



eCALL In-vehicle System Definition

Suppliers viewpoint

Expert meeting on eCALL
Olten December 2
Lennart Strandberg, Autoliv



Expert m

EG. 2 members

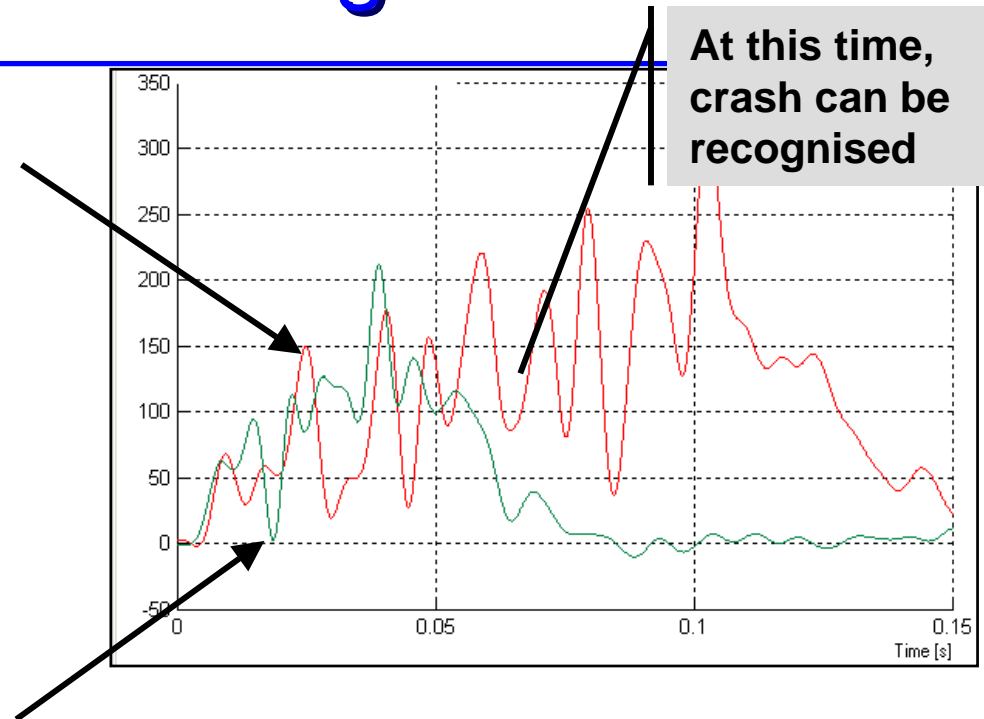


- ❑ Lennart Strandberg, Autoliv
- ❑ Alfred Krappel, Motorola
- ❑ Gianmaria Timossi, Magneti Marelli
- ❑ Olivier Beaujard, Wavecom
- ❑ Darren Stratton, SonyEricsson
- ❑ Stephane Pellerin, Sagem
- ❑ Andreas Kohn, Siemens

Triggers & Thresholds Crash Sensing

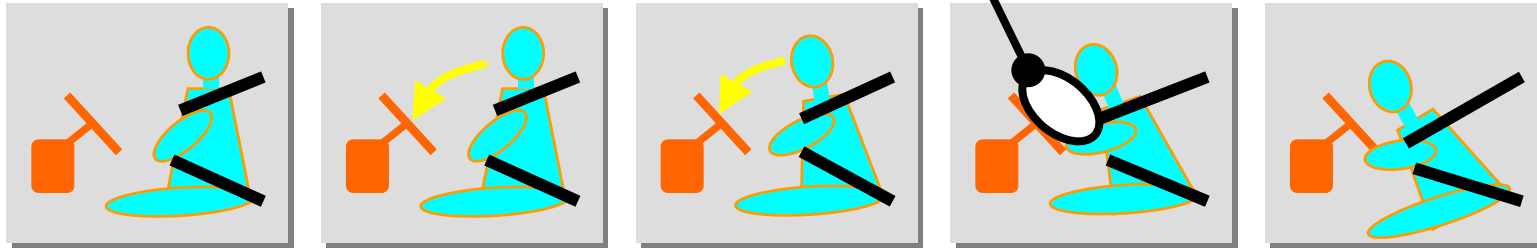


Crash Sensing



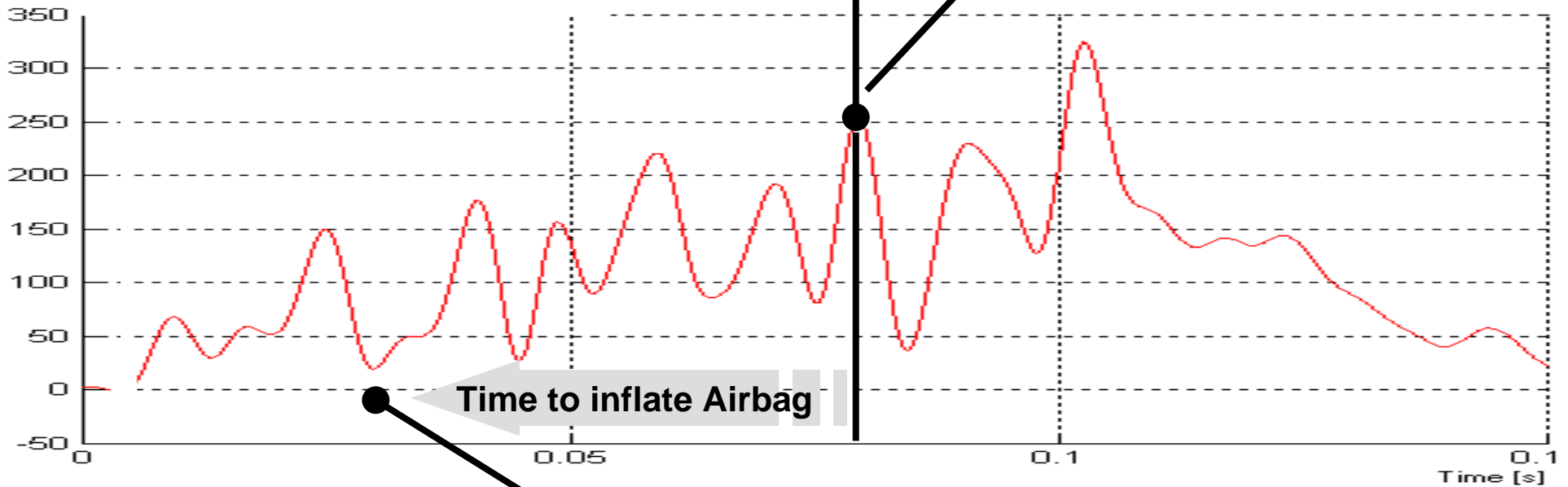
Crash Sensing

Remaining space = airbag thickness



Occupant moves to dashboard

Airbag must be in place



Time to inflate Airbag

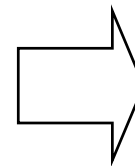
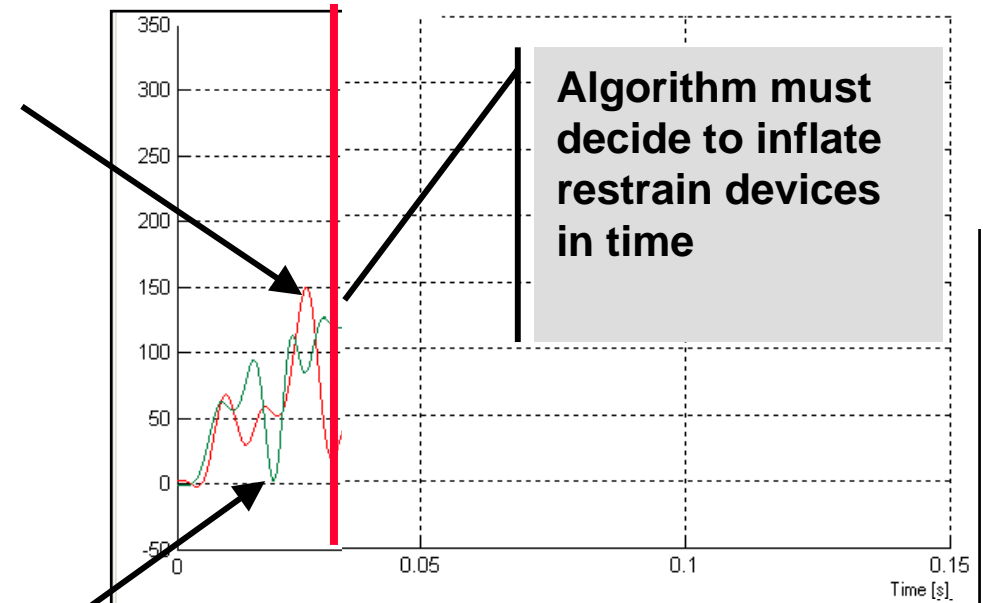
Decision must be taken

Crash Sensing

Severe crash



Non severe crash

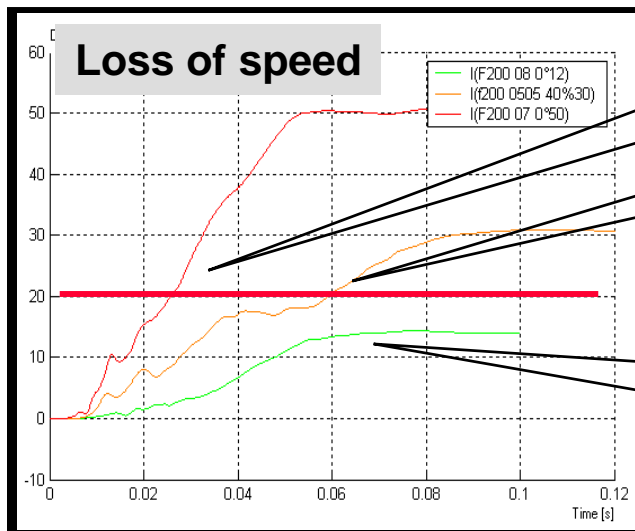


Crash sensing is differencing events at an early stage

Crash sensing concept

Sensing Concept issue

The higher the impact speed
 ↗ The higher the protection need
 ↘ The higher the loss of speed



Loss of speed reaches fire decision threshold



Loss of speed does not reach fire decision threshold

Mesure Acceleration in car

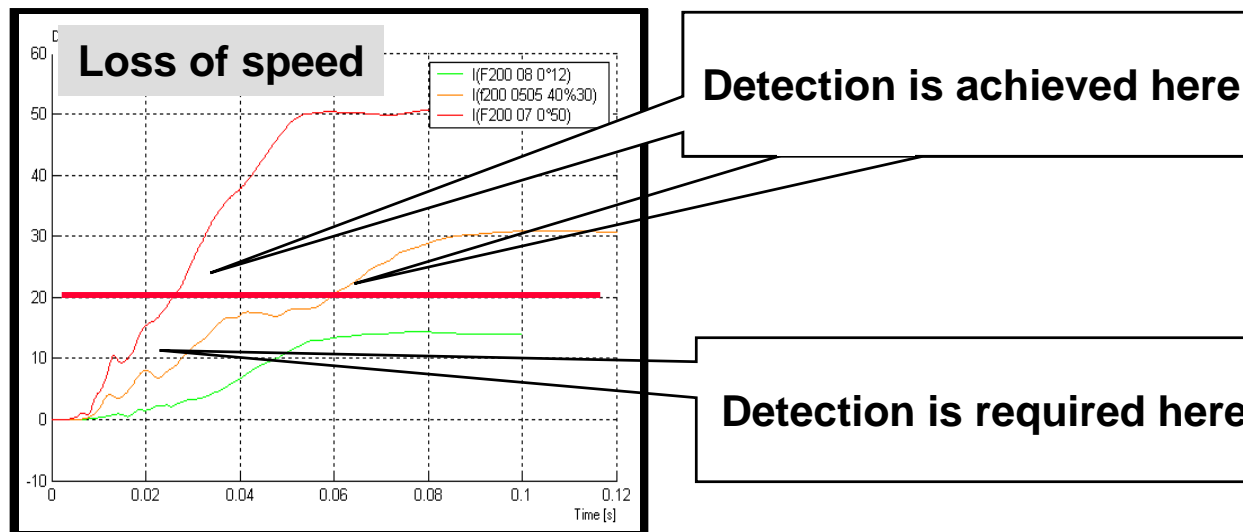
Integration : DeltaV

Calculate Threshold

DeltaV > Threshold



Sensing Concept Example



Mesure
Acceleration
in car

Integration :
DeltaV

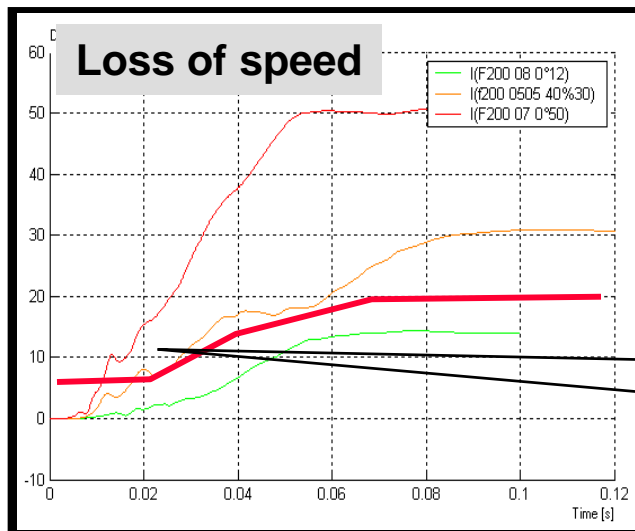
Calculate
Threshold

DeltaV
>
Threshold



Inflation

Sensing Concept Example



Threshold design is optimized

Mesure Acceleration in car

Integration : DeltaV

Calculate Threshold

DeltaV > Threshold



Sensing Concept

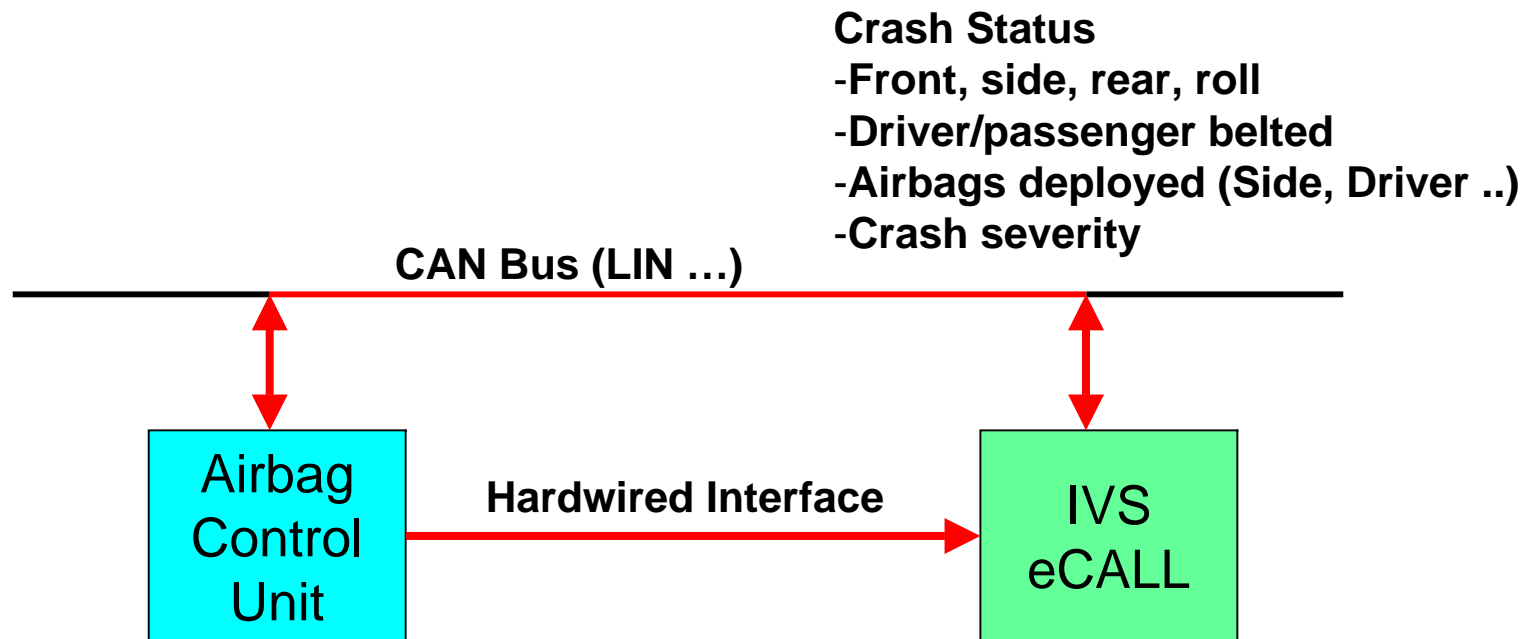


A concept consist of :

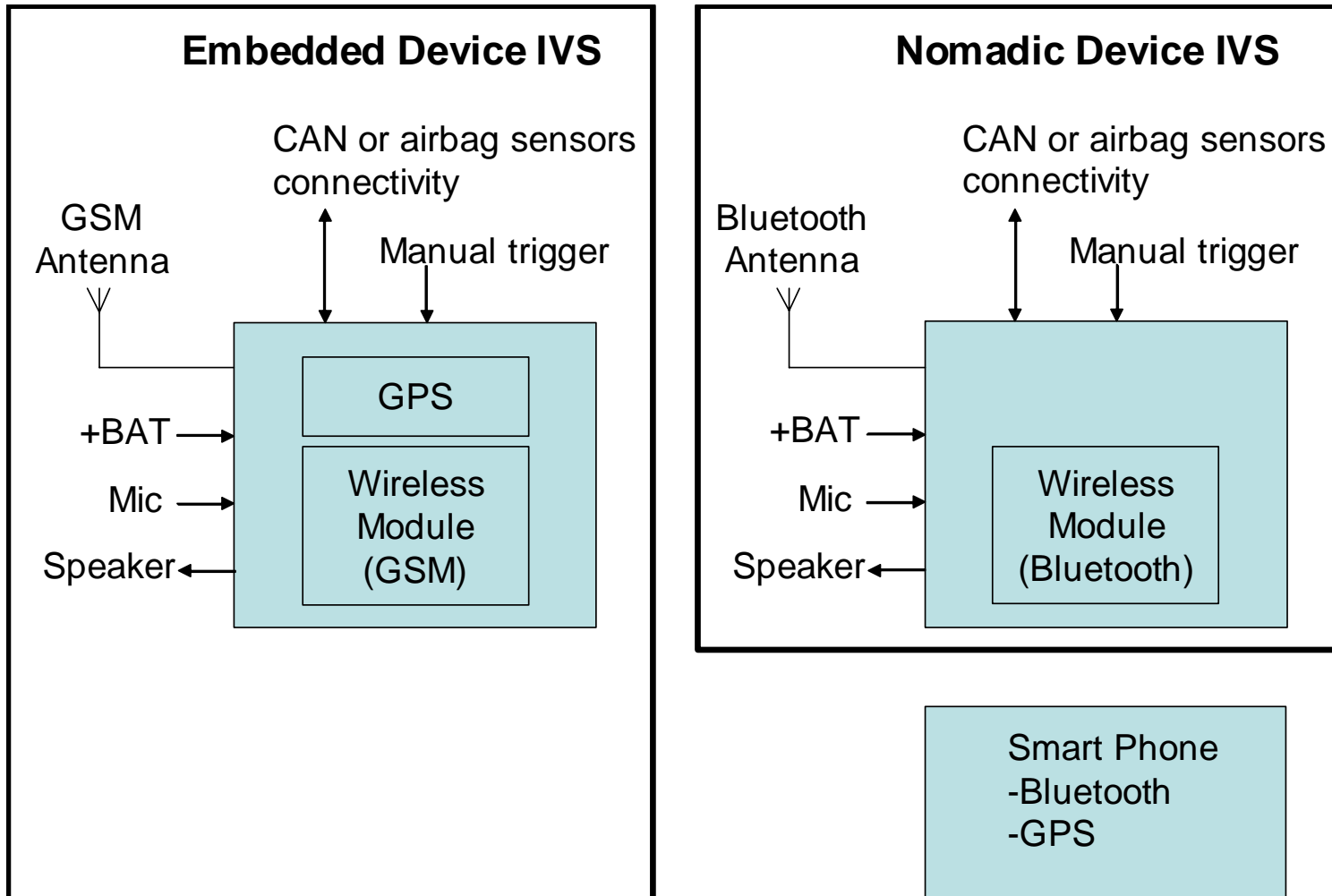
- Car structure behavior
- Sensors
 - Technology, characteristics
- Sensor locations
 - where ? Location characteristics
- Data processing
 - Filtering, Classification criteria, accuracy and frequency of calculations
- Decision logic
 - At least two sensor shall confirm a crash before a inflation is allowed.

Crash Data availability

Crash data is available for the IVS
100 ms after deployment



IVS Block Diagram



Embedded

□ Pros.

- Car standard compliant and robust design will secure function in most accident situations
- Allows certificating of complete IVS, including GSM
- Embedded device allow other car related telematic like safety and security, and remote control and diagnostic

□ Cons.

- To be viable, the IVS need to have a useful life of 10-15 years

Nomadic

□ Pros.

- Use of existing customer's equipment (if compatible with onboard IVS node and application)

□ Cons.

- Requires that the driver brings his phone, risk for incompatible device
- Certificating needed for each new mobile phone on the market that should work in the eCALL system

SIM no SIM issues



- Clear Identification of the calling device through the SIM
- SIM makes it possible to call-back to the car if the connection is interrupted
- All Operators does not allow 112 calls without SIM
- SIM does add cost to the in eCALL IVS

What requirement should be (not be)
specified as mandatory for a
eCALL IVS?

Specified

- ❑ Characteristics that are related to eCALL functional performance shall be specified
 - Positioning accuracy
 - Voice connectivity (hands free)
 - Manual and automatic trigger
 - Data connectivity
 - MSD
 - Environmental requirements (temperature, humidity....)
 - Mechanical requirements (vibration, shock , water tightness..)
 - Time T0 (Crash Signal Distribution Time), T1 (eCall Initiation Time)
 - ...

Not Specified

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- ❑ Characteristics that are related to implementation and vehicle architecture shall not be standardized, this will be handled by the industry and will differ from one car manufacturer to another
 - ACU physical interface (CAN, LIN ...)
 - Manual trigger interface
 - Audio interface
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Thank you for your attention!

