

Assessing the Economic value of 3D Geo-information

Andrew Coote
ConsultingWhere Ltd
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Agenda

- Project Introduction
- Key messages
- Economic Concepts
- Value Chain Analysis

Project Introduction

- This forms part of a continued widening of the EuroSDR research agenda to cover business themes in addition to technical topics
- Making an economic appraisal of value of 3D geo-information *per se* is not possible, it is first necessary to identify the **use cases** to which the information contributes.
- The first step for each use case is to understand the **value chain** - the “actors”, the data they produce and through what processes it becomes **actionable information**.
- Quantification of impacts (costs and benefits) is then possible focusing on the **most significant value adding** processes.

Key Messages

- **Quantification** is becoming indispensable to **securing investment** in geospatial projects - the qualitative statements of benefits alone are no longer sufficient justification.
- Decisions on investment are almost exclusively made by **senior executives who probably know very little about our domain**
- We are not alone in seeking solutions to quantification - **transport engineers, environmentalists have been here before us** and there are important lessons we can learn from them
- There is an increasing body of evidence to support “**benefits transfer**” using studies in other geographies
- **Storytelling** is the essential partner to economic analysis

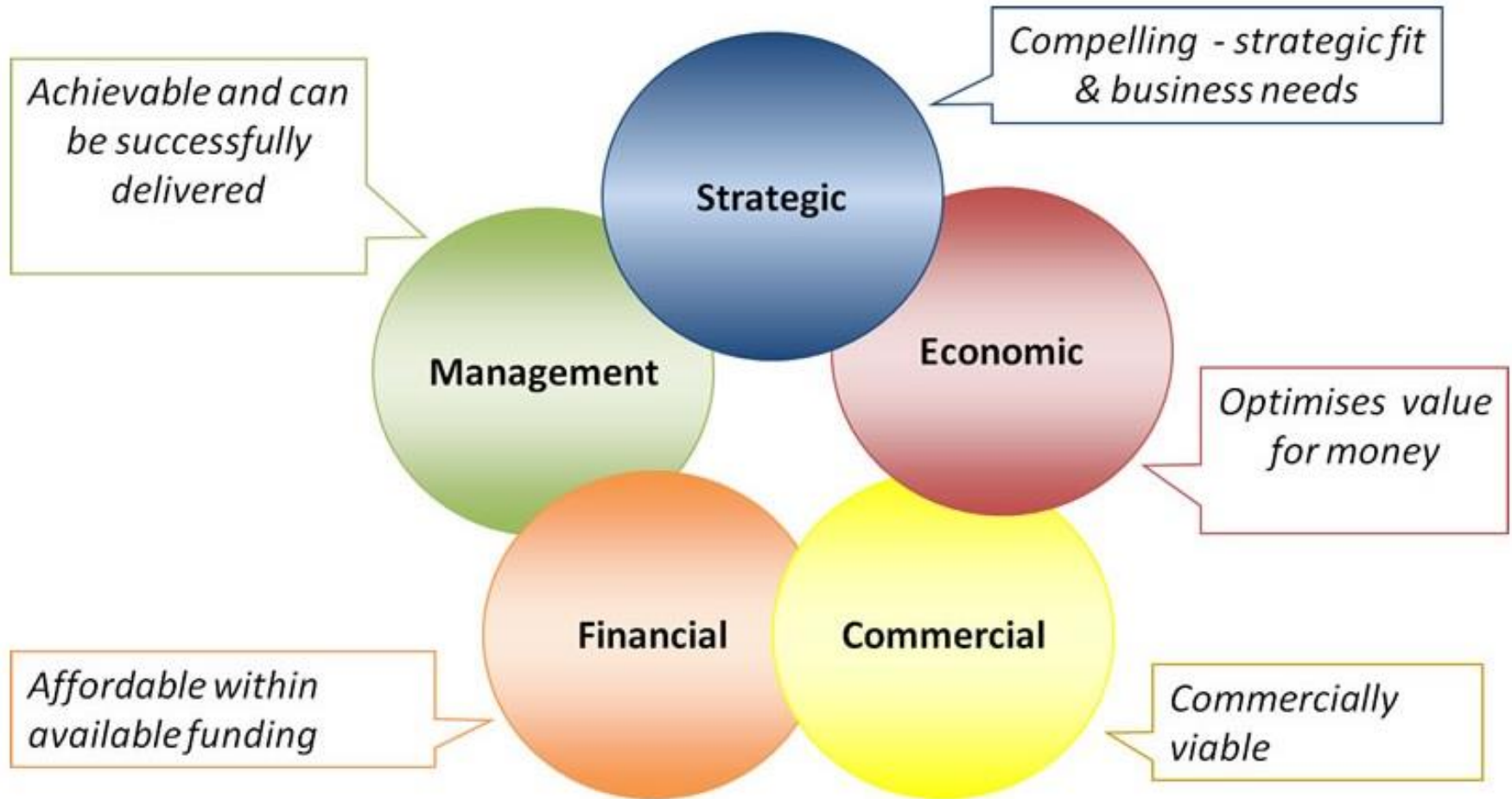
Economics can only inform the politics in decision making

Economic Concepts

Why undertake Economic Appraisal?

- Economics can be defined as the application of reason to choice; so economics seeks to develop a **logical and rigorous framework** with which to approach choices.
- We want to make **better choices** than we might make otherwise.
- It allows us to **compare objectively different investments** e.g. flood protection in Paris or Hip replacement surgery in Lyon.
- Satisfies requirement to engage with the **all stakeholders** in making decisions
- **Scarcity of financial resources** is the usual external constraint.

Components of the business case: five case model



Valuing Information

- Unless information is **applied** it has little or no value.
- We should not **confuse the value of information with the value of benefits from policies and/or systems** that use it in decision making
- There is almost always alternative evidence to support decisions (economists call this the “**counterfactual**”):
 - No change, continue as now (*status quo*)
 - Other data sources (increasing in a world of data abundance)
- It follows that an information source is only worth the **difference in value between it and the next best alternative**

Non-market Value

Non-market or “intangible” benefits can be quantified:

- Valuing time - UK Department for Transport (DfT) research
 - Difference between “own time” and “employer’s time”
 - Work time saved £29.65 per hour
 - Leisure time saved £6.39 per hour
- Valuing prevention of fatality or injury¹
 - Reduction in risk of death on roads:
 - €1.9million per fatal casualty prevented (UK Transport Ministry)
 - Based on Willingness to pay surveys plus gross lost output, medical and ambulance²

¹<http://www.dft.gov.uk/webtag/documents/archive/1208/unit3.4.1.pdf>

² Social Costs of Road Crashes and injuries

<http://www.transport.govt.nz/research/roadcrashstatistics/thesocialcostofroadcrashesandinjuries>

Value Chain Analysis

What is a Value Chain?

- A value chain describes the **flow of interactions between organisations** and how they contribute to the provision of services used by businesses and consumers.
- It describes **how and where value is added** at different stages in the supply chain, beginning with providers of raw materials through to distributors of the final product.

Value Chain Deliverables

- Value Chain Diagrams (Maps)
- Benefits Schedule

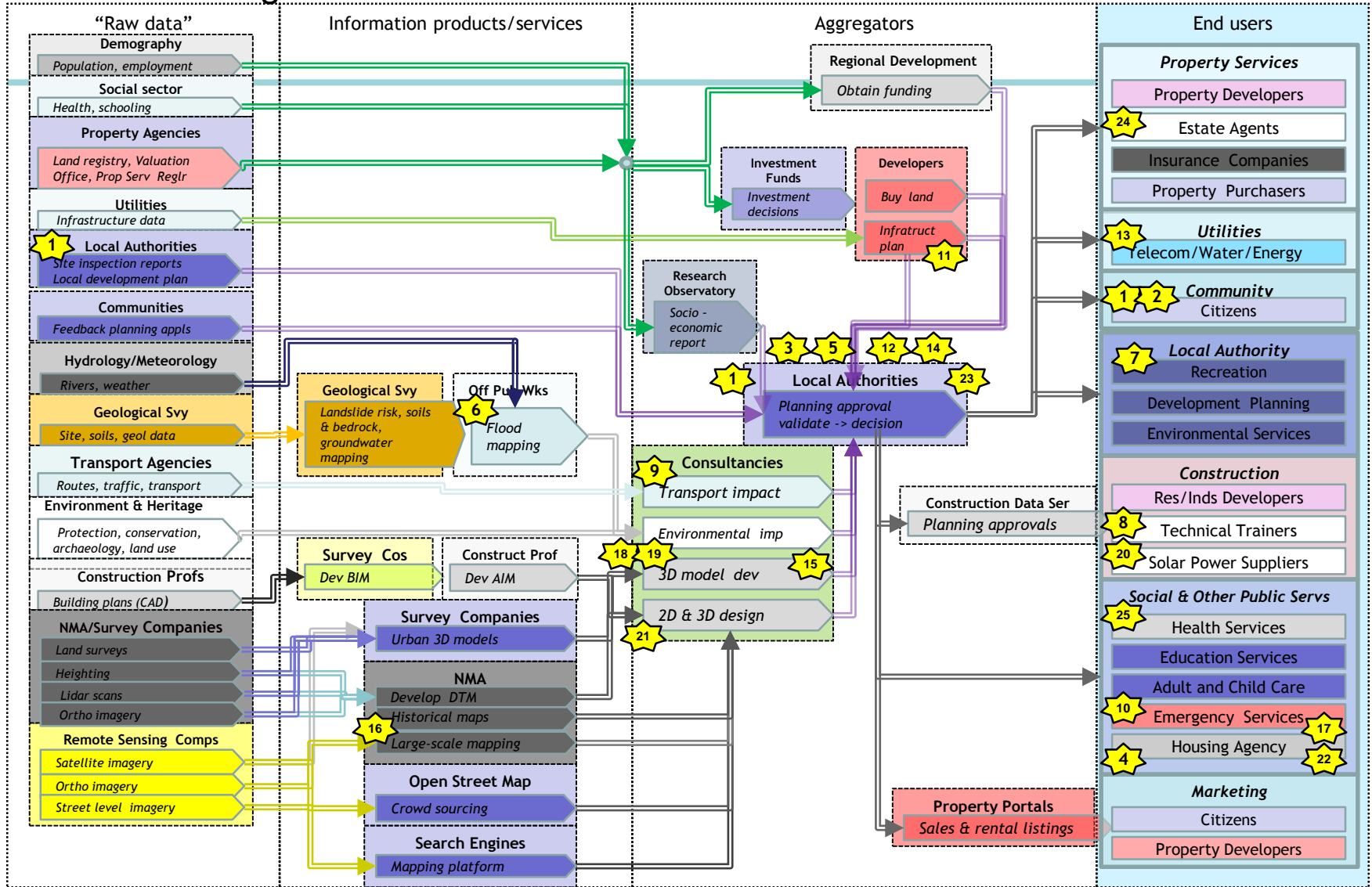
- Presentations, References for further study
- Glossary

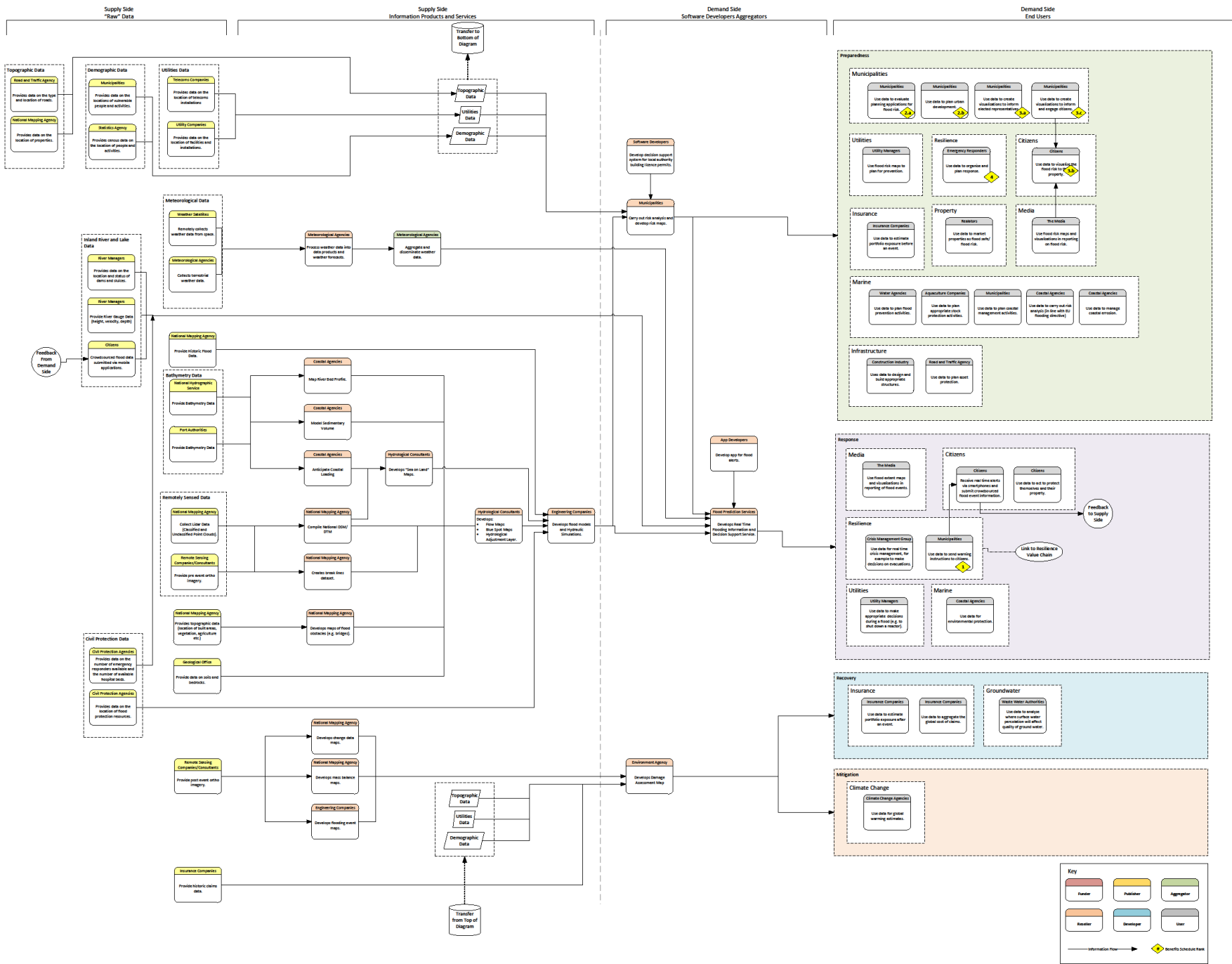
- Executive Summary (combined deliverables)

All available on BaseCamp

- wider access [\[To Be Confirmed\]](#)

Urban Planning - Value Chain





Actor	Process	Benefit	Score
Emergency Services	Flood early warning systems allows for emergency services and local authorities to take short term flood mitigation actions to save lives and property.	Increased public safety & avoid loss of life and damage to property.	17
Municipalities (agencies involved in development planning)	Improved flood risk map accuracy improves confidence in the legitimacy of flood risk assessments. Improved confidence increases risk awareness for politicians, citizens and local authorities which leads to more effective local strategic planning (10-20 years ahead) to mitigate future flood risk. Wise development in flood prone regions avoids loss of life and damage to property.	Increased public safety & avoid loss of life and damage to property. Reduced loss of business and interruption to services. Preservation of the natural function of floodplains.	8
Municipalities (agencies involved in development)	Improved tools for risk analysis in the strategic planning of construction are quicker to use and easier to justify this leads to savings in administrative costs (e.g. in dealing with appeals) and resources.	Administrative cost savings.	8
Emergency services	Putting the assets for disaster relief in the right place. More efficient allocation in planning leads to more effective response.	Improved Resource Deployment Quicker Response Times	4
Insurance Companies	Accurate insurance premiums for high and low risk areas. Accurate elevation data is required for individual property insurance risk assessment and calculating risk based premiums.	More accurate risk analysis increases insurance provider confidence when setting premiums allowing for more competitive premiums for some customers.	3
Citizens/Businesses	Citizen/Business awareness of flood risk is improved by the availability and communication of accurate flood risk maps. Communication is particularly effective is 3D visualisations are used. Making real the flood risk a citizen faces allows them to plan for future flood events.	Increased public safety & avoid loss of life and damage to property.	3
Utilities	Improved flood risk mapping allows for better decisions can be made about the siting and protection afforded to vital infrastructure. In addition in the event of a crisis better decisions can be made about what contingency measures to take. For example whether or not to shut down a power station.	Reduced interruption to services. Avoid damage to property.	2

Contact Information: Andrew Coote

Mobile: +44 7860884119

Email: andrew.coote@consultingwhere.com

Skype: andrew.coote Chipperfield, UK

Twitter: @acoote

Website: www.consultingwhere.com