Sharing Environmental Observation Data
Think Tank

9th September 2008

Environment Research

Funders' Forum

Environmental observations

Vital source of evidence from global to local scale for:

- understanding and managing our changing environment

- guiding current and future policy, science and innovation

- economic benefit and quality of life

- Includes all monitoring/ surveillance all technologies from satellite data to butterfly and woodlice counts- for or by the UK

The Think Tank - what is it?

Sound Data Management is at the heart of the UK-EOF concept.

Today is:

- An opportunity to discuss data issues
- Debate a vision of what success looks like
- Advise on scope and steps to achieve it

UK Environmental Observation Framework

Contents - in 4 parts

- What is the UK-EOF?
- Why is Environmental Data important ?
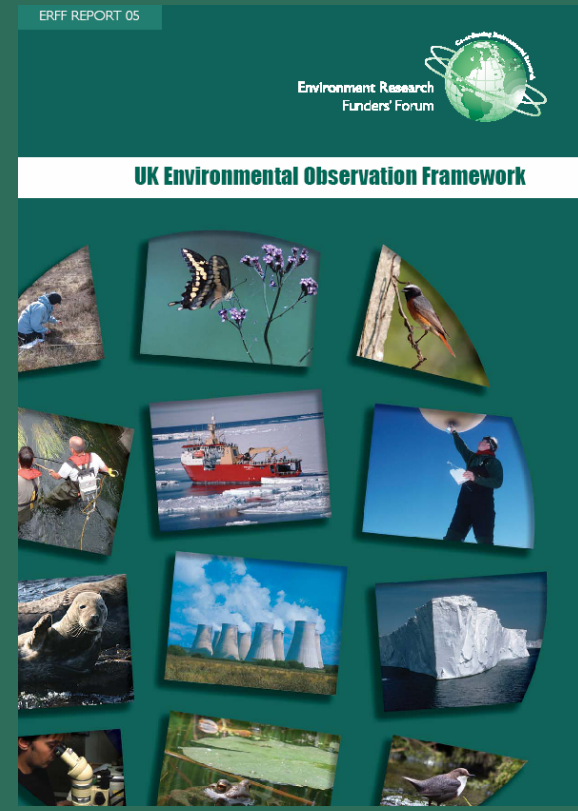- What is this Think Tank?

- Discussion 1 –What is the current situation?
- Discussion 2 -Where do we want to be?
- Discussion 3 - What actions can we take?

UK Environmental Observation Framework

ERFF review of Environmental Monitoring 2006

To UK-EOF

Development of the UK-EOF

Environmental observations are an essential part of the evidence base.

- At least 5yr initiative within ERFF
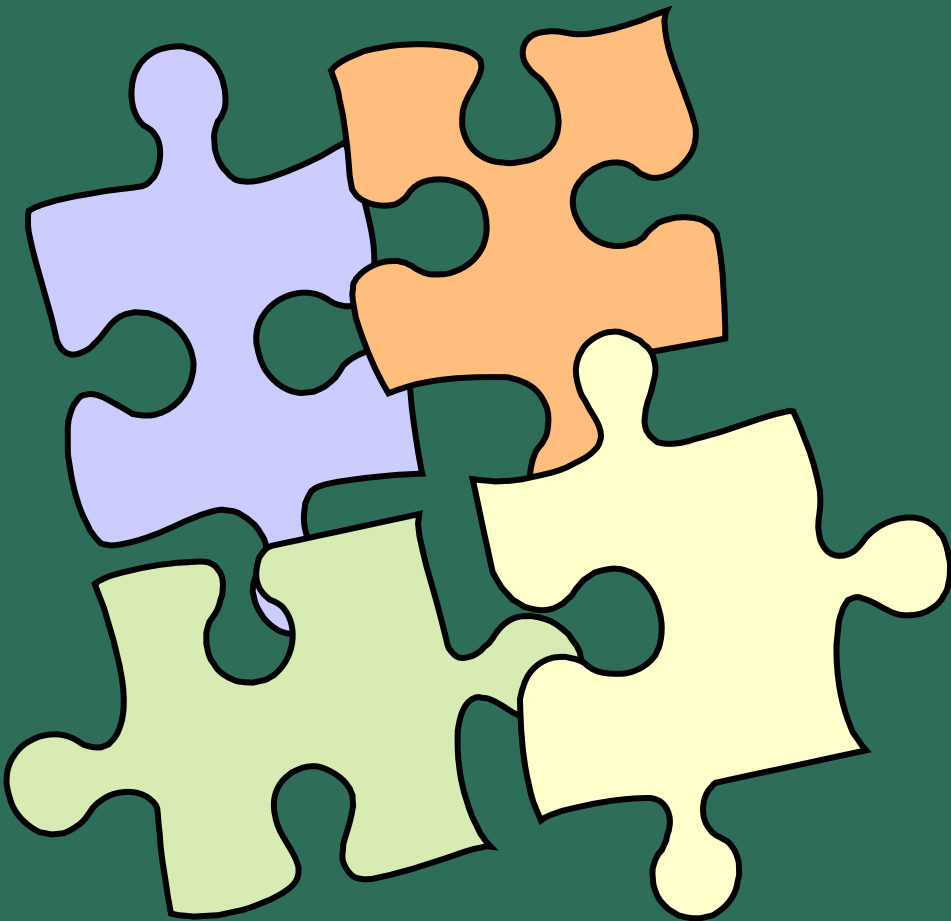
- 13 organisations fund but community much wider

UK-EOF

officially launched

17th July 2008

The current picture- confirmed at workshop

- FRAGMENTED
- UNCOORDINATED
- LACKS STRATEGIC DIRECTION
- NO OVERALL OWNER

Risk of

- Missed opportunities for knowledge
- Poor data sharing
- Funding stopped for key time series data
- Duplication of effort

Refs (ADAS, 2006), (UKMMAS Defra, 2005), GECC (2006)

The current problems

- Up to £500m public money spent per year – but no overview of where

- UK risks being left out of international programmes – due to an inability to take a rational UK view over value for money.

- Key datasets are under threat – and we do not have a way of knowing if these are the lowest priority for funding.

- We are living in a rapidly changing environment and we need to understand these changes in order to adapt and prioritise action and resources.

- **>80% of data not freely available and therefore not reused or shared e.g. for climate work**

UK-EOF Concept
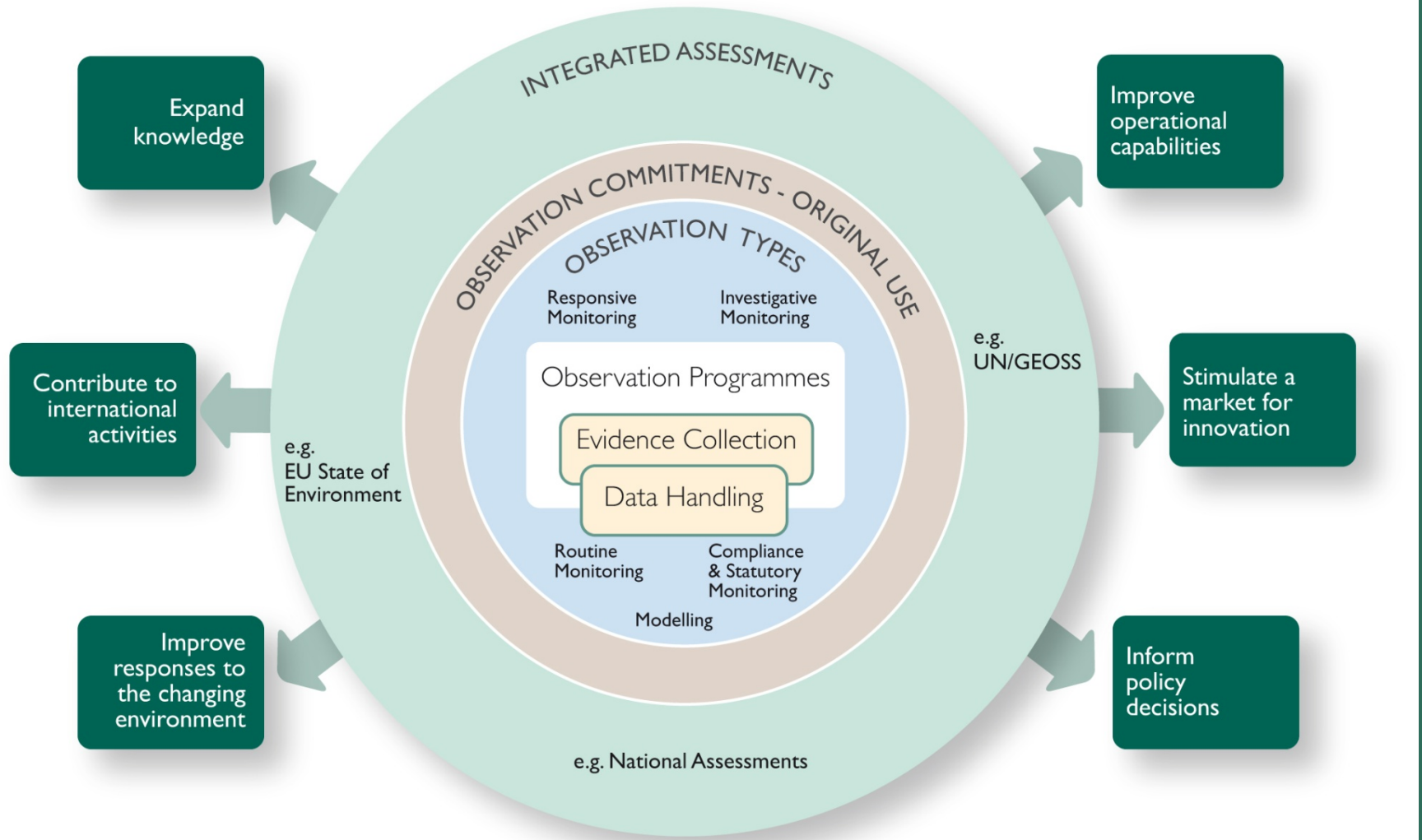
Note: this is schematic only

UK-EOF Outcomes by 2013

- Develop a holistic picture of the overall evidence needs of the UK and the role of observation in providing the information

UK-EOF Outcomes by 2013 cont…

• Share knowledge and information on observation programmes – we will understand who is investing in doing what, where and how.

• Understand the range of assessments that use observation data and the tools for effective knowledge transfer

• Enable funding mechanisms to support the long term information needs of the UK and the role of the UK in a global perspective.

• Build a strong community which is able to share data expertise and evidence efficiently and effectively.

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Importance of Data Management in Observations (estimation)

Collecting Samples:£10,000 – £500,000,000

Analysing Samples: - £1000 – £5,000,000

Data Management: £100 - £500,000

Data Management is the most essential aspect of monitoring but if failed to do correctly may compromise the whole programme- or mean the sampling has to be repeated

The Think Tank - what do we want to achieve today?

- **Discussion 1 -Recognition** that problems exist

- **Discussion 2 -Agreement** on what success looks like

- **Discussion 3 - Steer** on the areas for achievement, **Commitment** and **Advocacy** for change in all the organisations you influence

Contents.. 2

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LEGISLATIVE BACKGROUND

- Measures which require/encourage/allow open access to data/information held by public bodies:
  - Freedom of Information/Environmental Information Regulations
  - Reuse of Public Sector Information Regulations
  - Implicit powers to carry out public task

  Applies to approx 80% of the observations we know we collect

LEGISLATIVE BACKGROUND.. 2

- Measures which require/encourage financial return on data/information held by public bodies:
  - Trading Funds Act 1973 (mandatory on Trading Funds)
  - Wider Markets Initiative (discretionary)

Applies to most of the essential background and survey material for mapping / displaying and referencing the observations

LEGISLATIVE BACKGROUND

- Intellectual Property Rights IPR:
  - Copyright from Copyright Designs and Patents Act 1977
  - Database Right from Copyright and Rights in Databases Regulations 1997
  - Give power to licence use of data

Applies to all data including privately funded – may or may not be exercised

What are the issues? 1

- What's out there and can we use it ?

- "Discovery" – it's hard to know what exists already
  - So useful data isn't accessed
  - Time/money wasted in searching every time
  - Particular problem in cross cutting work

- " Technical" – getting the data in a form my computer can deal with
  - Common standards aren't applied to interfaces, data formats, protocols
  - Staff must have these skills

What are the issues? 2

- Cultural, economic and organisational

- Economic and Policy – we can't afford it/ onerous conditions
  - Tension between drivers for open access and drivers for data holders to make financial return
  - Downstream IPR complicates reuse
  - Lack of clear data policy puts potential users off
  - Perception of problems is a problem itself

- Organisational/cultural

– data management is not respected

- Not core business
- Staff capability not rewarded or nurtured – no incentive
- Policies not enforced

How will Data Initiatives help?

	Type Data	Not covered	**Domain**	Stage	Remit	D	T	E	O
INSPIRE	GI	All else	All	Directive	EU	y	y	x	y
SPIRE	GI+	Scotland	All	Demo	Defra plus	y	y	x	y
SEIS	Regulatory	Research/ non compliance	All	Proposal	EU	y	y	?	?
GEOS	Obs	?	All	Setting standards	Global	y	y	x	y
GMES	Satellite obs and services	Collecting insitu	All	Delivery and scoping	EU	?	?	?	?
MEDIN	all	Products	Marine	Delivery	UK	y	y	x	y
NBN	All	Non biodiveristy	Biological	Established	UK	y	y	x	x
NERC	All	Non NERC	All	Prototype	UK	y	y	x	?

Note: Initial analysis still to be debated.

Conceptual model – addressing data issues in the UK

Achievement →

Ideal world

Existing initiatives
and legislation

Do nothing

Now   2010

Time→

2019
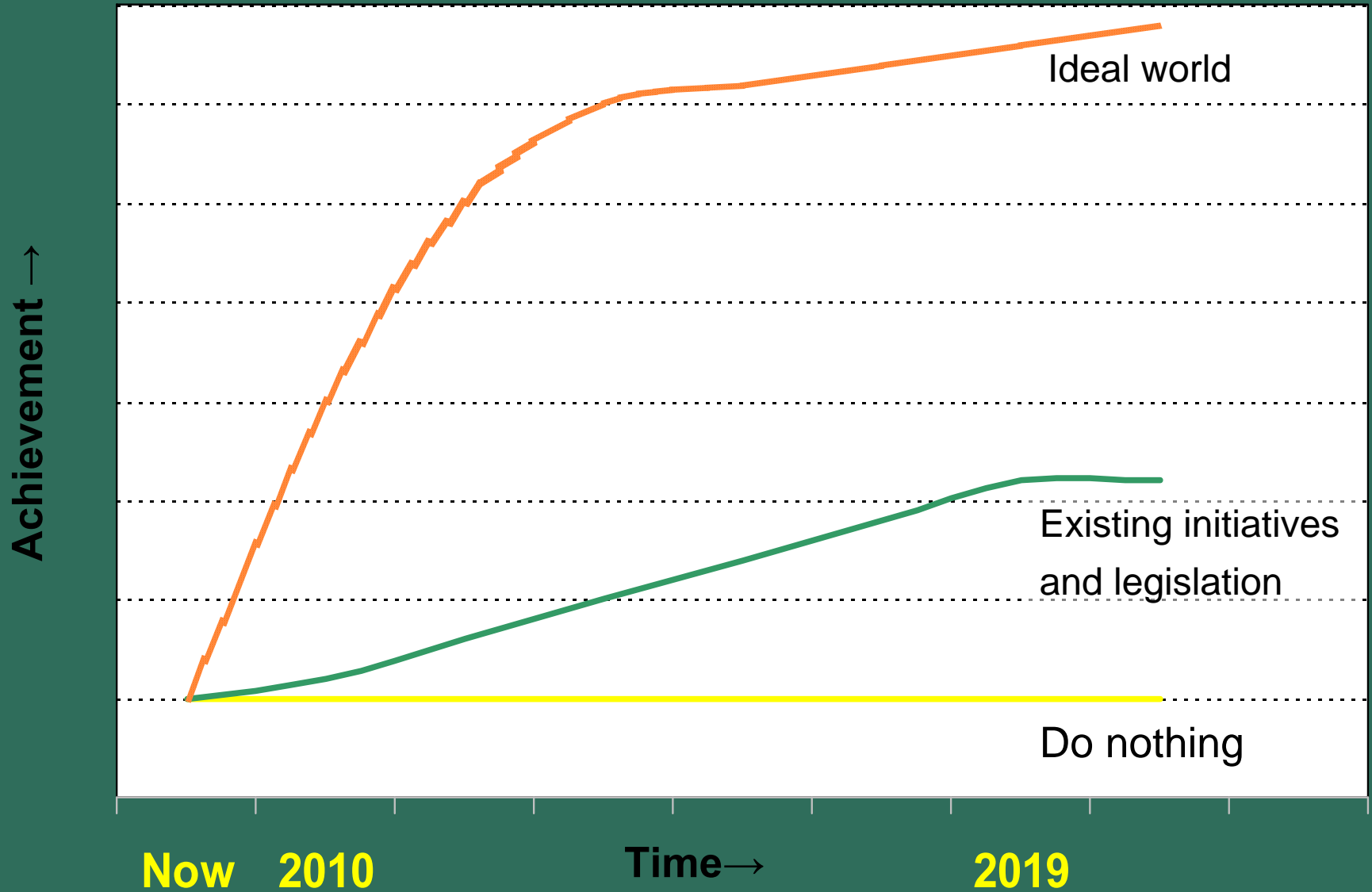
INSPIRE update

Ray Boguslawski - Defra

Why INSPIRE?

➢ In order to deliver environmental policies – *be it administering environmental grants, improving recreational access to the countryside or undertaking environmental impact assessments* - or tackle environmental problems - *be it local flooding, an animal disease outbreak or assessing the impacts of climate change* – there is an increasing need for sharing of and access to information;

➢ Given that everything happens somewhere there is a particular need for information (or data) that can be referenced to location: *such information is known as geographic or spatial information and can be referenced by postcode, grid reference etc*. It is important that this information is of known quality and fit for purpose;

➢ The aim of the INSPIRE Directive is to create a European **Spatial Data Infrastructure** that will improve the **sharing** of spatial information between public authorities and improve **accessibility** to the public. This will allow the EC and Member States to design and deliver **better environmental policies** that will result in improved **environmental outcomes**. INSPIRE will improve the quality of spatial information and enable information from different sources to be more easily combined.
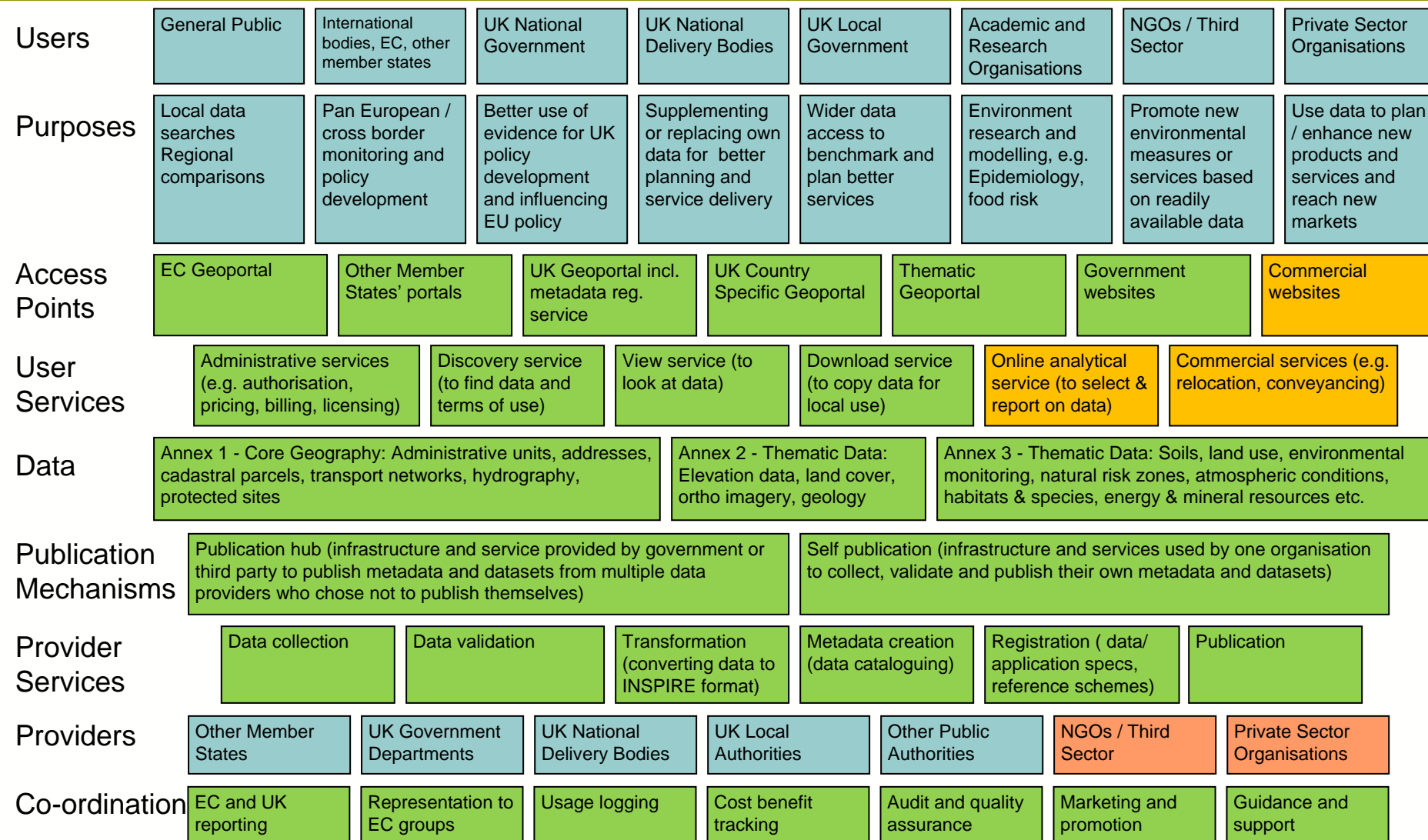
What will INSPIRE involve?

➢ The European spatial data infrastructure will be based on Member States' National Spatial Data Infrastructures. The UK does not have a formal or managed NSDI but the anticipated UK Location Strategy will deliver this and it has been agreed by the GI Panel that implementation of the two initiatives will be taken forward in parallel. It will involve:

- Providing catalogues that allow users to identify what information is available (metadata);
- Ensuring that information from different sources can be integrated (this will require information to adhere to specified common standards that INSPIRE will lay down);
- Provision of online services such as discovery (find out what data exists), view (to display, navigate, zoom in/out, pan, or overlay viewable spatial data sets), download (to obtain the data) and transform (to enable data interoperability);
- Having licensing arrangements that allow information to be shared, accessed and used in accordance with Freedom of Information legislation, the Environmental Information Regulations and the Public Sector Information Regulations;
- Monitoring mechanisms to demonstrate that the information is being made available;
- Co-ordination mechanisms to ensure effective operation of the infrastructure.

In essence, INSPIRE provides a legislative framework that promotes best practice

UK INSPIRE operational framework

Users	General Public	International bodies, EC, other member states	UK National Government	UK National Delivery Bodies	UK Local Government	Academic and Research Organisations	NGOs / Third Sector	Private Sector Organisations
Purposes	Local data searches Regional comparisons	Pan European / cross border monitoring and policy development	Better use of evidence for UK policy development and influencing EU policy	Supplementing or replacing own data for better planning and service delivery	Wider data access to benchmark and plan better services	Environment research and modelling, e.g. Epidemiology, food risk	Promote new environmental measures or services based on readily available data	Use data to plan / enhance new products and services and reach new markets
Access Points	EC Geoportal	Other Member States' portals	UK Geoportal incl. metadata reg. service	UK Country Specific Geoportal	Thematic Geoportal	Government websites	Commercial websites	
User Services		Administrative services (e.g. authorisation, pricing, billing, licensing)	Discovery service (to find data and terms of use)	View service (to look at data)	Download service (to copy data for local use)	Online analytical service (to select & report on data)	Commercial services (e.g. relocation, conveyancing)	
Data		Annex 1 - Core Geography: Administrative units, addresses, cadastral parcels, transport networks, hydrography, protected sites		Annex 2 - Thematic Data: Elevation data, land cover, ortho imagery, geology		Annex 3 - Thematic Data: Soils, land use, environmental monitoring, natural risk zones, atmospheric conditions, habitats & species, energy & mineral resources etc.		
Publication Mechanisms		Publication hub (infrastructure and service provided by government or third party to publish metadata and datasets from multiple data providers who chose not to publish themselves)			Self publication (infrastructure and services used by one organisation to collect, validate and publish their own metadata and datasets)			
Provider Services		Data collection	Data validation	Transformation (converting data to INSPIRE format)	Metadata creation (data cataloguing)	Registration (data/ application specs, reference schemes)	Publication	
Providers		Other Member States	UK Government Departments	UK National Delivery Bodies	UK Local Authorities	Other Public Authorities	NGOs / Third Sector	Private Sector Organisations
Co-ordination	EC and UK reporting	Representation to EC groups	Usage logging	Cost benefit tracking	Audit and quality assurance	Marketing and promotion	Guidance and support	

Key — Users and providers of data: ☐ Known ☐ Potential   INSPIRE components: ☐ Known ☐ Potential

European Shared Environmental Information System (SEIS)

John Custance

Head of Environment Statistics

Defra

Group of 4

- DG Environment
- European Environment Agency
- Eurostat
- Joint Research Centre

Data centres

EEA	Eurostat	JRC
• Air	• Waste	• Forestry
• Climate Change	• Resource Accounting	• Soils
• Nature & Biodiversity	• Integrated Product Policy	
• Water		*Environment and Health
• Land Use		*Chemicals

SEIS – Shared Environmental Information System

- European Commission Communication

- Distributed concept – from 'push' to 'pull'

- Complementing INSPIRE for non-spatial data

- Citizen focused services

- Step by step approach
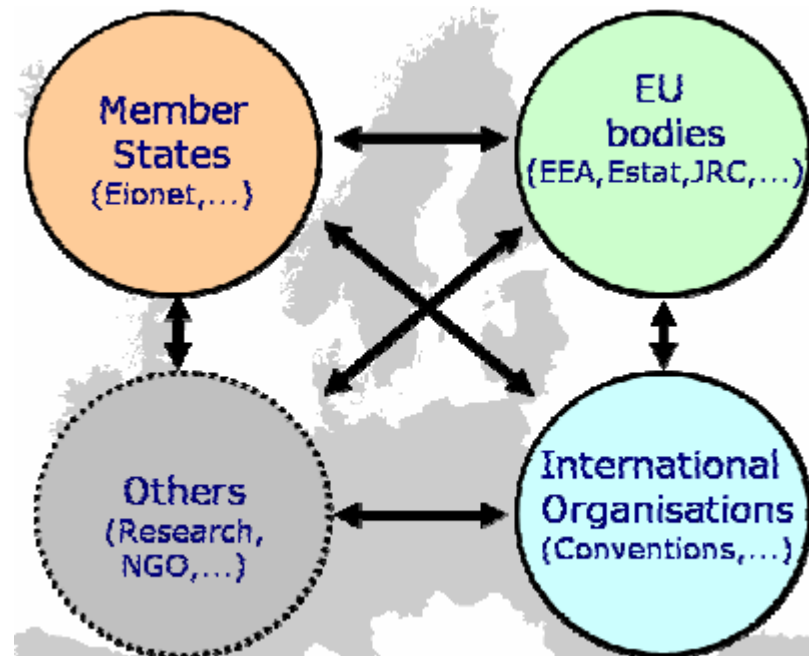
SEIS Principles

- **Information should be:**
  - managed close to source
  - collected once, shared many times
  - available to public authorities
  - accessible to end-users
  - comparable and harmonised
  - available to the public

Context
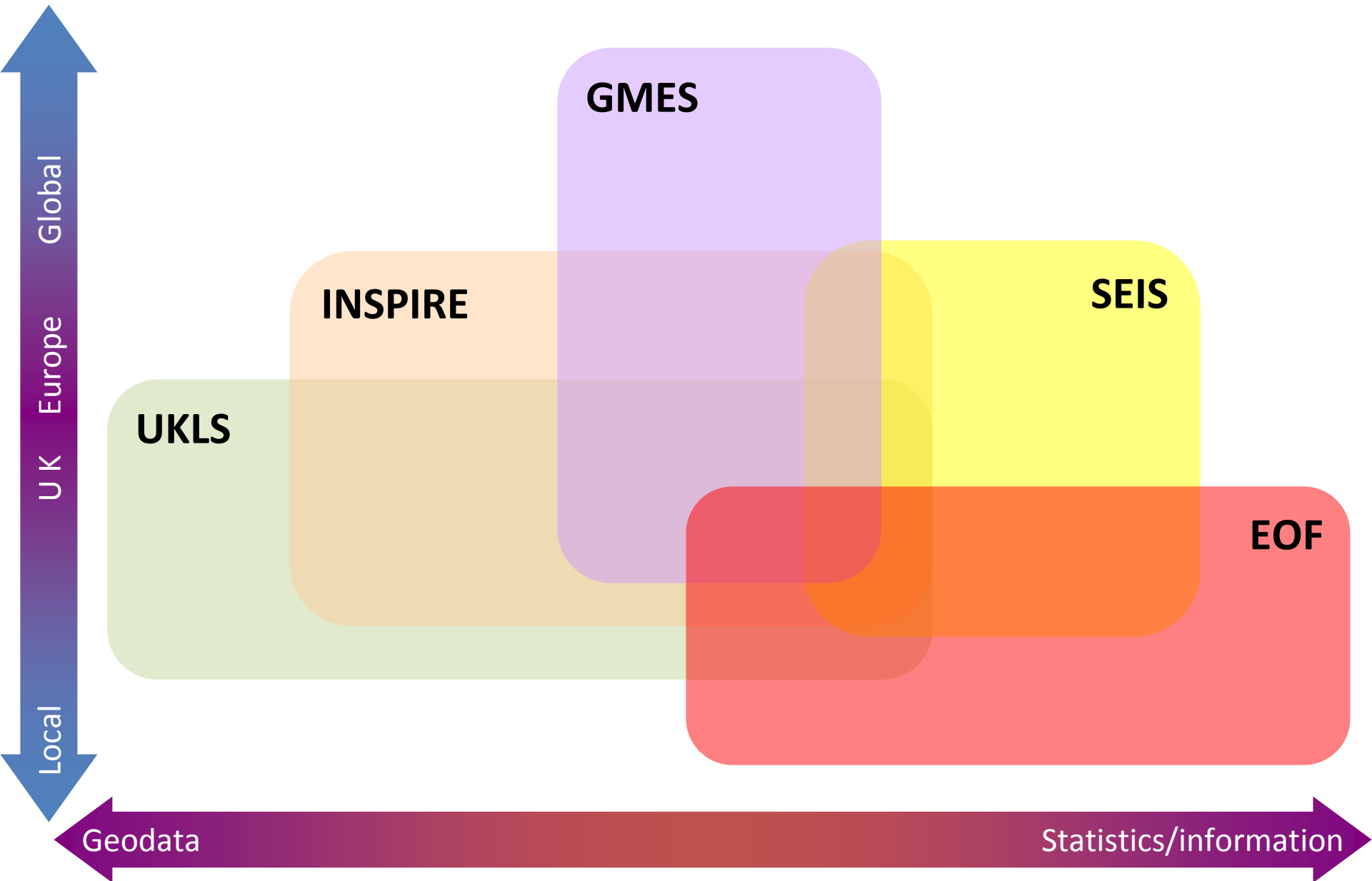
Another view

INSPIRE	GMES	SEIS
Content	Content	Content
Infra structure	Infra structure	Infra structure
Services	Services	Services
Obligation	Obligation	Obligation?
Business	Business	Business

SEIS Components

- **Commission Communication (Feb 2008)**

- **Revised Standardised Reporting Directive**
  - Covering all environmental reporting obligations
  - Make available and keep up to date

- **Harmonised/revised monitoring infrastructures?**
  - JRC benchmarking exercise
  - Where the real better regulation efficiencies are

Discussion 1

- Do you agree with the assumption that :

'despite the plethora of initiatives there are still major barriers to sharing data efficiently and effectively'

Contents... Part 3

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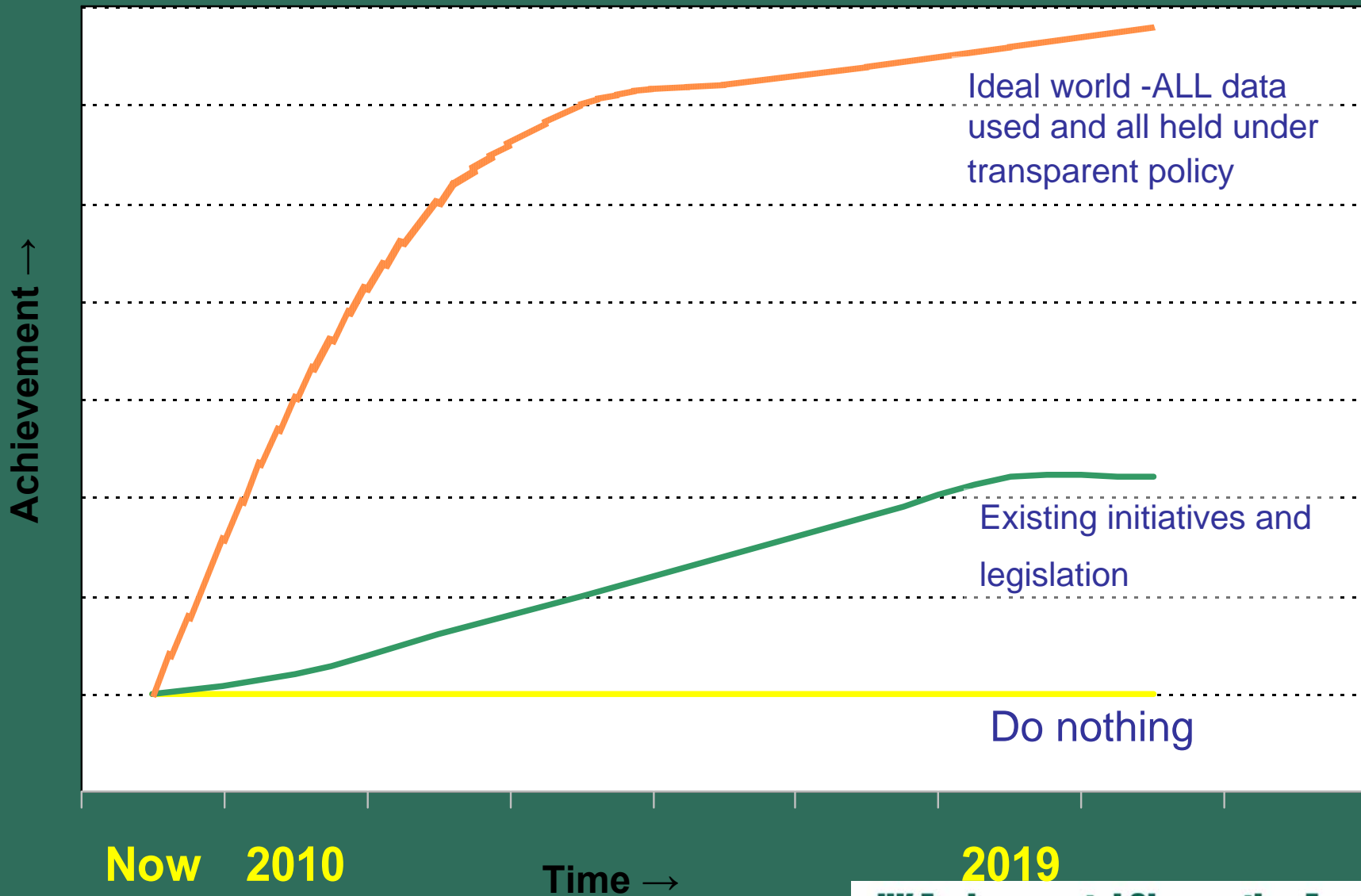- Discussion 3 - What actions can we take?

A proposed vision for success

People/organisations in UK plc actually share and reuse environmental observation data to inform policy decisions, expand knowledge, improve their responses to a changing environment, contribute to international activities and stimulate markets for innovation

Criteria for success

All data collectors adhere to best practice (as opposed to minimum compliance with legislation)

Each organisation has a transparent and well publicised data policy which balances open access with economic and societal pressures

What is the goal?

Achievement →

Ideal world -ALL data used and all held under transparent policy

Existing initiatives and legislation

Do nothing

Now   2010

Time →

2019

UK Environmental Observation Framework

Discussion 2
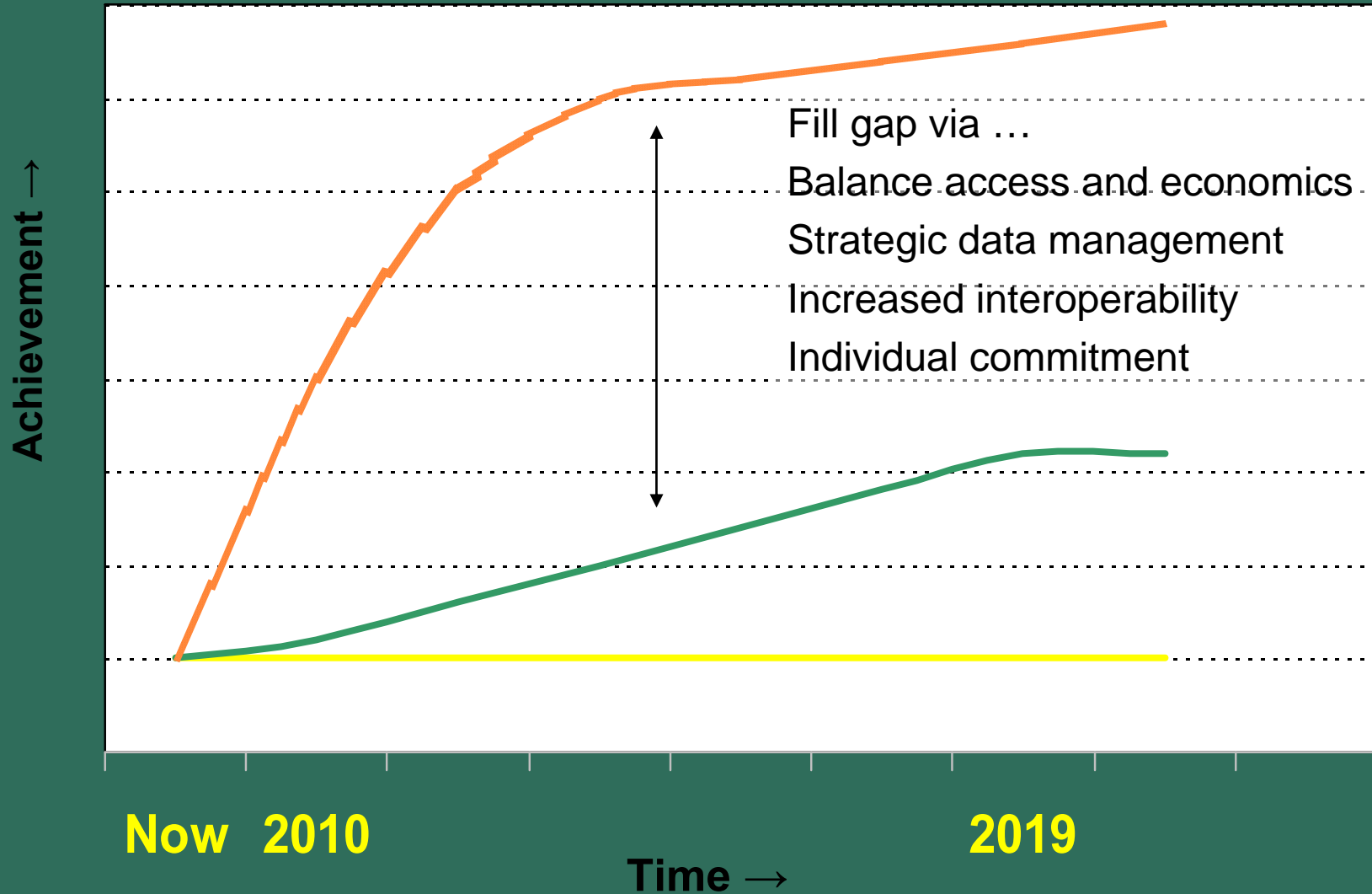
- Do you agree with vision?

- What should be the scope and remit of the vision?

i. should we seek to construct an "ideal" data policy

ii. should the scope of this work cover all environmental data or be restricted to environmental observation data (including baseline surveys).

iii. should we aim for minimum compliance by 2019 as required under INSPIRE – or should we be more proactive - such as 90% of data should be held under a transparent and effective data policy by 2013?

Contents....part 4

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How do we succeed? – who does what & when?

Achievement →

Fill gap via …
Balance access and economics
Strategic data management
Increased interoperability
Individual commitment

Now 2010

2019

Time →

UK Environmental Observation Framework

Who?

- At Government level - leadership, awareness, commitment, resources and decisions.

- Organisational level
  - adopt and enforce a strategic approach to data management as part of good governance
  - publish policy and shop window of data held under what conditions

- Technical level – use common standards,protocols, advances in technology

- Individual level – accept managing and sharing data is a valid scientific and corporate activity

ALL vital to success

UK Environmental Observation Framework

Possible actions

- Better Discovery: e.g.
  - organisations produce good metadata
  - Environmental Observation Catalogue
- Better technical framework: e.g.
  - Support and adopt INSPIRE / SEIS/ GEOSS etc
  - Extend lessons learned in one sector to other types of data/ domains etc

Possible Actions

- Better policy and economics:
    - Create ideal policy
    - Add a data clause to all contracts
    - Each organisation decides balance between open access and financial drivers
    - Enforce policies with sanctions if necessary
    - Be transparent on conditions

Possible Actions

- Improve data culture in organisations:
    - Create and adopt a citation scheme to value datasets which have been reused.
    - Recognise data management is not just the responsibility of low paid technical staff and value skills in Data management.
    - Core skills could become an integral part of postgraduate degrees
    - Make data management part of initial thinking on each project/ contract and not an add on at end.

Discussion 3

- What actions will most effectively help reduce the gap from current situation to ideal?

- Who should be tasked to undertake this work?

The Qs in the paper are:
- Should we seek clarification on where Government / Treasury intends the Trading Fund/Wider Markets Initiative model to apply, and where the "public good" model is preferred.
- should we seek to challenge and/or help enforce existing policies and best practice
- should we be proactive in the international and European areas, setting data standards such that the UK is seen as leading the way?
- should we assign champions for this work at senior level and establish reporting process to show progress towards any agreed vision

You may well have other ideas?

Conclusion

This Think Tank aimed to …..

- Discuss data issues
- Debate a vision of what success looks like
- Advise on scope and steps to achieve it

Thank you for your time