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Public warnings on public displays

Presentation to the

W3C Workshop on Web-based Signage

The Ericsson interest

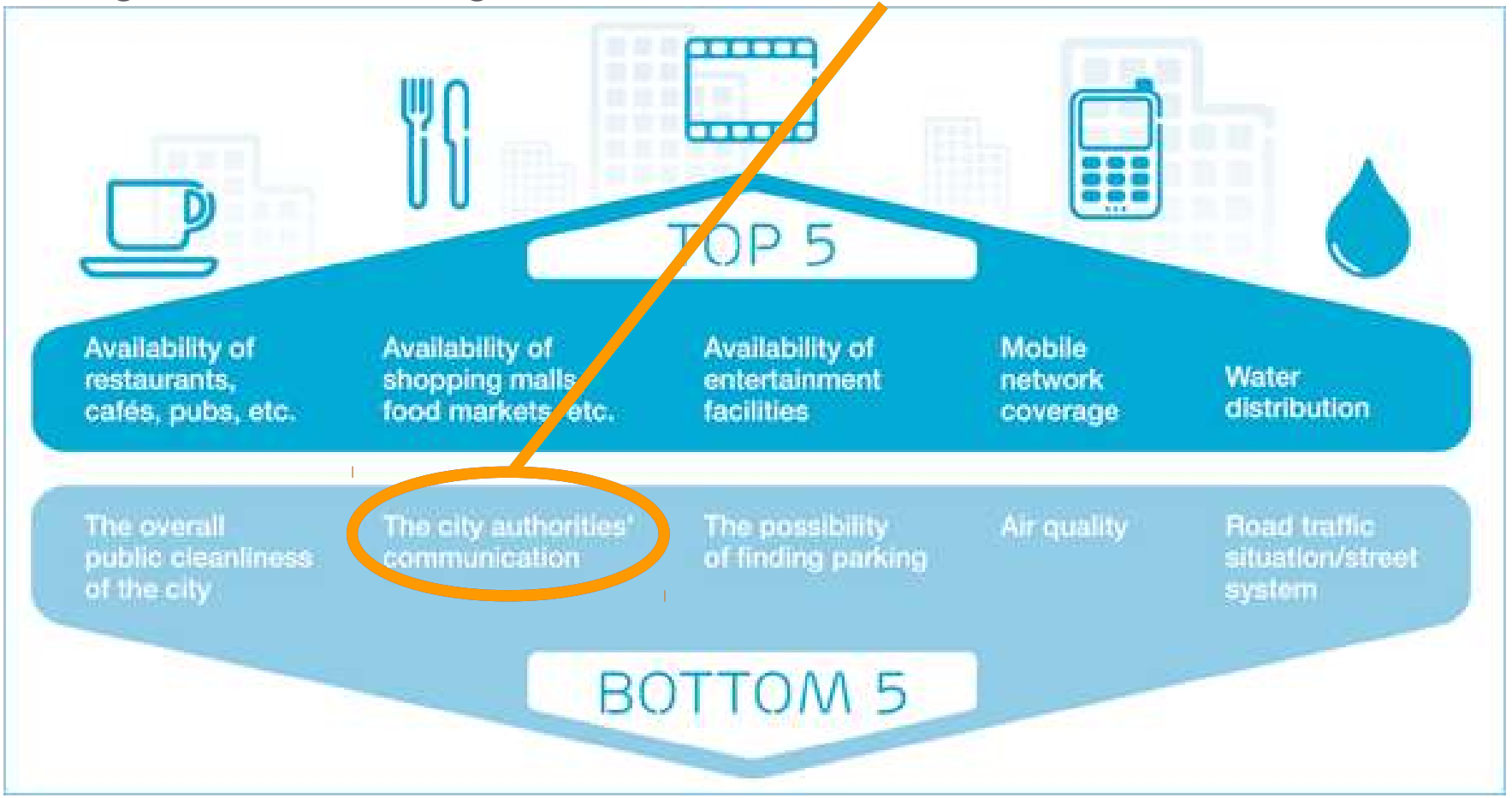
- Ericsson has a vision about “the networked society”
  - Where connectivity helps you make sense and more of your world
  - Where more than 50 billion devices are connected
- Ericsson builds networks which conform to 3GPP specifications
  - Including TS 22.268 when required
- Ericsson knows how networks work
  - Ericsson is the biggest service integrator in the telecom industry
    - There is more to creating entirely new services than following specifications
  - Ericsson is also one of the biggest IPTV systems suppliers
- Web technology, of which Ericsson has been a strong promoter since the W3C was founded, has an important role to play in simplifying and unifying the communication with people. Understanding how web technologies can be leveraged in improving the public communications and how digital signage fits in the network society is of high interest to Ericsson.
- Read more at http://www.ericsson.com/thinkingahead/

What if there were public screens for public warnings?

- Currently, loudspeakers on utility poles are used for emergency announcements in many cities
  - All cities in Japan
- Proved their value during the Great North-East Japan Earthquake and Tsunami in 2011
  - Saved several hundreds of lives saved by urging people to leave the exposed areas
- But the sound quality is lousy
  - It is often impossible to hear what they say in the loudspeakers
  - They are sometimes used for commercial advertisements
- And they can not show graphics or visual information
- However, public displays are everywhere
  - And could be in many more places
- Additional legal requirements from US Congress/FCC, EU, Korean government

Among 5 worst things in megacities

- City authorities communications are among the 5 worst things in megacities, according to Ericsson studies



- *Source: Ericsson Consumerlab*

Public warning systems requirements from 3GPP

- General requirements
  - Public Warning Systems (PWS) shall be able to broadcast Warning Notifications to multiple users simultaneously with no acknowledgement required.
  - PWS shall be able to support concurrent broadcast of multiple Warning Notifications.
  - Warning Notifications shall be broadcast to a Notification Area which is based on the geographical information as specified by the Warning Notification Provider.
  - PWS capable User Equipments (PWS-UE) in idle mode shall be capable of receiving broadcasted Warning Notifications.
  - PWS shall only be required to broadcast Warning Notifications in languages as prescribed by regulatory requirements.
  - Warning Notifications are processed by PWS on a first in, first out basis, subject to regulatory requirements.
  - Reception and presentation of Warning Notifications to the user shall not pre-empt an active voice or data session.
  - Warning Notifications shall be limited to those emergencies where life or property is at imminent risk, and some responsive action should be taken.

Source: 3GPP TS 22.268

Requirements on message content

- It is expected that Warning Notifications would likely include the following five elements:
  - Event Description
  - Area Affected
    - Based on the geographical information indicated by the Warning Notification Provider, it shall be possible for the Public Land Mobile Network (PLMN) operators to define the Notification Area based on their network configuration of the area coverage such as distribution of cells, Node Bs, RNCs, etc.
  - Recommended Action
  - Expiration Time (with time zone)
  - Sending Agency
    - Additional elements may be present, based on regulatory requirements.
- There is a concern that URLs or telephone numbers in a Warning Notification could exacerbate wireless network congestion at a time when network traffic is already dramatically increasing as individuals contact police, fire, and rescue personnel, as well as their loved ones. Therefore, Warning Notifications should not contain anything that would drive immediate and debilitating traffic loads into the PLMN (i.e., URLs or dialable numbers).
- Primary Notification shall be delivered within 4 seconds to the UE in the Notification Area even under congestion situation.
  - Secondary Notification is delivered to the users in the Notification Area even under congestion situation.
- Both Primary and Secondary Notification shall:
  - support at least 2 types of emergency events, which are Earthquake and Tsunami;
  - be able to indicate the preferred UE behaviours when receiving Warning Notification, (e.g. whether to display text in the foreground, whether to ring a buzzer, whether to vibrate);
  - be distinguishable from notifications generated for the purpose of testing, training and other notification services;
  - be sent in an optimized type and amount of data, for example, a text with a certain length, by considering the delivery platforms for ETWS.
  - Primary Notification shall:
    - convey data which is small enough to be sent quickly on the network.
    - convey small amount of data to indicate the imminent occurrence of Earthquake and Tsunami, etc.
  - Secondary Notification may:
    - convey a large amount of data in order to deliver text, audio to instruct what to do / where to get help, graphical data such as a map indicating the route from present position to evacuation site, time table of food distribution.
    - NOTE: The amount of data to be sent within a Primary Notification would be a few bytes to achieve quick information delivery.

Source: 3GPP TS 22.268

Support of warning notification providers

- PLMN operators shall, at a minimum, be able to support the following functionalities through interaction with Warning Notification Providers:
  - Activation of Warning Notification delivery
  - It shall be possible for multiple Warning Notifications to be activated concurrently from one or more Warning Notification Providers.
    - Cancellation of Warning Notification delivery
  - A cancellation is a command from the Warning Notification Provider to stop dissemination of a specific Warning Notification.
    - Updating of Warning Notification delivery
  - Warning Notification Providers update a previous Warning Notification to provide new instructions/information to the PLMN operator. When the Warning Notification Provider updates a previous Warning Notification they provide an identifier that allows the PLMN operator to associate the updated Warning Notification with the previous Warning Notification.
  - Additional functionality may be required based on regulatory or operator policy requirements.

Source: 3GPP TS 22.268

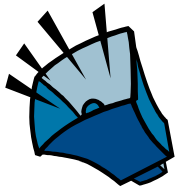
Terminal requirements

- PWS-UEs shall only be required to receive and present Warning Notifications in languages as presented by the Warning Notification Provider. Regional/regulatory requirements may require the Warning Notifications to be broadcast in multiple languages.
- There shall be no requirement for language translation in the operator's network or the UE.
- It shall be possible for the Warning Notification to be displayed on the PWS-UE upon reception and without any user interaction.
- It shall be possible for users to configure the behavior of a PWS-UE with regard to Warning Notification alerting and should allow at least volume adjustment.
- The PWS-UE shall support a dedicated alerting indication (audio attention signal and a dedicated vibration cadence) and be distinct from any other device alerts and restricted to use for Warning Notification purposes. The User Interface shall support the ability for the user to suppress the dedicated audio attention signal and/or the dedicated vibration cadence when a Warning Notification is received.
  - The alerting indication for a specific Warning Notification shall continue until suppressed by users' manual operation (e.g. by pushing keys). The frequency and duration of the continued alerting indication is mobile device implementation specific. This shall not suppress the alerting indication for subsequent Warning Notifications.
- The PWS-UE shall automatically suppress duplicate notifications. A duplicate is a repetition of a previous notification as determined by unique parameters.
- The PWS-UE shall not support any capabilities to forward received Warning Notifications, to reply to received Warning Notifications, or to copy and paste the content of Warning Notifications.
  - PWS-UEs should have the ability to present previously displayed Warning Notifications if requested by the user.
    - PWS-UE shall be able to support concurrent reception of multiple Warning Notifications.
- Battery life of the PWS-UE shall not be significantly reduced by PWS.
- The PWS-UE shall be configured to receive all Warning Notifications.
  - It shall be possible for users to disable (e.g., opt-out) presentation of some or all of the Warning Notifications, subject to regulatory requirements and/or operator policy. The user shall be able to select PWS-UE enabling/disabling options via the User Interface to disable, or later enable, the PWS-UE behavior in response to some or all Warning Notifications. Depending on the regional/regulatory requirements, the user shall be able to receive Warning Notifications in one or more selected languages.
  - Where regional or national regulations allow, the HPLMN operator shall be able to instruct the PWS-UE to ignore all Warning Notifications in the HPLMN and in PLMNs equivalent to it, by means of a setting on the USIM.
  - Where regional or national regulations allow, the HPLMN operator shall be able to instruct the PWS-UE to ignore all Warning Notifications that are received without security protection, by means of a setting on the USIM.

Source: 3GPP TS 22.268

Better displays would provide even better information

- More speakers closer to people would enable them to hear announcements better
- Public screens used for public announcements could provide visual information
  - Evacuation routes and locations
  - Information about radioactivity or chemical contamination
- Two ways to provide public announcement screens
  - Private screens get public announcement capabilties
  - Public screens can be used for private commercial advertisements
- Is interactivity possible in emergency displays?
  - Not according to the 3GPP requirements
  - But how would it work and why would you want it?



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