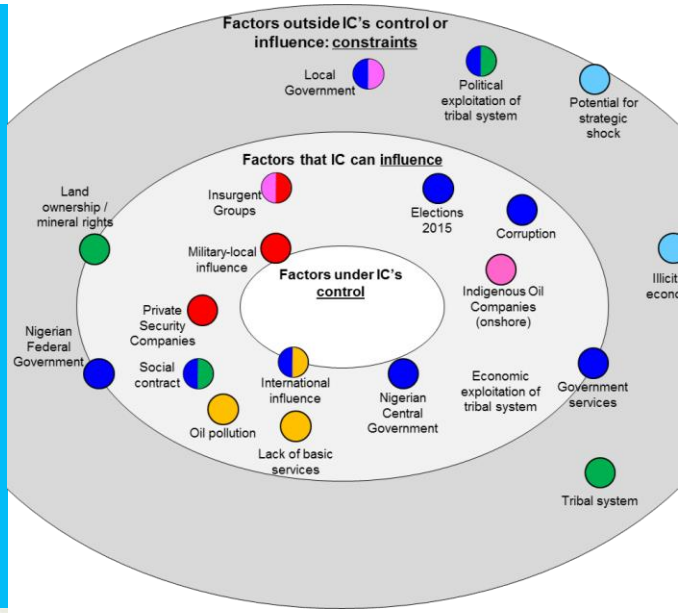
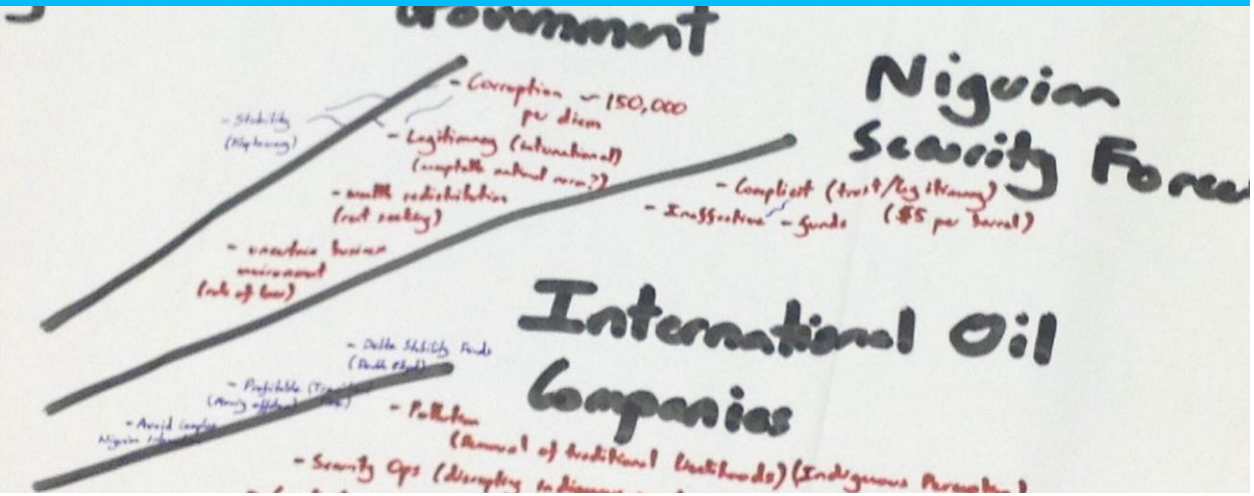
Developing the cognitive and social dimensions of 'understanding capability'

Paper 069

21st International Command & Control Research & Technology Symposium





Paddy Turner, QinetiQ

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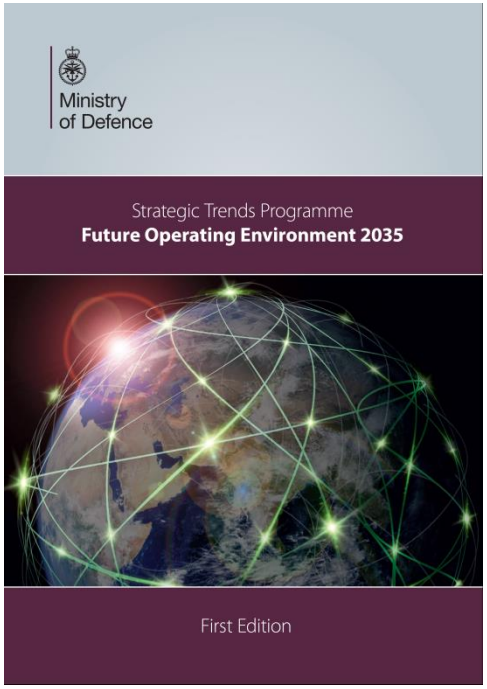
7 September 2016

The need for understanding

"Wars must **differ in character** according to the nature of the motives and circumstances from which they proceed. The first, the grandest, and most decisive act of judgement which the Statesman or General exercises is to **understand** the war in which he engages and not to take it for something, or wish to make of it something, which… it is impossible for it to be."

Carl von Clausewitz, *On War* (1832-34)

The challenge of achieving understanding

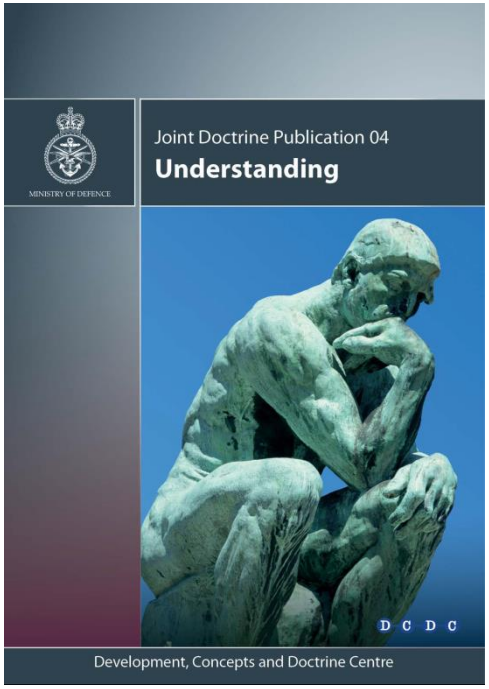


UK MOD, *Future Operating Environment 2035* (2015)

"Achieving a nuanced understanding of the operating environment will be more challenging – and more important – out to 2035"

The challenge will increase as the character of conflict becomes more complex

UK MOD definition of understanding



UK MOD, *JDP 04 Understanding* (2010)

Understanding is

"the perception and interpretation of a particular situation in order to provide the context, insight and foresight required for effective decision-making"

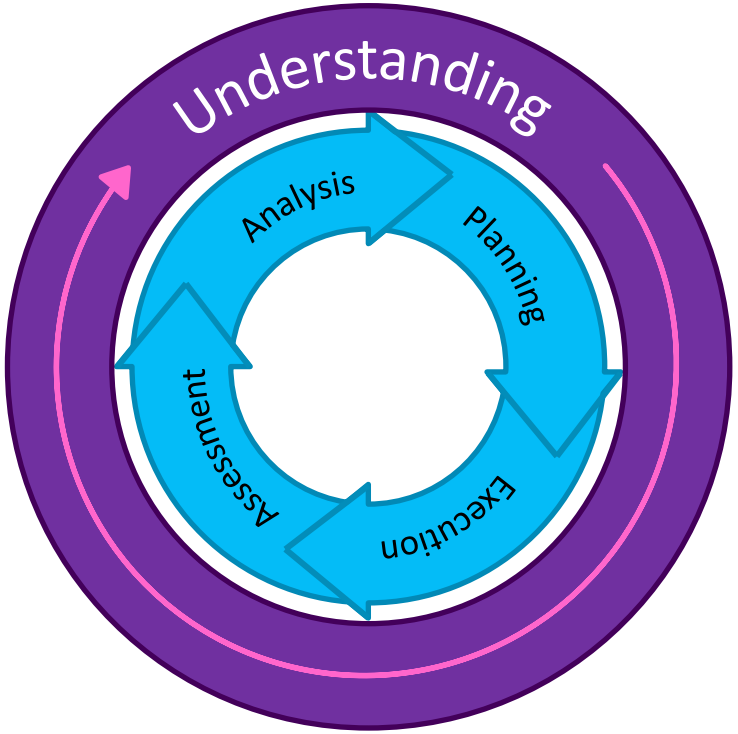
and is a

"non-discretionary element of decision-making"

Understanding as an ongoing process

The word "understanding" may refer to either the process by which understanding is developed or the state of knowledge gained through that process; we are most interested in the process

- **Military understanding is concerned with complex, wicked problems and is thereby ongoing and nonlinear**
- **There is no specific point at which a commander can claim that they have completed their understanding**



Understanding as a cognitive and social process

- **Understanding is a fundamentally human process; people are at the centre**
- **Individuals gain understanding, yet so do teams**
- **Sensemaking provides a good fit with the process of understanding; it concerns**
  - Interpretation of information within **frames**
  - Processes of **framing** (including reframing)

e.g. theories, models, cultural norms, doctrine, stories, hypotheses

- **Systems thinking provides a powerful approach for framing**
- **Activities that support framing *and thereby support understanding***
  - Boundary setting and checking
  - Problem formulation
  - Assumption surfacing and checking

Understanding as a HQ capability

- **Includes how *people* (individuals and teams) make sense of the operating environment, through dialogue, by framing and interpreting *information* and developing complex *knowledge***

- **Closely associated with Intelligence function but should integrate all HQ functions**
  - Traditional notions of 'providers' and 'consumers' break down for understanding
  - Requires collaboration rather than transactional relationships

- **How do commanders and staff think about the operating environment and how they engage in dialogue to further their understanding?**

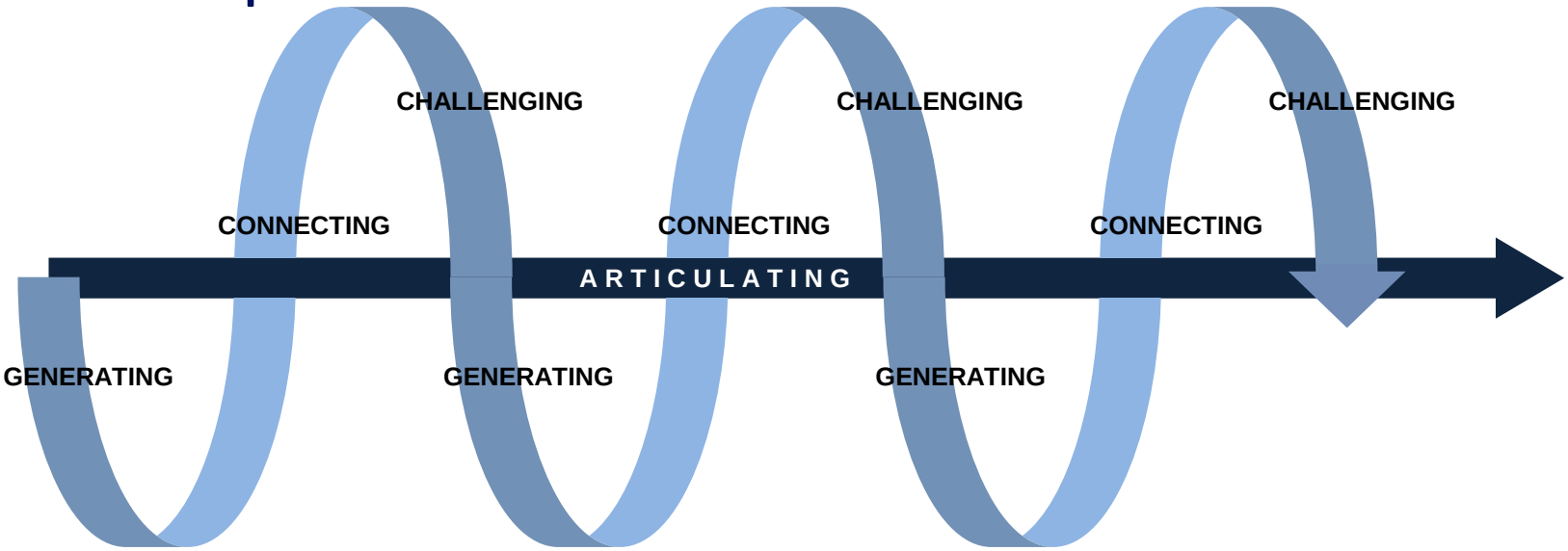
What are Understanding Techniques?

Understanding techniques are simple, repeatable ways of thinking and reasoning to help commanders and staff develop shared awareness, insight and foresight about complex operating environments

- **Focus upon eliciting, framing and reframing diverse knowledge from teams**
- **Complement data analytic techniques but do not 'crunch data'**
- **Relatively simple to train and practice**
- **Provide building blocks for broader staff processes**
  - e.g. Comprehensive Preparation of the Operating Environment (CPOE)
- **Lo-tech**

How do the techniques work?

- Explore actors, factors and other elements that make up a given problem or situation
- Connect these actors, factors and other elements in a coherent picture or story
- Challenge the meaning of these elements and connections
- Rapidly generate visual outputs with minimal training and technology – it's all about the practice



How do the techniques help?

- Encourage structured thinking to make sense of diverse information and perspectives
- Complement intelligence analysis / data analysis
- Enable the identification of knowns, uncertainties and gaps in understanding
- Support the articulation of collective understanding in an effective and efficient way
- Generate tangible outputs that can be briefed
- Geared to high-pace staff-work

Implementation within NATO/UK HQs

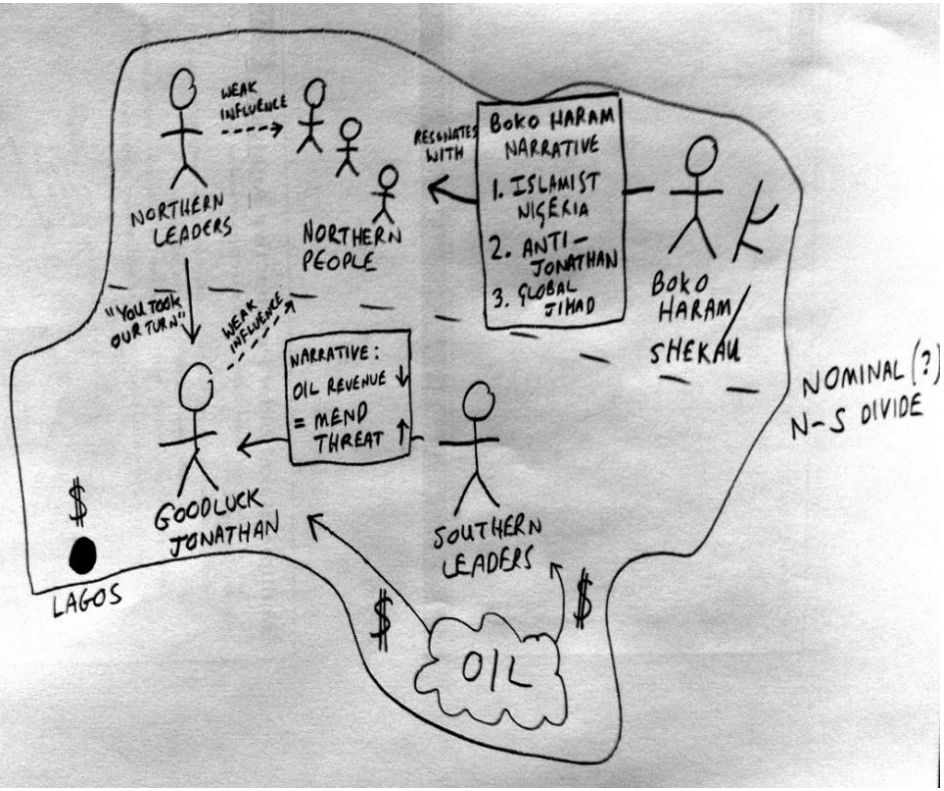
- **HQ ARRC 'understand' study period (CPOE), Feb 2014**
- **UK SJFHQ: Exercise JOINT VENTURE 16 CPOE, Apr 2016**

Technique	HQ ARRC, Feb 2014	UK SJFHQ, Apr 2016
Rich Picture	✓	
Multi-Perspective Diagram	✓	✓
Context Diagram	✓	✓
Concept Map	✓	✓
Actor Map		✓

HQ ARRC Understanding Techniques Aide Memoire (UTAM), Apr 2014
(12 techniques)

Rich picture

A way of visualizing complex issues or situations, following no formal syntax or format

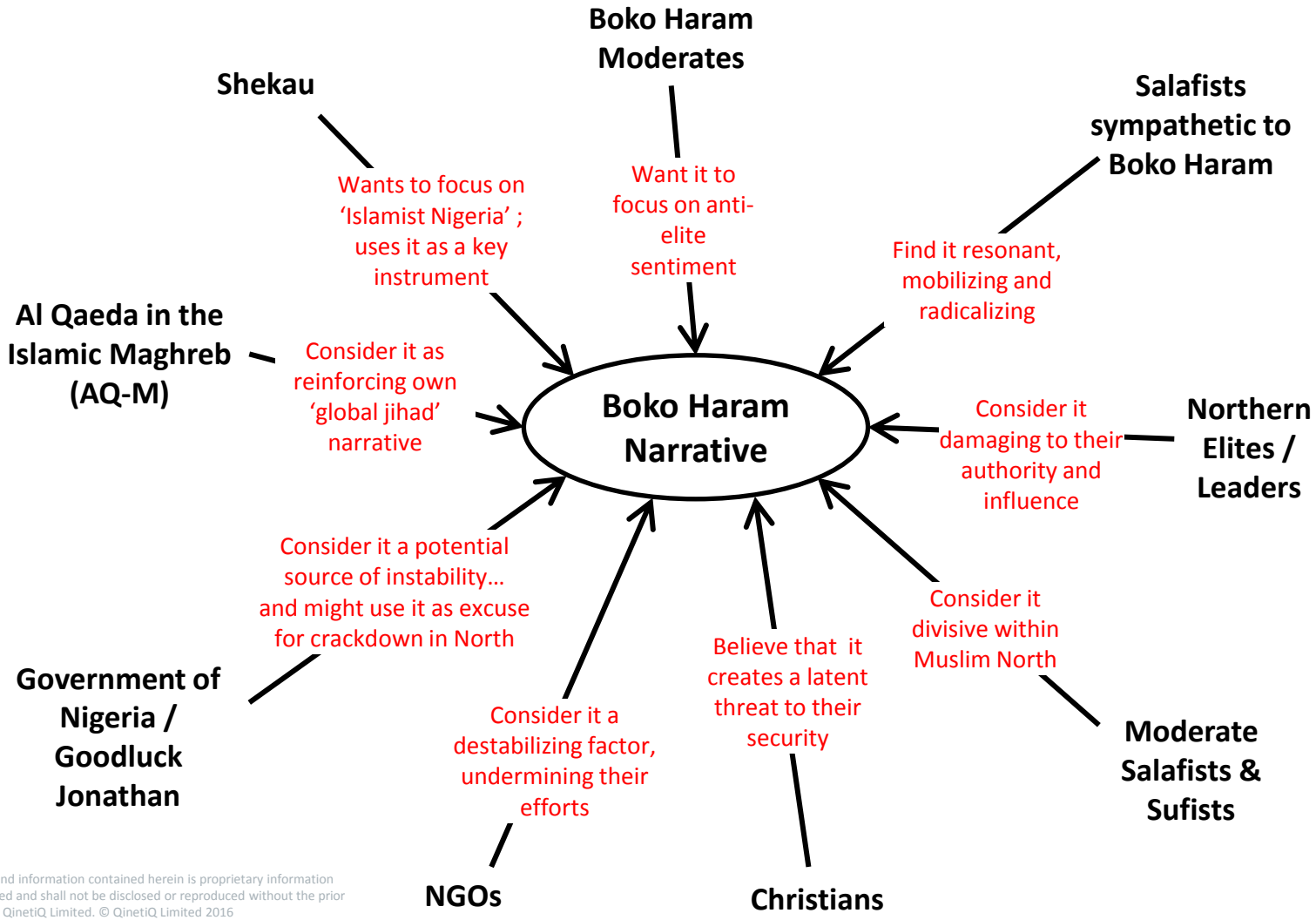


Simple

Graphical

Multi-perspective diagram

A way of building knowledge about different actors' perspectives on a specific issue: how they see it, how it affects them and what their interests might be



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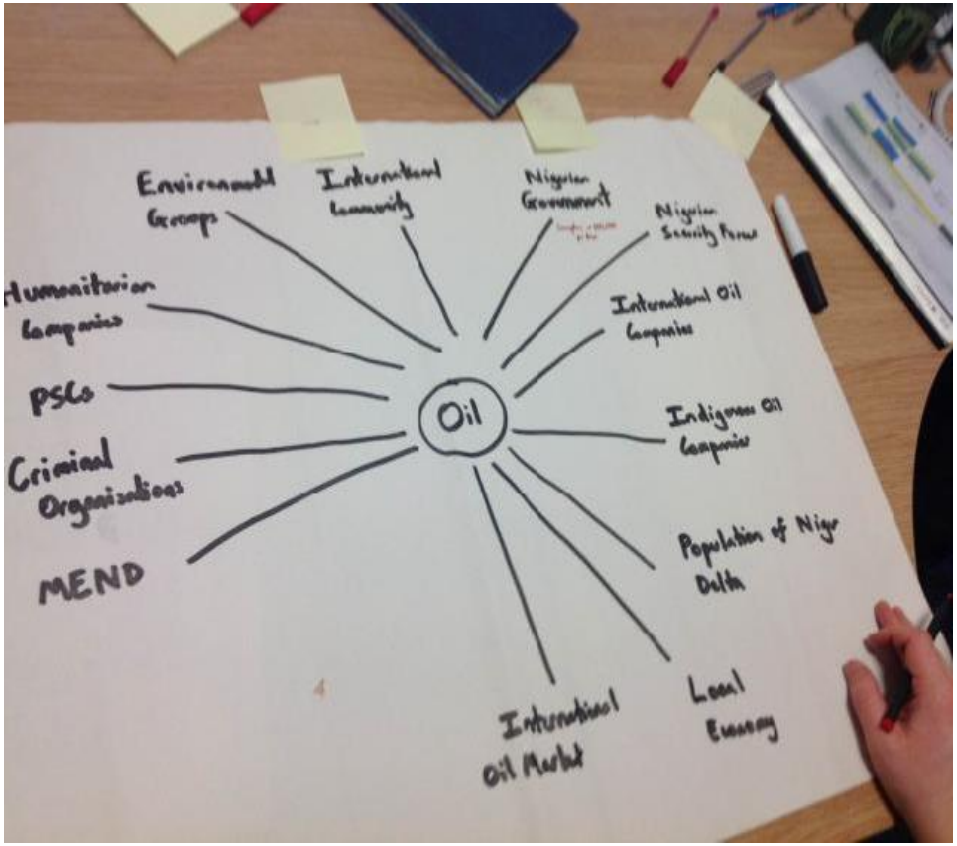
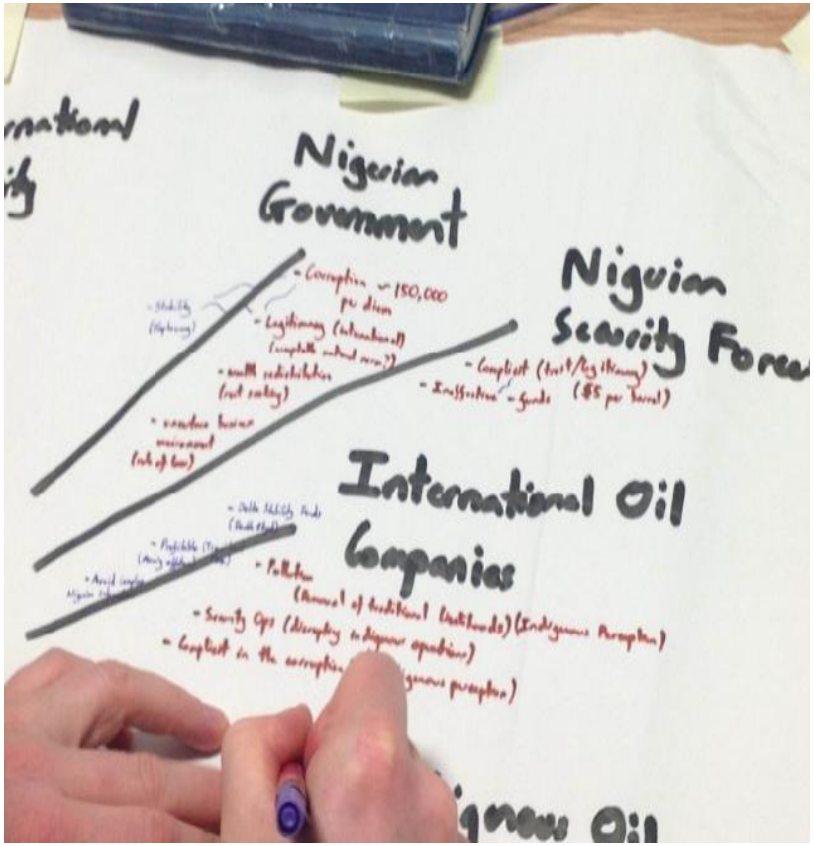


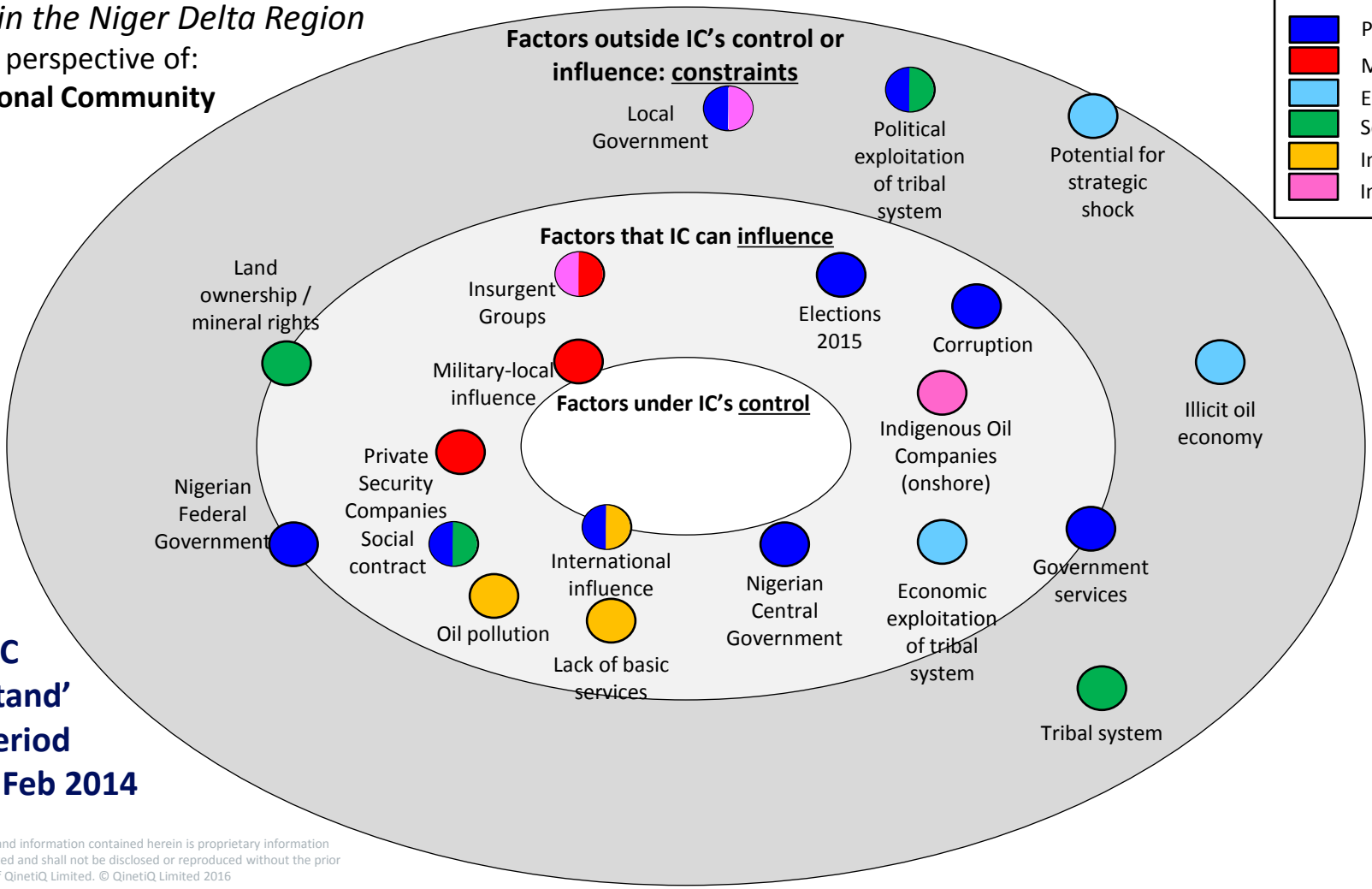


HQ ARRC 'understand' study period (CPOE), Feb 2014

Context diagram

A way of assessing factors in terms of whether they can be controlled or influenced (or must simply be treated as constraints)

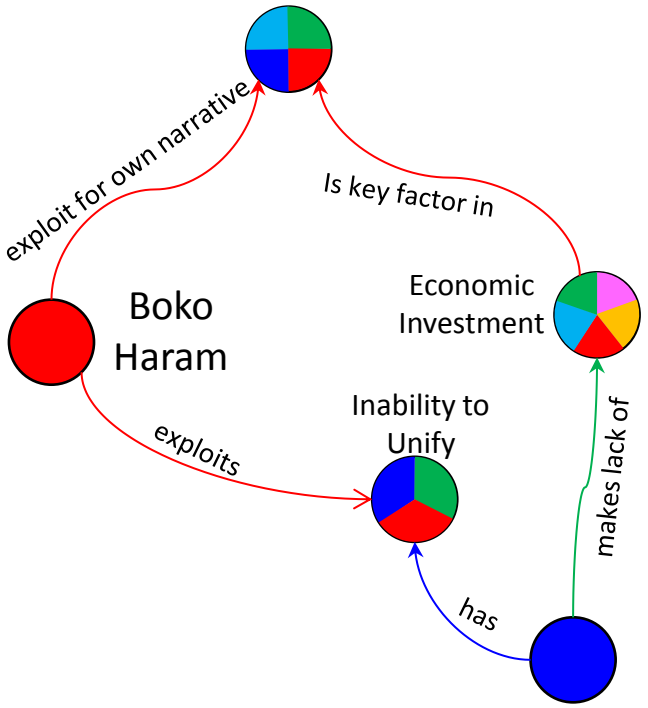
Factors in the Niger Delta Region
From the perspective of:
International Community



HQ ARRC 'understand' study period (CPOE), Feb 2014

Concept map

A way of representing relationships between factors and actors in the operating environment and telling the story of the key issues and dynamics at play



Actors / Factors

- Political
- Military
- Economic
- Social
- Infrastructural
- Information

Relationships (from operational perspective)

- Favourable
- Neutral or Balanced
- Unfavourable

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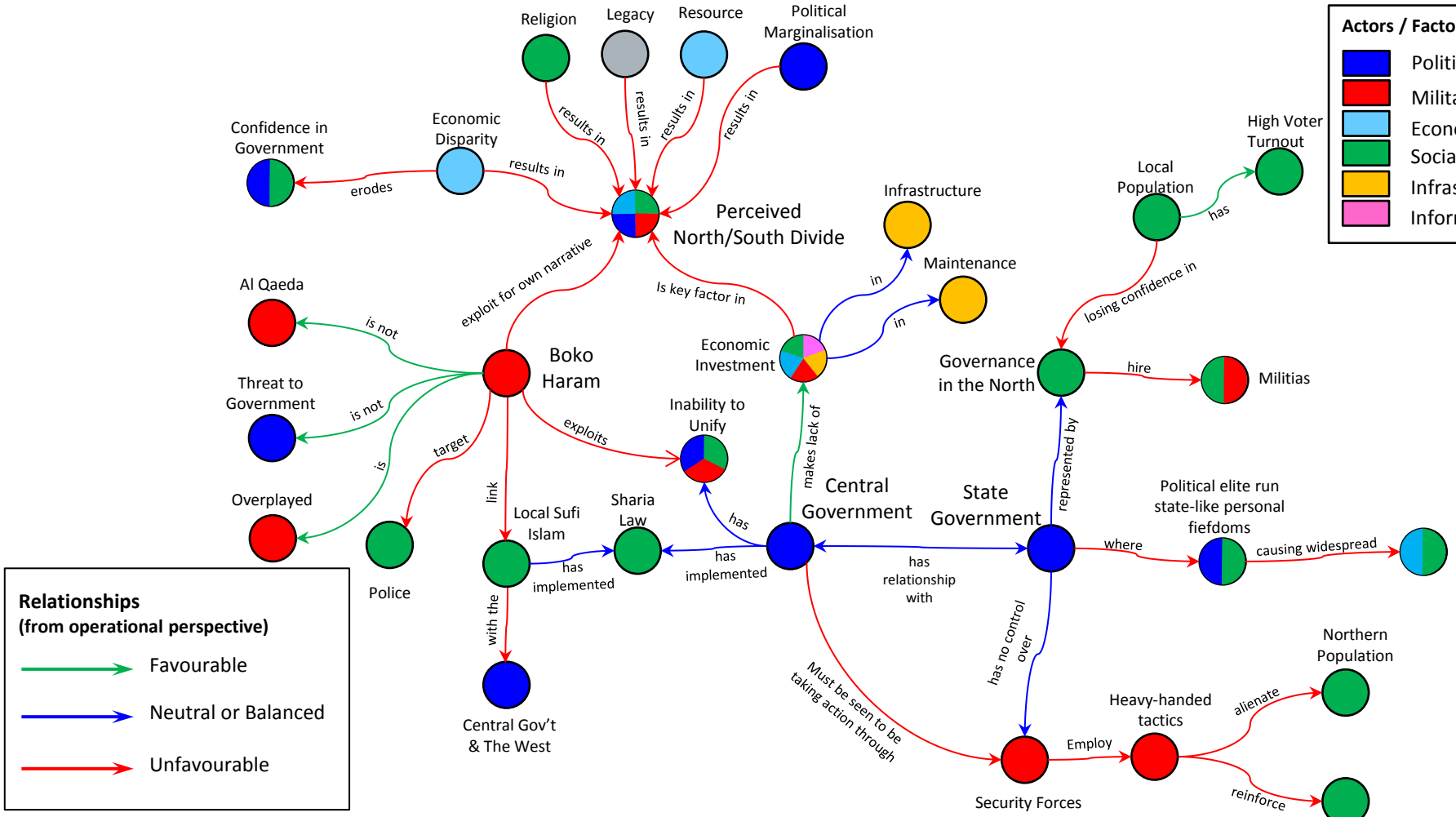

HQ ARRC 'understand' study period (CPOE), Feb 2014

Early lessons

- **Both HQ ARRC and SJFHQ considered the techniques to have benefitted their CPOE process**
  - Rapid adoption following limited training and coaching
  - Extensive briefing using outputs from techniques
- **Techniques required integration into CPOE and HQ settings**
- **Both HQ ARRC and SJFHQ staff adapted certain techniques**
- **Techniques were also applied further 'downstream' with similar success**
  - HQ ARRC Crisis Response Planning – context diagram to support Mission Analysis
  - SJFHQ Execution phase – rich picture, context diagram, cognitive map and laddering to support Red Teaming
- **Variation in the adoption of the techniques by the staff in both HQs**
  - Hypothesis: greater take-up by staff who were already attuned to systems thinking and the visual representation of problems and situations

Summary

- **Understanding is an ongoing cognitive and social process**
- **Understanding techniques provide ways of supporting this process**
  - By supporting sensemaking and, in particular, framing
- **Practice of techniques forms part of 'Understanding Capability' within HQs**
- **Initial implementation within both HQ ARRC and UK SJFHQ has been successful**
  - Effective training and practice within CPOE activities
  - HQ ARRC UTAM