

ETSI Software Development Groups

Collaborative Software in Support of Standardization

Silvia Almagia, Director of Software and Standards, ETSI

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ETSI is adapting to a new software driven world

+ Software in Networks

+ Software in Standards

+ Software in Research



ETSI SDG

Software Development Groups

ETSI Software Development Groups

New type of group in **ETSI Directives** since December 2022



Tailored for collaborative software development, in support of standardization



Choice of software license, including open source



Open communities, meritocracy-based governance



What is in it for ETSI



A **TOOLBOX** for quick prototyping, **experimentation** and new use-case validation allowing ETSI groups working on future network technologies to **accelerate** standardization cycles and optimize their **quality**.



A **BRIDGE** between **Standardization** and **Research**, as the code is adopted by research projects and new contributions received.



A **VEHICLE** to **promote** and facilitate adoption of ETSI standards among **software** development communities and **open source** projects.

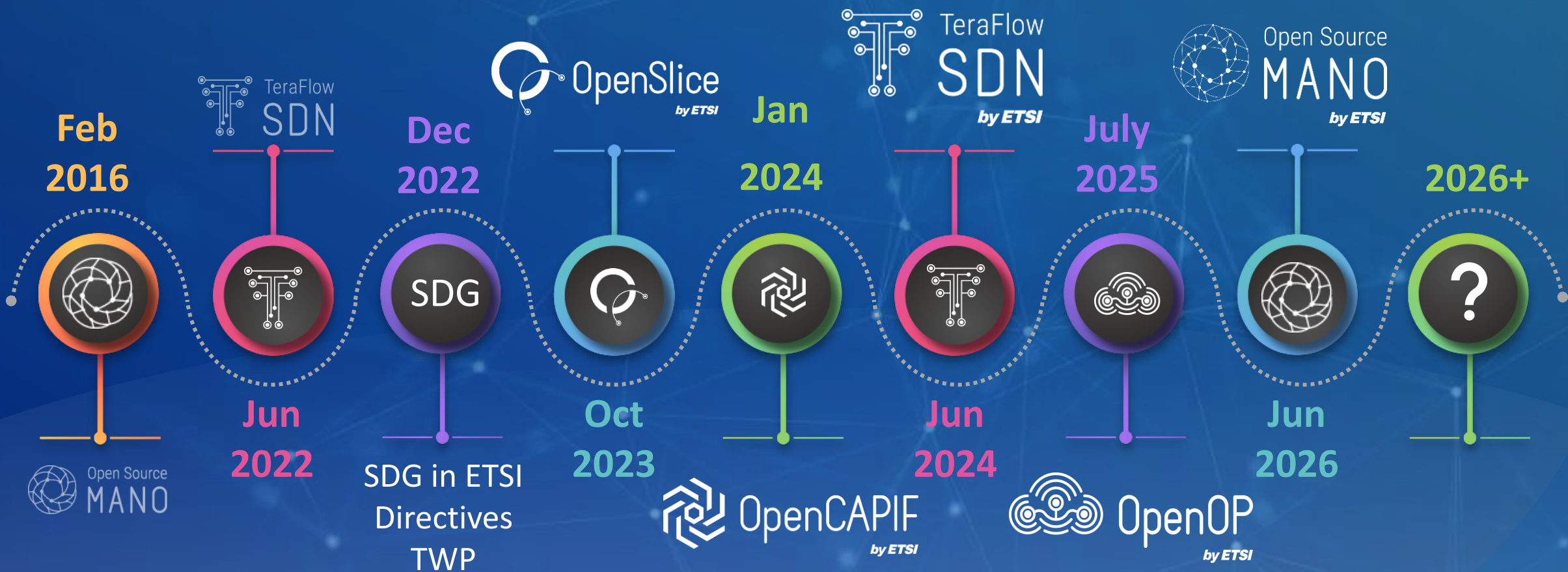
- SDGs develop code, not standards, but
 - They provide regular feedback to standardization groups (joint workshops, contributions..)
- Most of the hard work (code) is done asynchronously & online (Gitlab, Slack, ..), but
 - Community meets regularly (weekly conf calls / 2+ Plenary meetings a year)
- Major code releases twice a year
 - Followed by Plenary meetings, Hackfests, Webinars, demos, external events...



```
429 range(256):
430     ipplist.append(('192.168.'+str(i)+'.1', 192.168.'+str(i)+'.255'))
431     subclass='C':
432     for i in xrange(256):
433         ipplist.append(('192.168.'+str(i)+'.1', 192.168.'+str(i)+'.255'))
434
435 q=Queue()
436 for i in range(NUM):
437     th = Thread(target=pingsubnet,args=(q,))
438     th.setDaemon(True)
439     th.start()
440
441 for ip in ipplist:
442     q.put(ip)
443 q.join()
444 for addr in pinglist:
445     print addr,'is reachable.'
446
447 def scanipport():
448     global lock
449     while True:
450         host,port=sq.randget()
451         sd=sk.socket(sk.AF_INET, sk.SOCK_STREAM)
```



Open Source at ETSI - Timeline





Open Source MANO

by ETSI



<https://osm.etsi.org>

- Develops an open source **Management and Orchestration Stack** for Network Services across cloud platforms
- Created as (experimental) OSG in 2016
 - Becomes an SDG in June 2026
- Aligned with **ETSI** NFV specifications
 - Interaction with **OpenStack, Kubernetes**
- 155 organizations members and participants
- +35 research projects involved
- Latest news & events:
 - Joint SDG Ecosystem Day (Nov 2025)
 - OSM at SNS4SNS 2026 (Feb 2026)
 - ETSI OSM Release NINETEEN (Feb 2026)



TeraFlow SDN

by ETSI



<https://tfs.etsi.org>

- Develops an open source **cloud native SDN Controller** enabling smart connectivity services, automation and security for future networks
- Created as (experimental) OSG in 2022
 - Became an SDG in 2024
- Aligned with **IETF**, **ETSI ISG NFV**, MEC, ZSM, F5G, QKD principles and specs
- 25 organizations members and participants
- 15 research projects involved
- Latest news & events :
 - ETSI TeraFlowSDN Release 6 (Nov 2025)
 - TFS#8 Hackfest (18-21 Nov 2025)
 - Joint SDG Ecosystem Day (26 Nov 2025)
 - TFS at SNS4SNS 2026 (2-5 Feb 2026)

OpenSlice

by ETSI



<https://osl.etsi.org>

- Develops an open source **Operations Support System to deliver Network as a Service (NaaS)**
- Since October 2023
- Aligned with **ETSI ISG NFV, ZSM, TM Forum, GSMA** and **3GPP** principles and specs
 - Interaction with **LF Sylva, CAMARA**
- 18 organizations members and participants
- 11 research projects involved
- Latest news & events :
 - Joint SDG Ecosystem Day (26 Nov 2025)
 - OSL at SNS4SNS 2026 (2-5 Feb 2026)
 - ETSI OpenSlice Release 2025Q4 (Feb 2026)

OpenCAPIF *by ETSI*



<https://ocf.etsi.org>

- Develops an open source **Common API Framework (CAPIF)** allowing to expose and invoke APIs in a secure and consistent way
- Since January 2024
- Aligned and contributing to **3GPP**, ETSI MEC
- 15 organizations members and participants
- 12 research projects involved
- Latest news & events :
 - Joint SDG Ecosystem Day (26 Nov 2025)
 - OCF Tutorial at SNS4SNS 2026 (2-5 Feb 2026)
 - OpenCAPIF Release 4 (March 2026)



OpenOP

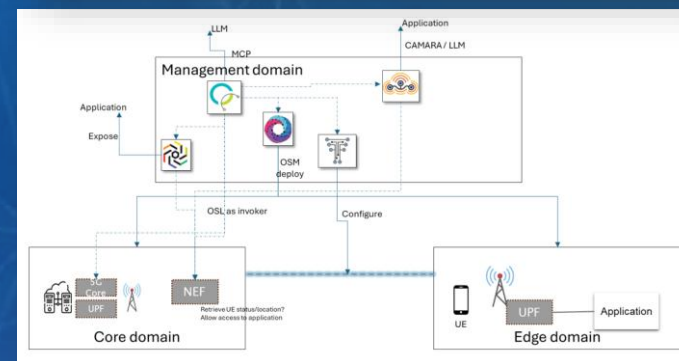
by ETSI



<https://oop.etsi.org>

- Develops an **Open Operator Platform** allowing for network and testbed federation and capability exposure to support 5G/6G experimentation.
- Since July 2025
 - Aligned with **GSMA** OPG specifications
 - Exposing LF **CAMARA** APIs
 - Consuming **3GPP**, **ETSI** MEC APIs
- 24 organizations Members and Participants
- 8 research projects involved
- Latest news & events :
 - Joint SDG Ecosystem Day (26 Nov 2025)
 - 1st OOP Tutorial at SNS4SNS 2026 (2-5 Feb 2026)
 - OpenOP Release 1 (March 2026)

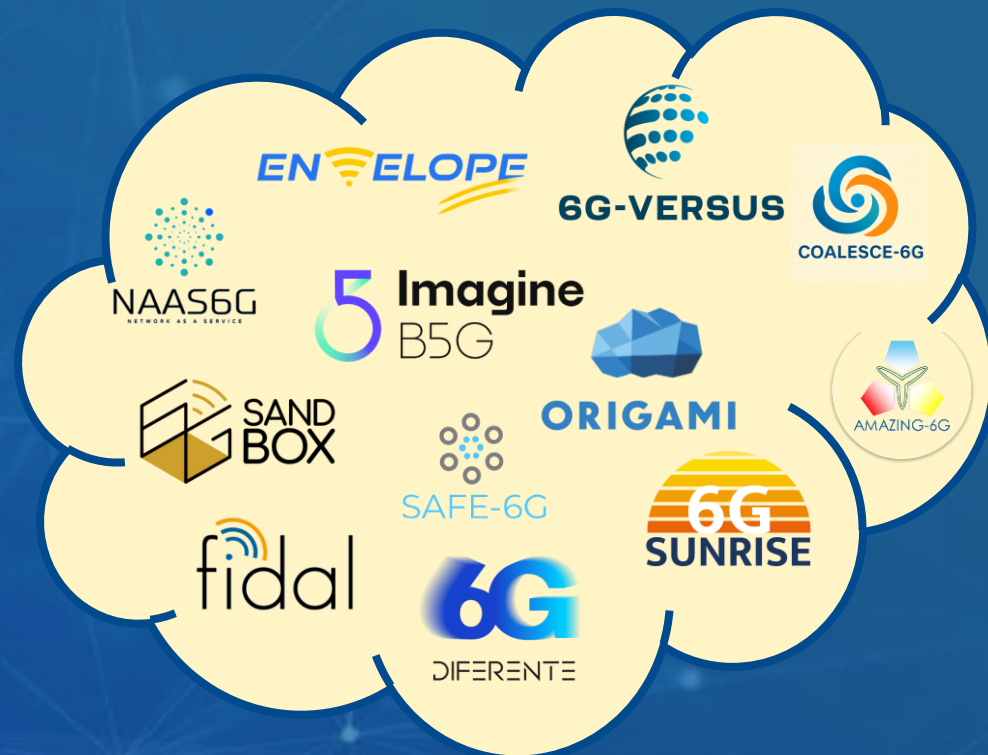
- Monthly coordination calls
- Cross SDG Labs & Demos
- Events
 - Joint SDG Ecosystem Days
 - ETSI SNS4SNS
 - Network X
 - EuCNC & 6G Summit



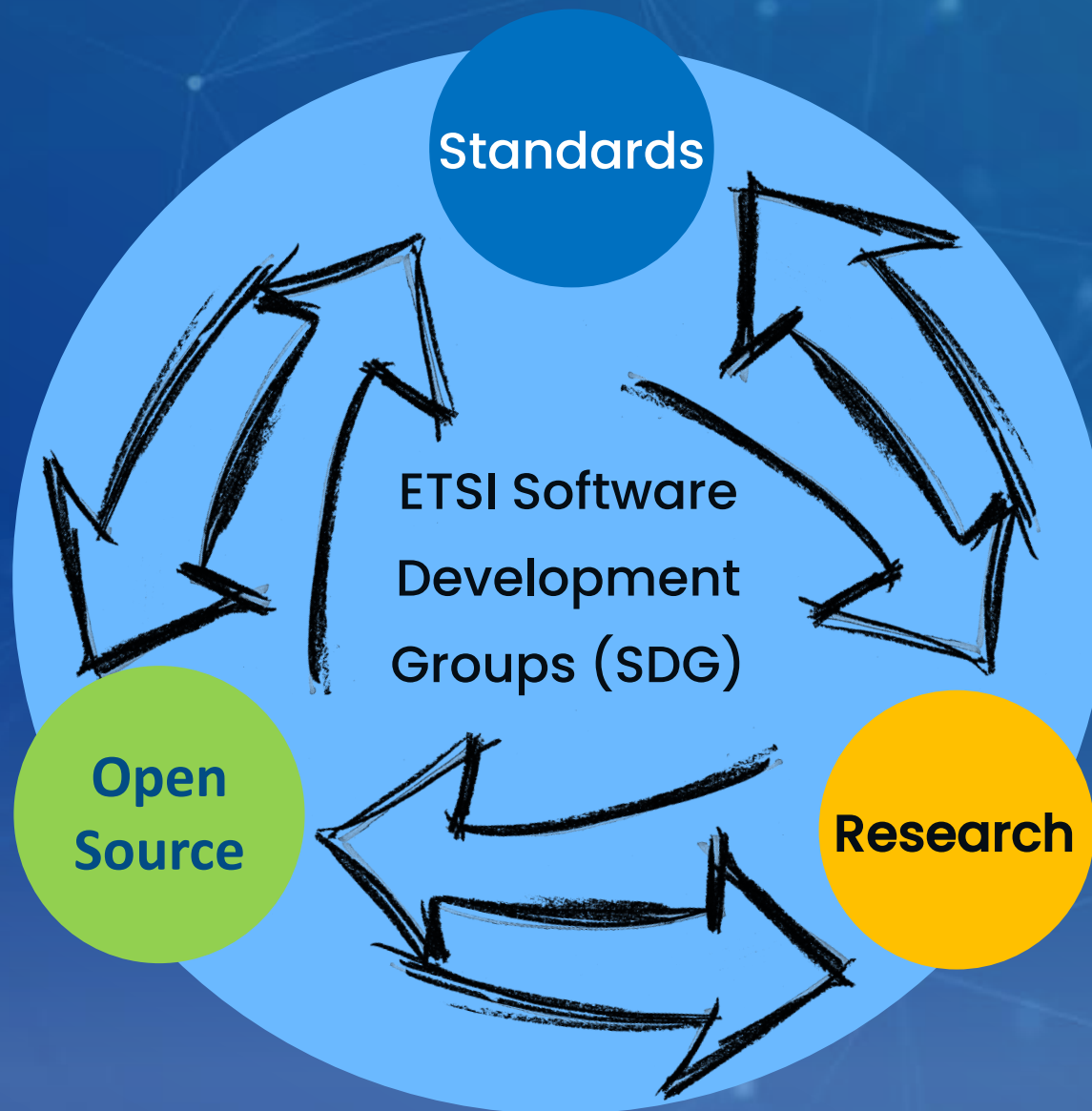
The OpenCAPIF success story



The OpenCAPIF success story



SDGs to enable cross-community collaboration



Bringing multiple benefits for

Standardization

Leverage Experimentation & Innovation

Receive Early Feedback

Shorten Development Cycles

Disseminate and Foster Adoption

Learn and Adopt New Ways of Working

Research

Leverage & Impact Standardization

Code Reuse & Sustainability

Build Global Communities

Stability & Continuity

Neutral & Trusted Home

Open Source

Leverage & Impact Standardization

Leverage Innovation

Promote Reuse & Sustainability

Reduce Risk of Fragmentation

Foster Adoption

Lessons Learnt – What's really helping

- Common tools and approaches
 - Git, Markdown, ...
 - Standards treating machine readable contents as code (APIs, Data Models, Test Specs, ..)
- Cross-community activities and events
 - Mutual awareness
 - Opportunities for collaboration
- Being close to research communities



Thank you!

Silvia Almagia, SNS Director, ETSI

silvia.almagia@etsi.org