



Arms Control Verification Research at AWE

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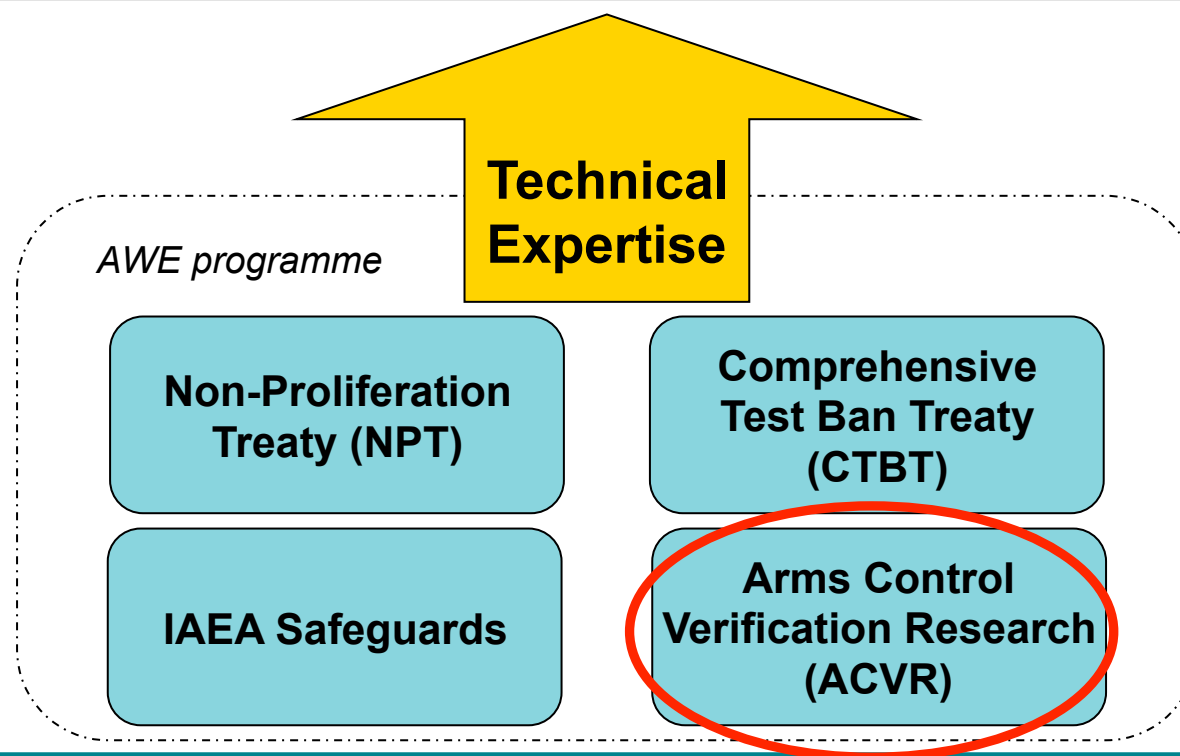
Outline

- Our purpose & history
- Our challenges and how we work to meet them
- Our thoughts on how UK academia can help



Nuclear Treaty Verification

UK Ministry of Defence (MOD)





Support and advice to government

- **We aim to place the UK government in a position of strength in the event of its participation in the negotiation of future nuclear-related treaties**
 - Research and develop technical options to support verification of these treaties
 - Analyse proliferation & security risks associated with deployment of technologies and conduct of on-site inspections
 - Prepare to support government in implementing any future verification activities
- **We help the UK government in its efforts to make progress on multilateral disarmament, towards the long-term goal of a world free of nuclear weapons**
 - Work internationally to co-operatively address technical verification issues and build global capacity
 - Contribute to technical aspects of the P5 process
 - Brief on UK arms control activities at NPT Preparatory Commissions and Review Conferences



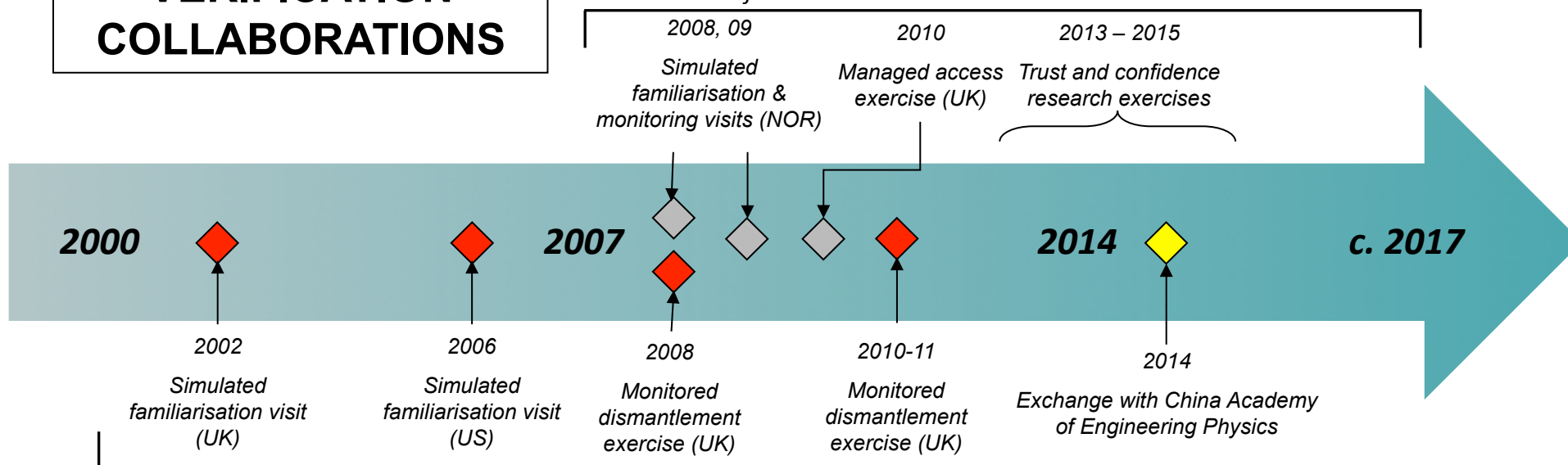
UK ARMS CONTROL VERIFICATION COLLABORATIONS

UK-Norway Initiative

Managed access exercises
Information barrier technology
Hardware & software authentication
Trust and confidence research

UK-Sweden

Explosive detection
Facility study



UK-US

Non-destructive analysis
Remote monitoring & low intrusion measurement equipment
Hardware and software authentication
Information barrier technology
Chain of custody methodologies
Measurement campaigns
Managed access exercises

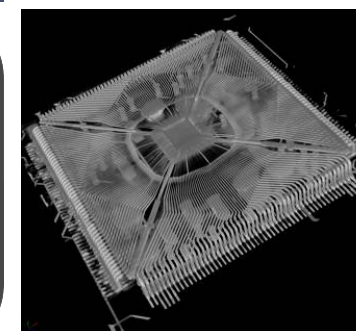
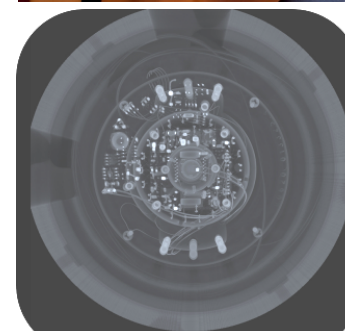
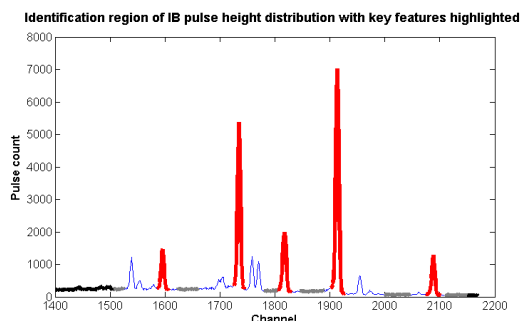
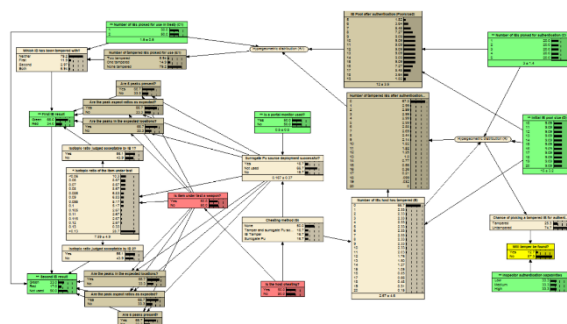
The Quad: Norway / Sweden / UK / US

Managed access
Technology assessment

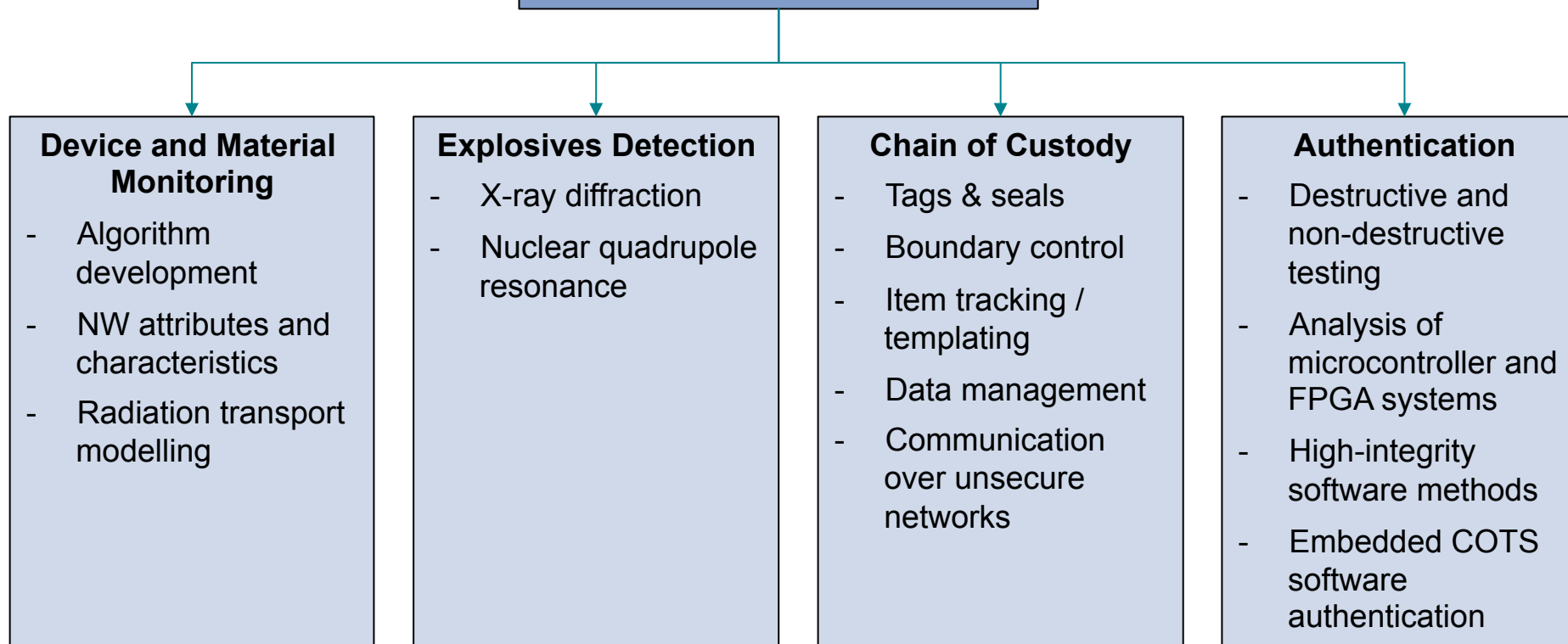
International Partnership for Nuclear Disarmament Verification (IPNDV)

Programme areas

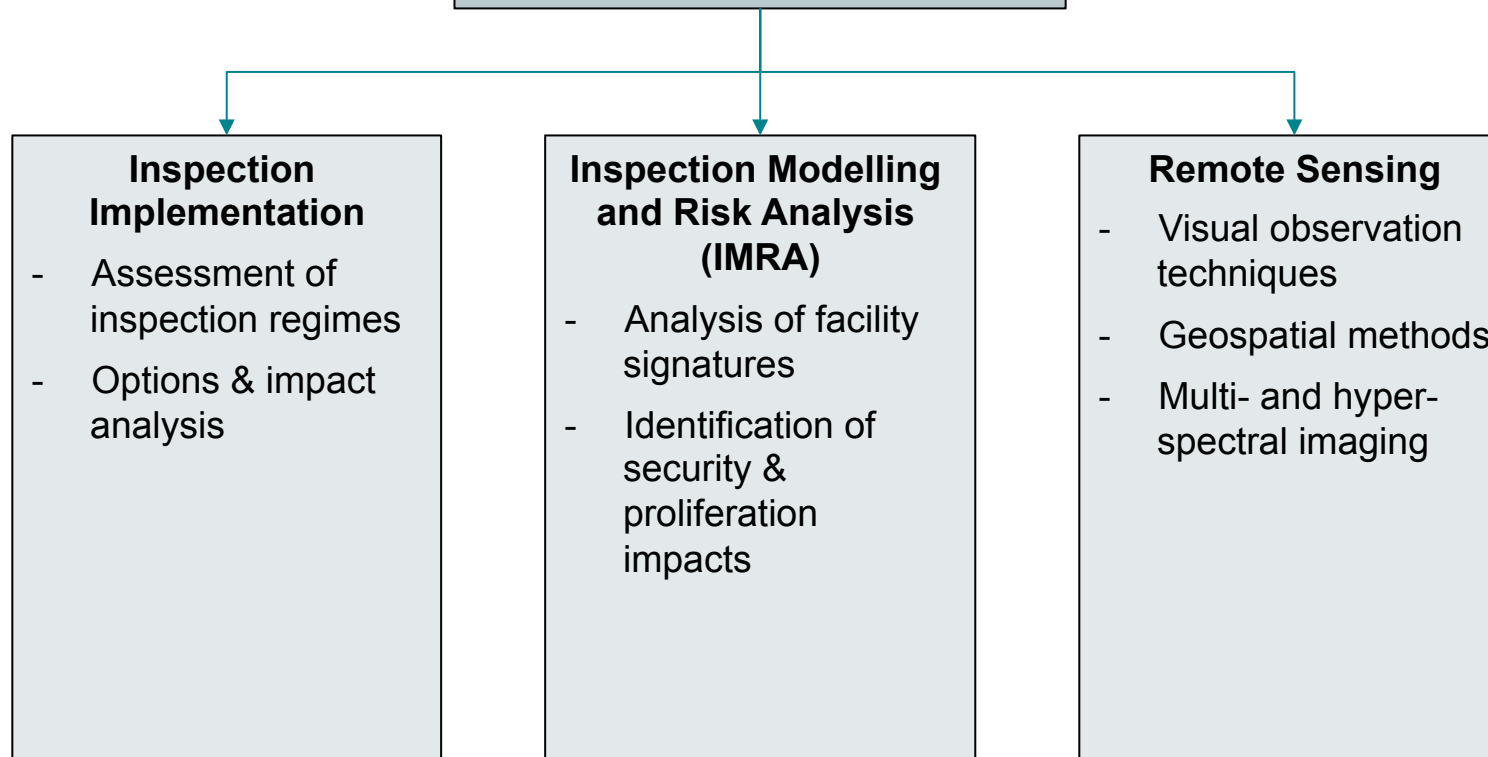
- Verification science
- Inspection studies
- Support and advice



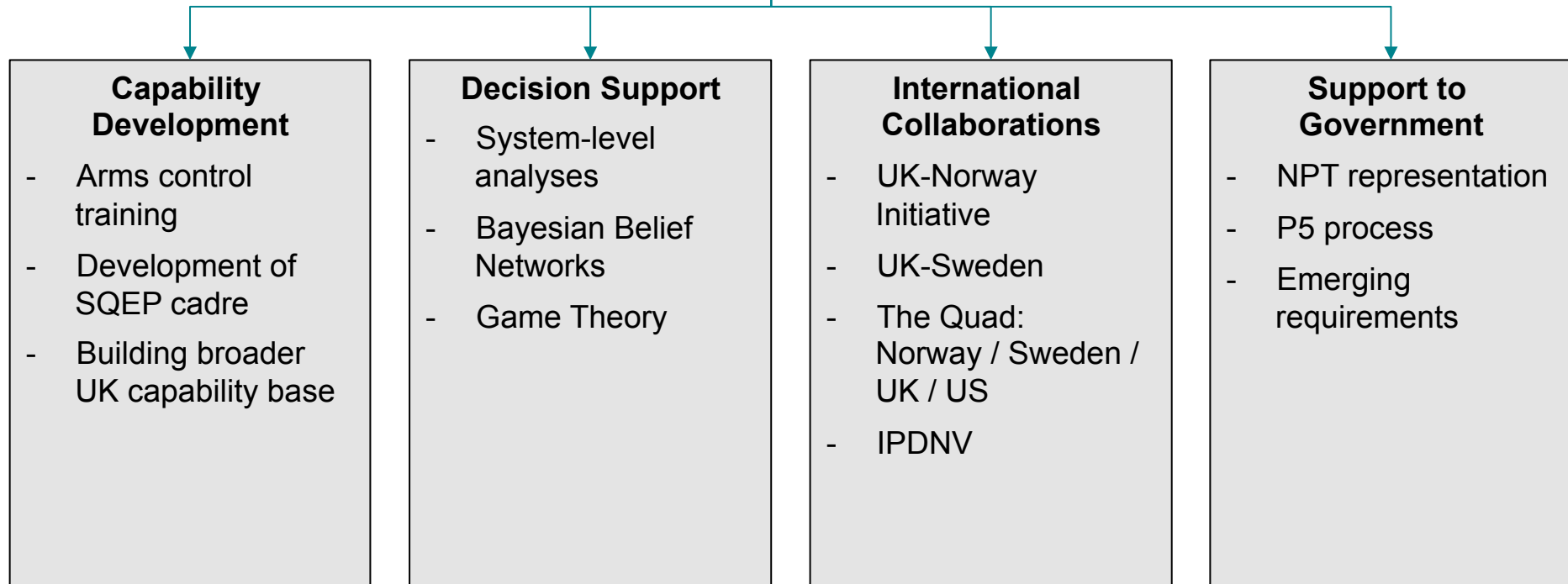
VERIFICATION SCIENCE



INSPECTION STUDIES



SUPPORT & ADVICE



How can UK academia help?

- An intellectually-rewarding space...
 - Novel technical challenges, with read-across to other applications
 - Potential for research with direct impact on national security and government policy-making
- ...but relatively few UK-based academics working on the technical issues
 - AWE working with Imperial, KCL, Manchester, Bristol, Cranfield...



There is a vibrant community of technical verification researchers in US academia – how can we help make this happen in the UK?



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www.awe.co.uk/what-we-do/national-nuclear-security