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Morphospaces

A catalogue of 52 morphological models from selected projects

1995-2017

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Contents

Introduction:

This compendium presents 52 morphological fields – or morphospaces – from a selection of client-based morphological modelling projects carried out between 1995 and 2017. All of these models – which are either in the public domain or have been cleared by the clients involved – were developed in facilitated workshops consisting of 6-8 client-specified subject specialists and 1-2 experienced General Morphological Analysis (GMA) modelling facilitators.

These modelling spaces are made available for those who are interested in decision science and non-quantified decision support modelling, in order to demonstrate GMA's wide range of application. This includes scenario modelling frameworks, technological forecasting, organisational design, Gap-analysis, stakeholder/position/policy analysis, social-technical modelling and – generally – a method for conceptual modelling and (creative) combinatorial heuristics. (GMA is also applied frequently in engineering and product design, which are not represented here.)

For those not previously acquainted with discrete variable morphological modelling the following sources are available for download:

For a short introduction:
"General Morphological Analysis: An overview", ACADEMIA Letters (2022)
https://www.swemorph.com/pdf/gma-overview.pdf

- For a longer, practitioner directed article:
"General Morphological Analysis: A general method for non-quantified modelling", Swedish Morphological Society (1998)
https://www.swemorph.com/pdf/gma.pdf

- For a more theoretical & methodologically grounded study:
"General Morphological Analysis as a basic scientific modelling method", *Technological Forecasting and Social Change* (2018).
https://www.swemorph.com/pdf/tfsc-pre-gma.pdf

- For a more detailed presentation of GMA's range of application:
"Applications of GMA: From Engineering Design to Policy Analysis", *Acta Morphological Generalis* (2015)
https://www.swemorph.com/amg/pdf/amg-4-1-2015.pdf

1. Transport Disruption Scenarios: Modelling Framework
Date: 2002
Client: Swedish Transport Authority

Scenarios	Inter-modal functions	Disruptions in road traffic systems	Disruptions in railway systems	Disruptions in maritime systems	Disruptions in airway systems
KK1: Defence scenario	Disturbances in intermodal transport node	Disturbances in critical routes	Regional stoppages	Disturbance / blocked national shipping routes / fairway	Disturbances in the border flight control syst. abroad
Major snowstorms over six days in greater Stockholm region	Disturbances in the intermodal reservation and information services of brokers and freight f	Disrupted node in the infrastructure	Long delays in regional traffic	Disturbance / blocked international shipping routes	Disruptions in air traffic systems in route
Extreme ice-storm conditions in south-west Sweden (blackouts)	Disturbances of intermodal monitoring services	Lack of capacity of road space	Physical IS knocked out - regionally.	Disturbances in critical port / terminal systems	Airports abroad close to Swedish traffic
Epidemic: "Sweden quarantined"	Disturbances in the customs and clearing systems etc.	Lack of capacity: vehicles	Lack of capacity of locomotives and wagons	Disturbances in the material handling systems	Shortage of aircraft and helicopter capacity
Disruptions in telecommunications (antagonistic)	Normal functions	Key personnel missing	Lack of capacity of tracks	Key personnel missing	Disturbances in the border function at airports
Disruptions in financial IT systems (antagonistic)		General staff Shortage	Key personnel missing	Disturbances in maritime fuel supply	Key personnel missing
Analytic scenario 1: Road traffic greatly disturbed		Disturbances in road traffic fuel supply	Disturbances in IT and signalling systems	Capacity shortages	Disturbances in the airline companies' vital systems
Analytic scenario 2: Rail traffic greatly disturbed		Interference of information and management systems	Disturbance in yard / station systems	Disturbances in vital reservations	Lack of strategic products for the aerospace sector
Analytic scenario 3. Maritime traffic greatly disturbed		Lack of road traffic strategic products	Normal operations	Disturbances in towage, piloting, etc.	Disturbances in supply of aircraft fuel
Analytic scenario 4. Air traffic greatly disturbed		Normal operations		Disturbances in shipyards, repair resources & parts supply	Disturbances in air rescue services, incl. managerial
				Normal operations	Disturbances in the aviation National Aviation networks (NATN)

2. Climate Change Conflict Scenarios
Date: 2007
Client: Swedish Defence Research Agency

Scenarios	Global mean temp change (C) Sea level rise (cm)	Areas most influenced (examples)	Consequences for areas influenced	Main sectors influenced	Possible societal consequences for affected areas	Conflicts that can befall influenced areas
Extreme case (A1F1)	Mean temp increase: 6-8 C Sea level rise: 70-80 cm	Baltic Sea area	Heavy drought	Agriculture	Structural changes in international competition	Civil war, internal conflicts
High temp renewable energy (B1)	Mean temp increase: 5-6 C Sea level rise: 50-60 cm	Middle Europe	Desert spreading	Forestry	Increased regional divergence	Regional war/conflicts over land and water areas
Mild rise, renewable energy (B2)	Mean temp increase: 3-4 C Sea level rise: 20-40 cm	Southern Europe	Flooding	Energy production	Mass immigration ("climate refugees")	Economic resource conflicts (incl. fresh water)
Kyoto +	Mean temp increase: 1-2 C Sea level rise: 10-20 cm	North Africa/Sahel	Greatly increased precipitation	Transport	Mass emigration ("climate refugees")	Closed borders
		Tropical Africa	Decreased water supplies	Living environment (housing)	Brain drain	War-lordism
		Southeast China	Increased heat waves	Fishery	Increased spread of contagions (infection)	Increased international terrorism
		Northeast China	Warmer and shorter winters	Industrial production	Increased poverty	None of above
		Arctic region	None of above	Tourism	Extreme protectionism	
		Russia		Water supplies	Financial crises	
		USA		Infrastructure	"Failed state"	
				None of above	None of above	

3. Threat Perception Model
Date: 2013
Client: EU 7th Framework Project

Type of threat / risk / insecurity	Context of perceived threat / insecurity	Demographic characteristics which can determine whether and to what extent people perceive threat?	Hypothesis about how people primarily appraise and cope with perceived threat	Type of responses (effect of coping style)
Natural disasters	Home and family	Age	Denial (of threat)	Seek social support
Man made disasters (tech. accidents)	Neighbourhood	Gender	Downplay the seriousness of consequences	Seek professional support (psychological)
Criminal violence	Workplace	Type of "household"	Attribute cause to higher power (God, fate)	Defensive avoidance (limiting oneself)
Property crime	Social group	Ethnic background	Attribute cause to society	Deal with symptoms of threat
Vandalism and other crimes against public order	Public spaces	Sexual orientation	Problem focussed coping	Seek / buy protection (legal/ physical/public authority)
"Terrorism"	Transport systems	Level of Education	Stereotyping	Confront source of threat
Drugs abuse and other addiction	Institutions	Occupation	"It's all my fault"	Do nothing
Discrimination/ marginalisation/ social exclusion	Society in general	Religion	Fear and insecurity (Not coping)	
Economic downturn/ social upheaval		Income		
War		Type of Housing		
		Membership in political parties/groups		
		Degree of social exclusion		
		Social cohesiveness		
		Previous victim of crime or threat		

4. Global Energy Scenarios
Date: 2005
Client: National Government Authority

Scenarios	Global energy technology development	Global sanctions on GHG emissions	State of international energy market	Global price of oil	Share of non-oil energy	Demand for oil and gas in emerging economies	Geo-political situation in Middle East
Politics prevail	Substantial development (Broad spectrum)	Reduce by 25%	Open liquid markets	$500/barrel	90%	Extremely aggressive, hoarding	War (Production collapse)
Global cooperation	Substantial development (Focused development)	Reduce by 10%	Interlinked regional trading blocks	$200 barrel	75%	Robust increasing demand	Low Intensity Conflict (Today)
End of oil	Limited spectrum development	No reduction imposed	Regional trading blocks	$120 barrel (Today)	60% (Today)	Status quo (Today)	Situation stabilises
Global energy market collapse	Only incremental development		Embryonic markets	$80 barrel	< 60%	Decreasing demand	Friendly relations
Global recession			Captive markets			No demand (Self-sufficient)	
Today							

5. Governance of Science & Technology (S&T) Development #1
Date: 2002
Client: Swedish Defence Research Agency

Why govern S&T development	How govern S&T development. (input governance)	Societal transformation via... (output governance)	Who governs	Who is target for governance	What is governed	What scientific areas
Advancement of science (searching for the "truth")	R&D-systems' infrastructure	Legislation	Large-scale, big enterprise	Large-scale, big enterprise	Basic research	Humanoria
Certain research is part of our culture	Grants/monies for projects and programs	Patent	Universities/ academic institutions	Universities/ academic institutions	Strategic research (need-motivated research)	Social science
National security	Formal regulation	Taxes, fees	Researchers/ scientists	Research institutes	Development	Technical science
Strenghten democracy	Self-regulation	Risk capital	National research foundations	Small and medium size enterprises	Distribution	Natural science
Societal decision support	Taxes, fees	Economic/business climate	National research councils		End user access	Medicine
Ethical principles	Career advancement opportunities	Educational system	Central government	Individual entrepreneurs		
Favour certain interests	Social pressure	National prestige Symbol	Government authorities			
Prevent/promote specific research as such		Consumption patterns/buying power	Private research councils			
Increase competence		Attitudes to social and cultural change	European Union			
Support economic growth		Historical processes				

6. Governance of Science & Technology (S&T) Development #2
Date: 2002
Client: Colombia University GENIE conference

Basic ruling principle for S&T governance	Driving force behind S&T	Trends in S&T	Funding	Means	Who decides/ influences	Who benefits?	Type of governance	Educational level of citizens: Distribution
Human Rights	Higher values/ Spirit	Escalating change	Governmental	Spontaneous protests	Politicians	Citizens	Proactive	High & Evenly distributed
S&T a common good	To better our lot Human needs	More complex language	NGO's	Science shops	Companies	Monopolies	Reactive	Low, with small elite
Democracy	Social values	Larger groups	Companies	OTA (technology assessment)	The people	Companies		
Limit harm	Curiosity	Monopolization	Venture capital	Patents	Courts	Poor in third world		
Intellectual property rights	Citizen security	Marketisation		Global funds/ programmes	Organised intellectuals			
Efficiency	Short term profit	Individualisation		Change university curriculum	Media			
Market	War			Education/dialogue scientists-citizens	Local communities			
Monopoly				Funding network to support diversity	Internal norms of a discipline			
				Risk analysis	Funders			
				CBA				
				"Bring science some silence"				

7. Media-Public Opinion Security Management Model

Date: 2004

Client: EU 7th Framework Project

Principal security issue	Factors which influence perceived state of society	Demographic variables	Economic status	Level of education	Cultural group identity	Media channel	Media source	Media use: frequency and breadth
"Terrorism"	Level of political stability	Age	Rich - wealthy	Higher education	Cosmopolitan	Broadsheets	Government	Broad & frequent
"Crime" and anti-social behaviour...	Trust in government	Gender	Well-off	Secondary education	National mainstream	Tabloids	Personal/ community	Broad & infrequent
Economic security/ employment	Trust in civil society	Ethnicity	Makes ends meet	Primary education	Regional identity (within country)	On-line news media	Academic/technical specialists	Narrow & frequent
Immigration/ integration (Cultural cohesion)	Level of community cohesion	Type of household	Struggling/ periodically unemployed	Little or no relevant education	Local identity	Social on-line media	Pressure groups	Narrow and infrequent
Natural disasters	Level of social capital	Urban-rural spectrum of living	Long-term unemployed		Political identity	TV	Popular culture	Not at all
Man-related (technical) disasters	Physical / urban environment	Health status	Illegal - homeless		Religious faith identity	Radio		
Health	Past experience and tradition	Housing tenure			Life-style identity	Local press		
Self-fulfilment/ development	Personal experience of security breach	Immigrant status			Ethnicity			
External political or military threats	Level of moral cohesion							
Children (their future)								

8. Media-Threat Scenarios
Date: 2006
Client: Swedish government authority

Threat scenarios	Scope	Production / distribution (actors)	Resources affected	Operational chains	Degree of disruption for customer	Consequences for society (citizens)
Power outage (1 day)	All of Sweden	Radio	Key personnel	Collection	Total stop	Loss in confidence in the media concerned
Power outages (> 1 week)	Region	TV	Staff in general	Editorial processing	Periodically stopped	Loss confidence in authorities
Telecom interruption for 6 hours (sensitive time period)	County	Daily press; printed newspapers	Computer systems	Technical editorial processing	Deteriorated quality	Lost / Impaired ability to make rational decisions
Telecom outages (> week)	Large municipality	Internet	Telephones	Distribution	No disturbance	Rumor + conspiracy thinking
Temporary disturbance in vital facility	Small municipality	Cable companies	Premises	Reception		Increased confidence in the relevant media
Unusable key facility		Mobile telephony	Internet			Chaos - increased lawlessness
Information operations, viruses,		News agencies	Production equipment			Increased risk of misinformation
"Natural disaster" Hurricane		Satellite company	Broadcast / distr. Equipment / facility			Declining diversity
Pandemic		Cable companies	Consumables			Financial consequences for media companies
			Reserve power			No consequences

9. Food Security Scenarios
Date: 2008
Client: Government authority

Scenarios	Peacetime Stockpiling	Public communication	Price Control	Food control measures	Owning overseas plantation	Strategic Alliance with Exporters	Agricultural Technology R&D	Local Production to fulfil overall requirements
Dooms Day	Stock pile at 12 month level	Aggressive	Actively broad Price Control	Broad rationing	Own and operate	Gov food agreement with producer	Aggressive investment in all areas	Above 50%
War in Middle East	Stock pile at 3-6 month level	Subtle	Active selective price control	Selective rationing	Own and outsource operations	Govt Assisted (E.g. Preferential loans)	Moderate investment across all sectors	15-50%
Natural Disaster in rice producing region	No need to stock pile	Minimum focus	Totally free market	No rationing	Lease	Free market (Gov hands-off)	Selective investments	Partial 10-15%
Rice Cartel					Joint Venture		No focus	Current 5% of requirements
End of Oil					None			None
Political Tension								
Food Tsunami								
GM Heaven								

10. Natural Disaster Transport Infrastructure Disruption Scenarios
Date: 2014
Client: EU 7th Framework Project

Type of hazard (Examples)	Frequency (Return period in years)	Restoration planning level	Assets considered which can be damaged	Type of traffic affected	Availability of diversion routes	Physical damage to infrastructure object(s)	Loss of functionality of infrastructure considered	Recover time (i.e. to repair/ replace functionality of damaged infrastructure)	Travel time extension	DIRECT costs of repair/ replacement (in % of cost of object(s))	COMPENSA-TION costs (Euros)	INDIRECT costs to society in general (Euros)
Earthquake	100	Comprehensive	Bridges	Local passenger	Local alternatives	Complete destruction	Unusable	Years	>200 %	75-100%	10s of millions	100s of millions
Flood	500	Partial	Tunnels	Long-distance passenger	Long- distant alternatives	Major	Significant	Months	100-200%	50-75%	Millions	10s of Millions
Tsunami	1000	None	Embankments	Freight	No alternatives	Limited	Limited	Weeks	<100%	25-50%	10s of thousands	Millions
Hurricane	5000					Little or no damage	None	Days	0-10%	5- 25%	0 - Thousands	0- 100s of thousands
								Hours		<5%		

11. Case Study Scenarios for Cascading Events
Date: 2014
Client: EU 7th Framework Project

Case	Types of hazard	Principal nature(s) of impact	Scope of impact	Onset of crisis	Scope of CM	Cross border?	Principal involved actors in CM	Directly affected sectors	Indirectly affected sectors	Triggers/ causes for cascade
Tsunami-Fukushima Japan, 2011	Natural	Physical	International & cross border	Sudden	Global	Yes	Police	Transportation GROUND	Transportation GROUND	Disruption of information relation
Firework factory explosion (2000) - Netherlands	Social	Social / Psychological	National	Rapid (Hours/days)	International	No	Fire	Transportation AIR-WATER	Transportation AIR-WATER	Disruption of supply relation
London attacks (2005)	Technological	Economic	Regional	Slow (Weeks)	National		Health	Energy production	Energy production	Disruption of organisational relation
Heat wave 2003 (France)	Antagonistic	Political	Local	Creeping (months/years)	Regional		Local admin. Municipal govt.	Energy transmission and distribution	Energy transmission and distribution	Malfunctioning of legal and regulatory relations
Malaysia MH17 plane crash (2014)					Local		National/central government	Water provision	Water provision	Disturbance relation
Avalanche Disaster of Galtür, AT (1999)							National security	Public communication (telecom)	Public communication	Relational condition
Central European floods (focus on Prague) (2002)							Insurance companies	Waste & biochem	Waste & biochem	
Hurricane Sandy, USA (2012)							Civil protection authorities	Healthcare (hospitals&clinics)	Healthcare (hospitals&clinics)	
Eruption of Eyjafjallajokull in Iceland (2010)							MACC, CMC, etc.	Emergency services and national security	Emergency services and national security	
							Civil society organisation	Economic services	Economic services	
							Community based organisations	Government sector (Decision & continuity)	Government sector (Decision & continuity)	
							Intergovernmental organisations	Social sector(Education, aggregation, icon)	Social sector (Education)	
							Companies/ industry	Residential housing sector	Residential housing sector	
								Natural environment	Natural environment	

12. Cross-border cooperation under cascading events
Date: 2015
Client: EU 7th Framework Project

Scope of cross-border cooperation	Areas of cross-border impacts of disaster	Areas of cross-border cooperation	Types of cross-border activities/ agreements	Extent of cross-border planning	Types of cross-border assistance and cooperation during disaster
International/intergovernmental intervention (NATO, OCHA involved)	Transport	Financial (e.g. budget sharing)	Planning meetings	Full blue-light preparedness planning	share info
Supranational intervention (EU involved)	Energy	Administrative	Transnational boards	Response plan for specific case	share command
International cooperation (Involving Nation States, typically bilateral dialogue or +)	Health care	Legal	Written agreements	Standard routines for specific cases	share systems
Inter agency cooperation (e.g. between two civil protection, not involving higher ranks of national governments). Small scale.	Communications	Operational/ logistic	Service contracts	Only common alert plan	share plans
Cross border cooperation (Not Existing protocols/practices/legal frame).	Water provision	Information (Information systems)	Shared procedure manuals	No common planning	share staff
Cross border cooperation (Existing protocols/practices/legal frame).	Waste & biochem		Cross-border training and exercises		share equipment
State of crisis declared and request of emergency aid to international community (Y/N).	Emergency services and national security		Development of inter-operability		share medical resources
	Economic services		Only informal interaction		traffic rerouting
	Social sector(Education, aggregation, icon)		None		evacuations
	Government sector (Decision & continuity)				
	Residential housing sector				
	Environmental				

13. Multi-Hazard Disaster Risk Reduction model
Date: 2005
Client: National Preparedness Authority

Hazards (Examples)	Risk reduction strategies	Unsafe physical conditions & practices	Adequate mitigation measures	Adequate preparedness measures	Adequate planning measures
Earthquake	Prevent the hazard itself	Population density	Building standards for new construction	Warning systems	Risk analysis
Floods	Reduce severity of the hazard itself	Unsafe location	Building retrofit	Evacuation system	Information management & dissemination
Tornadoes	Reduce physical exposure	Lack of safe space	Land usage controls	Relevant education and training systems	Mitigation planning
Cyclones/hurricanes/ typhoon	Reduce consequences	Building vulnerability	Site level controls	Public awareness measures	Response planning
Fire	Reduce secondary hazards	Lack of adequate housing	Hazard control structures/works	Capacity enhancement	Recovery planning
Volcanoes	Risk transfer	Weak critical facilities and infrastructure	Infrastructure location & design	Contingency planning for critical facilities	Public involvement/ participation planning
Tsunamis		Weak institutions and legal framework	Content adjustments		Integration with development planning
Landslides		Lack of disaster planning	Relevant education & training		
Temperature extremes		Lack of provision for vulnerable groups, minorities and social	Natural environment protection		
Snowstorms/ Ice-storms		**Lack of integration of planning and provision between systems levels**	Development of livelihood security		
Urban drought		Lack of neighbourhood planning and provision, action	Application of low-cost and "appropriate technologies"		
Pandemic/epidemic		Prevalence of endemic deceases	Urban renovation		
Accidental Nuclear/ Bio/Chemical releases			Creation of incentives		

14. Energy Sabotage scenarios
Date: 2002
Client: Swedish Government Authority

MOTIVE/ PURPOSE	GROUP SIZE	EXTENT OF NETWORK	LEVEL OF SYSTEM & WEAPON COMPETENS	TYPES OF WEAPONS	ETHICAL LIMITS	TYPE OF OBJECT	SCOPE	Consequence
Personal revenge	A few individuals	Local	System - Hi Weapon - Hi	IT - system penetration	Mass killing	Conventional production	Local	Local Short
Group revenge	Smaller groups	National	System - Hi Weapon - Low	Electro-mag.	Indiscriminate killing	Nuclear plant	Regional	Local Long
Demonstrate superiority	Large groups	International	System - Low Weapon - Hi	Empty threats	Kill those involved	Transformer station	National	Local - reoccurring
Protest against social injustice	Populations		System - Low Weapon - Low	Hand-tools/ weapons	Injure people	Coupling station		National Short
Gain political advantage	Nation state			Convential weapons	Damage or destroy property only	Operation center		National Long
Economic profit				PGM/ Guided missles	Only disrupt infrastructure	Cables		National reoccurring
Competition				Larger weapon systems		Power lines		
Paralyse society				RBC-weapons				
Demonstrate power/politics				RBC-combination				
Gain control of territory				Nuclear weapons				

15. Economic crime mitigation model
Date: 1998
Client: Swedish National Authority

Type of crime (examples)	Victim	Method	Physical (visible) controls	Technical solutions	Administrative controls	System and organisational solutions	Legislation	Influence motives
Cheating on taxes/tolls etc.	Consumer	False information	Very effective	Very effective	Very effective	Very effective	Standard regulations	Influence goal
Environmental crimes	External environment	Physical actions	Some possible	Some possible	Some possible	Some possible	Order regulations	Influence means
Fraud against companies	Competitors	Bookkeeping	Little or none	Little or none	Little or none	Little or none	Permission regulation	Rewards
Crimes to reduce costs	Employees	Financial transactions					Proceeding regulations	Sanctions
Limiting competition	Financers	Internat. IT-transactions					Little or no help	Little or no help
Cheating with subsidies	Owners	Planned bankruptcy						
Swindles and stock influence	The State	Illegal info transaction						
Insider crimes	Market mechanisms	Unlawful limitation of competition						
Company plundering								
Money laundering								
Transgressing commercial restrictions								

16. Conflict aetiology scenarios
Date: 2002
Client: International Peace Organisation

Scenario	Root causes	Proximate causes	Intervening factors	Trigger events (examples)	Scope	Principal national/regional stakeholders	International stakeholders
Authoritarian minority rule	Governance	Predominance of minority appointments	Growing political intolerance at local level	Attacks against Peace Monitors	Local Hot spots	National government	UN
Separatism	Territory	Presence of weapons	Frequent attacks against minorities	Assassination of key figure	Regional in country	Political parties	EU & other reg. org
Human rights violations	Natural resources	Poverty	Unassisted resettlement of IDPs and refugees	Kidnapping or imprisonment of key figure	National	Traditional power elite	INGOs
Corrupt elections	Economic distribution & infrastructure	Economic decline	Increasing local tension over land	Mass demonstrations/ uprisings	Regional	Mil & police	IGOs (e.g. SIDA)
	Environmental security	Impunity	Violent army and police cleansing operations	Coup	International	Religious leaders	International Financial Institutions
	Occupational power	Refuges & IDPs	Political persecution	Terrorist action		Judicial	Multi/international businesses
	Previous war	Gender issues	Marginalization & deprivation	Mass refugee movement		Intellectual elite and educational system	
	Corruption	Corruption	Censorship			Criminal groups & warlords	
		Ethnic, religious, cultural (drivers)	Impunity & extra judicial processes			National orgs, NGO and unions	
		Security / human security				Media and opinion makers	
						Identity groups	
						Social movement groups	

17. Accident type model
Date: 1999
Client: Swedish National Rescue Agency

Milieu	Victim	Municipality's security policy	Risk management strategy	Means (instrument) of control	What is to be influenced	Target group	Actors who perform actions
Dwelling	Elderly	Equal security for all	Accident prevention	Information	Behaviour	Potential victim	Private person(s)
Traffic and traffic milieu	Other vulnerable groups	Equal security with a particular milieu	Injury prevention	Education	Technical safety levels	Indirectly concerned parties	Rescue service
Public buildings public places	Children	Support for vulnerable groups	Injury limitation	Counselling	Course of the accident	Organisational responsibility (e.g. owners)	Social authorities
Industry	Adults	Max. effectiveness for reducing general risk level	Spreading risk	Norms			Municipal administration
Water	Important property	Unusual events with high consequences	Recovery measures after accident	Subsidies			Police
Terrain	Critical infrastructure	Individual responsibility		Municipal budget			State
	Natural environment						Private firms
							Non-profit organisations

18. National Bomb Shelter "Policy space"
Date: 1995
Client: Swedish National Rescue Agency

Geographic priority	Functional priorities	Size and cramming	New construction	Maintenance	General philosophy
Metropoles	All socio-tech. functions	Large, not crammed	With new building construction	More frequent maintenance	All get same shelter quality
Cities + 50,000	Tech support systems	Large & crammed	Compensation	Current levels	All take same risk
Suburbs and countryside	Humanitarian aims	Small, not crammed	New only for defence build up	No maintenance	Priority: Key personnel
No geo-priority	Residential	Small & crammed			Priority: Needy

19. Vulnerability – Resiliency GAP-analysis model
Date: 2015
Client: EU 7th Framework Project

Vulnerability TYPE	Vulnerability assessment process	Inter-dependencies	Amplification	Areas Affected	Community Impacts	Vulnerability factors	Aspects of resilience:	Vulnerability reduction conditions/ actions
Economic	Geophysical Risk	Physical	Critical	Death and Injury	Individuals: direct	Production pressures(take over safety)	Capacity for successful response to chronic risk or sudden onset of disaster. (Risk dimension)	Homeostasis
Technological or technocratic	Engineering and Architectural Risk	Geographic	Containable	Physical Health /Well-being	Individuals: indirect	Failure of the regulatory/control authorities.	Capacity for overall functioning of people, communities, organisations or constituencies post-disaster.	Omnivory
Residual	Technological Risk	Logical	No amplification.	Mental Health/Wellbeing	Small groups: direct	Weakness of the organisational safety culture.	Capacity to deal with surprise in cascading events.	High flux
Delinquent	Medical Consequences	Cyber		Home/Shelter	Small groups: indirect	Limits of operational feedback.	Capaciry for understanding the scope and magnitude of disaster effects in order to cope (Sense of Coherence)	Flatness
Newly generated	Socio -Economic Consequences			Safety and Civil Security	Community: direct	Flawed management of organizational complexity	Capacity for psychological resilience and integration of SoC scales in emergency management and security professionals.	Buffering
Natural hazard related	Plan Organizational Response			Food	Community: indirect.	No consideration about a whistle-blower	Flexibility of international diplomacy.	Redundancy
Total vulnerability				Potable Water		Wrong design of mitigation measures/ models	Capacity to mobilize effectively many resources with short time notice	Some of above in place, but need improvement
				Sewerage and public health systems		Social dependency on most interconnected sectors	Capacity to addresss latent vulnerabilities and limit the spread of cascading.	None of the above effectively present
				Information about services and support		Geographic concentration of Critical Infrastructures	Existence of an effective legal/political/admistrative framework	
				Access to services and support		Structural Weakness of Critical Infrastructures.	Some of above in place, but can be improved.	
				Income security/ economc/opportunity		Unsustainable development	None of the above effectively present	
				Social links, social networks and support				
				Community owned assets				
				Community owned /shared intangibles				
				Transportation				

20. Vulnerability – Resiliency GAP-analysis: Case of Fukushima disaster
Date: 2014
Client: EU 7th Framework Project

Vulnerability TYPE	Vulnerability assessment process	Inter-dependencies	Amplification	Areas Affected	Community Impacts	Vulnerability factors	Aspects of resilience:	Vulnerability reduction conditions/ actions
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Delinquent	Medical Consequences	Cyber		Home/Shelter	Small groups: indirect	Limits of operational feedback.	Capaciry for understanding the scope and magnitude of disaster effects in order to cope (Salutogenesis & Sense of Coherence)	Flatness
Newly generated	Socio -Economic Consequences			Safety and Civil Security	Community: direct	Flawed management of organizational complexity	Capacity for psychological resilience and integration of SoC scales in the routines of emergency managers and security professionals.	Buffering
Natural hazard related	Plan Organizational Response			Food	Community: indirect.	No consideration about a whistle-blower	Flexibility of international diplomacy.	Redundancy
Total vulnerability				Potable Water		Wrong design of mitigation measures/ models.	Capacity to mobilize effectively many resources with short time notice.	Some of above in place, but need improvement.
				Sewerage and public health systems		Social dependency on most interconnected sectors	Capacity to addresss latent vulnerabilities and limit the spread of cascading.	None of the above effectively present
				Information about services and support		Geographic concentration of Critical Infrastructures	Existence of an effective legal/political/admistrative framework	
				Access to services and support		Structural Weakness of Critical Infrastructures.	Some of above in place, but can be improved.	
				Income security/economic opportunity		Unsustainable development	None of the above effectively present	
				Social links, social networks and social support				
				Community owned assets				
				Community owned /shared intangibles				
				Transportation				

Vulnerability factors: Main = dark blue : Secondary = Light blue. Resiliency factors: In place = Dark blue : Needed = Red

21. Knowledge base vs. knowledge needs Gap-analysis model for operational environment
Date: 2005
Client: Swedish Defence Research Agency

Knowledge base (1-4) Problem areas to manage (A-D)	OP-Environment: institutional structures/factors to be aware about. (PRESERVERS)	OP-Environment: cultural values to be aware of (THEY) (SHAPERS)	OP-Environment: factors concerning local population's motivations & needs: (DRIVERS)	Interactions between IN and OUT groups	Actors/ players to take account of
1. CASCET	Ideology/ religious beliefs	Relation to gender	How are basic needs provided for	Perceptions of "our" force by local populations	Coalition forces
2. Growing QAWMS	National identity and values	Verbal- nonverbal communication	What gives Power	Perception of local populations by "our" forces	Our forces/ national
3. Hofstede	Political structure/ leadership	Individual/collective scale	What gives Prestige/ status	Perception by national and international opinion	Local populations
4. Inglehart	Demographic patterns	Power distance	How is economic security acquired	Number of interactions between commander and local authorities	Minority groups among local populations
A. Intel	Economic structure	Honour	How can Physical security be gained	Relationship (valence) between commander and local authorities (Key leader engagement)	Local authorities
B. Decision evaluation	Social network	Tightness-looseness	How do people strive for belonging/ affiliation	Interactions between our forces and local populations	NGOs/IOs
C. PsyOps	Information network and info flow via media	Taboos	How is trust acquired	Interactions between our forces and local forces (police and army)	Local security forces (police, army)
D. Socio-cultural awareness	Security structure	Hospitality rules	What are people's expectations for the future	Interaction between "us" and potentially emergent movements	Media opinion
	Educational structures	Attitudes to violence	How is self- expression attained	Interaction between "us" and NGO/ IO	Regional countries
		Attitudes to own security forces	What level of education provided and to whom?	None	Militias and insurgents
		Uncertainty avoidance: society's flexibility			Local non-authority actors
		Attitude towards education			Other stakeholders
		Attribution styles			
		None			

CASCET knowledge base vs. Decision evaluation needs: Light blue = only CASCET; Middle blue = need not satisfied; Dark blue: Need satisfied.

22. Model for organisational change/development
Date: 1998
Client: Swedish Defence Research Agency

Organisation TYPE	Leadership culture	Buyer structure	Dominate product/ service	Co-operation strategies	Main employee incentive	Employee profile
Official state agency	Bureaucratic hierarchy	Ministry dominated	Process + method support	Outside help when needed	Money	Life-long service
Government owned enterprise	Strong scientific leadership	Military and material dominated	Soft studies	Joint ventures	Managerial career	Career researcher
Academy (á la university)	Marketing division leadership	Defence Industry	Hard studies	Consultant purchasing	Pleasure in one's work	Development engineer
Trade institute	Umbrella management	Civilian agencies	Basic research	Mediator only	Educational motivation	"Consultant"
Consultant firm	Gate-keeping	Private markets (national)	Testing, construction		Titles, specialist career	Entrepreneur
"Learning organisation"	Skunk-works (ad hocrati)	International markets	Second opinion		Organisation gives status	Elite troops

23. Scenario-Strategy model for Extended Producer Responsibility system
Date: 2004
Client: Swedish Environmental Protection Agency

SCENARIOS	Consumer behaviour	Consumption patterns (total & private import)	Households sorting behaviour	National environment. policy	Price levels: Raw materials vs. Recycled material	Tech development: material usage	Tech development: material recycling	EU directives import/export	Vision/ Strategy
Wild East World crisis	Buy environmentally Willing to pay more	Total - UP Private - UP	Voluntary on ideological basis	Advanced holistic econ. & politics	Raw - high Recyc - high	Very fast development	Very fast development	More open than at present	Strategy A
Raw material crisis	Buy environmentally but will not pay more	Total - DOWN Private - UP	Sort by reward	Advanced buy fragmented	Raw - low Recyc - high	Steady development	Steady development	Status quo	Strategy B
Current development - pessimistic	Do not buy environmentally	Total - UP Private - DOWN	Sort if forced to	Advanced but only voluntary	Raw - high Recyc - low	Marginal development	Marginal development	More restrictive than at present	Strategy C
Current development - optimistic		Total - DOWN Private - DOWN	No sort/ protest	Lowest EU-adaptation	Raw - low Recyc - low				No strategy coverage
Greenhouse effect - stop emissions									
Batman: High-tech solutions									
Dematerialization									
Green paradise									

24. Educational assessment model
Date: 2010
Client: A National Ministry of Education

What can be assessed at the student level	How can assessments be done? (general)	Purpose of assessment (Why)	Stakeholder (Primary Drivers)	Societal role of assessment	Unintended consequences of assessments
Curriculum knowledge (Academic)	National exams (high stakes)	Certification (Formal curriculum)	Teachers	Basis for resource allocation	Excessive student's anxiety on performance
Subject specific skills (applied knowledge)	School/Class based academic assessments (Medium stakes)	Placement (School)	Students	Preserving meritocracy	Excessive workload/stress on teachers
Physical domains	Teacher informal assessment of non-academic domains	Placement (Job)	Parents	Providing opportunities for social mobility	Unrealistic expectations and aspirations by parents
Moral Values	Student self or peer assessment	International benchmarking (including overseas admission)	MOE	Fulfilling individual aspirations	Stigma/labelling
"Confident Person"	Master plan of awards (School level)	Feedback to inform learning and teaching	Public School leaders	Developing the skills for future work/studies	Vicious cycles of reinforcing sense of failure
"Self-directed Learner"	School excellence model (School level)	School accountability	Employers (includes PSC)	Used by society as a definition of success.	Social stratification
"Concerned citizen"	Recognition of achievements outside the school framework(Individual level)	Teacher accountability	Institutions of Higher Learning	A benchmark against other economies	Shallow learning instead of deep understanding
"Active Contributor"	Individual diagnostic tests (used for profiling students, looking for trends in student development)	Part of learning	Public (Includes subject matter experts)	Holistic development of students	Homogenous products and abilities. strengths and weaknesses
Aesthetics	Systemic monitoring and evaluation using sampling/matrix	Inform stakeholders	Singapore Examinations and Assessment Board		Placing excessive extrinsic motivation on learning
	Future assessments (E.g. Innovative use of ICT. BLOGs etc)	Direct School Admission	Private education providers		Teaching to the test (Narrowing the curriculum)
	Context driver/authentic assessments (e.g. work attachments)		National Institute of Education (NIE)		Promote spirit of excellence
					Narrow definition of success
					No known unintended consequences

25. International Aid and Poverty Reduction
Date: 2002
Client: International Aid and Development Agency

Sector	Channel	Mode	Form	Level	Targeting poverty	Goals
Infrastructure	Bilateral	Government	Budget support	National	Direct targeting exclusive	Economic growth
Social	Multilateral	Private sector	Sector programme support	Regional	Direct targeting inclusive	Economic & Social equality (poverty reduction)
Natural resources and environment		NGO national	Project support	District	Indirect intervention - policies and institutions	Economic & political independence
Private sector and capital markets		NGO international	Mixed credits	Local	Indirect intervention - national level	Democratic development
Research			Contract financed technical coop		Not relevant	Environmental care
Democratic governance						Gender equality
Public administration						
Culture and media						
Area development						
Relief						

26. Strategic trends impacting the info-com landscape
Date: 2008
Client: National Government Authority

Available Budget	ICT branding and promotion program	Financial incentives	Govt ICT spending	Policy, certification and Regulation	Additional IDA Focus	Talent Pool	Disruptions in the next 2 to 5 years
Triple	Double industry grants	4 year tax rebate	Accelerated projects	Increased controls	Driving R&D	Train for local ICT demand	Global Economic downturn (2 years)
Status Quo	Status Quo	Free land for data centre	Delay projects as a spending reduction measure	Moderate, Selective controls (SQ)	ICT to exploit climate change	Train for overseas demand	Positive negotiations on climate change
Reduce significantly	Reduce by 50%	Free electricity	Stronger mandate for energy efficient products	Relaxed regulation	Attracting data centre	Attract more foreign talents	Internet 2.0 bubble burst
Others	No budget for promotion of ICT	Accelerated write-off	Reduce Capex and expenditure as spending reduction measure	Others	Driving innovation	Attract more local ICT students	Energy crisis
	Others	Others	Increase Capex and Expenditure		Others	Others	Major ICT companies leaving country
			Status Quo				Major internet Infrastructure disruption (Prolonged)
							Nil

27. Modelling diagnostic meta-model
Date: 2015
Client: 7th Framework EU Consortium Project

What is being modelled	Purpose or goal of modelling	Main intended result of the model	From where is principal knowledge derived	Main type(s) of information available	Chief method of approach	Type(s) of competence required	Modelling mode	Types of uncertainty involved	Uncertainty transformation	Method of validation where possible	Specific modelling methods to be employed
Natural systems	Scrutinise/ evaluate/ test already existing system	To predict an outcome	Available "objective" data	Quantitative/ Numerical	Calculate/ optimise	Mathematical / math-statistical	Deterministic	None	To eliminate uncertainty	Mathematical/ Logical	Agent Based Modelling
Biological/ ecological systems	Adapt/improve already existing system or develop new system to new sector tasks	Propose a specific solution to a well defined problem	Assertions by stakeholders and problem owners	Logical	Simulate	Technical/ Engineering	Stochastic Probabilistic	RISK - with well grounded probabilities	Reduce option space	Experiment/ experience	System Dynamics Modelling
Technical systems	Adapt/improve already existing system or develop new system to new technologies	Provide proposals for alternative possible solutions to a well defined	Assertions by external, impartial groups	Graphic	Correlate (Statistically)	Philosophical / Epistemological	Quasi-causal	Genuine (with well defined outcome space)	Specify uncertainly factors	Expert judgement	NLP Non- Linear Programming
Organisational systems	Adapt/improve already existing system or develop new system to new social/political/ financial	To better structure and define a problem	Modellers' own observations, depictions and interpretations	Text/natural language	Compare/assess	Sociological/ Organisational/ Behavioural	Logical	Genuine (with ill-defined or unknown outcome space)	Better estimate of probability of outcome	Explicitly none	Linear programming models
Socio-technical system networks		Increase knowledge and competence within problem area			Describe, shape, give conceptual form	Economics/ finance	Normative	Agonistic Self-referenced	No explicit transformation		Bayesian networks
Conceptual systems		To establish and legitimate an idea or a policy direction				Historical Political science					Logic trees
		To provide normative guidelines									Influence diagrams/ Black-box interactive models
											Morphological/ typological
											Narrative & "rich pictures"

28. Meta-model of modelling types
Date: 2017
Client: Model for article in *Technological Forecasting and Social Change*

Type of variables	Type of connections between the variables	Quantification of connections	Cyclicity of connections	Mode of connections between variables
Continuous	Directed	Quantified	Cyclic connections	Causal: deterministic [mathematical-functional]
Discrete (Category variables)	Not directed	Non-quantified	Acyclic connections	Causal: probabilistic [Bayesian]
Black-box (Non-specified domain)				Non-causal [Logical; alethic; deontic]
				Unspecified connections

29. Modelling types #1: For difference project study phases
Date: 2004
Client: Swedish Defence Research Agency

Study Phase	Main type(s) of information available	Types of Method	Type(s) of competence required	MODE of work	Validation	Extent of "back-office" work
Problem formulation/ conceptualisation/ structuring	Numerical	Deterministic	Mathematical / math-statistical	Individual analyst	Mathematical/Logical	Much
Generation of alternatives (IF-THEN)	Logical	Stochastic	Philosophical / Epistemological	Small group of analysts	Experiment/ experience	Moderate
Analysis of possible solutions	Graphic	Iconological	Sociological/ Organisational/ Anthropological	Small group of analysts plus clients	Expert judgement	Very little or none
Interpretation, evaluation of result	Text/natural language	Structural (e.g. Influence diagrams)	Economics	Large group of analysts plus clients	Explicitly none	
Presentation/ recommendations		Morphological Typological	Behavioural	Client/analyst network		
		Narrative	Historical Political science			

30. Modelling types #2: For difference project types
Date: 2004
Client: Swedish Defence Research Agency

What is being modelled	Purpose or goal of modelling	Desired final result	Method of approach	From where is knowledge derived	Uncertainty transformation	Modelling type
Existing technical system	Adapt to new technology	Specific proposal for solution	Calculate/optimise	Statistical collation and compilation of available data	Specify uncertainly factors	System Dynamics Modelling/ Control engineering
Existing social system	Adapt to new social/political environment	To better structure and define the problem	Simulate	Assertions by stakeholders and problem owners	Reduce option space	Linear programming models
Design of technical system	Adapt to new economic/financial framework	Increase knowledge and competence within problem area	Compare/assess	Assertions by external, impartial groups	Better estimate of probability of outcome	Stochastic models (e.g. Monte Carlo)
Design of social system	Adapt to new sector tasks	To establish and legitimate an idea or a policy direction	Describe, shape, give conceptual form	(Our) own observations, depictions and interpretations	No transformation	Influence diagrams
	Adapt to other political goals					Morphological modelling
	To assess already existing system					Scenario narratives
						"Rich pictures"

31. Prototype Training & Instruction model: Example - Learning to write a rapport
Date: 2006
Client: TNO – Holland

Learning goals	Learning activities	Instruction (directives from teacher/system)	Type of feedback required	Learning method	Learning means
To interpret data or information	Read example articles	Give an assignment to write	Pose critical questions (Inquire)	"Traditional classroom" (Directive teacher, Group directed)	Paper-based materials
Analyse text	Formulate and answer critical questions	Study supportive or extra information (theoretical)	Give reflective feedback (Directive)	"Adaptive learning" (Directive teacher, Individually directed)	Simulator or mock-up
Use word processor (eg Word)	Write a section	Use explicite examples (view, compare, select different alternatives)	Give corrective feedback (Corrective)	"Collaborative learning" (Facilitating teacher, Group directed)	Instructional software
Use writing standards - style sheets, templates	Formulate text structure and organisation	Study just-in-time information.		"Apprentice learning" (Facilitating teacher, Individually directed)	"On-the-job"
Command of spelling and grammar		Listen to direct "explanation"			
		Assignment to reflect on or review own work			

32. Scenarios for Future Car Insurance
Date: 2003
Client: Swedish Insurance Company

Projected context	Volume of traffic (relative to current levels)	Car usage: Going up	Car usage: Going down	Customer type (Four examples)	Prioritised consumption (prime volume for car insurance)	Insurance needs for private car owner
1. "The car is everything"	Increase in all areas	"Garage driver" (Drive less)	"Garage driver" (Drive less)	Middle Swede	Must to have a car	"Formula 1-depot" (Luxury service)
2. "Climate shock"	Increase to and from urban areas	Leisure time and vacation	Leisure time and vacation	Urban families with children	Keep the old car as long as possible	"Full service" Everything within 6-12 hours"
3. "Climate change"	Status Quo	Daily use in own area	Daily use in own area	"Silver" (well situated retired, baby boomers)	The car a necessary evil (car pools, etc.)	KASKO
4. "Financial Crash"	Decrease within urban areas	To and from work	To and from work	Student	Car as status symbol	"Instant insurance" (SMS)
5. "Sudden oil crisis" (Politically driven)	Decrease to urban areas, increase in rural areas	At work	At work		Luxury hire or leasing	"Budget" Takes time No replacement car
6. "Creeping oil crisis" (Slow dry-up)	Decrease in all areas				"Subscribe to a car"	Only compulsory traffic insurance
7. Electrification					No car	No private customers

33. National fuel rationing policy space
Date: 2003
Client: Swedish National Authority

Which fuel product should be rationed?	Rationing system	Technical design of the rationing system	Distribution philosophy when rationing	Who is the rationing aimed at?	Who is most negatively affected?
Motor petrol	Prioritization	Individual ration card	Endurance (national)	Everyone - generally in society	The economically weak
Diesel	Standard ration for end users	Coupons (paper)	Priority users	Business	Blue light
EO 1	Needs rationing	Electronic rationing card	Equal quota for all (per capita)	Socially important activities	Order & security
Other EO	Manage deliveries to retailer	Ordinary debit card	Geographical prioritization	Private person in sparsely populated areas	Transporter
Aviation fuel	Control deliveries to large consumers	Form (license / agreement)	Equal quota for all owners of plant / vehicle	Private person in big city	Private motoring
Ethanol and biogas	Stock market / market based on savings targets		Market: Willingness to pay	Economically weak	

34. Perceived security model: Type of threat
Date: 2014
Client: EU 7th Framework Program Project

Type of threat/risk/insecurity	Context of perceived threat/insecurity	Demographic parameters which can determine whether and to what extent people perceive threat?	Hypothesis about how people primarily appraise and cope with perceived threat	Type of responses (effect of coping style)
Natural disasters	Home and family	Age	Denial (of threat)	Seek social support
Man made disasters	Neighborhood	Gender	Downplay the seriousness of consequences	Seek professional support (psychological)
Technical accidents	Workplace	Type of "household"	Attribute cause to higher power (God, fate)	Defensive avoidance (limiting oneself)
Violence	Social group	Ethnic background	Attribute cause to society	Deal with symptoms of threat
Property crime	Public spaces	Level of Education	Problem-focused coping	Seek / buy protection (legal/ physical/public authority)
Vandalism and other crimes against public order	Transport systems	Occupation	Stereotyping	Confront source of threat
Drugs abuse and other addiction	Institutions	Religion	"It's all my fault"	Do nothing
Discrimination/ marginalization/ social exclusion	Society in general	Income	Fear and insecurity (Not coping)	
Economic downturn/ social upheaval	World in general	Type of Housing		
"Terrorism"		Membership in political parties/groups		
War		Degree of social exclusion		
		Social cohesiveness		
		Previous victim of crime or threat		

35. Perceived security threat scenarios
Date: 2015
Client: EU 7th Framework Program project

Scenario example	Type of threat	Experience of being victim	Perception of targeted area	How people cope with stressors	Type of responses	Perceived consequence of actual intervention	Trust (Lack of)
Family who experiences a flood	Natural disasters	continuously/ daily	Home + family	Denial	seek social support	situation resolved/ highly improved	politicians (policy makers)
Garbage in Naples	Man made disasters tech. accidents)	weekly	Friends	attribute cause to higher power	seek professional support (psychological)	perception of security increased	judiciary system
Robbed and mugged on street	"Terrorism"	monthly	Neighbourhood	attribute cause to society	Defensive avoidance (limiting oneself)	Ambiguous	"Blue light"
Burning cars in Paris	Assault	within a year	Workplace	emotional focus coping	seek / buy protection (legal/ physical)	No change	fellow citizens
Stress via serial rapist	Rape	within 5 years	Public spaces	stereotyping	seek support of authority (e.g. police)	Situation worsens	"different' social groups
Kidnapping/ extortion	Robbery	once in a lifetime	Transport systems	problem focussed coping	confront source of threat	Situation completely deteriorates	Military
Poison in cheese	Vandalism	never been a victim	Undefined (society in general)				Insurance system
Madrid train bombings	"Threat" (per se)		Personal property				None
	Kidnapping		Social group				
	Extortion		A specific individual				
	Discrimination/ Social exclusion						
	Deformation/ slander						

36. Media and perceived security model
Date: 2016
Client: 7th Framework EU project

Media source	Media channel	Demographic variables	Economic status	Level of education	Cultural group identity	Principal security issue	Media use: frequency and breadth	Factors which influence perceived state of society
Government	Broadsheets	Age	Rich - wealthy	Higher education	Cosmopolitan	"Terrorism"	Broad & frequent	Level of political stability
Personal/community	Tabloids	Gender	Well-off middel class	Secondary education	National mainstream	"Crime" and anti-social behaviour...	Broad & infrequent	Trust in government
Academic /technical specialists	On-line news media	Ethnicity	Makes ends meet	Primary education	Regional identity (within country)	Economic security/ employment	Narrow & frequent	Trust in civil society
Pressure groups	Social on-line media	Type of household	Struggling/ periodically unemployed	Little or no relevant education	Local identity	Immigration/ integration (Cultural cohesion)	Narrow and infrequent	Level of community cohesion
Popular culture	TV	Urban-rural spectrum of living	Long-term unemployed		Political identity	Natural disasters	Not at all	Level of social capital
	Radio	Health status	Illegal - homeless		Religious faith identity	Man-related (technical) disasters		Physical / urban environment
	Local press	Housing tenure			Life-style identity	Health		Past experience and tradition
		Immigrant status			Ethnicity	Self-fulfilment/ development		Personal experience of security breach
						External pol-mil threats		Level of moral cohesion
						Children (e.g. their future)		

37. Client type marketing model
Date: 1998
Client: Swedish National Research Institute

Type of client	Relation to client	Type of cooperation	Client Resource Level (RL) vs Decision Power (DP)	Client's primary level of need	Our product/ service	Type of direction from client	Our motive for working with client, in this way
Government Offices	"Married"	We can do it ourselves	High RL High DP	Strategic Unspecified	Method (service)	Detailed process direction	Big income yield
Central government authorities	Long-time subcontractor	Joint venture with 3rd party	Low RL High BP	Strategic Specified	Method/model (product)	Task direction	Bread & butter
Local government organisations	"One shot"	Strategic alliance with 3rd party	High RL Low BP	Operative Unspecified	Develop whole decision base	General aim direction	Gives glory
Government industry		Turnkey project	Low RL Low BP	Operative Specified	Expert knowledge	Autonomy	Instructive/ learning experience
Large-scale enterprise				Mostly "Nuts & bolts"	Consultant in house		Future investment
SME					Second opinion		Service to society
Trade associations							Fun
Consultancy firms							

38. Anonymous communication over the Internet
Date: 2004
Client: Swedish National Authority

Scenario	Who (Sender)	Who (Receiver)	Legal status of content	Anon. to whom	What is anonymized	Method of anonymization	Who does anonymization	Degree of legal access
The Leak	Private person (individual)	Individual	Neutral or benign	Everybody	All identifiers of sender	Technical: with back door	Users themselves	No access
The freak	Collective (not legal person)	Closed group	Unethical	Everybody but receivers	Specific identity of sender	Technical: without back door	"Group operator"	Conditional (strong)
Blackmail (kidnapping)	Association (Legal person)	"Open group"	Illegal	Receiver(s)	Relationships	Social	System operators	Conditional (weak)
Whistleblower	Business	Mass		Operator			Mix-net	Agreement
Criminal planning	Public admin.							Complete access
Terrorist planning								
The gossip								
The business ("Anon. advertising")								
Disinformation "Fake news"								

39. New Religious Movements and Violence
Date: 2001
Client: Swedish National Authority

Leadership	Theology	Living patterns	Clientele	Relationship to society	Tactical approaches	Collective vision
Messianic	Antinomianism	Fully communal	People with specialised skills	Revolutionary (socio-political)	Genocidal violence	World beyond human redemption
Authoritarian	Apocalyptic	Communal enclaves	Dispossessed	Oppositional	Indiscriminate lethal violence	Perception of persecution
Cohesive core	Dissident	Congregational structure	Rootless/alienated	Reforming	Limited lethal violence	End can be affected by human action
Elected leadership	Established faith community	Covert actors	Walking wounded	Critical supportive	Non-lethal violence against persons	There is still good in the world
	State church	Networks - virtual	Established socio-econ. groups	Status quo (Value guard)	Only property damage	Salvation possible for the community
					Non-violent civil disobedience	
					Ordinary politics (no coercion)	

40. Operational Environment Awareness in Peacekeeping Missions
Date: 2008
Client: European Defence Agency

OP-Environment: institutional structures/factors to be aware about. (PRESERVERS)	OP-Environment: cultural values to be aware of (THEY) (SHAPERS)	OP-Environment: factors concerning local population's motivations & needs: (DRIVERS)	Interactions between IN and OUT groups	Actors/ players to take account of	Indicators/ measures of success (according to mission goals)
Ideology/ religious beliefs	Relation to gender	How are basic needs provided for	Perceptions of "our" force by local populations	Coalition forces	Less criminal offences
National identity and values	Verbal- nonverbal communication	What gives Power	Perception of local populations by "our" forces	Our forces/ national	Amount of territory secured
Political structure/ leadership	Individual/collective scale	What gives Prestige/ status	Perception by national and international opinion	Local populations	Decreased civilian population mortality
Demographic patterns	Power distance	How is economic security acquired	Number of interactions between commander and local authorities	Minority groups among local populations	Increased economic activity/ decrease in poverty
Economic structure	Honour	How can Physical security be gained	Relationship (valence) between commander and local authorities (Key leader engagement)	Local authorities	Increased school attendance
Social network	Tightness-looseness	How do people strive for belonging/ affiliation	Interactions between our forces and local populations	NGOs/IOs	Less attacks on own troops
Information network and info flow via media	Taboos	How is trust acquired	Interactions between our forces and local forces (police and army)	Local security forces (police, army)	Change in number and nature of manifestations
Security structure	Hospitality rules	What are people's expectations for the future	Interaction between "us" and potentially emergent movements	Media opinion	Change in migration patterns
Educational structures	Attitudes to violence	How is self- expression attained	Interaction between "is" and NGO/ IO	Regional countries	Decrease/increase in internal conflicts
	Attitudes to own security forces	What level of education provided and to whom?		Militias and insurgents	Changes in personnel turnover in local forces
	Uncertainty avoidance: society's flexibility			Local non-authority actors	Change in NGO / IO activity
	Attitude towards education			Other stakeholders	Change in nature of rhetoric in media and communication patterns
	Attribution styles				Time spent outside compound

41. Moving endangered city in Northern Sweden: Scenario Model
Date: 2002
Client: Swedish Mining Company

Scenario	Legal appeals	Ore market: Supply & Demand	Policy directions of "owner" [State]	Who pays?	Current transport political goals	Political balance: National - local	R&D concerning "fractures"
Dream on...	Actors continually appeal against each other	Pride UP Demand UP	Full support and facilitation	State pays for everything (Taxes)	Full compliance	Stabile nationally Stabile locally	New techniques mean continued production in spite of fractures
Realistic Positive	Strong groups appeal on grounds of national interests	Price UP Demand SQ	Attempts to govern and control details	Company pays for everything (Funds)	Goals reduced somewhat in order to ease process	Stabile nationally Unstable locally	New techniques for stopping or fixing fractures
Realistic Negative	Many small groups appeal the process	Price DOWN Demand UP	"Stays out of it"	Company pays for everything (Direct costs)	Goals reduced drastically in order to ease process	Unstable nationally Stabile locally	Status Quo
"Business solution"	Normal appeal rate (Status quo)	Price SQ Demand SQ	Reduces production in strategic areas	All actors (incl. the State) share costs	Goals eradicated	Unstable nationally Unstable locally	New techniques discover impending catastrophe
Politically enforced "sell-out"	Less or no appeals	Price SQ Demand DOWN	Sells out	All actors (excl. the State) share costs		Conflict between national and local levels	
Shut down		Price DOWN Demand DOWN	Shut down mine	No one pays			
Worst case							

42. Humanitarian Aid in Warzone
Date: 1998
Client: Swedish National Defence Research Agency

Humanitarian tasks toward civilian population	Task vis a vis military belligerent	Accepted level of causalities	Milieu	Military structure and capacity of belligerents	Level of consent	Security tasks toward civilian population
Support population (according int. law)	Enforcement	No/few casualties accepted	Full urban infrastructure. and local support	Middle level military capacity (regular forces)	No parties available for consent (Somalia)	Protect civilian population as a whole
Support other organisation's humanitarian tasks	Interposition	Some/limited casualties accepted	Ditto and some local support	Low level regular forces	No consent (Serbia)	Protect civilian population in certain areas
Carry out reconstruction with own resources	Observe and report	Relatively high casualty acceptance	Ditto and usable air-field	Advanced level irregular forces	Only strategic consent (UNPROFOR)	No defined tasks
No defined tasks	No defined tasks		Accessible road network	Low level irregular forces	Full consent (IFOR)	
			No working infrastructure			

43. Threat scenarios for transport of radioactive material
Date: 2002
Client: Swedish National Authority

Transport situation	Where is the cargo in the transport chain ?	Actor/threat	Does what ?	Information about the transport	Who gets information	Physical protection/ technical measures	Administrative routines and measures
Import of UF6	Onboard Swedish merchant vessel (open water)	Terrorist group	Destroy	Info on physical protection	Sender	Heavily armed escort	Limit the quantity of cargo
Spent fuel to CLAB	Onboard Swedish INF vessel (open water)	Organised crime	Highjack the whole transport	Advanced transport notification	Receiver	Lightly armed escort	Limit the number of people involved
Transit EU-to-EU country	Merchant vessel on way in or out of Swedish port	Organised nuclear power protesters	Steal the whole transport (when unattended)	Info on transport authorization	Carrier	Unarmed escort	Upgrade route planning
MOX	INF vessel on way in or out of Swedish port	General environmental activists	Rob the cargo	Dangerous goods documentation	Forwarding (shipping) agent	Hardened/attack protected vehicle	Upgrade personnel monitors
Nuclear fuel	Loading/Unloading in port (not specially protected areas)	Lone "revenger"	Steal the cargo (when unattended)	Commercial information	Local authorities	Hardened/ protected container	Increased measures for secrecy
Swedish transport outside of Sweden	Loading/Unloading in port (in specially protected areas)		Stop/hinder the transport	Goods and vehicle labelling	Regional authorities	Basic-level protection	Transponder
To Studsvik: refuse for recycling.	Temporary storage in port area			No information	Nuclear Power Inspectorate		Basic level routines
MTR fuel	Road transport				Radiation Protection Agency		
	Rail transport				Police		
	Planned stop during road transport				Customs		
	Unplanned stop during road transport				Foreign authorities		
	Arrival to/ departure from nuclear facility						

44. Financial Systems Disruption Model
Date: 2003
Client: Swedish National Authority

Technical systems affected	Basic needs resources	Payment services	Affected actor	Reserve routines
Banking system	Electricity	Internet payment	General public	Collaboration in crisis
ATM system	Electronic communication	Other Internet services	Financial companies	Common reserve routines and equipment
Girosystem	Technical IT service	Cash	Retail	Continuity planning, management
Social insurance system	Transport Mail delivery	Transfer account to account	Wholesalers	Own reserve routines and equipment
National/State payment system	Staff needs: Heat, food, water	Card payment	Municipalities	Manual routines
Tax system	Key personnel	Securities	Small businesses	No backup routines
Insurance companies' systems	Media / information	Government payments	Big companies	
Clearance system VPC, OM		National debt administration	Government agencies	
National Bank (clearing & settlement systems)				

45. Economic Crime and Mitigation Model
Date: 2001
Client: Swedish National Authority

Victim	Type of crime	Method	Physical visible controls	Technical solutions	Adminis-trative controls	System and organisat. solutions	Legislation	Influence motives
Consumer	Cheating on taxes/ customs, etc.	False information to official	YES	YES	YES	YES	Standard regulations	Influence (goal)
External environment	Environmental crimes	Physical handling	NO	NO	NO	NO	Order regulations	Influence (means)
Competitors	Fraud against companies	Bookkeeping					Permission regulation	Reward
Employees	Crimes to reduce costs	Financial transactions					Proceeding regulations	Sanction
Financers	Limiting competition	International IT- transactions					NONE	NONE
Owners	Cheating with subsidies	Planned bankruptcy						
The State	Swindles and stock influence	Illegal information transaction						
Market mechanisms	Insider crimes	Unlawful limitations on competition						
	Company plundering							
	Money laundering							
	Transgressing commercial restrictions							

46. Scenarios for Municipal Housing Development
Date: 2003
Client: Swedish Municipal Housing Company

Scenario	Real increases in rents (per year)	Vacancy rate (% of total)	Share dividend	Municipal premise income	Capital procurement	New construction or reconstruction strategies (cumul	Production of new apartments (trend per year)	Maintenance costs for housing stock
Vision year 2010	0 - 1%	1%	None	Present levels Present rents	Loan financing Stock maintenance	Exclusive housing	150	"Redevelopment" 125 SEK/m2
Very strong growth in municipality	+ 2%	3%	Company tax level	50% of present levels Present rents	Loan financing No stock maintenance	Traditional	50	"Renew, refine" 105 SEK/m2
Best business environment for company	+ 3%	6%	Maximum allowed	Present levels Decreased rents	No loan financing Stock maintenance	"LiveSmart" Low cost new construction	20	"Value maintenance" 90 SEK/m2
Present growth trends	+ 4%			50% of present levels Decreased rents	No loan financing No stock maintenance	Urban renewal	No new production	"Band-aids" 80 kr/m2
Sell-out (Political decision)						Broadband for all		
Drastically increased environmental demands from EU						Housing guarantee for students		
Negative growtn in municipality								
Worst business environment for company								

47. Residential Housing Development model
Date: 2002
Client: National Public Housing Authority

Real estate stock	Residential levels service in larger stocks	Price / content	Collaboration with owners & external actors	Company profile	Product mix	Type of living environment
Increase by building new	Bass service in own property	Exclusive accommodation	Active & continuous contact	Purely commercial	Highly diversified	Great opportunities for active living
Increase by buying up	Municipal service in own property	"City center"	Continuous contact (passive)	Commercial with public benefit	Somewhat diversified	Social community
Sell + buy actively with constant stock	Minimal basic service in own property	80s-90s	If necessary (emergency call)	Primarily public benefit	Standardization	Neat accommodation
Passive constant stock		60s-70s	Minimal			Turnkey service (passive accommodation)
Decrease by selling		Low budget				
Reduce by demolishing		Ikea model				

48. Waste management model
Date: 1999
Client: Swedish EPA

Type of waste	Quantity and quality waste	Cycle adaptation of products	The nature of waste management	Source	Waste management regulations (in practice)	The EU system
Solid: flammable	Less than today Fixed components	Environmentally friendly products	Low status Predominately manual Low qualifications	Residential areas	Good supervision and compliance Severe penalties	The market rules
Liquid: flammable	As today Fixed components	Quick product development with some control	Higher status Mix manual - machine Qualified labor	Trade and public administration	Decent supervision and compliance Some penalties	Strong environmental investment
Solid: environmentally hazardous	More than today Fixed components	Quick product development with little control	Best available high-tech	Industries, transport nodes	Poor supervision and compliance Small penalties	National solutions
Liquid: environmentally hazardous	Less than today Mixed debris			Closed waste facilities.		
Infectious, unsanitary	Like today Mixed debris			Public waste		
	More than today Mixed debris			Illegal facilities		

49. Hazmat accident preparedness model (Example: Ammonia tanker accident)
Date: 2001
Client: Swedish Rescue Services Agency

PLANNING/ PLANS	TRAINING AND EDUCATION	PERSONNEL AVAILABLE	EQUIPMENT AVAILABLE	LEADERSHIP LEVEL (pre-defined)	RESPONSE to chemical release	RESPONSE: Information to public	RESPONSE: Affected people
Full preparedness plan	Broad co-op. municipal training	11 or more	Special for specific case	Level 4	Reduce by at least 80% within 15 min	Warn involved population within 5 min	Help most within 30 min
Response plan for specific case	Training for specific case	8-10	Base for specific case	Level 3	Reduce by at least 80% within 30 min	Warn involved population within 30 min	Help some individuals within 15 min
Standard routine for specific case	Base education + regular training	5-7	Less than base for specific case	Level 2	Reduce by less than 50% within 15 min	No warning within 30 min	Help some individuals within 30 min
Standard routine for general case	Base education only	4 or less		Level 1	Reduce by less than 50% within 30 min		No help available within 30 min
Only alert plan					No measures taken within 30 min		

50. Postal Service Organisational Development - #1: The future of letters
Date: 2000
Client: National Postal Service

Format	Volume (per year)	Service level / Lead time	Submission point and collection	Sorting by identities (ID)	Terminal type	Delivery structure (Handling points)	Delivery type
Lump	Billions	In xx out xx + 2h	More submission points + later entry time + 7 days	Five ID	Letter terminal as today	4000 service points	Express carrier: big city/urban area
C5 / small flat	Hundreds of millions	In 24.00 and 05.00	Fewer submission points + later entry time	Four IDs No recipient ID	Letter factory with diverisfied service arrangement	750 delivery offices	Every morning: big city/urban area
C4 flat	Tens of millions	Overnight morning	Status quo:submission points and time	Three IDs No recipient & service ID	Product factory. with preparatory work for delivery	10,000 distributors	City letter carrier: every day
Flat odd shape. and/or color	Millions	Overnight evening	More submission points + earlier start time	Zero IDs Postal number	Totally diversified factory	40,000 "bundle boxes"	City letter carrier. every other day
Magazines and customer magazines	100,000s	3 nights with specific delivery day	Fewer More submission points + earlier start time				Download yourself / Wherever you want
		1 week with specific delivery day					Country postman
		Within 1 week, no specific delivery day					Electronic - Converted

51. Postal Service Organisational Development - #2: Process flow
Date: 2000
Client: National Postal Service

AREA	RECIPIENT PREFERENCES	GEOGRAPHY [INCOMING]	FORMAT [INCOMING]	LEAD TIME & [OUTGOING]	PRODUCTION METHOD	FORMAT [OUTGOING]	GEOGRAPHY [OUTGOING]	DELIVERY TO
Customer service	Time	Whole world	C5 / small	Courier immediately all week	Machine	C5 / small	Whole world	Residence
Sales	Place	Baltic Sea area	C4 / large	Morning cure all week	Manual	C4 / large	Baltic Sea area	Workplace
Invoice	How (physical / digital))	Whole country	Journal	Courier exactly all week	Digital to physical	Journal	Whole country	"Poste Restante" diversified service point
Delivery of goods	Who	Selected national regions	Lump	Express Monday-Friday	Physical to digital	Lump	Selected national regins	"Mobile live" (To mobile customer)
Order	What	Triangles	Unaddressed	Morning- express Monday-Friday	Digital to digital	Unaddressed	Triangles	Company Organisation
Payments	Accept physically	Locally	Flutter	Express exactly Monday-Friday		Flutter	Locally	Box
Information services	Accept digitally		Digital	Standard 2000		Digital		
			Value	Morning slow		Value		
			Cash on delivery	Slow day precision		Cash on delivery		
				Slow week precision				

52. Postal Service Organisational Development - #3: Customer types & added service
Date: 2000
Client: National Postal Service

Sender types	Communication requirements	Recipient types	Format in	Format out	Time window	Value added service
National post order & Internet trade	Customer service	Big companies	C5 / small	C5 / small	Anytime express	Downloadable
International post order & Internet trade	Sales	Business	C4	C4	The next day at specific time	Storage
Financial companies	Invoice	Small businesses	Magazines	Magazines	In a few days at specific day	Conversion
Media companies	Delivery	Authorities	Lump	Lump	In a few days, no specific day	Color
Associations Organisations	Order	Associations	Unaddressed	Unaddressed		Internal service
Other companies	Payments	Retirees	Flutter	Flutter		
Private persons	Information	Other private individuals	Digital	Digital		
	Storage	International				
		Intranet				