HD Voice Interoperability

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Agenda

- **HD Voice interoperability overview**

- **GSMA logo**

  - Design

  - Licensing arrangements and device compliance

- **Fixed-mobile interworking for the HD Voice service**

  - National and international interconnect programmes

  - Ongoing work with DECT Forum

- **Summary**

  - How can the GSMA programme work with NICC?

HD Voice Interoperability Overview

Motivation, intention

HD Voice Interoperability Overview

- This presentation reviews recent developments concerning interoperability of wideband voice services.

Motivation for Fixed and Mobile operators:

- Quantity of fixed-mobile calls from domestic addresses
- Quantity of DECT fixed-mobile calls due to call centre/SME use

⟹ Better customer experience

⟹ Strong differentiator from OTT/Internet voice players who cannot control E2E quality

- Opportunity to create a larger ecosystem for HD Voice

⟹ Bigger market impact, more end-user devices

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Audio codecs supported by NGN for session setup

Default	G.711 A/mu law: PCM for voice frequencies
Recommended	AMR: Adaptive Multi Rate
	EVRC: Enhanced Variable Rate Codec
	G.729: Speech coding at 8kbps using CS-ACELP
	G.729A: Reduced complexity 8kbps CS-ACELP codec
	G.722.1: 7kHz audio coding at 24 and 32kbps for hands free
	G.722: 7kHz audio coding at 64kbps
	AMR-WB: wideband speech coding at 16kbps (G.722.2)
	VMR-WB: Variable Rate Multimode Wideband speech
	G.726: 16/24/32/64 kbps ADPCM codec
	G.729.1: 8-32kbps scalable WB codec
	T.140: Protocol for multimedia application text conversation

GSMA HD Voice logo

Design, compliance and licensing arrangements

Logo: Brand drivers

- International, capable of representation in different colours, on large screens and as a small icon.

- A universally recognised symbol of quality.

- Make consumers aware of the end-to-end HD Voice service.

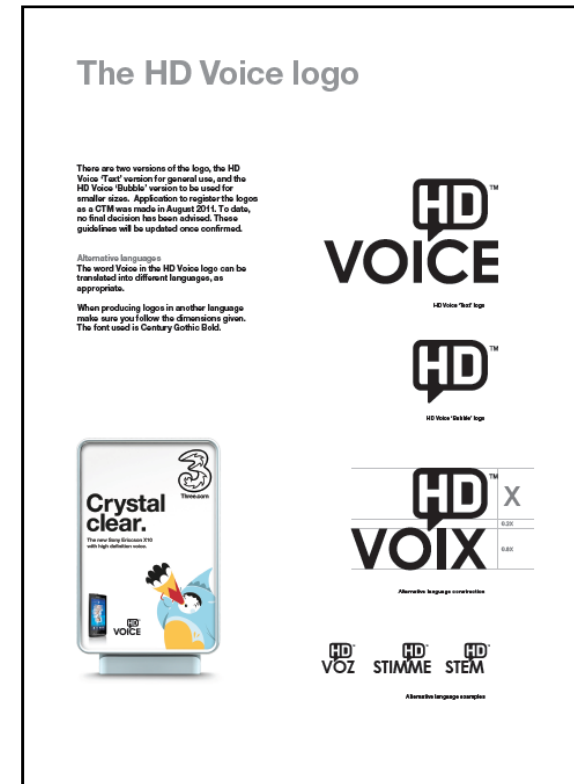- Appeal to them at point-of-sale and during their service experience.

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Registered Logo

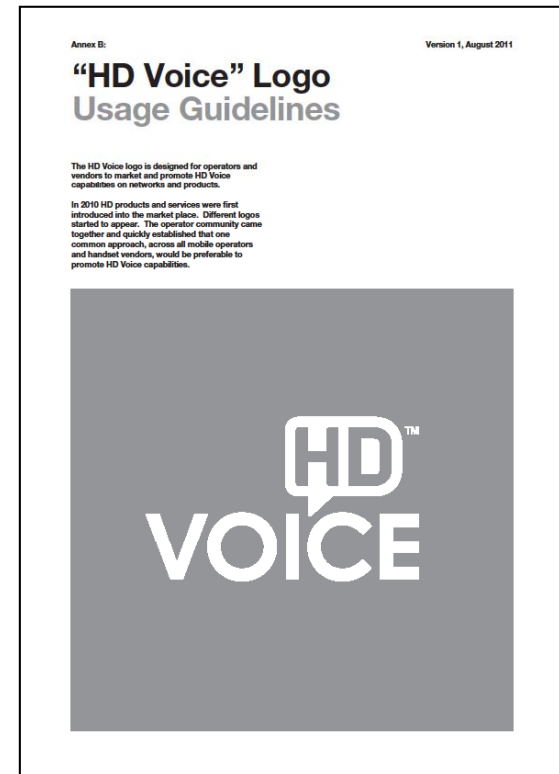

HD Voice 'Text' logo

HD Voice 'Bubble' logo

Logo guidelines
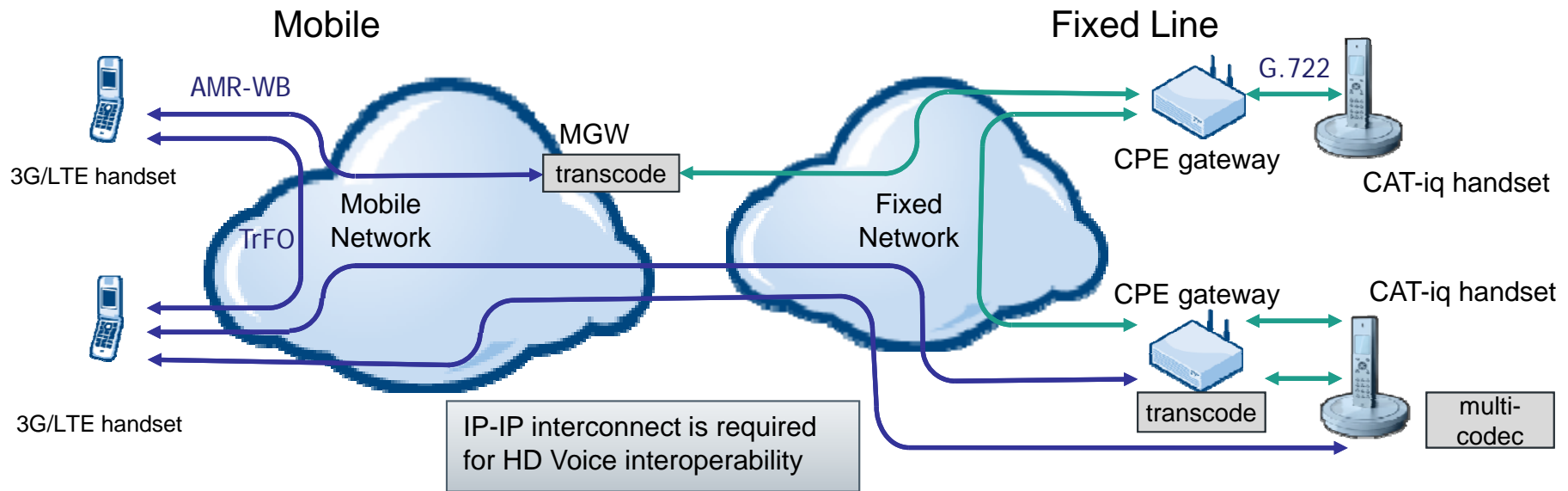
Logo - current status

- Device and network requirements agreed and incorporated as Annex within License Agreement

- Major operator groups have been signing the License Agreement

- Registered as a Community Trade Mark.

- Brand Guidelines, artwork and Q&As on use embedded.

Annex B: Version 1, August 2011

"HD Voice" Logo
Usage Guidelines

The HD Voice logo is designed for operators and vendors to market and promote HD Voice capabilities on networks and products.

In 2010 HD products and services were first introduced into the market place. Different logos started to appear. The operator community came together and quickly established that one common approach, across all mobile operators and handset vendors, would be preferable to promote HD Voice capabilities.

HD™ VOICE

Interoperability with fixed line networks

HD Voice between Networks

Mobile   Fixed Line

AMR-WB   G.722

3G/LTE handset   CPE gateway
                    MGW   CAT-iq handset
                    transcode
TrFO   Mobile   Fixed
        Network   Network   CPE gateway   CAT-iq handset

3G/LTE handset   transcode   multi-codec

IP-IP interconnect is required
for HD Voice interoperability

The mobile world uses AMR-WB for HD Voice
• Resource hungry
• Significant IP cost (=< $1 per codec)
• EMC agreement to mandate AMR-WB codec

DECT CAT-iq uses G.722 as the mandatory codec
• Low resource (CPU) codec, suitable for low-cost devices
    • Limits number of concurrent calls
• License free
• Other codecs possible
    • eg AMR-WB, but limits number of channels in the
      HGW if codec implemented in HGW

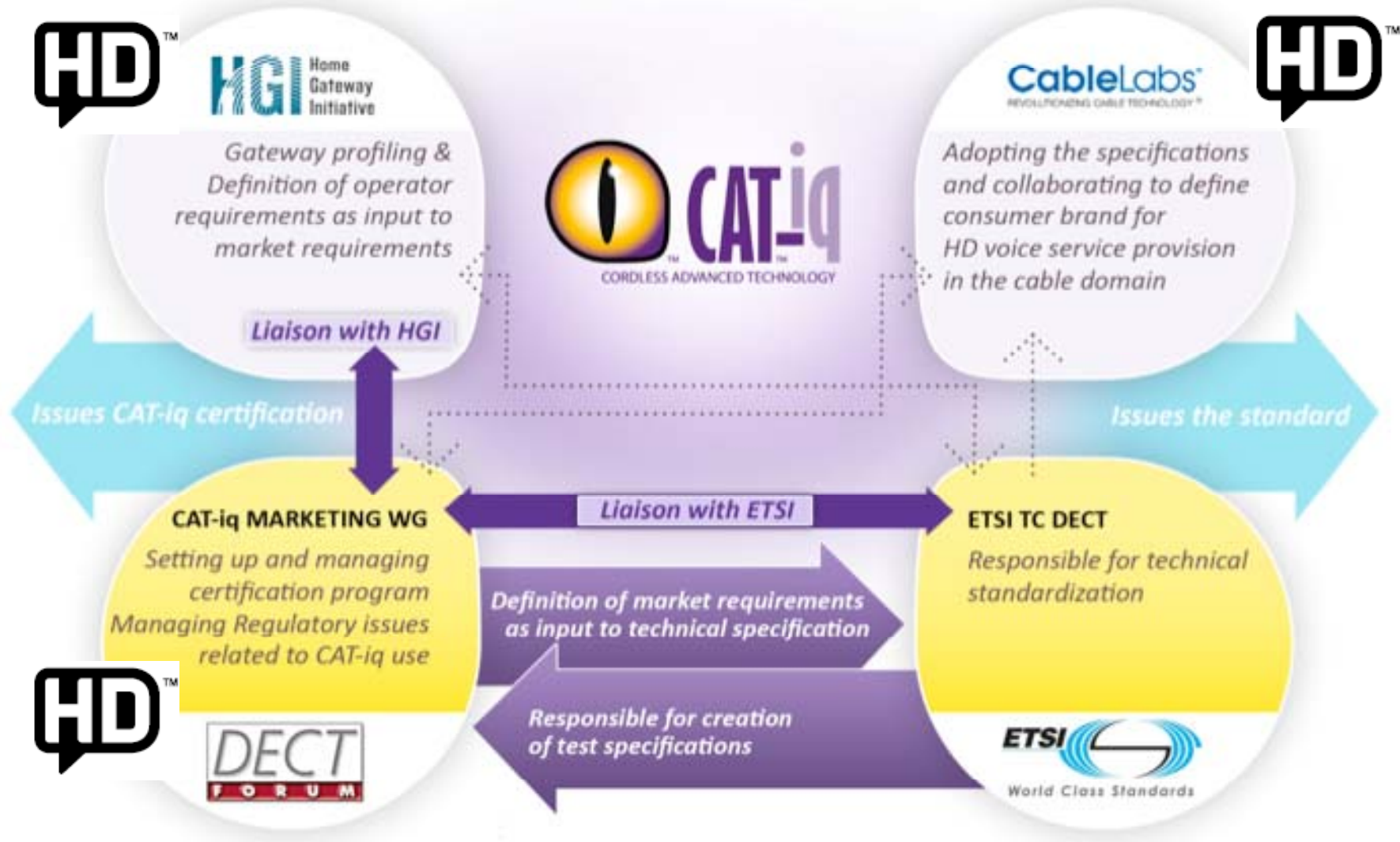Transcoding in the MGW or in the CPE gateway

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The HD Voice Ecosystem must include both Mobile and Fixed Line Networks

- Opportunity to maintain and improve voice as a high quality service from 3G into LTE and beyond.

- Industry bodies need to agree transcoder locations, codec licences and management of end-to-end call quality.

- Principal stakeholders:
    - DECT Forum
    - Home Gateway Initiative
    - CableLabs
    - 3GPP
    - FTTx providers
    - POLQA
    - TISPAN
    - ETSI STQ
    - National/regional bodies responsible for NGN interconnect (eg NICC).

Industry co-operation

Ongoing work with DECT Forum

- DECT Forum Marketing and MNOs agree that from a consumer perspective **wideband voice is one service and it shall be branded HD Voice.**
- DECT CAT-iq compliant devices to apply for HD Voice logo license from GSMA.

Issues to be resolved

- Codecs
    - Co-existence of AMR-WB and G.722
    - Cost of codec licenses
    - Lack of processing power to support AMR-WB in the handset
    - AMR-WB support over CAT-iq interface not standardised

- Transcoders
    - Possibly located in MGWs
    - Cost
    - Impact on link resources, E2E quality

Summary

- Mobile HD Voice is launched and is a success

- Ecosystem is developing quickly

- GSMA has registered the HD Voice logo
  - network and device criteria for self-certification to use logo

- Fixed-mobile interoperability will foster larger ecosystem
  - Greater market impact – more calls using HD Voice!
  - Requires discussion with relevant stakeholders