52ND SESSION OF THE UNITED NATIONS STATISTICAL COMMISSION - SIDE EVENT: THE GREAT DEBATE

Future Trends -The Geospatial Element

Christin Walter, Strategic Foresight Specialist



The World in 2050

Smart robots

Big data

Vaccines and cures

Autonomous systems

Emerging markets will dominate the global economy

Widespread internet access

Literacy rate increase

Child mortality rates lower

New industries and new jobs through Artificial Intelligence

Increase in renewable, clean energy

Greater equality and diversity



Superbugs & diseases (malaria, cholera, yellow fever)

Deforestation

Privacy concerns

Cyberattacks

Climate change

Natural resource pressures

Urbanisation likely triple

Air pollution & respiratory diseases

Rising temperatures

Aging population

Large-scale blackouts

Rising water levels

Bio diversity

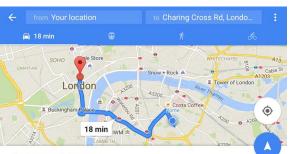
Food shortages Ordnance Survey

Geospatial is not 'special' – Everything happens somewhere

Geospatial information – it's in the sat nav in your car, the apps on your phone and the survey of your home.

- On average, we rely on geospatial information more than 40 times a day:
 - Utility providers (gas, electricity, telecommunication, water)
 - Waste collection
 - Property sales
 - Addressing
 - Insurance
 - Delivery services
 - Infrastructure development
 - Emergency services
 - Local services, such as schools, hospitals and roads
 - Traveling from A to B













What is the Future Trends report?

The Future Trends report provides expert opinion on the mid to long term-developments in geospatial information and is a strategic insight document for all countries and the global geospatial information community.

It is broad in nature, looking at emerging trends in technology, legal and policy, skills and training, the private and non-governmental sectors, and in the role of government.

Recognizing that disruption and change in the geospatial community are likely to occur as a result of the linking of multiple trends, the report explores a diverse set of emerging and developing trends. Among others, these include data privacy and ethics; Digital Twins; Artificial Intelligence and data analytics; and, capacity building.

The full <u>Future Trends report</u> can be accessed here.





Geospatial drivers and trends

- Relevance of data integration and interoperability increase
- Products and solutions produced from multiple data sources becoming the norm
- New opportunities for data gathering, i.e. autonomous vehicles
- Crowdsourcing and VGI become established ways of data collection
- High-resolution highrevisit Earth Observation data become valid alternative to aerial imagery
- Big Data processing has become a normal path of geospatial data processing
- Integration of multiple data sources requires licensing harmonisation
- Digital platforms provide access to data at scale
- Linked Data enables knowledge-on-demand

Rise of new data sources

& analytical methods

- Ubiquitous connectivity enables deployment of new tech
- Digital infrastructure through sensors and IoT
- Interconnecting modes of transport through intelligent mobility
- Digital Twins for modelling, simulation and prediction
- Wide uptake of edge computing to enable intelligent mobility, the IoT, and smart cities
- Visualisations and immersive technology widely used to enhance customer experience and decision making
- Machine learning, deep learning, and AI disrupt geospatial production
- Data cubes can deliver analysis ready data
- Quantum computing enables intensive processing

These trends should not be considered in isolation.

It is recognised that disruption and change in the geospatial industry are likely to occur as a result of the linking of multiple trends.

- Rise of products and services specifically designed for the urban environment
- Demand for real-time information provision
- Digital divide and exclusion continue to hold back universal digital transformation
- Seamless experience between outdoor and indoor mapping becomes an expectation
- Viable integrated Smart City solutions becoming wide spread

- Increased diversity at work in technology. science, and innovation
- Talent and consumer shift - changing values and attitudes
- Incubator spaces enable innovation to enter markets swiftly
- Regeneration of business ecosystem through the rise of nongeospatial start-ups
- New collaboration agreements with industries outside of geospatial emerge

- Digital ethics and privacy addressed by national and international initiatives
- Cybersecurity conversations increase in tandem with increase in digital devices
- Pace of digital and tech change puts pressure on national institutions to address policy and legislative shortcomings
- Pressure on aovernment institutions to be more tech and digital savvy

Technological advancements Evolution of user requirements

Industry structural shift

Legislative environment



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Mapping diseases – The case of COVID-19

In 1854, John Snow demonstrated the clear value of location to epidemiological science – mapping the clusters of cholera deaths in the London epidemic and tracing an important source of the outbreak.

Today, the COVID-19 pandemic has highlighted again how geospatial infrastructures have become an essential component of disease prediction, prevention, and response:

- Spatial Big Data, such as from smartphones, social media and wearable devices, are being analysed to trace people's movements;
- Predictions on people's behaviour are made by using contextualized data, digital maps and technologies including geofencing, GPS trackers and sensors;
- Visualizations make data more easily accessible highlighting where people are affected and where clusters are emerging both locally, nationally, and globally; and,
- Machine Learning techniques using aerial and satellite data help assess how environmental changes may impact infectious disease transmission.







"We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten."

Bill Gates (1990s)

Thank you!

