



UN Global Platform

Mark Craddock

#UNGlobalPlatform

@mcraddock

@UNBigData



Vision: A global
collaboration to harness
the power of data for
better lives



Global Platform

- © Trusted **Data**
- © Trusted **Methods**
- © Trusted **Learning**
- © Trusted **Partners**

- © **AI/ML Ready**

Drivers of innovation and modernisation

Data revolution

Digital transformation

New data sources

Competition among data providers

New metrics

Globalisation

Sustainable development

Geo-referencing

Cost of statistics

Quality vs. resources

Reduced budgets

Reducing response burden

Emerging demands

Differentiation of users

Integrated monitoring

Timeliness



UNITED NATIONS
SUSTAINABLE
DEVELOPMENT
SUMMIT 2015
25 - 27 SEPTEMBER

SUSTAINABLE DEVELOPMENT GOALS

Agenda 2030

Transforming Our World:
the 2030 Agenda for
Sustainable Development



Accessible Data

open data, accountability and data literacy



Sustainable Development Goals

measuring progress on new indicators and for all groups



Data Landscape

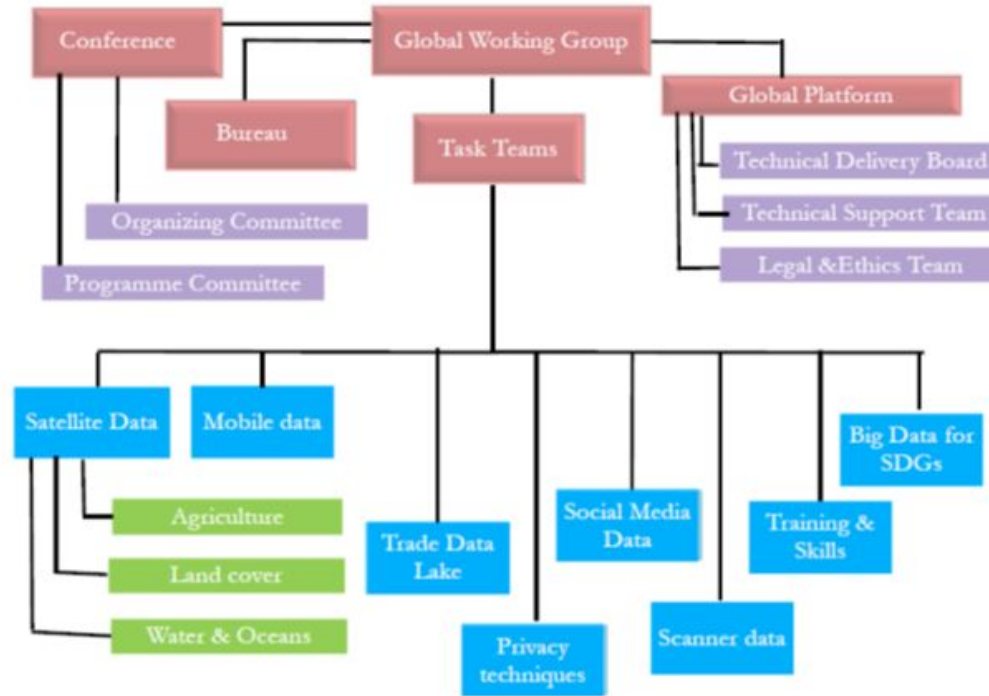
addressing systemic challenges



Data Innovation

big data and new technologies

UN GWG (Big) Data Organisational Structure



UN GWG (Big) Data Membership

Australia; Bangladesh; Brazil;
Cameroon; **Canada**; China;
Colombia; **Denmark**; Egypt;
Germany; Indonesia; Ireland; Italy;
Mexico; Morocco; **Poland**;
Netherlands; Oman; Pakistan;
Philippines; Republic of Korea;
Saudi Arabia; Switzerland; **United
Arab Emirates**; **United Kingdom**;
United Republic of Tanzania;
United States of America

United Nations Statistics Division,
United Nations Economic Commission
for Africa , Nations Economic and
Social Commission for Asia and the
Pacific, United Nations Economic
Commission for Europe, United
Nations Statistical Institute for Asia
and the Pacific, United Nations Global
Pulse, International
Telecommunication Union, Universal
Postal Union, African Development
Bank; CARICOM, GCCSTAT,
Eurostat/European Commission,
International Monetary Fund, OECD,
World Bank

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Australia

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A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Bangladesh

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Brazil

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The background features a white space with several colorful circles and dashed lines. In the top left, there is a large teal circle with a white center, a smaller teal circle, and a dashed teal circle. In the top right, there is a large lime green circle, a smaller green circle, and a dashed green circle. In the bottom left, there is a large green circle with a white center, a smaller orange circle, and a dashed yellow circle. In the bottom right, there is a large yellow circle, a smaller orange circle, a smaller pink circle, and a dashed blue circle. A large dashed blue circle is also visible in the center-right area.

Cameroon

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Canada

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A decorative graphic consisting of various colored circles and dashed lines. On the left, there are teal, blue, and green circles, some with dashed outlines. On the right, there are yellow, orange, and pink circles, also some with dashed outlines. A large dashed blue line curves across the page, passing through several of the circles.

China

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, yellow, blue) arranged in a circular pattern around the central text.

Colombia

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A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Denmark

The background features a white space with various colorful geometric shapes. On the left, there is a large teal ring, a smaller teal circle, a lime green circle, a green circle with a white center, and a small orange circle. On the right, there is a large lime green circle, a green circle, a pink circle, an orange circle, and a large yellow ring. A dashed blue line curves across the page, connecting the shapes. The word "Egypt" is centered in a black, serif font.

Egypt

The background features a white space with several colorful circles and dashed lines. In the top left, there is a large teal circle with a white center, a smaller teal circle, and a dashed teal circle. In the top right, there is a large lime green circle, a smaller green circle, and a dashed green circle. In the bottom left, there is a large green circle with a white center, a smaller orange circle, and a dashed yellow circle. In the bottom right, there is a large yellow circle, a smaller orange circle, and a smaller pink circle. A dashed blue line curves across the page, connecting the various circles.

Germany

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Indonesia

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Ireland

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Italy

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Mexico

A decorative graphic consisting of various colored circles and dashed lines. In the top left, there is a large teal ring and a smaller teal circle. In the top right, there is a large lime green circle and a smaller green circle. In the bottom left, there is a large green circle with a white dot, a smaller yellow-green circle, and a small orange circle. In the bottom right, there is a large yellow ring, a large orange circle, and a small pink circle. A dashed blue line curves through the composition.

Morocco

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, yellow, green) arranged in a circular pattern around the central text.

Poland

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Netherlands

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Oman

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A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Pakistan

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Philippines

A decorative graphic consisting of various colored circles and dashed lines. In the top left, there is a large teal ring and a smaller teal circle. In the top right, there is a large lime green circle and a smaller green circle. In the bottom left, there is a large green circle with a white dot, a smaller lime green circle, and a small orange circle. In the bottom right, there is a large yellow ring, a large orange circle, and a small pink circle. A dashed blue line curves around the central text.

Republic of Korea

A decorative graphic consisting of various colored circles (teal, blue, green, yellow, orange, pink) and dashed lines of different colors (teal, green, yellow) arranged in a circular pattern around the central text.

Saudi Arabia

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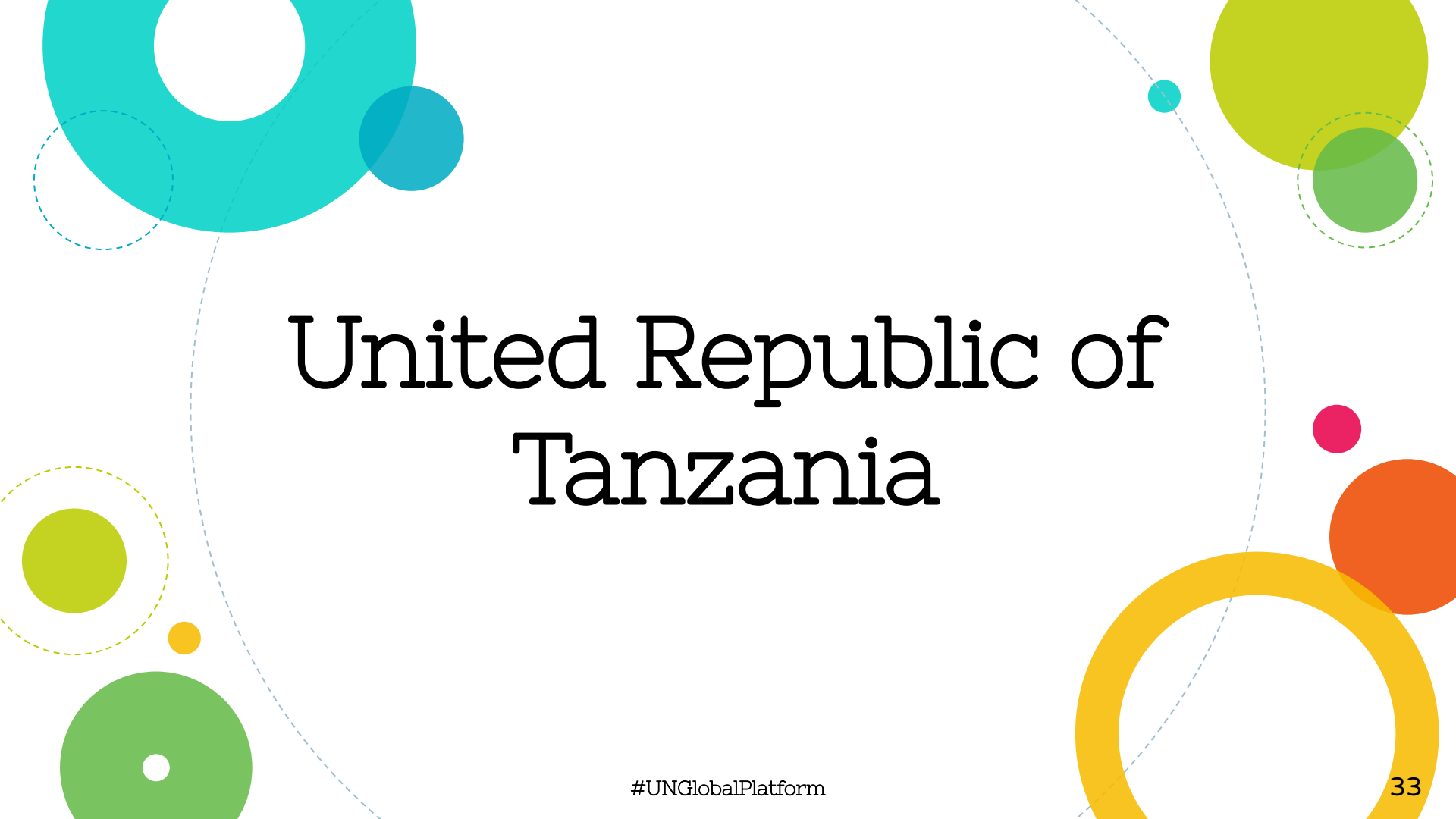
Switzerland

A decorative graphic featuring a large, light blue dashed circle that frames the central text. Various colored circles and rings are scattered around the page: a large teal ring in the top left, a smaller teal circle next to it, a lime green circle in the top right, a green circle with a dashed border below it, a pink circle in the middle right, an orange circle below that, a yellow ring in the bottom right, a lime green circle in the bottom left, a green circle with a white dot in the bottom left, and a small orange circle in the bottom left. The text "United Arab Emirates" is centered in a black, monospace-style font.

United Arab Emirates

The background features a large, light blue dashed circle that frames the central text. Various solid-colored circles in shades of teal, blue, green, yellow, orange, and pink are scattered around the page. Some circles are solid, while others are dashed outlines. A large teal ring is in the top left, and a large yellow ring is in the bottom right.

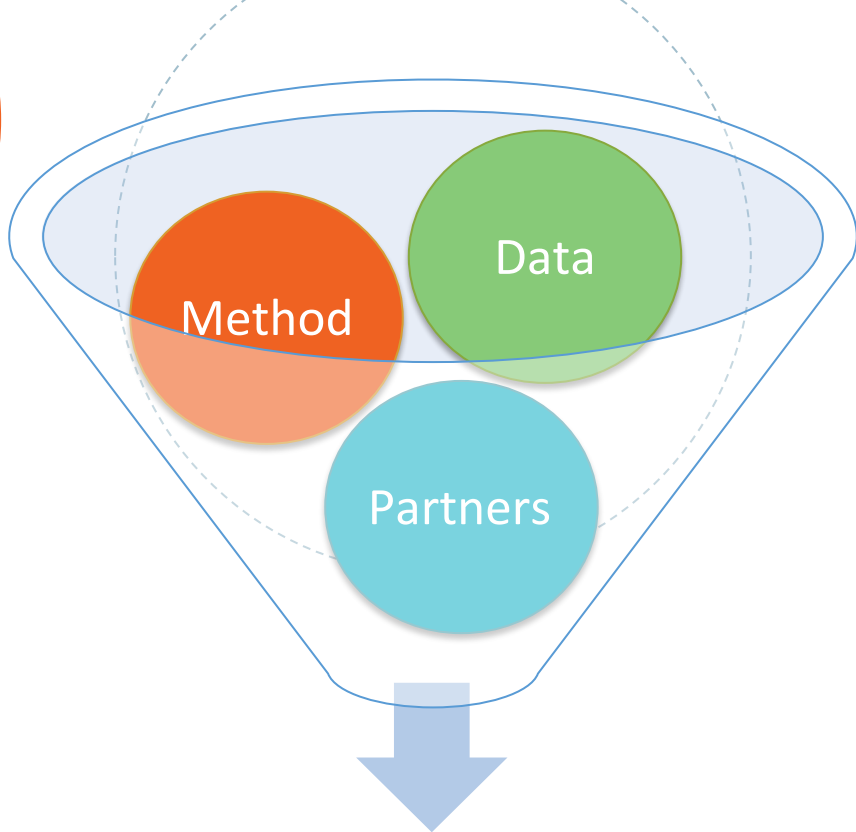
United Kingdom

A decorative graphic featuring a large, light blue dashed circle that frames the central text. Various solid-colored circles in shades of teal, green, yellow, orange, and pink are scattered around the page, some overlapping the dashed circle. There are also some circles with dashed outlines.

United Republic of Tanzania

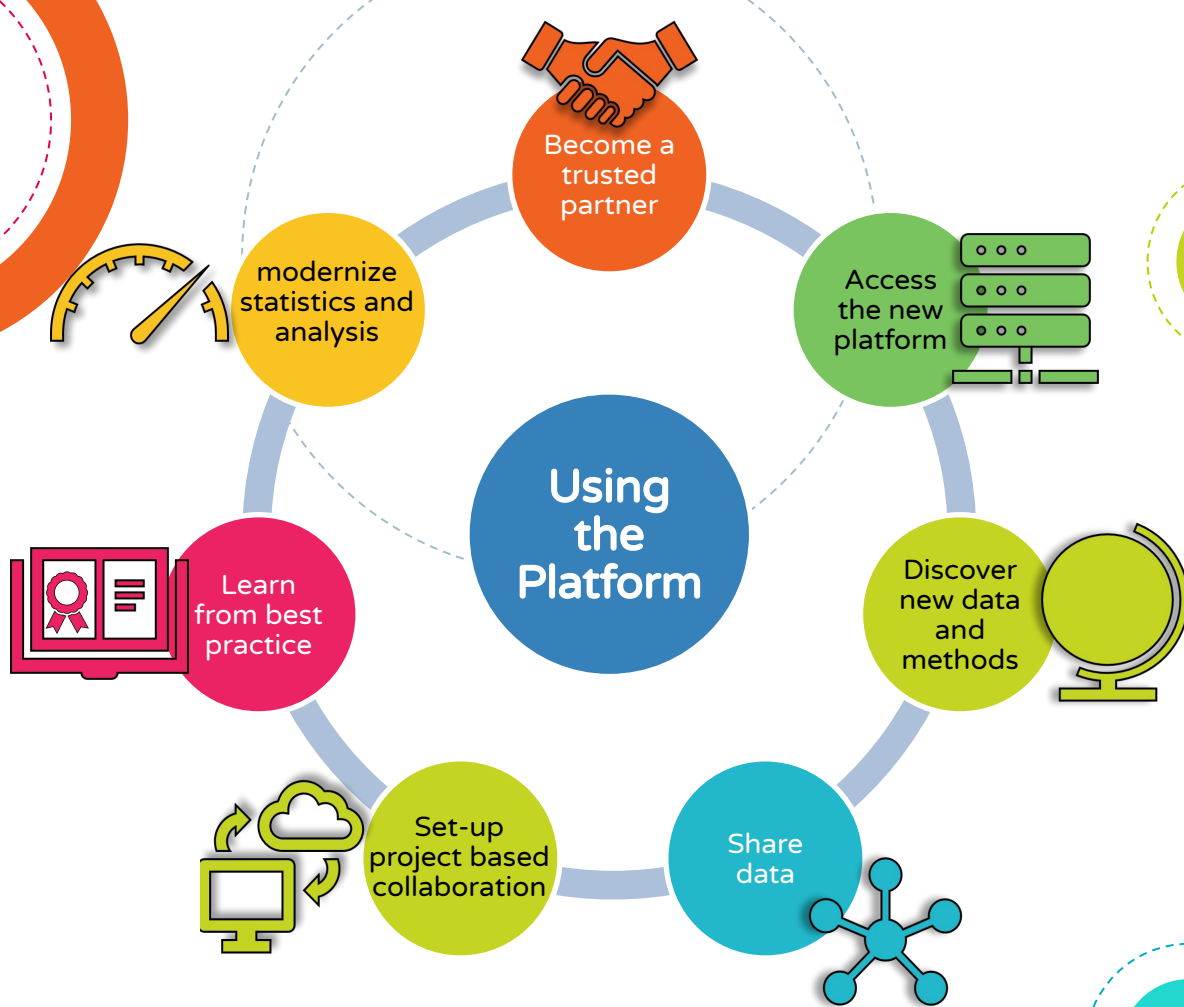
A decorative graphic featuring a large, light blue dashed circle that frames the central text. Various solid-colored circles in shades of teal, green, yellow, orange, and pink are scattered around the page, some overlapping the dashed circle. There are also some circles with dashed outlines.

United States of America



Data Collaborative

Using the Platform



AI/ML Ready



AI/ML Ready

- ◎ Earth Observation Service
 - ◎ Train Machine Learning Models
 - ◎ Analyse Satellite Imagery
- ◎ Methods Service
 - ◎ Deploy and manage machine learning models
 - ◎ API enable machine learning models



AI/ML Ready

- ◎ Location Analytics Service
 - ◎ ML / Pattern of Life

Online Community



Online Community

- ◎ Sharing / Collaboration
- ◎ 230+ people in 14 timezones
- ◎ 4,000+ messages over last 30 days
- ◎ Algorithms, Data, Services, Methods, AIS, ADS-B, Cloud Vendors, Privacy Task Team, Task Teams
- ◎ Join (<http://bit.ly/join-ungp-slack>)



Working Practices



Working Practices

- ◎ Work in the open
 - ◎ Transparent, sharing, collaborating
- ◎ Working Online
 - ◎ Online document sharing, online communications channels, online kanban/activity tracking, online training



Working Practices

- ◎ Delivery first
 - ◎ Agile practices, prototype/demo, publish early working functionality, reuse-recycle, iterate, user and customer focus, empowered teams and individuals

Global Standards



Global Standards

- ◎ [Incident Management](#)
- ◎ [Portability](#)
- ◎ [Principles](#)
- ◎ [Platform Security](#)
- ◎ [Service Management](#)



Security

Security

- ◎ DDOS/DNS
 - ◎ CloudFlare
 - ◎ [The DDoS That Almost Broke the Internet](#)
 - ◎ Multi user administration / access
 - ◎ Audit logs
- ◎ Content Delivery Network (CDN)
 - ◎ CloudFlare



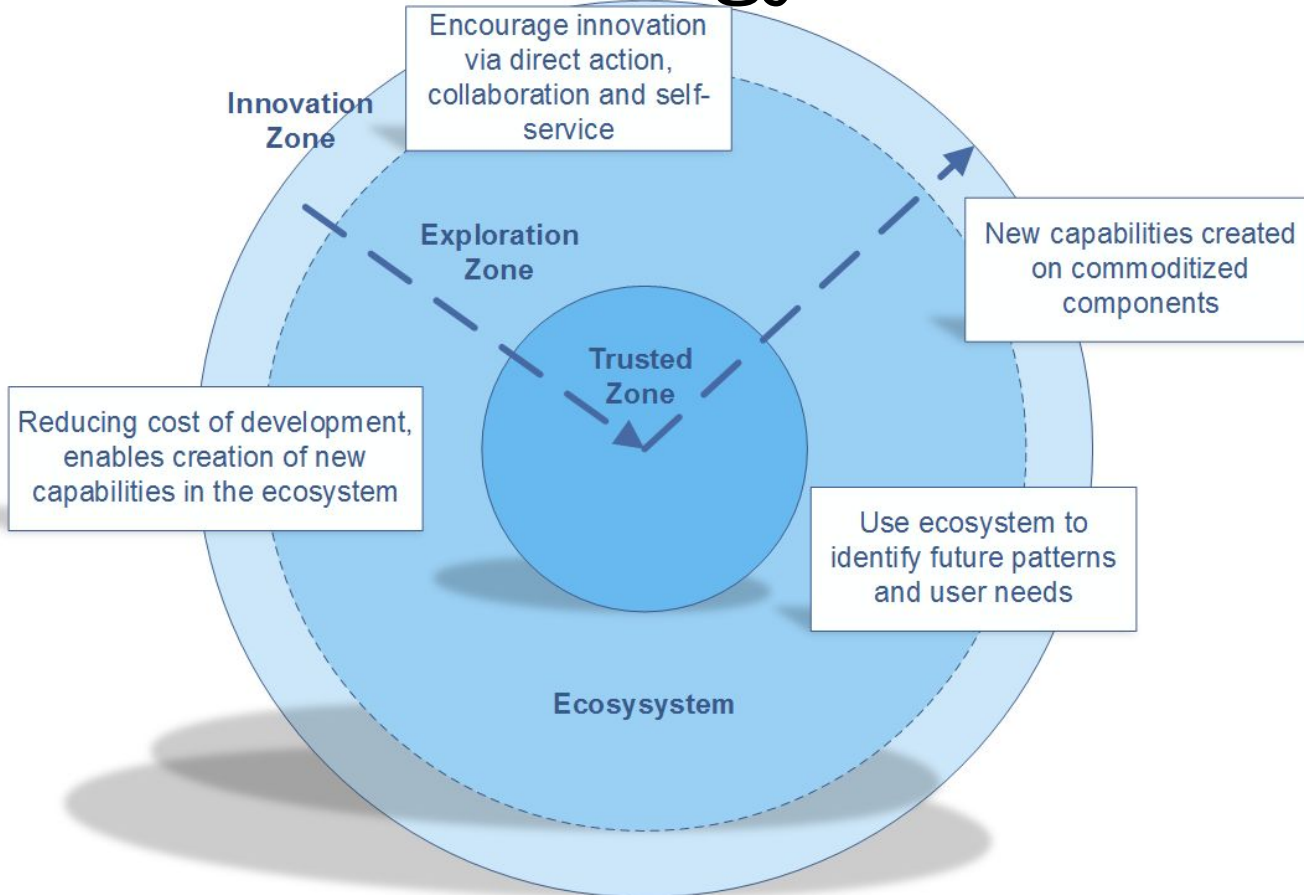
Security

- ◎ CloudFlare - [Project Galileo](#)
 - ◎ If you are an organization working on behalf of the arts, human rights, civil society, or democracy, you can apply for Project Galileo to get Cloudflare's highest level of protection, for free.

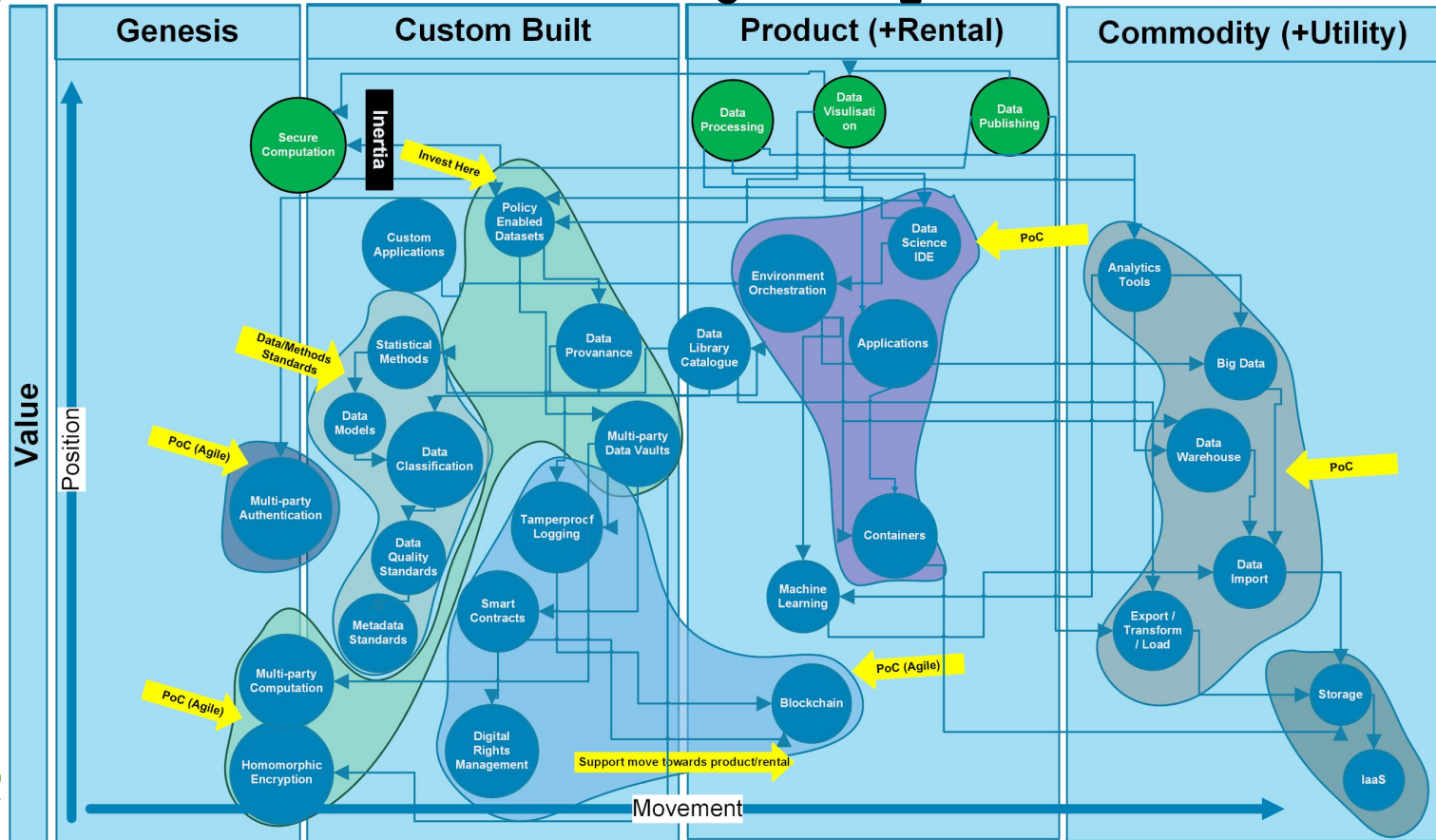


Strategy

Strategy



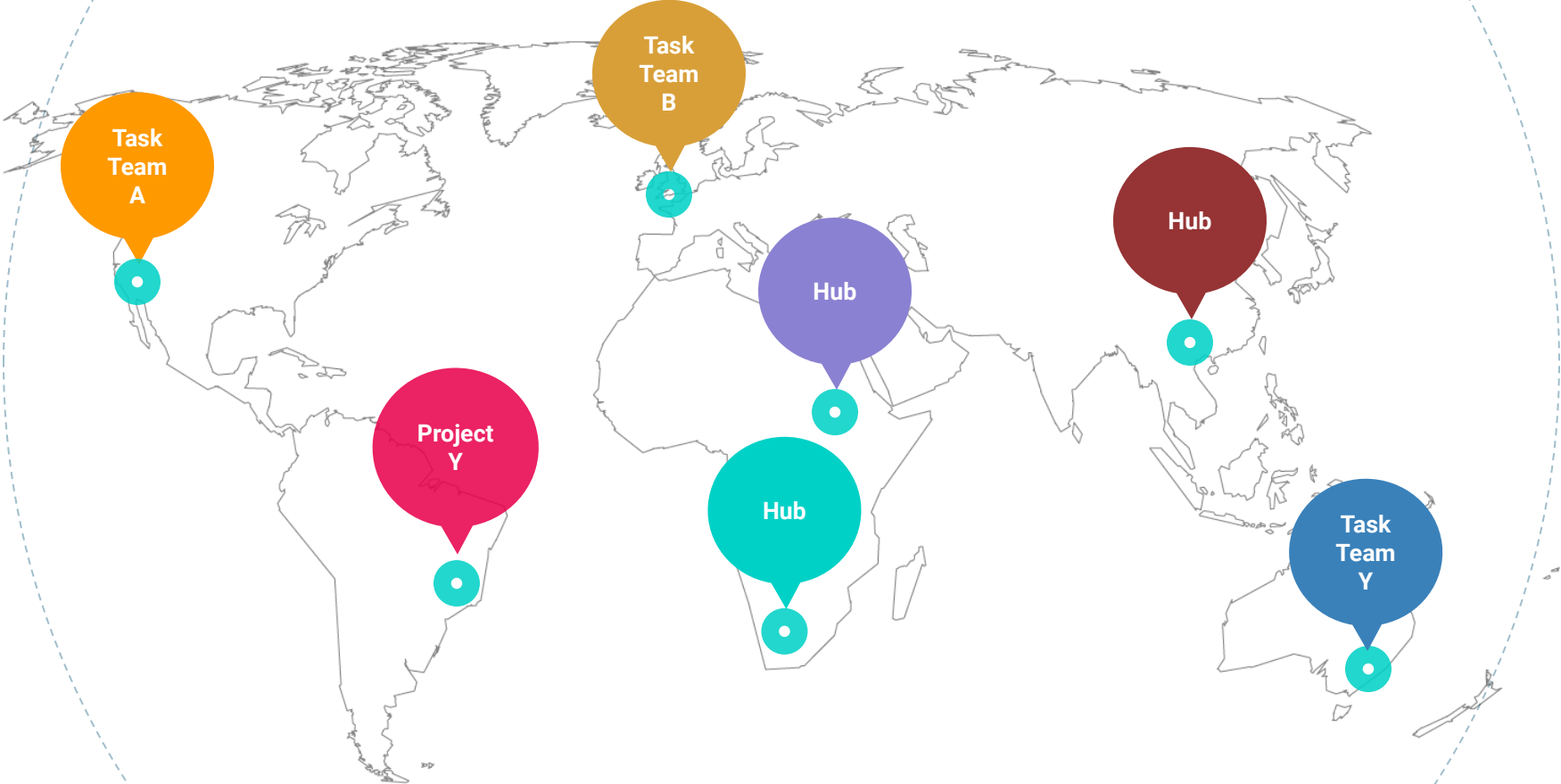
Wardley Maps





Global Billing

Global Billing





Global Billing

- ◎ Consolidate Billing Globally
 - ◎ Alibaba, Amazon, Azure, Microsoft, Service Partners
- ◎ Leverage Discounts
- ◎ Manage Credits
- ◎ Allocate Budgets
 - ◎ Per Task Team
 - ◎ Per Partner
 - ◎ Per Program

Technology Strategy Handbook



Technology Strategy Handbook

- ◎ Mapping the Technology Landscape
 - ◎ Cloud
 - ◎ Machine Learning
 - ◎ Big Data
 - ◎ Serverless
 - ◎ IoT
 - ◎ Privacy Preserving Techniques



Technology Strategy Handbook

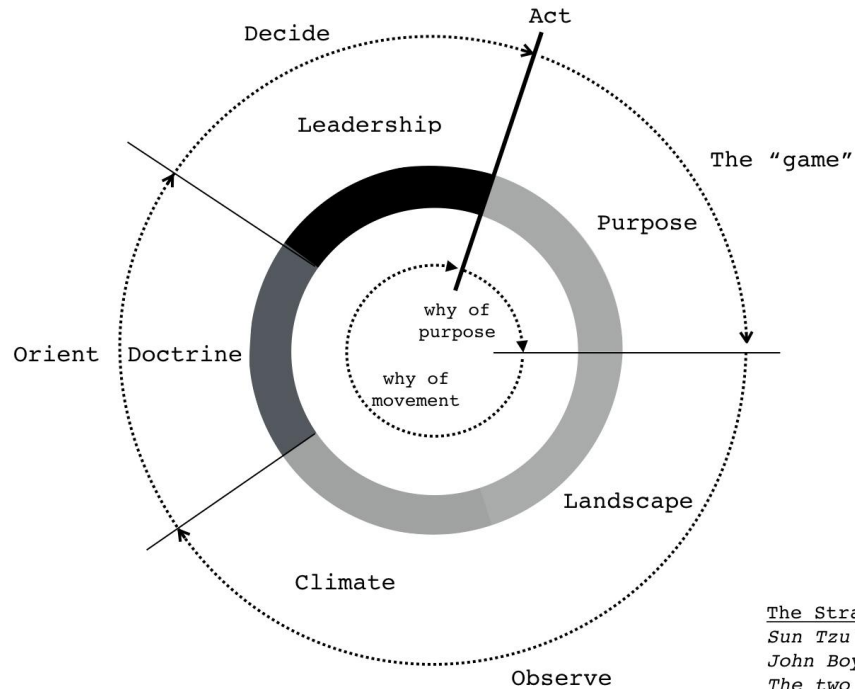
- ◎ Mapping the Technology Landscape
 - ◎ Anchor, Position & Movement
- ◎ Strategy Cycle
 - ◎ Why of Purpose, Landscape, Climate, Doctrine, Leadership
 - ◎ Observe. Orient and Decide, Why of Movement. Why should we be taking this action over that action.



Technology Strategy Handbook

- ◎ Mapping the Landscape
 - ◎ Cloud
 - ◎ Machine Learning
 - ◎ Big Data
 - ◎ Serverless
 - ◎ IoT
 - ◎ Privacy Preserving Techniques

Strategy Cycle



The Strategy Cycle
Sun Tzu's five factors
John Boyd's OODA loop
The two types of why



Technology Strategy Handbook

- ◎ Doctrine
 - ◎ Know your users (e.g. customers, shareholders, regulators, staff)
 - ◎ Focus on user needs
 - ◎ Focus on high situational awareness (understand what is being considered)



Technology Strategy Handbook

- ◎ Doctrine
 - ◎ Use a common language (necessary for collaboration)
 - ◎ Be transparent (a bias towards open)
 - ◎ Challenge assumptions (speak up and question)
 - ◎ Use a systematic mechanism of learning (a bias towards data)

Technology Strategy Handbook

© Doctrine

- Remove bias and duplication
- Think small (as in know the details)
- Use appropriate methods (e.g. agile vs lean vs six sigma)
- Move fast (an imperfect plan executed today is better than a perfect plan executed tomorrow)

Technology Strategy Handbook

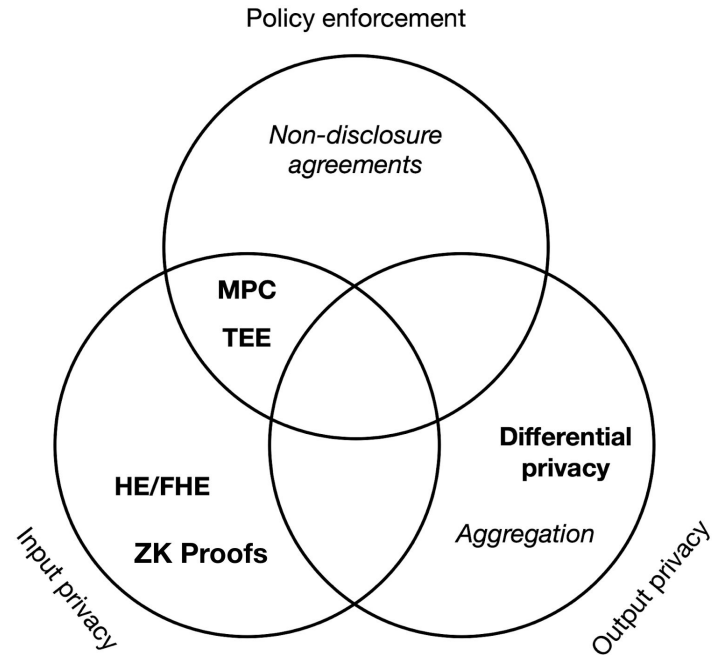
© Doctrine

- Be pragmatic (it doesn't matter if the cat is black or white as long as it catches mice)
- Manage inertia (e.g. existing practice, political capital, previous investment)
- Effectiveness over efficiency
- Leave no-one behind

Privacy Preserving Techniques Handbook

Cryptographic Techniques

- ◎ Multi-party Computation
- ◎ Fully Homomorphic Encryption
- ◎ Zero Knowledge Proofs
- ◎ Trusted Execution Environments
- ◎ Differential Privacy





Cryptographic Techniques

- ◎ [UN Privacy Preserving Techniques Handbook](#)
- ◎ Proof of Concepts for 62nd ISI World Statistics Congress
 - ◎ Health Statistics
 - ◎ Trade Statistics
 - ◎ Synthetic Data



Business Case/Model

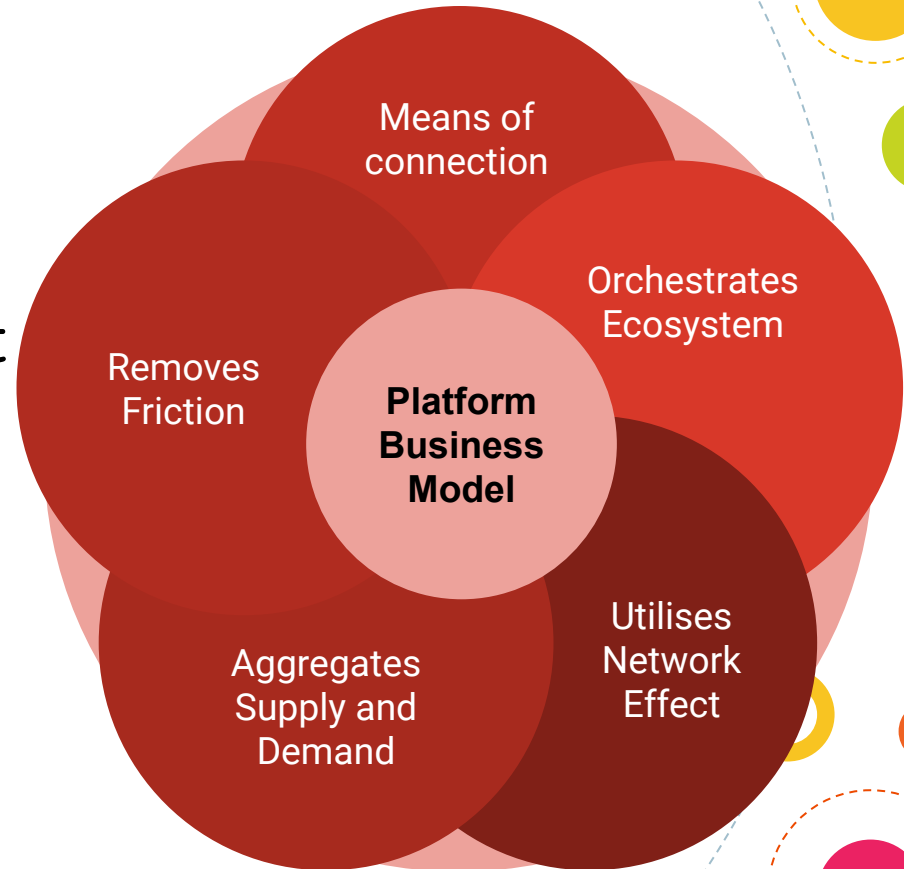


Business Case/Model

- ◎ Business Model
- ◎ Business Case
- ◎ Funding Model
- ◎ Operations Model
- ◎ Programs & Partnerships


Platform Business Model

- ⊙ A means of connection
- ⊙ Orchestrates an ecosystem
- ⊙ Utilises the network effect
- ⊙ Aggregates supply and demand
- ⊙ Remove frictions
- ⊙ Can have more than one type of value exchange going on





Programs & Partnerships



Platform Partners

- ◎ Provide Core Platform Services
- ◎ Provide Services within the Platform
- ◎ Joint Marketing
- ◎ Conferences

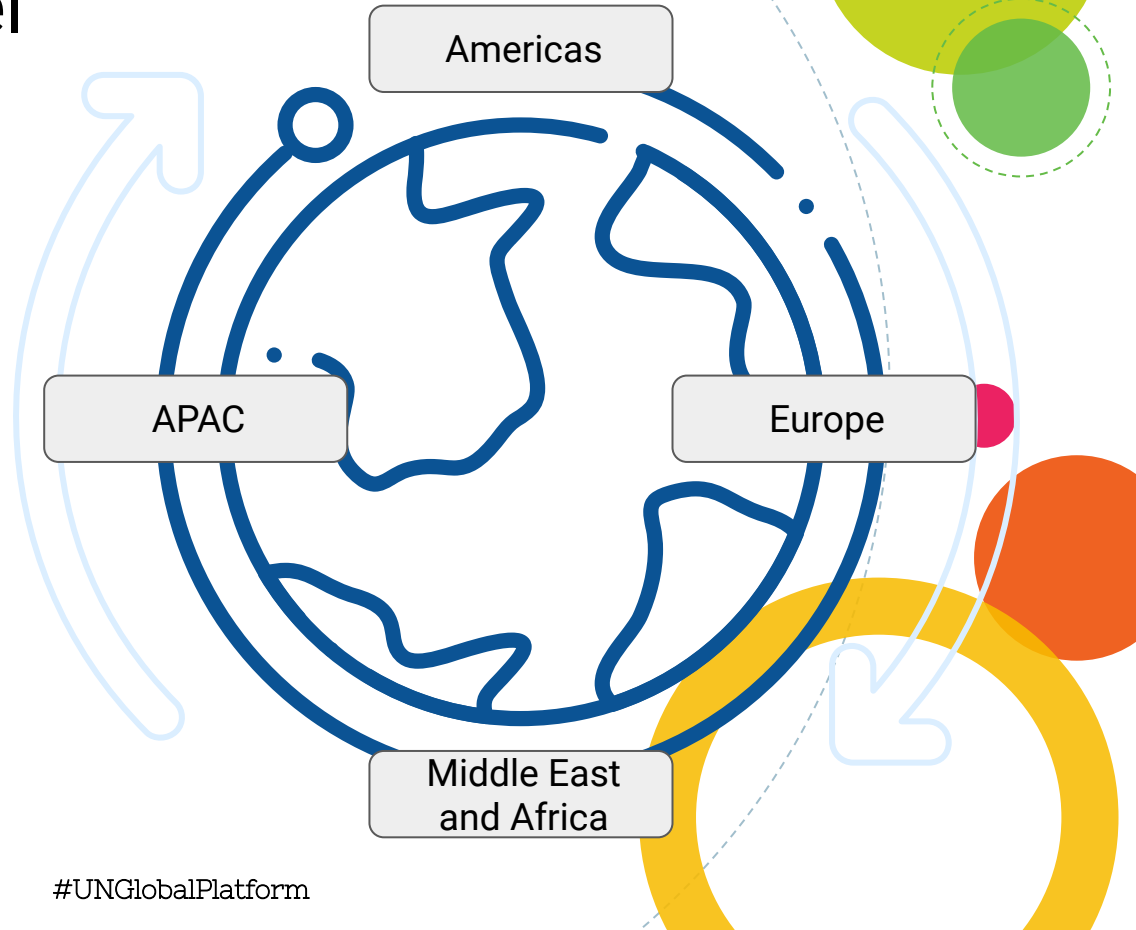


Hubs

- ◎ Official Partners
- ◎ Research
- ◎ Global Support
- ◎ Program Based
- ◎ Specialists
 - ◎ AI / ML
 - ◎ Environment
 - ◎ Mobile

Global Support Model

- **24/7** 'follow the sun' global support model





Hub/Partner Framework

- ◎ Policies
- ◎ Principles
- ◎ Data Ethics
- ◎ Data Policy Framework
- ◎ Technical Standards



UN Global Platform

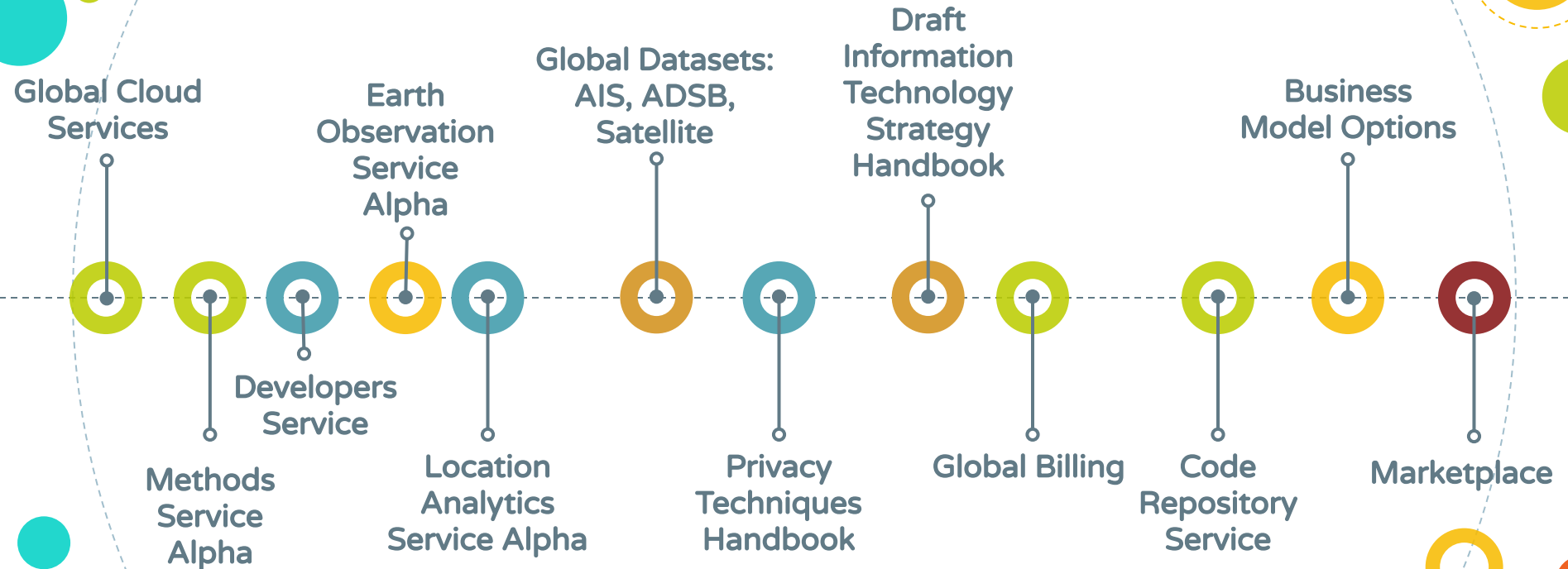
Gavin Phillips

#UNGlobalPlatform

@UNBigData

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Achievements – March '19



Global Datasets



3

Global Big Datasets

100,000,000,000+

ADS-B Records

40,000,000+

AIS Records / Day

Automatic Identification System (AIS)

- ◎ 40 Million Records / Day
- ◎ Ship Position / Movement
- ◎ 3 Months Trial
- ◎ Analysis via
 - ◎ Methods Service
 - ◎ Location (Stealth) Service
 - ◎ Jupyter Notebooks
 - ◎ APIs

Automatic Dependent Surveillance (ADS-B)

- ◎ 3 Million Records / Second
- ◎ Aircraft Position / Movement
- ◎ 100 Billion Records
- ◎ Analysis via
 - ◎ Methods Service
 - ◎ Location (Stealth) Service
 - ◎ Jupyter Notebooks
 - ◎ APIs



Satellite Imagery

- ◎ Open Data
 - ◎ Landsat
 - ◎ Sentinel
- ◎ Commercial
 - ◎ Planet (Trial)
 - ◎ AirBus (Trial)
 - 1.5m Resolution
 - 0.5m Cities



UN Global Platform Services

Marketplace

**Earth
Observation
Service**

**Satellite
Imagery**

**Location
Analytics
Service**

**Global
Billing**

ADS-B

**Trusted
Methods
Service**

**Online
Community**

**Developers
Service**

AIS

**AI / ML
Ready**



UN Global Platform – Update

- ◎ Trusted Methods Library/Service
 - ◎ <https://methods.officialstatistics.org>
- ◎ Earth Observation Service
 - ◎ <https://eo.officialstatistics.org>
- ◎ Location Analytics Service
 - ◎ <https://location.officialstatistics.org>
- ◎ Marketplace
 - ◎ <https://marketplace.officialstatistics.org/>

UN Global Platform – Update

© Jupyter Service

- <https://jupyter.officialstatistics.org>

© Operations Service

- <https://operations.officialstatistics.org>

© Helpdesk Service

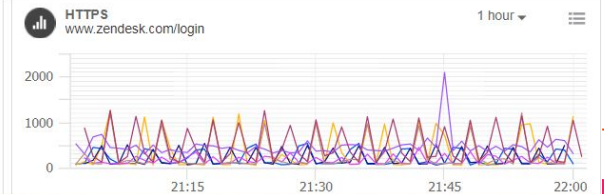
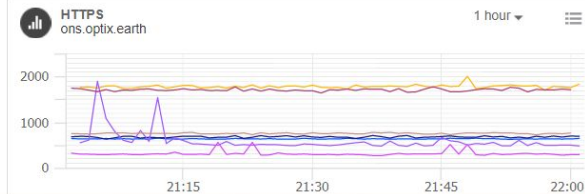
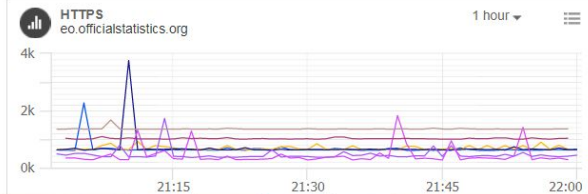
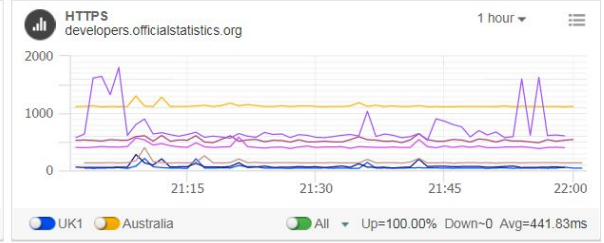
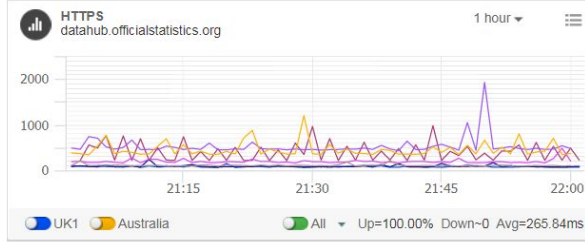
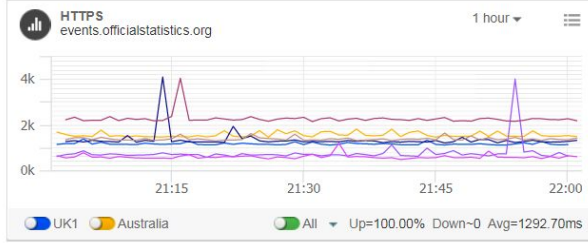
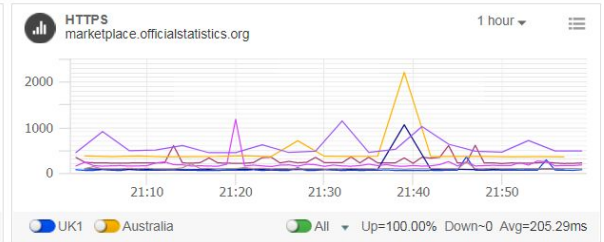
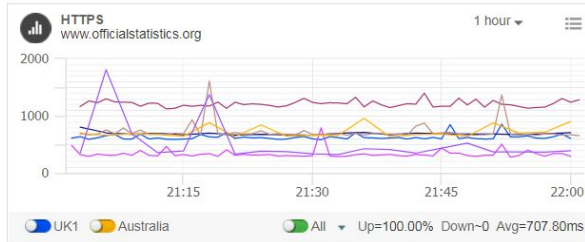
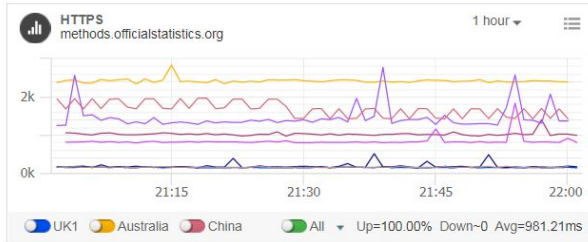
- support@officialstatistics.zendesk.com

Operations Service

BigData UN Global Working Group

Powered by  monitis

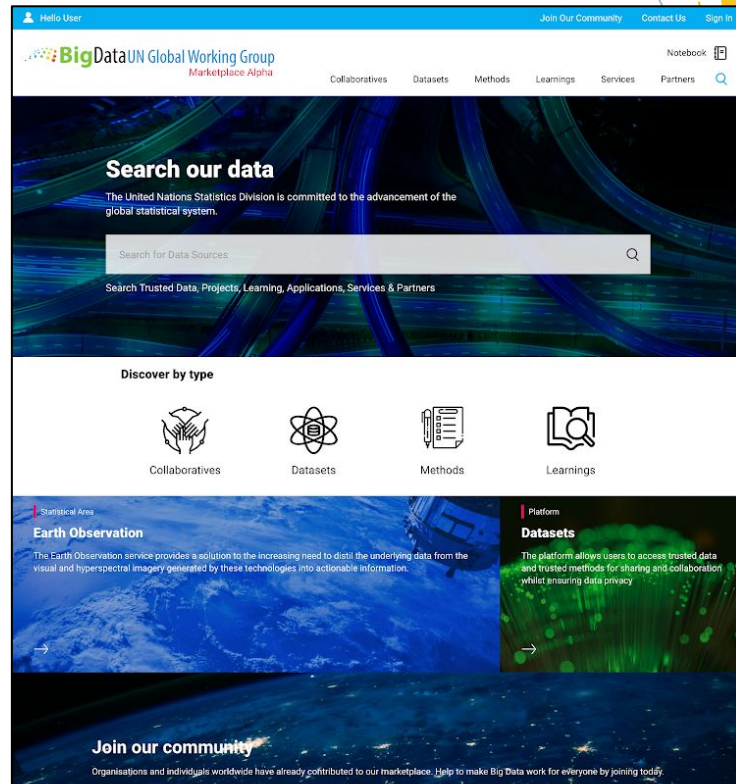
Web Performance



Marketplace

Marketplace

- ◎ Alpha Marketplace Live
- ◎ One place to search for trusted data, applications, partners, methods, algorithms and services
- ◎ Self Manage Listings (Task Teams, Partners, NSIs)





Demo Time

Location Analytics Service

- ◎ Visualise and Analyse Location Data
 - ◎ AIS
 - ◎ ADS-B
 - ◎ Mobile Phone
 - ◎ “Anything that moves”
- ◎ Real time data feeds
- ◎ Visualise and Analyse Anything That Moves

Location Analytics Service

- ◎ AIS Data Source 1
 - ◎ 6GB / Day Ingest
 - ◎ 1.23TB
 - ◎ From Oct '18
- ◎ AIS Data Source 2
 - ◎ 29GB / Day Ingest
 - ◎ 1.41TB
 - ◎ From April '19

*15th May 2019

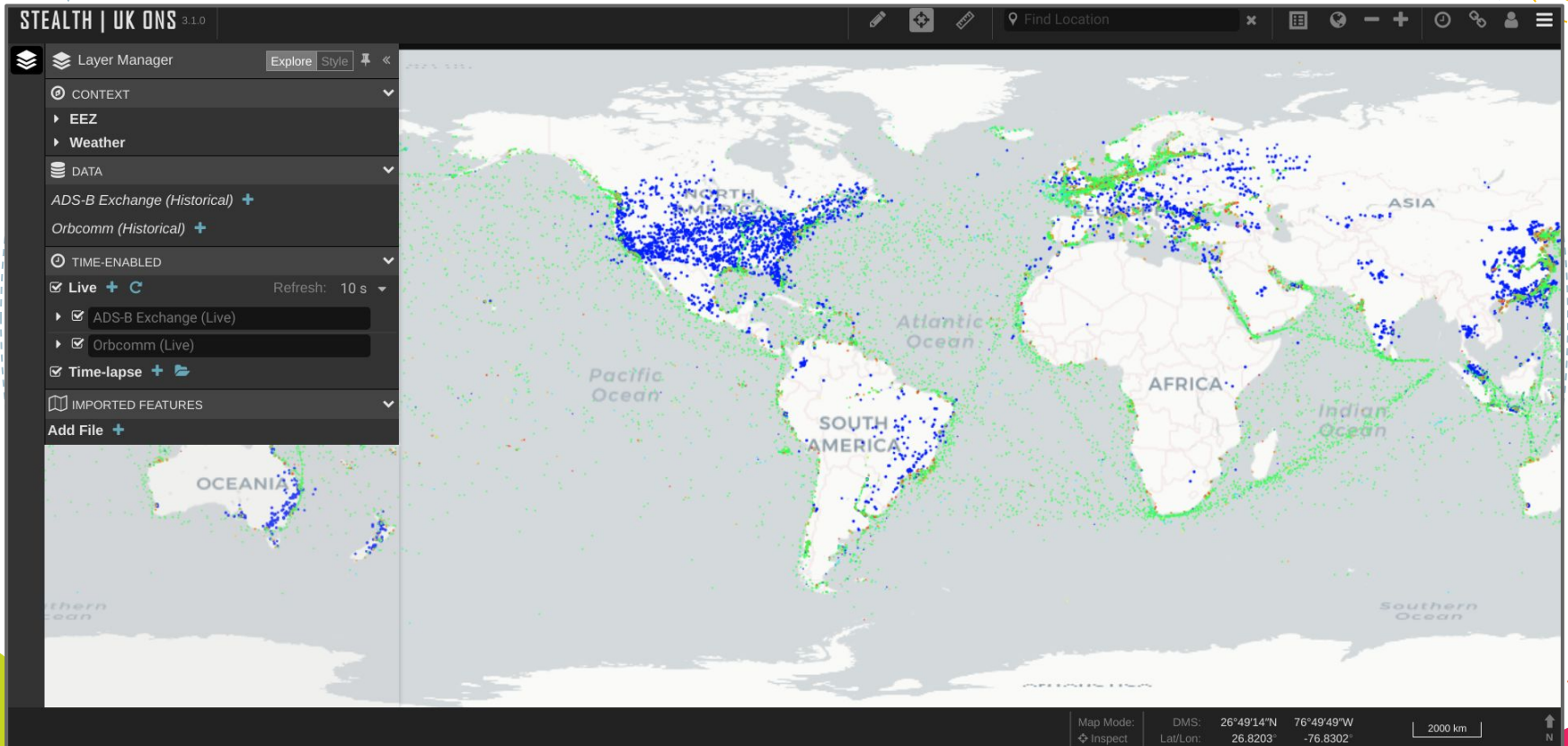
Location Analytics Service

- ◎ ASDB Data Source
 - ◎ 13GB / Day Ingest
 - ◎ 4.49TB*
 - ◎ From Oct '18

*15th May 2019



Location Analytics Service

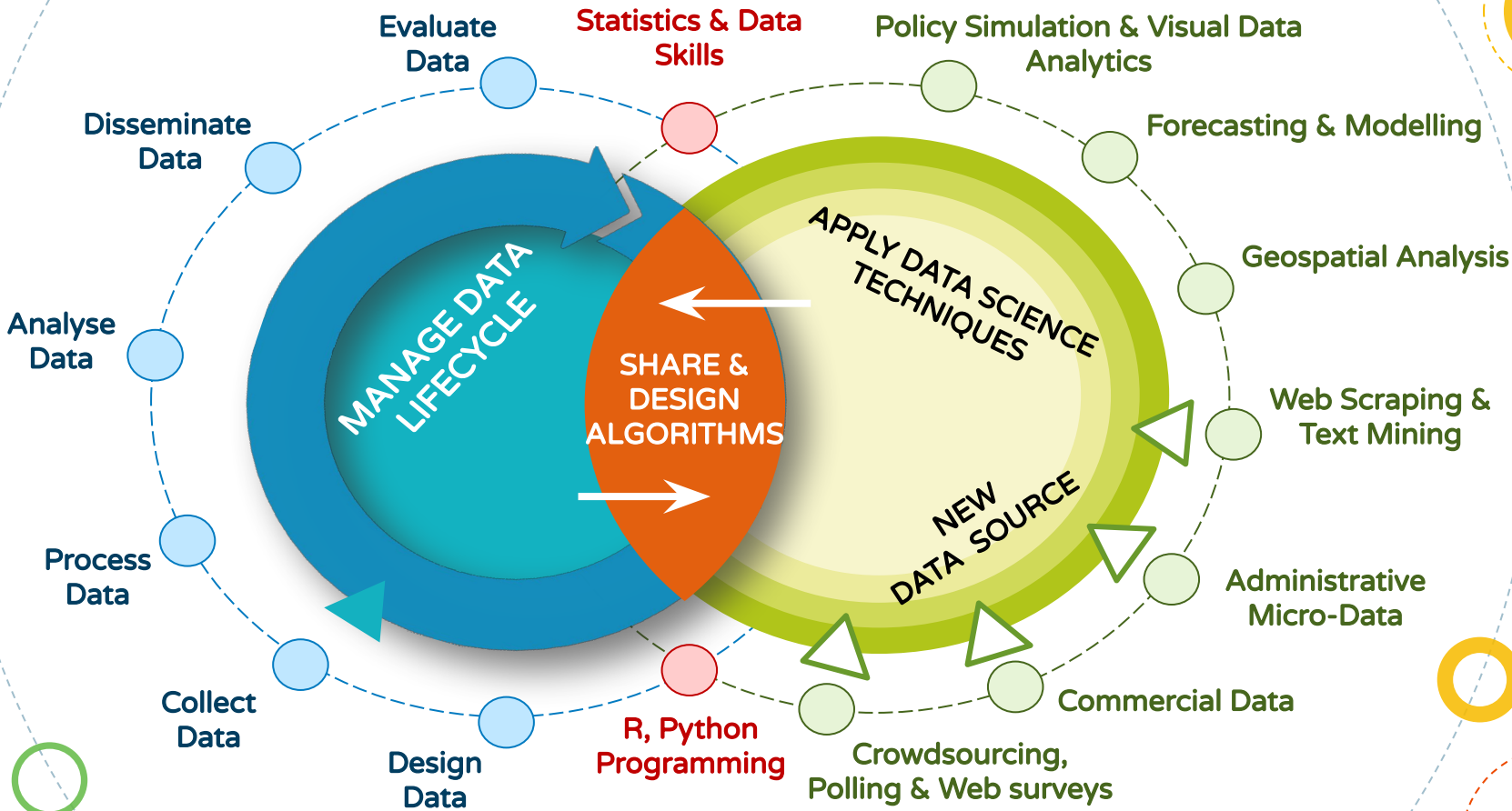




Demo Time



Methods Service





Method Service

- ◎ Methods and algorithms must be easy to share and reuse
- ◎ Methods must be documented and of known quality
- ◎ Methods must not place too many technology dependencies on users



Methods Service

- ◎ Provides a library for trusted methods and algorithms that:
 - ◎ Member countries can collaboratively populate, manage and use
 - ◎ Allows easy sharing and development of new algorithms
 - ◎ Does not require specialist knowledge or equipment



Methods Service

- ◎ The library needs to:
 - ◎ Scale
 - ◎ Integrate with the rest of the UN Global Platform technology stack
 - ◎ Be extensible to new use cases

Method Service

- ◎ Code, documentation and execution
- ◎ Deploy without software engineers
- ◎ Scalable workers & GPUs
- ◎ Organisations: code collaboration, inheritance & governance
- ◎ Standard APIs to call all algorithms
- ◎ Use for production and prospective purposes



Demo Time



Earth Observation Service

- ◎ Analyse Satellite Imagery
- ◎ Common Satellite Data
- ◎ Commercial Satellite Data
- ◎ Common Algorithms (NDVI, NDWI)
- ◎ Machine Learning



Earth Observation Service

- ◎ Roles Based Access Controls
 - ◎ Users
 - ◎ Teams
 - ◎ Organisations
 - ◎ Share/Publish
 - ◎ Collaboration

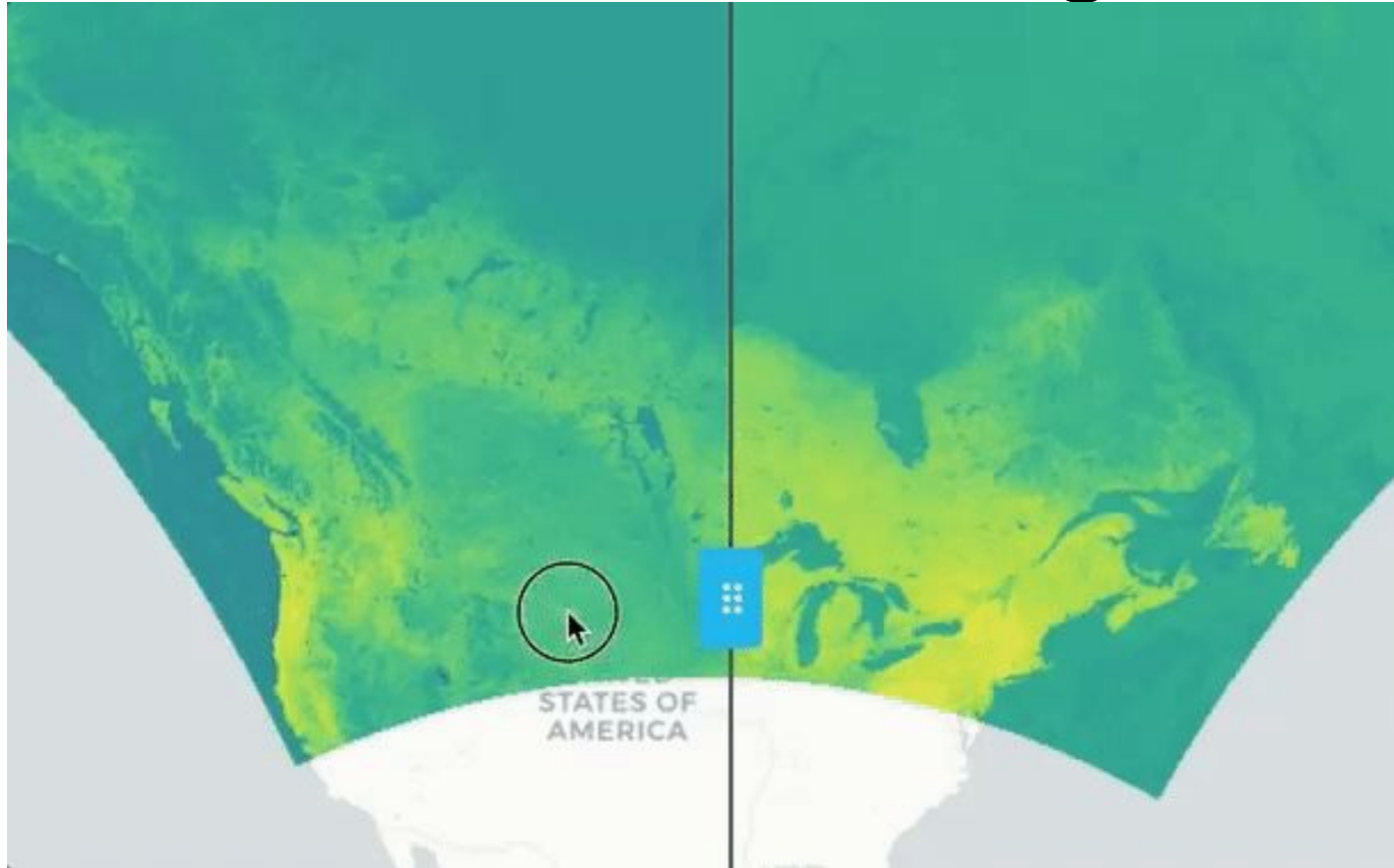
Earth Observation Service

The screenshot displays the Earth Observation Service interface. At the top, there is a navigation bar with 'Home', 'Projects', 'Data', 'Lab', and 'Algae ID'. A user profile 'MA mark.craddock' is visible in the top right. The main workspace is divided into three sections:

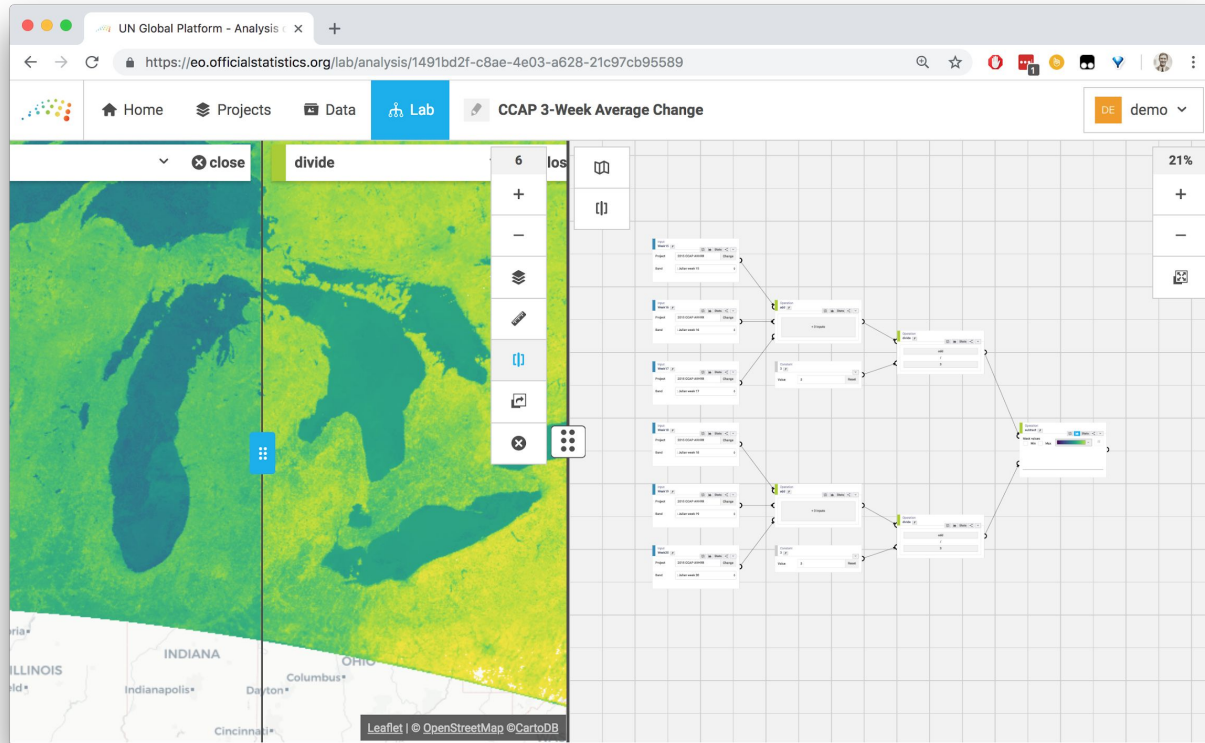
- Map View:** On the left, a map shows a coastal area with a color scale from dark purple to yellow. A 'divide' window is open at the top left of the map, and a vertical toolbar with various map controls is on the right.
- Workflow:** On the right, a workflow is built with three 'Input' widgets and one 'Operation' widget. The 'Input Green' widget is set to 'Project: Plymouth' and 'Band: 3: Green'. The 'Input Red' widget is set to 'Project: Plymouth' and 'Band: 4: Red'. The 'Input NIR' widget is set to 'Project: Plymouth' and 'Band: 8: Near Infrared'. The 'Operation subtract' widget has 'Green' in the top input field and 'Red' in the bottom input field. The workflow is connected to the map view.
- Map Controls:** On the far right, a vertical toolbar shows zoom controls (+, -, 76%, +) and a 'close' button.

At the bottom left of the map, the text 'Leaflet | © OpenStreetMap © CartoDB' is visible.

Historical AVHRR satellite images



Historical AVHRR satellite images





Demo Time



Roadmap

Roadmap - March '20

5th
International
Conference
on
Big Data for
Official
Statistics

Privacy
Techniques
PoCs

Privacy
Task Team
Legal
Sub-Group

Framework
Agreements

Final
Business
Case/Model

March '20
51st UNSC



Release
Strategy
Handbook

Global
Authentication
Service

Alpha
Data as a
Service

62nd ISI
Conference

Roadmap – March '20

◎ Alpha

- ◎ Data Service
- ◎ ~~Developers~~ Jupyter Service

◎ Beta

- ◎ Global Billing
- ◎ Marketplace
- ◎ Earth Observation Service
- ◎ Geospatial Analytics Service
- ◎ Methods Library/Service

How Can You Get Involved?



How Can You Get Involved?

- ◎ Task Teams
- ◎ Administration Tasks
- ◎ Technical Specialists
- ◎ Cloud Specialist Group
- ◎ Machine Learning Models

- ◎ Covered by an MOU

UN Global Platform



Faster. Quality. Statistics

#UNGlobalPlatform



Thanks!



Any questions?

You can find me at [@mcraddock](#) & contactus@officialstatistics.org

#UNGlobalPlatform

Additional Information



Future Events

- ◎ 62nd ISI World Statistics Congress
 - ◎ UN Statistics Division (UNSD)
Symposium on Data Science and Official Statistics jointly organized with UNESCAP and UN Global Working Group on Big Data for Official Statistics, 15 - 17 August 2019