GCF
Test Certify Connect



In cooperation with:

TCCA

GCF MCX Certification Programme Overview

How to get your product certified



Harald Ludwig
Chair Technical Forum at TCCA, Chair. MCS WS Co-convenor



Asif Hamidullah
Head of Certification, IoT & Verticals at GCF, MCS WS Co-convenor



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Mission Critical Communications Consultant at Astazero



Magnus Tränk
Technical Product Manager at Ericsson, MCX ACE

This session will be recorded

Agenda

- **Welcome**

- **GCF MCX Certification Overview**
  Asif Hamidullah, GCF
- **ACE Services - Guiding the Manufacturer through the Certification Process**
  Magnus Tränk, Ericsson
- **RTO Services - Executing the testing to achieve compliance to standards**
  Peter Gundersen, AstaZero

- **Question & Answers**
  Please use the "raise hand" function to ask any questions to the presenters

Speakers

- **Harald Ludwig (moderator)**
  TCCA Technical Forum Chair
  GCF Mission Critical Services workstream Co-convenor

- **Asif Hamidullah**
  GCF Head of Certification, IoT & Verticals
  GCF Mission Critical Services workstream Co-convenor

- **Magnus Tränk**
  Ericsson Technical Product Manager
  MCX ACE (Assessment Capable Entity)

- **Peter Gundersen**
  AstaZero Mission Critical Communications Consultant











GCF MCX Certification Overview

Asif Hamidullah, GCF

GCF
Test Certify Connect

GCF & TCCA MCS
Certification Webinar

July 9th 2024



GCF MCX Certification Overview for UE & Client Vendors

Asif Hamidullah, GCF Office, MCSWS Co-Convenor

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GCF – the mobile and IoT industry's mobile certification

- **GCF is an industry organisation that develops and maintains a global certification scheme for wireless products and solutions**

- **Most major mobile and IoT global brands participate**
  - **350+** member companies
  - Collaborative participation between Operators and Service Providers, Device and IoT Manufacturers, Test Industry and Industry Partners
  - More than **500** device models are certified every year

- A **GCF certified product provides confidence** that the device will work with the network and services, reducing time and costs for Operators/Service Providers and Manufacturers.



Since 1999 GCF has, together with the mobile industry, successfully Developed and maintained certification for 3GPP based devices

GCF in collaboration with TCCA has established a Mission Critical Services Work Stream to develop and manage the certification programme for MCX Products & Solutions

GCF Certification Key Actors



- **Manufacturers:** UE and MCX Client Suppliers who are undertaking certification of their product on behalf of themselves (OEM) or their customers (ODM). They key person from the Manufacturer dealing with the certification process is known as the Device Certification Manager (**DCM**).



- **Operators:** Cellular Network Service Providers who typically sell and/or activate certified products on their networks. **MCCO** is a subset of the Operator category focussed primarily on Public Safety Operators.



- **Test Equipment Manufacturers (TEMs) / Test Platform Vendors (TPVs):** Manufacturers of test platforms that are typically validated to ensure tests required for GCF Certification can be executed in a conformance test environment for the device undergoing certification



- **Recognised Test Organisations (RTOs):** ISO 17025 accredited 3rd party labs that meet GCF requirements for testing laboratories, and are authorised to execute the Conformance, Interoperability, and/or Field Trial tests. RTOs typically purchase/lease validated test platforms required for device certification
  https://www.globalcertificationforum.org/services/rto/conformance-rtos.html



- **Assessment Capable Entities (ACEs):** Are internal to OEM or 3rd party organisations (TPACE) who have SMEs that are available to work with the Manufacturer to determine the overall scope of GCF certification for a particular product. RTOs often have SMEs on board who provide ACE services.
  https://www.globalcertificationforum.org/third-party-assessment-capable-entities.html

Membership Fees

- Fees are annual

- Allows for any number of certifications within the calendar year

- No additional charges by GCF for certification of the product*

* Testing service cost charged by RTO/ACE is outside the scope of GCF and negotiated bilaterally between MFR & RTO/ACE

Membership Fees 2024

Membership programme	Fee Euro (€)	Fee GBP (£)	Fee USD ($)
Operator	10,000	8,670	10,990
Associate Operator	0	0	0
Manufacturer	10,000	8,670	10,990
Associate Manufacturer I	10,000	8,670	10,990
Associate Manufacturer II ← MCX Client Vendor	5,000	4,335	5,495
Observer	5,000	4,335	5,495
Virtual Operator - MVNO	5,000	4,335	5,495
Virtual Operator – Associate MVNO	0	0	0
Mission Critical Communications Operator	5,000	4,335	5,495

https://www.globalcertificationforum.org/membership.html

https://www.globalcertificationforum.org/membership/how-to-join-gcf/membership-fees.html

MCX Certification Testing



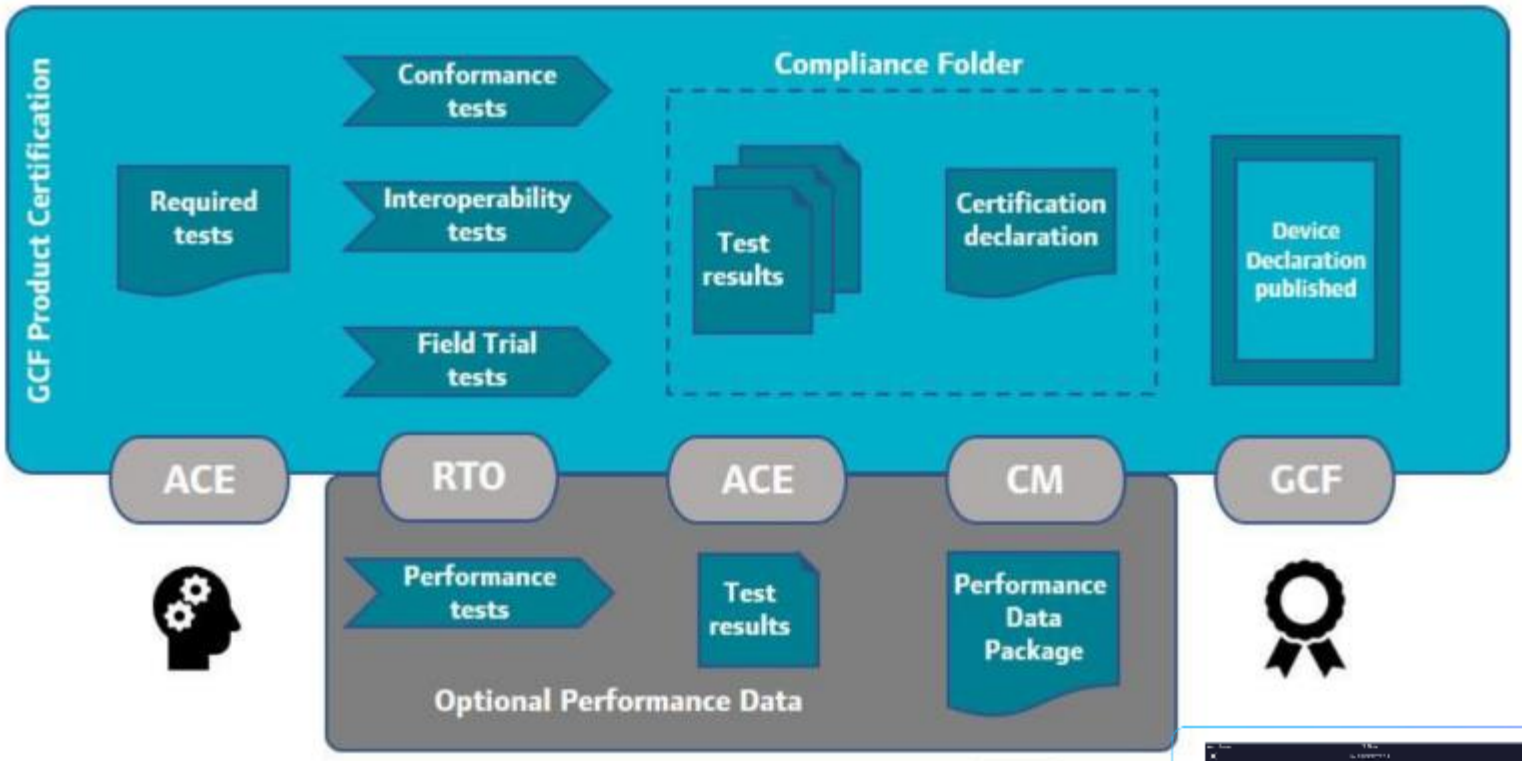
Conformance (Active)



Interoperability (Future)



Field Trials (Future)



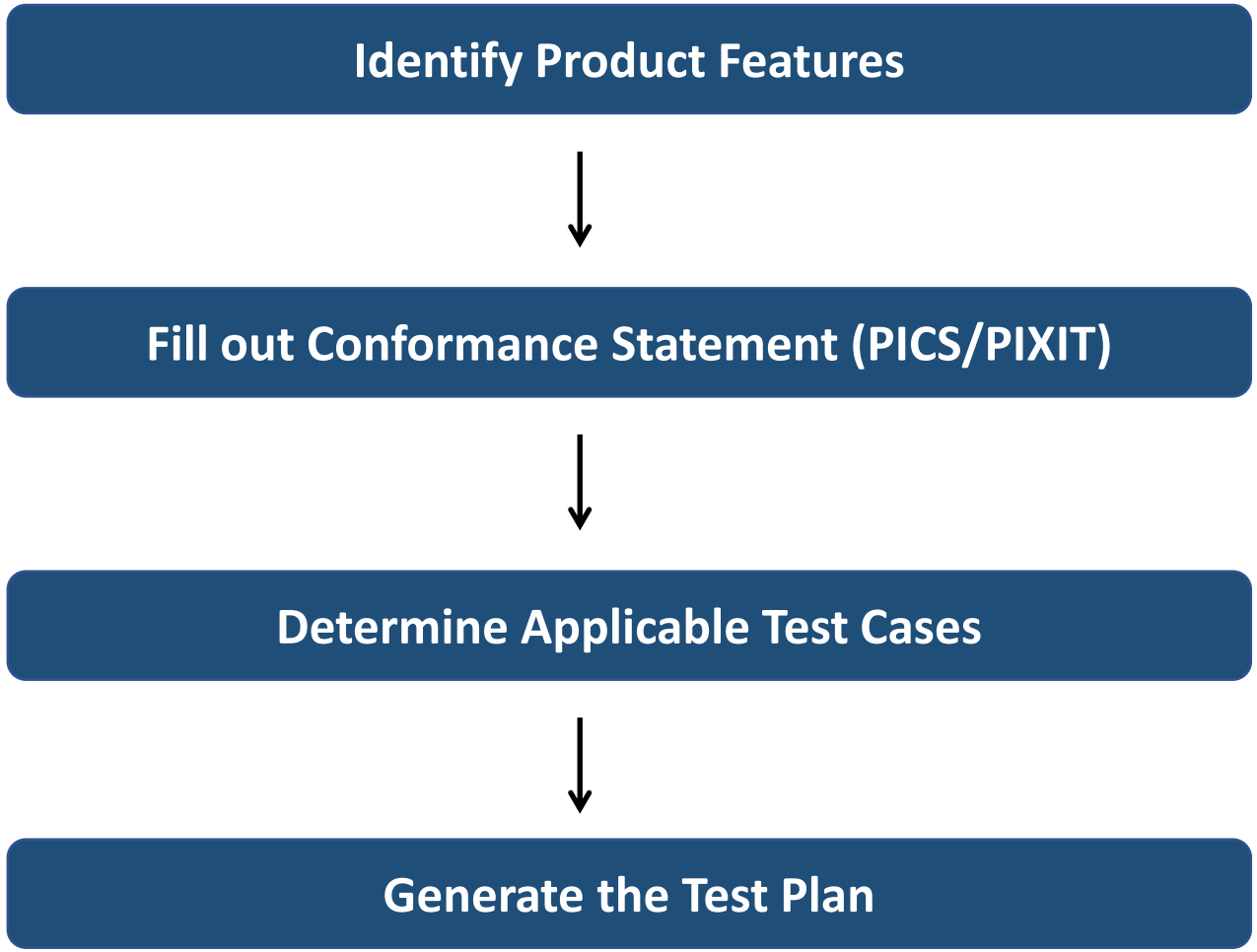


Performance (Future)

Scope of MCX Conformance Tests

- Current Conformance testing scope captured in **WI-288 Rel-14 MCPTT (GCF-CC Annex F4.9)**
- Additional work items and releases for **MCVideo** and **MCData** will be added over time as those test cases become validated on the test platforms
- All **Category A** and **Category B** test cases must be executed should those specific features be supported on the MCX product
- Test Case mapping is done based on the **3GPP PICS/PIXIT** documentation provided by the Manufacturer to the ACE, who then maps to the validated test cases in the GCF test case database (DCC)

PICS/PIXIT for Mission Critical Services is captured in 3GPP TS 36.579-4 & TS 36.579-5



Routes to Certification

The full process is outlined in the GCF MCS PRD:
https://mcsws.globalcertificationforum.org/documents/reference-documents.html



1 **UE with integrated MCX Client**



MCX UE

- Standard GCF Certification i.e. UE with MCX as a feature
- All declared features under certification have to be tested (4G, 5G, IMS, Frequency Bands, MCX, etc.
- Manufacturer is responsible for the certification of all features UE and Client

2 **UE with a GCF Certified MCX Client Platform**

UE



+

Certified MCX Client Platform



- UE Manufacturer integrates a certified GCF MCX Client Platform
- Client Manufacturer responsible for certification of MCX Client
- UE Manufacturer responsible for certification of the combined system and can focus testing on UE features and spot test MCX (integration areas)

3 **MCX Client on GCF Certified UE Platform**



MCX Client

+



Certified UE Platform

- Client Manufacturer uses a certified GCF UE Platform
- UE Manufacturer responsible for certification of the UE (without MCX)
- Client Manufacturer responsible for certification of the combined system focusing on MCX and can leverage testing already done on the UE Platform

4 **MCX Client / Client Platform only Certification**

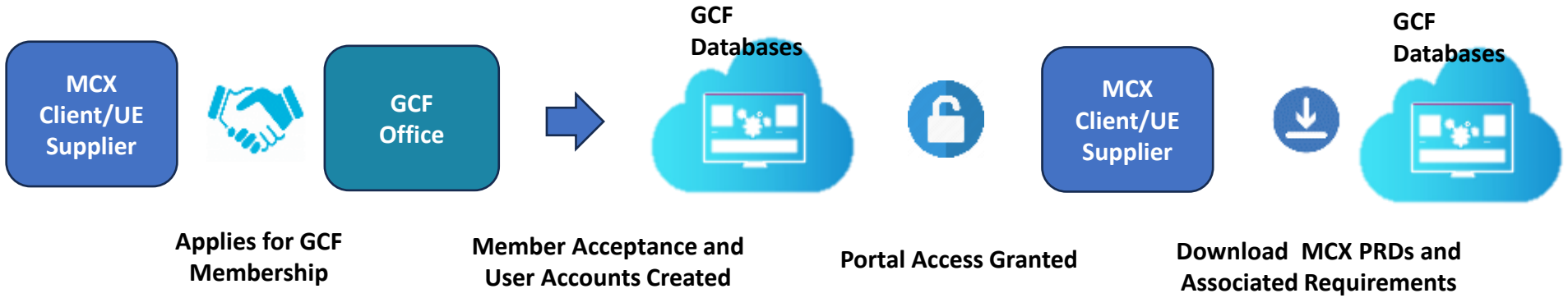


MCX Client Only

- Client Manufacturer undertakes a standard GCF Certification of their MCX Client as an End Product or as a Client Platform focusing on MCX features testing
- MCX Client needs to be installed on a “host” device supporting LTE in order to communicate with the Test System

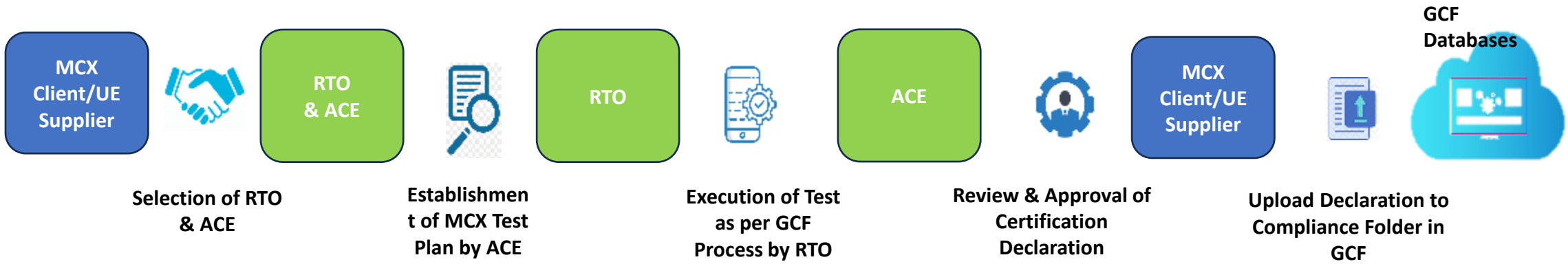
MCX Certification Process Flow

Membership Registration:



Once uploaded, the device is published on the public portal and considered certified. The Manufacturer also downloads a PDF Certificate to prove compliancy

Certification:



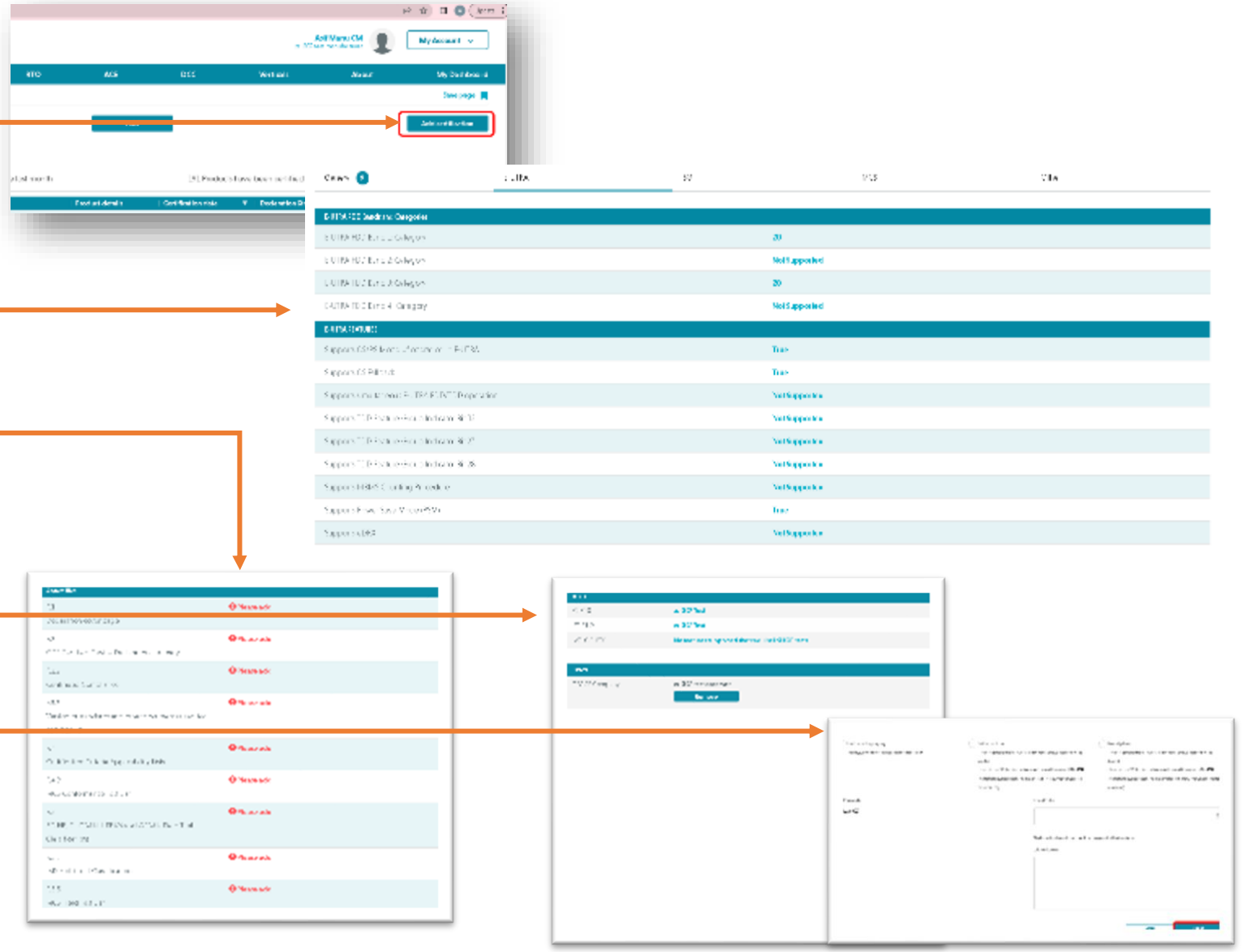
Certification Declaration Preparation

- Following Certification Testing, the Manufacturer is required to work with the **ACE** to prepare the **Certification Declaration.**
- This involves filling out the relevant Annexes found in GCF Certification Criteria (GCF-CC PRD) for upload on the Portal:
  - Annex F1 Declaration Cover Page
  - Annex F2 Declaration Summary
  - Annex F2.2 Continued Compliance
  - Annex F3.2 Versions of 3GPP Standards Used
  - Annex F4.1 Certification Criteria Applicability List
  - Annex F4.9 MCS Conformance Test List
  - Annex F5.1 5G NR, E-TRAN, UTRAN, and GERAN Field Trial Classifications
  - Annex F5.2 IMS Field Trial Classifications
  - Annex F5.5 MCS Field Test List* (if applicable)
  - Annex F6 Test Exemption List
- The above is based on a UE supporting standard 3G/4G/5G and/or Client supporting MCX
- All PRDs can be downloaded from: https://www.globalcertificationforum.org/documents/official-documents/gcf-documents/gcf-reference-documents.html

*Note: MCS Test Annexes for Field Trials have not yet been developed and dependent on Field Trial Verification of GSMA TS.11 Annex N Test Cases

Data Fill & Upload of Annexe Files on the Certification Portal

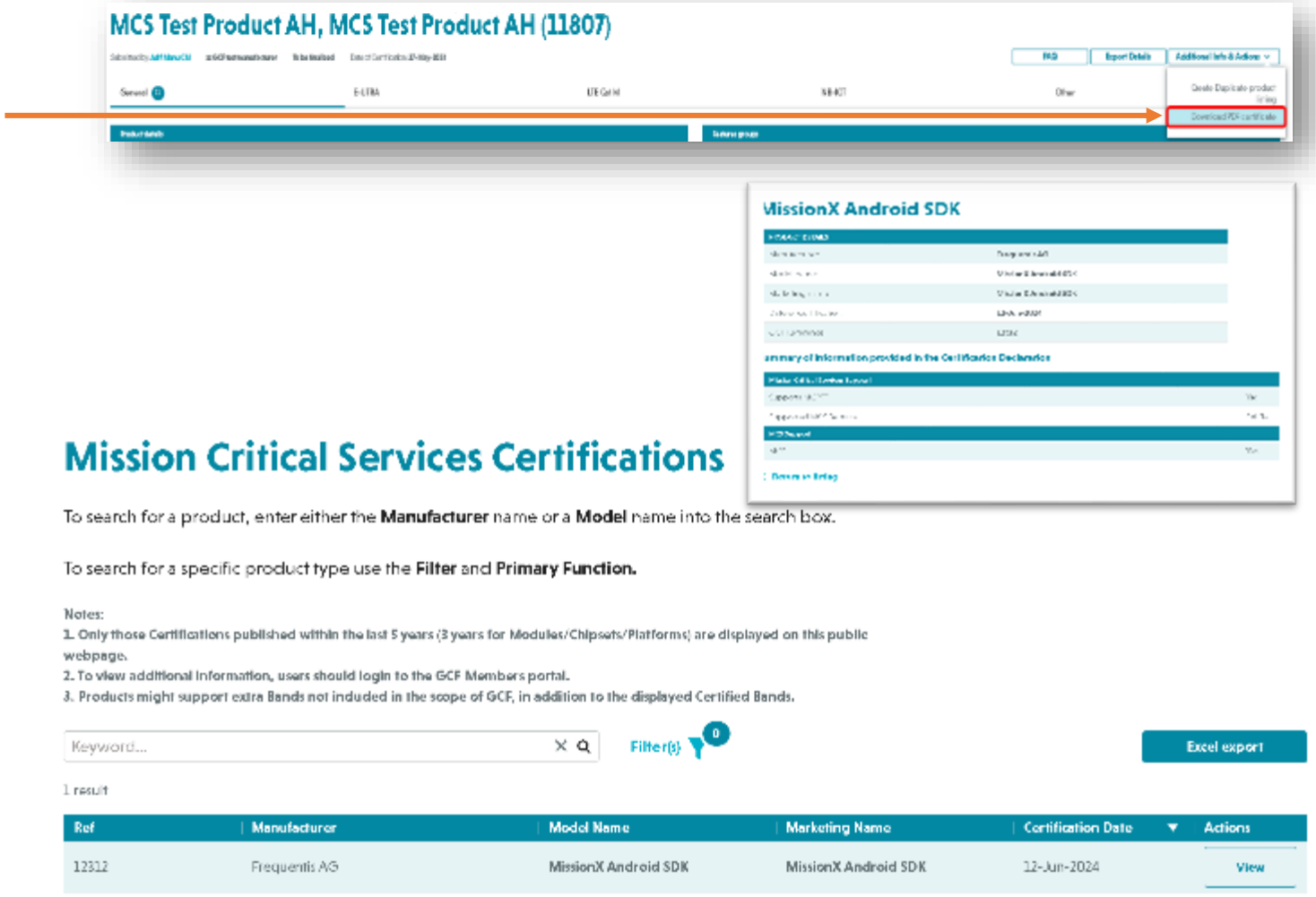
- Login to the GCF Member's Portal at https://globalcertificationforum.org to create a new Certification Declaration
- Fill in all editable fields according to what is supported on the product and what is in the GCF-CC Annex Files
- Once all features support has been indicated, under General Tab, the Manufacturer will be required to upload all the filled out Annexes found in GCF-CC
- Indicate the ACE & RTO that has been chosen to support the certification activities
- Publish the declaration according to the timescale desired (Immediate, Restricted, Deferred)



The information in these tabs should match the information in the Declaration Annexes filled out with the ACE…

Download the Certificate & Publication on the Website

- Once published the Manufacturer may download the GCF Certificate from the menu
- Publication on the GCF website is also proof the device has successfully demonstrated compliance to the GCF requirements
- A list of published MCS Certifications and details can be viewed via the following links:
  - https://www.globalcertificationforum.org/pub_product/12312.html
  - https://www.globalcertificationforum.org/gcf-certified-products/all-mcs-certifications.html
- While the public listing will show high-level information about the product, authorised individuals from GCF Operators members (including MCCO) will be able to download the declarations to have detailed insight into the product certification



Ongoing Compliance

- The Manufacturer has the responsibility to maintain ongoing compliance of the product to the declared **GCF-CC** version at the time of certification
- Should **changes or updates** be made to the hardware/software of the product affecting product functionality, the certification declaration must be updated following the appropriate testing and/or retesting/regression testing of new and/or affected areas in consultation with the **ACE**
- Updated testing requirements follow similar process as outlined with the services of an **ACE** and **RTO** being required to assess and test the corresponding areas
- Manufacturer should upload any revision to Annexes or additional Annexes as required on the portal



Checklist for Certification Preparation

- ✓ **Do I have GCF Manufacturer Membership?**
  - Am I a Full Manufacturer, Associate Manufacturer Type I (AMM I) or Associate Manufacturer Type II (AMM II)?
  - MCX Client Suppliers would join as AMM II, UE Suppliers as either Full Manufacturer or AMM I
- ✓ **What type of MCX product am I certifying?**
  - Is it a UE with MCX Client, or an MCX Client / Client Platform?
- ✓ **Which Certification Route will I take?**
  - Am I using a certified MCX Client Platform or Certified UE Platform in my End Product? Can I leverage any testing that is already done at the platform level?
- ✓ **Do I have my login credentials for the GCF Member's Portal to access documentation and submit the declaration?**
  - Have I downloaded all the relevant PRDs (GCF-MCS, GCF-AP, GCF-CC) that capture the certification requirements?
  - Have I made sure that the required GCF-CC Annexes filled out match the entries on the certification portal declaration?
- ✓ **Who will be my ACE?**
  - Have I selected an ACE that can help me generate the test plan and review my final declarations? Note: Only one official ACE can be selected who signs of on the final Certification declaration
- ✓ **Which RTO(s) will do the testing?**
  - Have I selected the RTO that will do MCX (Rel-14 MCPTT) testing?
  - Have I selected the RTO that will do 3GPP 4G/5G testing for additional features declared on my product (if applicable)?
  - Note: Multiple RTOs can be selected by the Manufacturer to do different areas of certification testing

Some Best Practices to Consider…

- Plan to certify your product with the Hardware and Software version you would like to commercialise in the market (i.e. after all development and internal pre-certification tests completed and passed)
- Plan on having certification activities be part of the overall design and development process of the product
- Do try and run the certification tests in the development stage (if possible) to iron out any potential issues/bugs, so that certification testing can occur in 1 cycle (as opposed to multiple cycles and bug fixes)
- Engage with RTO and ACE earlier on in the project stage to ensure your product timeframes can be met
- Attend GCF working group meetings in your line of business so that you have visibility into the GCF technology roadmap that can be used in your product planning
- While the ACE should be your main point of contact for certification related issues, the GCF Office is available to offer a helping hand, and provide guidance where clarity is needed
- A very detailed overview of the certification process is available in **MCS-24-060** with video of the presentation given: https://drive.google.com/file/d/1nz9RC1HnbMXmERXBjr1HgemwZTN_Pvqt/view?usp=sharing



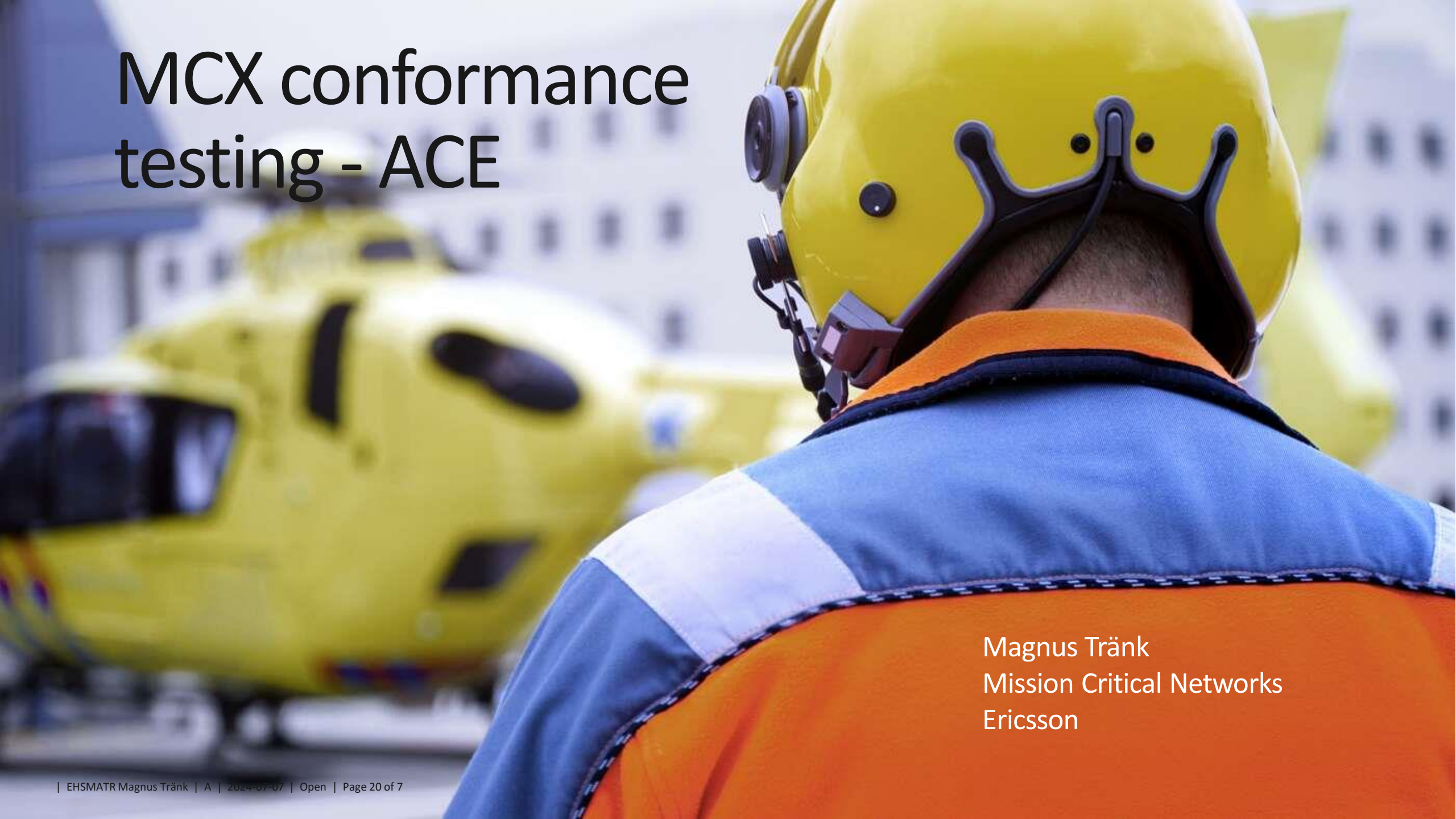
ACE Services

Guiding the Manufacturer through the Certification Process

Magnus Tränk, Ericsson

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MCX conformance testing - ACE



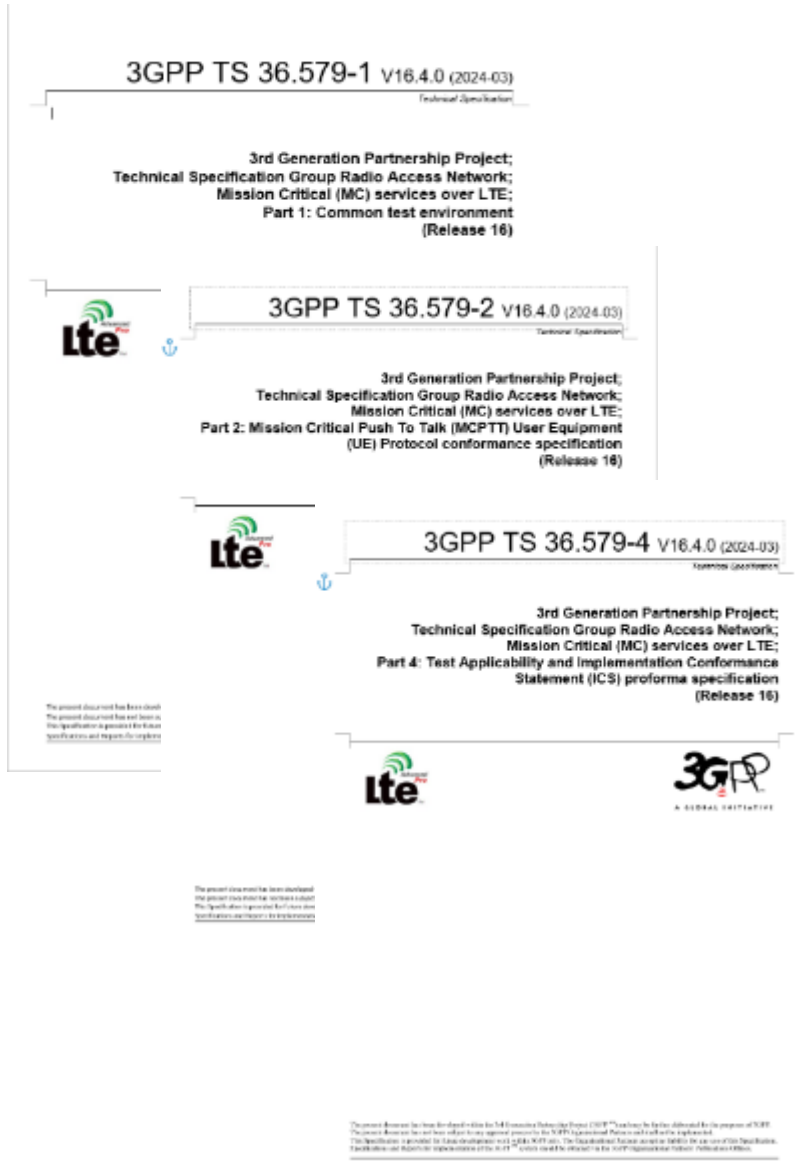
Magnus Tränk
Mission Critical Networks
Ericsson

Introduction

- Ericsson – TP ACE for MCX certification
  - Mission Critical Network provider
  - MC services standardized in 3GPP for a reason
  - 3GPP main contributor
- Standardization update
- Test case selection
- End-2-end network aspects

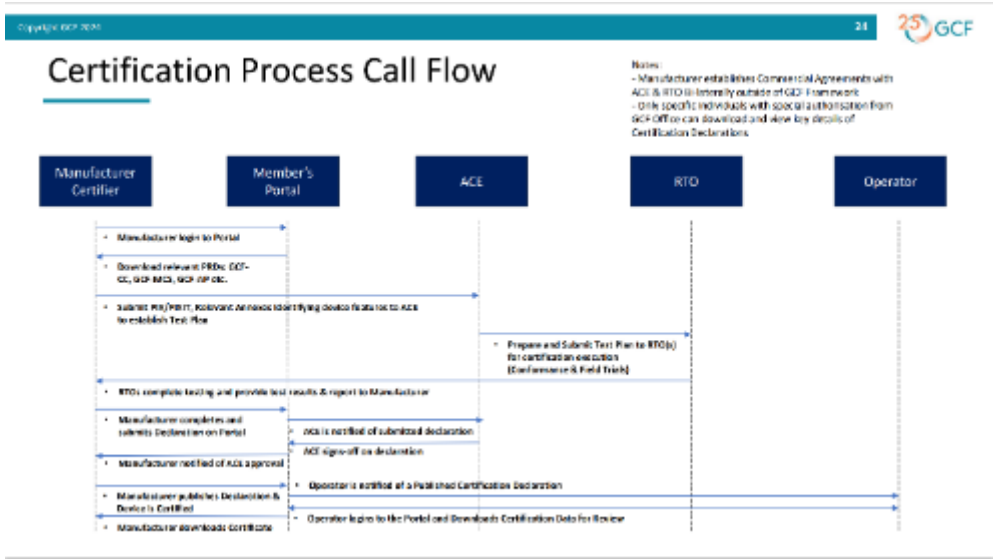
Standardization updates

- 3GPP Release-18 freeze 2024 Q2
- MCX conformance test specifications TS 36.579-x Release 16
- Starting 2024 H2 – Release 17
  - new TS series TS 38.579-x
  - MCX over 5G
  - Serverside testing



Test case selection

- ACE support in:
  - MCX client feature evaluation
  - Test case selection – Feature applicability
    - Currently 36 MCPTT test cases activated
  - Preparation and submission of test plan
  - Review test result and documentation



Clause	TC Title	Release MCPTT	Applicability		MCX certification				
			Condition	Comment	GCF WI	Priority	TP support	Test scope	Result
5.1	Configuration / Authentication / User Authorisation / UE Configuration / User Profile / Key Generation	Rel-14	C01	IUT containing MCPTT Client	WI-288-IPCAN	1		Yes	
5.2	Configuration / Group Creation / Group Regroup Creation / Group Regroup Teardown	Rel-14	C01	IUT containing MCPTT Client	WI-288-IPCAN	1			
5.3	Configuration / Group Affiliation / Remote change / De-affiliation / Home MCPTT system	Rel-14	C01	IUT containing MCPTT Client	WI-288-IPCAN	1		Yes	
5.4	Configuration / Pre-established Session Establishment / Pre-established Session Modification / Pre-established Session Release	Rel-14	C01	IUT containing MCPTT Client	WI-288-IPCAN	1		Yes	
5.5	Configuration / Determination of MCPTT Service Settings / Current Active MCPTT Settings / De-subscribe	Rel-14	C01	IUT containing MCPTT Client	WI-288-IPCAN	1		Yes	
6.1.1.1	On-network / On-demand Pre-arranged Group Call / Automatic Commencement Mode / End-to-end communication security / Floor Control / Upgrade to Emergency Group Call / Cancel Emergency State / Upgrade to Imminent Peril Group Call / Cancel Imminent Peril State / Client Originated (CO)	Rel-14	C01	IUT containing MCPTT Client	WI-288-IPCAN	1		Yes	

Conformance Test Specifications and Device Certification Criteria (DCC)

- TS 36.579-1 Common Test Environment
- TS 36.579-2 UE Protocol conformance specification
  - Includes 51 MCPTT test cases for Rel-14
- TS 36.579-4 Test Applicability and Implementation Conformance Statement (ICS) proforma specification

- DCC
  - 36 testcase activated for MCPTT – All must be tested and passed

E2E network aspects

MCPTT system
Network connectivity
- APN usage
- Default/dedicated bearer usage

Deployment options
- SIP core/IMS
- Resource management

MCX UE capabilities
- Multicast usage
- Off-network

MCX client features
- Call models
- Regulatory requirements

Mapping to relevant test cases

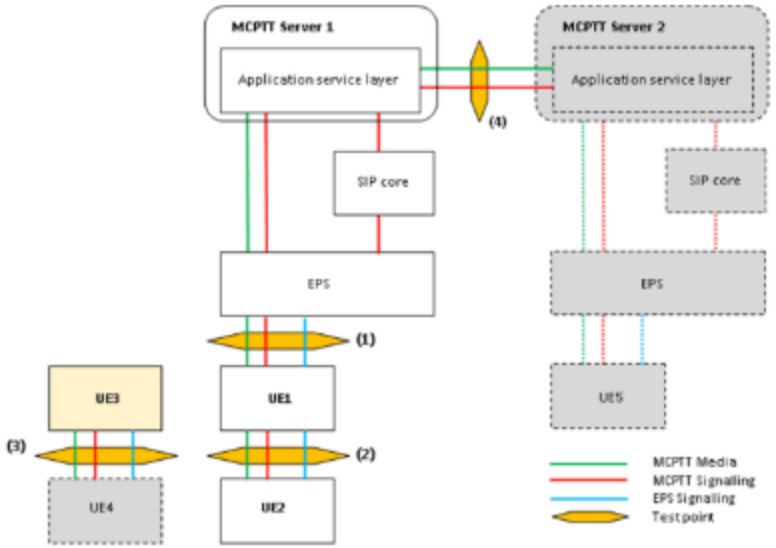


Figure 4.1.1: MCPTT Conformance testing test points model



RTO Services

Executing the testing to achieve compliance to standards

Peter Gundersen, AstaZero

GCF
Test Certify Connect

MCS Conformance Certification July 2024



Intro AstaZero
How?
What support can I get?
Conclusions

AstaZero – Subsidiary of Research Institutes of Sweden

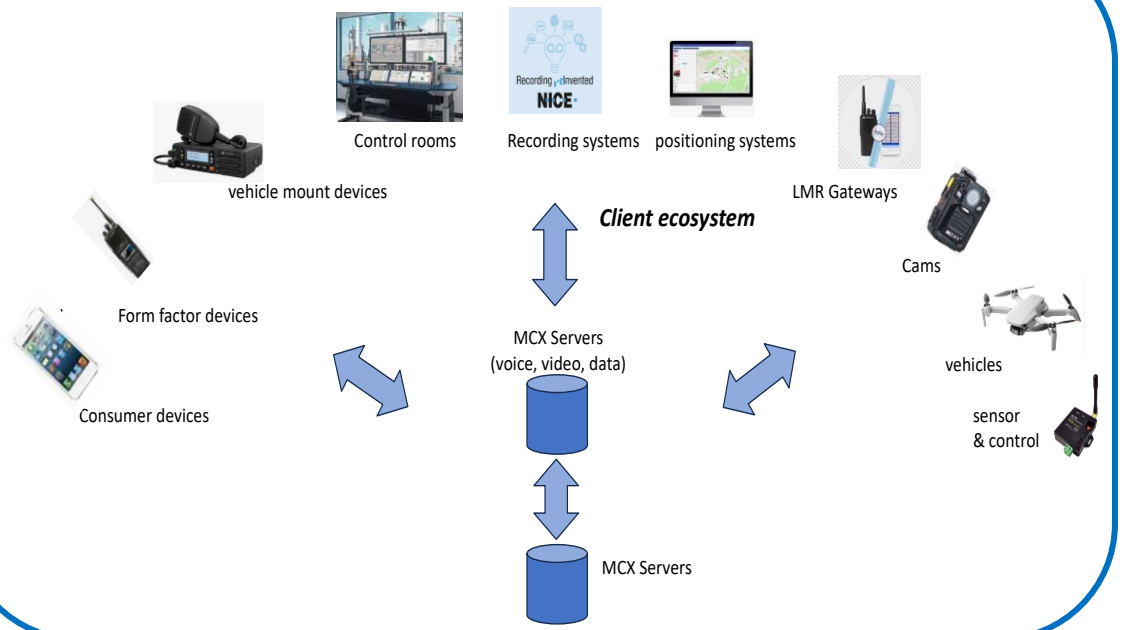
- Research/Test/Certification facilities with
  - Multiple 4G/5G networks
  - EMC and other Chambers
- Broad partner network within industry, govt & research
- Mission Critical – leverage synergies with automotive to the benefit of Society:
  - GCF Conformance certification
  - Development support including proving grounds
  - Research



MCS conformance Certification - Client and Device

Facilitate a cost efficient, interoperable eco system

Client ecosystem



Device ecosystem



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GCF MCS Routes to Certification

- The MCSWS has defined 4 routes to certification:
  1. **Native Integration of an MCX Client on an End Product**
  2. **Integration of a GCF Certified MCX Client Platform on an End Product**
  3. **Integration of an MCX Client on a GCF Certified device platform**
  4. **MCX only Client Certification**
- **Routes 1 – 3** cover certification of the device & client system according to the standard GCF process, with the end system being commercially available to users
- **Route 4** covers certification of the MCX functionality of the Client that is commercially available in a standalone fashion, and does not specifically cover certification of the underlying host device capabilities





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MCS Conformance certification - How?



Certification planning
- Chose route & components
- Select test cases

Certification Dry-run
- Initial deployment
- Test run
- Eventual corrections

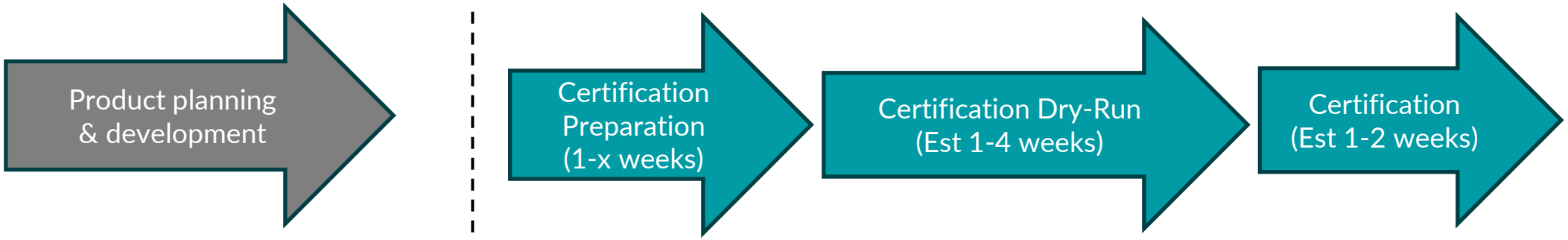
Test environment
- GCF Validated test platform

Certification Execution
- Test execution
- Document output
- Assessment of result
- Self declaration

Test environment
- GCF Validated test platform

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MCS Conformance certification – How?



Product planning & development
- Product planning
  - Including 3GPP compliant client/device features
  - Assessing existing gaps
- Product Development
- Test automation development
- End Product integration

Certification planning
- Chose route & components
- Select test cases

Certification Dry-run
- Initial deployment
- Test run
- Eventual corrections

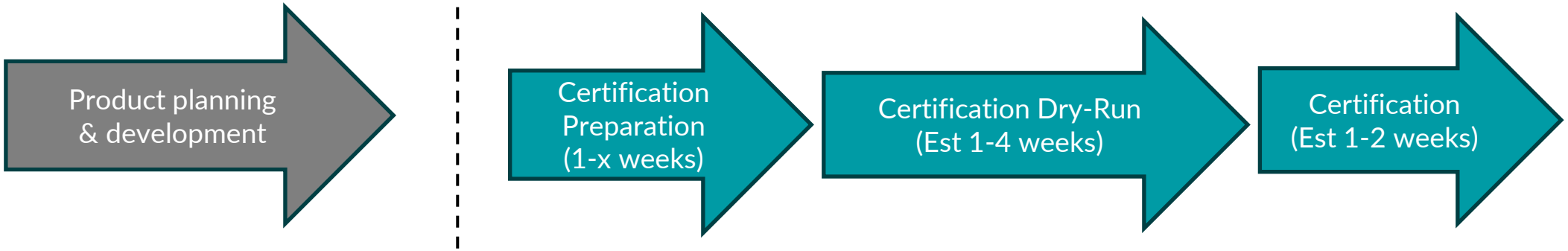
Test environment
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Certification Execution
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- Self declaration

Test environment
- GCF Validated test platform

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AstaZero & partners support



- Online MCS test tool
- Expert assistance

- ACE services*

- ACE services*
- RTO services**
- Validated test platform

- ACE services*
- RTO services**
- Validated test platform

*ACE = Assessment capable entity (advisory), in collaboration with partner
**RTO = Recognized Test Organization – ISO 17025, validated test platform

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Summary

- Start preparing for conformance certification now to scale up
- RTO service is available
- Give us a call and we can discuss your needs, and plan a quick assessment on efforts required to get your product certified





Questions & Answers

Please use the "raise hand" function to ask any questions to the presenters. You will need to unmute yourself when requested.

GCF
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Thank you for your attention

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Harald.Ludwig@tcca.info

www.globalcertificationforum.org

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