

ETSI

European Telecommunications Standards Institute

2020年1月22日

NICT イノベーション推進部門

釘吉 薫

- CEN*¹, CENELEC*² と並んで、欧州委員会 (EC) に認められた標準化団体の一つで、欧州委員会から与えられるmandateに従いICTに関連する標準仕様の策定を担当している。
- 現在欧州を中心に64か国より923のmanufacturers, network operators, administrations, service providers, research bodies およびend usersがメンバとして加入している。
- ETSIは欧州の地域標準化団体であり欧州標準の策定を目的としているが、欧州の先進的manufacturers, network operatorsが活発に活動しており、その標準は広くグローバル市場で採用されている。

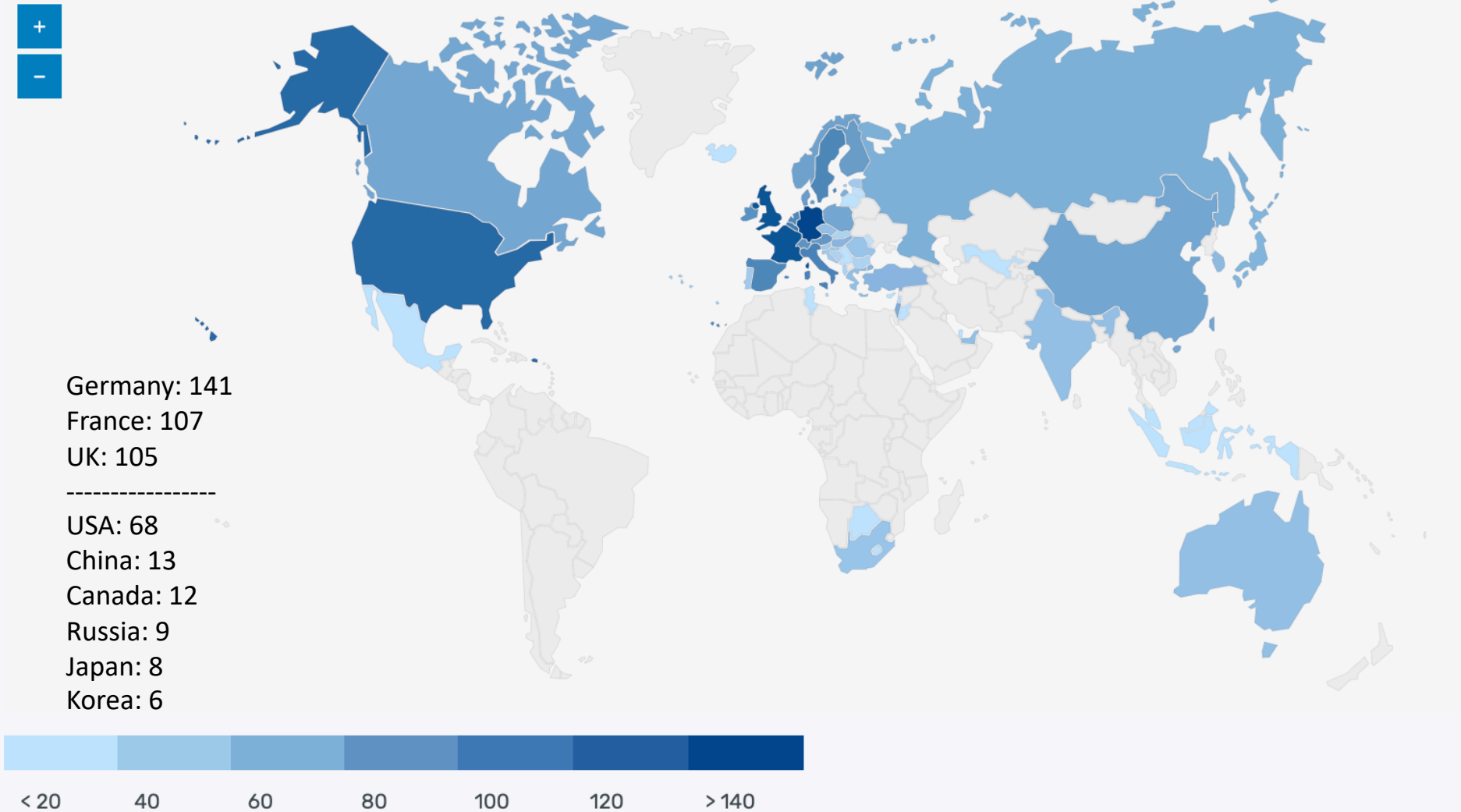
*¹ CEN: European Committee for Standardization

*² CENELEC: European Committee for Electro-technical Standardization

- 過去ETSIが策定した標準はGSM, 3GPP, DVB*¹等に採用され、NGNの標準化ではTC-TISPAN (2003～2012)が活発な標準化策定を行い、ITU-T勧告もそれらを参照している。
- 2012年6月にはTC-SCP (Smart Card Platform) にて次世代SIM規格 (4FF nanoSIM) を策定し、2012年7月にはM2Mの標準化を行うSDOの団体であるoneM2MにTC-M2Mの成果を移管する等積極的に貢献している。
- 2013年1月にはISG-NFV (Network Functions Virtualisation)を設立し、その後のネットワーク仮想化の検討をリードしている。
- 私は2011年11月の第58回ETSI総会GA (General Assembly) にて、2012年～2014年のBoardメンバの1名に任命され、2017年まで2期6年間担当した。

*¹ DVB: Digital video broadcasting

ETSI members around the world



ETSI Strategy Area

第58回総会 (2011年11月)で発表されたETSI Strategy 2012では、Strategy Areaとして以下の3つが挙げており、この取り組みは現在も継続している。

- **GSP: Global Standards (developing) Producer, standardization for the global level**
 - ICT標準を開発し、その成果をグローバル市場に提供する。
- **ESO: European Standards Organization, standardization for European needs**
 - EUとEFTAのregulationに準拠する欧州市場のICT標準を開発し、他ESOと協力し活動する。
- **SPO: Service Providing Organization, services such as Forapolis, Plugtests™, etc.**
 - 相互接続試験、Forumホスト、プロトコルや試験仕様の開発向けのサービスを提供する。

ETSIは単に欧州標準を開発するというSDOの機能にとどまらず、その成果のグローバル市場での普及と他SDOの支援も含めて幅広く活動を行っている。

ETSI Structure

🌐 GA (General assembly)

- メンバ各国が参加し、運営、規則、予算等について議論する会議で、年2回開催される。

🌐 Board会議

- Strategy, Policy, Budget等を検討しGAに諮問する委員会で、年5-6回F2F会議が開催される。

🌐 TC (Technical committee)

- TCは各技術分野の標準を策定する委員会で、現在29のTBが設置されている。ITU-TのSG/WPに相当する。

🌐 ISG(Industry specification group)

- ISGは特定の技術分野の標準を策定する専門グループで、現在15のISGが設置されている。ITU-TのFGに相当する。

TC (Technical Committee)

- TCは各技術分野の標準を策定する委員会で、現在26のTCが設置されている。
- TCの中には、TC BRAN (Broadband Radio Access Networks)、TC DECT (Digital Enhanced Cordless Telecommunication)、TC ITS (Intelligent Transport System)、TC SmartM2M (Smart Machine-to-Machine Communication)、TC NTECH (Network Technology)、TC SCP (Smart Card Platform)、TC Safety (Telecommunications Equipment Safety) といった比較的なじみのある技術分野から、合法的傍受の国内、国際法の要求条件を検討するTC LI (Lawful Interception) や、ICTのHuman factorを扱うTC HF (Human Factor) 等、幅広い検討が行われている。
- TBの標準化活動の成果として、年間3000件以上のTS (Technical Specification), TR (Technical Report), ES (ETSI Standard) 等の技術仕様を発行し、活発な標準化活動を行っている。

ISG (Industry specification group)

- ISGはTBでは扱っていない新しい技術分野に対する検討グループとして位置付けられ、4membersの提案で設置される。通常は1-2年の時限付活動で、研究成果はGS (Group Specifications) として出力され、その後の標準のベースとして参照される。ETSI外部メンバも参加が可能。
- 過去6年間のBoard任期中には、10件以上の新ISGの設置提案があり、その数は2011年の6から現在は15に増加している。
- 現在のISGは、NFV (Network Function Virtualisation)、QKD (Quantum Key Distribution)、MEC (Multi-access Edge Computing)、ARF (Augmented Reality)、CDP (City Digital Profile)、ENIとZSM (Telecom 分野でのArtificial intelligent利用)、SMT (Surface Mount Technique)等をテーマとして活動しており、テレコム業界の将来技術と標準化動向を伺う極めて重要な活動となっている。

ETSI Structure

ETSI Partnership projects



Committees

ATTM Access, Terminals, Transmission and Multiplexing	BRAN Broadband Radio Access Networks
BROADCAST EBU/CENELEC/ETSI on Broadcasting	CABLE Integrated broadband cable telecommunication networks
CYBER Cyber Security	DECT Digital Enhanced Cordless Telecommunications (DECT)
EE Environmental Engineering	eHEALTH eHEALTH
EMTEL Emergency Communications	ERM EMC and Radio Spectrum Matters
ESI Electronic Signatures and Infrastructures	HF Human Factors
INT Core Network and Interoperability Testing	ITS Intelligent Transport Systems
LI Lawful Interception	MSG Mobile Standards Group

MTS Methods for Testing & Specification	NTECH Network Technologies
OSM OpenSource MAND	RRS Reconfigurable Radio Systems
RT Railway telecommunications	SAFETY Safety
SCP Smart Card Platform	SES Satellite Earth Stations & Systems
SmartBAN Smart Body Area Network	SmartM2M Smart M2M
STQ Speech and multimedia Transmission Quality	TCCE TETRA and Critical Communications Evolution
USER User Group	

Industry specification Groups

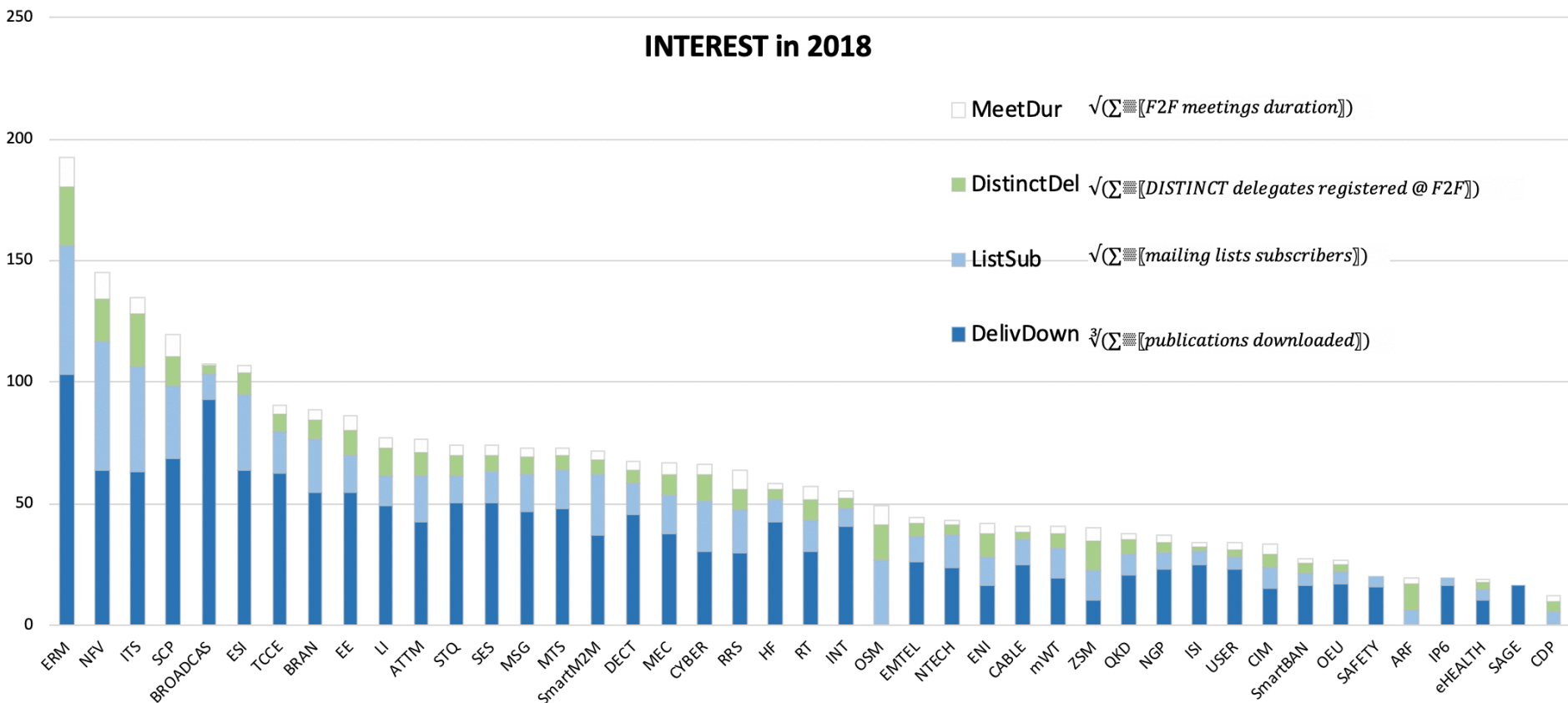
ARF Augmented Reality Framework	CDM European Common information sharing environment service and Data Model
CIM cross-cutting Context Information Management	ENI Experiential Networked Intelligence
F5G 5th Generation Fixed Network	IP6 IPv6 integration
MEC Multi-access Edge Computing	mWT millimetre Wave Transmission
NFV Network Functions Virtualisation	NGP Next Generation Protocols
OEU Operational energy Efficiency for Users	PDL Permissioned Distributed Ledger
QKD Quantum Key Distribution	SAI Securing Artificial Intelligence
ZSM Zero touch network and Service Management	

ETSI Specifications

- **European Standard (EN)** – Used when the document is intended to meet needs specific to Europe and requires transposition into national standards, or when the drafting of the document is required under a mandate from the European Commission (EC)/European Free Trade Association (EFTA). An EN is drafted by a Technical Committee and approved by European National Standards Organizations.
- **ETSI Standard (ES)** – Used when the document contains technical requirements. An ES is submitted to the whole ETSI membership for approval.
- **ETSI Guide (EG)** – Used for guidance to ETSI in general on the handling of specific technical standardization activities. It is submitted to the whole ETSI membership for approval.
- **ETSI Technical Specification (TS)** – Used when the document contains technical requirements and it is important that it is available for use quickly. A TS is approved by the Technical Committee that drafted it.
- **ETSI Technical Report (TR)** – Used when the document contains explanatory material. A TR is approved by the Technical Committee that drafted it.
- **ETSI Special Report (SR)** – Used for various purposes, including to make information publicly available for reference. An SR is approved by the Technical Committee which produced it.
- **ETSI Group Specification (GS)** – Provides technical requirements or explanatory material or both. Produced and approved within our Industry Specification Groups (ISGs).

Overall interest estimated indicator

INTEREST in 2018



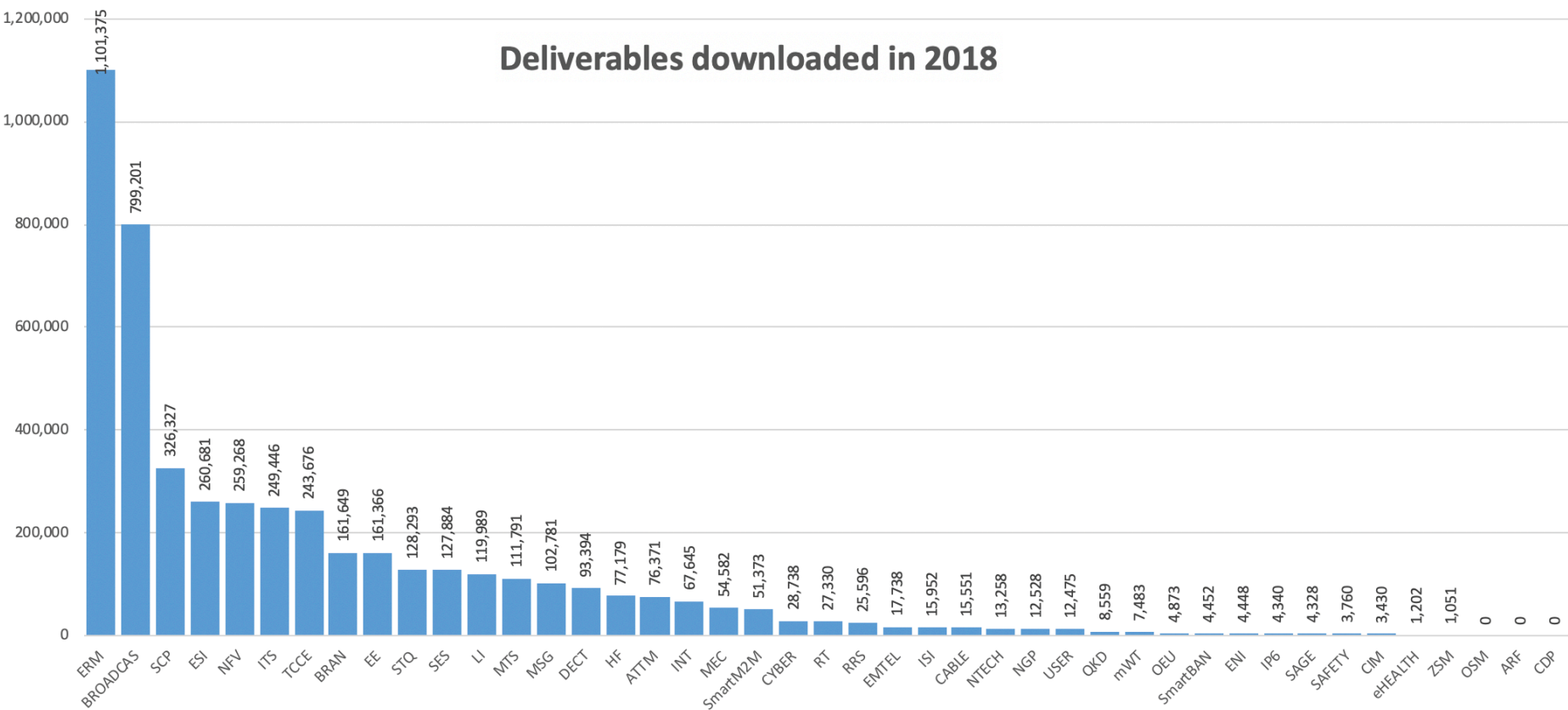
NFV: Network Functions Virtualisation
 ERM: EMC and Radio Spectrum Matters
 CYBER: Cyber Security
 BROADCAST: EBU/CENELEC/ETSI on Broadcasting
 SES: Satellite Earth Stations & Systems
 ITS: Intelligent Transport Systems

MEC: Multi-access Edge Computing
 SmartM2M: Smart M2M
 MSG: Mobile Standards Group
 MTS: Methods for Testing & Specification
 EE: Environmental Engineering
 RRS: Reconfigurable Radio Systems

LI: Lawful Interception
 RT: Railway telecommunications
 OEU: Operational energy Efficiency for Users
 EMTEL: Emergency Communications
 ESI: Electronic Signatures and Infrastructures
 TCCE: TETRA and Critical Communications Evolution

Number of deliverables

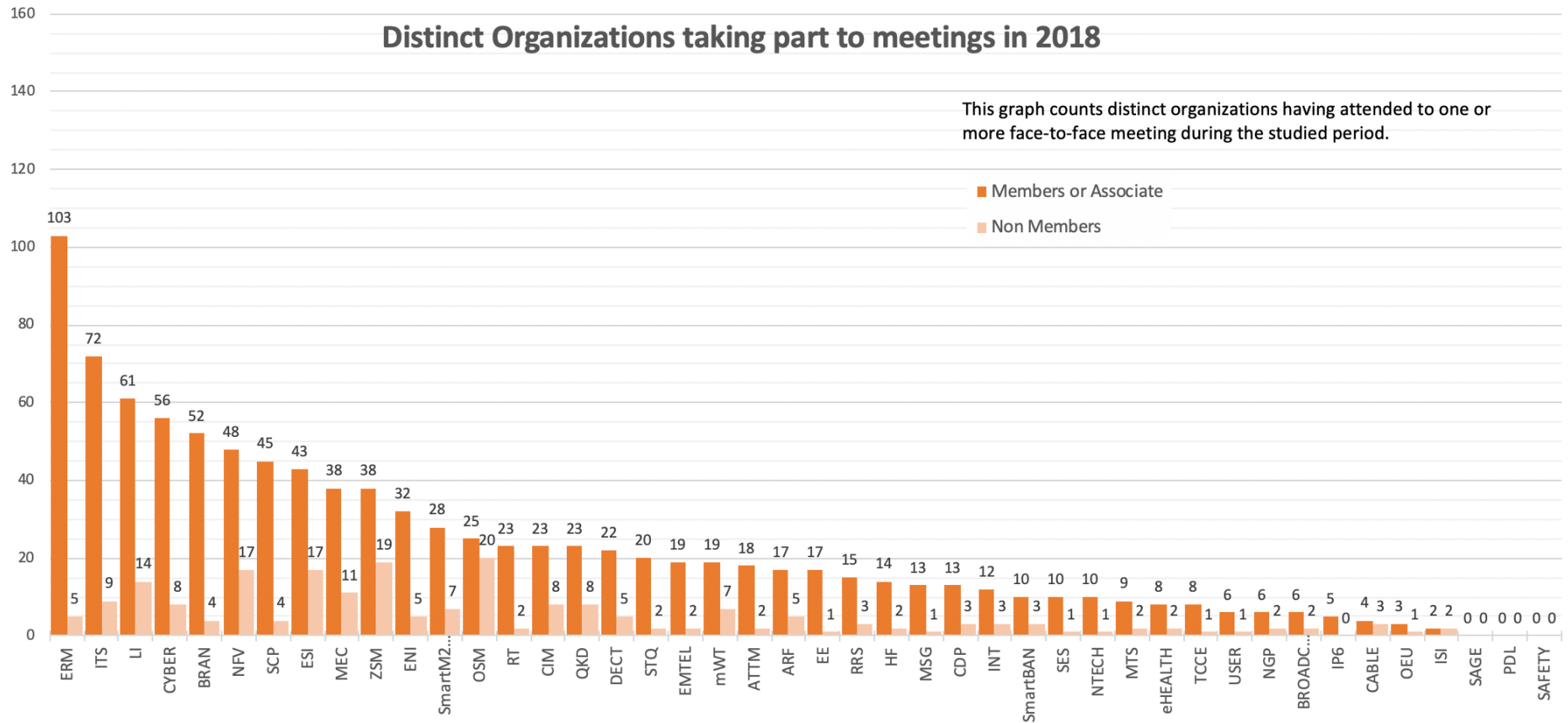
Deliverables downloaded in 2018



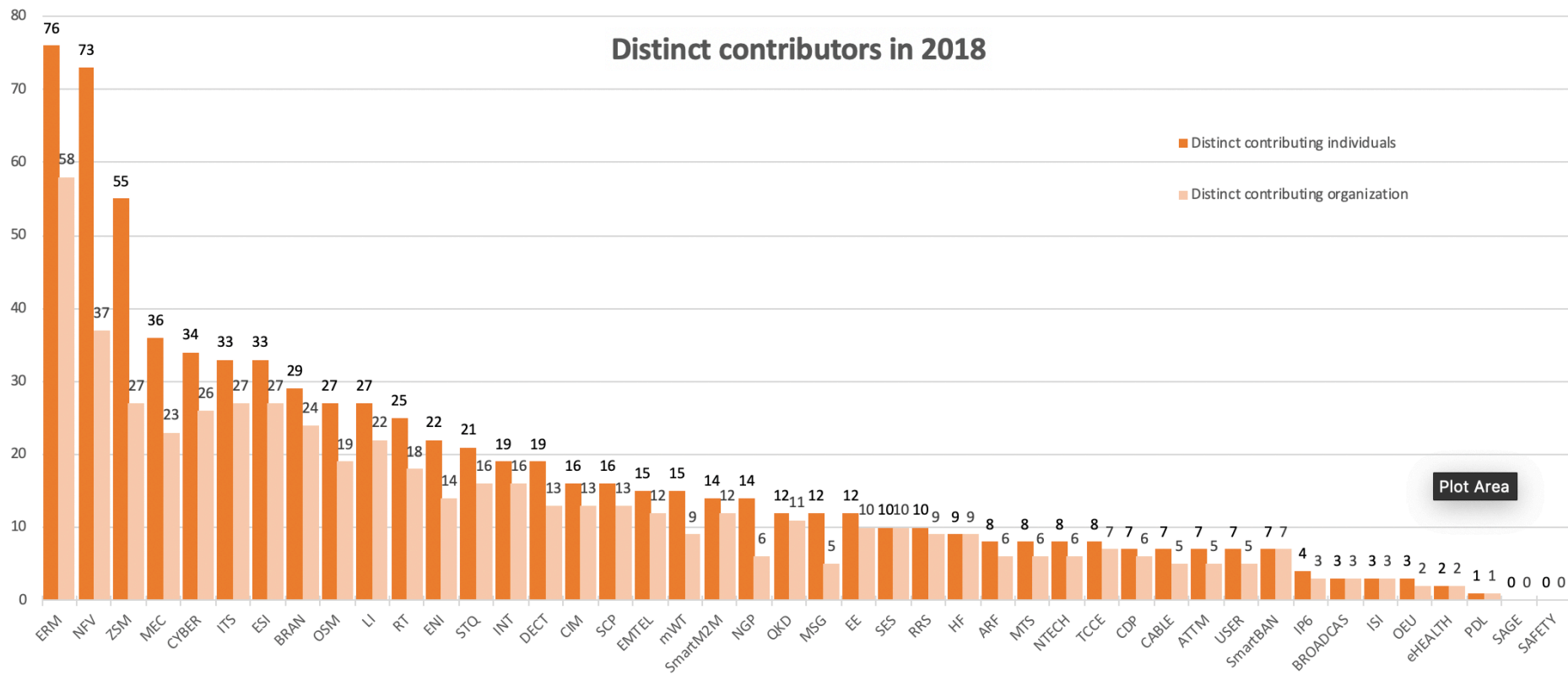
Number of Organizations

Distinct Organizations taking part to meetings in 2018

This graph counts distinct organizations having attended to one or more face-to-face meeting during the studied period.



Number of Contributions



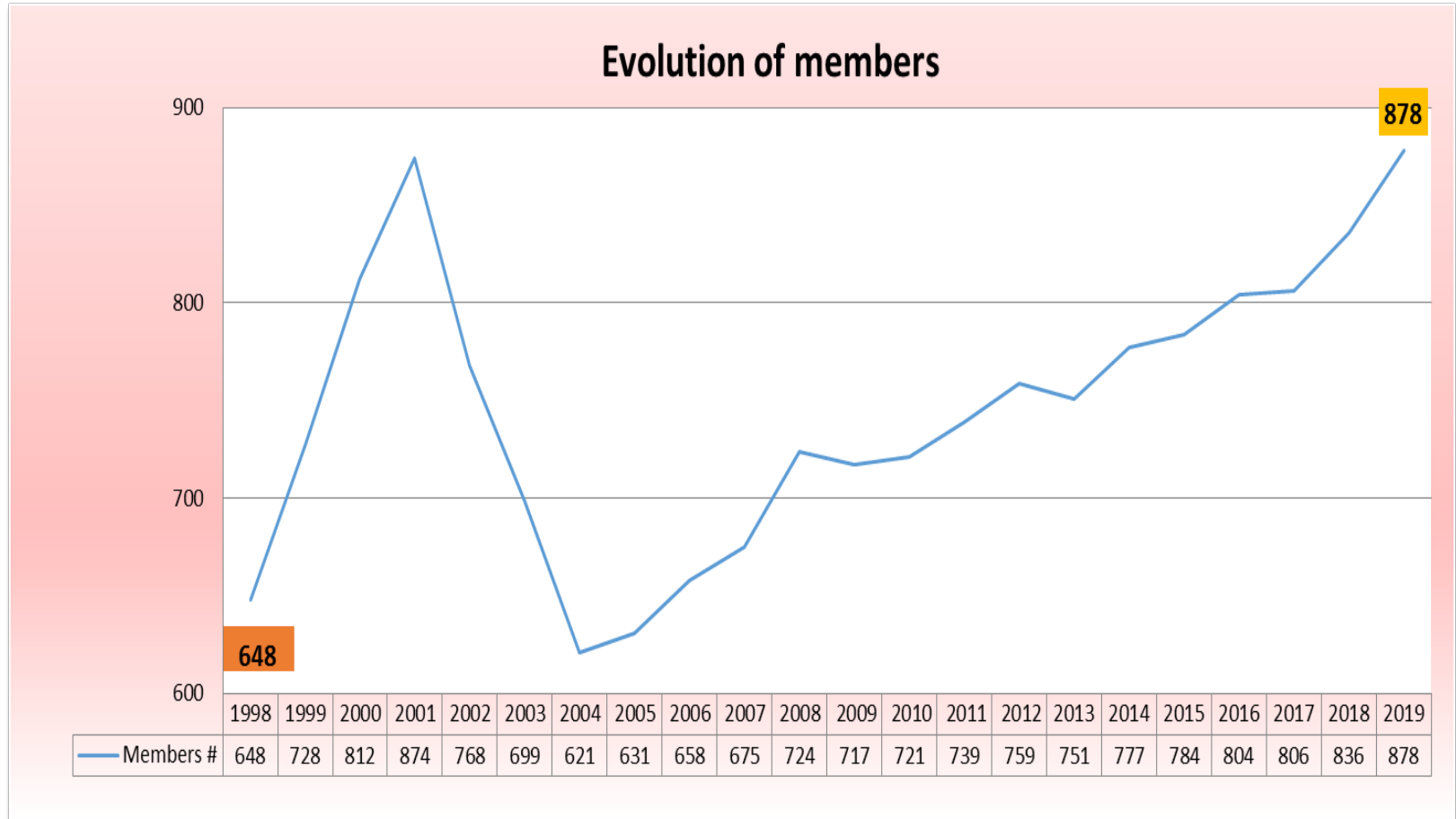
ETSI GA#74

- 🌐 The ETSI GA#74 meeting was held on 3- 4 December 2019 in ETSI premises in Sophia-Antipolis France.
- 🌐 ETSI GA is the highest meeting in ETSI which is regularly held twice per year and discusses operation, regulation, budget, strategy and other important agendas of ETSI.
- 🌐 All ETSI member states were invited to the meeting and 142 participants from 30 countries participated in GA#74 meeting.
- 🌐 Mr Kikuchi was the representative of NTT Japan to the meeting.
- 🌐 Major topics of this meeting were a) Report from the board, b) Report from the DG , c) Finance report etc.

Approval of new applicants for membership

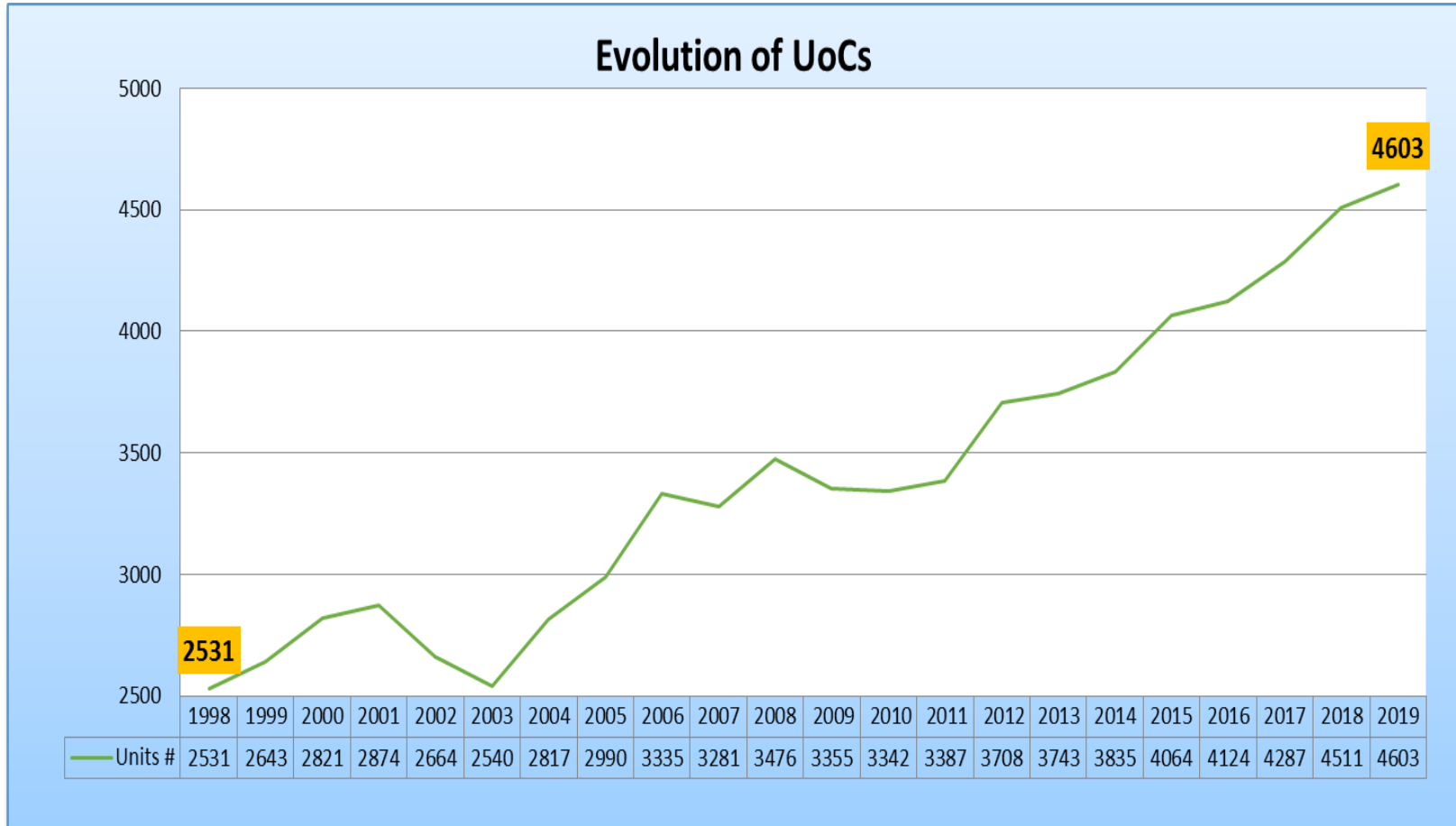
- Director General Mr Luis Jorge Romero introduced ETSI membership status.
- ETSI has 755 full members, 155 associate members and 13 observers.
- Total number of membership becomes 923 from 65 countries in 5 continents. 52 membership has increased since the GA#72 in November 2018.
- Total Unit of Contribution (UOC) becomes 4650. This is 64 plus since GA#72.
- Amazon (2017), Facebook (2018) and Google (2019) have been member of ETSI.

Number of member



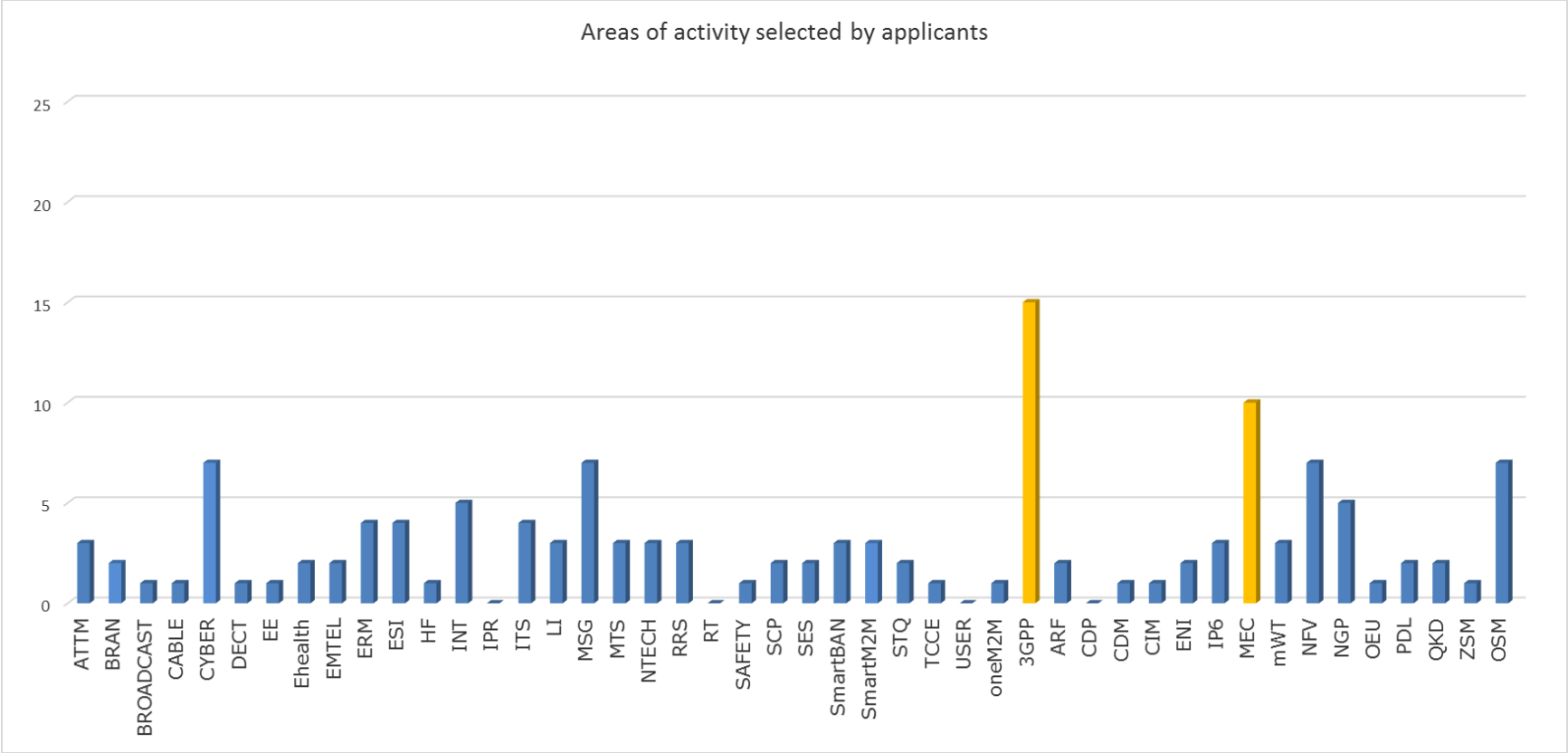
GA(19)74_009r1_Membership_changes_since_GA73

Number of UoC

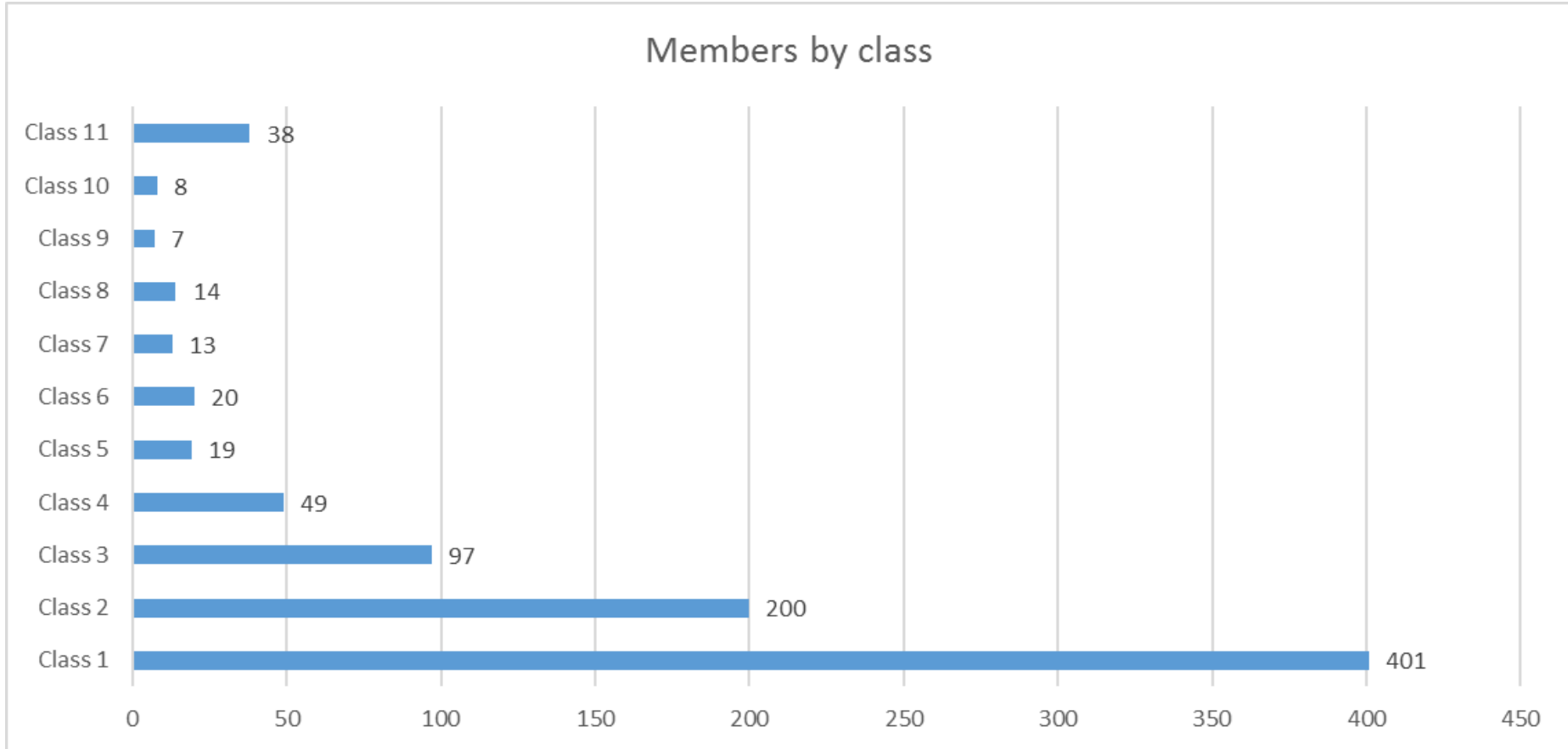


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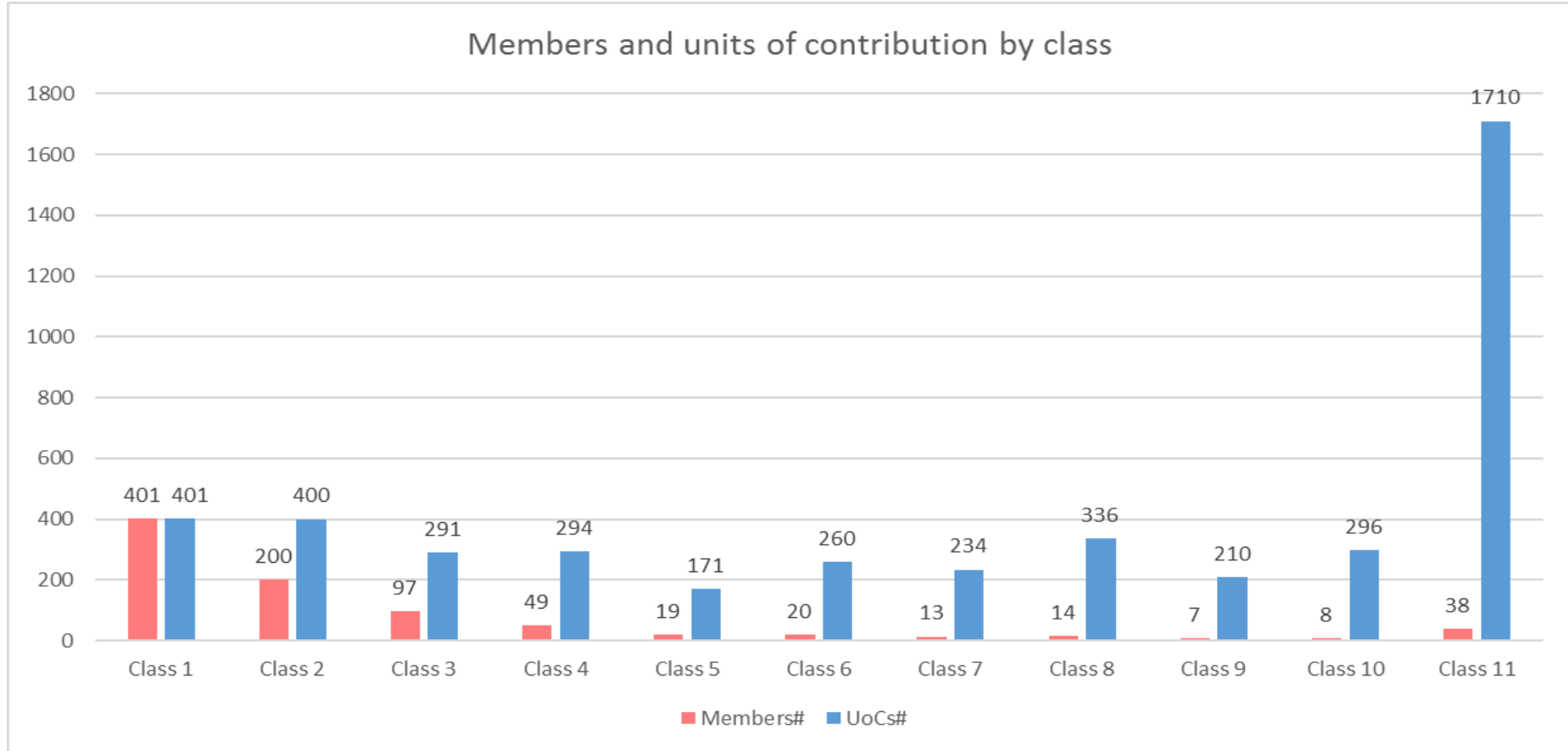
Areas of interest selected by new members



Members by class



Members and units of contribution by class



GA(19)74_009r1_Membership_changes_since_GA73

Report from the Board

- Board Chair Mr Dirk Weiler (Nokia, DE) introduced the report of Board.
- This report includes board activities since the last GA which are new appointment of TC Chairmen, reviewing and monitoring the TC activities, ETSI STF funding, external relations such as new MoU and Lol with SDOs, new acceptance of EU mandates and ETSI strategies.
- There were three physical meetings and one e-meeting since the last GA.
- Two new proposed ISGs were discussed and approved.
 - ISG CDM on the “European Common information sharing environment service and Data Model)” and ISG SAI (Securing Artificial Intelligence)
- Three ISGs were proposed to extend.
 - ISG IP6, ISG ARF (Augmented Reality Framework) and ISG ZSM (Zero touch network and Service Management)
- Two ISGs were proposed to terminate.
 - ISG ISI (Information Security Indicators) and ISG CDP (City Digital Profile).

ETSI Long Term Strategy 2019-2020

- 🌐 Board strategy manager Mr Jorge Bonifácio (PT Portugal SGPS SA, PT) introduced the ETSI Long Term Strategy 2019 -2020 and its implementation plan.
- 🌐 ETSI Long Term strategy is the high-level strategy spells out ETSI's ambitions and intentions, and describes the direction and focus of its future work for the period 2016-2021, together with the rationale behind. It was adopted in ETSI GA#67 in April 2016.
- 🌐 This document includes five strategic objectives, a) **Being at the heart of Digital**, b) **Being an enabler of standards**, c) **Being global**, d) **Being versatile** and e) **Being Inclusive**.

ETSI Long Term Strategy 2019-2020

BEING AT THE HEART OF DIGITAL

Developing Long-term technical roadmap
Holistic evaluation of 5G and IoT activities
Strawman proposal/white Paper on A.I.
New ISGs (avg 2-3 per year since 2011)
Partnering with EC
2 proposals to ITU-R as IMT-2020 Candidates

BEING AN ENABLER OF STANDARDS

Monitoring of regulatory and policy initiatives that may trigger needs for ICT standard /Interplay between standards, regulations and policies
New working Methods
Open Source Projects, ENAP+

BEING GLOBAL

Global membership, 900+ members, 60+ countries
Globally applicable standards
Strengthening of Partnerships (>100)
PAS process as an “integration channel” enabler to be global

BEING VERSATILE

Strengthen the linkage between R&D and standardization
Empowered, very skilled team @ secretariat, forward looking for new challenges, new ways and methods, ready to embrace new ideas and technologies

BEING INCLUSIVE

Proposal for an outreach campaign to targeted ecosystems
Specific program for SMEs in ETSI
Direct contribution from non-ICT sectors
ETSI Standards and TSs free for all
3SI programme and NSO's periodic meeting

5G and IoT

5G and Internet of Things (IoT) are today some of the major drivers of innovation and digitalisation.

Board Strategy groups **5GCOM** and **IoT**, working together with **TBs**, **OCG** and secretariat enable an holistic view and consistency of ETSI activities performed in these key areas

Achievements 2019

- Updated 5GCOM activities in ETSI, presented to Board 123 and 124, and a consolidated view to GA# 74
- Continuation of work on smartM2M/oneM2M and SAREF architectures
- ETSI work plan for Smart & Sustainable Cities and Communities (SSCC)
- CG-SMa (smart manufacturing) and Digitising European Industry (DEI)
- Two Radio interfaces both supporting URLLC and mMTC submitted to ITU-R as IMT-2020 candidates: 3GPP (public mobile) and DECT NR (private networks)

Activities 2020

- Continue to monitor IoT, 5G and beyond activities in 2020, presenting updates as necessary to Board and/or GA
- Fully development of the two submitted IMT-2020 radio technologies
- Big data and AI (Artificial Intelligence) in IoT
- Further involvement in Smart manufacturing and Smart Cities and Communities (SSCC)

Artificial intelligence

Potential ETSI Roadmap on Artificial Intelligence (AI):

EDUCATION AND AWARENESS

IMPACT ANALYSIS

ETSI TECHNOLOGY ROADMAP

ACTION PLAN AND IMPLEMENTATION

COLLABORATIONS AND LIAISONS

ETSI Activities currently related to A.I. as a tool

Plus STF activities

Networks

- [ISG NFV](#): is planning to use AI for Virtualization and Orchestration, Network routing and optimisation
- [ISG ENI](#): machine learning is integral to network optimization services
- [ISG ZSM](#): Network and service intelligence capabilities include data-driven machine learning, artificial intelligence, etc. to enable adaptive closed-loop management
- [TC INT AFI WG](#): Autonomic Management & Control for networks, powered by AI Capabilities for self-diagnosis, self-configuration, etc

Cyber

- [ISG SAI](#) for Secured AI
AI to rapidly compute Quantum-Safe Crypto-codes

Reasoning

- [TC SmartM2M](#): Ontology design using SAREF (Smart Appliances REference)
- [ISG CIM](#): Standardizing information exchange using linked property graphs for metadata (provenance, quality, etc).
- [TC ITS](#): AI for Automotive Vehicle Connectivity, for Cooperative-ITS (C-ITS) and autonomous driving
- [SC EMTEL](#): communications involving IoT in emergency situations, including A.I. consolidate data for First Responders
- [3SI](#): AI in ICT will have a huge impact on the labour market and on education/work/leisure.

An ETSI position paper regarding A.I. is being prepared

Open source software

Board_OSS

Open Source Software

ETSI processes for open source activities. The group is open to all ETSI members. After in-depth analysis of possible interactions with open source the group is working on a proposal for concrete processes and guidance on how to start open source developments.

Achievements 2019

- What-Why-How analysis of exemplary scenarios completed;
- Three work packages defined: Cooperation with external open source projects; (Reference) Implementations; Starting new work within ETSI.
- In depth analysis of ETSI instruments and processes, e.g. new work item proposal, completed;
- Analysis of issues around licensing;
- Flow-chart and basic outline for processes and for guidance document in progress.

Activities 2020:

- Complete development of concise proposal for processes and guidance document

Board member for 2018 - 2020

	NAME	Supporting Organization	Category	Cty
1	ANDERSEN Niels	Anemone Technology	Consultancy (SME/ME)	DK
2	ARQUEVAUX Remi	Ministère de l'Economie et des Finances	Administration	FR
3	BENN Howard	Samsung R&D Institute, UK	Manufacturer	UK
4	BONIFACIO Jorge	PT Portugal SGPS SA	Network Operator	PT
5	BOVEDA Angel	Wireless partners S.L.L.	Consultancy (SME/ME)	ES
6	CLIFTON Chris	Sony Europe Ltd	Manufacturer	UK
7	FERRAZZINI Axel	GovStrat SPRL	Consultancy (SME/ME)	BE
8	FRIEDRICH Jochen	IBM Europe	Manufacturer	DE
9	FROST Lindsay	NEC Europe Ltd	Manufacturer	UK
10	GRANT Marc	AT&T GNS Belgium SPRL	Network Operator	BE
11	HICKS Simon	DCMS	Administration	UK
12	HOLLEY Kevin	BT plc	Network Operator	UK
13	KHUN-JUSH Jamshid	Qualcomm CDMA Technologies GmbH	Manufacturer	DE
14	MADFORS Magnus	Ericsson Telefonaktiebolaget LM	Manufacturer	SE
15	MARCHESE Pierpaolo	Telecom Italia	Network Operator	IT
16	MUECK Markus	Intel Deutschland GmbH	Manufacturer	DE
17	NEAL Adrian	Vodafone Group plc	Network Operator	UK
18	NIKOLOSKI Neviana	Phonak Communications AG	Manufacturer	CH
19	OWEN Gabrielle	Ministry of Economic Affairs	Administration	NL
20	POLSTERER Heinz	Deutsche Telekom AG	Network Operator	DE
21	ROCHE Dominique	eG4U	User	FR
22	SAMPSON Nick	Orange	Network Operator	FR
23	STARON Alain	VEOLIA Environnement SA	Service Provider & Other	FR
24	TOCHE Christian	Huawei Technologies France	Manufacturer	FR
25	TOFFALETTI Sebastiano	SBS aisbl	User	BE
26	TOPIČ Bogdan	SIST	Administration	SI
27	VALET-HARPER Isabelle	MICROSOFT EUROPE SARL	Manufacturer	FR
28	WEILER Dirk	Nokia Solutions and Networks GmbH & Co. KG	Manufacturer	DE
29	WORKMAN Helene	Apple (UK) Ltd	Manufacturer	UK
30	WÖSTE Christoph	BMW	Administration	DE

2018-2020 BUDGET income

Income Budget	ACTUAL 2018	Forecast 2019	BUDGET 2019	BUDGET 2020
Statutory contributions				
<i>Members Contributions</i>	16 976	17 550	16 950	17 550
<i>Net income new members acquisition/withdrawals</i>		-	460	590
<i>Withdrawals / expulsions</i>		-	- 530	- 550
<i>Changes in contributions (UoC)</i>		-	100	160
Total Members Funding	16 976	17 550	16 980	17 750
<i>Observer Fees</i>		-	-	-
Total statutory contributions	-	-	-	-
		-	-	-
Credit notes to be issued- Surplus returned to Members	- 1 450	-	-	-
Other contributions				
<i>Partnership projects advance payments</i>	2 431	2 587	2 491	2 351
<i>Partnership Voluntary Funding</i>	-	-	-	-
<i>EC / EFTA: Operating Grants</i>	2 418	2 627	2 500	2 250
<i>EC / EFTA: STFs Action Grants</i>	1 113	900	1 000	1 000
<i>EC / EFTA: Plugtests Actions Grants</i>	265	300	300	300
<i>EC / EFTA: Special projects - H2020</i>	93	61	20	-
<i>EC/EFTA/CEN/CENELEC/ETSI: SESEI</i>	307	280	315	330
<i>EC : Special projects - FPI</i>	160	378	1 136	1 962
<i>Voluntary member funding</i>	209	347	259	312
Total Other contributions	6 995	7 481	8 022	8 505
Not-contributions income				
<i>Sales: Standards</i>	16	13	15	15
<i>Sales: Codes & Algorithms</i>	110	85	100	50
<i>Forapolis Income</i>	5	-	-	-
<i>European Friends of 3GPP</i>	631	536	546	530
<i>Miscellaneous Income</i>	109	128	40	74
<i>Provisions written back</i>	265	60	135	100
<i>Financial Income</i>	51	60	55	60
Total not-contributions income	1 186	881	891	829
Deferred income:				
<i>+ Carry-overs from previous year</i>	1 258	1 264	1 383	1 614
<i>- Project Carry-overs to next year</i>	- 1 312	- 1 726	- 1 653	- 1 788
Total deferred income	- 54	- 462	- 270	- 175
- PROFIT (-) / DEFICIT	- 92	- 795	0	755
TOTAL INCOME	23 561	24 656	25 622	27 664

2018-2020 BUDGET expenditure

Expenditure Budget	ACTUAL 2018	Forecast 2019	BUDGET 2019	BUDGET 2020
Secretariat				
<i>Staff costs: Current costs</i>	12 905	13 317	13 498	13 831
<i>Maintenance & Utilities: Facilities</i>	760	778	806	792
<i>Maintenance & Utilities: IT</i>	236	293	280	314
<i>Staff travels</i>	1 137	1 088	1 279	1 222
<i>Other operating expenses</i>	164	164	211	195
<i>Promotion Corporate Communication</i>	408	517	660	621
<i>Meetings & Hospitality</i>	292	389	770	1 084
<i>Post & Telecommunications</i>	251	230	290	294
<i>Professional Fees</i>	376	820	695	772
<i>Outsourced Systems Development</i>	850	857	884	1 033
<i>Taxes</i>	299	306	310	310
<i>Depreciation Logistics/Buildings</i>	537	515	558	481
<i>Depreciation IT</i>	284	244	287	296
<i>Contingencies 3GPP</i>	24	5	170	170
<i>Contingencies FPI</i>		-	66	191
SubTotal Secretariat (incl. Overheads)	18 523	19 521	20 763	21 605
Financial Charges				
<i>Provision for Risks & Charges</i>	124	200	100	100
<i>Losses</i>	51	34	55	55
SubTotal Financial Charges	175	234	155	155
Special Projects				
<i>EC / EFTA: Special projects - H2020/SESEC</i>	94	101	38	28
<i>EC /EFTA/CEN/CENELEC/ETSI: SESEI_</i>	339	300	345	360
<i>EC: Special projects - FPI</i>	87	100	236	633
<i>European Friends of 3GPP_</i>	500	357	328	386
SubTotal Special projects	1 019	858	947	1 407
Experts				
<i>Experts Costs:Contribution funding - STF FWP</i>	1 235	1 240	650	680
<i>Experts Costs: Contribution funding-testing STF</i>	-	-	400	770
<i>Experts Costs:EC/EFTA funding</i>	1 165	1 110	1 190	1 210
<i>Experts Costs:voluntary member funding</i>	209	312	259	312
<i>Experts Costs:Partnership projects</i>	1 066	1 049	1 003	1 122
<i>Experts Costs:Services and support</i>	168	329	250	402
<i>Experts Preparatory meeting travel</i>	1	2	5	3
SubTotal Experts	3 844	4 042	3 757	4 498
TOTAL EXPENDITURE	23 561	24 656	25 622	27 664

まとめ

- 5大陸、64ヶ国、900以上のmemberで構成される。現在も規模が拡大中。
- 26のTechnical Committeeで広範囲な技術標準の開発に取り組んでいる。
 - 多くの標準化団体とMoUを締結
 - 特にPartnership Projectの3 GPP、oneM2Mとは緊密な協力関係
- ISG NFVの成功以後、次々に新しいISGが設置され標準化ホットトピックスに取り組んでいる。
 - ISGは最少4 FullまたはAssociate memberで提案ができる
 - ISGメンバで承認した技術仕様はGroup Specificationとして発行される
- Seminar, Workshop, Plugtests等のイベントを積極的に開催し、標準の普及活動を行っている。

<https://www.etsi.org/events?start=0>

References

- ETSI Portal site

<https://portal.etsi.org/Home.aspx>

- ETSI Structure

<https://www.etsi.org/about/how-we-work/how-we-organize-our-work/etsi-structure>

ETSI document (GA, Board)の参照はETSI membershipが必要

ETSI ISGs

2020年1月22日

NICT イノベーション推進部門

鈕吉 薫

ISG-QKD (Quantum Key Distribution)

🌐 設立 2008年10月

🌐 ToR

- **To develop GSs describing quantum cryptography for ICT networks.** Quantum Key Distribution is the essential credential in order to use quantum cryptography on a broad basis. It is the **main task of the QKD ISG to specify a system for Quantum Key Distribution and its environment.**
- The activities of the QKD ISG will be performed in close co-operation with relevant standards activities within and outside ETSI. External relationships will be established where and when ever needed, Formal relationships will be established using the normal ETSI processes via the ETSI Secretariat.

🌐 参加メンバ

- member 33社 (NICT, NTT, 東芝, NEC, 三菱を含む)、participants 6社
- 会合参加は40名程度

🌐 活動状況

- 現在活動しているISGの中で最も長く継続している。(9年6ヵ月)
- Shields Andrew (Toshiba UK)がISG chairを担当。
- NICT, 東芝から提案活動を実施。

ISG-NFV (Network Functions Virtualisation)

🌐 設立 2013年1月

🌐 Vision

- An open ecosystem for NFV enables rapid service innovation for Network Operators and Service Providers. Innovation in end-to-end services is enabled by software-based deployment and operationalization of **virtualized network functions on independently deployed and operated NFV infrastructure platforms.**

🌐 参加メンバ

- member 74社、 participants 39社

🌐 活動状況

- 欧州を中心にネットワークオペレータ13社が設立。F2F会合には300名を超える参加者が集まり、ネットワーク仮想化の中心的活動となっている。
- POCイベントの開催、OPNFVと連携したOpen Sourceの利用など、標準をベースとした実装を推進している。
- 昨年以後メンバ数が半減し活動が縮小したが、ISGとしては最大規模。

ISG-ENI (Experiential Networked Intelligence)

🌐 設立 2017年4月

🌐 Scope

• The main objectives of ISG ENI are:

- to consider standardization and to develop specifications for a Cognitive Network Management system incorporating a closed loop control approach. The closed loop control approach is based on a “monitoranalyze-plan-execute” model and will be enhanced by learning capabilities,

🌐 参加メンバ

- member 41社 (NICT, NTT, 東京大学を含む)、 participants 16社

🌐 活動状況

- Huawei主導で設立され、中国、韓国企業が比較的多く参加している。
- ETSIの標準化活動としては、最も早くテレコムネットワークへのAIの活用について検討を開始した。
- 2019年7月にRelease 1が完成し、現在 Release 2の開発を行っている。

ISG-ZSM (Zero touch network and Service Management)

🌐 設立 2018年1月

🌐 Scope

- ISG ZSM will define a new, future-proof, horizontal and vertical end-to-end operable framework enabling agile, efficient and qualitative management and automation of emerging and future networks and services.
- The goal is to have **all operational processes and tasks (e.g., delivery, deployment, configuration, assurance, and optimization) executed automatically, ideally with 100% automation.**
- The ISG ZSM will initially focus on the 5G end-to-end network and service management (e.g. network slicing management) and will extend to the management for future network generations.

🌐 参加メンバー

- member 43社 (NICT, Docomo, NECを含む)、participants 21社

🌐 活動状況

- 2019年8-10月に、基本標準となる Terminology, Reference architecture, Requirements を発行した。

ISG-SAI (Securing Artificial Intelligence)

🌐 設立 2019年10月

🌐 Scope

- The intent of the ISG SAI is therefore to address 3 aspects of AI in the standards domain:
 1. Securing AI from attack e.g. where AI is a component in the system that needs defending.
 2. Mitigating against AI e.g. where AI is the ‘problem’ (or used to improve and enhance other more conventional attack vectors),
 3. Using AI to enhance security measures against attack from other things e.g. AI is part of the ‘solution’ (or used to improve and enhance more conventional countermeasures).

🌐 参加メンバ

- member 33社、 participants 6社 (日本からの参加無し)

🌐 活動状況

- BT, Cadzow Communications, Fortinet, Huawei Technologies (UK), NCSC^{*1}, Telefonica S.A.が設立メンバとなり、2019年10月にKick-off meetingを開催。
- 設立の提案については、TC-Cyberとの重複(デマケ)が議論になっている。

^{*1} NCSC (National Cyber Security Center)

まとめ

- 新しい技術分野への取り組みとしてISGの活動が拡大している。現在15のISGを設立し、ETSIの標準化動向を示す重要な活動となっている。
- 会合への参加は、non-ETSI memberも可能。Non-ETSI memberの参加は、Academiaより特定技術分野のSME, Startupが多い。
- ISGの設置は最少4 FullまたはAssociate memberで提案ができる。Board任期中(2012-2017)に提案されたISGは、DGの判断で全て設立された。
- 開発したDeliverablesはETSI標準GS (Group specification)として直ちに出版される。