

Source: The Netherlands, Denmark, Finland, Norway, Sweden  
Title: Proposal for a Study Plan on Question CCH 3.

## 1. Introduction

During the XIth Plenary Assembly of the Telecommunications Commission (Vienna, June '82) it was decided that CCH should be entrusted with the study of a new Question on a future 900 MHz public mobile communications system. Following this decision a Special Group on Mobile Services (GSM) chaired by Mr. Thomas Haug (Sweden) will be nominated by CCH. The new Question CCH 3 to be studied by GSM is entitled:

"Harmonization of the technical and operational characteristics of a public mobile communications system in the 900 MHz band"

It was indicated by the chairman of CCH that the GSM shall report to CCH and finalize the work in principle before the end of 1986. Furthermore the chairman of CCH proposed to arrange a special CCH-meeting to activate the new Group in the Autumn of 1982. The administrations of the Netherlands and the Nordic countries were invited to submit a first draft for a plan of action at this meeting.

As a result, in this document an outline of the work to be carried out by the GSM is proposed. The following paragraphs contain considerations to be taken into account during the studies, the basic system requirements and an action plan including a list of items to be studied by the GSM.

## 2. Considerations

- a. Land mobile telephone systems working in the 900 MHz band are expected to be put into operation in the middle of the 1980's in some of the CEPT countries (interim national systems).
- b. In the early 1990's there will be a need for a new system capable of offering advanced service facilities in addition to traditional telephony.
- c. During a transition period the systems operating in the 900 MHz band will have to share the same frequency band.

### 3. Basic requirements for a harmonized Mobile Communication System

- a. The existence of earlier mobile telephone systems working in the 900 MHz band must be taken into account. In order to ensure full compatibility from the frequency sharing point of view, the work concerning these systems should be thoroughly followed.
- b. A future 900 MHz mobile communications system should be harmonized to such an extent that mobile stations can be used in all participating countries, preferably all CEPT countries.
- c. It is expected that in addition to normal telephone traffic, other types of service (non-speech) will be required in the system. However, since such predictions concerning the user requirements at the time the system of the 1990's will be in operation will contain a great amount of uncertainty, a modular system structure allowing for a maximum of flexibility will be necessary.

This purpose may be achieved by applying the same philosophy as applied for modern developments such as ISDN and OSI. The choice of standards for protocols, logic functions etc. shall as far as practicable seek to obtain compatibility with such modern developments.

- d. The system concept to be chosen shall permit a high level of spectrum efficiency and state-of-the-art subscriber facilities at a reasonable cost. Information on the order of ultimate system traffic capacity is needed at an early stage.
- e. The services and facilities offered in the public switched telephone networks and the public data networks at the relevant period of time should be available in the mobile system. It shall be possible to benefit by the full advantages of new techniques to be introduced.

The system may also offer additional facilities (e.g. special barring functions, rerouting of calls and special message handling facilities).

- f. The system shall be designed to allow for operation in the entire frequency bands 890-915 MHz and 935-960 MHz.
- g. It should be possible for mobile stations taking part in the system to be used on board ships, as an extension of the land mobile service.
- h. To ensure unambiguous identification of the mobile stations, a high capacity integral identification plan for mobile units is required, which will have to be compatible with the numbering plans and routing possibilities used in the public switched telephone networks and the public data networks of the participating countries.
- i. The system should be designed with a high degree of flexibility in order to ensure that mobile stations of earlier public 900 MHz systems in Europe will be able to operate in the same frequency band without mutual interference.

It shall be possible for each individual country to choose the point of time for transition from earlier systems to the new system and to have both systems operating simultaneously.

- j. The system shall be capable of providing for portable (hand-held) mobile stations, but the consequential impact on the system shall be assessed.
- k. The demand for voice security (encryption) may increase considerably and must be taken into account. Any encryption facilities should not have a significant influence on the costs of those parts of the system used by mobile subscribers who do not require such facilities.
- l. The design of the system shall be such that no significant modification of the fixed national telephone networks will be necessary.
- m. Since the cost of the mobile stations will constitute the main portion of the total system cost, the system parameters shall be harmonized with the view to limit the cost of the mobile unit.
- n. The system design shall permit the participating countries to maintain their existing charging systems, thus enabling different tariff principles and rates to be used.
- o. For the interconnection of the mobile switching centres, an internationally standardized signalling system shall be applied.

This interconnection must not require a dedicated signalling system exclusively for the purpose of the mobile communications system.

#### 4. Action plan

Paying consideration to the system requirements listed above, the GSM shall perform the following actions:

- a. A detailed examination of the studies already going on in CEPT and other organisations (CCITT, CCIR, ISO etc) shall take place, keeping in mind the possible use of these studies within the frame of the GSM action plan.
- b. In succession to the identification of suitable items for external studies the chairman of the GSM will invite concerned groups to contribute to the work of the GSM.
- c. All studies which do not fall within the competence area of other existing groups or which are not expected to be accomplished in due time with respect to the time schedule of the GSM shall be immediately executed.
- d. The need for verification of the proposed system must be considered.

The following items should be studied:

- e. Specification of the operational and technical requirements of the system.  
This item should be finalized as soon as possible.
- f. Examination of the on-going studies in other groups.  
An interim report should be given in Oct. 1983.
- g. Identification and study of relevant reports etc. which can be available for use by the GSM from research institutes such as universities, public research laboratories etc.  
An interim report should be given in Dec. 1983.
- h. Investigation of the administrative and regulatory aspects on the use of mobile radiocommunications equipment by subscribers not permanently domiciled in the country in question, including border crossing procedures.  
This study item should be finalized in Dec. 1983.
- i. Investigation of the different national conditions for type approval of radio transmission equipment.  
This study item should be finalized in Dec. 1983.

- j. Assessment of the impact on the system capacity, caused by the inclusion of portable mobile stations according to para. 3j.

This study item should be finalized in Dec. 1983.

- k. Establishment of the basic system parameters (outline specification) for the various parts of the system and their interfaces.

This item should be finalized in Dec. 1986.

Furthermore, the following technical specifications, including functional aspects and having enough detail to allow for type approval and giving a guarantee for compatibility of the mobile stations, should be established:

- 1 System specification
  - 2 Specification of the system parameters relevant to the mobile services switching centre
  - 3 Specification of the system parameters relevant to the base station
  - 4 Specification of the system parameters relevant to the mobile station, including man-machine interface
- l. Recommendation on harmonized administrative procedures for licensing and type approval.
- m. Recommendation on harmonized rules for the use of mobile radiocommunications equipment by subscribers not permanently domiciled in the country in question, including border crossing procedures.

\* The mobile services switching centre is not necessarily an equipment dedicated to the mobile services exclusively. It could as well be implemented as a subsystem to a switching centre used also for other purposes. In this context, the specification in view should only deal with the aspects relevant to the mobile services.