ILNAS

Technical Standardization in support of Artificial Intelligence

Information Session

16.02.2018

Meeting Agenda

Technical Standardization in support of Artificial Intelligence

09:00 – 09:05	**Introduction: Technical standardization for Artificial Intelligence** *Dr. Jean-Philippe HUMBERT – Deputy Director – ILNAS*
09:05 – 09:15	**Artificial Intelligence and the needs for standardization in Luxembourg** *Mr. Jérôme HOEROLD – OLN, ILNAS*
09:15 – 09:30	**Standardization in support of Innovation** *Mr. Nicolas DOMENJOUD – ANEC GIE*
09:30 – 09:50	**Artificial Intelligence and related technologies: International standardization landscape** *Mrs. Natalia CASSAGNES – ANEC GIE*
09:50 – 10:30	**Open Discussion**

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Welcome

Bienvenue

Willkommen

ILNAS

PRESENTATION OF THE NATIONAL STANDARDS BODY

Artificial Intelligence and the needs for standardization in Luxembourg

16.02.2018

1. Presentation of ILNAS

ILNAS

- Public administration under the authority of the Minister of the Economy
- Created by the law dated July 14, 2014 (repealing the amended Law of May 20, 2008)
- Total staff: 44 (February 2018)

National standards body

- Composed of 5 persons
- Close collaboration with the G.I.E. ANEC-N (6 persons)

2. ILNAS Standardization activities

- Coordination and supervision of the creation of national normative documents
- Participation in standardization committees (European and international level)
- Manage the National Mirror Committees
- Publish and implement European, international and national standards
- Organize education and training courses about standardization
- Develop partnerships with academia and research
- Foster and promote voluntary, consensus-based standards

3. Availability of standards

3.1 Standardization catalogue

- 61 national standards

- 60.201 European Standards from CEN, CENELEC and ETSI

- 60.729 International Standards from ISO and IEC

- 46.104 DIN standards

➔ **More than 160.000 normative documents at your disposal**

3. Availability of standards

3.2 ILNAS e-shop

- Format: electronic
- Language: French, German and English
- Competitive prices
- Free access to documents in public enquiry

3. Availability of standards

3.3 Free access on lecture stations

Availability of all EN (CEN,CENELEC et ETSI), ISO, IEC and ILNAS standards (despite DIN)

Location of the lecture stations:

1) Université du Luxembourg

Campus Kirchberg

2) Chambre of Commerce

House of Entrepreneurship

3) Bibliothèque nationale de Luxembourg

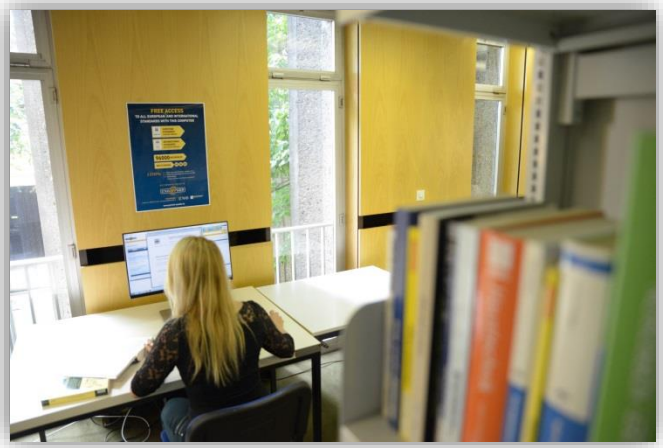
Luxembourg city-center

4) ILNAS

Esch-Belval

5) LIST

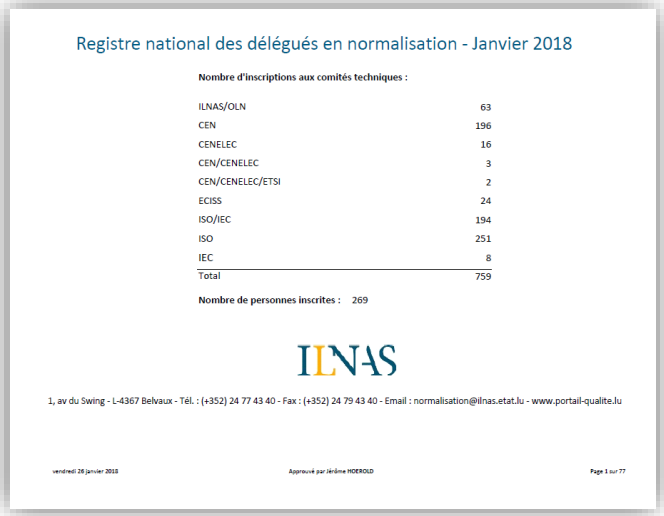
Esch-Belval (Maison de l'innovation) & Belvaux



4. Participation in standardization

4.1 National delegate in standardization

- **Why participate ?**
  - Privileged access to the drafts of future standards
  - Opportunity for commenting and voting
  - Be part of a network of experts
- **Who can participate ?**
  - Every socio-economic actor with a certain expertise
- **Cost of participation ?**
  - Free participation in Luxembourg
- **National experts register (January 2018)**
  - 269 persons registered
  - 759 registrations in technical committees



Registre national des délégués en normalisation - Janvier 2018

Nombre d'inscriptions aux comités techniques :

ILNAS/OLN	63
CEN	196
CENELEC	16
CEN/CENELEC	3
CEN/CENELEC/ETSI	2
ECISS	24
ISO/IEC	194
ISO	251
IEC	8
Total	759

Nombre de personnes inscrites : 269

ILNAS

1, av du Swing - L-4367 Belvaux - Tél. : (+352) 24 77 43 40 - Fax : (+352) 24 79 43 40 - Email : normalisation@ilnas.etat.lu - www.portail-qualite.lu

vendredi 26 janvier 2018 — Approuvé par Jérôme HOEROLD — Page 1 sur 77

For more information

Portail qualité
www.portail-qualite.lu

ILNAS e-shop
ilnas.services-publics.lu

National Standards Body

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ILNAS

ANEC

Standardization in support of innovation

ILNAS - 16.02.2018

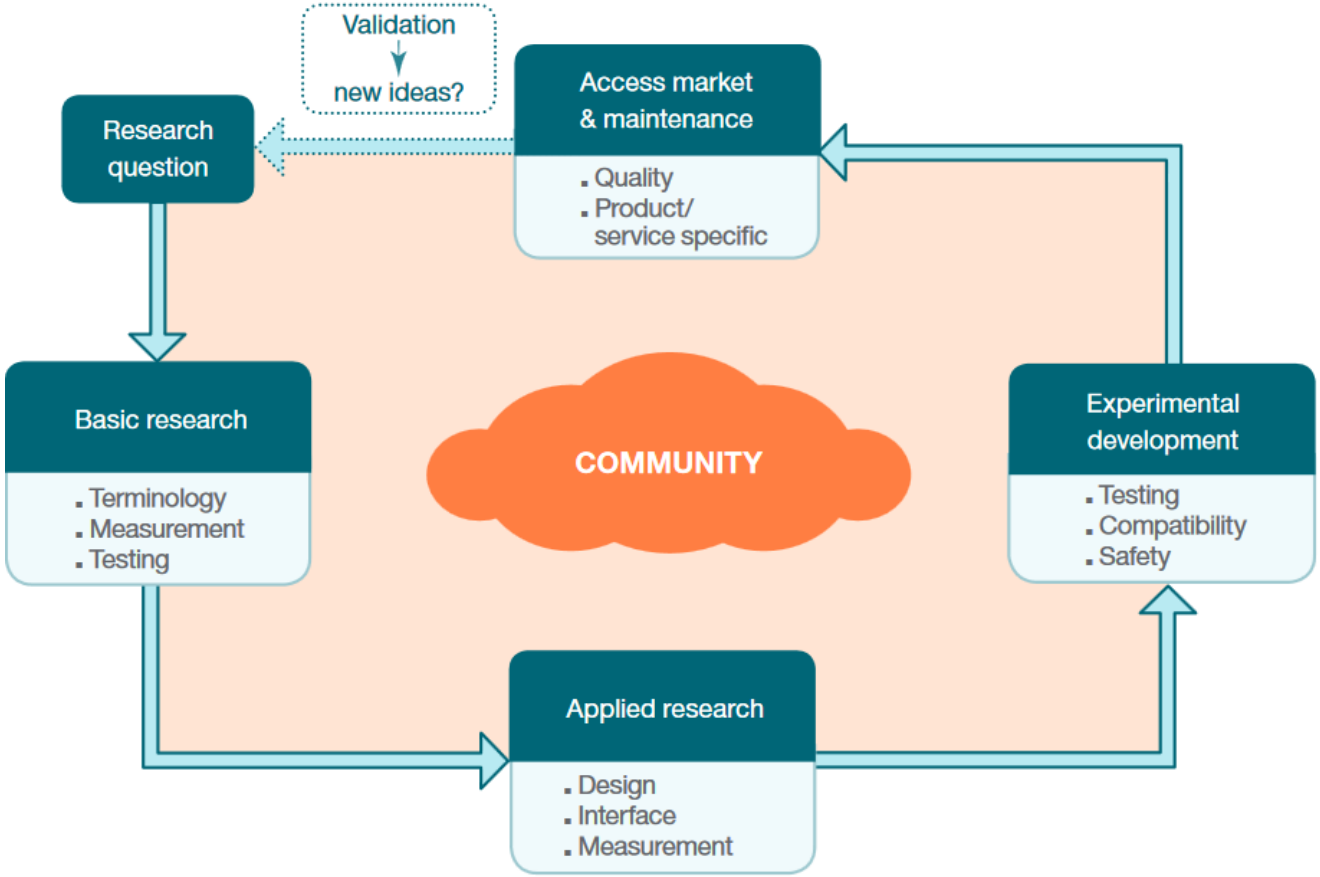
How standardization can support research and innovation?

- **Europe 2020 Flagship Initiative, Innovation Union, COM(2010) 546**
  - "*Standards play an important role for innovation. By codifying information on the state of the art of a particular technology, they enable dissemination of knowledge, interoperability between new products and services and provide a platform for further innovation*"

- **Standardization facilitates:**
  - The transfer of knowledge and technology into marketable products and services
  - The dissemination and exploitation of R&D results
  - The enhancement of recognition and reputation
  - Building trust in the innovations
  - Networking with other researchers, industries and stakeholders for future research and innovation
  - The inclusion of all interested parties in framing the rules relevant for future R&D
  - Leveraging licensing revenues of own patents by referencing them into standards
    - Patent-protected technologies included in standards are called standard-essential patents (SEPs)
    - FRAND (Fair, Reasonable and Non-Discriminatory terms) agreements for the licensing are required

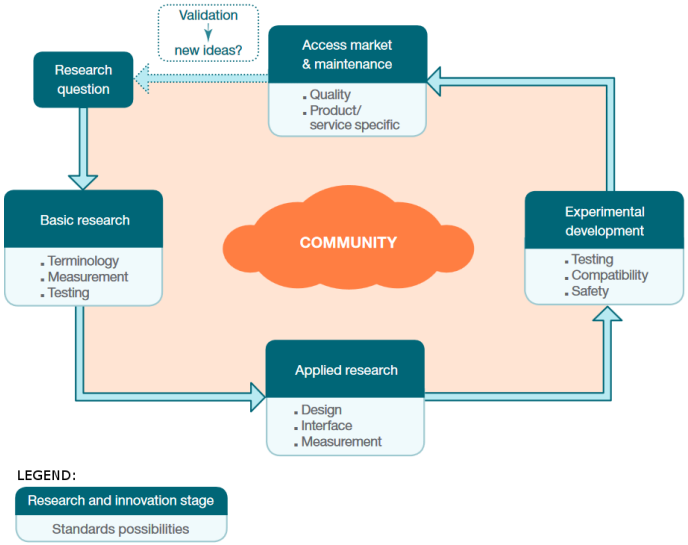
https://www.cencenelec.eu/research/news/publications/Publications/BRIDGIT-researcher-guide.pdf
https://ec.europa.eu/growth/industry/intellectual-property/patents/standards_fr

How standardization can support research and innovation?



https://www.cencenelec.eu/research/news/publications/Publications/BRIDGIT-researcher-guide.pdf

Typology of standards and their effect on innovation

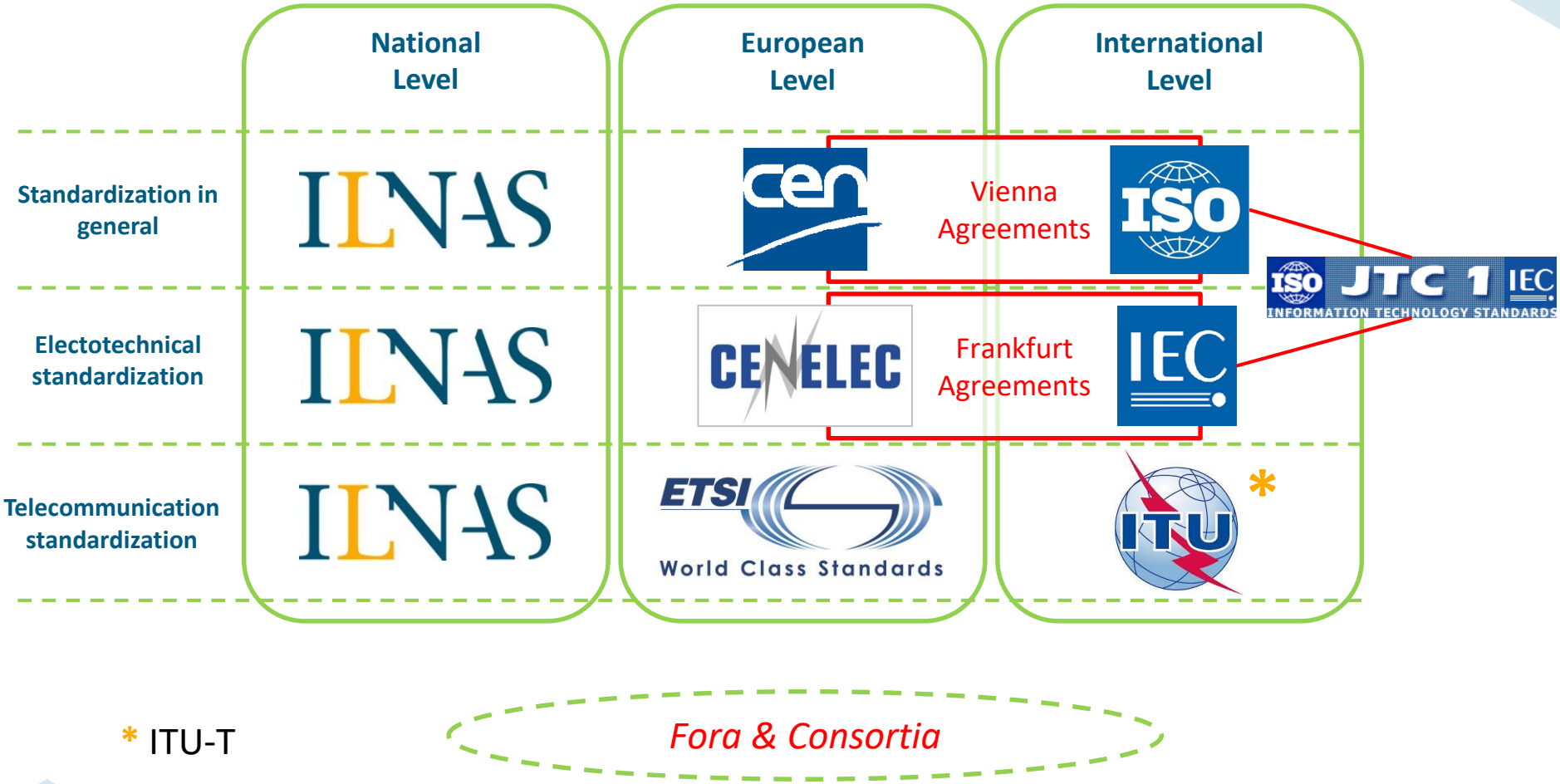


- **Terminology / Measurement / Testing standards**
  - Provide a common understanding of technological knowledge
    - ➢ Reduce transaction costs, facilitate trade
- **Quality / Safety standards**
  - Reduce uncertainty and risk
  - Build consumer trust on emerging technologies
    - ➢ Reduced transaction costs for a broader diffusion
- **Compatibility / Interface standards**
  - ➢ Achieve network externalities (particularly important in the ICT sector)
  - ➢ Avoid technology lock-in
- **Variety reducing standards**
  - Define specifications of products and services
  - Reduce the production variety
    - ➢ Economies of scale, critical mass for market success

https://www.cencenelec.eu/research/news/publications/Publications/BRIDGIT-researcher-guide.pdf

Zoo, H., et al., Interplay of innovation and standardization: Exploring the relevance in developing countries, Technol. Forecast. Soc. Change (2017), http://dx.doi.org/10.1016/j.techfore.2017.02.033

Overview of recognized standards bodies



* ITU-T

Fora & Consortia

Overview of ISO/IEC JTC 1 “Information technology”

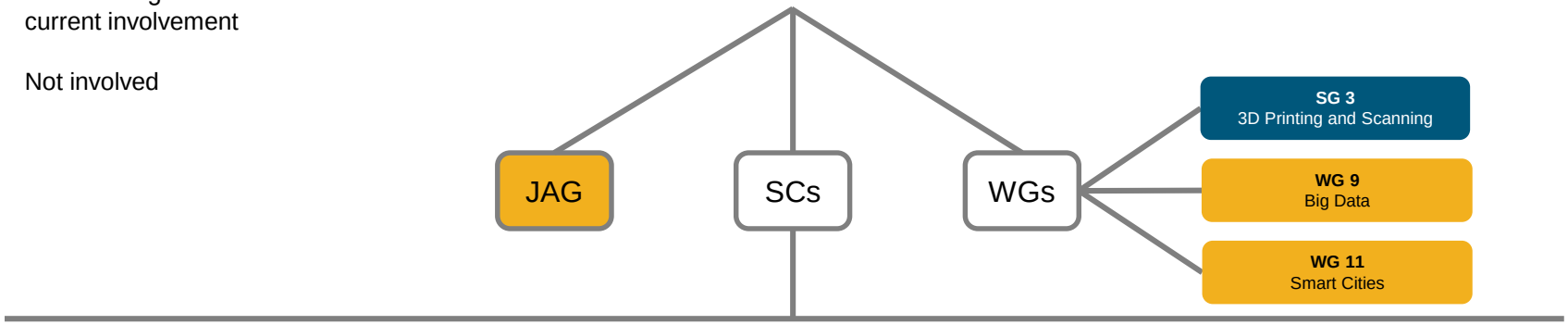
Presidency by ILNAS

ISO JTC1 IEC

INFORMATION TECHNOLOGY STANDARDS

Luxembourg’s current involvement

Not involved



SC 2 Coded Character Sets	**SC 6** Telecommunications and information exchange between systems	**SC 7** Software and Systems Engineering	**SC17** Cards & Personal Identification	**SC 22** Programming Languages	**SC 23** Digitally recorded media for information interchange and storage	**SC 24** Computer graphics, image processing, and environmental data representation	**SC 25** Interconnection of information technology equipment	**SC 27** IT security techniques	**SC 28** Office equipment	**SC 29** Coding of audio, picture, multimedia and hypermedia information
SC 31 Automatic identification and data captures techniques	**SC 32** Data management and interchange	**SC 34** Document description and processing languages	**SC 35** User interfaces	**SC 36** Information technology for learning, education and training	**SC 37** Biometrics	**SC 38** Cloud Computing and Distributed Platforms	**SC 39** Sustainability for and by information technology	**SC 40** IT Service Management and IT Governance	**SC 41** Internet of Things and related technologies	**SC 42** Artificial Intelligence

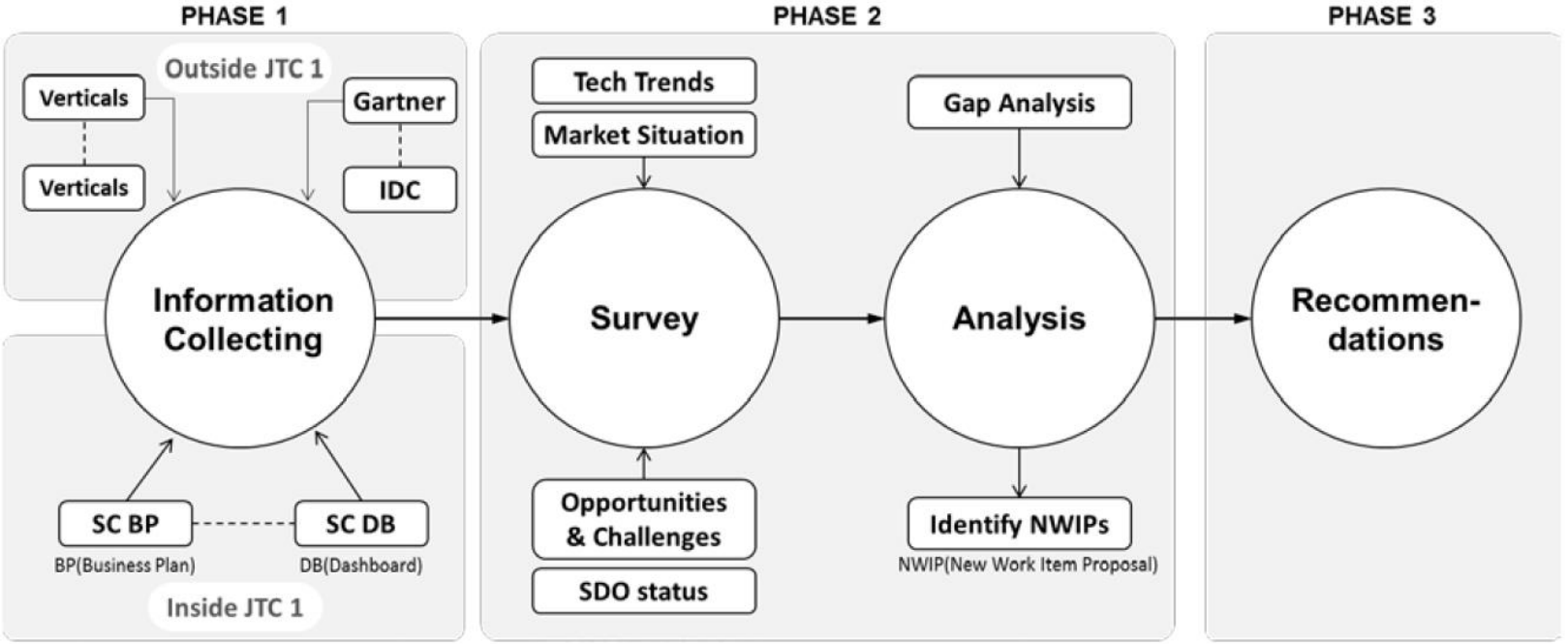
ISO/IEC JTC 1 Advisory Group (JAG)
JAG Group on JTC 1 Emerging Technology and Innovation

- **The JTC 1 Advisory Group (JAG) is responsible for several activities related to JTC 1**
  - **Strategic activities**
  - Managerial and steering activities
  - Operational efficiency activities
  - Communications, outreach and marketing activities

- **August 2016 – Creation of a JAG Group on JTC 1 Emerging Technology and Innovations (JETI)**
  - Assess the **opportunities addressing evolving ICT business needs**
  - Assess, on an annual cycle, the **technology opportunities** in the next 1 – 3 years to identify the priorities that warrant immediate action and those that should be watched for potential consideration later
  - Emphasize reaching out and incorporating input from outside of JTC 1, such as verticals (e.g. financial services, health care)
  - Make recommendations on actions to the JAG

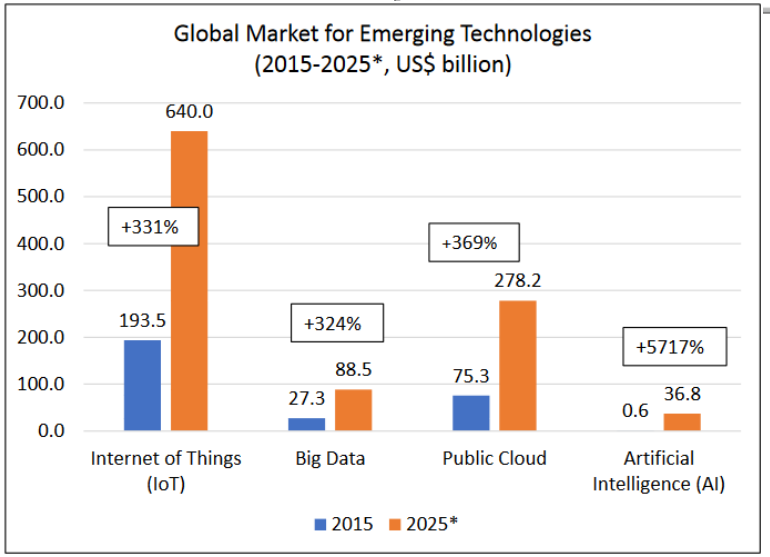
JTC 1/JAG JETI - Planning process

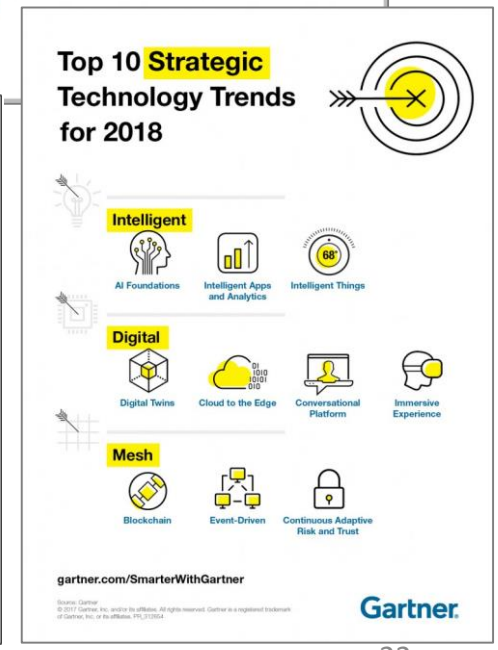
- **JAG JETI planning process**
  - Considers JTC 1 business planning over a 3-5 year timeframe
  - Expected to **identify relevant technology trends at an early stage**, to **highlight challenges and opportunities for JTC 1** and to **make recommendations to JTC 1 on what actions it should take**



JTC 1/JAG JETI - Planning process

- **Phase 1 - Information collecting phase**
  - Call for input on technology trends and possible new work areas is issued to JTC 1 subgroups, Liaison Organizations (e.g.: ITU) and individual experts as well as fora and consortia (e.g.: IEEE, W3C)
  - Inputs from research and advisory firms (e.g.: Gartner, IDC)
  - Preparation and review of a survey (extended in Phase 2)





https://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017/
https://www.gartner.com/smarterwithgartner/gartner-top-10-strategic-technology-trends-for-2018/
ITU, Measuring the Information Society Report 2017 - Volume 1

JTC 1/JAG JETI - Planning process

- **Phase 2 – Survey & analysis phase**
  - Online survey to evaluate standardization maturity of emerging technologies (environmental scan)
  - Review and evaluation of the survey's results
    - Initiation of ad hoc groups (AHG) to prepare Technical Trend Reports (TTR)
    - Preparation of a global report on the survey
    - Preparation of Technical Trend Notes (TTN) to inform SCs or WGs and receive their inputs on new emerging technologies
    - E.g.: 2018 Internal pre-survey results for prioritization (from Phase 1)

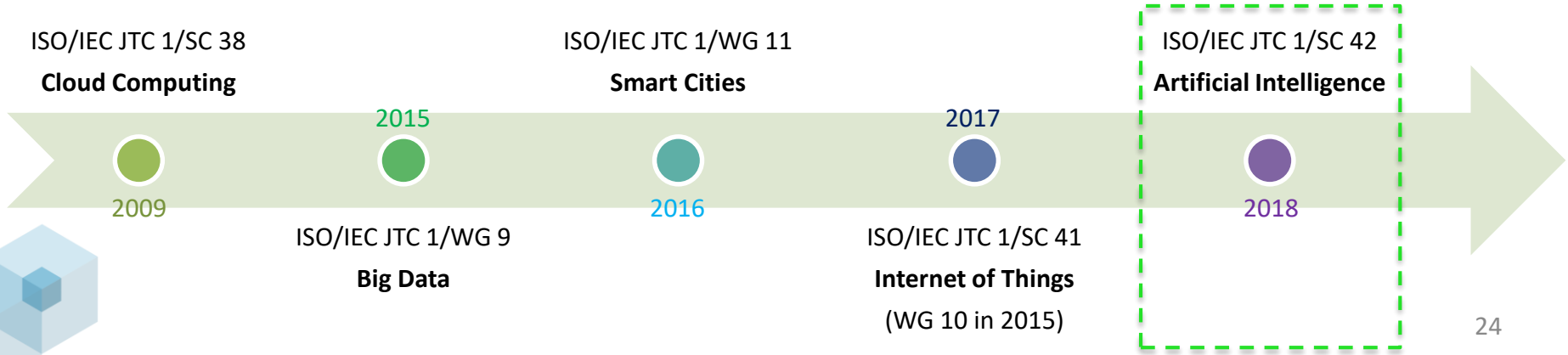
1. **Smart Car**
2. **Autonomous Systems**
3. **Robotics**
4. **Connected Car**
5. **Digital Twin**
6. **Autonomous Vehicles**
7. **Quantum Computing**
8. **Augmented Data Discovery**
9. **Virtual Assistance**
10. **Brain-Computer Interface**
11. **4D Printing**
12. **Cognitive Computing**
13. **Drone**
14. **Smart Workspace**
15. **Neuromorphic Hardware**

No.	New emerging tech item	High (A)	Mid (B)	Low (C)	Covered by JTC 1(D)	Not Necessary (E)	Priority*	Related JTC 1 entity**
1	Smart Car	4	4	1		1	56	
2	Autonomous Systems	5	3		1	1	50	SC 42, SC 7
3	Robotics	3	5			2	45	
4	Connected Car	3	3	3		1	43	
5	Digital Twin	1	6	2		1	37	
6	Autonomous Vehicles	3	4	1	1	1	36	SC 42, SC 7
7	Quantum Computing	3	2	3		2	33	
8	Augmented Data Discovery	1	6	1		2	31	
9	Virtual Assistance	2	5	1	1	1	31	
10	Brain-Computer Interface	2	3	3		2	28	
11	4D Printing		5	4		1	24	
12	Cognitive Computing	1	4	4	1		24	
13	Drone	1	5	2	1	1	22	SC 42, SC 7
14	Smart Workspace	1	5	2	1	1	22	
15	Neuromorphic Hardware		4	4		2	14	
16	Blockchain	3	2	1	2	2	11	SC 27, SC 32, SC 38

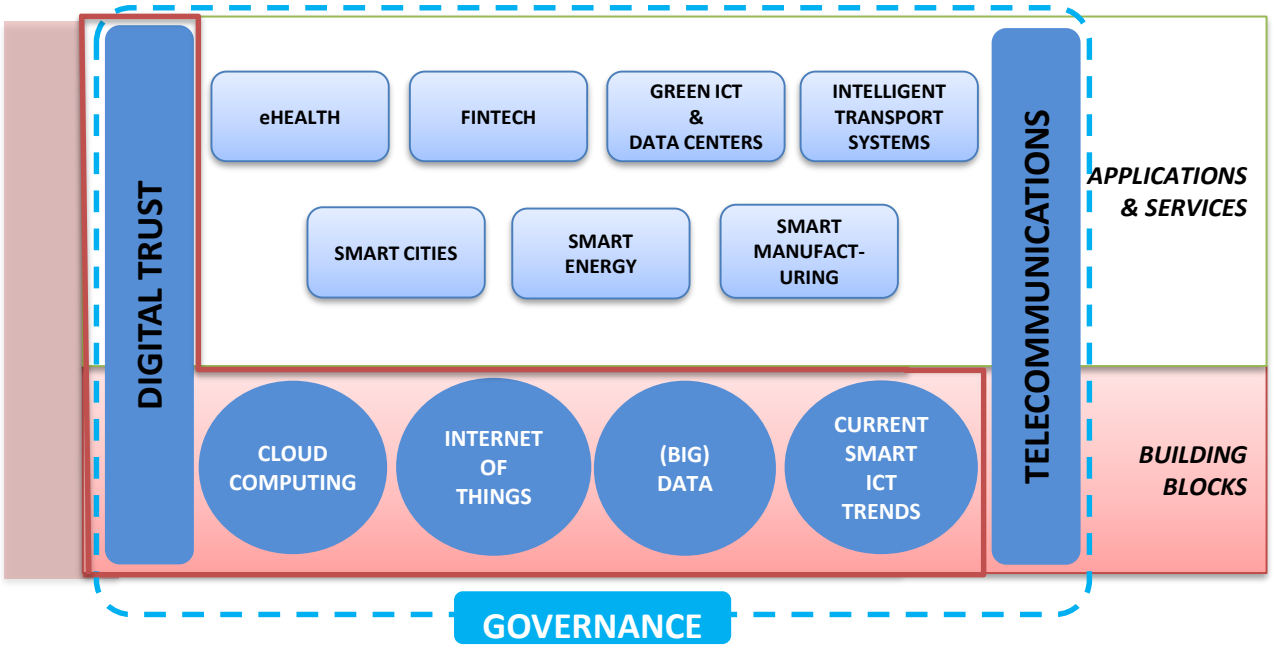
** Note that all relevant activities need to be checked again with further survey.

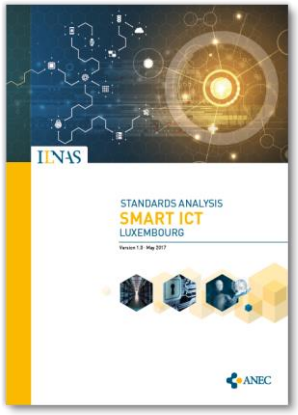
JTC 1/JAG JETI - Planning process

- **Phase 3 – Recommendation phase**
  - JAG JETI prepares a yearly report with recommendations for JTC 1 future work that considers:
    - TTR from ad-hoc groups
    - Collection of feedback from the JTC 1/SCs and JTC 1/WGs based on the TTNs
  - Yearly report also provides information on the analysis and recommendations of the survey of the previous year in one part and initial information on the analysis and recommendations of the survey of the current year
    - E.g.: creation of new subcommittees / initiation of new projects (e.g.: Artificial Intelligence and 3D printing in 2018)



Luxembourg - Smart ICT Standards Analysis





- **FOCUS ON SMART ICT AND DIGITAL TRUST**
  - Cloud Computing
  - Internet of Things
  - Big Data
  - Current trends in SMART ICT (Artificial Intelligence and Blockchain)
  - Digital Trust related developments

https://portail-qualite.public.lu/content/dam/qualite/publications/normalisation/2018/standards-analysis-smart-ict-2-0.pdf

Luxembourg - Smart ICT Standards Analysis

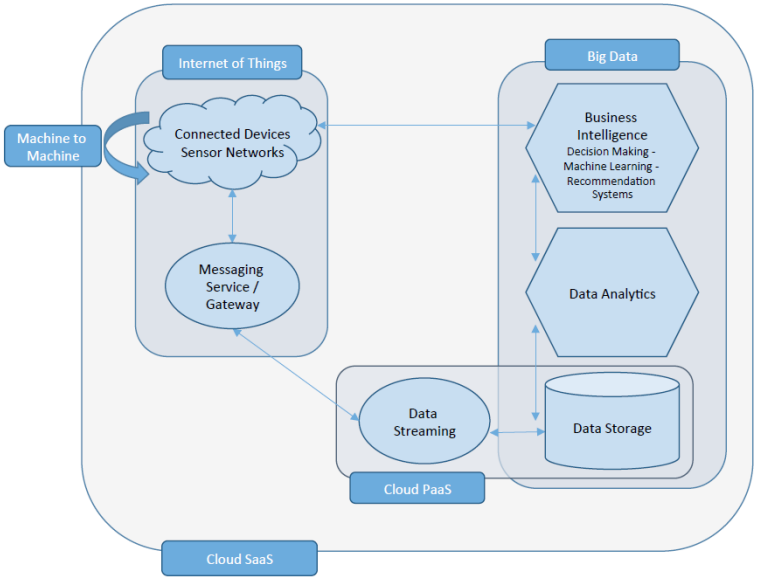
INFORM	IDENTIFY	ENCOURAGE	DEVELOP
about Smart ICT standardization developments	standardization opportunities for the national market	the involvement in the standardization process	“standards-related” skills and collaborations

For the benefit of all national stakeholders

Luxembourg - Smart ICT Standards Analysis

Smart ICT

Smart ICT corresponds to a holistic approach of ICT development, integration and implementation, where a range of emerging or innovative tools and techniques are used to maintain, improve or develop products, services or processes with the global objective to strengthen different societal, social, environmental and economic needs. It includes, through related interconnected ecosystems, advanced ICT such as Cloud Computing, Big Data and Analytics, Internet of Things, Artificial Intelligence, Robotic and new ways of gathering data, such as social media and crowdsourcing.



- **SMART ICT COMPONENTS AND THEIR INTERACTIONS**
  - General introduction of the Smart ICT landscape and of the existing interactions between Cloud Computing, IoT and Big Data
- **FUNDAMENTAL CONCEPTS OF SMART ICT AND RELATED DIGITAL TRUST**
  - Cloud Computing: ISO/IEC 17788:2014, Information technology -- Cloud computing -- Overview and vocabulary
  - Internet of Things: ITU-T Y.4000/Y.2060 (06/2012), Overview of the Internet of things
  - Big Data: ISO/IEC 20546 (under development), Information Technology -- Big Data -- Definition and Vocabulary
  - Digital Trust: based on the ILNAS White Paper “Digital Trust for Smart ICT” (October 2016)
  - Artificial Intelligence (AI): ISO/IEC NP 22989 (under development), Artificial Intelligence Concepts and Terminology
  - Blockchain: ISO/AWI 22739 (under development), Blockchain and distributed ledger technologies -- Terminology and concepts

Luxembourg - Smart ICT Standards Analysis

BIG DATA

- **TECHNICAL COMMITTEES (2)**
  - ISO/IEC JTC 1/WG 9 “Big Data”
  - ISO/IEC JTC 1/SC 32 “Data management and interchange”
- **PUBLISHED STANDARDS (1)**
  - ISO/IEC TR 20547-2, Information technology – Big data reference architecture – Part 2: Use cases and derived requirements
- **STANDARDS UNDER DEVELOPMENT (4)**
  - ISO/IEC DIS 20546, Information technology -- Big Data -- Overview and Vocabulary
  - ISO/IEC CD 20547-3, Information technology -- Big Data Reference Architecture – Part 3: Reference Architecture
  - …

BLOCKCHAIN

- **TECHNICAL COMMITTEES (1)**
  - ISO/TC 307 “Blockchain and Distributed Ledger Technologies (DLT)”
- **STANDARDS UNDER DEVELOPMENT (4)**
  - ISO/AWI 22739, Blockchain and distributed ledger technologies -- Terminology and concepts;
  - ISO/NP TR 23245, Blockchain and distributed ledger technologies -- Security risks and vulnerabilities;
  - ISO/NP TR 23244, Blockchain and distributed ledger technologies -- Overview of privacy and personally identifiable information (PII) protection;
  - ISO/NP 23246, Blockchain and distributed ledger technologies -- Overview of identity
  - …

Luxembourg - Smart ICT Standards Analysis

INFORMATION ABOUT STANDARDIZATION

- Smart ICT workshops
- Awareness sessions
- Smart ICT standards watch
- Publications and disseminations
- Free consultation of the standards
- Smart ICT standardization research results

TRAININGS IN STANDARDIZATION

- Trainings on digital trust
- University certificate Smart ICT for Business Innovation

INVOLVEMENT IN STANDARDIZATION

- Become national delegate in standardization
- Comment standards under public enquiry
- Propose new standards projects
- Monitor the standardization work performed by the European Multi-Stakeholder Platform on ICT Standardization (MSP)

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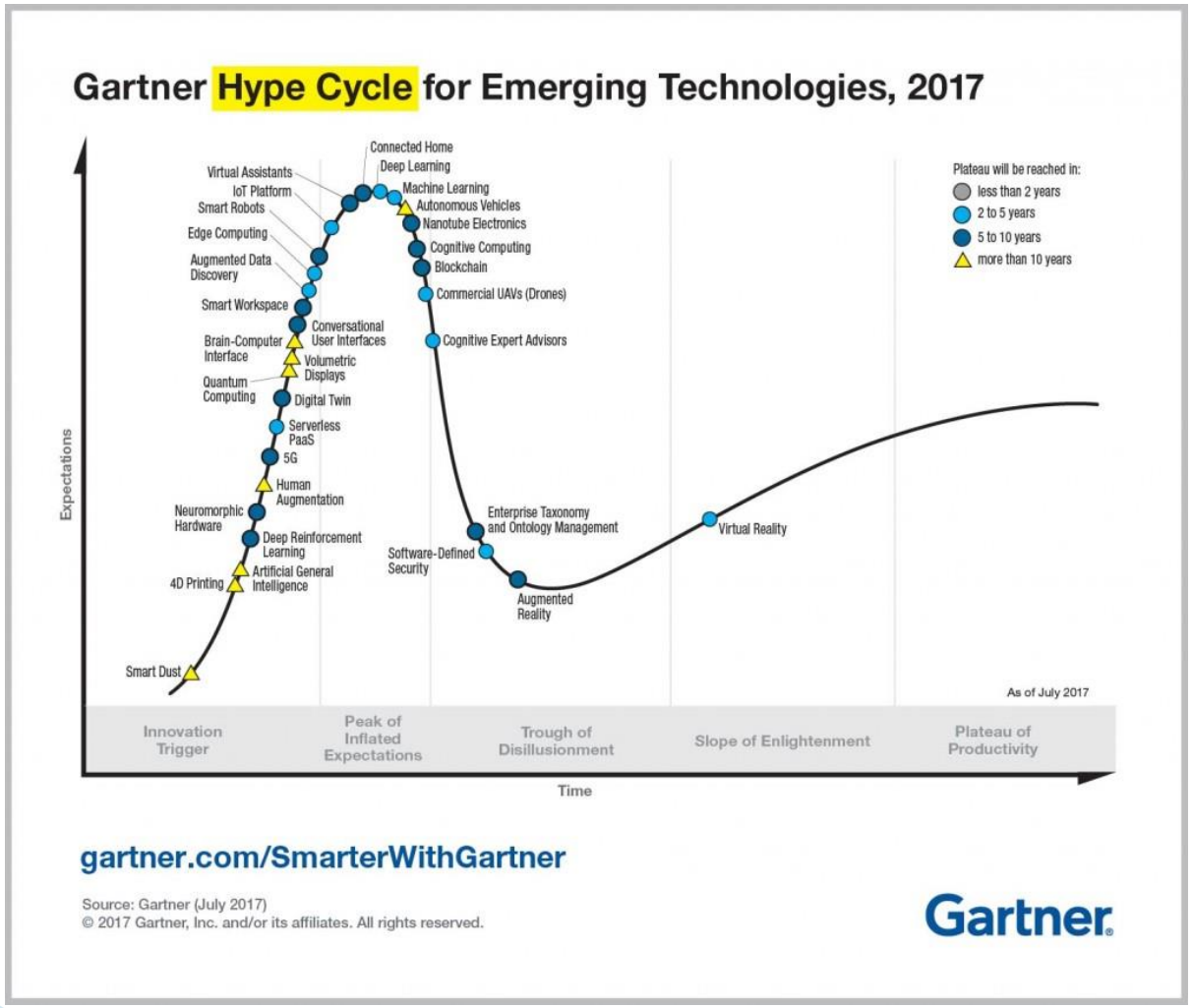
Artificial Intelligence and related technologies

International standardization landscape

16.02.2018

Predictions for AI



AI Everywhere:

- Deep Learning
- Reinforcement Learning
- Artificial General Intelligence
- Autonomous Vehicles
- Cognitive Computing
- Commercial UAVs (Drones)
- Ontology Management
- Machine Learning
- Smart Dust
- Smart Robots
- Smart Workspace

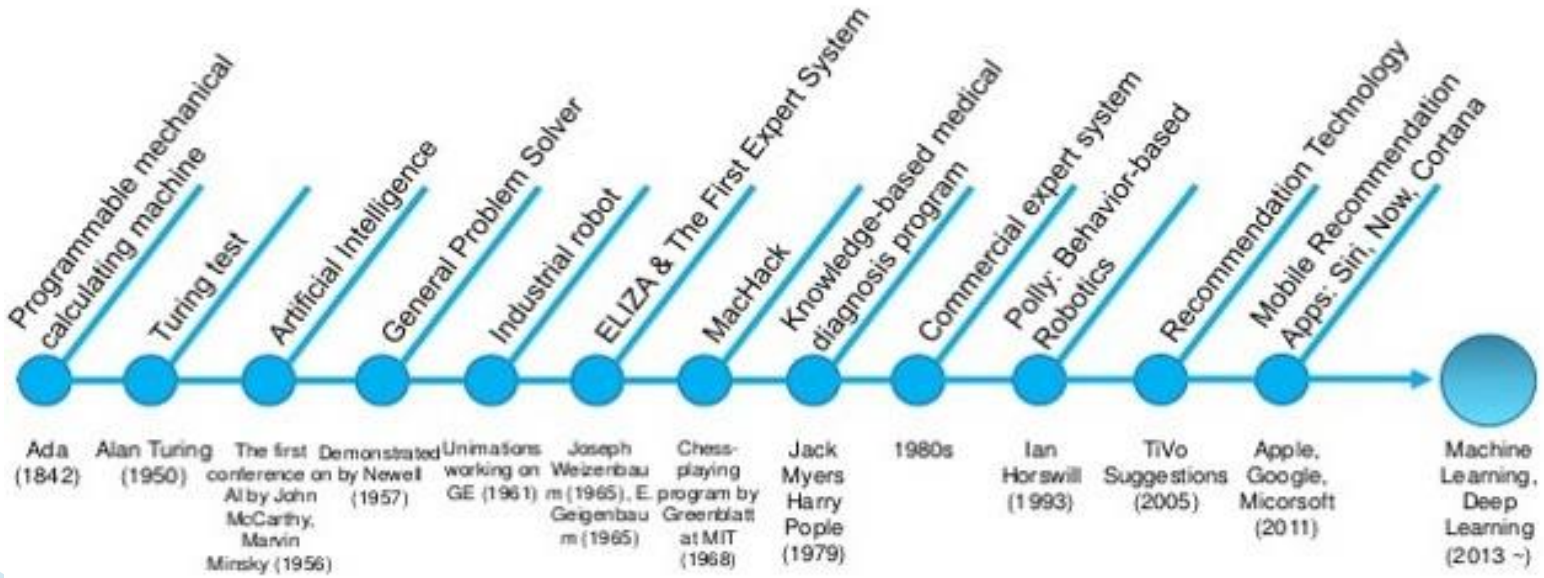
Source: https://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017/

AI is not new

Artificial Intelligence in 1950

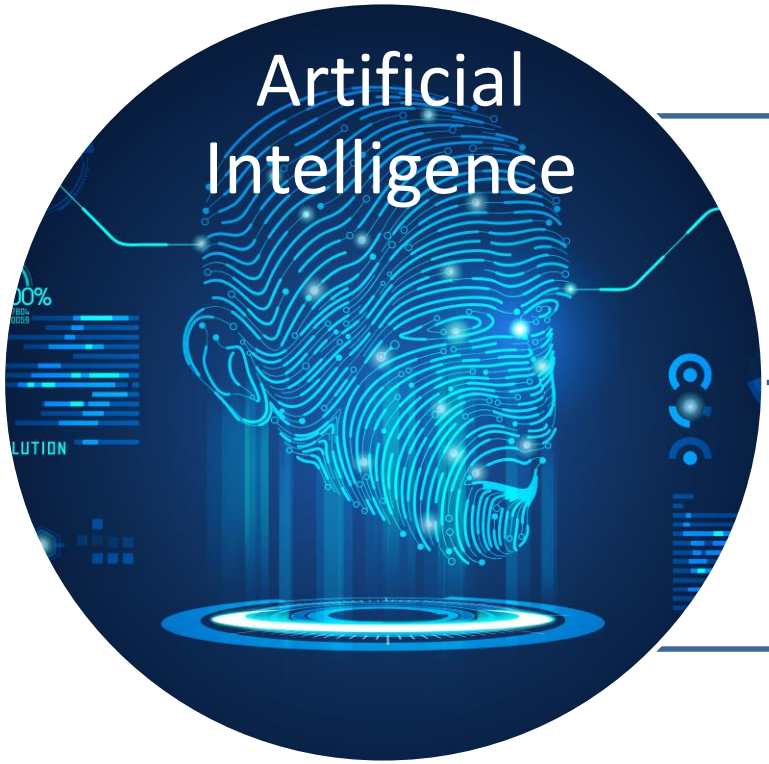
Artificial Intelligence in 2016 - 2017

AI Timeline



Sources: https://www.slideshare.net/kepark07/ai-history-tomlearning
Artificial Intelligence - IEEE

AI Enabling technologies



Internet of Things

Big Data

Cloud Computing

AI: What Is Inside?

Definition

- ✓ Artificial intelligence is *"the science and engineering of making intelligent machines, especially intelligent computer programs"*. (John McCarthy, 1956)

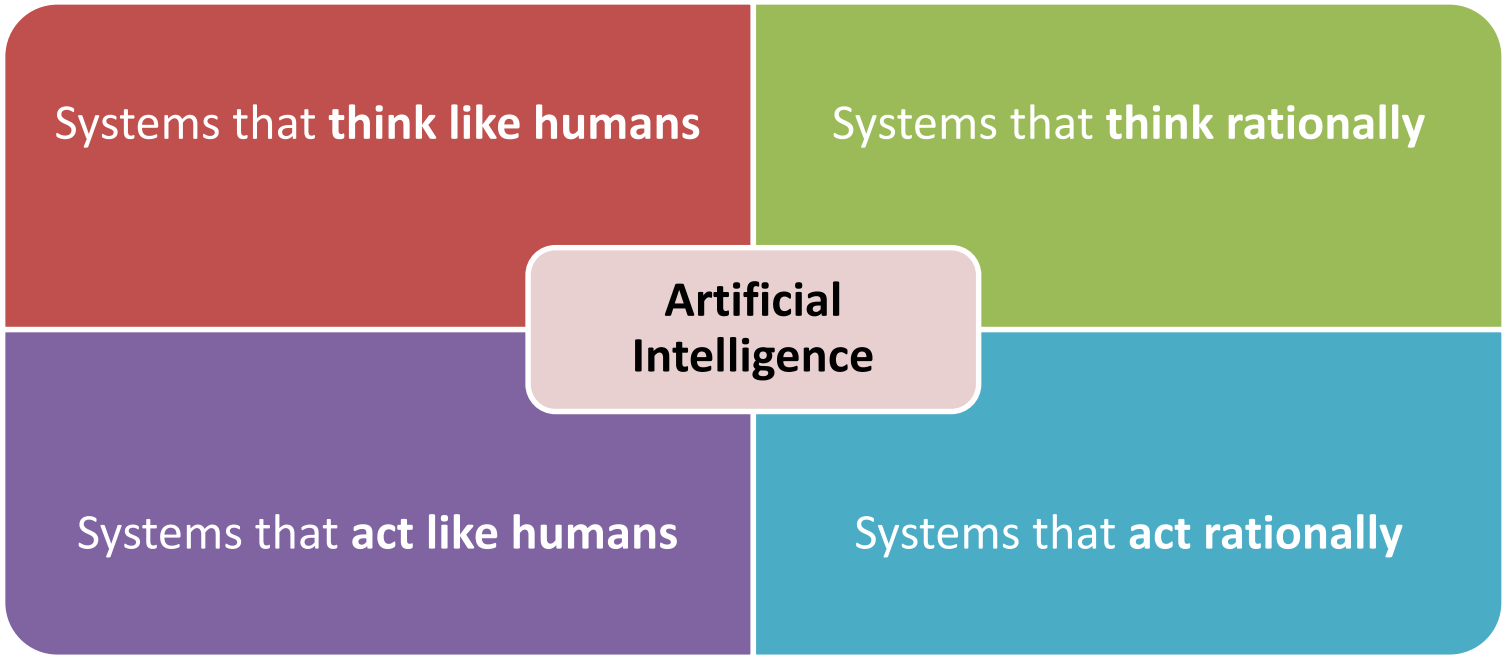
- ✓ Artificial intelligence (AI, also machine intelligence, MI) is intelligence demonstrated by machines, in contrast to the natural intelligence (NI) displayed by humans and other animals. In computer science AI research is defined as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals.

- ✓ Artificial intelligence is technology that appears to emulate human performance typically by learning, coming to its own conclusions, appearing to understand complex content, engaging in natural dialogs with people, enhancing human cognitive performance (also known as cognitive computing) or replacing people on execution of nonroutine tasks. Applications include autonomous vehicles, automatic speech recognition and generation and detecting novel concepts and abstractions (useful for detecting potential new risks and aiding humans quickly understand very large bodies of ever changing information).

- ✓ The capability of a functional unit to perform functions that are generally associated with human intelligence such as reasoning and learning. (ISO/ IEC 2382-28:1995)

AI: What Is Inside?

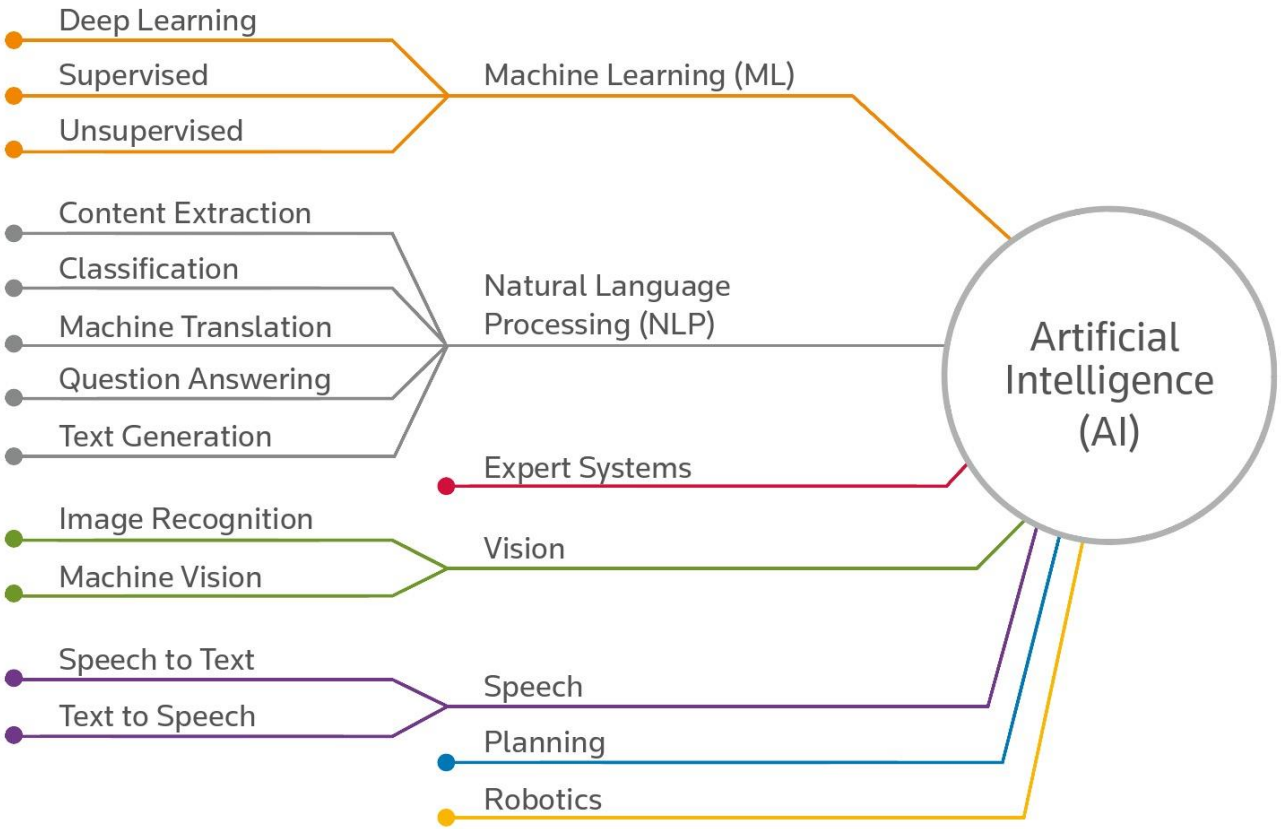
Taxonomy



Source: Stuart Russell and Peter Norvig, "*Artificial Intelligence: A Modern Approach*" (3rd edition)

AI: What Is Inside?

Taxonomy

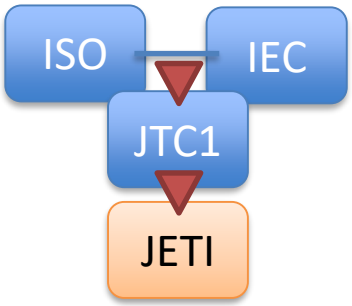


Source: www.fullai.orgshort-history-artificial-intelligence

AI standardization background

Motivation to develop standards on AI

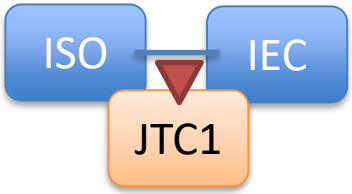
- **Work on AI vocabulary since 1995**
  - ISO/IEC 2382-28:1995 Information technology – Vocabulary – Part 28: Artificial intelligence – Basic concepts and expert systems
    - Definition maintained in the updated version ISO/IEC 2382:2015 (en) Information technology — Vocabulary
- **JTC1 Group on Emerging technologies and innovations (JETI) : Internal survey, Landscape study and Gap analysis on Artificial Intelligence (AI) & Autonomous Systems (AS)**



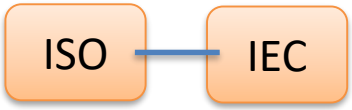
  - Survey timeframe: July-August 2017
  - Survey participants: 13 JTC1 sub-committees & working groups
  - 43% of participants consider have working items related to AI
  - 12 relevant ongoing and future projects
  - Relevant activities: interoperability, security, privacy, software engineering, performance, risk analysis, traceability, ethics, etc.
  - Recommendation for JTC1 to start the activity on the development of standardization on AI and AS

AI standardization background

Establishment of JTC1/SC42, Artificial Intelligence



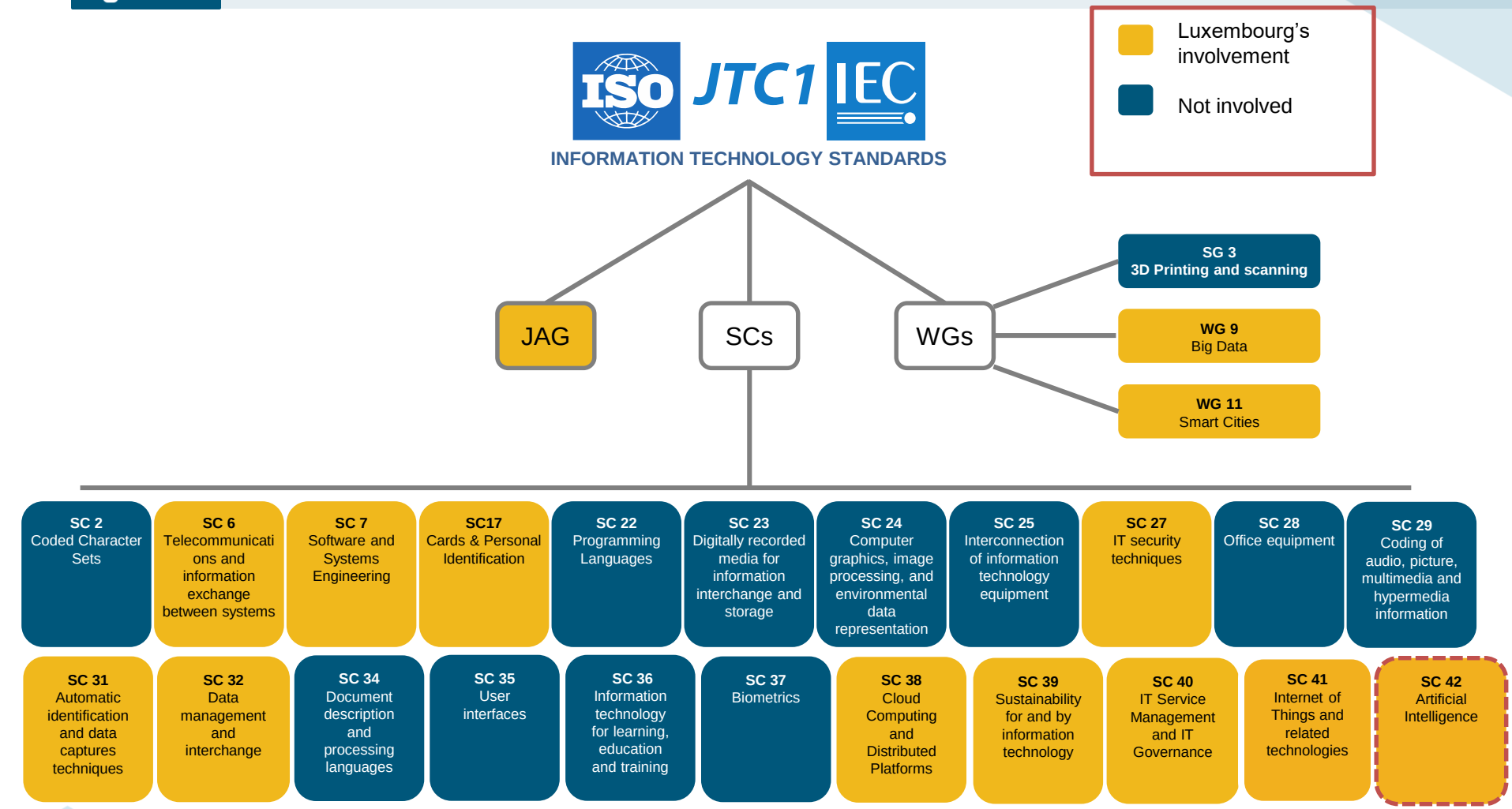
- **ISO/IEC JTC1 Plenary meeting in October 2017**
  - Resolution 12 – Establishment of JTC 1/SC 42, Artificial Intelligence
    - Include the topics such as
      - Foundational standards
      - Computational methods
      - Trustworthiness
      - Societal concerns
    - US serves as Secretary, Chairman – Wael Diab (Huawei)
    - China offers to place a Vice-Chair
  - Resolution 13 – Placement of the Work of JTC 1/WG 9, Big Data



- **IEC Standardization Management Board (SMB)**
  - Ratifies the establishment of the JTC 1/SC 42, Artificial Intelligence
- **ISO Technical Management Board (TMB)**
  - Ratifies the establishment of the JTC 1/SC 42, Artificial Intelligence on condition:
    - Exclude societal concerns from program of work
    - Exclude work program of JTC 1/WG 9, Big Data

AI standardization: JTC1/SC42, Artificial Intelligence

JTC1 structure



AI standardization: JTC1/SC42, Artificial Intelligence

New Approved Work Items

- **ISO/IEC 22989, Artificial Intelligence Concepts and Terminology**
  - AI Taxonomies
  - Machine learning
  - Deep learning
  - Autonomy
  - Automation
  - Human-machine Teaming
  - Narrow AI
  - General AI
  - Other terms and concepts

- **ISO/IEC 23053, Framework for Artificial Intelligence (AI) Systems Using Machine Learning (ML)**

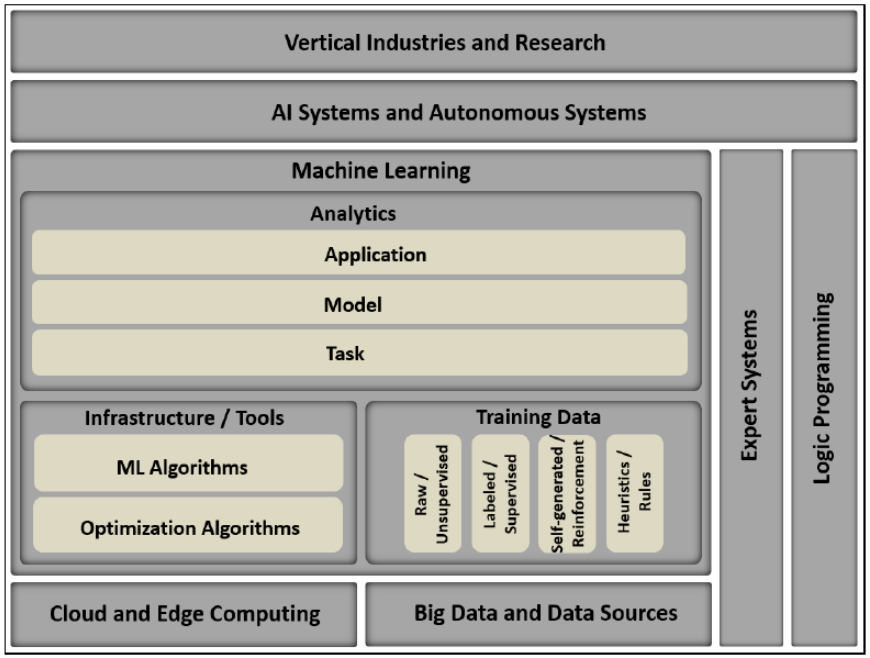


Figure 1 AI Ecosystem

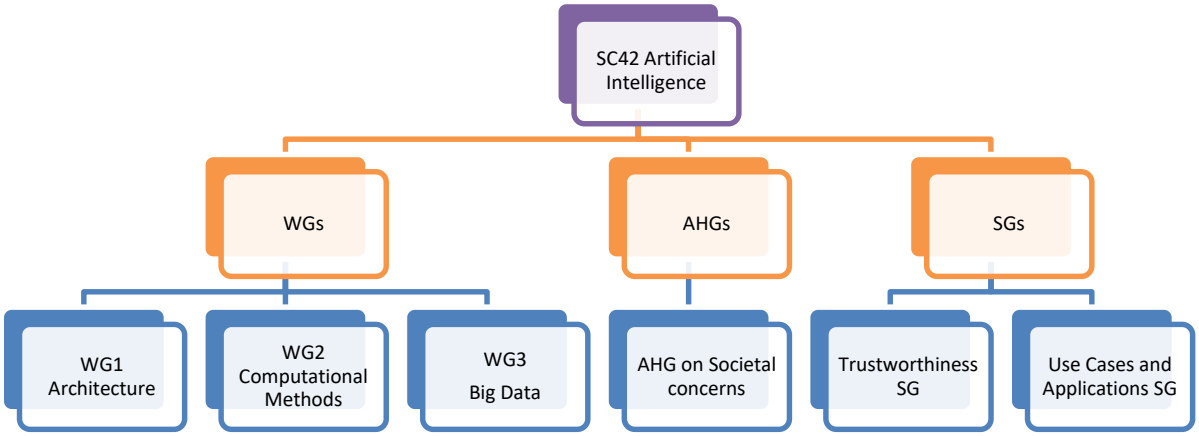
AI standardization: JTC1/SC42, Artificial Intelligence

Motivation for inclusion of WG9 Big Data and Societal concerns

- **Placement of JTC1/WG9, Big Data under SC42**
  - Data, Data Sets and Extracting Information from Data
  - Participants in Big Data and AI
  - Applications, Use Cases
  - Liaison Relationships
  - Future Work and Trajectory
  - Ecosystem and Cross-Functional Aspects
- **Inclusion of Societal concerns in program of work**
  - Develop a definition of societal concerns as it relates to AI
  - Examples of what should be in scope:
    - Algorithmic bias
    - Autonomous, Robotic and Industrial IoT systems: Do No Harm
    - AI Eavesdropping
  - Examples of what should NOT be in scope:
    - Impact of deploying AI in manufacturing on unemployment
    - Decision on how to deploy AI and/or govern its use

AI standardization: JTC1/SC42, Artificial Intelligence

Suggested Structure



- **Working Groups (WGs)**
  - WG1: Architecture
    - Develop JTC 1 NP 22989 Artificial Intelligence Concepts and Terminology
    - Work on other foundational documents such as a reference architecture
  - WG2: Computational Methods
    - Develops JTC 1 NP 23053 Framework for Artificial Intelligence (AI) Systems Using Machine Learning (ML)
    - Identification and development of additional computational methods
  - WG3: Big Data
    - Big Data Reference Architecture Interface to Support Reusable, Deployable and Operational Analytic techniques
- **Ad-Hoc Groups (AHG)**
  - AHG on Societal Concerns
    - Develop a definition of societal concerns, as it relates to AI
    - Draft appropriate justification for placement of such concerns in SC 42, versus other Committees
- **Study Groups (SGs)**
  - Trustworthiness SG
    - Investigate areas of trustworthiness; including system requirements from an AI perspective
  - Use Cases and Applications SG
    - Investigate and collect use cases
    - Identify AI application domains and application areas for AI systems

Related standardization activities: Machine Learning, Analytics

- **ISO TC69/WG12, Big Data Analytics**
  - ISO/NP TR 23348 Statistics -- Big Data Analytics -- Model Validation
    - Guidelines on techniques of checking and validation of models and results of Big Data analytics
      - Verify the stability of the coefficients of parametric models and related performance by reconsidering datasets other than the original training ones, through resampling techniques such as bootstrap, subsampling, cross-validation, etc.
    - Proposal and comparison of performance and of quality measures of big data analytics and models.
  - ISO/NP TR 23347 Statistics -- Big Data Analytics -- Data Science Life Cycle
    - This standard will describe the end-to-end data science life cycle in the context of big data, and the impact on existing statistical methods for describing the distribution of data values in a dataset both for preparation, sampling, and analytics.
  - ISO/NP 3534-5 Statistics – Vocabulary and symbols – Part 5: Terms used in big data (predictive analytics)
    - Define terms used in the field of statistics dealing with data sets that occur in the realm of big data applications that may be used in the drafting of other International standards
- **ISO/IEC SC32, Data Management and Interchange**
  - ISO/IEC NP 13249-11 Information technology -- Database languages -- SQL Multimedia and Application Packages -- Part 11: Deep learning
    - The proposed part focuses on packages for defining deep learning user-defined types and their associated routines.

Related standardization activities: IEEE, ITU-T

- **IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems (AI/AS) (April 2016)**
  - Two primary deliverables - Ethically Aligned Design (EAD), Versions 1 & 2
- **IEEE Symbiotic Autonomous Systems (SAS) Initiative (July 2017)**
  - Take the lead in developing the new field of Symbiotic Systems Science
  - Foster interdisciplinary technology deployments that take into account Ethical, Legal, and Societal considerations
  - Promote human-centric economic growth
- **ITU-T FG DPM (Data Processing and Management) (July 2017)**
  - WG1: Use Cases, Requirements and Applications/Services
  - WG2: DPM Framework, Architectures and Core Components
  - WG3: Data sharing, Interoperability and Blockchain
  - WG4: Security, Privacy and Trust including Governance
  - WG5: Data Economy, commercialization, and monetization
- **ITU-T FG 5GML (Machine Learning for Future Networks including 5G) (January 2018)**
  - WG1: Use, cases, services and requirements
  - WG 2: Data formats and ML technology
  - WG3: ML-aware network architecture

ISO/IEC JTC1/SC 42, Artificial Intelligence: Recap

- **Participating countries: 18**
  - Austria
  - Belgium
  - Canada
  - China
  - Denmark
  - Finland
  - France
  - Germany
  - Ireland
  - Israel
  - Italy
  - Japan
  - Luxembourg
  - Netherlands
  - Sweden
  - Switzerland
  - United Kingdom
  - United States
- **First plenary meeting**
  - 18-20 April, 2018 in Beijing, China
  - Agenda
    - Review title and scope
    - Initial program of work
      - Define structure
      - Placement of approved work items
      - Identify potential new work items
    - Identification of relevant liaisons
  - Contributions to the plenary meeting must be submitted by 19 February 2018
  - Contributions for the documents on the agenda are due by 19 March 2018

Meeting Agenda

Technical Standardization in support of Artificial Intelligence

09:00 – 09:05	**Introduction: Technical standardization for Artificial Intelligence** *Dr. Jean-Philippe HUMBERT – Deputy Director – ILNAS*
09:05 – 09:15	**Artificial Intelligence and the needs for standardization in Luxembourg** *Mr. Jérôme HOEROLD – OLN, ILNAS*
09:15 – 09:30	**Standardization in support of Innovation** *Mr. Nicolas DOMENJOUD – ANEC GIE*
09:30 – 09:50	**Artificial Intelligence and related technologies: International standardization landscape** *Mrs. Natalia CASSAGNES – ANEC GIE*
09:50 – 10:30	**Open Discussion**

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