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Workshop 5GA and 6G

Qualcomm

Input from Qualcomm SA4 team

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Questions

Technical Topics:

- What projects had been successful/unsuccessful in SA4 and why?
- Which studies/work item matter for you in Rel-19 and why?
- Do you have any concrete ideas for Rel-20 5GA?
- Can you share a vision for 6G?

Procedural Discussion:

- What can SA4 do for codec specifications?
- Do we need reference/evaluation implementation of SA4 defined technologies?
  - Before we start, during normative phase, after completion of specs
  - Should specifications be differentiated whether they are implemented or not?
- Should SA4 care about market relevance, and if so, what does it mean for you?
- Do we need more promotion of 3GPP SA4 technologies, and if so how?
- Do we need more industry input to SA4, and if so how?
- What would you like to see addressed by a "new" leadership?
- What is the perception of SA4 in your company?

Technical Topics

What projects had been successful in SA4 and why?

Project	Success Measure	Supporting development procedures
EVS, AMR	wide-scaled deployment	based on operator requirements, software, characterization
MTSI voice	widely deployed	stage-3 for a revenue-generating operator service, spec with many examples
eCall	mandated deployment	based on external requirements, implementation and evaluation
DASH	wide-scaled deployment, Emmy	Collaboration with MPEG, reference and conformance tools, need beyond mobile
Video Characterization	widely referenced study	Software, tools, expert collaboration, consensus, no normative work
IMS Data Channel	Wide-scale deployment	Operator need to follow apps and webApps
Acoustics	Impact implementation	Driven by product needs

What projects had been unsuccessful in SA4 and why?

Project	Unsuccess Measure	Mistakes made
MMS	From global success to replacement by RCS and proprietary services	Diminishing MNO influence, lack of maintenance, low coordination with GSMA
MBMS (and MBS)	Not deployed (despite since Rel-6)	Commercial value unclear despite many attempts – maybe comes as 5G Broadcast?
VR	3GPP (and generally MPEG specs) irrelevant for VR	It is not a service for moving users, WiFi connection much more likely. No tools

Yet to be proven …

Project	Status	Open questions
5G Media Streaming	Only implemented in reference tools. Interest (also with 5G Broadcast), but not deployed	Builds on 5G QoS framework. More successful if Rel-19 approach is taken (application QoS)?
5G real-time communication (with webRTC)	Too early to tell	Similar as 5GMS

Which studies/work item matter for you in Rel-19 and why?

Study/Work Item	Engagement	Reason for Engagement
Advanced Media Delivery	Rapporteur	Relevant for 5G Broadcast and operators monetization media delivery
Avatar Representation	Rapporteur	Relevant for potential productization
RTP for XR	Contributor	QCOM interest in XR optimizations
VOPS (& Beyond2D)	Spec Editor	Format interoperability between Android and iOS
Messaging Enhancements	Rapporteur	See issues for MMS, interoperability across ecosystems
Acoustics	Active contributor	Potential product relevance

Caring, but not driving with low contributions: MediaGREEN, IVAS phase 2, Beyond 2D, SR-IMS

Very relevant for Qualcomm, but unclear what 3GPP can contribute: AR Spatial, AI4Media

Low relevancy, no impact: iRTCw2, Haptics

Ignore: We typical do not ignore anything, we check for potential product impact

Do you have any concrete ideas for Rel-20 5GA?

Planning not yet complete, but at least an indication

Avoid starting substantial new topics in Rel-20 5GA unless required by SA1/SA2

Continue normative work on studies not yet completed in Rel-19, e.g. for

Advanced Media Delivery (see remaining Key Issues and possibly new ones)	Avatar Representation	VOPS and Beyond2D (extensions to VOPS)	For AI4media, if we focus on commercially relevant use cases	Acoustics-related topics (ATIAS and DACAS), if not completed in Rel-19

Can you share a vision for 6G?

Preliminary thoughts without priorities

Full-body Avatar communication

Video Codecs

- How to deal with external next-generation video codecs?
- Do we have specific scenarios and use cases from mobile/3GPP for new codecs?

Audio Codecs (very-low bitrate)

AI-based media compression and work flows ➔ how can collaboration be done

Advanced Media Delivery ➔ Media Distribution architecture (with other orgs)

Trusted and private communication in GenAI era

6G Media Messaging - Media formats and interoperability

Gaussian Splats - workflows and use cases

User-experience based services

Procedures and Working Methodologies

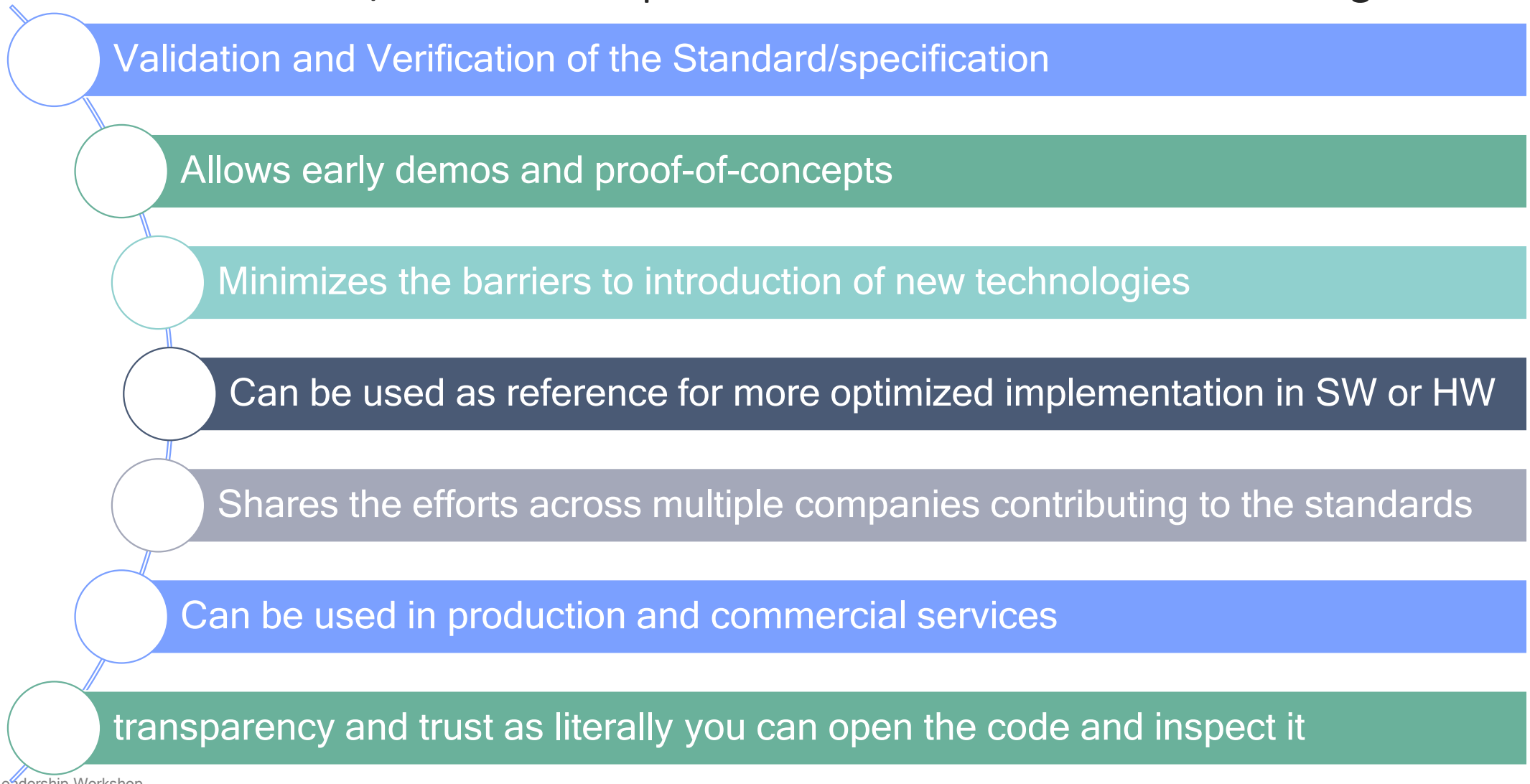
Vision

3GPP SA4 should be well-recognized for important media-related specifications:

- Developer-friendly: APIs, code, examples, git-environments, exchange with developers
- Implementability of the specifications (test, evaluation, code, reference software)
- addressing market needs, deployment feasibility, sustainability, innovation platform, monetization opportunities, cost-conscious
- Timeliness: allow things to do quicker, do things at the right time, leave time to address essential work
- Develop specifications against meaningful KPIs for media services
- Collaboration with the industry and market representation partners
- Generally, build on the principles established in the 5G era and evolve (or adapt) based on experiences and learning

Reference Implementations and Software

Do we need reference/evaluation implementation of SA4 defined technologies?



Codec Specifications

What can SA4 do?

Speech/Audio – typically developed in 3GPP SA4

Full specification done in 3GPP ➔ good

Better integration of technologies in apps and web

Usability of core codec components in different app environments – more MSE like

Video – typically relying on external technologies

For NGVC, different levels may be considered:
1) Characterization framework (i)
2) Interoperable Operation Points (n)
3) permitted/recommended for a 3GPP service (n)
4) mandatory for a 3GPP Service (n)

New use cases and requirements may be defined to create input to standardization work in external organizations

Market Relevance and External Relations

Should SA4 care about market relevance, and if so, what does it mean for you?

- *Yes, SA4 should care*
- ***Market relevance** for us means one or more of the following criteria hold*
  - *The technology is on the roadmap or horizon and interop needs are identified or at least beneficial*
  - *We have a clear demand from one or multiple customers*
  - *There are very clear service requirements from mobile operators or media service providers*

Do we need more promotion of 3GPP SA4 technologies, and if so how?

- *Yes, we should do more promotion*

Do we need more industry input to SA4, and if so how?

- *Yes, this is very relevant*

Ideas for promotion and industry collaboration

- *We should have at least once per Release an industry workshop where present what we do and get feedback from external – preferably done in the middle of the Release to adjust and collect thoughts for next release.*
- *We should collaborate (even more) with MRPs and Industry orgs (5G-MAG, GSMA, SVTA, etc.)*
- *We should encourage sharing promotion material and opportunities across 3GPP companies*
- *We should have presence in shows and conferences such as IBC, MWS, MHV, etc.*
- *We should have some web presence, blogs and other dissemination activities*
- *We should have a meetup at every f2f meeting*

Perception and Next steps

What is the perception of SA4 in your company?

Generally considered relevant for certain topics, but often disconnected with other WGs

Product and market impact of deliverables is once in a while unclear

Are operators present and if so, what is their opinion?

What would you like to see addressed by a "new" leadership?

Improve the relation to other working groups (collaborate early) and SA/RAN

More engagement with customers of SA4, industry needs and so on

Introduce new working methodologies, using tools and software

Create a larger team with responsibilities for topics such as software, promotion, industry relationship and so on.

Based on our thoughts we look forward to collaborate on shaping requirements for 6G

Qualcomm

Thank you

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