THE EMERGING GI ENVIRONMENT

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23 October 2015



OUTLINE

- •Questionnaire
- •Some past and current trends
- •The changing landscape
- Implications







STARTING POINT

'EVERYTHING HAPPENS SOMEWHERE EVERYTHING IS LOCATED SOMEWHERE at some point in time'

GI / LOCATION (and time) A CRITICAL PIECE OF THE DIGITAL INFORMATION LANDSCAPE







PAPER MAPS

DIGITAL MAPS

LOCATION IN DIGITAL DATABASES



TRENDS 1

MAPS > DATABASES

"Its not about maps any more its about geodatabases" - CEO National Mapping Agency

"We need a geo people working with computer scientists, mathematicians, sociologists, anthropologists, system architects, database designers"

- Director and co-founder of GIS/Big Data Analytics company,



TRENDS 2

NATIONAL MAPPING AGENCIES

NMAs + PRIVATE SECTOR

NMAs + PRIVATE SECTOR +





DIGITAL MAP SILOS





SDIs







STATIC HISTORICAL DATA

(yesterday ... yesterday ... yesterday's world)



(NowNowNowRightnow)



PREDICTION

(whats coming ... where is it going what next what are my options)





GEOGRAPHY



LOCATION



<u>TRENDS 6</u>

Software as a service (SaaS) Data as a service (Daas) Infrastructure as a service (IaaS) Platform as a service (PaaS) National mapping as a service



SOME DRIVERS OF CHANGE

- Internet of Things
- Remote sensing (UAVs, etc)
- Wearable cameras
- Open public sector data
- Social media
- Volunteer GI (& citizen science)
- Mobile & real time
- Inside / outside positioning
- 3D / 4D
- 5G

- Big data analytics
- Linked data
- Semantics
- Augmented reality
- Virtual reality
- Artificial intelligence
- Text analytics
- Networks of networks
- Cloud
- Spatial Data Infrastructures
- Data analytics
- Open source



SOME DRIVERS FOR CHANGE INTO THE FUTURE DATA GENERATION (1)

• SOCIAL MEDIA



REMOTE SENSING









SOME DRIVERS FOR CHANGE INTO THE FUTURE DATA GENERATION (2)

• INTERNET OF THINGS







SOME DRIVERS FOR CHANGE INTO THE FUTURE DATA GENERATION (3)

• OPEN DATA



• REAL TIME











SOME DRIVERS FOR CHANGE INTO THE FUTURE BIG DATA

KILO- MEANS 1,000; A KILOBYTE IS ONE THOUSAND BYTES.
MEGA- MEANS 1,000,000; A MEGABYTE IS A MILLION BYTES.
GIGA- MEANS 1,000,000,000; A GIGABYTE IS A BILLION BYTES.
TERA- MEANS 1,000,000,000,000; A TERABYTE IS A TRILLION BYTES.
PETA- MEANS 1,000,000,000,000,000; A PETABYTE IS 1,000 TERABYTES.
EXA- MEANS 1,000,000,000,000,000; AN EXABYTE IS 1,000 PETABYTES.
ZETTA- MEANS 1,000,000,000,000,000,000; A ZETTABYTE IS 1,000 EXABYTES.
YOTTA- MEANS 1,000,000,000,000,000,000,000; A YOTTABYTE IS 1,000 ZETTABYTES





31TS.BLOGS.NYTIMES.COM, INTEL.COM, APPLE.COM, TIME.COM, DAILYMAIL.CO.UK, SKYPE.COM, STATISTICBRAIN.CO

SOME DRIVERS FOR CHANGE INTO THE FUTURE BIG DATA LANDSCAPE

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A DRIVER FOR CHANGE INTO THE FUTURE DATA TRANSMISSION 5G

- 20Gbps
- 100+Mbps for 1+m IoT devices within 1 km2 radius

SOME DRIVERS FOR CHANGE INTO THE FUTURE ANALYSING INFORMATION - BIG DATA ANALYTICS (1)

DRIVERS FOR CHANGE INTO THE FUTURE ANALYSING INFORMATION BIG DATA ANALYTICS (2)

Very hot (compared with other industries) Hot Moderate Low Very low (compared with other industries)

Potential big data opportunity on each dimension is:

SOME DRIVERS FOR CHANGE INTO THE FUTURE ARTIFICIAL NEURAL NETWORKS

SOME DRIVERS OF CHANGE INTO THE FUTURE SHARING INFORMATION LINKED OPEN DATA

SOME DRIVERS OF CHANGE INTO THE FUTURE SHARING INFORMATION LINKED OPEN DATA

SOME DRIVERS OF CHANGE INTO THE FUTURE <u>SHARING INFORMATION</u> SEMANTICS

SOME KEY ISSUES (1)

Intellectual property rights

© creative commons

• Expertise

• Privacy

- Intellectual property rights Creative Commons
- Expertise I just cant get the right staff mix tekkies (computer scientists, GIS people, etc) and softies (anthropologists, sociologists etc)
- Standards lot done .. much to do

SOME KEY ISSUES (3)

OBJECT BASED GEODATABASES (1)

Objects

- Manhole cover, light pole, bridge, building, car,etc
- static, 2D/3D/4D
- Unique ID
- Unique web address
- Structured links between objects
- Open and closed
- Authoritative and non-authorative
- Metadata

OBJECT BASED GEODATABASES (2)

KEY QUESTION WHAT DOES ALL THIS MEAN FOR US?

Discussion Discussion Discussion Discussion Discussion Discussion Strategising Action Action Action

<u>EUROGI</u>

- Aim ... to promote the widespread and effective use of geoinformation and geotechnologies in Europe
- Membership

THANK YOU

