IEEE CSCN 2023 Panel 1 (P1): Maximizing the Impact of Research through Standardization: SDOs plans for the future

Maximilian Riegel

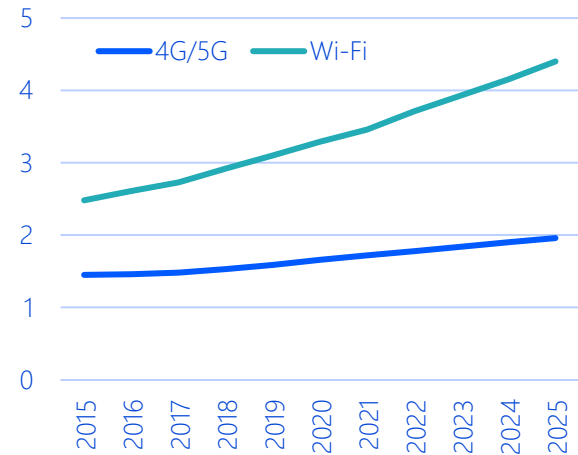Nokia Standards

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Standards that define future…

IEEE 802.11™ aka 'Wi-Fi'

- Originally conceived to link wireless cash registers
- Today underpins revolutionary mobile devices and ever-growing range of applications
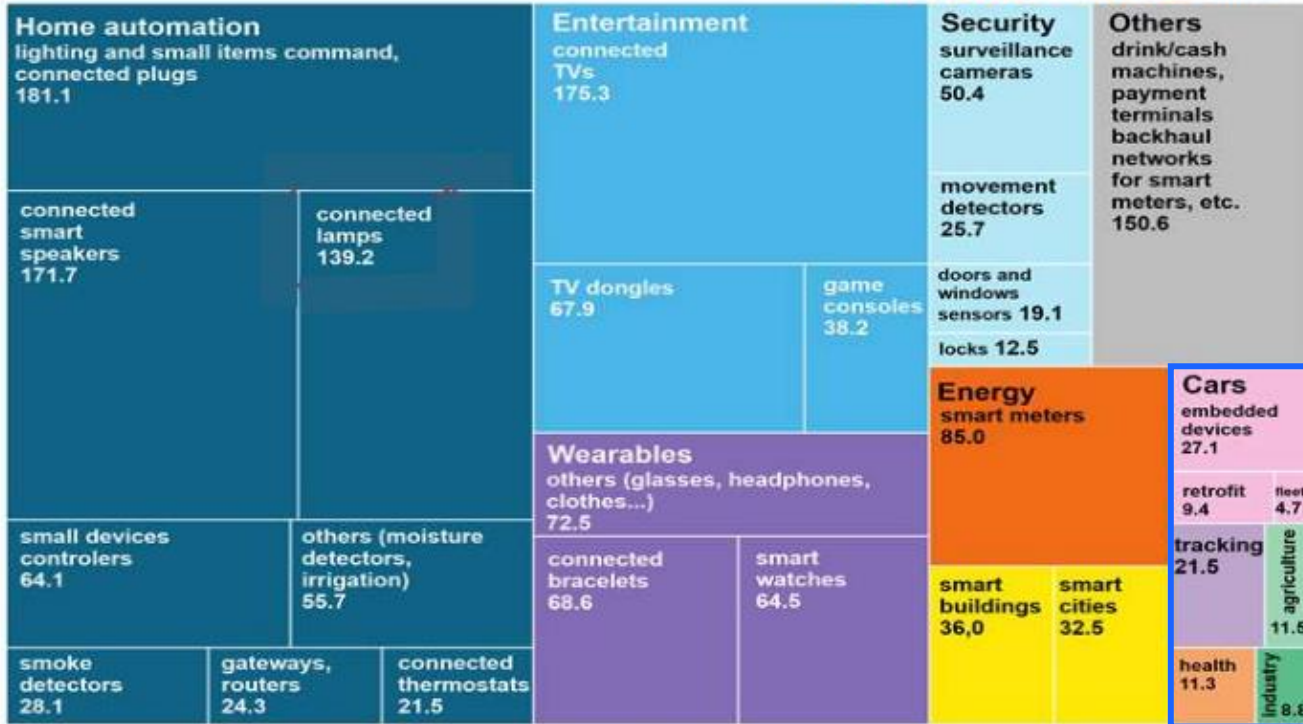
Annual shipment devices [B]

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Which are the IoT devices that require URLLC?

New connections or sales/deliveries of connected devices: world panorama in 2020
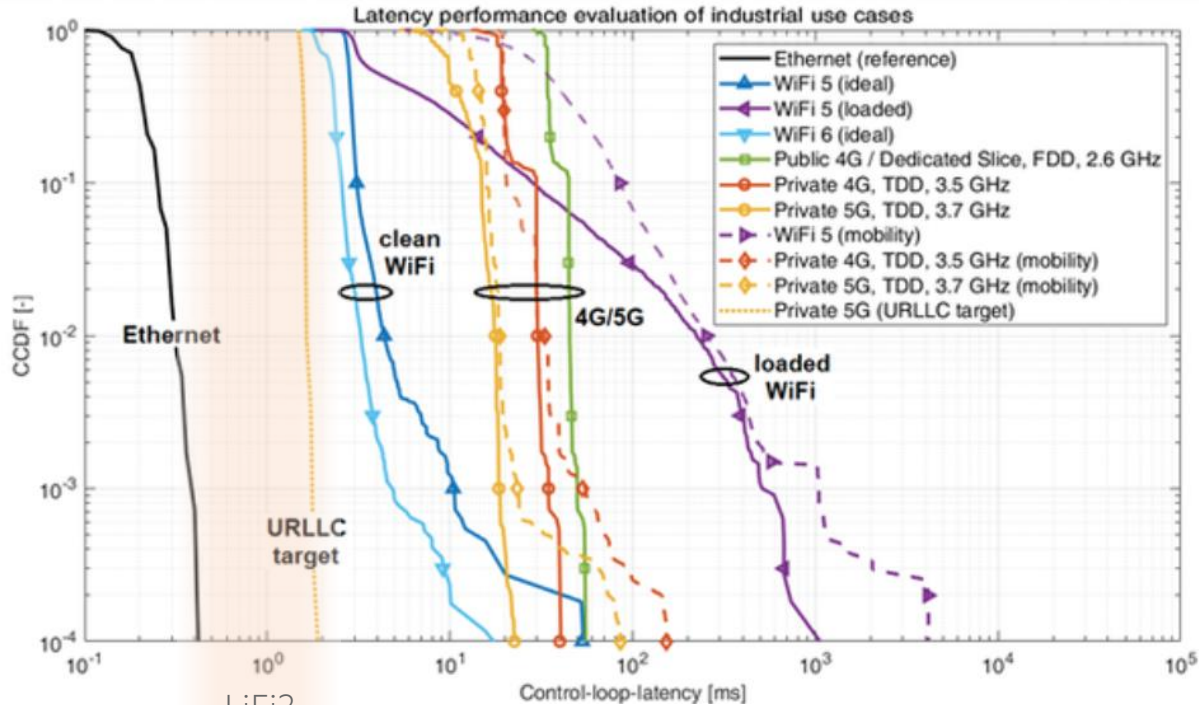
in millions

TOTAL **2020 +1.703** Billion

Home automation
lighting and small items command, connected plugs
181.1

connected smart speakers
171.7

connected lamps
139.2

small devices controlers
64.1

others (moisture detectors, irrigation)
55.7

smoke detectors
28.1

gateways, routers
24.3

connected thermostats
21.5

Entertainment
connected TVs
175.3

TV dongles
67.9

game consoles
38.2

Wearables
others (glasses, headphones, clothes...)
72.5

connected bracelets
68.6

smart watches
64.5

Security
surveillance cameras
50.4

movement detectors
25.7

doors and windows sensors **19.1**

locks **12.5**

Others
drink/cash machines, payment terminals backhaul networks for smart meters, etc.
150.6

Energy
smart meters
85.0

smart buildings
36,0

smart cities
32.5

Cars
embedded devices
27.1

retrofit
9.4

fleets
4.7

tracking
21.5

agriculture
11.5

health
11.3

industry
8.8

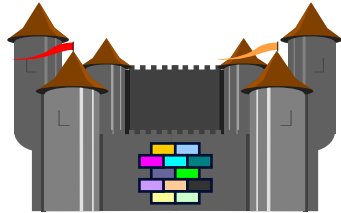Devices potentially requiring URLLC

Analysys Mason: Strategy Analytics

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The gap between wired and wireless technologies
Could other technologies fill the performance gap providing near wire-quality

Latency performance evaluation of industrial use cases

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Two approaches to standardization...

Architectures

- Harmonized architecture
- Well defined applications and services
- 'Compulsory' Standards

- Corporate membership
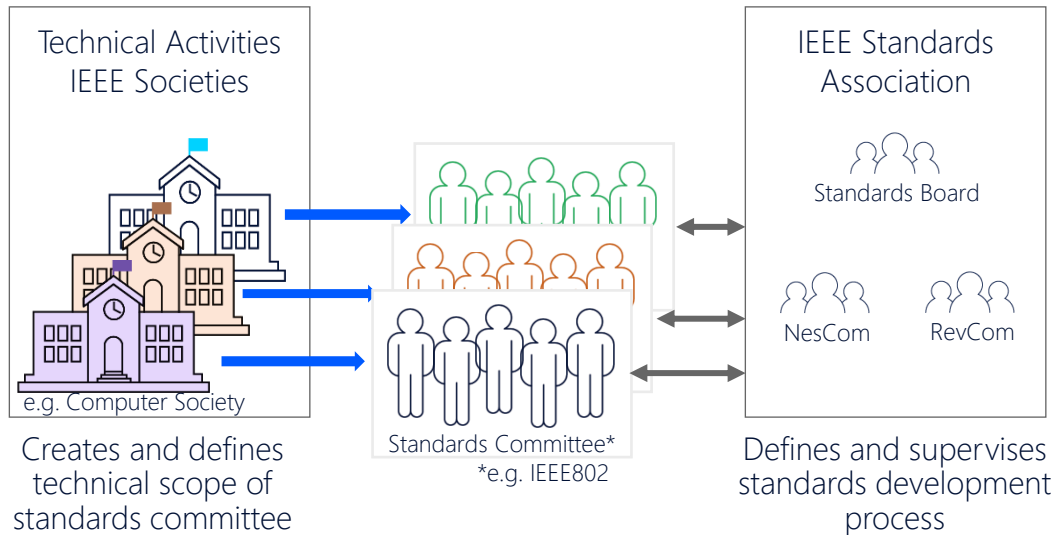- Established big players

Protocols

- General building blocks
- Single functions
- Adoption open to market
- Running code
- Contributions by individuals
- Fast and flexible players

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Research and standardization

E.g. Standardization within IEEE

Technical Activities IEEE Societies	Standards Committee*	IEEE Standards Association

e.g. Computer Society

Creates and defines technical scope of standards committee

Standards Committee*
*e.g. IEEE802

Standards Board
NesCom   RevCom

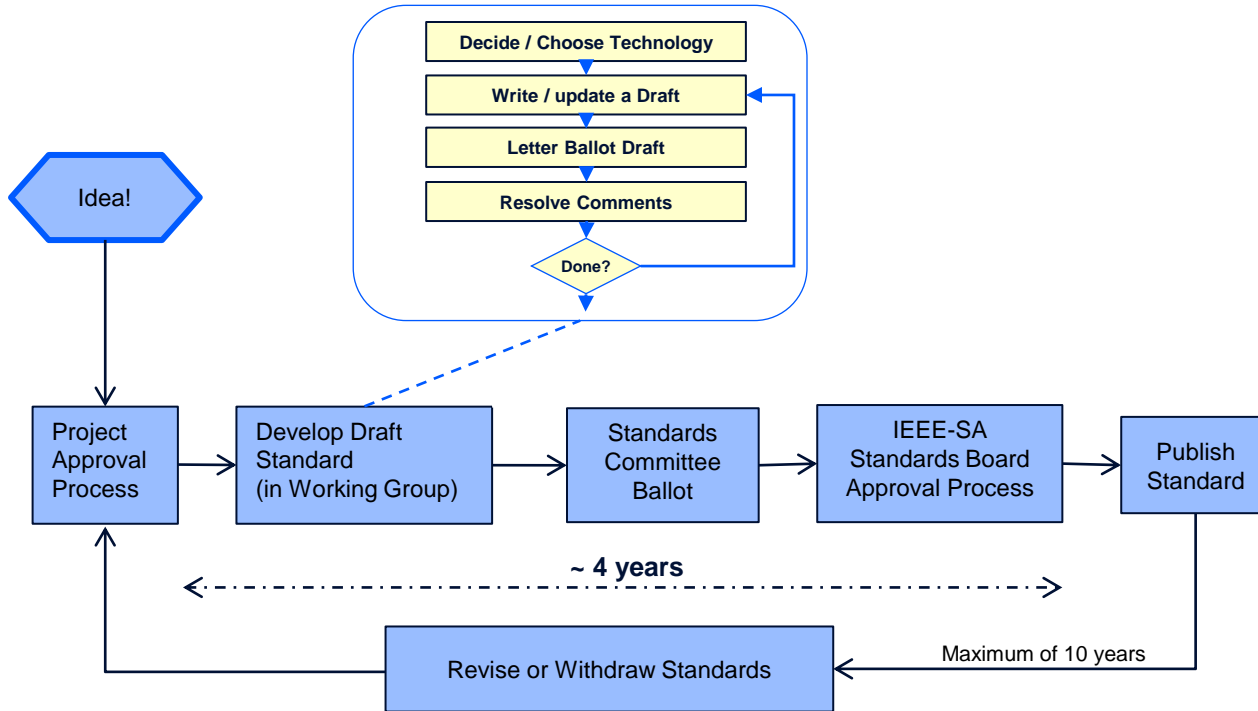Defines and supervises standards development process

IEEE standardization process

- Mainly addressing functional components, very rarely system architectures
- Usually based on individual membership, i.e. voting rights belong to individuals
- Open access: anybody can participate without need for membership or payments
- Technical decisions through comprehensive voting
- Responsibility of IEEE Standards Association is limited to procedural aspects

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Serious standardization takes time

IEEE Standards development process flow