

Workshop 2 Preliminary findings: use of data and critical interdependencies



Review of a workshop held on 2 July 2015, which examined the use of data to identify and manage critical interdependencies

Workshop overview

One of the major challenges in understanding interdependencies among critical national infrastructures is the availability of data to inform such analysis. The purpose of the workshop was to understand the different aspects of data use for identifying and managing critical interdependencies. The workshop represented an opportunity for participants to share their knowledge on existing processes and practices for assessing interdependencies, the various challenges in creating useful data, and the value of data integration towards better business practices.

Objectives

- Shared knowledge of data challenges in understanding interdependencies, and ways to move forward.
- Insights into some common issues across sectors:
 - understanding of data management and its value
 - assessment of the entire data gathering process
 - barriers towards gathering data that is useful
 - moving towards better data management.
- Creation of a knowledge-base of like-minded people across sectoral or organisational set-ups who are involved with these issues at a strategic or operational level.

Conclusions

- BIM creates a comprehensive GIS-base context to combine systematic failure effects. It also enables evidence-based decision making, eg value protected by flooding measures

implemented (compared to those not implemented) to defend/explain decisions made after events occur.

- Data exists, but should be made available for use. The potential of open data is great.
- Data security and sensitive criticality information prevents sharing and reduces opportunities to integrate innovation addressing resilience challenges. The data available tends to be non-interoperable and, at the most, companies may be happy to share location data, but not criticality. Companies need to look into how this can be done safely (ie filtering/limiting availability – ‘a very honest staging platform’ is required). Engineering institutions are advocating this more often, so it is going to be necessary if SMART cities are to be developed. In addition, there is a cost associated to cleaning data for sharing, and companies need to be assured of the cost/benefit ratio.
- Besides the issues arising from consolidating data, there are also different ways to evaluate resilience. Some see it in terms of speed of recovery, others as resistance to disruption. Data is often project/asset based rather than service based so delivered in the wrong context. These differing frameworks for data acquisition and application affect data interoperability.
- Completeness of data is affected by a widespread tendency for patchy data collected within a short-term view.
- There is a growing trend to adopt or develop technology for data collection, eg multi-sensor technology on TRV trains. There

are issues of compatibility for the multiple types of software being developed, and often multiple systems are run in parallel with incompatible data. The priority should be for software to be developed with a focus on multiple end users. This happens not only between sectors or organisations, but also within larger organisations.

- There is often too much data, which makes it difficult to draw out useful information. Consultants are developing algorithms to help extract information from the data recorded (aiming at knowing more about the systems, understanding them better, and using existing data more cleverly). In many organisations, there are processes to capture and monitor data, but not necessarily tools to extract information and knowledge from it.
- A large amount of data is already freely available, but can be disparate and of uneven quality. Data affects performance (better data = better performance), but only if data is trustworthy, dependent on whom the data is prepared for. Data widely available prepared for regulators may be different to data suitable for being used operationally.
- Policy-makers in government often think of interdependencies in terms of risks and opportunities, but many do not have processes in place to assess it. Local emergency planning does consider interdependencies, but there are few processes for considering the opportunities arising from interdependencies as a basis for investment at regional or national levels. They know it is there, but cannot plan or categorise

it. They are mostly interested in economic data associated to interdependencies to assess value for money and costs–benefits ratio to guide investment.

- Examples of opportunities arising from interdependencies include the use or recycling of old assets by another sector. The roll-out of broadband cables can reuse some of the old Victorian sewage routes. Sharing of assets by different sectors may compound disruption, ie if one sector fails other associated sector(s) may be disrupted.
- In terms of governance, there are currently no mechanisms to

resolve stakeholder tensions. Industry does not always react consistently to risk (likely to be dynamic and link to factors such as balance sheet or share price rather than users/regulator response), and such responses are difficult to model/quantify. Fines can be orders of magnitude smaller than the cost of disruption caused, which do not incentivise appropriate behaviour. Should consumers have a say (service wanted/needed/urgency/importance)?

- Some assets are 100 to 150 years old, so there is no data on how they were built,

exactly where it is or the condition it is in. For some assets it is unknown who owns the asset, so it is not being maintained (walls, earth structures, foot bridges are all assets without chargeable services). Sometimes there is a limited history of data, so representativeness (particularly for failures or less common events) is also limited. Where old data is available, it has to be decided whether it is sufficiently fit for purpose (ie continue to collect the same data to have a consistent set or changes to be more useful in the future).

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