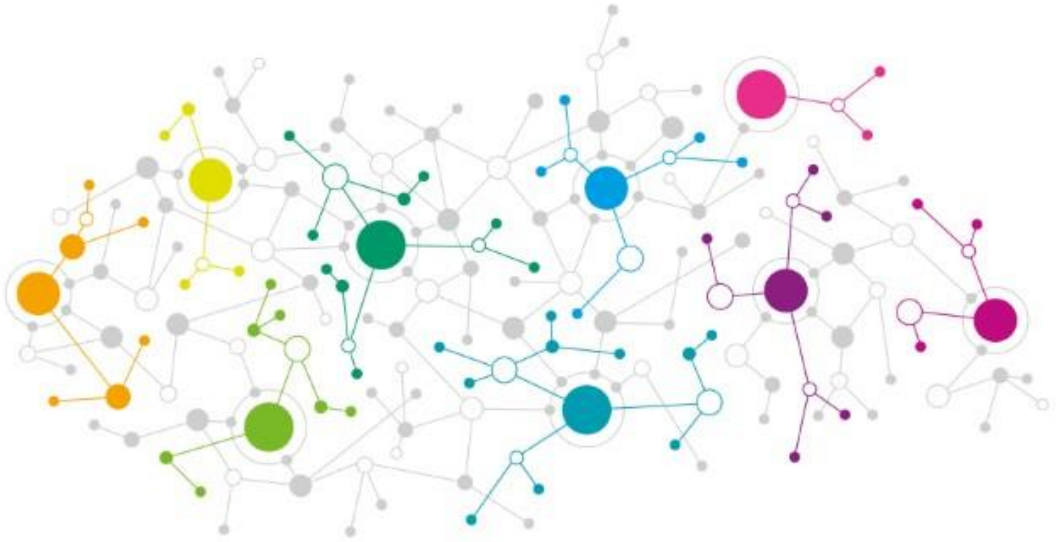
SQW



Using an assessment of ‘complicated’ and ‘complex’ characteristics to determine evaluation design

Presentation for the Open Evaluation 2016 Conference, Vienna

Jonathan Cook

Contents

- Context & why this is important
- Characteristics of RTI policies – complicated & complex
- Implications for evaluation design
- Learning points

SQW

Context – why this is important

- Emphasis on counterfactual impact evaluation
  - And policy makers require quantitative (& monetised) answers
- … But how appropriate are they for some RTI policies?
  - Non-linear routes to, & unexpected nature of, results
  - Increasingly 'open' & collaborative nature of innovation, with diffusion of knowledge
  - Policy design, e.g. systemic or highly tailored
- … And what are the alternatives?
- Session draws on our work in scoping & carrying out evaluations of various RTI policies

"We're asking SQW essentially to make the infinite countable"

SQW

Context – introduction to ‘complexity’

- Simple characteristics of programmes
  - Single component to the programme
  - Experience of recipients is consistent
  - Causality linear & predictable
- Complicated characteristics of programmes
  - Multiple components to the programme
  - Recipients get something different
  - Multiple causality
- Complex characteristics of programmes
  - Disproportionate outcomes & feedback loops
  - ‘Emergent’ outcomes

Draws on Rogers (2008)

SQW

How ‘complicated’ or ‘complex’ are RTI policies?

Characteristic	Applies to…	Implications for evaluation…
Timescales to outcomes can **vary** & be **long**	Most innovation programmes **Acute for certain sectors**	Does not on its own preclude CIE if sufficient data are available
Significant **heterogeneity** in: • **nature** of support • **alternative routes to outcomes** • **beneficiaries**	**RTI infrastructure**, e.g. Catapults in the UK	Some variation can be incorporated in CIE Significant variation requires alternative/complementary approaches
Small initial effect may lead to a **large ultimate effect** through feedback loops	Programmes involving significantly changing markets, e.g. **demand-side measures**	Difficult to model using CIE, and so alternative/complementary approaches likely to be required
Emergence: **interactions** between entities lead to greater/qualitatively different outcomes	**Demand-side measures** where effects work through multiple interactions Certain **spillover** effects	

SQW

Implications for evaluation design

- Experimental & quasi-experimental approaches work best when:
  - Direct relationships between the 'driver' & the 'outcome' of interest
  - Effect occurs over a short period of time
  - Same 'treatment' is received by beneficiaries
  - Stability in the context/ environment surrounding the intervention
- Alternatives required
  - For interventions with 'complicated' &/or 'complex' characteristics
  - & also where…
    - there are 'small n' beneficiaries
    - a counterfactual cannot feasibly be established

SQW

Case example 1: Collaborative R&D (ATI)

- Aerospace a priority sector for UK industrial strategy
- ATI established in 2013, as a collaboration between Government and Industry, to lead the UK's aerospace technology strategy
- Oversees £150m per year of Government funding for collaborative R&D

ATI R&D projects

- Beneficiaries include 'primes' (e.g. Airbus, Rolls-Royce), supply chain, research base
- Budgets from £0.5m to £15m
- Differing timescales
  - **Secure** (0-5 years): develop short-term capabilities
  - **Exploit** (up to 2025): focus on upgrades to existing aircraft and systems
  - **Position** (beyond 2025): ground-breaking technologies for the all-new aircraft that will enter service in 10+ years

SQW

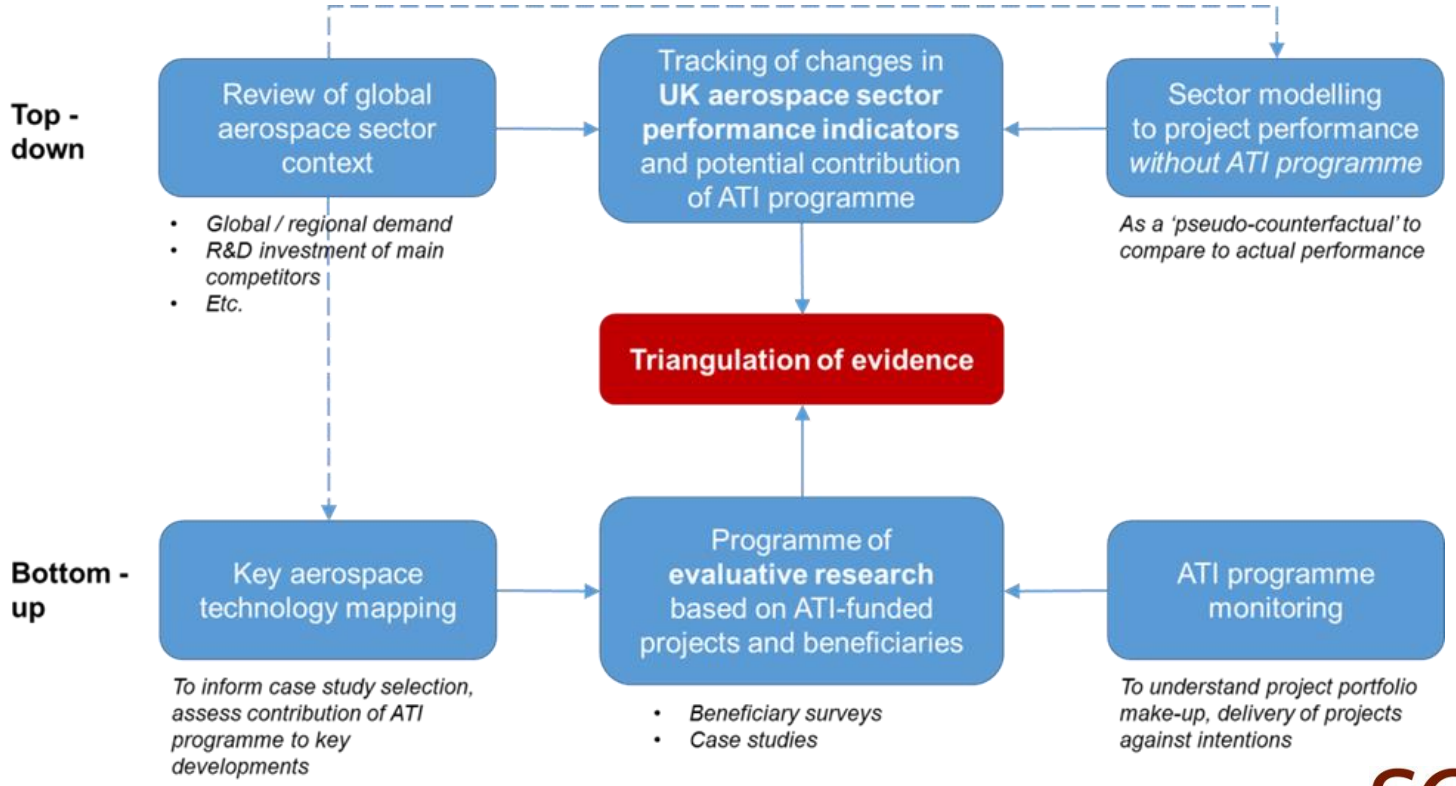
ATI: complex and/or complicated?

- Long and varying development times
  - Effects may not materialise until 10+ years after investment
- Varying types of projects and beneficiaries
  - Different actors (large & small) and expected results
- Isolating ATI projects and attribution
  - Beneficiaries involved in multiple (ATI / non-ATI) projects
  - External factors (global demand, policies of other countries…)
- Absence of a suitable counterfactual or ‘control group’
  - Due to size and structure of the sector

SQW

ATI: contribution analysis forms core of evaluation approach

- 'Bottom up' work to test the intervention logic and…
- …establish the extent to which ATI projects have contributed to the changes in sector performance observed via the 'top-down' analysis



SQW

Case example 2: RTI infrastructure (HVM Catapult)

CATAPULT
High Value Manufacturing

- Established in 2011 to grow the value of UK manufacturing through reducing the risk of innovation & accelerating the pace of business development
  - 7 physical centres
  - 2,000 personnel
  - £500m+ of assets
  - Some 3,000 clients
  - Diverse portfolio of technologies

- Heterogeneity in what it does
  - Range of activities & firms
  - Variation in market maturity, & in timescales to outcomes
  - Bespoke rather than standard customer journey
- Use of multiple forms of support & feedback loops
  - Activities change/adapt as firms engaged in R&D
  - Some outcomes hard to trace or 'emerge' over time, e.g.
    - Absorptive capacity
    - Influence on market-making

SQW

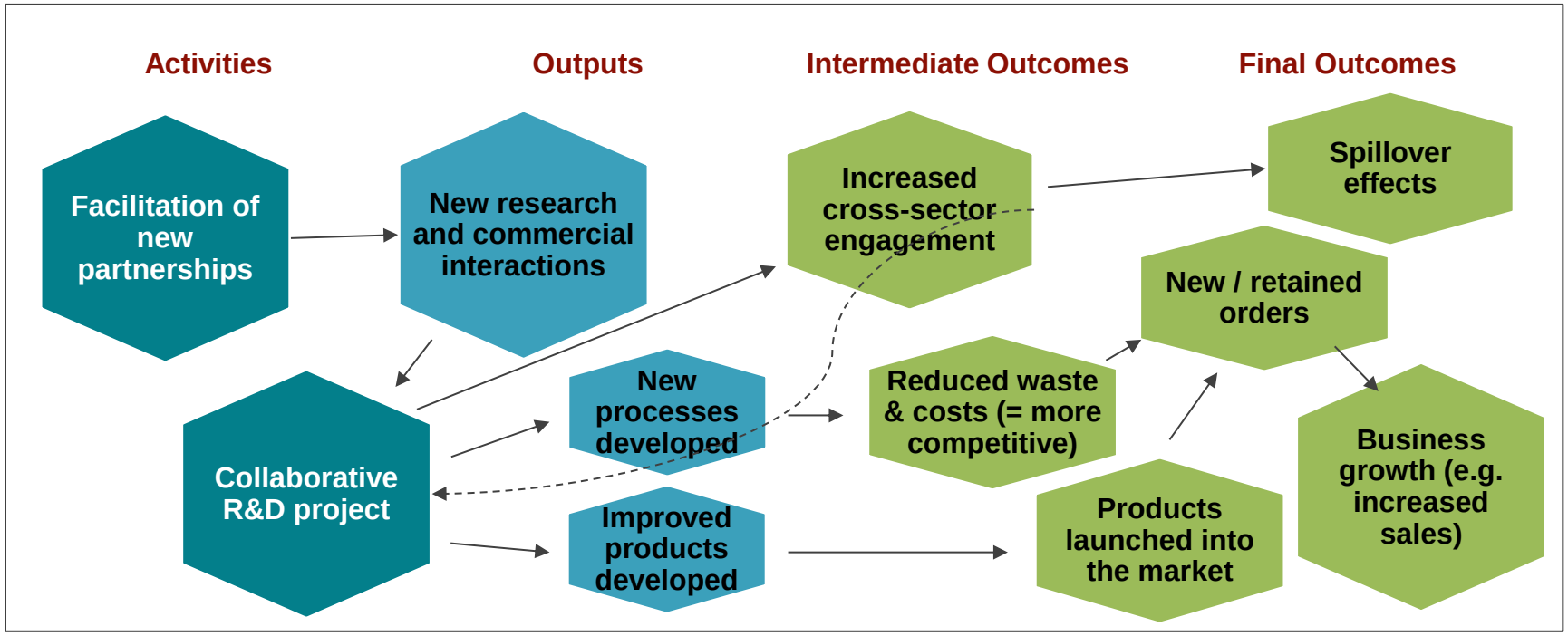
HVM Catapult: evaluation approach

- Mixed methods, including
  - In-depth case studies to assess routes to outcomes & establish 'contribution story' in relation to the role of the HVM Catapult
  - Survey-based approach to estimate the outcomes & value the benefits
    - & alongside case studies different routes to outcomes
  - Econometric analysis for 'on-going' evaluation, seeking to match a group of benefiting companies to a comparison group
- Flexible approach to using logic models & theories of change – developed with input from those on-the-ground
  - Overarching framework for outputs, outcomes etc.
  - Flexible to develop & test different/tailored sub-theories

SQW

Building & testing theories of change

Theory of change & underlying assumptions: postulated and tested … and then refined further as iterations and alternative routes understood



External and other factors: what else needs to happen, what else may have contributed to outcomes.

Timescales for the achievement of outcomes: expected timescales.

SQW

Learning points

- The characteristics of interventions can be important determinants of evaluation approaches
- There is a need to develop appropriate programme theories & logic models, which draw on the perspectives of those delivering on the ground
- Theory-based evaluation approaches provide an important option instead of, or to complement, counterfactual techniques
- Need to be alert to the limitations of different methods

SQW

Contact

Jonathan Cook

Director

SQW

t. +44 (0)20 7391 4105

e. jcook@sqw.co.uk

w. www.sqw.co.uk

SQW