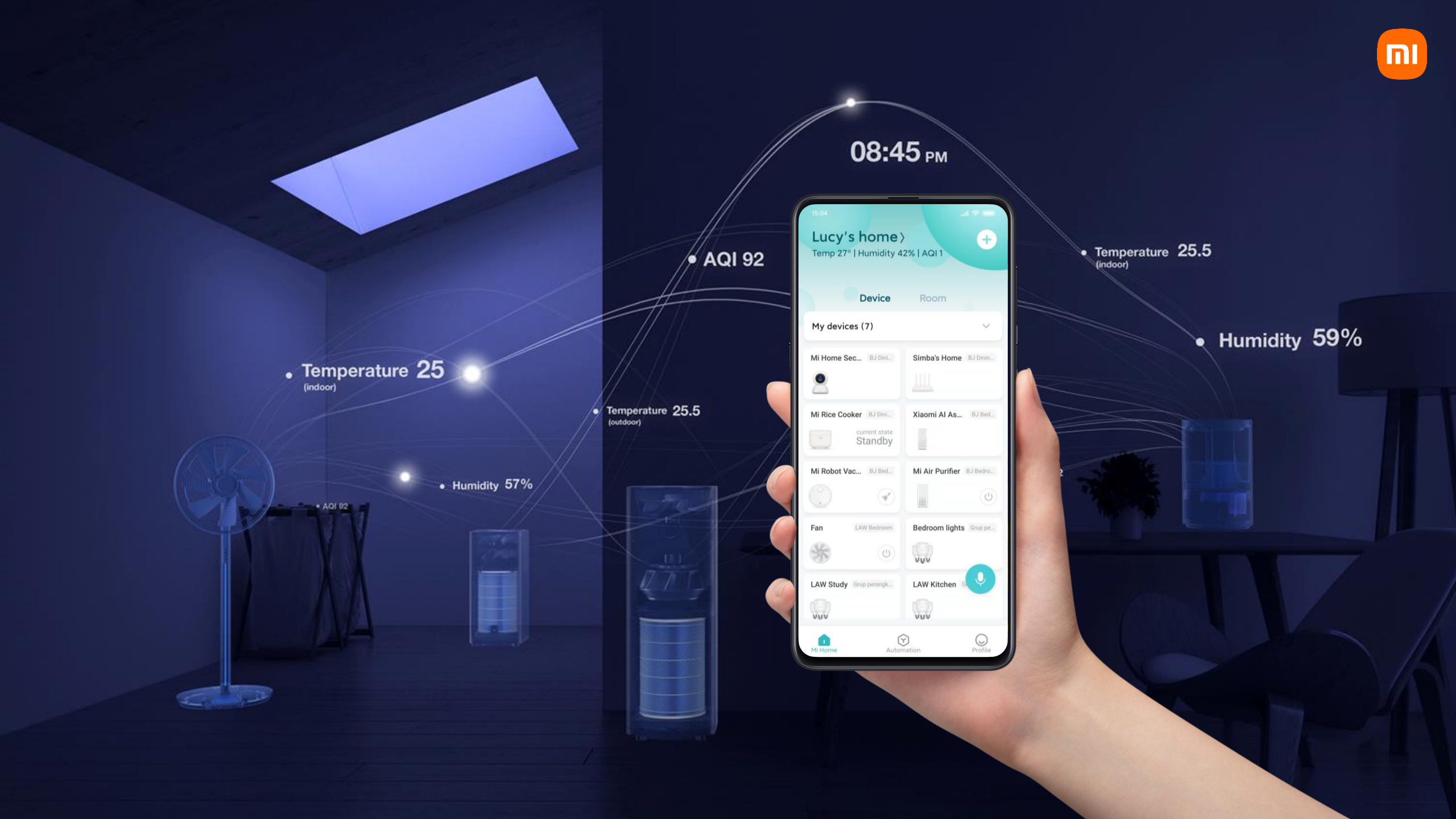
Views on media in Rel-18

ML. CHAMPEL, E. THOMAS, W. BIN

11/03/2021

小米集团技术委员会 - 标准与新技术部 COPYRIGHT 2021, ALL RIGHTS RESERVED

A full smart life solution


08:45 PM
AQI 92
Temperature 25.5
(indoor)
Humidity 59%
Temperature 25
(indoor)
Temperature 25.5
(outdoor)
Humidity 57%
AQI 92
Lucy's home
Temp 27° | Humidity 42% | AQI 1
Device
Room
My devices (7)
Mi Home Sec...
Simba's Home
Mi Rice Cooker
current state
Standby
Xiaomi AI As...
Mi Robot Vac...
Mi Air Purifier
Fan
LAW Bedroom
Bedroom lights
LAW Study
LAW Kitchen
Mi Home
Automation
Profile

Core strategy

Smartphone × AIoT

In 20m

造车进展超预期
小米汽车预计2024年上半年正式量产

CyberDog
Bio-inspired Quadruped Robot
CYBERDOG

Standardization priorities

1. Address technical domains for which commercial interests have already been identified.
2. Define application agnostic standards dedicated to specific device classes.
3. Leverage existing technologies and possibly profile it down to suit device characteristics/capabilities.
4. Support implementation in products through guidelines, reference software, testing,…

 COPYRIGHT 2021, ALL RIGHTS RESERVED

Key points for Rel-18

Device	Interoperability	Architecture
• **Increasing number of media device types.** • Smartphone, TV, smart glasses, AR glasses, VR HMD, IoT, vehicles,…	• **Media interop points per device class.** • Ideally small and dedicated to device. • First study device classes and then define media interop points.	• **Building blocks for both APIs and integrated services.** • 3rd-party applications. • Technology blocks for OS/middleware and bundled for operator-based services.

Device specific

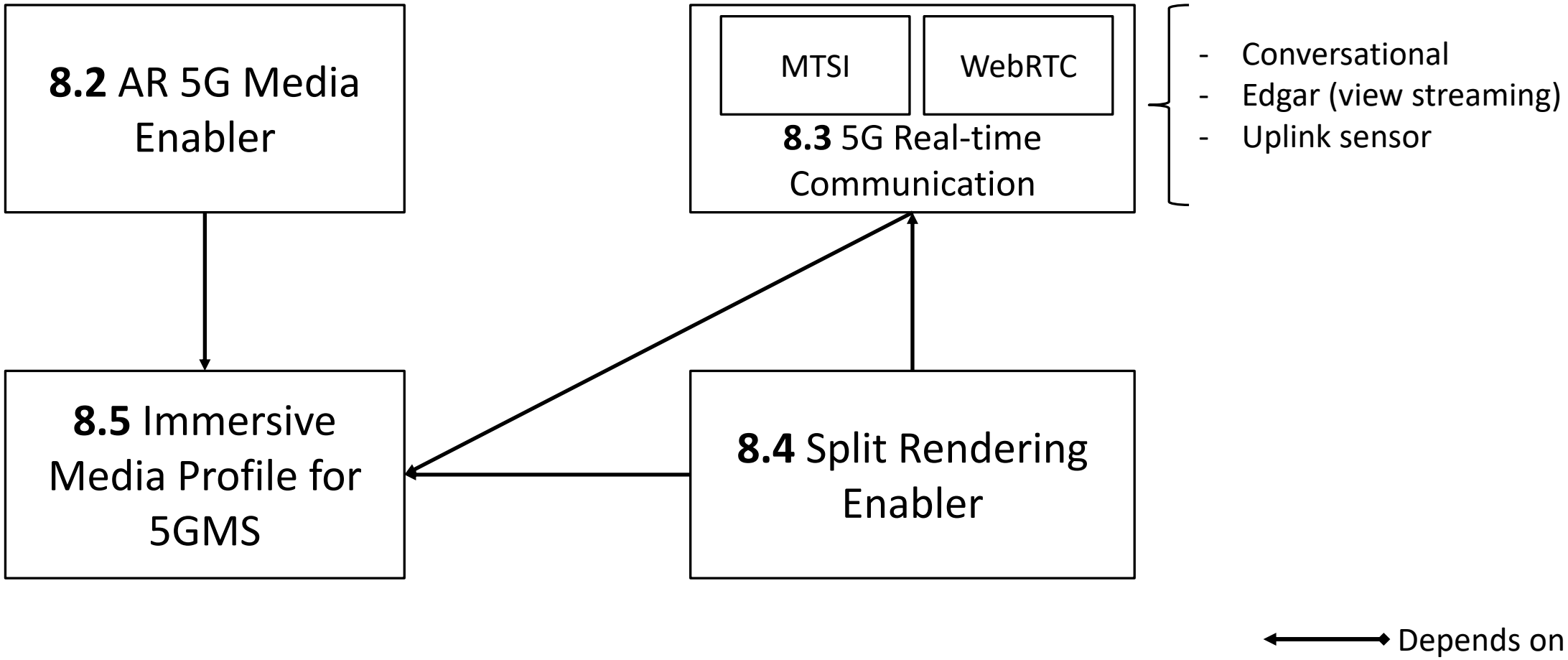
Application agnostic

 COPYRIGHT 2021, ALL RIGHTS RESERVED

Way forward beyond STAR

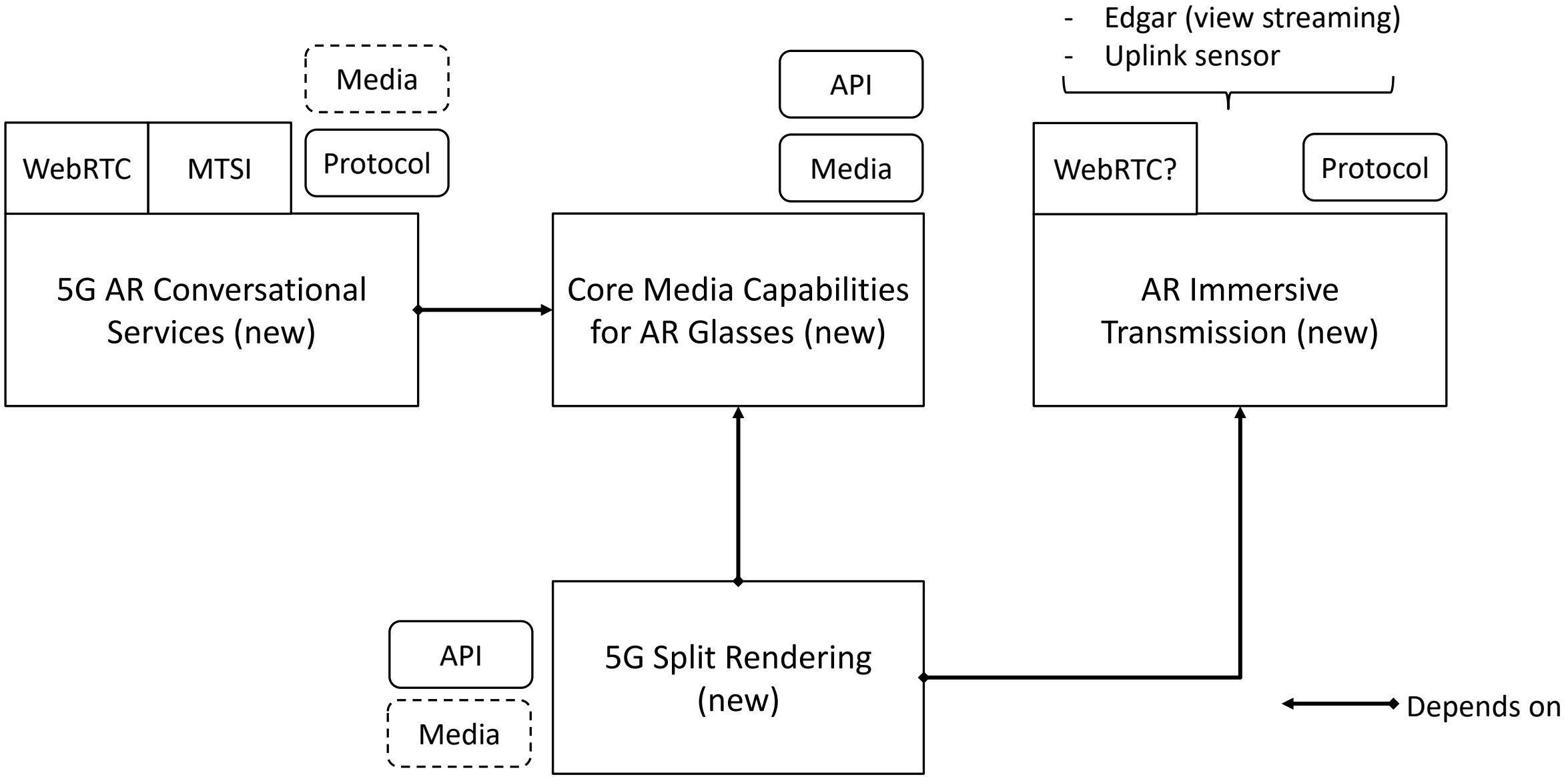
 COPYRIGHT 2021, ALL RIGHTS RESERVED

STAR conclusions (v1.0.2)



 COPYRIGHT 2021, ALL RIGHTS RESERVED

STAR follow-ups : new WIDs



 COPYRIGHT 2021, ALL RIGHTS RESERVED

Core Media Capabilities for AR Glasses

Goals

- 1-stop shop for AR glasses ecosystem.

What

- Provide set of application agnostic functions for AR applications to leverage hardware capabilities and 5G systems.
- Identify specific device classes and define interoperability point(s) dedicated to them.
- For each device class, define:
  - conformance points for media types, formats and encapsulation, including audio, still image and video.
  - encoding and decoding capabilities.
- At least address lightweight tethered/untethered AR glasses (EDGAR/WLAR).

Why

- For AR devices manufacturers, we believe this topic is essential and has capability to address our current industry needs. Xiaomi is committed to drive/progress this activity.

小米集团技术委员会 - 标准与新技术部 COPYRIGHT 2021, ALL RIGHTS RESERVED

Media Capabilities for AR Glasses (MeCAR)

Qualcomm, Xiaomi, FaceBook, Samsung, Dolby, Nokia

- **Separate Specification than 5G-RTC, Split-Rendering, etc… that is device-centric and service-agnostic**
- **Motivation**
  - AR chipsets may be quite different from traditional smartphone chipsets
  - Similar as was done for feature phones 15 years ago, AR glasses require basic interoperability on codecs and formats
  - New KPIs include very low power consumption, low latency options, new formats, multiple decoders
  - Codecs for glasses are service independent
  - Serves as end point for basic AR applications as well as for split-rendering => Addressing EDGAR device as in TR 26.998
  - The media capabilities are importantly driven by realistic deployment options addressing device capabilities as documented in TR 26.998, clause 4.5.2 as well as the relevant KPIs
- **Objectives:**
  - This work item defines service-independent media capabilities for AR Glasses. In particular, the following objectives are considered:
    - Define a reference terminal architecture for an AR devices
    - Define at least one AR device category that addresses the constraints of an EDGAR-type glass
      - Note: Additional device categories such as STAR may be defined, but with lower priority
    - For each AR device category
      - Define relevant media types and formats, including basic scenes, audio, graphics and video as well as sensor data.
      - Define decoding capabilities, including support for multiple parallel decoders
      - Define encoding capabilities
      - Define relevant security capabilities
    - Define relevant KPIs and QoE Metrics for AR media
    - Encapsulation into RTP and ISO BMFF/CMAF

From S4WS-210017, Qualcomm SA4 Rel-18 Priorities

小米集团技术委员会 - 标准与新技术部 COPYRIGHT 2021, ALL RIGHTS RESERVED

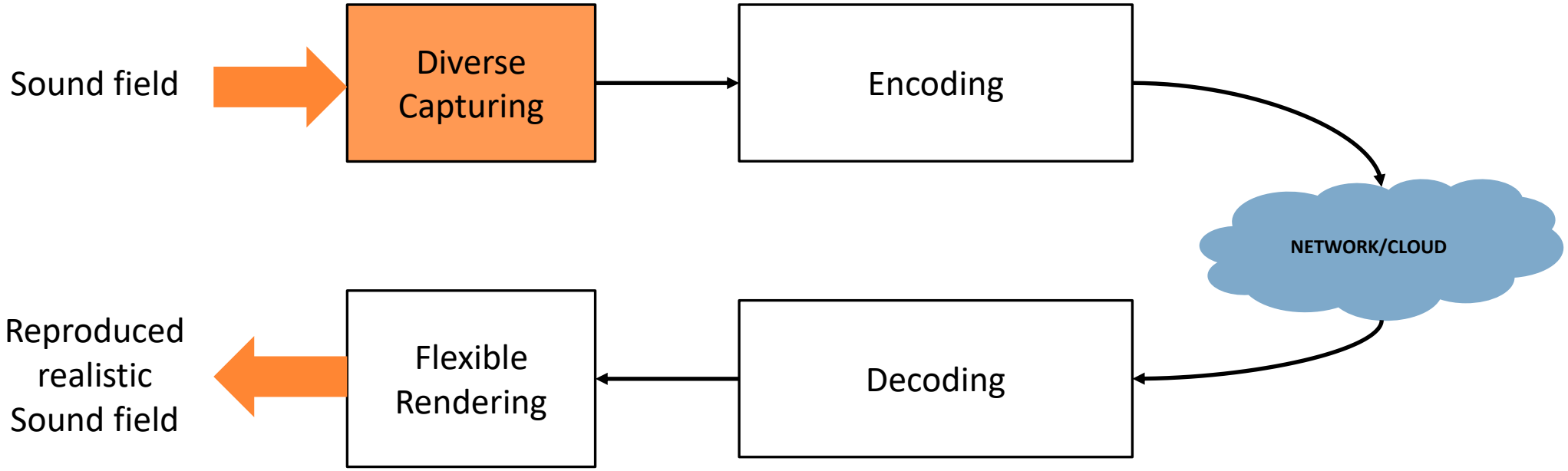
Future Audio developments in Rel-18

 COPYRIGHT 2021, ALL RIGHTS RESERVED

Audio solution Evolution

- IVAS already supports:
  - Monaural audio to spatial audio
  - Information only communication to full spatial audio reproduction
  - Versatile feature codec
- Need to address:
  - Front-end: diverse capturing

NEW WID ?



 COPYRIGHT 2021, ALL RIGHTS RESERVED

Immersive audio services

More realistic audio and voice experience

- Conversational use-cases and non-conversational use-cases.

Characteristics

- Diverse input formats
  - Channel-based audio, Object-based audio, Scene-based audio
- Flexible playback formats
  - Loudspeaker setup, Headphone

Next steps:

- Avoid practical implementation complexity issues when finalizing IVAS.
- Robust packet loss concealment.
- Terminal audio acoustics testing methodologies.
- Study and prepare for system integration with AR scene rendering together with visual information. (Audio, Video & Graphics temporal and spatial sync).

Scenarios

- Immersive Telephony, Spatial conferencing, AR/VR conferencing…

小米集团技术委员会 - 标准与新技术部 COPYRIGHT 2021, ALL RIGHTS RESERVED

Conclusion

Support media devices classes

Shape targeted specifications

Develop building blocks

 COPYRIGHT 2021, ALL RIGHTS RESERVED