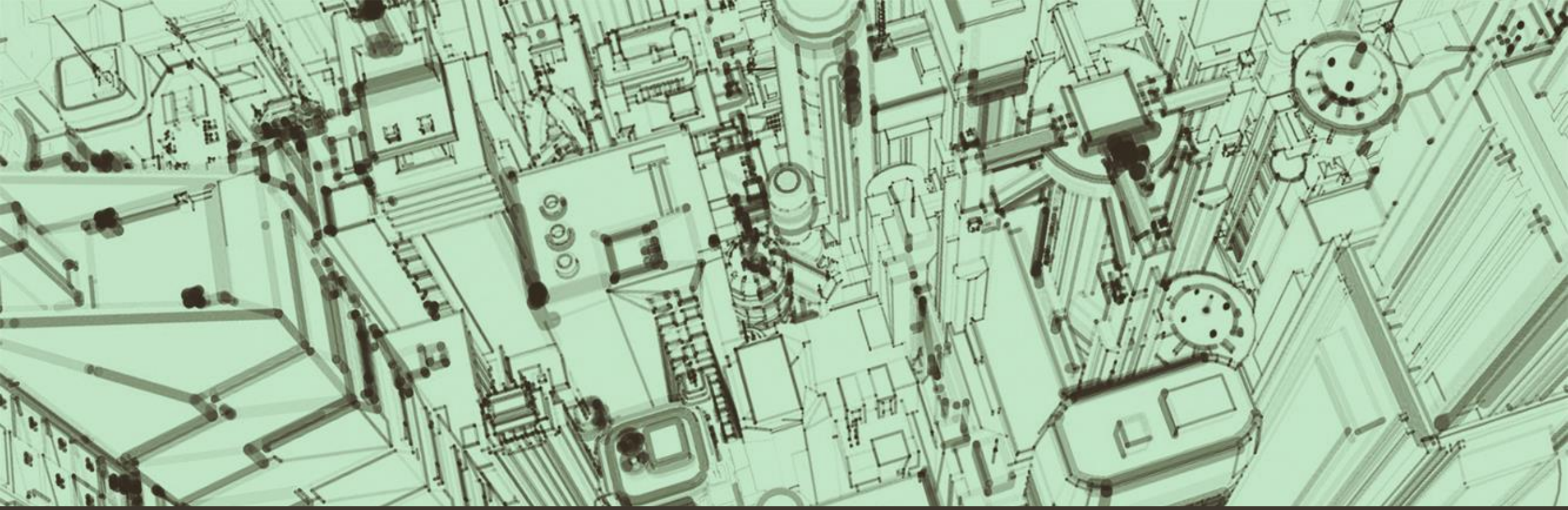


Data, resilience, infrastructure

Bridget Rosewell

How it used to be done?

- Over-engineering by eg Bazalgette
- Small continuous teams of men who knew their patch
- Tolerance of things going wrong
- Developing complacency?

Consequences

- Infrastructure thought of as having an infinite life
  - At current rates it will take several hundred years to replace all water pipes
- A loss of knowledge as data systems have changed
  - No way to incorporate soft information – brain dumps – as data became stored in machines
- Fragmented systems that couldn't or wouldn't talk to each other
  - Systems built around previous human based ways of managing information and jealous guarding of expertise, understandable but not helpful
- Late recognition of these disconnects
  - BIM systems only now implementable, recent recognition of the potential of 'digital twins'

Digital twins?

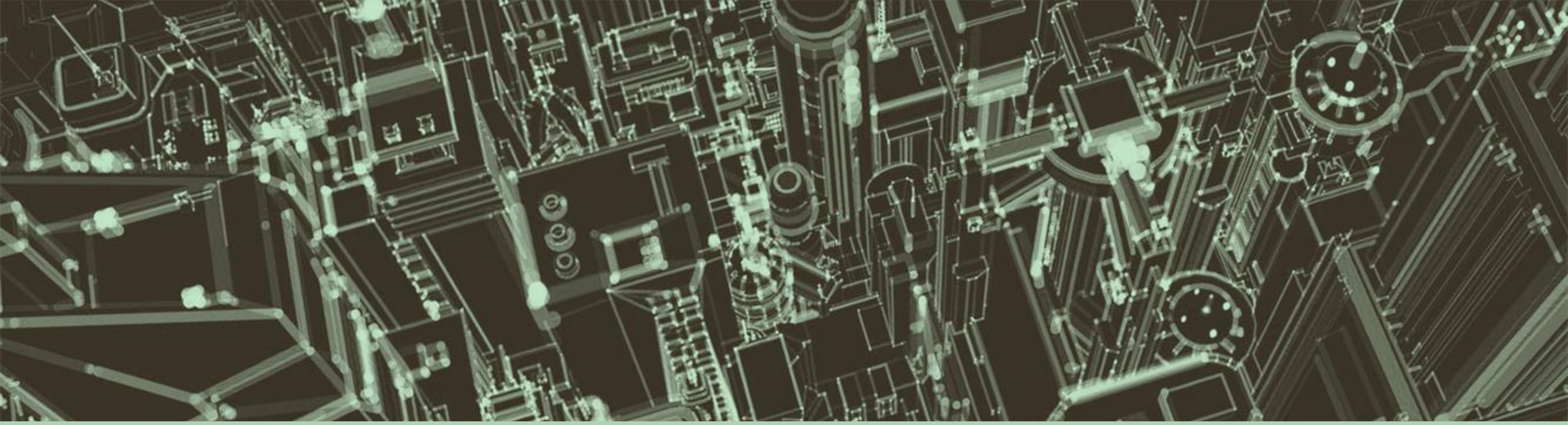
- Are only as good as the data that they incorporate
  - Compiling accurate data and maintaining is more difficult than people think
- Must identify the linkages and feedbacks between different data domains
  - Modelling can mislead as easily as it informs
- Risk being a new black box that no-one understands
  - And that is thought to fulfil purposes it cannot
- In the real world even identical twins have different life trajectories!
- DAFNI exists to help manage these challenges and identify tools that are fit for purpose

More and Less

- A small group can understand and learn its own part of the picture but won't see the rest of the elephant
- Large data sets are increasingly available but what do they tell us, for example about underground aging assets?
- Information needs to lead to insight, and be linked to creative decision making.
- In Northumbrian Water we are developing a 'tipping point' tool to help identify when intervention might be needed before failure. Risks going in too early as well as too late
- In Flood Re, looking at plans to reduce flood risk – how will nature based solutions fare when we haven't examples to look at?
- We need to leap from the 19th to the 21st century

DAFNI

- Large scale capability
  - Manage large scale data
- Data combinations
  - Remember the shuttle disaster where measurement systems differed
- Software tools
  - Query and report
- Visualisation help
  - Does this make sense??
- Consideration of wider factors
  - Well being etc



Questions