

# Challenges and Opportunities - Semantic Interoperability in Developing Countries

Wim Hugo (CTO, [DANS](#))

*Data Archiving and Networked Services*



# Wim Hugo

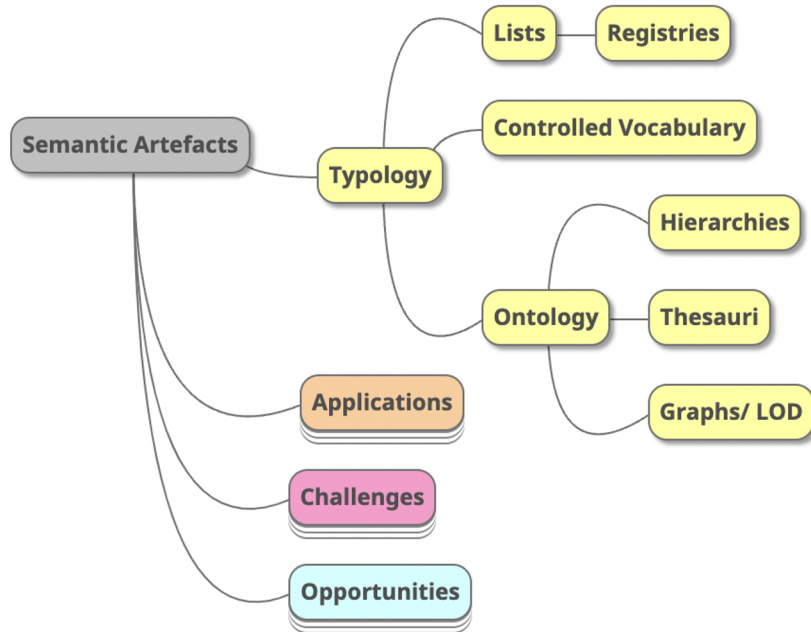


Wim is currently the CTO of DANS, an expertise and digital curation center focused on research outputs in the Netherlands and the EU. Prior to this, he was the CIO of the South African Environmental Observation Network.

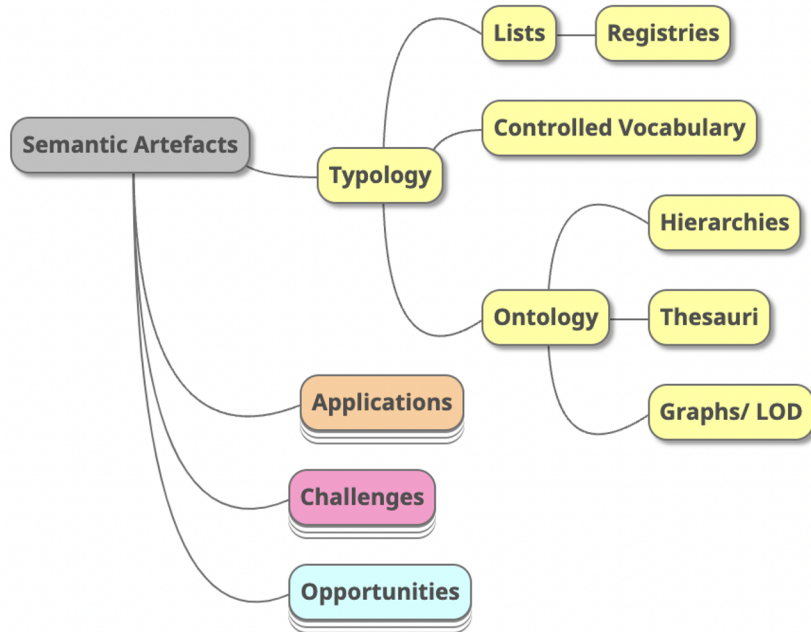
He was a founding member of CoreTrustSeal and served on the board until recently, past vice-chair of the World Data System Scientific Committee, and is active in RDA, GEO, CESSDA, and various other regional and international initiatives. He has contributed technical and governance input to IGSN and DataCite in the recent past.

Current focus is on semantic interoperability, linking digital repositories to semantic services, automated curation, and mechanisms for adding value to research outputs.

# Semantic Artefacts: Context



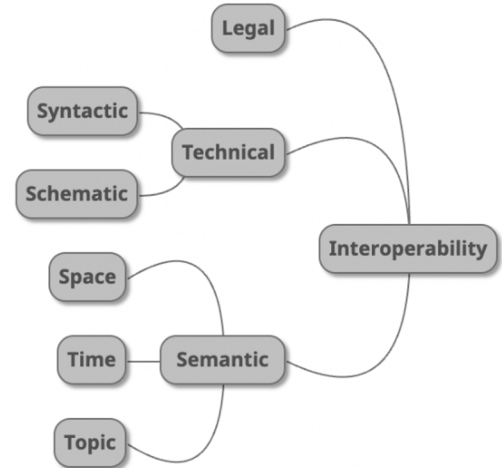
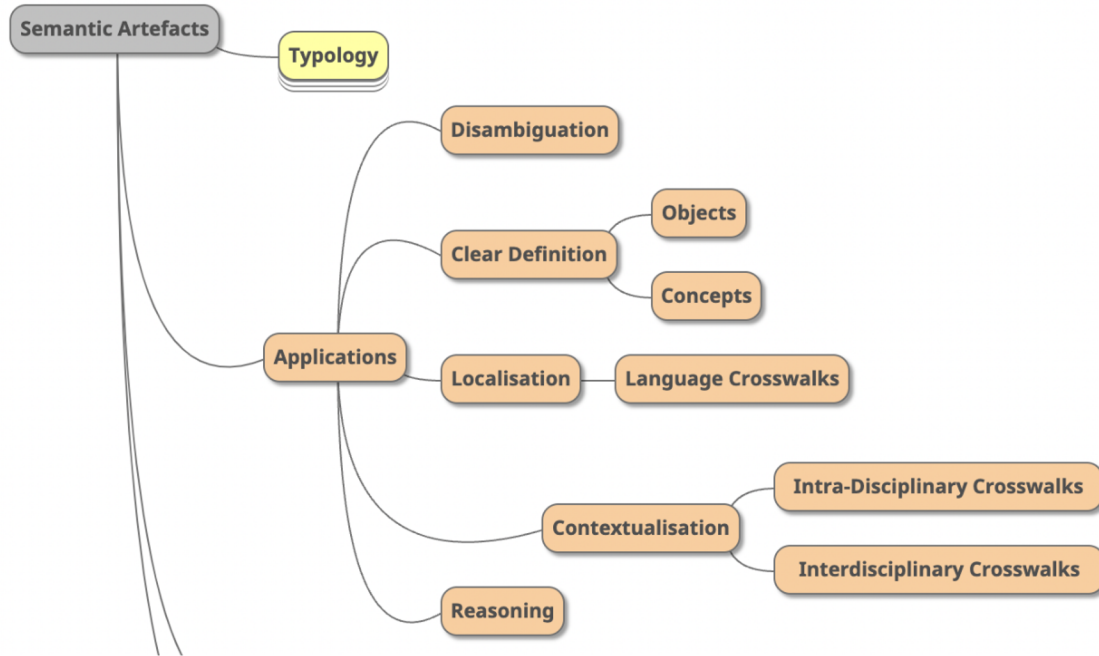
# Semantic Artefacts: Context



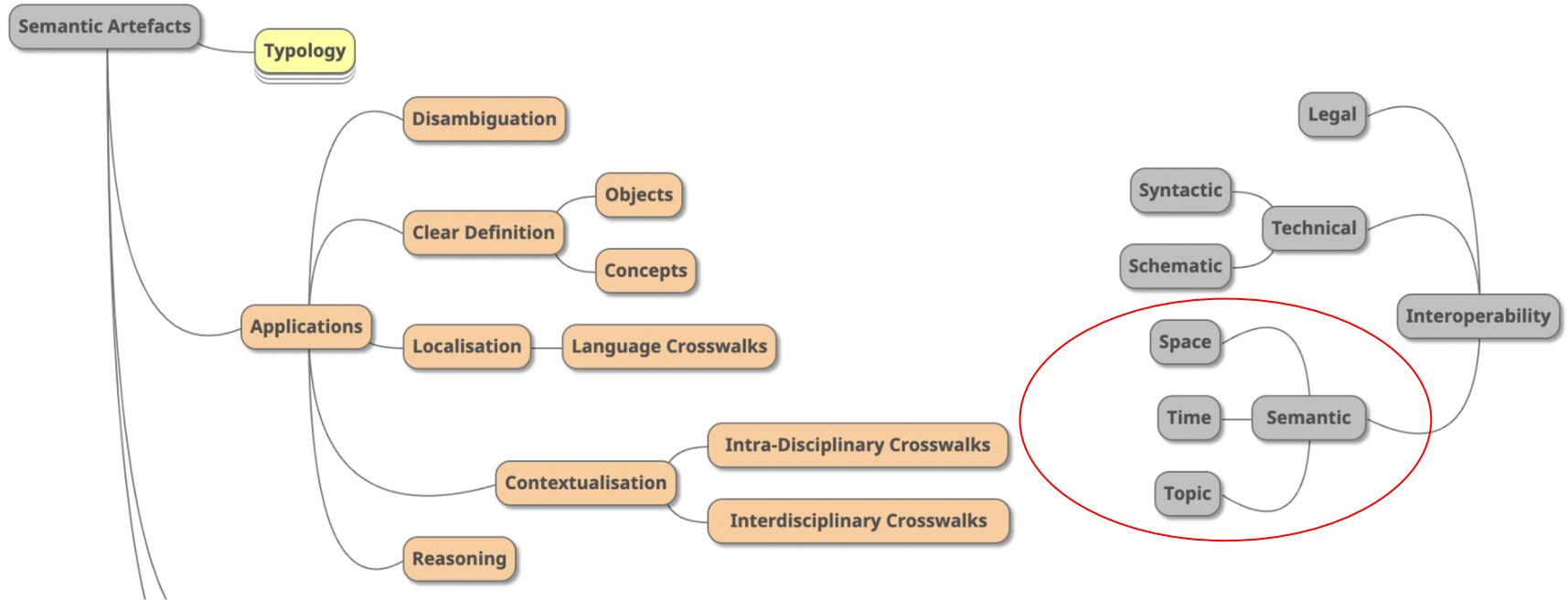
Type	Curated	Relations	Persistent IDs
Lists	Maybe	None	Maybe
Controlled Vocabulary	Yes	None	Maybe
Ontology	Yes	Any	Maybe
- Hierarchies	Yes	Parent-Child	Yes
- Thesauri	Yes	Lexical	Yes
- Graphs	Yes	Controlled Vocabulary	Yes



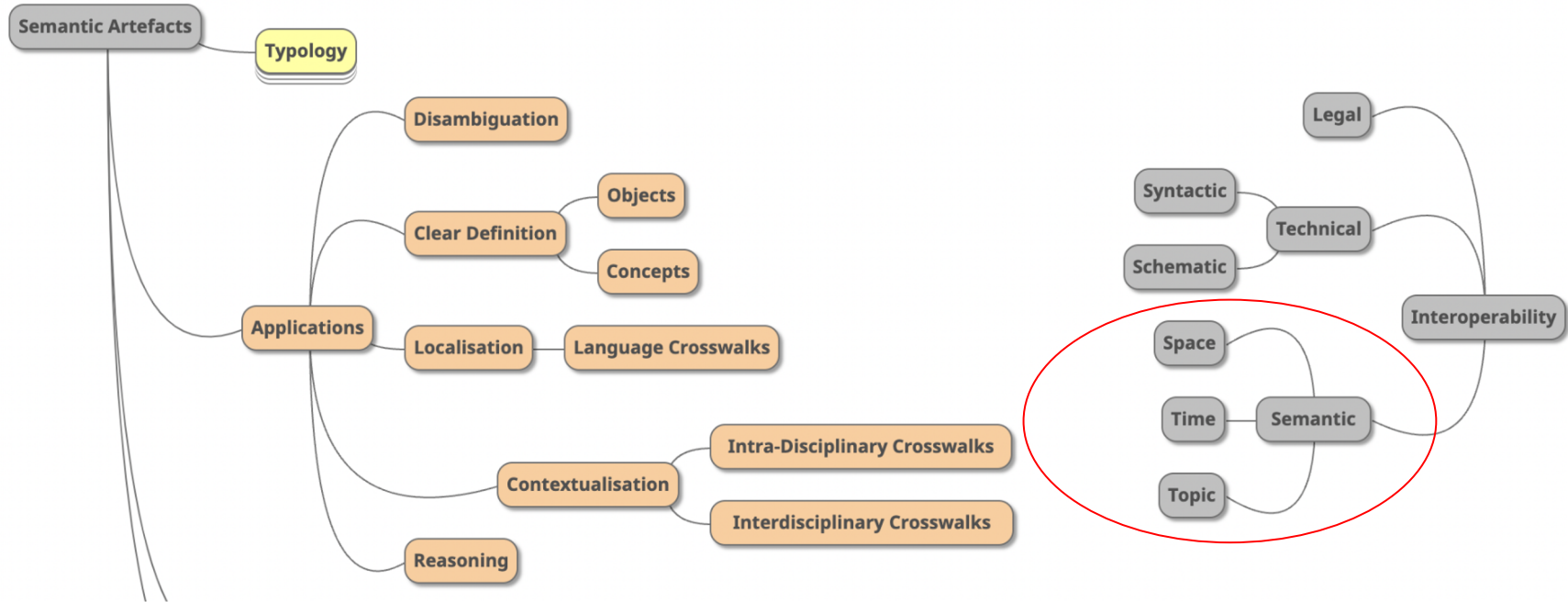
# Semantic Artefacts: Applications



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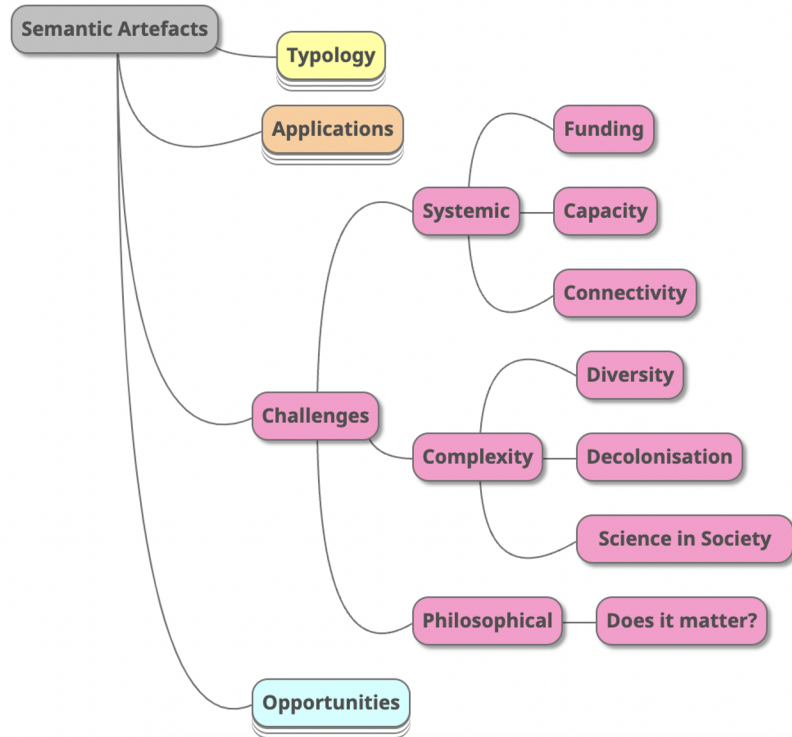


# Semantic Artefacts: Applications

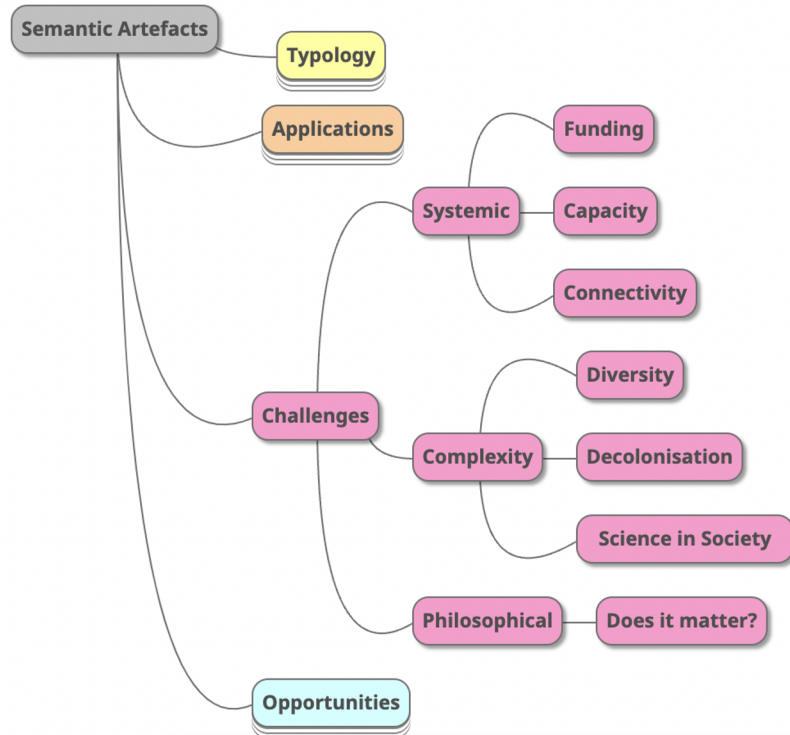


Metadata is easy ... data is hard!

# Semantic Artefacts: Challenges in Developing Countries

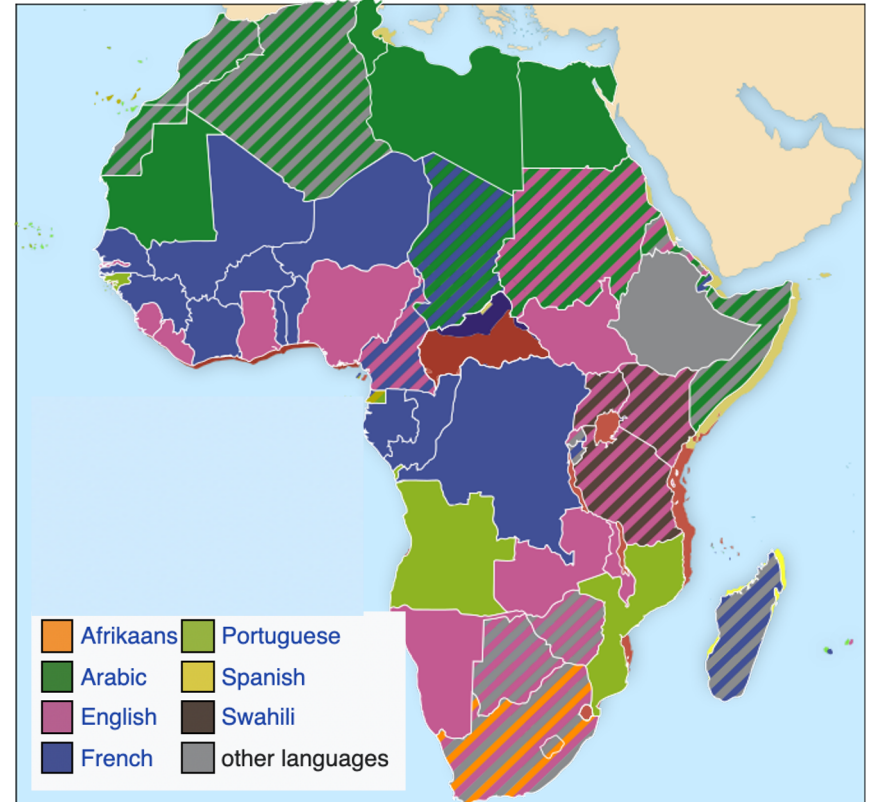
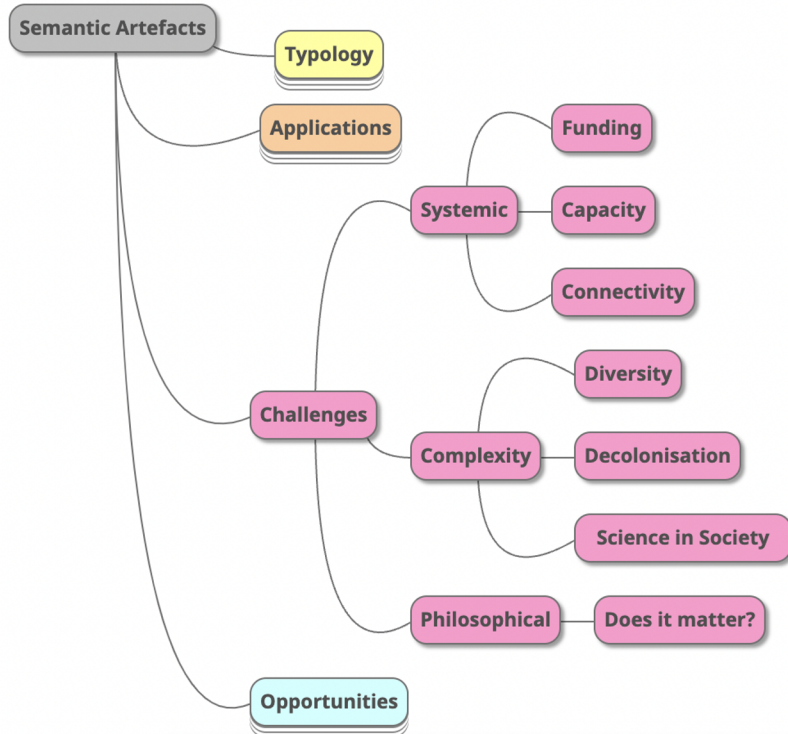


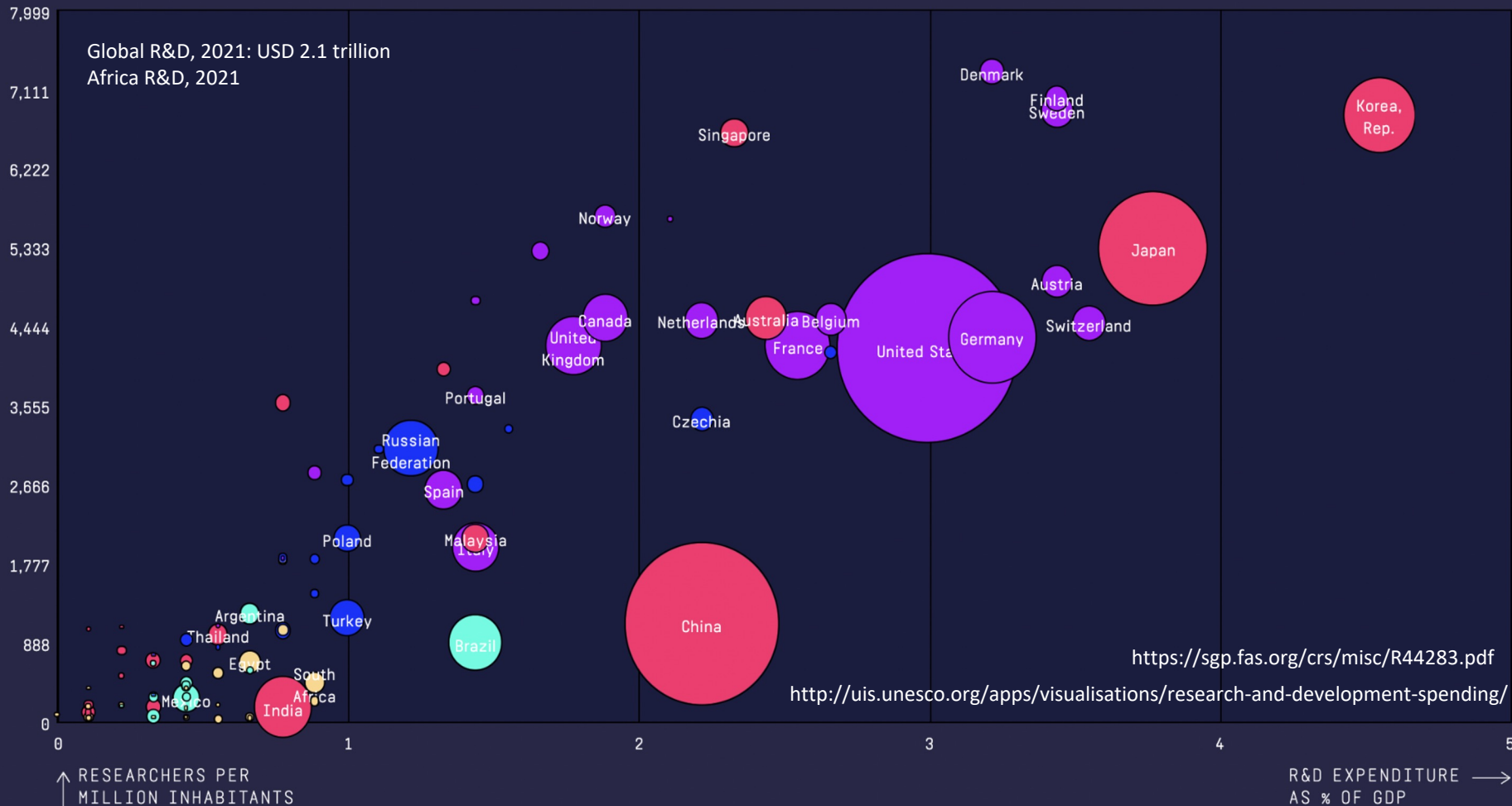
# Semantic Artefacts: Challenges in Developing Countries





# Semantic Artefacts: Challenges in Developing Countries





\$1,000B

# Does it Matter?

Global R&D, 2021: USD 2.1 trillion

Africa R&D, 2013: USD 45 billion

\$800B

\$600B

\$400B

\$200B

\$0

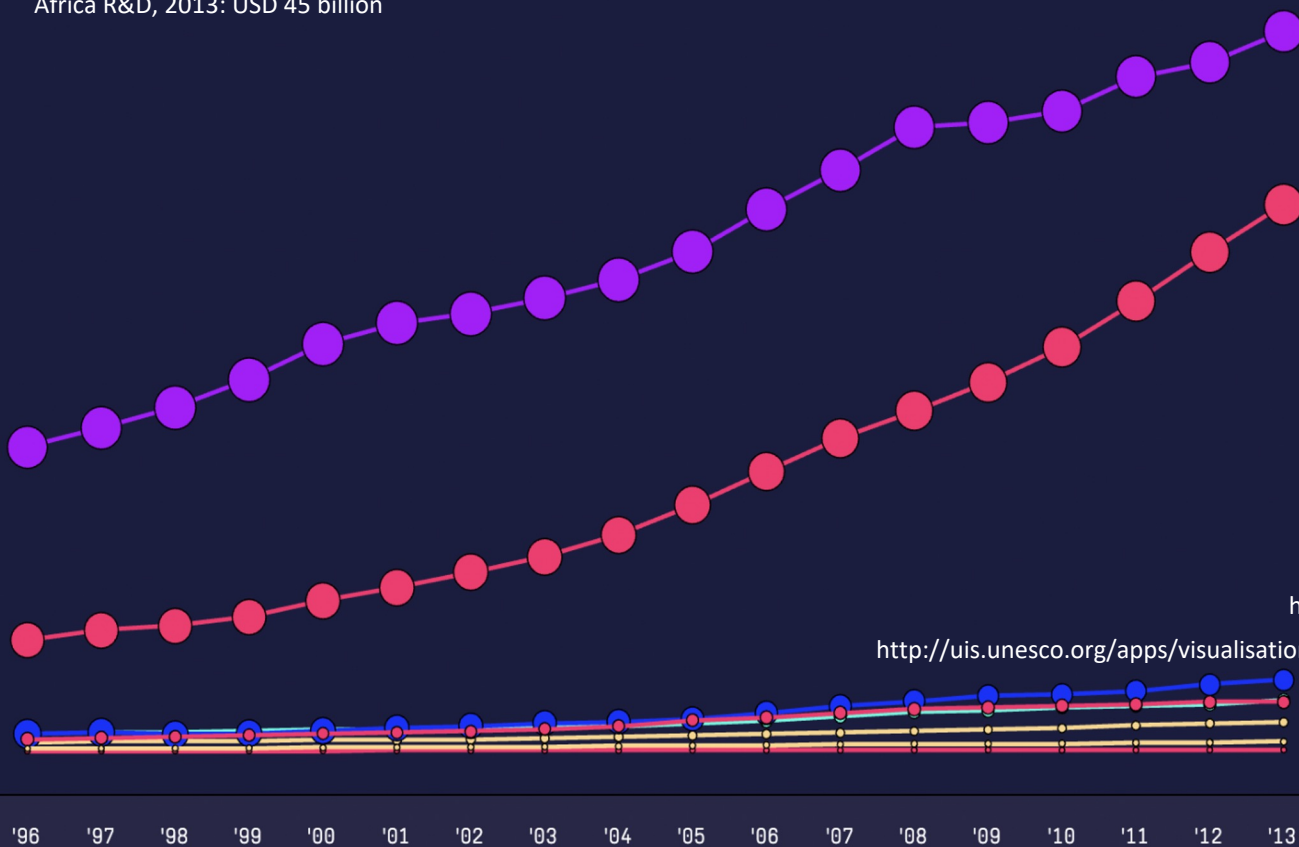
NORTH AMERICA AND WESTERN EUROPE

EAST ASIA AND THE PACIFIC

<https://sgp.fas.org/crs/misc/R44283.pdf>

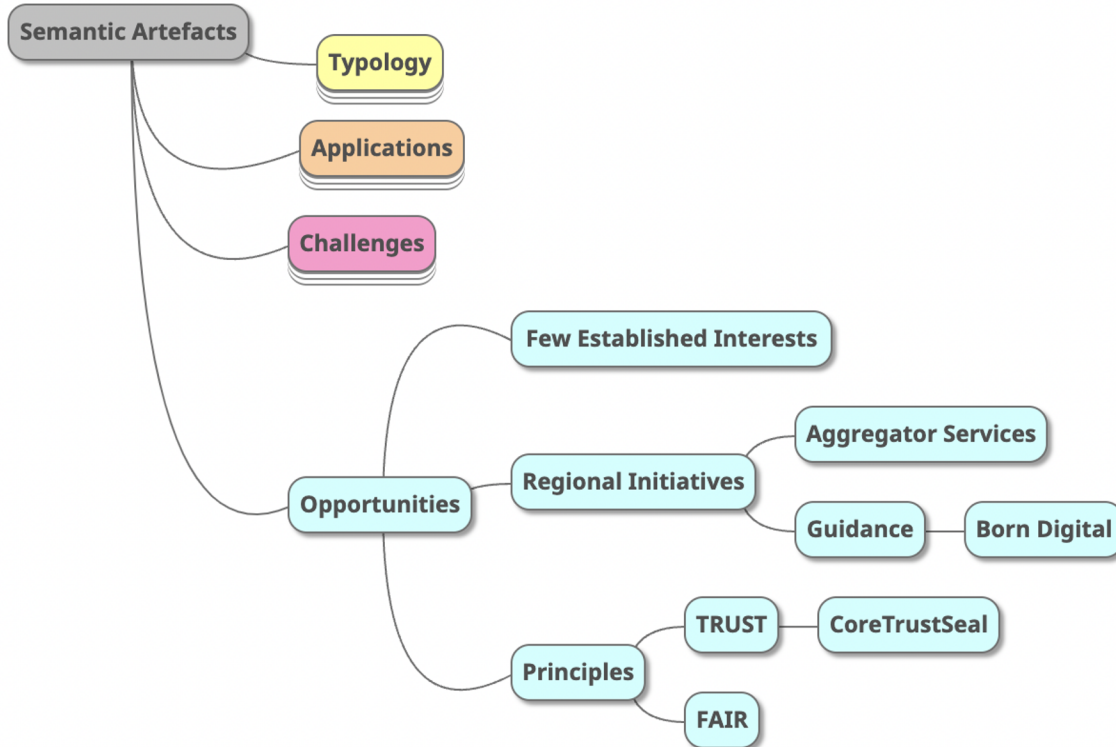
<http://uis.unesco.org/apps/visualisations/research-and-development-spending/>

'96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13





# Opportunities



Motivation: Inclusiveness and Fairness

Focus: New, Born Digital Material

Work through regional initiatives

Support TRUST and FAIR

Support for Arab participation



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