IRIX standards

- Answer to some key-questions:
  - **Why:** Background and why were the standards developed?
  - **Who:** Who contributed to their development?
  - **What:** What are they?
  - **Impact:** What is their impact on existing radiological notification systems?
  - **Benefits:** What are the benefits of using these standards?
  - **Future:** Planned IRIX-related developments?
- 1-slide overview
- Conclusion

Why? - Background

- **2003/4** – Start of the IAEA Action Plan development based on recommendations of CAs and TM
- Objective:
  - Strengthen international emergency preparedness and response (EPR) system
- Action Plan designates three Work Groups:
  - **A** – International Communications WG
    - EG 1, 2, 3, 4, 5, 6
  - **B** – International Assistance WG
  - **C** – Sustainable Infrastructure WG-EPR
    - SG-I, SG-F

Who? - WG-A – International Communications

- 40 experts from 16 countries & 2 International Organizations participated
- Task: To have in place an effective internationally harmonized communication system for nuclear and radiological emergencies
- Assisted by Expert Groups

Who? - WG-A: Expert Groups

- **WG-A : EG1,2,3 defined standards referred to as International Radiation Information eXchange (IRIX).**
  - **EG1 Defined appropriate Dataset**
  - **EG2 Developed appropriate XML Schema**
  - **EG3 Recommended Web-Services Implementation and network architecture**
- *EG4 made recommendations to improve public communication arrangements*
- *EG5 made recommendations to improve the operational arrangements at the IEC*
- *EG6 defined standards for Video-conferencing*

Who? - WG-B – International Assistance

- 60 expert from 23 countries and 4 International Organizations participated
- Task: To have in place effective, efficient and compatible arrangements whereby MS can confidently obtain relevant and adequate assistance, including sound and timely assessments and advice; technical products (e.g. atmospheric dispersion predictions) to support assessments and decision making; and coordinated practical assistance
- Assisted by Expert Groups

Who? - WG-C (WG-EPR): Sustainability

- 29 experts from 17 countries and 4 International Organizations
- Two *standing* sub-groups
  - **S**ub-**G**roup on Action Plan **I**mplementation (**SG-I)**
  - **S**ub-**G**roup on Action Plan **F**ollow-up (**SG-F**)
- Tasks:
  - Sustainable Infrastructure
  - WG-EPR monitors and facilitates:
    - Action Plan implementation
    - Develops recommendations to ensure harmonization and long term sustainability
  - Objective is to strengthen the international emergency preparedness and response system

Who? - WG-C: SG-I: Sub-group for Implementation

- Improved IRIX data-set;
- Improved IRIX schema (latest version of December 2009);
- Definition of IRIX Web-service methods;
- Demonstration application for feasibility and schema debugging;
- Obtained agreement to establish an IRIX Steering Committee;
- Achieved consensus with IEC regarding the implementation in future developments of the Unified System regarding:
  - The IRIX standards,
  - A mirror-site,
  - A watchdog mechanism for the web-sites and the web-clients,
  - The interfacing to a call-out system,
  - PKI.

What is IRIX?

- A well defined set of data-elements;
- The encoding of these elements in an XML data-format;
- A set of recommendations for machine-to-machine communications using web-services in an scalable star-network topology;

  – *In short: IRIX is a set of standards to facilitate the exchange of radiological information.*

Extract of an IRIX file


```
<?xml version="1.0" ?>
- <p1:Report TypeOfReport="Return message" StatusOfInformation="Confirmed"
      NotificationUnderEuratom="true" NotificationUnderConvention="true" xmlns:p1="http://IRIX/1.1"
      xmlns:p14="http://IRIX/Annex/1.0" xmlns:p6="http://IRIX/Base/1.0"
      xmlns:p8="http://IRIX/CounterMeasures/1.0" xmlns:p3="http://IRIX/EventInformation/1.0"
      xmlns:p2="http://IRIX/Identification/1.1" xmlns:p4="http://IRIX/Location/1.0"
      xmlns:p10="http://IRIX/Measurements/1.0" xmlns:p12="http://IRIX/Media/1.0"
      xmlns:p9="http://IRIX/MedicalInfo/1.0" xmlns:p5="http://IRIX/Meteorology/1.0"
      xmlns:p11="http://IRIX/ModelResults/1.0" xmlns:p7="http://IRIX/ReleaseInfo/1.0"
      xmlns:p16="http://IRIX/Requests/1.1" xmlns:p17="http://IRIX/ReturnMessage/1.0"
      xmlns:p13="http://www.w3.org/2000/09/xmldsig#" xmlns:p15="http://www.w3.org/2001/04/xmlenc#"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://IRIX/1.1
      file:///f:/Vienna/Schemas/IRIX.xsd"> <!-- Attribute NotificationUnderConvention is optional  --> <!--
      Attribute NotificationUnderEuratom is optional  --> <!-- Attribute StatusOfInformation is optional  -->
- <p1:Identification ValidAt="2002-10-10T12:00:00Z" Update="635000"> <!-- Attribute Update is optional  -->
  <p2:OrganisationReporting>FRMAC</p2:OrganisationReporting>
  <p2:DateAndTime>2002-10-10T12:00:00Z</p2:DateAndTime>
  <p2:SequenceNumber>6</p2:SequenceNumber>  <!-- Element p2:Follows is optional  -->
  <p2:Follows>5</p2:Follows>  <!-- Element p2:Revoke is optional  -->  <!-- Element p2:LastMessageForEvent
      is optional  -->
  <p2:LastMessageForEvent>true</p2:LastMessageForEvent>
  <p2:Confidentiality PublicationAfter="-P1Y2M3DT10H30M">Free for publication</p2:Confidentiality>
```

IRIX web-service methods

- **GetEventsFromTo** (From,To): Gives array of event-description and id of the events that the client is authorized to see.
- **GetReportsByEvent** (EventId): returns an array of available reports.
- **GetReport** (ReportId, Version) Report object
- **SubmitReport** (Report) ReturnCode
- **GetSupportedVersions** () returns an array of available versions on the server-side or client-side.

What IRIX is *not*

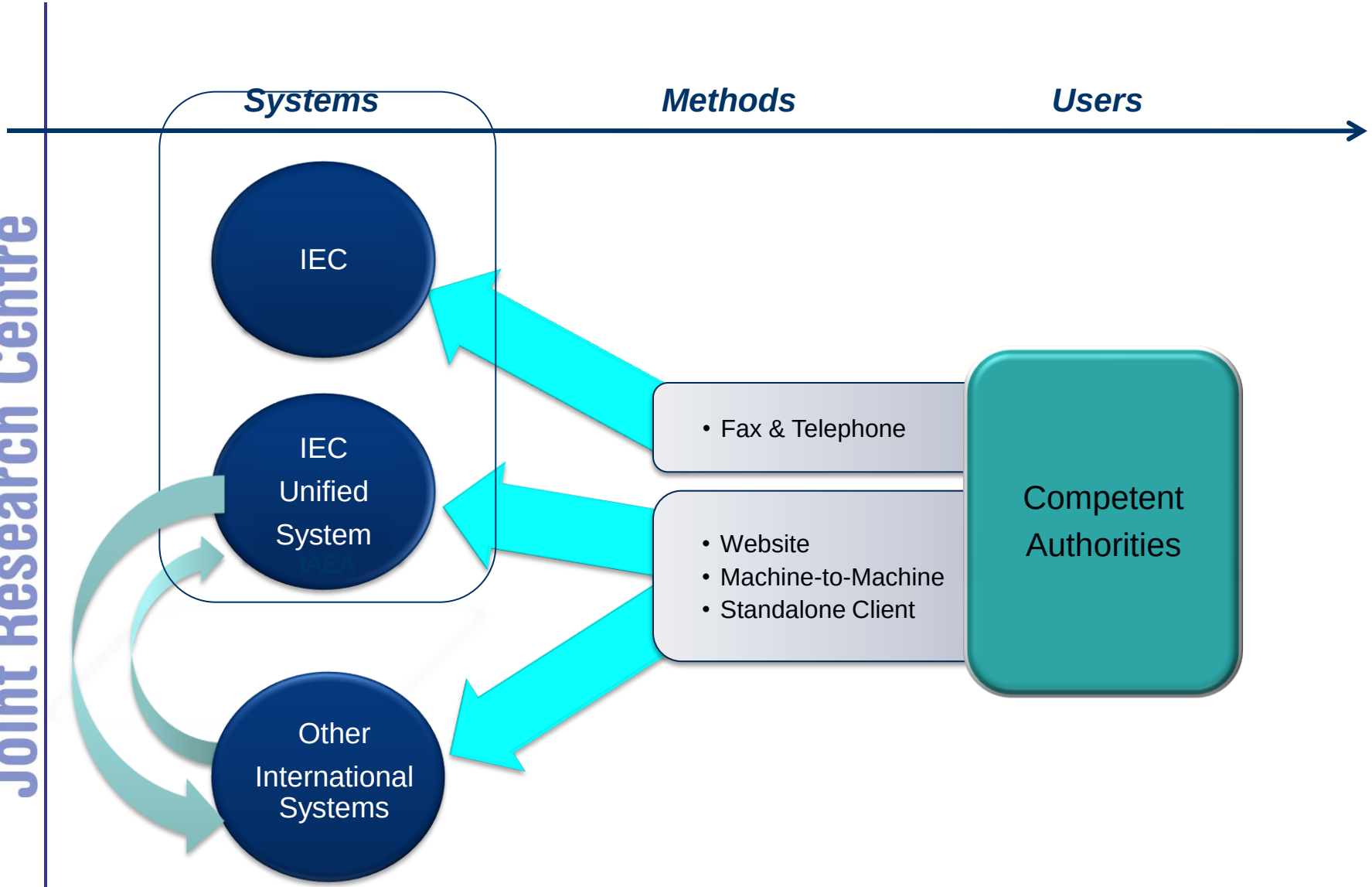
- it is *not* a network,
- It is *not* a system,
- it is *not* an application.

  – However, IRIX standards can be applied in (existing) national and international applications to achieve better, internationally harmonized systems!

Impact on existing Information Exchange systems?

- The new ENATOM + NEWS web-site (USIE) will be IRIX compatible
- WebECURIE and EURDEP are scheduled to conform to the IRIX standards by 2011.
  - Other radiological notification systems are likely to implement the IRIX standards in future

Impact: Future Information Flow



Impact: What is required at the CA to migrate from Fax or Website login to machine-to-machine communications?

- Build a local application that extracts data from a national system and sends it to USIE and/or WebECURIE
- IAEA foresees to make available a standalone application to manually enter the event information
  - Both applications can also work with non-permanent (dial-up) Internet connection
  - Both applications should also poll the IAEA website for new information and can keep downloaded info locally available

What are the benefits of using the IRIX standards?

- Can serve a multitude of data-exchange agreements (i.e. IAEA + EC notification);
- Enables machine-to-machine data-exchange (even with limited Internet connectivity);
- Inherent data-validation;
- Minimizes integration costs;
- More reliable early notification systems

In other words: *Facilitates the setup of an "… effective internationally harmonized communication system."*

Future IRIX related actions

- Establish IRIX Steering Committee
  - Management of IRIX Schema modifications
  - Further improvement of the IRIX schema and methods:
  - Extend the documentation of the IRIX standards
  - Further extend and then make the demonstration application software available for CAs
  - Promote the implementation of the recommended VTC capabilities and standards at the IEC

Summar

- Same definitions, units etc.

- Re… International …
during an emergency will …
- The IRIX standards:
  - Appropriate dataset definition
  - XML data-format
  - Web-service methods
  - Scalable star network
- Additional Action Plan …
  - Reliable central server(s) w…
  - IA… perate…
  - Standard protocols for Video…

Client/server

-ASCII
-Many standard tools available
-Strong data-validation
-Easy conversion from existing XML formats
-Minimizes integration cost

…change agreements
-WSDL for faster development
-Minimizes integration cost

-Clients use the same standards to exchange information with central and local servers.
-Server c… be clien… her server
-Clients always open the connection to a server both for sending and retrieving notifications

client client client client client

Conclusion

After the implementation of the IRIX standards (2nd half 2011):

- To notify under ENATOM CAs may either:
  - Login to USIE
    - The information entered can be exported in XML and sent to the IAEA using Web-services, or USIE may be instructed to forward the same information to the EC
  - Write an application that extracts the information from the national system and pushes it to the USIE server
  - Send a Fax …..
- To notify under ECURIE CAs may either:
  - Login to WebECURIE
    - The information entered can be exported in XML and sent to the IAEA using Web-services, or WebECURIE may be instructed to forward the same information to the IAEA
  - Write an application that extracts the information from the national system and pushes it to the WebECURIE server
  - Send a Fax ……
- To send monitoring data to EURDEP:
  - Use the same IRIX XML format and the same Web-service methods
- The same Web-service can be use to retrieve information in the IRIX format from WebECURIE, ENATOM and EURDEP

End of Presentation

Email:
gerhard.de-vries@jrc.ec.europa.eu

Gerhard de Vries