Submitted by the expert from OICA

Informal document GRSG-111-39
(111th GRSG, 11-14 October 2016,
Agenda item 13)

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AECS
Accident Emergency Call System

1. Regulatory framework for emergency call systems

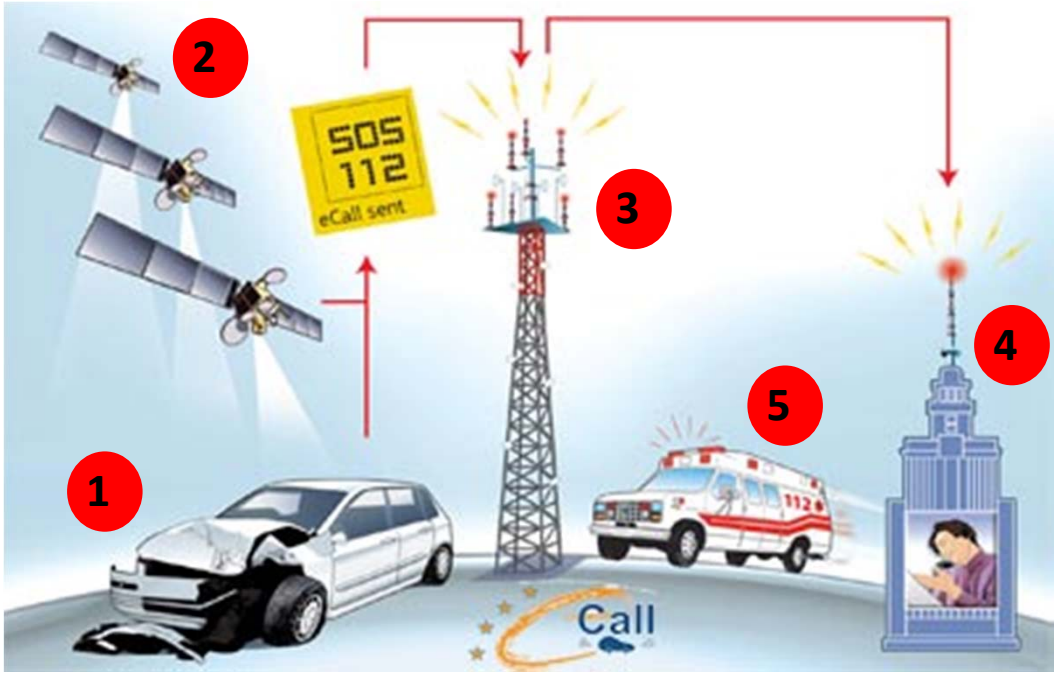
1. **Russia: ERA Glonass (Accident Emergency Response system)**
   Eurasian Custom Union: Russia, Belarus, Kazachstan, Armenia, Kyrgyzstan

2. **EU: eCall**

3. **UNECE: AECS (Accident Emergency call System)**

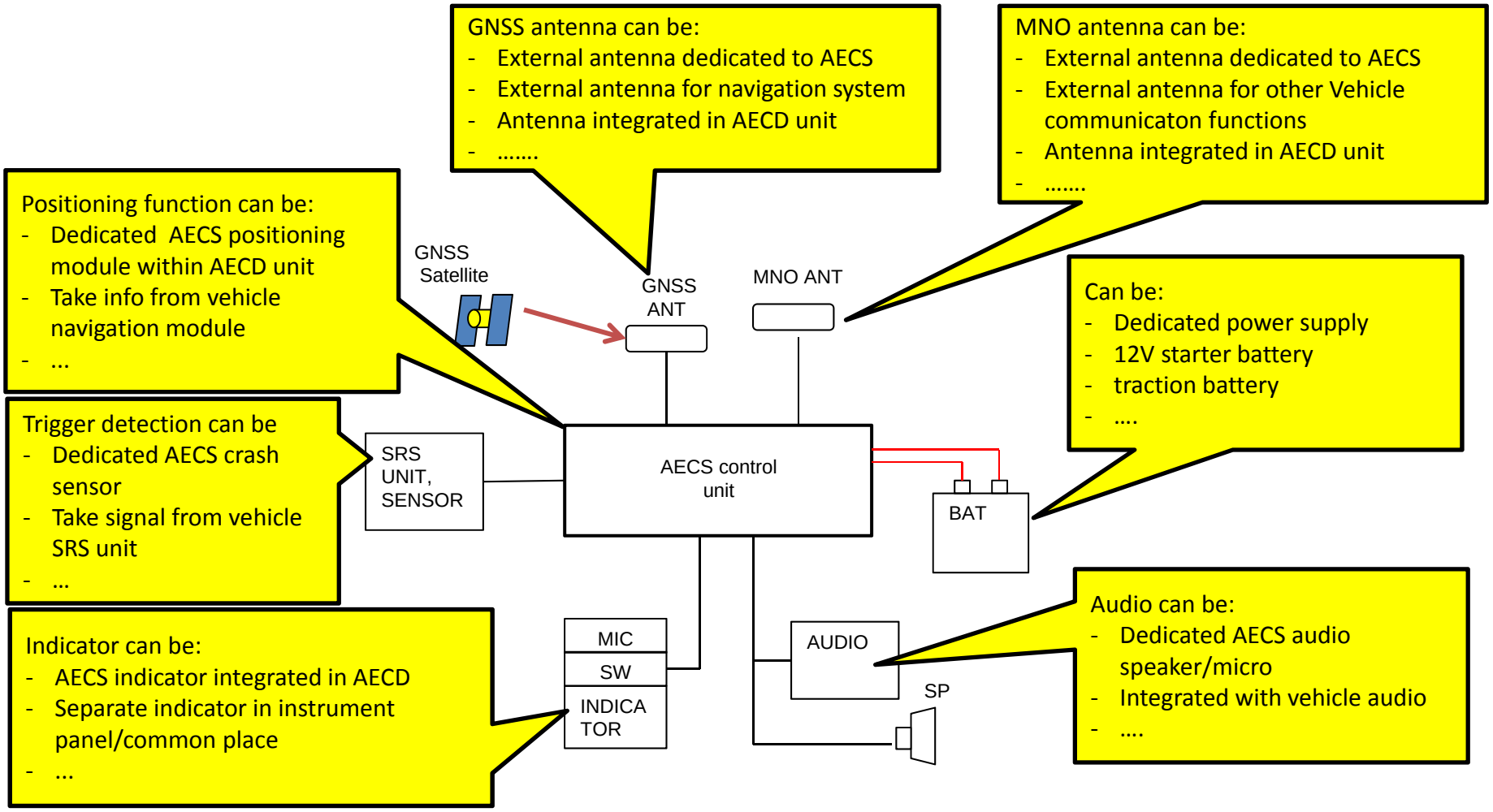
4. **Help Net Japan (voluntary emergency call system)**

2. Emergency call process



① Vehicle crash happens
② Vehicle sends emergency MSD (Minimum Set of Data) and voice call to 112
③ Mobile Network Operator (MNO) & infrastructure transmit MSD and voice to 112 Public Service Access Point (PSAP, call center)
④ PSAP receives MSD and voice call
⑤ PSAP sends emergency services

3. Basic system lay-out and test requirements



Complexity of the certification process is also determined by

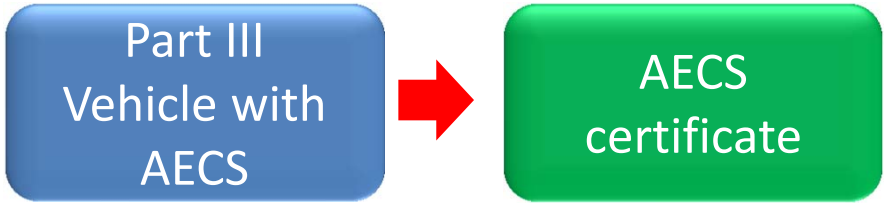
- Integration of the emergency call system in the vehicle (one box system, semi integrated or fully integrated)
- Supplier responsibility

4. UN ECE AECS lay-out

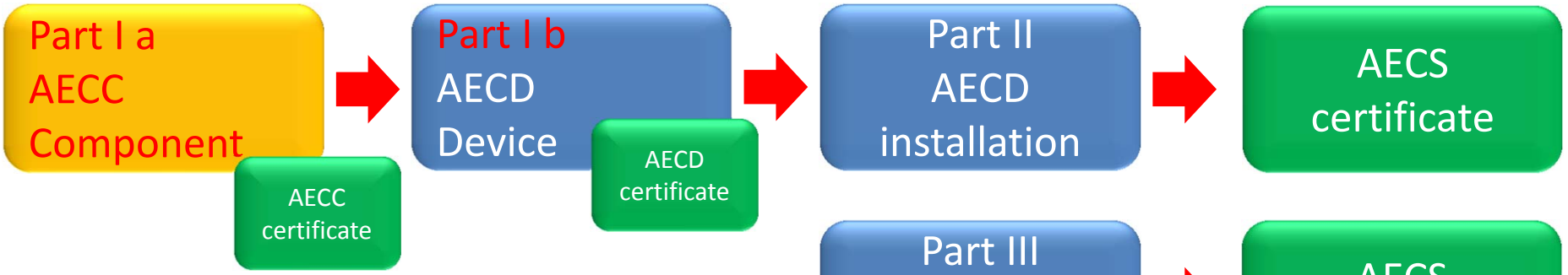
1. Current Regulation Proposal (2 procedures to obtain UNECE AECS certification)

Formal Document: ECE-TRANS-WP29-GRSG-2016-19e

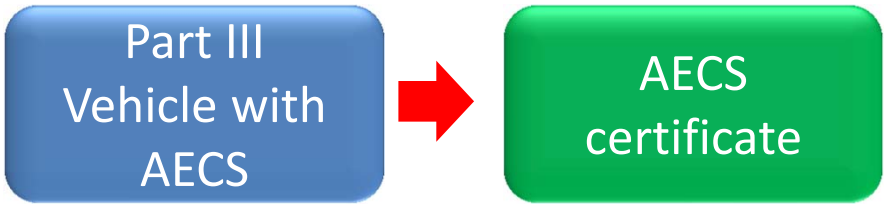
Informal Documents:
GRSG-111-06e (AECS secr. Justification)
GRSG-111-07e (AECS secr. Amendment
GRSG-111-13e (Russia amendment for Roll over)



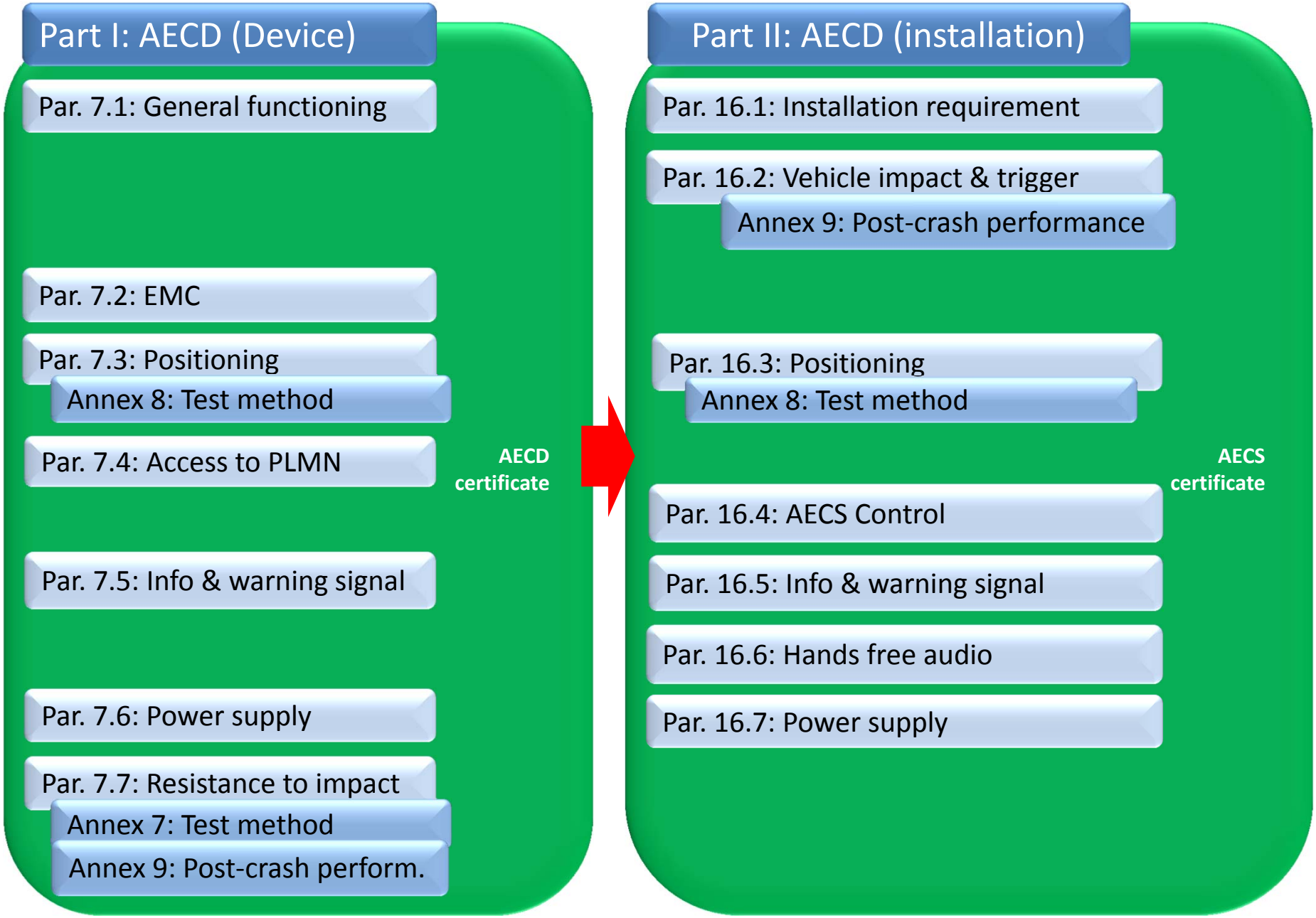
2. Additional proposal by OICA for a 1st revision of the AECS Regulation



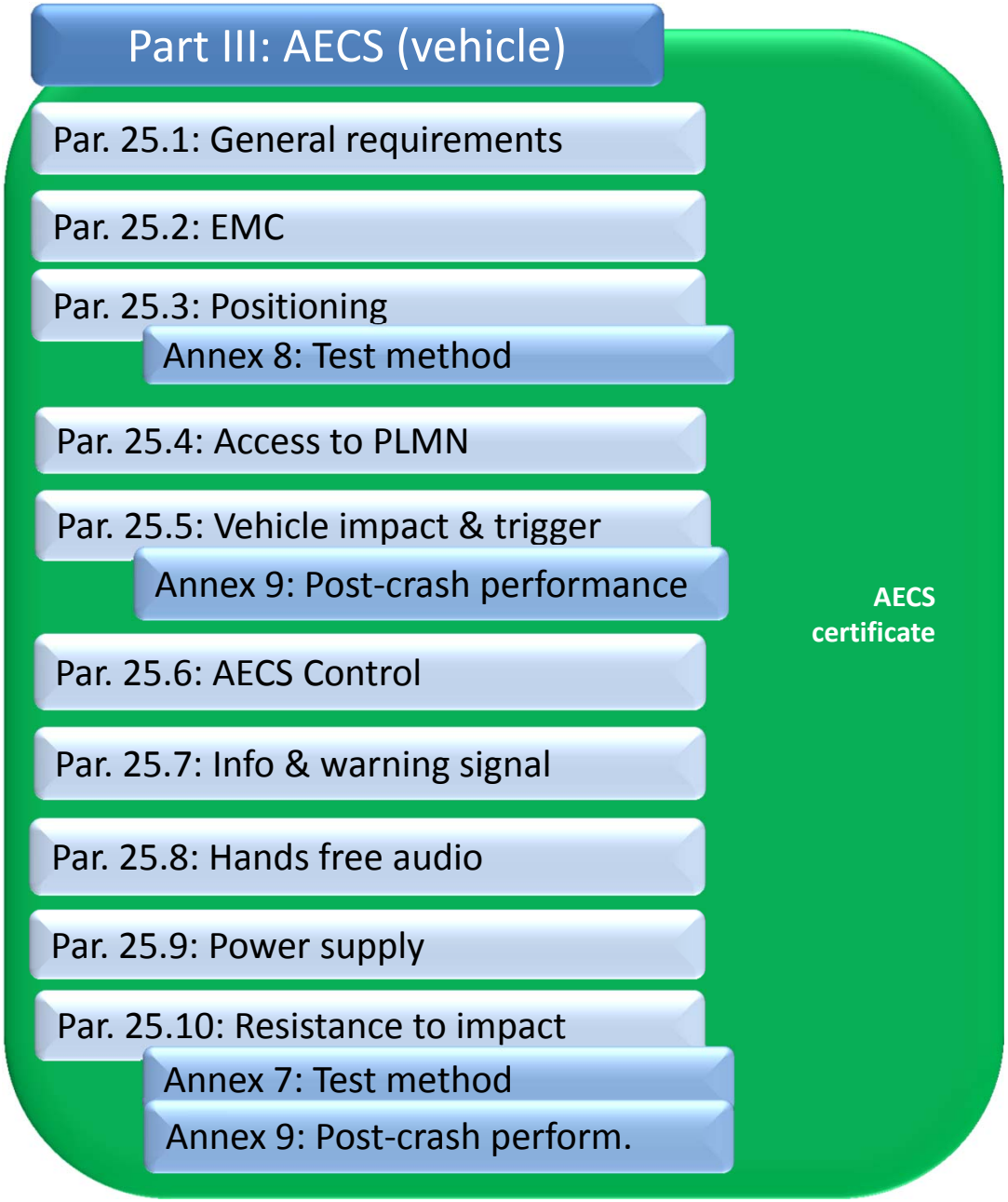
Informal Document:
GRSG-111-15e (OICA proposal for component approval)



5. UN ECE AECD details



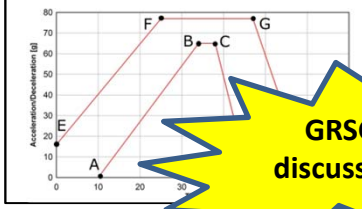
6. UN ECE AECS details



7. Resistance to impact (device)

Component set → **High g test** → **Function check**

60g (or 65g for EU)



GRSG discussion

- **Data transmission check**
- **Position data check**

3 possible methods

1. AECD control unit

AECD control unit

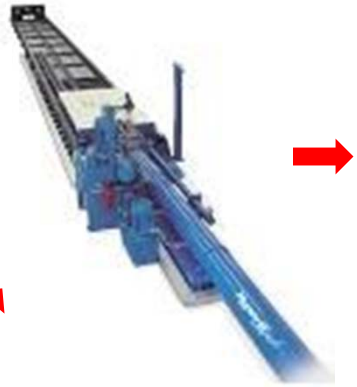
With intended fixation & part of wire harness

2. Mobile Network antenna

With intended fixation & part of wire harness

3. Main power supply
If no back-up battery

w/o fixation



AECD test bench

GNSS antenna

AECD control unit

Manual button

or

1. "Over the air" transmisison
- Real network and PSAP

or

2. "over the air" transmission
- Mobile network & PSAP simulator

3. "wired" transmision"
- Mobile network simulator
- Antenna VSWR measurement

- Wired test can be used for test facility in regions that have MNO frequency restrictions
- For EU it can also be performed as a component test by supplier -> OICA has also prepared a AECC (Accident Emergency call Component) certification proposal as a first revision of the AECS Regulation

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8. Optional GNSS Positioning test (device or vehicle)

Device or vehicle → **Check performance**

GNSS testing
- **Static Accuracy**
- **Dynamic accuracy**
- **Dynamic shadow accuracy**
- **Cold start**
- **Reacquisition**
- **Sensitivity and calibration**

If we use a 3 GNSS compatible GNSS module we can use UNECE Regulation to replace Regional positioning requirement in EU and Russia
- **EU: GPS + Galileo & EGNOS**
- **Russia : Glonass**
- **UNECE (optional): GPS + Glonass + Galileo & EGNOS optional**

If not covered by UNECE certification it needs to be covered at national or Regional level

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9. Full scale impact test (vehicle)

Impact test

- **UNECE R94**
- **UNECE R95**

Function check

- **Voice communication**
- **Data transmission**
- **Position check**

4 possible methods:


1. “Over the air” transmisison
- Real network and PSAP

or

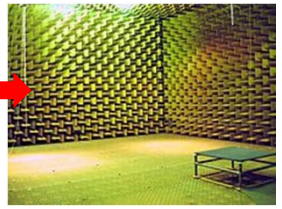

2. “Over the air” transmission
- Mobile network simulator & PSAP simulator

or

3. “wired” transmision” (not for ERA Glonass)
- Mobile network simulator
- Antenna VSWR measurement

or

4. Transport vehicle to shielded room (not allowed for ERA Glonass)


“over the air” transmission
- Mobile network & PSAP simulator

- OICA is also preparing a post-crash verification method using HMI (as part of 1st revision of AECS Regulation)
- Internal Impact testing protocols need to be updated to incorporate post crash emergency call functional tests

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10. In vehicle-self test (device or vehicle)

Induce malfunction → Check malfunction signal

- *ECU is in working order (e.g. no internal hardware failure, processor/memory is ready, logic function in expected default state)*
- *External mobile network antenna is connected*
- *Mobile network communication device is in working order (no internal hardware failure, responsive)*
- *External GNSS antenna is connected*
- *GNSS receiver is in working order (no internal hardware failure, output within expected range)*
- *Crash control unit is connected*
- *No communication failures (bus connection failures) of relevant components in this table*
- *SIM is present (this item only applies if a removable SIM is used)*
- *Power source is connected*
- *Power supply state of charge (UNECE only)*

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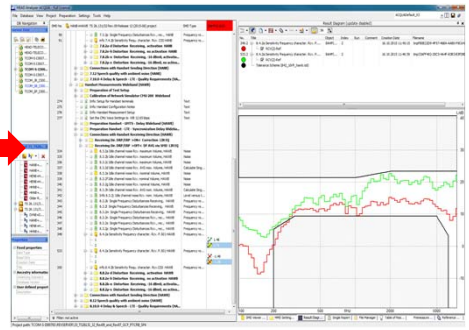
11. Audio tests (Vehicle)

Applicable standard	Vehicle test	Validation

1. Pre-crash audio test (Optional)
Based on ITU P1140 (Hands Free audio systems for emergency call)



If UNECE AECS is adopted it can replace the national requirement of a signatory Contracting Party.

12. Power supply capacity

Requirement	Device test	Vehicle
5-60-5 power supply requirement The emergency call system should have the capability for - 5 min talking - 60 min stand by - 5 min. Talking	If power supply is part of device (e.g. back-up battery) - demonstrate	If AECS power supply comes from vehicle power supply (e.g. starter battery) - Demonstrate or calculate

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13. Next Steps

1. AECS proposal for discussion (and adoption?) at UNECE GRSG-111 in Oct. 2016
2. UNECE WP.29 in March 2017?
3. Ratification by United Nations in Sept. 2017?

4. In parallel discuss
- **AECC component certification proposal**
- **post-crash verification method using HMI**

-> Not clear how further discussion can be done (new IG mandate, ad hoc expert group, … ?)