Unified Digital Trunked Radio Communication network for all significant public safety services in Hungary

A service-oriented approach for fulfilling the requirements

Introduction

The section of the Hungarian government being responsible for ICT had a brain-storming started more than 10 years ago (1993-94). The applied technology for public safety services had not been considered as obsolete or legacy systems at that time, but it was clear that in the near future a change of technology would be necessary. There were several competing technologies; TETRA was a relatively new and not yet mature technology at that time. Based on earlier tradition, the major public safety services preferred propriety, closed telecommunication and IT networks. This fact indicated technology procurement as the whole system would have been operated by a dedicated section of the Hungarian Government, probably under the auspices of Ministry of Interior. However, not only the police and other services under the Ministry of Interior (fire-fighting, emergency, disaster recovery, civil protection) had been interested but other law enforcement, disaster recovery (water and flood management) and defense service organizations showed explicit interest to participate in such a system.

The political goal was to exploit the scale of economies involving wide range of services of public administration. The services belonging to Ministry of Interior are the dominating players.

Moreover, to provide fair share for all stakeholders and to find the balance between the various interests and to strike a compromise, the Hungarian government has made a decision for the procurement of state-of-the–art radio communication **service** for the public safety and emergency services.

For expressing the joint efforts of all Hungarian services, the would-be system has been christened to Unified Digital Radio Communication Network (the Hungarian Acronym is EDR – English UDR).

The strategic planning and conceptualization for implementation of the system had started more than 10 years ago. There were several failed attempt to construct such

a radio communication service for the public safety organizations, as the periodic elections and the associated changes of government brought new type of approaches.

In the spring of 2003, the government made a decision and formulated the decision in a government resolution that stated that radio communication service for the public safety organizations should be procured in the form of "managed service". The advantage of this decision was that the "market", i.e. the potential service provider, would select the appropriate technology, architecture and design method for the future services. By this way, the state avoided an unnecessary discussion on the topic of the technology that would have lead to hair-splitting argumentation. In autumn of 2003, an UDR Commissioner post created firstly at ministry level, later on in spring of 2005, at government level. The Commissioner was responsible for carrying out the UDR project including the procurement in line with the Hungarian Public Procurement Law conforming to the EU directives and regulations. The Request for Information and the Request of Proposal with the technical annex was created by the work of the Secretariat of the Commissioner. In mid-October of 2005, the whole public procurement process concluded with a selection of the winner-bidder.

After the successful contracting, the Commissioner main task is to manage and control the whole project by coordinating the interested parties, stakeholders and the service provider.

Goal of the system

Naturally, the frequency band is that CEPT and NATO agreement designated and dedicated to public safety (**NATO** Joint Civil/Military Frequency Agreement).

There are tentative requirements from the EU directives, Schengen agreement, and from the activities of the cooperation among the Law Enforcement Agencies within EU to apply state-of-the art technologies for the radio communication.

By the directions of the Schengen agreement, the application of standardized radio communication technology for the cooperation among the Border Guard / Border Police of EU Member States is strongly advised, tended towards interoperability at both technical and organizations level. For this reason, there was a pressure to implement a radio communication system for cross- border communication between the Border Guard / Police Forces. The technology would be applied was not specified, European technology was advised and preferred. Hungary has become full member of EU in 2004 and thereby it should slowly adopt the full requirements of the Schengen agreement.
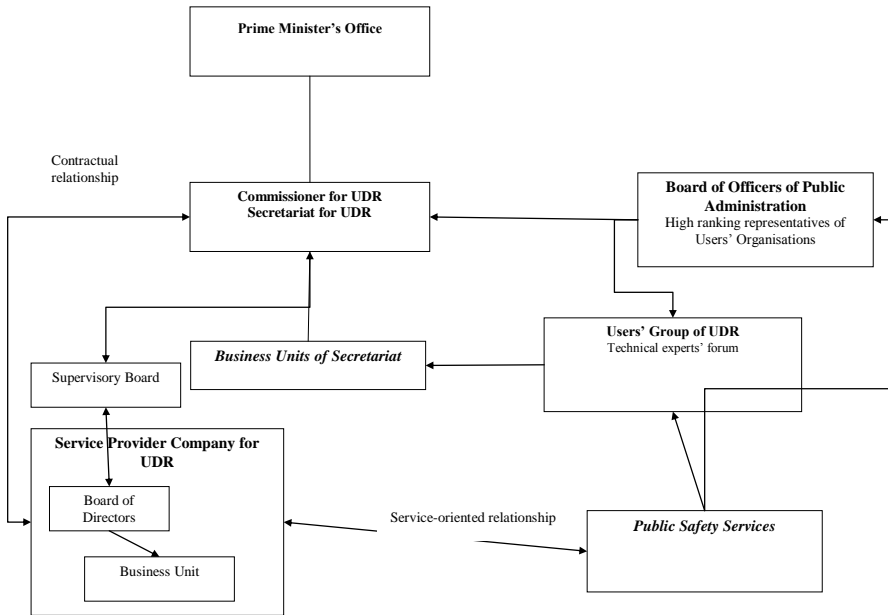
Managed Service from Service provider- an attempt to avoid the pitfalls known before

As we have already mentioned above, the selected model for the radio communication service is the "managed service", i.e. third party builds the network, operates and maintains the network not the organizations of public administration. One of the advantages is that the public safety services can still have capital purchase for terminals, dispatchers etc. thus maintaining choice and competition for lower risk purchase items which users directly interface with.

We take into account as disadvantage that the changes in the applied technology of network have to be formally agreed via several interested parties, stakeholders, moreover there is only limited technical influence from users for the ongoing evolution of the radio communication network. An another disadvantage is related to the security, moreover the national security issues. How could the requirements on security issues be guaranteed and assured in a managed service approach?

By our plan to treat the disadvantages and to control the service provider, a government organization should be set up for the tasks related to management the UDR. The provisional name is the Secretariat for UDR whose main task is to support the government Commissioner for UDR. The Secretariat first priority is to coordinate and manage the business issues and problems among the public safety organizations and the service provider. From the beginning of the service provision on, the second most important priority will be the control and audit activities. To involve into the decision making processes the civil servants in senior positions, a board was established that includes all ministries and authorities responsible for public safety organizations, and they are in the position to initiate the necessary

activities, to instruct their own organizations, and to channel the different interests. For the reason, that the actual user could give voice their problems a Users' group is formed, and they can provide assistance in the technical and management issues for the Secretariat.

Prime Minister's Office

Contractual relationship

Commissioner for UDR
Secretariat for UDR

Board of Officers of Public Administration
High ranking representatives of Users' Organisations

Supervisory Board

Business Units of Secretariat

Users' Group of UDR
Technical experts' forum

Service Provider Company for UDR

Board of Directors

Business Unit

Service-oriented relationship

Public Safety Services

For national security and business reason, there was a condition in the Request for proposal to establish a separate legal entity, business in the form of private limited company having two Boards for controlling the business activities in line with the Hungarian Law for Business companies, namely a Supervisory Board and a Board of the Directors. Basically, the Service provider sole business activity is to ensure the TETRA facility for the public safety services.

For the assurance of the high level security, a business unit will operate within the service provider that was obligated by the RFP. The head of the unit will be a professional specialist in the security issues, and staff of the unit as well. The national security services and other authorities will be carried out regular audits to check the security related issues, and maintain a steady high operational level on security.

First Stage of Implementation

The first stage will be to have an operational service in the capital of Hungary at the latest 5th of April 2006.

Budapest is the capital of Hungary, 20 % of population of Hungary live in the city, produces ~30% percent of GDP (The central region of Hungary 45%). A densely populated area by people , buildings and cars. The traffic is the highest in the country as well as the rate of crimes. That would be a litmus test of the future system.

Furthermore, it is the political and cultural centre of Hungary implying a huge number of public events that require police monitoring.

The public procurement prescribed a tight schedule for the service roll-out. In order to make the most of the readily available service in Budapest, the service provider will supply radio terminals for the public safety services on time. The first priority is to fulfill the capacity demand of police; but also other services operating in the Budapest area will receive equipments. The provision the first lot of 14.000 terminals will follow usual rental scheme, on contractual basis the service provider will supply, maintain, replace the radio terminals in the case of natural wearing-out but not in the case of the consequences of various accidents, incidents.

Migration issues

The whole system should operate on 31st January 2007. The public safety services will start to take up the new UDR service, and the migration of the old legacy systems to the new one. The service provider will deploy analogue interfaces at network switching centers and the NOC to assist the migration. The analogue and the digital system will work parallel till the middle of 2007. The government resolution strictly prescribes that the old, legacy systems should be demolished and the government should make advantage or profit from the unused frequencies, spectrum.

The ambulance service has received some allowances for taking up the UDR service in the form of extra three months. For the reason, they cannot make partial use of the service as they operate country-wide. They need a radio coverage for the whole country and only then from this point on could start the migration to the new system. So that, the analogue system will be in use for a while providing opportunity for a smooth change to migrate to the TETRA system at the technical level.

The business process re-engineering of public safety services will immediately start from this point on. There is a general consensus that firstly the technical level migration will take place without disturbing processes, organization, the command, control, communication and instruction system that are working well and reliably.

The second stage

As we anticipate, the TETRA service will be available countrywide by 31st January 2007.The budget for procuring the required additional 28000 radio terminals for each public safety service will be allocated from January. The public procurement scheme for purchasing the radio terminals will be very similar to a catalogue purchasing mechanism for the equipment vendors.

The coverage by the contract is 94% of the country. However, Hungary is a „flat" country but there are some hilly areas with a complicated terrain where there are some difficulties. The required system capacity is to serve 60000 radio terminals. But for middle-term, 42000 radio terminals will operate and entered into the system with the necessary licenses. The availability requirements is fairly high, namely 99, 9 % permitting only 8 hours / year not-allowed outage country-wide. The contingency event, extraordinary capacity demand is managed by mobile stations as extra resources.

Avoiding the cost of the complicated billing mechanism & information system, the tender Request for Proposal called for a flat service rate. The government obliged in a government resolution the compulsory use of the UDR service, the rate for the public safety organizations will depend on the capacity demanded by them. The cost sharing is subscription based / demanded terminals.

The contract will last till 31st December 2015, the last invoice will be issued in January 2016. The extension of the contract or new procurement for service in the future will be realized by the Laws in Force in effect at that time.

The Service provider

The consortium has consisted two market leader telecommunication companies, one of them the market leading GSM company in Hungary (T-Mobile), the other one is the market leading traditional telephone company (T-Com Hungary).

As the UDR / TETRA system technologically very similar to the GSM, the mobile communication company has had huge amount of experiences for 12 years for designing, operating and maintaining radio communications network. The knowledge and experiences piled up provides the opportunity for an efficient and effective operation including the cost-effectiveness. The Hungarian T-Com has had business relationship to the public safety services for long time. This well-established good business relationship is extended by the UDR service. The two members of the consortium established a company called Professional Mobile Private Limited Company as UDR service provider (Pro-M private lc. – Pro-M Z Rt. in Hungarian. (not floated on Stock Exchange)).

All of the assets required for the reliable and secure operation of UDR are owned by UDR service provider. The optimal utilization of the resources possessed by either the state or the owner of the service provider will be guaranteed by the service provider and its owners.

The most important business partners are: EADS Secure Networks as system and technology vendor, T-System as IT system expert and developer (both having international references). The consortium finances the project making use their own capital and loan provided by the proprietors (T-Com Hungary, T-Mobile Hungary)

There is an appropriate business management and technology infrastructure for handling qualified documents, at the UDR service provider a document management system will be built up to fulfill the security requirements. There are several employees having clearances from the Hungarian National Security service. There

have been experiences accumulated for several years for system monitoring, deployment, operation and providing the legal eavesdropping service for the national security services.

The required infrastructure to ensure the service level for security, reliability is essentially available at the owners of the service provider, giving the necessary foundation to satisfy the high level requirements for security. The consortium owns the knowledge and experiences for setting up the appropriate facilities for housing the IT resources as well. The facilities are compact enough for the purposes and they are suitable for the operation at the high level required by the Request for Proposal.

Short biographies

Name Mr István Pesti

Job Title: Commissioner of the Hungarian Government for the Unified Digital Radio Communication Network

Company Name: Prime Minister's Office, Office of the Commissioner

Mr. István Pesti had been charged with the task to manage the UDR project in Hungary in September 2003, firstly as Commissioner of the Ministry for Information and Communication Technologies, later on, as Commissioner of the Hungarian Government in March 2005. He has managed the whole public procurement procedure for acquiring the service to provide UDR till the contracting phase. Concluding the procedure, he directs the implementation project for ensuring the UDR services for the public safety organisations on behalf of the Hungarian Government.

He had worked for the Hungarian Army as a high ranking officer in various positions being responsible for radio and other telecommunication technologies for 25 years. Then he has fulfilled leading positions as CEO, managing director etc. at different multinational telecommunications companies in Hungary for several years.

Name Dr. Bálint Molnár

Job Title: Principal Consultant

Company Name: Secretariat of Comissioner for the Unified Digital Radio Communication Network within the Prime Minister's Office of the Hungarian Government,

5-10 line biography…

Principal Consultant, Research and Course Manager. at Information Technology Foundation of the Hungarian Academy of Sciences which works for the Hungarian Government as service provider in ICT consultancy.

Part time job: Associate Professor at Budapest University of Economic Sciences and Public Administration

Taking part in the preparation of the public procurement procedure for purchasing a service for Unified Digital Radio Communication Network from 2003. Participating

in the creation of the Call for Tender and technical specification and actively assisting the whole public procurement procedure till the contracting phase.

Education:

Institution [Date from - Date to]Degree(s) or Diploma(s) obtained:**ELTE Budapest 1981**M.Sc. in Mathematics**Technical University of Budapest 1998**Ph.D in Technical Informatics**John von Neumann Society for Computing Sciences, Hungary**László Kalmár Award (1992), for the practical application of the computer sciences (informatics) (Kalmár díj- NJSZT) **Information Systems Examinations Board, British Computer Society, and SSADM User's Group 1995**Certificate of Proficiency in SSADM Version 4.2**John von Neumann Society for Computing Sciences, Hungary**Expert at System Development (Certification No.:2458/98, valid thru:2003.09.30)Expert at Application of IT/IS (Certification No.:1949/98, valid thru:2003.09.30)Expert at Procurement, Tendering and Investment Appraisal at IT/IS Certification No.: 2459/98, valid thru:2003.09.30)(http://www.portalbin.njszt.hu/szakertok/szakertok.xls

)Information Systems Audit and Control Association Certified Information System Auditor (1999), (www.isaca.org) (www.isaca.hu)**Communications Authority in Hungary (**www.hif.hu**), (Szakértői névjegyzék, NHH)** Certified expert at Public Key Infrastructure and Digital Signatures (No:16046-1/2002)TÜV Rheinland InterCert Certification for Internal Auditor for Governance of SecurityTÜV Rheinland InterCert No. : TRI-AK/04/14152)

The Unified Digital Radio Telecommunications (UDR) Network of The Hungarian Government

Commissioner of The Unified Digital Radio Telecommunications Network of the Prime Minister's Office

Service Provider

Mr. István Pesti Commissioner,

Secretariat for the Government Commissioner of The Unified Digital Radio Telecommunications Network

Presenter: Bálint Molnár, PhD technical informatics,

Principal Consultant for the Secretariat

1 December, 2005

Characteristics of UDR in Hungary

Radio Communication Network for Public Safety and Emergency Services

- High availability network (99,9 %)
  - Operational even in State of Emergency and Disasters
  - Frequency band based on international agreement 380 – 400 MHz (CEPT,   NATO)
  - Basis of International Cooperation (Schengen Agreement)
  - Users: Public Safety and Emergency Services in Hungary
  - Not-public Network (Closed user group)
  - Recently legacy technology in Use (20-25 yrs old)

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The major user groups in Hungary

- Police

- Border Guard (Border Police)

- Fire Brigade

- Disaster Protection

- Customs and Excise Service

- Ambulance Service

- Hungarian Army

- Others:
  - Ministry of Justice
  - National Security Services

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Rádiótávközlő Rendszer

Project for Implementation of UDR in Hungary

Requirements:

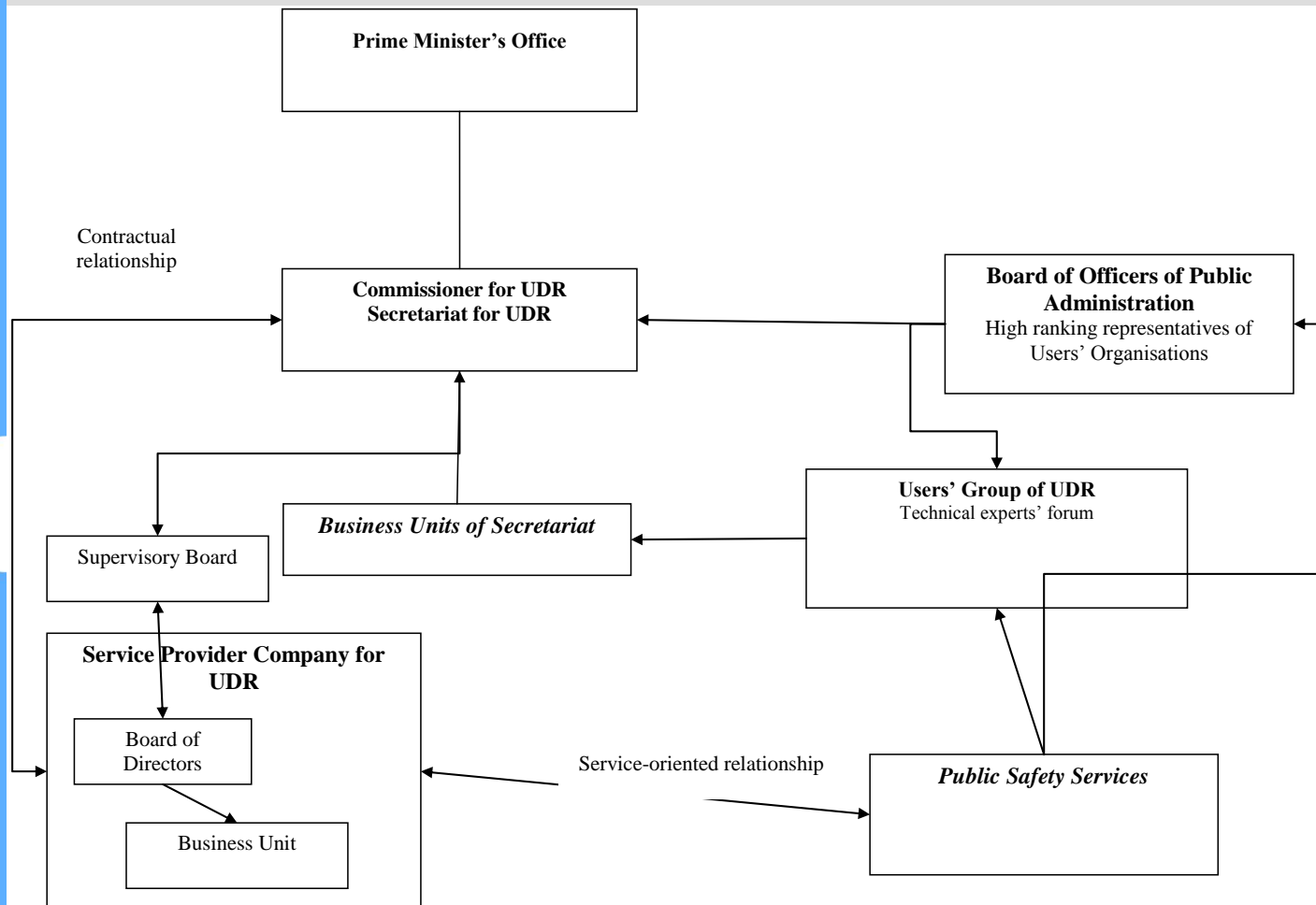**The winner bidder of public procurement procedure is a consortium : T-Mobile Hungary Plc., T-Com Hungary Plc.**

- Establishing a Service Provider Company dedicated for UDR
- Coverage for Capital of Hungary (Budapest) 5th April 2006.
  - 34 Base Station and 2 repeater
- 14 000 radio terminal made available for 1st stage, Budapest
  - rental included in the service fee

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Project for Implementation of UDR in Hungary

- Project finish date 31st January 2007:
    - Coverage of Hungary 94%
    - 42 000 radio terminal operational in the network
    - 200-300 base station
    - 28 000 radio terminal will be purchased through some public procurement procedure – not exclusively the Service Provider will supply

- Network availability 99,9 % / year. Allowed outage: 8 hours / yr

- Flat rate service fee / yr : 9 325 000 000 HuF + VAT (~ 37.300.000 €).

- Expiration Date of Contract: 31st December 2015

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Organisation structure

Prime Minister's Office

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Some words about the winner bidder - T-Mobile Hungary with Magyar Telekom (T-Com Hungary) Consortium

- **25. May 2005.**
  - T-Mobile Hungary Co. Ltd. with Magyar Telekom Consortium founded

- **Members of Consortium**
  - T-Mobile Hungary Co. Ltd. (75%-1)
  - Magyar Telekom (25%+1)

- **Main partners**
- EADS (Nokia) - EDR system vendor
  - T-System - main IT system vendor (member of T-COm Hunary's Group)

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Competence

- **Coverage planning:**
  - More than 10 years experience in NMT450 radio access network planning and more than 10 years GSM radio access network planning practice
  - Step by step refined TETRA network model (coverage/capacity) developed during the last 3 years
  - 10 years experience in the field of wireless infrastructure in Hungary
- **Capacity planning:**
  - T-Mobile Hungary network is among the bests in international benchmarking of traffic efficiency
- **Network operation:**
  - More than 10 years practice in mobile telecommunication network operation

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Added value in the field of security, quality and experience

- Members of Consortium:
  - „NATO Approved Vendor" title
  - Comply with qualified document handling rules – approved by National Security Control office
  - Years of practice on deployment and operation of lawful interception interface
  - Extant infrastructure security elements are nearly the same as prescribed for UDR
  - Experiences in operation of critical IT security solutions

MINŐSÍTETT
N A T O
BESZÁLLÍTÁSRA
ALKALMAS

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Thank you for your attention

…Questions?