'Making it STARC'!
Proposed future ways forward for contemporary military & special operations intelligence & knowledge work

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Introduction #1

- Outline a **proposed interconnected analytical framework + series of concepts** >>> furthering conduct of contemp. **mil. & SO INT & knowledge work in globalised circumstances + future**.

- Build on **'System of Systems Analysis' (SoSA)** approaches >>> a **joined-up comprehensive systems-based approach** = advanced.

- Better capture enterprise-relevant **System of System Dynamics (SoSD)**

- Greater **contextualisation potential** = offered.

Introduction #2

- Help subsequent **'System of Systems Engineering' (SoSE)** efforts - i.e. 'mission accomplishment' thru transforming devs.

- Close eye = maintained on:

  ➡ **sustained delivery of intelligence reqs of '3Rs'** = *'getting the **right intelligence/information**, to the **right person/people**, at the **right time**'* +

  ➡ Continuing to **simultaneously meet + consistently maintain over time**, all of highly-pressing customer/end-user intelligence delivery criteria of **'STARC'** = *'Specificity, Timeliness, Accuracy, Relevance and Clarity'*

- **Especially pressing reqs** during **contemporary 'Big Data'/'Cyber' age**.

Introduction #3

- **Conclusions = designed to offer suggestions** >>> potential viable utility in mil. & SO INT & knowledge work - however precisely configured/calibrated/scaled (spatially/temporally).

- Esp. while strive to navigate demands gen. by negotiating conduct of several **multi-functional operations (MFOs)** ranging from 'war' to 'peace' - **covering full-spectrum of diverse concerns**, e.g.:

  ➡ crisis management, peacekeeping and humanitarian operations, cyber, counter-insurgency (COIN), counter-terrorism (CT), counter-proliferation, + the countering of transnational organised crimes, etc.

- + as all above MFOs = occurring in **both physical (sea, air, land, space) + virtual (cyber) domains (5x)** during **overall era of globalised strategic risk (GSR)**, unfolding in **'complex co-existence plurality' (CCP) environments**.

- Ultimately, a **constant feedback process of 'context appreciation' + 'solution fashioning'** emerges as important.

Where we are today #1

- Currently **use/rely on SoSA** approaches, breaking-down 'problems' in op. spaces into readily graspable dimensions of, e.g.:

  - **'PMESII'** ('Political, Military, Economic, Social, Informational and Infrastructural'), e.g. used by NATO;

  - **'PESTLE'** (Political, Economic, Sociological/Social, Technological/Technology, Legal/Legislative, Environmental), e.g. used by EUROPOL;

  - **'DIME'** (Diplomatic, Information, Military, Economic);

  - **'HSCB'** (Human, Social, Cultural, Behavioural), e.g. as both used by US Military;

  - **'STEEP(L)'** (Social, Technology, Economic, Environmental, Political, [Legal]), e.g. as used in commercial/business intelligence contexts, etc.
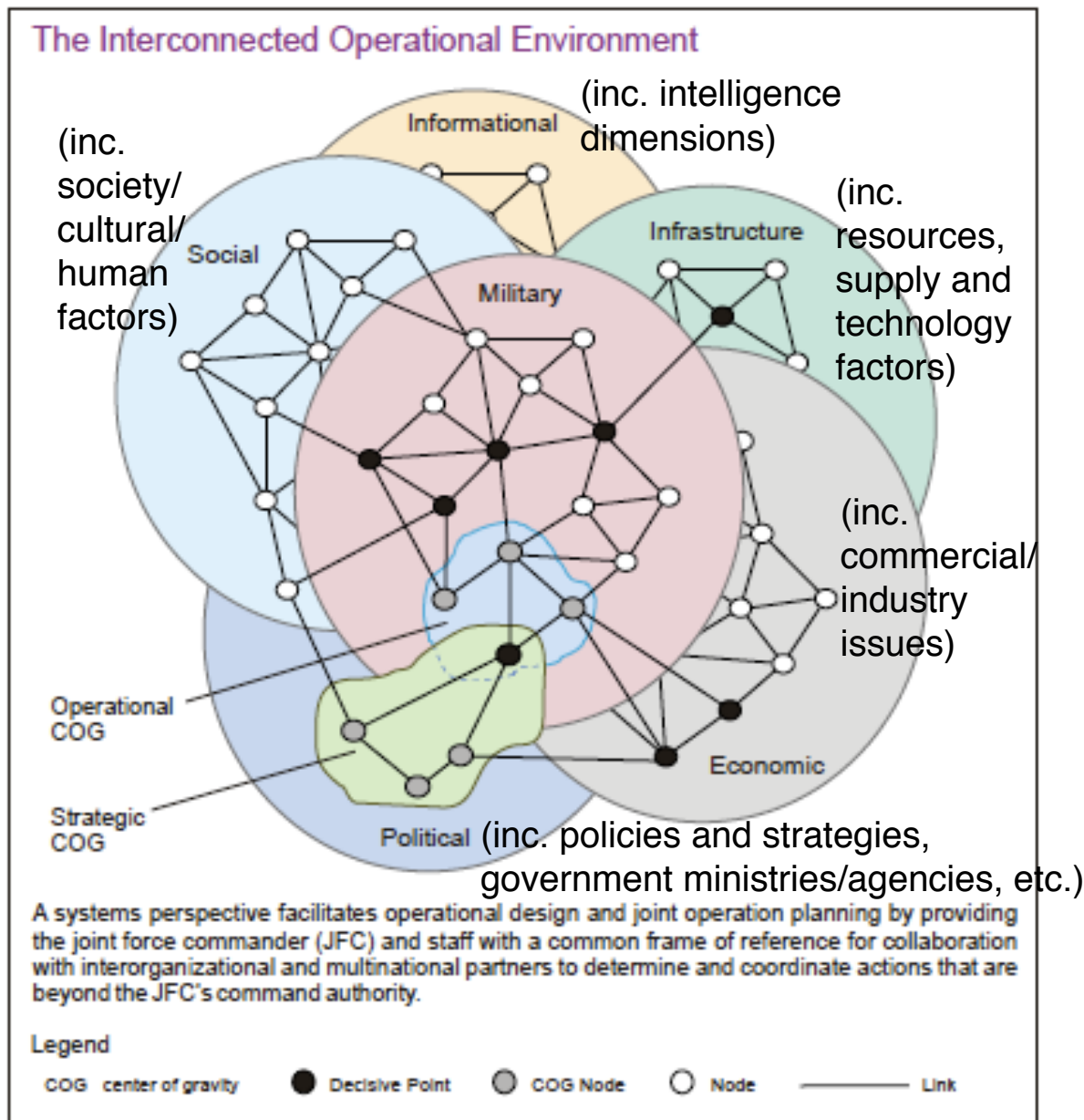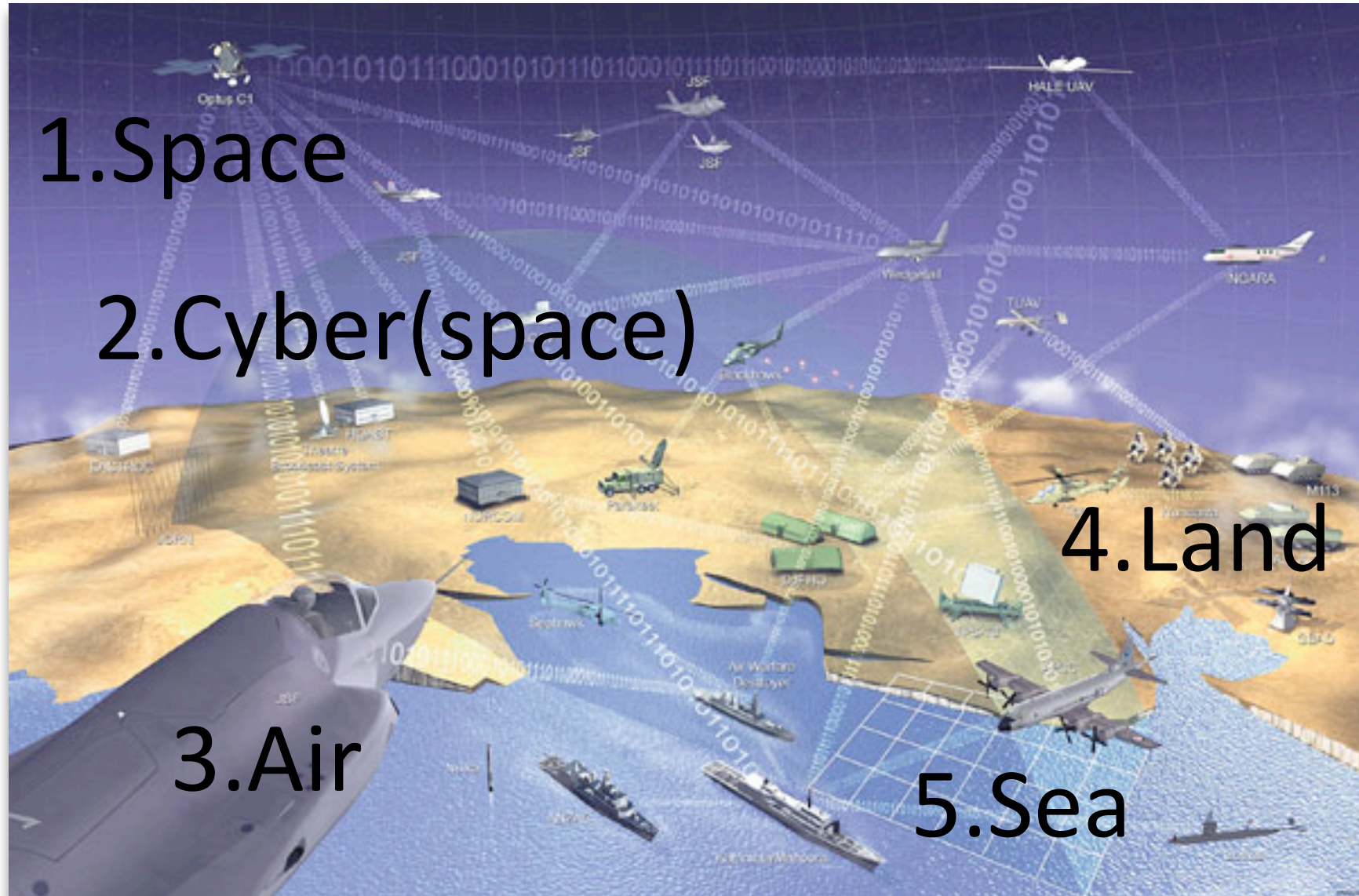
Where we are today #2

Depiction of System of Systems Analysis (SoSA) - *figure IV-2* from US Joint Chiefs of Staff, *J-P 3.0* (Aug. 2011), p.IV-5 *(my additions)*

Where we are today #3

5x domains of activity:

1. Space
2. Cyber(space)
3. Air
4. Land
5. Sea

Source: http://www.defence.gov.au/news/raafnews/editions/4802/images/10-P12-Main-graphic.jpg

Where we are today #4

- However there = **readily discernible limits** - e.g.:
  - As Ben Connable of RAND argued (2012):
    - *'while SoSA* **tries to explain in very basic and mechanistic terms** *how to reify and deconstruct a complex system* [(here read, e.g., the spatial socio-cultural context)], *it* **does not explain how to reconstruct that system** *in a way that accurately conveys* **interrelated complexity**.'

Where we are today #5

- Also, Keith Patrick Dear, a British RAF Squadron Leader, observed:

  - *'The **desire for clarity and simplicity** is also manifested in an **over-reliance on abstract modelling** of insurgent groups, primarily Social Network Analysis (SNA)… **It does not show the more complex reality, but rather a simplistic and incomplete abstraction**.'*

- He reveals: **one 'system'** - in this e.g., **the 'social' = over-emphasised above, + some times at the expense of**, **others** that simultaneously exist.

- Result(s): The **'big(ger) picture' becomes or = more neglected** >>> detrimental / counter-productive effects.
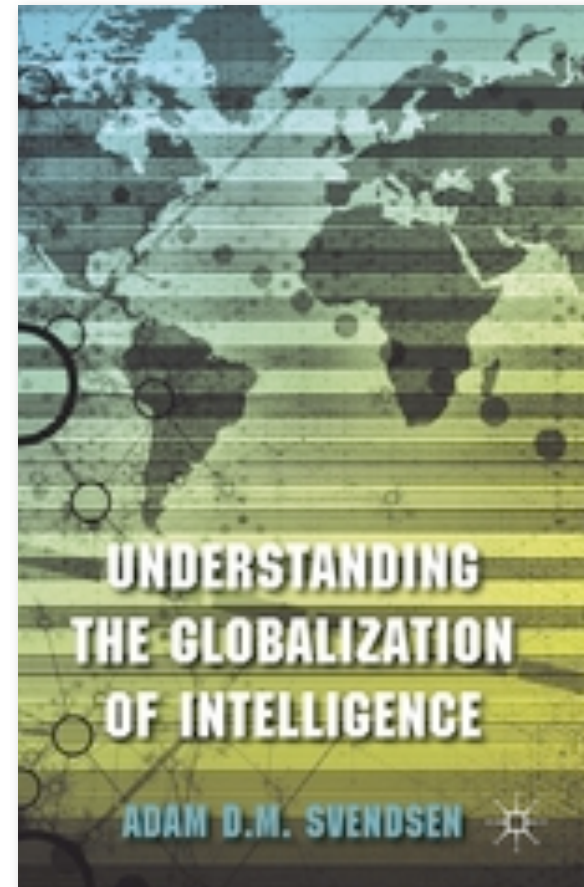
Where to go next? #1

- **SoSA approaches *alone* = not adequate**

- Many different approaches = instead proposed.

- Most viable = **Build on SoSA** approaches **+ *better harness* SoSE** approaches >>> better cover SoSD.

  - e.g. Use **'target-centric' intelligence analysis** approach - cf. Robert M. Clark

  - Work on **'(i) marking target carefully; (ii) watching background; (iii) taking clean + clear shots'** basis.

- Propose use an **interconnected, joined-up 'systemic' model,** helpful for subsequent **SoSE** + synthesis efforts.

- Namely, advance a ***'SoSA+SoSE'* (SoSD) approach**

Where to go next? #2

- That last **SoSD model** inc. covering **8x systemic attributes or variables**:

CHECKLIST

1. internal influences/factors;

2. rationale;

3. types and forms;

4. conditions and terms;

5. trends;

6. functions;

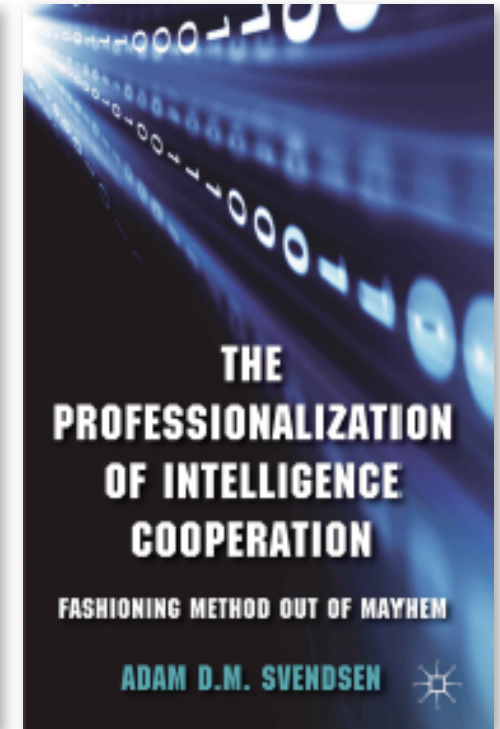7. external influences/factors; +

8. effects and outcomes.

- (cf. A.D.M. Svendsen (2012), *Understanding the Globalization of Intelligence*, pp. 99-107)

UNDERSTANDING THE GLOBALIZATION OF INTELLIGENCE

ADAM D.M. SVENDSEN

Where to go next? #3

- + inc. covering **8x levels of (inter-)activity/implementation**:

  1. Ideological
  2. Theoretical
  3. Strategic
  4. Policy
  5. Operational
  6. Tactical
  7. Individual (as 'professional')
  8. Personal
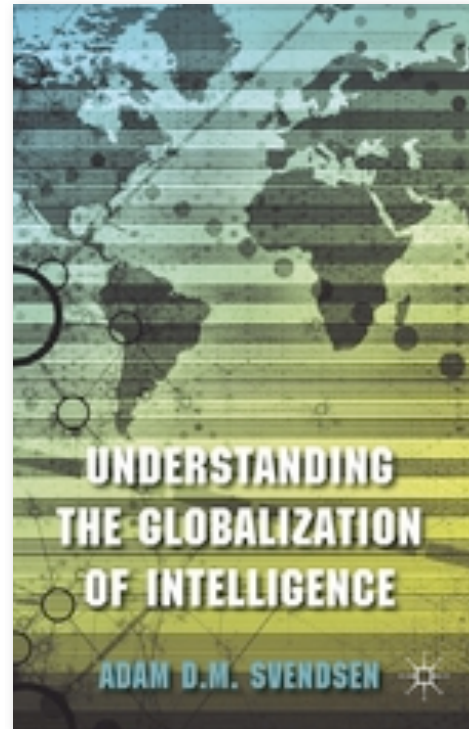
- + **'Reach' concepts** >>> **'under-reach'** + **'over-reach'**

- Need realise **'optimised reach balance(s)'** in overall enterprises

- (cf. A.D.M. Svendsen (2012), *Understanding the Globalization of Intelligence*, e.g. p.12, etc. + A.D.M. Svendsen (2012), *The Professionalization of Intelligence Cooperation*.)

Where to go next? #4

Figure 3.2
Geospatially Oriented Aspects of the Information Domain of the Operating Environment

Most dynamic

Information
Mass media
Other info channels

Cognitive/Behavioral
Behaviors and events
Info consumption, etc.
Attitudes and beliefs
Culture

Political/Administrative
Boundaries
Organizations
Networks

People
Location
Demographics
Sect, tribe, etc.

Infrastructure
Broadcasting facilities
Publishing facilities
Telecoms
Billboards, signage

Terrain
Urbanization
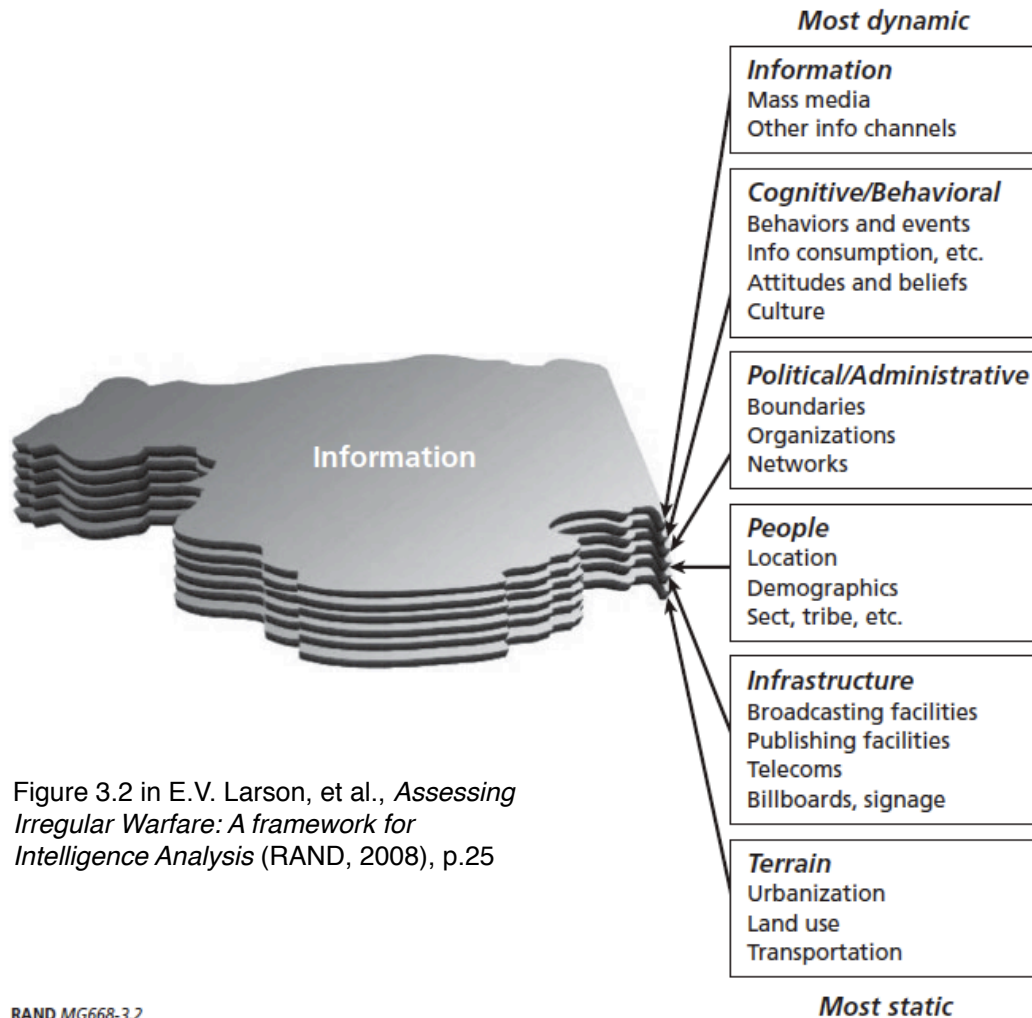Land use
Transportation

Most static

Information

Figure 3.2 in E.V. Larson, et al., *Assessing Irregular Warfare: A framework for Intelligence Analysis* (RAND, 2008), p.25

RAND *MG668-3.2*

- + inc. covering dimensions, e.g. given in this figure.

Context appreciation

- **Captures 'M4IS2**: *multiagency, multinational, multidisciplinary, multidomain information sharing and sense making*', which **ranges across 'eight entities** [*of*] *commerce, academic, government, civil society, media, law enforcement, military and non-government/non-profit.*' (Segell, 2012) + **shows importance of (+ doing) RESINT + COLINT**.

How to put it all together? #1

Overall '**Situational Awareness**' Evaluation (**SoSA/G-J2**)

CONTEXT APPRECIATION - Observe + Orient

System attributes/ variables > e.g. inc. captures + covers...? > -------------- SoSA units (e.g. PMESII):	Internal influences / factors 'Who?' / 'Which?'	Rationale 'Why?'	Types + Forms 'What?'	Conditions + Terms 'When?'	Trends (+ dynamics/ flows) 'Where?'	Functions 'How?'	External influences / factors 'Who?' / 'Which?'	Effects + Outcomes 'What?' / 'S.W.O.T.'
Political (inc. law/legislation)								
Military								
Economic								
Social (inc. sociological + cultural)								
Informational/ Intelligence (inc. technological)								
Infrastructural (inc. environment[al])								

This matrix is designed to provide an analytic framework with **core - even checkbox - criteria or variables to consider** into which evaluators can record as holistically as possible - e.g., through mapping - what they observe from, e.g., a selected case/issue/ problem, etc.

This approach enables the **comprehensive capturing** of - if not all - at least several different aspects of an event/episode, issue, etc., in its **varying key dimensions**.

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FUSION EXAMPLE: ISIS

Overall 'Situational Awareness' Evaluation (SoSA/G-J2)

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Political (inc. law/legislation)	Sharia law / alternative hierarchies	Unrep. elsewhere/ power-play	Strong leadership	Fill governance vacuum	Exploiting Iraq/Syria weaknesses	Ruthless / kill off opposition	Sympathis ers	Imposing regime
Military	Tight, well-disciplined C2	Got weapons / tactics	e.g. Heavy +automatic weaponry	Succeed vs. weaker/ disorg. oppo	Good at capturing; less so at holding?	Agile / flexible / fast-lightfoot	Ex-military personnel	Competent committed adversary
Economic	Profitable/ employed	Make profit - e.g. oil	Steady supply funding	Exploit existing/new markets	Exploiting oil-refineries	Able to sell, e.g. oil	Resp to consumer demands	Self-sustaining /autarky?
Social (inc. sociological + cultural)	Camarad -erie/ purpose	Romance	Bonding/ band-bros/ marriage	Links/ties - e.g. friends/ passions	Native + Foreign fighters	Quasi-religious/ smashing activities	'Call of the wild'/ share adventurism	Soft + not just hard factors
Informational/ Intelligence (inc. technological)	Good / soc media / BYOD	Able to influence	Social media/ propaganda	INFO/ PSYOPS = work	Use internet - e.g. Twitter	Access to electronic devices	Acquiescence support thru intimidation	Shifting frames of reference
Infrastructural (inc. environment[al])	Good networks/ comms	Can seize/ control/ trade/nego	Training camps/ bases	Using what is there - e.g. roads...	Urban/ settled/travel-able areas	Travel on roads / oil refinery use	Unwitting(?) private service prov	Too depend on what have already?

How to put it all together? #2

Overall '**Mission Accomplishment**' Guide (**SoSE/G-J3**)
SOLUTION FASHIONING - Decide + Act

SoSA units (e.g. PMESII) > ---------------- 'Levels' (of interactivity/ implementation/ engineering):	Political (inc. law/ legislation)	Military	Economic	Social (inc. sociological + cultural)	Informational/ Intelligence (inc. technological)	Infrastructural (inc. environment[al])
Ideological (e.g. Ideas/Why realise?)						
Theoretical (e.g. Aspirations/Why do?)						
Strategic (e.g. Directions/How go?)						
Policy (e.g. Aims/Where go?)						
Operational (e.g. How/What realise?)						
Tactical (e.g. How/What do?)						
Individual (as 'professional') (e.g. What/Which realise?)						Privacy buffer
Personal (e.g. Who do?)						

Deliverable work filling/completing this matrix (+ the one given on prev. slide) can be **done 'live'** - e.g. in a real battlespace/ operational context ('pre-flight' style); or equally can be **done more 'off-line' + in the abstract** - e.g. during a simulation/training/ exercise in the classroom.

Overall, these **matrices form useful analytical frameworks + educational teaching tools**, also helping to advance **standards + best practices** in approaches towards situation evaluations + subsequent transformation.

Also suggests **where 'to draw the line'** in relation to issues, e.g. privacy, etc.

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How to put it all together? #3

Fusion grid = mapping System Attributes/Variables + Levels

for each specified SoS unit of analysis* - e.g. using PMESII model: Political; Military; Economic; Social; Informational/Intelligence; Infrastructural (*show which is selected for focus)

System Attributes/ Variables> ---------------- 'Levels' (of interactivity/ implementation/ engineering):	Internal influences / factors 'Who?' / 'Which?'	Rationale 'Why?'	Types + Forms 'What?'	Conditions + Terms 'When?'	Trends (+ dynamics/ flows) 'Where?'	Functions 'How?'	External influences / factors 'Who?' / 'Which?'	Effects + Outcomes 'What?' / 'S.W.O.T.'
Ideological (e.g. Ideas/Why realise?)								
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Personal (e.g. Who do?)								

This third chart (table) for mapping allows for **'triangulation'** to be undertaken, e.g. with the results from the other two previous charts, during overall 'fusion' activities.

Privacy buffer

How to put it all together? #4

OVERVIEW SNAPSHOT SUMMARY
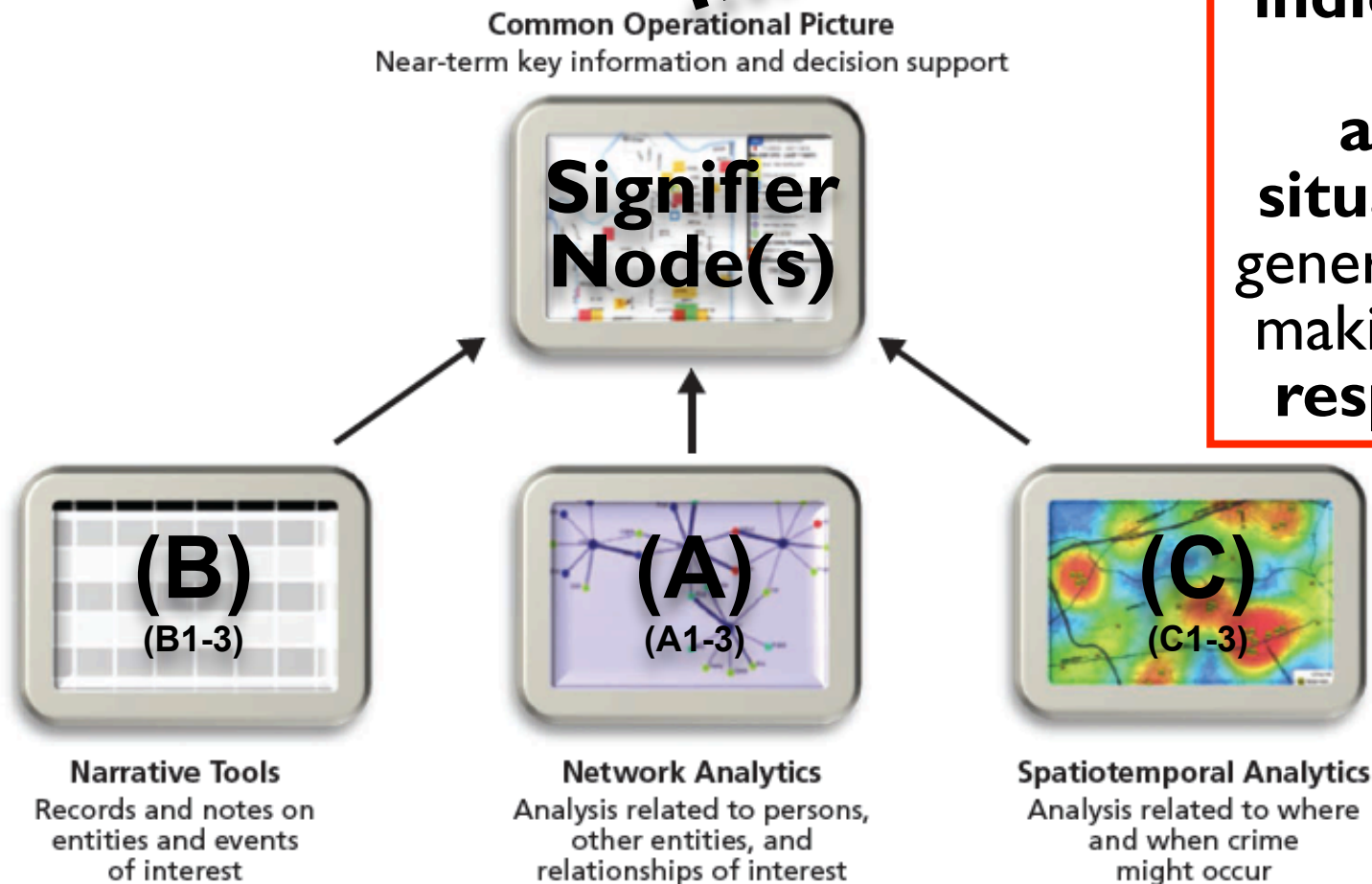**At a minimum for context consider + fuse:**

(A) 'Key Actors' - e.g. who? (e.g. OC groups, individuals, other 'targets', etc.)	**(A1) Events** - e.g. what? when? where?
	(A2) Patterns - e.g. how?
	(A3) Drivers - e.g. why?
(B) 'forces/factors of change' - e.g. what activity? (e.g. SOC areas, etc.)	**(B1) Events** - e.g. what? when? where?
	(B2) Patterns - e.g. how?
	(B3) Drivers - e.g. why?
(C) 'possible change over time' - e.g. when? / where? (e.g. environment, PESTLE/PMESII [SoSD] indicators, SWOT, etc.)	**(C1) Events** - e.g. what? when? where?
	(C2) Patterns - e.g. how?
	(C3) Drivers - e.g. why?

Aim = capture: (i) the **players**; (ii) their **relationships**; (iii) their **drivers** (e.g. their **means**, **motives** & **opportunities**).

How to put it all together? #5

130   Predictive Policing: The Role of Crime Forecasting in Law Enforcement Operations

Figure 5.5
Tools to Create Shared Situational Awareness

Common Operational Picture
Near-term key information and decision support

Signifier Node(s)

(B)
(B1-3)

(A)
(A1-3)

(C)
(C1-3)

Narrative Tools
Records and notes on entities and events of interest

Network Analytics
Analysis related to persons, other entities, and relationships of interest

Spatiotemporal Analytics
Analysis related to where and when crime might occur

RAND RR233-5.5

Generation of '**Signifier Node(s)**' for positioning on triage-related/colour-coded '**indicator board(s)**' = for **context appreciation** + **situation awareness** generation >>> help for making **where next + response decisions**
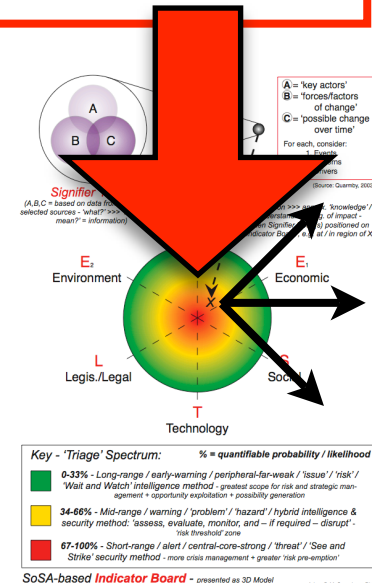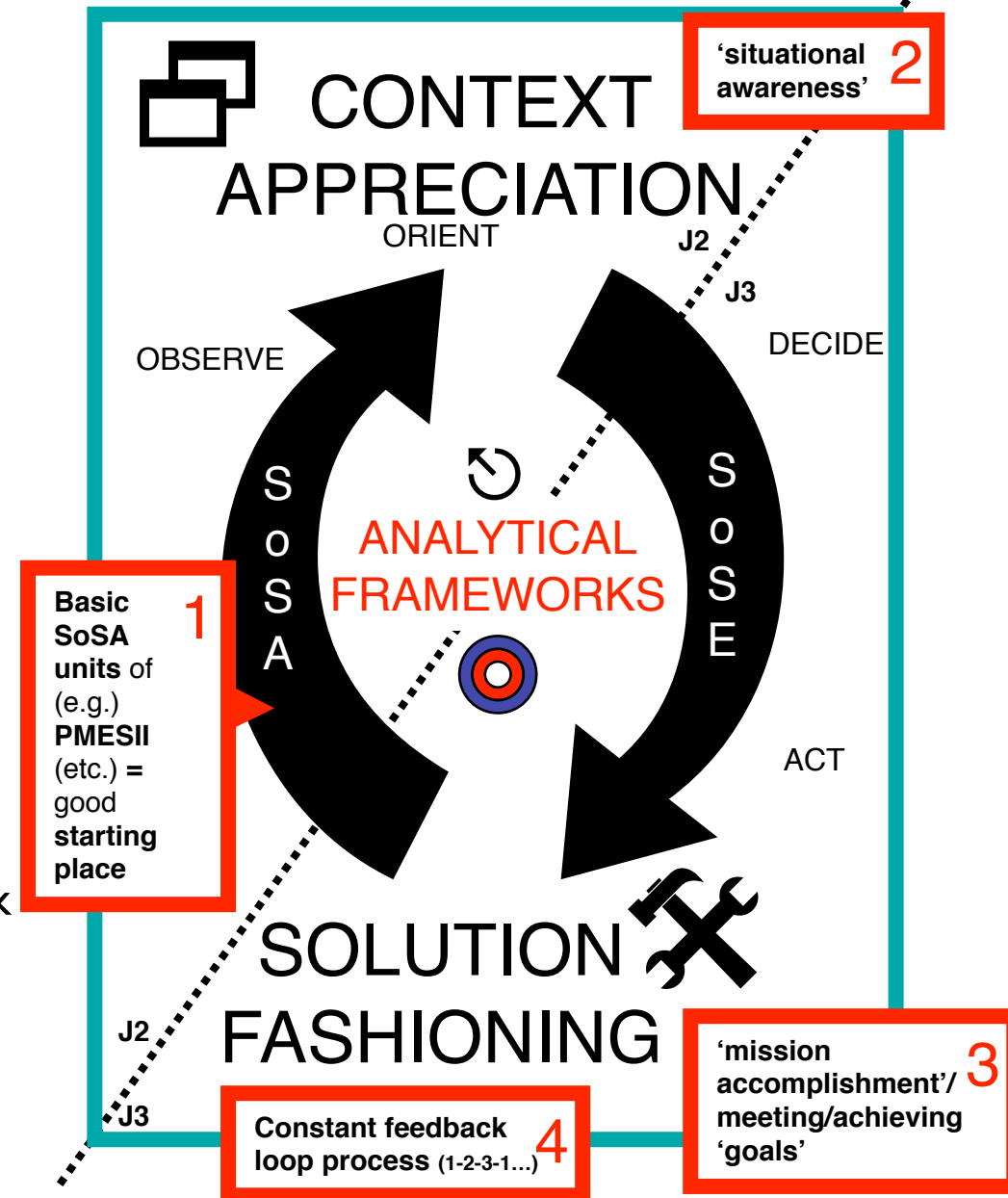
Conclusions #1

- Arguably **'SoSA+SoSE' = SoSD approach** advanced here >>> better:

    (i) **captures 'intelligence dynamics'** (e.g. information flows, cybernetic 'feedback-loop', networked dimensions, etc.) **found in military & special operations knowledge work**; +

    (ii) **joins up the many different 'systems' involved** + encountered during MFOs in overall GSR and CCP environments.

    (iii) **'fills the/any gaps' + offers greater contextualisation** of (e.g.) socio-cultural knowledge-related full-spectrum-ranging issues, problems, hazards, risks + threats.

Conclusions #2

Key Takeaway:

- Integrated/joined-up/comprehensive **'SoSA+SoSE' (SoSD) approach** =

- Helps **meet 'mission accomplishment' ends**, e.g., transform developments + better **keep 'ahead curve of events'**.

- Can be readily overlaid with other (perhaps more familiar) approaches - e.g. **OODA Loop**, etc.

- Helps ensure: **sustained delivery of '3Rs' + meet 'STARC' reqs**.

- Encourages **greater 'thinking outside of the box'** in military & special operations intelligence & knowledge work enterprises.

- **Assists in/with both collection + analysis** in overall enterprises - e.g. better refines IS[TA]R platforms focus, tasking + targeting, etc.

CONTEXT APPRECIATION

ORIENT

J2

J3

OBSERVE

DECIDE

S o S A

ANALYTICAL FRAMEWORKS

S o S E

'situational awareness' **2**

Basic SoSA units of (e.g.) **PMESII** (etc.) = good **starting place** **1**

ACT

SOLUTION FASHIONING

J2

J3

Constant feedback loop process (1-2-3-1...) **4**

'mission accomplishment'/ meeting/achieving 'goals' **3**

Conclusions #3

- Generally, **grander strategic/architectural/shaping approaches** = esp. pressing during:

  (i) our **contemporary 'Big Data'/'Cyber' age** +

  (ii) when **experiencing much 'sensory'** (e.g. IS[TA]R-platform) **+ other conditions of 'information/data overload'** +

  (iii) as do more **'Collective Intelligence' (COLINT)** while scrutinised more by more involved public +

  (iv) while continually **subjected to, e.g., 'Snowden-related' allegations** (or so-called 'revelations') + assoc. mis-/distrust; +

  (v) as related challenging **'legalisation'/'legalism' trends extend** >>> **'Smart-Law'** to instead needing advancement = better weighing Soft/Hard Law dimensions.

Call for Action & Partners
(researchers + sponsors)!

- Introducing: '**The Intelligence-domain System of Systems Dynamics Reference Content (SoSD)**' research project

- The innovative partnership between **Global University Alliance** and the **Copenhagen Institute for Futures Studies** focuses on **System of Systems Dynamics (SoSD)**.

- SoSD Research Goal:

  ➡ Involving a standardisation process, the project will create future intelligence-related **enterprise relevant standards + 'best practices'** + leading practice guides/guidelines.

  ➡ These standards = relate to SoSD use + dev. in + during intelligence-related operations, cases, etc., spanning the law enforcement and military/defence and security sectors.

  ➡ For more info: **www.cifs.dk/en/gua.asp**

Questions?
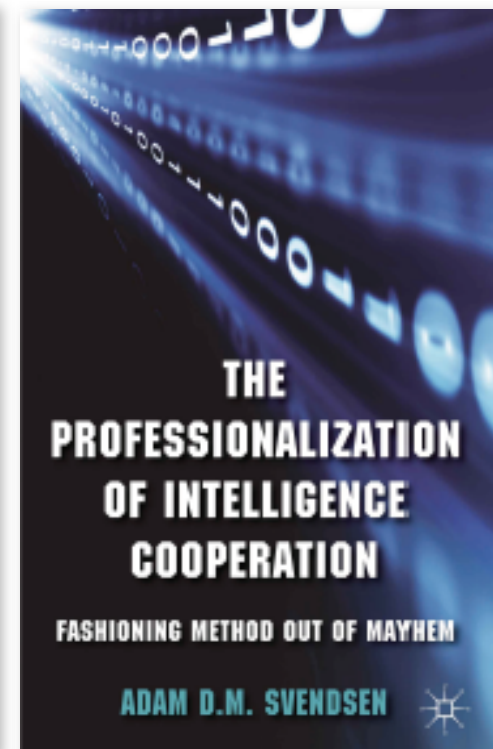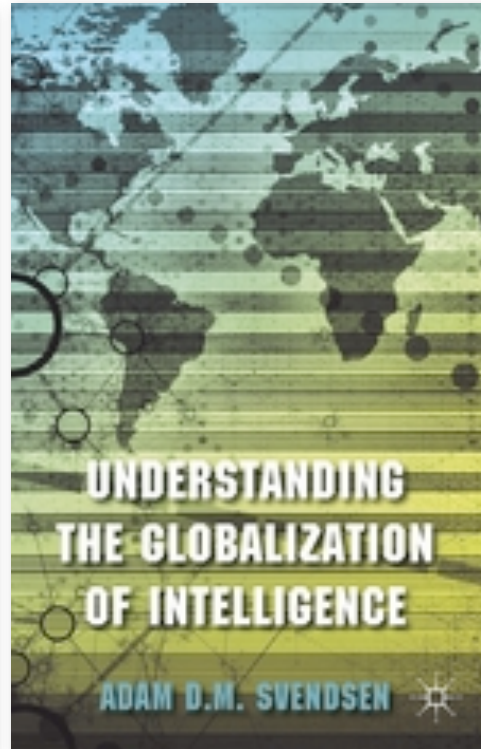
Further reading:

Adam D.M. Svendsen, **'Advancing "Defence-in-depth": Intelligence and Systems Dynamics'**, *Defense & Security Analysis* (2015).

Adam D.M. Svendsen, **'Contemporary intelligence innovation in practice: Enhancing "macro" to "micro" systems thinking via "System of Systems" dynamics'**, *Defence Studies* (2015).