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|  | Standardization Sector |
| ITU-T Technical Paper |
| (03/2024) |
|  | **TP.inno** |
|  | Description of the incubation mechanism and ways to improve it |

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| **ITUPublications** | **International Telecommunication Union** |



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| Technical Paper ITU-T TP.innoDescription of the incubation mechanism and ways to improve it |

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| SummaryIn accordance with its mandate, ITU-T Study Group 17 (SG17) coordinates security-related work across all ITU-T Study Groups. Security, as described in the Study Group's mandate, evolves at a pace that is much faster than the four-year term that characterizes study periods. There are many forces in action driving a lot of innovation such as:– The arms race between attackers and defenders;– The general digitalization mega-trend driving general innovation (artificial intelligence (AI), distributed ledger technology (DLT), etc.);– A strong change in the policy and regulatory frameworks at country and regional levels (e.g., different data protection regulation).In this context, SG17 has taken the initiative to develop a strategy of transformation of security studies through a correspondence group on the transformation of security studies called CG‑XSS. This correspondence group and the associated special sessions on the transformation of security studies delivered a strategy in three steps where the first step involved the creation of an incubation mechanism to deal with innovation in a much timelier manner.While this incubation mechanism proved to be successful in the pilot phase, a lot of the documentation describing it became diluted in too many temporary documents. It was therefore felt that there was a fundamental need for a live reference document that can codify this incubation mechanism and incrementally answer the question of how to bring innovation in cybersecurity standardization in Study Group 17 in a timely manner.The purpose of this Technical Paper is precisely to answer this question.As any mechanism can be improved, it will as well review and analyse what other standards development organizations (SDOs) are doing in terms of innovation, and perhaps it will help SG17 to constantly review and improve this mechanism. |
| KeywordsIncubation, innovation, mechanisms. |

Note

This is an informative ITU-T publication. Mandatory provisions, such as those found in ITU-T Recommendations, are outside the scope of this publication. This publication should only be referenced bibliographically in ITU-T Recommendations.

Change Log

This document contains Version 2.0 of the ITU-T Technical Paper on "*Description of the incubation mechanism and ways to improve it*" approved at the ITU-T Study Group 17 meeting held in Geneva, 21 February – 3 March 2023.

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Technical Paper ITU-T TP.inno

Description of the incubation mechanism and ways to improve it

# 1 Scope

This Technical Paper describes entirely the incubation mechanism established by ITU-T SG17.

It then analyses other ways and mechanisms in ITU and other standards development organizations (SDOs) to accept innovation.

# 2 References

None.

# 3 Definitions

## 3.1 Terms defined elsewhere

None.

## 3.2 Terms defined in this Technical Paper

This Technical Paper defines the following terms:

**3.2.1 allocation criterion**: A condition to be met by a new work item to become an incubation candidate new work item.

**3.2.2 incubation allocation**: The first part of the incubation mechanism which will agree to the allocation of the new work items into either their final question or the incubation question.

NOTE – The final question is any question except the incubation question.

**3.2.3 incubation candidate new work item**: A new work item[[1]](#footnote-2) that has met the allocation criteria but has not yet been agreed as an incubation new work item.

**3.2.4 incubation management**: The second part of the incubation mechanism where the incubation question manages the incubation queue.

**3.2.5 incubation mechanism**: A means that allows any new work item which is valid for SG17 to study but is not agreed to fit exactly in the current structure of SG17 to continue to be developed by SG17 by being allocated to an incubation question until it is finished or reallocated to its final question.

**3.2.6 incubation question**: The question hosting the incubation queue that is responsible for its management and development.

**3.2.7 incubation queue**: A set of incubation work items in the incubation question.

**3.2.8 incubation rapporteur**: An associate rapporteur in charge of the management of the incubation queue in the incubation question.

**3.2.9 incubation reallocation**: The process to move an incubation work item from the incubation queue to its final question.

**3.2.10 incubation work item**: A work item that had been agreed to be in the incubation queue.

# 4 Abbreviations and acronyms

This Technical Paper uses the following abbreviations and acronyms:

AI Artificial Intelligence

CG Correspondence Group

CG-XSS Correspondence Group on Transformation of Security Studies

CTO Chief Technology Officer

CxO Chief "whatever" Officer

DLT Distributed Ledger Technology

FG Focus Group

IETF Internet Engineering Task Force

ISG Industry Specification Group

JTC Joint Technical Committee

NFV Network Function Virtualization

NWI New Work Item

OASIS Organization for the Advancement of Structured Information

PP ITU Plenipotentiary Conference

PWI Preliminary Work Item

SC Subcommittee

SDN Software Defined Network

SDO Standards Development Organization

TD Temporary Document

TSAG Telecommunication Standardization Advisory Group

WTSA World Telecommunication Standardization Assembly

# 5 Introduction

## 5.1 Context

In accordance with its mandate, ITU-T Study Group 17 (SG17) coordinates security-related work across all ITU-T Study Groups. Security, as described in the Study Group's mandate, evolves at a pace that is much faster than the four-year term that characterizes study periods.

There are many forces in action driving a lot of innovation such as:

– An arms race between attackers and defenders;

– The digitalization megatrend driving general innovation (AI, DLT, Quantum, etc.);

– A strong change in the policy and regulatory frameworks at country and regional levels.

The purpose of this Technical Paper is to develop a new SG17 incubation mechanism that will keep SG17 work programme in line with the quickly changing requirements in the world of secure telecommunications.

Any mechanism can be improved. It is possible to identify, document and analyse what other standards development organizations (SDOs) are undertaking when exposed to the same issues. Part of this process is to review this mechanism to improve it based on lessons learned.

As a result, if this incubation mechanism, which is currently an SG17 mechanism only, proves effective, it may be considered for introduction into ITU-T standard working methods through changes to the relevant WTSA Resolutions and A-series ITU-T Recommendations.

## 5.2 Problem statement

Every four years, the World Telecommunication Standardization Assembly (WTSA) defines the structure and the mandates of all Study Groups for the next four-year study period.

Each Study Group has its own way to describe its terms of references (ToR) or mandates.

Some Study Groups have a very simple, short and 'catch all' approach to describe their ToR, including in their Questions. In this case, there are no strong borders in the ToR and it is easy for the Study Group to dispatch topics to the most appropriate Question.

However, other Study Groups have a very strict and precise way to describe their ToR, which does not give flexibility to dispatch some valuable new work items (NWIs) that would otherwise be accepted.

SG17 finds itself in the latter situation and, as the ToR is set for the whole study period, SG17 may face difficulties to manage and work on new innovative topics that were not anticipated during the previous WTSA.

In the above context, the problem that this document resolves is:

– How to bring innovation in cybersecurity standardization in Study Group 17 in a timely manner?

## 5.3 The need for an innovation path in SG17

Bringing innovation in any Study Group sometimes means that a topic submitted to the group in a contribution to a meeting might not fit exactly in the current structure that is consensus-based and changing the structure or amending ToR existing questions is always a difficult and a risky task for a large spectrum of reasons discussed in another Technical Paper [b‑XSTP-sgstruct].

This situation leads to a gap and a tension between the formulation of a given NWI vs the strict mandate of the study Question that do not match exactly (on a consensus basis) when the topic is a valid contribution to the Study Group but would be accepted if the structure of the Group were be changed or the Question text were amended, which takes time and necessitates following a specific process.

With a number of members wishing to bring in their contributions, it was necessary to find a solution to this problem and relax the pressure to change reactively and perhaps unwisely the structure without any long-term vision.

For example, 14 contributions on DLT were presented to one of the SG17 meetings, which resulted in the establishment of a creative ad hoc approach. However, this also led to a substantial, short-notice change in the agenda of the whole meeting, generating a significant number of challenges during it. It would be preferable not to repeat this approach.

## 5.4 The reason for considering an innovation path in SG17 at this point in time

SG17 has evolved incrementally over the years but security has evolved at a much faster pace due, as described above, to a number of factors, including:

An arms race between attackers and defenders leading to a large range of innovations.

The digitalization megatrend driving general innovation (AI, DLT, etc.), which increased both:

– The attackers and defenders capabilities;

– The attack surface.

Increased awareness of:

– The importance of security and the need to invest among all the business constituencies;

– Security among policy-makers and regulators across the globe;

– Balancing security with concerns about personal identifiable information among civil society;

– New frontiers for security in academia.

A shortage of skills, talents, resources and professionalization:

– Which accelerates the need for best practices and standards to simplify the jobs;

– Which demands the appropriate lifelong capacity-building programmes and courses.

All of these factors combined together explain why innovation was accelerated by investment to a degree that it outpaced the incremental evolution of SG17.

## 5.5 Potential solutions to fill this gap

As discussed in [b-XSTP-sgstruct], comparing a Study Group to a company was compelling enough to inspire a solution from industry.

Indeed, when organizations launch a new business, this typically comes with a number of risks; sometimes the solution used is to incubate the innovation until it is solid enough that the organization can qualify what to do with this new business and whether to spin off a new company, rearrange business units, etc.

The approaches taken by businesses regarding start-ups led them to also create the concept of incubators.

Inspired by these approaches, the idea of an incubation mechanism for SG17 started to gain acceptance until it became a reality. Once the principle was agreed, the question that needed to be addressed was how to design it and implement it within the rules and procedures of ITU-T, which this Technical Paper will address.

# 6 The incubation mechanism

## 6.1 General description

The incubation mechanism is a mechanism that allows any contribution for an NWI which is valid for SG17 to study but does not fit exactly in the current consensus-based structure of SG17.Such NWIs need to be developed further by SG17 until the specific incubation question (which can be interpreted as a staging area) has been answered or until it has been allocated to its final question.

## 6.2 A mechanism in two parts

The application of the mechanism implies a requirement that candidate NWIs can be placed using the metaphor of a staging area in SG17, in what is defined as the incubation queue.

This means that this mechanism needs a way to:

– Allocate the incubation candidate NWI into this incubation queue;

– Manage this incubation queue including the possibility to reallocated incubation work items to their final question if needed.

Where:

– A work item in the incubation queue is defined as an incubation work item;

– A NWI candidate for incubation is defined as an incubation candidate NWI;

– The question defined in the incubation queue and the incubation management is defined as the incubation question;

– The associate rapporteur of the incubation question who is in charge of the management of the incubation queue is defined as the incubation rapporteur.

It is recognized that the incubation mechanism will consist of two parts during SG17 meetings:

– The first part will designate the allocation of the NWIs and will also be defined as incubation allocation;

– The second part will designate the management of the queue and the developing NWIs and will be defined as incubation management.



Figure 1 – General flow of the incubation mechanism in two parts: allocation and management

Each part needs to be hosted by an entity:

– The allocation part is handled by a special session that manages allocations of incubation candidate NWI. This special session may need arbitrations across the Study Group between Questions and it needs to be handled as early as possible in the Study Group;

– The management part that manages reallocations, among other things, is handled by the above special session.

## 6.3 Incubation mechanism framework

### 6.3.1 The incubation work item

An incubation work item is a work item that is identified as having been placed in the incubation queue.

Identifying it as an incubation work item provides transparency to the whole Study Group and allows an interested Question to claim the work item for reallocation at the special session on incubation.

The incubation work item may be reallocated to its final Question at any time and at that point it loses its status of being an incubation work item to continue its normal lifecycle as a work item in its final Question.

NOTE 1 – As the incubation mechanism has run for a few years it can be observed and noted that some contributors were encouraged to transform their proposed new work item for Recommendation into a Technical Paper or a Technical Report in the incubation queue. As these were really innovative topics and it was often a first experience for the contributors it proved to give a number of benefits, which are as follows:

– Helping Contributors to develop their understanding of ITU-T and SG17 procedures;

– Allowing membership to familiarize itself with the new topic;

– Identifying calls for future contributions;

– Turning a Technical Paper or a Technical Report into a Recommendation.

NOTE 2 – When ITU-T SG17 work items are listed in temporary documents (agendas, reports, etc.) incubation work items may be identified with the symbol \*\* after their name.

### 6.3.2 Candidate incubation NWIs

A candidate NWI is one that is difficult to allocate to a specific question. Table 1 lists some reasons that would justify sending an NWI into incubation and provides an associated example.

| Table 1 – Examples of potential NWIs candidate for incubation |
| --- |
| Reason | Example of a potential new work item topic that would fall in the category |
| The Question's mandate does not cover the topic exactly | AI |
| The Question's mandate is too restrictive for the topic | Q8 does not cover big data |
| The Question's mandate has a dependency with ISO/IEC that may forbid the scope of the contribution | Q3 has specific agreements with ISO that may limit what it can cover |
| ITU mandate that may forbid the topic e.g., PP Resolution 130 *resolve* 5. | Ad spam is at the edge of security and content  |
| The topic can fit into multiple questions because the topic was never properly recognized or positioned in SG17 or because there are overlaps between questions and membership wants to decrease the proliferation of joint meetings. | Big data appeared in Q2, Q7, Q8?Should SDN/NFV be paired with Q6 or Q8? |
| The topic can exist in the general question mandate, but the real meaning of the contribution shows a possible misalignment | Relates to the allocation of KT quantum work item. Were the right reasons really considered to put it in Q2? Should it be more explicit about the architecture implications regarding middleboxes first? |

### 6.3.3 Allocation criteria for candidate incubation NWIs

Table 2 lists the criteria to allocate NWIs as candidate incubation NWIs.

| Table 2 – Allocation criteria for candidate incubation NWIs |
| --- |
| Criteria | Category | Description | Comments | Example |
| C1 | Innovation | ITU-T SG17 members agree that there are no exact Questions that can host this new work item or the contributor allocated this NWI to ALL/17 or to the incubation question.  | This happens when the topic covered is about a 'next big thing' which is not yet covered by any Question. The contributor wants to bring innovative subject to SG17. This is one of the main reasons why the incubation process has been created. Allow innovation to come in and later, when the structure is fixed, move the work item to its final Question. | New work item is about AI, currently not covered by any Question of SG17. |
| C2 | Too many target questions | ITU-T SG17 members agree that there are multiple questions that can host this new work item | This happens when there are overlaps between Questions and it is difficult to agree what the right Question is, probably because the Question text needs to be reviewed and there is a 'chicken and egg situation' by which this cannot be done yet (CG-XSS S2 or S3 steps not completed yet, TSAG did not approve, perhaps PP impacts, etc.) | This has already happened in the allocation of big data work items between Q2, Q7 and Q8 or SDN/NFV between Q6 and Q8, etc. |
| C3 | Semantic mismatch | ITU-T SG17 members agree that the new work item is targeting a Question but they have no consensus that the Question real semantic or capabilities match the NWI. | This happens if a contributor specifies a Question but the topic of the NWI is not yet covered by the Question by consensus and the future structure of the CG‑XSS might bring the topic to another Question in the future. | In theory today Q8 does not cover big data and so NWIs that are about big data should be sent to the incubation process. |
| C4 | SDO dependency | ITU-T SG17 members agree that the new work item has a dependency with ISO/IEC that temporarily forbids the scope of its contribution. | This happens when the contributor is unaware of the specific formal relationships between ITU and other SDOs, yet the NWI is valid, and it needs some cycles with the other SDO. | Q3 has specific agreements with ISO that limit what it can cover. |
| C5 | NWI semantic misalignment | ITU-T SG17 members has no consensus that the contributor provided a partial rationale for its new work item and a review of the full semantic of the NWI can allow its allocation in multiple Questions or to no Question because it is about a 'next big thing'. | This happens if the contributor did not review all the implications of his NWI by consensus and in fact a real reformulation with more support to its NWI, making it candidate to multiple or to no Questions. | Relates to the allocation of KT quantum work item. Were the right reasons to put it in Q2 really considered? Should it not be more explicit about the architecture implications regarding middleboxes first? |
| C6 | ITU mandate possible restrictions in PP Resolution 130 | ITU-T SG17 members have no consensus that the new work item is falling into a grey area or a mandate restriction of the ITU or not. | There are perhaps conditions under which SG17 might want to keep the topic because it takes time to validate if this is within the scope or restrictions of ITU mandate or if the ITU mandate might change (e.g., in relations to PP or WTSA) | Example content related NWI, etc. |

NOTE – This criteria, like any other, is just metadata that is put on a given NWI that would match it. This is to help the audience of the incubation allocation phase to have clarity in its discussion, remembering that the incubation allocation is not discussing the content of the NWI but where to send it. It is of course very clear that should an NWI breach an ITU mandate restriction, SG17 would of course not support its establishment.

Table 3 – Discussion criteria

|  |  |
| --- | --- |
| # | DESCRIPTION |
| D | Members opinion on discussion.• "N" indicates no discussion is needed at the incubation special session• "Y" indicates item should be discussed during the incubation special session• "D" indicates there is disagreement that this item is being discussed during the incubation special session |

The example template table in Annex B to Appendix II may be used to make it clear which new work item was allocated and on which criteria with which outcome and results.

### 6.3.4 Selection of NWI candidates for incubation

Selection of NWI candidates for incubation should take certain considerations into account. The responsibility of the selection of the NWI candidates for incubation should not be left to one individual (SG17 Vice-Chair of the special session on incubation) in order to avoid or reduce potential arbitrariness, mistakes, misinterpretations of the NWI and lengthy special sessions on incubation. In addition, this should encourage a thorough preparation of the meeting and a thorough understanding of the NWI at SG17 level versus at Question level.

The following process will achieve the selection:

a) SG17 Chair reminds all SG17 members by email via the mailing list, after the contribution cut-off date, about the incubation mechanism special session and, to help prepare this special session, invites all the members to highlight if any NWI proposed warrants further discussion and on which criteria (Table 2) they want it discussed. Answers are to be sent to the incubation question mailing reflector list.

b) The SG17 Vice-Chair in charge of the incubation special session represents in a neutral way all the input in the agenda and, when possible, coordinates all the inputs, leveraging the example template in Appendix II and uses Table 2 options accordingly. The objective is simply to help prepare the special session.

c) The agenda is constructed with all the data as preparation mindful of the possibility for anyone to add or modify the proposal during the appropriate agenda item in the special session.

d) In addition, the SG17 Vice-Chair in charge of the incubation completes the agenda and can use the example agenda template in Appendix I, completing it with the elements pertaining to incubation management (in particular with the status of the incubation that is in the report of the incubation question at the last SG17 meeting; an example is provided in Annex C to Appendix II).

e) The agenda is reviewed in an open management meeting the day before the open plenary and should be published no later than the evening before the open plenary.

f) The opening plenary includes a special session on the incubation mechanism in its agenda.

g) This special session executes the agenda as usual, noting any flexibility regarding an existing work item in the queue itself and/or the final allocation of an NWI.

NOTE – For the incubation queue processing: When there is a 'dispatching' issue during the special session between the incubation hosting question and a candidate question, the processing of the NWI in the incubation queue should allow the candidate question to participate, therefore agendas should not allow parallelism for this particular question or a joint session should be run.

### 6.3.5 Running the special session on incubation

The incubation mechanism is run through a special session which is scheduled immediately after the SG17 opening plenary and the SG17 working party plenaries.

The SG17 Vice-Chair in charge of the incubation mechanism then acts as the special session Chair potentially with another, nominated, special session co-Chair.

The agenda is followed per the example template in Appendix II in sequence, namely:

– The incubation allocation part;

– The incubation management part.

During the meeting, in the incubation allocation part, the special session Chair:

– Asks the audience whether there are any missing contributions that should be considered;

– Goes through the proposed list and for each candidate:

• Manages discussion about the reasons why this item is in the candidate list;

• Obtains either the meeting's agreement to send this candidate to the incubation queue or to allocate it to a final agreed question;

• If no consensus is obtained, then the status quo prevails and the NWI is allocated to its declared Question.

During the meeting, in the incubation management part, the special session Chair:

– Identifies the incubation work items in the incubation queue as found in the TD carrying the report of the incubation question;

– Reads the analysis made in the report by the incubation rapporteur;

– Opens the discussion for any proposal to reallocate an incubation work item to a final Question;

– Discusses each request;

– Records any agreement obtained.

NOTE – Experience shows that TSB can elegantly support this session by making a copy of the special session on incubation agenda, which is then displayed and edited. This allows each decision to be noted in the last column of the table named "Proposed incubation candidate NWI for allocation discussion". Equally, results from the reallocation are noted on this file.

This amended agenda file can then be immediately sent to all SG17 members via the reflector so that:

1) Every participant has clarity; and

2) Rapporteurs can update their respective agendas with no delays.

### 6.3.6 Incubation queue utilization

The incubation queue can be used in several ways as it contains the list of incubation work items, because:

– The number of incubation work items is a key information that indicates the workload;

– The number of incubation work items may be used as an indication of SG17 status, as follows:

• No incubation work items in the incubation queue indicates that the SG17 structure allows new work to be accepted;

• A few incubation work items in the incubation queue indicates that the SG17 structure for acceptance for new work is breaking down, otherwise the NWIs would be sent to final questions;

• Many incubation work items in the incubation queue indicates that the SG17 structure is not fit for purpose and requires significant changes.

– The analysis of the incubation work items demonstrates that the Study Group has captured a valuable set of work that may trigger:

• The change of an existing question; or

• The generation of a new question; and/or

• Other decisions (e.g., joint meetings).

 NOTE – The risk to take any of the above decisions is significantly lower than it would be if there were there no incubation mechanism as there is no guessing; the content of the incubation queue constitutes tangible concrete data of work already developed that may help SG17 to propose a new area of study.

## 6.4 Incubation rapporteur

As the incubation queue can receive arbitrary contributions on edge innovation topics, this imposes some requirements on the one or more incubation rapporteurs who manage the incubation queue in the incubation question.

The core requirements for candidates are:

– Proven experience as a rapporteur in or outside the ITU;

– A high level of expertise in core security;

– A high level of expertise in innovation management and associated topics.

The nomination of the one or more incubation rapporteurs follows SG17 rules.

The only specific additional tasks for any incubation rapporteur is:

– He or she must produce a specific status report as part of the incubation question report.

– This report must:

• Contain the number of incubation work items;

• List each new work item in the incubation queue.

– This report may:

• Contain an analysis of the queue;

• In particular, alert SG17 on the current and expected growth of the incubation queue;

• Identify the emergence of any particular category of study that could be relevant for any SG17 restructuring parallel activity, including potential Question text change, e.g., to offload the incubation queue;

• Identify any potential incubation work item candidate for incubation reallocation at the next meeting.

Finally, the incubation rapporteur is encouraged to participate in the relevant correspondence group about the short, mid and long-term transformation of SG17.

As by its nature the incubation mechanism is a way to innovate, it is expected that the probability that contributors and editors will be new to ITU-T or even to standardization as a whole is very high. The incubation rapporteur may direct newcomers to materials for newcomers as well as relevant tutorials that are prepared by TSB and SG17 leadership.

Appendix I

Template to support the reporting of the incubation mechanism
in the incubation question report

The following is an example text to be included in the incubation question report to document the status and assessment of the incubation mechanism for consideration in the working party closing plenary and then potentially in the Study Group closing plenary.

For sake of clarity, this template example text was created when Q4 was the incubation question; the incubation mechanism might be hosted by another question.

All variable elements are marked in yellow.

Q4 incubation mechanism report

Q4 hosts the incubation management part of the incubation mechanism as described in ITU-T Technical Paper (2020), *Strategic approaches to the transformation of security studies*.

Q4 incubation rapporteur(s) in charge of incubation management in this SG17 meeting

Q4 incubation rapporteur(s) in charge of incubation management in this SG17 meeting is (are):

*First name, name, affiliation, country*

Status of the incubation queue

The incubation queue contains eight work items under development as of 19 July 2019 (see Table I.1).

Table I.1 – Status of the incubation queue

|  |  |  |
| --- | --- | --- |
| TD | Work Item | Title |
| [TD1981](https://www.itu.int/md/T17-SG17-190122-TD-PLEN-1981) | TP.inno | Description of the incubation mechanism and ways to improve it |
| [TD1982](https://www.itu.int/md/T17-SG17-190122-TD-PLEN-1982) | TP.sgstruct | Strategic approaches to the transformation of security studies |
| [TD1950](https://www.itu.int/md/T17-SG17-190122-TD-PLEN-1950) | TR.sec-qkd | Technical report on security framework for quantum key distribution in telecom network |
| [TD2250](https://www.itu.int/md/T17-SG17-190827-TD-PLEN-2250) | X.cg-QKDN | Use of cryptographic functions on a key generated in quantum key distribution networks |
| [TD2228](https://www.itu.int/md/T17-SG17-190827-TD-PLEN-2228) | X.qrng-a | Quantum noise random number generator architecture |
| [TD1880](https://www.itu.int/md/T17-SG17-190122-TD-PLEN-1880) | X.rdmase | Requirements and guidelines for dynamic malware analysis in a sandbox environment |
| [TD2248](https://www.itu.int/md/T17-SG17-190827-TD-PLEN-2248) | X.sec-QKDN-km | Security requirements for quantum key distribution – key management |
| [TD2249](https://www.itu.int/md/T17-SG17-190827-TD-PLEN-2249) | X.sec-QKDN-ov | Security requirements for quantum key distribution networks – overview |

Consensus on work items to be reallocated to their final questions

Q4 agreed at the meeting to present the following work items to be proposed for reallocation to their final Questions at the SG17 closing plenary (see Table I.2).

Table I.2 – Incubation reallocation

|  |  |  |
| --- | --- | --- |
| Work item | Title | To be moved to question |
|  |  |  |
|  |  |  |

Incubation rapporteur(s) analysis and report

The incubation queue grew significantly and shows the emergence of a new category on quantum key distribution and quantum random number generation that could be recognized in a future structure change of SG17.

Assessment of the incubation queue

*The Q4 rapporteur has the opportunity to write any assessment of the incubation queue here for example:*

– *Is the queue manageable, or too big, etc?*

– *Is there a need for specific experts among the group of rapporteurs of Q4 to manage new work items on topic X?*

– *Is there an interesting trend developing in the queue on which the Q4 rapporteur wants to suggest a potential new question or other structure or coordination or anything relevant*?

Appendix II

Example template of a special session agenda

The variable elements of this example are marked in yellow.

|  |  |  |
| --- | --- | --- |
| A black and white logo  Description automatically generated | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2022-2024 | SG17-TD1593R1 |
| STUDY GROUP 17 |
| Original: English |
| **Question(s):** | All/17 | Geneva, 20 February – 1 March 2024 |
| **TD** |
| **Source:** | Chair, special session |
| **Title:** | Agenda of special session on incubation mechanism |
| **Contact:** | Arnaud TaddeiBroadcom Europe Ltd.United Kingdom | Tel: +41795061128E-mail: Arnaud.Taddei@broadcom.com |
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| **Abstract:** | This is the agenda for the special session on incubation whose objectives are to execute the incubation allocation and the incubation management parts of the SG17 incubation mechanism. |

1. Opening remarks

2. Agenda adoption

3. Incubation allocation

(Review of candidate new work items for agreement by the incubation mechanism)

a. Reminder of the Annex A incubation criteria

b. Annex B: Proposed incubation candidate new work items for allocation discussion

c. Agreement for Annex B

d. Agreement for each item to be discussed in Annex B (potentially amended by 3c)

4. Incubation management

(Potential incubation work items to be claimed by any question)

a. Incubation identification (from last incubation question meeting report)

Q15/17 report [TD1146](https://www.itu.int/md/T22-SG17-230829-TD-PLEN-1146/en) section 7.5

b. Incubation analysis and report (from last incubation question meeting report)

c. Agreement for incubation reallocation

Chair proposal to move TP.inno-2.0 work item from the incubation queue to Q1

5. Conclusions

6. Any other business

7. Closing

Annex A

to Appendix II

## A.1 Incubation criteria

Table A.1 – Incubation criteria

|  |  |  |
| --- | --- | --- |
| # | Criteria | Description |
| C1 | Innovation | ITU-T SG17 members agree that there are no exact Questions that can host this new work item (NWI) or the contributor allocated this NWI to ALL/17 or to the incubation question. |
| C2 | Too many target Questions | ITU-T SG17 members agree that there are multiple Questions that can host this NWI. |
| C3 | Semantic mismatch | ITU-T SG17 members agree that the new work item targets a Question but they have no consensus that the matches the NWI semantically or in terms of capabilities. |
| C4 | SDO dependency | ITU-T SG17 members agree that the NWI has a dependency with ISO/IEC that temporarily forbids the scope of its contribution. |
| C5 | NWI semantic misalignment | ITU-T SG17 members have no consensus that the contributor provided a partial rationale for the NWI and a review of the full semantic of the NWI can allow its allocation in multiple Questions or to no Question because it is about a next big thing. |
| C6 | ITU mandate possible restrictions in PP Resolution 130 | ITU-T SG17 members have no consensus that the new work falls into a grey area of decision on whether it touches a mandate restriction of the ITU or not. |

Table A.2 – Discussion criteria

|  |  |
| --- | --- |
| # | Description |
| D | Members opinion on discussion:• "N" indicates no discussion is needed at the incubation special session;• "Y" indicates that the item should be discussed during the incubation special session;• "D" indicates there is disagreement on whether this item should be discussed during the incubation special session. |

Annex B to Appendix II

Proposed incubation candidate new work items for allocation discussion

The list of 62 proposed new work items (NWI) at this SG17 meeting is given by [TD1517](https://www.itu.int/md/T22-SG17-240220-TD-PLEN-1517/en).

For the purpose of this example Table B.1 has been edited.

| Table B.1 – Proposed new work items |
| --- |
| Number | Title | Source | Question | C1 | C2 | C3 | C4 | C5 | C6 | D | Notes | Result |
| [C483](https://www.itu.int/md/T22-SG17-C-0483/en) | Proposal for new work item X.1254Rev: Entity authentication assurance framework | Aetna (United States) | Q10 |  |  |  |  |  |  | N |  |  |
| [C485](https://www.itu.int/md/T22-SG17-C-0485/en) | Proposal for new work item X.EPSS: Exploit Prediction Scoring System | Forum of Incident Response and Security Teams (FIRST) (United States) | Q4 |  |  |  |  | X |  | Y | Remembering section 2.4.2.1 of [TD1182](https://www.itu.int/md/T22-SG17-230829-TD-PLEN-1182/en) (incubation special session report), this proposal is a continuation of C329 which could not' be reviewed in the previous SG17 meeting. At that time, the contribution was both for Q4 and Q15 and the special session on incubation analysed that there is a potential synergy with two work items on simulation in the incubation queue, forming a future 'predictive' category which is very beneficial to SG17 and probably ultimately for Q4. Given its affinity with CVS, etc. the current incubation special session Chair's point of guidance is to keep it in Q4, hoping for a regrouping of all predictive work items in Q4 and with a note that Q4 and Q15 may do some joint meetings in the interim if and when appropriate. |  |
| [C490](https://www.itu.int/md/T22-SG17-C-0490/en) | Proposal for new work item: Amd. 1 to Rec. ITU‑T X.500 | ISO/IEC 9594-1 | Denmark | Q11 |  |  |  |  |  |  | N |  |  |
| [C500R1](https://www.itu.int/md/T22-SG17-C-0500/en) | Proposal for new work item for secure resource management for service-oriented network | Electronics and Telecommunications Research Institute (ETRI) (Korea (Republic of)) | Q7 | X |  |  |  | X |  | Y | Remembering section 2.4.2.6 of [TD1182](https://www.itu.int/md/T22-SG17-230829-TD-PLEN-1182/en) (incubation special session report), this proposal is the continuation of [C369](https://www.itu.int/md/T22-SG17-C-0369/en) at the same meeting and therefore the Chair proposes to apply the same guidance for the same reasons and move it to the incubation queue. |  |
| [C508](https://www.itu.int/md/T22-SG17-C-0508/en) | Proposal for new work item: TR.sec-int-cpc: Security guidelines for interconnection of computing power centres | China Telecommunications Corporation, Peng Cheng Laboratory (China) | Q2 | X |  |  |  | X |  | Y | This proposal scopes interconnection of computing power centres (CPN) but is CPN defined and what is its relationship with edge? The same thing? A competing proposal? Should the target be Q2 or Q8? |  |
| [C519](https://www.itu.int/md/T22-SG17-C-0519/en) | Proposal for new work item: Security guidelines for Industrial Internet in context of information and operational technology convergence | China Unicom, Zhejiang University (China) | Q15 |  |  |  |  |  |  | N |  |  |
| [C526](https://www.itu.int/md/T22-SG17-C-0526/en) | Proposal for new work item X.ztac: Zero trust architecture and capabilities for telecommunication networks | Korea (Republic of) | Q2 |  |  |  |  | X |  | Y | This new work item engages on Zero Trust and 'capabilities' which semantically means 'security capabilities' however these are to be defined by, e.g., X.arch-design (Q1) and X.secadef (Q15). The risk is to break the sequence of what CG-SECAPA needs to resolve for WTSA20 Resolution 50, disaligning SG17 outcomes. Quality risk. Proposal is to bring this work item to the incubation Queue with Q15 and CG-SECAPA to help alignment of work items context with SG17 strategy.To discuss in sequence with C585. |  |
| [C531](https://www.itu.int/md/T22-SG17-C-0531/en) | Proposal for new work item X.sec\_QKDN\_nq: Security framework for end-to-end QKDN and non-quantum cryptography services | Beijing University of Posts and Telecommunications (China) | Q15 |  |  |  |  |  |  | N | Q15 |  |
| [C541](https://www.itu.int/md/T22-SG17-C-0541/en) | Proposal for new work item X.gapci: Guidelines on Anti-DDoS protection for cloud infrastructure | Ministry of Industry and Information Technology (MIIT) (China) | Q8 |  |  |  |  |  |  | N |  |  |
| [C542](https://www.itu.int/md/T22-SG17-C-0542/en) | Proposal for new work item X.ig-dw: Implementation guidelines for digital watermarking | Alibaba China Co. Ltd. | Q15 |  |  |  |  |  |  | N | Incubation queue |  |
| [C544](https://www.itu.int/md/T22-SG17-C-0544/en) | Proposal for new work item X.gpmr: Guidelines and security measures for prevention and mitigation of ransomware | China Mobile Communications Co. Ltd., China Unicom, MIIT (China) | Q7 |  |  | X |  |  |  | Y | The semantic of this proposal is not for Q7 but for Q4. Proposal to redispatch this proposal to Q4. |  |
| [C545](https://www.itu.int/md/T22-SG17-C-0545/en) | Proposal for new work item X.sr-da: Security threats and requirements for data annotation service of artificial intelligence | China Unicom, MIIT, Vivo Mobile Communication Co., Ltd. (China) | Q7 | X |  |  |  | X |  | Y | This proposal is both innovative and relates strongly to X.sr-ai which is in the incubation queue. Proposal to redispatch this one in the incubation queue. |  |

Annex C to Appendix II

Status of incubation queue

Status of the incubation queue

The incubation queue contains 12 work items under development per section 7.5 of [TD1146](https://www.itu.int/md/T22-SG17-230829-TD-PLEN-1146/en); see Table C.1.

Table C.1 – Status of the incubation queue

|  |  |  |
| --- | --- | --- |
| TD | Work Item | Title |
| [[990-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230221-TD-PLEN-0990)(Rev.1) | X.icd-schemas | Vendor agnostic security data schemas for integrated cyber defence solutions |
| [[1405-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1405) | X.secadef | Security capabilities definitions |
| [[1388-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1388)  | TR.smpa | Technical Report, Security middle platform architecture |
| [[1375-PLEN ]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1375) | X.so-sap | Guidelines for security orchestration of service access process |
| [[1449-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1449) | X.gcspcc | Guidelines of developing of cybersecurity simulation platform based on cloud computing |
| [[1426-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1426) | X.Secaas | Security threats to be identified in the domain of security as a service |
| [[1458-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1458) | TP.inno-2.0 | Description of the incubation mechanism and ways to improve it |
| [[1366-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1366) | X.dtns | Guidelines of using digital twin of network for network security |
| [[1397-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1397)(Rev.1) | TR.srsec | Security aspects of segment routing IPv6 for the convergence of computing and network resources for telecommunication operators |
| [[1348-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1348)(Rev.2) | X.sr-ai | Security requirements for AI systems |
| [[1384-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1384)(Rev.3) | X.ssc-sra | Guidelines for Software Supply Chain Security Audit |
| [[1400-PLEN]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG17-230829-TD-PLEN-1400)(Rev.2) | X.rm-sup | Risk management on the security of software supply chain for telecommunication organizations |

The incubation rapporteur made observations in TD1336.

According to clause 6.4, the incubation rapporteur alerts SG17 that the incubation queue grew significantly with several new topics and so SG17 may consider taking urgent actions on its current structure.

As requested by Q15, the incubation rapporteur notes that Q15 ran out of time and needed an ad hoc session. This is due to a conjunction of two factors:

– NWI had too many chances to come back with improved versions of their work to a point it took time from the last Q15 meeting time session. It should be enforced that the last Q15 meeting time session be solely dedicated to Q15 documents themselves: LS/o, meeting report, etc.

– That the incubation queue grew significantly requiring more time to process NWIs and this impacted quantum work items and Q15 timing as a whole.

Both above points should be addressed by SG17 management team.

Appendix III

Incubation mechanism considerations

The incubation mechanism is a convenience of SG17 to support its work.

## III.1 Benefits and risks of the incubation mechanism

### III.1.1 Benefits of the incubation mechanism

The main aim of this proposal is to:

– Allow decorrelation of transformation of the SG17 structure versus the adoption of new work items that do not fit the SG17 structure;

– Simplify the flow of SG17 meetings by bringing forward the allocation part;

– Accept key innovations in SG17 in a much more agile manner;

– Therefore, it is proposed to:

• Give proper time to the relevant correspondence groups to carry out their job and make recommendations regarding the long-term transformation of SG17 and the evolution of its structure;

• Facilitate the work on the development of thoroughly validated new work items (NWIs) without delay and support legitimate requests from sector members.

– Furthermore, it is suggested to:

• Offer a good tool for SG17 to significantly accelerate innovation;

• At the same time, be conservative and cautious in terms of future big bets and new structure;

• Use this new tool to help to communicate effectively to recruit new members and encourage participation.

### III.1.2 Risks of the incubation mechanism

As for all proposals, nothing comes with only advantages, and it is important to be aware that there are risks too.

#### III.1.2.1 Risk associated with implementing the incubation mechanism

There are risks associated with implementing the incubation mechanism (also called 'risk of doing'). The main ones are:

– R1: The queue grows too fast and is difficult to manage with resources available;

– R2: Special expertise required is not available;

– R3: The incubation mechanism is exploited to delay work.

Mitigation suggestions:

– R1 can be mitigated by the incubation rapporteur alerting SG17 through normal reporting;

– R2 can be mitigated by the growing number of experts joining ITU-T, but in case of a severe shortage on a specific topic, SG17 will need to campaign to attract relevant new members;

– R3 can be mitigated by SG17 members and by discussions. SG17 has a strong community spirit.

#### III.1.2.2 Risk associated with not implementing the incubation mechanism

The risk of not implementing the incubation mechanism is the lack of flexibility for SG17 to allow a team to develop NWIs under good conditions (this is the 'risk of not doing'). This would significantly increase the coordination level and would eventually lead to more arbitrariness in new structure decisions. In fact, it would significantly hinder the work of SG17 and it would require a major 'step function' to avoid a dangerous plateau effect.

#### III.1.2.3 Risk of postponing the implementation of the incubation mechanism or of stopping the incubation process

The situation would create a block as changes to Questions would not be allowed. It would also block participants' positions and in general would make it much harder to establish trust in the process and to allow evolution. This would cause a delay of six months for any decisions and would not resolve anything. It may lead to a major crisis.

## III.2 Alternatives and gap analysis to introduce innovation in standardization

### III.2.1 About innovation in security

Innovation is a normal element of any technological evolution and the result of various forces. However, in security, those forces have the specific nature of an arms race between attackers and defenders in the context of a technological war between key actors.

Standardization being one of the places where these forces materialize, it is therefore natural to observe a pressing need for innovation at a high pace in security and in standardization.

This will happen at various stages, in prestandardization and then in standardization itself. However, with each standards development organization (SDO) having its own governance, it might be more or less easy at each to introduce an efficient approach to innovation in standardization and in particular in security.

Identifying other mechanisms and ways to approach innovation in security can:

– Position the incubation mechanism for a wider spectrum of innovation approaches;

– Provide information on how to maintain and/or develop the incubation mechanism.

### III.2.2 Other alternatives in the implementation of an incubation mechanism

For future development of this mechanism several implementation alternatives could have been chosen.

#### III.2.2.1 Centralized versus decentralized

Depending on the model of structure adopted by the Study Group, the incubation mechanism could be implemented 'centrally', meaning attached to one incubation question as implemented at present, or it could be dispatched across a few questions.

Indeed, should there be a Study Group with empowered working parties, there could be one 'parent question' per working party that could host an incubation queue for the working party. As such it would be a good way to distribute the emerging and innovation topics across the Study Groups to balance potential workload issues.

#### III.2.2.2 Emerging topics on dedicated question

Another alternative is for the Study Group to dedicate a full question solely to emerging topics, which would be one specialization of a centralization approach. The incubation mechanism would still be useful especially because of its incubation allocation part 1 as an important immediate first step after the opening plenary, which has allowed agreement on all ambiguous cases and allowed a smooth execution of all meetings so far.

## III.3 Other mechanisms dealing with innovation within ITU and their relationship to incubation mechanism

### III.3.1 TSAG hot topic

The rapporteur group for standardization strategies (RG-SS) under TSAG took the task to collect and aggregate proposed 'hot topics' from any of ITU-T entities in addition to ITU-T chief technology officer (CTO) and chief "whatever" officer (CxO) meetings.

While 'hot topics' do not seem to be explicitly defined, some delegates interpreted them as being any topic related to innovation, with the idea to make this list visible and shared in particular for study groups to have a chance to potentially coordinate and collaborate on joint topics.

The incubation mechanism can be a source of information from the study group to TSAG to declare new 'hot topics' and 'sub hot topics' or enrich the qualification of existing ones and so could contribute to informing any potential outgoing liaison statement from the study group to TSAG.

### III.3.2 Focus groups

Focus groups are defined by [b-ITU-T A.7] and provide a way to manage innovation for the objective of pre-standardization.

In comparison, the incubation mechanism is a tactical and lightweight instrument for the Study Group to manage innovation that is ready for standardization as well as to develop analysis for potential future work through non-normative work items.

## III.4 Gap analysis with other SDOs

Table III.1 provides a high-level view of the main approaches, if any, of some other SDOs to innovation.

| Table III.1 – High-level view on how innovation is dealt with by different SDOs (non-exhaustive) |
| --- |
| SDO | Mechanisms to deal with innovation | Abbre-viation | Status | Comments |
| ITU-T | Focus group at Study Group level | FG | In place |  |
| ITU-T  | Focus group at TSAG level | FG | In place |  |
| ITU-T | Incubation mechanism | None | In pilot | Considered by other SGs |
| ISO | Advisory group | AG | New | Transformed from another concept |
| ISO | Preliminary work item | PWI | In place | ISO/IEC JTC1/SC27 introduced a concept of "Preliminary Work Item" (PWI) as a replacement for "Study Period" (SP).PWI seem to be interpretable as an incubation mechanism in SC27 and this can also echo to SG17's incubation mechanism. |
| IETF | Birds-of-a-feather sessions | BoF | In place | [RFC 2418 Section 2.4](https://www.rfc-editor.org/rfc/rfc2418.html#section-2.4) provides guidance and details about proposing a birds-of-a-feather sessions, particularly in the context of "IETF Working Group Guidelines and Procedures".[RFC 5434](https://datatracker.ietf.org/doc/rfc5434/), as its title suggests, provides "Considerations for Having a Successful Birds-of-a-Feather (BOF) session". |
| IETF | Bar birds-of-a-feather sessions | Bar BoF | In place | Same as above but done informally.  |
| IETF | Dispatch | Dispatch | In place | IETF has mechanism which have some similarities with the incubation mechanism part 1. Indeed IETF has a working group called [gendispatch](https://datatracker.ietf.org/wg/gendispatch/about/) and another called [secdispatch](https://datatracker.ietf.org/wg/secdispatch/about/). They are based on [RFC7957](https://datatracker.ietf.org/doc/rfc7957/). IETF has also published its working methods. |
| IETF | Side meetings | Side meetings | In place | [RFC 6771](https://datatracker.ietf.org/doc/rfc6771/) provides guidelines on how to have a side meeting to work on a possible proposal for new work in the IETF. |
| ETSI | Industry specification groups | ISGs | In place | More information on ETSI committee structures can be found at <https://www.etsi.org/about/our-operations>  |
| OASIS | None | N/A | In place | OASIS has a very pragmatic way to accept any valuable suggestion on the working draft flow in their standards track process. |

## III.5 Historical aspects of determining to which question to attach the incubation queue

The rationale for selecting the incubation question flows in the SG17 structure and distribution of experts during the 2017–2020 study period as follows:

– As new questions cannot be created, a "Question 0" cannot be established as the incubation question. However, a Question 0 covering the scope of emerging technologies could have multiple benefits for the trouble of creating a new question;

– Q1 could take work items in its current set-up as there are no experts in this question; it is a coordination question. The incubation new role requires expertise to carry out the peer reviews and offer normal good conditions for the work item to develop. However, should there be a solid incubation rapporteur (1) experts would be present where the work is being done and (2) it would regroup the incubation queue and management with the coordination question;

– None of Q3, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13 or Q14 can carry the role because they presently have specific purposes (irrespectively of whether they 'should' have this purpose) and are specialized unless there is an option for a distributed incubation queue mechanism versus a central queue mechanism, but this would require embracing a very specific structure of SG17 with a number of assumptions:

• The principle of stable long-term working parties;

• The principle of having a 'parent' question in each working party.

 This would resolve some problems of workload but would probably make the incubation allocation much harder;

– Remains Q2 on architecture and frameworks and Q4 cybersecurity.

Both Q2 and Q4 are reasonable candidates to host, at this stage, the incubation question.

However, looking deeper, it is noted that there is a requirement on expertise to give a good review and support for the work item development. Indeed, just looking at the above examples in previous clauses, it is evident that there is need for significant expertise in core security versus architecture. Both types of expertise would be needed, and it might happen in the future that both needs may occur at the same time, or that a switch takes place depending on what the new structure of SG17 might be.

So, with this new requirement in mind, it becomes clear that Q4 is right now the best candidate, but with Q2 next in line.

It was therefore that Q4 host the incubation role and mechanism at this stage.

Then with WTSA20, it was agreed to create a new Question 15 (Q15/17) for Security for/by emerging technologies including quantum-based security which naturally hosted the incubation mechanism.

## III.6 Conclusions

The incubation mechanism successfully finished its pilot phase of around 2 years which tested all of its features.

It has been adopted by SG17 and is part of a proposal to be allocated to a new emerging question for the next study period 2021-2024.

It provided significant benefits to the Study Group in particular, allowing:

– Key innovative new standards to be developed, e.g., quantum key distribution, quantum random number generation;

– Very peaceful and lean SG17 meetings regarding a number of exceptions in NWI allocation to be managed immediately after the opening plenary and as early as possible during the meeting, allowing for a well-managed meeting;

– Flexibility for delegates to progress their work items, for a rapporteur to observe the work and understand the fitness to their questions;

– Re-valuation of the benefits of providing Technical Papers and Technical Reports before doing purely normative work, thus allowing the community to familiarize itself in different manners with topics that are innovative in nature;

– A lot of agility to allow innovation and transformation while avoiding the constraints of the creation of a new entity, either in the Study Group (creation or change of a new question) or outside (creation of a Focus Group);

– For the Study Group to work proactively towards a strategic approach versus having to change, while in operation, its structure and potentially jeopardize fundamental changes or increase operational rigidity;

– An elegant indirect indicator if the structure of the Study Group is adequate or needs changes;

– The consideration of potential structural changes with the facts in the queue as they are identified and developing versus having to make a bet with no evidence, decreasing significantly the transformation risks and helping the qualification of the reach of the potential changes.

This approach may be considered by other Study Groups in a growing complexification of the technical standardization as a flexible and lightweight instrument not only to accept innovation but also to allow a safe path to transformation.

Bibliography

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[b-XSTP-sgstruct] ITU-T Technical Paper (2020), *Strategic approaches to the transformation of security studies*.

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1. A contribution or text carrying a new work item from another SDO is to be understood as submitted before the contribution deadline for the SG17 meeting. [↑](#footnote-ref-2)