

Innovation... how hard can it be?

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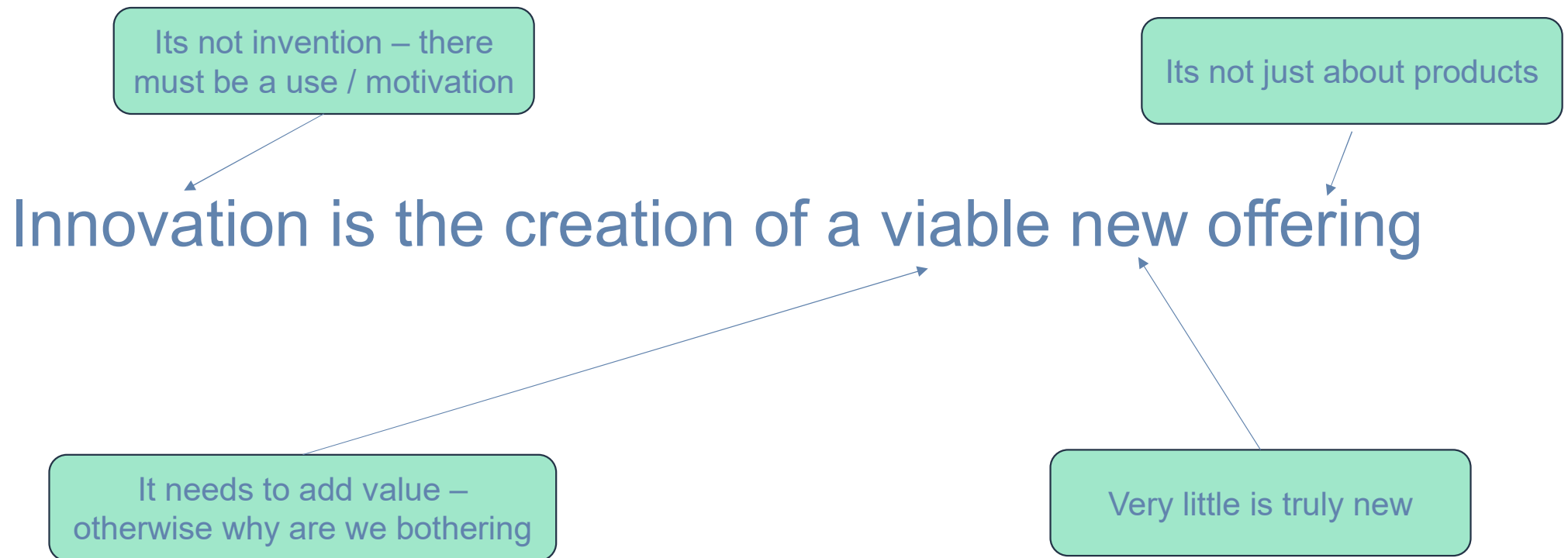
A bit about Ennuvo

- Ennuvo is a new engineering and regulatory consultancy focused on enabling the deployment of innovation to improve safety, security and help meet new zero targets.
- It works in a lean way by collaborating with world experts to address challenges and realise opportunities through systems thinking.
- Ennuvo is currently working in areas such as:
 - Deployment of SMRs
 - Decommissioning of Gen IV reactors
 - Regulation of artificial intelligence
 - Nuclear cogeneration
 - Innovation competency
 - Software assurance
 - Development of tools to enable innovation

Introduction

- Factors such as climate change and energy security are increasing the need for innovation.
- There is a potential conflict between the uncertainty associated with the deployment of innovation and the needs maintain safety, security, safeguards and environmental protection.
- This presentation
 - What do we mean by innovation and its characteristics
 - Barriers to innovation
 - Enablers of innovation
 - Oh, and a bit on AI

What do we mean by innovation



Ten types of innovation – L Keeley

Some characteristics of innovation

Uncertainty

Lack of evidence

Lack of good practice

“We’ve always done it this way”

Why now?

The inappropriate use of previous precedent
where its not valid

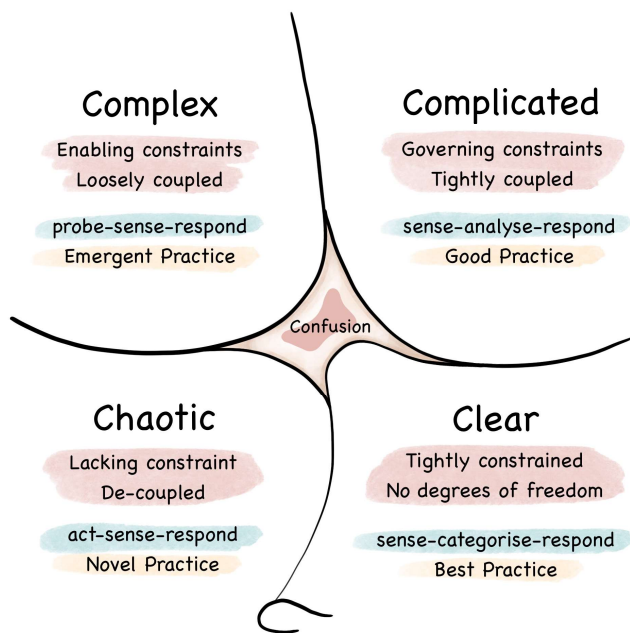
Too scared to say no

Its about
technology...AND
PEOPLE

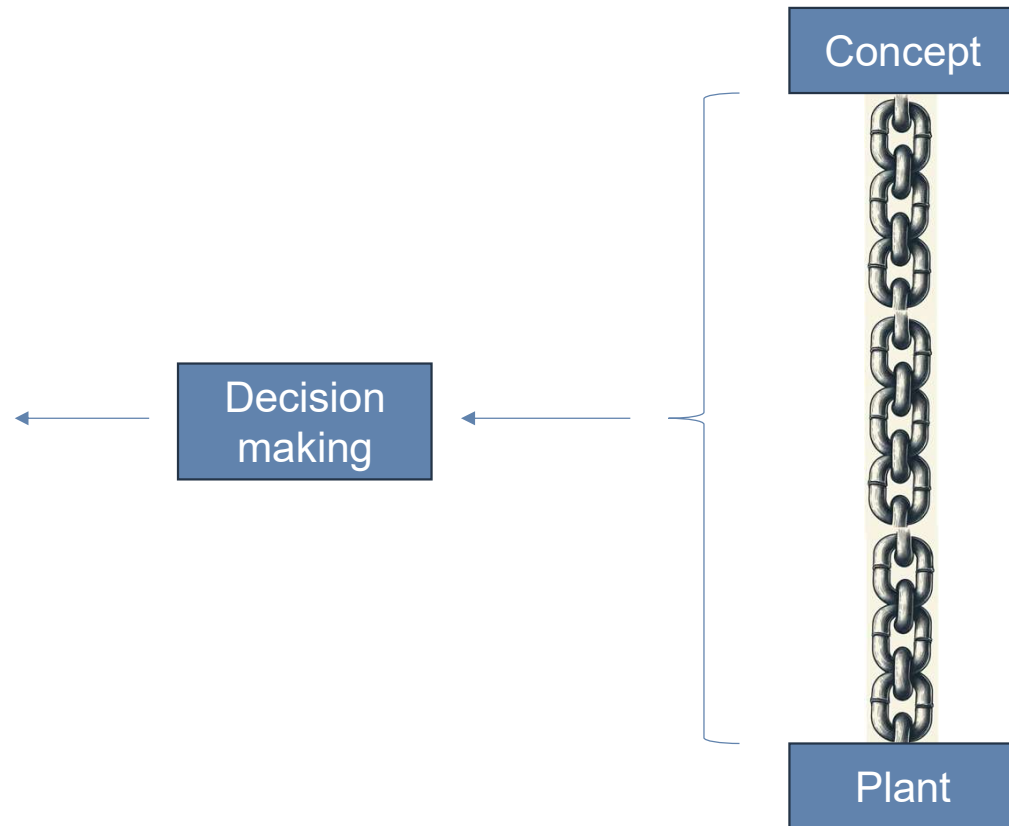
Results of the exercise

- Next week I'm going for a trek across Scotland – should I take a waterproof jacket?
- Do you think I should invest in some gold given the current political instability and the predicted change in interest rates?
- Do you think we should legislate the use of AI to reduce its impact on the environment?

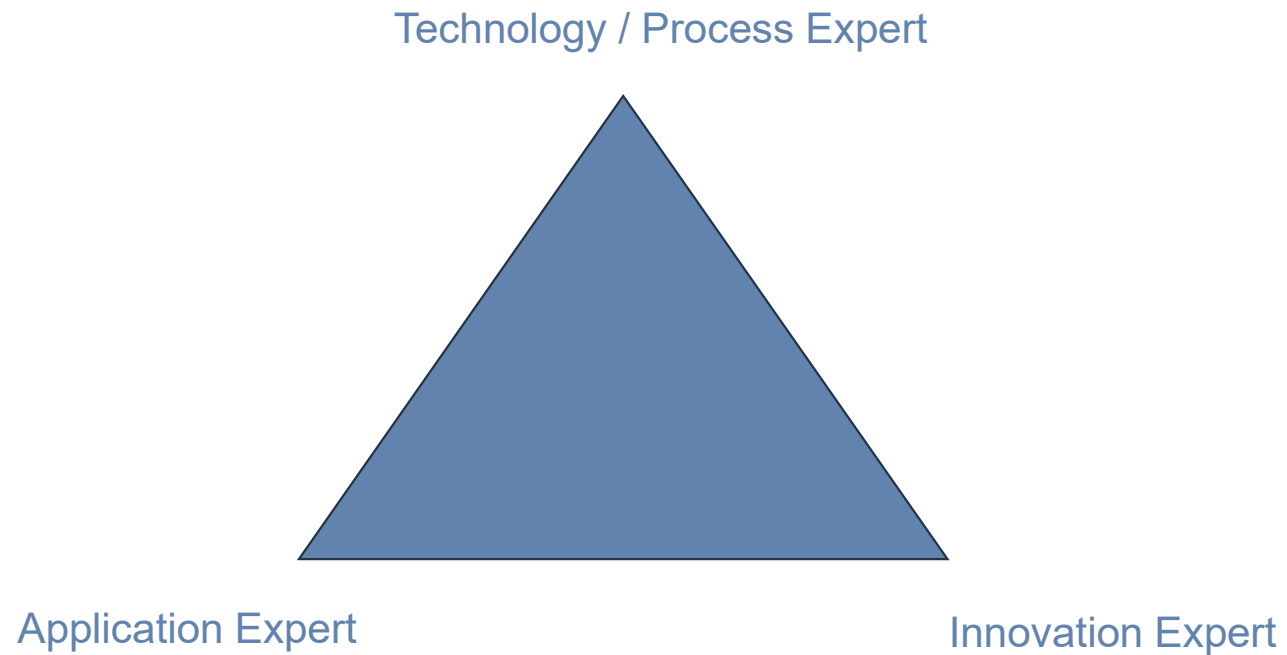
Barriers to innovation



Cynefin framework



Innovation and competency



So, what does this mean for AI

Based on experience whilst working with others

Governance

Justify its use

Risk assessment
and management

Adopt good practice
in specification and
design

Understand the
characteristics of
the AI component in
the broader system

Identify and address
potential failure
modes (including
bias, ethical impact)

Develop confidence
in the performance
of the AI - lifecycle

Access to
competent persons

Monitor and review

<https://www.onr.org.uk/news/all-news/2023/11/outcomes-of-nuclear-ai-regulatory-sandbox-pilot-published/>

<https://consult.ofgem.gov.uk/energy-technologies/use-of-ai-within-the-energy-sector-call-for-input/>

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RegLab

Regulatory Sandboxing

Participants

- Regulators
- Tech companies
- Licensees
- Global organisations

Collaborative working in a safe space to understand how innovation can be deployed in the nuclear sector.

Consideration at an early stage from multiple perspectives.



Summary – some observations



Image created by ChatGBT

Innovation does not align with the way we are organised – collaboration is essential.

Don't get too comfy with your collaborators – creativity is enhanced when you are open and honest.

Never assume innovation is not possible – explore and listen.

Our working culture is often to look for problems – look for opportunities to explore where risk is low.

Take a phased approach and apply the precautionary principle.

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