The NKS-B CommTech seminars February 2003 at STUK, Finland and May/June 2005 at SSI, Sweden

Participants (apart from the co-ordinator) at the CommTech seminar at SSI, 2005

Updated 19 April 2006

Background

Communication technology is playing an increasingly greater role in nuclear and radiological emergency preparedness. The reaction time requested by modern societies has been much reduced in recent years. Nowadays the modern media is able to set up live satellite based news broadcasts from almost any place in the world. The authorities must be able to respond and provide assessments and guidance as quickly as possible. Communication technology plays a key role here.

One complicating factor is that more and more measurement and decision support systems are being automated, but a common interface for the different systems (and in different countries) is still to be defined. Different communication protocols are in use, each may have its own advantage, but how should one be chosen for common use?

Even the choice of how web technology is used is not as simple as it would seem at first sight. Many web sites may appear to the ordinary user to be advanced and serving their purpose well. Yet when one tries to print the information the right hand side of the displayed text may be missing. In reality there have been substantial improvements in standardization of web technology, but most web sites are still based on older standards. As a consequence their performance is very browser specific and usually formatting code is mixed with the actual contents. For emergency preparedness this means that far more stringent requirements need to be placed on the communication channels than would be the case if new standards were properly used (high bandwidth may be required were very low bandwidth might have been sufficient). This also means fewer opportunities for using mobile devices (e.g. telephone with web browsers) that are becoming more integrated into emergency response systems.

Communication technology is a rapidly expanding field, with no one expert having a complete overview. This makes it difficult for potential users to identify the pitfalls and the possibilities the new technique may offer.

Aim with the CommTech seminars

The original idea behind the first CommTech seminar was to bring together key users from the Nordic nuclear and radiological emergency response authorities on one hand and leading experts in different fields of communication technology on the other. The hope was that this could encourage a dialogue that would then continue and make it easier for these authorities to co-operate and use communication technology more effectively. This idea was first discussed at a meeting of representatives from the Nordic authorities dealing with radiological and nuclear emergency preparedness (the NEP group). The group suggested that this should be organised as an NKS seminar and asked Sigurður Emil Pálsson to organise it. since he had previously been acitive in presenting issues concerning the use of communication technology at NEP meetings.

The CommTech seminars 2003 and 2005

The first CommTech seminar was held at STUK, Finland, in the spring of 2003 with 25 participants. The seminar lead to exchange of views and discussions, but it was also clear that some of the leading Nordic experts had not been involved and some of the relevant international work had not been presented. Since the first seminar was less expensive to conduct than expected and the NEP group considered a follow-up to be worthwhile, then a permission was sought from the NKS Board to use part of the remaining funding to organize a new seminar, taking into account weaknesses identified at the first seminar and subsequent technological developments. It proved difficult to find a time suitable for all key participants until May 2005, when the second seminar was held at SSI, Sweden, with 19 participants. Presentations given at the seminars included information on international work (IAEA, EU/ MODEM), the need for more effective use of web technology (incl. use of web standards), effective use of limited communication channels (e.g. mobile phones), data transfer using the secure Tetra network, benefits of using XML, and presentations of various national systems, either existing or under development..

The dialogue on use of communication technology for emergency preparedness has strengthened in the Nordic countries. It has become a regular item on the agenda of NEP meetings and the XML format has now come into widespread use internationally. There has

been an active exchange of ideas and experiences between the Nordic authorities and they have now taken an active role in international work on the utilization of communication technology (e.g. within the IAEA as providing members to the working group on communication). The NKS-B/CommTech work has now come to an end, but hopefully it has contributed to build up awareness, Nordic co-operation and competence in this field.

Links to the CommTech seminars

The CommTech 2003 seminar

The CommTech 2005 seminar

The presentations from the CommTech seminars are currently (April 2006) being compiled into an NKS report.

Sigurður Emil Pálsson, Programme Manager, NKS-B

CommTech 2003

STUK, 27-28 February 2003

- Welcome (Hannele Aaltonen)
- The NKS+NEP work and the background for the meeting (Sigurður Emil Pálsson)
- Introduction of participants (all; incl. what do we want to achieve with this meeting)
- **Communication - a tool for enhanced international response to nuclear and radiological emergencies** (Finn Ugletveit, giving an introduction to the ongoing work within IAEA working groups)
- **Recent developments: mobile Internet, web standards – the case for using open standards from the user's point of view** (Sigurður Emil Pálsson)
  (see also *Example of separation of contents and layout* below)
  This work was followed up with a **poster** at an international seminar in Salzburg autumn 2003.
- The communication project at NRPA (Jon Arvid Ludviksen et al.)
- Strategy for use of communication in radiological emergency preparedness (general discussion)
- Presentation of the Emergency Response Centre at STUK
- Separation of content and appearance, new strategies in web site design and the advantage of using XML as a standard basis for exchange of data (Sigurður Emil Pálsson, Nordic co-operation in this field will be recommended)
- Development of mobile data networks (GPRS, WWW, 3G etc.) (Mika Flink, Sonera)
- Introduction to FINRI (Anne Weltner, Kalle Korpijoki)
- Introduction to STUK's alarm system (Heikki Lemmelä, Ari Rosenberg)
- **Introduction to the NucInfo system** (Hans Olav Nymand)
- **Development of the mobile Internet – including secure communications with the Tetra Network** (Ole Arrhenius, Nokia)
- **Conclusions, recommendations for future work by NEP, within the NKS framework, to be presented jointly to the IAEA, or on another basis**.

Example of separation of contents and layout

- IAEA ERC message in an XML format, but with a linked XSL style sheet. The XML file can be easily imported directly into databases, but when viewed on the Web with a browser it will be displayed as dictated by the style sheet (which can be stored at the receiver's end and thus minimising the amount of information transferred).
- The **message in XML format** (most browsers will automatically also fetch the linked

XSL style sheet and display it accordingly). The source code can be viewed by using the command View source (or equivalent). The source code is also available **here as a text file**.

(The IAEA EMERCON form is now (2006) out of date, but the technique demonstrated is still valid)

List of participants

1. Eldri Naadland Holo, NRPA, Norway
2. Inger Margrethe Eikelmann, NRPA, Norway
3. Jon Arvid Ludviksen, NRPA, Norway
4. Yngvar Bratvedt, NRPA, Norway
5. Finn Ugletveit, IAEA/NRPA, Norway
6. Sigurður Emil Pálsson, NKS/Gr, Iceland
7. Robert Finck, SSI, Sweden
8. Peter Møller, SIS, Denmark
9. Hannele Aaltonen, STUK, Finland
10. Anne Weltner, STUK, Finland
11. Heikki Lemmelä, STUK, Finland
12. Juhani Lahtinen, STUK, Finland
13. Kaj Vesterbacka, STUK, Finland
14. Kalle Korpijoki, STUK, Finland
15. Markku Pentikäinen, STUK, Finland
16. Ari Rosenberg, STUK, Finland
17. Jarkko Ylipieti, STUK (ROI), Finland
18. Riitta Hänninen, STUK, Finland
19. Ari-Pekka Neuvonen, STUK, Finland
20. Juha Häikiö, STUK, Finland
21. Ole Arrhenius,Nokia, Finland
22. Mika Flinck, Sonera, Finland
23. Laura Nihti, Sonera, Finland
24. Hans Olav Nymand, Prolog Development Center A/S, Denmark
25. Tarja Ilander, STUK, Finland

CommTech 2005

SSI, 31 May – 1 June 2005

- Welcome / Introduction (SEP)
- The IAEA Action plan for strengthening the international preparedness and response system to nuclear and radiological emergencies 2004-2009 (Finn Ugletveit) (**ppt slides**)
- The ongoing work within IAEA's working group on communication (Finn Ugletveit) (**ppt slides**)
- The ongoing work within IAEA's working group on assistance, with respect to communication (Finn Ugletveit) (**ppt slides**)
- Using new web standards to minimise bandwidth usage and make web based information accessible on a wider range of platforms (Sigurður Emil Pálsson) (**ppt slides**)
- A prototype for data and information exchange for nuclear/radiological emergency response (Carlos Rojas-Palma) (**ppt slides**)
- The Mobile Challenge (Snorri Agnarsson) (**ppt slides**)
- Using the Internet and web technology to gather and exchange information - presentation of two systems (Jan Erik Dyve) (**ppt slides**, **abstract**)
- Communication in a Radiological Emergency Using Tetra Mobile Phones (Harri Toivonen) (**ppt slides**, **abstract**)
- A new Swedish web based information system for use in emergencies (Ulf Andersson) (**ppt slides**)

Other topics at the seminar

- Where (and how) do we go from here? - Panel discussion summarising the current situation and possible paths for improvements, including possibilities for co-operation
- Presentation of the new facilities at SSI for emergency preparedness management

List of participants

1. Carlos Rojas Palma, EU / SCK.CEN (International org)
2. Finn Ugletveit, IAEA WG / NRPA (International org+NO)
3. Jeppe Vöge Jensen, Danish Emergency Management Agency, Nuclear Division (DK)

4. Hannele Aaltonen, STUK (FI)
5. Anne Weltner, STUK (FI)
6. Harri Toivonen, STUK (FI)
7. Sigurður Emil Pálsson, NKS / Geislavarnir ríkisins (NKS+IS)
8. Snorri Agnarsson, Softis / University of Iceland (IS)
9. Eldri Naadland Holo, NRPA (NO)
10. Jan Erik Dyve, NRPA (NO)
11. Yngvar Bratvedt (NO)
12. Jonas Lindgren, SSI (SE)
13. Ulf Andersson, SSI (SE)
14. Annika Ovegård, SKI (SE)
15. Kjell Olsson, SKI (SE)
16. Charlotta Källerfelt, Swedish Rescue Services Agency, Emergency Preparedness for Hazardous Substances in Karlstad. (SE)
17. Renée Eriksson, Swedish Rescue Services Agency, Emergency Preparedness for Hazardous Substances in Karlstad. (SE)
18. Per Löfström, FQR Forsmarks Kraftgrupp avdelningen för Säkerhet och Miljö (SE)
19. Björne Fredriksson, FGD Forsmarks Kraftgrupp avdelningen för Säkerhet och Miljö (SE)

Communication - a tool for enhanced international response to nuclear and radiological emergencies.

Finn Ugletveit
Norwegian Radiation Protection Authority

- **Nuclear and radiological emergencies very easily become international events where authorities in several (or many) countries need to respond:**
  - Decide upon and implement actions to protect life, health, environment or other interests for the society.
  - Provide the public with sufficient, adequate and timely information regarding the emergency, the consequences and actions implemented.

Norwegian Radiation Protection Authority

- **To be able to accomplish this, the authorities in the respective countries all need:**
  - Information (regarding accident, its development, consequences, countermeasures etc.)
  - Resources (in terms of expertise, manpower and tools for acquiring and processing information, making assessments and decisions and implement actions)
  - Infrastructure, organisation, plans, procedures, etc.

NEEDS OF ACCIDENT STATE

- **In an accident State and some times even in neighbouring States, a severe nuclear or radiological accidents may easily require resources exceeding the capabilities of a single State.**

  The only way to provide these resources would be through international assistance from other State or international organisation

NEEDS OF NON ACCIDENT STATE

- **In neighbouring or in some cases even in far field countries, authorities need information in order to make their own assessments as basis for their own decisions and information to their own population.**

  This information can at an early stage only be provided through international communication of this information from those States who have this information.

INTERNATIONAL VISION

- **The goal (Competent Authorities Meeting in Oslo, May 2002)**

  – Develop and maintain a system of co-operation between all states so that in spite of the fact that they are individual states undertaking actions for their own population, through co-operation and sharing of information and resources can achieve a coherent and globally optimised response to all nuclear and radiological emergencies.

What do we need?

Requirements:

Technical possibility and political willingness to efficiently share all information available.

- **Standard communication platform**
  - communication strategy,
  - communication lines,
  - communication protocols,
  - data formats etc.

What do we need?

Requirements:

Technical and administrative possibility and political willingness to efficiently share resources available.

- **Harmonised (standardised) resources**
  - Equipment
  - Services
  - Products
  - Procedures and criteria

Norwegian Radiation Protection Authority

AGREEMENTS AND CONVENTIONS

- **Convention on Early Notification of a Nuclear Accident (1986)**
- **Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986).**
- **A large number of different regional and bilateral Agreements**

ONGOING ACTIVITIES

- **The meeting of Competent Authorities in Oslo in May 2002 established a Plan of Action with 3 Working Groups:**
  - Long term sustainability
  - International assistance
  - International communications

Ongoing work

- **WG 1 - Long term sustainability**
  - Review Conventions
  - Strengthening co-operation
  - Consider establishing mechanism for long term sustainable development
  - Resolve funding issues

Ongoing work

- **WG 2 – Assistance**
  - What is assistance?
  - Roles and responsibilities.
  - What can we achieve through assistance?
  - What is needed to achieve assistance?
  - Recommendations on standards needed.

Ongoing work

- **WG 3 – Communication**
  - What do we want to communicate? (Everything?)
  - What is the purpose of communication?
  - What do we need in order to communicate?
    - Identification of standard products
    - Establishing standard formats
    - Agree on standard communication protocols.
  - Establish a proposal for plan of action

SECOND MEETING OF COMPETENT AUTHORITIES, VIENNA ,JUNE 2003.

Proposals from the Working Groups to be discussed and a plan of action to be decided on.

Enhanced efforts in this field expected and international communication is a vital part in this development. Establishment of standard communication procedures is absolutely necessary in order to succeed.

What should we do?

<u>Not</u> develop own solutions.
Active participation in the development.
Implementation as development proceedes.

- **plans**
- **procedures**
- **technical solutions (inc. DSS)**

Geislavarnir ríkisins

Recent developments: mobile Internet, web standards the case for using open standards from the user's point of view

NKS-B CommTech mini-seminar at STUK February 27th-28th

Sigurður Emil Pálsson

Geislavarnir ríkisins

Recent developments

Rapid technical developments in recent years have made new more efficent methods of communication possible

Not just a technical issue, it affects what can be communicated and how it can be used

Some uses require the end-users to harmonise or standardise the framework for the use. This should be done in the early phase, otherwise the retrospective harmonisation can be cumbersome and very expensive

Many end-users are still basing their communication strategy on completely outdated technology.

New strategies in web site design

Separate information and appearance!

The information available to all users should be the same, its selection and appearance can be different, e.g. depending on device (computer, phone)

Information should be able to flow freely across different types of platforms, different types of browsers (without reference to whether it is a wired or wireless device)

Same web site for all users (no special WAP sites, printer friendly pages), but different appearance styles applied.

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The mobile Internet

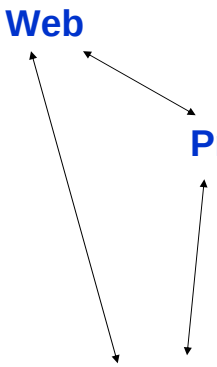
The potential use of the mobile Internet for emergency response management is described in NKS report NKS-77:

Combining Internet Technology and Mobile Phones for Emergency Response Management

References to information on the new standards for the Web and the mobile Internet can be found on pages 10-12

Proxy servers

transforming information from Web



Proxi servers can be (and have widely been) used to transform information (including images) to a format suitable for mobile devices.

Security analysis required for confidential information

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Advantages of not using a proxy server for mobile Internet

- *Increased reliability*. ***The user is not dependent upon the operation of a special server (which may get overloaded)***
- ***It is*** *easier to demonstrate secure treatment of confidential information* ***(information can be transferred using 128 bit bank grade SSL encryption from Web site to mobile device, like to any other web browser.***

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Initial tests - (ordinary Web pages)
News reports: Kursk accident

First news report of the Kursk accident posted at the BBC News Web site as displayed on a Palm Pilot screen

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Initial tests - (ordinary Web pages)
National emergency situation

Earthquake
(6.6 on Richter scale) reported on a newspaper web site in Iceland
4 minutes after it occurred (on a national holiday).

Same fast response on 21 June at 00:51, same magnitude earthquake.

A good example of possible use of Web and mobile devices in a real emergency situation

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Lessons from the Icelandic earthquakes of June 2000

The news media can be incredibly fast to act ***(with a Internet news service being fastest to respond during the night time earthquake).*** *The authorities must also minimize their response time****.***

The *communication network functioned****,*** ***including*** *mobile phones* ***and*** *Internet****.*** ***The phone network tolerated the usage under stress***

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Use of test site in JINEX 1 exercise (push and pull modes)

Short summary on Web

- **written after new information was received**
- **placed quickly on Web**
- **thus also instantly also accessible on WAP mobile devices**

e-mail / SMS notification

- **of Web update sent out to registered receivers. The SMS message contained the essence of the new information**

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Design of Web test site (to be mirrored to WAP)

Structure (must not change):

- Simple. A table used for dividing text into blocks.
- Time of publishing to Web used as index.

Writing style:

- Short condensed text.
- Descriptive sentence at beginning of block.
- Source of information quoted.
- Time given when information was valid.

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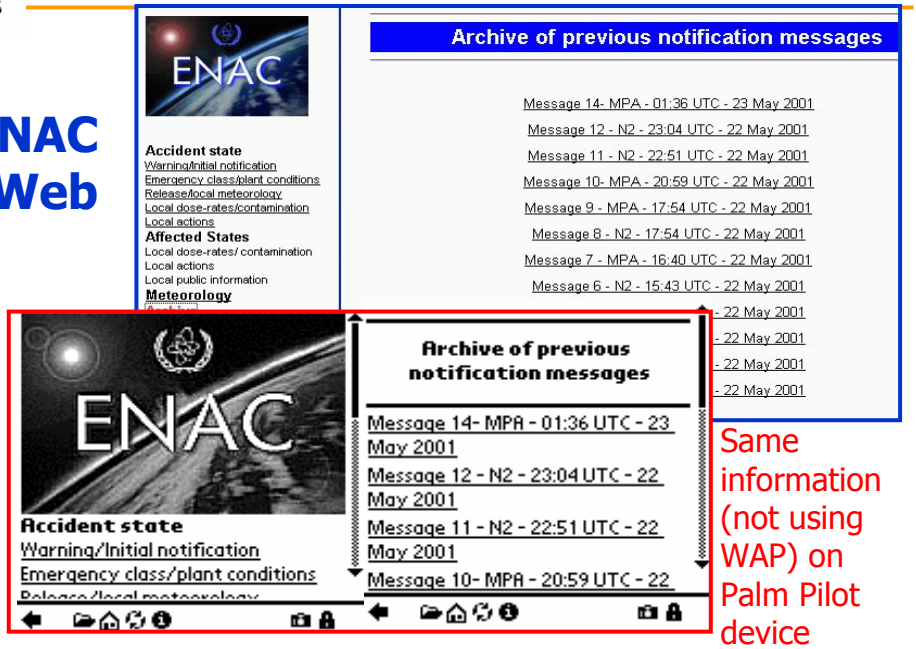
ENAC Web



Same information (not using WAP) on Palm Pilot device

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JINEX-1 Initial information placed on test Web site

10:12 IAEA N-2: "Site emergency" at Gravelines NPP. On-site emergency plan activated at 6:00. Provisional INES rating 2. No severe damage to fuel, no release. Info received at 10:03, valid at 8:00.
Note: Information has now been placed on IAEA's ENAC site.

09:40 IAEA N-1 notification has been received. "Alert" at Gravelines NPP France. No radioactive release, not considered likely. No off-site protective actions. Info received 9:34, valid at 6:45.

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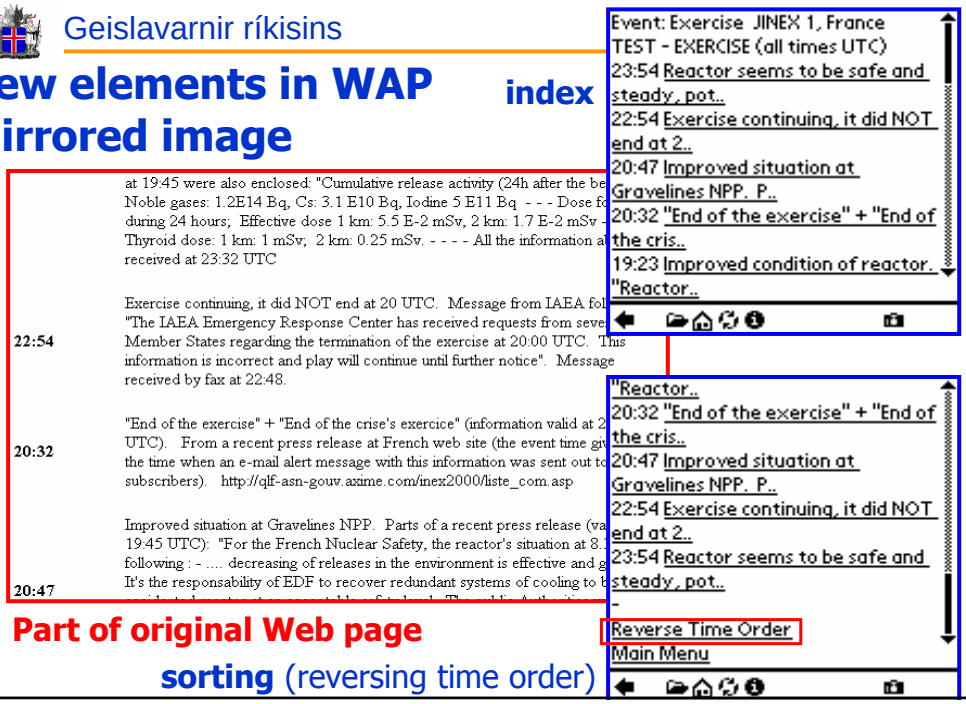
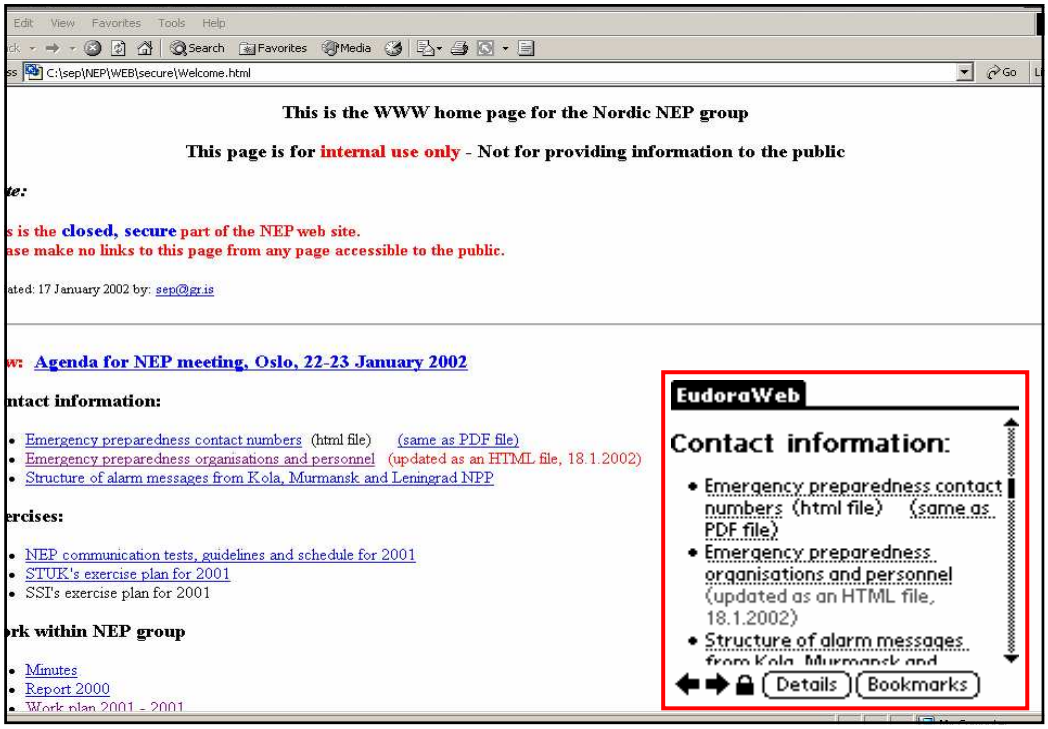
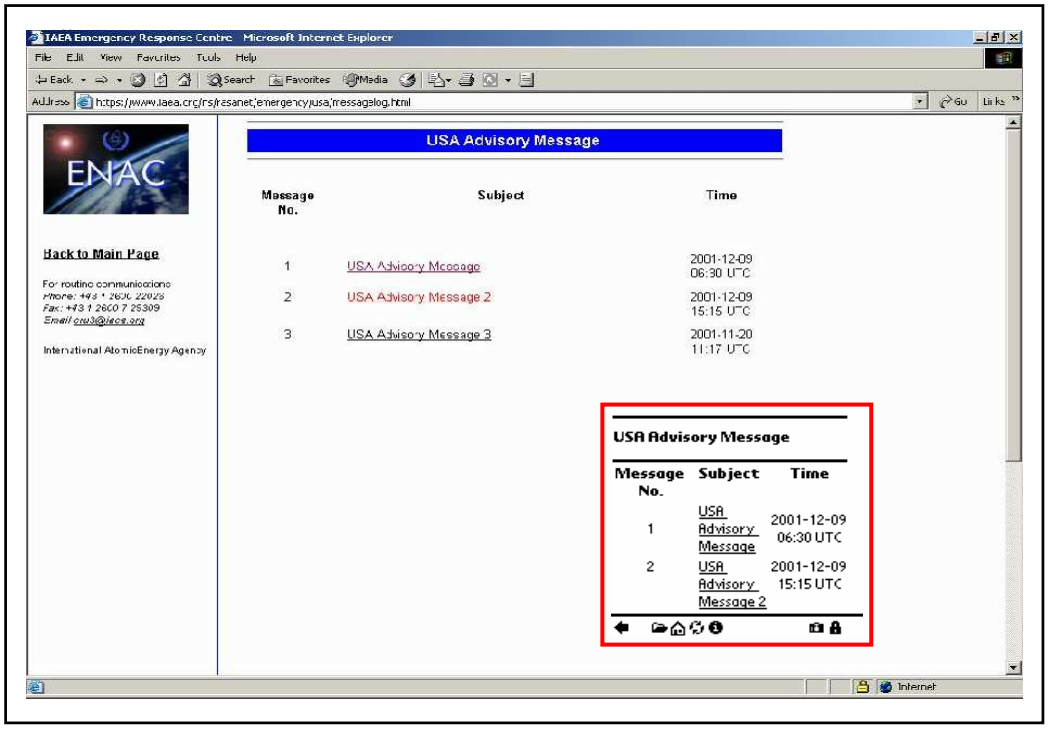
New elements in WAP mirrored image

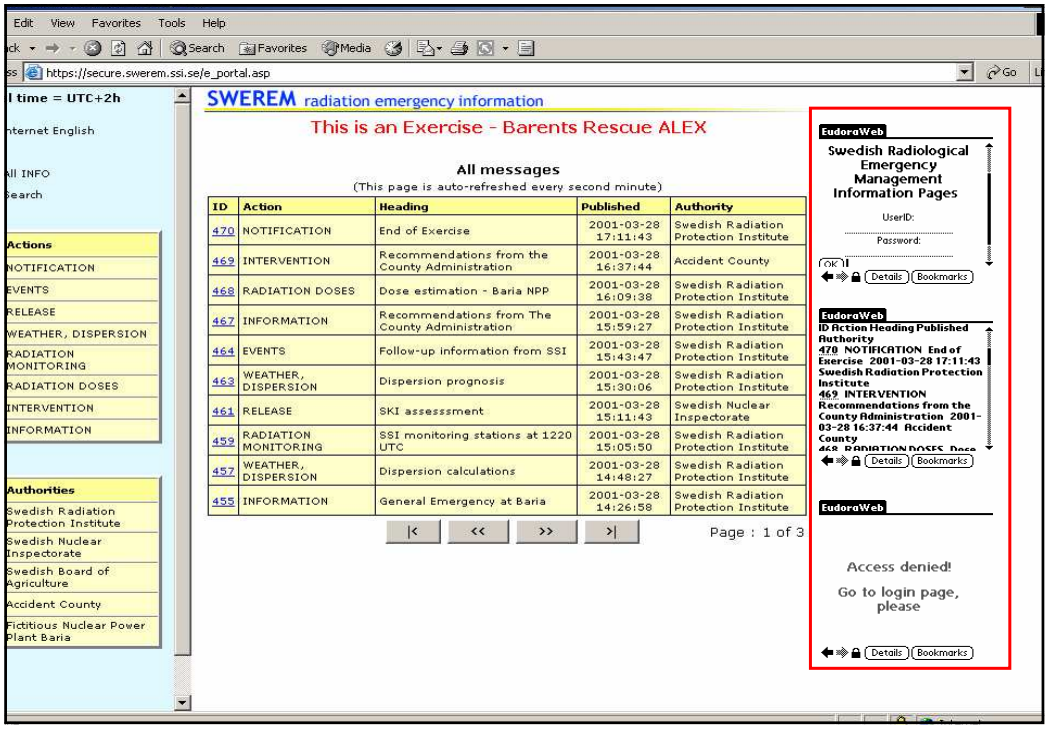


Part of original Web page

sorting (reversing time order)


Edit View Favorites Tools Help
Search Favorites Media
C:\sep\NEP\WEB\secure\Welcome.html
Go
This is the WWW home page for the Nordic NEP group
This page is for internal use only - Not for providing information to the public
te:
s is the closed, secure part of the NEP web site.
ase make no links to this page from any page accessible to the public.
ated: 17 January 2002 by: sep@gr.is
w: Agenda for NEP meeting, Oslo, 22-23 January 2002
ntact information:
Emergency preparedness contact numbers (html file) (same as PDF file)
Emergency preparedness organisations and personnel (updated as an HTML file, 18.1.2002)
Structure of alarm messages from Kola, Murmansk and Leningrad NPP
ercises:
NEP communication tests, guidelines and schedule for 2001
STUK's exercise plan for 2001
SSI's exercise plan for 2001
rk within NEP group
Minutes
Report 2000
Work plan 2001 - 2001
EudoraWeb
Contact information:
Emergency preparedness contact numbers (html file) (same as PDF file)
Emergency preparedness organisations and personnel (updated as an HTML file, 18.1.2002)
Structure of alarm messages
Details
Bookmarks


IAEA Emergency Response Centre Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address https://www.iaea.org/rs/resanet/emergency/usa/messagelog.html
Go Links
ENAC
Back to Main Page
For routine communications
Phone: +43 1 2600 22029
Fax: +43 1 2600 7 25309
Email cnu3@iaea.org
International Atomic Energy Agency
USA Advisory Message
Message No.
Subject
Time
1 USA Advisory Message 2001-12-09 06:30 UTC
2 USA Advisory Message 2 2001-12-09 15:15 UTC
3 USA Advisory Message 3 2001-11-20 11:17 UTC
USA Advisory Message
Message No.
Subject
Time
1 USA Advisory Message 2001-12-09 06:30 UTC
2 USA Advisory Message 2 2001-12-09 15:15 UTC
Internet



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Solution to problems: new standards

Following the new web standards would eliminate the problems

Makers of PDAs (e.g. Palm) and mobile phones (e.g. Nokia) are endorsing the use of the new standards and turning away from proxy based solutions (incl. traditional WAP).

Many web sites are being restructured to confirm with new standards and new web design strategies (e.g. www.wired.com and Geislavarnir).

What is XML?

XML stands for Extendible Mark-up Language

XML is a standardized technology designed to be able to describe any structured data

XML is not a specific mark-up language but a standardized method to describe anything

- **Defines certain rules and syntax (e.g. XHTML is HTML in XML syntax)**

XML is a new and important technology which enables companies and organizations to achive certain things better and cheaper

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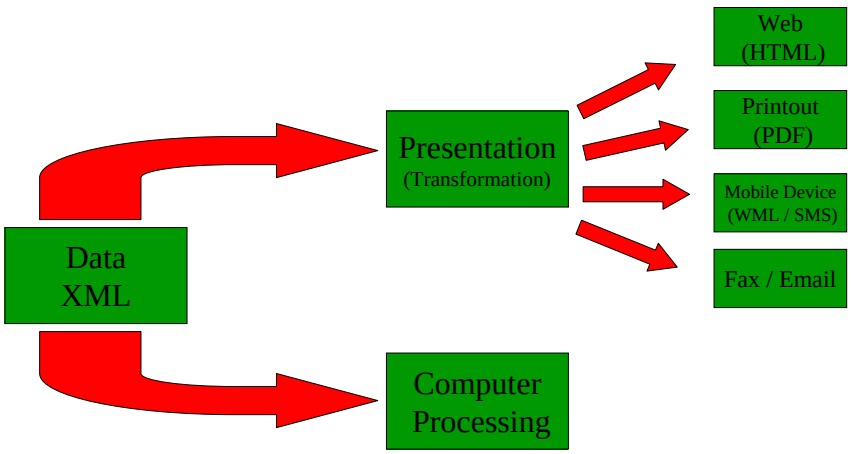
Separation of Content from Presentation



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The Challenge

Content data and presentation data are generally not separated in today's common presentation formats.

Content and document management is a problem in many organizations

How to control the layout of documents?

Most solutions are limited

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Common Electronic Presentation Formats

Word

- **Pros:** Offers rich layout options, suitable for printing
- **Cons:** Propriatery format, not suitable for web presentation, does not work on all operating systems, content and presentation in same document

HTML

- **Pros:** Open standard, suitable for web presentation, simple, works everywhere
- **Cons:** Limited layout capabilites, not suitable for printing, content and presentation genereally in same document

PDF

- **Pros:** Suitable for printing, any printable document can be turned into a PDF document, compressed format which is suitable for web presentation
- **Cons:** Propriatery format, needs special viewing software, content and presentation in same document

Most other common formats have similar limitations

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Electronic Presentation of the Future

Separation of content data from presentation data

Content described with a generic mark-up langauge - XML

- **Any structured data can be described using XML: Any type of document content, e-mail, music, multimedia, etc.**
- **XML is an open and widely supported standard**
- **XML suits well for automatic machine processing as well**

Transformations define layout and presentation based on any relevant requirement for presentation

- **Print-out, web-presentation, mobile presentation, monitor presentation, etc.**
- **Open transformation standards have recently emerged – XSL, CSS, etc.**

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Benefits of separtion of content from presentation

Unified look and feel

Adaptation to a new presentation form is much easier (e.g. mobile presentation)

Saves a lot of time

Better layout because only professional designers influence the layout

Changing the look and feel requires only a change to the transformations

Transformations can be created to suit the needs of different viewers based on any parameter

- **relevance, authority, security, location, preferences, time, etc.**

XML has extensive software industry support

Essential to Microsoft's .Net strategy

Web Services are based on XML

Emerging e-Commerce technologies are based on XML

Increasing number of document standards are based on XML

Plethora of XML development tools and XML support available in every common programming language

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Benefits of XML

Exchanging data between disparate systems will be easier and cheaper using standardized XML interfaces and describing common data in XML

Separation of content from presentation makes all presentation easier

Both human and machine readable (stylesheets help humans read XML)

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IAEA notification form

To: **International Atomic Energy Agency**
Emergency Response Centre
Fax: +43-1-xxxxxxxxxxx

Form N-1
NUCLEAR FACILITY

EMERCON	N-1	EMERCON	N-1	EMERCON

1 Accident STATE: MESSAGE No. 1 Page __ of __

2 **Emergency class:**

☐ **Alert** ☐ **General emergency**
☐ **Site emergency** ☐ **Transboundary emergency**

EMERGENCY CLASS DECLARED: yyyy/mm/dd ____/__/__ (24 Hour Clock) hh:mm __:__ (local)
yyyy/mm/dd ____/__/__ (24 Hour Clock) hh:mm __:__ (UTC)

3 Competent authority:

Name of Contact Person
Tel: +
Fax: +
E-mail:

4 STATE(S) informed

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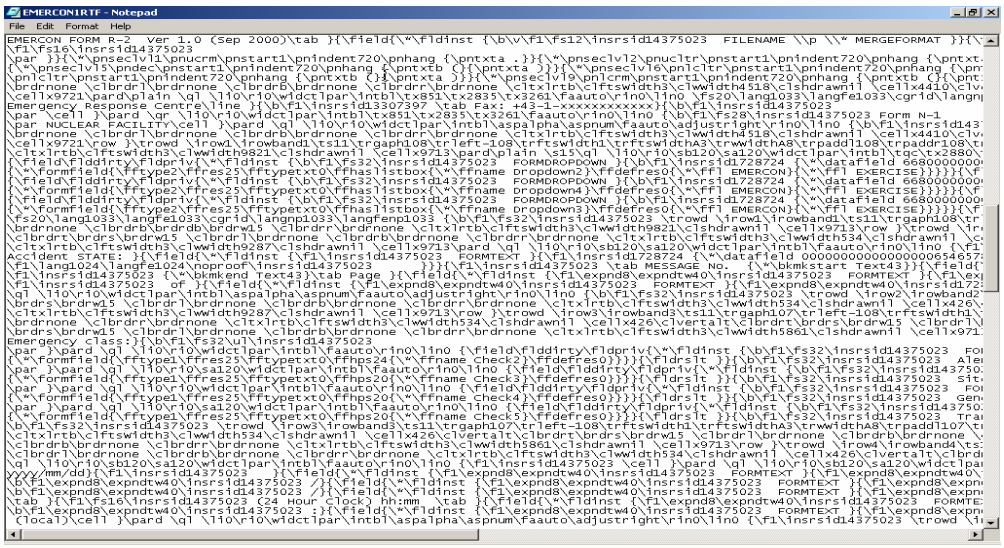
Part of the empty form as an RTF file



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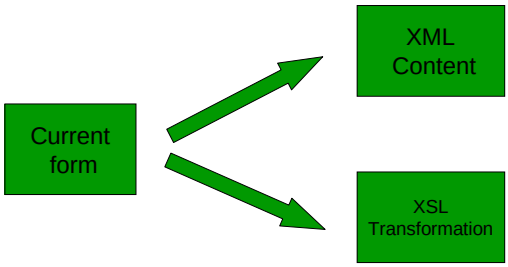
Separation of content and presentation



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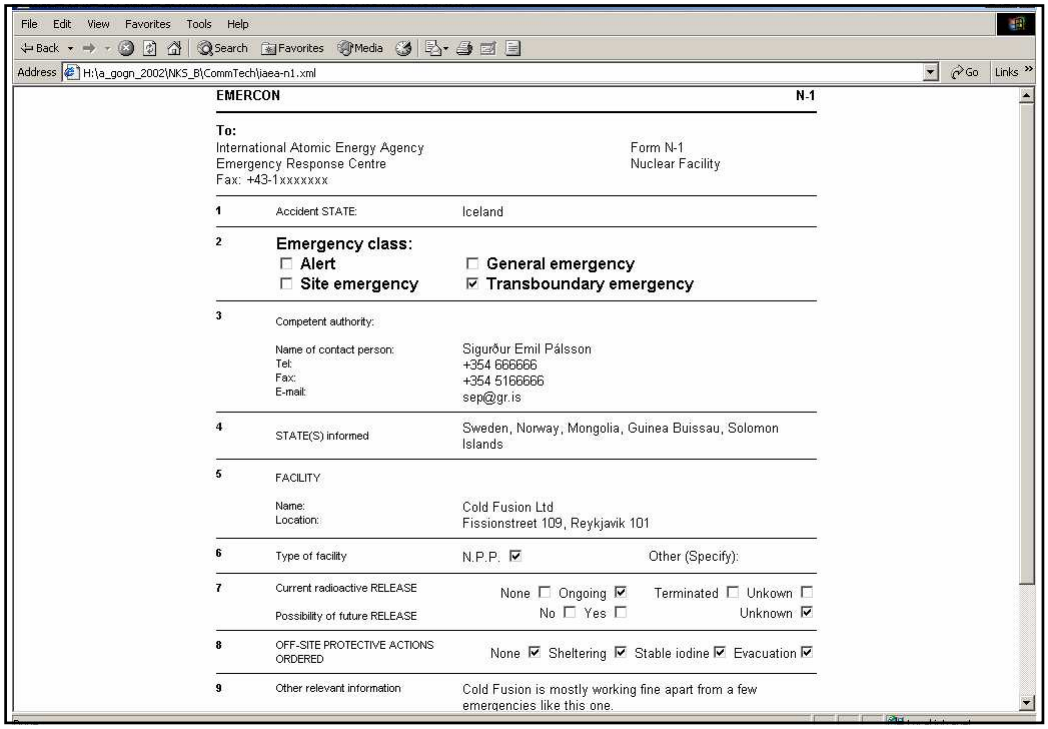
Example XML file w. EMERCON information

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<?xml-stylesheet type="text/xsl" href="iaea-n1-style.xsl"?>
<emercon-form id="N-1" version="Emercon Form R-2 Ver 1.0 (Sep 2000)" name="Nuclear Facility">
        <meta>
                <recipient>
                        <name>International Atomic Energy Agency</name>
                        <division>Emergency Response Centre</division>
                        <fax>+43-1xxxxxxx</fax>
                </recipient>
        </meta>
        <emergency>
                <accident-state>Iceland</accident-state>
                <class>
                        <category name="Alert" selected="false"/>
                        <category name="Site emergency" selected="false"/>
                        <category name="General emergency" selected="false"/>
                        <category name="Transboundary emergency" selected="true">
                                <declaration>
                                        <localtime>
                                                <year>2003</year>
                                                <month>02</month>
                                                <day>28</day>
                                                <hour>16</hour>
                                                <minute>22</minute>
                                        </localtime>
                                        <utctime>
                                                <year>2003</year>
                                                <month>02</month>
                                                <day>28</day>
                                                <hour>16</hour>
                                                <minute>22</minute>
                                        </utctime>
                                </declaration>
                        </category>
                </class>
                <authority>
```

Information is identified by tags.
If the same information is shared by different users, the definition of tags needs to be the same.
Standardisation within user group needed!

Part of XLS document defining appearence

```
<xsl:template match="accident-state">
<td width="28%" class="tableheader">
<xsl:text>Accident STATE:</xsl:text>
</td>
<td width="3%" />
<td width="28%" align="left">
<xsl:value-of select="./." />
</td>
<td width="3%" />
<td width="28%" />
</xsl:template>
<xsl:template match="authority">
<td width="31%" class="tableheader" align="left" colspan="2">
```



Time for action!

XML is widely being taken into use within emergency preparedness organisations, e.g.

- **Nordic radiation protection authorities**
- **IAEA Emergency Response Centre**
  (has ENATOM info downloadable in XML format as of 1 March 2003)

Sometimes only the technical experts are involved, not the end-users.

The time for standardisation is now!
The end-users need to be involved!

Geislavarnir ríkisins

Acknowledgements

Georg Lúðvíksson, of Dimon Software,
wrote some of the description of XML shown in this presentation and designed the ENATOM XML and XLS sheets used as examples.

The present and the future

Where are we now?

- **Report from meeting – summaries, incl. requests on systems not presented?**

Where do we want to go?

- **Mechanism for co-operation? NKS, NEP ?**

XML

Mapping interest, potenial users ?

Example on web: XML file with ENAC web page, different style sheets ?

Contact forum in support of voluntary harmonisation ?

IAEA WG3 ?

ICELANDIC RADIATION PROTECTION INSTITUTE
Environmental Monitoring and Emergency Preparedness Division

Use of the Internet in International Emergency Management: Current Problems and Possible Improvements

Sigurður Emil Pálsson
Icelandic Radiation Protection Institute

Introduction

The Internet has during the last decade grown rapidly to become one of the main tools for exchanging information in a modern society. This has been in parallel with similar growth in communication technology, providing both wired and wireless high capacity communication channels. Many special applications and services have been developed making use of the new technology. International emergency management is however currently only making use of a part of the possibilities the Internet can offer. This is due to lack of co-operation and harmonisation, and not using recent standards for information exchange. This problem can be solved simply by more co-operation and active use of modern standards.

Identification of problems

The problem for international emergency management arises from the wide variety of users and their needs. On one hand there are users in countries with nuclear power plants and sophisticated decision support systems, on the other hand there are countries without nuclear reactors within or near their boarders. The latter may not be able to justify developing or setting up complex decision support systems, but in most cases they would want to be able to make use of internationally distributed information in some efficient way. Many of the sophisticated web based applications have been excellently tailored for the needs of the owners, but are often less suitable for others.

Some of the typical problems are:

a) **Too large files**. Application developers commonly use solutions that require large files (or sets of files) to be transferred in order to create a pleasant interface for the users. The rapid growth in high capacity communication channels makes this type of solutions practical, as long as the server and the user are linked by such a channel. When the same information is transferred with congested (e.g. due to an emergency) low capacity (international) channels, it results in long download times or even the possibility that the user may not receive the information at all.

b) **Integration of content and layout information in one file**. This is one of the main causes of files being unnecessarily large, whether they are web pages (HTML files), or e.g. PDF or Word files. Typically the content for the users is just a small part of the file, most of information in the file is related to the presentation layout.

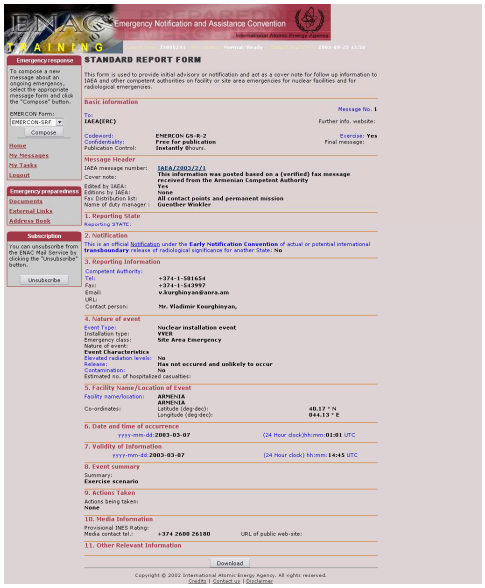
c) **Device and web browser specific solutions**. Some web sites are optimised for one type of web browser, but the contents may not be readable with other types of browsers and it may also be difficult to print. This also means that it is more difficult to make the information accessible on other platforms, e.g. mobile devices and the systems are more likely to require constant maintenance in order to keep up with technological developments.

d) **Inconsistent structure**. This causes extracting information from web pages automatically into databases (e.g. for decision support systems) to be very unreliable. Information for databases has usually to be made available through separate channels. The HTML language traditionally used for web pages has tags to identify different types of information. But modern HTML web pages are generally loaded with non-standard device specific formatting instructions. Having two web pages that look the same does not mean that the underlying code is the same. The author conducted a test a couple of years ago where commercial software was used to transform web pages from a few emergency management sites to another platform (WAP pages for mobile phones). The transformation failed in some cases because of inconsistent use of identifying tags in the underlying code.

A simple but relevant example: information on the IAEA ENAC web site

Please note that the example given here is from an exercise conducted to test the training version of the IAEA ENAC web site, it is not information about an actual event

This is how the information sent to the IAEA would have been displayed on the ENAC web site, as viewed on an ordinary PC computer (total size of files transferred 52k)



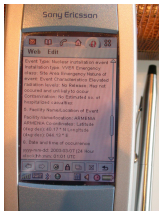
The actual information is the following (size of text file 0.7k)

EMERCON-SRF
2003-03-07 15:10
2003-03-07 15:13
2003-03-07 15:13
2003-03-07 14:45
1
Armenia, Republic of
Armenian Nuclear Regulatory Authority (ANRA), Emergency Response Centre,
Free for publication
instantly
No
Yes
ARMENIA
All contact points and permanent mission
Guenther Winkler
Yes
None
IAEA/2003/2/1
This information was posted based on a (verified) fax message received from the
Armenian Competent Authority
Verified by IAEA
IAEA(ERC)
EMERCON GS-R-2
VYER
Mr. Vladimir Kourghinyan,
+374-1-543997
+374-1-581654
v.kurghinyan@anra.am
Nuclear installation event
No
40.17N
044.13E
ARMENIA
2003-03-07 01:01
Exercise scenario
None
+374 2600 26180
No
Site Area Emergency
Has not occured and unlikely to occur
No
No

This information is of limited use unless the meaning of information element is explained. If the information is to be displayed in an easily understandable format (such as is done on the web page above), then the receiver has to have a special computer program for displaying the received information in an appropriate way and possibly process it for own use.

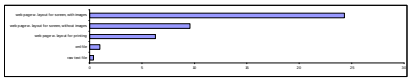
The XML solution

An XML file is similar to the raw text file, but here every information element is identified with special tags, at the beginning and at the end. The users exchanging information must agree on the definition of these tags, but normally they are given descriptive names so that information in the file is easily understandable to a human being. The tags make the file larger than a raw text file (size of XML file is here 2k), but it is still only a fraction of the size of the files required to display the web page.



iPanel
Event Type:
Nuclear installation event
Installation type:
VYER
Emergency class:
Site Area Emergency
Nature of event:
Event Characteristics
Elevated radiation levels: No
Release:
Has not occured and unlikely to occu
Contamination: No

Comparison of sizes of transferred files relative to an XML file



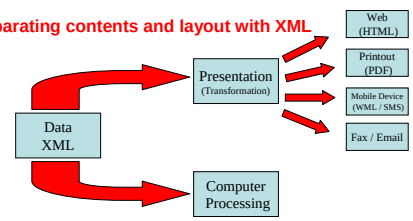
Relatively small file sizes is one of the benefits of using XML compared to using traditional web solutions. But it is not the main benefit (raw text files would be smaller). The main benefit is that it offers a structured standardised method of separating the content information and layout information (these can easily be in different files). This method has been endorsed by the information technology industry and has already been widely taken into use. Microsoft Excel and Access 2002 programs can open and save files in XML format (the XML file above can easily be read directly, the tags are interpreted as field names). Web browsers are starting to have the ability to read XML files directly (e.g. the current version of Internet Explorer). If the XML file includes a reference to a special style sheet (which can be a separate file), then the information can be displayed in any preferred way, e.g. in the same manner as on the web page. The style sheet can be kept by the receiver (and thus needs not to be sent every time) and it can be modified to the receivers preferences (e.g. so that all information apart from the actual data received appears in the receiver's native language). Receiving the information in a standardised structured format makes it also easy to import it into decision support systems and most commercially available database systems (most of them support XML).

<?xml version="1.0" ?>
- <Message ID="243">
<EnatomForm>EMERCON-SRF</EnatomForm>
<SubmittedDate>2003-03-07 15:10</SubmittedDate>
<LastModifiedDate>2003-03-07 15:13</LastModifiedDate>
<PublishedDate>2003-03-07 15:13</PublishedDate>
<ValidityDate>2003-03-07 14:45</ValidityDate>
<MessageNumber>1</MessageNumber>
<ReportingState>Armenia, Republic of</ReportingState>
<CompetentAuthority>Armenian Nuclear Regulatory Authority (ANRA), Emergency Response Centre,</CompetentAuthority>
<PublicationControl>Free for publication</PublicationControl>
<PublicationDelay>instantly</PublicationDelay>
<IsNotification>No</IsNotification>
<IsExercise>Yes</IsExercise>
<Site>ARMENIA</Site>
<FaxDistributionList>All contact points and permanent mission</FaxDistributionList>
<DutyManagerName>Guenther Winkler</DutyManagerName>
<IsIAEAEdited>Yes</IsIAEAEdited>
<IAEAEditions>None</IAEAEditions>
<IAEAMessageNumber>IAEA/2003/2/1</IAEAMessageNumber>
<CoverNote>This information was posted based on a (verified) fax message received from the Armenian Competent Authority</CoverNote>
<Status>Verified by IAEA</Status>
<DistributionList>IAEA(ERC)</DistributionList>
<Codeword>EMERCON GS-R-2</Codeword>
<IsFinalMessage />
<FacilityType>VYER</FacilityType>
<CAContactPerson>Mr. Vladimir Kourghinyan,</CAContactPerson>
<CAFax>+374-1-543997</CAFax>
<CAURL />
<CATelephone>+374-1-581654</CATelephone>
<CAEmail>v.kurghinyan@anra.am</CAEmail>
<EventType>Nuclear installation event</EventType>
<ElevatedRadiation>No</ElevatedRadiation>
-
- <Coordinates>
<Latitude>40.17N</Latitude>
<Longitude>044.13E</Longitude>
</Coordinates>
<CasualtyNumber />
<EventLocation>ARMENIA</EventLocation>
<EventDate>2003-03-07 01:01</EventDate>
<EventDescription>Exercise scenario</EventDescription>
<ActionsTaken>None</ActionsTaken>
<INESRating />
<MediaContactNumber>+374 2600 26180</MediaContactNumber>
<OtherInfoText />
<Contamination>No</Contamination>
<EmergencyClass>Site Area Emergency</EmergencyClass>
<EventNature />
<Release>Has not occured and unlikely to occur</Release>
<FurtherInfoURL />
<PressReleaseURL />
<FurtherInfoAttached>No</FurtherInfoAttached>
<PressReleaseAttached>No</PressReleaseAttached>
</Message>

More emphasis should be on web solutions which are not device specific

The design of modern web pages is often assuming that the receiver is using a powerful desktop computer with a high capacity communication channel. Some of these pages cannot be viewed by simpler browsers or browsers on mobile devices, which are becoming increasingly more common. These include small computers (PDAs) and so called "smartphones". If the browser can view the page, then it is often with some difficulties. Above can be seen how the example from the IAEA ENAC training page appears on a smartphone and a PDA.
By making use of new standards for web design it becomes much easier to make web pages adapt to the browser (and device) used for viewing. Thus a PC user can get a complex layout, a user with a mobile device a simplified layout. Both users are however accessing the same page. Such new style web sites are becoming more common and this approach would also be highly useful for emergency preparedness web sites.
Most of these new modern web pages make use of the XHMTL web language, which is the traditional HTML web language restructured according to XML rules.

Separating contents and layout with XML



User coordination groups needed

Various XML applications have been defined, each group of users must define for themselves the structure and labelling of the information elements they want to exchange. This has already been done in many fields within science, industry and elsewhere.
http://www.oasis-open.org/cover/xml.html#applications
Some organisations working within nuclear and radiological emergency preparedness have made such definitions internally and taken XML into use. Some specific groups in this field have also done so. But we will only obtain full benefits of XML usage if we try to reach a general consensus on the required definitions, where appropriate. An informal contact group is being set up in the Nordic countries for this purpose. Other interested parties are encouraged to be in contact via e-mail: **sep@gr.is**
More information is available at: **http://www.gr.is/nks-b/CommTech/**

NucInfo

Web-based Nuclear Information System

http://www.nucinfo.com

STUK, February 2003, Hans Olav Nymand

NucInfo

PDC

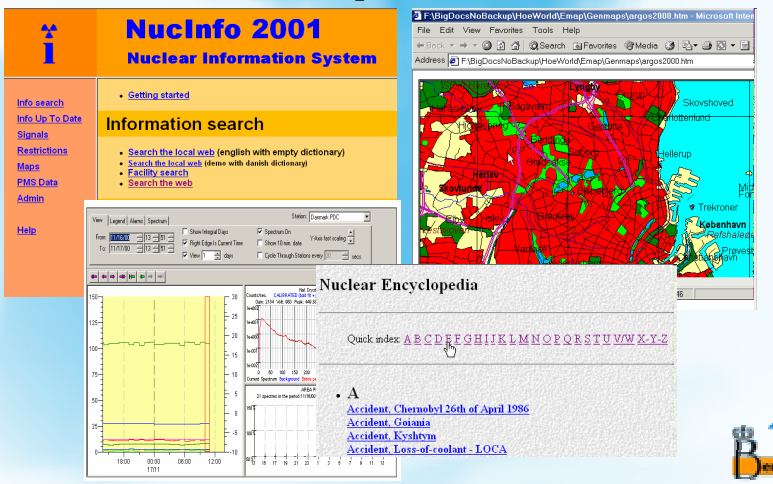
- Hans Olav Nymand, project manager
- Prolog Development Center A/S
  independent danish software-house founded 1984
- Approx. 40 developers
- Cooperation with DEMA since 1993 on emergency management systems
- ARGOS, PMS, NucSpec, NucInfo
- http://www.pdc.dk

NucInfo

What is it

NucInfo

Basically a collection of web-pages and some advanced components



PROCES DEVELOPMENT CENTER

Beredskabsstyrelsen

Background

NucInfo


12 BERLINGSKE . 1. SEKTION

Atomkraft-ulykken

Miljøstyrelsen kimes ned

Kolossalt med henvendelser til den oplysningscentral, som Miljøstyrelsen har oprettet efter ulykken på det sovjetiske atomkraftværk.

- Immediately after the Chernobyl accident a public service was established in Denmark for telephone enquiries

PROCES DEVELOPMENT CENTER

Beredskabsstyrelsen

Usage

- Originally meant as support system for call-center
- Today primarily for intranet and internal information in organisation
- DEMA working on Internet site with (parts of) NucInfo

NucInfo

DEMA – Emergency org.

NucInfo

Emergency information flow

NucInfo

The duty officer

NucInfo

Call center

NucInfo

Experts at the Nuclear Authority
Submitting information to NucInfo information server

Call Center

<u>Static information</u>:
Nuclear encyclopedia
Maps
Facility database
+ anything added on-site

<u>Dynamic information</u>:
Online info from experts
Current restrictions
Current monitoring data
HTML dump from Argos

The public
Calling the call-center

Intranet in daily work

NucInfo

Nuclear databases IAEA/PRIS, Risø, Nuclear Engineering..

IRS IAEA/OECD

NucNet News NucNet in Bern

INES IAEA

Problem: protected sites, slow access, not always avaiable...

Monitoring data ARGOS prognosis

Other information internal/mail/web

INTRANET – web, databases

Nuclear Authority

FAST access, information is indexed for local search

INDEXING pooled information - making it TRANSPARENT on web

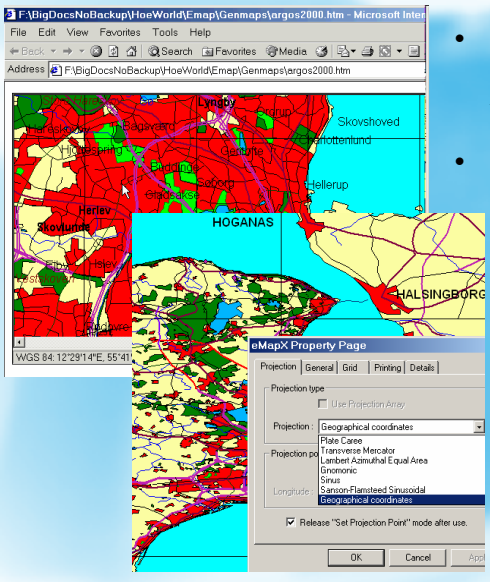
NucInfo can improve an existing intranet with advanced features or be the basis for a new intranet

NucInfo components

- Call center support (Info-Up2Date)
- GIS module (eMapX)
- Facility database (including PRIS)
- Search engine with local language support
- Nuclear encyclopedia
- Restrictions database
- Online monitoring data

NucInfo

GIS Module - eMapX

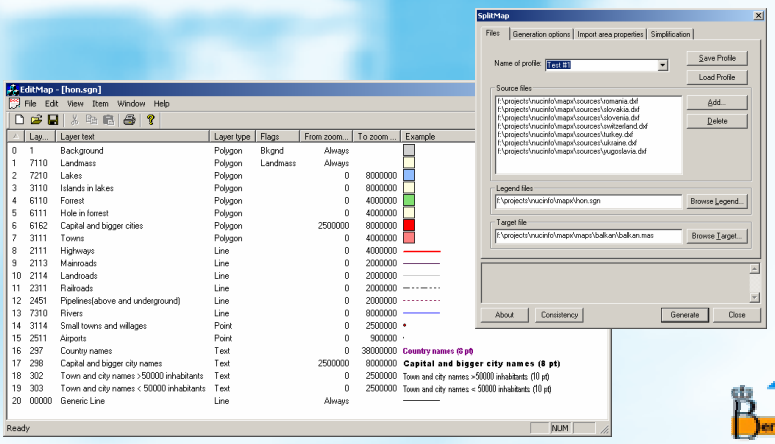


- Dynamic zoom from entire world to single building
- Several projections
  - Different levels of detail depending on viewed area
  - Good performance also on poor lines
  - Local PC, LAN or Internet
  - Create new maps

NucInfo

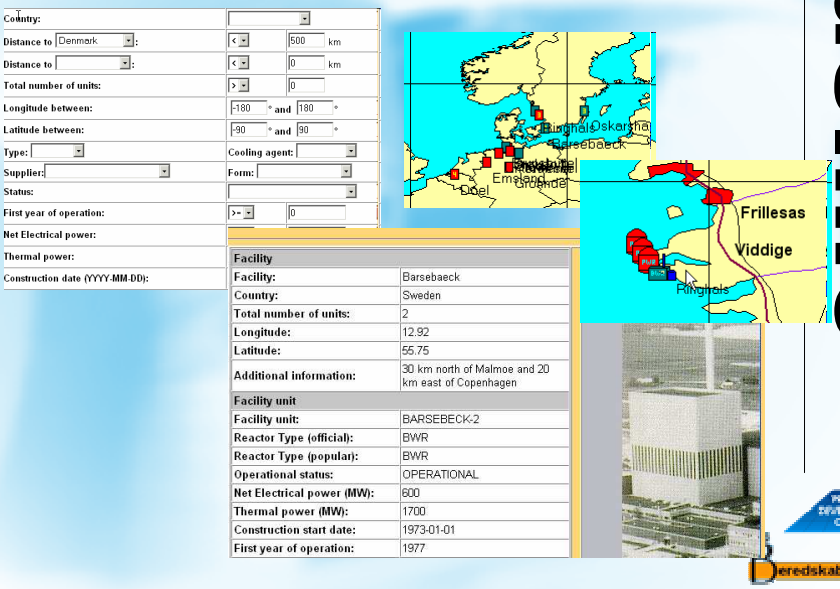
Creating new maps

- Support for DXF and Shape-files
- Longitude/Latitude, UTM32 and ED50



NucInfo

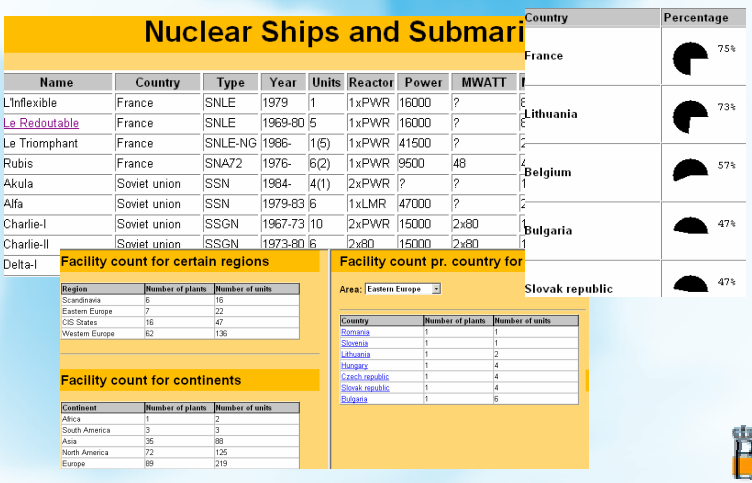
Facility database – search



NucInfo

Facility database - additional

- Yearly import of data from PRIS
- Additional information from DEMA



Nuclear Ships and Submari

Name	Country	Type	Year	Units	Reactor	Power	MWATT
L'Inflexible	France	SNLE	1979	1	1xPWR	16000	?
Le Redoutable	France	SNLE	1969-80	5	1xPWR	16000	?
Le Triomphant	France	SNLE-NG	1986-	1(5)	1xPWR	41500	?
Rubis	France	SNA72	1976-	6(2)	1xPWR	9500	48
Akula	Soviet union	SSN	1984-	4(1)	2xPWR	?	?
Alfa	Soviet union	SSN	1979-83	6	1xLMR	47000	?
Charlie-I	Soviet union	SSGN	1967-73	10	2xPWR	15000	2x80
Charlie-II	Soviet union	SSGN	1973-80	6	2x80	15000	2x80
Delta-I							

Country	Percentage
France	75%
Lithuania	73%
Belgium	57%
Bulgaria	47%
Slovak republic	47%

Facility count for certain regions

Region	Number of plants	Number of units
Scandinavia	6	16
Eastern Europe	7	22
CIS States	16	47
Western Europe	62	136

Facility count for continents

Continent	Number of plants	Number of units
Africa	1	2
South America	3	3
Asia	35	88
North America	72	125
Europe	89	219

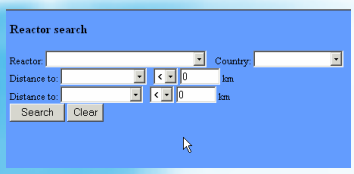
Facility count pr. country for

Area: Eastern Europe

Country	Number of plants	Number of units
Romania	1	1
Slovenia	1	1
Lithuania	1	2
Hungary	1	4
Czech republic	1	4
Slovak republic	1	4
Bulgaria	1	6

NucInfo

Support for handhelds



Reactor search

Reactor: Country:

Distance to: < 0 km

Distance to: < 0 km

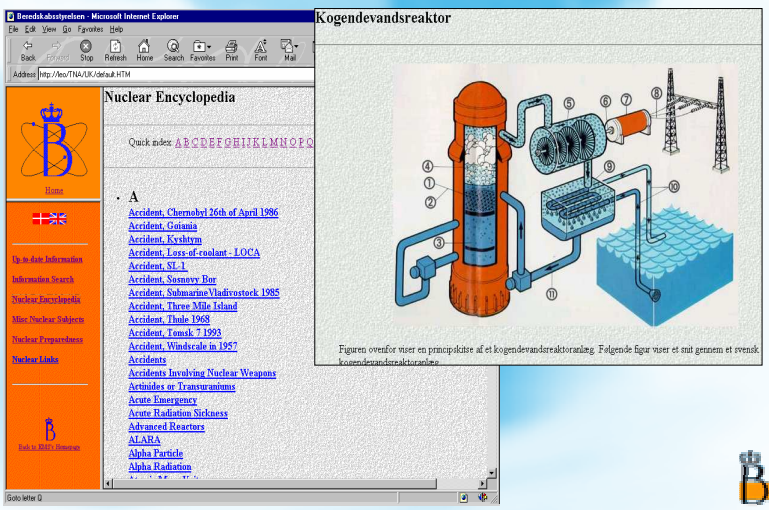
Search Clear

- Symbian (and other) devices have additional nice features
- E-Mail, Fax
- Better display for WAP
- FTP, Telnet
- Citrix and similar

NucInfo

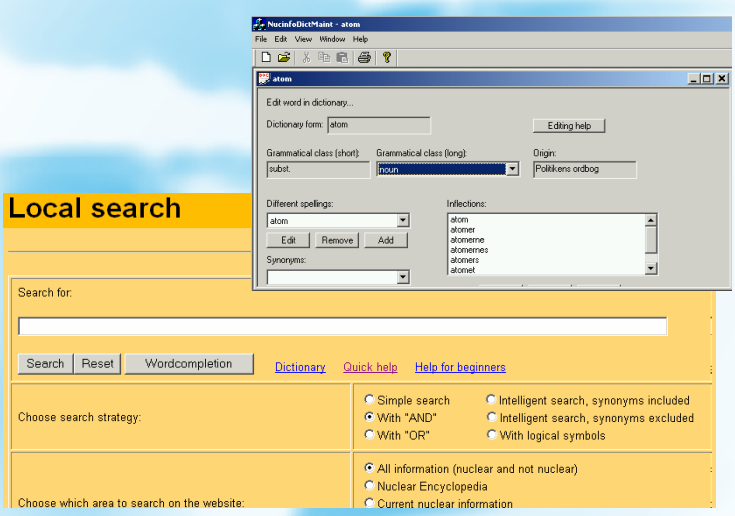
Nuclear encyclopedia

- Text and pictures



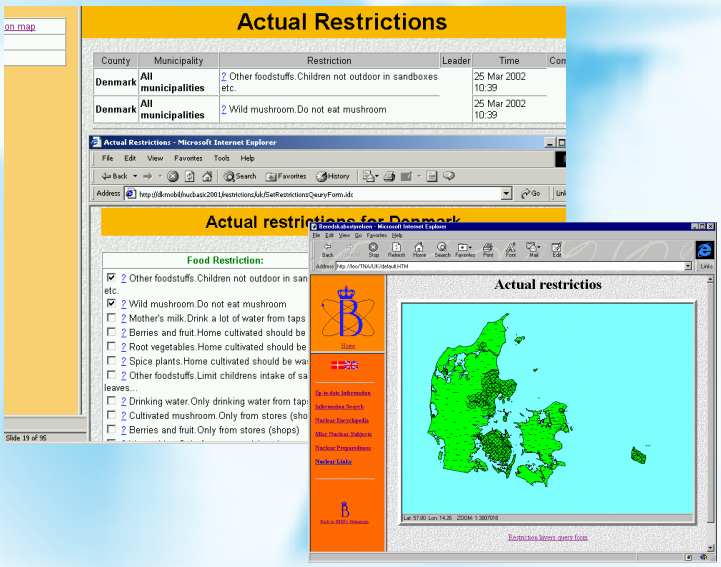
NucInfo

Search engine



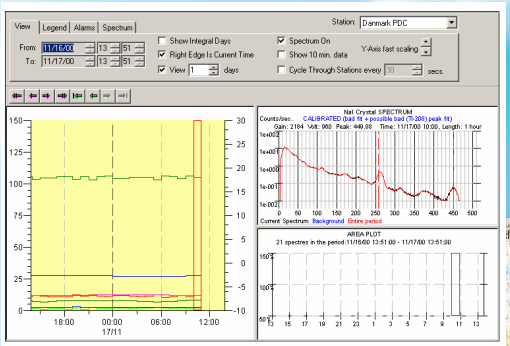
NucInfo

Restrictions



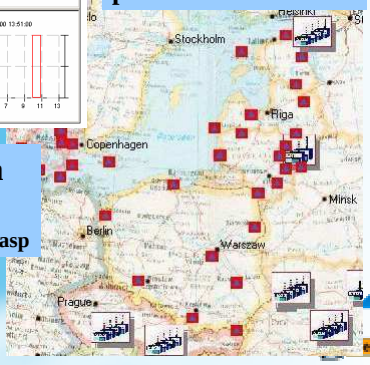
Nucinfo

Monitoring data



Internet version of PMSViewer

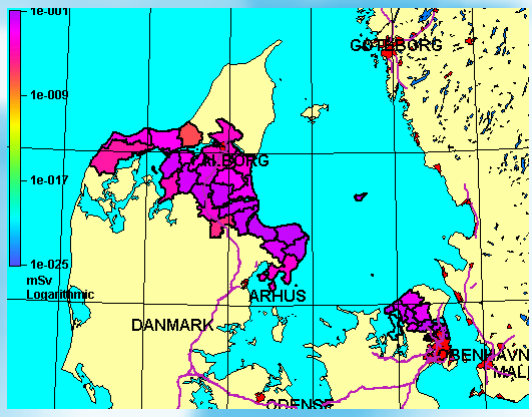
PMSViewer for both PCs and handheld devices – mobile phones with internet



Try online access to Latvian monitoring stations (PMS):
www.rdc.gov.lv/nucbasic2001/pms/asp/PMS.asp

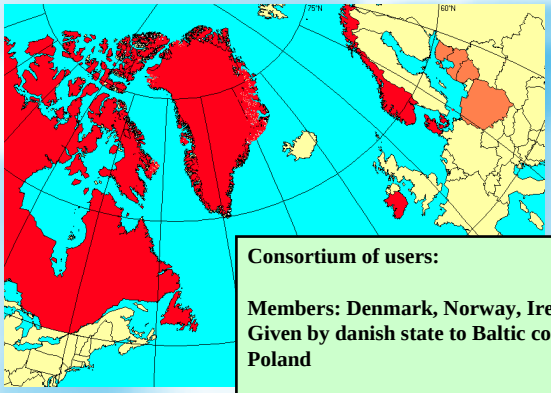
Nucinfo

Sample dump from Argos



NucInfo

Argos & NucInfo consortium



Consortium of users:

Members: Denmark, Norway, Ireland, Canada Given by danish state to Baltic countries and Poland

No license fee for access to NucInfo, Argos, NucSpec and PMS – but yearly fee for new development

Nordic countries 100-200.000 DKK/year

http://www.nucinfo.com

NucInfo

Mobile data with TETRA and other standards

What is TETRA

TETRA data

others

Ole Arrhenius

Senior System Marketing Manager

Nokia

NOKIA

The only open digital PMR standard

ETSI

European Telecommunications Standardization Institute

TETRA

- Purpose built technology - developed in co-operation with public safety agencies
- Open standard enables open competition between vendors
- The only digital PMR standard approved by an international standardisation body (ETSI)
- Interoperability between different suppliers' infrastructure and terminals enables open competition and cross-border communication

ROHDE&SCHWARZ

NOKIA

FREQUENTIS

sepura

MOTOROLA

Marconi

TELTRONICS

Clear-Tone Communications, Inc.

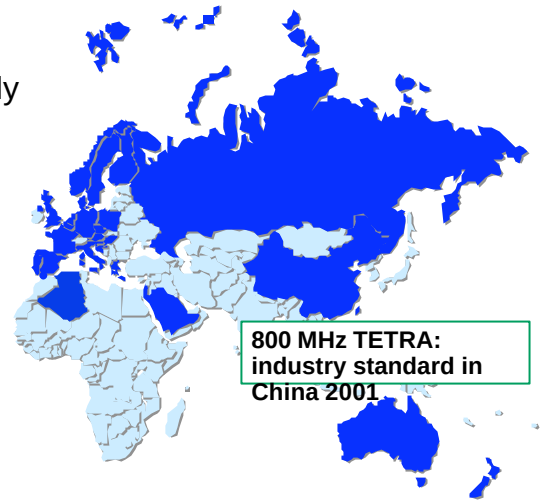
NOKIA

TETRA goes global

- TETRA has evolved from a European standard to a globally adapted multi-vendor digital PMR standard
- More than 100 contracts awarded so far world-wide
- Over 30 networks in operation

NOKIA
SIEMENS
MOTOROLA
MARCONI COMMUNICATIONS
ROHDE&SCHWARZ

contracts by vendors' announcements, March 2000



800 MHz TETRA: industry standard in China 2001

What makes TETRA unique?

- Unique communication package in total
- Instant group communication
- Fast call set-up time
- Direct Mode (DMO)
- Queuing of channel resources
- Pre-emptive priorities
- Uncompromised security
  - authentication of radios (and networks)
  - air interface encryption, static or dynamic keys
  - end-to-end encryption support
  - disabling of stolen radios
- Field access to data with IP packet data

Open Channel Communication for Unexpected Situations

- open channel provides all informed communication for selected users
- no dialling - the users only press PTT, when they want to talk
- to manage e.g. incident and big maintenance operations
- late entry
- dispatcher sets up a virtual dedicated network for the communication by allocating channels and selecting members

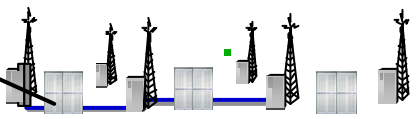
NOKIA

Separated technical and operative management Flexibility to choose operating model

- Dispatchers manage their Virtual Private Network

Virtual Private Networks

- Operator manages physical radio network



Physical Radio Network

NOKIA

Complete solution with Nokia TETRA

Nokia TETRA infrastructure

Base stations

Exchanges

Nokia Dispatcher Solutions

Complete commitment

Network management
Nokia NetAct

Nokia TETRA Solution

Completing connectivity

Integrated command and control

Intranet
Internet

LAN
WAN

PSTN
PABX
ISDN

Connectivity products

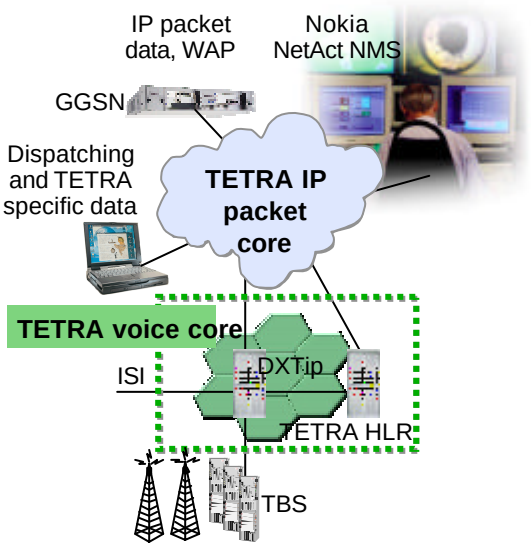
Nokia TETRA terminals

Nokia services
Planning and deploying

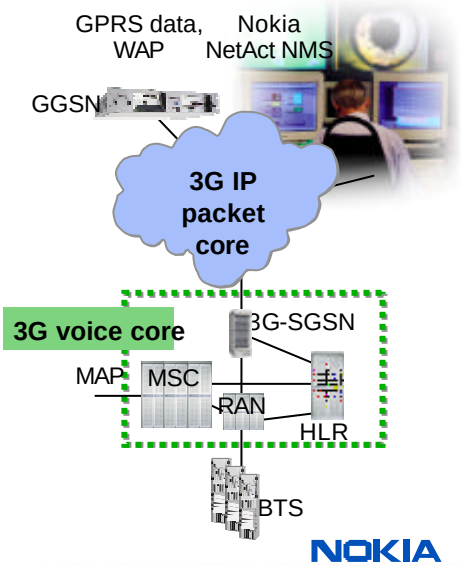
NOKIA

TETRA system architecture is the same as in 3G

Nokia TETRA

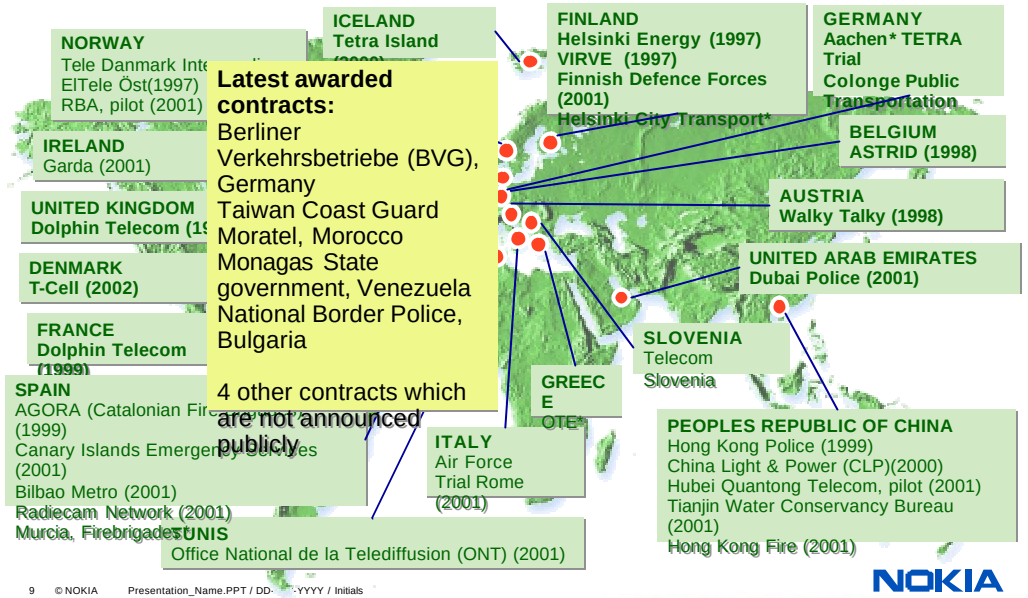


Nokia 3G



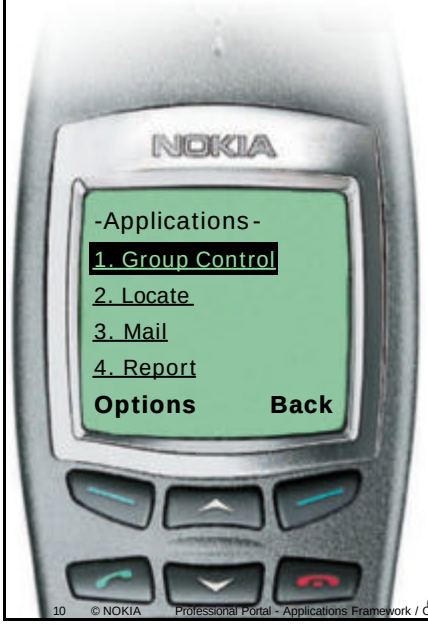
NOKIA

Nokia success in TETRA continues



NOKIA

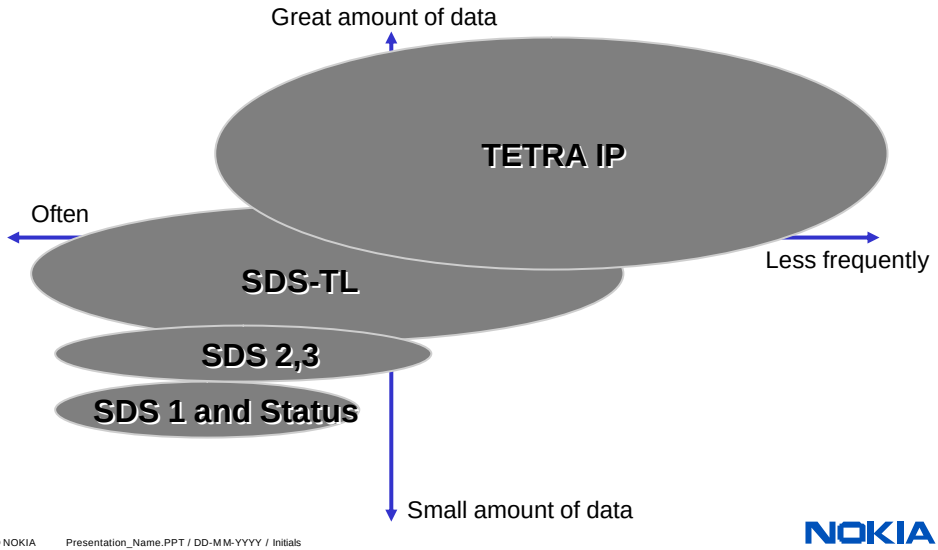
TETRA data services complement voice



- Status messages
  - efficient numeric messages for fixed status information
- Short Data Service, SDS
  - text messaging
  - applications
- IP packet data
  - Internet/Intranet
- Circuit mode data
  - specialized applications
- WAP

NOKIA

Data services for different needs



NOKIA

Wireless data applications

Portable users
Vehicle users
Fixed equipment

Workforce management
Unit status, AVL
Instructions

Information retrieval, inquiries
Task related information
Identity
Vehicles, weapons, fingerprints
Maps

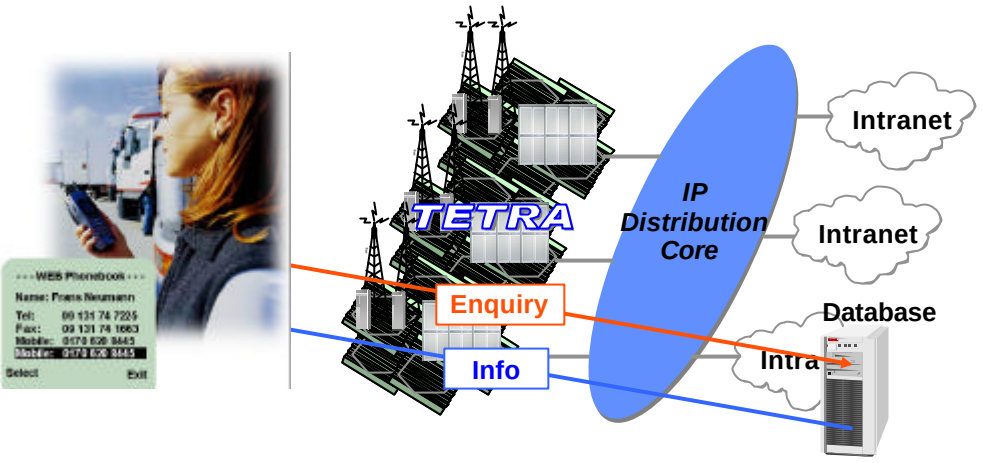
Reporting
Task course and operations

Control and monitoring
Alarm devices
Environmental measurements
Field equipment telemetry

Surveillance video
Still/video image

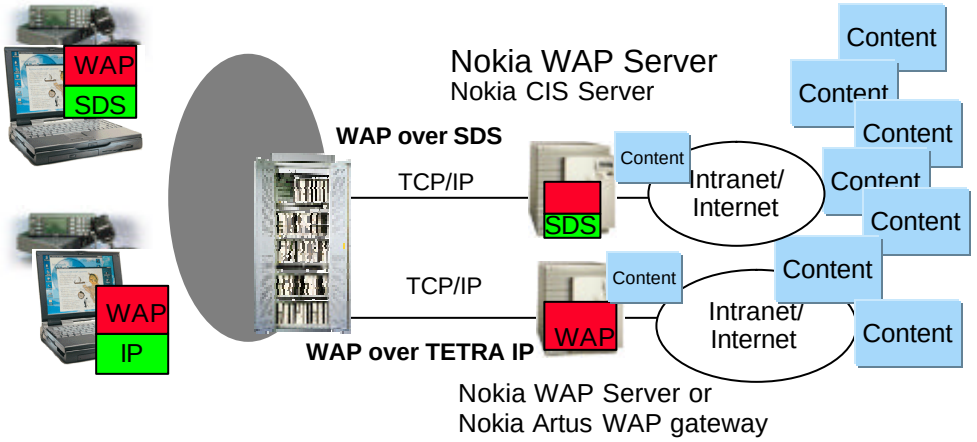
Control rooms
IT systems
Databases
Data networks
Instrumentation

Example - Data access with TETRA IP Database interrogation



NOKIA

WAP with TETRA



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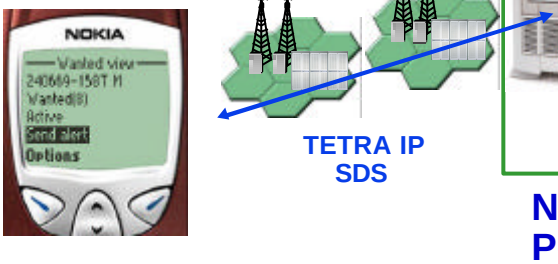
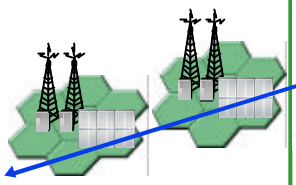
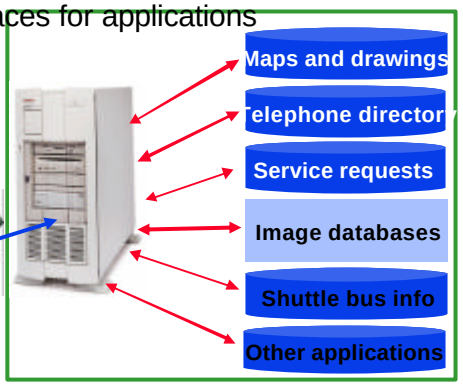
Nokia Professional Portal

- Application Portal is a controlled way to offer applications for end-users
- Portal binds services together and offers easy to use applications
  for end-users and unified open interfaces for applications

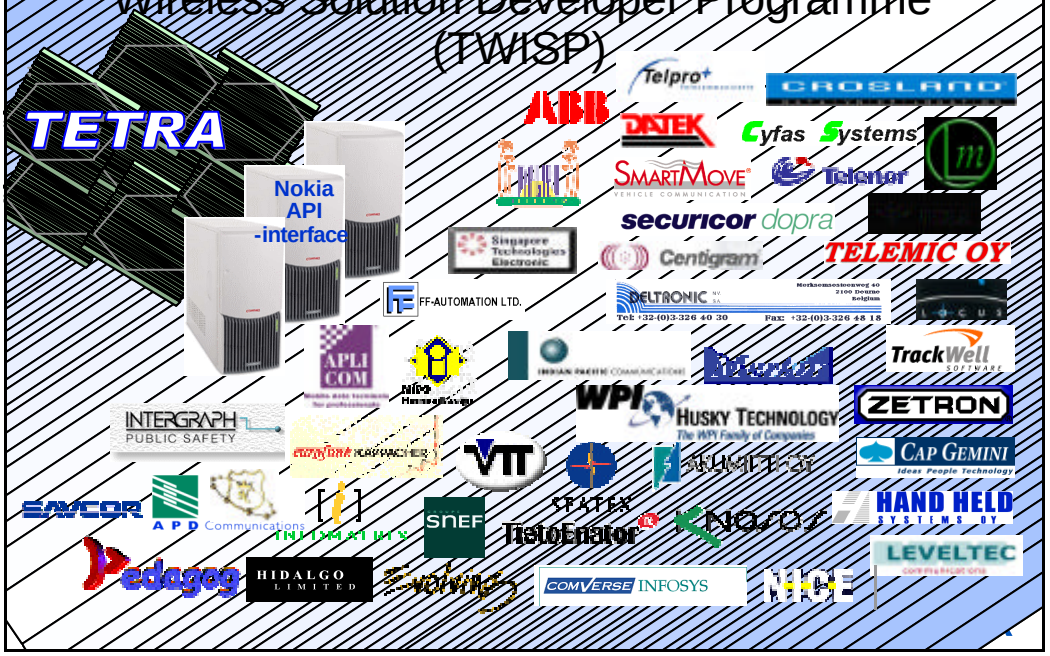






Nokia Professional Portal

Nokia TETRA open APIs and Wireless Solution Developer Programme (TWISP)



The Mobile World

In the future, a major part of personal communication - be it voice, data, images or video - will be wireless.

The personal mobile device will be the main application platform and medium!

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In our Vision, the Mobile Device Will Enable Complete Personal Connectivity

Messaging

Personal Data

Financial Transactions

Entertainment

Music

Calendar

Imaging

Voice Calls

Location-based Services

Contacts

Video

Tasks

News

Information

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Amount and Types of Mobile Content Will Explode in the Future

MMSs | Images | Videoclips | Audio/music | Applications





- Typ[illegible]onte
  - User created (images, videoclips, music etc.)
  - Personal (music, movies, movieclips, games, applications, etc.)
  - Group (family, friends, etc.)
  - Community (greyhound owners' image album etc.)
  - Subscribed (Manchester United Multimedia news service etc.)
  - Network provided (location-based weather info etc.)
  - Professional (authorities own databases and applications)

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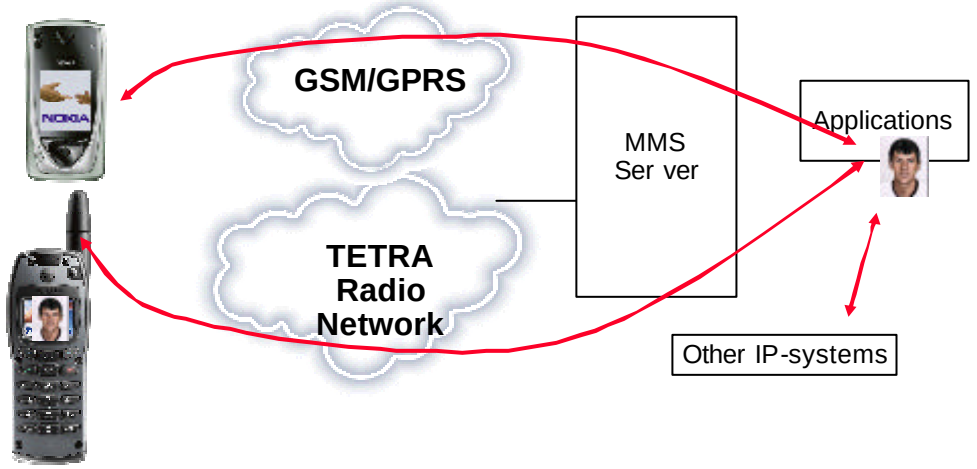
Common applications



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Conclusion

There is no single technology solving all communication needs but with a well planned combination we can reach a very high level

TETRA, GSM, GPRS, UMTS, WLAN

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NKS-B CommTech

Results
Where do we go from here?

Mini-seminar at STUK
27-28 February 2003

Communication technology and emergency preparedness

CommTech seminar – Day 1

- Welcome (Hannele Aaltonen)
- The NKS+NEP work and the background for the meeting (Sigurður Emil Pálsson)
- Introduction of participants (all; incl. what do we want to achieve with this meeting)
- **Communication - a tool for enhanced international response to nuclear and radiological emergencies** (Finn Ugletveit, giving an introduction to the ongoing work within IAEA working groups)
- **Recent developments: mobile Internet, web standards – the case for using open standards from the user's point of view** (Sigurður Emil Pálsson)
- The communication project at NRPA (Jon Arvid Ludviksen et al.)
- Strategy for use of communication in radiological emergency preparedness (general discussion)
- Presentation of the Emergency Response Centre at STUK

CommTech seminar – Day 2

- Separation of content and appearance, new strategies in web site design and the advantage of using XML as a standard basis for exchange of data (Sigurður Emil Pálsson, Nordic co-operation in this field will be recommended)
- Development of mobile data networks (GPRS, WWW, 3G etc.) (Mika Flink, Sonera)
- Introduction to FINRI (Anne Weltner, Kalle Korpijoki)
- Introduction to STUK's alarm system (Heikki Lemmelä, Ari Rosenberg)
- **Introduction to the NucInfo system** (Hans Olav Nymand)
- **Development of the mobile Internet – including secure communications with the Tetra Network** (Ole Arrhenius, Nokia)
- Conclusions, recommendations for future work by NEP, within the NKS framework, to be presented jointly to the IAEA, or on another basis.

Relevant work not included
(not known until recently)

- EU MODEM **Contacts now established**
- EU DSS network
- Work done at STUK (Harri Toivonen)

Options

- Finish CommTech,
  return unused part of funding to NKS
- Propose continuation focusing on identified relevant topics,
  e.g. continuation in form of a follow-up seminar + co-operation with other groups (EU, IAEA, ...)
  (this latter option would require clear support of NEP)

Possible aim of future work

Through use of:

- new standards (e.g. XML, XHTML)
- voluntary harmonisation

make exchange of information more efficient and have the same information accessible by various methods (without reformatting)

For men and machines

Using different platforms (desktop computers down to PDAs and smartphones)

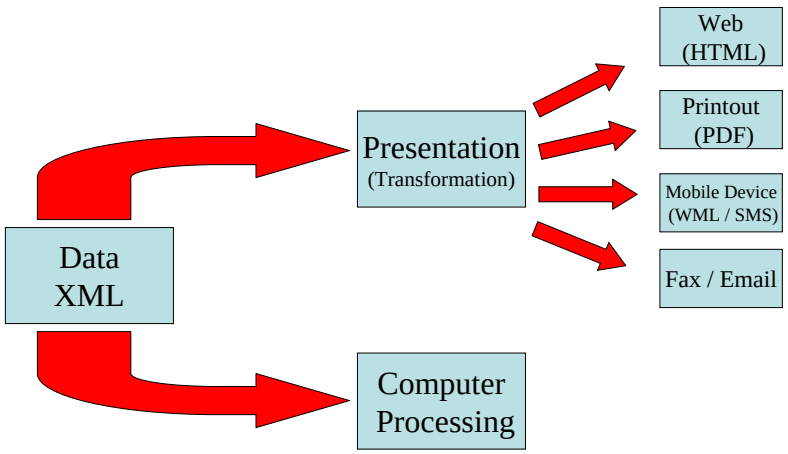
Potential future work

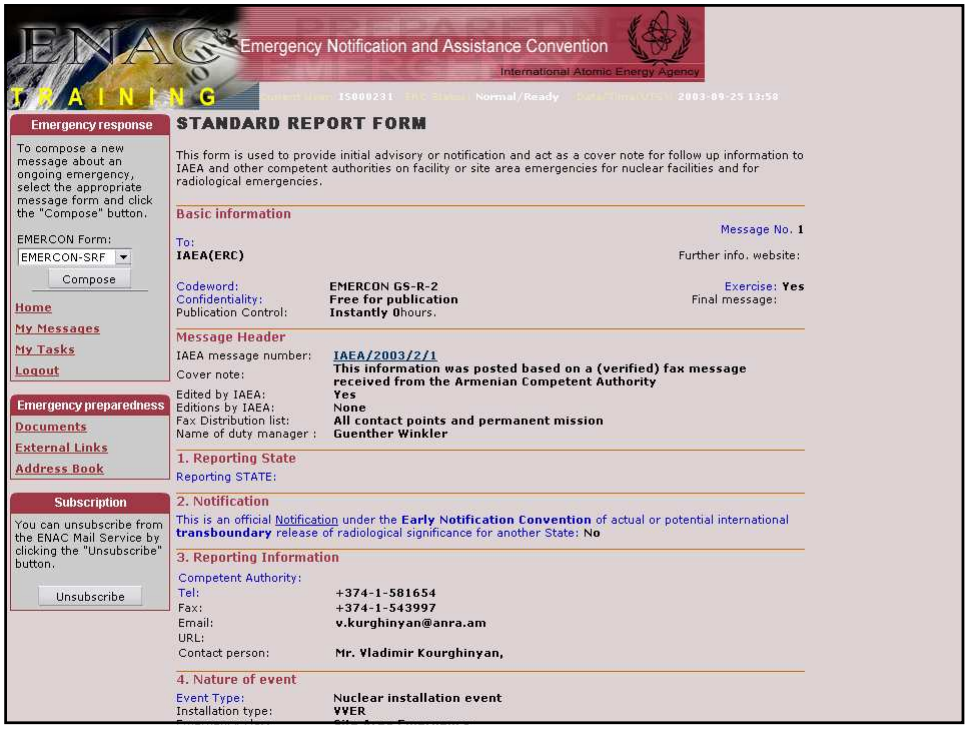
- **Data transfer**: Encourage more harmonisation in use of XML. Potential partners:
  - Nordic groups (EMARAD, METNET, AGS and CGS)
  - EU: MODEM, DSS network, ...
  - IAEA ENAC
- **WEB** Promoting the use of new standards (e.g. XHTML to make web-based information accessible on different platforms + reducing bandwidth requirements)
  - IAEA ENAC site
  - Same for Nordic Web sites ?

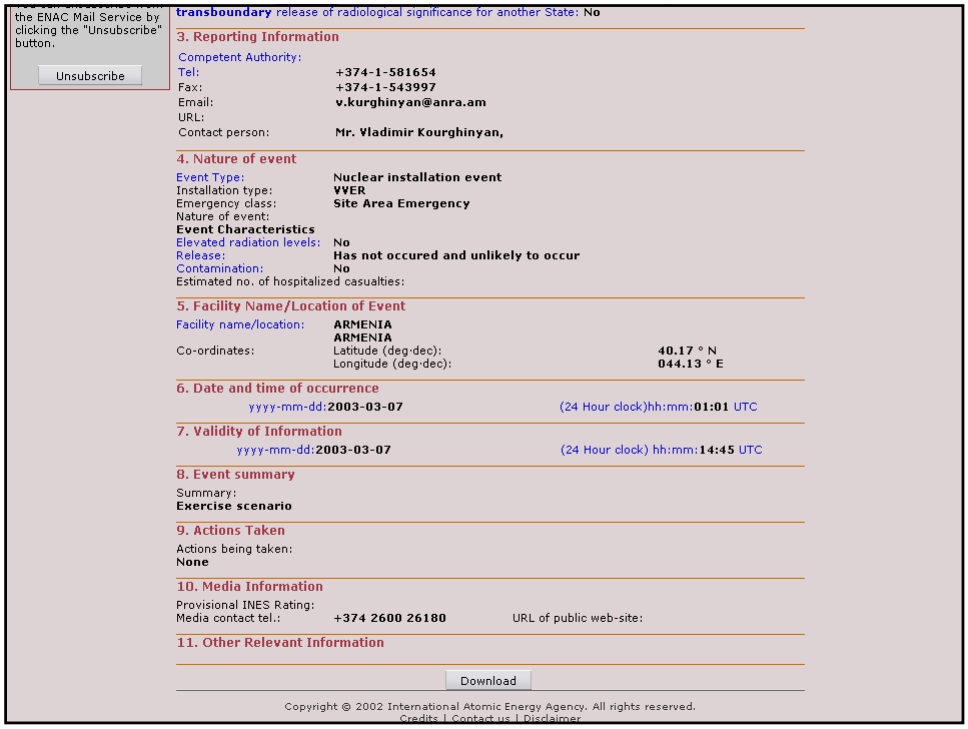
Benefits of XML

- Exchanging data between disparate systems will be easier and cheaper using standardized XML interfaces and describing common data in XML
- Separation of content from presentation makes all presentation easier
- Both human and machine readable (stylesheets help humans read XML)

Separation of Content from Presentation




ENAC
TRAINING
Emergency Notification and Assistance Convention
International Atomic Energy Agency
Emergency response
To compose a new message about an ongoing emergency, select the appropriate message form and click the "Compose" button.
EMERCON Form:
EMERCON-SRF
Compose
Home
My Messages
My Tasks
Logout
Emergency preparedness
Documents
External Links
Address Book
Subscription
You can unsubscribe from the ENAC Mail Service by clicking the "Unsubscribe" button.
Unsubscribe
STANDARD REPORT FORM
This form is used to provide initial advisory or notification and act as a cover note for follow up information to IAEA and other competent authorities on facility or site area emergencies for nuclear facilities and for radiological emergencies.
Basic information
Message No. 1
To:
IAEA(ERC)
Further info. website:
Codeword: EMERCON GS-R-2
Exercise: Yes
Confidentiality: Free for publication
Final message:
Publication Control: Instantly 0hours.
Message Header
IAEA message number: IAEA/2003/2/1
Cover note: This information was posted based on a (verified) fax message received from the Armenian Competent Authority
Edited by IAEA: Yes
Editions by IAEA: None
Fax Distribution list: All contact points and permanent mission
Name of duty manager : Guenther Winkler
1. Reporting State
Reporting STATE:
2. Notification
This is an official Notification under the Early Notification Convention of actual or potential international transboundary release of radiological significance for another State: No
3. Reporting Information
Competent Authority:
Tel: +374-1-581654
Fax: +374-1-543997
Email: v.kurghinyan@anra.am
URL:
Contact person: Mr. Vladimir Kourghinyan,
4. Nature of event
Event Type: Nuclear installation event
Installation type: VVER


the ENAC Mail Service by clicking the "Unsubscribe" button.
Unsubscribe
transboundary release of radiological significance for another State: No
3. Reporting Information
Competent Authority:
Tel: +374-1-581654
Fax: +374-1-543997
Email: v.kurghinyan@anra.am
URL:
Contact person: Mr. Vladimir Kourghinyan,
4. Nature of event
Event Type: Nuclear installation event
Installation type: VVER
Emergency class: Site Area Emergency
Nature of event:
Event Characteristics
Elevated radiation levels: No
Release: Has not occured and unlikely to occur
Contamination: No
Estimated no. of hospitalized casualties:
5. Facility Name/Location of Event
Facility name/location: ARMENIA
ARMENIA
Co-ordinates: Latitude (deg·dec): 40.17 ° N
Longitude (deg·dec): 044.13 ° E
6. Date and time of occurrence
yyyy-mm-dd:2003-03-07 (24 Hour clock)hh:mm:01:01 UTC
7. Validity of Information
yyyy-mm-dd:2003-03-07 (24 Hour clock) hh:mm:14:45 UTC
8. Event summary
Summary:
Exercise scenario
9. Actions Taken
Actions being taken:
None
10. Media Information
Provisional INES Rating:
Media contact tel.: +374 2600 26180 URL of public web-site:
11. Other Relevant Information
Download
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Credits | Contact us | Disclaimer

The raw info

EMERCON-SRF
2003-03-07 15:10
2003-03-07 15:13
2003-03-07 15:13
2003-03-07 14:45
1
Armenia, Republic of
Armenian Nuclear Regularory Authority (ANRA), Emergency Response Centre,
Free for publication
instantly
No
Yes
ARMENIA
All contact points and permanent mission
Guenther Winkler
Yes
None
IAEA/2003/2/1
This information was posted based on a (verified) fax message received from the
Armenian Competent Authority
Verified by IAEA
IAEA(ERC)
EMERCON GS-R-2
VVER
Mr. Vladimir Kourghinyan,
+374-1-543997
+374-1-581654
v.kurghinyan@anra.am
Nuclear installation event
No
40.17N
044.13E
ARMENIA
2003-03-07 01:01
Exercise scenario
None
+374 2600 26180
No
Site Area Emergency
Has not occured and unlikely to occur
No
No

Info in XML format (page 1/2)

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  <PublicationDelay>instantly</PublicationDelay>
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  <DutyManagerName>Guenther Winkler</DutyManagerName>
  <IsIAEAEdited>Yes</IsIAEAEdited>
  <IAEAEditions>None</IAEAEditions>
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  <CoverNote>This information was posted based on a (verified) fax message received from the Armenian Competent Authority</CoverNote>
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<CAFax>**+374-1-543997**</CAFax>
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<CAEmail>**v.kurghinyan@anra.am**</CAEmail>
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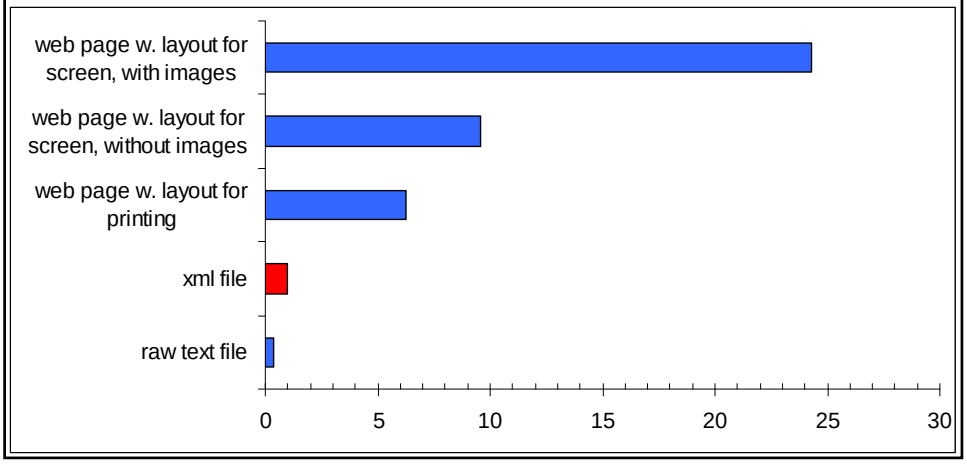
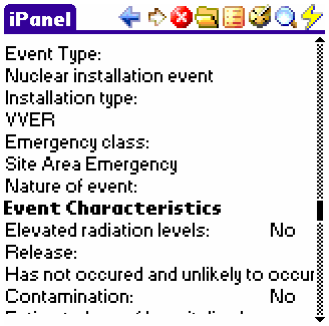
Info in XML format (page 1/2)

Comparison of file sizes corresponding to different methods of displaying info from ENAC web site

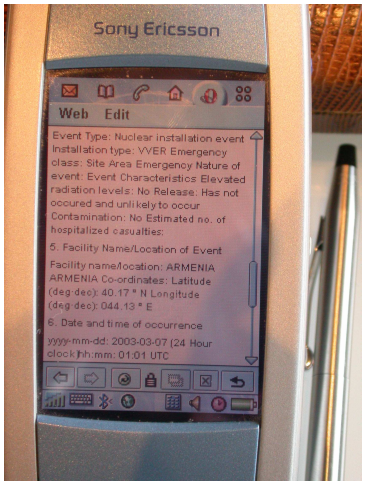


The current ENAC web page can be viewed on a PDA (e.g. connected to a mobile phone)



(Screenshot from a Palm computer)

and even on a Smartphone



(ENAC information displayed on a Sony Ericsson P800)

But

- in both cases displaying the ENAC web page involves a lot of wasted resources.
- it would be possible to display the same information tranferring much less data (requiring much less bandwidth)

Solution to problems: new standards

•Following the new web standards would eliminate the problems

•Makers of PDAs (e.g. Palm) and mobile phones (e.g. Nokia) are endorsing the use of the new standards and turning away from proxy based solutions (incl. traditional WAP).

•Many web sites are being restructured to confirm with new standards and new web design strategies (e.g. www.wired.com and Geislavarnir).

XML User Groups

- Various XML applications have been defined, each group of users must define for themselves the structure and labelling of the information elements they want to exchange. This has already been done in many fields within science, industry and elsewhere.
- http://www.oasis-open.org/cover/xml.html#applications

The present and the future

- **Where are we now?**
  - Report from meeting – summaries, incl. requests on systems not presented?
- **Where do we want to go?**
  - Mechanism for co-operation? NKS, NEP ?
- **XML**

  Mapping interest, potenial users ? **RSS ?**

  Example on web: XML file with ENAC web page, different style sheets ?

  Contact forum in support of voluntary harmonisation ?

  IAEA WG3, work has been started (suggestions for work presented at this seminar) ? **+ EU work**

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            <contact-person>
                <name>Sigurður Emil Pálsson</name>
                <phone>+354 666666</phone>
                <fax>+354 5166666</fax>
                <email>sep@gr.is</email>
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</states>
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    <name>Cold Fusion Ltd</name>
    <location>Fissionstreet 109, Reykjavik 101</location>
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</facility>
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<radioactive-release>
    <current>
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    </current>
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</off-site-protective-actions>
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    Cold Fusion is mostly working fine apart from a few emergencies like this one.
</other-information>
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        <month>02</month>
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```

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        </emergency>
</emercon-form>
```

NKS-B
CommTech seminar
Stockholm, 31 May – 1 June 2005

The International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies.

Finn Ugletveit
Norwegian Radiation Protection Authority

Conventions

After the Chernobyl accident in 1986, it was widely recognised that a closer international cooperation was needed in response to nuclear and radiological emergencies, and two conventions were established:

- The Convention on Early Notification of a Nuclear Accident.
- The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

to form a legal basis for such a cooperation.

Early Notification Convention

Main features of the Convention:

Parties shall:

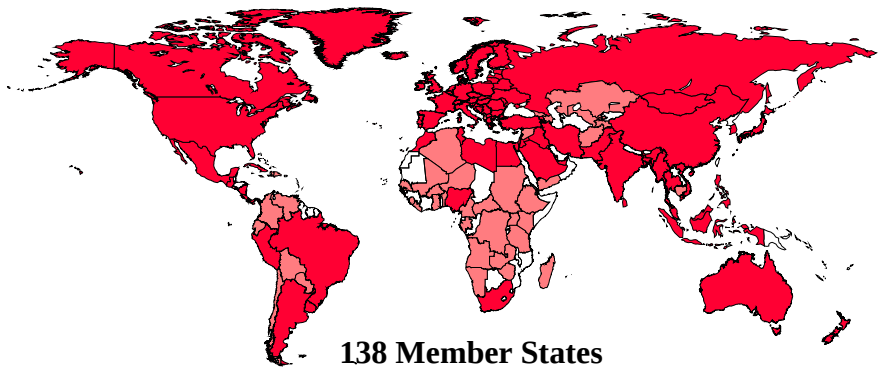
- ***Forthwith notify,*** *directly or through the IAEA those States which are or may be physically affected by the nuclear accident.*
- ***promptly provide*** *those States and IAEA with available information relevant to minimizing the radiological consequences in those States,*

Assistance Convention

The main features of the Convention:

- Parties **may call** for assistance from any other State Party, directly or through the IAEA.
- Parties requested **shall promptly** respond and state willingness and capability to assist.
- The IAEA **shall provide** resources and where requested, coordinate the international assistance.

Notification Convention 2004



138 Member States
92 Parties
WHO, FAO and WMO are parties

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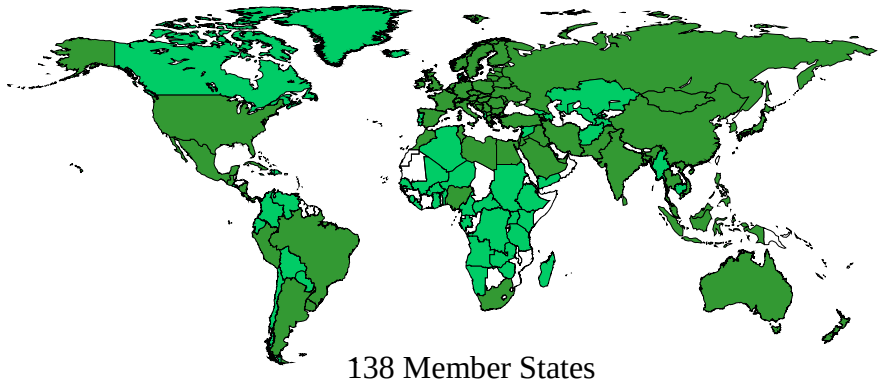
Assistance Convention 2004



138 Member States
89 Parties
WHO, FAO and WMO are parties

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Implementation of these Conventions?

Today there is a wide recognition that the conventions form a good basis for international cooperation.

- The Early Notification Convention has been quite **well implemented.**
- The Assistance Convention has **not been well implemented.** The necessary work for well functioning assistance has not been carried out and the convention objectives are not fulfilled.

Responsibilities

We recognise that serious nuclear or radiological events may have consequences over wide areas and several or even many states.

Clearly the responsibility of states to :

- Assess, decide and act in order to protect life, health, environment and other values in society.
- Provide adequate, correct and timely information to the population.
- Fulfil international obligations.

How to succeede?

- To be able to accomplish this, the authorities in the respective states all need:
  - Infrastructure, organisation, plans, procedures, etc.
  - Information (regarding accident, its development, consequences, countermeasures etc.)
  - Resources (in terms of expertise, manpower and tools for acquiring and processing information, making assessments and decisions and carry out the actions)

THE LONG-TERM VISION

A long-term vision for the international community has been adopted by Competent Authorities:

- a self-sustaining and continuously improving system of co-operation between States for preparedness and response for nuclear and radiological emergencies. Therefore recognizing that they are individual States undertaking actions for populations under their own jurisdictions, they can through co-operation, communication and the sharing of information, resources and experience achieve a coherent and optimised handling of the event taking all available resources into consideration.

Recent progress

Over the past 4 – 5 years IAEA Member States and the Secretariat have together enhanced their efforts to achieve a better international cooperation on nuclear and radiological emergency preparedness and response.

- IAEA GC Resolutions
- Regular meetings of National Competent Authorities. (NCAs)
- Establishment of an NCA Coordinating Group (NCACG)
- Development of an Action Plan.

The Action Plan.

The International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies, 2004 - 2009

was developed by IAEA Member States Competent Authorities and the IAEA Secretariat, approved by the IAEA Board of Governors and supported by the 2004 IAEA GC .

Main elements

The Action Plan consists of three main elements:

- International Communication (6 actions)
- International Assistance (7 actions)
- Sustainable Infrastructure (4 actions)

Working Groups

Two Working Groups have been established chaired by:

Communication	**Dominique Rauber**, CH
Assistance	**Vince McClelland**, USA

and several Expert Groups established to work with the different actions.

Main goals

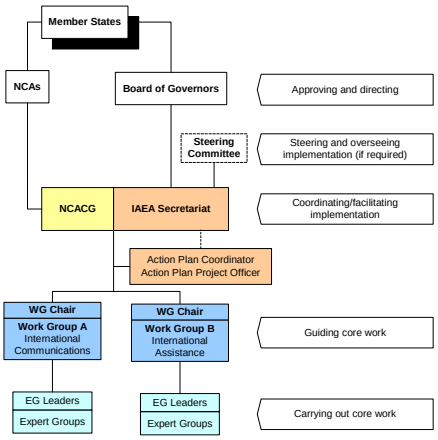
Communication:

- To have in place an effective and internationally harmonized communication system for nuclear or radiological incidents and emergencies.

Assistance:

- To have in place a set of standardised/harmonised procedures so that all types of assistance requested in response to nuclear or radiological events can be efficiently rendered.

Action Plan implementation structure



Coordination

Communication and assistance are not independent and need to be developed ”hand in hand”.

In principle communication could be one type of assistance.

Some types of assistance require international communication.

Proper coordination is ensured through the Action Plan, at the management level and at the WG level.

Resources

Requests for resources have been made by IAEA to Member States and from NCACG to Competent Authorities.

Financial resources from USA, Netherland and Norway.

Human resources offered from about 20 countries.

Logistic resources from about 5 -10 countries.

What do we need to do?

Member States need to:

- Contribute to the implementation of the Action Plan.
- Adopt the solutions developed through the Action Plan.
- Implement the developed solutions.

Why should we do it?

- Member States have the responsibility to establish the necessary response capabilities.
- Member States have the resources. No one else have.
- Member States will benefit. It is cheaper and better!

Action Plan Web site.

An Action Plan Web-Site has been established and can be accessed through a link from the IAEA ENAC Web site where all Competent Authorities have been given access.

All document related to the Action Plan have been posted there.

Statens strålevern

NKS-B
CommTech seminar
Stockholm, 31 May – 1 June 2005

The International Action Plan Communication

Finn Ugletveit
Norwegian Radiation Protection Authority

Statens strålevern

What do we need?

We need an efficient tool of communication so that we all can share information available.

This will establish the best possible basis for all states affected by an event to make their own assessments, decisions and provision of public information providing international consistency.

G O A L

To have in place an effective and internationally harmonized communication system for nuclear or radiological incidents and emergencies.

International communication

Action A1.

Identify existing communication arrangements, define compatibility requirements for international applications, identify future global needs and develop a strategy for enhancing international emergency communications.

This action is a preparation for all the other actions, making an analysis of needs and existing solutions.

International communication

Action A2.

Strengthen the international system for secure, timely and reliable emergency notification, active transmission of important/urgent information identified under Action A.1, and receipt of confirmation.

This action deals with communication of notifications based on the work of A1.

A joint Expert Group A2/A3 to be established and started soon. Some of the work already done under A1.

International communication

Action A3

Develop compatible international Arrangements that connect and enhance systems for sharing information identified under Action A.1.

This action relates to all other communication based on A1. A joint Expert Group A2/A3 soon to be established.

Some work already done under A1.

International communication

Action A4.

Review and enhance public communication arrangements.

Expert Group under establishment. One major task to explore the possibility to enhance international consistency. Will start during Summer/Early autumn.

International communication

Action A5.

Review and implement changes to arrangements for communication between IAEA Member States and the IAEA Secretariat, including the protected web site ENAC.

Expert Group to be established soon. A major part of the work is connected to A1,A2 and A3. So far only minor changes implemented.

International communication

Action A6.

Promote compatibility among arrangements for secure and reliable voice and video communications for specific intergovernmental emergency response purposes.

Expert Group to be established soon. Results expected relatively soon.

Work Group on International Communication

Dominique Rauber (Chair)	Switzerland
Helen Asp	Sweden
Mitch Doran	USA
Günther Winkler	IAEA
Rejane Spiegelberg Planer	IAEA
Tony Stott	South Africa
Gerhard De Vries	EC
Marcos Moreira	Brasil
Mr./Ms. X	South Korea or China

Progress so far

2004 June	Action Plan approved
2004 August	First Meeting of the CWG *Analysis of the tasks, decision that CWG will perform Action A1*
2004 December	Second Meeting of the CWG *Content of the report A1*
2005 February	Third Meeting of the CWG *Review of the draft report A1*
2005 June	Draft decision paper A1 for discussions.

Action A1

Main output

- Identification of the emergency information/data sets to be communicated internationally.
- Clear understanding of existing national, regional and global needs and solutions
- a glossary of standard terms;
- a communications strategy and a set of priorities for longer term action.

Solution requirements

- For communication among authorities and international organisations.
- Serving all 138 IAEA Member States and relevant international organisations.
- Communicating all kinds of relevantinformation.
- Should be one solution.
- Easy to use.
- A Long term solution to build on.
- A tool also for daily activities.
- Easily interfaced with national systems.
- Integrated with other international networks.

Sets of information.

Prepare for communication of all kinds of relevant information sets in the form of text, graphics or numbers, like:

- Site and accident development information
- Measurement results
- Modelling results
- Countermeasures
- Public information

The format depends on the subsequent use.

The solution (I)

- Exchange achieved through a unified and integrated platform, Incident and Emergency Information System.
  - Hard- and software platform
  - Communication protocols
  - Communication lines/networks
- International standards are established, such as:
  - Standard data sets
  - Standard data formats
  - Standard information structures

The solution (II)

- A network configuration
- Optimised communication strategy
  - Push mode
  - Pull mode
- Basic language : English
- Network maintenance - IAEA

Action A1 - The way forward

- A report is being prepared for discussions at the Third Meeting of Competent Authorities in Vienna in July 2005.
- Hopefully the proposal can be endorsed and Actions A2 and A3 be started making the detailed proposal for the communication solution.

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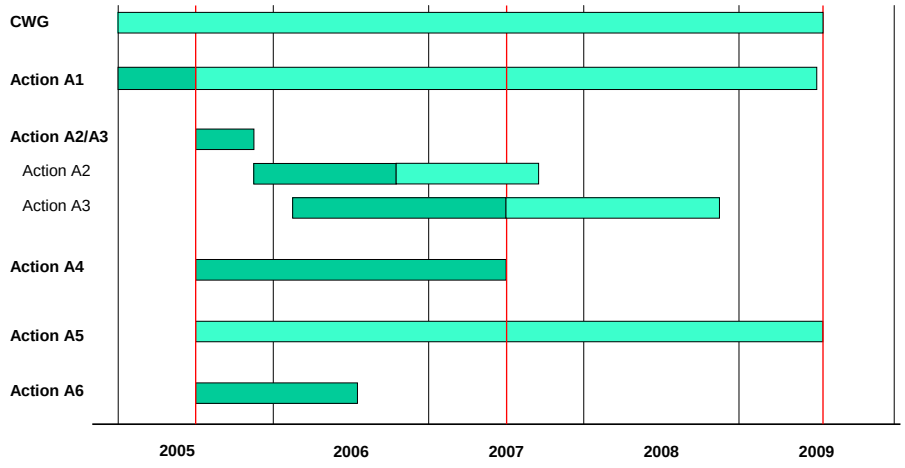
The Way Ahead (Draft)



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What do we need to do?

Member States need to:

- Contribute to the implementation of the Action Plan.
- Adopt the solutions developed through the Action Plan.
- Implement the developed solutions.

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The Action Plan
International Assistance

Finn Ugletveit
Norwegian Radiation Protection Authority

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Recognitions

It is widely recognised that:

- such an event easily could require resources exceeding the capabilities of a single state.
- building and keeping resources available for rare but serious events, is very costly.
- through efficient arrangements of international assistance, we could all improve our capabilities of response at a reduced the cost.

Problems.

The major problem today is that every state has established its own arrangements, most of which are incompatible with the arrangements of their neighbours.

This incompatibility is today the main obstacle for achieving efficient arrangements for international assistance.

The goal

To have in place a set of standardised/harmonised procedures so that all types of assistance requested in response to nuclear or radiological events can be efficiently rendered.

What kinds of assistance are there?

Most of the resources a state requires for proper response to an event can i principle be rendered as assistance (except decisions):

- Advice
- Assessments
- Measurements and modelling results
- Provision of equipment and personnell.
- Etc, etc.

Assistance could be performed on the scene or from home base or both.

International Assistance

Action B1.

Identify and define the requirements for assistance of different types, review existing capabilities, and propose plans for enhancing the delivery of such assistance.

Action B2.

Develop compatible arrangements for response to situations involving lost, stolen, damaged or discovered dangerous sources.

International Assistance

Action B3.

Establish compatible arrangements for radiation monitoring and interpretation of results during emergencies.

Action B4.

Develop – in collaboration with WHO – compatible arrangements for the medical management of radiation injuries, and their diagnosis and treatment, including management of psychological consequences.

International Assistance

Action B5.

Update – in collaboration with WMO - standard meteorological products, and enhance arrangements for providing associated assistance.

Action B6.

Review the use of models for assessment of the impact of releases to the environment with respect to efficient provision of assistance, and enhance arrangements for providing such assistance.

Action B7.

Review and develop the ERNET concept

What do we need to do?

Member States need to:

- Contribute to the implementation of the Action Plan.
- Adopt the solutions developed through the Action Plan.
- Implement the developed solutions.

Why should we do it?

- Member States have the responsibility to establish the necessary response capabilities.
- No one else can do it. Only Member States have the resources.
- Member States will through joint efforts and consistent development benefit from an enhanced international co-operation. It is cheaper and better!

Using new web standards to minimise bandwidth usage and make web based information accessible on a wider range of platforms

CommTech-2 31/5-1/6 2005

Sigurður Emil Pálsson

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Preface: from CommTech-1 (2003)

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Possible aim of future work

Through use of:

- new standards (e.g. XML, XHTML)
- voluntary harmonisation

make exchange of information more efficient and have the same information accessible by various methods (without reformatting)

For men and machines

Using different platforms (desktop computers down to PDAs and smartphones)

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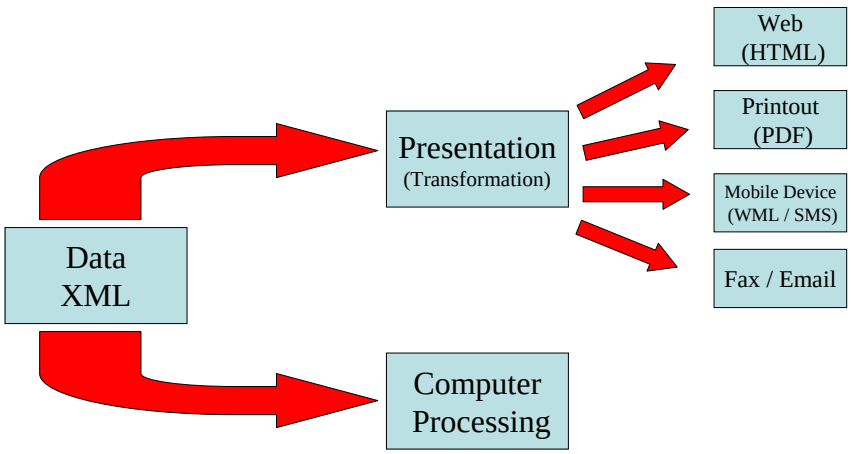
Potential future work

- **Data transfer**: Encourage more harmonisation in use of XML. Potential partners:
  - Nordic groups (EMARAD, METNET, AGS and CGS)
  - EU: MODEM, DSS network, ...
  - IAEA ENAC
- **WEB** Promoting the use of new standards (e.g. XHTML to make web-based information accessible on different platforms + reducing bandwidth requirements)
  - IAEA ENAC site
  - Same for Nordic Web sites ?

Benefits of XML

- Exchanging data between disparate systems will be easier and cheaper using standardized XML interfaces and describing common data in XML
- Separation of content from presentation makes all presentation easier
- Both human and machine readable (stylesheets help humans read XML)

Separation of Content from Presentation




ENAC
TRAINING
Emergency Notification and Assistance Convention
International Atomic Energy Agency
Emergency response
To compose a new message about an ongoing emergency, select the appropriate message form and click the "Compose" button.
EMERCON Form:
EMERCON-SRF
Compose
Home
My Messages
My Tasks
Logout
Emergency preparedness
Documents
External Links
Address Book
Subscription
You can unsubscribe from the ENAC Mail Service by clicking the "Unsubscribe" button.
Unsubscribe
STANDARD REPORT FORM
This form is used to provide initial advisory or notification and act as a cover note for follow up information to IAEA and other competent authorities on facility or site area emergencies for nuclear facilities and for radiological emergencies.
Basic information
Message No. 1
To:
IAEA(ERC)
Further info. website:
Codeword: EMERCON GS-R-2
Exercise: Yes
Confidentiality: Free for publication
Final message:
Publication Control: Instantly 0hours.
Message Header
IAEA message number: IAEA/2003/2/1
Cover note: This information was posted based on a (verified) fax message received from the Armenian Competent Authority
Edited by IAEA: Yes
Editions by IAEA: None
Fax Distribution list: All contact points and permanent mission
Name of duty manager : Guenther Winkler
1. Reporting State
Reporting STATE:
2. Notification
This is an official Notification under the Early Notification Convention of actual or potential international transboundary release of radiological significance for another State: No
3. Reporting Information
Competent Authority:
Tel: +374-1-581654
Fax: +374-1-543997
Email: v.kurghinyan@anra.am
URL:
Contact person: Mr. Vladimir Kourghinyan,
4. Nature of event
Event Type: Nuclear installation event
Installation type: VVER


the ENAC Mail Service by clicking the "Unsubscribe" button.
Unsubscribe
transboundary release of radiological significance for another State: No
3. Reporting Information
Competent Authority:
Tel: +374-1-581654
Fax: +374-1-543997
Email: v.kurghinyan@anra.am
URL:
Contact person: Mr. Vladimir Kourghinyan,
4. Nature of event
Event Type: Nuclear installation event
Installation type: VVER
Emergency class: Site Area Emergency
Nature of event:
Event Characteristics
Elevated radiation levels: No
Release: Has not occured and unlikely to occur
Contamination: No
Estimated no. of hospitalized casualties:
5. Facility Name/Location of Event
Facility name/location: ARMENIA
ARMENIA
Co-ordinates: Latitude (deg·dec): 40.17 ° N
Longitude (deg·dec): 044.13 ° E
6. Date and time of occurrence
yyyy-mm-dd:2003-03-07
(24 Hour clock)hh:mm:01:01 UTC
7. Validity of Information
yyyy-mm-dd:2003-03-07
(24 Hour clock) hh:mm:14:45 UTC
8. Event summary
Summary:
Exercise scenario
9. Actions Taken
Actions being taken:
None
10. Media Information
Provisional INES Rating:
Media contact tel.: +374 2600 26180
URL of public web-site:
11. Other Relevant Information
Download
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The raw info

EMERCON-SRF
2003-03-07 15:10
2003-03-07 15:13
2003-03-07 15:13
2003-03-07 14:45
1
Armenia, Republic of
Armenian Nuclear Regularory Authority (ANRA), Emergency Response Centre,
Free for publication
instantly
No
Yes
ARMENIA
All contact points and permanent mission
Guenther Winkler
Yes
None
IAEA/2003/2/1
This information was posted based on a (verified) fax message received from the
Armenian Competent Authority
Verified by IAEA
IAEA(ERC)
EMERCON GS-R-2
VVER
Mr. Vladimir Kourghinyan,
+374-1-543997
+374-1-581654
v.kurghinyan@anra.am
Nuclear installation event
No
40.17N
044.13E
ARMENIA
2003-03-07 01:01
Exercise scenario
None
+374 2600 26180
No
Site Area Emergency
Has not occured and unlikely to occur
No
No

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Info in XML format (page 1/2)

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Info in XML format (page 1/2)

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<CAFax>**+374-1-543997**</CAFax>
<CAURL />
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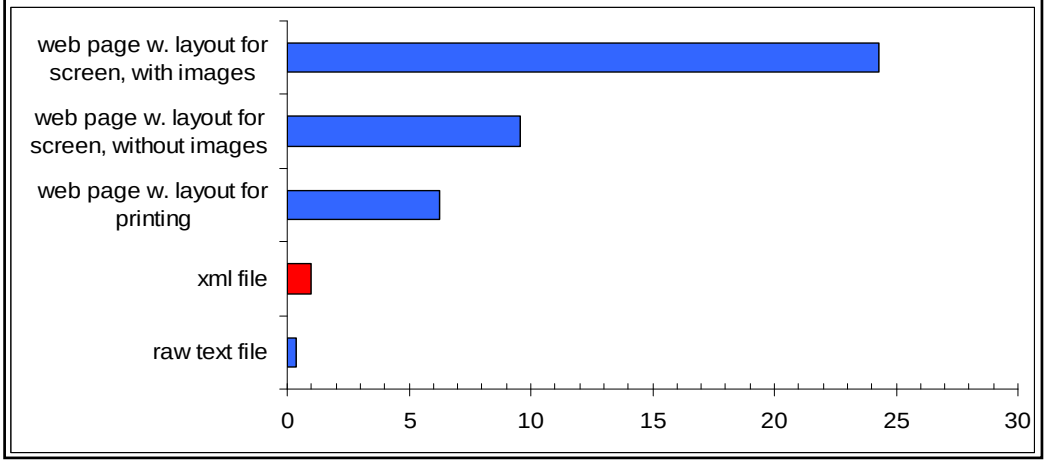
Comparison of file sizes corresponding to different methods of displaying info from ENAC web site



Now back to the present:
CommTech-2

Point to be made in this presentation

- Behind the facade, web browsers have been radically redesigned in recent years to comply with new web standards.
- This makes it possible to make smaller and better code, separate content and appearance and thus make the same web pages usable on different devices.
- What is then the problem?
- **We (the users) are the problem!**

This is my topic of today and how we can use the Internet more efficiently (including cost efficiency)

Sections of presentation

1. Where are we now – How did we get here?
2. Way out – Standardisation of recent years
3. What is the current situation?
4. Special needs for (nuclear and radiological) emergency preparedness
5. What about e-mail?
6. Conclusion / summary

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Where are we now
How did we get here?

Section 1

- Initial development of the Web
  - Focus on content, not appearance
- Then: Layout commands inserted into the code
  - Result: chaos

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Plain old style HTML code

```
<H1>This is the main title</H1>
<H2>Here is a sub-title</H2>
<P>Here is an <EM>ordinary</EM> paragraph!</P>
```

resulting in:

This is the main title

Here is a sub-title

Here is an *ordinary* paragraph!

Same text in contemporary code, with integrated formatting:

```
<p class="MsoNormal"><b><span style="font-size:24.0pt">This is the main title</span></b></p>
<p class="MsoNormal"><span style="font-size:18.0pt">Here is a sub-title</span></p>
<p class="MsoNormal">Here is an <i>ordinary</i> paragraph!</p>
```

- The main makers of browsers developed their own special tricks for fancy layout
- Web design became a craft focused on assuring “nice appearance” in different types (and generations) of browsers
- Special versions required for printing and odd devices (e.g. handheld devices)

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Traditional web design

Pros (or rather aims):

- Nice appearance
- Backward compatibility to versions N of browsers x,y and z (not necessarily all)

Cons:

- Complex and bulky non-standard code
- Bulky code requires more bandwidth, a serious drawback for emergency preparedness
- Difficult and expensive to maintain and upgrade

Way out – standardisation of recent years

Section 2

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- Stricter grammar: HTML into xhtml (using XML grammar)
- Enables separation of content and appearance
- Result:
  - Much smaller code
  - Easier to maintain
  - Same web page can be used for different devices (screen, print, handheld)

- Industry finally realised they had a problem
- Support for better standardisation of Web development
- New versions from all leading makers of browser support the new standards
  - Internet Explorer
  - Mozilla Firefox
  - Opera

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Two elements slowing the process:

- **Web designers** faced with the task of learning their craft anew and rewriting a lot of existing code
- **Users** that fail to demand that new standards should be use and thus get backward compatible products that require more resources than necessary and are difficult/expensive to maintain.

Is it realistic to require developers to switch to the new standards?

Counterarguments (made by some)

- *New* standards, not fully implemented by industry
- Do not offer (yet) as good control over appearance as existing methods (pages will be too dull for end users)
- Not possible to use powerful techniques using data from databases on the pages
- Cost of adopting new techniques

The arguments above are not valid!

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- The new standards have already been implemented by industry in a more uniform manner than the old ones ever were
- The new standards do offer no less (often more powerful) possibilities for controlling appearance than the old ones. It is in fact now much easier to make designs that will look good on different types of browsers (with different resolution)
- Data from databases can be used in no less efficient way

What is the current situation?

Section 3

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Test that users are encouraged to make:

1. Does the web page comply with web standards (new or old)?
2. Is the code clean or cluttered with descriptions of appearance? (try *view source*)
3. How does the page tolerate lower resolution? (try narrowing the browser window)
4. Does it allow changing font size through browser commands?
5. How does it tolerate being viewed on a handheld? (try using <shift> <F11> in the Opera Browser).
6. Can it be printed (without part of the page disappearing at the right side)? (use *Print Preview*)

This is just my selection of criteria, every user should make his/hers own

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Validation: Does the web page comply with standards?

- http://validator.w3.org/
- I checked your home pages:
  - SSI, SKI, NRPA & STUK: Validation impossible because document type of character encoding not defined
  - BRS/DEMA & Gr: HTML 4 code, but not valid
- No use of xhtml visible and what was used was not valid!

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Changing font size

- Internet Explorer
  - Command: View – Text Size
- Mozilla Firefox
  - Same as I.E
  - But also shortcuts: ctrl + ctrl –
- Opera
  - Zooms the whole frame (incl. images)
  - Shortcuts: + -

View on a handheld device

- Opera offers a command shift F11 which lets the browser identify itself as being on a handheld device

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How will the web page look when printed?

- All three browser offer the command File – Print preview

- Note:
- The fact that a web page complies with standards does not (yet) automatically guarantee it will appear the same in all new and old browsers (on the same type of device)
- This is were the craft of web design comes in

Geislavarnir ríkisins

- The xhtml web standard comes in different versions, the most important are:
  - Strict
  - Transitional
- For most users the best way currently is to go for transitional. This guarantees compatibility with many old systems and browsers and yet brings benefits of the new standard.

Special needs for (nuclear and radiological) emergency preparedness

Section 4

Geislavarnir ríkisins

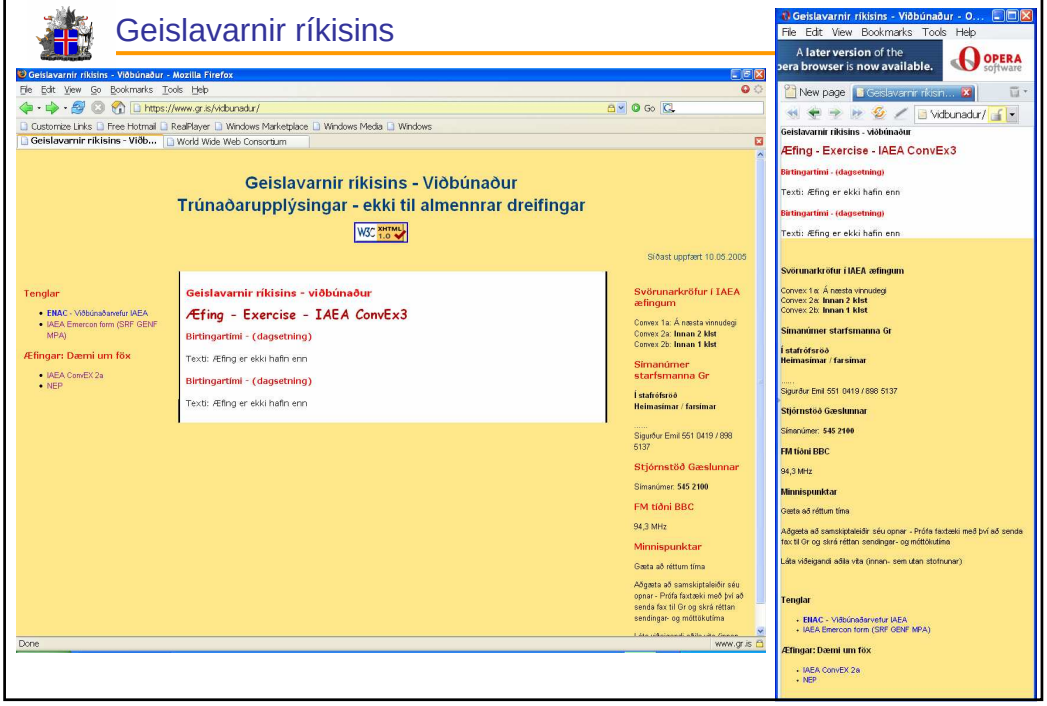
- **Essential:**
- Reduce (eliminate) the sending of any unnecessary data (bytes) over the network!
- The capacity of a network is a limited resource, especially in an emergency
- It is irresponsible of users not to request that available technology shall be used that can minimise – apply ALARA to bytes, not only radiation!

- For mobile users it is very important to minimise the amount of bytes being transferred.
- The Opera browser for handheld devices does a very good job of making ordinary web pages look nice on a small screen.
- But unless the “handheld” feature of the new standards is used, the same number of bytes are nevertheless sent to the handheld as to an office computer

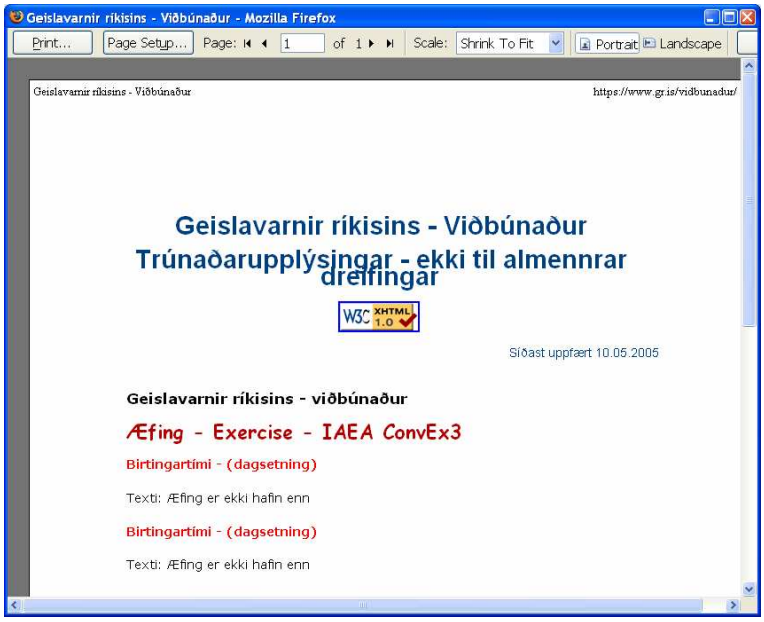
Geislavarnir ríkisins

- **Example of a prototype system used in the ConvEx-3 exercise in May 2005**
- https://www.gr.is/vidbunadur/

Geislavarnir ríkisins



Geislavarnir ríkisins



What about e-mail?

Section 5

A lost battle?

- I have been fighting the problems of wireless e-mail for more than a decade now (first a laptop connected to a GSM phone, then handheld devices)

Similar approach should be used as when optimising web usage:

- Minimise the amount of data that needs to be sent
- Have secure method of data transfer
- The data on the device should be stored securely (if at all)

Geislavarnir ríkisins

- Now been using one such system (OpenHand) which reduces amount of data sent between mail server and device (mobile phone)
- System already in use in firms requiring fast secure connections for individuals with mobile phones travelling world wide.
- Tried to establish contact between laptop and mail server via ordinary VPN over a hotel Internet connection in Stockholm last week for part of one night, without success
- OpenHand on the other hand worked fast and reliably in Sweden accessing a mail server in Iceland using a GPRS connection
- Other similar systems may be available, but at least this example show that radical improvements can be made in accessing e-mail in a fast and secure manner on mobile devices.

Conclusion

Section 6:

Geislavarnir ríkisins

- The standards and technology is already here that can enable us to create web sites with:
- Better structure (separation of content and appearance)
- Much smaller code
- Same page can support screen, handheld devices and printers, no need for different versions
- Better future compatibility and thus greatly reduced maintenance costs

- A bit of craftsmanship may be needed for supporting old browsers, but that may not be necessary for internal web sites if an organisation decides that old generation browsers should not be supported in its system.
- Effective transmission of data over the Internet is also an important issue, but this is outside the scope of this presentation.

Geislavarnir ríkisins

- Minimising bandwidth requirements is not only a requirement for the “rich” (e.g. users of mobile networks), it is a global requirement, not least for third world countries (many of which have found it cheaper to build up wireless networks than update and expand wire based ones).
- The World Wide Web consortium is putting more emphasis on mobile usage, it launched now in May its Mobile Web Initiative, in co-operation with members of the industry.

- The bandwidth is a limited resource that should be treated with respect.
- If we do so, we will be rewarded during an actual emergency
- **It is up to us, the users, to request best use of available technology in our Web, mail and other Internet based systems.**

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MODEM

A DATA AND INFORMATION EXCHANGE PROTOTYPE FOR NUCLEAR AND RADIOLOGICAL EMERGENCY RESPONSE: STATUS AND FUTURE PERSPECTIVES

Carlos Rojas-Palma et al.

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Motivation

- In Europe and elsewhere, a great deal of resources have been allocated to designing and developing coherent and comprehensive decision support systems for off site nuclear emergency management.
- These systems provide from simple radiological consequence assessments to more complex features, e.g., the assessment of countermeasures.
- In addition to advanced DSS, there is a tendency to operate home-made systems for nuclear emergencies.

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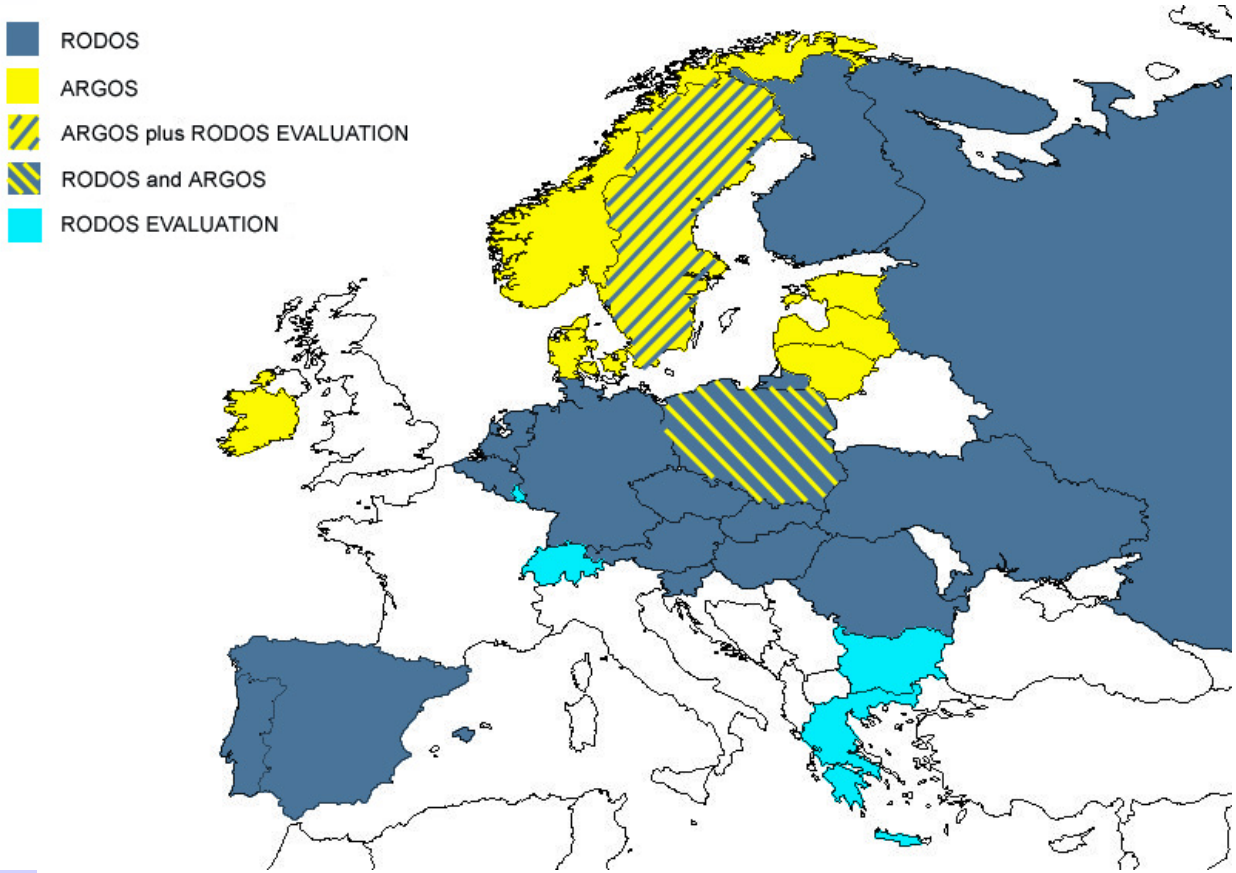
DSS in Europe



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Cont'd

- The criticality accident in Japan showed that there is still a lack of an adequate information and data exchange mechanism that enables these systems to function properly.
- It is essential for a good crisis management that dose assessments and decisions are coordinated and harmonized between the affected countries.
- Countermeasures, recommendations and information to the public and the media must be consistent. In particular for neighboring countries.
- Consequently, there is a strong need for intensive, rapid and reliable exchange of all type of information.

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The MODEM Project

- Belongs to EURATOM's 5th Framework Program
- Clustered with other RTD projects to create synergy (ASTRID and STERPS – source term based on plant status data)
- Coordinated by SCK•CEN
- With the participation of:
  - BfS, D
  - VUJE, SK
  - DEMA, DK
  - SPA Typhoon and
  - FZK, D

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The data and information exchange prototype in a nutshell

- It all began with a study of and in cooperation with the DSSNET network of what the users considered relevant to exchange with neighboring states,
- Followed by a study on existing data and information exchange means and protocols (ECURIE, EURDEP, EMERCON), and
- A study on what technology had to offer in order to achieve the objective of the project.

  “Introduce practical improvements in cross-boundary nuclear emergency management”

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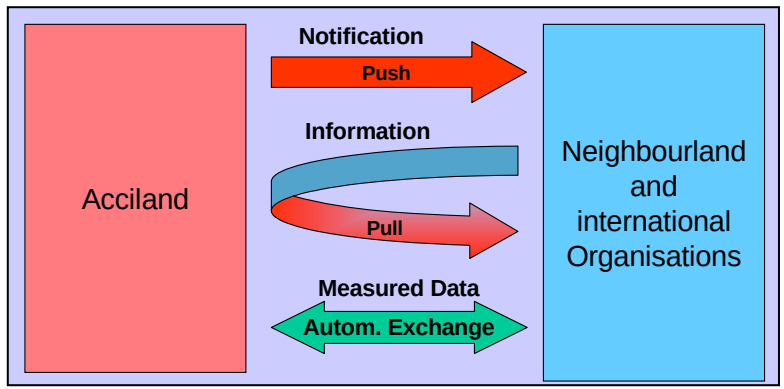
The MODEM prototype is based on:

- ✓ XML (Extensible Mark-up language) as format for messages and data
- ✓ Web server technology
- ✓ The PUSH-PULL concept for data exchange



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Why XML?

Because it is:

- ✓ A modern standard for data exchange (through the Internet)
- ✓ Application and platform independent
- ✓ Has structuring and formatting ability

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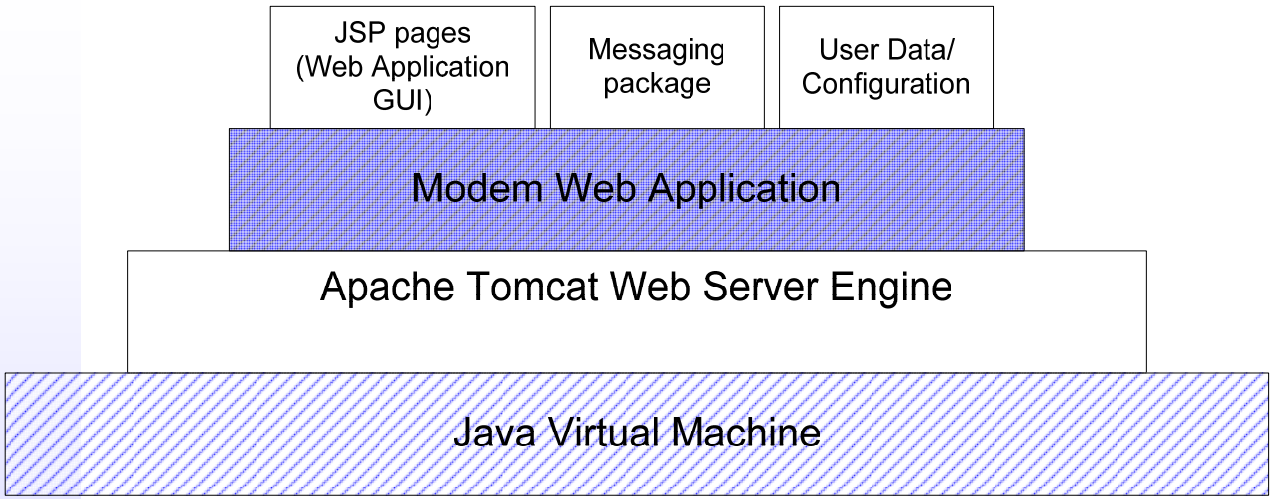
The foundation of MODEM



Modem Web Application
Deployed on Apache Tomcat Web Server
(Platform Independent)

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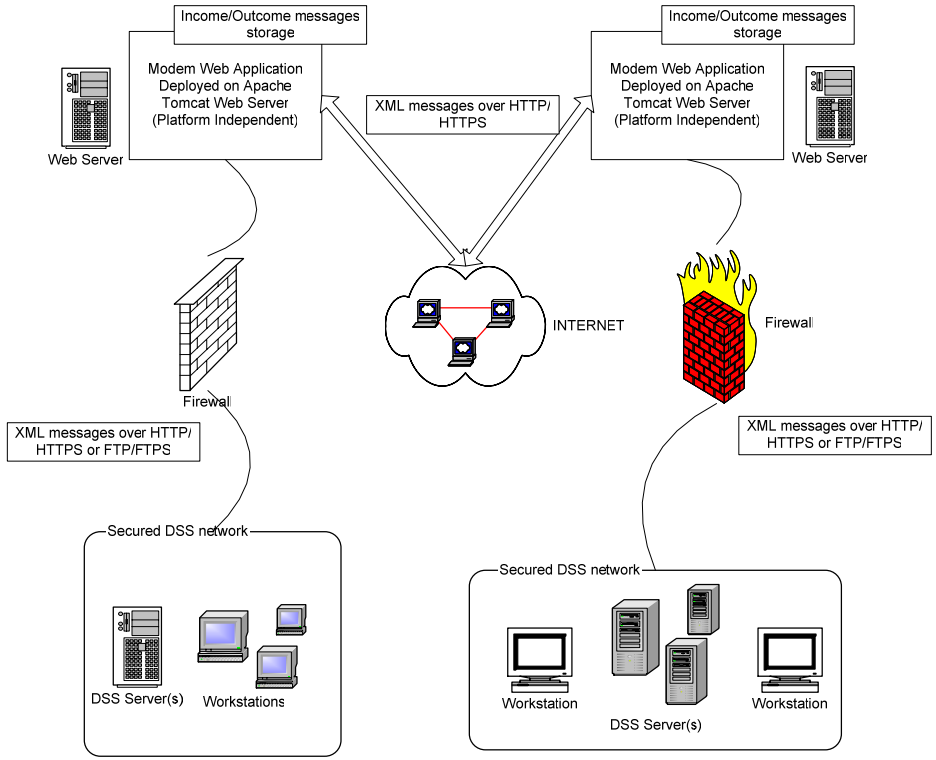
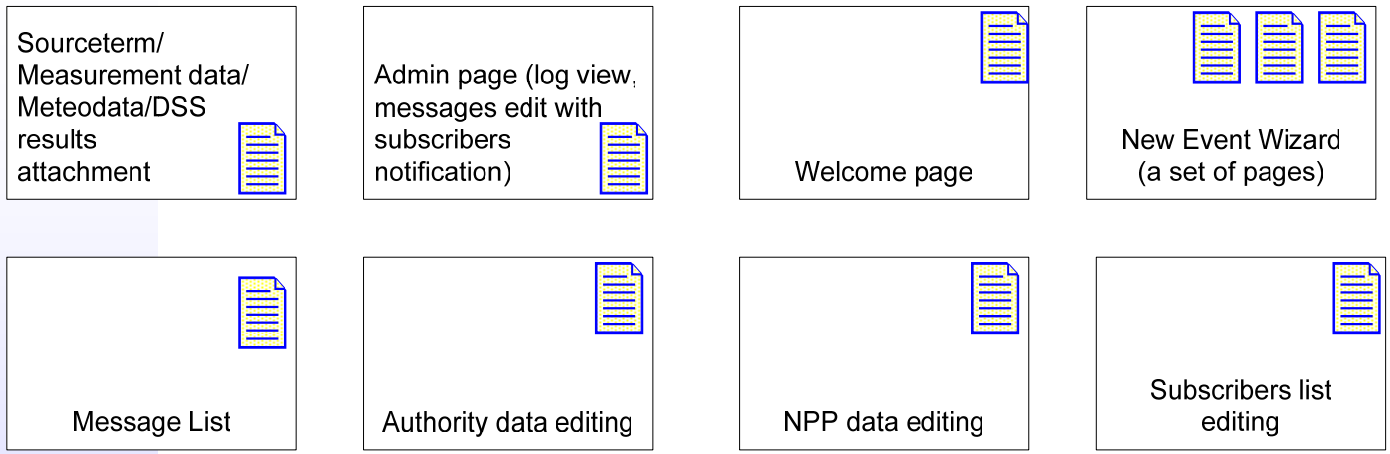
MODEM architecture



Exchange data between Decision Support Systems via modem software

The Graphic User Interface



JSP pages
(Web Application GUI)

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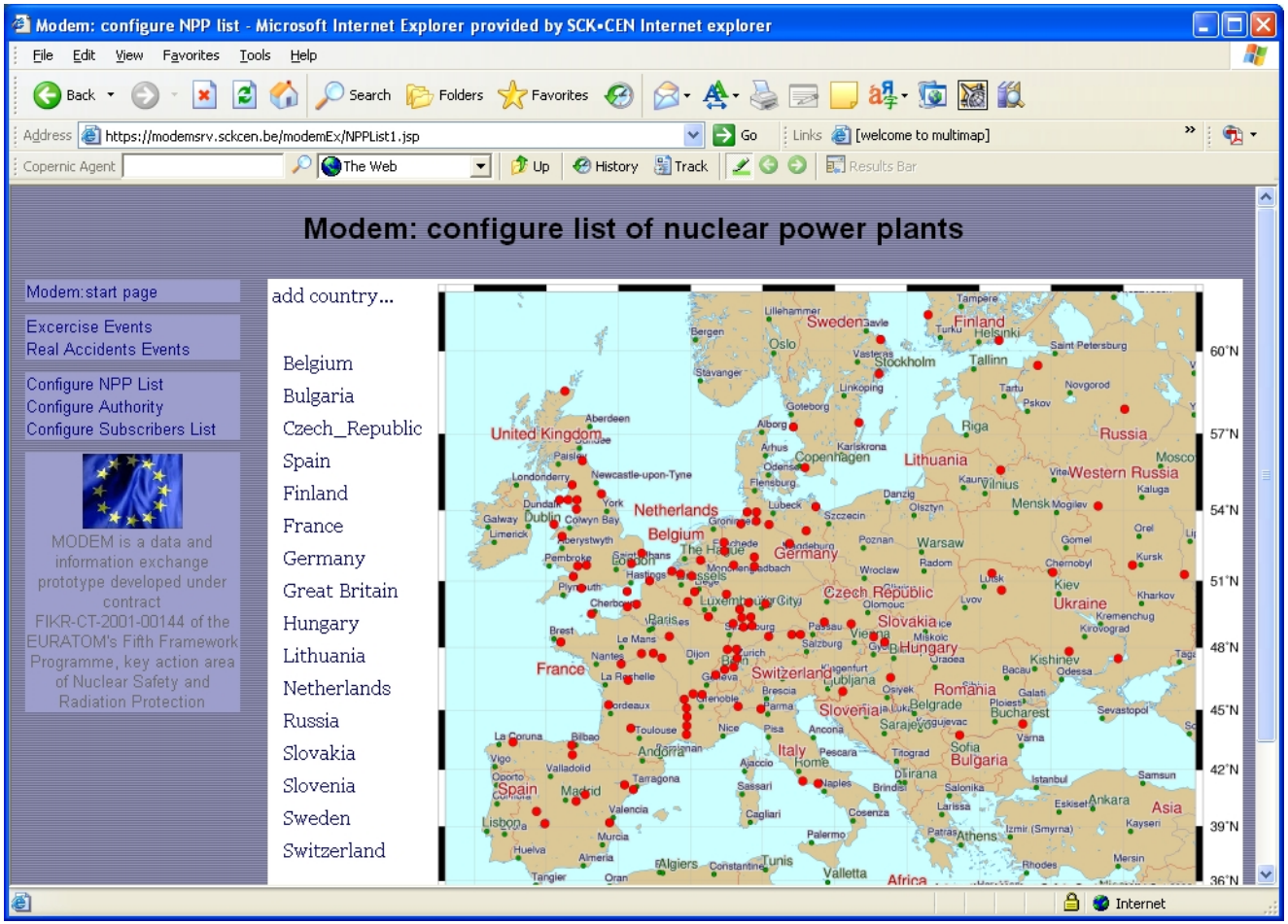
Interface



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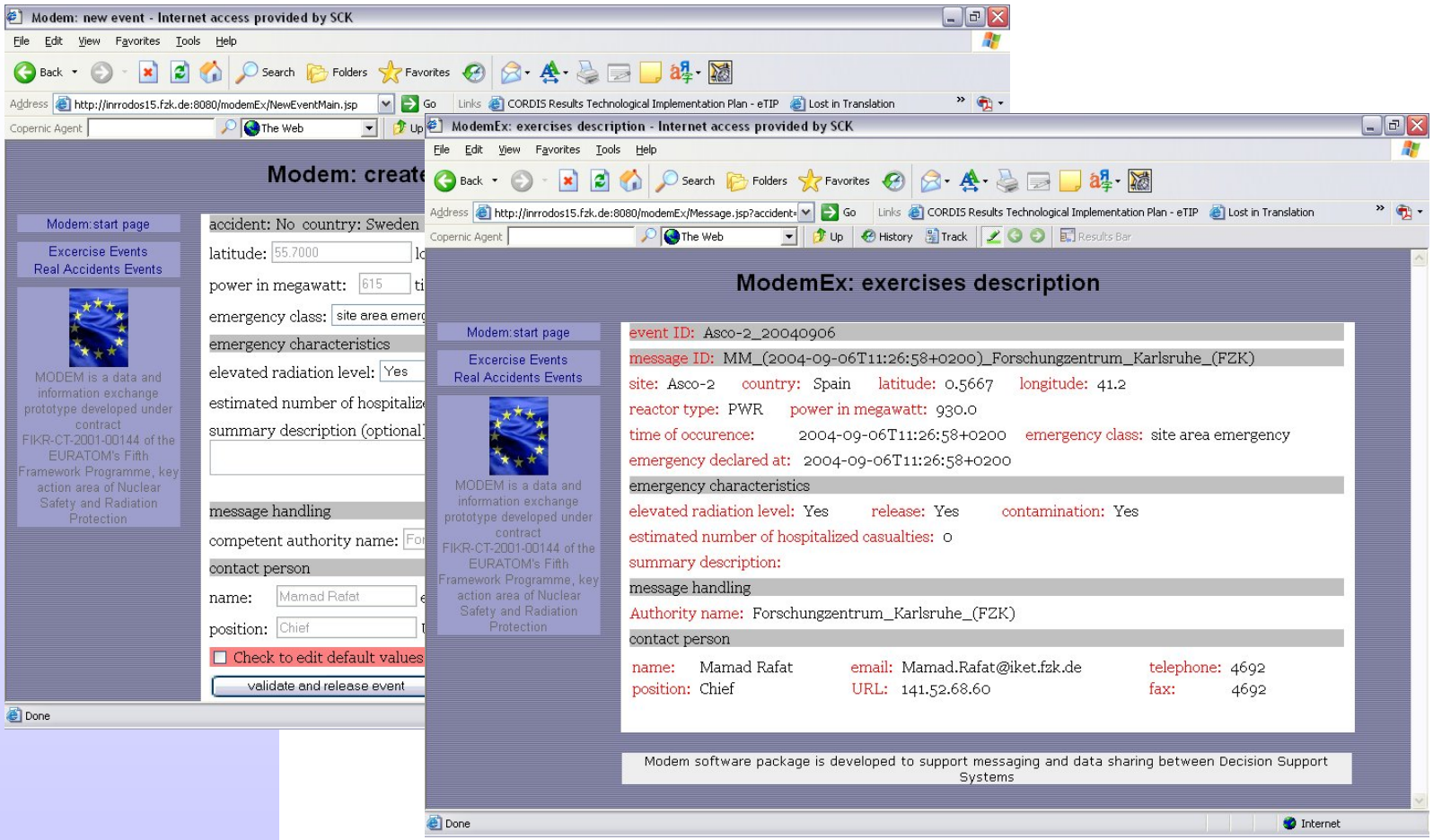
Notification



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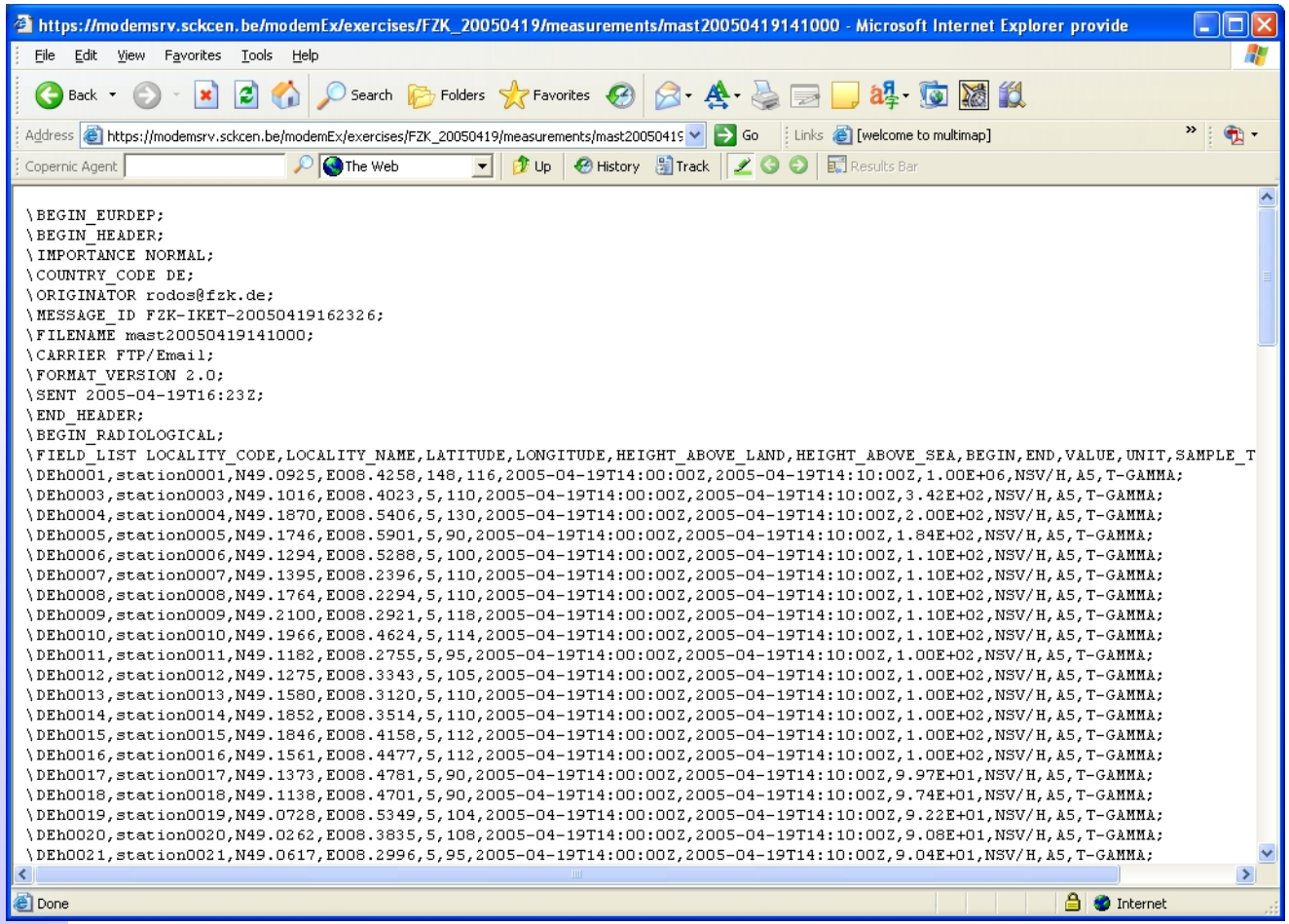
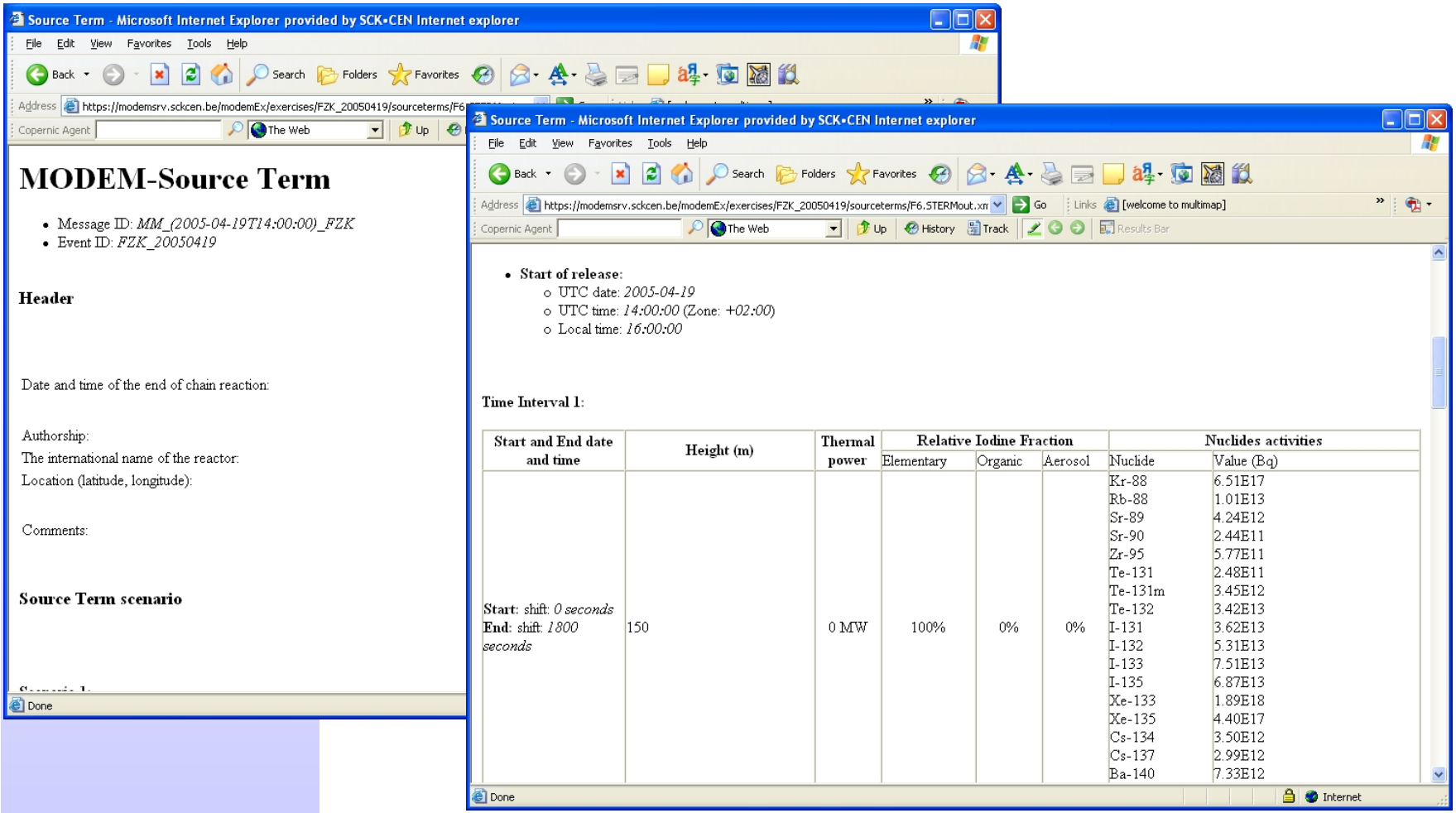
Measurements



Source term


Source Term - Microsoft Internet Explorer provided by SCK•CEN Internet explorer
File Edit View Favorites Tools Help
Back Search Folders Favorites
Address https://modemsrv.sckcen.be/modemEx/exercises/FZK_20050419/sourceterms/F6
Copernic Agent The Web Up
MODEM-Source Term
Message ID: MM_(2005-04-19T14:00:00)_FZK
Event ID: FZK_20050419
Header
Date and time of the end of chain reaction:
Authorship:
The international name of the reactor:
Location (latitude, longitude):
Comments:
Source Term scenario
Done
Source Term - Microsoft Internet Explorer provided by SCK•CEN Internet explorer
File Edit View Favorites Tools Help
Back Search Folders Favorites
Address https://modemsrv.sckcen.be/modemEx/exercises/FZK_20050419/sourceterms/F6.STERMout.xm
Go Links [welcome to multimap]
Copernic Agent The Web Up History Track Results Bar
Start of release:
UTC date: 2005-04-19
UTC time: 14:00:00 (Zone: +02:00)
Local time: 16:00:00
Time Interval 1:
Start and End date and time
Height (m)
Thermal power
Relative Iodine Fraction
Elementary
Organic
Aerosol
Nuclides activities
Nuclide
Value (Bq)
Start: shift: 0 seconds
End: shift: 1800 seconds
150
0 MW
100%
0%
0%
Kr-88 6.51E17
Rb-88 1.01E13
Sr-89 4.24E12
Sr-90 2.44E11
Zr-95 5.77E11
Te-131 2.48E11
Te-131m 3.45E12
Te-132 3.42E13
I-131 3.62E13
I-132 5.31E13
I-133 7.51E13
I-135 6.87E13
Xe-133 1.89E18
Xe-135 4.40E17
Cs-134 3.50E12
Cs-137 2.99E12
Ba-140 7.33E12
Done
Internet

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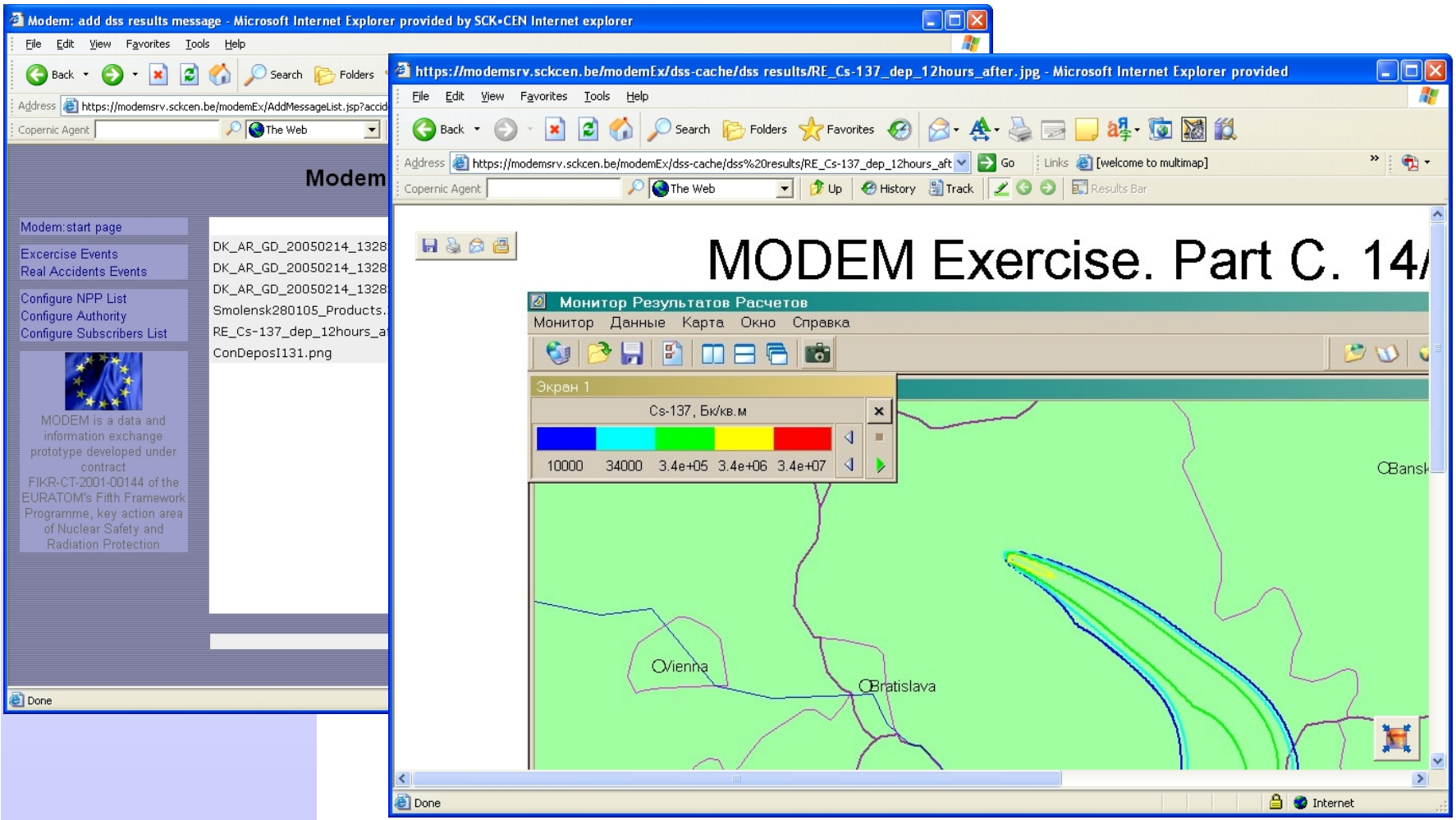
Results



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Current status, parallel developments and future perspectives

- The MODEM Prototype connects RODOS (EU), ARGOS(DK) and RECASS (RU)
- Bug and version control features have been added
- A new version has been released and deployed in AT, B, CA, DK, SK, D, RO, RU and soon others will follow.

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Cont'd

- Parallel developments between the US, RU and JP resulted in an extension of the MODEM project to facilitate and strengthen the interaction of Decision Support Systems.
- The network formed by ARAC (US), RODOS, ARGOS, RECASS (RU) and WSPEEDI (JP) will be tested during the ConvEx-3 international exercise.

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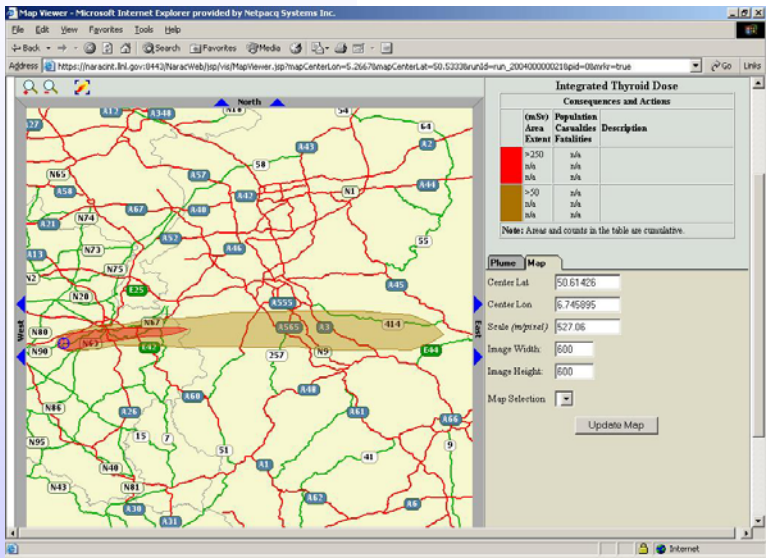
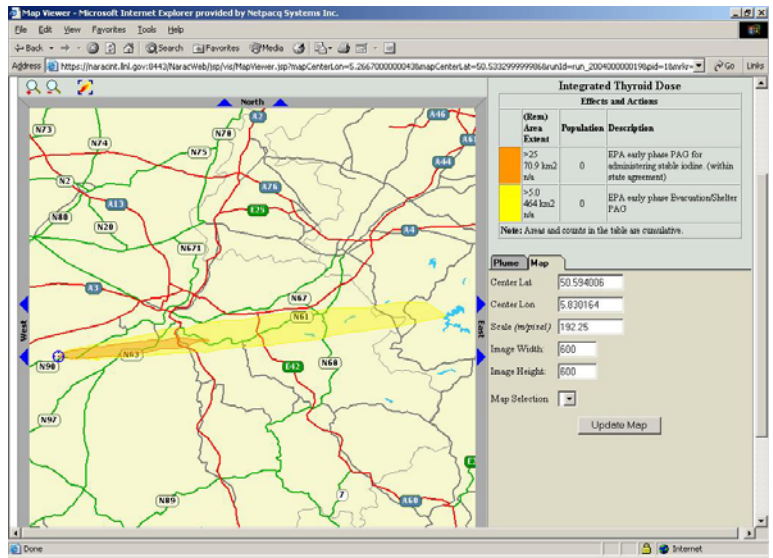
By early 2005 the gap should be filled

During the 4th DSSNET exercise, Belgium provided the source term to the US and JP and they reported:





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Milestones still to be accomplished

- Continue with the deployment of MODEM web application version to partners and volunteers.
- Collaborate with IAEA work group on Communication (new action plan) in conjunction with the ENSEMBLE group.

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Concluding remarks

Technology offers the possibility to exchange data and information in real time, using it is a political decision.

Thanks

My appreciation to…for their commitment to the project

Sandra Baig, BfS

Tatiana Duranova, VUJE

Guy Van Sanden, SCK•CEN

Benny Carlé, SCK•CEN

Oleksiy Prymachenko, FZK

Marcel Cavojsky, VUJE

Steen Hoe, DEMA

Valery Kosykh, SPA Typhoon

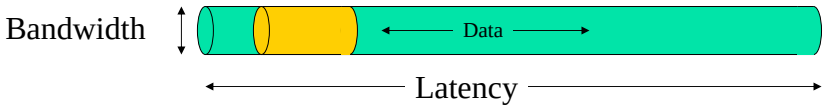
Wolfgang Raskob, FZK

The Mobile Challenge

Snorri Agnarsson, Ph.D.
University of Iceland and Softis hf

Softis

Network communication

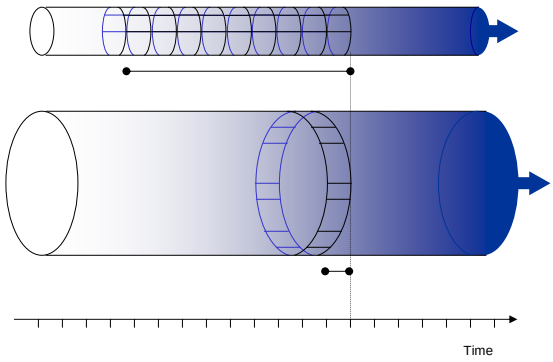


Response time =
Data size / Bandwidth
+
Number of messages * Latency
+
Computation time

Softis

Latency vs. Bandwidth

Increased bandwidth gives **more data** per time unit, but not necessarily a better **response time**



Softis

Unique Problems

- "Long, thin wires"
- High latency (long wires)
- Low bandwidth (thin wires)
- Like transporting goods over a long narrow road
- Much harder to achieve adequate response time

Softis

Three types of solutions

- Current systems assume "short, wide wires", not "long, thin wires"
- Exceptions:
  - Browser solutions
  - Custom-programmed mirroring or synchronisation systems
  - Custom-programmed on-line systems
- Good examples: e-mail systems

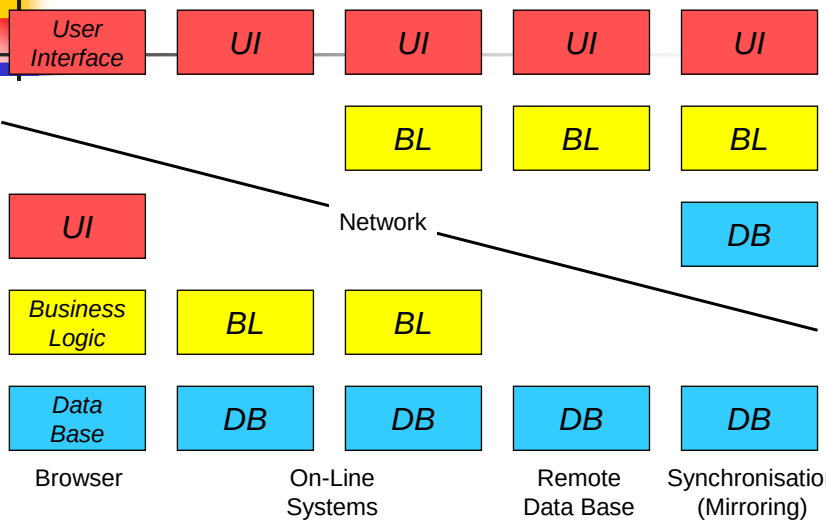
Softis

E-Mail Systems

- Synchronising / Mirroring
  - POP, IMAP, ActiveSync, SyncML
  - Mobile access: Blackberry, Good Technology, etc.
- Browser Based
  - Outlook Web Access and many many more
  - Many specialised for mobile access, e.g. WAP
- On-Line Systems
  - IMAP, ActiveSync (partly)
  - Mobile access: OpenHand

Softis

Spectrum of distributed systems



Softis

Pros and Cons: Synchronisation

- Pros:
  - Lightning fast response time
  - Excellent user interface capabilities
- Cons:
  - Limited access to data and services
  - High communication costs even when not used
  - Needs custom programmed client devices
  - Hard to ensure security

Softis

Pros and Cons: Browser Solutions

- Pros:
  - Custom programmed client devices not needed
  - No communication when not used
  - Unlimited access to data and services
- Cons:
  - Very limited user interface capabilities
  - Security may be hard to ensure

Softis

Pros and Cons: On-Line Solutions

- Pros:
  - Fast response time
  - Good user interface capabilities
  - No communication when not used
  - Unlimited access to data and services
  - Excellent security
- Cons:
  - Needs custom programmed client devices
  - Techniques for dealing with high latency not widely known

Softis

Improving Existing Systems for Mobile Access

- Data Reduction (Browser based)
  - Modify to use better and smaller HTML, XHTML, WML, etc.
  - Intermediate servers can compress and improve in other ways
- Other systems
  - Architectural improvements can reduce data size and number of network messages
  - Can be achieved by putting new front-ends on existing systems

Softis

Comments or questions?

Softis

USING THE INTERNET AND WEB TECHNOLOGY TO GATHER AND EXCHANGE INFORMATION

Jan Erik Dyve
Norwegian Radiation Protection Authority

Agenda

- **The strategy**
- **Website for Preparedness and Crisis Communication**
- **Reporting measurement data on the Internet**
- **Questions**

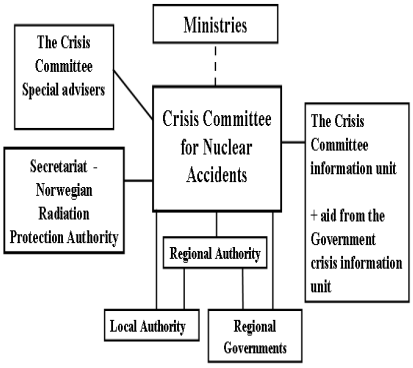
Norwegian Radiation Protection Authority

What's the Norwegian Strategy?

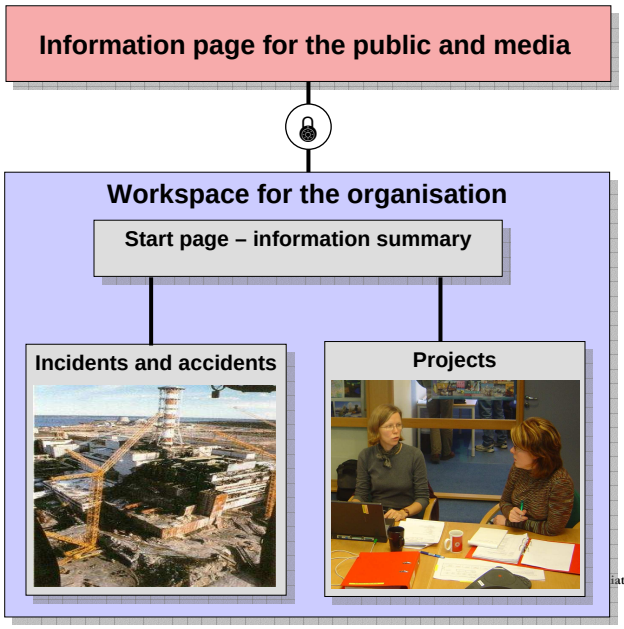
- **Why use the Internet and web technology?**
  - Better accessibility
  - Make information available quickly
  - Information available independent of geographical location
  - Reduced cost compared to other software solutions
- **How to use them – two systems:**
  - Communication - "Virtual situation room"
  - Gather radiological data – web based extension to the decision support system

A Website for Preparedness and Crisis Communication

- **Main objectives:**
  - **Contribute to more efficient communication between central and regional members of the nuclear preparedness organisation.**
  - **Improve the day-to-day communication between NRPA and the organisation**
  - **Provide a common place for coordinated information to the public and media during a nuclear incident or accident.**



Structure



iation Protection Authority

Demonstration

www.atomberedskap.no

Norwegian Radiation Protection Authority

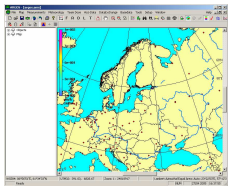
Reporting measurement data on the Internet

Measurement resources

Reporting

Feedback

Web application



Decision support system

Norwegian Radiation Protection Authority

Demonstration

Sivweb.nrpa.no

Norwegian Radiation Protection Authority

Statens strålevern

The End

Questions or comments?

Norwegian Radiation Protection Authority

USING THE INTERNET AND WEB TECHNOLOGY TO GATHER AND EXCHANGE INFORMATION

Jan Erik Dyve, Yngvar Bratvedt, Synne Egset, Eldri Holo, Jon Arvid Ludviksen
Norwegian Radiation Protection Authority, P. O. box 55, Grini Næringspark 13, N-1332 Østerås, Norway
Email: jan.erik.dyve@nrpa.no

NRPA has developed two new web-based systems for improving the communication within the nuclear preparedness organisation in Norway. The first system is a web site (www.atomberedskap.no) for communicating information within the national response organisation, to authorities internationally and to the media and public. The second system is a tool for reporting data from external measurement units, for instance the Norwegian Civil Defence. Both systems are developed with focus on ease of use and accessibility.

A website for preparedness and crisis communication

The site www.atomberedskap.no is the information page and workspace for the nuclear emergency preparedness and response organisation in Norway. The main objective is to provide more efficient communication between central and regional members, improve the day-to-day communication between NRPA and the organisation, and provide a common place for coordinated information to the public and media during a nuclear incident or accident.

The system has two levels of access; an information page for the public and media, and a password protected workspace for members of the organisation. On the information page press releases and other information will be made available during a crisis. In addition the page contains contact information and background information on the preparedness organisation and its work. In the workspace members of the organisation has access to more information like minutes, situation reports, media reports, measurement data, dispersion maps and emergency response plans. Based on access rights they may also have access to a set of tools for producing information and log important events and actions.

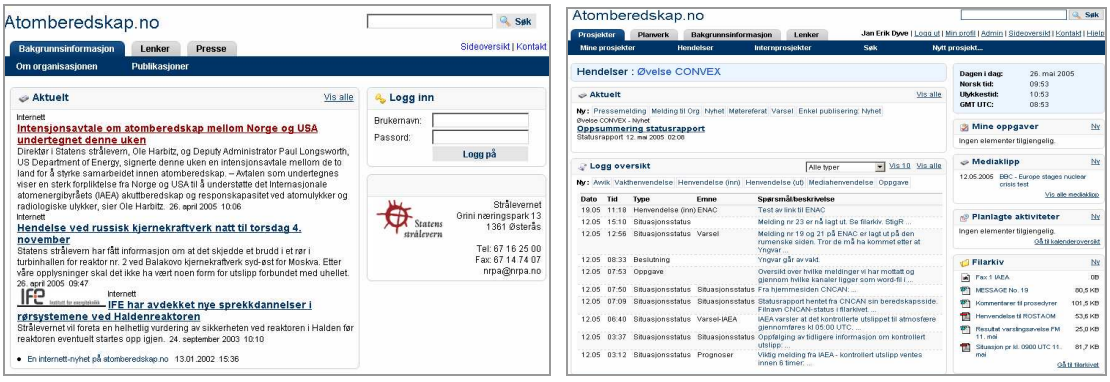


Figure 1 Screenshot on the left shows the site for the media and public. Screenshot on the right shows the workspace used during a crisis.

Reporting measurement data on the Internet

The system for reporting measurement data on the Internet was originally developed to improve data acquisition from measurements done manually by civil defence personnel, and allow easy import into the decision support system ARGOS.

Civil defence personnel have access to a password protected website where they can report new measurements. Theses measurements are done with AUTOMESS instrument either at some fixed location for background measurement or wherever required. The system reflects this allowing the personnel to choose a predefined location or input coordinates. In addition to the location and measured value the user can include information on time of measurement, precipitation, instrument and general comments. After confirming the measurement values above 0.7 µGy/h will cause an SMS and e-mail alarm to NRPA. Historical data is easily accessible through simple report functionality. The user can search for data based on date and location, and output these to a list on the screen or PDF document, or to a map as shown in figure 2.

The design of the system easily allows new areas of application since underlying infrastructure can be shared. For instance a system for importing mobile measurement data has been implemented.

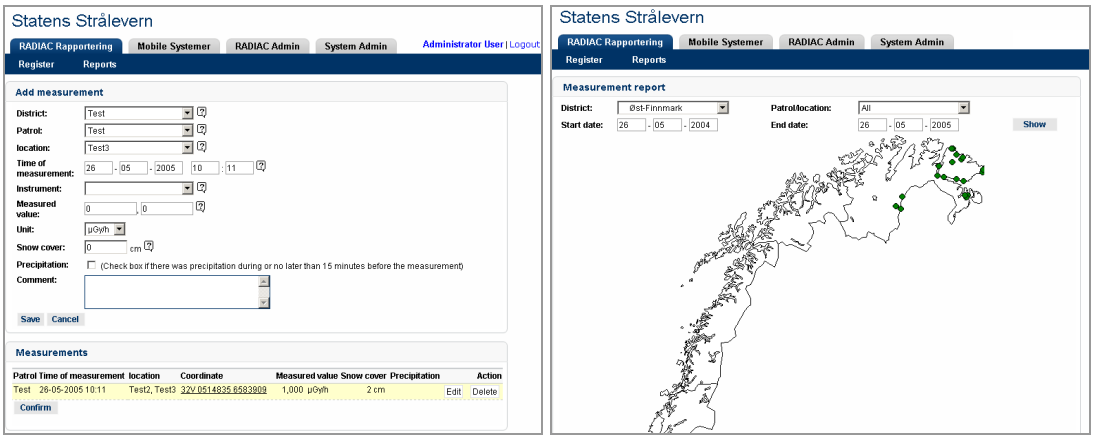


Figure 2 Screenshot on the left shows the form for reporting single measurements done by a civil defence patrol. Screenshot on the right shows presentation of the measurements in a map.

STUK

Communication in Radiological Emergency Using Tetra Mobile Phones

Harri Toivonen
STUK - Radiation and Nuclear Safety Authority, Finland

NKSComm Tech Seminar, Stockholm, 31 May - 1 June, 2005

harri.toivonen@stuk.fi

New Scientist 182(2450), June 2004

Only a matter of time?

The likely aftermath of a dirty bomb attack

bomb is "a nightmare waiting to happen", says Frank Barnaby, a nuclear consultant who used to work at the UK's atomic weapons

STUK

Contents:

Emphasis in
• communication and
• data management

(1) Stationary measurements

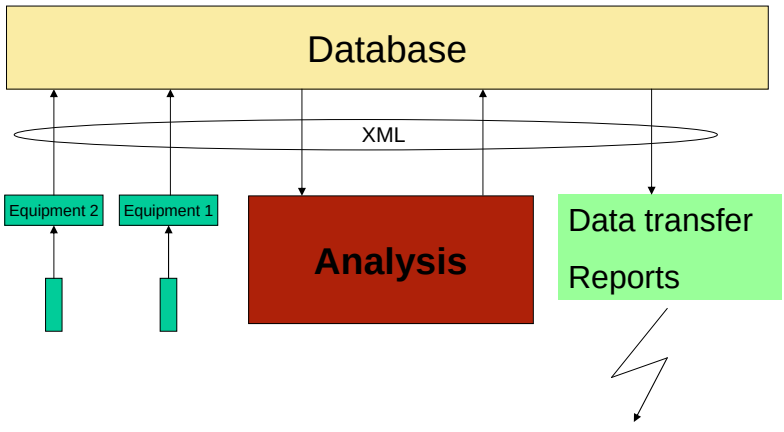
Network of 300 stations

(2) Mobile measurements

(3) Tetra network for communication

STUK

Measurement Principle



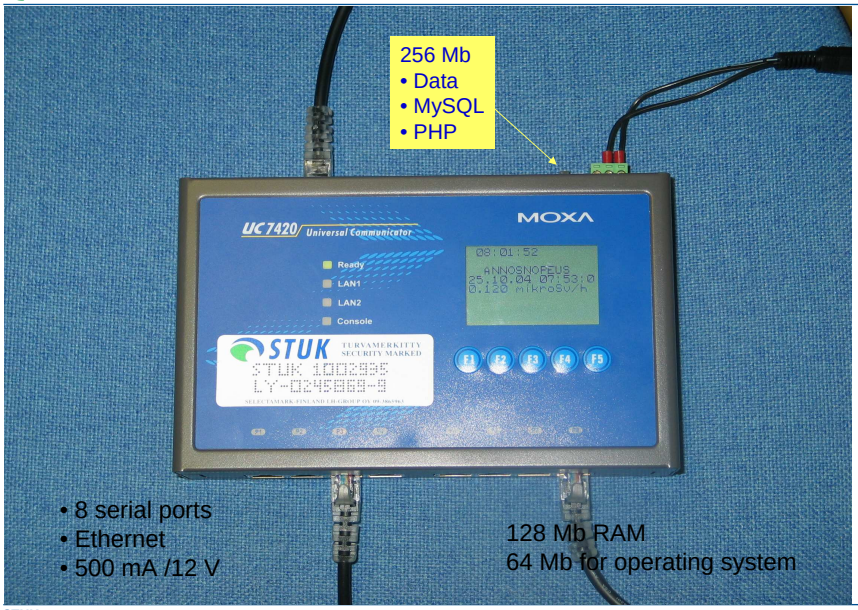
Major components of RN monitoring station

1. Station Infrastructure

2. Detector or detectors

3. **Data processing tools**
   data logger
   PC and software

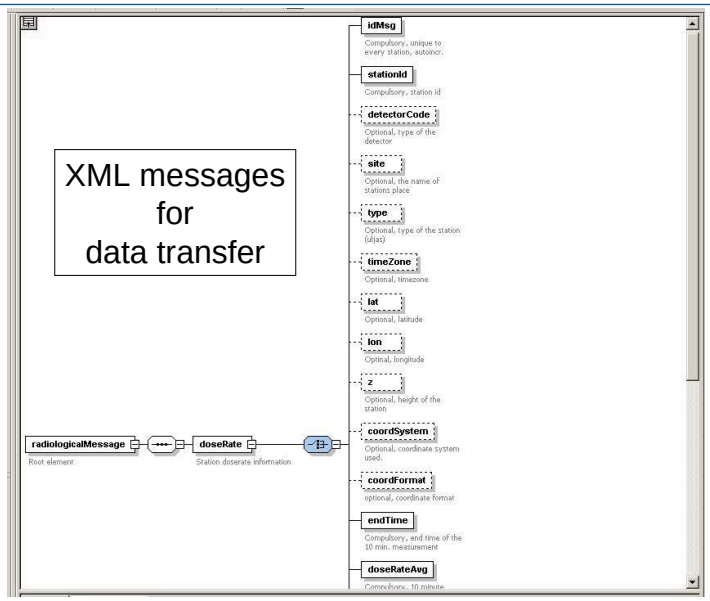
Linux PC < 1,000 €



Vendor-independent solution

xml schema

XML messages
for
data transfer



Minimum contents of an XML message

```
<?xml version="1.0" encoding="UTF-8"?>
<radiologicalMessage>
  <doseRate>
    <idMsg>5118</idMsg>
    <stationId>4567</stationId>
    <endTime>2004-10-29 08:03:07</endTime>
    <doseRateAvg>0.123</doseRateAvg>
    <doseRateAvgUnc>0.009</doseRateAvgUnc>
    <rain>0</rain>
    <temperatureDetAvg>5.11</temperatureDetAvg>
    <unit>mikroSv/h</unit>
  </doseRate>
</radiologicalMessage>
```


Future RN monitoring station of STUK

- COTS hardware, but vendor-independent
  (detector, infrastructure, PC)
- software made in STUK
- maintainable
- extensions (spectrometer) ..
- secure communication (TETRA)
- Price < 7,000 €

Mobile radionuclide measuremens

1. Threat scenarios - ”Dirty bomb”
2. Airborne measurements
3. Carborne measurements
4. ”Rescue team” - First Responders

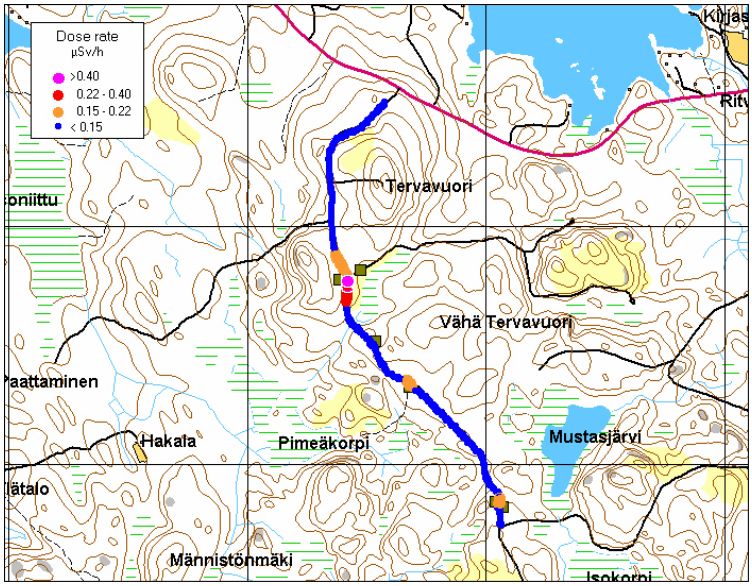
Training ?

Mobile Measurements

SONNI - *S*ophisticated *On*-site *N*uclide *I*dentification

- Large four wheel drive
- Infrastructure based on ambulance design
- Crew of four

SONNI in a field trial - Padasjoki 2004



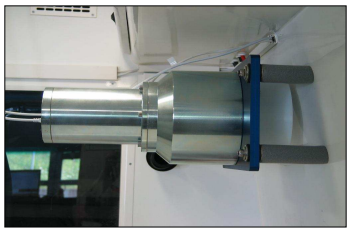
Operation of radiation detectors

GIS
- **maps**
- **gps**

Communication

Software:
- **analysis**
- **integration**

In-situ gamma spectrometry



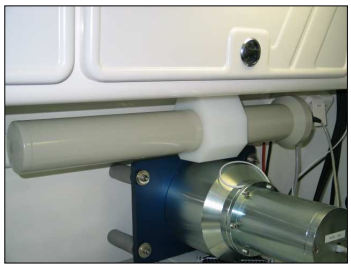
- Uncollimated HPGe (electrically cooled)
- High resolution for nuclide identification

- NaI (3 crystals)
- High sensitivity for low level detection
- Direction sensitivity with collimation

STUK

Dose rate measurement

- GM-tube based dose rate meter
- Saving dose rate and pulse rate



STUK

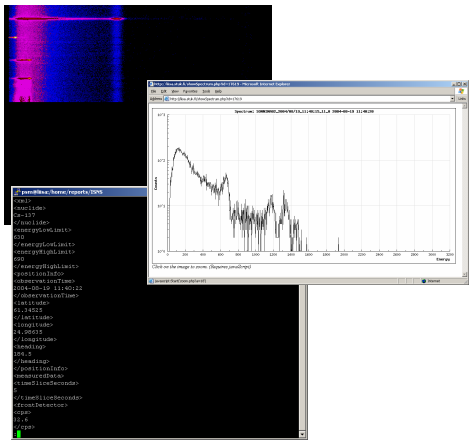
Communications

- GSM phones
- GPRS data
- TETRA voice and data (Finnish Virve network)
- Satellite communications

STUK

Data management - database LINSSI

1. All raw data stored in database
2. Data integration and analysis via database
3. Automatic report and alarm generation
4. Data communication to HQ with XML coded messages



STUK

First Responders

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Radiation protection

- Dose rate and dose alarms
- Powered respirators and protective clothing
- Over pressurized cabin

STUK

Manual doserate measurements

STUK

Communication

plays vital role in an emergency.

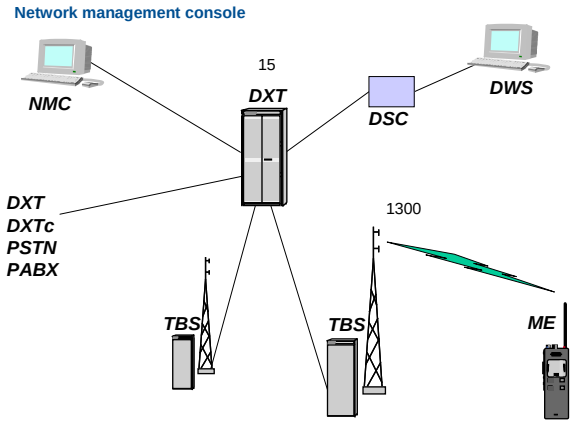
STUK

FINNISH VIRVE NETWORK

- Based on TETRA standard
- Covers the whole country (car usage)
- 1300 base stations (TBS), 15 digital centres for Tetra (DXT) ja 2 other centres (DXTc)
- Fast connection, below 500 ms
- Secure - encoded communication (end-to-end)

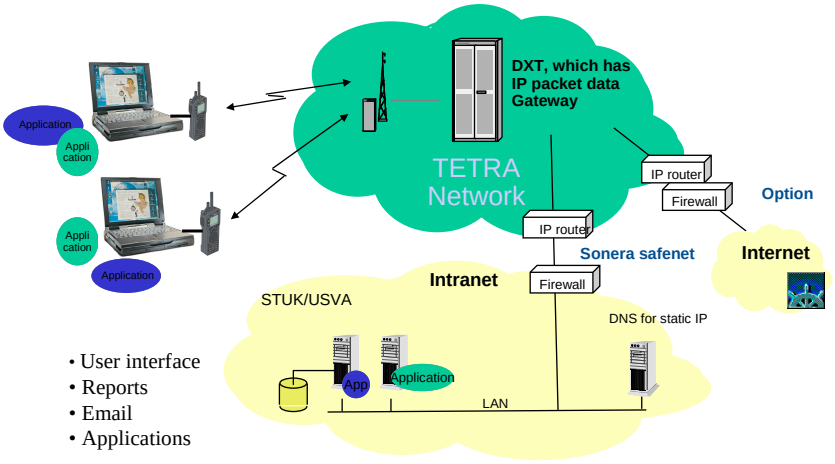
STUK

VIRVE - Network Structure



STUK

Dataservice – TETRA packet data



- User interface
- Reports
- Email
- Applications

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VIRVE - Properties

- **Group calls**
  - Fast calls
  - Individual calls
- **Short messages**
  - Status messages
  - Situation message
  - Emergency call
- **Packet data**
  - GPS coordinates
  - Direct communication (property of the phones)

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VIRVE: Group calls

- Similar to analog radio channels
- One talks - many listen (PTT)
- Network prevents simultaneous talking (queing)
- Dispatcher (duty officer) of the group has top priority in talking
- Possible to listen many groups
- Fixed groups but also dynamic groups

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VIRVE: Fast and individual calls

- Fast call
  - Between two persons
  - Connects directly if the person to be called has his audio loudspeaker on
- Individual call
  - Resembles normal gsm call
    - Inside Virve
    - External networks (if allowed)

STUK

VIRVE: Short messages

- Resembles GSM:n text messages (SDS - SMS)
- Length 140 characters - 1380 bits
- No message centre (yet) - message is not delivered if the recipient is not in network ;(
- No messages outside VIRVE
- A message centre is under construction and a more decent system is soon available!

STUK

VIRVE: Status and Situation information

- Situation information
  - To a predefined number
  - ”At the station”, ”On route”, ” On site”, ”Break”, etc..
- Status messages
  - To individual phone or to a group
  - Group message only to phones where the group is chosen

STUK

VIRVE: Emergency call and positioning

- Emergency call
  - Dedicated push button in the phone (RED)
  - Priority call to the dispatcher (duty officer) -112
- Positioning
  - GPS coordinates (the phone must support)
  - Cell positioning
  - Automated in emergency call

Communication

Navigation

gps

Navigation and communication

STUK

Training for field measurements

- Threat scenarios
- Radiation protection
- Measurement ⟷

- **Communication**
- **Navigation**
- **Data integration**

- Doserate monitoring
- Beta contamination
- Sampling (air,swipes,..)
- Source finding
  cps detectors, plastic crystal or NaI; HPGe, neutrons, ..

Communication in Radiological Emergency Using Tetra Mobile Phones

NKS Comm Tech Seminar, Stockholm, 31 May - 1 June, 2005

Harri Toivonen
STUK - Radiation and Nuclear Safety Authority, Finland

The measurements play a key role in a radiological emergency for understanding the consequences of the event. Different kind of data and analysis results need to be transferred to the control centre. This data transfer must be fast and reliable which may be difficult to achieve because of cost reasons. It is fully possible that in emergency the normal communication channels, such as commercial networks based on mobile phones, are not functional.

Standard data structures, protocols and formats are prerequisites for efficient communication. A modern format is based on XML which can be tailored to carry the information produced or required. The format can easily be enlarged for new data types. The messages can be validated at the sending site and at the receiving site. Standard high-efficient parsing software is available for different platforms.

For the decision making process of the countermeasures the data from the monitoring sites have to processed for a useful format, maps, diagrams etc. A secure wireless communication linkage can be established by

- radio links;
- satellites and
- Tetra network (authority mobile phones with GPRS and text messages).

Radio links provide a fast and independent way of communication. Radio link is a good solution for local small networks and for conditions where insufficient infrastructure exists. Satellite communication may be too expensive for routine data transfer. However, it provides a communication system not dependent on geographical coordinates, and is therefore essential in international missions.

Wireless communication using a Tetra-based system, such as Virve network in Finland, is a secure solution for the data exchange. A dedicated authority network does not collapse in a crisis, or at least it survives longer than the commercial mobile services.

The Finnish dose rate monitoring network with 300 stations will be renewed in 2005 - 2007. The communication is based on Virve; the mode of operation is “push-type” in 10 min intervals using XML coded short messages. In addition, Virve will be the backbone of the mobile communication in an emergency. Secure voice connections, gprs data transfer and short text messages provide the communication tools for efficient authority response.

Presentation of

- National requirements
- Present system used by SSI – Generalen v.3
- Short demo of the present system
- The upcoming system – Generalen v.4

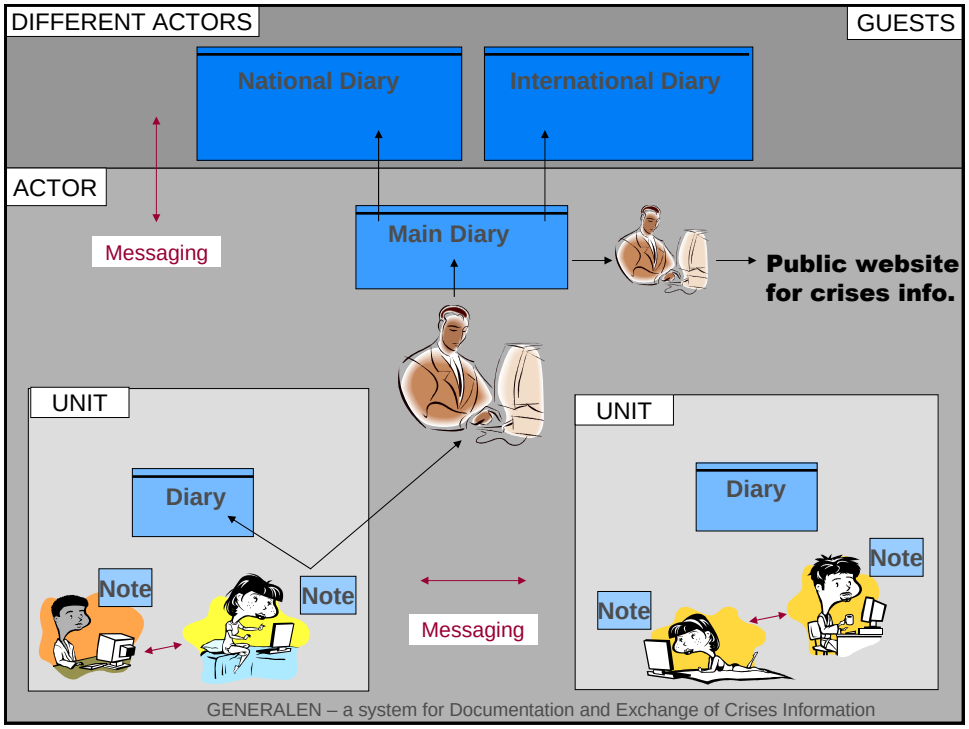
National requirements on systems for handling crises information

The Swedish Emergency Management Agency (SEMA) has a governmental assignment to:

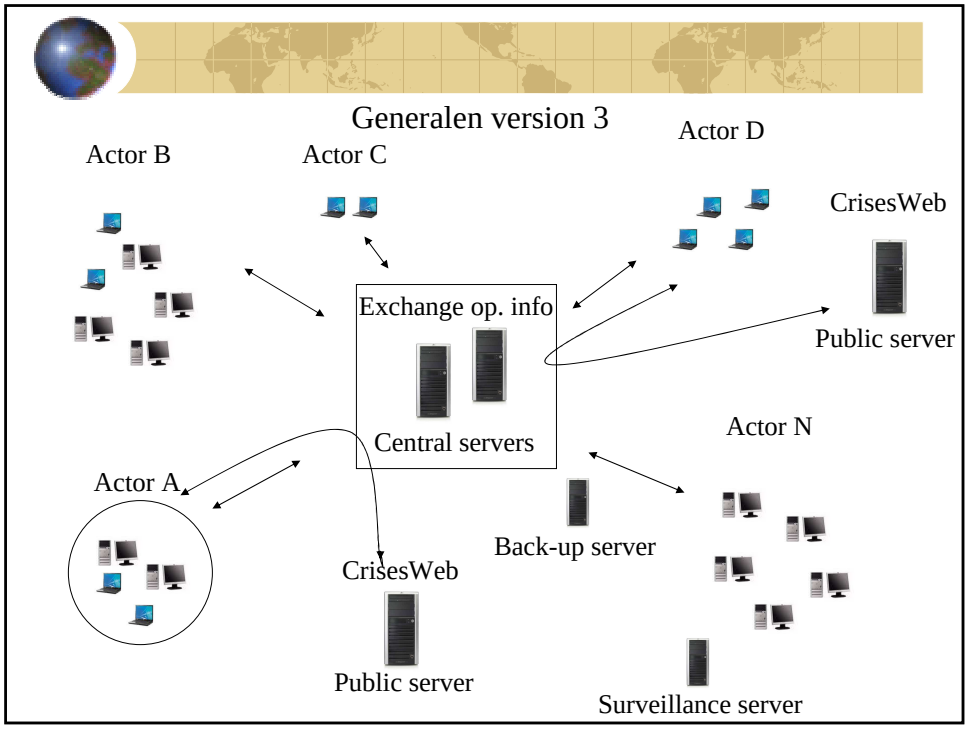
- Develop a web based information system,WIS.
- Develop a National Portal with crises information.
- Advise authorities and organisations on construction of web pages for crises information.

Generalen version 1-3

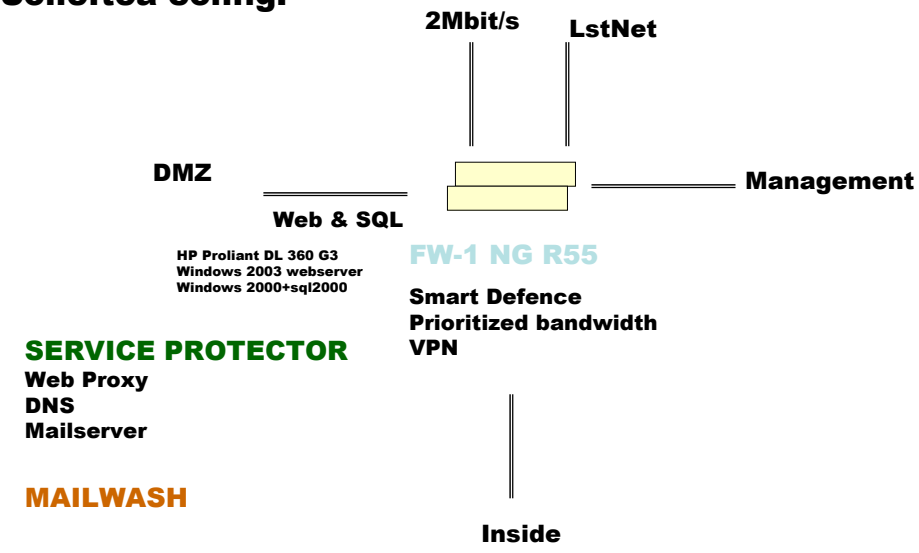
- Development started year 2000. Ver.1 in operation same year. Ver.3 is the operational version today.
- Dev. Tool MS Visual InterDev 6.
- Active Server Pages, ASP.
- MS IIS and SQL server.
- Central web- and sqlserver.



DEMO GENERALEN

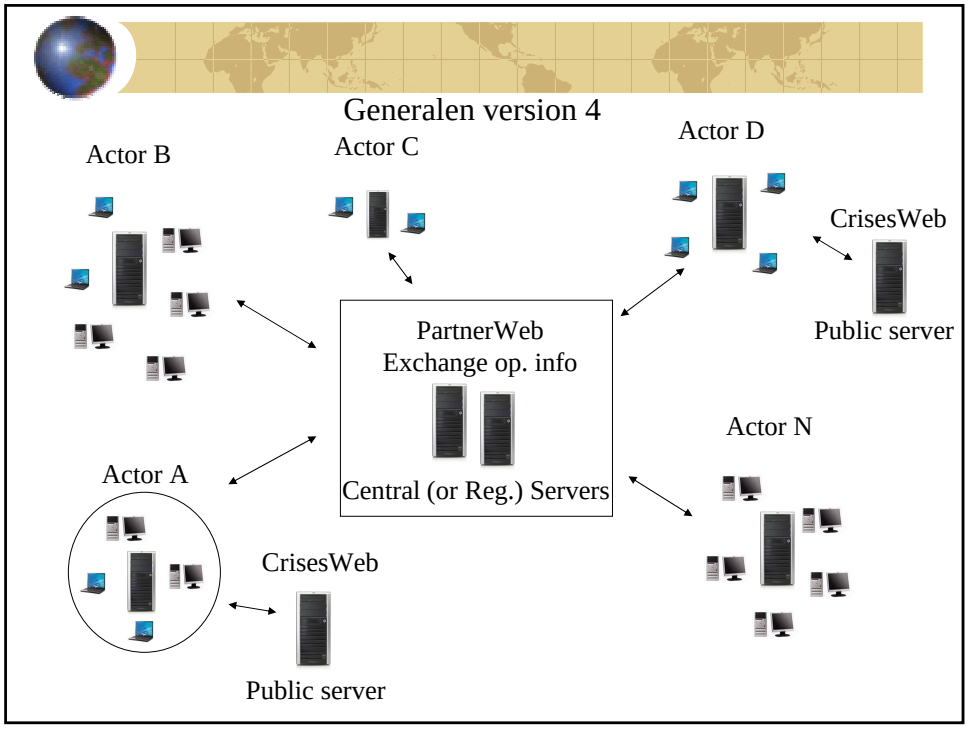


Sollefteå config.



Generalen version 4

- Development started 2005. Beta1 version is planned to be released end this year.
- Dev. tool MS Visual Studio 2005 (Beta).
- ASP.NET 2.0, ASPX
- MS IIS and SQL
- Distributed servers
- Communication – web service 2.0, prot. SOAP


Generalen version 4
Actor B
Actor C
Actor D
CrisesWeb
Public server
PartnerWeb
Exchange op. info
Central (or Reg.) Servers
Actor N
Actor A
CrisesWeb
Public server