Cell Broadcast System

E112 - Wireless Emergency Services

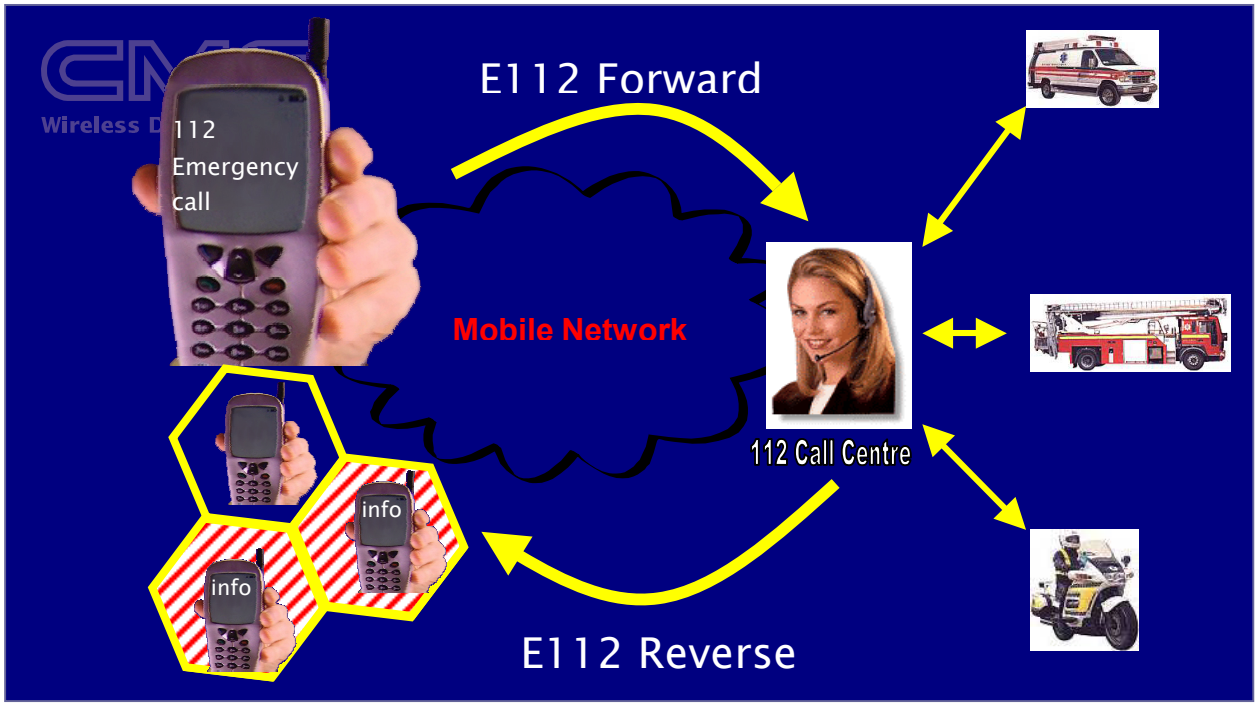
Service description

E112 - Wireless Emergency Services is a set of location-based services in GSM mobile networks that will facilitate the various phases in a calamity-fighting plan with communication technology.

Calamity-fighting phases	Support from GSM mobile technology	CMG service
Alarm notification	Enhance alarm notification from mobile phone users with position information	E112 forward
Alarm investigation	Information gathering by police officer or commander via mobile phone	E112 forward
Rescue/action	Inform mobile phone users in specific areas on emergency situations.	E112 reverse
Aftercare	Inform mobile phone users in specific areas on emergency status.	E112 reverse

Background

Emergency services are one of the most wanted location-based services that people would like to have on their mobile telephone (according to Harris Interactive US market study on LBS). This preference for emergency services exists because local calamities are a fact of life: environmental disasters like Tornadoes, Typhoons, Tsunami and volcano eruptions; major traffic calamities; industrial disasters like explosions and recently terrorist actions happen all over the world.
The mobile phone already is an important communication device world-wide. 60% of first alerts are received from mobile phones at Public Safety Answering Points (PSAP) like 911 and 112. Mobile phones could also play an important role in spreading real-time emergency alerts to reach people where they are during their daily activities. Government organisations like the FCC in the USA, the LOCUS-project in the European Union and the State Development and Planning Commission (SDPC) in China, recognise this opportunity and come with regulations to facilitate and stimulate this development.
CMG Wireless Data Solutions is the leading global supplier of messaging, mobile Internet, Customer Care and Billing solutions for the wireless industry. The service: “E112 forward” provides facilities to enhance mobile communication with location-based information; the service “E112 reverse” provides facilities for area-specific, real-time information provisioning to mobile users.



Usage scenario 1 – E112 Forward

A person uses his or her mobile phone to call 112 and to notify a public safety answering point (PSAP; e.g. 112 call centre) of an emergency.
The Call Centre will ask the person to identify his or her location. Very often, a person does not know his or her position (investigation has shown that in the Netherlands and in the UK 60% of the calls are from the Mobile Network while 60% of the callers cannot indicate their position - i.e. 36% of emergency calls). For more information, refer to the LOCUS report commissioned by the EEC.

If the caller is not able to identify his or her position, the Call Centre can ask a system like CMG's Location Service Broker (this is a system providing GMLC functionality described in the GSM standard) to provide the subscriber's location.
The method described here, in fact a method available in most networks, is that the Home Location Register (HLR) is queried to provide caller's cell ID.
The Location Service Broker will then translates this abstract cell-ID into a real geographic location such as "Museumplein, Amsterdam". If a more accurate positioning system is available, like GPS or EOTD, the Location Service Broker will automatically use this.
This location can then be used by the 112 operator to direct the emergency services to the correct location.

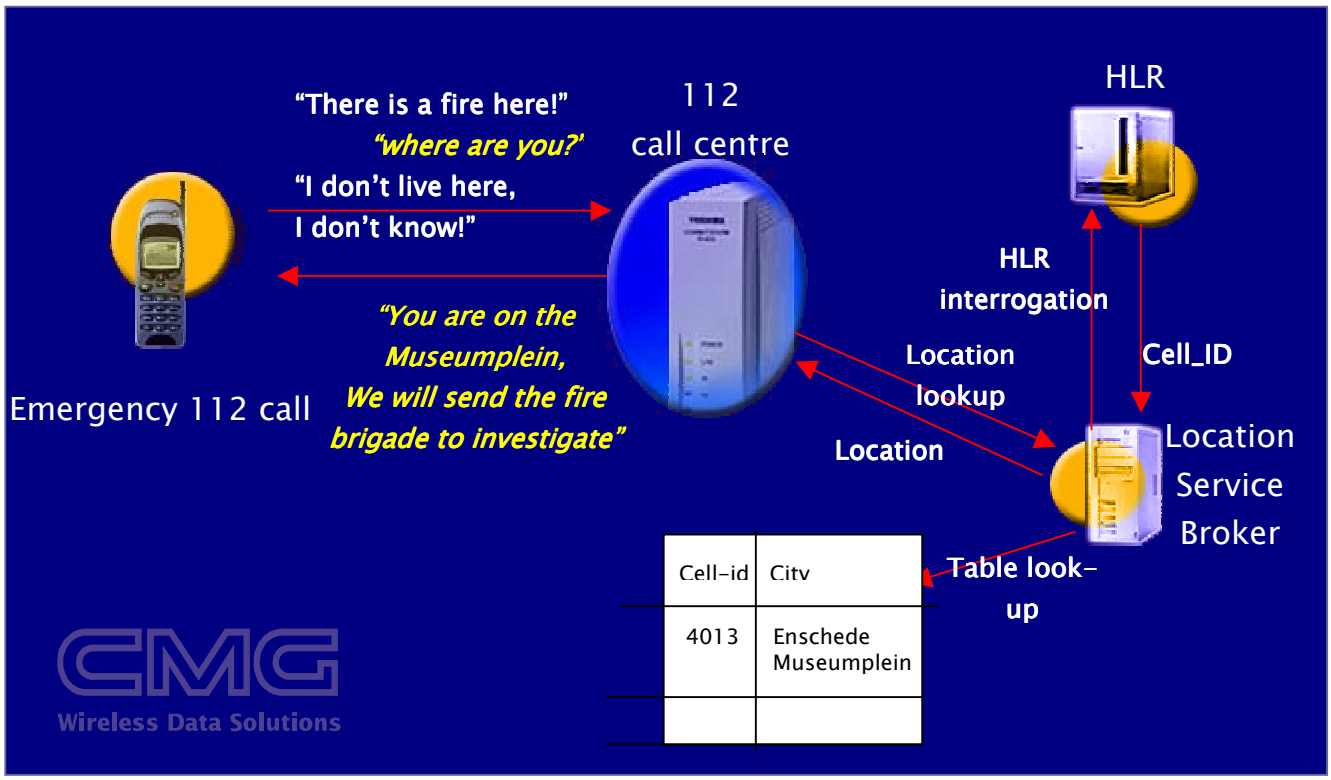
Usage scenario 2 – E112 Forward

A leading officer from the fire brigade or the police uses his or her telephone to query for information about hazardous goods that might be located in the vicinity of the emergency. This might be done, for example, using a WAP or I-Mode menu on his or her mobile phone.

A mobile network element like CMG's Location Service Broker receives these data requests and will check if this user is allowed to request this information (authentication).
If allowed, the Location service Broker will forward the query together with the callers location, to an in/external content provider. This content provider then can use the location to query a database (or something else).
The result is sent back to the caller.
If the information contains hyper-links, the caller can use it to drill-down for more detailed information.
It is easy to imagine additional information to be shown on the handset like contact information, maps and so on.

System architecture – E112 Forward

The figure below shows the various system elements required to enable usage scenario 1.



The following system element can be provided by CMG Wireless Data Solutions:

- Location Service Broker – a GSM network element according the GSM 03.71 standard for GMLC with additional support to retrieve information from in/external resources based upon location information.

Privacy

Position information of a person is protected by various government legislations. The CMG Location Service Broker complies with the GSM 03.71 standard with regard to the GMLC functionalities.

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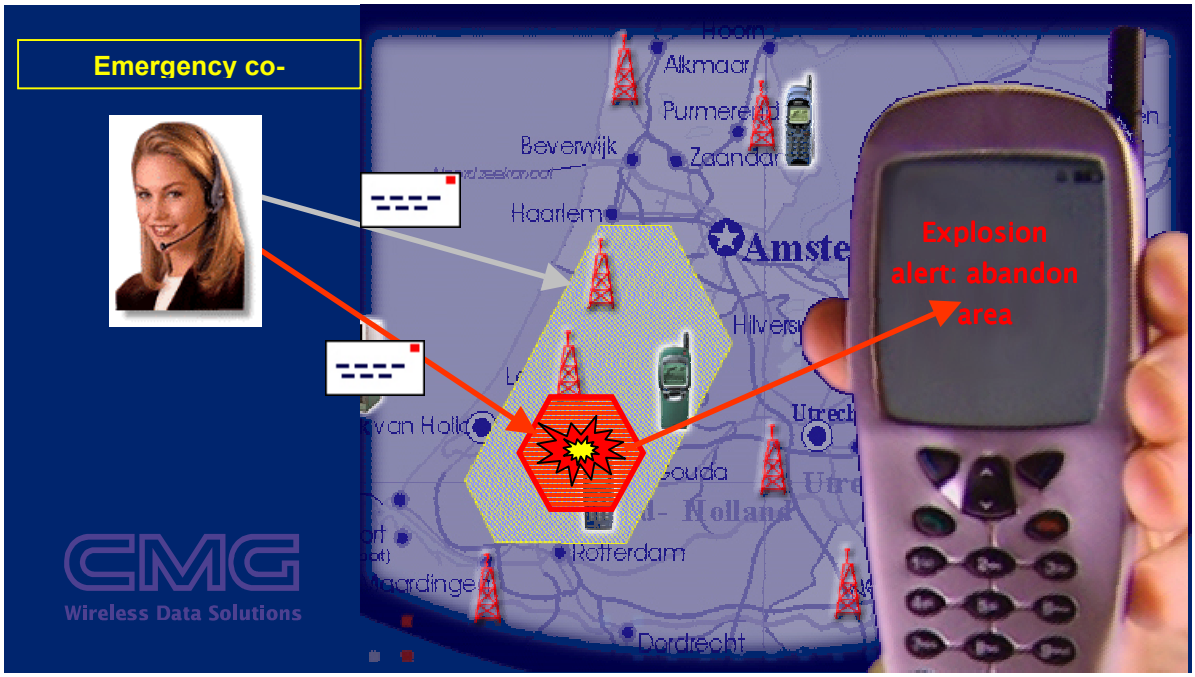
E112 Reverse - Service description

E112 Reverse is a reliable and cost-effective facility to inform people real-time on emergencies in their direct neighbourhood.
In case of calamity, the GSM mobile network has proven to be a reliable infrastructure, which can be used as a mass communication instrument to broadcast emergency information.

Usage scenario – E112 Reverse

A GSM mobile network can provide the facility to broadcast short messages to mobile phone users within a certain area (minimum an area of a few kilometres, maximum the complete network of an operator) on a real-time basis (within seconds); this is the Cell Broadcast facility.
Emergency organisations (like fire departments, regional radio and TV stations) can have access to the Cell Broadcast facility via an entry provided by the GSM mobile network operator. Various areas can be identified using geographical information. Per area, an emergency message can be specified (e.g. “Explosion alert: abandon area near chemical industry immediately!” or “Close doors and windows and turn on the radio”). This message can be broadcast on a regular basis (for example, every 5 minutes). As time passes, the broadcast message can be updated or removed if necessary.
It is also possible to specify messages in various languages so that end-users will receive emergency notifications in their native language.



Highlights

- Real-time emergency notification via GSM mobile phones
- Location-specific information repeated frequently and updated if required
- Areas can be identified with powerful geographical information system
- Foreigners and visitors can be informed in their native languages
- Cost-effective solution for mass communication by making use of existing infrastructure

Prerequisites

- Cell Broadcast entry at emergency organisations to specify messages per area
- Standardised emergency channels (e.g. channel 112 for European Community) provided by mobile network operator(s)

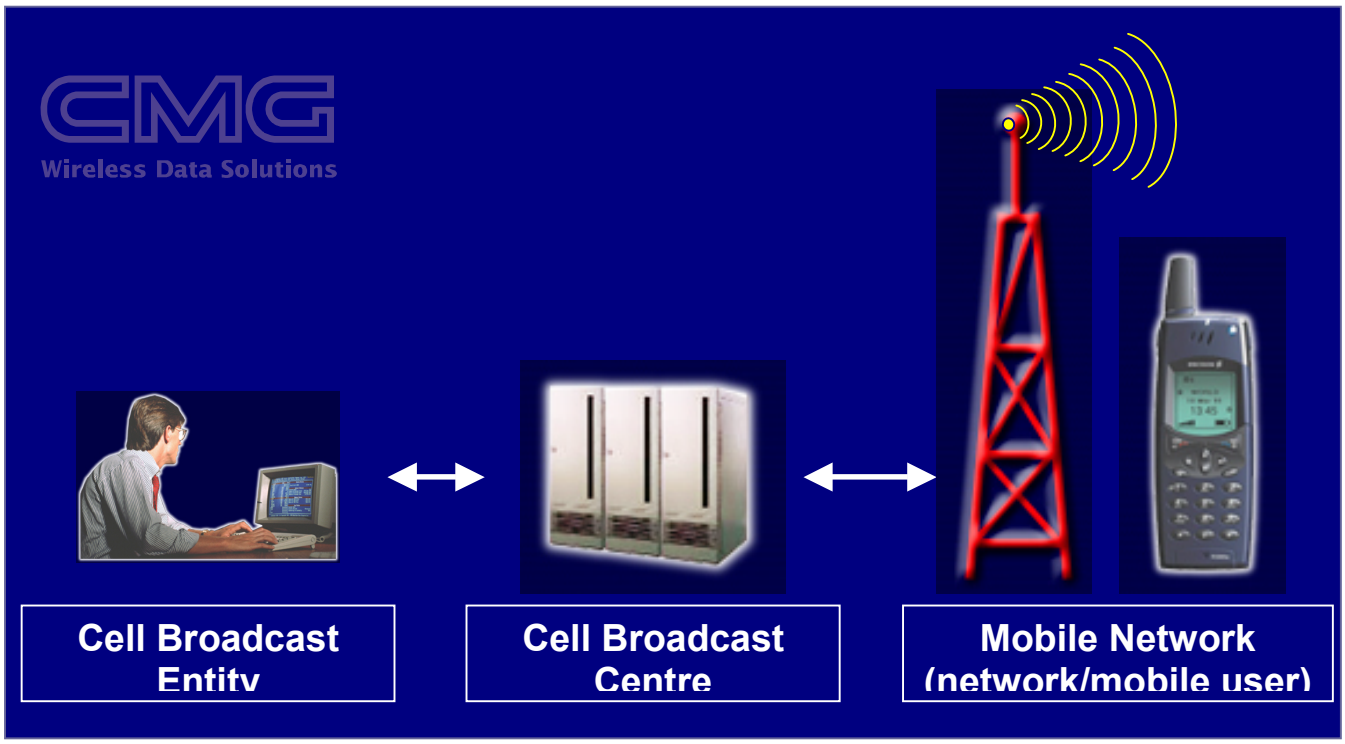
- Create user awareness to activate appropriate Cell Broadcast channels on mobile phone (optionally this can be done by the operator)

Privacy

Cell broadcast is a non-intrusive push technology as mobile users are able to activate or de-activate a certain cell broadcast channel (similar to adjusting a radio or television to a certain channel).

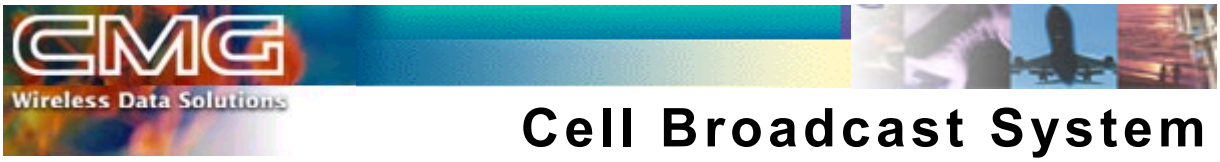
System architecture – Reverse E112

The figure below shows the various system elements of a cell broadcast system.



The following system elements can be provided by CMG Wireless Data Solutions:

- Basic Front End – Cell broadcast entity with a character-based user interface to create and manage cell broadcast messages
- Script Front End – Cell broadcast entity that supports automated cell broadcast message handling based upon a scripting language.
- GIS Front End – Cell broadcast entity with a graphical user interface to create and manage cell broadcast messages based upon geographical information to identify broadcast areas.
- Cell Broadcast Centre – System that provides the cell broadcast functionality in a mobile network



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About CMG Wireless Data Solutions

CMG Wireless Data Solutions is the leading global supplier of messaging, mobile Internet, and Customer Care and Billing solutions for the wireless industry. CMG develops high-end solutions in close cooperation with its partners. To date, more than 200 of these quality solutions have been delivered to over 100 operators worldwide. They are widely recognized to be the best available, combining minimum operator intervention with maximum performance and availability. The product portfolio includes solutions based on the Wireless Service Broker (tm), Unified Messaging solution, Multimedia Message Service Center, Short Message Service Center, Cell Broadcast System and EPPIX (Customer Care & Billing System).

CMG Wireless Data Solutions is a division of CMG plc (http://www.cmg.com/); CMG was established in 1964 and currently employs around 13,000 employees. The group is listed on the London and Amsterdam stock exchanges.

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