

# Adaptive Planning in the Transport Sector

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Decision Making Under Deep  
Uncertainty Workshop



# The (messy) context

## ❖ We are in the middle of several transitions

- Infrastructure
- Economy
- Technology
- Politics

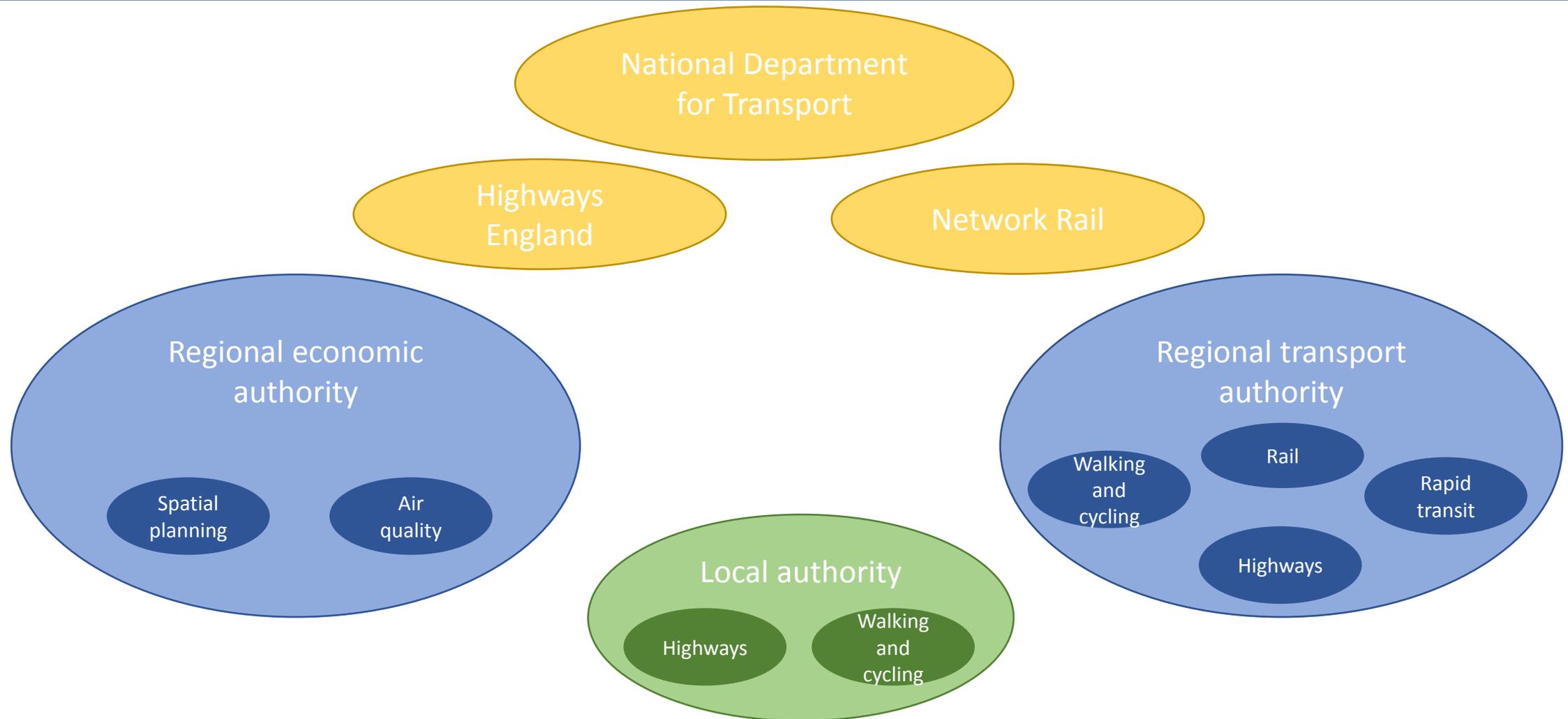
## ❖ It is not clear how they will play out

- Pace
- Significance
- Interactions between

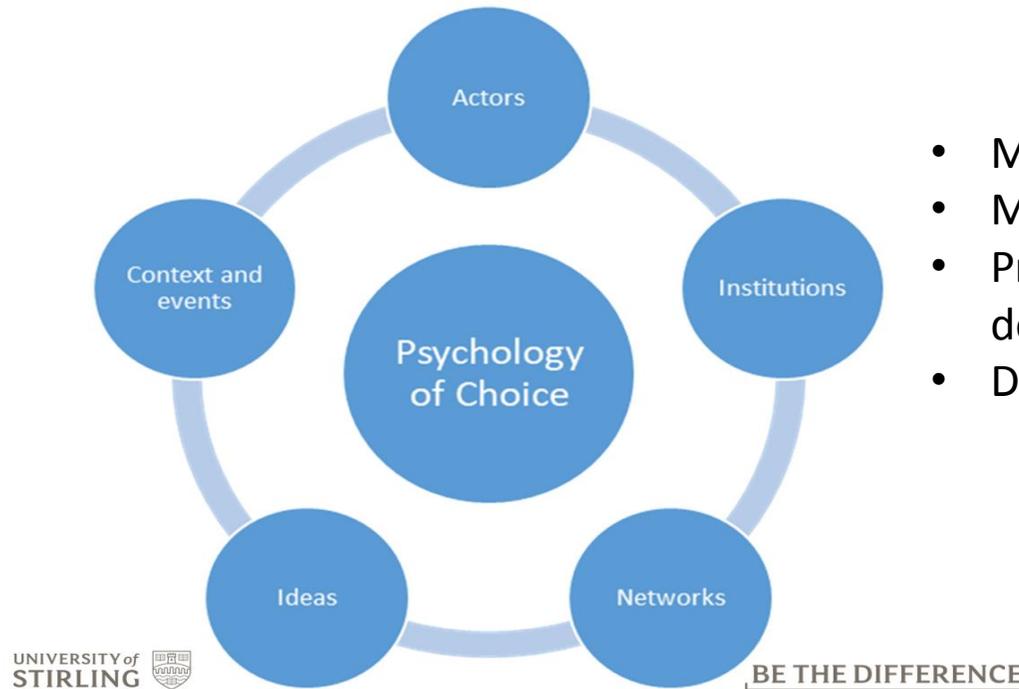
## ❖ In this changing context, can we justify investments by?

- Including passive provision in case of ...
- Investing now to shape demand in anticipation of...
- Understanding risk of investing in unnecessary...

# The decision landscape: multi-actors, multi-objectives and multi-levels



# The decision landscape: non-rational decision makers



- Multiple actors
- Multiple plans/objectives
- Processes and context driving decisions
- Different types of decisions

❖ <https://paulcairney.wordpress.com/2018/10/25/evidence-based-policymaking-and-the-new-policy-sciences-2/>

# Applying the Dynamic Adaptive Policy Pathways approach to this context

How to monitor systemic change?

Whose objectives?

How are objectives & actions connected?

Actions for whom?

Are all actions the same?

Who implements the plan(s)?

What if decision making isn't rational?

Is it possible to have a plan?

1. Analyse objectives, vulnerabilities & opportunities using scenarios

2. Identify actions and assess efficacy, and use-by year of actions

3. Develop and evaluate adaptation pathways and map

4. Design of an adaptive plan, inc. preferred pathways and triggers

6. Monitor

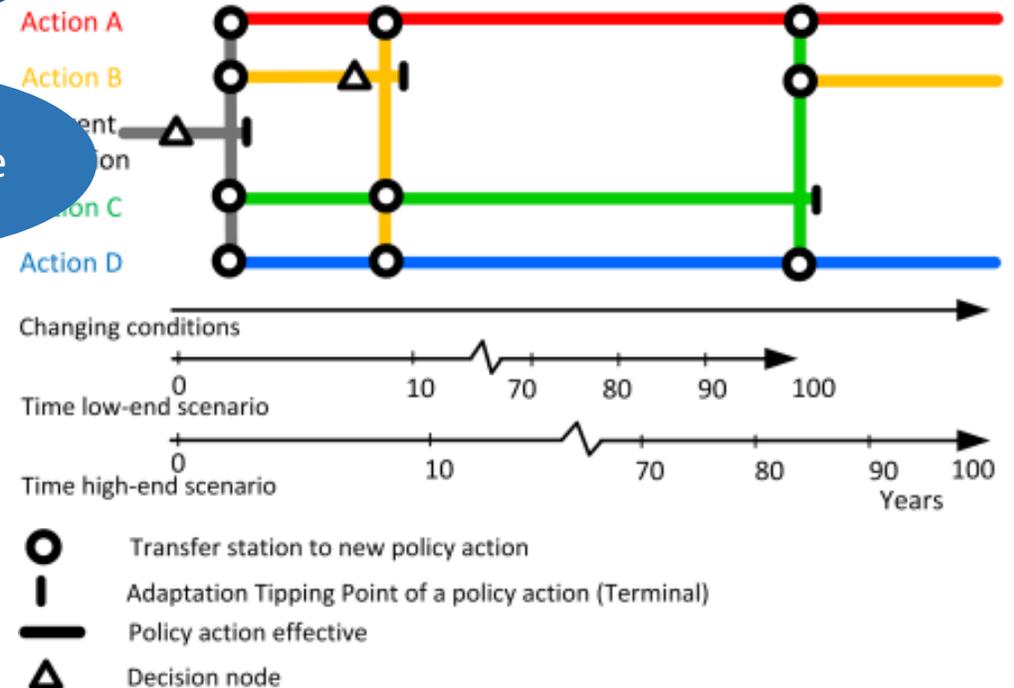
5. Implement the plan

reassessment, if needed

actions

reassessment, if needed

Adaptation Pathways Map



# Key modifications

Connection between  
decisions/objectives/plans



Problem mapping and decision  
portfolios

Different types of decisions



Decision typology

Multiple actors



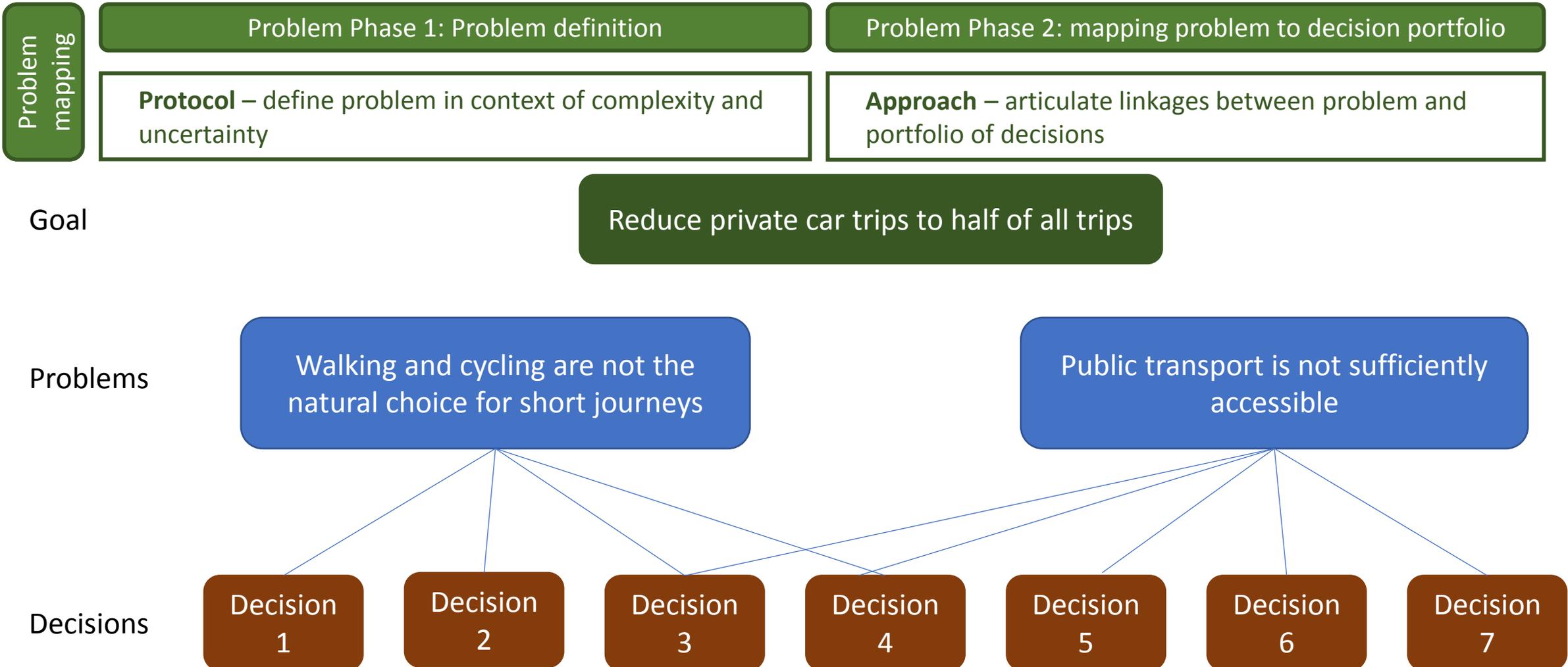
Stakeholder mapping

Non-rational decision making



Use cases

# Mapping problems and decisions - a multi-level and multi-objective landscape



# Dealing with decisions

## Decision Support

### Decision Phase 1: Decision screening

**Decision tree** – identify decisions in need of adaptive approach and ‘type’ of decision

- Institutional/investment/innovation?

- Reversibility
- Extent of control
- Type of uncertainty (level or issue?)
- Impact on vision/sensitivity of vision/impact on whole system
- Scale of investment
- Availability of data
- Exposure to political/legal challenge
- Interaction with other targets or problems
- Urgency

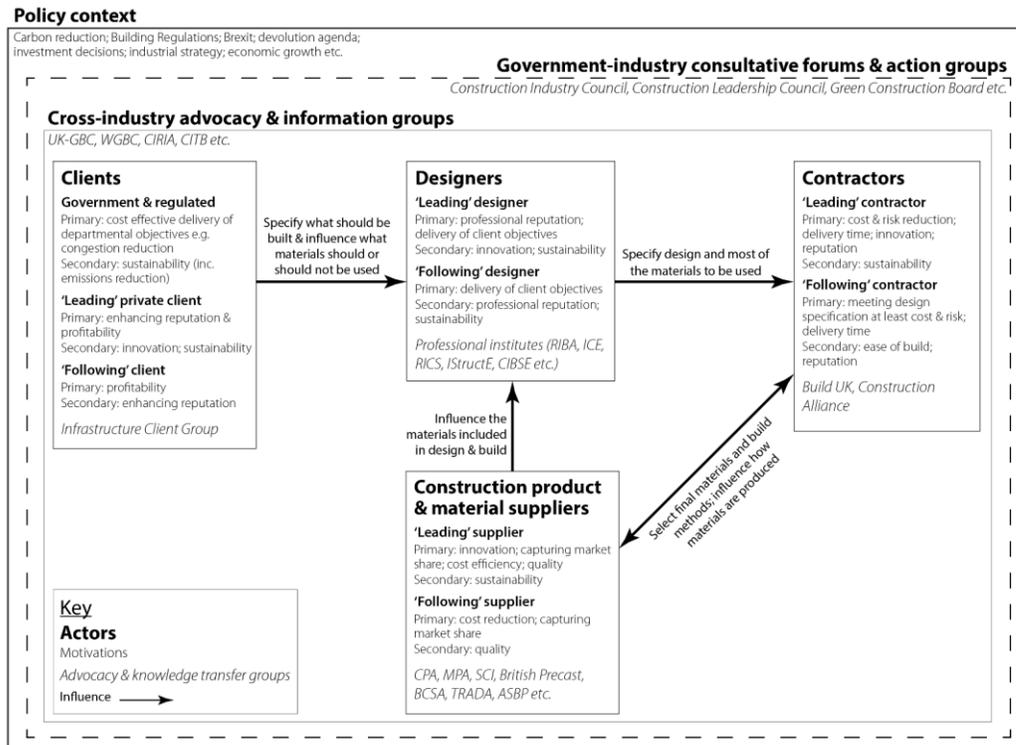
### Decision Phase 2: decision support identification

**Toolkit** – map ‘type’ of decision onto appropriate tool/approach/model with examples of how these tools/approaches/models have been used

- Adaptive planning
- Robust DM
- Real options
- MCDA
- Influence diagrams and decision trees
- Hurdle rate analysis
- .....

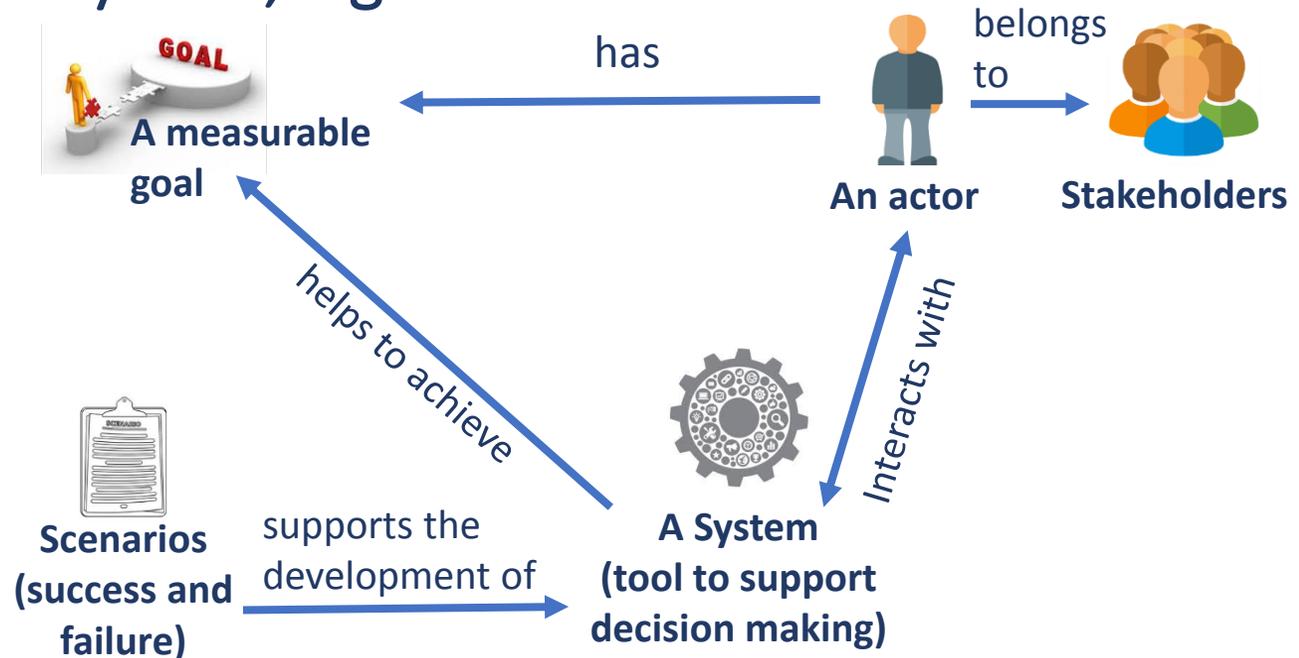
# Mapping stakeholders and objectives - multi-actors and non-rational decision making

## Stakeholder mapping



## Use cases<sup>1</sup>

A "use case" comprises actor(s), a system, a goal and a scenario.



<sup>1</sup> Approach introduced by Dr Thomas Downing, GCAP (adapted from IT)

# Analysis Under Uncertainty for Decision Makers (AU4DM) Network

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# The added value of using use cases to develop tailored decision making tool under uncertainty

- ❖ **Developing decision support tools and models can support more effective project and strategic appraisal to help handle uncertainties**
- ❖ **Use cases can support the development of TAILORED support decision tools. Indeed, they allow to:**
  - Better understand the decision-maker(s) and his/her/their decision space(s)
  - Take into consideration divergence in views, understanding and values across all the actors involved in the decision by creating a library of use cases (MULTIPLE ACTORS INVOLVED)
  - Encapsulate complex relationships between multiple considerations (MULTIPLE CONSIDERATIONS INVOLVED)
  - Bound the system, i.e. what the system will achieve and what is out of scope and what the knowledge gaps and lack of evidence are