Capability Development for Sustainability and Resilience: **A cartographer‘s view**

Georg Gartner, UNWGIC, Hyderabad 2022

Where it starts..

humans are spatial

demand for knowing about „where“

Where it all starts..

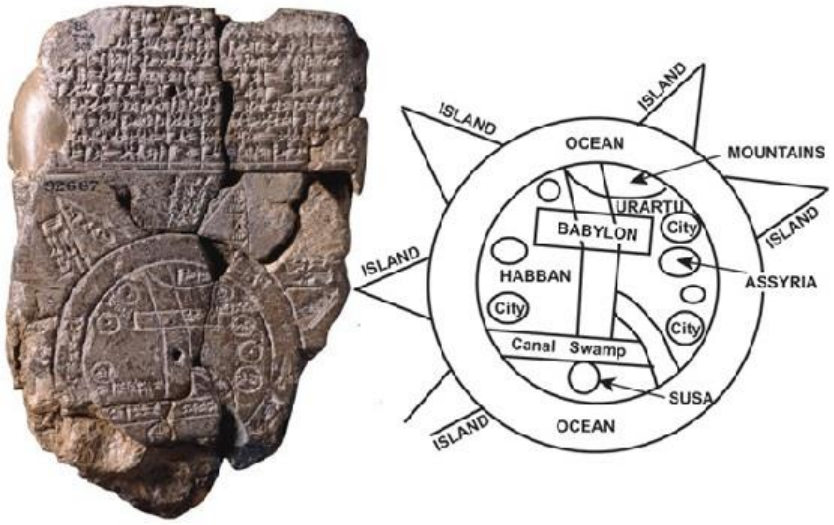
Where it all starts..

humans use graphics to depict objects, relations and emotions

Where it all starts..

graphic depictions differ significant by being abstract:
selective, generalised, heterogenous, scaled

The realm of cartography

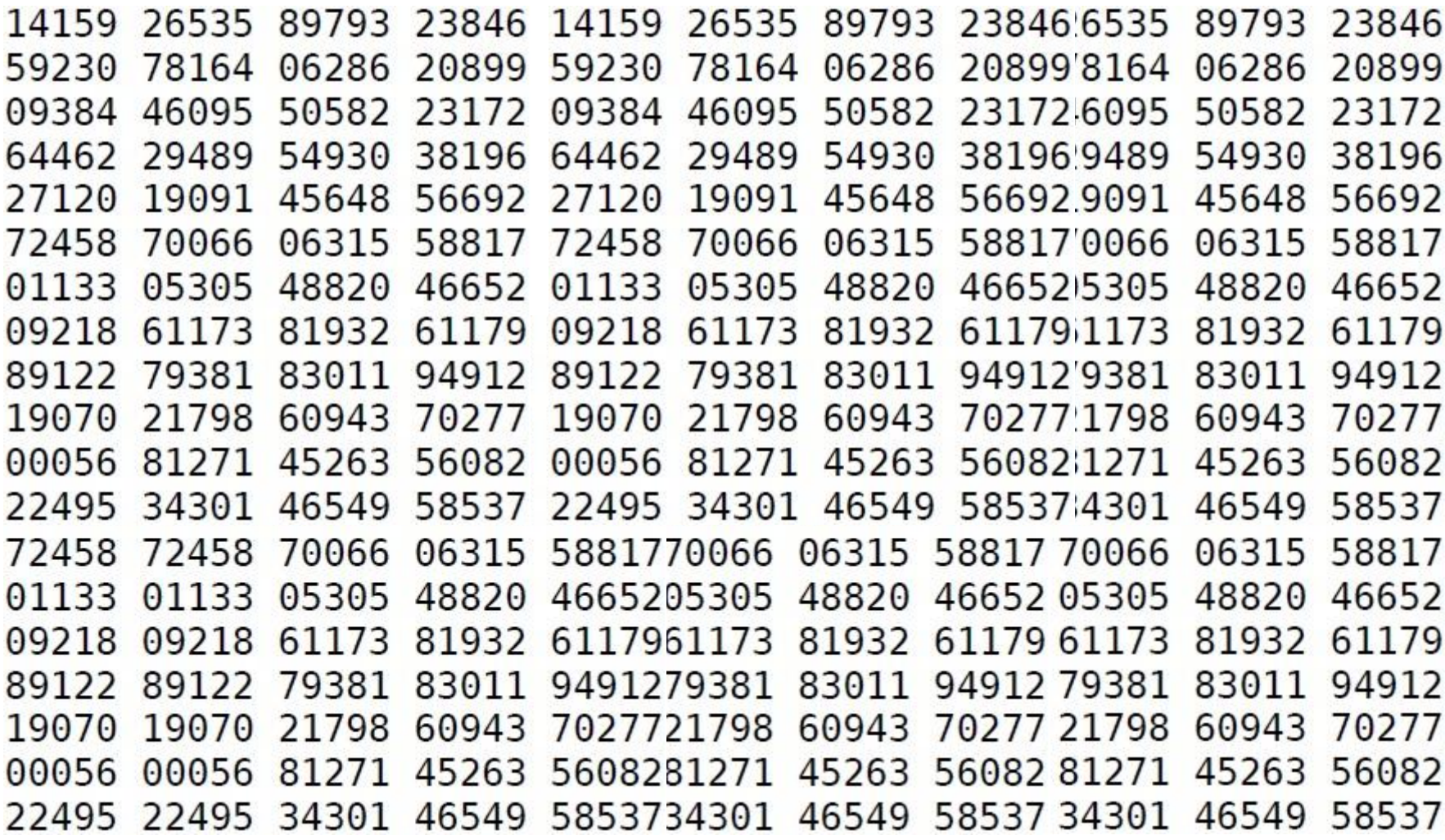


Babylonian Map of the World

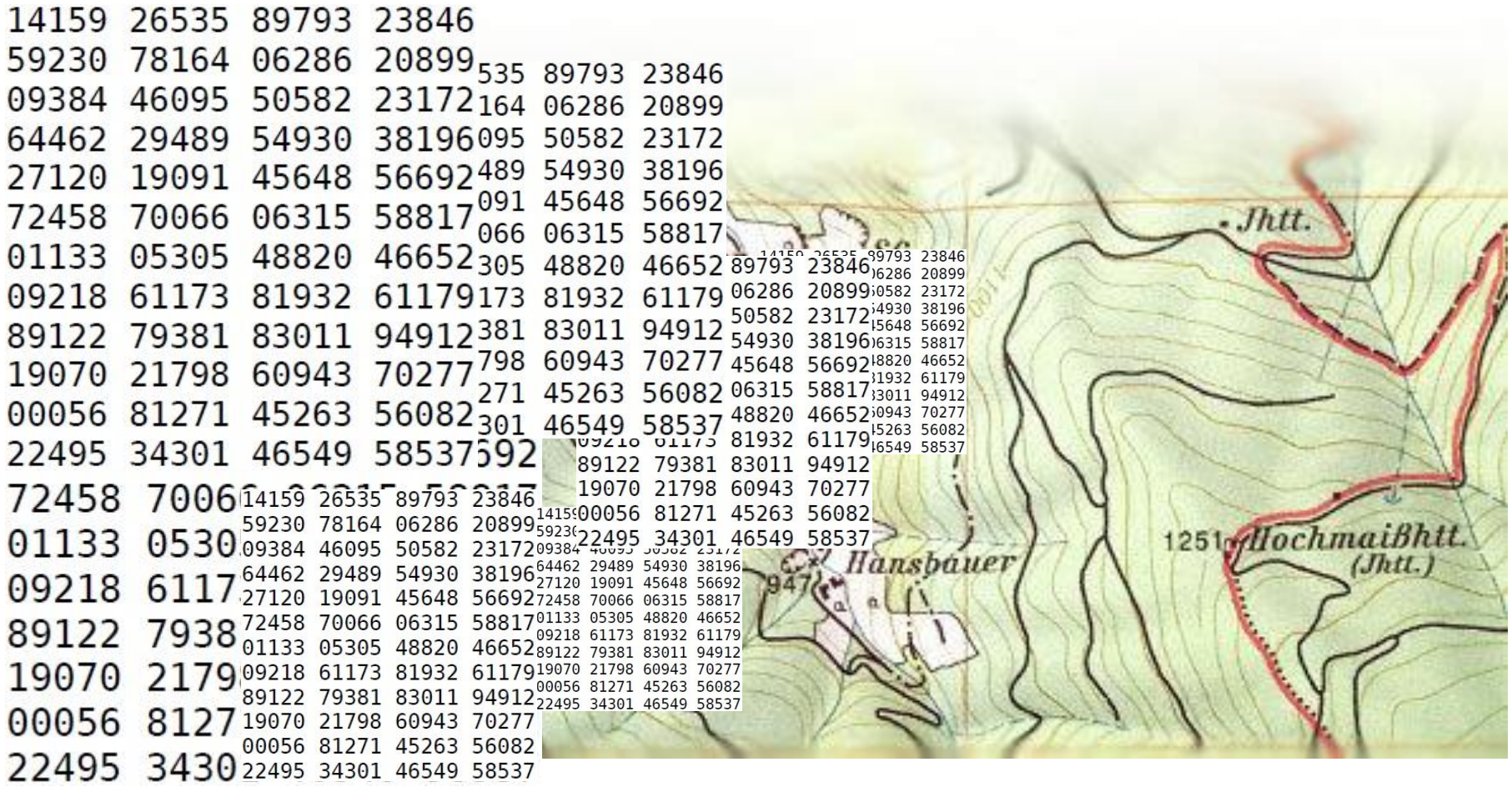
The realm of cartography

Systematic Capturing

The realm of cartography

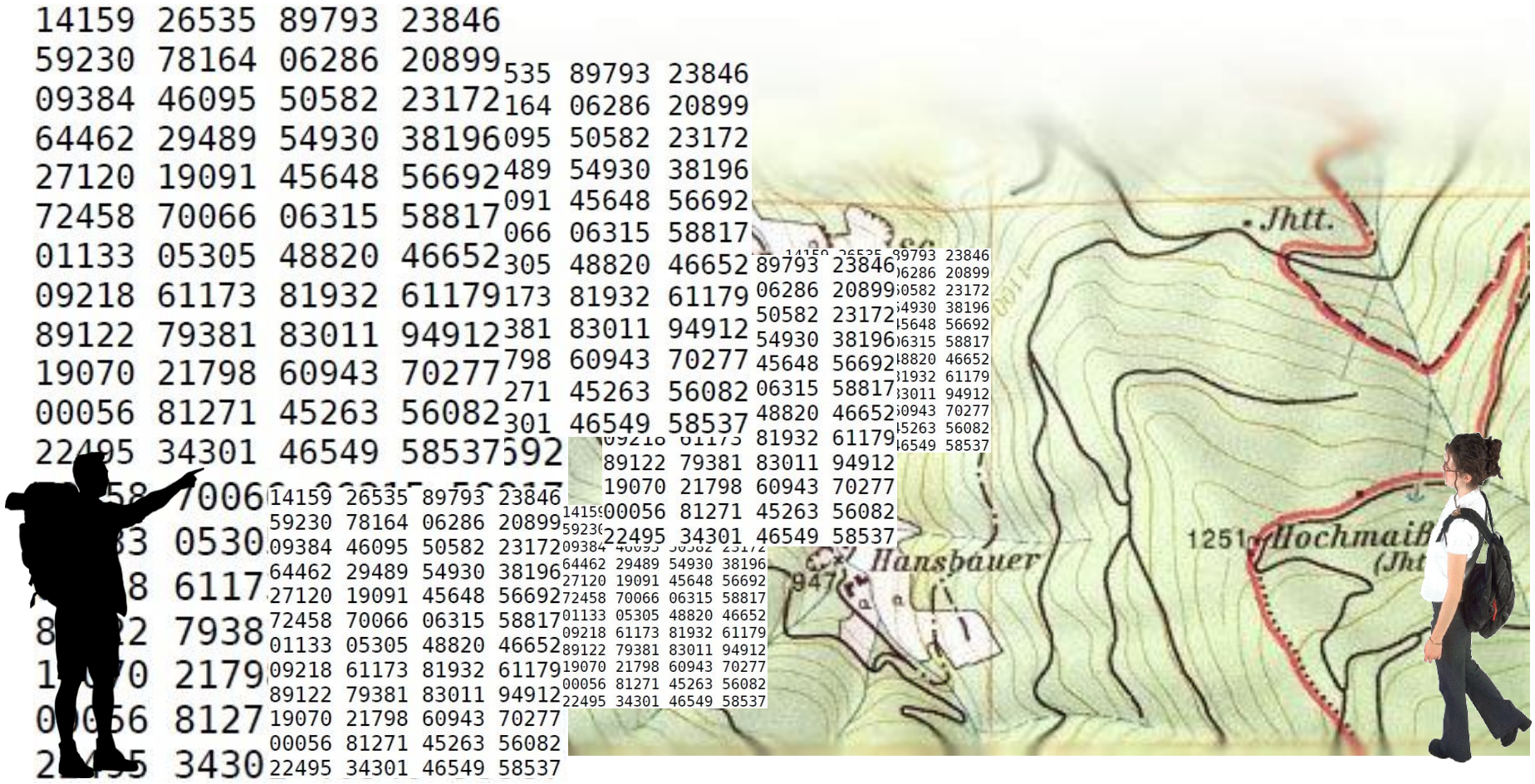


The realm of cartography



Translating to graphic language

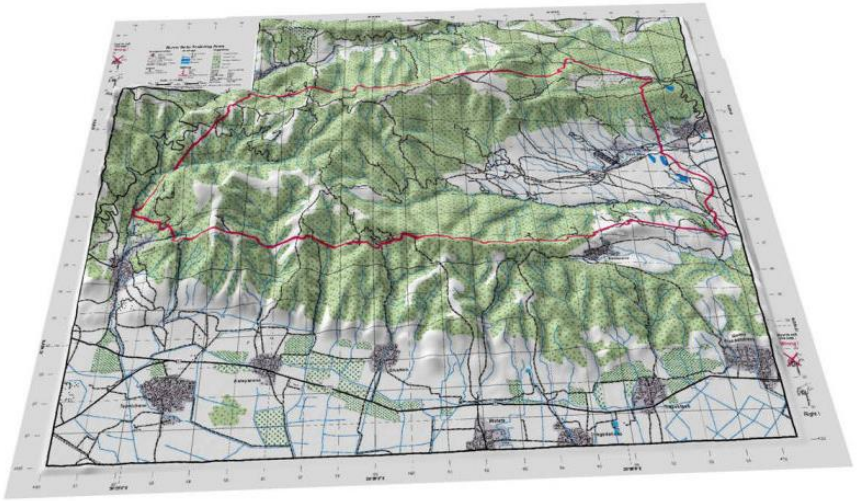
The realm of cartography



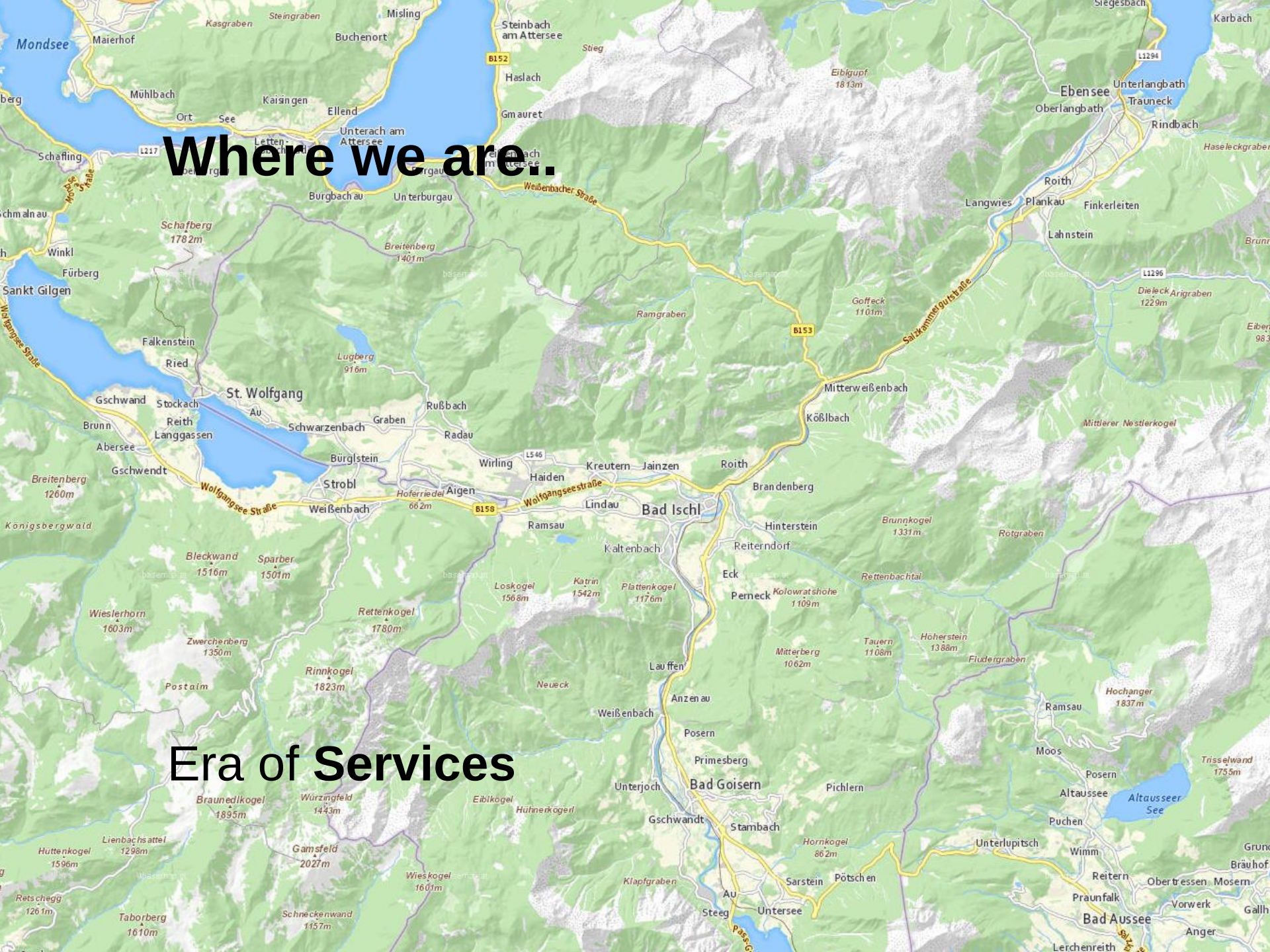
Translating to graphic language to meet human demands

making maps

Where we have been..



Era of **Artefacts**


Where we are..
Era of **Services**
Mondsee
Maierhof
Misling
Steingraben
Kasgraben
Buchenort
Steinbach am Attersee
Stieg
B152
Haslach
Gmauret
Mühlbach
Kaisingen
Ellend
Ort
See
Unterach am Attersee
Schafling
L217
Burgbachau
Unterburgau
Weißenbacher Straße
Schafberg 1782m
Breitenberg 1401m
Winkl
Fürberg
Sankt Gilgen
Wolfgangsee Straße
Falkenstein
Ried
Lugberg 916m
St. Wolfgang
Gschwand
Stockach
Au
Rußbach
Brunn
Reith
Langgassen
Graben
Schwarzenbach
Radau
Abersee
Bürglstein
Wirling
L546
Kreutern
Jainzen
Roith
Gschwendt
Strobl
Haiden
Breitenberg 1260m
Hoferriedel 662m
Aigen
Wolfgangsee Straße
B158
Weißenbach
Lindau
Bad Ischl
Ramsau
Königsbergwald
Kaltenbach
Bleckwand 1516m
Sparber 1501m
Loskogel 1568m
Katrin 1542m
Plattenkogel 1176m
Eck
Perneck
Kolowratshohe 1109m
Wieslerhorn 1603m
Rettenkogel 1780m
Zwerchenberg 1350m
Rinnkogel 1823m
Postalm
Neueck
Lauffen
Anzenau
Weißenbach
Posern
Primesberg
Unterjoch
Bad Goisern
Braunedlkogel 1895m
Würzingfeld 1443m
Eiblkogel
Hühnerkogerl
Gschwandt
Stambach
Lienbachsattel 1298m
Huttenkogel 1596m
Gamsfeld 2027m
Wieskogel 1601m
Klapfgraben
Retschegg 1261m
Taborberg 1610m
Schneckenwand 1157m
Au
Steeg
Untersee
Sarstein
Pötschen
Pass G
Eibigupf 1813m
Ebensee
Oberlangbath
Unterlangbath
Trauneck
Rindbach
Haseleckgraben
Roith
Langwies
Plankau
Finkerleiten
Lahnstein
L1294
L1296
Dieleck 1229m
Arigraben
Goffeck 1101m
Ramgraben
B153
Salzkammergutstraße
Mitterweißenbach
Kößlbach
Mittlerer Nestlerkogel
Brandenberg
Hinterstein
Reiterndorf
Brunnkogel 1331m
Rotgraben
Rettenbachtal
Mitterberg 1062m
Tauern 1108m
Höherstein 1388m
Fludergraben
Hochanger 1837m
Ramsau
Moos
Posern
Altaussee
Altausseer See
Trisselwand 1755m
Pichlern
Puchen
Unterlupitsch
Hornkogel 862m
Wimm
Reitern
Obertressen
Mosern
Bräuhof
Praunfalk
Vorwerk
Bad Aussee
Anger
Lerchenreith
Gallh
Grund

The era of services

Maps are produced

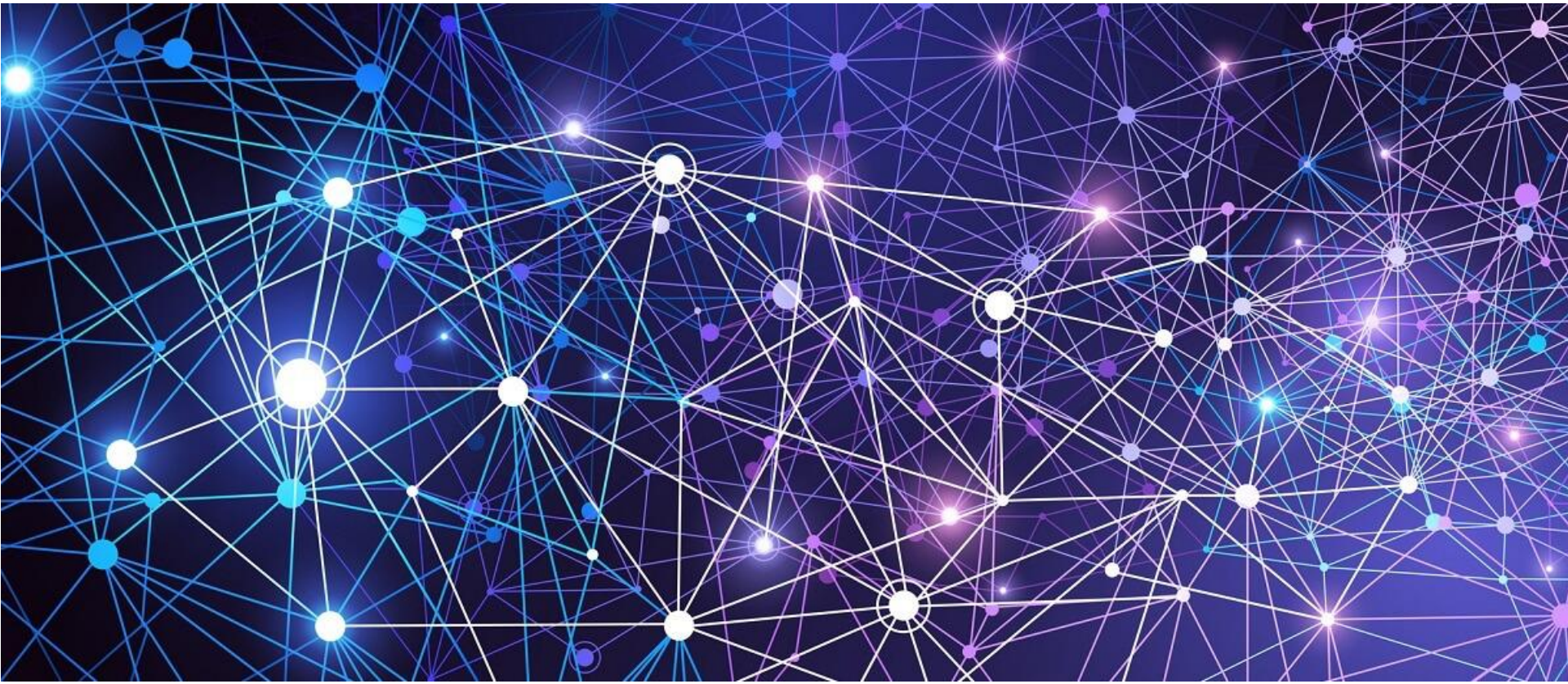
automatically
formally described
in real-time
with ubiquitous means

The era of services

underpinned by

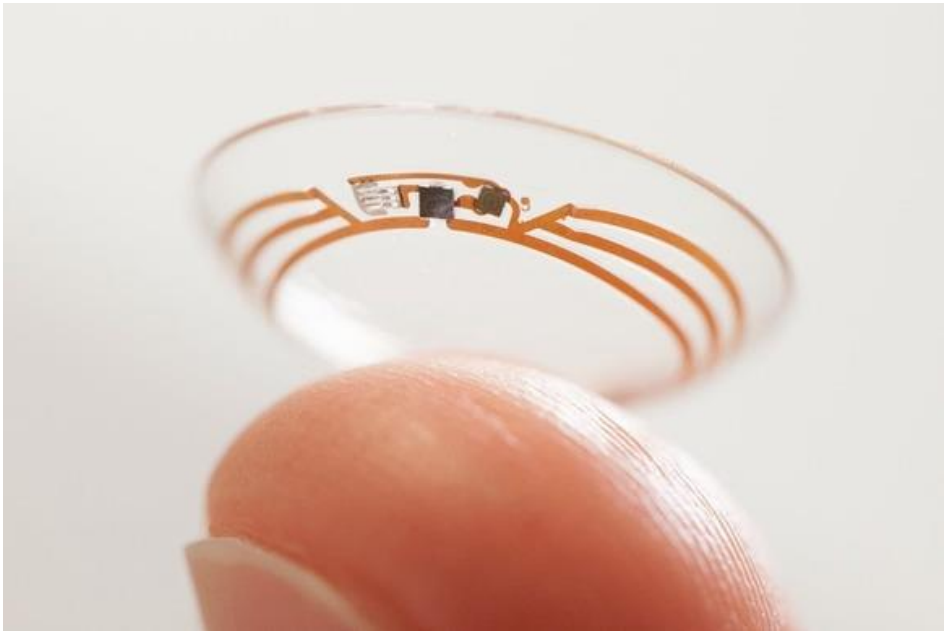
big data
spatial data infrastructure
standards and geo data policies
semantic web and linked data
web services
innovative hci and media

Where we head to..



Maps+

Maps+ **Non-intrusive Interfaces**



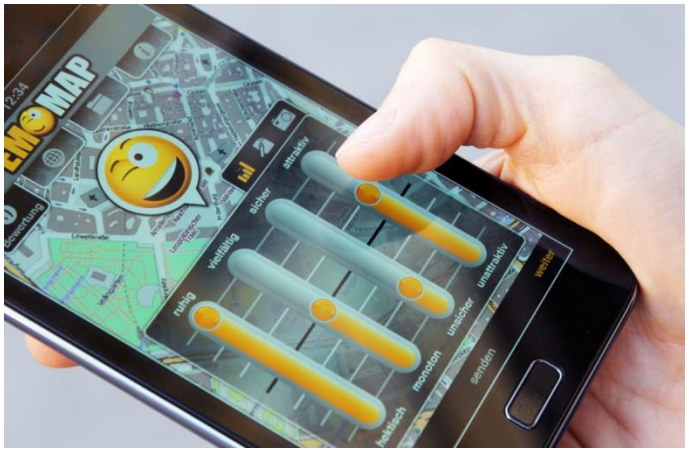
Maps+ **Non-intrusive Interfaces**

Maps+ **Emerging technologies**

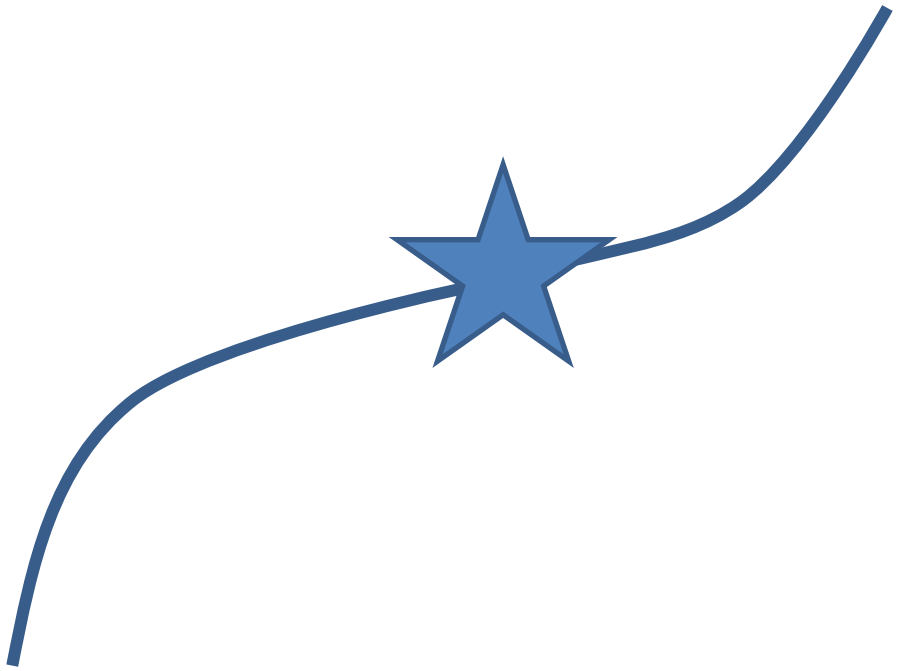
Maps+ **Context-awareness**

Maps+ **Semantic Engineering**

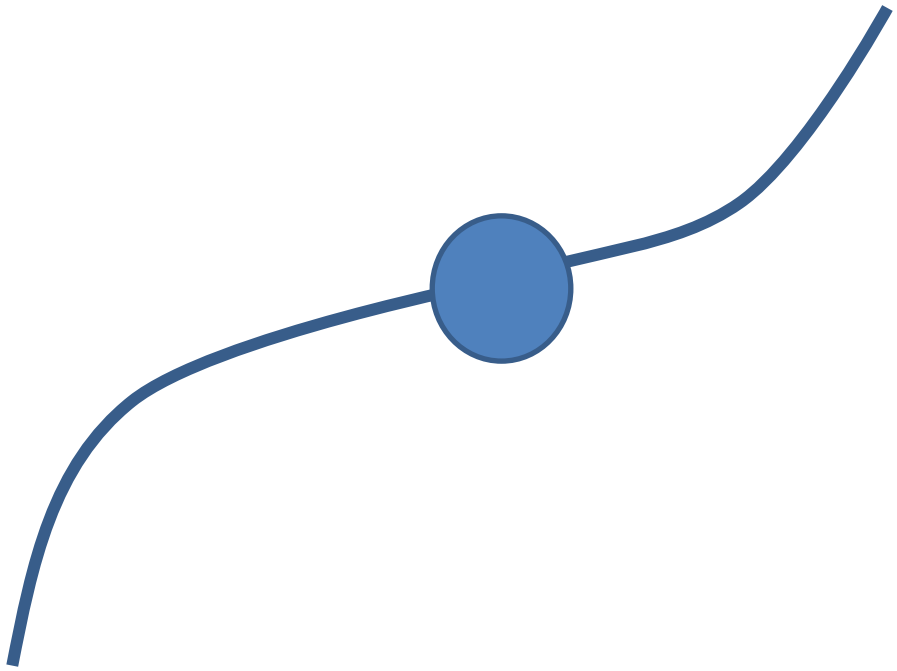
Maps+ **Emotional Mapping**



Maps+ **semiotically informed**

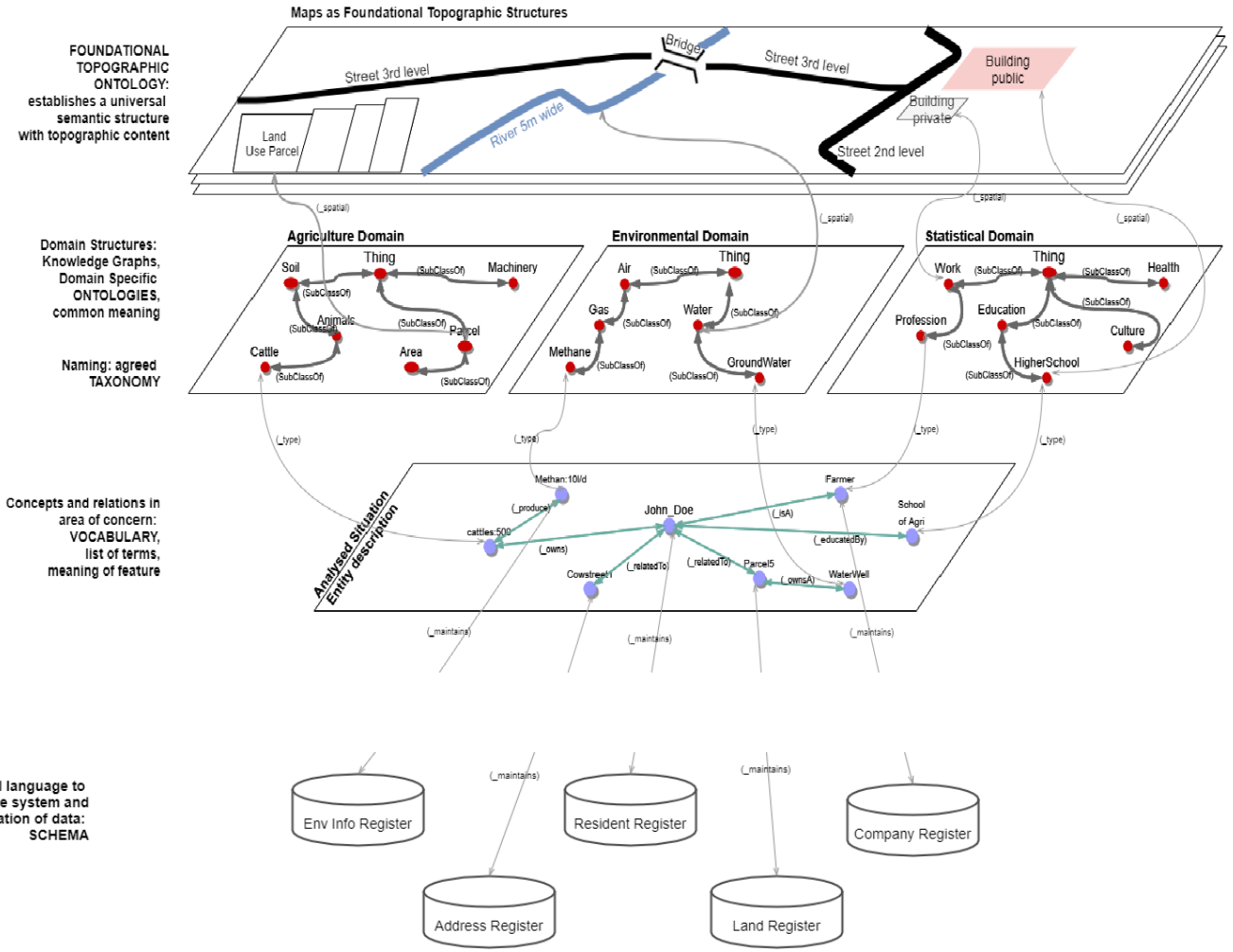


Maps+ **semiotically informed**



Maps+ **Trustworthiness**

Maps+ **Knowledge Infrastructures**

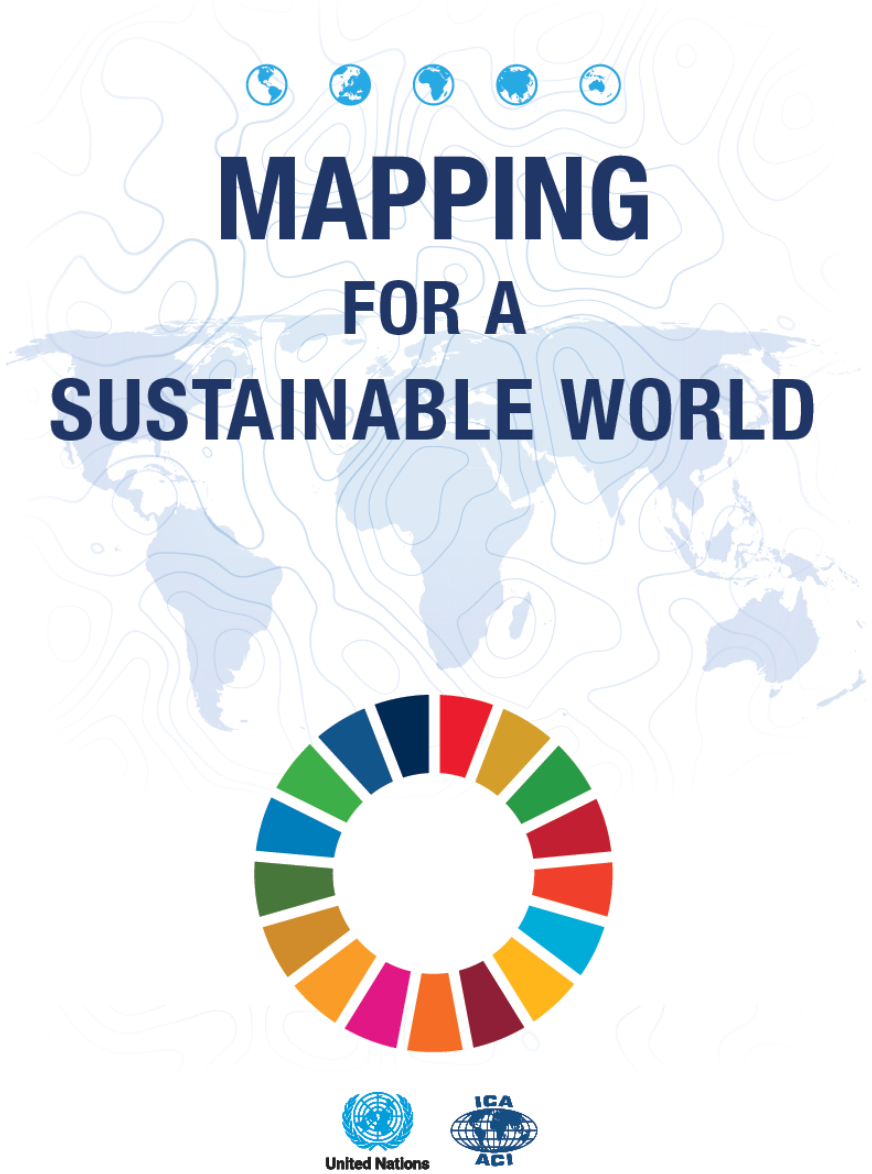


Maps+ **Contemporary education programs**

Science seeks for gaining **knowledge.**

Knowledge empowers **humans.**

Cartography empowers humans on knowing about „**where**“.



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SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS