



REDIRNET



SECTOR

Dealing with language barriers

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Language barriers

Social/Cultural Interoperability

Pragmatic Interoperability

Semantical Interoperability

Syntactical Interoperability

Physical Interoperability

- Inter-organisational collaboration
- Cross-border operations
- Professional, voluntary and private stakeholders
- Human Factors
- Iconography
- Semantics and syntax
- Workflow management
- Communication networks

Source: NATO IST-075

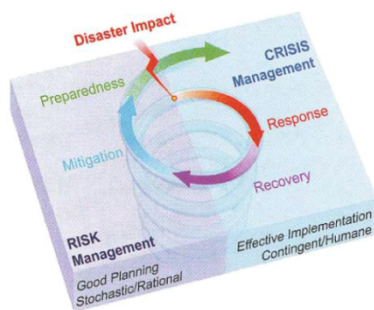
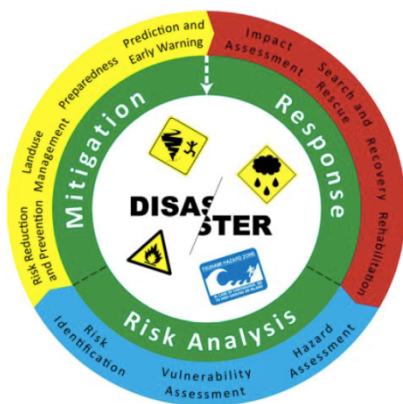
Motivation

Pan-European Inventory →

Objective: “derive [...] : **taxonomy** [...] to be used at European level with a view to enable collaboration processes and exploitation of information from different sources and across borders”

Source: FP7 Theme ‘Security’ Work Programme

→ Standardisation?



Kyoto University, DPRI (2009)

Source: Aubrecht et al 2012

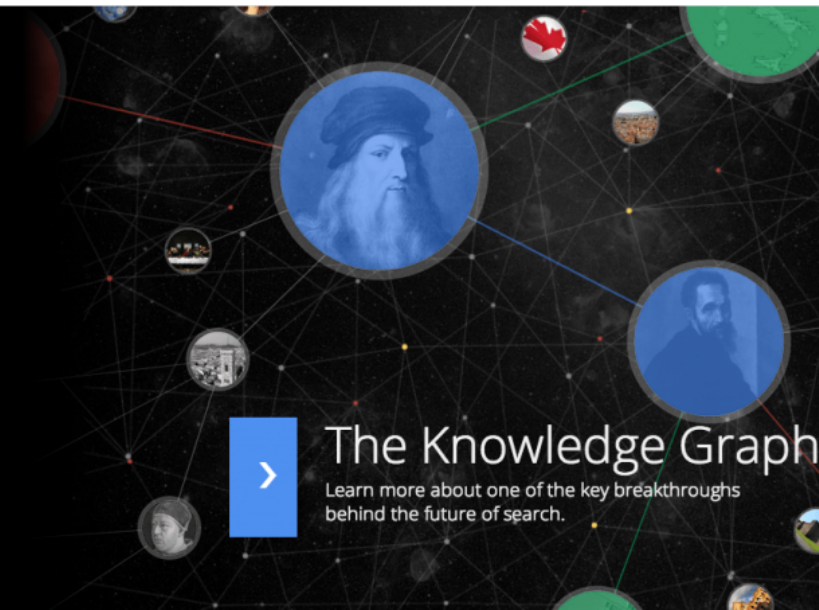
Taxonomies

- Characteristics of a taxonomy
 - Categorisation / classification scheme
 - Need based
 - Controlled vocabulary
 - Relationships, often hierarchical structure
- Two different perspectives:
 - Find or retrieve information (e.g., an exercise planner trying to identify relevant data sets)
 - Provide information about something (e.g., a software provider wants to inform about information systems)



→ Currently there are often no ways (*or too many ways*) for the categorisation of data sets, processes and information systems

A well-known reference...



Google search results for "taj mahal". The search bar contains "taj mahal" and the results show approximately 29,800,000 results. The top results include:

- Taj Mahal - Wikipedia, the free encyclopedia**: en.wikipedia.org/wiki/Taj_Mahal. The Taj Mahal is a white marble mausoleum located in Agra, India. It was built by Mughal emperor Shah Jahan in memory of his third wife, Mumtaz Mahal.
- Taj Mahal (musician) - Wikipedia, the free encyclopedia**: en.wikipedia.org/wiki/Taj_Mahal_(musician). Henry Saint Clair Fredericks (born May 17, 1942), who uses the stage name **Taj Mahal**, is an American Grammy Award winning blues musician. He often ...
- Atlantic City New Jersey Casino Hotels | TripAdvisor**: www.tripadvisor.com. For five star Atlantic City Casino hotels, Trump Taj Mahal, restaurants, nightlife and a casino floor you can't resist.
- Welcome To Official WebSite of Taj Mahal**: www.tajmahal.gov.in. Taj Mahal at Agra, India is one of the wonders of the world. Find information related to Taj Mahal travel and tourism in this article. Score: 27 / 30 - 312 Google reviews.
- Taj Mahal - Welcome to tajblues.com HOME**: www.tajblues.com. Official site includes news, tour schedule, discography, audio/video and pictures.
- Images for taj mahal**: Report images. A grid of images showing the Taj Mahal and related landmarks.
- The Taj Mahal, India**: Yes, the Taj Mahal is a beautiful building, but it is also a musician and a casino...and Google knows this. Western related to.
- Taj Mahal India**: www.tajmahal.com. Taj Mahal, Taj Mahal history, taj mahal location, pictures, information, taj mahal tours, tickets and packages. Taj Mahal India.
- Explore the Taj Mahal Virtual Tour - "5 STARS ..."**: www.taj-mahal.net/ "WCWif... Thrilling... Exotic... Ravishing!" says the SundayTimes, London -- 360° panoramas, mini-movies, narration, music, School Projects and more. One of the ...
- Taj Mahal - UNESCO World Heritage Centre**: whc.unesco.org. Culture > World Heritage Centre > The List. Article by UNESCO World Heritage Centre on the suspended Taj Corridor Project and ...

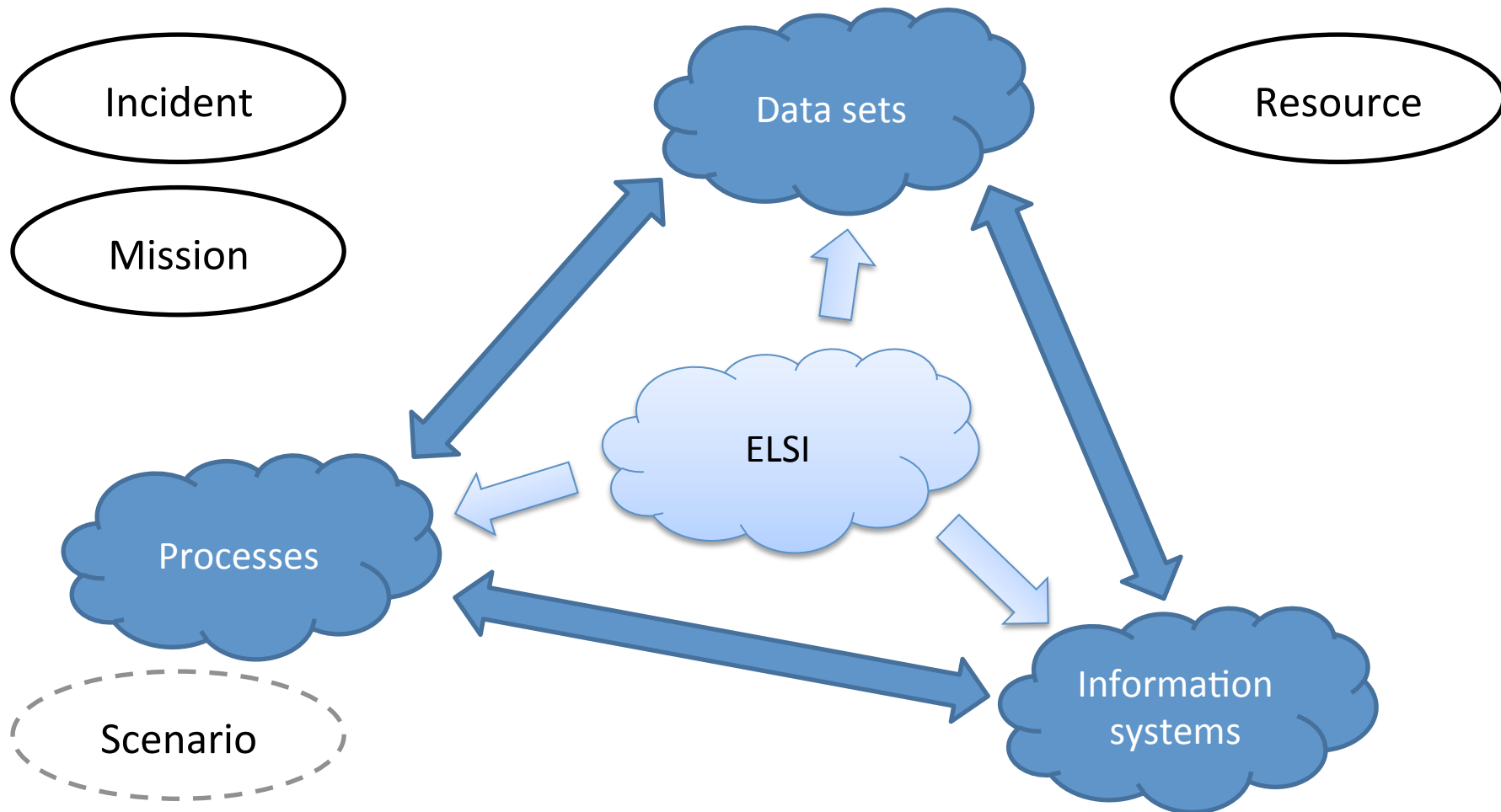
On the right side of the search results, there is a summary box for "Taj Mahal" with a map, a photo, and key facts:

- Taj Mahal**
- Map showing the location in Agra, India.
- Photo of the Taj Mahal.
- Height:** 561 feet (171 m)
- Address:** Agra, Uttar Pradesh 282001, India
- Architectural style:** Mughal architecture
- Phone:** 0562 222 6431
- Function:** Mausoleum
- Architect:** Ustad Ahmad Lahouri

Below the summary box, there are sections for "People also search for" (Agra Fort, Great Wall of China, The Red Fort, Qutub Minar, Jama Masjid, Delhi) and "See results about" (Taj Mahal Musician, Trump Taj Mahal Casino Resort).

Source: www.google.com, www.hallaminternet.com

Domain specific interests

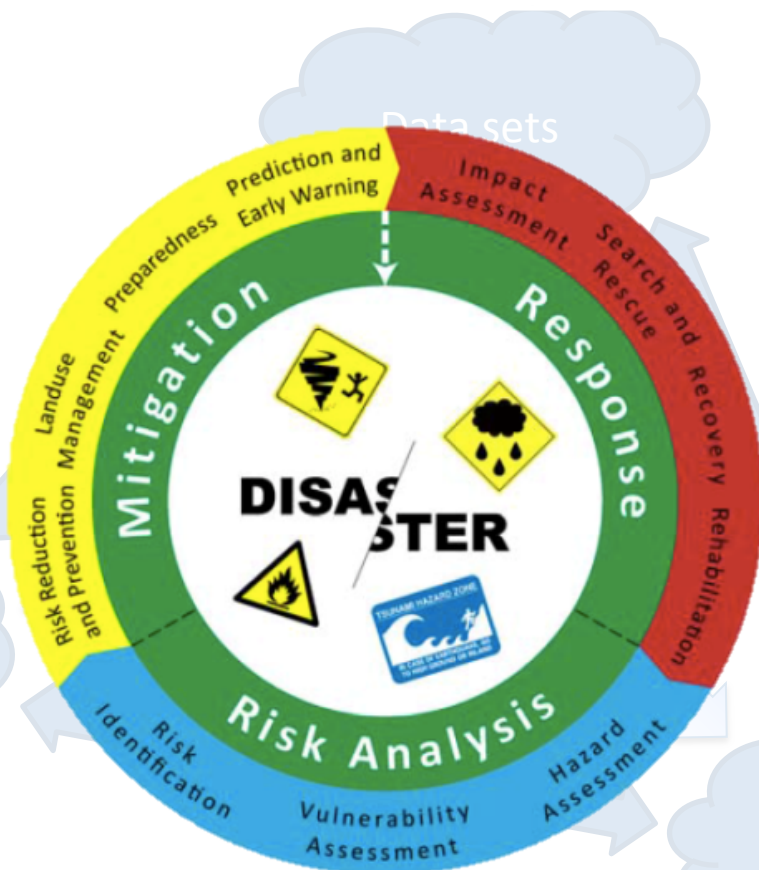


Existing models

NIEM
HXL
BBK glossary
...

EDXL, CAP, TSO
HL7, JC3IDM,
Emergel, PRML, DIN
Spec 91287, ...

ISO TC 223/292
(CEN TC 391)
ICS, FWDV, ...



NATO standards
Interoperability
...

W3C standards
Linked Open Data
OGC standards
...

DOLCE, DUL,
Dublin Core,
FOAF, ...





Some complementary examples



Sender:

<instruction>Necessarie attività di aspirazione acqua con **pompe idrovore** ed attività di pulizia fango e detriti</instruction>

Annotation of messages according to user's contexts

 Pumping system	lang	
 Systems designed for pumping pollutant spill, and water excess during natural disasters.	lang	

Receiver:

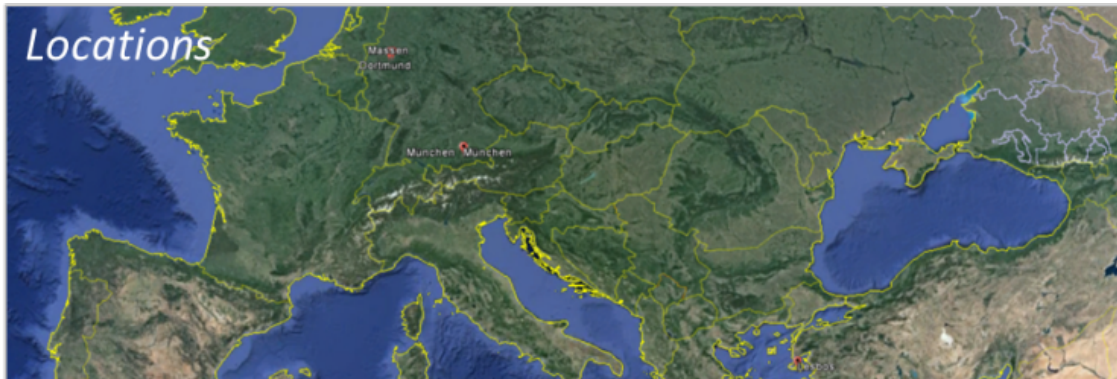
<instruction>Necessarie attività di aspirazione acqua con **pompe idrovore (SA Hydraulikpumpe B Kolbenpumpe B)** ed attività di pulizia fango e detriti</instruction>

Mapping IT to EPISECC: broader matching Pompe idrovore to Pumping system

Mapping DE to EPISECC: broader matching **Hydraulikpumpe** to Pumping system

Mapping DE to EPISECC: broader matching **Kolbenpumpe** to Pumping system

Locations



Search results

FD Munich – Refugee reception incident report

[\[private\] URL fd.munich.de/incidentRep-refugee-reception](#)

Incident IncidentReport FireService MassCasualtyIncident

Police worn video – Dortmund refugee reception

[\[private\] URL www.police.gov/dortmund-refugees-12394cam](#)

Video ITsystem ELSI

Greek Border Security – Lesbos reception center practices

[\[private\] URL border-sec.gr/goodPractice-lesbos-reception](#)

Crisis BorderSecurity GoodPractice SearchAndRescue

German government – Reception center concept 1988/89

[\[private\] URL gov.bundesregierung.de/reception-DE-RUS](#)

Migration BorderSecurity GovDirective

ELSI guidelines

Protecting Data

ELSI DataProtection AffectedPers

Maintaining Diversity

ELSI Ethics Culture

Account

ELSI Civ

Context sensitive
visualisation of
information

Related experts



Source Container Type	Source Element (property name)	Source Data Type	Source Element Definition	Mapping	NIEM Element	NIEM Element Path	NIEM Type	NIEM Element Definition
EDEN								
eden:org_organisation	eden:org_organisation	Organisation	Represent a legal entity involved or not in the crisis management	close match	nc:Organization	nc:Organization	nc:OrganizationType	A unit which conducts some sort of business or operations.
eden:org_organisation	eden:org_organisation:name	String	indicates the name of the organization	exact match	nc:OrganizationName	nc:Organization/nc:OrganizationName	nc:TextType	A name of an organization.
eden:org_organisation	eden:org_organisation:acronym	String	represents the acronym of the organization	exact match	nc:OrganizationAbbreviationText	nc:Organization/nc:OrganizationAbbreviationText	nc:TextType	An abbreviation, acronym, or code for an organization name.
eden:org_organisation	eden:org_organisation:country	String	the contry from which the organization is from	broad match	nc:LocationLocale	nc:Organization/nc:OrganizationLocation/nc:LocationLocale	abstract	A geopolitical area.
eden:org_organisation	eden:org_organisation:phone	String	the phone number of a responsible people	close match	nc:ContactTelephoneNumber	nc:Organization/nc:OrganizationPrimaryContactInformation/nc:ContactTelephoneNumber	nc:TelephoneNumberType	A telephone number for a telecommunication device by which a person or organization may be contacted.
eden:org_organisation	eden:org_organisation:organisation_type	Enum	the type of the organization. Eden manages the following enumeration {Academic, United Nations, Bilateral, Red Cross, Provider, Governmental, Inter-Governmental, Military, NGO, Private}	close match	nc:OrganizationCategory	nc:Organization/nc:OrganizationCategory		
eden:org_organisation	eden:org_organisation:website	String	the website of the organization	exact match	nc:ContactWebsiteURI	nc:Organization/nc:OrganizationPrimaryContactInformation/nc:ContactWebsiteURI	niem-xs:anyURI	A website address by which a person or organization may be contacted.
eden:org_organisation	eden:org_organisation:year	String	the year in which the organization has been constituted	exact match	nc:OrganizationEstablishedDate	nc:Organization/nc:OrganizationEstablishedDate	nc:Date	A date an organization was started.
eden:org_organisation	eden:org_organisation:comments	String	any comment	narrow match	nc:OrganizationDescriptionText	nc:Organization/nc:OrganizationDescriptionText	nc:TextType	A description of an organization.

Mapping data fields to a shared vocabulary

Sources Heading		
Name	Owner	Type
Tunnel CCTV 1	Tunnel Agency	IP, 2MP+Night vision
North escape door	Tunnel Agency	Door
South escape door	Tunnel Agency	Door
Fire zone - East	Tunnel Agency	Partition
West fire detector	Tunnel Agency	Smoke
Central fire detector	Tunnel Agency	Smoke
Tunnel fire coverage	Tunnel Agency	Partition
East fire detector	Tunnel Agency	Smoke
Tunnel CCTV 1	Tunnel Agency	CCTV
Tunnel CCTV 2	Tunnel Agency	CCTV
Tunnel CCTV 3	Tunnel Agency	CCTV
Tunnel CCTV 4	Tunnel Agency	CCTV
Police CCTV 2	Police	CCTV
Agency CCTV 2	Agency	CCTV
Police CCTV 1	Police	CCTV
Agency CCTV 2	Agency	CCTV

Sources Heading

Short Dec.	Fixed Camera North entry	Name	Tunnel CCTV 1
Longitude	17.276001	Latitude	48.102846
Orientation	55 degree from north	Description	Description example
Height	5m	Address	Košariská 180/79, 900 42, Dur

1 km

Leaflet | © OpenStreetMap contributors

Identifying relevant and accessible resources (cams, ...)

Summary

- Support for information sharing
 - Main focus on response phase including a wide variety of stakeholders
 - Complemented by efforts focused on preparedness activities
- The taxonomy is not necessarily visible for humans in the loop
- Many taxonomies (non-technical) and ontologies (technical) exist
- Integration ELSI seems to provide significantly added value
- Overcoming language barriers – that’s about links/mappings/extensions, not about completely new models
 - Human and organisational interoperability
 - Data exchange and technical interoperability
- Not replacing existing languages, but aligning them

Thank you!

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Taxonomy Task Force

in coordination action for topic FP7 SEC-2012.5.1-1 Analysis and identification of security systems and data set used by first responders and police authorities: EPISECC (GA N° 607078), REDIRNET (GA N° 607768), SecInCoRe (GA N° 607832), SECTOR (GA N° 607821)