UK Emergency Calls – ESW 14 April 2011
UK Emergency Service

- UK Population – 61.4 million citizens
  [England(84%), Northern Ireland (3%), Scotland(8%) and Wales (5%)]

- UK Area - 22.6 million hectares

- UK 112 organisation :-
  - Stage 1 and Stage 2 PSAPs (Model 2)

*UK Office for National Statistics 2008
UK Emergency Service

Public Emergency numbers
- 999/112,
- 18000 (ITU v21 text over voice, ie real time text using special terminals)

Stage 1 PSAPs
BT (5) or C&W (2)

BT has c 450 people in PSAPs

Public networks
- Police 52%
- Ambulance 42%
- Fire 6%
- Coastguard <1%

(204 Local Controls)

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UK Emergency Service

- Stage 1 is financed by Telecommunications Industry
- Stage 2 financed and organised by a combination of local and national Government:
  - separate Departments for Police, Fire, Ambulance and Coastguard
- Common issues co-ordinated by Government-chaired “999/112 Liaison Committee”
UK Citizen’s knowledge of 112

• 8% of UK citizens knew 112 as number to call emergency services anywhere in the EU

• UK Government gradually developing channels to the traveller :-
  - The Foreign and Commonwealth Office website has 112 in “useful numbers”
  - Passport service includes 112 on leaflet sent with new passports
  - Ofcom (Regulator) is to consider encouraging mobile networks to include knowledge of 112 in it’s welcome messages to travellers

• Communication Providers mention 112 (alongside 999) in Public Payphones and Telephone Directories
UK PSAPs - overview

- **Stage 1 PSAPs** (UK-wide coverage) operated by two telcos
  - all CPs contract with either BT and C&W to connect their 112s
  - BT, C&W use different switches, databases and call handling software

- **Stage 2 PSAPs**: 92 Control Rooms for Police, 59 for the Fire, 34 for the Ambulance* and 19 for Coastguard
  - all in separate sites with diverse network access
  - usually separate call taking and despatch (in same room)
  - wide range of hardware and software currently used
  - some moves to co-ordinated approach:
    - Airwave Digital Radio for most services
    - Ambulance use same medical questions for prioritisation
    - Fire may move to smaller number of regional controls

- **Stage 2 PSAPs** of same type operate back-up arrangements for neighbours/near neighbours
112 Access to PSAPs

- All calls from anywhere in UK routed first to Stage 1 PSAPs

- Automatic location for Fixed and Mobile calls

- At stage 1 PSAPs :-
  - Fixed calls routed using civic location (match postcode map coordinates to Stage 2 PSAP coverage areas)
  - Mobile routing uses Cell IDs (map cell coverage to PSAPs)
  - VoIP calls use a default civic location (registered address) which is confirmed verbally where possible

- UK Mobile networks allow Limited Service State calls with SIM (national “roaming” for 112)

- Calls from Private Networks (e.g., Campus, or large organisation) are tagged to alert PSAPs of possible address issues

- Automatic Alarms go first to specialised Monitoring Companies before connecting to any PSAPs
Statistics for emergency calls (112 + 999) -1

• Approximately 31 million calls each year to stage 1 PSAPs, 60% from mobile phones
• 95% of calls answered within 5 seconds (stage 1)
• Around 60% are connected to Stage 2 PSAPs (usually within 10 seconds)
• 40% “false calls” carefully filtered-out (accidental calls from mobiles, children playing with fixed phones, fault generated 112s)
• Peak days are at weekends (daily peaks are late afternoon, or when pubs/clubs close at weekends)
• Extreme weather peaks and “winter pressures” for Ambulance
Statistics for emergency calls (112 + 999) - 2

- Different call answer targets for stage 2 PSAPs: between 5 and 10 seconds

- Different caller conversation times: typically 30 seconds at stage 1, 60 seconds with Fire, 120 seconds with Police and 180 secs for Ambulance.

- Inappropriate calls:
  - accidental (mobile handset in pocket)
  - Children playing (no request for help)
  - inappropriate (need help but not an emergency)
  - hoax, where caller asks for specific help to a certain location

- Language:
  - Stage 1: around 2% of calls would benefit from language assistance (many Asian in UK)
  - Stage 2 conference-in Interpreters or use a Voice Call Server
Call handling

• **Stage 1 : -**
  - Quick answer, select stage 2 PSAP, check connection, reassure caller
  - filter out false calls : standard questions/criteria to **safely** filter “silent” calls, agreed with Police ; use of Police IVR
  - Call details automatically recorded and stored

• **Stage 2 : -**
  - Call-takers confirm incident location and identify problem
  - Prioritise (eg AMPDS for Ambulance)
  - Send details (data) to Despatch team within Control Room
  - Send details (often as data) to response vehicles (which may have been already selected and mobilised as soon as location known)
  - Fire services use pre-determined response based on incident type and any information in local database
  - Some medical advice given by Ambulance call-takers when help is on the way
Accessibility- for hearing or speech impaired

- Use of ITU v21 text over voice which requires :-
  - special terminals
  - unique number (18000)
  - Text Direct(TXD) network platform and Relay Operators

- Emergency SMS service
  - normal mobile phone
  - registration (to ensure limits understood, minimise misuse)
  - uses TXD Platform and Relay Operators
  - new processes developed and trained to PSAPs
Location for emergency callers

- Available automatically at Stage 1 and Stage 2 PSAPs

- Fixed lines: civic locations as name and address (from Stage 1 PSAP database, which is updated daily by CPs)

- Mobile networks provide cell coverage area (enhanced with timing advance for some) over standard ETSI interface: radius ~2.2km

- Limitations for VoIP calls, calls from private networks, mobile roamers

- Stage 1 PSAPs provide Location Servers which can be accessed freely by Stage 2 PSAPs (location retrieved instantly using telephone number + secure TCP/IP link)
  [Stage 2 PSAPs pay for their lines, hardware and software]

- Telematics emergency calls (non-standard eCalls) growing and can provide GPS information
Public Warning

• Environment Agency provides Flood Warning :-

• Automated call delivery to all fixed lines in areas likely to be flooded

• Emergency Services (Stage 2 in liaison with Stage 1) can currently use media news announcements (TV and Radio)
Future Challenges

• More precise mobile locations

• Managing inappropriate use

• Reliable VoIP locations

• Better international links between PSAPs

• Moving all PSAPs to IP-based communication to improve user access and PSAP response
Any Questions??

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