



AI-based software instantly predict the impact of housing growth on network drainage

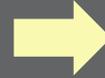
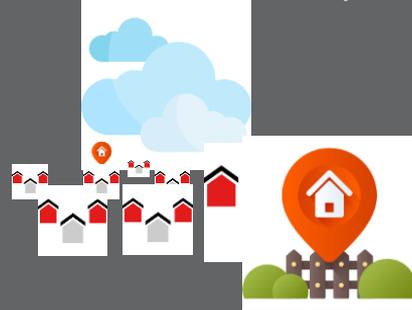
Presenters: John Barnes & Hedy Watt

26th March 2019

The Current UK Housing Situation

Government to build up to 300k houses per year

From **Apr 2018**, network improvements will be funded by developers through the infrastructure charge, this is a flat rate, **regulated charge** levied on all new connections over the five-year AMP period



Policy makers see water connection as a **bottleneck** to planning approval



Water companies must:

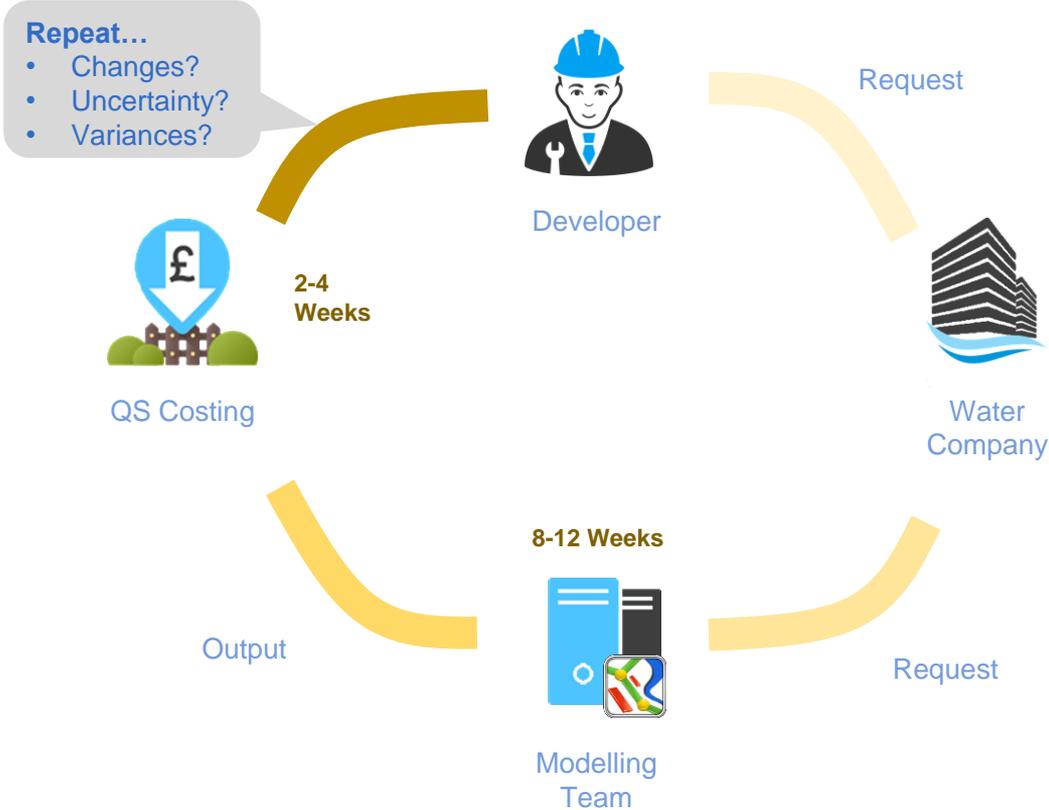


Mitigate the impact of growth through network upgrades



Invest the money they receive effectively

Large Site Development Planning Process



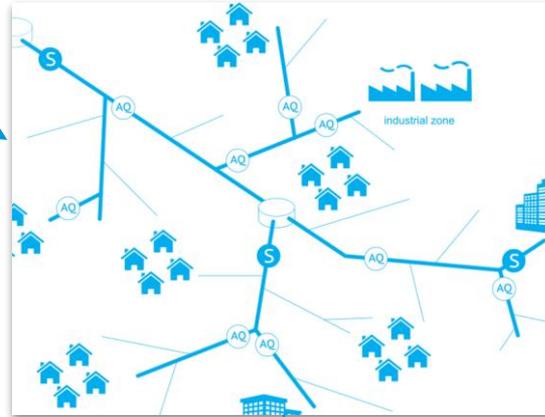
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Challenges facing the UK Water Industry

Increasing Population

Ageing Infrastructure

Climate Change

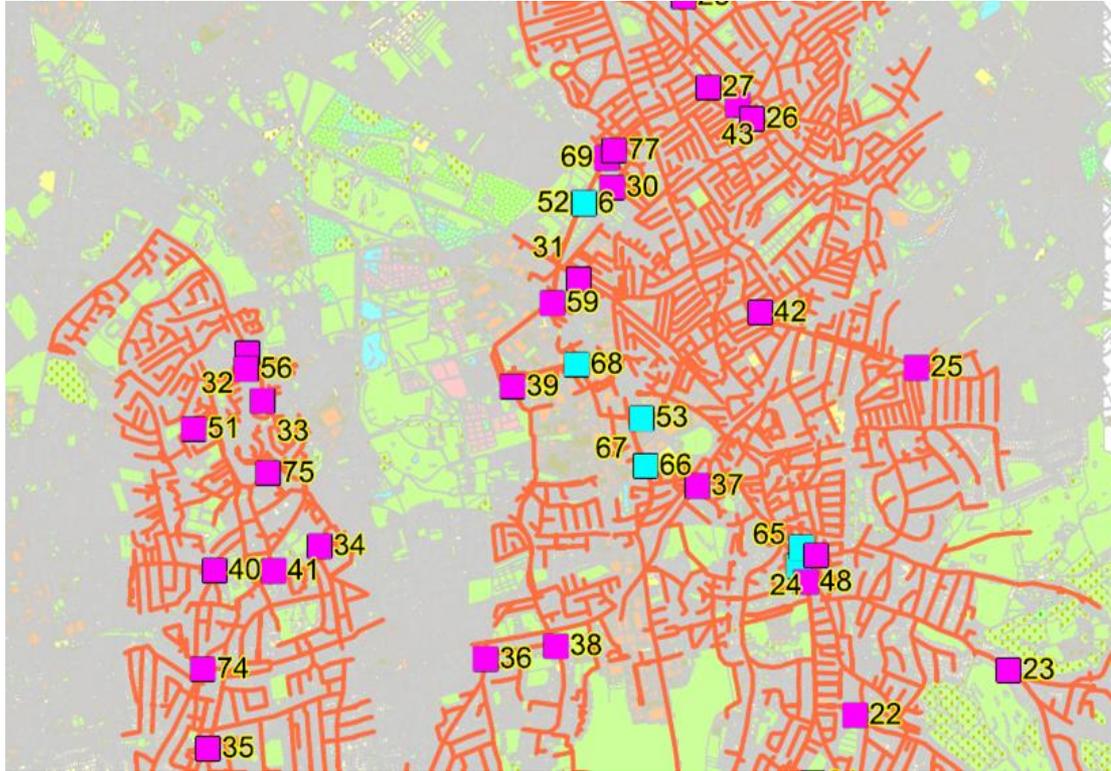


Supply Insecurity

Flooding

Pollution

Water Company Catchment Investment Planning



20-30 year water company CAP based on speculative development info from Local Authority

Subject to uncertainty and constant change

Difficult to strategically plan without modelling many scenarios

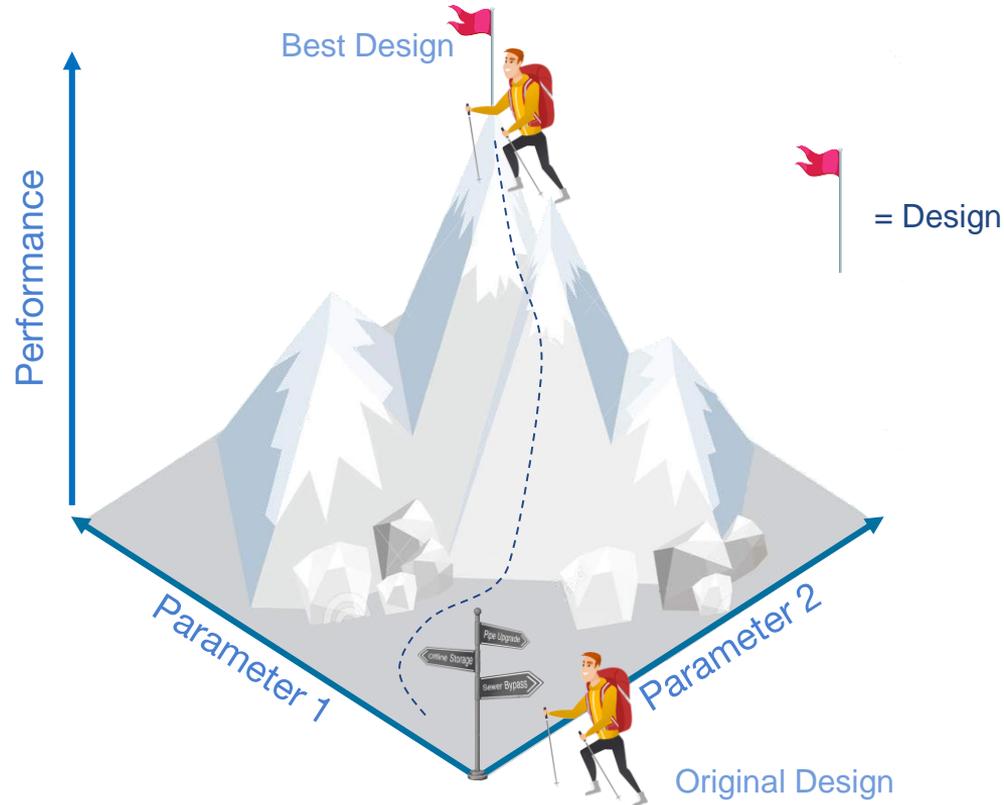
If only there was a way to...

- Instantly predict the impact of a development/growth scenario
- Efficiently devise and cost mitigation measures
- Have a long-term investment plan that can readily adapt to changing circumstances
- Make short-term operational decisions quickly
- Free up modellers' time to create more accurate models and drive innovation

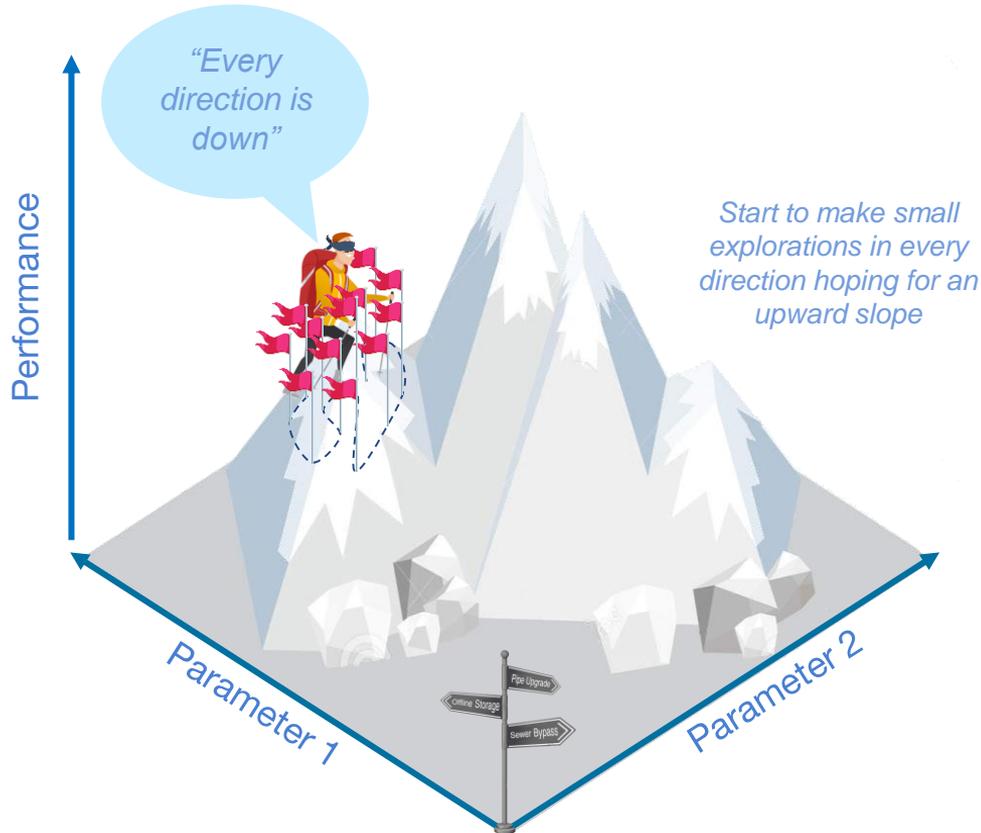
Demonstration



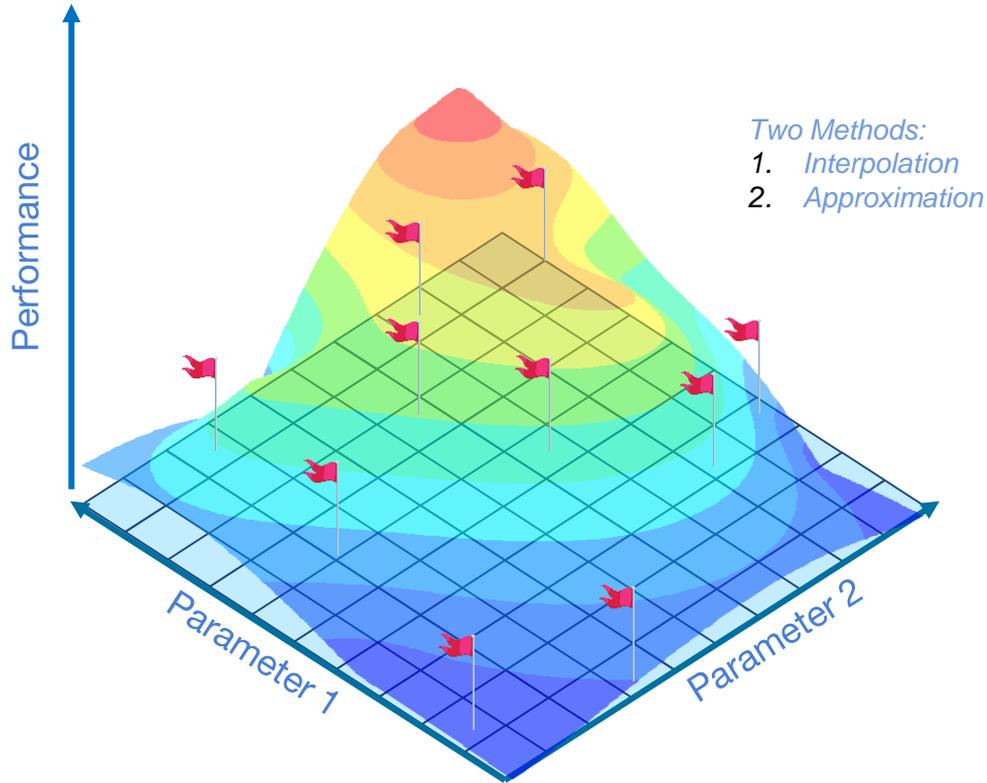
How does it Work?



What do you do when you get stuck?

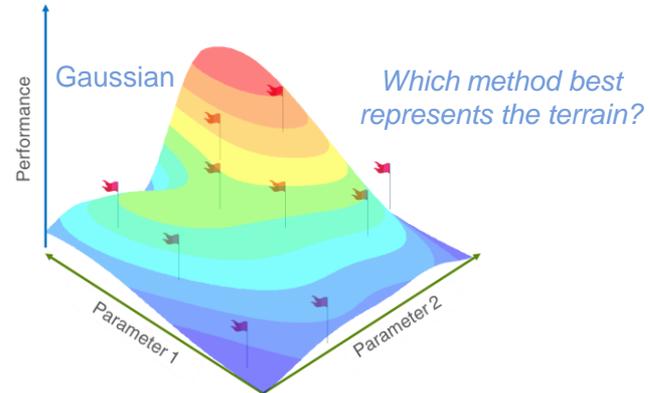
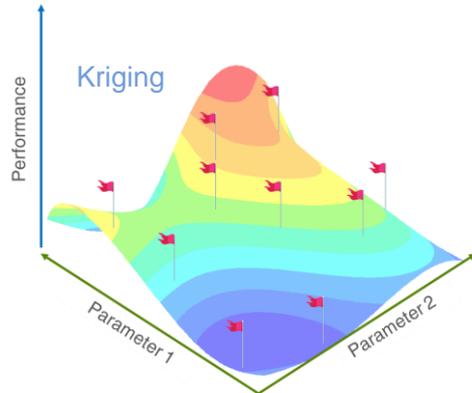
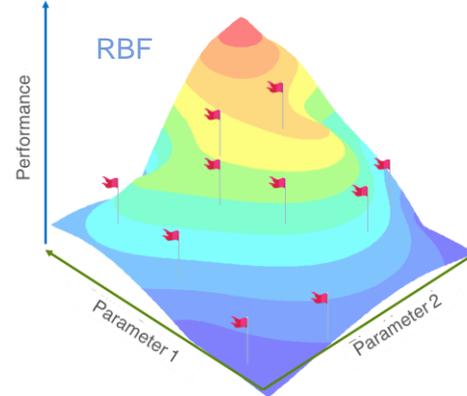
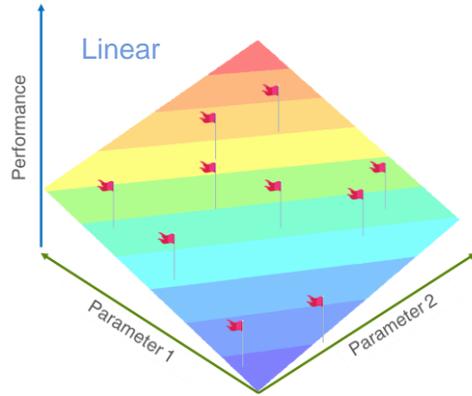


Train a Meta-Model upon the Design Points?

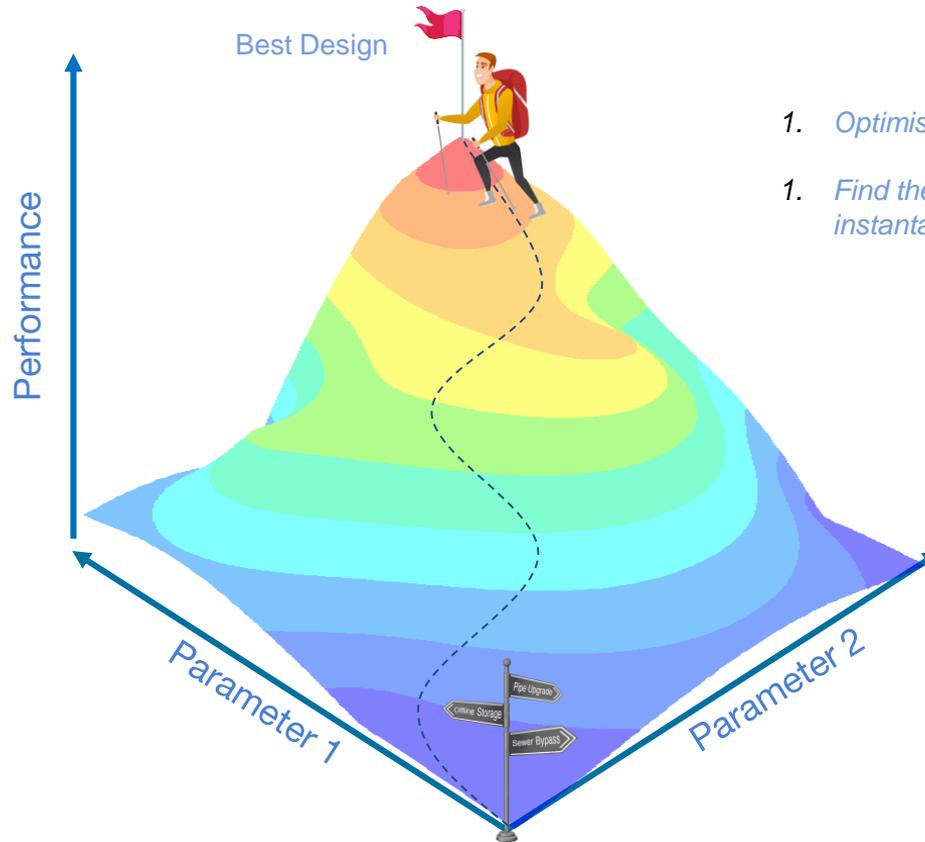


Systematic

Multiple Methods can be Trained

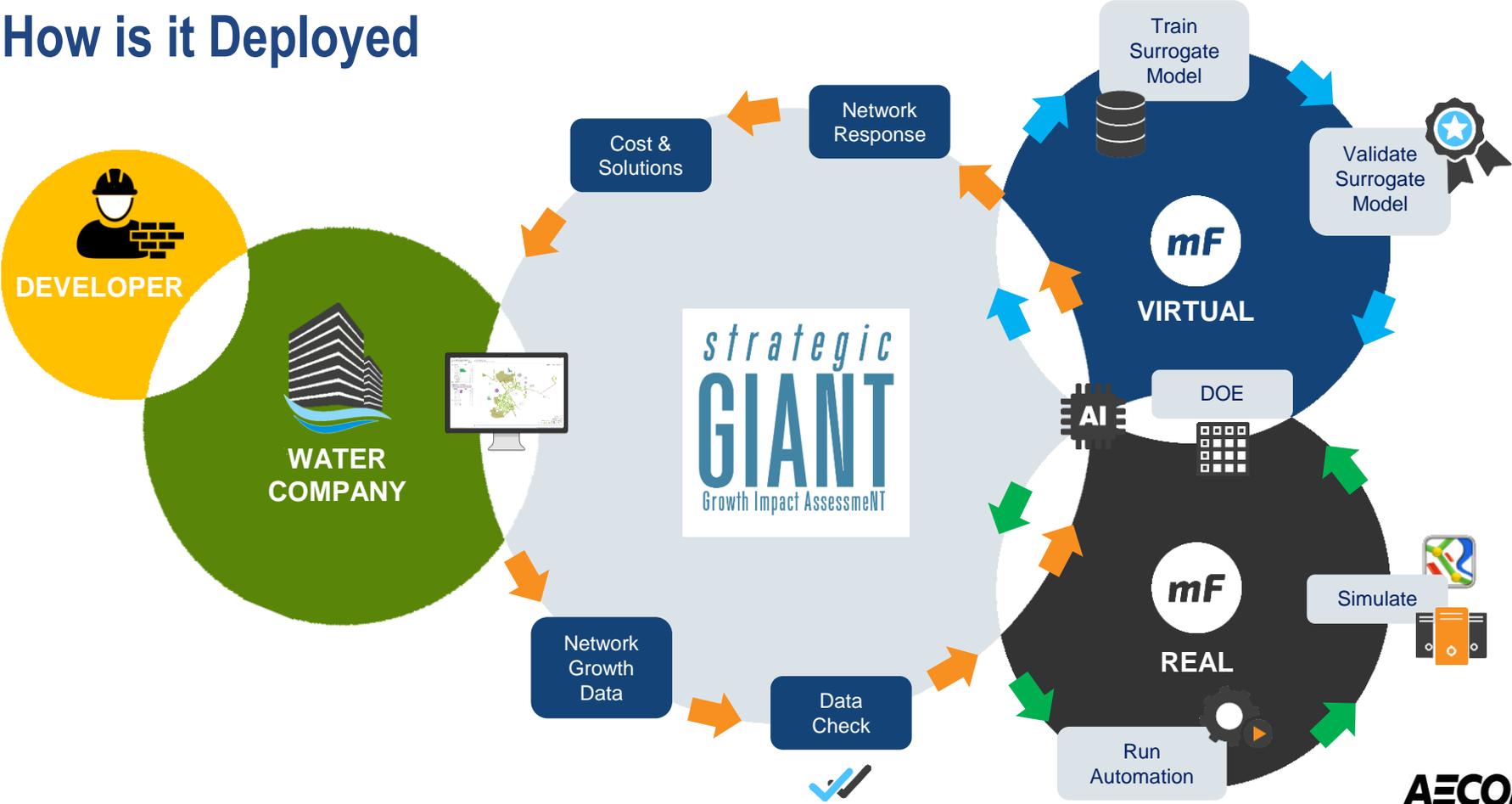


Optimise on the Meta-Model?



1. *Optimise on the Meta-Model*
1. *Find the best design almost instantaneously*

How is it Deployed



Anglian Water

*“strategicGIANT is **ideal for Anglian Water** to operate effectively in 2018 and beyond, and we’ve worked hard with EnginSoft UK to create a system which **responds to the key issues we face in the industry**, such as high risk and low flexibility*

Gareth Barker
Developer Growth PR19 Programme Manager
Anglian Water Services

Failures Avoided



Unable to predict the impact of a growth scenario quickly



Unable to deploy short-term tactics to save money



Have an inflexible investment profile leading to bad investment decisions



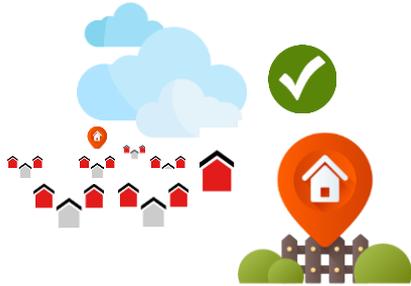
Bad PR or OFWAT penalties



Unhappy stakeholders due to flooding or pollution

Transformation

What Anglian are now able to do...



CONSIDER COMPLEXITY



CATCHMENT STRATEGY



AVOID RISK



DEVELOPER

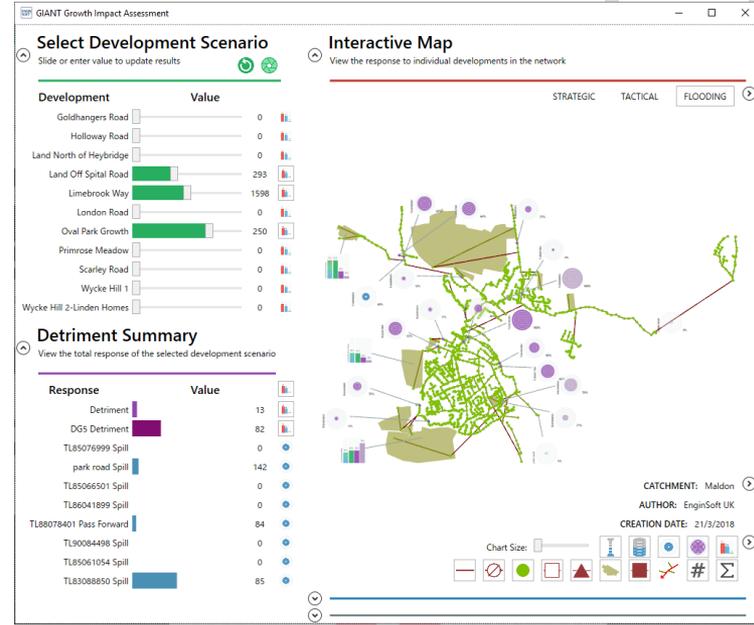


FAST RESPONSE

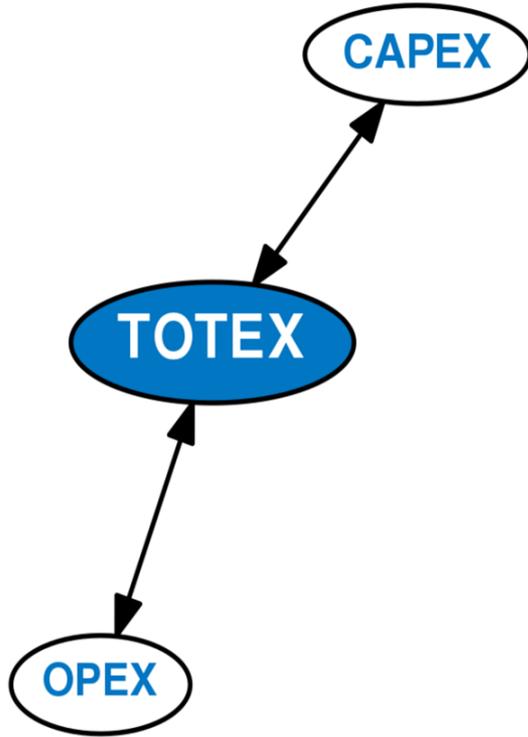


WATER COMPANY

ALL IN ONE SYSTEM...



2065 Visions



Full integration of a water company's investment plan and operational plan to enable:

Quick decision making

Increased resilience

Reduced costs

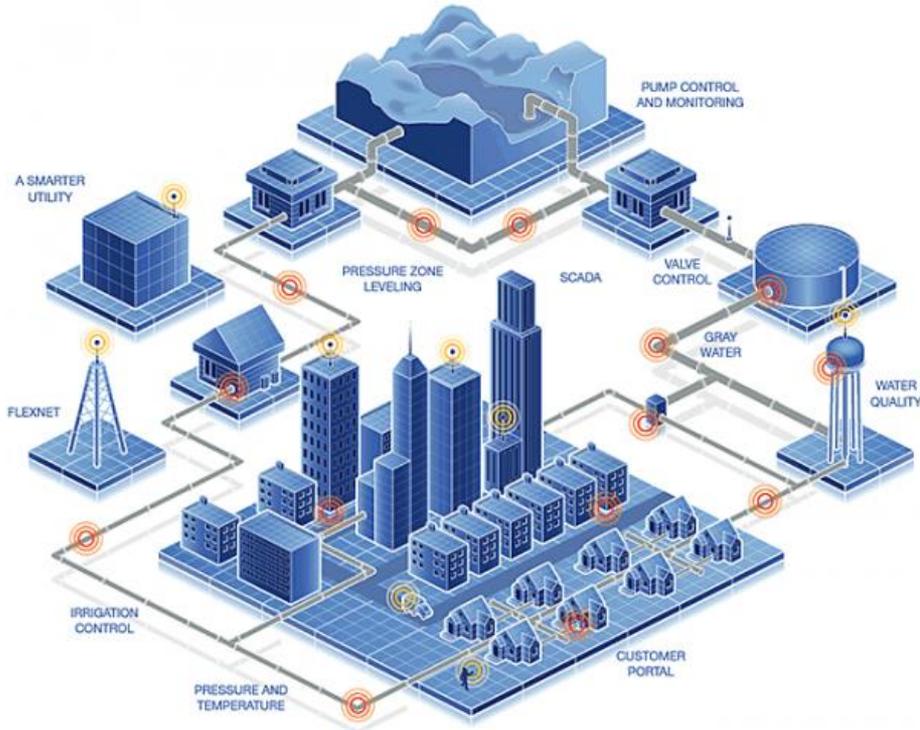
More 2065 Visions



Quicker
facilitation of
infrastructure
needs for new
developments

Helping to create
more affordable
homes

2065 Visions continued



Smart Networks

Feed real-time or forecast network data into a digital twin to aid rapid decision making

Can also be applied to clean water networks...

Or even grey water collection and distribution networks...

OR EVEN green energy distribution networks



Thank you!

 **ENGINSOFT**
AECOM