[dstl]

Lessons Identified
- Purpose and Methodology
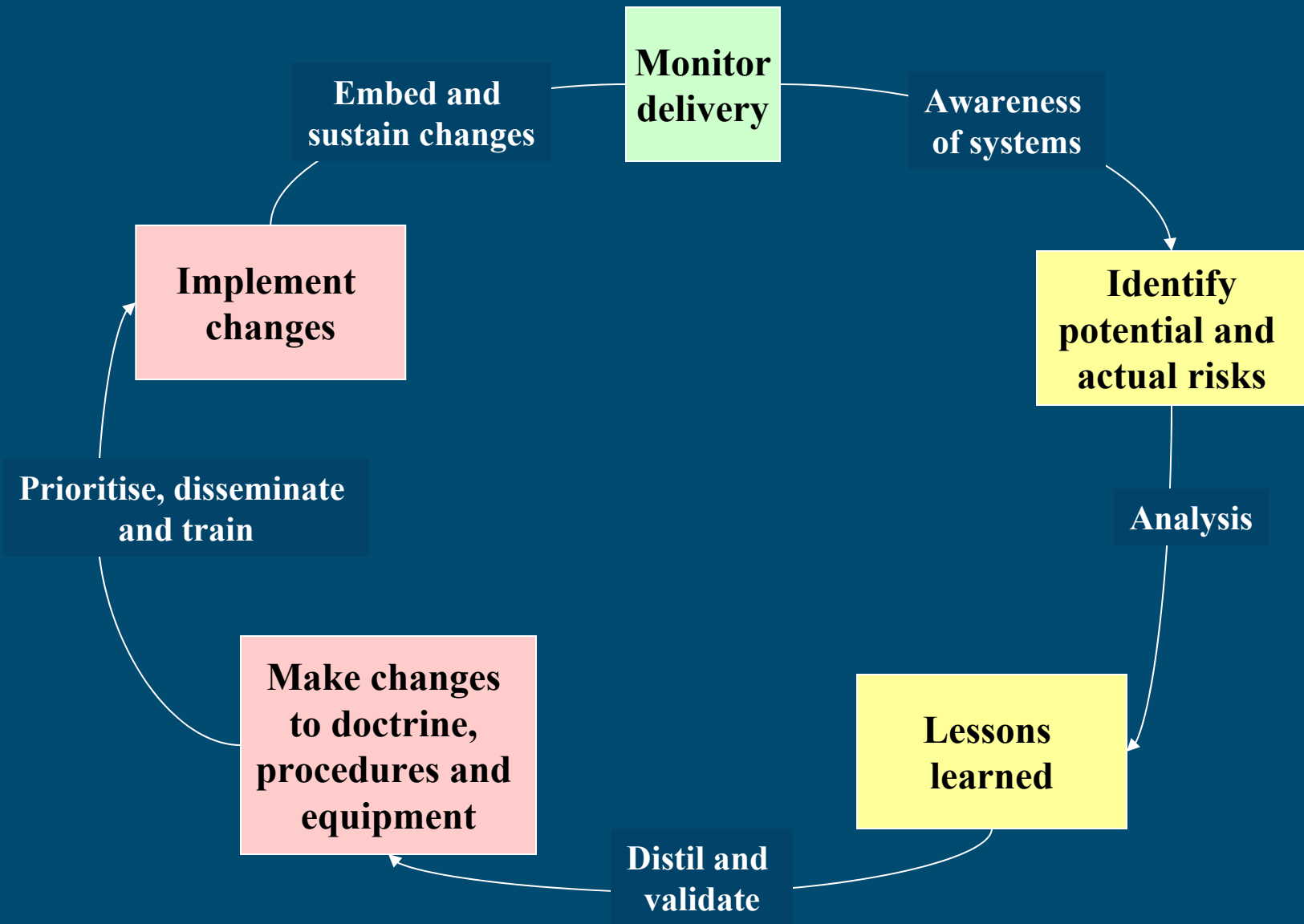
Merfyn Lloyd
IX Team

Background

- Apparent super-abundance of data

- Data extremely diverse:

    - content and quality.

    - identification and analysis.

- Apparent lack of process.

- No apparent concept of 'testing' or validation.

    - Undesirable emergent behaviours.

Validation

- Validation, and its method, is essential to understanding the implications of LIs for both current and future operations, to which the impact of NEC adds another dimension.

- Requires a clearly expressed understanding of the military business to provide consistency throughout all its aspects.

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Purpose of Lessons Identified

- Two purposes of the LI process;
  - To gain a clear understanding of the problem,
  - To decide on the appropriate corrective measures.
- Can be viewed as:
  - Fundamental to the generation of corporate knowledge.
  - Measuring the effectiveness of and validating the operational endeavour;
    - Quality control ('are we doing the right thing?').
    - Risk assessment (the adequacy of resources, training and the like) strategies .
- A key part of any audit process.

Monitor delivery

Embed and sustain changes

Awareness of systems

Implement changes

Identify potential and actual risks

Prioritise, disseminate and train

Analysis

Make changes to doctrine, procedures and equipment

Lessons learned

Distil and validate

Definitions:

- **Lesson stimulated:**

  - the raw data and observations arising before, during or after the critical event.
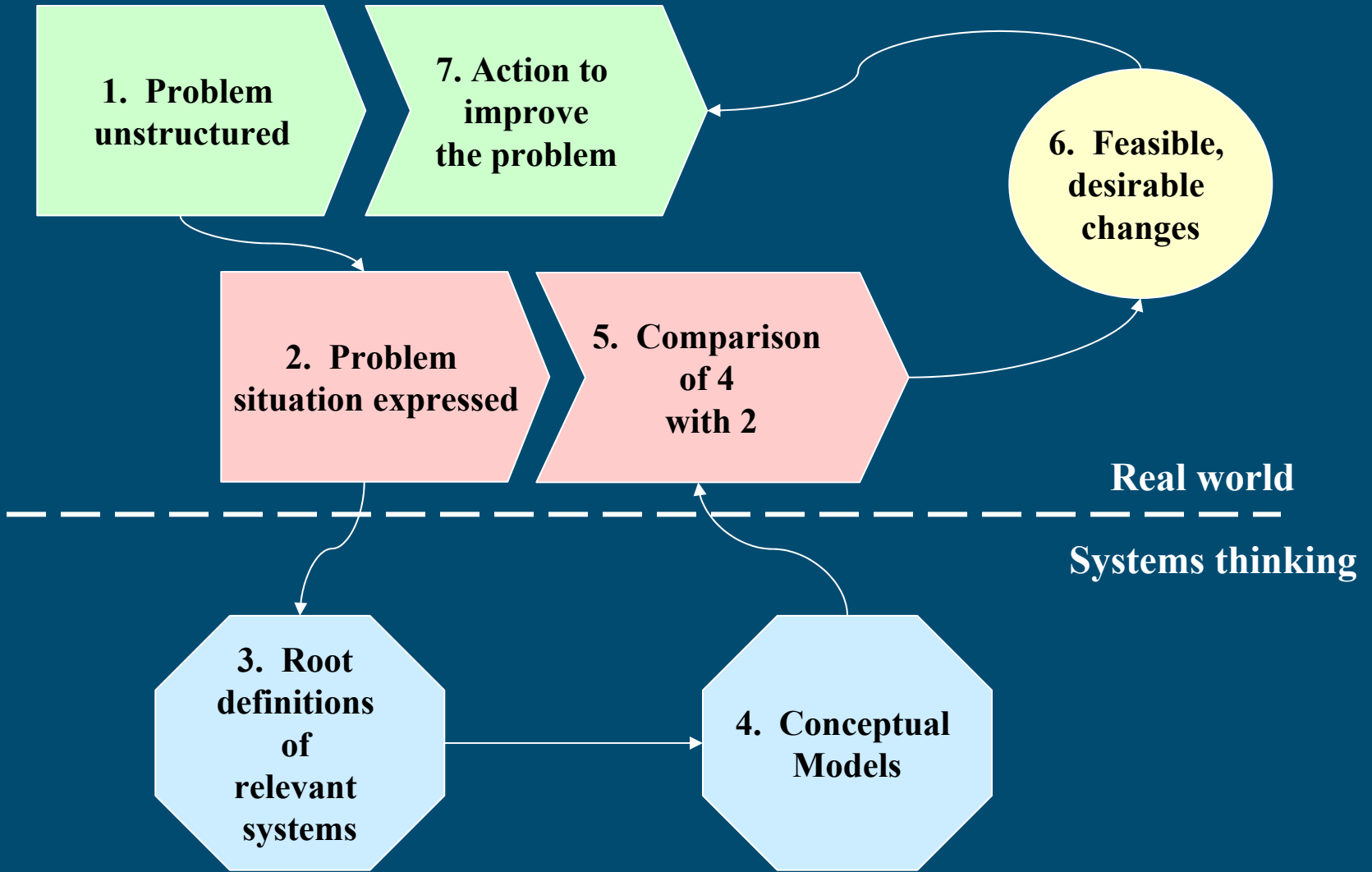
- **Lesson identified:**

  - the appreciation of the event in terms of understanding its cause and the consequences.

- **Lesson learnt:**

  - the identification of the changes which would ameliorate the situation.

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Definitions:

- **Lesson stimulated.**

- **Lesson identified.**

- **Lesson learnt.**

- **Lessons implemented:**

  - **the acceptance and putting into practice the changes to doctrine, procedures and equipment resulting from lessons learnt. Implicit in this is an action to monitor implementation to ensue that the lessons become embedded.**

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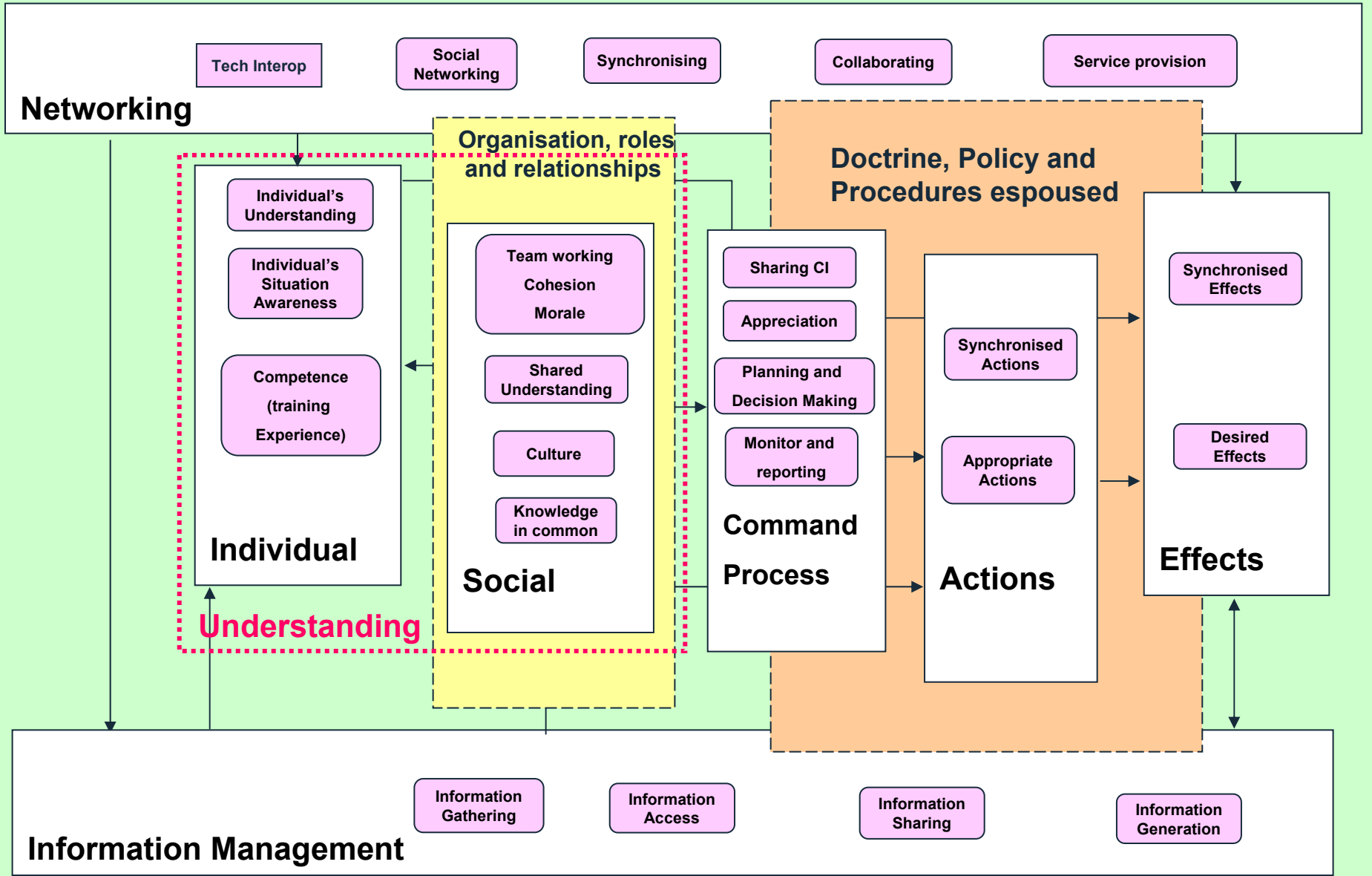
1. Problem unstructured

7. Action to improve the problem

6. Feasible, desirable changes

2. Problem situation expressed

5. Comparison of 4 with 2

Real world

Systems thinking

3. Root definitions of relevant systems

4. Conceptual Models

Analysis.

- **Need to identify discover the structures, the processes, and their relationship.**

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Human Activity Issues

- Organisation, roles and relationships of those involved.

- Doctrine, policy and procedures espoused (the formal process).

- Operational environment.

- Team dynamics.

- Individual characteristics.

- The mission in which the stakeholders were engaged.

- The influence of the adversaries and partners in, eg, a coalition.

- The social, cognitive and behavioural processes (the informal communication networks and 'ways of working').

Social. Cognitive and Behavioural Process

Networking

- Tech Interop
- Social Networking
- Synchronising
- Collaborating
- Service provision

Organisation, roles and relationships

Doctrine, Policy and Procedures espoused

Individual
- Individual's Understanding
- Individual's Situation Awareness
- Competence (training Experience)

Understanding

Social
- Team working / Cohesion / Morale
- Shared Understanding
- Culture
- Knowledge in common

Command Process
- Sharing CI
- Appreciation
- Planning and Decision Making
- Monitor and reporting

Actions
- Synchronised Actions
- Appropriate Actions

Effects
- Synchronised Effects
- Desired Effects

Information Management

- Information Gathering
- Information Access
- Information Sharing
- Information Generation

Social Understanding	Teams who train together and who share experiences are more likely to have what are called 'shared mental models' because they may frame new experiences in a similar way and thus arrive at similar or compatible interpretations of the current situation. These teams experience similar relationships and their experiences are gained as a result of networking together and experiencing a similar organisational context and similar social cog and behavioural experiences - hence the link to all these.
Team working, cohesion, morale	Teams develop teamwork mental models of what behaviours to expect from particular members as a result of past experiences together and generate shared mental models as described above.
Culture	Culture can be defined simply as 'the way we do things around here'. Value systems, behavioural standards or norms surround these fundamental assumptions, and on the very outermost level of a culture are the obvious artefacts that can be seen even by outsiders, such as an organisation's dress code or buildings.
Shared Understanding	Enabling each user to generate an understanding of the battlespace that is appropriate and adequate to their task and consistent with the understanding of other users. This understanding covers the interpretation of the situation (current situation, its history, and potential developments of all battlespace participants) and of Command Intent (the effects and outcomes higher command wants to achieve).
Knowledge in common	These are obviously linked to the concept of mental models, described earlier. Also heavily influences by the wider team/social context and the organisational/social contexts that will frame understanding and knowledge, hence their position in these boxes

Social, cognitive and behavioural processes	These are the day-to-day processes that individuals go about in the organisation as they conduct their tasks some of which will be individual, some team, all of which will be influenced by the organisational context and its culture, so they are in effect the emergent behaviours framed by the organisational culture, the organisational culture in practice. e.g. how people use technology in practice, who they communicate with and how, how they conduct their daily tasks. This is the reason they are the backdrop to everything as it were.
Organisation, roles and relationships	Structure represents a particular view on roles and relationships, which define patterns of activity across the organisation in response to stimuli. Formal roles and relationships, defined in terms of power, authority and responsibility, can be described in an organisational structure chart (showing who reports to whom, who is responsible for what and who). In practice, these relationships are always refined by informal processes grounded in day-to-day social, cognitive and behavioural processes, including previous experience and friendships, and prosecuted through informal meetings and consultations. These informal processes, though less easy to articulate than the formal organisational structure, supplement and sometimes subvert the roles and relationships as inferred from the formal organisational structure - ultimately, the behaviour of individuals is driven by their perceived roles and relationships, which may or may not be identified in the formal model.
Doctrine, policy and procedures	This is the codification of practice, i.e. the formal counterpart to the organisational culture. It is the formalisation of 'how things should be done around here' (as opposed to 'the way things are actually done around here' in practice, c.f. social, cognitive and behavioural processes above).

Category		Social, cognitive and behavioural processes	Organisation, roles and relationships	Doctrine, policy and procedures
Networking	Technical Interoperability			
	Social Networking			
	Synchronising			
	Collaborating			
	Service Provision			
Information Management	Gathering			
	Access			
	Sharing			
	Generation			
Individual Understanding	Understanding			
	Situation Awareness			
	Competence (training, experience)			
Social Understanding	Teamworking, cohesion, morale			
	Culture			
	Shared Understanding			
	Knowledge in common			
Command Process	Sharing Command Intent			
	Appreciation			
	Planning and decision making			
	Monitoring and reporting			
Actions	Synchronised			
	Appropriate			
Effects	Synchronised			
	Desired			

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Category		Social, cognitive and behavioural processes	Organisation, roles and relationships	Doctrine, policy and procedures
Social Understanding	Team working, cohesion, morale	The SCB dimensions are the dominant factor here, and reflect mental models and behaviours which are built up over time. Training of teams together and common membership of establishment structures (e.g. Bde) are key contributors - without these, it is impossible to achieve team working and cohesion, and difficult to emulate by other means.	Co-location of team, virtual teams, ad-hoc/agile teams. Inter team processes, cross organisational teams. Leadership issues could be raised here as well	Doctrine for team working, SOPs, Field manuals, etc
	Culture	Interpersonal behavioural values. Shared goals, values and purpose. Shared operational approach. Evolves from behaviour and guides behaviour, constantly changing	Organisational culture - "this is the way it has always been done in this organisation". Informal culture - how it is done in practice	Formal culture - how it should be done. Prescribed in DPP, SOPs, etc
	Shared Understanding	Arrived at from Individual Understanding and Teamworking. Communication and co-ordination between parties	Underpins both successful sharing of information (through mutual awareness of different roles and relationships) and failures in shared understanding (failure in Liaison, breakdown in communication and co-ordination processes, misinterpretation due to different perspective).	Doctrine for understanding, SOPs & Field manuals at team or HQ level. Job descriptions

Category		Social, cognitive and behavioural processes	Organisation, roles and relationships	Doctrine, policy and procedures		
Networking	Technical Interoperability			22, 27, 29, 33, 40, 84, 148, 152, 171, 177, 178, 179, 180, 184, 185, 188, 195, 196, 199, 200	8.89%	24.00%
	Social Networking		173		0.44%	
	Synchronising	78, 115	61, 75, 82, 99, 104, 152	54, 73, 78, 99	5.33%	
	Collaborating	78, 79	22, 34, 53, 57, 72, 88, 89, 90, 173	78, 79, 88, 89, 90	7.11%	
	Service Provision		178, 186	56, 186, 187	2.22%	
Information Management	Gathering	101, 115	1, 7, 8, 24, 25, 30, 43, 101	1, 11, 20, 21, 25, 29, 38, 40, 100, 175	8.89%	24.00%
	Access		5, 43, 148, 196, 198	148, 196	3.11%	
	Sharing	194	18, 19, 22, 23, 30, 43, 60, 182, 190, 197	5, 15, 16, 19, 27, 64, 191	8.00%	
	Generation		180, 183, 197	14, 17, 21, 29, 59	4.00%	
Individual Understanding	Understanding	36, 56, 66		58, 174	2.22%	16.44%
	Situation Awareness	86, 94, 107, 190, 193			2.22%	
	Competence (training, experience)	66, 93, 143		15, 23, 24, 37, 41, 63, 65, 66, 68, 69, 70, 71, 93, 99, 102, 108, 110, 122, 134, 142, 148, 150, 158, 159,	12.00%	
Social Understanding	Teamworking, cohesion, morale	93, 143	150	41	1.78%	13.78%
	Culture					
	Shared Understanding	122, 151	1, 31, 33, 82, 84, 94, 171, 187	59, 74, 122	5.78%	
	Knowledge in common		67, 78, 150	15, 37, 63, 64, 71, 78, 99, 104, 108, 122, 150	6.22%	
Command Process	Sharing Command Intent		26, 27, 28, 60, 153, 176		2.67%	13.78%
	Appreciation				0.00%	
	Planning and decision making	172	32, 39, 74, 75, 20, 83, 88, 95, 101, 172, 185, 198	10, 12, 21, 32, 58, 60, 74, 90, 141, 176, 185	10.67%	
	Monitoring and reporting			42	0.44%	
Actions	Synchronised	89, 91	46, 53, 55, 75, 76, 79, 83, 89, 96, 99	89, 91, 99	6.67%	8.00%
	Appropriate		56	97, 113	1.33%	
Effects	Synchronised				0%	0.00%
	Desired				0%	
		11.11%	**37.78%**	**51.11%**		

Category		Social, cognitive and behavioural processes	Organisation, roles and relationships	Doctrine, policy and procedures		
Networking	Technical Interoperability			2, 12, 21, 25	9.09%	29.55%
	Social Networking					
	Synchronising		1, 5	3, 27	9.09%	
	Collaborating		3, 13, 14	9	9.09%	
	Service Provision			29	2.27%	
Information Management	Gathering					13.64%
	Access		4, 22		4.55%	
	Sharing		4, 12, 18	25	9.09%	
	Generation					
Individual Understanding	Understanding	14			2.27%	11.36%
	Situation Awareness	26, 32		26, 32	9.09%	
	Competence (training, experience)					
Social Understanding	Teamworking, cohesion, morale		4		2.27%	29.55%
	Culture					
	Shared Understanding	10, 32	2, 3, 10, 13, 32	3, 32	20.45%	
	Knowledge in common			9, 11, 15	6.82%	
Command Process	Sharing Command Intent			20	2.27%	13.64%
	Appreciation	14			2.27%	
	Planning and decision making		4, 13	7, 8	9.09%	
	Monitoring and reporting					
Actions	Synchronised			27	2.27%	2.27%
	Appropriate					
Effects	Synchronised					0.00%
	Desired					
		13.636%	**40.909%**	**45.455%**		

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Peace Keeping

| Category		Social, cognitive and behavioural processes	Organisation, roles and relationships	Doctrine, policy and procedures		
Networking	Technical Interoperability			124, 149, 150, 155, 156, 157, 158, 160, 163, 165	10.00%	25.00%
	Social Networking					
	Synchronising			83	1.00%	
	Collaborating		93, 138	49	3.00%	
	Service Provision		149, 171	105, 150, 152, 153, 156, 158, 160, 165, 171	11.00%	
Information Management	Gathering			56, 57, 71, 132, 150	5.00%	20.00%
	Access		55, 63	55, 63, 68, 150	6.00%	
	Sharing		96, 107	72, 98	4.00%	
	Generation		92	57, 66, 72, 92	5.00%	
Individual Understanding	Understanding			46	1.00%	13.00%
	Situation Awareness	157		60, 157	3.00%	
	Competence (training, experience)		91	45, 81, 91, 115, 123, 134, 139, 154	9.00%	
Social Understanding	Teamworking, cohesion, morale		61, 76	45, 76	4.00%	23.00%
	Culture					
	Shared Understanding		54, 93	60, 67, 98, 106	6.00%	
	Knowledge in common		76, 111, 154	45, 76, 105, 111, 123, 134, 136, 137, 139, 154	13.00%	
Command Process	Sharing Command Intent	78	54	46, 54, 78	5.00%	16.00%
	Appreciation					
	Planning and decision making		90	42, 47, 48, 57, 66, 67, 104, 112	9.00%	
	Monitoring and reporting		70	46	2.00%	
Actions	Synchronised					1.00%
	Appropriate			113	1.00%	
Effects	Synchronised		103	103	2.00%	2.00%
	Desired					
		2.000%	**21.000%**	**76.000%**		

Category		Social, cognitive and behavioural processes	Organisation, roles and relationships	Doctrine, policy and procedures		
Networking	Technical Interoperability			01, 03, 05, 09, 10, 12, 13, 14, 15, 16, 17, 18, 27, 30, 38, 51, 52, 53	23.68%	31.58%
	Social Networking				0.00%	
	Synchronising	35	33, 35		3.95%	
	Collaborating		23, 33, 59		3.95%	
	Service Provision				0.00%	
Information Management	Gathering		04, 08, 60, 61	04, 09, 23, 59	10.53%	36.84%
	Access		04, 25	04, 07, 09, 25	7.89%	
	Sharing		18, 23, 38, 60, 61	06, 09, 10, 59	11.84%	
	Generation		60, 61	09, 26, 59	6.58%	
Individual Understanding	Understanding	10, 44		44	3.95%	7.89%
	Situation Awareness	17, 26			2.63%	
	Competence (training, experience)	26			1.32%	
Social Understanding	Teamworking, cohesion, morale				0.00%	11.84%
	Culture			14	1.32%	
	Shared Understanding		17, 20, 22	22	5.26%	
	Knowledge in common	44	44	20, 44	5.26%	
Command Process	Sharing Command Intent			26	1.32%	9.21%
	Appreciation				0.00%	
	Planning and decision making		42, 62	14, 21, 37, 40	7.89%	
	Monitoring and reporting				0.00%	
Actions	Synchronised			11	1.32%	1.32%
	Appropriate				0.00%	
Effects	Synchronised				0.00%	1.32%
	Desired			62	1.32%	
		9.21%	**31.58%**	**59.21%**		

Category		Social, cognitive and behavioural processes	Organisation, roles and relationships	Doctrine, policy and procedures		
Networking	Technical Interoperability			12, 13, 27, 43, 47	5	5.49%
	Social Networking					
	Synchronising		31, 38	31, 38	4	4.40%
	Collaborating	56, 57	7, 30, 46, 51, 56, 57	5, 30, 34	11	12.09%
	Service Provision		10	13, 48	3	3.30%
Information Management	Gathering		25	25, 36	3	3.30%
	Access		28	27, 28	3	3.30%
	Sharing		7	11, 14, 34	4	4.40%
	Generation		25	25, 48	3	3.30%
Individual Understanding	Understanding			2	1	1.10%
	Situation Awareness	6			1	1.10%
	Competence (training, experience)	20		8, 18, 20, 49, 52, 54	7	7.69%
Social Understanding	Teamworking, cohesion, morale		7		1	1.10%
	Culture		35		1	1.10%
	Shared Understanding		30, 35	30	3	3.30%
	Knowledge in common	56, 57	34, 35, 49, 56, 57	4, 9, 18, 24, 31, 34, 49, 50, 51, 54	17	18.68%
Command Process	Sharing Command Intent		7	18	2	2.20%
	Appreciation	23		22, 23	3	3.30%
	Planning and decision making	6	46	1, 3, 4, 16, 19, 22, 24, 32, 38	11	12.09%
	Monitoring and reporting	20		21, 32, 39	4	4.40%
Actions	Synchronised			4, 39	2	2.20%
	Appropriate	23		23	2	2.20%
Effects	Synchronised					
	Desired					
		10.99%	**26.37%**	**62.64%**		

		Op Telic - Operation		Op Telic - Command		Peace Keeping		Medium Capability		KCDI		Average (not weighted)
Networking	Technical Interoperability	8.89%		9.09%		10.00%		23.68%		5.49%		
	Social Networking	0.44%	24.00%		29.55%		25.00%	0.00%	31.58%	4.40%	25.27%	**27.08%**
	Synchronising	5.33%		9.09%		1.00%		3.95%		4.40%		
	Collaborating	7.11%		9.09%		3.00%		3.95%		12.09%		
	Service Provision	2.22%		2.27%		11.00%		0.00%		3.30%		
Information Management	Gathering	8.89%				5.00%		10.53%		3.30%		
	Access	3.11%	24.00%	4.55%	13.64%	6.00%	20.00%	7.89%	36.84%	3.30%	14.29%	**21.75%**
	Sharing	8.00%		9.09%		4.00%		11.84%		4.40%		
	Generation	4.00%				5.00%		6.58%		3.30%		
Individual Understanding	Understanding	2.22%		2.27%		1.00%		3.95%		1.10%		
	Situation Awareness	2.22%	16.44%	9.09%	11.36%	3.00%	13.00%	2.63%	7.89%	1.10%	9.89%	**11.72%**
	Competence (training, experience)	12.00%				9.00%		1.32%		7.69%		
Social Understanding	Teamworking, cohesion, morale	1.78%		2.27%		4.00%		0.00%		1.10%		
	Culture							1.32%		1.10%		
	Shared Understanding	5.78%	13.78%	20.45%	29.55%	6.00%	23.00%	5.26%	11.84%	3.30%	24.18%	**20.47%**
	Knowledge in common	6.22%		6.82%		13.00%		5.26%		18.68%		
Command Process	Sharing Command Intent	2.67%		2.27%		5.00%		1.32%		2.20%		
	Appreciation	0.00%		2.27%				0.00%		3.30%		
	Planning and decision making	10.67%	13.78%	9.09%	13.64%	9.00%	16.00%	7.89%	9.21%	12.09%	21.98%	**14.92%**
	Monitoring and reporting	0.44%				2.00%		0.00%		4.40%		
Actions	Synchronised	6.67%	8.00%	2.27%	2.27%		1.00%	1.32%	1.32%	2.20%	4.40%	**3.40%**
	Appropriate	1.33%				1.00%		0.00%		2.20%		
Effects	Synchronised	0%	0.00%		0.00%	2.00%	2.00%	0.00%	1.32%		0.00%	**0.66%**
	Desired	0%						1.32%				
Social, cognitive and behavioural processes		11.11%		10.99%		2.00%		9.21%		10.99%		**8.86%**
Organisation, roles and relationships		37.78%		26.37%		21.00%		31.58%		26.37%		**28.62%**
Doctrine, policy and procedures		51.11%		62.64%		76.00%		59.21%		62.64%		**62.32%**

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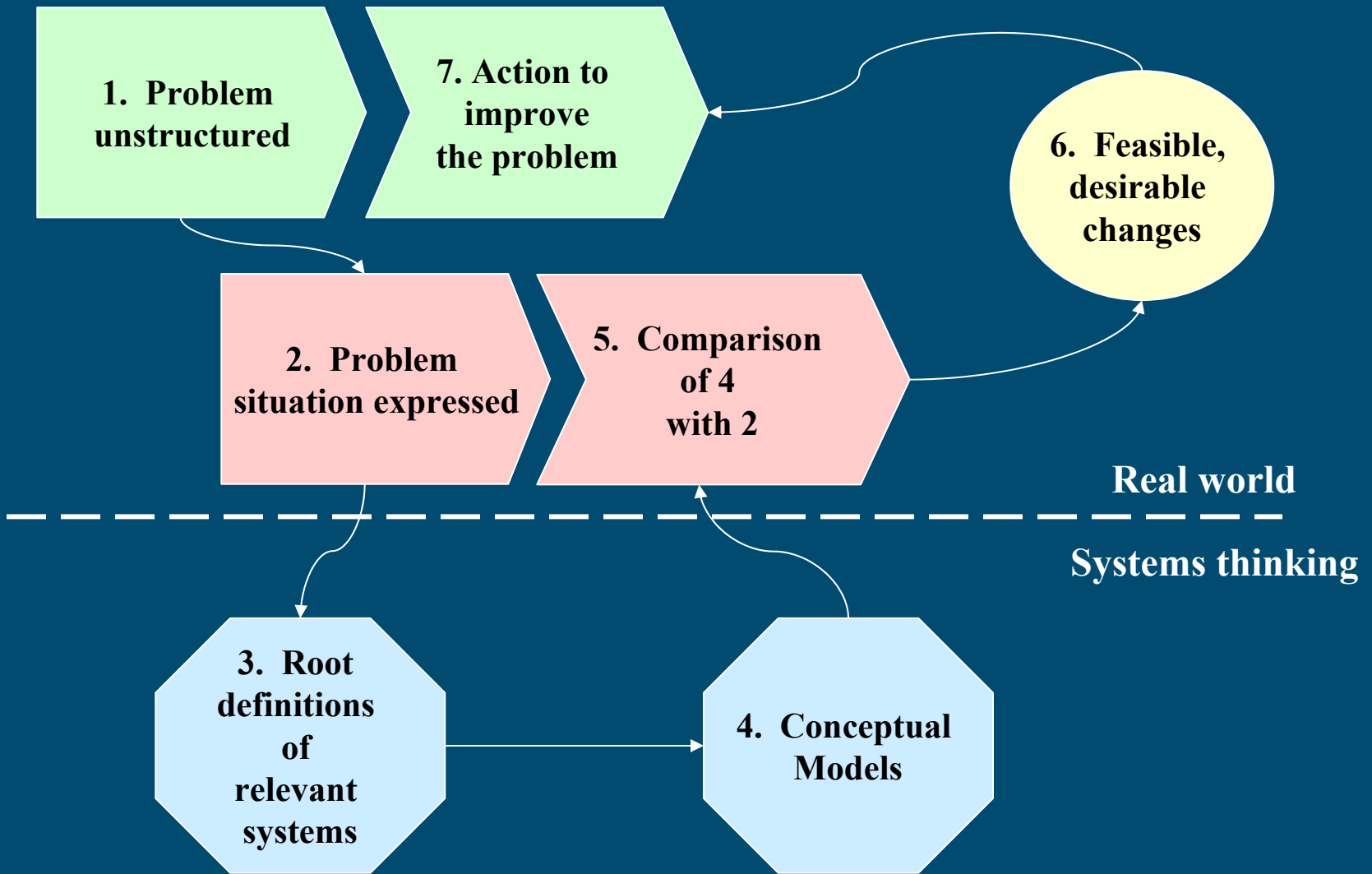
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