



Australian Government
Department of Defence
Defence Science and
Technology Organisation

Agility in an Extended Space of Constructible Organisations

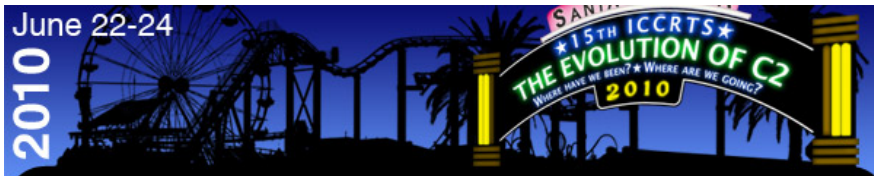
Alex Kalloniatis

Iain Macleod, Elizabeth Kohn

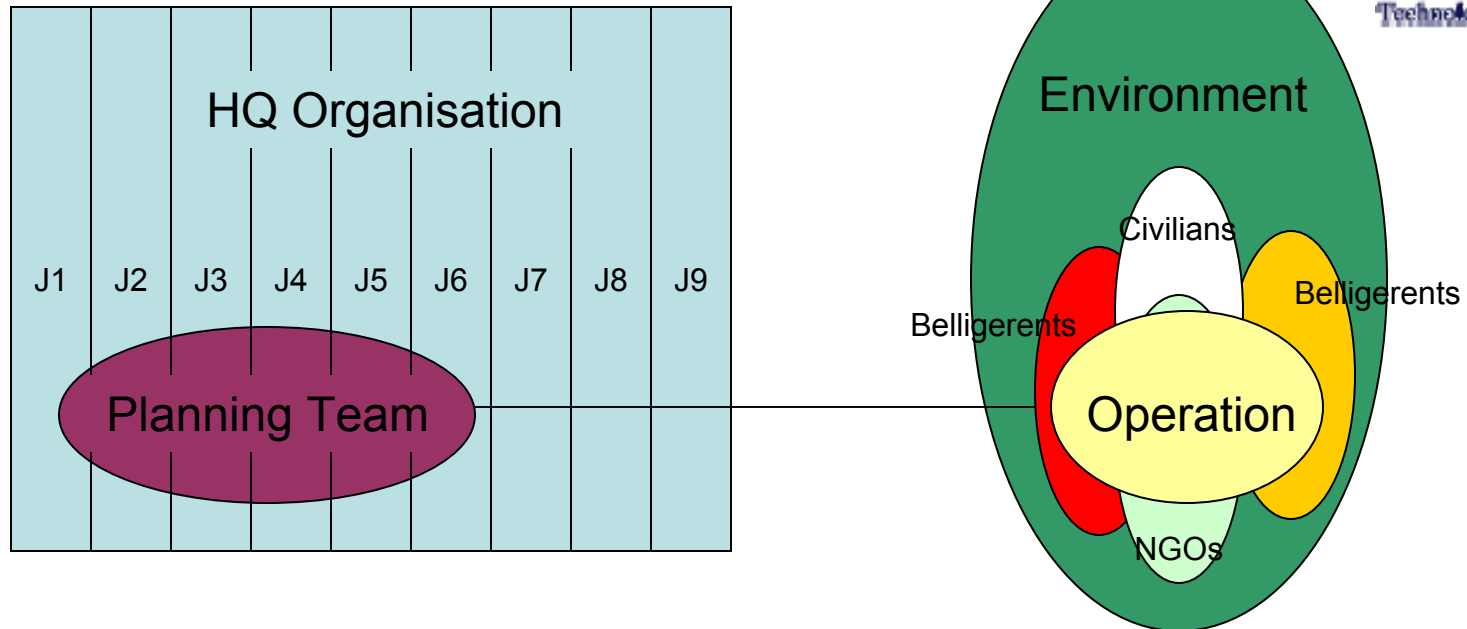
Joint Operations Division

June 22-24

2010



Context



Example:

UN-endorsed peace-keeping operation in response to border conflict between adjoining nations. ADF to mount a JTF to “keep the peace”.

Joint Operational HQ requires a planning team to conduct *Immediate Planning* for the Operation to launch in 2 months time.

Planners (J5) require other J-specialist input: Personnel (J1), Intelligence (J2), Logistics (J4), CIS (J6), Lessons-Learned (J8), Civ-Mil Affairs (J9).

Q1: How best to structure and coordinate the planning team?

Q2: What role does ICT play in enhancing or undermining this?

Outline

- Background Principles
- Geometrical model for Space of Constructible Organisations
- ICT and Extending the Space
- Edge vs Adhocracies
- Challenges to Agility in the Extended Space
- Conclusions

Background Principles

- *Principle of Requisite Variety (Ashby)* applied to Organisations: Orgs must have internal variety \geq that of environment in which operations conducted.
- *C2 (Pigeau-McCann)* as
 - Command = creativity & will
 - Control = structures and processes
 - \Rightarrow command exercised from above *and* below, through structure, to achieve common intent and therefore coordinated action.
- *Contingency Theory (Burns & Stalker, Donaldson)*: there is no universal form for an organisation making it fit-for-purpose for all contingencies. Therefore parts of organisations must adapt to enable operations for differing contingencies.

Space of Constructible Organisations

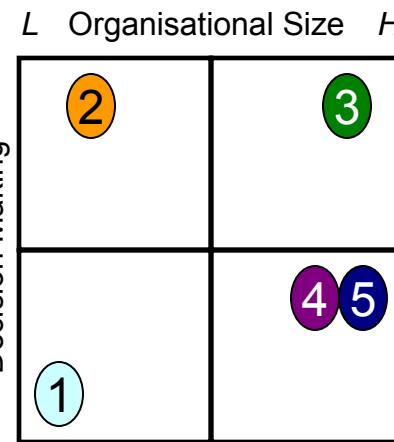
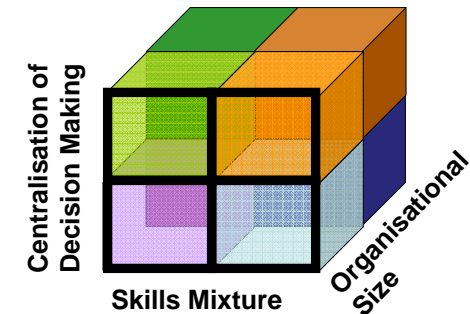
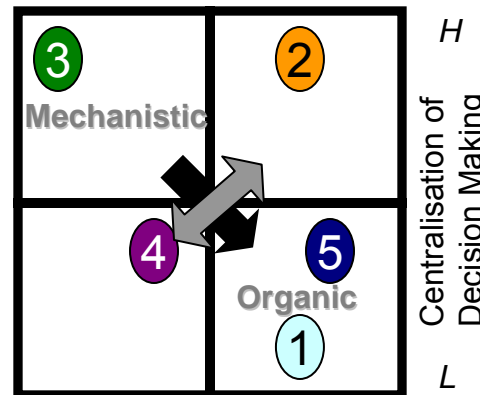
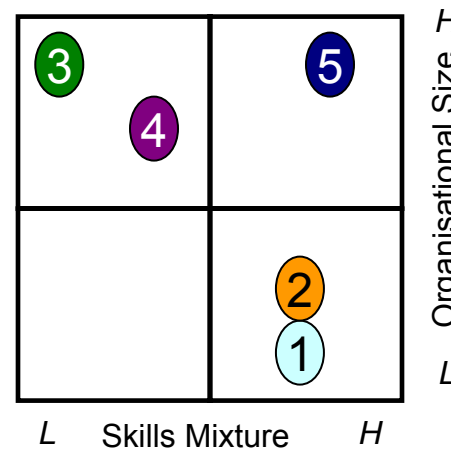
There is no universal form for an Organisation making it fit-for-purpose for every contingency.

Mintzberg's Classic 5 Types

Henry Mintzberg,
The Structuring of Organizations, 1979

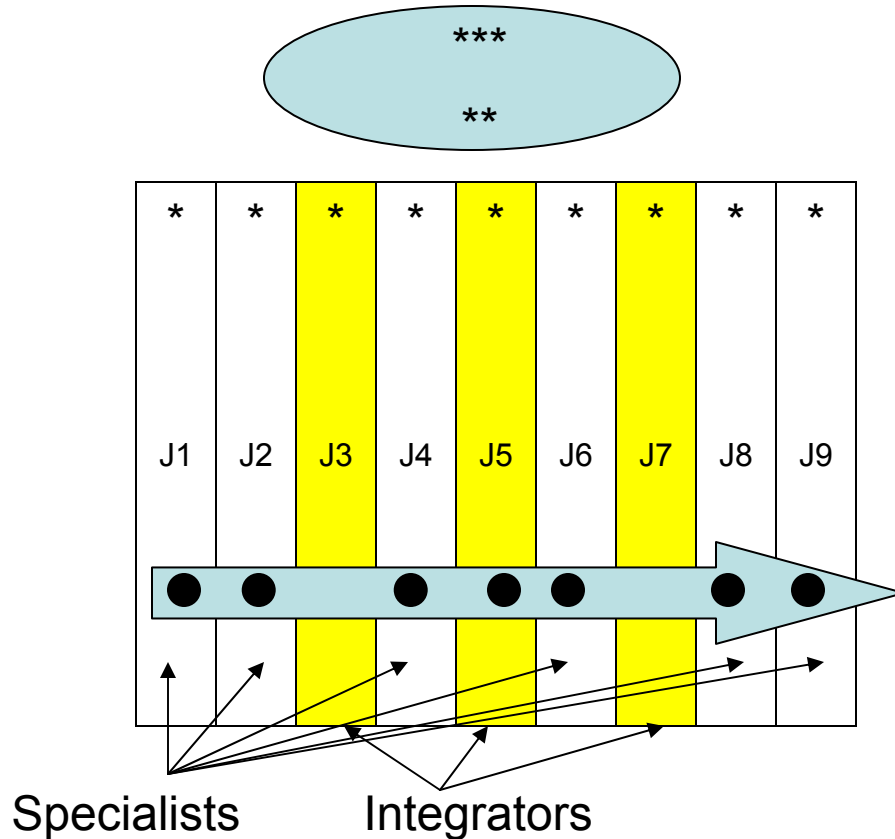
- Evolutionary Direction ↓
- ① Adhocracy
 - ② Simple
 - ③ Machine
 - ④ Professional
 - ⑤ Divisional

Adaptation Asymmetries:
Hollenbeck, Ellis, Moon, Jundt et al. 2000–2006

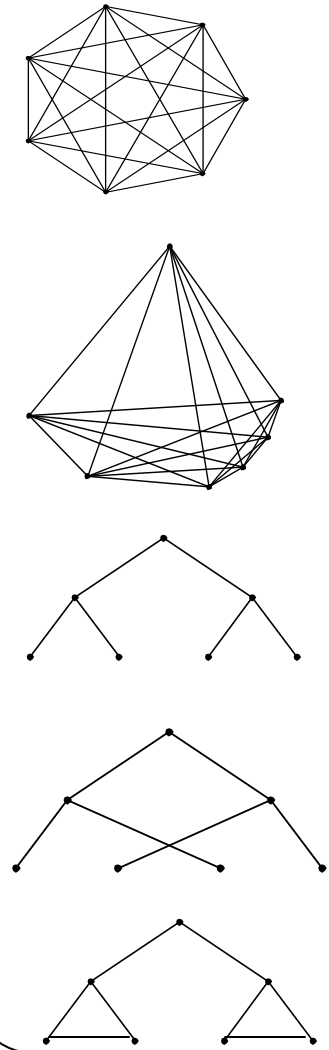


Geometrical Model: Kalloniatis, Macleod, Kohn – ICCRTS, 2010

CJSS and Mintzberg models



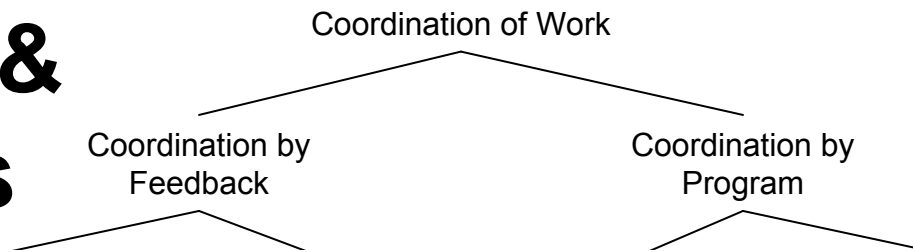
Planning Team
eg N=7



J-staff is *hybrid* in nature: for different connections and coupling strengths *all five* Mintzberg types can be realised.

Not a bug but a feature: generates scope for agility within a default Divisional – Bureaucratic Form

Coordination & Organisations



Human
Systems

ICT
Systems

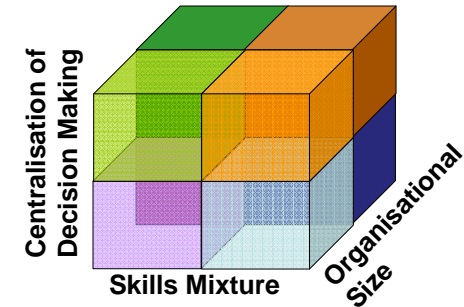
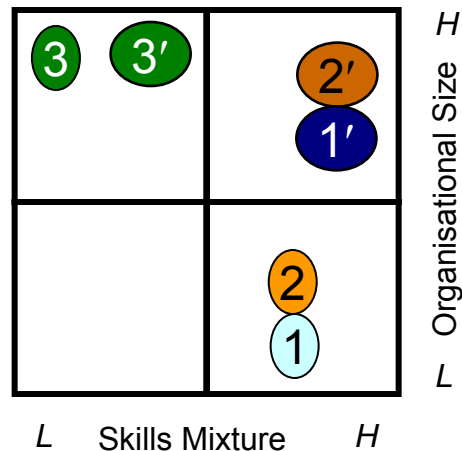
Org
Systems

Groth's Extended Organisational Space

Lars Groth, *Future Organisational Design*, 1999

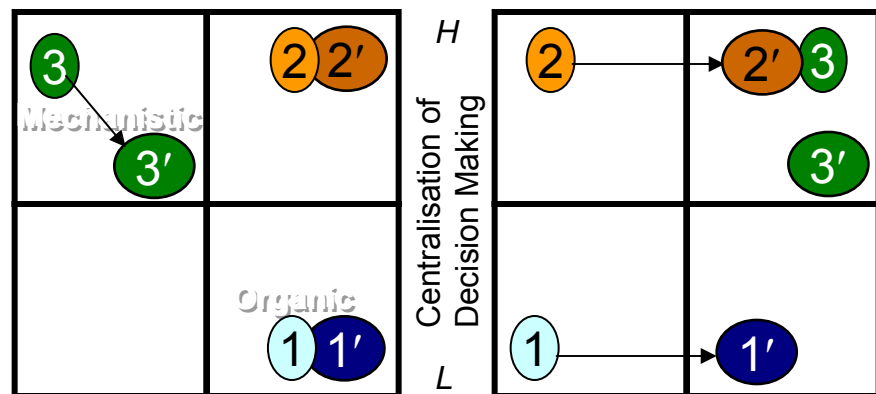
Mintzberg's Classic

- ① Adhocracy
- ② Simple
- ③ Machine



Groth's extended (excl Cloud and Meta-Organisation)

- ①' Interactive Adhocracy
- ②' Joystick
- ③' Flexible Bureaucracy



Contingency factors

Donaldson, *The Contingency Theory of Organisations*, 2001



Q: How to characterise the environment within which a Team undertakes an intervention?

Environmental Complexity: how inter-connected is external variety/heterogeneity?

Correlates with Internal Organisational Variety

Problem Size/Scale: how big are the fluctuations in the environment requiring control?

Correlates with Organisational Size

Near-Far Coupling aka Public Accountability [Pugh et al, 1969, Arambula, 2008]: how much does the local organisational environment influence its conduct in the operational environment? Is the organisation judged by measures natural to the operational environment?

(Arguably) correlates with Vertical Centralisation

o:
Environmental Coupling

Task Inter-dependence/decomposability

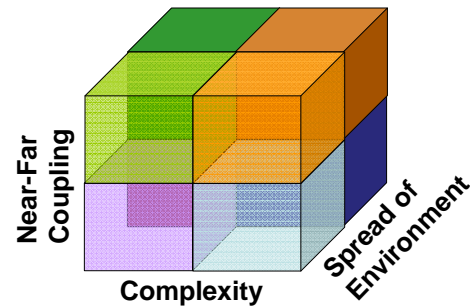
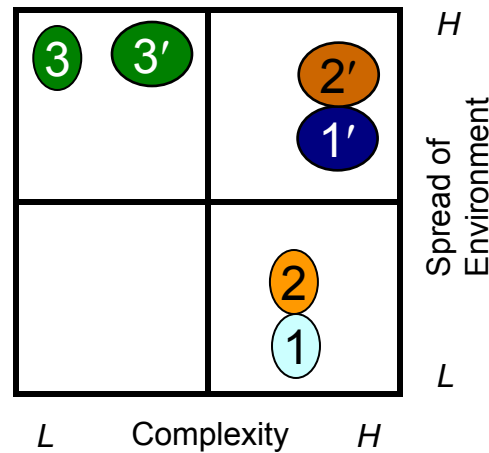
Organisations and Contingencies

Geometrical Model: Kalloniatis, Macleod, Kohn – ICCRTS, 2010



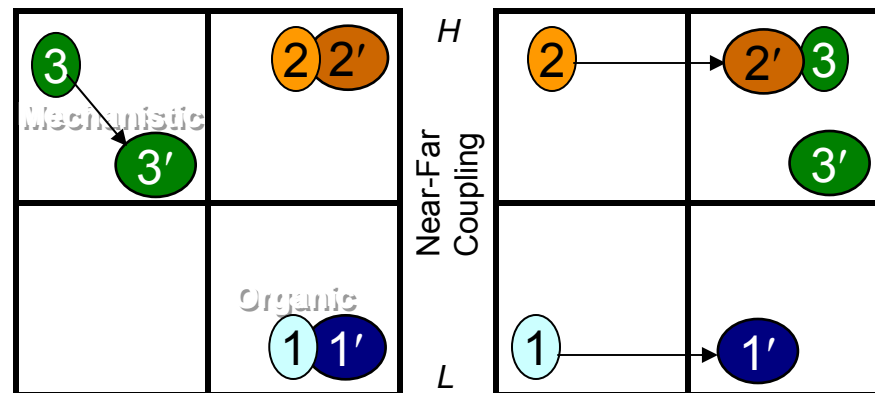
Mintzberg Types

- Adhocracy
- Simple
- Machine



Both Types

- Interactive Adhocracy
- Joystick
- Flexible Bureaucracy



Team in a Military Organisation may confront contingencies anywhere in this

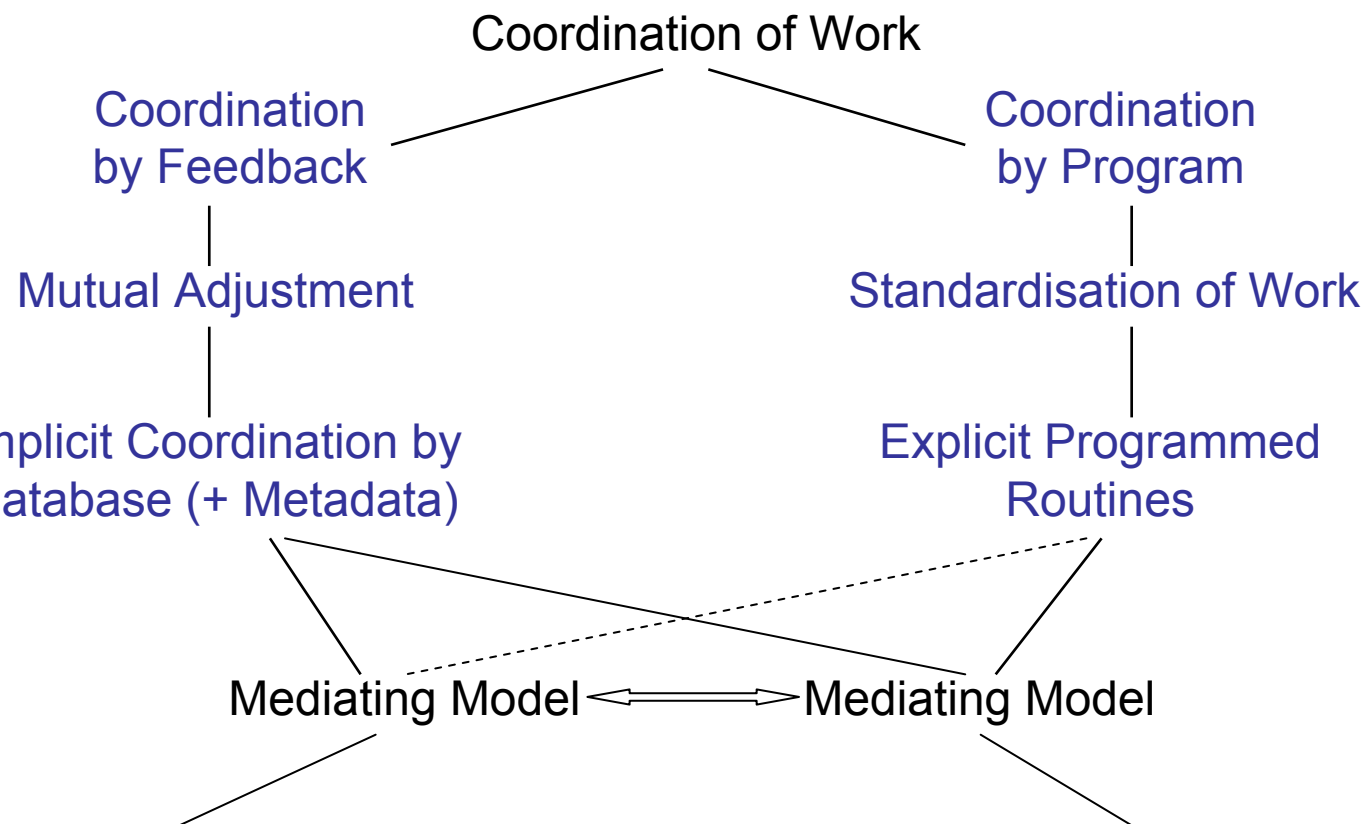
Edge vs Adhocracy: Characteristics



Characteristic	Edge	Adhocracy
Peer-to-Peer, Flexible Interaction	✓	✓
Professional Competency	Medium	High*
Skills Mixture / Specialisation	Mixture	Mixture
Shared Understanding of Goals, Shared Situational Awareness	✓	✓
Self-Synchronisation = Mutual Adjustment	✓	✓
Capable of Creative Solutions	✓	✓
Efficient with Well-Understood Problems	X	X
Use of Databases for Implicit Coordination	✓	X with Simple ✓ with Interactive
Speed / Accuracy in GWOT Scenario [Nissen, 2007, Tables 4, 6]	✓ / X	X / X (with Simple)

* Nissen (2007) sets this to Low

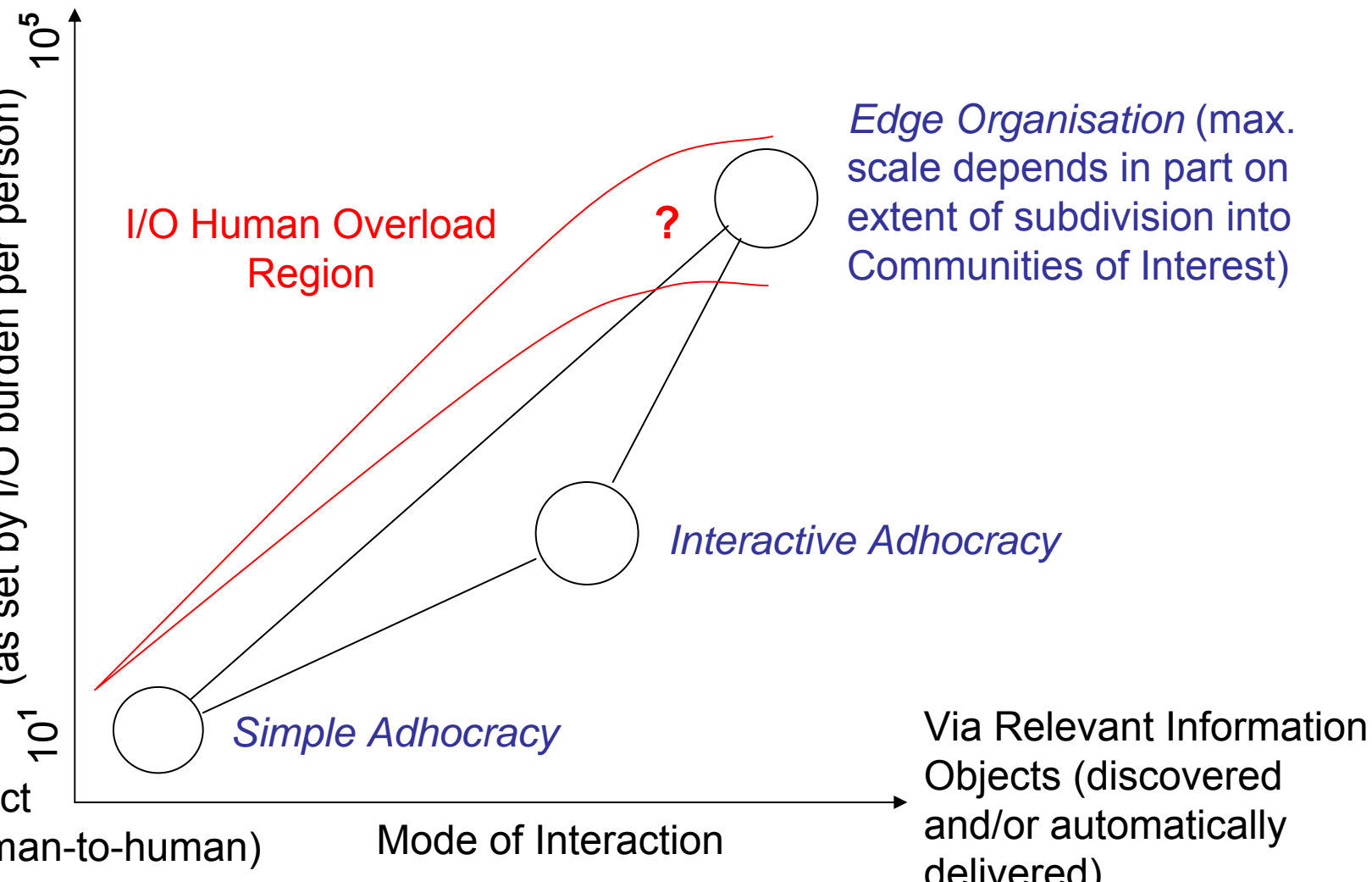
Large vs Adhocracy: Coordination Models



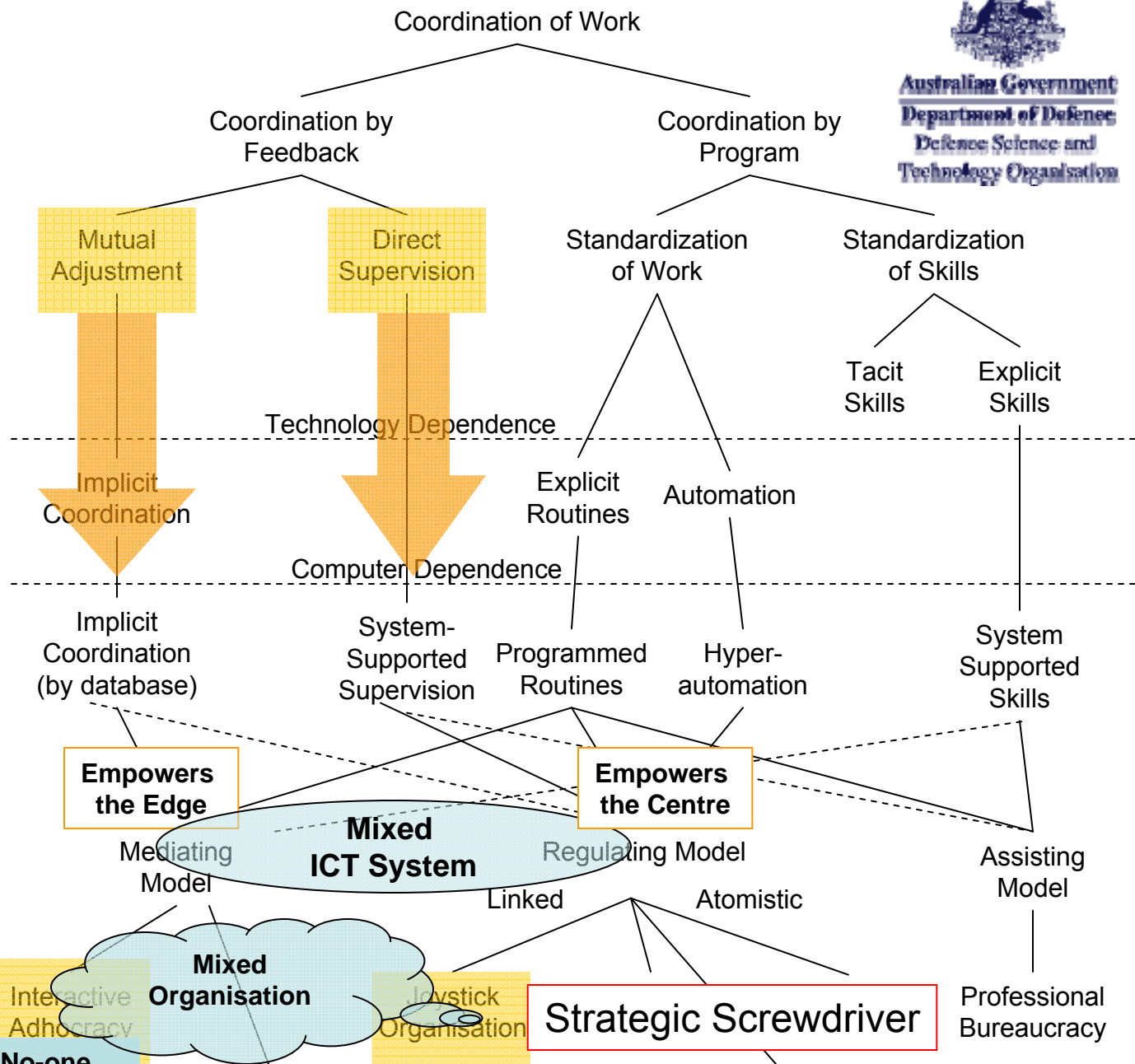
Large Organisation – emphasises coordination of human work via discovery, automated delivery and

Interactive Adhocracy – emphasises coordination of human work via encoded knowledge of problem domain and

Where does the Edge sit?



ICT Challenge Synchronisation Ability?



Conclusions



Organisational Theory has provided comprehensive taxonomy of Organisational Types both with and without ICT support.

Organisational type is fit-for-purpose for all contingencies: adaptability required within space of constructible organisations; *this is form of organisational agility*.

Broth-Mintzberg theory predicts forms of organisation resembling the edge, as well as other ICT enhanced forms with very different properties.

ICT can enhance and/or undermine adaptations between Classical and extended organisational types; *accidentally* mixed conceptual models for ICT undermine the intended purpose of technology.