



DISCOVERY
Europe-North America Dialogues for ICT Cooperation

D.4.1 - Benchmarking on best practices for EU-North America cooperation in ICT

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EXECUTIVE SUMMARY

There are many studies that examine ways to foster multi-lateral information and communication technology (ICT) as well as science and technology (S&T) research development cooperation between EU countries and non-EU countries (1-5). These studies most often consider the impediments to cooperation and ways to remove them. This benchmarking study considers the experience of researchers and administrators who have participated in multi-lateral projects; it probes ways to support international collaborations once research cooperation has already been established. Through conversations and a Delphi method survey with principal investigators, project administrators, research leads and researcher team members of projects that engage in multi-lateral cooperation, a list of determinants of success have been compiled. This study has two related objectives: 1) to understand the ways that participants in multi-lateral projects determine the success of their collaborations and to better understand how these determinants of success can be fostered and incorporated into funding program models and 2) to understand ways beyond funding that success in these projects can be fostered.

Two studies were conducted: a Stakeholder Group Delphi Study with 29 participants and expert interviews with 6 experts from EU, US and Canada, the stakeholder groups. The results of these studies indicated that in addition to measures of success elicited in other project activities such as meeting project goals, ongoing collaboration or new projects to pursue, team satisfaction, funder satisfaction, recognitions, publications, knowledge-building, and alignment of goals; participants felt that other valid and important markers of success (as shown in Figure 1) were: adoption by industry/implementation, impact, innovation, sustainability, further funding/research, cooperation quality, facilitate other research, job creation and informing policy.

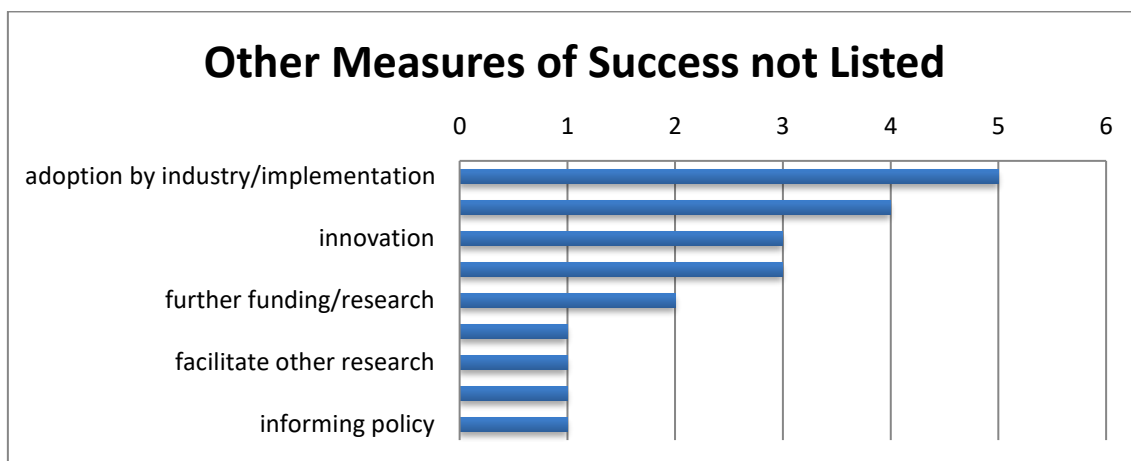


Figure 1 Additional Measures of Success Not Listed.

Experts that we interviewed spoke about related measures of the project success such as examining what remains after the project has been complete, how beneficial or useful the project was as well as the ability of the project to generate change.

Participants also identified important aspects of supporting success:

- in-person meetings/interactions
- commitment/linkages by the project officer
- outside engagement

- trust between partners and between partners and project officer
- flexibility in project design
- good project information

These aspects are discussed in section 3.4.

The report concludes with suggestions for changes to funding programs to help support success of multi-lateral projects. These suggestions include rethinking measures and evaluation techniques, funding for failure and ensuring funding levels that support all partner activities and build synergies within and between projects and stakeholders.

1 OBJECTIVE

There are many studies that examine ways to foster multi-lateral information and communication technology (ICT) as well as science and technology (S&T) research development cooperation between EU countries and non-EU countries (1-5). These studies most often consider the impediments to cooperation and ways to remove them. This benchmarking study considers the experience of researchers and administrators who have participated in multi-lateral projects; it probes ways to support international collaborations once research cooperation has already been established.

Through conversations and a Delphi method survey with principal investigators, project administrators, research leads and researcher team members of projects that engage in multi-lateral cooperation, a list of determinants of success have been compiled. This study has two related objectives: 1) to understand the ways that participants in multi-lateral projects determine the success of their collaborations and to better understand how these determinants of success can be fostered and incorporated into funding program models and 2) to understand ways beyond funding that success in these projects can be fostered.

2 MARKERS OF SUCCESS ALREADY IDENTIFIED

Prior to the commencement of the study, discussions with participants at Discovery Labs, workshops and working groups led to the development of 11 commonly cited markers of success:

- Meeting project goals
- Ongoing collaboration or new projects to pursue
- Team satisfaction
- Funder satisfaction
- Recognitions
- Publications
- Knowledge-building
- Alignment of goals

In addition to these markers, the following factors were cited as fostering success:

- Communication supports for cross partner communication
- Clear delineation of responsibility
- Common research ethos between countries

We wanted to probe more deeply to try to understand how these successes and supports are achieved and fostered both within the project and through the programs that fund them. In addition to these markers, we wanted to know if there were other ways that team-members gauged the success of their projects as well as how this success was or could be measured and supported.

3 PROCESS

The study utilized two primary data collection strategies: 1) a remote group survey utilizing Delphi study methods and 2) interviews with key informants from each of the three target regions (Europe, Canada and US). Information from the Delphi study formed areas of discussion and probes within the interviews. Both approaches are described in the following sections. The Delphi study was conducted in June and July of 2017. Interviews were conducted late July 2017 through October 2017.

3.1 Stakeholder Group Delphi Study

3.1.1 Rationale

The main assumption of the Delphi Study method is that decisions from a structured group of individuals are more accurate than those from unstructured groups. The remote method allows for easy participation in multiple sessions by participants separated by oceans, land distances and multiple time zones. All target participants are familiar with and have access to ICT so an online collaboration would not create unexpected barriers. The collaboration was carried out through email notifications and a Google form. Both of these modes were accessible for participants using assistive technologies.

3.1.2 Participants

DISCOVERY Project team members and working group leads helped to develop a list of potential Delphi Survey participants who would meet the following inclusion criteria:

- 1) Have experience in two or more multi-lateral projects involving at least two of the target regions (Europe, Canada and the US).
- 2) Be based in one of the three target regions (Europe, Canada, US)

Invited participants were selected to achieve a proportionate sample from the three regions as well as a diverse representation from different levels of the project process (e.g.: PI, collaborator, team member, project administrator, research support). DISCOVERY project members forwarded the invitation to selected participants with which they had a connection, other participants were contacted directly via email by the study lead. Participants who were invited were asked to invite other participants who met the criteria. While email addresses were collected for purposes of communication, participant names and affiliations were not shared with the group. This approach helped to remove bias or influence that some participants may have had on other participants based on their stature within the research community or position within the research project/process. That said, it is conceivable (although unlikely) that some participants would be recognizable to some peers based on their responses to open-ended questions.

Twenty-nine individuals participated in the remote group. Participants represented the target regions as follows: 59% from Europe, 31% from Canada, 10% from the United States.

What is the region that you are employed in?

29 responses

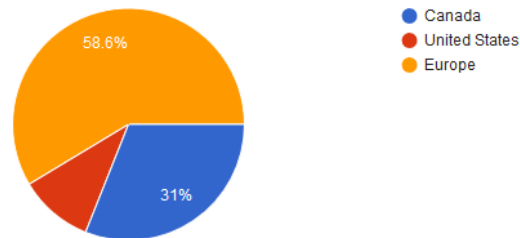


Figure 2: Location of Employment for Study participants

This regional representation somewhat under-represents the United States but is a reasonable proportion of North American Participants to European participants. Importantly as is shown in Figure 3, projects reported on by participants indicate multilateral and bi-lateral projects with 15 projects including Canada, 17 projects including United States and 23 projects including Europe. Asia and the South Pacific, Latin America and the Caribbean as well as Africa were also project regions that were represented but in smaller proportions of the total (each included by less than 10% of participants).

What regions were involved in the project you are responding about?

29 responses

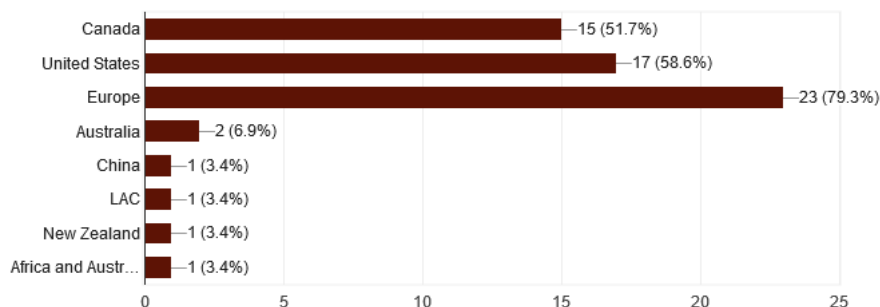


Figure 3: Regions from the Participant Source Project indicate bi-lateral and multi-lateral cooperation between the target regions

3.1.3 Procedure and Tools

As is shown in Figure 4, the process for the Delphi Study requires experts to anonymously engage in two rounds of questioning using a digital form:

1. After the first round, a summary of the expert answers and rationale are provided to all participants
2. Experts are questioned again and encouraged to revise their answers based on colleague responses

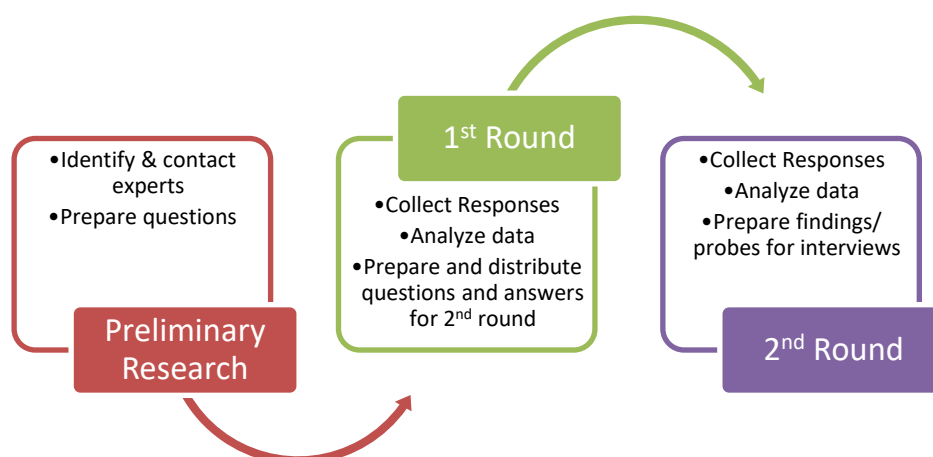


Figure 4: Delphi method for Group consensus-building

The group questionnaire was shared with experts as an on-line Google form. Along with assurances of anonymity, instructions to the participants on the form were as follows:

As part of DISCOVERY Project, we are asking people who have been in multi-country projects (especially between European countries and Canada and/or the United States) to help us make recommendations to international funding agencies for ways to measure project success and ways to support project success. Please think of a project that you have worked on that involved cooperation between at least two countries. If you would like to respond to this questionnaire more than once so that you can respond based on your experience on more than one project, then please do so. In the coming weeks we will send you a brief summary of the responses to your email and will ask that you review your answers and make any changes to your responses that you would like to make.

After a period of three weeks, participants were invited to review the aggregated responses to the study and invited to change their answers on the survey based on this review if they wanted to. The Google form provides a simple aggregation of the data including descriptive statistics for close-ended questions which makes rapid sharing of the group submissions easily carried out. Participants were able to edit their responses for three months after the start of the group after which time the form was closed to changes. The questions were as follows:

Background Information

1. Name
2. What is the region that you are employed in?
3. What regions were involved in the project that you are responding about?
4. Which of the following best describes your role on in the project?
 - PI/co-PI
 - Partner or Collaborator Lead
 - Team member
 - Administrator
 - Other (please describe)
5. Which of the following areas of study does your project fit under (select all that apply)?
 - ICT
 - Cybersecurity

- e-Health
- Digital Inclusion
- Other (please describe)

Measures of Success

6. There are many ways to measure success of a collaborative project. Please select from the following list of 12 indicators of success the five¹ items that you think could be suitable measures for your project (select all that apply):
- Meeting project goals
 - Ongoing collaboration or new projects to pursue
 - Team satisfaction
 - Funder satisfaction
 - Recognitions
 - Publications
 - Knowledge-building
 - Opportunities to train new/emerging researchers
 - Server logs or web analytics
 - Policy change
 - Beneficial impacts on people
 - Beneficial impacts on social structures
7. What other ways would you use to measure the success of the project?

Success Factors

8. What three factors do you think are most important in having a successful bi-lateral or multi-lateral project?
9. If you were to participate in a funded bi-lateral or multi-lateral project again, what would you want in place to support success of the project? Why is this factor critical?

3.1.4 Stakeholder Group Results

The following section describes the results of the group that participated in the Delphi Study:

3.1.4.1 Participant Information

Which of the following best describes your role on the project?

29 responses

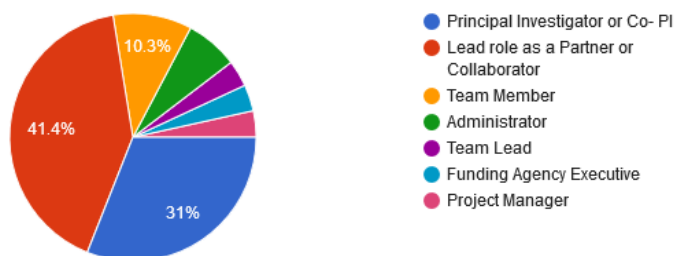


Figure 5: Roles of Participants

Most of the participants had principal investigator (41%) or lead roles (31%) in multi-lateral projects but there was also representation from team members (10%), administrators, managers and funders. These diverse roles allow for different views

¹ The list was offered five times and one item was selected each time as a form of rank-ordering.

of measuring and fostering success but importantly, the weight of the participants is on project leads who are most responsible for negotiating measures of success with funders and fostering success in the project team. All but three of the participants indicated that their project was either ICT or areas directly related to ICT such as e-health. ICT (76%) is a target area of the DISCOVERY project with identified priority areas being: cybersecurity (10%), e-health (21%) and digital inclusion (24%). These target areas were most represented by the participants.

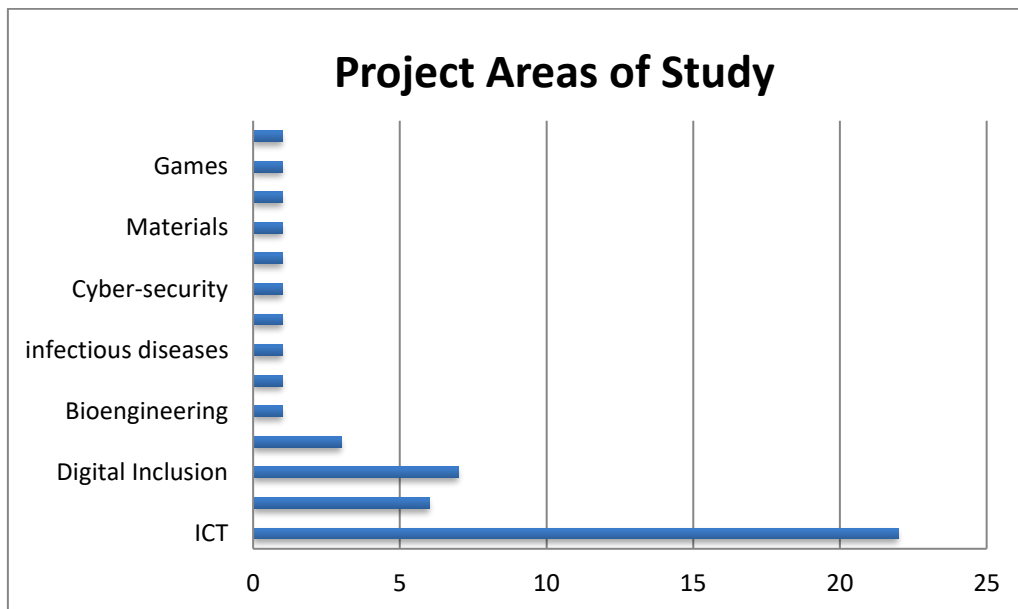


Figure 6: Project Areas of Study

3.1.4.2 Measures of Success

When asked to select five ways to measure success most suited to their project from a list of twelve, less than half of the participants selected the most popular answer: “meeting project goals” as their first selection.

Success Measure	Count
Meeting project goals	13
Beneficial impacts on people	4
Publications	3
Knowledge-building	3
Funder satisfaction	2
Policy change	1
Ongoing collaboration or new projects to pursue	1
Team satisfaction	1
Beneficial impacts on social structures	1

Table 1: First selection for most suitable Measure of Success

However, as shown in Figure 7, over all five selections, meeting project goals was considered a suitable measure by 22 of the 29 participants. When all five choices are examined, the other most commonly chosen measures were Beneficial impacts on people (19), Knowledge-building (18), Ongoing collaboration or new projects to pursue (18) and Beneficial impacts on social structures (18).

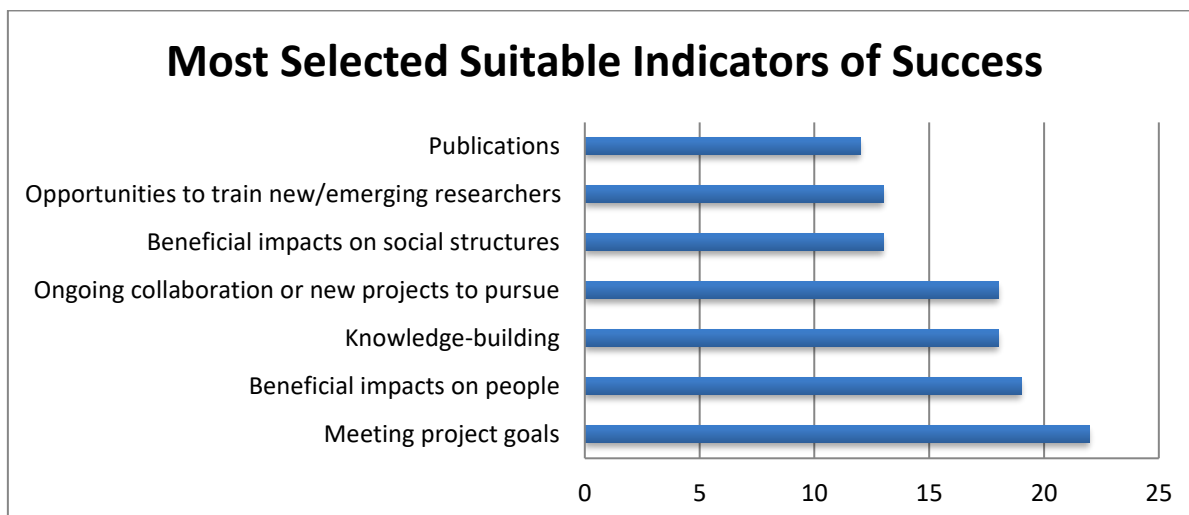


Figure 7: Total of five most suitable indicators of success.

While all twelve measures were selected at least once, of interest is the low-ranking measures of success; these include Server or web analytics (1), recognitions (5), policy change (7), team satisfaction (8) and funder satisfaction (9).

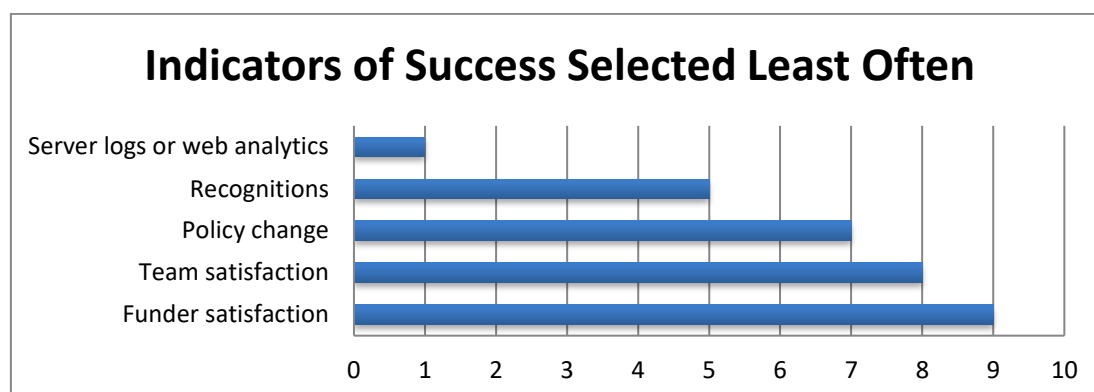


Figure 8: Indicators of success that were the least chosen as a suitable indicator

Perhaps of most interest are the additional indicators of success provided by participants. Eighteen participants suggested 21 indicators of success which have been aggregated to nine categories: adoption by industry/implementation, impact, innovation, sustainability, further funding/research, cooperation quality, facilitate other research, job creation and informing policy.

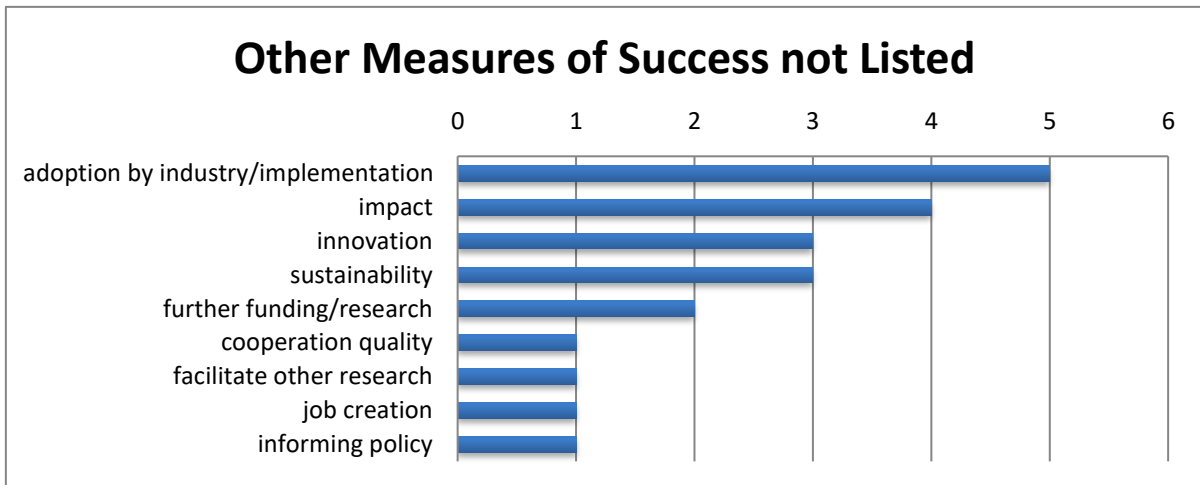


Figure 9: Indicators of Success suggested by participants

Figure 10 below provides an indication of the importance of each of the indicators of success to the participants as well as the selection-order frequency for each indicator. When frequency and order of selection are considered, meeting project goals is the most important criteria but knowledge-building has more weight than beneficial impacts on people. Ongoing collaborations, while selected as frequently as knowledge-building, was selected last most often and is selected first and second fewer times than knowledge-building giving it less weight than the equally frequent know-ledge building.

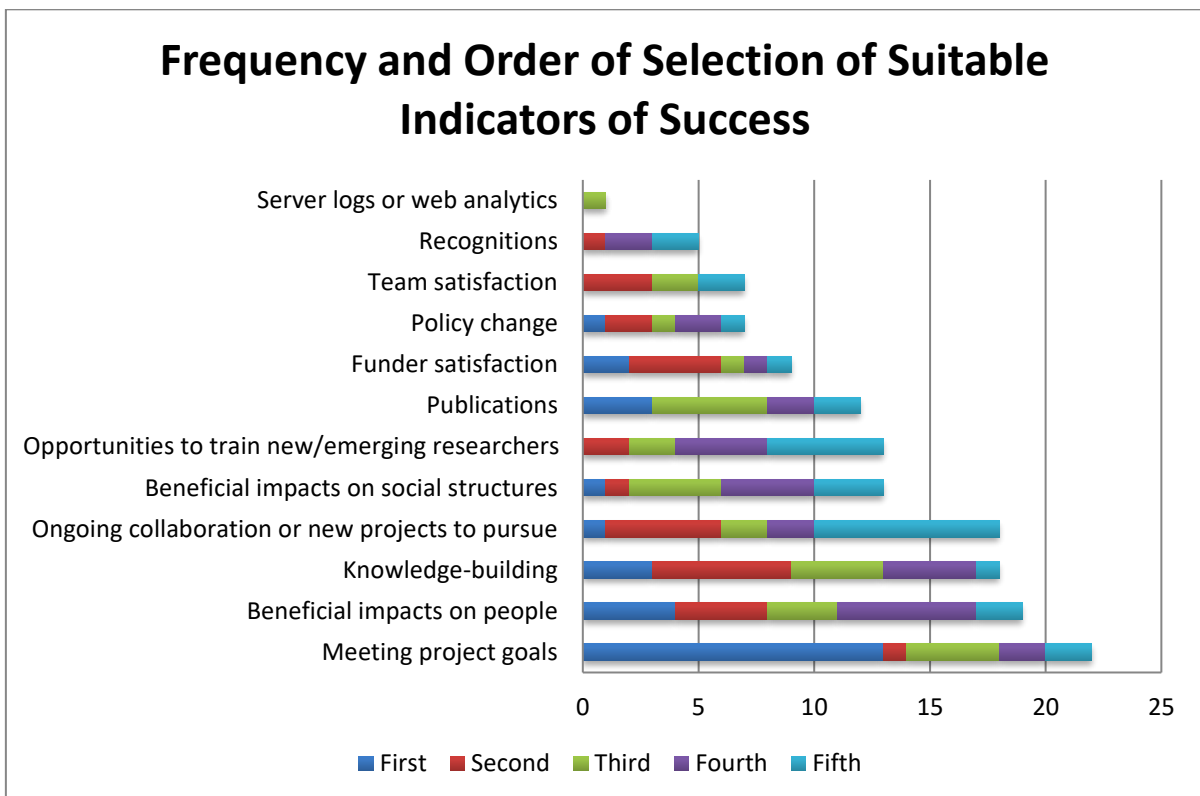


Figure 10: counts of Selection order for indicators of Success

When asked, “What three factors do you think are most important in having a successful bi-lateral or multi-lateral project?” participants made 68 entries that could be aggregated into 15 categories as shown in:

Factor	Count
common goals	18
frequent interactions	14
funding	9
leadership	8
clear roles	3
beneficial to partners	3
wide reach	2
rapport	2
marketability	2
funder transparency	2
exchange	1
complementary expertise	1
common methods	1
common impact measures	1
clear deliverables	1

Table 2: Factors required for success

Participants indicated that the most important factor is for the team to have a common set of goals and shared commitment that is supported by frequent interactions and collaborations. These activities must be supported by funding for team members and strong leadership.

3.1.4.3 Requirements for Project Success

Participants were asked what they would need in place in a funded project in order to help ensure its success. One quarter of the respondents indicated that **funding** had to be bi-lateral or multi-lateral. One respondent felt that this burden of funding could be alleviated if the funding programs would be more open to funding projects that are outside of the focus of the call but related. In this way, diverse but complementary teams could be configured and supported sufficiently.

Shared goals were equally important for successful collaboration but sharing goals was frequently described as not sufficient alone. Team members must be motivated to achieve the goals and have a clear vision of what the goals are and how to achieve them. Understanding the motivations of the collaborators to ensure that the activities moved towards united goals rather than individual goals was noted by a few members of the group but these factors also related to structures of funding programs that a) are not bi-lateral or multi-lateral so partners go unfunded and have challenges prioritizing project goals and b) are inflexible in the setting of project goals so that projects cannot respond with **agility** to new understandings or to technological, political or knowledge shifts. One participant referred to standard EU projects as “death marches because the initial project plan commits participants to a fixed plan and set of deliverables, [when] research is by definition uncertain and requires frequent course revision.” In the desire for accountability through established deliverables, many project funding schemes risk creating projects where the focus becomes individual deliverables rather than the unified project goals and matching of outcomes to changing contexts and markets. Interaction with the funder to align project goals and make sure that goals are market-driven is seen as a way to keep project goals meaningful; otherwise, “immense effort is wasted on generating token results.”

Our respondents noted that project management with clear timelines, dependencies and follow-up were important to have in place for project success as were opportunities to build rapport, collaborate and meet regularly. Regular face to face meetings were seen as an ideal way to build rapport but participants who indicated the need for these meetings also felt that funding programs also needed to fund and support these **in-person exchanges**. An active and committed steering committee that meets monthly (and face to face semi-annually) was described as an import way to unify team effort, keep goals in sight of team members and provide necessary follow-up.

3.2 Semi-structured Interviews

Ideas generated by participants in the group Delphi method survey we used as additional probes in the expert interviews. The goal of the interviews is to gain further insight into indicators of success as well as to better understand what factors foster project success.

3.2.1 Interview Participants

Participants were identified through convenience sampling as well as through leads generated through other project work and from databases such as Cordis. A list of candidate projects from collaborators (T4.1) and projects identified in the mapping of the ICT landscape (T2.1) was developed and participants from these projects were identified as potential experts for the interviews. Participants were selected based on their involvement in multi-lateral or bi-lateral projects and being located within Europe, Canada or the United States. Preference was given to participants with a lead or PI role. Eight individuals were invited to participate. Six interviews with experts were carried out: 3 from Europe, 1 from the US and 2 from Canada. The participants had all had researcher roles on multi-lateral projects and three also held or had held administrative/coordinator roles on multilateral projects. Three had been principal investigators on multi-lateral projects and all but one had worked on more than 10 multilateral projects with one having worked on between 4 and 10 multilateral projects as a partner or collaborator lead. Together, these respondents represented more than 60 experiences on multi-lateral projects.

3.2.2 Method

All interview participants were given the option to meet via video conference or teleconference. All interviews were conducted by phone except one which was conducted in person. The semi-structured interviews lasted 30-60 minutes and the following guide was utilized to ensure that key topics were touched upon during the interview while allowing the participant and interviewer to choose the flow of the conversation and order that the topics were pursued:

Interview Guide

Background Information

1. Name
2. What is/was your role in the project?
 - PI/co-PI
 - Partner or Collaborator Lead
 - Team member
 - Other (please describe)

3. How many international collaborations have you participated in?
 - 1-3
 - 4-10
 - >10

Measures of Success

4. How do you measure project success?

Probes

- Can you tell me a bit more about why you would use [stated measure] to measure success?
- In other research we carried out, individuals said that [selected indicator] was a good measure. What do you think of that?

Success Factors

5. What three factors do you think are most important in having a successful bi-lateral or multi-lateral project?

Probes

- Can you tell me a bit more about why you [stated factor] is important for success?
 - In other research we carried out, individuals said that [selected indicator] was a good measure. What do you think of that?
6. If you were to participate in a funded bi-lateral or multi-lateral project again, what would you want in place to support success of the project? Why is this factor critical?

3.3 Measures of Success Responses

Participants agreed with the measures of success that had been identified at other stages of the study (see section 2) but also had other measures to discuss. It is true that the measures of success change depending on goals of the project, but all participants were able to discuss success measures that were relevant across all their multi-lateral projects. Three principal areas of success were identified that had not been fully identified previously: accomplishing more or extra than intended, being useful and invoking change.

3.3.1 "Résidu Sèche"

Perhaps the most interesting measure that was raised by two thirds of the experts was the idea of more being developed than the deliverables. One participant referred this concept as the "résidu sèche" (dry residue) as in what is remaining after the reports. The participants saw multi-lateral projects as a form of networking where more can and should happen than is expected by the deliverables. One participant referred to this success measure as "doing things that are extra." Another referred to this marker as "moving substantially beyond the initial idea of the project." A marker of success was when something else happened or was able to develop because of the project. In some cases, it might be new prototypes and understandings but in all cases, it was events and activities beyond what was expected based on the statement of work. In a related measure, two participants discussed the building of a genuine network in which project participants were able to have new relationships that would be sustained after the project funding. This relates to earlier identified measures where there are new and ongoing collaborations that stem from the original project. Similarly, a level of saturation between partners in which all partners take ownership of the project and use a common lexicon around project objectives and activities was

viewed as a mark of success because it signified a deeper level of commitment than to a specific deliverable or work package.

3.3.2 Beneficent/Useful

One third of the measures of success that were raised by the experts related to the usefulness of the deliverables and the ability of the deliverables to benefit others. Usefulness was generally viewed as benefitting others in their work (e.g. other researchers, policy-makers, implementers) or in directly benefiting populations (e.g. the intended beneficiaries of the work) or people more generally. Work that made a difference or improved people's lives was valued by two thirds of the experts and all discussed usefulness of the deliverables in their response. All participants wanted to see the project deliverables and outcomes be used or implemented by others. Measuring usefulness, however, can be challenging because these impacts often occur towards the end or after the conclusion of the project. Potential measure of usefulness of reports were measures of demand such as document requests and downloads. Other potential measures were related to counts of citations and social media activity such as retweets. Two participants suggested more direct measures in the form of getting comments from users of the project products and from intended beneficiaries. Additionally, an advisory committee that could conduct a quality assurance analysis of project deliverables/products/activities was recommended to gauge and assure usefulness.

3.3.3 Change

Related to the concept of usefulness was the ability of the project to produce a change in others especially in their approach to problems or way of thinking about their environment or area of expertise. The ability of a project to change peoples' minds or shift awareness was valued by one third of the experts as a measure of success. Another referred to success as having priorities identified within a multilateral project taken up or implemented (e.g. by policy-makers).

3.4 Factors for Success Responses

We asked participants what factors supported project success. Our goal was to understand how to better support multi-lateral projects and foster success. Experts we spoke with raised similar ideas as those who participated in the stakeholder group Delphi study. The stakeholder group highlighted funding, shared goals, clear vision, flexibility, regular face to face meetings and active steering committees as requirements for success.

3.4.1 In Person Meetings/Interactions

Experts we interviewed we asked discuss success factors beyond funding. Five of the six participants noted that interactions between the partners were critical with three specifically noting that face to face meetings were essential for building the project team rapport, shared understandings and sense of community. One expert noted that there is a need for project members to take the time to understand partner cultures and ways of collaborating. Although all participants agreed that much could be done through email and team conference calls there was a consensus that frequently at the beginning of the project and then periodically over the span of the project that partners needed to meet and spend time together. These meetings were viewed as essential to build up nearly every other factor for success that was raised: trust, engagement, commitment and clear project information.

3.4.2 Commitment/linkages

Meetings were integral to building partner commitment to the whole project. Many of the experts we interviewed were able to recount multi-lateral, multi-partner projects that became individual partners working on a specific piece of the project without having a sense of or commitment to the whole of the project. In person interactions and meetings were cited as ways to build the core partnerships at the beginning that would be able to propel the project forward. These interactions were also the point when partner linkages could be established, integrated and supported. Projects that were particularly useful to the partners heightened the commitment of the partners to the whole project. Opportunity to build on and make the connections to securely link partners to the project are important for the project success.

3.4.3 Outside Engagement

Two thirds of respondents noted the importance of having the engagement of the project officer, government and stakeholders. The interest of the project officer in the project was especially important for providing guidance, assisting with networking and helping the project to gain notice of the appropriate people in the public and private sector as well as connections with other projects. There was a sense that the project officer must have a genuine interest in the project and feel some responsibility for its success. Participants were able to recount projects in which the project was just a "file on the officer's desk" or where the project officer had a role that felt adversarial rather than invested.

3.4.4 Trust

Engagement of the project officer relates to the success factor of trust. While trust between partners was also mentioned, more participants elaborated on trust between the partners and the funding agency or project officer. There was a sense that the funding agencies were unwilling to support risk-taking and because of this position failed to support the opportunity for innovation within projects. Experts we interviewed talked about the fact that when they did not feel supported by their project officer that they felt less able to bring problems to the attention of the project officer. This wariness meant that it was sometimes harder to acknowledge ideas that did not work and to correct them. There was a desire to have a more collegial relationship with funders and project officers to allow for periods of greater experimentation and exploration before deliverables and the mechanisms of the project became set in inflexible work package descriptions.

3.4.5 Flexibility

Along with trust, three of the participants discussed the need for flexibility. While trust of funders and project officers was described as a form of flexibility, these participants also discussed flexibility in terms of the partners and their interactions with each other and with other stakeholders. In this case, flexibility referred to openness to thinking differently and considering the different perspectives and approaches of other partners. Success was also seen as being related to harmony with stakeholders especially for in projects that have direct beneficiaries. For these projects, partners must have the ability to listen to people and hear what works for them. There is a need to be agile in response to new information and to be able to adjust direction and focus based on input from stakeholders.

3.4.6 Project Information

Finally, two thirds of those interviewed discussed the need to have very clear project information that clarifies who leads as well as how decisions will be made and communicated. The role of the project manager was highlighted by several as an integral part of keeping project partners motivated and connected. One participant strongly linked project success to the project manager and stressed that planning for success and keeping project goals at the forefront of all partner interactions was the responsibility of the project manager. Another felt that the project manager needed to be able to communicate key elements of the project in short and simple statements that could engage but not overwhelm the partners. Excess of information within multi-lateral projects was described by this participant as a stressor that caused partners to disengage from the overall project and become siloed.

3.5 Suggested Changes to Funding Programs

We asked participants what they needed in place to support project success and probed about how the funding agency could facilitate these needs. Participants spoke about measures/evaluation, failure/innovation, funding rules and synergy.

3.5.1 Measures/Evaluation

Participants talked about the ways that project success is measured and evaluated. There was a consensus that this system is imperfect and challenging to address. While participants understood the need for accountability to ensure that funding is dispensed wisely, most found the process for evaluation counter-productive, anti-innovation, and an exercise that is more about checking boxes than uncovering truths about projects. The measures tended to be based on delivering a set of reports or coming up with a set of deliverables that had been agreed upon before the project began and did not have a process for human judgement to consider goals, benefits and outcomes based on the events of the project. Many felt that there needed to be greater flexibility in the project outcomes; that the projects were too pre-determined to allow partners to explore directions that look more beneficial to the goals (e.g. as new connections were made, or different technologies become more prominent).

Participants agreed that it was desirable to have deliverables planned but indicated that most projects were constructed without enough flexibility in the timing of the deliverables or in the way the deliverables would be accomplished. Many stated that they had been in projects that became focussed on individual deliverables rather than the development of the project goals which needed a more holistic approach. The goals of the project which would be propelled by the interactions and deliverables became secondary to the creation of reports and products along the project timeline even when deliverables had become less relevant due to other developments.

Evaluations of project measures especially by external evaluators were viewed as unhelpful exercises that failed to get at the truth of projects. One participant said that evaluations do not uncover lessons that can be learned by the projects and do not uncover if the project was helpful. Instead, these evaluations were typically constrained by deliverable lists and work package descriptions that break the project into its pieces but fails to understand how the pieces functioned as a unit.

Other participants suggested that new measures for success be considered. One felt that the measures should focus on project growth and that there needed to be a

continuum of development and phases of growth to determine how well a project is moving from concept to goal fulfilment. Another participant discussed the difference in measures for projects that occur in developing countries and projects in developed countries. Projects in developing countries will have measures of social impact and policy change but these measures seem undervalued in developed world projects. Social impact or beneficial impacts on people and impact on social structures was also raised by the stakeholder group as a useful measure of success.

3.5.2 Failure/Innovation

Half of the participants touched on aspects of facilitating innovation and allowing for failure. One participant specifically suggested that money would be better utilized if the first phase of funding was understood as funding failure as a better mechanism to determine the most promising projects to continue funding. The idea is to provide funding for many projects but for a shorter term as a way to determine the potential for a project to achieve goals. This approach also allows for iterations of the approach before being written into less flexible structures such as work packages. Funded trials, the participant suggested, would be a better way for funders to determine the viability of projects and to distribute long-term funding. Another participant suggested that there needed to be greater trust between the funder and the researcher at the initial phase to allow creativity to be “free-flowing.” While not necessarily the same as “funding failure” this suggestion also fits with the idea that projects need to have initial exploratory phases.

Several participants felt that failure was not sufficiently valued as part of learning and that there needed to be a cultural shift in how funding agencies evaluated projects that did not achieve expected results. Participants felt that lessons learned and new directions from projects that didn’t achieve goals were not acceptable as a project outcome and were hidden or lost as a result. One participant felt that funders wanted to manage innovation but that this approach was not feasible and was an oxymoron. Instead, funders could support innovation by facilitating multiple iterations and accepting lessons learned as a valuable contribution to the innovation process.

3.5.3 Funding rules and Synergy

Coordination of funding between countries was described as very important but also problematic. Many participants could recount a project where partners from one country were insufficiently funded due to lack of coordination between countries or funding rules that prevented funding labour in other countries. Cooperative funding programs were important to participants, but some found that these were not successful because funding for partners from one region did not guarantee funding for partners from another region; as a result, the same challenges of unequally funded partners could arise, or in most cases, the project could not be funded.

Another funding challenge related to evaluation and impact. Most participants indicated that they seldom had opportunity to assess the impact and outputs of their projects because funding was only for production of deliverables and meeting of goals but not for long-term or follow-up assessment. While some had opportunity to make assessments part of the project time-line, most felt that there was no opportunity to explore the ways project results had been implemented or had an impact. Lack of opportunity was related to inability to fund follow-up activities.

Four of the participants talked about synergies within multi-lateral projects as being a shared responsibility between the funding program, the project officer and the

project partners. The participants talked about the need for there to be less separation between work packages and that they wanted project officers to do more to help create linkages to other projects and help build outside interest and synergies with the project. Two also indicated that they felt the project officer and project manager should have a discussion of goals and impacts at the start but that the project officer needs to cultivate a partnership role and work on building trust. More than one participant indicated that the project officer needs to be more than a money dispenser.

4 DISCUSSION

Four themes emerged in both the stakeholder group and interview participant comments: the importance of face-to-face meetings, having shared goals and funding to support these activities as well as the need for agility. Despite the proliferation of inexpensive and readily available video conferencing systems, face to face exchanges especially at the beginning but also throughout the project were viewed as very important to build understanding and community within the project. These meetings were important for helping to understand the motives and interests of partners and for creating foundations for relationships that could then be successfully maintained through remote means such as email or phone calls.

For funders, it may be worthwhile to consider creative ways to support networking goals of projects beyond providing funding for travel and hospitality. One approach may be having dedicated staff to coordinate and arrange in-person meeting for multi-lateral projects. Events that included multiple projects may be a useful way to allow multi-lateral project partners to meet, share goals and develop relationships and then to also explore synergies with other funded multi-lateral projects that may have overlapping goals. Having individuals in roles to plan these events would remove the need for project managers or staff to spend project time and resources on event planning and could enable better economies of scale for funding dollars that support networks and meetings while also achieving better results and improved synergies within and between projects.

Shared goals may seem like a given in a multi-lateral, multi-partner projects and even beyond the reach of the project officer or funder but shared goals seemed related to the other prominent themes: networking, funding and agility. Participants reported that shared goals and overarching project goals often became subordinate to individual deliverables and motives. In some cases, participants reported that the commitment to the deliverable was counter-productive to the project goals and even a waste of resources but a requirement for completion of the project. It was also reported that lack of funding for some partners led to fractured focus and commitment.

It is understandable that funders, particularly those dispensing public funds, require systems for accountability and ways to measure project success. The comments from stakeholders and expert interviews, however, suggest that the current method of measuring success and defining deliverables is not useful and may even hamper innovation. Participants reported that they needed greater agility in determining direction and outcomes during long-term projects as well as different scales to measure their accomplishments. The suggestion by some of our experts in their interviews to fund for failure is an interesting starting point to consider addressing these intertwined challenges.

Creating start-up funds that fund many project ideas with smaller short-term funds and are less prescribed but allow for creativity and exploration may be a better way to consider which projects show greatest promise for further funding. This approach would also allow projects that have completed start-up funding to re-evaluate approach and deliverables based on the exploratory phase. The iterative approach to funding and project formation would improve the resilience of the project deliverables over the long term. Even with a formative exploratory phase to improve the project once given long-term funding, it may be that projects require more regular evaluations of goals and directions with a problem-solving approach rather than a checklist approach. Evaluation processes that are collegial and partnership-based are more likely to uncover project challenges or shifts in perspective that have a bearing

on goals and deliverables. This approach may require a cultural change at the funding agencies in how they view the roles and goals of project officers and review committees. Rather than reviewing deliverables and progress on work packages, there should also be a review of progress on overarching project goals as well as consideration of changes that should occur at the project level given new developments in technology, understandings or even partner priorities.

This iterative approach relates to the expressed need for greater agility within projects to respond to changes in the environment or field. There is a sense that once a project is funded that the deliverables are locked in and there is no flexibility within the project description to alter direction or priorities. Research projects have elements of discovery. Funders and project officers need to generate a partnership culture and have techniques to build relationships of trust and support in which new directions based on discovery can be discussed and implemented where it makes sense to do so.

5 CONCLUSIONS

Bi-lateral and multi-lateral cooperation on funding of research and development projects across the ICT landscape allow for networks and partnerships to develop amongst the most suitable partners rather than the ones who are geographically closest. There are certainly steps that can be taken to improve cooperation and to continue successful cooperative approaches (see, for example D.1.6 - Report on Transatlantic ICT Forum Conference - TIF 2017). However, funding and ideal partnerships does not necessarily translate into the most successful projects.

The stakeholders who participated in our Delphi study group and the experts that we interviewed indicated that there were challenges that they experienced in fostering successful projects and that they had diverse ways of measuring and prioritizing success factors. Once funding is secured participants indicated that they needed better ways to respond to project developments, to build relationships within and between projects, and to interact with project officers and funders.

There was a sense that tolerance for failure needed to be increased and even capitalized on with the expectations that failures could lead to better conceived projects and better decisions around what projects to fund over longer terms. Rigidity in program processes can lead to wasted efforts and "check list" projects where deliverables are created because they are required even when new information or techniques indicate that the deliverable will no longer make the desired contribution.

Removing impediments to multi-lateral and bi-lateral cooperation in ICT funding and S&T research development cooperation between EU countries and non-EU countries is only the first step in support international collaborations. There are further areas for support and improvement once research cooperation has been established and projects receive funding.

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