

Architecture options and cost issues for PSAP upgrade

Associate partners
workshop



Content

- 112 Models
- eCall Models
- Technical Background
- Practical example: Spain
- Cost issues



Content

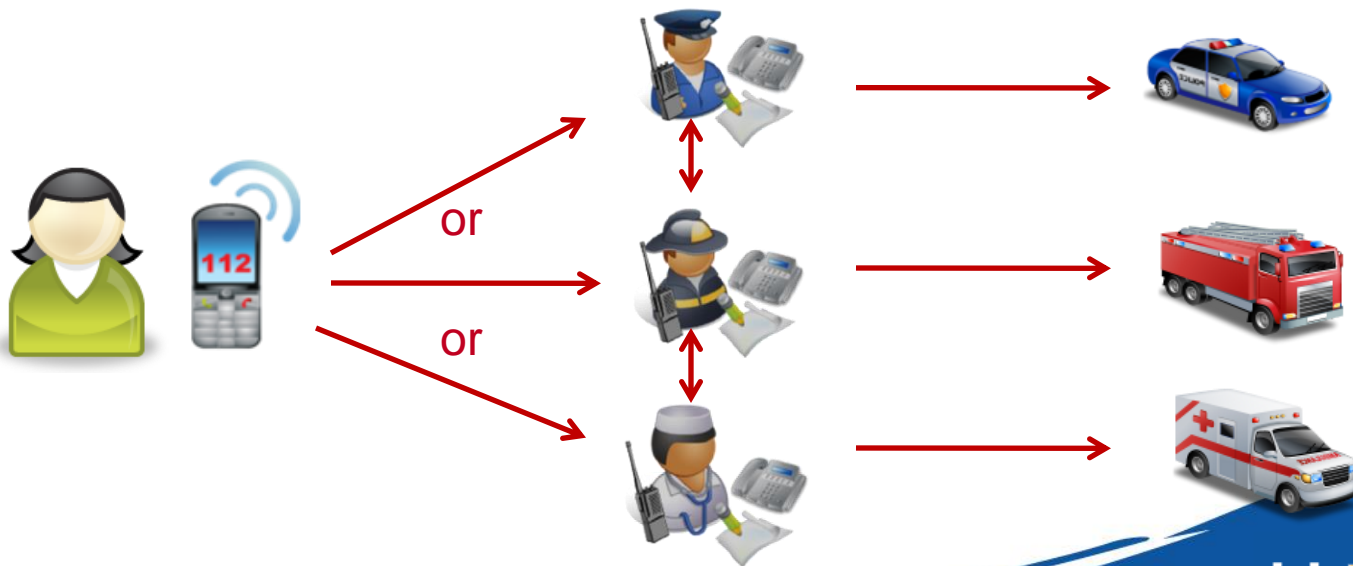
- **112 Models**
- eCall Models
- Technical Background
- Practical example: Spain
- Cost issues



112 Models

« EROs handling emergency calls » Model (1)

- Calls to national numbers and 112 calls redirected to Emergency Response Organisations (EROs).
- If the intervention of a different ERO is required, call and/or data about the emergency situation are forwarded to the most appropriate ERO.
- Dispatch of the intervention resources done by the ERO operators.
- In a variant, two EROs are colocated and contacted via the same number.



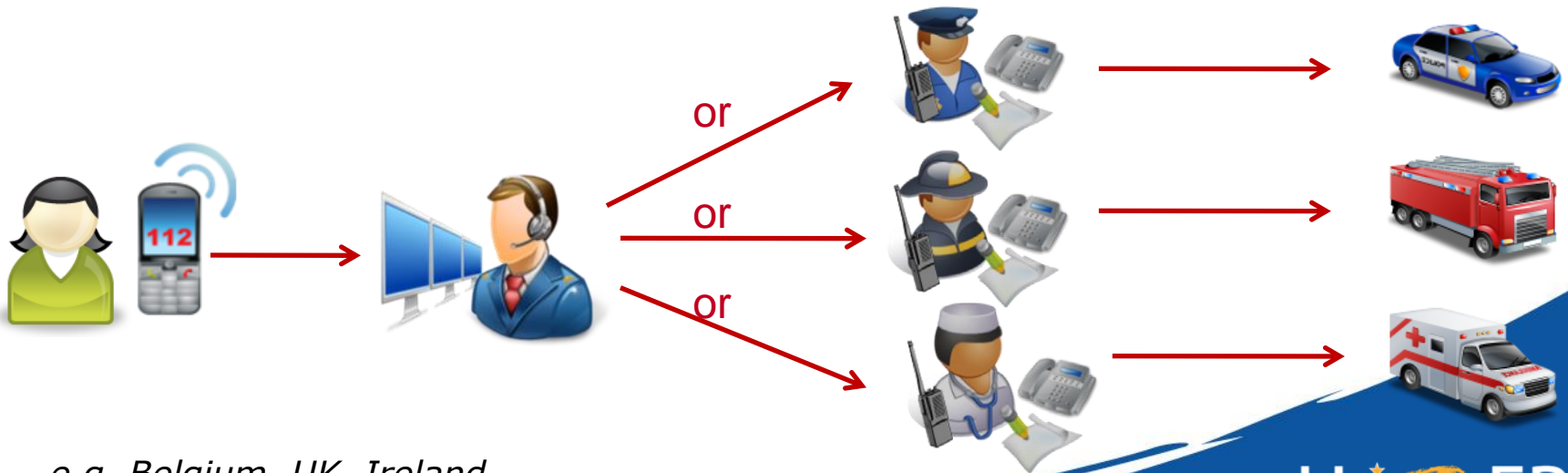
e.g. Austria, France, Germany, Norway



112 Models

« Filtering stage 1 PSAP and resource dispatching stage 2 PSAPs » Model (2)

- Independent Stage 1 PSAP receives all emergency calls and then forwards it to a local ERO.
- Call-takers only ask the caller with which emergency service he/she wants to be connected to.
- Stage 1 PSAP forwards the call to the appropriate local ERO. Detailed data gathering and dispatch of the intervention resources are done by the emergency response organisation.



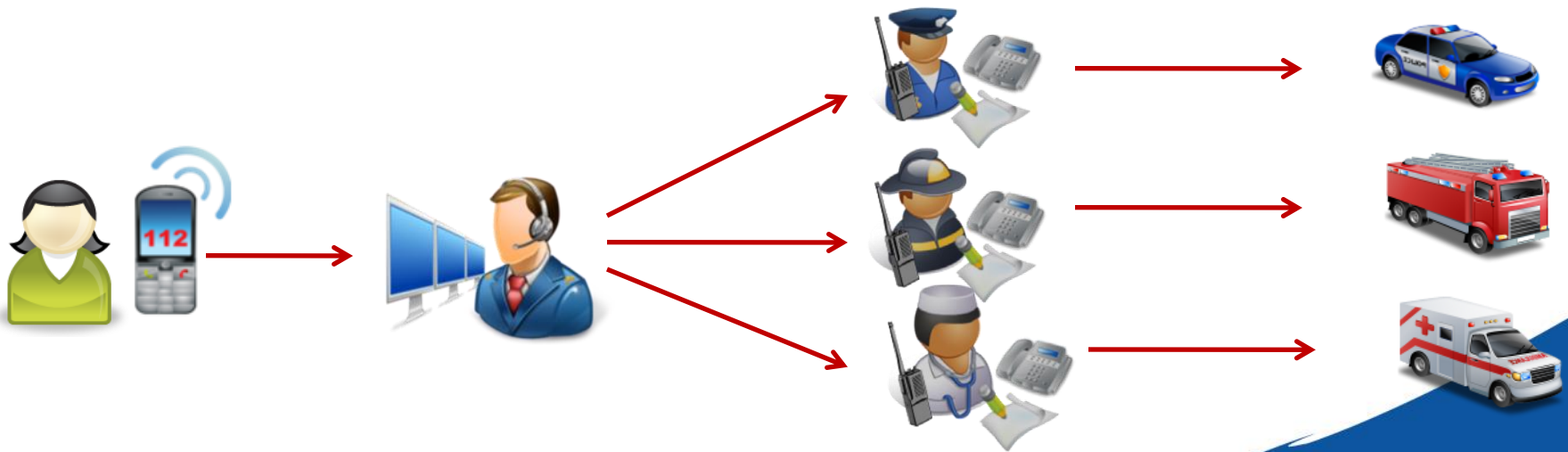
e.g. Belgium, UK, Ireland



112 Models

« Data gathering by stage 1, resource dispatching by stage 2 » Model (3)

- Also in two levels. The difference is the role played by the independent organisations.
- Civilian call-takers classify the call and makes a parallel dispatch of the calls to EROs. In some cases police, EROs' specialists are available to support the call takers.
- Dispatch of the intervention resources done by EROs.



e.g. Romania



112 Models

« Data gathering by stage 1 PSAP, resource dispatching by stage 2 in an integrated control room » Model (4)

- Also in two levels but civilian call-takers and EROs are in the same location.
- Civilian call-takers is in charge of classifying the call and makes a parallel dispatch of the calls to the most appropriate EROs, if needed. In some cases, EROs' specialists are available to support call-takers.
- Dispatch of the intervention resources done by EROs.



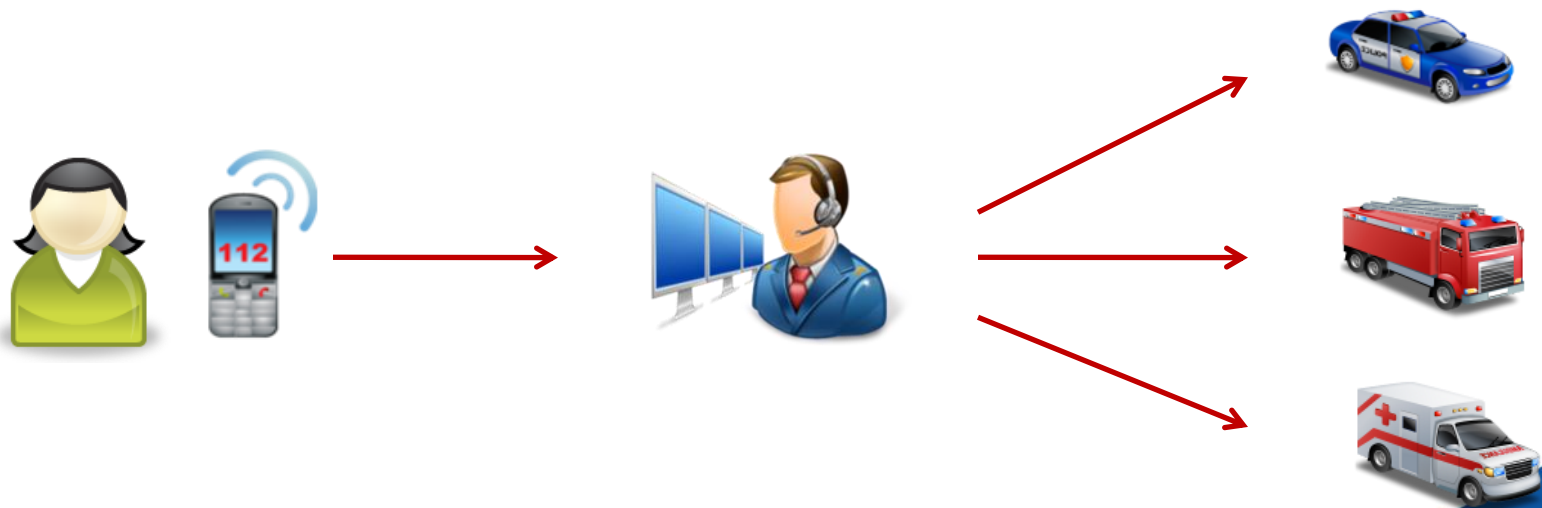
e.g. Some regions in Spain, Belgium and Turkey



112 Models

« ERO independent PSAP » Model (5)

- Civilian call-takers handle both call-taking and intervention resources' dispatch. In some cases, EROs' specialists are available to support.
- The same PSAP is in charge of classification of calls, data collection and dispatching the intervention resources to the incident.



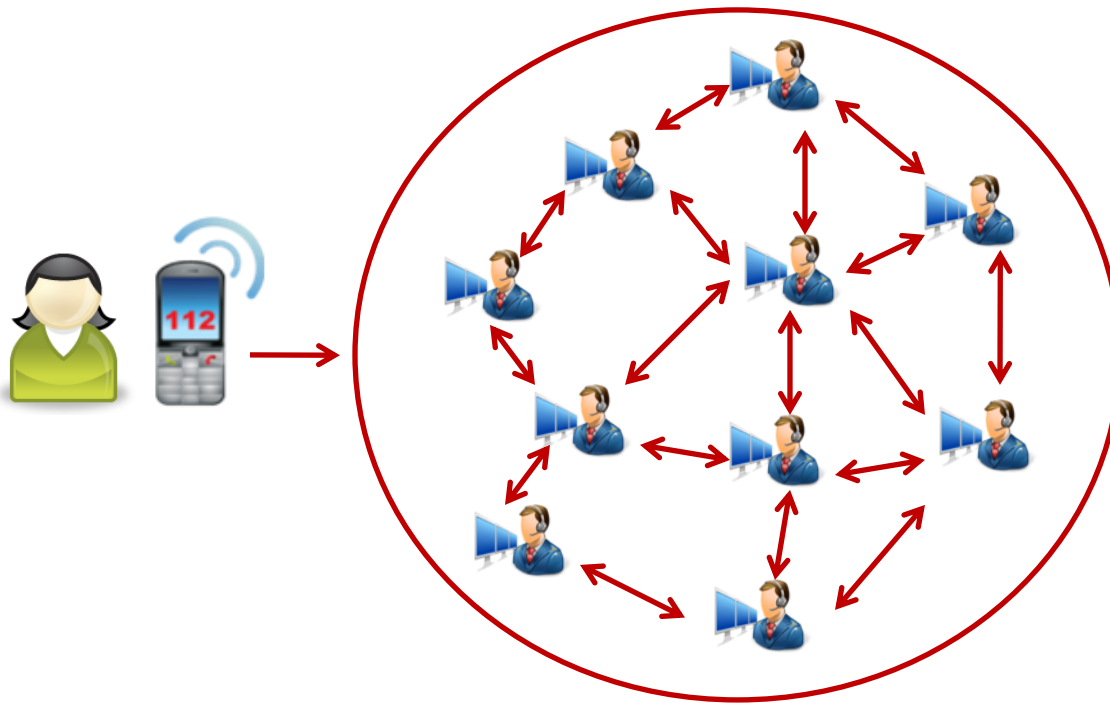
e.g. Finland



This project is funded by
the European Union

Variant: « Interconnected PSAPs » 112 Models

- PSAPs of different regions can be interconnected. If no call-taker is available, the call can be redirected to another PSAP.



e.g. Bulgaria, Czech Republic, Sweden



Content

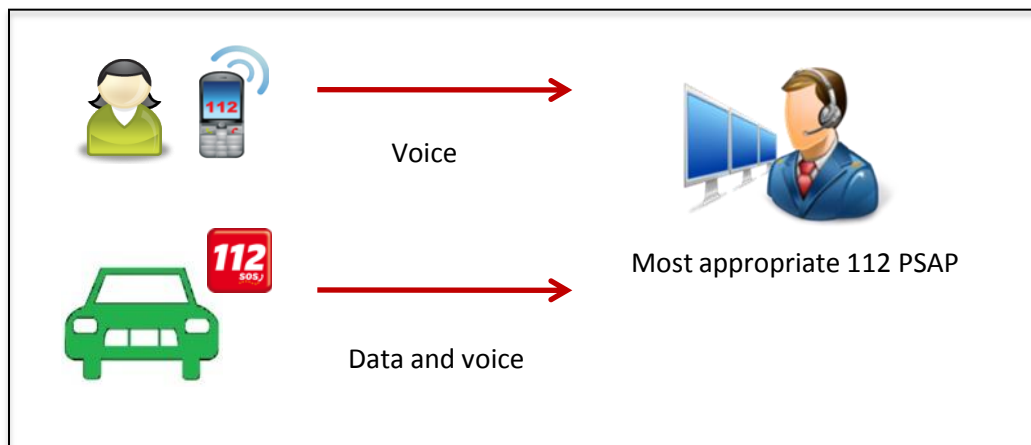
- 112 Models
- **eCall Models**
- Technical Background
- Practical example: Spain
- Cost issues



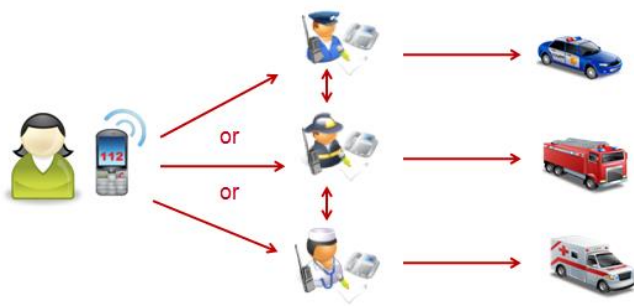
Receive eCalls (1)

MODEL 1:

eCalls routed as 112 calls. The most appropriate PSAP receives 112 calls and eCalls.

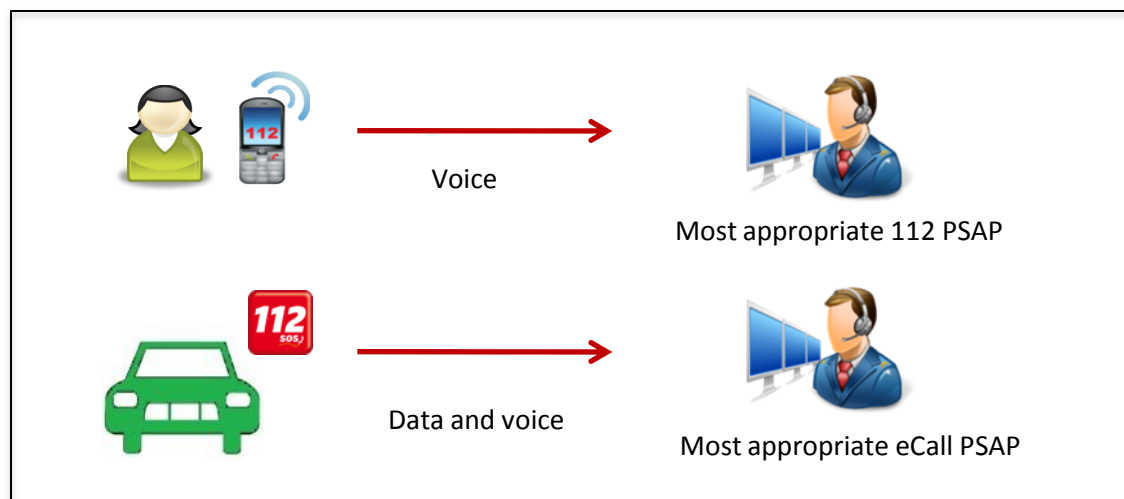


NB: Costly to implement in countries where 112 is handled following the « local PSAP model » e.g. about 100 « 112 PSAPs » in France, 290 « 112 PSAPs » in Germany



Receive eCalls (2)

MODEL 2: all types of eCalls are routed to a PSAP only dedicated to eCalls. 112 calls continue to be routed to the 112 PSAP.



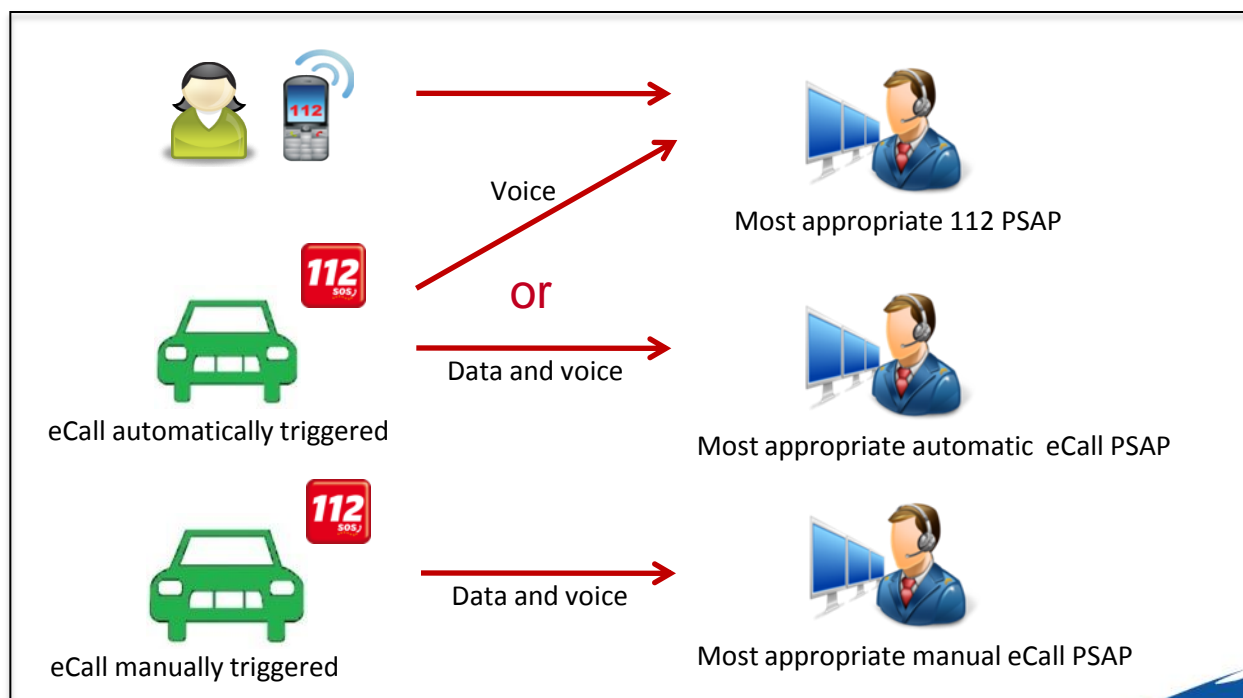
NB:

- An eCall is identified in the network thanks to the « eCall flag » so that it can be routed accordingly by mobile network operators
- The eCall PSAP can be a private call centre operating under public mandate



Receive eCalls (3)

MODEL 3: manually triggered eCalls and automatically triggered eCalls are routed to a different PSAP (it can be the same PSAP as for 112 calls e.g. dedicated automatic eCall PSAP can be the same as 112 PSAP)



Content

- 112 Models
- eCall Models
- **Technical Background**
- Practical example: Spain
- Cost issues
- Conclusion



Old habits die hard

Data and speech communication using the same transmission channel

Then: Acoustic coupling

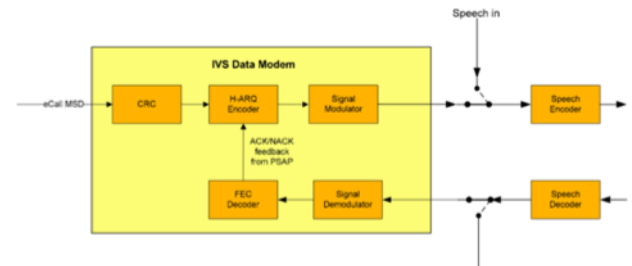


Either Phone...



...or data

Now: Inband Modem



First data transmission
then switch over to phone
call

112 - eCall – data, timing and receiver

Data contains?

Current Position (GPS)

Driving direction

Vehicle ID (VIN)

of passengers

Kind of drive



Timing: when will the PSAPs receive an eCall

Automatically, if the car sensors detect a **severe accident**
(airbag sensor triggers, ...)

Manually by pressing a button inside the car

Not in case of little or no damages (no airbag)

Who **receives** the data?

ALWAYS and **EXCLUSIVELY** the responsible **PSAP**.

Data will **NEVER** be forwarded to **TPS**

eCall – what's up and what's not

eCall is an EU regulated service

New cars **from 2018** are equipped with eCall – **> 90% expected from 2030 on** -> eCall will **slowly rise**

Only passenger cars

No trucks, no motorbikes

Future planning: transmission of hazardous goods data

After-market devices expected

Better precision than GSM cell location

Exact car position by GPS

up to 3 coordinates (pearl chain) to calculate **driving direction**

Vehicle ID for additional car details (type, colour, ...)

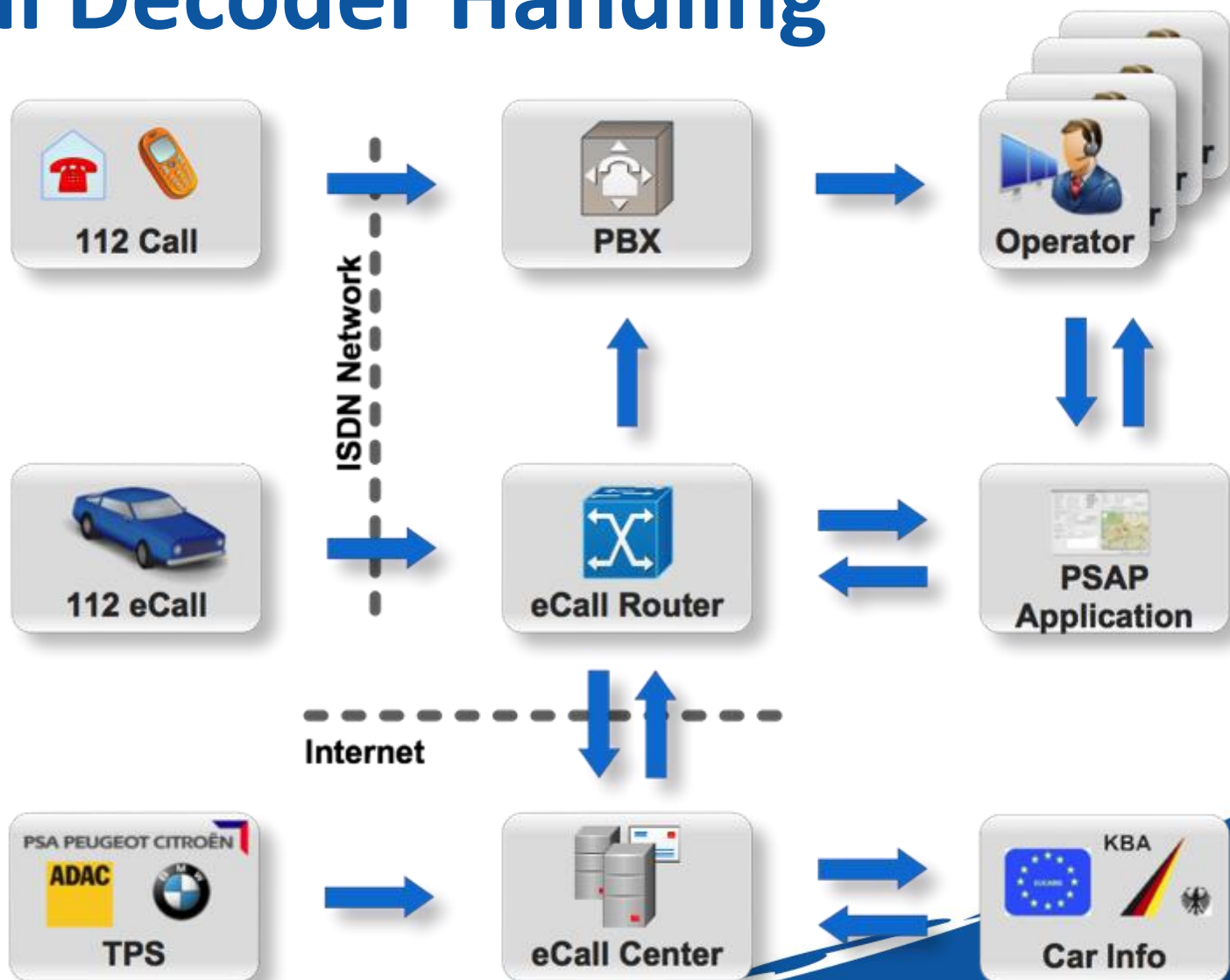
Resend eCall (in case nobody answers -> passengers outside the car?)

How to upgrade PSAPs?

- 3 components necessary
- **PBX** – already installed; internally ISDN or VoIP call forwarding. Forwarding instructions will be upgraded by PBX service operators.
- **eCall Decoder** – new; some PBX vendors and some specialised companies offer these devices.
- **PSAP software** – available, but must be upgraded to process eCall data. eCall is a bidirectional system, some additional buttons have to be integrated.

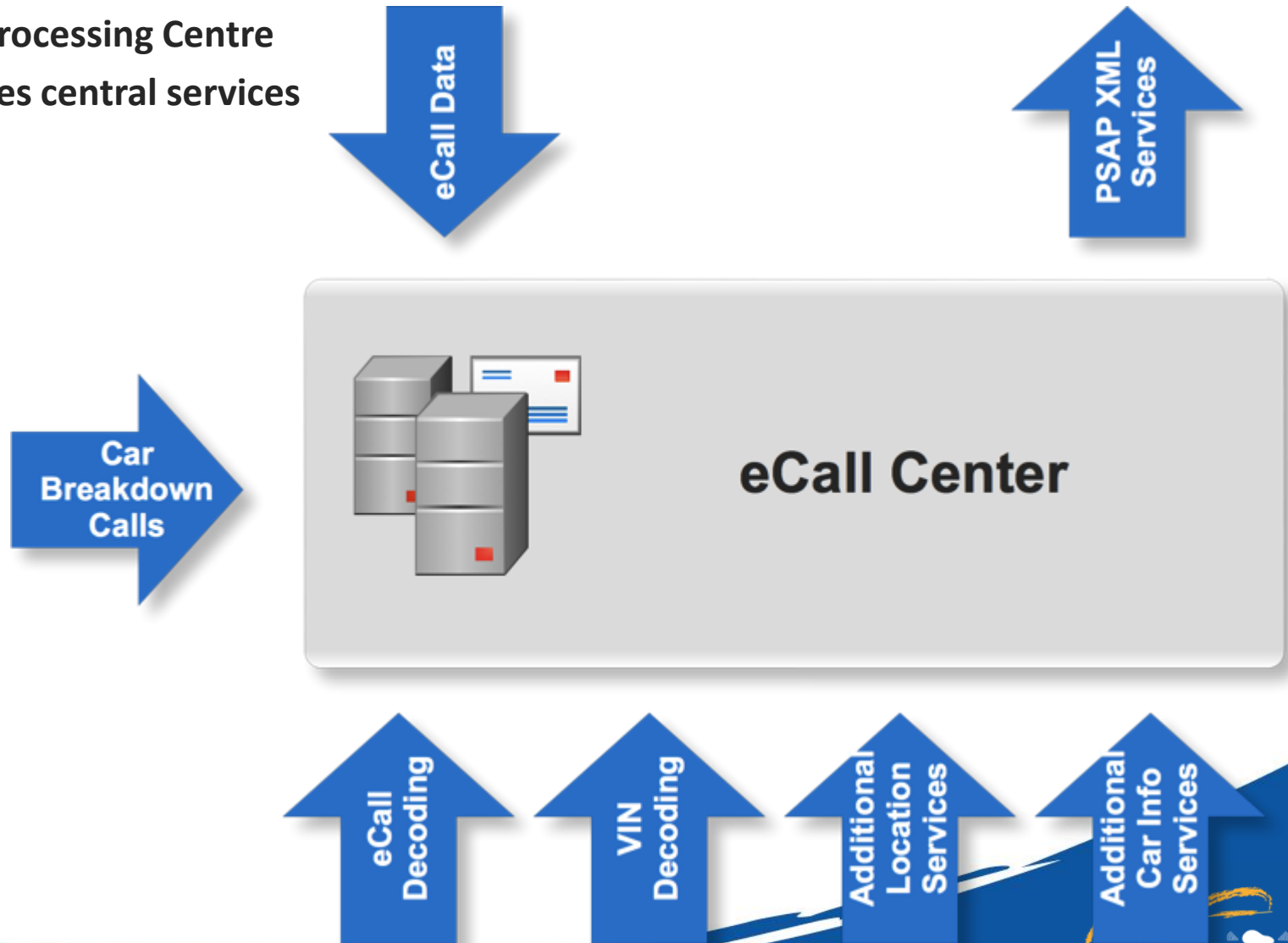


eCall Decoder Handling



eCall Center

Data Processing Centre
provides central services



Content

- 112 Models
- eCall Models
- **Practical example: Spain**
- Cost issues
- Conclusion



Organisation in Spain (HeERO 2)

MODEL 3: manually triggered eCalls and automatically triggered eCalls are routed to a different PSAP (it can be the same PSAP as for 112 calls e.g. dedicated automatic eCall PSAP can be the same as 112 PSAP)



Organisation in Spain (HeERO 2)

- General Directorate of Traffic (DGT) will host an intermediate PSAP in its Traffic Management Centre placed in Madrid
- This center will filter eCalls (in order to discard false alarms) and forward them to the most appropriate 112 PSAP.
- 19 PSAPs will receive the eCall information from the intermediate PSAP (MSD will be decoded in the intermediate PSAP only, and the relevant information will be forwarded to the appropriate PSAP, together with the voice call)



Content

- 112 Models
- eCall Models
- Practical example: Spain
- **Cost issues**
- Conclusion



Cost issues

Depending on the age
of the software and
the expected level of
integration



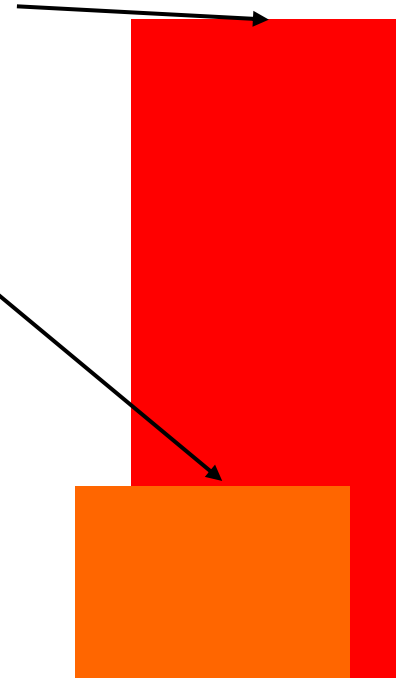
PBX



eCall decoder



PSAP software



Content

- 112 Models
- eCall Models
- Practical example: Spain
- Cost issues
- **Conclusion**



Conclusion

- Different model depending on the country
- eCall model has to take into account the 112 model
- eCall upgrades are very similar independent of the PBX or PSAP software vendors
- eCall will rise slowly – 2018 only a few cars



Questions?

Thank you!

Contacts details:

Frank Brennecke - OECON Products & Services GmbH
E-mail : brennecke@oecon-line.de

Cristina Lumbreras EENA
E-mail : cl@eena.org



This project is funded by
the European Union