Will AI Eat Geo?

Idays, Bad Nauheim, Germany

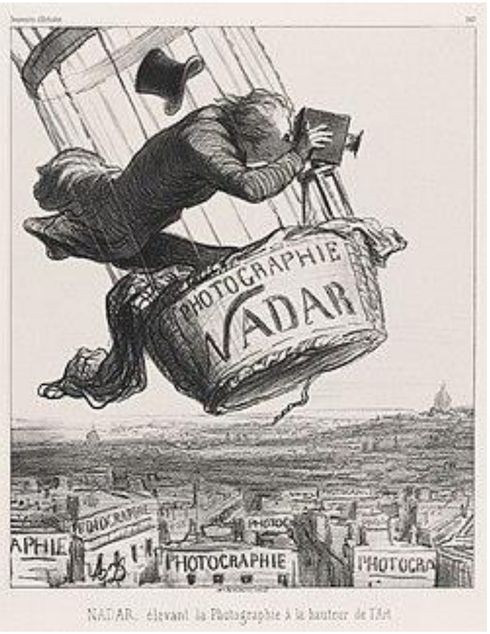
Peter Rabley

09.12.2025

We created maps to simplify our understanding of the world

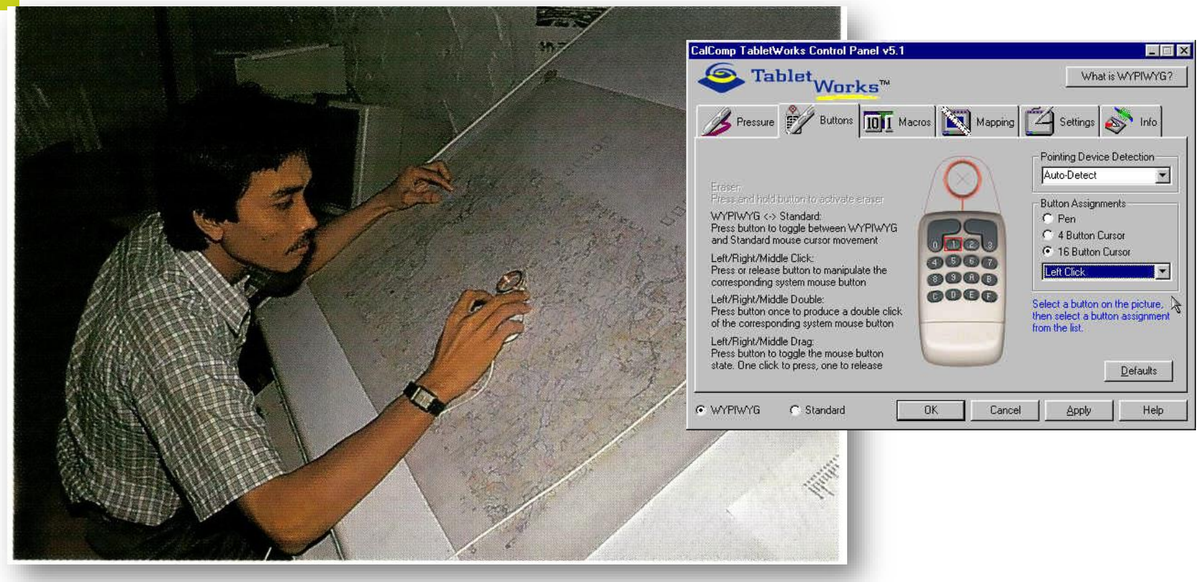
Nippur map tablet, Iraq (c.1500 BC)

World Mercator projection with true country size and shape added

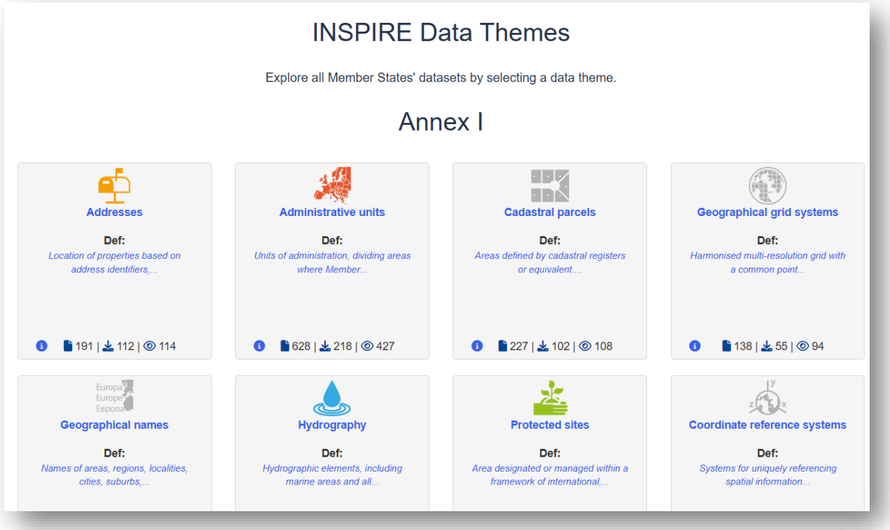


NADAR élevant la Photographie à la hauteur de l'Art

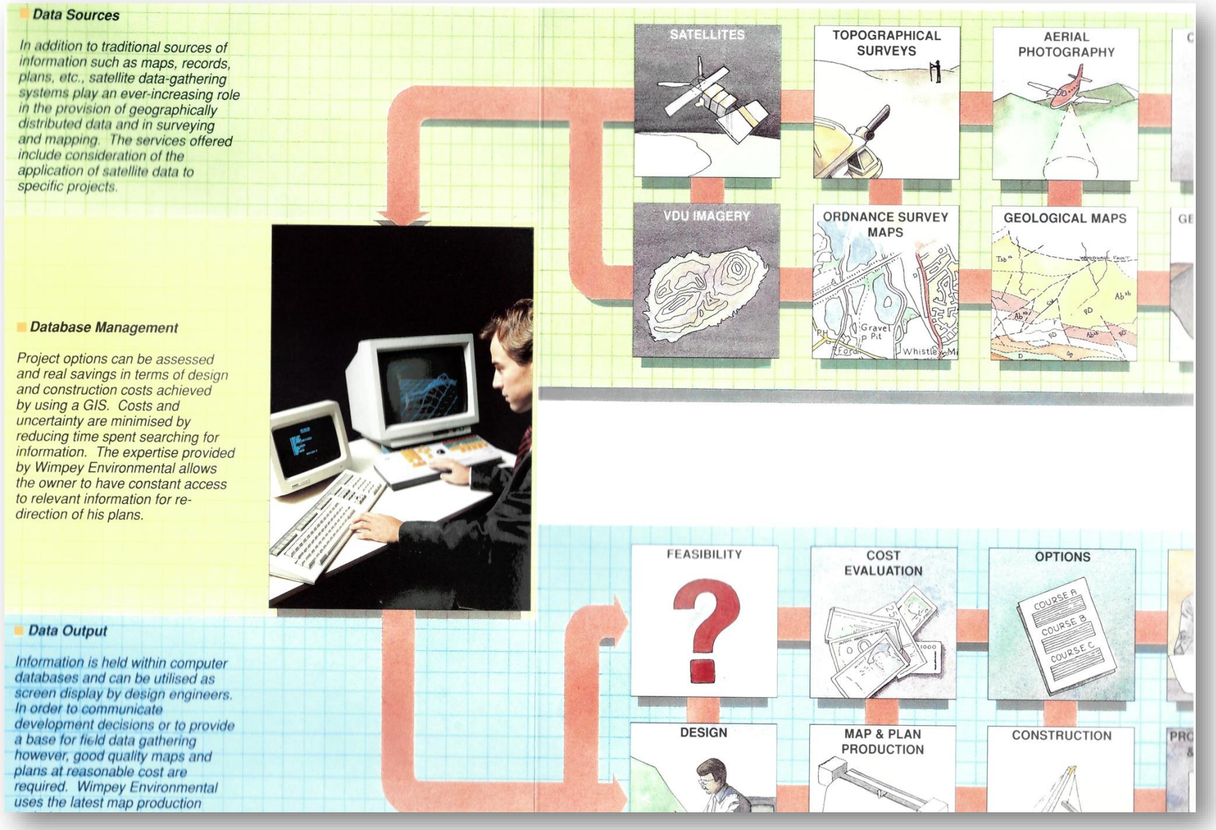
Then we digitized them for efficiency (or so we thought)



Jakarta, JABOTABEK Land Use Mapping (1992)

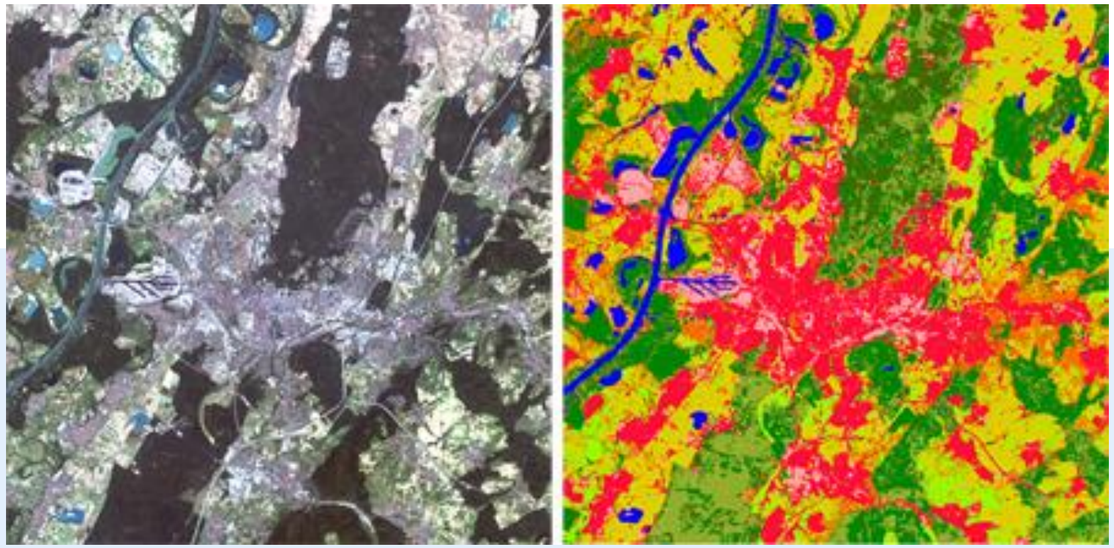


INSPIRE data catalog



GIST brochure, Wimpey Environmental (1989)

AI: Geospatial for 40+ years – early agents - Computer Vision



Satellite Image from the Karlsruhe Region and Classification
Source: LANDSAT and © LUBW with modifications

Wikipedia
https://en.wikipedia.org › wiki › Roomba

Roomba - Wikipedia

Engineer Joe Jones first conceived the idea for what eve
in 1989 while working at the MIT Computer Science and
Laboratory. The initial design, using Lego, stemmed from
Jones and his colleagues. Early prototypes were created

Overview

A Roomba is an autonomous robotic vacuum cleaner made by the company iRobot, and was first introduced in September 2002. Roombas have a set of sensors which help them navigate the floor area of a home. ... See more

Design

Roomba mo
enough to fi
Most Room
measuring 3

See all on Wikipedia >

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USING PERCEPTUAL GROUPING TO DETECT OBJECTS IN AERIAL SCENES [1]

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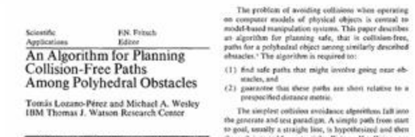
Abstract

Mapping, cartography, photointerpretation and guidance are some applications that can directly and readily benefit from automated aerial scene analysis. We have successfully used perceptual organization ideas to analyze aerial scenes and to describe cultural features of interest, such as buildings. Perceptual organization refers to the ability of a visual system to quickly capture representations of structure and similarity among otherwise random elements, features, and patterns in the visual field. We describe some of the systems we have developed and applied to aerial images and present several examples. We also give a brief description of our current work, in particular the development of the concept of a *grouping field* to represent salinecy and help define the computational aspects of grouping operations. This paper is based on the work of many different people in our research group with more details of each part found in the referenced papers.

KEY WORDS: Automatic Mapping and Photointerpretation, Aerial Image Understanding, Perceptual Grouping, Computer Vision.

ACRONYM


Scientific Applications
F.N. Fritsch Editor
An Algorithm for Planning Collision-Free Paths Among Polyhedral Obstacles
Tomás Lozano-Pérez and Michael A. Wesley
IBM Thomas J. Watson Research Center

Those agents are now smarter & faster

Cantabria, Spain

Courtesy Gabriel Ortiz, Government of Cantabria, Spain
(13) Gabriel Ortiz | LinkedIn

1:5.000 Series, 2007 stereo plotting, complex project involving over 1.2 million euros, 20+ people complete QC/QA program. 1 year edited and reviewed many times.

2024 True ortho. 1 Geographer with a single GPU with #AI capabilities, 2 days for training and 1 day for inference + regularization. No editing, just automatic regularization. Revision and QC/QA pending.

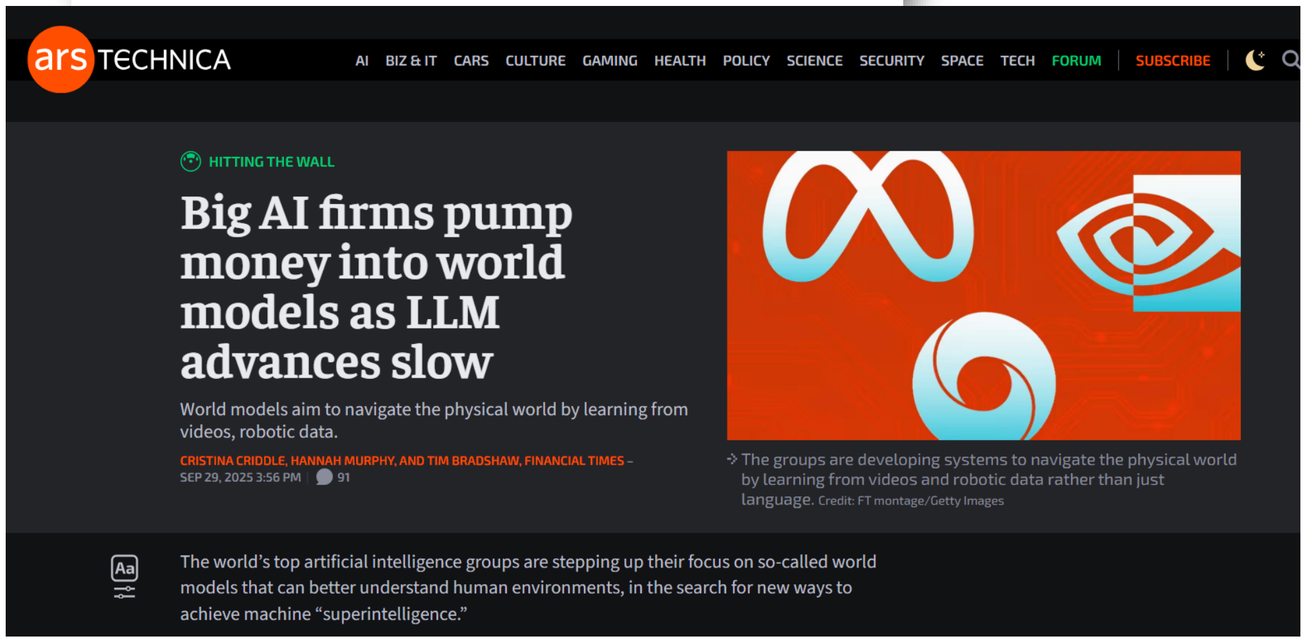
Iron Bridge, Shropshire (1779): World’s first major cast iron bridge

World Models are driving the next wave of AI

‘A house cat has way more common sense of the world than any LLM.’
Yann LeCun, Meta’s chief AI scientist

Progress depends on systems that can model the world, remember, reason, and plan[1].

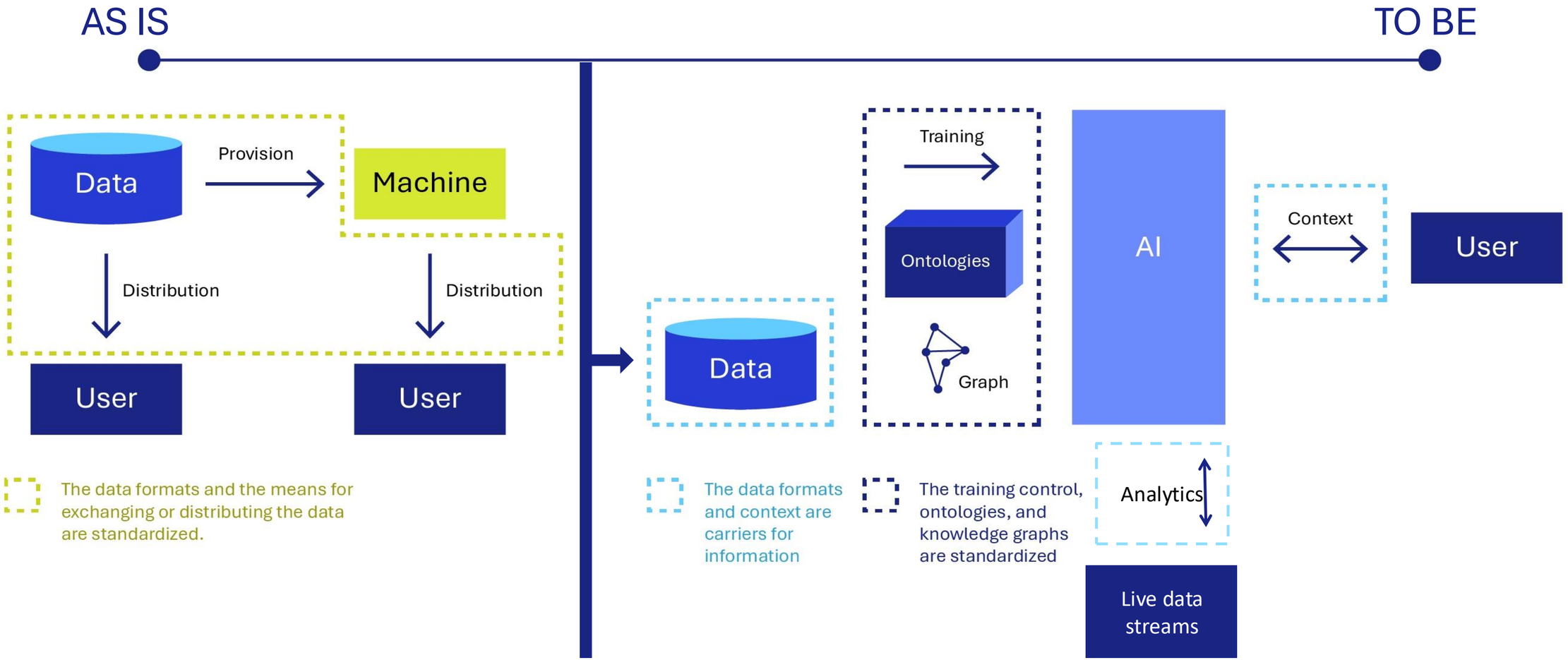
As LLMs reach their limits, reasoning models, world models, and robotics will drive the next AI wave[2].



[1] https://www.builderlab.ai/p/why-lecun-is-betting-on-world-models
[2] https://www.1950.ai/post/why-yann-lecun-believes-ai-needs-world-models-not-just-language-models-2

The question isn't *"can I get the data?"* but *"can I trust it?"*

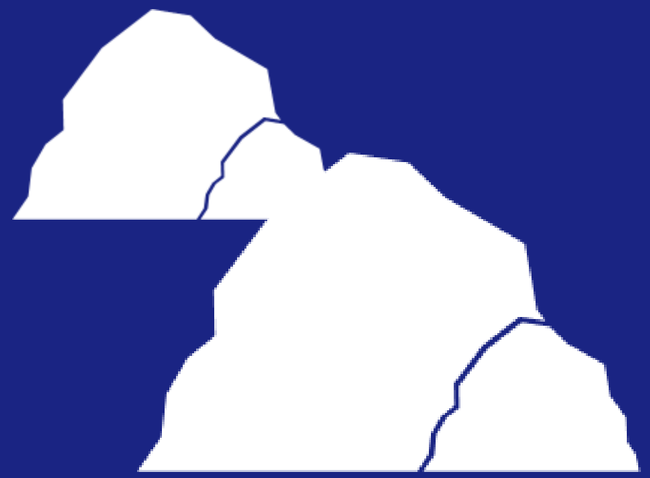
From codifying data to codifying knowledge – reusable technical blocks that can be assembled in countless ways to meet the needs of different users, sectors, and geographies



Blocks – a new enabling ecosystem

Public Perceptions Today

- Massive LLMs
- Black Box
- Powerful, but trustworthy?



Transition

Enterprise/Sovereign

AI functions

Agentic AI

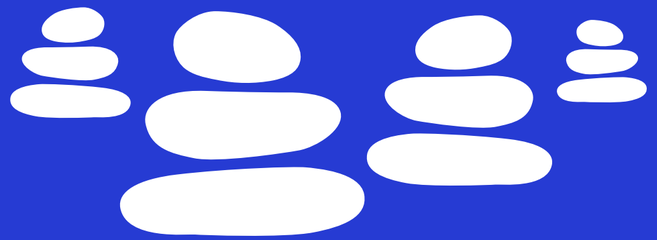
Safeguarded AI

Proof vs black box

World Models

Specialized AI & ML

- Smaller, efficient, domain-specific models
- Sovereignty-driven, cost-effective
- Outperform big models in specialized fields
- Allows building workflows and complex models with reasonable resources requirements



Real-World Systems:

- Autonomous cars, power grids, underground infrastructure
- AI must be *trusted* and *safe*
- Formalize expert knowledge → ML inference → safety regions → real world data integration at runtime

OGC's Role:

- Integral, not niche: Geospatial everywhere
- Safeguarded AI for spatio-temporal systems
- Support fast innovation & public admin
- Vision: Ask a chatbot, enable a trustworthy system

Proposed OGC principles for AI

- Values and ethics must be operationalized from the outset
- IPT - Integrity, Provenance, and Trust (-worthiness)
- SPA – Security, Privacy, and Accuracy
- AI must always be checked by humans
- Use open models and protocols
- Minimize environmental impact

AI: Will it eat Geospatial?

Not really...

Amplify...

Re-orient...

Scale...

Thank you

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