Developments in Science and Technology –

OPEN SOURCE TOOLS FOR CONFIDENCE IN COMPLIANCE

Acknowledgements to:

Auswärtiges Amt

Side event to the Meeting of Experts of the BWC

Geneva, 10 August 2015

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ZNF Carl Friedrich von Weizsäcker-Centre for Science and Peace Research

Research Group for Biological Arms Control

Content

- Considerations on confidence and compliance relevant information
- Challenges for OS based monitoring,
- Tasks for OS monitoring,
- Developing a standardised query,
- Examples for the gathering of OS information,
- Conclusion.

Transparency/Knowledge as Main Sources for Confidence in Compliance

Status Quo: Performance in compliance behaviour as „known unknown“ in the BWC regime.

Information gathering indispensable for the strengthening of any regime.
No confidence without knowledge.

With the absence of an official mechanism to monitor…

- BW relevant activities (state level),
- Relevant scientific and technological developments (global level)

… the question is, how transparency building can be facilitated for the BWC regime.

Actors	Technical Means	Range of transparency
States	NTMs	No/limited transparency
International Organisations	ITMs	Defined by States Parties
NGOs	PTMs	The general public

- Few states have the capacity to systematically collect relevant information,
- PTMs with enhanced technical potential due to revolutions in IT and reconnaissance technology,
- Public transparency is conceptually very different from State based transparency.

PTMs as last resort?

Use of **PTMs** as effective way to produce confidence by transparency in biological arms control.

Need for the development of a **publicly** applicable method to identify **qualified questions** on the compliance behaviour of states on base of open source information.

Disclaimer for public OS based monitoring:

- Does not replace an official mechanism,
- Focus: activities of states rather then small scale activities.

Searching the needle in the haystack? Not a complicated exercise!

Preventive biological arms control is the search in 193 haystacks with individual levels of complexity. Any haystack may contain a needle, but also parts of needles consisting of different ‚materials'. Parts of the needle might be perfectly suitable to legitimate activities.

We can only investigate them from a distance or from hearsay.

Challenges

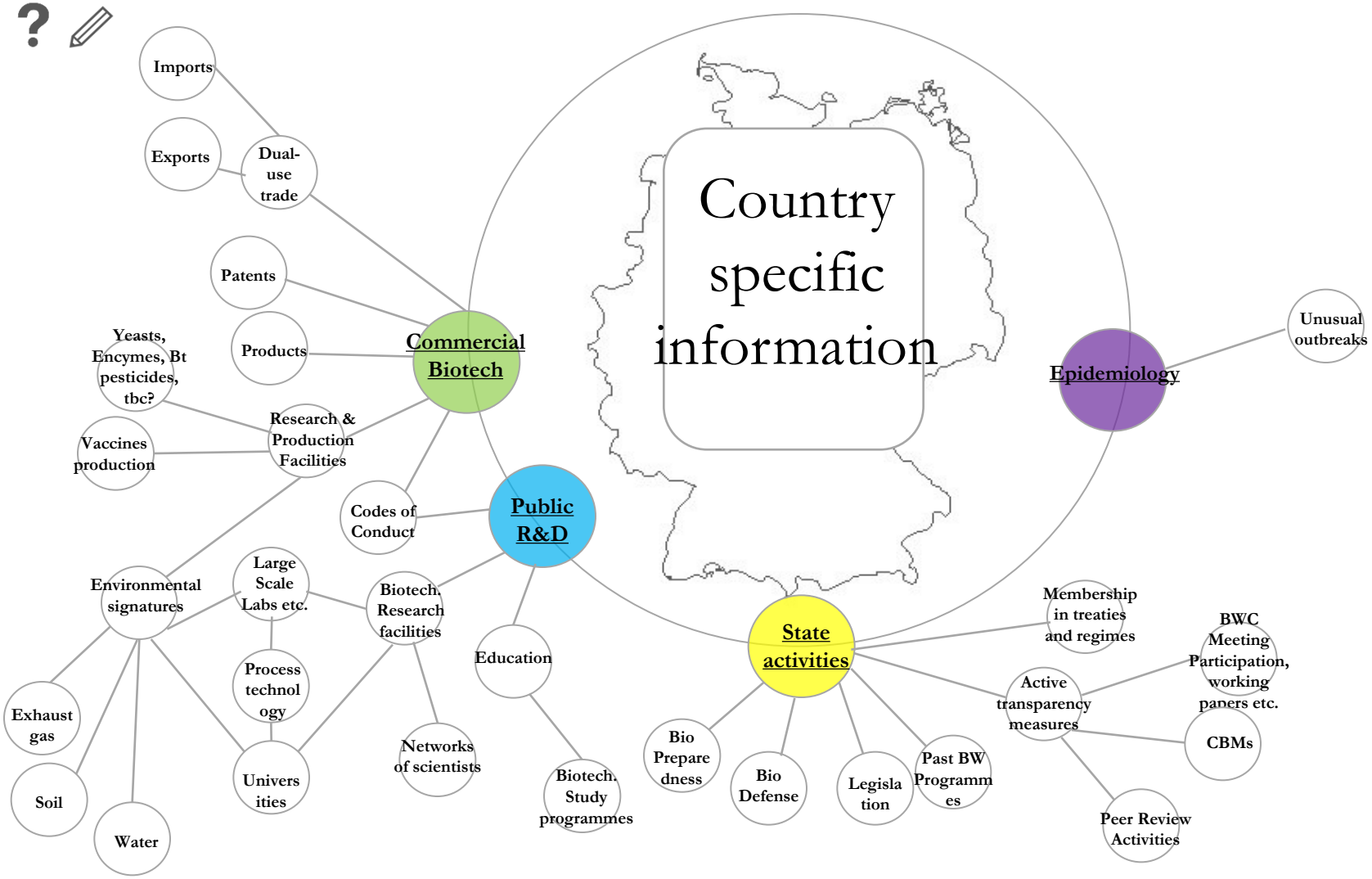
- Biological arms control is preventive:
  - Includes the identification and investigating civil facilities and activities with significant dual-use characteristics,
- Biotechnology still rapidly developing geographically, technically, and economically,
  - Wide-spread dual-use characteristic of agents, methods, technology, knowledge, etc.,
  - Availability of equipment on „the market“.

- Big Data needs aggregation and visualisation,
- New technologies needed for off-site measurements of environmental markers.

Tasks for public OS monitoring

- Indicators for off-site monitoring,
- Signatures of relevant facilities and activities,
- Accessibility of relevant information.

General context information such as S&T developments, availability of dual-use equipment, etc.



Standardised query - any point can be the stating point.

Sources of Compliance Relevant Information (BWC)

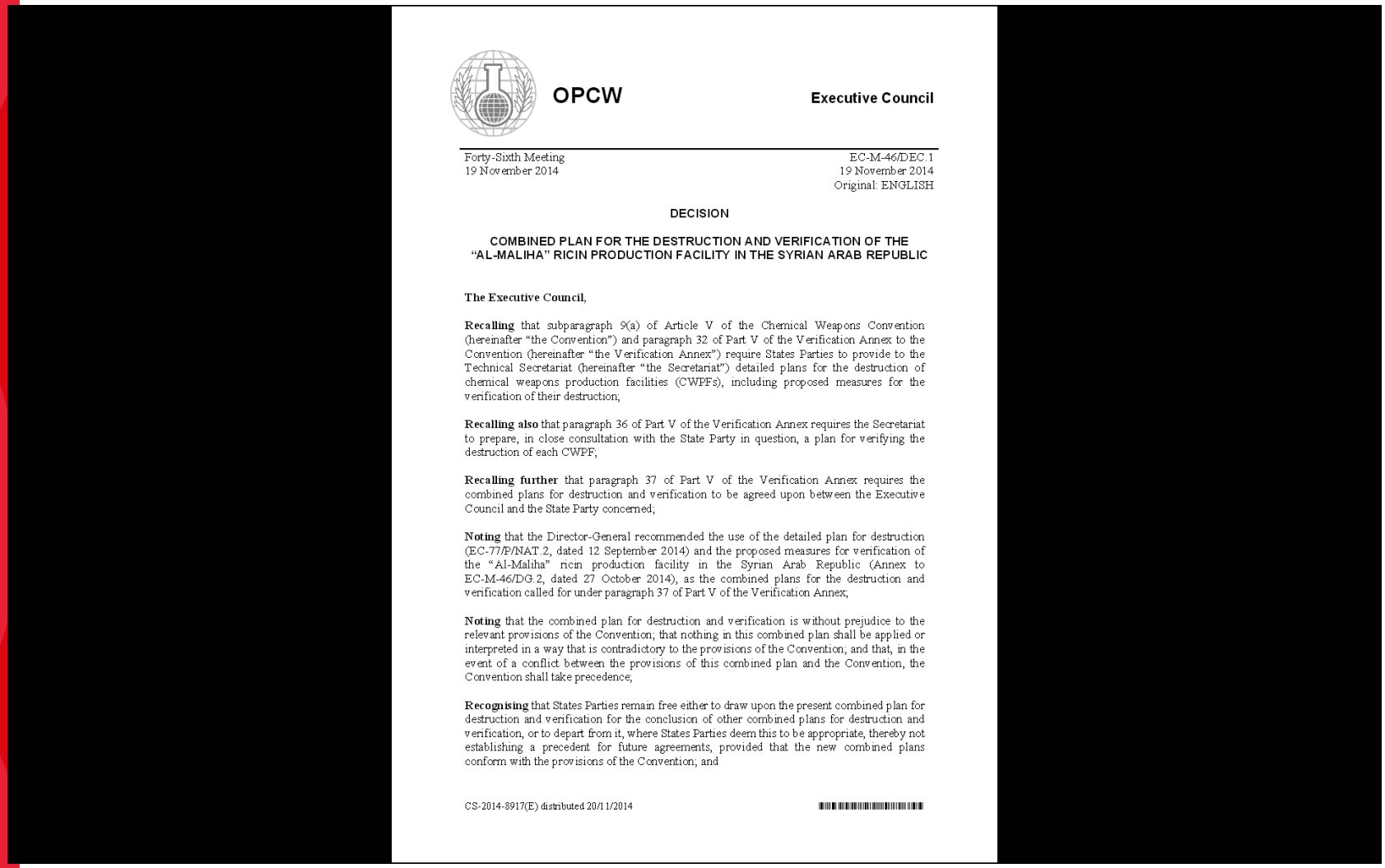
Off-site measurements:

- Environmental samples
- Official documents

Big Data:

- Epidemiological Information (real-time, global)
- Patents
- Biotechnical facilities and capacities (companie‘s websites…) Yellow Pages)
- Historical offensive BW-programmes/ongoing biodefence programmes
- Scientific Publications (PubMed etc.)
- Social media
- Satellite imagery
- Reports in the media (e.g. the trench forum)
- Relevant trade data

The example of Syria



OPCW

Executive Council

Forty-Sixth Meeting
19 November 2014

EC-M-46/DEC.1
19 November 2014
Original: ENGLISH

DECISION

COMBINED PLAN FOR THE DESTRUCTION AND VERIFICATION OF THE "AL-MALIHA" RICIN PRODUCTION FACILITY IN THE SYRIAN ARAB REPUBLIC

The Executive Council,

Recalling that subparagraph 9(a) of Article V of the Chemical Weapons Convention (hereinafter "the Convention") and paragraph 32 of Part V of the Verification Annex to the Convention (hereinafter "the Verification Annex") require States Parties to provide to the Technical Secretariat (hereinafter "the Secretariat") detailed plans for the destruction of chemical weapons production facilities (CWPFs), including proposed measures for the verification of their destruction;

Recalling also that paragraph 36 of Part V of the Verification Annex requires the Secretariat to prepare, in close consultation with the State Party in question, a plan for verifying the destruction of each CWPF;

Recalling further that paragraph 37 of Part V of the Verification Annex requires the combined plans for destruction and verification to be agreed upon between the Executive Council and the State Party concerned;

Noting that the Director-General recommended the use of the detailed plan for destruction (EC-77/P/NAT.2, dated 12 September 2014) and the proposed measures for verification of the "Al-Maliha" ricin production facility in the Syrian Arab Republic (Annex to EC-M-46/DG.2, dated 27 October 2014), as the combined plans for the destruction and verification called for under paragraph 37 of Part V of the Verification Annex;

Noting that the combined plan for destruction and verification is without prejudice to the relevant provisions of the Convention; that nothing in this combined plan shall be applied or interpreted in a way that is contradictory to the provisions of the Convention; and that, in the event of a conflict between the provisions of this combined plan and the Convention, the Convention shall take precedence;

Recognising that States Parties remain free either to draw upon the present combined plan for destruction and verification for the conclusion of other combined plans for destruction and verification, or to depart from it, where States Parties deem this to be appropriate, thereby not establishing a precedent for future agreements, provided that the new combined plans conform with the provisions of the Convention; and

CS-2014-8917(E) distributed 20/11/2014

The example of Syria

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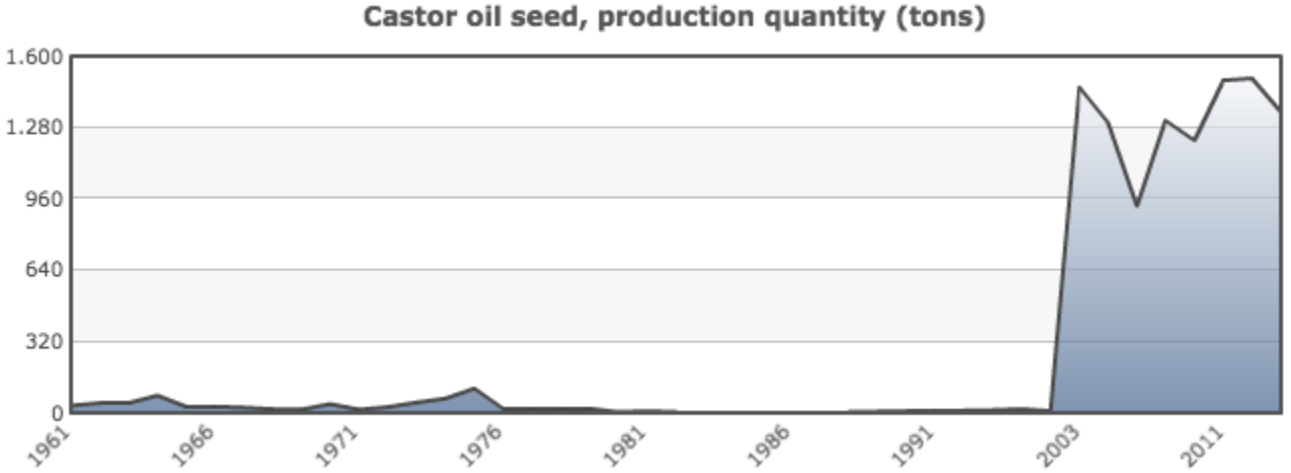
Syria‘s ricin programme



Source: FAO

Source: google earth

2000 2005 2014

Tameco pharmaceuticals, Al-Maliha

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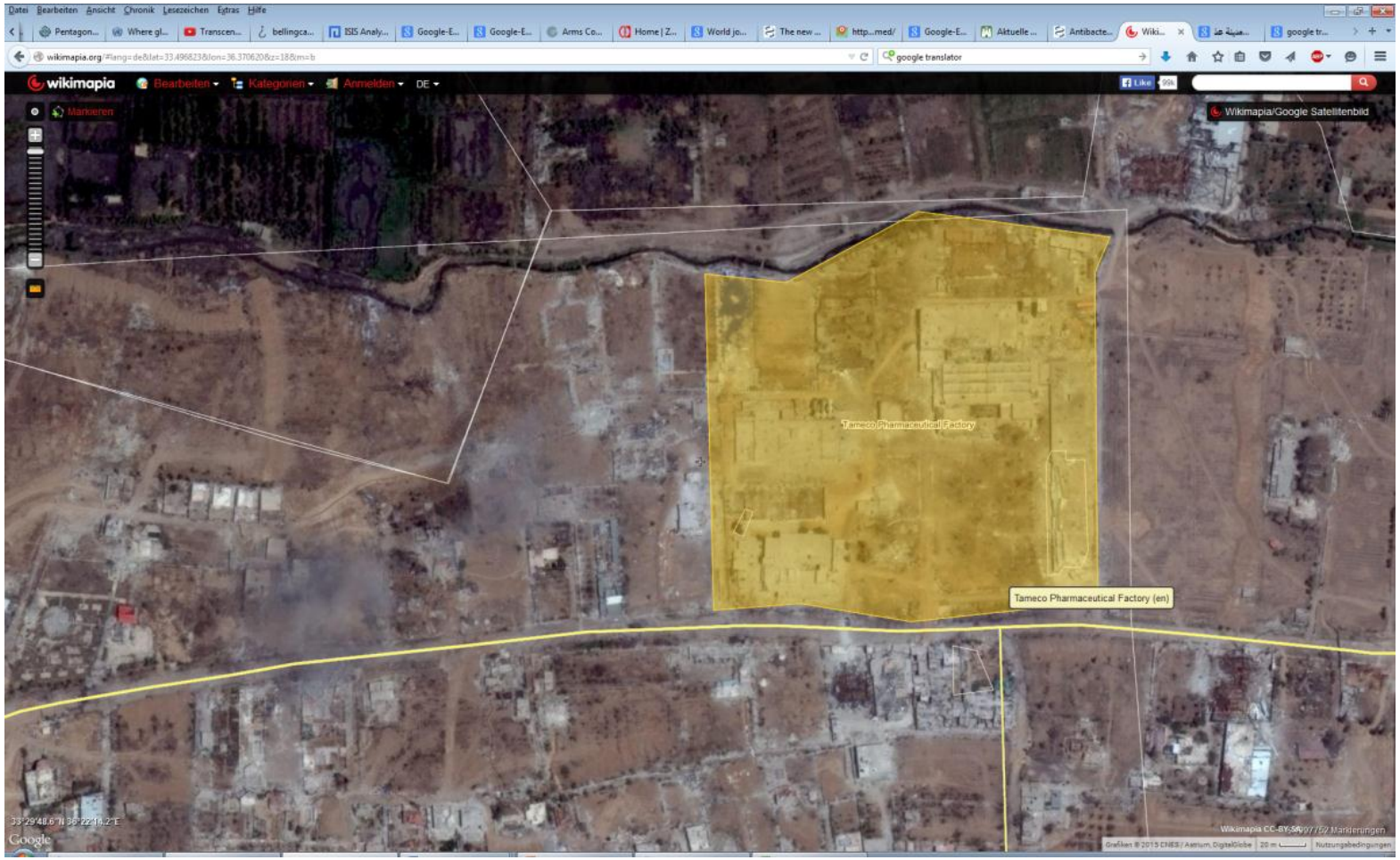
Identifying further bio-(chemical) facilities in Syria

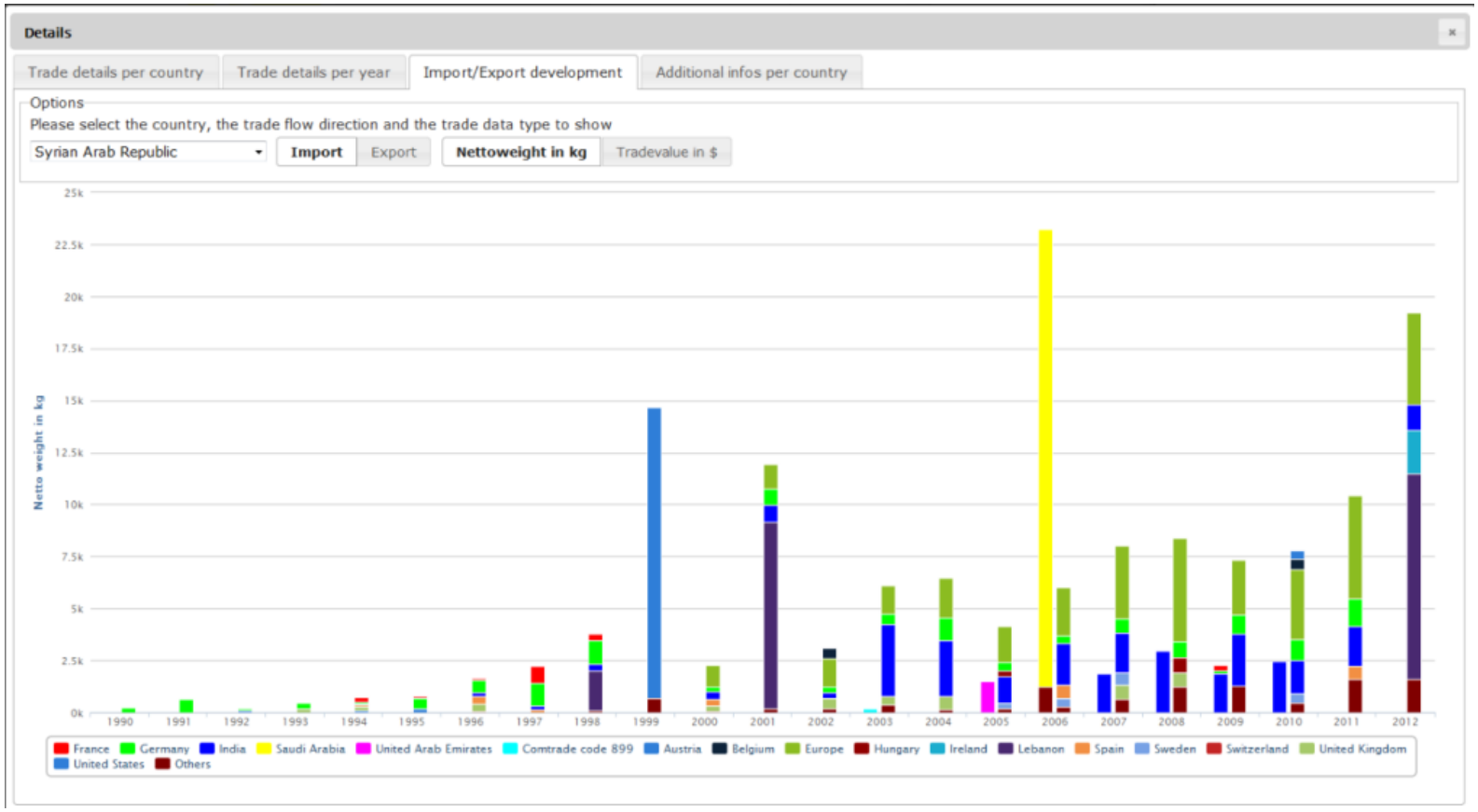
Identified by (list not conclusive)

- List of customers of a producer of specific AC.
- Optical indicators:
  - Specifications of biotech facilities on satellite images,
  - Number of satellite images of a certain site,
  - Linkage with on the ground photographs.
  - Wikimapia search.

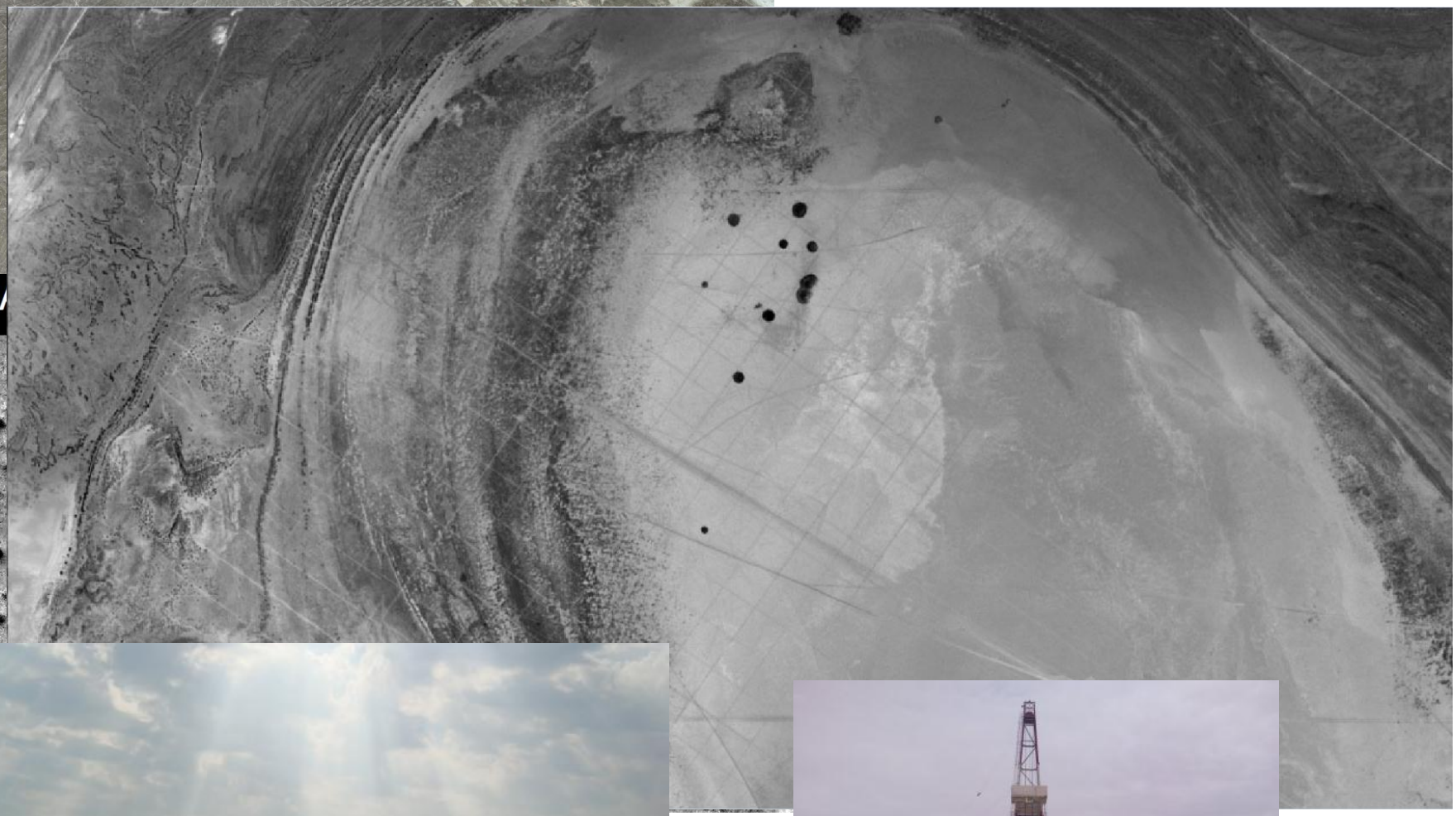
Search with wikimapia



Syria‘s trade in biological growth media



www.biological-arms-control.org/monitor



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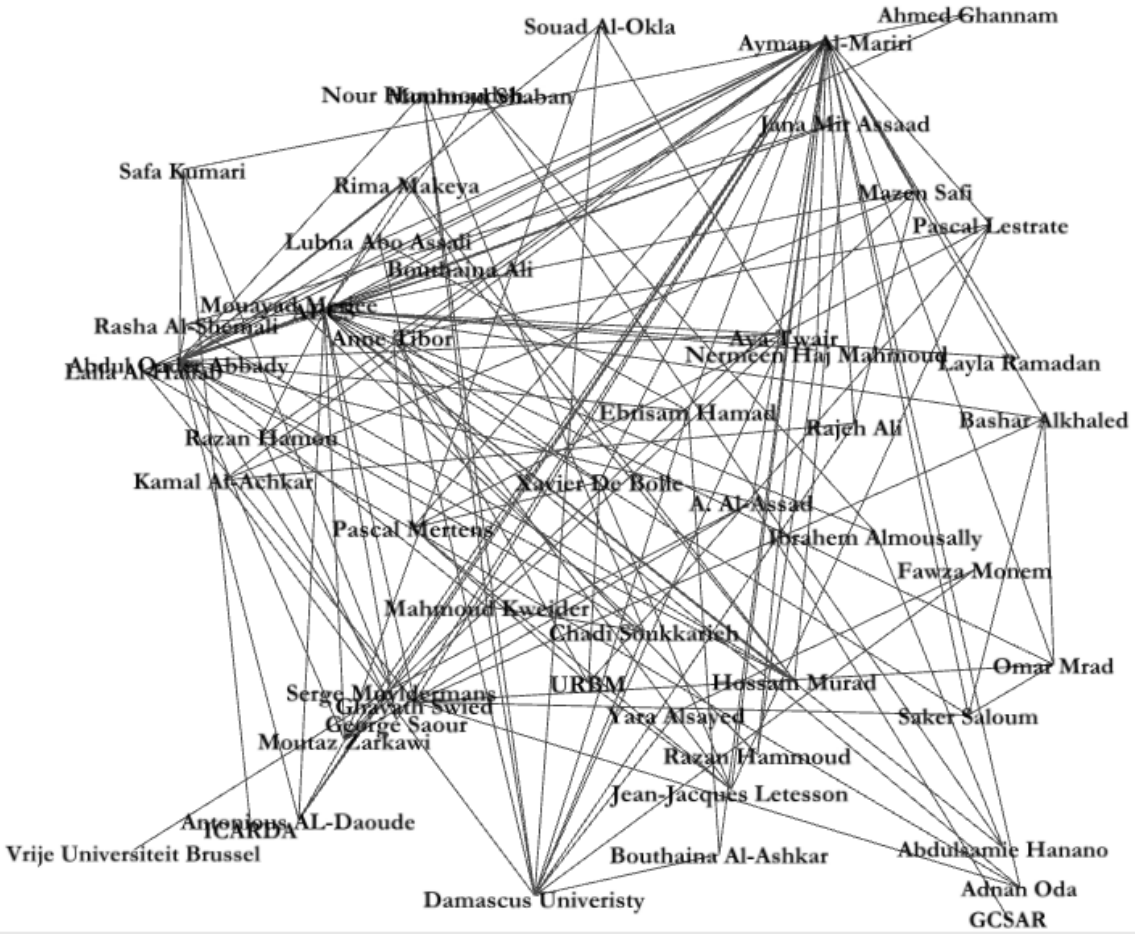
Identifying networks of bioscientists



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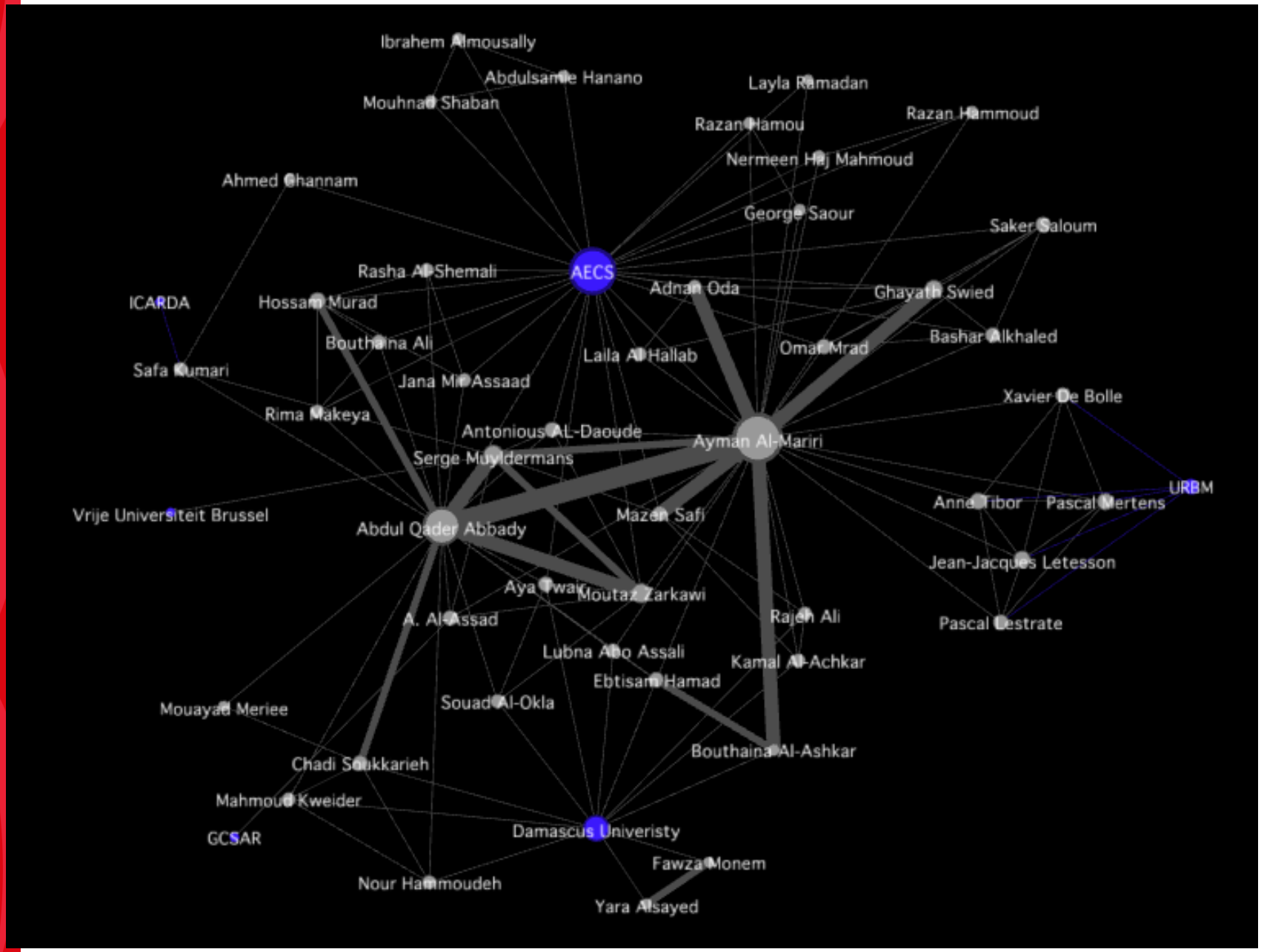
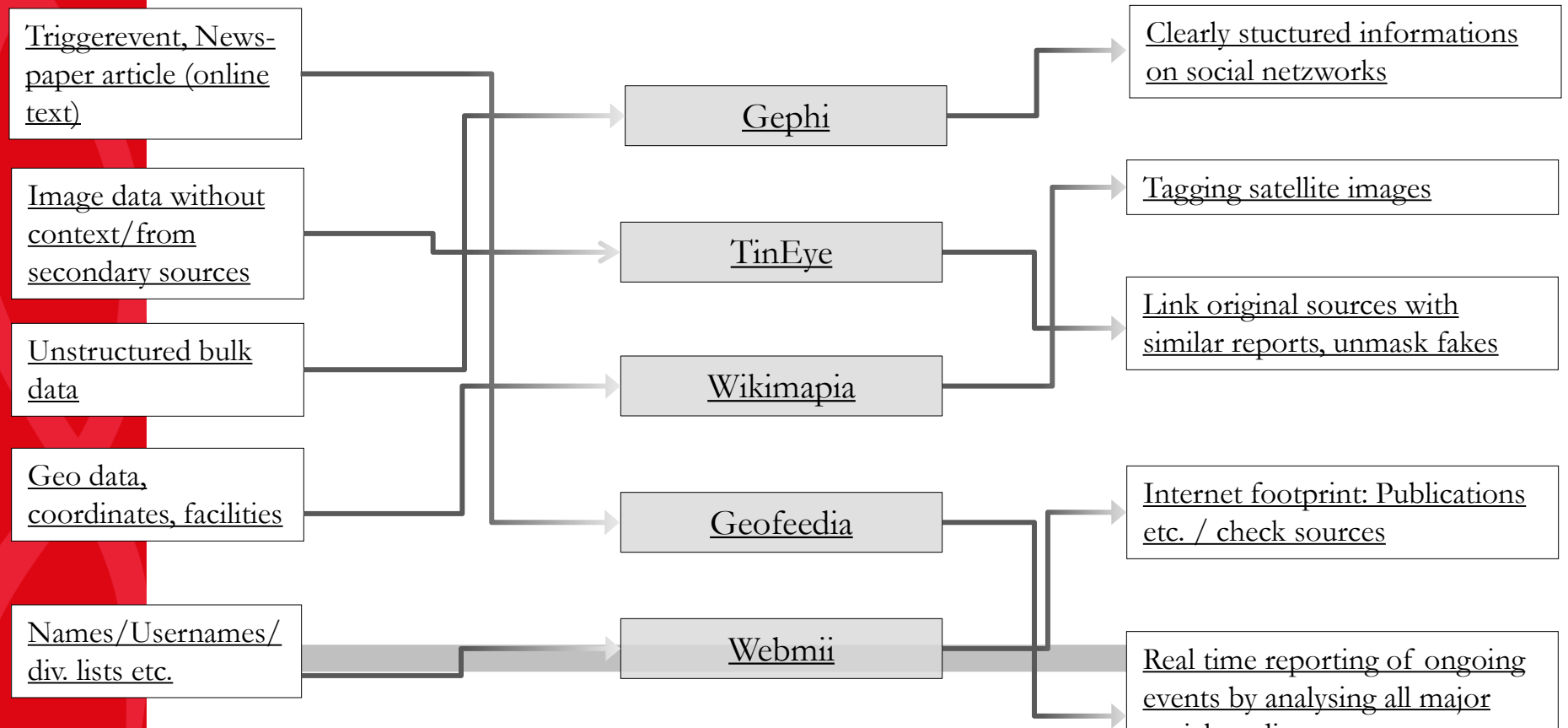


For example: Open Source Tools for web analysis



Conclusion on Syria

- Developing biotechnology industry:
  - Growing vaccines production
  - Starting to export vaccines (before the war),
  - Research on few (listed) pathogens (most notably Brucellosis),
- At moment no indications for the production of BW based on pathogens,
- All activities suitable for a country with many livestock in an area of endemic brucellosis and other animal disease,
- No obvious links found to the Ricin programme,

- Notified past BW Program (Ricin) from 2003 on,
- Tameco as supposable production site,

- But: Striking trade data remains unexplained and many facilities of which we could not find out anything.

Conclusion

- Building public transparency cannot replace an official mechanism to strengthen confidence in compliance - but relevant information will be recognised in the regime and will cause effects,
- Requirement of a standardised methodology to evaluate divergent informational inputs,
- **Results will come as qualified questions, not as judgements,**
- Independent monitors must act in a responsible manner!
- Useable to monitot article X implementation,
- Learning from other fields is prerequisite.

Thank you!