The role of Numbers in PSAP operations and the impact of introducing eCall

BJÖRN SKOGLUND, SOS ALARM, SWEDEN
SOS ALARM

- Formed by the Swedish state, county councils and municipalities in 1972 (publicly owned)
- Manages the emergency number 112 by agreement with the Swedish state
- Dispatching of Fire Rescue Services by agreement with municipalities (in most of Sweden)
- Dispatching of Ambulance Services by agreement with the county councils (in most of Sweden)
- Thirteen 112-centers (PSAPs)

Locations:
- Luleå
- Östersund
- Sundsvall
- Falun
- Jönköping
- Växjö
- Göteborg
- Halmstad
- Malmö
- Stockholm
- Norrköping
- Örebro
- Karlstad
112 IN SWEDEN

- Single emergency number since 1996
- Replaced earlier single emergency number, introduced 1956
- SOS Alarms PSAPs answers about 3 million 112-calls a year
- Whereof some kind of action taken by PSAP in appx 2,1 million calls
- Road traffic incidents 2016: ~31 000
- Whereof fire rescue service dispatched: ~22 000
290 municipalities in Sweden, each has two Municipality Identification Codes
- One for 112-calls by fixed landlines, one for mobile telephony
- Also codes by county for IP-telephony, one national for satellite telephony and codes for (internal) testing
- Now implementing two more municipality codes for eCall
- Municipality code routes call to geographically appropriate PSAP
- MNO’s has implemented eCall flag
- SOS Alarm not tested this yet due to lack of eCall equipment
HOW IT WORKS....
ECALL, MUNICIPALITY IDENTIFICATIONS CODES

<table>
<thead>
<tr>
<th>Subfield name</th>
<th>Subfield value</th>
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</thead>
<tbody>
<tr>
<td>Nature of address indicator</td>
<td>1 (National (significant) number)</td>
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<tr>
<td>Address signals</td>
<td>123 112 XYZ</td>
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<tr>
<td></td>
<td>Note 1, 2, 3</td>
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</tbody>
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Table 2: Subfields NoA and Address signals

Note 1 - 123 routing number for short codes 11X and 90X
Note 2 - 112 short code for emergency number
Note 3 - XYZ origin of call according to this document
CALLER LOCATION

Today cell-id, tomorrow GPS... there's a BIG difference!
CALLER LOCATION BY GPS

- Currently Mobile Network Operator’s delivers cell-id
- Other technical solutions delivers GPS or WIFI
- Upcoming: eCall
- Implemented in several EU countries: AML (Advanced Mobile Location) / AEL (Android Emergency Location); handset or operational system delivering location
- Used in many countries: solution where PSAP sends an SMS including an web link where the user accepts the PSAP to locate, which in turn sends the location to PSAP
- Future (now!): the MNO’s should deliver GPS location to PSAPs
CALLER ID

- Not unusual with dropped calls to 112
- If the call drops in an early stage, vital information could be missed
- In worst case this could result in:
  - wrong kind of resources alerted,
  - no resources or not enough resources sent
  - the location is unknown
  - the location is not verified
- PSAP must therefore be able to call back to the car (the device)
- Caller line identification, a valid telephone number, should always be presented (as I suppose the owner of the car does not know it)
- The number must be possible to call
TESTING ECALL

- Is testing necessary? Yes, probably in the same way as other systems in the car are tested.
- Who will be responsible?
- How will testing be done?
- Important: this must mean NO involvement from PSAPs!
TPS ECALL, LONG NUMBERS

- Third Party Service not regulated in pan-European eCall
- SOS Alarm has agreements with 4 Third Party Service Providers (TPSP)
- Advantage: Filtering non-emergency calls
- Disadvantage: non-effective way for real emergencies – a detour to PSAP
- Ford Sync - alternative solution
PSAP CHALLENGES...

- Be ready in time for PSAP eCall start 1 Oct
- Handle additional data to emergency call - new feature!
- Cooperation with Police, Fire Rescue Services and Ambulance Services
- How to handle silent manual/automatic calls?
- How to transfer data in cross border calls? Possible or not?
- eCall means increased number of calls to 112...
OTHER CHALLENGES (not related specifically to eCall)

- Transfer emergency call to PSAPs in other countries (TN Database)
- Location of IP based telephony
- Developing EU standards for Next Generation 112
- Handle additional data or alternate ways of "calling"/reaching 112
- Keep up with technology development, with new features in telecom industry, and the constantly raising demands and expectations from the general public
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