GÉANT organisation activities are not something NRENs participate in. Most questions also gave the option to leave comments.

Usage sub-questions offered four options ("Yes", "No", "Sometimes", and "Not aware of this event/this service"). Sub-questions about importance allowed a ranking between four options ("Very important", "Important", "Somewhat important", "Not important"); a fifth option stated "No opinion" or "Not applicable (N/A)". Perceived quality in all cases used a four-item scale, though the wording differed across questions (highest possible rating: "Excellent", "Very satisfied", "Very high quality"; second highest rating: "Good", "Satisfied", "High quality"; second lowest ratings: "Below average", "Dissatisfied", "Low quality"; worst rating: "Poor", "Very dissatisfied", "Very low quality"). All questions also included a "No opinion" option.

Apart from the questions that aimed to assess perceived quality, the survey also contained questions that tried to explore the needs and attitudes of NRENs towards particular services directly. These questions were about the InAcademia service (Q16–Q17), GÉANT's procurement efforts (Q21–Q22) and the Compendium (Q25).

## 2.4 Methodology

As has been the case for the last two Satisfaction Surveys (2019 and 2021), the survey asked each NREN to provide one set of responses. It thus aimed to measure the perceived benefit of GÉANT's activities/services for the NREN as an organisation. The survey was implemented using the Survey Monkey [[SurveyMonkey](#)] online survey tool, which has also been used in previous NREN Satisfaction Surveys.

The survey questions, while based on those asked in previous years, were discussed with the teams within GÉANT that are in charge of the respective remits. As a result of these discussion, the range and diversity of questions in the 2022 Satisfaction Survey were slightly changed compared with previous years. However, the majority of questions remained the same, so comparisons with earlier surveys are possible in many cases.

While the Results section generally only presents data from the most recent, 2022 survey, analysis was undertaken to detect trends across the last three surveys. "Trend" here means a consistent change over all three surveys (2019, 2021, 2022).<sup>1</sup> If a trend was detected, this is indicated in the

---

<sup>1</sup> The following method was used to determine negative and positive trends:

A **negative trend** (less important or lower quality) is indicated when the number of lower marks (somewhat important + not important or low quality + very low quality, respectively) increased from 2019 to 2021 (without dropping in 2021) AND the higher marks (very important + important or very high quality + high quality) did drop by more than 3 votes (2019 to 2021) or 4 votes (2021 to 2022) from very important to important (or very high quality to high quality) (3 and 4 were correcting

figures by a blue upward arrow (more important or higher quality) or a yellow downward arrow (less important or lower quality).

Links to the survey were sent to the General Assembly (GA) representatives of all NRENs, accompanied by a letter that invited them to participate in the survey and that explained the procedures, duration and also the changes compared to the previous surveys.

The survey was carried out from 21 March until 22 April 2022.

Throughout this report, actual numbers of responses are used rather than percentages, especially in the figures; where percentages are given, these are in addition to the numbers, to allow the reader to grasp more quickly the degree of perceived satisfaction or importance among NRENs.

#### 2.4.1 Follow-Up Activities

The Satisfaction Survey is of course intended to inform GÉANT's work and it is therefore essential to share and discuss the survey results with the appropriate teams within GÉANT and the GN4-3 project. Part of this process is also to assess which actions – of whatever scale and timeframe, from long-term strategic to immediate procedural improvements – will be influenced by the insights gained through the Satisfaction Survey.

---

factors as the response rate decreased by these numbers between the 2019 and 2021 surveys and the 2021 and 2022 surveys, respectively).

A **positive trend** is indicated when:

1. The number of lower marks (somewhat important + not important or low quality + very low quality, respectively) decreased by more than 3 votes (2019 to 2021) or 4 votes (2021 to 2022) respectively AND the number of positive ratings increased (very important + important or very high quality + high quality).
2. The number of lower marks did not change but the higher marks did change by more than 3 votes (2019 to 2021) or 4 votes (2021 to 2022) from high quality to very high quality.

## 3 Response Rate and Respondents

### 3.1 Response Rate

	2019		2021		2022	
	Count	%	Count	%	Count	%
(N)RENs asked to participate	44		45		45	
(N)RENs present in responses	40	91%	37	82%	33	73%

Table 3.1: Satisfaction Survey response rates from 2019 to 2022

As can be seen in Table 3.1, response rates have decreased over the last three Satisfaction Surveys, from 91% in 2019 to 73% in 2022. Changing response numbers make it harder to compare surveys, as the subsets of NRENs that answered the survey differ between years. Beyond this methodological problem, low response rates reduce the usefulness of the Satisfaction Survey as a quality control tool as not all users/NRENs provide feedback about their satisfaction, potentially leaving problems unreported and therefore unaddressed.

It is likely that the decreased response rate is the result of a number of different factors. What affected most NRENs in 2022 were Easter holidays, which in most countries overlapped with the survey period, so some employees normally involved in responding to the survey were not available during some or most of this time. Other reasons were more specific to individual NRENs: two of them were still in the process of reorganisation (Sikt, SUNET) or had to renew their project-based funding (FCCN); CARNET had just installed a new CEO, who did not yet feel confident enough to fill in the survey, while BASNET's non-response is likely due to the sanctions issued against Belarus as a consequence of the Russian invasion of Ukraine. Of the remaining eight NRENs that did not respond to the survey, four have not participated in the survey for several years, so their absence is not a surprise – all of them are small NRENs for which filling in the survey means a significantly higher effort in relation to their workforce than for larger NRENs. One is also only an associate and generally focuses much more on its membership in NORDUnet.

A less tangible influence might be “survey fatigue”, as NRENs are asked to provide information to GÉANT regularly in a number of surveys (Satisfaction Survey, Compendium Survey, Cloud Survey, TF-EDU Survey), which is sometimes the responsibility of the same person, depending on the NREN.

Not all of these reasons can be readily addressed, being rooted in conditions outside of the Stakeholder Insights Task's control. However, holiday seasons can and will be considered more closely

in future surveys. Also, to reduce the survey load on NRENs, the Satisfaction Survey will be carried out every other year in the future.

## 3.2 Organisational Function of Respondents

The survey asked for the job title / function of the person charged with responding to the Satisfaction Survey. Among the 33 NRENs, 20 charged people from the executive level with answering the survey, 12 of whom were CEOs, the other 8 being either chief executives or deputy executives, or heads of departments. This reflects the need for a person high enough in the NREN to command insight into the different areas of the company and also suggests that NRENs take the survey seriously enough to assign this task to senior personnel – which, in return, makes it important to GÉANT to take this seriously as well.

In some cases, the job titles also allowed the area of expertise of the respondents to be identified. While there is quite some diversity in the data, there were two identifiable “blocks of origin”: 9 respondents came from a background of managing external relations, such as business development, strategic partners or customer support, while 4 respondents came from the network department of their employer (1 person from each of these groups also belonged to the executive-level respondents discussed above). Both origins make sense: GÉANT certainly counts as an important partner, making it a good fit for people from the first “block”, while it is quite specifically providing network services to all NRENs, making the network departments natural contact points.

## 4 Results

### 4.1 GÉANT Organisation (GÉANT Association)

This section of the survey aimed to assess the NRENs' level of satisfaction with the GÉANT organisation in its role as an organisation that develops, delivers and promotes advanced networks and associated e-infrastructure services and organises collaboration and knowledge sharing among members, partners and the wider research and education networking community.

It comprised four questions (Q3–Q6), most of which contained several sub-questions, as follows:

- Q3. Please rate the following key activities of the GÉANT organisation:
  - Operating the GÉANT network and providing network services.
  - Organising community knowledge-sharing events and training (e.g. TNC, REFEDS).
  - Providing middleware / AAI services.
  - Managing the GÉANT (GN4-3 and GN4-3N) project.
  - NREN coordination meetings (e.g. EOSC projects, EuroHPC).
  - Managing regional projects (e.g. AfricaConnect, EaPConnect).
  - Running Task Forces and Special Interest Groups.
  - Market communication (GÉANT website, CONNECT magazine and website, social media activity, etc.)
  - Procurement support (e.g. cloud services, network equipment).
- Q4. How confident are you in GÉANT's ability to serve its members in the best possible way?
- Q5. How would you rate the following?
  - The value for money represented by GÉANT.
  - GÉANT's performance promoting the interests of Research and Education networking to the European Commission.
  - GÉANT's performance promoting the interests of GÉANT NRENs internationally / with global regional partners.
  - The effectiveness of General Assembly meetings as the main membership decision-making forum.
  - Your experience with GÉANT's invoicing and billing process.
  - Transparency of financial streams and the cost-sharing mechanism.
  - GÉANT's performance in keeping you informed of our services and activities.

- Engagement with international research organisations (ESA, CERN, EUMETSAT, etc.).
- Q6. How satisfied were you with the following in the interactions with GÉANT?
  - The ease of getting in touch with the right person at GÉANT.
  - The responsiveness of GÉANT staff to your questions / concerns.
  - The level of knowledge of our staff.
  - GÉANT's online communication and coordination tools (intranet, wiki, GÉANT Tools Portal, GÉANT Partner Portal, Ticket systems ...).
  - The availability of the GÉANT CEO to discuss important topics.

### 4.1.1 GÉANT's Key Activities

Question 3 asked about GÉANT's key activities, i.e., activities or services that GÉANT undertakes on behalf of the NRENs or organises for them.

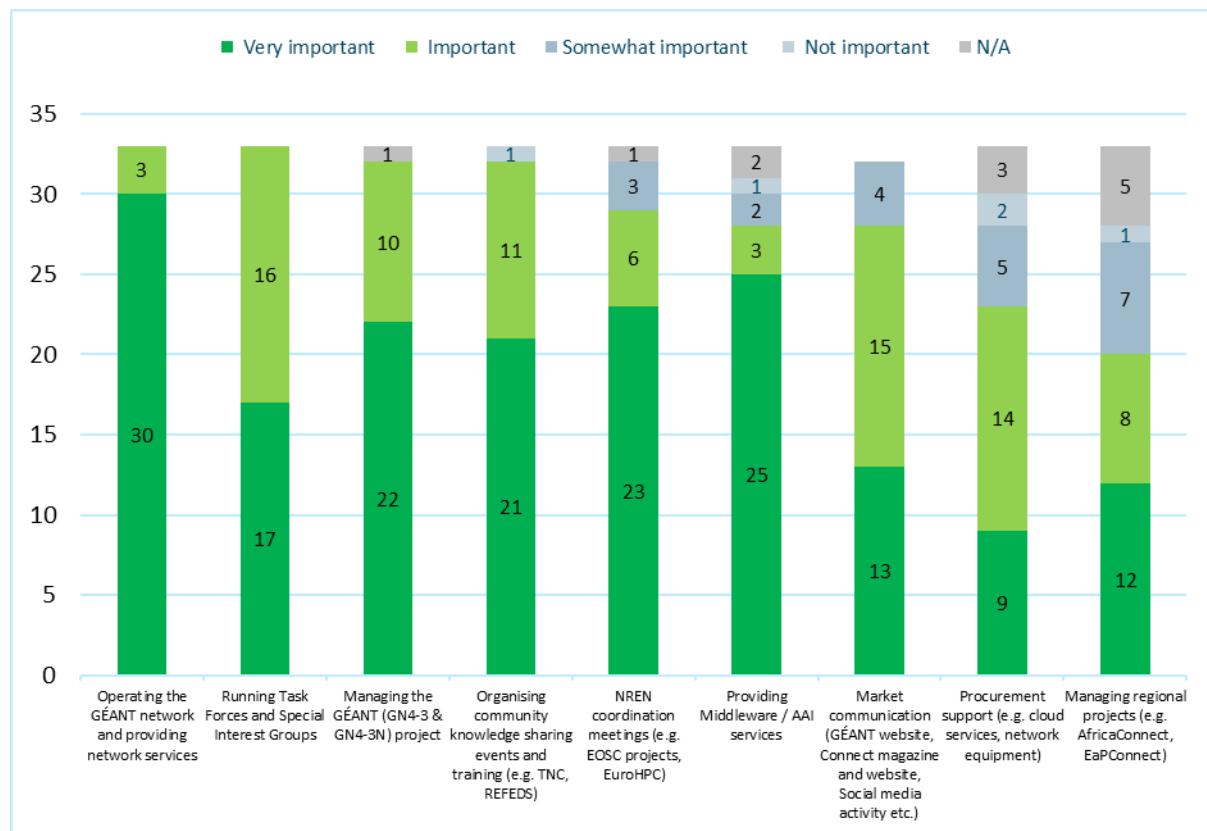
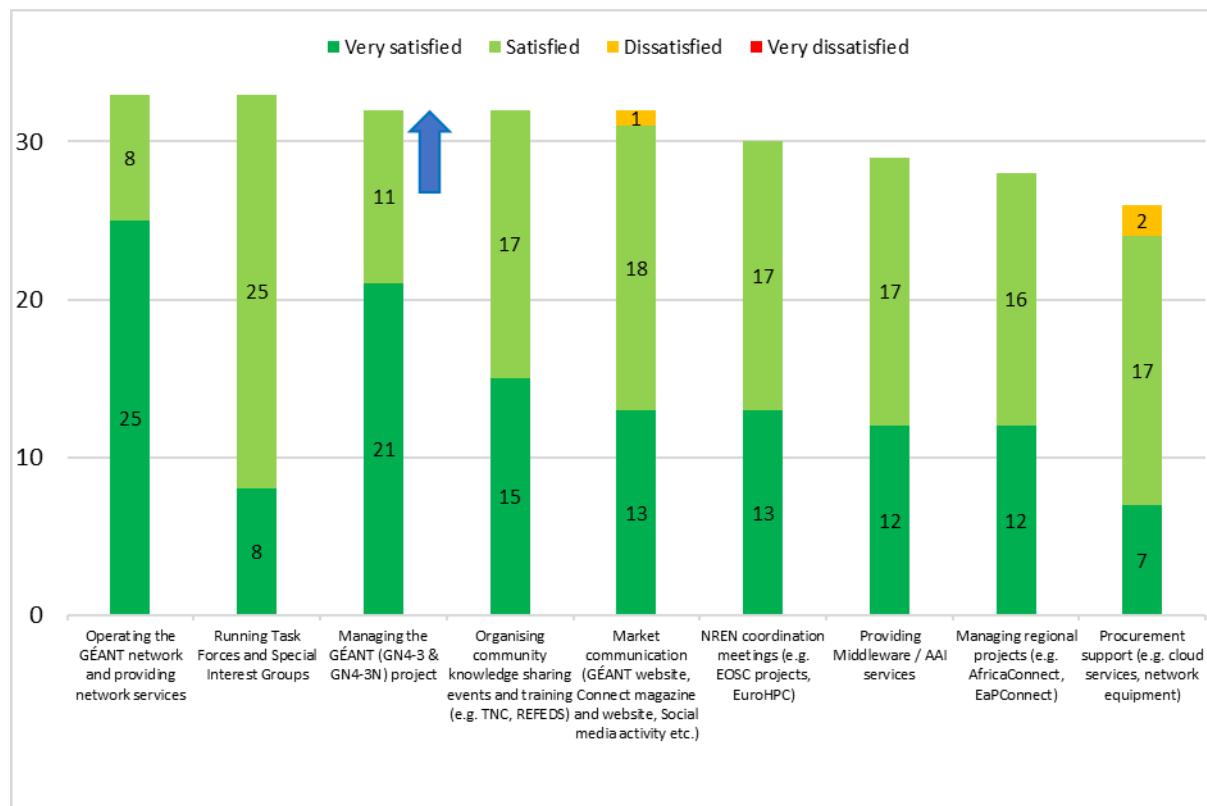


Figure 4.1: Importance of key activities. Responses are ordered by perceived importance (very important + important) from left to right.

Figure 4.1 shows the importance ratings given by NRENs. Most key activities are considered important or very important by a large majority of NRENs. Expressed as a percentage of the responding NRENs, the activity considered most important is the network (100%), followed by Task Forces and Special Interest Groups (100%), the management of GN4-3/GN4-3N (97%), organising knowledge-sharing events (97%), NREN coordination meetings (88%), market communication activities (88%), and

providing middleware/AI services (85%). Comparatively less importance is assigned to procurement support (68%) and the management of regional projects (60%). The latter two results reflect the fact that procurement support cannot be used by all NRENs due to local procurement rules, while regional projects by definition only involve a subset of NRENs.



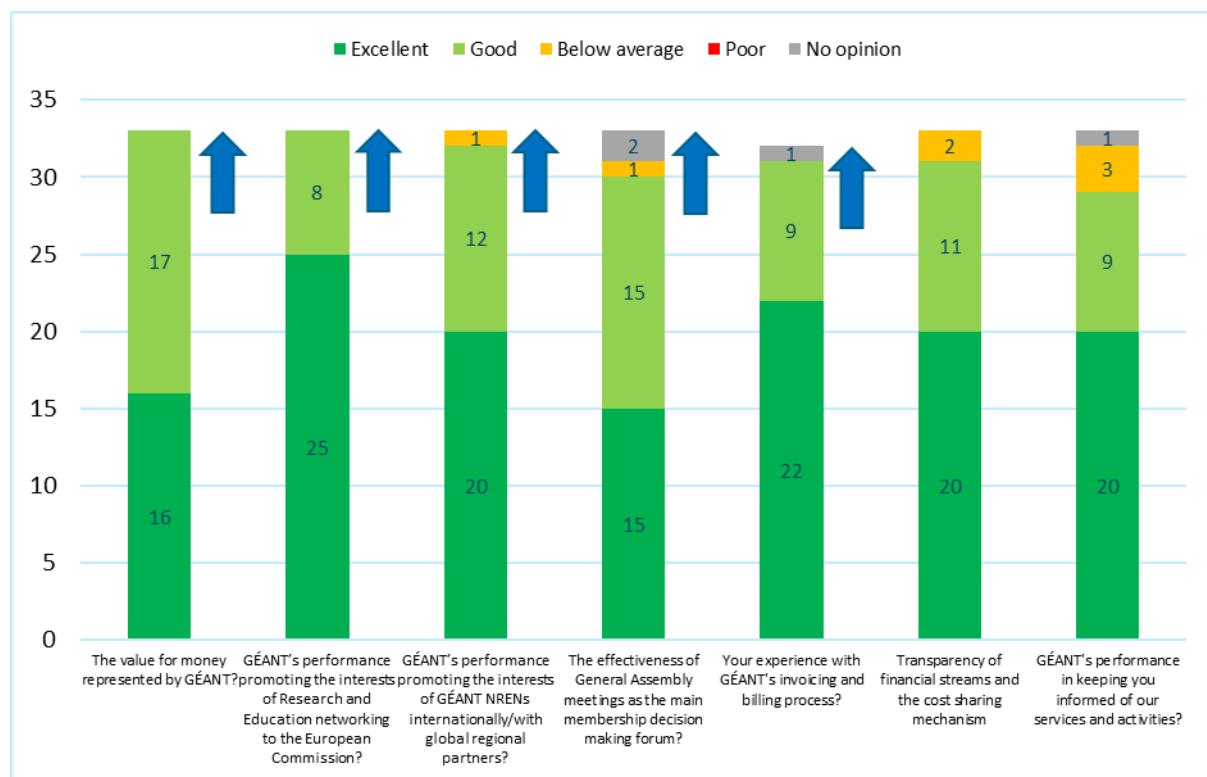
**Figure 4.2: Satisfaction ratings for key activities. Responses are ordered by perceived satisfaction (very satisfied + satisfied) from left to right. The blue arrow denotes a trend towards a more positive perception over the last three surveys (2019, 2021, 2022).**

Figure 4.2 shows the satisfaction ratings given by NRENs. By far the majority of NRENs are very satisfied or satisfied with GÉANT's key activities. Expressed as a percentage of the responding NRENs, only procurement support, with 77%, has an aggregate satisfaction rating (very satisfied + satisfied) of less than 90%. Again, this is most likely because not all NRENs are able to take advantage of GÉANT's procurement support.<sup>2</sup>

#### 4.1.2 GÉANT's Key Functions

Question 5 asked about GÉANT's key functions vis-à-vis its members.

<sup>2</sup> This was also pointed out in a number of comments throughout the survey.



**Figure 4.3: Satisfaction ratings for GÉANT's key functions.** Responses are ordered by perceived satisfaction (very satisfied + satisfied) from left to right. The blue arrows denote a trend towards a more positive perception over the last three surveys (2019, 2021, 2022).

Satisfaction levels generally are high (90% or above) for all items here and the majority of ratings have increased continuously since 2019. Especially notable is the improved level of satisfaction with the GA's effectiveness, as this has been a long-standing problem (apparent in the Satisfaction Surveys but also articulated through other channels) and was addressed by reorganising the GA's work practice in a number of ways.

### 4.1.3 Interactions with GÉANT

Question 6 explored the NRENs' level of satisfaction regarding GÉANT's interface with its users. This field covers a number of different aspects, including the availability (and competence) of GÉANT's staff, the various communication tools available through GÉANT's website, and also the availability of GÉANT's CEO in case of need.

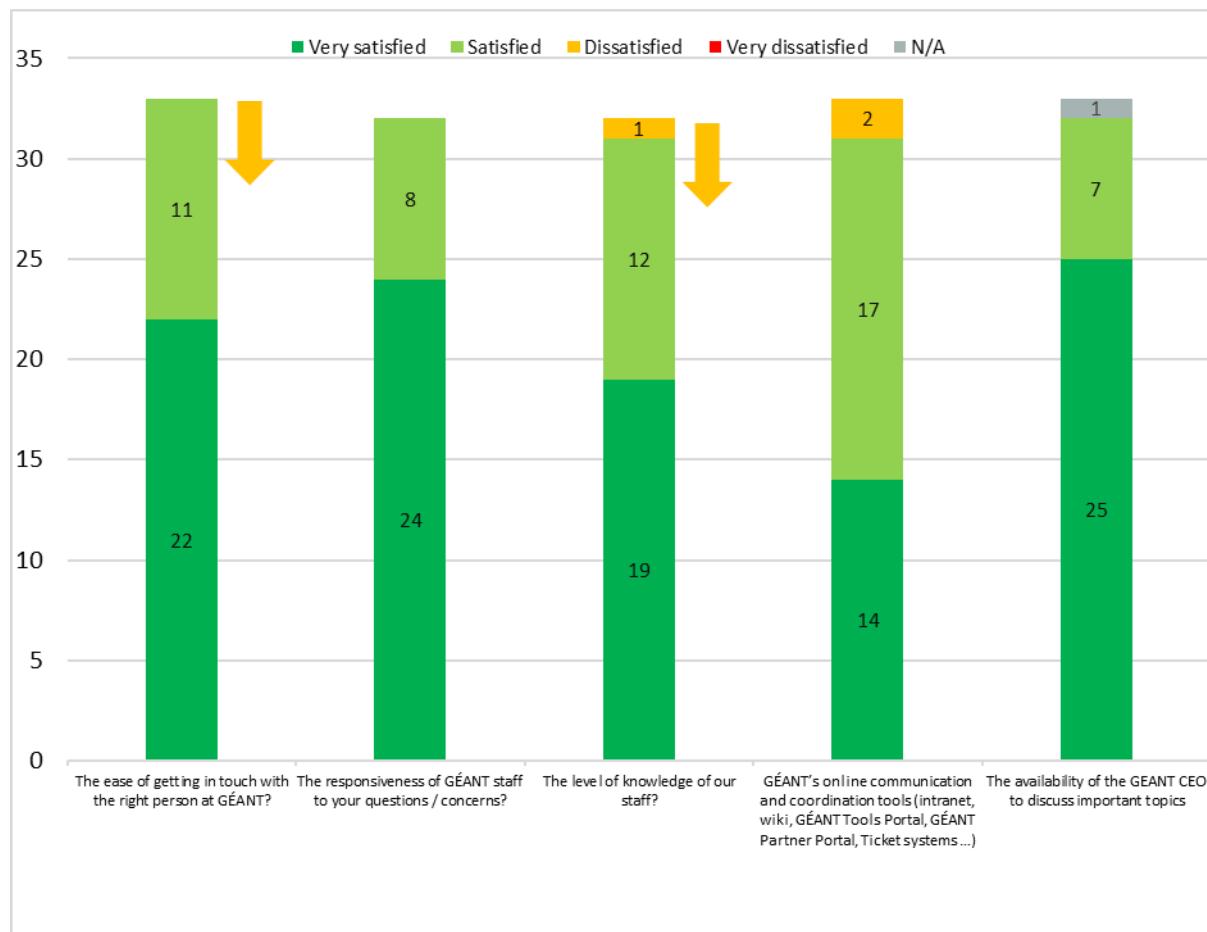


Figure 4.4: Interactions with GÉANT. The arrows denote a drop in satisfaction over the last three surveys (2019, 2021, 2022).

The NRENs' level of satisfaction with their interactions with GÉANT is generally quite high (well over 90% in all 5 sub-questions). Nonetheless, the responses show a slight drop in satisfaction over the last three surveys (2019, 2021, 2022) when it comes to finding the right person within GÉANT and the knowledge level of GÉANT staff. Another notable result is the 2 "dissatisfied" responses concerning GÉANT's online tools.<sup>3</sup>

#### 4.1.4 General Confidence in GÉANT

Question 4 asked about the NRENs' confidence "in GÉANT's ability to serve its members in the best possible way", a measure of the general trust among GÉANT's members.

<sup>3</sup> There was also a comment noting that they sometimes appear overly complex.

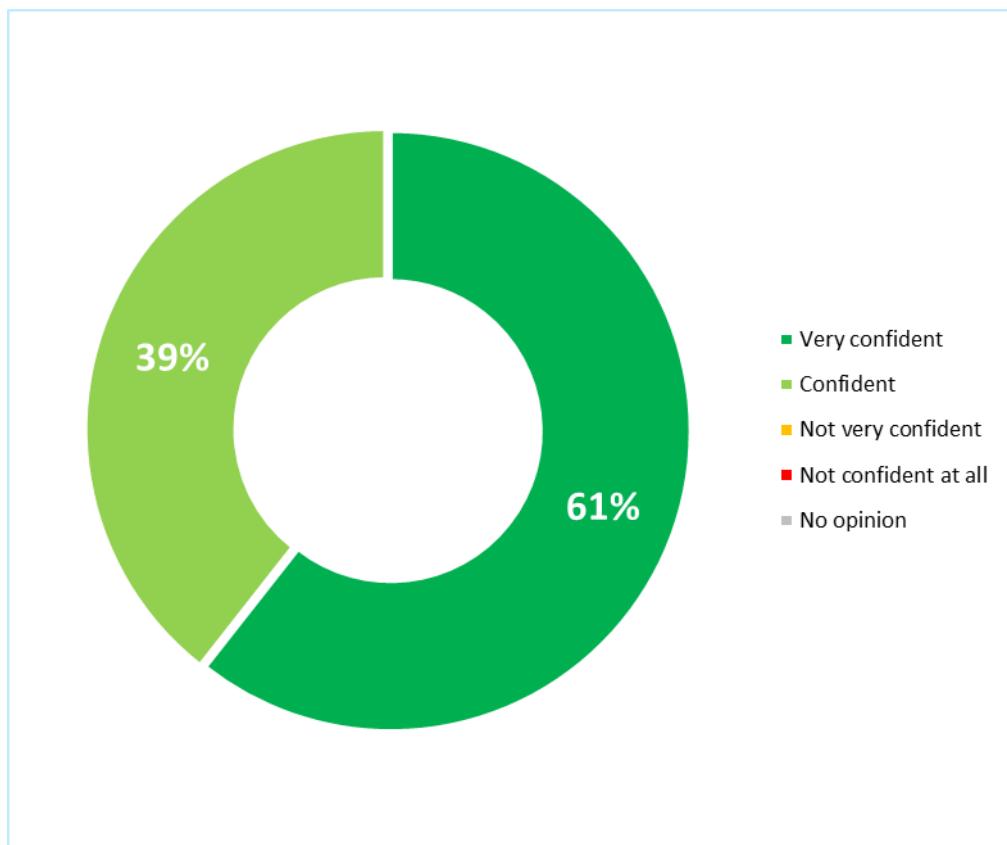


Figure 4.5: Confidence in GÉANT's ability to serve its members in the best possible way

According to the 2022 survey, confidence in GÉANT is very high among its members/users, with 61% or 20 NRENs answering they were “very confident” and the remaining 39% (13) being “confident”. This result is also an improvement over the confidence levels given in the 2019 and 2021 surveys (2019: 40% “very confident”, 50% “confident”, 7% “not very confident”, 3% “no opinion”; 2021: 35% “very confident”, 65% “confident”).

## 4.2 GÉANT Project (GN4-3/GN4-3N)

This section of the survey comprised one question to rate the NRENs’ level of satisfaction with the management of the GÉANT (GN4-3/GN4-3N) project. Eight indices were rated:

- The overall project management.
- The level of transparency of activity planning in the annual project work plan.
- The level of financial transparency.
- Project administration (e.g. meetings, documents, reporting).
- Interactions of the GÉANT Project Planning Committee (GPPC) and GÉANT staff in preparing the GN5 Framework Partnership Agreement (FPA).
- Project communication (e.g. news, bulletins, information on activities).

- Coordination of pan-European user groups / projects on behalf of NRENs (e.g. EUMETSAT, LHCONE).
- The GÉANT Partner Relations team as the main point of contact for NREN liaison and support.

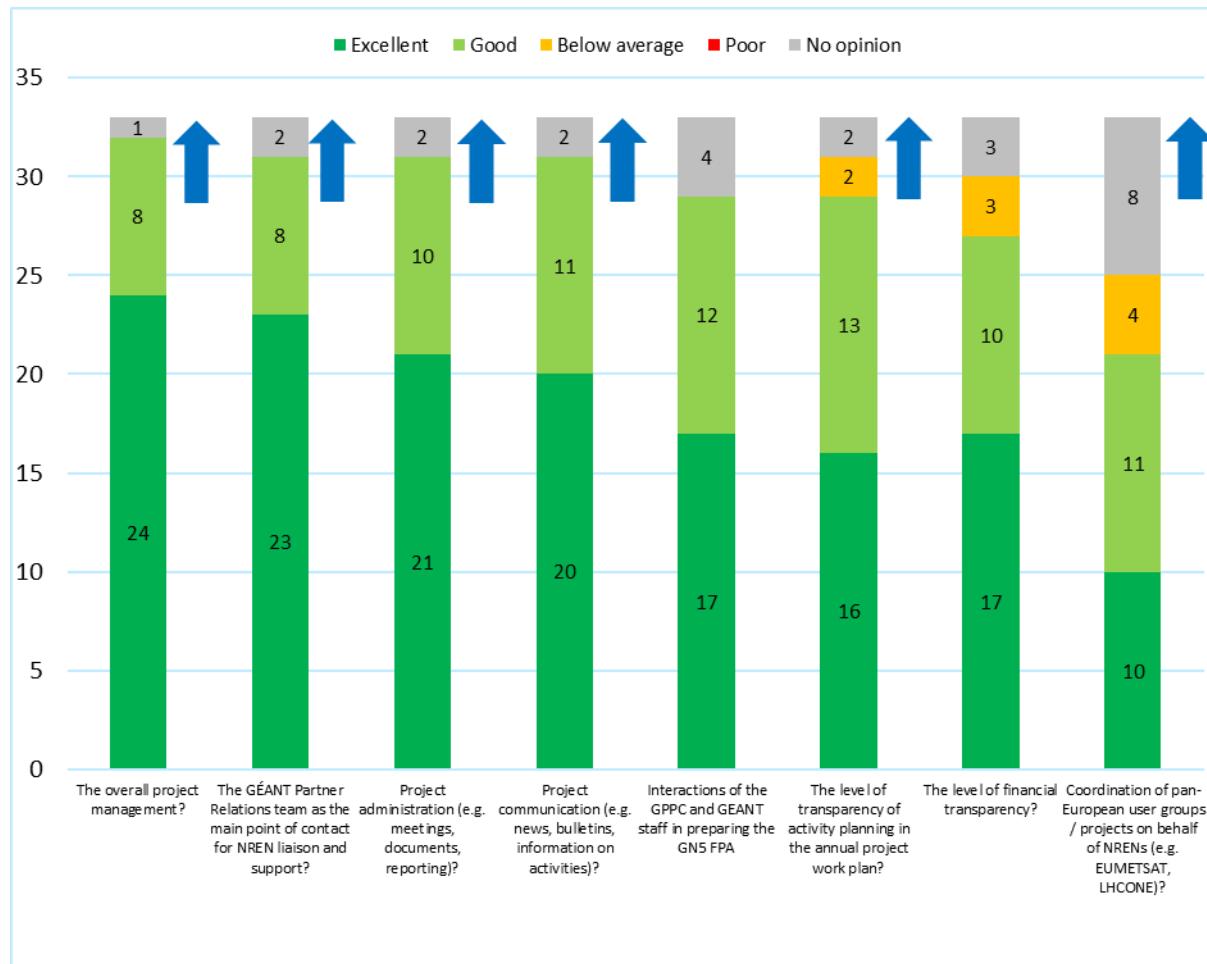


Figure 4.6: Satisfaction with the management of the GÉANT (GN4-3/GN4-3N) project. In this figure, the bars are ordered by satisfaction rate (excellent + good) from the left to the right. As in other figures, the arrows (where present) indicate a trend over the last three surveys (2019, 2021 and 2022).

All but one of the indices scored high satisfaction rates, four were rated good or excellent and all but one (coordination of pan-European user groups) by 80% or more of NRENs. Moreover, most aspects of the project management showed improved satisfaction over the course of the last three surveys and none showed a downward trend.

As the three surveys cover roughly the time since the start of the GN4-3 project, the positive trend in the results likely reflects to a degree that the project is increasingly closing in on the goals of the initial proposal.

## 4.3 GÉANT Network and Network Operation

This section of the survey encompassed a series of questions asking users to rate the quality and general operation of the GÉANT network, and the activities of the GÉANT Operations Centre.

With regard to the network, users were asked to rate the following:

- Overall performance and reliability.
- Operation and management.
- Connectivity with global R&E networks.
- Service and Technology Forum (STF) as a means for Access Port Managers (APMs) to receive and share information.
- Ability of the GÉANT Operations Centre to respond to technical issues.

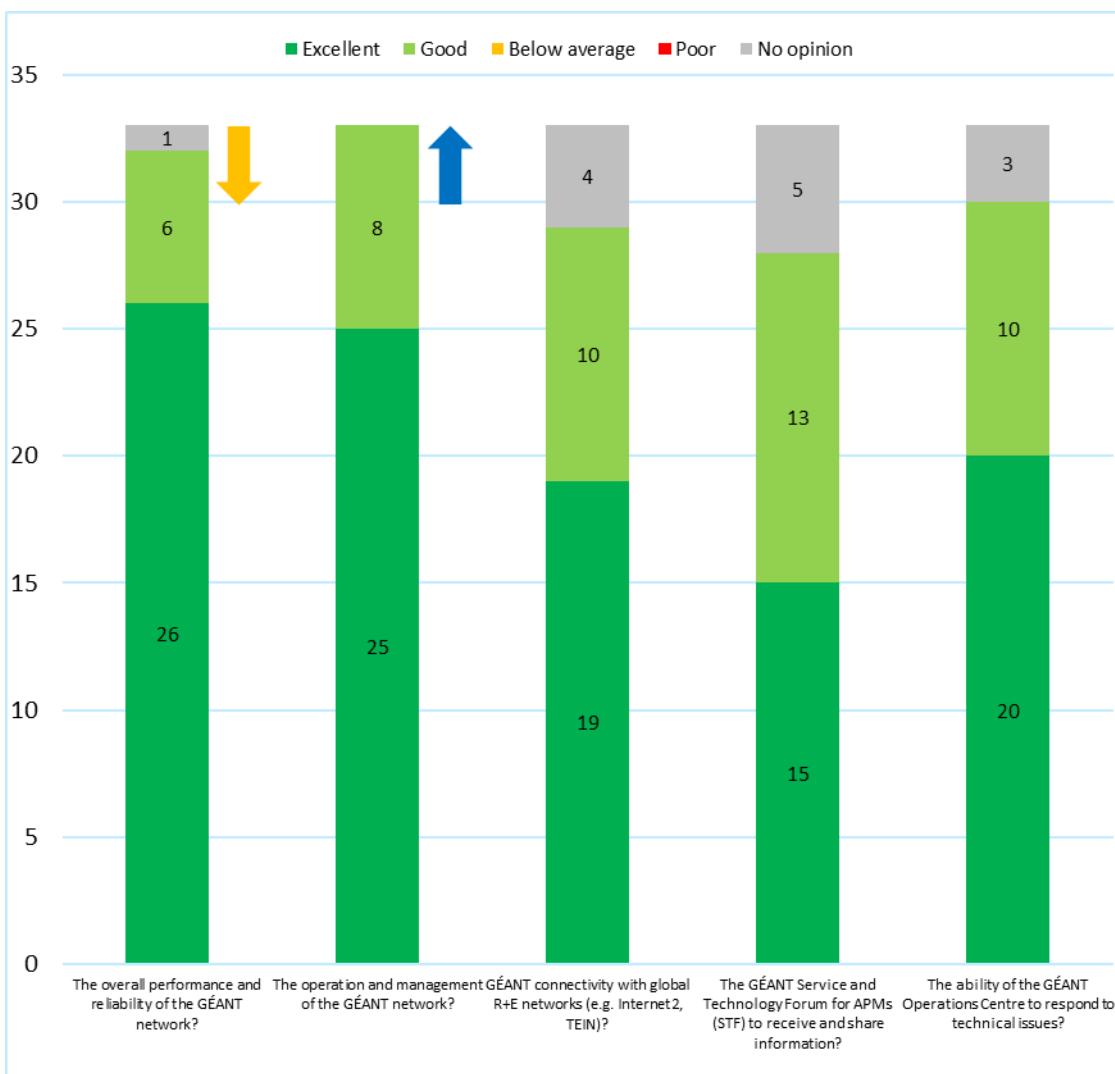


Figure 4.7: Perceived quality of the GÉANT network. As in other figures, the arrows (where present) indicate a trend over the last three surveys (2019, 2021 and 2022).

As with other fields of GÉANT's activities, customer satisfaction is high, with more than 80% of users rating the different aspects of running the network excellent or good, while no user gave ratings of below average or poor, though some NRENs opted to record "no opinion" (Figure 4.7).

Broadly, these results are comparable to previous years' results, though the perceived quality has decreased for the overall performance and reliability of the network and increased for the operation and management of the network.

Equally high satisfaction results came from questions about the general interactions with GÉANT's Network Operations Centre (NOC) and GÉANT's service upgrade procedures. The service upgrade procedures have even managed to improve continuously since 2019, and were rated as excellent or good by more than 90% of all responding NRENs, with no criticism at all. No figures are shown here but the numbers can be found in Appendix A.3.

The last question in this section asked about GÉANT's network security, specifically the security level of the network and the handling of security incidents by the GÉANT Computer Emergency Response Teams (CERT). These two sub-questions were mostly rated positively (excellent or good) by 26 and 18 out of 33 responding NRENs (79% and 54% respectively); 6 (18%) and 13 (39%) NRENs respectively had no opinion on either subject while 1 (3%) and 2 (6%) of the NRENs rated them below average (Figure 4.8). These numbers have remained at similar levels over the 3 surveys, and no particular trends can be spotted. The high share of "no opinion" responses most likely reflects that many NRENs did not witness or experience any relevant events, leaving some NRENs on the fence regarding these issues (as is also suggested by a couple of comments explicitly making this point – see Appendix A.6). The NRENs rating network security negatively (GARR and IUCC) left comments which made clear that they were not referring to specific events but rather were criticising the information flow (or the lack of it) in this area; this particular subject was also broached in another two comments (by KIFÜ and RENAM, which left positive ratings).

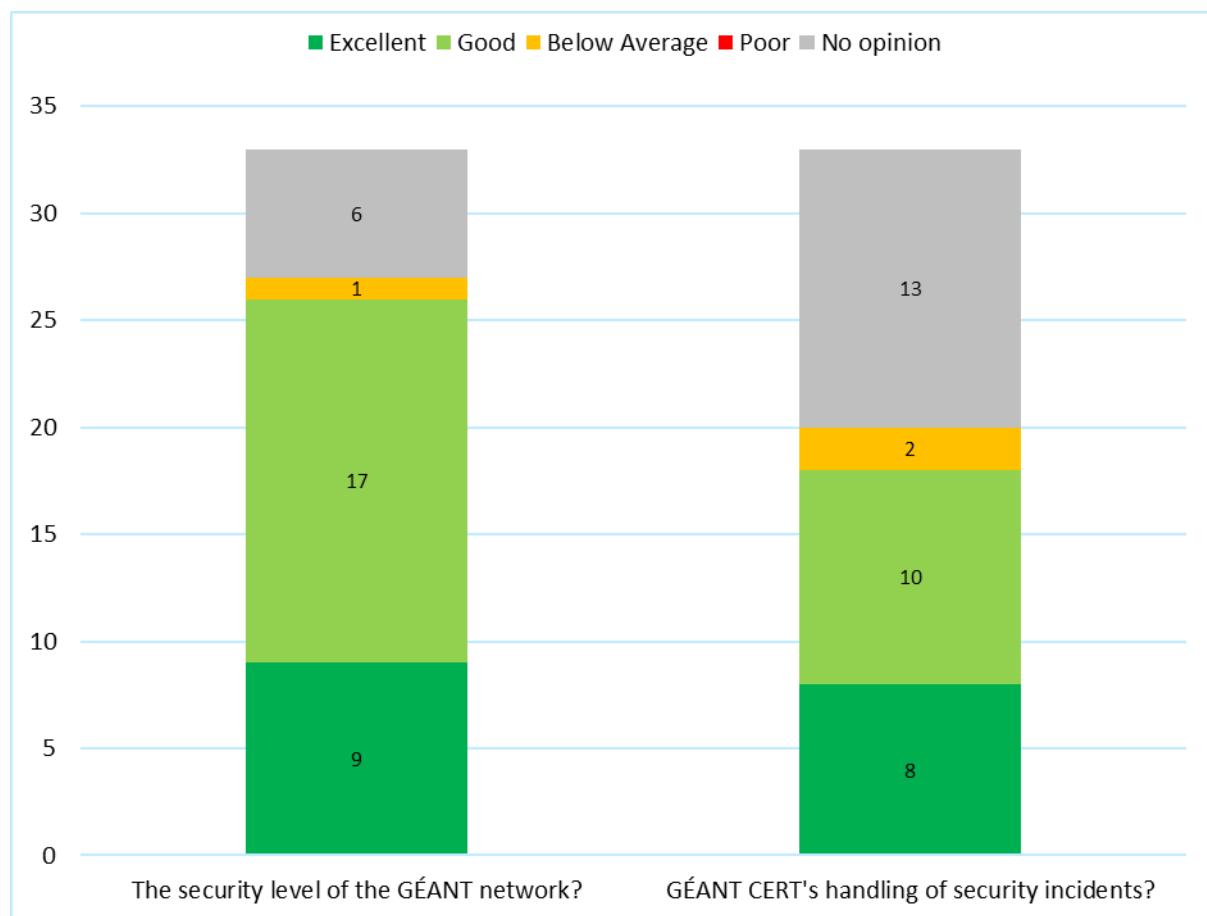


Figure 4.8: Satisfaction levels with the security of GÉANT's network

## 4.4 GÉANT's Service Portfolio

The objective of this section of the survey was to get a high-level overview of how the service portfolio is perceived and valued by the NRENs.

Most of GÉANT's services fall into four categories: network-based services, trust and identity (T&I) services, security services and cloud services. Table 4.1 summarises the specific services within these categories and the questions asked.

Service Category	Service	Questions
Network-based services	GÉANT IP	Does your NREN use this service?
	GÉANT Lambda	How important is this service for your NREN?
	GÉANT Open	How would you rate the quality of the service?
	GÉANT Peering	
	GÉANT Plus	

Service Category	Service	Questions
	GÉANT World Service	
	L3-VPN	
	MD-VPN	
	MS ExpressRoute	
	NMaas	
	perfSONAR	
	perfSONAR consultancy and expertise service	
	PMP	
T&I services	eduGAIN	Does your NREN use this service?
	eduroam	How important is this service for your NREN?
	eduroam managed IdP	How would you rate the quality of the service?
	TCS	
	Federation as a Service	
	InAcademia	
Security services	Firewall on Demand	Does your NREN use this service?
	DDoS (Cleansing & Alerting)	How important is this service for your NREN?
	Anomaly Alerting	How would you rate the quality of the service?
Cloud services	GÉANT cloud portfolio (IaaS+ Framework)	Does your NREN/national community use it?
	Cloud Support provided by GÉANT (forums, communication material, training, etc.)	How important is it for your NREN? How would you rate the quality of the service?

Table 4.1: Service categories, services and questions asked

Also included in this section are questions about GÉANT's procurement activities, which, while not a specific service, are important for many NRENs and also play a role in how some of the services in GÉANT's portfolio are provided (e.g. Trusted Certificate Service (TCS), cloud services). Finally, there is also a list of four software packages that are promoted by GÉANT, which, while not services as such, are used by NRENs and institutions to provide services to their users.

#### 4.4.1 Overall Service Portfolio

The section about services started with a question about the overall suitability of the GÉANT service portfolio: How does GÉANT's service portfolio overall meet your NREN's needs in terms of range and the quality of services?

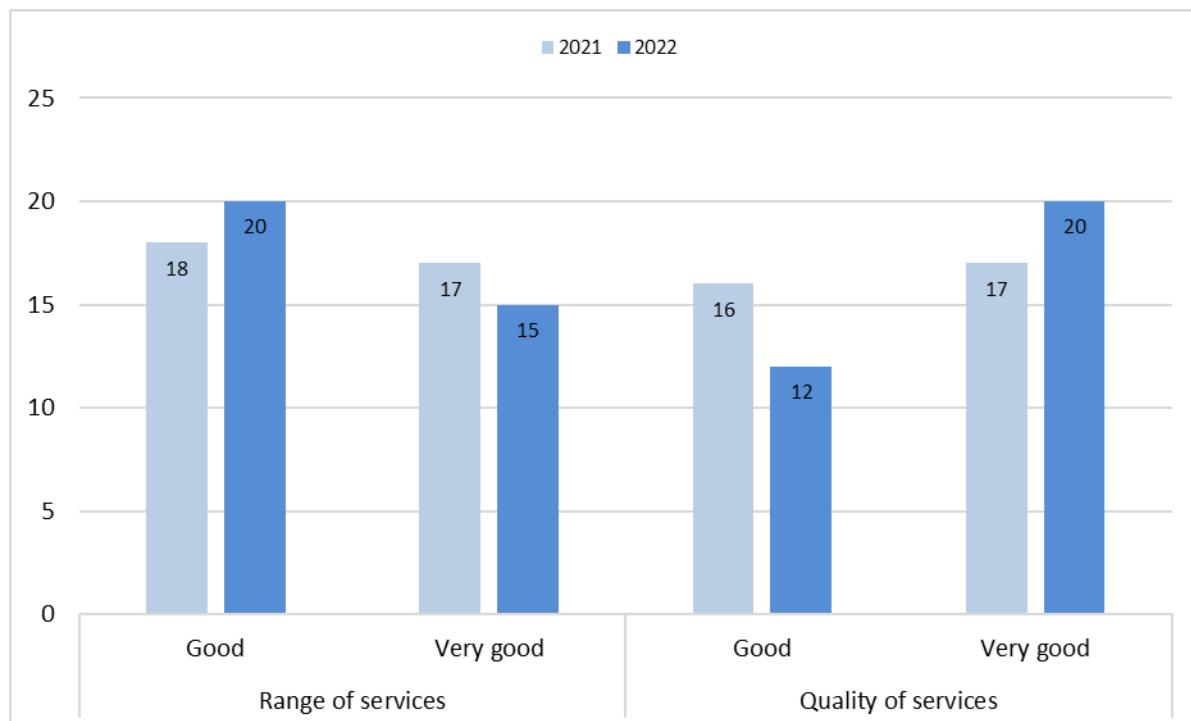


Figure 4.9: How GÉANT's service portfolio meets the NRENs' needs in terms of range and quality of services 2021 and 2022. In neither year did any NRENs leave marks other than "good" or "very good", so the figure only presents these, omitting "bad", "very bad" and "no opinion. Note also that in 2021, 35 NRENs responded to this question while in 2022 only 32 NRENs did so.

Generally, both the range and quality of the GÉANT service portfolio only earned positive ratings ("good" or "very good"). In addition, the ratio of "very good" to merely "good" has increased in 2022 compared with the 2021 survey (range of services: 52% vs 49%, quality of services 63% vs 43%) (see Figure 4.9 for the exact numbers).

#### 4.4.2 Network-Based Services

	GÉANT IP	GÉANT World Service	GÉANT Peering	GÉANT Lambda	GÉANT Plus	GÉANT Open	L3-VPN	MD-VPN	MS ExpressRoute	perfSONAR	perfSONAR consultancy and expertise service	PMP	NMaaS
Usage	30	18	24	10	10	4	14	13	8	20	6	10	2
Very important + important	30	19	23	12	11	5	16	11	8	14	8	6	2
Very high quality + high quality	29	19	24	9	11	6	14	14	7	17	5	8	2

Table 4.2: Correlation between usage, importance and perceived quality for network-based services. Note that (as can be seen in detail in the figures) almost all of the responses that were not “Very high quality” or “High quality” were “no opinion”.

Table 4.2 shows usage numbers,<sup>4</sup> importance and perceived quality ratings for all network-based services. In most cases, the three metrics are highly correlated, i.e. high usage numbers imply high importance and are also accompanied by high perceived quality. The correlation of usage and importance of services is entirely expected, as NRENs will in general use those GÉANT services that will provide useful and important features; that this is generally also followed by high perceived quality, however, is a very positive result of the survey.

More details about the perceived quality ratings can be found in Figure 4.10 and Figure 4.11, which also show that of all network-based services, only Network Management as a Service (NMaaS) got a negative rating (“low quality”). Note that due to the large number of network-based services they have been split into two groups, presented in two different figures (Figure 4.10 and Figure 4.11).

<sup>4</sup> Note that usage overall should also provide a measure of how many NRENs are using a particular service. However, the numbers do not always match those kept by GÉANT’s service departments. This very likely reflects that the persons in charge of the survey on the NREN side are not always aware of all the services their NREN is using. Despite this problem, usage numbers from the survey are still used here as a reference to be consistent with the rest of the survey, as importance and quality of a service are generally only given for services that the NREN knows about (though curiously, in some cases, more NRENs judge services as important or high quality than claim to use it).

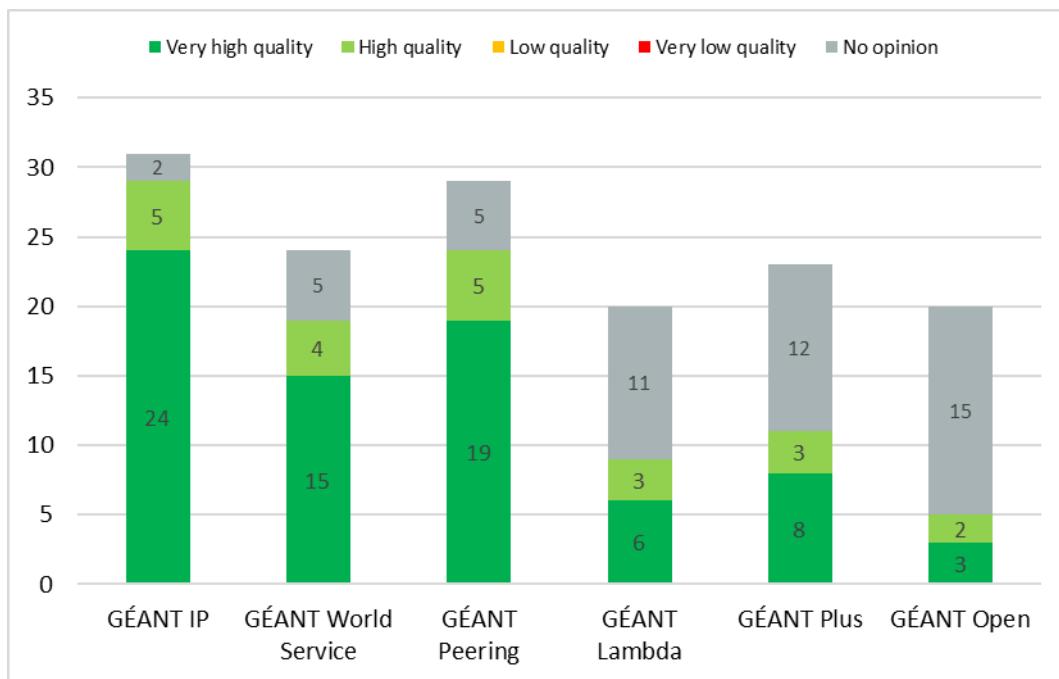


Figure 4.10: Perceived quality of network-based services (1)

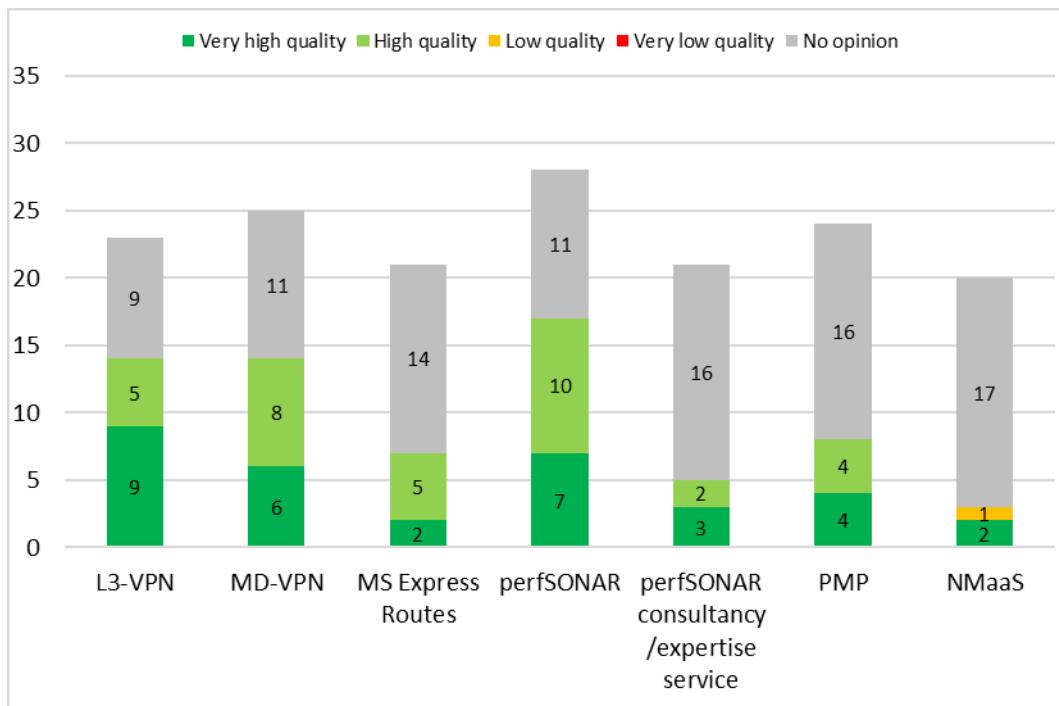


Figure 4.11: Perceived quality of network-based services (2)

#### 4.4.3 T&I Services

	eduGAIN	eduroam	eduroam managed IdP	TCS	Federation as a Service (FaaS)	InAcademia
Usage	30	31	10	22	7	10
Very important + important	32	32	12	21	11	14
Very high quality + high quality	29	30	12	18	8	8

Table 4.3: Correlation between usage, importance and perceived quality for T&I services. Note that (as seen in the figure in more detail) almost all of the responses that were not “Very high quality” or “High quality” were “no opinion”.

As is evident in Table 4.3 (and as is the case for the network-based services), the three metrics are well correlated for most T&I services. In some cases, there is a mismatch between usage and importance: Federation as a Service (FaaS) and InAcademia were both ranked important by more NRENs than are using them. In the case of FaaS, this likely reflects that the service can be (and in some cases is) used by universities directly without the NREN acting as a provider; in this case, FaaS can be important for the research and education community of a country even if the local NREN does not use or provide the service itself. InAcademia, on the other hand, is a recently introduced service which is still growing, so the “surplus” of importance is reflecting NRENs that plan to adopt the service in the near future (see also Table A.21 in the appendix).

While the data in Table 4.3 already show a high perceived quality for all services (80% for even the lowest-ranking service, Trusted Certificate Service (TCS)), Figure 4.12 shows also that only one service, TCS, received a “low quality” rating and none received a “very low quality” rating. The comparatively low ranking of TCS most likely reflects problems connected with the quality of the provider of the security certificates, which was part of the reason for GÉANT switching to another provider.

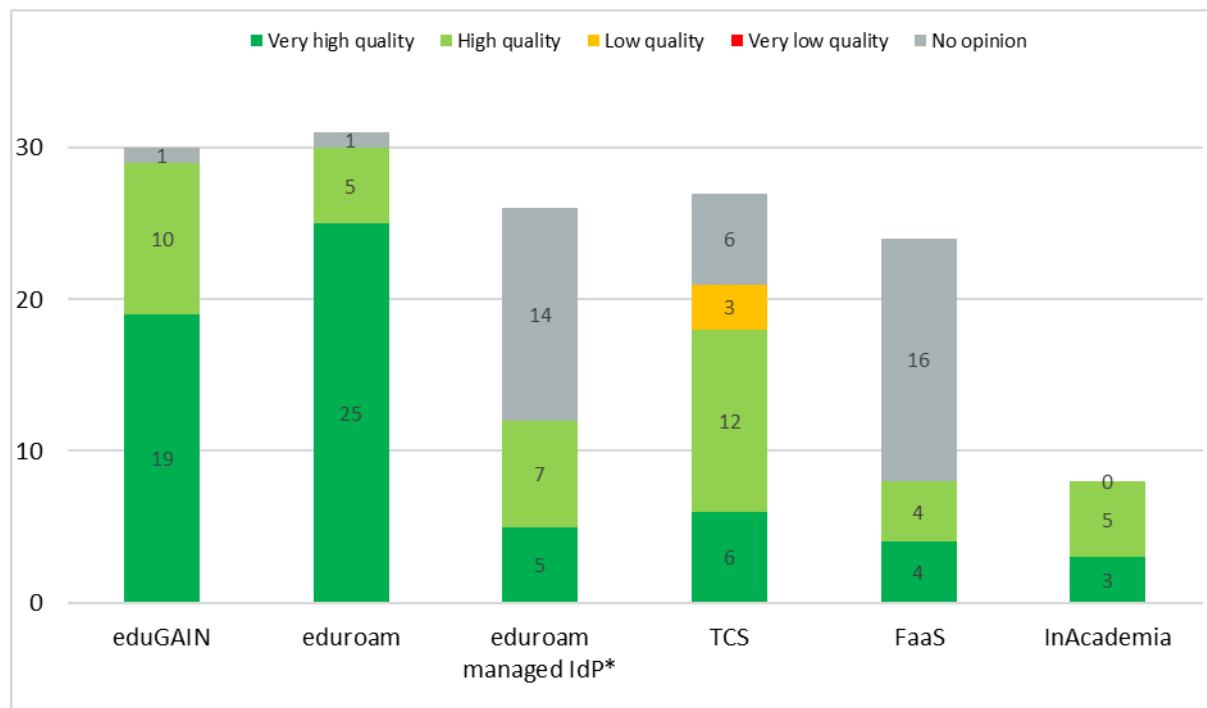


Figure 4.12: Perceived quality of T&amp;I services

#### 4.4.4 Security Services

	Firewall on Demand (FoD)	DDoS (Cleansing & Alerting)	Anomaly Alerting
Usage	17	11	10
Very important + important	16	17	15
Very high quality + high quality	18	10	11

Table 4.4: Correlation between usage, importance and perceived quality for security services

Among security services, usage and importance (and quality) are only well correlated for Firewall on Demand (FoD); both Distributed Denial of Service (DDoS) mitigation and Anomaly Alerting are considered important by far more NRENs than are claiming to use them. This is likely due to the general feeling that security is of growing importance, which was apparent in the comments that NRENs left throughout the survey (see Section 4.6 and Table A.39).

As with other services, the perceived quality of the security services is high (80% or more). Nevertheless, each of the three security services was given a negative rating by one NREN: FoD and DDoS a “low quality” (by KIFÜ and GRNET, respectively) and Anomaly Alerting even a “Very low quality” (by GARR).

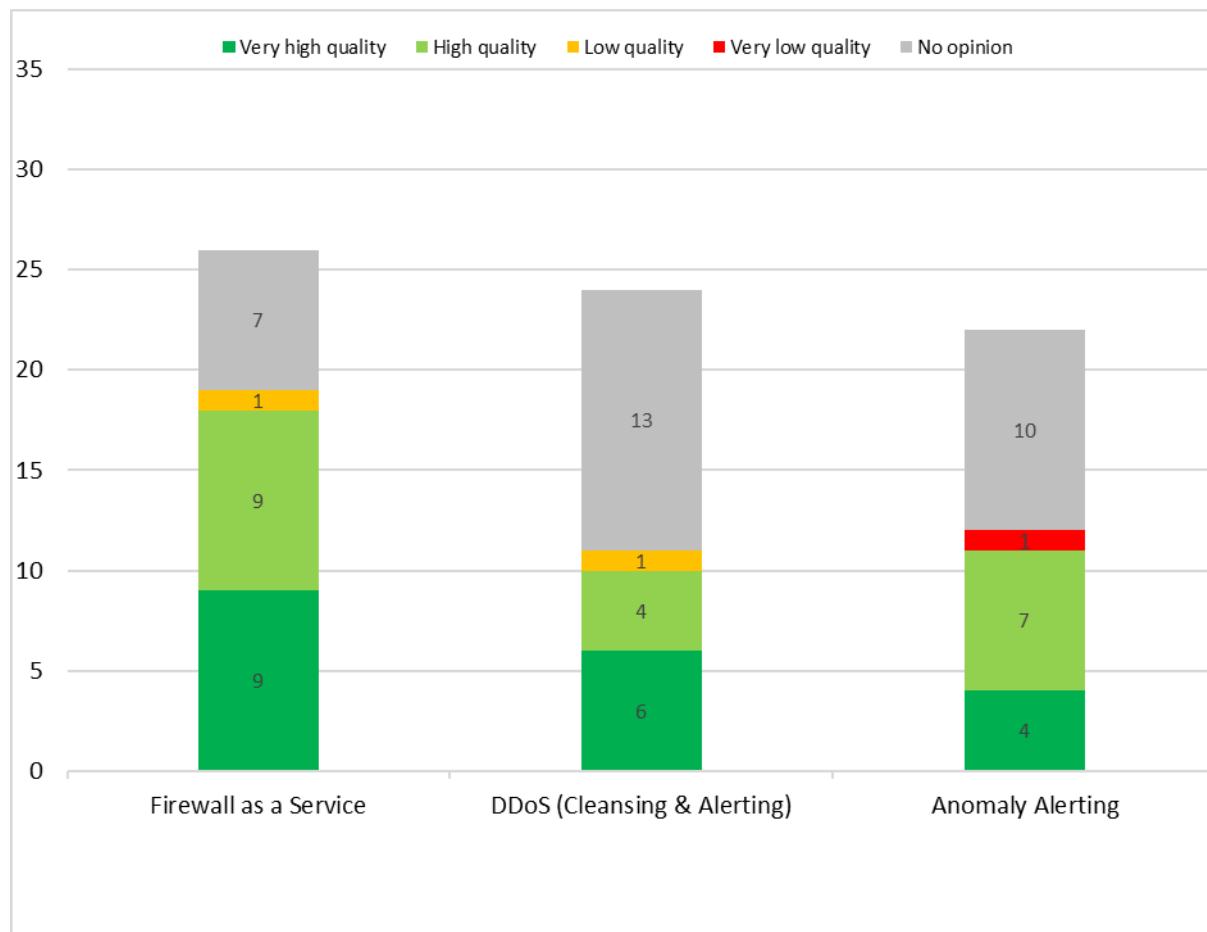


Figure 4.13: Perceived quality of GÉANT's security services

#### 4.4.5 Cloud Services

	GÉANT Cloud Portfolio (frameworks, preferential quotations, etc.)	Cloud Support Provided by GÉANT (forums, communication material, training, etc.)
Usage	17	20
Very important + important	14	16
Very high quality + high quality	15	15

Table 4.5: Correlation between usage, importance and perceived quality for cloud services

In the case of cloud services, the correlation between usage and importance is not as close as with most other services (Table 4.5). The cloud portfolio is dominated by the Open Clouds for Research Environments (OCRE) cloud service procurement framework in which almost all GÉANT members participate. However, not all NRENs actively promote the use of the framework among their users (which explains the modest number of only 17 NRENs claiming to use it). Also, while widely available,

OCRE is not used for cloud consumption in all member countries.<sup>5</sup> Again, the perceived quality was high among the users (with one “low quality” rating by KIFÜ). The cloud support “service” comprises a number of different information offers and forums targeted mostly at the cloud specialists within an NREN, which makes it difficult to track its use, and the usage numbers resulting from the survey clearly underestimate the true usage. Despite this under-reporting issue, the service is mostly judged positively (with one “low quality” rating by CESNET). For more details, see Figure 4.14.

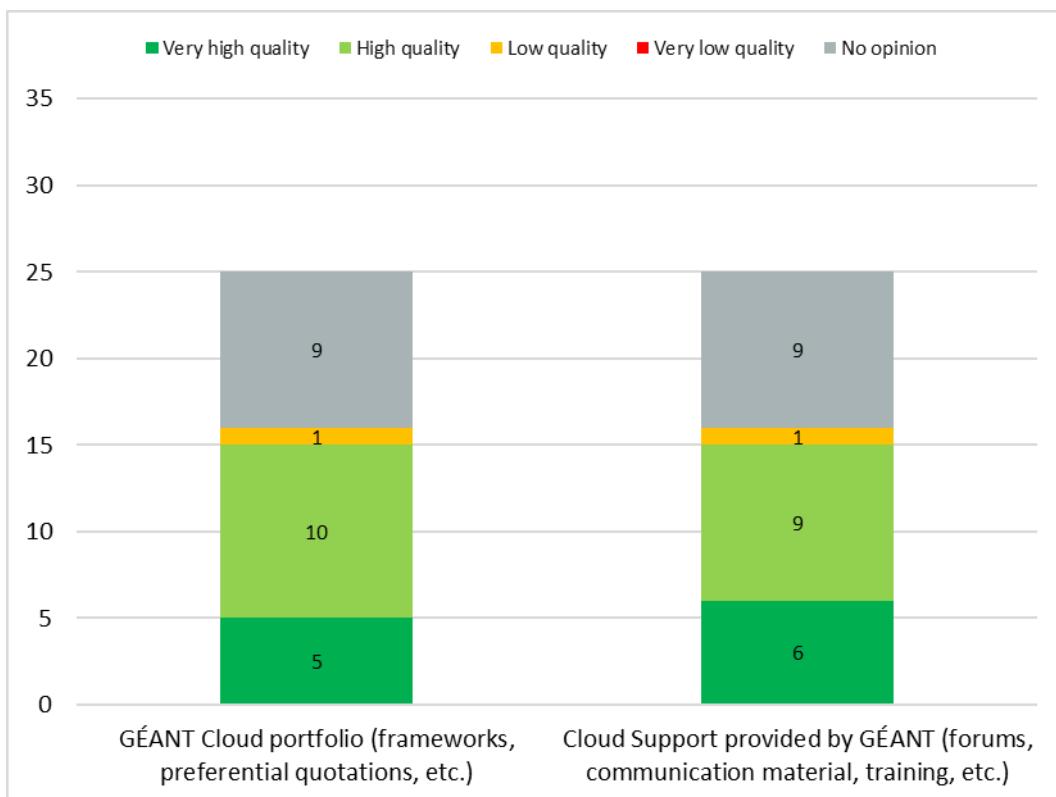


Figure 4.14: Perceived quality of cloud services

#### 4.4.6 Procurement

Procurement support has long been part of GÉANT’s portfolio, leveraging the large number of potential customers the NRENs constitute to achieve better conditions with providers in a number of different areas. Indeed some of the services GÉANT provides to the NRENs are based on such procurement schemes, e.g. GÉANT World Service (GWS) and Trusted Certificate Service (TCS). Other procurement frameworks that allow NRENs (or NRENs’ users) to procure at preferential conditions are the OCRE/IaaS+ framework for cloud services and a framework to procure network equipment.

---

<sup>5</sup> According to the 2021 Compendium, cloud consumption through OCRE occurred in 23 countries in 2021. In general, the responses to the cloud services section of the survey demonstrate the pitfalls of trusting only the survey data: in the survey, both LITNET and CyNET, the Lithuanian and Cypriot NRENs, respectively, replied that they did not use the GÉANT cloud portfolio, whereas the OCRE team knows that LITNET and CyNET do make use of the framework. In both cases the likely reason for this omission is that the person charged with the survey on the NRENs’ side was not involved in the cloud procurement project.

Questions about procurement have been included in the Service Portfolio subject area since the 2021 Satisfaction Survey. These questions, however, were different from the questions about the other services as procurement is a series of individual efforts rather than a continuous service. With satisfaction with GÉANT's procurement activities as a whole being part of Q3 (see Section 4.1.1 of this document), the objective of the procurement questions in the Service Portfolio subject area was to get feedback about where GÉANT should focus its procurement efforts in the near future, with five options to choose from. The results are shown in Figure 4.15 below. Five NRENs claimed not to use GÉANT's procurement services. This is mostly due to national regulations clashing with the terms of the procurement schemes and mostly affects NRENs from non-EU countries. Among the other answer options, most NRENs (13) were in favour of setting up a joint body between NRENs and GÉANT to discuss procurement topics, and 9 would like to see GÉANT organise software procurements.

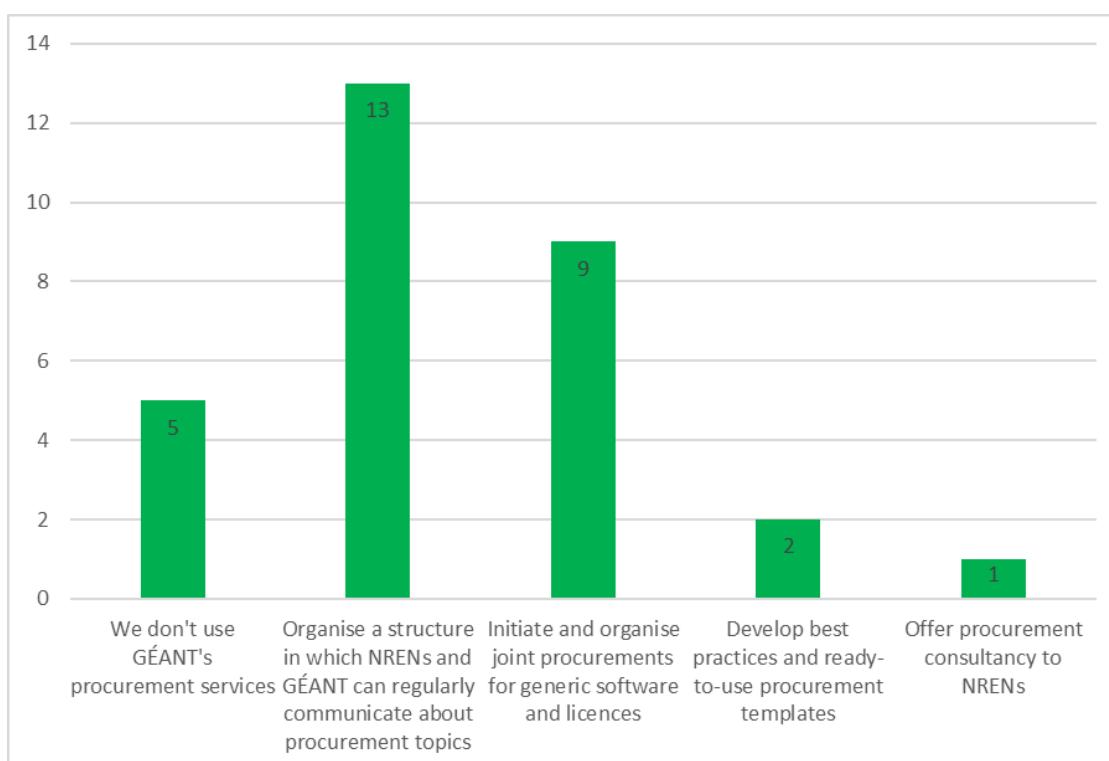


Figure 4.15: Where would NRENs like to see GÉANT focusing its procurement efforts?

#### 4.4.7 Software Packages

Software Package	Questions
eduMEET	
eduVPN	Do you use this software to provide services to your users?
Filesender	How do you rate the quality of the software?
WiFiMon	Do institutions among your users use the software to offer services?

Table 4.6: Software packages and questions asked

	eduMEET	eduVPN	Filesender	WiFiMon
Usage	11	13	22	2
Very high quality + high quality	7	11	23	3

Table 4.7: Correlation between usage and perceived quality for software packages

The software packages, which at different points in time arose from the GÉANT projects, are free software and can be used by anyone. They are therefore not a service in the proper sense but as they are to various degrees promoted and supported by GÉANT within the framework of the GN4 project, the Satisfaction Survey asked about their usage among NRENs. The four software packages are not equally suited to the needs of NRENs and they all compete with commercial offers. WiFiMon in particular is more targeted to sites that connect huge numbers of users via Wi-Fi, such as university campuses, rather than small or mid-sized offices such as an NREN. The low adoption rate of WiFiMon among NRENs is therefore not particularly surprising and no indication of a failing (or success) of the software in the marketplace<sup>6</sup>. eduMEET (videoconferencing) and eduVPN are relatively recent additions to GÉANT's portfolio, and against this background their adoption by 11 and 13 NRENs respectively is a good sign. However, especially for eduMEET, quality seems to be a bit of an issue (though only one NREN explicitly ranked eduMEET as "low quality"). The Filesender software package enables the transfer of very large files, which is a common application in science. Its common use by NRENs to provide a service to their users is therefore not surprising and, as the oldest software package of the four, its high quality ranking likely also reflects a certain maturity of the software. The perceived quality of all software packages is shown in Figure 4.16.

---

<sup>6</sup> In an attempt to explore the usage of the software packages among institutions, the question "Do institutions among your users use the software to offer services?" was added to the survey in 2022. However, by far the most prevalent answer for WiFiMon was "We don't know" (13 of 23 respondents), so not much information was gained.

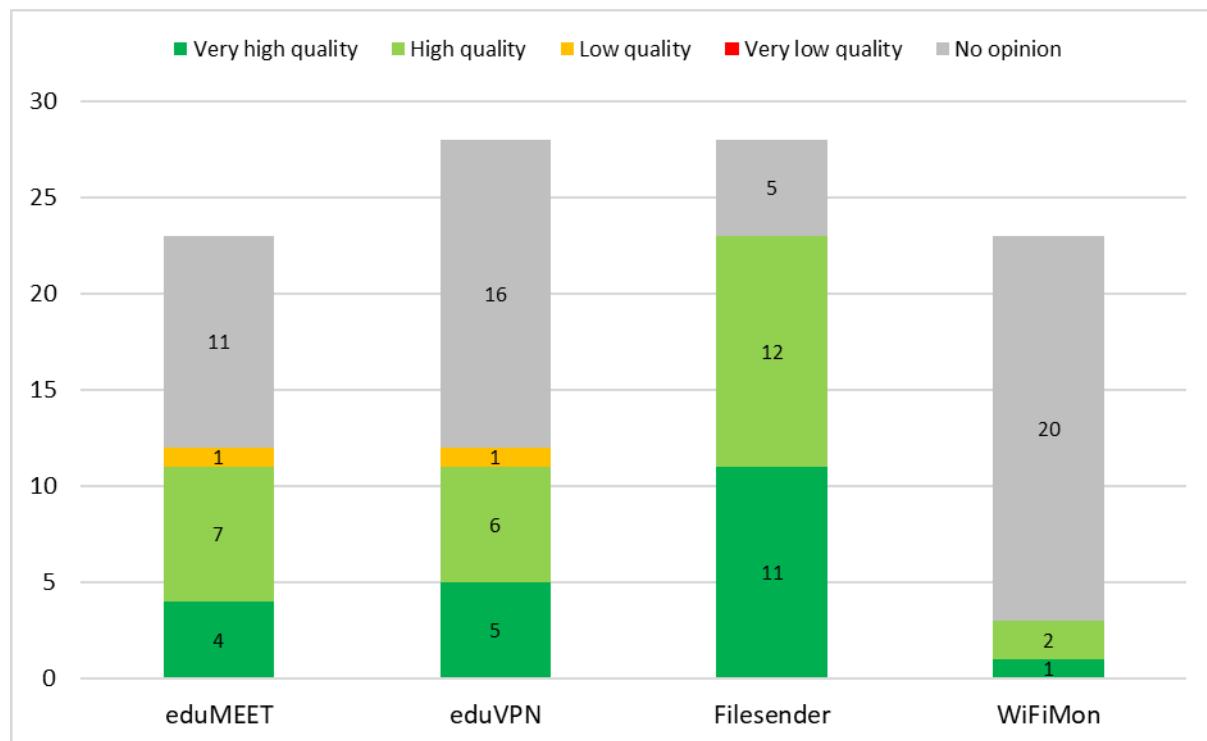


Figure 4.16: Perceived quality of software packages promoted by GÉANT

#### 4.4.8 Services Summary

Overall, the feedback on services was very positive, especially with regard to perceived quality: when all 365 responses about the quality of services are summarised, this paints a very positive picture (Figure 4.17).

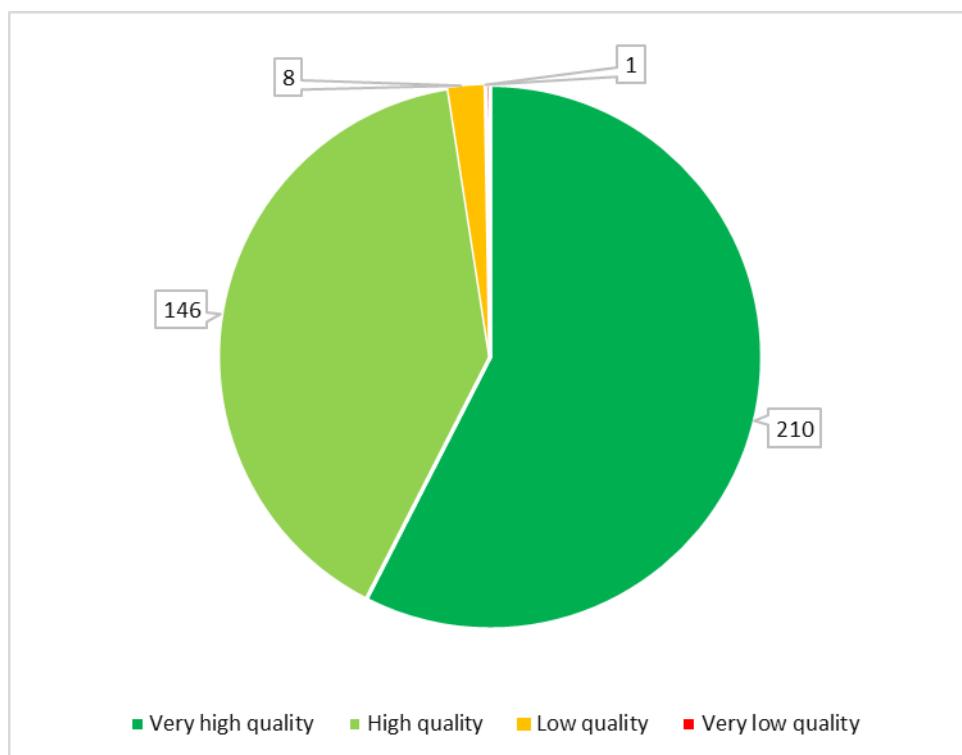


Figure 4.17: Perceived quality of all services. For this figure, all responses about the perceived quality of all services were added together.

The picture is similarly positive when the responses for the individual service areas (network-based, T&I, security and software are counted, as shown in Table 4.8.

Service Area	Positive Responses	Negative Responses	Number of Services
Network	164	1	13
T&I	107	3	6
Security	39	3	3
Software	48	2	4
Overall	358	9	26

Table 4.8: Perceived quality by service area. “High quality” and “very high quality” were collapsed into Positive responses, and “low quality” and “very low quality” into Negative responses.

## 4.5 Collaboration and Community Activities

GÉANT organises and maintains a number of events and collaborative groups. For GÉANT’s members, these groups provide a forum to spread knowledge and discuss and plan the needs of the research and education community.

Three questions were included to gauge the NRENs' level of participation in these initiatives, the importance they hold for NRENs and the perceived quality of the events/meetings.

The activities and events rated were:

- Task Forces (TFs) / Special Interest Groups (SIGs).
- The Networking Conference (TNC).
- Infoshares/webinars.
- STF meetings.
- Spotlight events.<sup>7</sup>
- Chief Technology Office (CTO) workshops / Roadmap workshops.

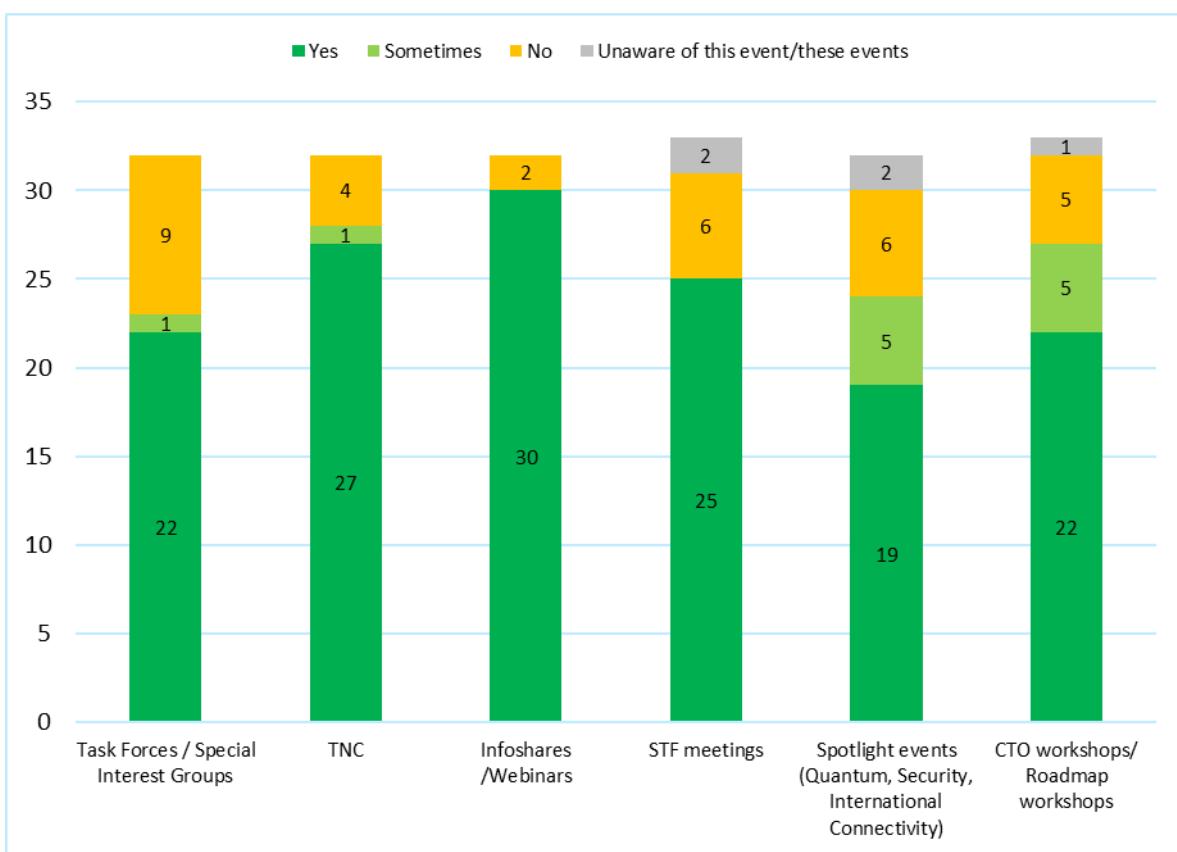


Figure 4.18: Participation in collaboration and community activities

Participation levels have remained at comparable levels for the events present in the 2019, 2021 and 2022 surveys (TFs/SIGs, infoshares, STF meetings). TNC was cancelled in 2019 and was a virtual event in 2020, which makes comparisons difficult. Spotlight events and CTO/Roadmap workshops are formats that have only been used in 2021/2022.

<sup>7</sup> Spotlight events and CTO/Roadmap workshops were only introduced in 2021, while the other group/event formats have a longer history, some of them going back decades (e.g. TNC, Task Forces / Special Interest Groups).

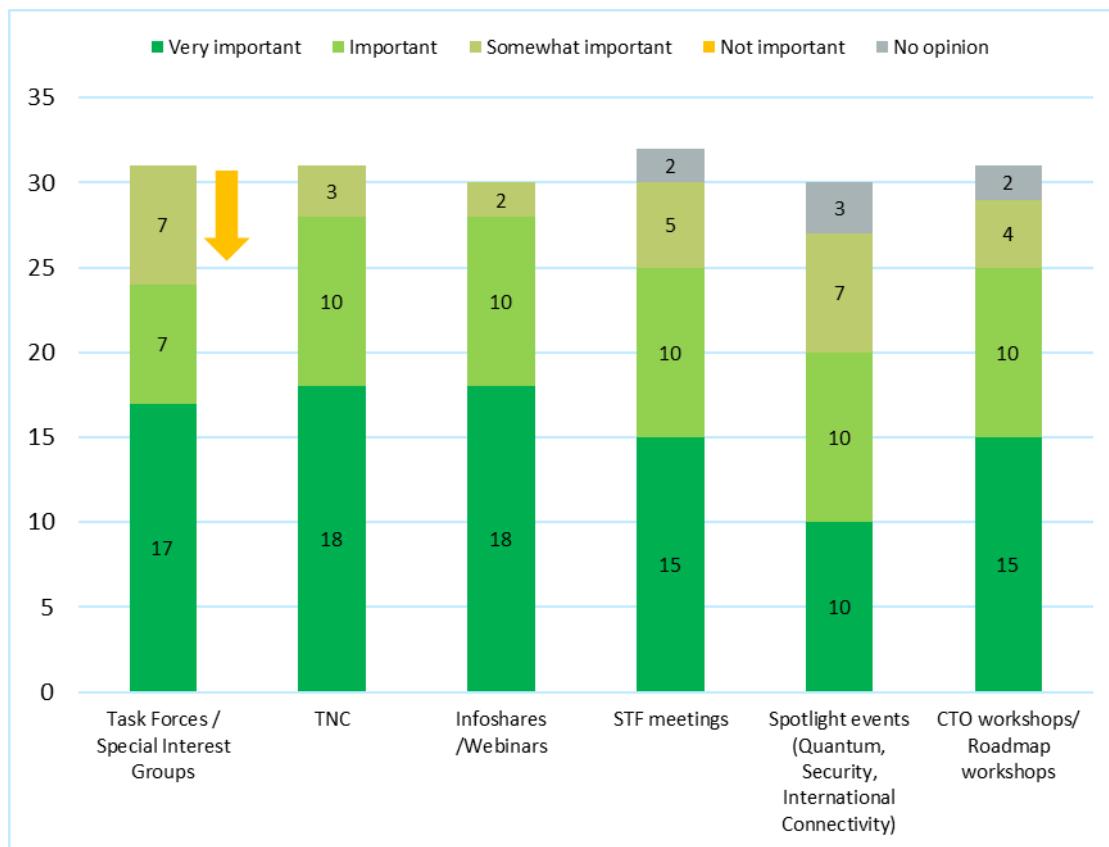


Figure 4.19: Importance of collaboration and community activities

Importance levels are fairly high for all event classes. Even the lowest-ranking Spotlight events received a combined “very important” + “important” score of more than 70%, while TNC ranked highest with 90%.

For most events, the importance has remained at similar levels across the three surveys, with the exception of TFs/SIGs, which have seen a slight downward trend in importance since 2019. Most likely this is an effect of the COVID-19 pandemic: because of travel restrictions, TF/SIG meetings were held as virtual events, which meant they lacked some of the personal-contact aspects that usually contribute to their perceived importance.

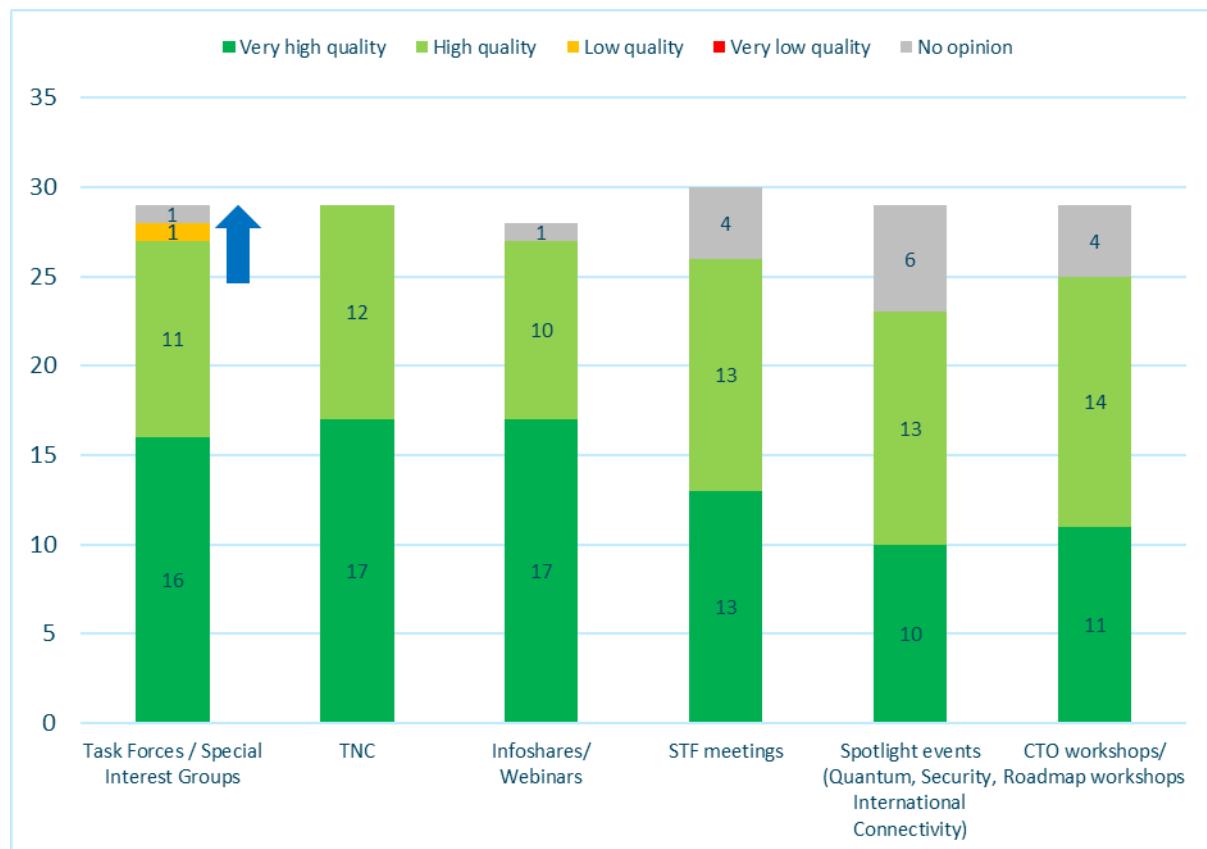


Figure 4.20: Perceived quality of collaboration and community activities

Generally, all event classes were rated highly, the lowest-ranking Spotlight events receiving a combined “very high quality” + “high quality” ranking of 78%, with all other categories scoring 80% or better. The relatively low scores of the lowest-ranking events (Spotlight events and CTO/Roadmap workshops) probably reflects that these were also the most recently added categories.

Similar to participation and importance scores, perceived quality levels have seen little change over the three surveys since 2019, with the notable exception of TFs/SIGs, where the perceived quality has gone up (in contrast to their perceived importance).

## 4.6 Comments

Most questions in the Satisfaction Survey gave the option to leave free-text comments in addition to the response scales, and three questions (Q13, Q24 and Q27) were free-text-only questions. Comments provide valuable additional information when talking to NRENs but they are also helpful when analysing survey results. While comments are of course related to the questions where they were given, they often give insight beyond the confines of the question, which makes it worthwhile to analyse them in their own right. To do so, all comments were collected and categorised, using three categories: general tendency, field and specifics (see Table 4.9). A list of all comments and their categorisation is provided in Appendix A.6.

Category	Description	Possible Values
General tendency	Whether the comment was positive, negative or explanatory	Critical, Positive, Qualifier, Suggestion
Field	Which subject matter or field of activity the comment was about	Services, Network, Security, Strategy, Procurement, Technology adoption, Cloud, Community, Communication, Satisfaction survey, General, Decision making, pan-European research organisations, Transparency, Project management, Network operations
Specifics	More specific information, e.g. individual service or activity the comment was about (not assigned for all comments)	General, Security, GA, International, Services, Partner Relations, Case-specific, perfSONAR & PMP, Network services, NMaaS & PMP, MD-VPN, MS ExpressRoute, Peering, Spectrum, InAcademia, TCS, eduGAIN, eduGAIN & eduroam, FaaS & managed IdP, T&I, IaaS+, NSHaRP, Community clouds

Table 4.9: Categories used in the analysis of comments. A list of all comments with the question they came from and their categorisation can be found in Appendix A.6.

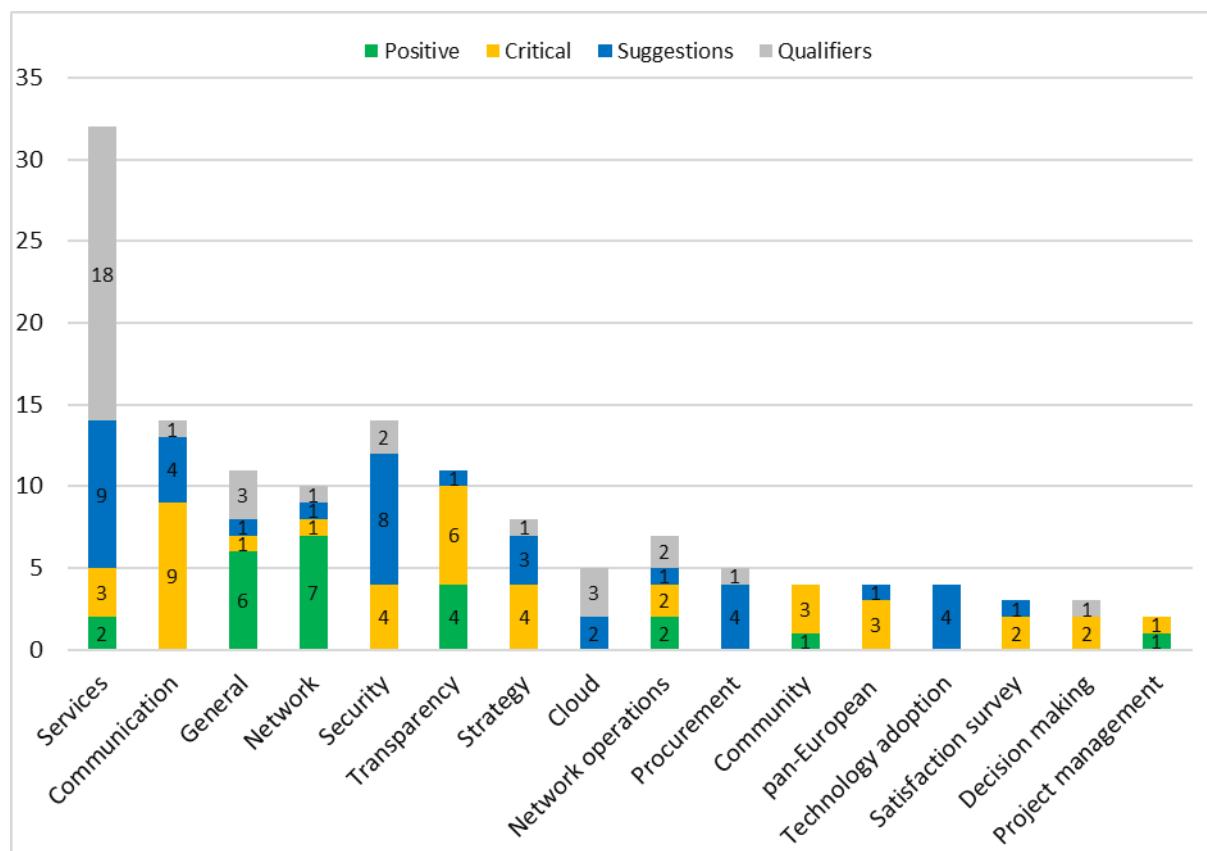


Figure 4.21: Overview of comments provided by NRENs across the survey. In total, NRENs left 134 separate comments. In this figure, comments are plotted over the different subjects they were about and marked by whether they were positive, critical, suggestions or qualifiers of responses.

Thematically, the comments covered most areas of the survey (Figure 4.21). As could be expected, most comments related to subjects that had survey sections dedicated to them, with the number of comments also reflecting the size of the section, as demonstrated by the comments on services, the largest section of the survey. Most interesting were comments on areas that were not directly invoked by questions. These were security, communication and transparency (discussed below).

While most comments (40) were suggestions and 33 comments were qualifiers, 23 of these could be characterised as positive and 41 as critical. GÉANT's network was the single most praised subject (7 comments); the only other subject that attracted more than a couple of positive comments was transparency within the GÉANT community (4 comments). Criticisms were more equally distributed, though interestingly, the leading targets were communication (9 comments) and transparency (6 comments).

A closer look at the comments critical about transparency and communication reveals that the criticism does not indicate a general, systematic problem with transparency or communication channels, as the comments were all pointing at different, usually quite specific issues. However, this emphasises that communication and information flow are critical within the community and are an area that needs constant attention – glitches are quickly noticed as potentially problematic.

Finally, security is notable for being commented on often, while being the explicit subject of relatively few questions. Almost all of these comments were suggestions, which suggests that security is considered an important area within the community (but not indicating a particular deficit within GÉANT).

While insights from comments are interesting and valuable, it is necessary to keep in mind that qualitative data carry inherent biases. Not all respondents leave comments – in the 2022 survey, 23 out of 33 NRENs did – and 50% of all comments were provided by just 6 NRENs, so there is considerable bias in the comments towards a subset of NRENs. Also, while this seems trivial, comments are generally given where the option to do so is specifically provided, so this inherently creates a bias towards subjects on which a lot of questions are asked: as mentioned above, services as the largest section received most comments. For the same reason it was notable that security was frequently invoked as a concern despite not having a dedicated place in the survey assigned to comments.

## 5 Conclusions

Satisfaction continues to be stable at a high level across all areas that the survey covered: organisation, project, network and network operation, services and community activities. This has generally been true for the last three Satisfaction Surveys. Despite the high general level of satisfaction, in 16 cases a trend across the three last surveys could be identified, the majority of them (13) positive changes; of these, 10 concerned GÉANT activities, i.e. project work and GÉANT's functions.

Specific highlights among the survey results include:

- The GPPC role in GN5-1 FPA preparation was valued. This question was added to the 2022 survey to gauge the effectiveness of changed, more inclusive procedures for preparing the FPA.
- Increased confidence in GÉANT to provide value to its members. All the ratings were either excellent or good, without any of the below average, poor or no opinion responses received in the last two surveys.
- GÉANT's activities in promoting the community to the EC are considered to be excellent by a high proportion of members. This is especially important with regard to supporting pan-EU strategic topics (the "Big 5": HPC, Quantum, Intercontinental, GNx, EOSC).
- Satisfaction with GA effectiveness has improved for three consecutive surveys, rewarding the ongoing efforts to respond to repeated criticism.
- The number, range and quality of comments indicate active engagement despite the lower response rate.

Key takeaways from the survey include the following:

- While the critical comments about transparency and communication with and within the community are clearly no indication of a systematic problem in this area, they are an important reminder that information flow needs constant attention.
- To reduce the survey load on NRENs, the Satisfaction Survey will be carried out every other year in future. In addition, the timing of the surveys will take holiday seasons into closer account. Both measures should help increase the survey response rate.

Actions taken as a consequence of the 2022 survey include:

- Bilateral follow-up meetings held with members who participated in the survey to qualify their feedback.
- Follow-up contact made with non-responding NRENs to enquire about their reasons for not participating.
- Feedback relating to services has been shared with the respective service teams.

While the results show that GÉANT's members are mainly satisfied in all areas covered by the survey, GÉANT operates in a dynamic environment where change is a constant. This means that the needs and views of the GÉANT community must be regularly monitored and taken into account; among the many tools used to do so, the Satisfaction Survey remains one of the most valuable.

## Appendix A Survey Response Details

This appendix gives the details behind the graphs in Section 4. It shows the number of responses received for each option within a question, including, where appropriate, “No opinion” or “Not applicable”. In some cases (e.g. Q10), it also restates the total number of respondents who answered the question (“n”).

The questionnaire also contained three questions (Q13, Q24, Q27) that asked for free-text answers. The responses to these questions are listed in the Comments section of the appendix (A.6), together with comments from other questions.

## A.1 GÉANT Organisation

### A.1.1 Q3. Please rate the following key activities of the GÉANT organisation – Importance

Activity	Year	Very important	Important	Somewhat important	Not important	N/A	Total (Excl. N/A)
Managing the GÉANT (GN4-3 & GN4-3N) project	2021	29	7	1	0	0	37
	2022	22	10	0	0	1	33
Operating the GÉANT network and providing network services	2019	33	5	2	0	0	40
	2021	34	3	0	0	0	37
	2022	30	3	0	0	0	33
Managing regional projects (e.g. AfricaConnect, EaPConnect)	2019	11	10	13	2	4	36
	2021	12	8	10	5	2	37
	2022	12	8	7	1	5	33
Organising community knowledge-sharing events and training (e.g. TNC, REFEDS)	2019	21	17	1	0	1	39
	2021	24	12	1	0	0	37
	2022	21	11	0	1	0	33
Providing Middleware / AAI services	2019	24	12	0	1	2	37
	2021	25	10	0	1	1	37
	2022	25	3	2	1	2	33
Running Task Forces and Special Interest Groups	2019	21	15	3	0	1	39
	2021	21	13	3	0	0	37
	2022	17	16	0	0	0	33
Procurement support (e.g. cloud services, network equipment)	2021	9	19	7	0	1	36
	2022	9	14	5	2	3	33
NREN coordination meetings (e.g. EOSC projects, EuroHPC)	2021	13	17	5	0	2	37
	2022	23	6	3	0	1	33
Market communication (GÉANT website, CONNECT magazine and website, social media activity, etc.)	2022	13	15	4	0	0	32

Table A.1: Importance of GÉANT organisation key activities 2019–2022

### A.1.2 Q3. Please rate the following key activities of the GÉANT organisation – Satisfaction

Activity	Year	Very satisfied	Satisfied	Dissatisfied	Very dissatisfied	N/A	Total (Excl. N/A)
Managing the GÉANT (GN4-3 & GN4-3N) project	2019	13	21	2	1	2	37
	2021	20	14	1	0	1	36
	2022	21	11	0	0	1	33
Operating the GÉANT network and providing network services	2019	19	20	0	0	1	39
	2021	26	10	0	0	1	37
	2022	25	8	0	0	0	33
Managing regional projects (e.g. AfricaConnect, EaPConnect)	2019	11	16	2	0	10	29
	2021	10	15	2	0	9	36
	2022	12	16	0	0	3	31
Organising community knowledge-sharing events and training (e.g. TNC, REFEDS)	2019	21	17	1	0	1	39
	2021	13	24	0	0	0	37
	2022	15	17	0	0	1	33
Providing Middleware / AAI services	2019	13	23	1	0	1	37
	2021	13	21	0	0	3	37
	2022	12	17	0	0	3	32
Running Task Forces and Special Interest Groups	2019	21	15	3	0	1	39
	2021	8	28	0	0	1	37
	2022	8	25	0	0	0	33
Procurement support (e.g. cloud services, network equipment)	2021	6	24	2	0	4	36
	2022	7	17	2	0	6	32
NREN coordination meetings (e.g. EOSC projects, EuroHPC)	2021	9	23	1	0	4	37
	2022	13	17	0	0	2	32
Market communication (GÉANT website, CONNECT magazine and website, social media activity, etc.)	2022	13	18	1	0	0	32

Table A.2: Satisfaction with GÉANT organisation activities 2019–2022

### A.1.3 Q4. How confident are you in GÉANT's ability to serve its members in the best possible way?

Confidence	Response count		
	2019	2021	2022
Very confident	16	13	20
Confident	20	24	13
Not very confident	3	0	0
Not confident at all	0	0	0
No opinion	1	0	0
<b>Total</b>	<b>40</b>	<b>37</b>	<b>33</b>

Table A.3: Confidence in GÉANT's ability to serve its members 2019–2022

#### A.1.4 Q5: How would you rate the following:

Function	Year	Excellent	Good	Below average	Poor	No opinion	Total (Excl. no opinion)
The value for money represented by GÉANT?	2019	9	24	3	1	2	37
	2021	9	25	3	0	0	37
	2022	16	17	0	0	0	33
GÉANT's performance promoting the interests of Research and Education networking to the European Commission?	2019	24	11	4	0	0	39
	2021	22	13	0	0	2	35
	2022	25	8	0	0	0	33
GÉANT's performance promoting the interests of GÉANT NRENs internationally/with global regional partners?	2019	11	23	3	0	2	37
	2021	12	21	2	0	2	35
	2022	20	12	1	0	0	33
The effectiveness of General Assembly meetings as the main membership decision making forum?	2019	6	22	9	1	1	38
	2021	9	22	3	2	1	36
	2022	15	15	1	0	2	31
Your experience with GÉANT's invoicing and billing process?	2019	15	18	2	0	4	35
	2021	18	17	0	0	2	35
	2022	22	9	0	0	1	31
Transparency of financial streams and the cost sharing mechanism?	2021	12	18	0	5	2	35
	2022	20	11	2	0	0	33
GÉANT's performance in keeping you informed of our services and activities?	2019	10	24	5	0	0	39
	2021	21	14	1	1	0	37
	2022	20	9	3	0	1	32
Engagement with International research organisations (ESA, CERN EUMETSAT, etc.)	2022	14	15	2	0	2	31

Table A.4: Rating of primary GÉANT functions 2019–2022

### A.1.5 Q6. How satisfied were you with the following in the interactions with GÉANT?

Aspect	Year	Very satisfied	Satisfied	Dissatisfied	Very dissatisfied	N/A	Total (Excl. N/A)
The ease of getting in touch with the right person at GÉANT?	2019	22	16	1	0	0	39
	2021	26	9	1	0	1	37
	2022	22	11	0	0	0	33
The responsiveness of GÉANT staff to your questions / concerns?	2019	19	18	2	0	0	39
	2021	25	12	0	0	0	37
	2022	24	8	0	0	0	32
The level of knowledge of our staff?	2019	25	13	1	0	0	39
	2021	25	11	0	0	1	37
	2022	19	12	1	0	0	32
GÉANT's online communication and coordination tools (intranet, wiki, GÉANT Tools Portal, GÉANT Partner Portal, Ticket systems ...)?	2021	14	19	3	0	1	37
	2022	14	17	2	0	0	33
The availability of the GÉANT CEO to discuss important topics?	2021	25	8	0	0	4	37
	2022	25	7	0	0	1	33

Table A.5: Satisfaction with GÉANT interactions 2019–2022

## A.2 GÉANT Project

### A.2.1 Q7. How would you rate the following relating to the GÉANT (GN4-3/GN4-3N) project?

Aspect	Year	Excellent	Good	Below average	Poor	No opinion	Total
The overall project management?	2019	15	19	2	0	2	38
	2021	23	13	1	0	0	37
	2022	24	8	0	0	1	33
The level of transparency of activity planning in the annual project work plan?	2019	9	24	4	0	1	38
	2021	14	17	3	1	2	37
	2022	16	13	2	0	2	33
The level of financial transparency?	2021	14	17	3	0	3	37
	2022	17	10	3	0	3	33
Project administration (e.g. meetings, documents, reporting)?	2019	15	21	1	0	1	38
	2021	19	15	1	0	2	37
	2022	21	10	0	0	2	33
Project communication (e.g. news, bulletins, information on activities)?	2019	14	18	4	0	2	38
	2021	21	13	1	0	2	37
	2022	20	11	0	0	2	33
Coordination of pan-European user groups / projects on behalf of NRENs (e.g. EUMETSAT, LHCONET)?	2019	5	11	9	0	13	38
	2021	7	10	7	0	13	37
	2022	10	11	4	0	8	33
The GÉANT Partner Relations team as the main point of contact for NREN liaison and support?	2019	14	12	5	0	5	36
	2021	26	8	1	0	2	37
	2022	23	8	0	0	2	33
Interactions of the GPPC and GÉANT staff in preparing the GN5 FPA?	2022	17	12	0	0	4	33

Table A.6: Satisfaction with the management of the GÉANT project 2019–2022

## A.3 GÉANT Network and Network Operation

### A.3.1 Q8. How would you rate the following relating to the GÉANT network?

Aspect	Year	Excellent	Good	Below average	Poor	No opinion	Total (Excl. no opinion)
The overall performance and reliability of the GÉANT network?	2019	30	9	0	0	0	39
	2021	33	4	0	0	0	37
	2022	26	6	0	0	1	32
The operation and management of the GÉANT network?	2019	24	14	1	0	0	39
	2021	28	8	0	0	1	36
	2022	25	8	0	0	0	33
GÉANT connectivity with global R+E networks (e.g. Internet2, TEIN)?	2019	24	13	0	0	2	37
	2021	21	12	0	0	4	33
	2022	19	10	0	0	4	29
The GÉANT Service and Technology Forum for APMs (STF) to receive and share information?	2019	15	19	0	0	5	34
	2021	17	13	0	0	7	30
	2022	15	13	0	0	5	28
The ability of the GÉANT Operations Centre to respond to technical issues?	2019	16	17	3	0	3	36
	2021	19	13	0	0	5	32
	2022	20	10	0	0	3	30

Table A.7: Rating of the GÉANT network 2019–2022

### A.3.2 Q9: Thinking about your last interaction with the GÉANT Operations Centre ...

Question	Year	Yes	No	N/A	Total (Excl. N/A)
Have you logged an issue with the GÉANT Operations Centre in the last 12 months?	2019	24	9	5	33
	2021	23	7	6	30
	2022	23	4	6	27
Are issues resolved timely and satisfactorily?	2019	26	1	11	27
	2021	25	0	10	25
	2022	25	0	8	25
Is the communication while dealing with issues satisfactory?	2019	27	1	10	28
	2021	25	0	9	25
	2022	26	0	7	26

Table A.8: Rating of the GÉANT Operations Centre 2019–2022

### A.3.3 Q10: Did you request one or more new or upgraded services in the last 12 months?

Question	Year	Yes	No	Total
Did you request one or more new or upgraded services? (n=33)	2019	21	17	38
	2021	18	15	33
	2022	23	10	33

Table A.9: Service upgrades 2019–2022

### A.3.4 Q11. If you requested one or more new or upgraded services in the last 12 months, what is your view on:

Aspect	Year	Excellent	Good	Below average	Poor	No opinion	Total (Excl. no opinion)
The ability of GÉANT Operations to deliver the services/upgrades within your desired timeframe?	2019	5	15	0	1	0	21
	2021	13	5	0	0	1	18
	2022	16	8	0	0	3	24
The ability of GÉANT Operations to deliver the services/upgrades to your expected standard?	2019	12	10	0	0	0	22
	2021	12	6	0	0	1	18
	2022	18	6	0	0	3	24
The frequency, accuracy and helpfulness of communication and updates during the service provision?	2019	10	10	1	0	1	21
	2021	13	5	0	0	1	18
	2022	16	7	0	0	4	23

Table A.10: Perceived quality of service upgrades 2019–2022

### A.3.5 Q12. How would you rate... (Network security)

Aspect	Year	Excellent	Good	Below average	Poor	No opinion	Total (Excl. no opinion)
The security level of the GÉANT network?	2019	11	21	1	0	5	33
	2021	18	12	0	0	6	30
	2022	9	17	1	0	6	27
GÉANT CERT's handling of security incidents?	2019	9	13	1	0	16	23
	2021	11	9	0	0	16	20
	2022	8	10	2	0	13	20

Table A.11: Network security 2019–2022

## A.4 Services

### A.4.1 Q14. Regarding GÉANT's network-based services ... (1) (Usage)

Service	Year	Yes	No	Not aware of this service	Total
GÉANT IP	2019	33	3	1	37
	2021	31	3	0	34
	2022	30	2	0	32
GÉANT World Service	2019	19	13	4	36
	2021	19	13	2	34
	2022	18	11	3	32
GÉANT Peering	2019	23	11	2	36
	2021	26	8	0	34
	2022	24	8	0	32
GÉANT Lambda	2019	9	27	0	36
	2021	8	26	0	34
	2022	10	21	0	31
GÉANT Plus	2019	15	17	4	36
	2021	17	15	1	33
	2022	10	20	1	31
GÉANT Open	2019	4	26	6	36
	2021	4	28	2	34
	2022	4	26	0	30

Table A.12: Usage of GÉANT's network-based services 2019–2022 (1)

#### A.4.2 Q14. Regarding GÉANT's network-based services ... (1) (Importance)

Service	Year	Very important	Important	Somewhat important	Not important	No opinion	Total (Excl. no opinion)
GÉANT IP	2019	28	3	0	0	1	31
	2021	32	1	0	0	0	33
	2022	29	1	0	0	2	30
GÉANT World Service	2019	16	2	2	2	4	22
	2021	17	3	3	2	0	25
	2022	17	2	2	1	3	22
GÉANT Peering	2019	16	5	0	3	3	24
	2021	17	8	1	0	0	26
	2022	17	6	0	2	4	25
GÉANT Lambda	2019	9	5	4	1	7	19
	2021	6	6	0	1	0	13
	2022	5	7	2	0	6	14
GÉANT Plus	2016	4	7	2	0		13
	2017	2	9	2	1	14	14
	2018	13	6	1	3	10	23
GÉANT Plus	2019	7	5	2	1	9	15
	2021	10	6	2	0	0	18
	2022	7	4	2	3	7	16
GÉANT Open	2019	4	2	2	4	10	12
	2021	4	1	4	2	0	11
	2022	3	2	4	3	8	12

Table A.13: Importance of GÉANT's network-based services 2019–2022 (1)

### A.4.3 Q14. Regarding GÉANT's network-based services ... (1) (Perceived quality)

Service	Year	Very high quality	High quality	Low quality	Very low quality	No opinion	Total (Excl. no opinion)
GÉANT IP	2019	27	4	0	0	1	31
	2021	26	5	0	0	3	31
	2022	24	5	0	0	2	29
GÉANT World Service	2019	14	3	0	0	8	17
	2021	11	7	0	0	9	18
	2022	15	4	0	0	5	19
GÉANT Peering	2019	14	7	0	0	6	21
	2021	17	8	0	0	5	25
	2022	19	5	0	0	5	24
GÉANT Lambda	2019	11	3	0	0	11	14
	2021	5	4	0	0	13	9
	2022	6	3	0	0	11	9
GÉANT Plus	2019	8	2	0	0	12	10
	2021	9	8	0	0	7	17
	2022	8	3	0	0	12	11
GÉANT Open	2019	2	1	0	0	18	3
	2021	3	0	1	0	16	4
	2022	3	2	0	0	15	5

Table A.14: Perceived quality of GÉANT's network-based services 2019–2022 (1)

#### A.4.4 Q14. Regarding GÉANT's network-based services ... (2) (Usage)

Service	Year	Yes	No	Not aware of this service	Total
L3-VPN	2019	10	25	1	36
	2021	11	22	0	33
	2022	14	17	0	31
MD-VPN	2019	20	15	1	36
	2021	12	21	1	34
	2022	13	16	2	31
MS ExpressRoute	2022	8	20	2	30
perfSONAR	2019	25	11	1	37
	2021	24	10	0	34
	2022	20	11	0	31
perfSONAR consultancy and expertise service	2021	7	23	3	33
	2022	6	24	1	31
PMP	2021	14	13	7	34
	2022	10	20	1	31
NMaaS	2021	4	29	1	34
	2022	2	26	2	30

Table A.15: Usage of GÉANT's network-based services 2019–2022 (2)

#### A.4.5 Q14. Regarding GÉANT's network-based services ... (2) (Importance)

Service	Year	Very important	Important	Somewhat important	Not important	No opinion	Total (Excl. no opinion)
L3-VPN	2019	10	2	2	1	9	15
	2021	5	9	1	2	0	17
	2022	9	7	0	2	6	18
MD-VPN	2019	12	5	3	1	8	21
	2021	7	5	2	3	0	17
	2022	6	5	3	3	8	17
MS ExpressRoute	2022	5	3	3	2	8	13
perfSONAR	2019	6	13	5	3	2	27
	2021	5	11	8	2	0	26
	2022	5	9	8	2	6	24
perfSONAR consultancy /expertise service	2021	2	4	4	4	0	14
	2022	2	6	3	3	8	14
PMP	2021	2	8	3	0	0	13
	2022	0	6	4	3	11	13
NMaaS	2021	5	1	3	3	0	12
	2022	2	0	1	0	17	3

Table A.16: Importance of GÉANT's network-based services 2019–2022 (2)

#### A.4.6 Q14. Regarding GÉANT's network-based services ... (2) (Perceived quality)

Service	Year	Very high quality	High quality	Low quality	Very low quality	No opinion	Total (Excl. no opinion)
L3-VPN	2019	6	2	1	0	15	9
	2021	6	4	0	0	12	10
	2022	9	5	0	0	9	14
MD-VPN	2019	8	9	0	0	12	17
	2021	7	4	0	0	12	11
	2022	6	8	0	0	11	14
MS ExpressRoute	2022	2	5	0	0	14	7
perfSONAR	2019	5	14	1	1	8	21
	2021	5	14	1	0	8	20
	2022	7	10	0	0	11	17
perfSONAR consultancy /expertise service	2021	4	4	0	0	14	8
	2022	3	2	0	0	16	5
PMP	2021	3	6	0	0	13	9
	2022	4	4	0	0	16	8
NMaaS	2021	4	1	0	0	15	5
	2022	2	0	1	0	17	3

Table A.17: Perceived quality of GÉANT's network-based services 2019–2022 (2)

#### A.4.7 Q15. Regarding GÉANT's trust and identity services ... (Usage)

Service	Year	Yes	No	Not aware of this service	Total
eduGAIN	2019	35	2	0	37
	2021	34	2	0	36
	2022	30	2	0	32
eduroam	2019	38	0	0	38
	2021	35	1	0	36
	2022	31	1	0	32
eduroam managed IdP	2019	9	25	1	35
	2021	15	21	0	36
	2022	10	21	0	31
TCS	2019	27	7	1	35
	2021	24	11	1	36
	2022	22	8	0	30
FaaS	2019	4	28	3	35
	2021	4	27	2	33
	2022	7	19	3	29
InAcademia	2021	7	28	0	35
	2022	10	21	1	32

Table A.18: Usage of GÉANT's T&amp;I services 2019–2022

#### A.4.8 Q15. Regarding GÉANT's trust and identity services ... (Importance)

Service	Year	Very important	Important	Somewhat important	Not important	No opinion	Total (Excl. no opinion)
eduGAIN	2019	27	9	1	0	0	37
	2021	27	8	0	0	0	35
	2022	28	4	0	0	0	32
eduroam	2019	35	3	0	0	0	38
	2021	34	2	0	0	0	36
	2022	30	2	0	0	0	32
eduroam managed IdP	2019	3	10	2	6	7	21
	2021	9	3	5	5	0	22
	2022	6	6	5	5	6	22
TCS	2019	19	5	3	0	7	27
	2021	21	7	0	0	0	28
	2022	6	12	3	0	6	21
FaaS	2019	2	4	1	6	13	13
	2021	2	2	2	4	0	10
	2022	5	6	1	5	9	17
InAcademia	2021	1	8	8	2	0	19
	2022	4	10	5	2	6	21

Table A.19: Importance of GÉANT's T&amp;I services 2019–2022

#### A.4.9 Q15. Regarding GÉANT's trust and identity services ... (Perceived quality)

Service	Year	Very high quality	High quality	Low quality	Very low quality	No opinion	Total (Excl. no opinion)
eduGAIN	2019	18	18	1	0	0	37
	2021	23	11	0	0	1	34
	2022	19	10	0	0	1	29
eduroam	2019	28	9	1	0	0	38
	2021	30	5	0	0	1	35
	2022	25	5	0	0	1	30
eduroam managed IdP	2019	3	6	1	0	18	10
	2021	9	7	0	0	11	16
	2022	5	7	0	0	14	12
TCS	2016	12	9	1	1		23
	2017	13	14	1	0	5	28
	2018	15	16	0	0	11	31
TCS	2019	8	15	3	0	7	26
	2021	9	9	7	0	4	25
	2022	6	12	3	0	6	21
FaaS	2019	2	2	0	0	21	4
	2021	2	2	0	0	19	4
	2022	4	4	0	0	16	8
InAcademia	2021	2	6	0	0	18	8
	2022	3	5	0	0		8

Table A.20: Perceived quality of GÉANT's T&amp;I services 2019–2022

- A.4.10 Q16. InAcademia is an added-value service that aims to generate a new source of sustainability towards Trust & Identity services. For the NRENs that are not currently participating, on a scale of one to five (one being the lowest), how likely is it that your identity federation would refer national commercial use cases for registration to InAcademia?**

	1	2	3	4	5	Total (Excl. no opinion)
# of NRENs	1	5	4	3	6	19

Table A.21: Adoption likelihood of InAcademia

- A.4.11 Q17. Multi-national retail services currently operate inside the eduGAIN interfederation and have built commercial business models on the value they take from eduGAIN. Some identity federations have implemented new policies towards these retail services that result in InAcademia being their only option to access federated identities, thus requiring them to contribute to the cost of running the service. On a scale of one to five (one being the lowest), how likely is it that your identity federation would implement similar policies towards commercial/retail services that use eduGAIN for commercial gain?**

	1	2	3	4	5	Total (Excl. no opinion)
# of NRENs	5	3	8	4	4	24

Table A.22: InAcademia – policy adoption towards commercial services

**A.4.12 Q18. GÉANT NSHaRP is an Incident Response framework and a security services toolset which encompasses Firewall on Demand (FoD), DDoS (Cleansing & Alerting) and Anomaly Alerting. Does your NREN subscribe to any of the aforementioned services? If so, what are your experiences with these security services? (Usage)**

Service	Year	Yes	No	Not aware of this service	Total
Firewall as a Service	2019	4	28	3	35
	2021	19	14	1	34
	2022	17	12	1	30
DDoS (Cleansing & Alerting)	2021	11	21	1	33
	2022	11	18	1	30
Anomaly Alerting	2021	8	21	3	32
	2022	10	16	2	28

Table A.23: Usage of GÉANT's security services 2019–2022

**A.4.13 Q18. GÉANT NSHaRP is an Incident Response framework and a security services toolset which encompasses Firewall on Demand (FoD), DDoS (Cleansing & Alerting) and Anomaly Alerting. Does your NREN subscribe to any of the aforementioned services? If so, what are your experiences with these security services? (Importance)**

Service	Year	Very important	Important	Somewhat important	Not important	No opinion	Total (Excl. no opinion)
Firewall as a Service	2019	2	4	1	6	13	13
	2021	12	4	4	3	0	23
	2022	14	4	4	4	2	26
DDoS (Cleansing & Alerting)	2021	11	4	1	2	0	18
	2022	15	2	3	3	3	23
Anomaly Alerting	2021	8	3	4	2	0	17
	2022	12	3	3	4	2	22

Table A.24: : Importance of GÉANT's security services 2019–2022

**A.4.14 Q18. GÉANT NSHaRP is an Incident Response framework and a security services toolset which encompasses Firewall on Demand (FoD), DDoS (Cleansing & Alerting) and Anomaly Alerting. Does your NREN subscribe to any of the aforementioned services? If so, what are your experiences with these security services? (Perceived quality)**

Service	Year	Very high quality	High quality	Low quality	Very low quality	No opinion	Total (Excl. no opinion)
Firewall as a Service	2019	2	4	1	6	13	13
	2021	9	8	0	0	12	17
	2022	9	9	1	0	7	19
DDoS (Cleansing & Alerting)	2021	6	4	1	0	15	11
	2022	6	4	1	0	13	11
Anomaly Alerting	2021	4	4	0	0	15	8
	2022	4	7	0	1	10	12

Table A.25: Perceived quality of GÉANT's security services 2019–2022

#### A.4.15 Q19. Regarding the cloud services ... (Usage)

Service	Year	Yes	No	Not aware of this service	Total
GÉANT Cloud Portfolio (frameworks, preferential quotations, etc.)	2019	20	17	0	37
	2021	21	14	0	35
	2022	17	14	0	31
Cloud Support provided by GÉANT (forums, communication material, training, etc.)	2019	25	11	1	37
	2021	26	8	0	34
	2022	20	10	1	31

Table A.26: Usage of GÉANT's cloud services 2019–2022

#### A.4.16 Q19. Regarding the cloud services ... (Importance)

Service	Year	Very important	Important	Somewhat important	Not important	No opinion	Total
GÉANT Cloud Portfolio (frameworks, preferential quotations, etc.)	2019	7	12	6	2	5	32
	2021	8	15	2	0	0	25
	2022	7	7	8	1	3	26
Cloud Support provided by GÉANT (forums, communication material, training, etc.)	2019	11	11	4	0	6	32
	2021	9	13	5	0	0	27
	2022	8	8	5	1	4	26

Table A.27: Importance of GÉANT's cloud services 2019–2022

#### A.4.17 Q19. Regarding the cloud services ... (Perceived quality)

Service	Year	Very high quality	High quality	Low quality	Very low quality	No opinion	Total
GÉANT Cloud Portfolio (frameworks, preferential quotations, etc.)	2019	6	14	1	0	9	30
	2021	5	11	2	0	10	28
	2022	5	10	1	0	9	25
Cloud Support provided by GÉANT (forums, communication material, training, etc.)	2019	10	12	0	0	8	30
	2021	6	15	2	0	6	29
	2022	6	9	1	0	9	25

Table A.28: Perceived quality of GÉANT's cloud services 2019–2022

#### A.4.18 Q20. GÉANT promotes a number of software packages. Do you use these tools to provide services and how would you rate their quality? (Usage)

Service	Year	Yes	No	Not aware of this	Total
eduMEET	2021	9	25	0	34
	2022	11	20		31
eduVPN	2021	14	20	0	34
	2022	13	18		31
Filesender	2021	23	12	0	35
	2022	22	10		32
WiFiMon	2021	4	30	0	34
	2022	2	27		29

Table A.29: Usage of software packages 2021–2022

**A.4.19 Q20. GÉANT promotes a number of software packages. Do you use these tools to provide services and how would you rate their quality? (Perceived quality)**

Service	Year	Very high quality	High quality	Low quality	Very low quality	No opinion	Total (Excl. no opinion)
eduMEET	2021	3	6	2	0	16	11
	2022	4	7	1	0	11	12
eduVPN	2021	6	10	0	0	10	16
	2022	5	6	1	0	16	12
Filesender	2021	10	13	0	0	6	23
	2022	11	12	0	0	5	23
WiFiMon	2021	1	4	0	0	18	5
	2022	1	2	0	0	20	3

Table A.30: Perceived quality of software packages 2021–2022

**A.4.20 Q20. GÉANT promotes a number of software packages. Do institutions among your users use the software to offer services?**

Service	Year	Yes	No	We don't know	Total
eduMEET	2022	5	9	10	24
eduVPN	2022	7	8	13	28
Filesender	2022	12	8	8	28
WiFiMon	2022	1	9	13	23

Table A.31: Use of software packages by NRENs' users

**A.4.21 Q21. GÉANT procurement is an enabler for services such as TCS, GWS and the IaaS/OCRE frameworks. In which areas you would like to see GÉANT procurement focus its efforts?**

Year	We don't use GÉANT's procurement services	Organise a structure in which NRENs and GÉANT can regularly communicate about procurement topics	Initiate and organise joint procurements for generic software and licences	Develop best practices and ready-to-use procurement templates	Offer procurement consultancy to NRENs	Total
2022	5	13	9	2	1	30

Table A.32: Focus of GÉANT's procurement efforts

**A.4.22 Q22: What (if any) are your reasons to not use GÉANT's procurement services (multiple answers possible)?**

Year	We prefer to procure these services ourselves	We are not aware of these services	These services are not of interest for us	The services are too expensive	Other (please specify)	Total
2022	0	2	1	0	3	6

Table A.33: Reasons for not using GÉANT's procurement services

#### A.4.23 Q23. How does GÉANT's service portfolio overall meet your NREN's needs in terms of ...

Aspect	Year	Very good	Good	Badly	Very badly	No opinion	Total
Range of services?	2019						0
	2021	17	18	0	0	0	35
	2022	17	16	0	0	0	33

Aspect	Year	Very good	Good	Badly	Very badly	No opinion	Total
Quality of services?	2019						0
	2021	15	20	0	0	0	35
	2022	20	12	0	0	0	32

Table A.34: Range and perceived quality of GÉANT's service portfolio 2019–2022

## A.5 Collaboration and Community Activities

### A.5.1 Q25. Does your NREN attend or participate in the following events and activities, and how well do these events and activities meet your needs? (Participation)

Event / Activity	Year	Yes	Sometimes	No	Unaware of this event/these events	Total
Task Forces / Special Interest Groups	2019	23	9	4	0	36
	2021	27	3	6	0	36
	2022	22	1	9	0	32
TNC	2019	31	4	2	0	37
	2022	27	1	4	0	32
Infoshares/Webinars	2019	25	9	2	0	36
	2021	32	4	0	0	36
	2022	30	0	2	0	32
STF meetings	2019	22	9	1	4	32
	2021	25	6	4	0	35
	2022	25	0	6	2	31
Spotlight events (Quantum, Security, International Connectivity)	2022	19	5	6	2	30
CTO workshops/ Roadmap workshops	2022	22	5	5	1	32

Table A.35: Participation in GÉANT's community events 2019–2022

**A.5.2 Q25. Does your NREN attend or participate in the following events and activities, and how well do these events and activities meet your needs? (Importance)**

Event / Activity	Year	Very important	Important	Somewhat important	Not important	No opinion	Total (Excl. no opinion)
Task Forces / Special Interest Groups	2019	17	14	1	0	2	32
	2021	17	11	2	0	2	30
	2022	17	7	7	0	0	31
TNC	2019	23	11	1	0	0	35
	2022	18	10	3	0	0	31
Infoshares/Webinars	2019	17	13	1	0	8	31
	2021	24	12	0	0	0	36
	2022	18	10	2	0	0	30
STF meetings	2019	15	15	0	0	3	30
	2021	22	11	0	0	2	33
	2022	15	10	5	0	2	30
Spotlight events (Quantum, Security, International Connectivity)	2022	10	10	7	0	3	27
CTO workshops/ Roadmap workshops	2022	15	10	4	0	2	29

Table A.36: Importance of GÉANT's community events 2019–2022

**A.5.3 Q25. Does your NREN attend or participate in the following events and activities, and how well do these events and activities meet your needs? (Perceived quality)**

Event / Activity	Year	Very high quality	High quality	Low quality	Very low quality	No opinion	Total (Excl. no opinion)
Task Forces / Special Interest Groups	2019	12	18	0	0	3	30
	2021	11	17	1	0	2	29
	2022	16	11	1	0	1	28
TNC	2019	22	10	0	0	2	32
	2022	17	12	0	0	0	29
Infoshares/Webinars	2019	7	22	0	0	3	29
	2021	16	17	1	0	1	34
	2022	17	10	0	0	1	27
STF meetings	2019	9	19	1	0	2	29
	2021	17	10	0	0	7	27
	2022	13	13	0	0	4	26
Spotlight events (Quantum, Security, International Connectivity)	2022	10	13	0	0	6	23
CTO workshops/ Roadmap workshops	2022	11	14	0	0	4	25

Table A.37: Perceived quality of GÉANT's community events 2019–2022

#### A.5.4 Q26. What does your NREN use the Compendium for? (please tick all that apply)

Use	2019	2021	2022
Reference information	33	33	31
Strategic planning (e.g. gap analysis, service portfolio planning)	17	19	20
National lobbying	16	21	19
PR / marketing	13	12	9
Not aware of the Compendium	0	1	0
Other (please specify)	1	5	1

Table A.38: Use cases for the NREN Compendium 2019–2022

#### A.6 Comments

Comments were left across the whole survey, as most questions allowed comments. The following table lists the comments, the NREN that made them and the question where they were left, and also how they were categorised for the analysis.

- General tendency (Critical, Positive, Qualifier, Suggestion).
- Field (Services, Network, Security, Strategy, Procurement, Technology adoption, Cloud, Community, Communication, Satisfaction survey, General, Decision making, pan-European research organisations, Transparency, Project management, Network operations).
- Specifics (General, Security, GA, International, Services, Partner Relations, Case-specific, perfSONAR & PMP, Network services, NMaaS & PMP, MD-VPN, MS ExpressRoute, Peering, Spectrum, InAcademia, TCS, eduGAIN, eduGAIN & eduroam, FaaS & managed IdP, T&I, IaaS+, NSHaRP, Community clouds) – this was not assigned to all comments.

The list of comments also includes all responses to the 3 free-text questions:

- Q13. Please let us know if you have any suggestions for improvement in the area of GÉANT network operations.

- Q24. Which services would you like GÉANT to offer in the future, including any NREN-developed services that could be developed into GÉANT-wide services?
- Q27. And finally, if you haven't had a chance to tell us earlier in the survey... Which one improvement could we make over the coming year that would help us better serve your NREN?

NREN	Question #	Comment	General Tendency	Field	Specifics
CESNET	Q04	We are happy, that GÉANT has been in intense contact regarding planned network upgrades with us.	Positive	Network	
DFN	Q04	The most important question in this survey. I'm aware and supportive that GÉANT needs to serve other interest as well (EC, International Organisations, global peers, ...). This naturally creates trade-offs and I want to see more that GÉANT considers its members to be the top priority in such situations. Not always as easy as it might sound.	Qualifier	General	
KIFÜ	Q04	I am very confident, but I see some other emerging communities and organisations whose appearance can diminish the obvious importance and visibility of GÉANT community.	Qualifier	Strategy	
KREN	Q04	Local needs and GÉANT solutions in some cases cannot be fully applicable, especially for KREN, because Kosovo is a non-EU member when procurement procedures are often a barrier to use for example GÉANT procurement support.	Qualifier	Procurement	
KREN	Q04	However, at this stage, we are very satisfied with the support we received from GÉANT, especially in sharing knowledge.	Positive	General	
NORDUnet	Q04	The community and infrastructure aspects of GÉANT are critical to NORDUnet fulfilling our mission. T&I, the pan-European and global network, and the facilitation and coordination of NREN joint action is indispensable – and happily in most cases in very capable hands. Anything else is a bonus – and a cost.	Positive	General	
SURF	Q04	Would like to see more coordination effort on solidarity/cohesion of the community in addition to providing services. In SURF's view a well aligned membership is important for a strong GÉANT community.	Critical	Community	

NREN	Question #	Comment	General Tendency	Field	Specifics
SURF	Q04	Support for Transits could be improved	Critical	Community	Security
GARR	Q04	Middleware is less important than AAI	Qualifier	Services	General
Belnet	Q05	Regarding: “keeping you informed”: many communications channels, distribution list and online information sources making it sometimes difficult to find the right information directly when you need it.	Critical	Communication	
DFN	Q05	Hopefully unsurprisingly one last question: I'm not aware the service lifecycle includes consultation(!) before a service goes into production. Information is a necessity, but not sufficient. Please note my focus on production.	Critical	Communication	
GARR	Q05	The consensus process for technical strategic decision has to be improved and made more agile. Such process has to be prepared outside GA meetings.	Critical	Decision making	GA
KREN	Q05	For the third question, I don't have enough information. This is the reason for choosing “No Opinion”.	Qualifier		
NORDUnet	Q05	As a network, GÉANT is very expensive for the traffic levels. When we factor in the evolution of the T&I infrastructure and the ability to act as a vehicle for joint action, the picture is much better. This means that these aspects must be given priority for GÉANT to have a reasonable value add.	Qualifier	General	
NORDUnet	Q05	Engagement with international organisations has been somewhat hit and miss in the past, with GÉANT at times acting as a reseller where a community facilitator is needed, and with the partners not taking responsibility. We believe there is room for improvement, and that there is both a will and a plan to do this.	Critical	pan-European research organisations	
SURF	Q05	Engagement International: We would like to see a better coordination on joint and interoperable (network) services/support rather than translating existing NREN offers into a GÉANT offer. A federated approach is key. We know that improving this is work in progress and we do encourage keeping focus on that.	Critical	Strategy	
SURF	Q05	Global Partners: Involve NRENs more in projects, developing joint NREN/GÉANT strategy/tactics	Critical	Strategy	International

NREN	Question #	Comment	General Tendency	Field	Specifics
SURF	Q05	Transparency financial streams: Good improvement on cost p/service work. With all this work, we as members have gained insight in the project and service portfolio we all contribute to. At SURF we are currently doing the same exercise and we do acknowledge importance, but also the complexity. Let's keep this up-to-date so this GA can take well-informed discussions on future changes of the portfolio.	Positive	Transparency	Services
SURF	Q05	Keeping us informed: With respect to security information flows could be improved (that is why we rated 'below average'). Rest is good	Critical	Communication	Security
SWITCH	Q05	I have not been long enough in the GA in order to judge its effectiveness	Qualifier	Decision making	GA
ACOnet	Q06	Should be read as "satisfied+" in most cases but not "very satisfied" in all cases	Qualifier		
Belnet	Q06	Too many online resources, not always easy to navigate find the right information immediately.	Critical	Transparency	
Belnet	Q06	"Partner Portal" should be the gateway & directory also for the Wiki pages (the latter almost not navigable, searchable... if you did add a page to your favourites). Also use of different communication tools sometimes via Box, SharePoint... is not making it easier.	Suggestion	Transparency	
IUCC	Q06	Numerous links found in Google still do not work. The migration of all GÉANT pages was not done in a reasonable manner.	Critical	Communication	
KIFÜ	Q06	The GÉANT's online communication and coordination tools should be findable much easier – especially from one own page from the others. e.g Finding intranet from tools portal should be use easy or there should be a landing page which is pointing all the tools.	Critical	Transparency	
NORDUnet	Q06	GÉANT staff – both partner relations and tech are responsive and a pleasure to work with.	Positive	Transparency	Partner Relations
NORDUnet	Q06	From time to time we see initiatives that make us wish GÉANT staff had a better understanding of the priorities and the stakeholders of the members.	Critical	General	

NREN	Question #	Comment	General Tendency	Field	Specifics
NORDUnet	Q06	We're always happy to be involved; checking in early is appreciated.	Qualifier	Communication	
RedIRIS	Q06	As GÉANT has grown, it is not easy to navigate its organisation chart, and to know who is in charge of what, and then get a chance to know that person.	Critical	Transparency	
RedIRIS	Q06	Luckily, we have a very good point of contact with Jenni, as member of the Partner Relations team in charge of dealing with our account – among other things, she helps us to locate the right person for each topic.	Positive	Transparency	Partner Relations
SURF	Q06	Please make sure GÉANT's tools and services apply the "drink your own champagne" principle, e.g. by making sure relevant services are made accessible by use of edugAIN.	Suggestion	Technology adoption	
SWITCH	Q06	I cannot judge the availability of the CEO but I am confident that he would be available if there is an urgent need.	Positive	General	
ACOnet	Q07	Regarding EUMETSAT a stream viewable without any licence/client restrictions (probably best with open source clients) for testing purposes would be a great help.	Suggestion	pan-European research organisations	
Belnet	Q07	As we were very satisfied with Nathalie McKenzie in the past, we are very happy having Jennifer Ross as our Partner Relations Manager. She is very helpful and we never have to wait long for a response or getting in touch with other GÉANT staff when needed. Equal credits for Tryfon too, when we have question about the project !	Positive	Transparency	Partner Relations
Belnet	Q07	The preparation and information about GN5-1 Work plan could have been, from our point of view, more centralised, maybe on collaborative platform for example (maybe we just don't know that it exists...somewhere on the wiki) instead having to wait for documents sent & infoshares.. with time intervals. This last remark is made from our perspective from an NREN that is not too involved yet in GN4-3 and does not always get first-hand information or can discuss GN5 work package matters, like probably other participants that are active in GN4-3 work packages do. We understand now too it is quite a challenge to keep 40	Critical	Communication	

NREN	Question #	Comment	General Tendency	Field	Specifics
		participants all the time informed especially for such a complex project with strict deadlines.			
DFN	Q07	The EUMETSAT coordination effort in its first years struggled in building the required trust and mutual commitment between EUMETSAT and involved NRENS, therefore did not succeed in refining the many objectives into plan and actions. This realisation came after too much time was spent on exhausting back-and-forth communication and mounting impatience by all involved. It's good to feedback now we see the situation improving.	Critical	pan-European research organisations	
GRNET S.A.	Q07	Coordination of pan-European user groups is an important aspect, and more effort should be allocated to this activity.	Critical	pan-European research organisations	
GRNET S.A.	Q07	Regarding the financial transparency, the involvement of the rest of the consortium in each activity is not clear. More transparent financial planning would be beneficiary to enhance cooperation even more.	Critical	Transparency	
KIFÜ	Q07	Where can one find "The activity planning in the annual project work plan"? Are the minutes of PAIR review visible somewhere?	Critical	Transparency	
RedIRIS	Q07	The GÉANT Project Management Office is very good in general, and Tryfon in particular.	Positive	Project management	
RedIRIS	Q07	So, in that respect, project management is excellent – but in other different, more substantial matters (such as timely preparation of the proposal, system to share manpower, successful new services put in place) there would be room for improvement.	Critical	Project management	
SURF	Q07	In our view there were some corners cut along the road from the CTO Workshops to the actual workplan. It is not that we are unhappy with the outcome, but the reasoning behind some choices is not very clear (e.g. CNaaS)	Critical	Communication	
GARR	Q08	The control of routing topology, its stability and security may be improved.	Critical	Network	
IUCC	Q08	I would rate it the best part of GÉANT if I had to rank the various GÉANT groups.	Positive	Network	

NREN	Question #	Comment	General Tendency	Field	Specifics
KREN	Q08	KREN is connected to GÉANT PoP in Zagreb since February of this year. For this reason, we have only one answer about great support from the technical team. For other questions, we didn't have any opinions.	Qualifier	Network	
NORDUnet	Q08	The GÉANT network is fit for purpose and indispensable for ensuring global connectivity for our members.	Positive	Network	
SURF	Q08	The GÉANT connectivity is a stable service for us and we have had no problems with performance. Over time we have migrated and changed the IAS/CLS connectivity. That went smoothly.	Positive	Network	
SURF	Q08	The wiki with information on routing (e.g. communities to use for connectivity with other networks) changes now and then and it can be difficult to find actual information. In the end interaction with GÉANT staff or digging deeper brings a solution.	Critical	Transparency	
SURF	Q08	The Brian & Looking Glass functionality is very helpful. Also the SIG-NOC is well supported and relevant for SURF.	Positive	Network	
GRENA	Q12	Will be good to have DDoS protection for GWS channels.	Suggestion	Services	Security
IUCC	Q12	Are GÉANT routers properly protected? Have security scans and pentests been performed on GÉANT routers and servers? If so, where have the results been reported to the NRENs?	Critical	Network	Security
Belnet	Q12	We don't have much contact with the GÉANT Security team, so not an opinion at this moment.	Qualifier	Security	
KREN	Q12	No opinion – because we started this year, we still do not have any “issue experience”.	Qualifier	Security	
CyNET	Q12	Instead confusing email notifications, we think the creation of a channel (e.g. Discord or direct chat via the website) to be more efficient.	Suggestion	Communication	Security

NREN	Question #	Comment	General Tendency	Field	Specifics
Funet	Q12	GÉANT might do a procurement for getting a framework agreement for NRENs getting security scanning tools/service to be offered as on-premise NREN service for NREN universities and institutions.	Suggestion	Procurement	Security
GARR	Q12	Get more in touch with NRENs CERTs to get a clue of what's happening in the area: it is difficult to see it if you do not really see users' activities.	Suggestion	Security	
HEAnet	Q12	We would love to see more Threat Intelligence Sharing inter-NREN and between GÉANT and NRENs	Suggestion	Security	
KIFÜ	Q12	Exchange the NREN CERT contact informations – especially if they are not in the trusted introducer.	Suggestion	Transparency	Security
RENAM	Q12	More close interrelations/cooperation of GÉANT and NRENs' Security teams in resolving security incidents, elaboration and implementation of common security solutions (tools, platforms, best practices, etc.).	Suggestion	Security	
SURF	Q12	Setting up a MISP server to connect and share threat information with all connected NRENs.	Suggestion	Security	
GARR	Q13	Communication of network migration timings and process was poor. No details were provided on the actual operations needed to interconnect to the new network. No contact was established in order to agree on migration timing. At least in a case, the migration of a service happened without even notifying it to us, and was carried out impacting our redundancy level for several days.	Critical	Network operations	Case-specific
IUCC	Q13	Security staff should be at least 4 FTEs for a network of GÉANT's size and probably best to have 6 FTE.	Suggestion	Security	
KIFÜ	Q13	Share the schedule	Suggestion	Network operations	
NORDUnet	Q13	In general we're happy to see improvements over that past few years. Things like new service Id's are a big help, and generally the consistency and clarity is much improved.	Positive	Network operations	

NREN	Question #	Comment	General Tendency	Field	Specifics
RENAM	Q13	Emphasise joint GÉANT – NRENs activities in the area of resolving networking security issues – support in performing security audit and monitoring; network security standards / best practices elaboration and jointly implementation (as mandatory solutions).	Suggestion	Security	
SURF	Q13	Interactions are good and people know to find each other.	Positive	Network operations	
SURF	Q13	It would be an improvement if we as NRENs would be able to handle service-id's better (Alignment of multi-domain services)	Critical	Network operations	
SWITCH	Q13	Support the SCION technology to become successful within the NREN community.	Suggestion	Technology adoption	
ACOnet	Q14	perfSONAR and PMP both don't help small organisations with problems at local loop level, because small organisations typically don't want to run an own node, but local loop issues is their main cause of troubles.	Qualifier	Services	perfSONAR & PMP
DeIC	Q14	I am not involved in the details of the network operations, so I do not have the knowledge to answer the questions.	Qualifier	Services	Network services
GARR	Q14	NMaaS is used in an experiment. One PMP node is in a lab	Qualifier	Services	NMaaS & PMP
RedIRIS	Q14	We use proxy MD-VPN, not native MD-VPN	Qualifier	Services	MD-VPN
SURF	Q14	We use our own ExpressRoute 'uplink' to Microsoft	Qualifier	Services	MS ExpressRoute
SURF	Q14	We might make more use of the peering service in cases where this would clearly benefit the performance of the connectivity. We recently started to do this with one of the GÉANT peers. We will also take a more active role in the routing between our institutions and LHC.	Qualifier	Services	Peering
SURF	Q14	The list above doesn't mention the alien wavelength/spectrum sharing service. Recently we have implemented wavelength services in both networks. Interaction and service provisioning was good. Sometimes the start of such a	Qualifier	Services	Spectrum

NREN	Question #	Comment	General Tendency	Field	Specifics
		project is hard, trying to define the contracts and parameters where there still are lot of uncertainties.			
ACOnet	Q15	ACOnet only recently joined InAcademia (which only happens once you expose a local merchant to InA), so there's insufficient experience/data available. Responses from the InA team are timely and thorough, though.	Qualifier	Services	InAcademia
CESNET	Q15	InAcademia might be interesting if linked to ISIC. TCS had some migrational issues related to migration of the service to new provider.	Qualifier	Services	InAcademia
DFN	Q15	"No opinion" on TCS is meant no option that expresses "Could be better"	Critical	Services	TCS
KIFÜ	Q15	There is a need to increase the quality of eduGAIN – also capabilities at NREN level. I think the advocating of teaching work done by Brook Schofield is very much missing. There is a need for high-quality training material, high-quality cookbooks – like we have for eduroam.	Critical	Services	eduGAIN
KREN	Q15	Very next task with the highest priority is the connection with eduGAIN and eduroAM. We are still not connected but we are working hard to finish this asap.	Qualifier	Services	eduGAI & eduroam
SURF	Q15	FaaS & Managed IDP added value is marginal. We do see and agree on the value for NRENs that need to kick-start, but the community needs to make an in/out choice at some point. The community could also decide to spend the money, that is now allocated on running these services, on helping members implementing 'real' IdPs and federations. A roadmap for this would be useful.	Critical	Services	FaaS & managed IDP
CESNET	Q16	Local students' discounts are in most cases solved already. ISIC integration will definitely raise the added value.	Qualifier	Services	InAcademia
DFN	Q16	The type of Service Providers (student discount) addressed by InAcademia is very rare in DFN-AAI. Insofar, this use case is of little relevance for our federation. In DFN-AAI, questions of attribute release are usually negotiated between Service and Identity Providers without the federation operator being involved. As soon as a Service Provider has to pay* for (proxy) access to a federation, they expect	Qualifier	Services	InAcademia

NREN	Question #	Comment	General Tendency	Field	Specifics
		the federation operator to convince the Home Organisations to release the requested attributes. At least that's our experience so far. * To GÉANT, not DFN			
KIFÜ	Q16	We have to discuss with local retailers if they can adopt InAcademia. But this market insight and building should be financed somehow, since persons in NRENs have to work on tasks which somehow generate some form of return to the NRENs.	Suggestion	Services	InAcademia
KREN	Q16	We have a quite powerful infrastructure that shall be “extended to the private sector” through the InAcademia service. The service will be implemented in KREN only after eduGAIN and eduROAM services	Qualifier	Services	InAcademia
NORDUnet	Q16	NORDUnet has no identity federation. All of the NORDUnet federation are either participating or highly likely to do so.	Qualifier	Services	InAcademia
SURF	Q16	While we value the InAcademia service in itself, and support the notion of making sure from day one it has a sustainability model behind it, this does not mean other services like eduGAIN, eduroam, eduTEAMS etc should ‘lean back’. If we as NRENs want to make sure we can continue to jointly innovate using the GÉANT programme, we must develop a model in which at some point all services emerging from the project become self-sustaining.	Qualifier	Services	T&I
SURF	Q17	We might be seen as a federation that has such a policy in place. It is not written in black and white, but we certainly do not have “resellers” of student identities on SURFconext and we do not want to allow them. Then they should go to InAcademia. We do see this is going to be a challenge with SSI, where the student her/himself will put his evidence in a wallet. But we're not there yet.	Qualifier	Services	InAcademia
GARR	Q19	We receive security notifications, however, they are not reliable because the source IP addresses are always wrong, not belonging to our constituency. We receive reports of incidents of which our users are victims and we do not consider it useful to open incidents in which our users are victims (they already know ...). There was no response to the various reports of incorrect data. The impression is that the NSHaRP activity is not supervised. More space and support should be	Critical	Services	NSHaRP

NREN	Question #	Comment	General Tendency	Field	Specifics
		provided by GÉANT to the NRENs engaged in Community Clouds activities at national level			
ACOnet	Q19	Passive referrer role, little community demand	Qualifier	Cloud	IaaS+
GRNET S.A.	Q19	GRNET is planning to use the hybrid cloud model where important or critical services will be hosted in its community cloud (in house IaaS). Moreover, several NRENs are also operating Community Clouds, which in a national and European context enhance digital sovereignty and open data management practices, especially in the scientific domain, and these community clouds should be supported further. Factual collaboration, sustainability models design and knowledge sharing between NRENs in the upcoming years is of foremost importance to multiply the outcomes of the current national efforts, functional and complementary to the implementation of the EOSC and other efforts.	Suggestion	Cloud	Community clouds
KREN	Q19	KREN infrastructure is established as a hybrid cloud solution, more exactly, it is Azure Stack on-premise infrastructure. The infrastructure is fully operational since January of this year. Cloud Support is very useful for KREN.	Qualifier	Cloud	
NORDUnet	Q19	Jointly procured frameworks are important for all the Nordic NRENs. We need to find mechanisms to scale this approach to other things than IaaS	Suggestion	Procurement	
SWITCH	Q19	For SWITCH it is important to follow the GÉANT Cloud service activity. However, given a) the current adoption of public cloud at Swiss universities and b) the fact that the EU procurement rules don't apply to Switzerland, we don't see an immediate business uptick in Switzerland.	Qualifier	Cloud	IaaS+
NORDUnet	Q23	To NORDUnet, GÉANT is primarily about infrastructure – the European network, the open exchanges, the global connectivity, the T&I infrastructure. We are quite happy with the infrastructure – high quality, fit for purpose.	Positive	Network	
SURF	Q23	Security is underdeveloped. We do see opportunities	Critical	Security	
GRNET S.A.	Q23	GÉANT should prioritise its service portfolio based on the interest of services usage by the NRENs.	Suggestion	Services	General

NREN	Question #	Comment	General Tendency	Field	Specifics
NORDUnet	Q23	To NORDUnet, GÉANT is primarily about infrastructure, services on top of that are secondary. The services are somewhat fragmented.	Qualifier	Services	General
RENAM	Q23	Wide range of services for connected NREN institutions having good multilateral support.	Positive	Services	General
ACOnet	Q24	As a whole (GÉANT/NREN) community we haven't managed to create (and use ourselves!) a scalable and sustainable open source based environment for our own communication / collaboration / info and document sharing. We are constantly using commercial solutions like Zoom, MS/SharePoint/O365, Box, Google, Atlassian and even in a rather suboptimal and non-integrated way.	Critical	Strategy	Software tools
Funet	Q24	Procuring a framework agreement for security scanning tools/service for NRENs to be able to offer it as a service for NREN universities and institutions.	Suggestion	Procurement	
GRNET S.A.	Q24	Support of NREN-developed services to become GÉANT wide (e.g. cloud, Zeus, abuse io, monitoring). Centralised IDM tech stack, modern/ open PKI.	Suggestion	Technology adoption	
IUCC	Q24	Netflow: Sending Netflow to Kentik might violate GDPR since they are located in the USA and they focus more on visibility rather than cyber threats. We should create our own Netflow processing system, hosted within Europe where we focus on cyber threats that can be identified based on ML and AI analysis. The core GÉANT Juniper routers can be configured to export Netflow (1:100, 1:1000) to the Netflow processing system where we will just keep raw data for 30 days and focus on processing. As an example, we can look for data exfiltration via DNS tunneling, GRE tunnels, RDP access, etc.	Suggestion	Security	
IUCC	Q24	Security: Shadowserver reports: We can provide to Shadowserver a list of all 50-60 ASNs of GÉANT and get daily about 40-50 Excels which aggregates all IPs discovered and marked by Shadowserver. We then create a set of scripts to break apart these Excel files based on ASN or based on specific IPs and send customised cyber reports to universities and NRENs within GÉANT.	Suggestion	Security	
NORDUnet	Q24	To NORDUnet, GÉANT is primarily about infrastructure – the European network, the open exchanges, the global connectivity, the T&I infrastructure. Services on	Positive	Network	

NREN	Question #	Comment	General Tendency	Field	Specifics
		top of that are secondary. We are quite happy with the infrastructure – high quality, fit for purpose.			
NORDUnet	Q24	The services are somewhat fragmented. It is key to further develop the infrastructure – network suitable to carry both spectrum and terabit connectivity, flexible and interconnected landing points for high-capacity global connectivity, identity infrastructure to integrate with and manage communities for Research Infrastructures and other e-Infrastructures. It is likewise important to be able to meet non-traditional requirements (quantum, time- and frequency, etc), and to be able to manage the increasing complexity.	Critical	Strategy	Services
RENAM	Q24	Community cloud services	Suggestion	Cloud	Community clouds
RENATER	Q24	Before buying on the market or only using services from the GNx projects, GÉANT could every (2) year(s) analyse the NREN offers and identity services worth developing to enhance them at a European level – and then use them and help bring them at a European level (with contributions from x interested NRENs). This would contribute to sovereign service with large numbers of users in major NRENs. GÉANT could be an agile market place.	Suggestion	Strategy	
SWITCH	Q24	SCION would be another service that deserves attention in SWITCH's view.	Suggestion	Technology adoption	SCION
SWITCH	Q24	Given the nature of NRENs, more in the area of piloting new services and exploring new technologies could be done – with the clear aim to rapidly fail if they are not successful. This could be an interesting bridge between operating production quality services and academic services (which are often built ad-hoc and never become mature). With this in mind, we are happy if T7 in WP5 is put back. SCION would be another service that deserves attention in SWITCH's view.	Suggestion	Strategy	
CyNET	Q24	eduGAIN and eduroam in a box (docker installation or similar)	Suggestion	Services	eduGAIN & eduroam

NREN	Question #	Comment	General Tendency	Field	Specifics
HEAnet	Q24	More Security services such as: DDoS Mitigation for NREN traffic, SOC/SIEM for NRENs & clients	Suggestion	Services	Security
KIFÜ	Q24	Some education supporting services, where every NREN that provide education services should participate.	Suggestion	Services	Education
NORDUnet	Q24	Educational services are of growing importance at the campus level; it is not clear what, if any, role GÉANT has here beyond acting as an (important) facilitator for community discussion and exchange.	Critical	Services	Education
PSNC	Q24	Time & frequency synchronisation signals on EU level, quantum communication on EU level, EOSC hub integrated with GÉANT services, EU testbed for IT services in 5G, IoT, AI areas	Suggestion	Services	New services
RedIRIS	Q24	Monitoring tools (e.g., CA Spectrum) and ASPERA-like software for fast transmission of big research files.	Suggestion	Services	New services
SURF	Q24	CNaaS, not in project, still see opportunities	Suggestion	Services	CNaaS
SWITCH	Q24	The current services are excellent as they are.	Positive	Services	General
GARR	Q25	Task Forces / Special Interest Groups are of medium quality	Critical	Community	
NORDUnet	Q25	All of this is good stuff. There's been a lot of growth, and this is good. It's now at a level where one cannot attend everything and must make choices. This is a good thing. It will force members to send the right people to the right kind of events.	Positive	Community	
RENATER	Q25	CTO is the wrong word. It is totally misleading. NRENs may have several C levels in Networks, Services, Security... So best use "C level" workshops	Critical	Communication	CTO
SURF	Q25	CTO Workshops should be the place for interaction and discussion to get consensus on direction, our experience is that it was mainly sending information	Critical	Communication	CTO
Belnet	Q27	We hope to get more involved in GN5-1: see remark under Q13. An idea: Introduction of sort of NREN Single Point of Contact (SPOC) role per NREN (person or unit from the NREN) who is informed about who receives all important	Suggestion	Communication	

NREN	Question #	Comment	General Tendency	Field	Specifics
		information (this not always an APM, GA-member, participant in a one project work packages...) directly (Association and project (administration) matters, infoshares, STFs, SIG-TF meetings. . . . (without being subscribed to X mailinglists, checking wiki pages...etc..) . This NREN-SPOC is than responsible for relaying information to the relevant internal stakeholders in the NREN in time (if it did not reach them or just not aware that certain service exists, an interesting SIG/TF meeting or infoshare will take place.			
DFN	Q27	To illustrate a possible starting point for improvements, here's a question which came to my mind during this exercise: Does GÉANT know which services my NREN is using? If so, why do they ask instead of providing me with an individualised survey? If not, GÉANT might want to improve its inventory as part of its service lifecycle management.	Suggestion	Satisfaction survey	
Funet	Q27	GÉANT is great doing procurements on European level on behalf of all the NRENs. Collecting the needs for upcoming common procurements in the future might be worth some discussions/workshops/BoFs.	Suggestion	Procurement	
GRNET S.A.	Q27	Collaborate constructively with other pan-European e-Infrastructures trying to find synergies and complementarities, instead of competing solutions. Support GRNET-developed services and tools to be adapted internationally in the pan-European landscape.	Suggestion	Strategy	
GRNET S.A.	Q27	Increase transparency and consultation towards NRENs when GÉANT, on behalf of the community, negotiates important strategic cooperation such as EOSC in general, procurement of EOSC-core, etc	Suggestion	Communication	
HEAnet	Q27	Focus on filling the staff vacancies in GÉANT – we want to see more of you :-)	Suggestion	General	
KIFÜ	Q27	You did not ask some questions related to some GÉANT services e.g. eduTEAMS, WiFiMon, SocTools, vulnerability management, NeMo. Result of OCRA activities are not really visible.	Critical	Satisfaction survey	
NORDUnet	Q27	Working together in a flexible and agile manner, leveraging each other's strengths to deliver value for European research and education is essential. We	Positive	General	

NREN	Question #	Comment	General Tendency	Field	Specifics
		are moving in the right direction. We can – from both sides – work to be more transparent to get even better results.			
RENAM	Q27	Identification and sharing information of new services, technologies, tools, solutions (other achievements) available in the GÉANT community – to make this knowledge accessible to all community members and providing support to interested members in effective exploitation of existing experience/know-how of other NRENs	Suggestion	Communication	
SANET	Q27	Continue as so far	Positive	General	
SURF	Q27	In this survey SURF is still listed as SURF. Please check and change.	Critical	Satisfaction survey	
SURF	Q27	As indicated earlier in this survey, the GÉANT community itself is extremely important. Not less important than all the services that GÉANT makes available to us. Within this community we, as members, all play an important role in our countries. To be successful in the EU and beyond we need to be well aligned too. We do think that more effort on the awareness of joint responsibility would be welcome. Finally, sometimes our responses might sound as critical or unsatisfied. Yes, we are Dutch and we can sometimes be a bit direct, but it is never meant to be rude. We do believe good and honest feedback is of value for GÉANT and our feedback should be taken as help to keep GÉANT (at least) as great as it is today. After all, SURF is a proud member of GÉANT and its community.	Qualifier	General	
SWITCH	Q27	Last but not least: a big thank you to all the staff at GÉANT. GÉANT is very important to NRENs and it is its staff that makes it successful.	Positive	General	
ACOnet	Q27	Re-evaluate the removal of SFJ from GÉANT's "all mailing lists, spaces and events". I was really surprised by this radical measure!	Critical	Communication	
AMRES	Q27	Put into production the GÉANT PoP in Belgrade until the end of 2022 as a result of GN4-3N project.	Suggestion	Network	

Table A.39: All comments, showing related NREN, question and categorisation

## References

[SurveyMonkey] <http://www.surveymonkey.com/>

## Glossary

<b>AAI</b>	Authentication and Authorisation Infrastructure
<b>AI</b>	Artificial Intelligence
<b>APM</b>	Access Port Manager
<b>ASN</b>	Autonomous System Number
<b>BoF</b>	Birds of a Feather
<b>CEO</b>	Chief Executive Officer
<b>CERN</b>	European Organisation for Nuclear Research
<b>CERT</b>	Computer Emergency Response Team
<b>CLS</b>	Controlled-Load Service
<b>CNaaS</b>	Campus Network Management as a Service
<b>CTO</b>	Chief Technology Officer
<b>DDoS</b>	Distributed Denial of Service
<b>DNS</b>	Domain Name System
<b>EaP</b>	Eastern Partnership
<b>EC</b>	European Commission
<b>EOSC</b>	European Open Science Cloud
<b>ESA</b>	European Space Agency
<b>EU</b>	European Union
<b>EUMETSAT</b>	European Organisation for the Exploitation of Meteorological Satellites
<b>EuroHPC</b>	European High-Performance Computing
<b>FaaS</b>	Federation as a Service
<b>FoD</b>	Firewall on Demand
<b>FPA</b>	Framework Partnership Agreement
<b>FTE</b>	Full-Time Equivalent
<b>GA</b>	General Assembly
<b>GDPR</b>	General Data Protection Regulation
<b>GPPC</b>	GÉANT Project Planning Committee
<b>GRE</b>	Generic Routing Encapsulation

<b>GWS</b>	GÉANT World Service
<b>HPC</b>	High-Performance Computing
<b>IaaS</b>	Infrastructure as a Service
<b>IAS</b>	Internet Authentication Service
<b>IdM</b>	Identity management
<b>IdP</b>	Identity Provider
<b>IoT</b>	Internet of Things
<b>IP</b>	Internet Protocol
<b>ISIC</b>	International Student Identity Card
<b>L3</b>	Layer 3
<b>LHC</b>	Large Hadron Collider
<b>LHCONE</b>	Large Hadron Collider Open Network Environment
<b>MD-VPN</b>	Multi-Domain Virtual Private Network
<b>MISP</b>	Open-Source Threat Intelligence and Sharing Platform
<b>ML</b>	Machine Learning
<b>N/A</b>	Not Applicable
<b>NMaas</b>	Network Management as a Service
<b>NOC</b>	Network Operations Centre
<b>NREN</b>	National Research and Education Network
<b>NSHaRP</b>	Network Security Handling and Response Process
<b>OC</b>	Operations Centre
<b>OCRE</b>	Open Clouds for Research Environments
<b>perfSONAR</b>	performance Service-Oriented Network monitoring ARchitecture
<b>PKI</b>	Public Key Infrastructure
<b>PMP</b>	Performance Measurement Platform
<b>Pop</b>	Point of Presence
<b>R&amp;E</b>	Research and Education
<b>RDP</b>	Remote Desktop Protocol
<b>REFEDS</b>	Research and Education Federations
<b>REN</b>	Research and Education Network
<b>SCION</b>	Scalability, Control, and Isolation On Next-Generation Networks
<b>SIEM</b>	Security Information and Event Management
<b>SIG</b>	Special Interest Group
<b>SIG-NOC</b>	Special Interest Group – Network Operations Centre
<b>SOC</b>	Security Operations Centre
<b>SSI</b>	Self-sovereign identity
<b>T</b>	Task
<b>T&amp;I</b>	Trust and Identity
<b>TCS</b>	Trusted Certificate Service
<b>TEIN</b>	Trans-Eurasia Information Network
<b>TF</b>	Task Force
<b>TF-EDU</b>	Task Force on Educational Services and Activities
<b>TNC</b>	The Networking Conference
<b>VPN</b>	Virtual Private Network
<b>WP</b>	Work Package
<b>WP3</b>	GN4-3 Work Package 3 User and Stakeholder Engagement
<b>WP3 T1</b>	GN4-3 WP3 Task 1 Partner Relations and Engagement
<b>WP3 T3</b>	GN4-3 WP3 Task 3 Stakeholder Insights