Tools for Trade Analysis and Open Source Information Monitoring for Non Proliferation

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Nuclear Security Unit
Ispra, Italy

http://itu.jrc.ec.europa.eu/
http://www.jrc.ec.europa.eu/

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Definition

Open source: "publicly available information that anyone can lawfully obtain by request, purchase, or observation". (Best & Cumming 2007).

It includes, but it is not limited to media sources, government and non-governmental reports and analyses, commercial data, and scientific/technical literature, including trade data.
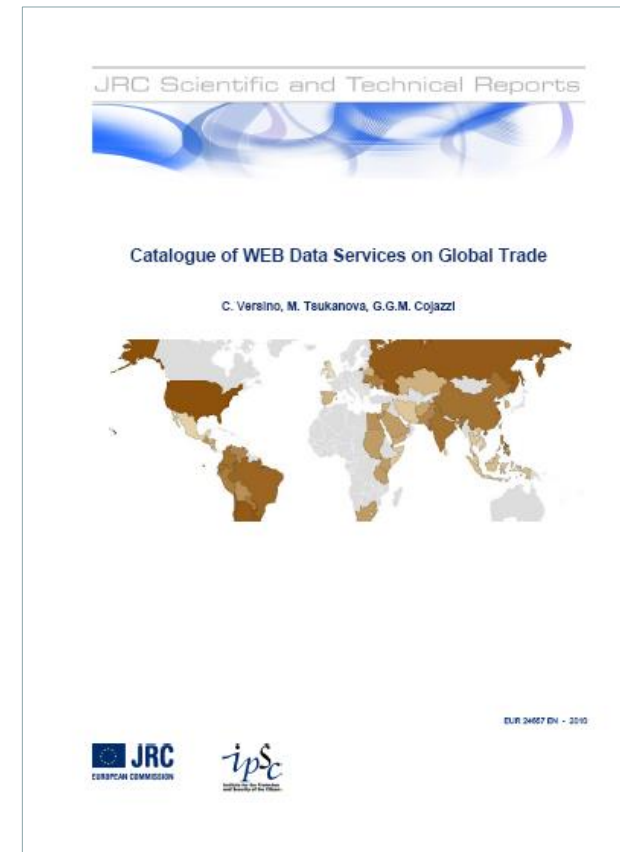
Contents

✓ Trade Analysis, data, methodology & tools

✓ Open source information monitoring: data sources and tools

Trade analysis for IAEA safeguards

✓ Key question 'Can open source data about the world trade support IAEA's verification activities?'

✓ 2007-now: context EC support task to IAEA.

Web services on global trade data

✓ Data derived from exporters/importers declarations to customs.

✓ **Imports/exports records on:**
- ✓ What is traded (Harmonised System descriptor)
- ✓ Value
- ✓ Quantity
- ✓ When
- ✓ Exporting country / entity
- ✓ Importing country / entity
- ✓ ...

JRC Scientific and Technical Reports
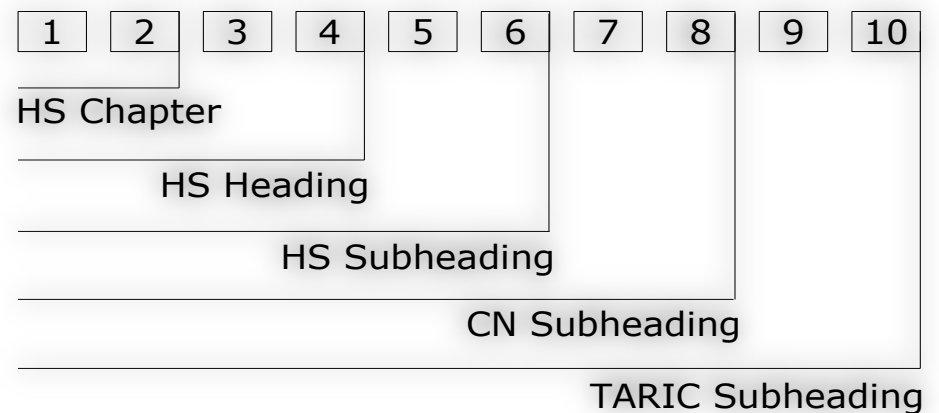
Catalogue of WEB Data Services on Global Trade

C. Versino, M. Tsukanova, G.G.M. Cojazzi

EUR 24657 EN - 2010

JRC
EUROPEAN COMMISSION

ipSc

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Web services on global trade data

DATA FORMAT		
SCOPE	**Transactions**	**Statistical data**
Multi-national	ANONYMOUS INFODRIVE PIERS STATISTIKA VED THE DATAMYNE URUNET	COMEXT GTA & WTA TRADE MAP THE DATAMYNE UN COMTRADE
National	CTI EXIMKEY TIPS TRADEIQ	CCS TRADE DATA ONLINE USA TRADE ONLINE TRADEVIEW

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Characteristics of global trade databases

Source:	State/ customs authorities
Nature of information:	Official
Temporal coverage:	More than 15 years
Temporal granularity:	By year, month, or shipment
Continuity:	Regular
Geographical coverage:	All States in the world economy.
Information type:	Structured by the Harmonised System
Reliability:	Medium to low, depending on items' type, value, flow, publishing state
Accuracy:	Medium to low, depending on items' type.

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Goods in The Harmonized System

✓ The Harmonized System (HS) is the **taxonomy of goods** by the World Customs Organization.

✓ Since trade data is indexed by the HS, to retrieve the data it is necessary to map items of interest to HS.

→ JRC The Big Table tool

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

HS Chapter

HS Heading

HS Subheading

CN Subheading

TARIC Subheading

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Methodological steps to use trade data services

✓ Determining items of interest

✓ Mapping items of interest into Harmonized System codes

✓ Planning queries on trade data services

✓ Queries, analysis and interpretation of trade data

The Big Table* (TBT)

- A tool to search a collection of
  reference documents for export controls.

- Reference documents include:
  - regulatory documents
  - technical handbooks
  - the Harmonized System

- The document collection is stored in **database** format and as **PDF** files.

- The document collection is **searched either by text or by <u>correspondence tables</u>**.

- Correspondence tables present equivalent or related items together.

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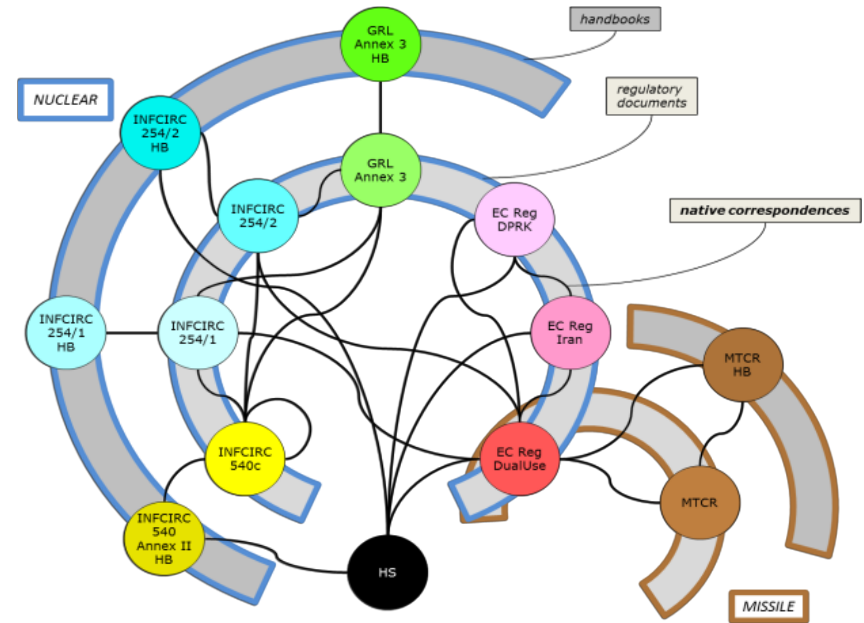
*Source code registered in JRC software catalogue, Nr. 2883.

Part of the TBT document collection

NUCLEAR (Ref. NUCLEAR SUPPLIERS GROUP)

Additional Protocol

-------- handbook

 Nuclear Suppliers Group 'Trigger List'

-------- handbook

 Nuclear Suppliers Group 'Dual-Use List'

-------- handbook

Goods Review List

-------- handbook

 EU Restrictive Measures against Iran

 EU Restrictive Measures against DPRK

| Document	Access	Nr. DB records
INFCIRC 540c Annexes I, II (1997)	Public	154
INFCIRC 540 HB Annex II (2004)	IAEA	137
INFCIRC 254 1 rev10 (2011)	Public	158
INFCIRC 254 1 HB (2002)	NSG	148
INFCIRC 254 2 rev8 (2010)	Public	229
INFCIRC 254 2 HB (2003)	NSG	229
GRL Annex 3 (2002)	Public	415
GRL HB Annex 3 (1998)	IAEA	391
EC Reg 961/2010 Annexes II, IV (2010)	Public	81
EC Reg 567/2010 Annex I (2010)	Public	83

IAEA's Physical Model + JRC's The Big Table
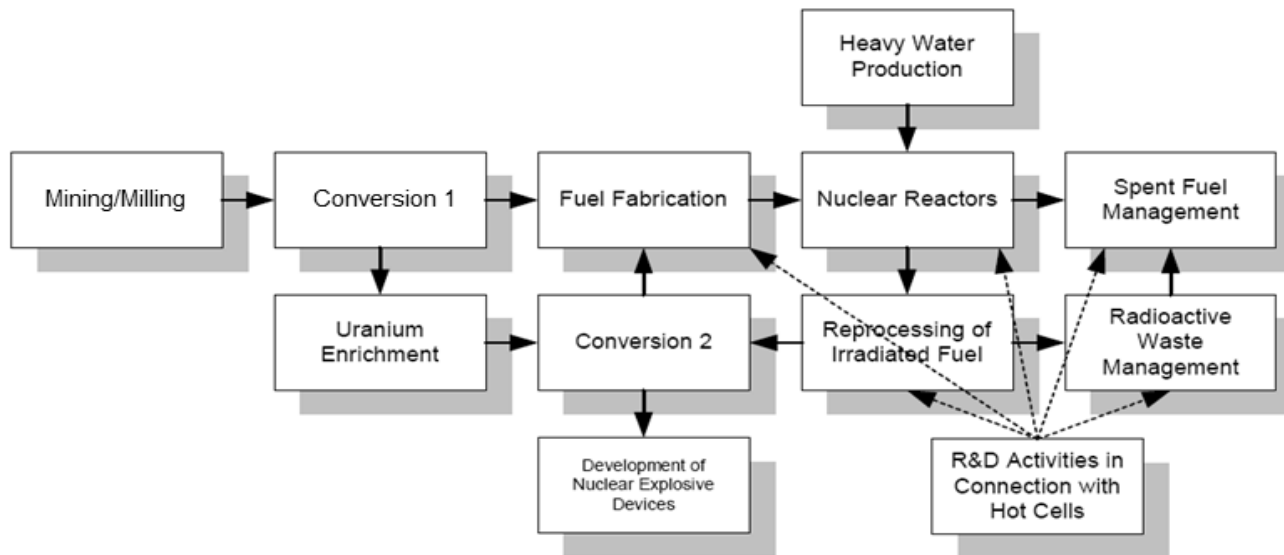
*The Physical Model describes the Technologies, Processes and Narratives underlying the **Nuclear Fuel Cycle**.*

Liu Z., Morsy S. Development of the Physical Model.
IAEA-SM-367/13/07, IAEA, Vienna, 2007.

Integrating the Physical Model with The Big Table

- *To make the **Physical Model** documents **searchable in a structured way** by storing them in a **database** format.*

- *To **link the Physical Model to other documents** to which the PM either makes explicit reference (e.g., the Additional Protocol, the Nuclear Suppliers Group guidelines for export controls) or*

- *to which the PM is related by means of the technical items it refers to (**e.g.**, technical handbooks, the **Harmonized System trade nomenclature**).*
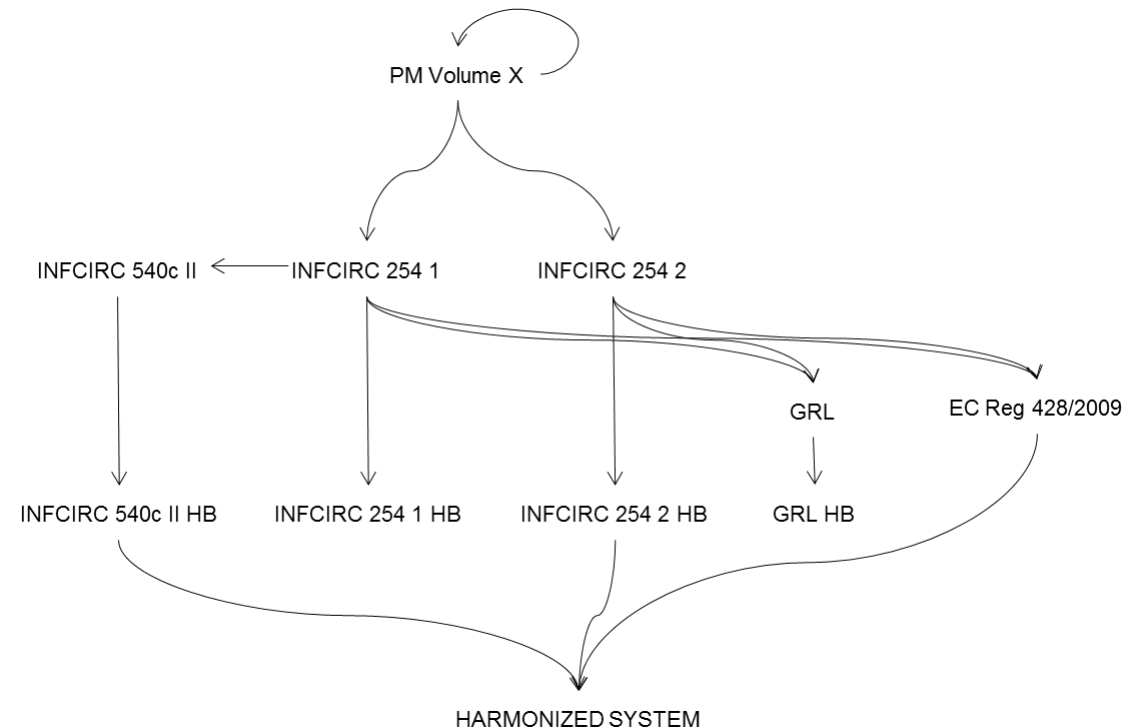
Trade analysis for IAEA safeguards

✓ 'Can open source data about the world trade support IAEA's verification activities?'

✓ The analysis of trade related information by the IAEA is proving useful for:

  ✓ The State evaluation process and for drawing broader safeguards conclusions;

  ✓ Verifying (import and) export declarations (Annex II) made by States under Additional Protocols (APs) . (2.a.(ix)).

  ✓ Identifying indicators of activities to be declared under APs (Annex 1) or other nuclear fuel cycle activities. (2.a.(iv)).

  ✓ See also at this Symposium, this session, IAEA paper by Marinova et al., and JRC paper by C. Versino.

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Open Source Information Collection and Analysis

Context

- ✓ **EMM**: JRC-IPSC developed a powerful, general-purpose Europe Media Monitoring system (EMM) that automatically aggregates and analyzes news information from over 4000 pre-defined web sites (http://emm.jrc.it).

- ✓ The **support task EC D 1880** aims at enhancing IAEA's capabilities in the collection, analysis and dissemination of Open Source information. The main objective is to establish a dedicated version of EMM – a *Nuclear Security Media Monitor* (**NSMM**) - that is customized to the needs of nuclear security and non-proliferation.

Open source information at IAEA Safeguards

✓ The Department of Safeguards uses open sources in several ways in support of the **state evaluation process**.

✓ Three primary open source collection processes:

- ■ **Daily review** for early warning and current awareness

- ■ Country-specific information collection for **state evaluation**

- ■ **Focused analytical and research reports**.

See paper JRC-IAEA paper in ESARDA Bulletin, No. 50, 2013

IAEA-SGIM Open Source Highlights (OSHL)

- ✓ Daily monitoring of general news media and specific nuclear sources.
- ✓ News review is disseminated to internal IAEA clients
- ✓ **Labour-intensive process** for review, collection and newsletter production.

Objective of support task: use EMM to increase the efficiency of IAEA's open source information collection process and OSHL production workflow

Europe Media Monitor (EMM)

✓ Fully automatic web-based system for **news aggregation and analysis** developed by JRC

✓ Replaces manual searching

✓ **Monitors Pre-defined list of web sources**

✓ Provides **real time analysis** and alerting functions

✓ **Reduce amount of data** based on predefined categories

✓ Provide **additional information**: Other categories, places, people, quotes.

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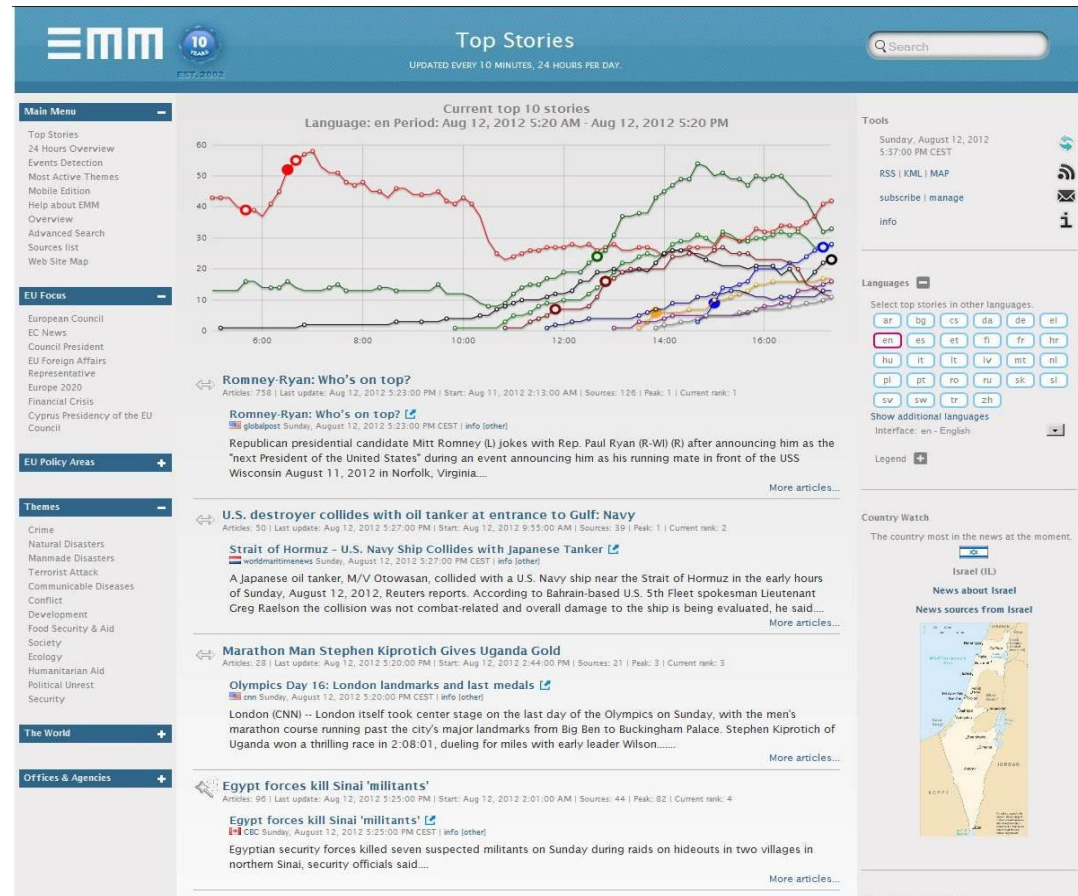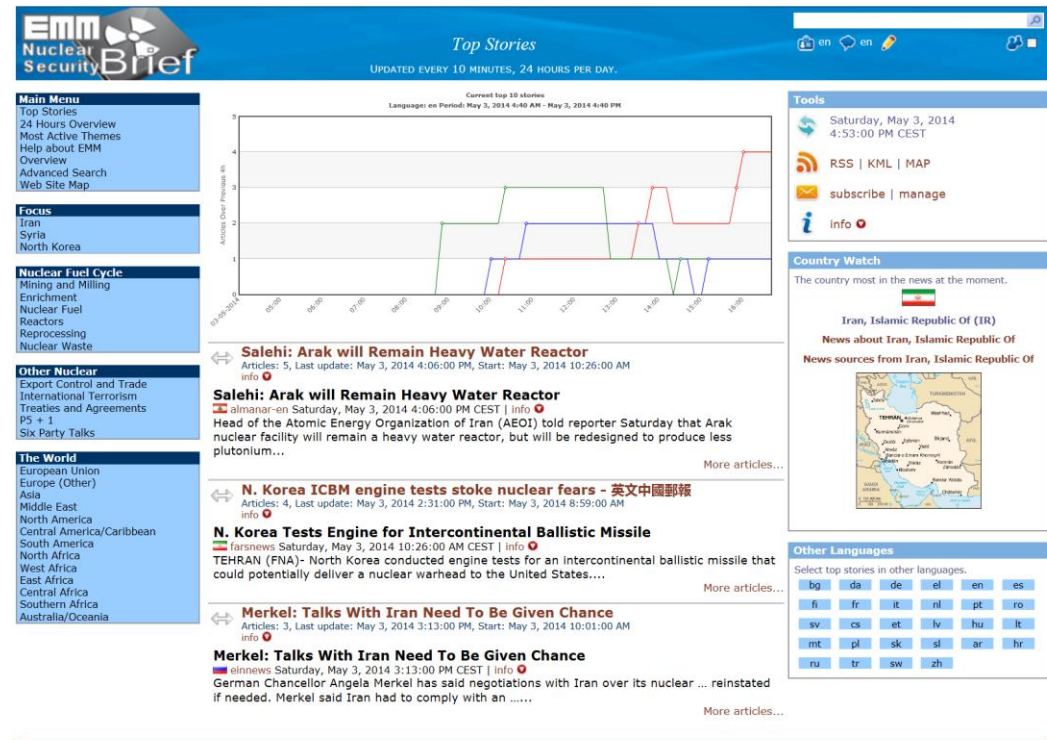
EMM statistics

- ✓ 200,000 articles per day

- ✓ Monitors over 4000 news portals (10.000 pages/RSS feeds)

- ✓ > 40 languages

- ✓ Classifies all news according to hundreds of subjects and countries (~1400 category definitions)

- ✓ 25.000 visitors/day on the public sites

- ✓ JRC Nuclear Security page accessible at

  http://emm.newsbrief.eu/NewsBrief/alertedition/en/JRCNuclearSecurity.html

Nuclear Security Media Monitor (NSMM)

✓ Separate EMM installation **dedicated to nuclear domain**

✓ Includes over **150 nuclear sources**

✓ **Filters all information** incoming information according to nuclear relevance

✓ Provides categories according to **thematic and geographic areas of interest.**

✓ **See EC stand at this symposium….**

https://nsmm.emm4u.eu/nucsec

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Classification of Sources to be monitored by NSMM

Category Name	Content	Frequency
General News and Aggregators	Directly-accessed news sources, news aggregators, and "fee-based" comprehensive news archive with collection of newspapers, periodicals, and news wires.	Very High
Nuclear News Aggregators	Articles from news agencies and news aggregators that customarily or primarily report on issues related to nuclear industry and safeguards.	High
Blogs	Interactive websites with commentaries on nuclear issues.	Medium
NGO & Academic	Non-governmental organization or university reporting providing detailed reports and added value assessments concerning State's nuclear programmes and activities, and general nuclear nonproliferation issues.	Medium
Government & Intergovernmental	Information from relevant intergovernmental organizations and competent authorities at national level are a unique source of authoritative information on nuclear safeguards and nuclear industry issues.	Low / Medium
Nuclear Industry	Information on companies including location(s), products, capabilities, activities, number of employees, main customers, exports of nuclear related items.	Low / Medium

NewsDesk

✓ NewsDesk is an **extension to EMM** developed for the production and dissemination of **news briefs**.

✓ It allows the information analyst to **review the article feed** generated by EMM and **select relevant articles** for inclusion to the news brief.

✓ NewsDesk is an **interactive, web-based** application that requires **login.**

✓ It supports **collaborative** work in teams.

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Use of NSMM @ JRC

JRC Nuclear Security News

Context: Daily collection and review of nuclear related information as basis for subsequent IANUS analysis and as early warning to EC clients.

- ✓ Established in 2010, a **news review** on nuclear security is delivered **daily**.

- ✓ Use is made of **Nuclear Security Media Monitor**

- ✓ Currently the newsletter is for EU internal use and is sent to approx. **200 users**.

Potential Information Flow JRC
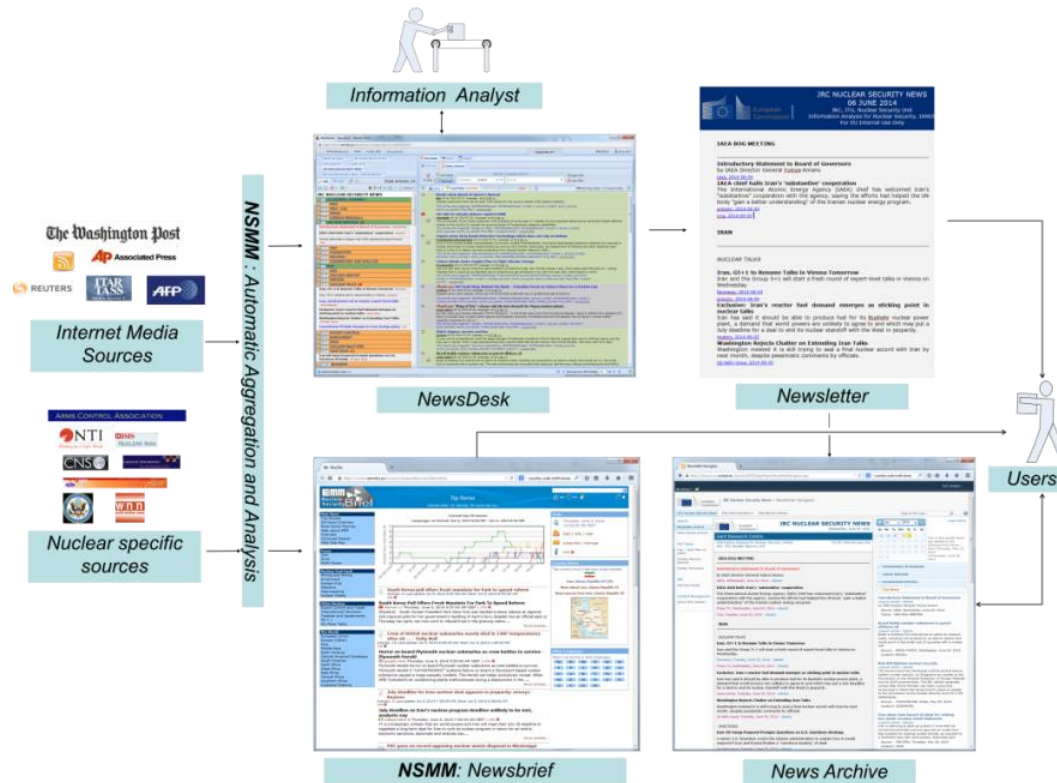
Conclusions

✓ JRC develops tools to support trade data analysis and collection of open source information news in nuclear safeguards.

✓ Close collaboration exist with IAEA for tool developments. JRC Analysis products are for EC customers.

✓ Open source information use can further increase following evolution of state level concept by contributing to the establishment of a global state picture.

Acknowldegments

✓ The work here presented is being carried out within the projects

  ✓ Open Source Information for Nuclear Security: applications and tools and

  ✓ Trade Analysis for Non Proliferation,

  ✓ both funded within the European Commission (EC) Euratom Horizon2020 Research and Training Programme, as contribution to the EC Support Programme to the IAEA.

✓ The Nuclear Security Media Monitor is developed by EC-JRC as collaboration between the Institute for Transuranium Elements and the Institute for the Protection and Security of the Citizen.

✓ The authors would like to thanks all the IAEA officers and JRC colleagues that contributed to the activities here presented.

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Europe Media Monitor (EMM)

http://emm.newsbrief.eu/NewsBrief/alertedition/en/JRCNuclearSecurity.html