

OMEGA Centre – Project Briefing for TfL

Harry Dimitriou

John Ward

Phil Wright

Overall Agenda

- Outline of Overall Study Methodology: International Comparative Study of Mega Transport Projects (HD)
- Data Collection Overview (JW)
- Pre-Hypothesis Research Overview (PW)
- Discussion

Outline of Overall Study Methodology: International Comparative Study of Mega Transport Projects

Harry T. Dimitriou
Bartlett Professor of Planning Studies
Director of OMEGA Centre
University College London

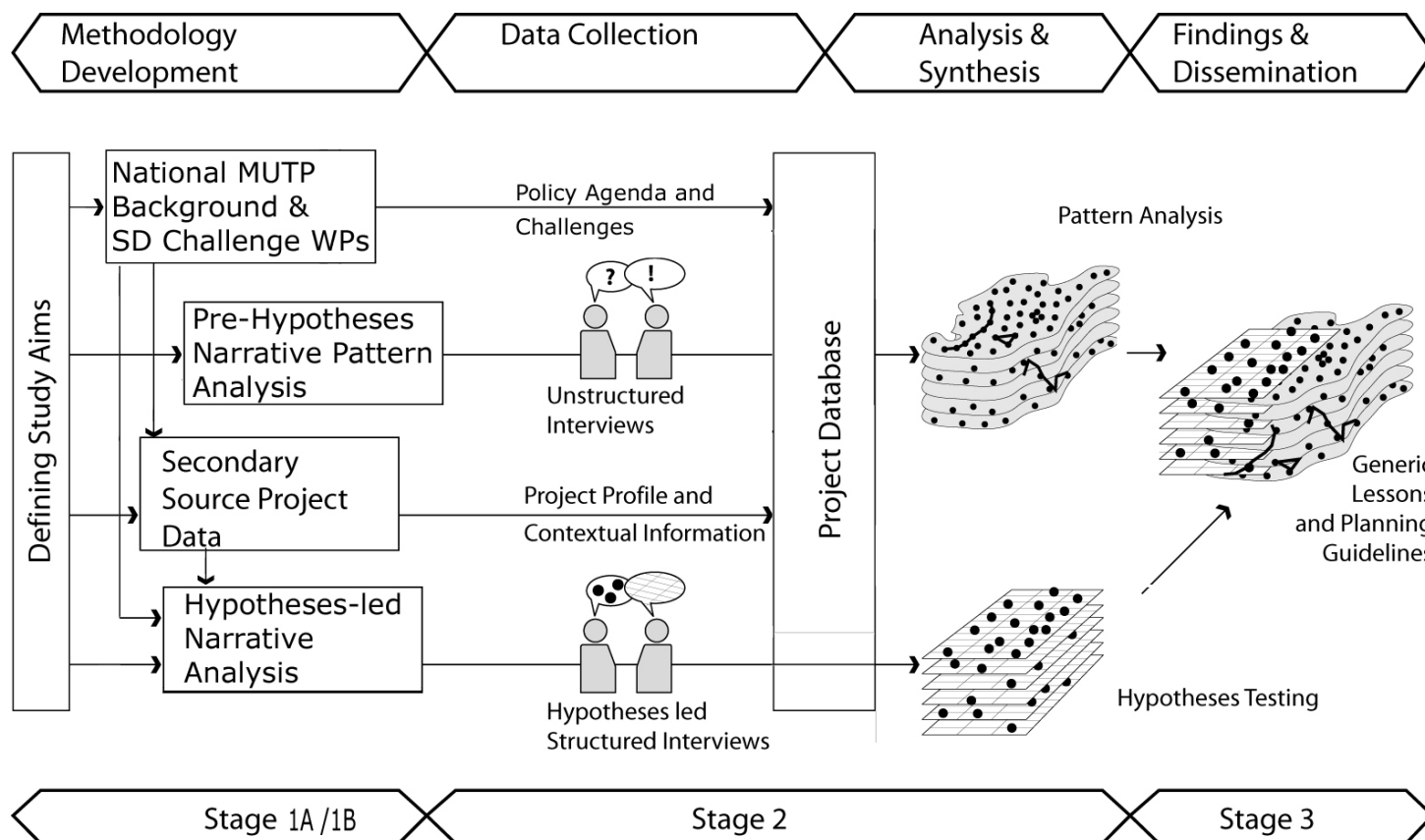
Overall research questions:

1. What constitutes a 'successful mega urban transport project (MUTP)?
2. How well has risk, uncertainty and complexity been treated in the planning, appraisal and evaluation of such projects?
3. How important is context in making judgements regarding the above questions?

Clarification questions:

1. What constitutes a MUTP, what are its boundaries and typologies?
2. What stakeholder perspectives of judgement are to be investigated and how (see Figure 1)?
3. How does one identify generic and context-specific judgements of success and lessons?

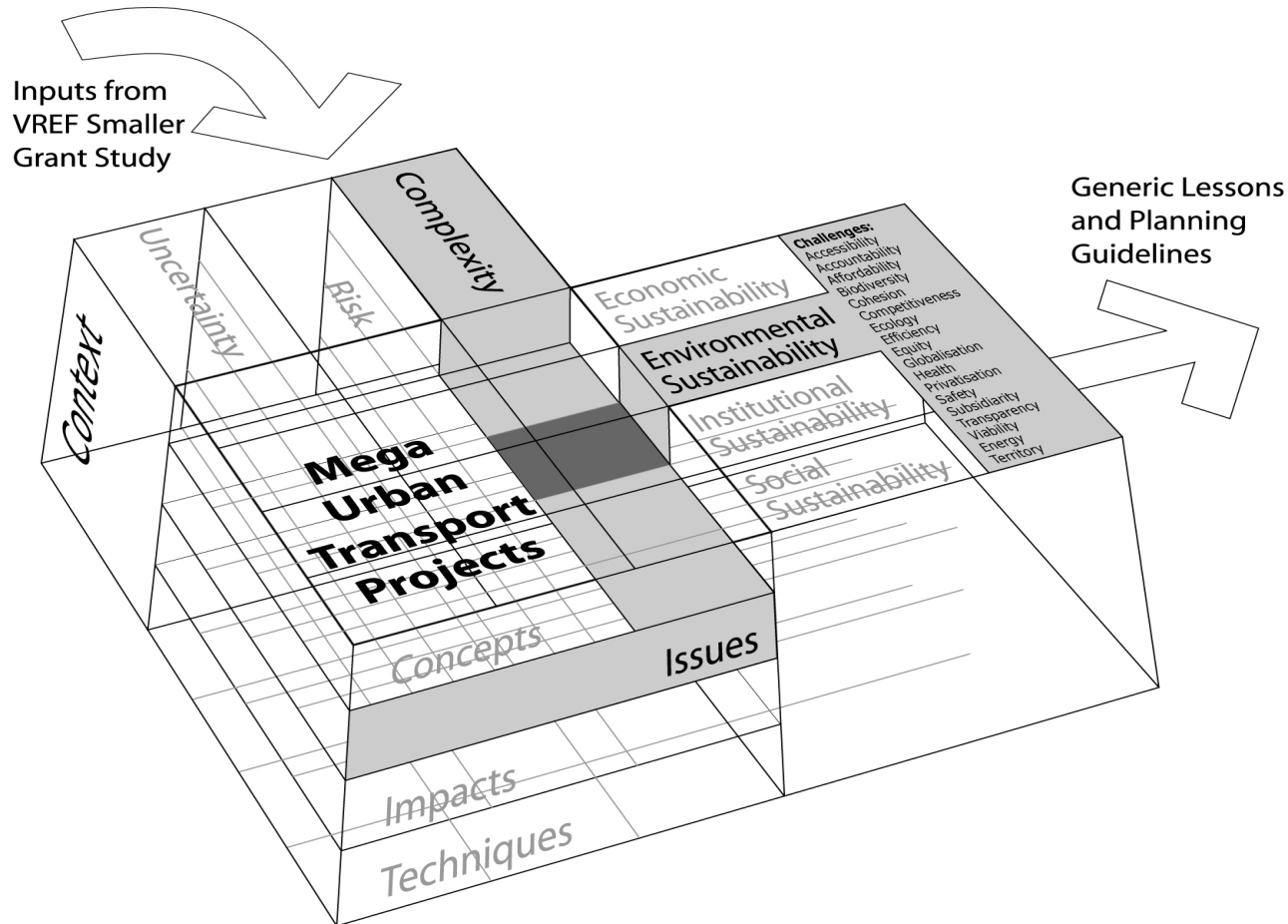
Figure 1: Methodology for data collection



Criteria for judging MUTP success

1. Traditional criteria relating to cost overruns, completion dates, generation of travel time savings for users and adequate rates of returns to investors.
2. New emerging agenda related to vision(s) of sustainable development (see Figure 2).
3. Strategic thinking – level of competence in treatment of risk, uncertainty, complexity and context in decision-making.

Figure 2: Study methodology framework



Context setting

1. Sustainability visions & challenges (see Figure 3)
2. National background/policy/planning/funding frameworks
3. Geographical/spatial context analyses
4. Cultural and institutional contexts
5. Temporal dimensions of above

Figure 3: Proposed Assignment of MUTP Sustainable Development Challenge Topics

Proposed Assignment of MUTP Sustainable Development Challenge Topics

Country Partners/ SD Challenges	UK	France	Greece	Germany	Netherlands	USA	Australia	Hong Kong	Japan	Sweden
Accessibility										
Accountability					1					
Affordability										
Biodiversity							1			
Cohesion			1							
Competition										
Ecology									1	
Efficiency										
Energy										1
Equity										
Globalisation	1									
Health										
Privatisation		1								
Safety										
Subsidiarity										
Transparency										
Viability								1		
Spatial/territorial re-structuring				1						
Institutional development incl. participation & Consultation						1				

Data collection

- **From MUTP stakeholders** (including those impacted by projects) using pre-hypotheses website questionnaires and selected naïve face-to-face interviews, with emphasis on story-telling employing Narrative Pattern Analysis.
- **From secondary sources**, including reports, websites etc. producing project profiles with information of project characteristics inserted into a shared web-based GIS data base with both geographical and spatial dimensions.
- **From MUTP stakeholders** (including those impacted by projects) using hypothesis-led website questionnaires, face to face interviews employing Narrative Pattern Analysis of story-telling of project experiences by selected key decision-makers.

Case study analyses of MUTP components

- Examination of treatment of uncertainty, risk and complexity and importance of context
- Examination of underlying and driving concepts
- Examination of major issues confronted
- Examination of dominant methodology and techniques employed (path dependency?)

Case study analyses of MUTP fulfilment of traditional appraisal criteria

1. Completion within budget
2. Completion on time
3. Completion within expected range of generated benefits to users
4. Completion with rates of return acceptable to stakeholders

Case study analyses of MUTP contribution to sustainability vision

1. Defining sustainability, sustainable urban development and sustainable transport
2. Economic dimensions of sustainability vision
3. Environmental dimensions of sustainability vision
4. Institutional dimensions of sustainability vision
5. Social/cultural dimensions of sustainability vision

Case study review of MUTP responses to sustainability challenges:

- Accessibility
- Accountability
- Affordability
- Biodiversity
- Cohesion
- Competitiveness
- Ecology
- Globalisation
- Health
- Privatisation
- Safety
- Subsidiarity
- Transparency
- Viability
- Energy
- Territory

The Partners & their Case Studies



UK Case Studies

- The CTRL (Channel Tunnel Rail Link)
- Queen Elisabeth II Bridge
- Jubilee Line Extension

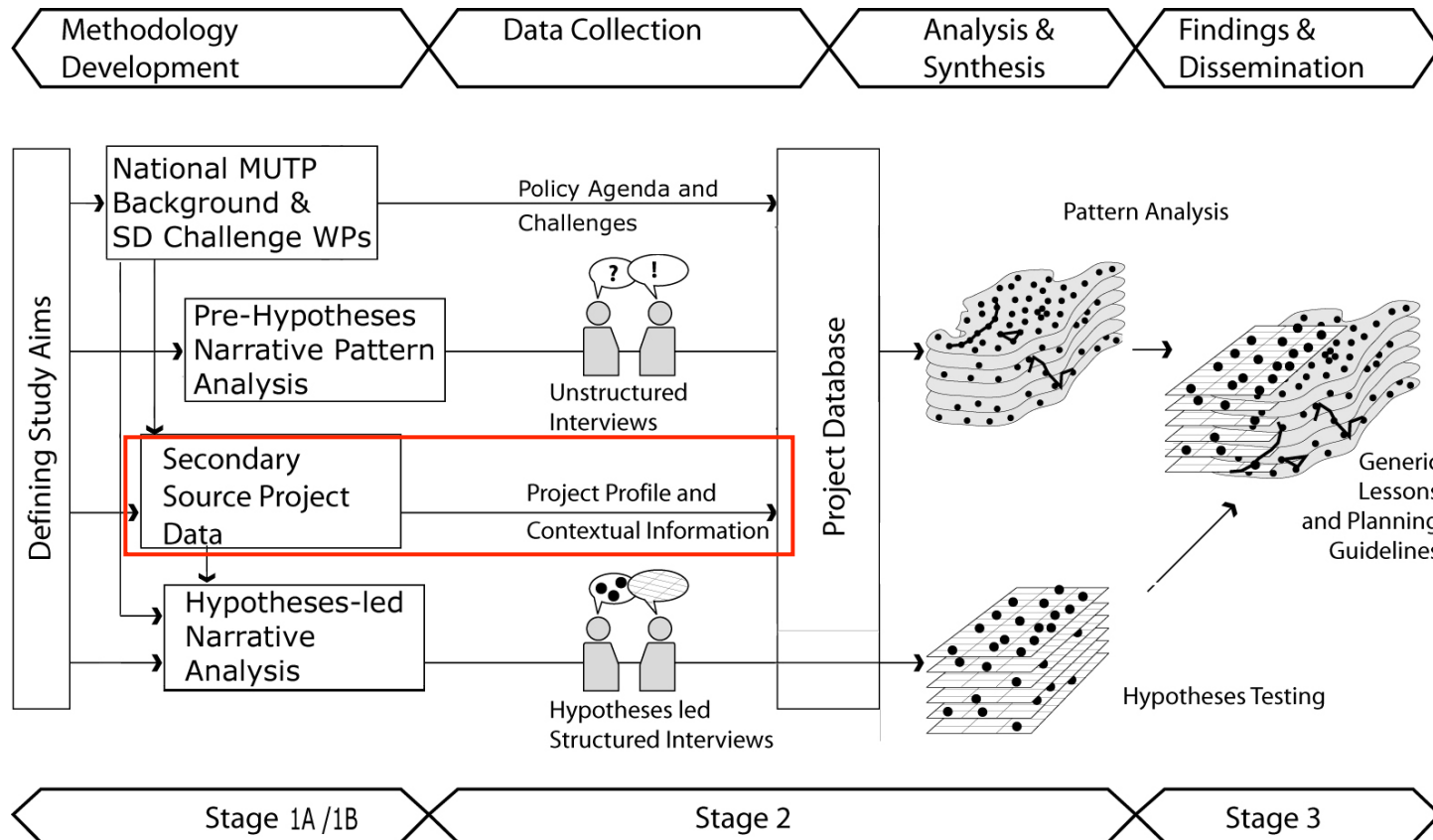
Data Collection Overview

John Ward

Research Fellow

OMEGA Centre

Methodology for data collection



The Project Profile

- populated with data mainly from secondary sources: reports, websites etc. but also interview transcripts.
- project characteristics inserted into a shared web-based data base with both geographical and temporal dimensions.
- allows the interrogation and comparison of project characteristics
- allows incorporation of data from pre-hypothesis and hypothesis-led research,

Project characteristics to support case study analyses of MUTP: contribution to sustainability vision


1. sustainable urban development and sustainable transport
2. economic dimensions of sustainability vision
3. environmental dimensions of sustainability vision
4. institutional dimensions of sustainability vision
5. social/cultural dimensions of sustainability vision



Structure of Project Profile

- Project Introduction
- Project Background
- Principal Project Characteristics
- Project Timeline
- Project funding/financing
- Operations


1 - Project Introduction


1.1 Type of Project

1.1.1 Project Name:		
1.1.2 Description of Mode Type:	Road, rail, bridge or combination of modes	
1.1.3 Technical Specification:	e.g international standards adopted for construction, gauge of track	Image showing section of principal infrastructure 
1.1.4 Principle Transport Nodes:	Description of centres/nodes linked by the project and include reference to intermediate centres/nodes	

1.1.5 Major Associated Developments:	description of any planning/regeneration/development initiatives related to both the principle infrastructure and transport nodes. For example, in the case of the CTRL this includes the Thames Gateway, development of Ashford and major regeneration initiatives at King's Cross and Stratford.	
1.1.6 Parent Projects:	A description of any trans-national axes of which the project is part (CTRL - TEN-T Priority Axes)	
1.2 Country/ Location:	An outline of the spatial extent of the project, associated projects and parent projects supported by images and maps where appropriate.	 Map: Extent of project
1.3 Current Status:	A description of the status of the project and subprojects (completed/ under construction etc.), with a supporting map to provide the geographical extent of each subproject.	 Map/Plan: zoom in of each subproject

2 - Project Background

2.1 Principal Project Objectives:	A description of the objectives from key stakeholders, ideally including objectives from Government, Principle Constructor and Operator. Indicate where these appear to have changed/evolved over time paying particular attention their relation to route option development		
2.2 Key Enabling Mechanisms			
2.2.1 description of Key Enabling Mechanisms	A description of key mechanisms which enabled the project to proceed:		
2.2.2 Key Enabling Mechanisms Timeline: Identify process/events leading up to decision and date of decision and present as timeline for example:	Month	Year	Event
	02	1986	The Channel Tunnel Treaty is signed by Margaret Thatcher and François Mitterand
	
2.3 Main Organisations Involved:	An overview of the most influential organisations involved in the project – including an indication of how/when/why they were involved. If possible, define involvement during the following phases: 1. Pre-construction Phase, 2. Construction Phase, 3. Operations Phase		Supporting Diagrams Showing Structure of Organisations 

3.3 Project Costs				
3.3.1 Construction Costs	Predicted (in year of decision to go ahead) (£/Euro/\$ at year of cost)		Actual (£/Euro/\$ at year of cost)	
	
3.3.2 Construction Cost Time line	Month	Year	Cost (£/Euro/\$ at year of cost)	Description
	01	1986	£400m	Government advised British Rail (BR) to consider its estimate of £400m for the rail link as a maximum (based on use/upgrading of existing infrastructure) as a maximum.
3.4 Project Delivery:		Timeline		
		Decision to Proceed		Date
		Construction Start		
		Commencement of Use		
3.5 Main Engineering Features:				
3.5.1 Details of Engineering and Construction		Contextual information regarding engineering and construction		Maps of Main Contracts 

4 – Project TimeLine				
4.1 Project Timeline:	Month	Year	Type of Decision	Key Decision/Event
	-	1971	Project Initiation	Initial consideration - British Railways (BR) worked in conjunction with French Railways (SNCF) on a combined scheme for the Channel Tunnel and respective rail links to their capital cities.
			Line Haul & Hubs	BR proposed a new terminal - none of existing London terminals had sufficient capacity for expansion. Initial proposals were West London at Kensington Olympia or Clapham Junction
4.2 Project Time Line Key issues:	Some of the key points that emerge from the Project Timeline are:			

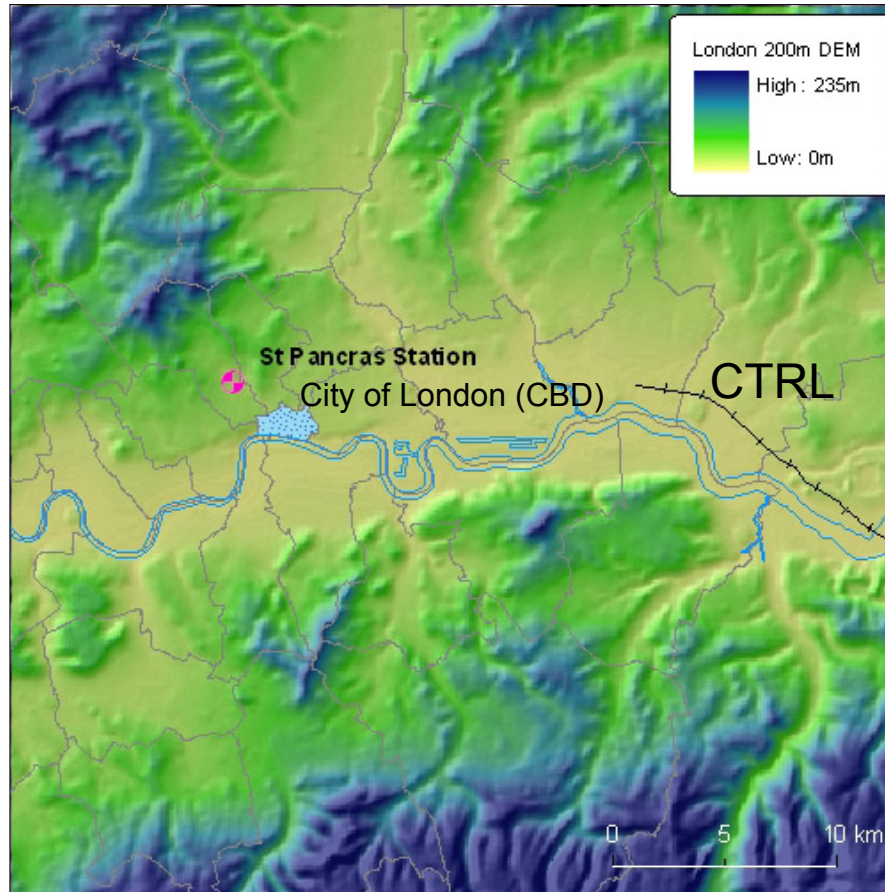
GIS

GIS *spatial* datasets to be collected - working towards Impact Analysis

- **Topographical data** (e.g.: elevation, geology)
as raster digital elevation models *or* contour vector data
- **Network data** (e.g.: road, rail, metro)
as polyline vector data
- **Boundary data** (e.g.: census, administrative)
as polygon vector data

The Spatial Datasets

Topography (raster elevation & vector river data)



The Socio-economic Datasets 1

Non-spatial attribute datasets to be collected:

As tables with ID codes that match boundary / study area polygons or geographical area centroids (points)

- Census data (e.g.: population, employment)
- Migration (e.g.: long-term movement)
- Travel-to-work data

The Socio-economic Datasets 2

Non-spatial attribute datasets to be collected:

as tables with ID codes that match boundary / study area polygons or geographical area centroids (points)

- Land Value (e.g.: property prices)
- Deprivation indices
- Pollution / air-quality

Dataset Issues

Data collection – desirable:

- At least 3 different time periods (i.e.: 3 censuses)
- At the smallest spatial scale (i.e.: smallest census area)
- At the finest temporal scale (i.e.: between 10yr censuses)

Some potential problems:

- Changes in boundaries over time – hard to compare directly between censuses (c.f.: Modifiable Areal Unit Problem)
- Transformation of data to create comparable sets over time and space – what to sacrifice for consistency? How to quantify the error introduced?
- Increase in quality and quantity of data in general
- Some derived data not produced for all / any of the study area for all of the time periods

Pre-Hypothesis Research Overview

Phil Wright

Research Fellow

OMEGA Centre

OMEGA Project Research Methods

‘Traditional’

- Secondary Research
- Hypothesis-Led Research
- Specialist Research Papers (e.g. National Background to MUTP Planning and Delivery, Sustainability Challenges)

‘Novel’

- Pre-hypothesis Research
 - Naïve interviews (with prompting questions)
 - Hybrid Storytelling Interviews (interviewee sets the agenda)
 - Web capture

Pre-hypothesis Research

What is it?

- ❖ Built on learning/techniques from knowledge management, cognitive science, narrative, complexity, anthropology
- ❖ Comprises:
 - Open discovery using narrative (anecdotes, illustrations, video – Sense Making Items (SMIs))
 - Consult a diverse range of stakeholders (no stratified sample, looking for the extremes – the supporters, the objectors)
 - Desire to see the project from multiple perspectives
 - Focus on experiences (rather than statements/ opinions)
- ❖ Hypotheses are not formed and tested up-front but are created after analysis of the narrative data
 - The Process becomes ‘A Voyage of Discovery’

Why Choose a Pre-Hypothesis Based Approach?

- ❖ Based on fundamental principles of how humans share knowledge – through storytelling
- ❖ Avoids cognitive bias - hypotheses can blind you to new insights
- ❖ Reduce research bias
 - avoids 'leading the witness'
 - avoids reinforcing previously held assumptions
 - focuses on what the interviewee thinks is important, not the researcher

Humans evolved to share knowledge & learn through stories:

❖ **Natural Rules for Sharing Knowledge**

- Knowledge can only be volunteered not conscripted
- You know more than you can tell and you can tell more than you can write
- You don't know what you know until you need to know it

❖ **Survival instinct - we learn from failure**

- Best practice approaches naively offer a formula for success
- Don't take account of luck and serendipity in discovering patterns of knowledge
- And insufficient attention paid to shifting context

❖ **Myth of the rational decision maker**

- We make decisions by matching patterns - we scan available data, notice some of it, match it with prior experiences and act
- We don't process information according to rational criteria like a computer
- So providing people with MORE information and criteria for decision making is not the solution
- We need to be able to see new patterns in data

❖ **Context is key**

- Lessons learnt in narrative form provides meaningful context for a learner to adapt lessons for their context
- People won't share knowledge in "anticipation" of a need - they will if it's around a specific context

Some limitations of hypothesis-led research:

- ❖ They can be gamed or gifted
 - If it's too obvious what information is being sought people can manipulate their response and people respond by assuming a role or persona based on how they would like to be perceived rather than who they really are
- ❖ Facilitator leads the witness
 - Facilitator perspectives/hypotheses influence the outcome
 - Common to confuse correlation with causation
- ❖ Rely too heavily on experts
 - Psychometric instruments ask direct questions and interpret the results simplistically by putting people into broad categories of behaviour that require expert interpretation
- ❖ Lack sufficient context
 - You need context to understand the root cause of the issue in order to act appropriately to resolve it

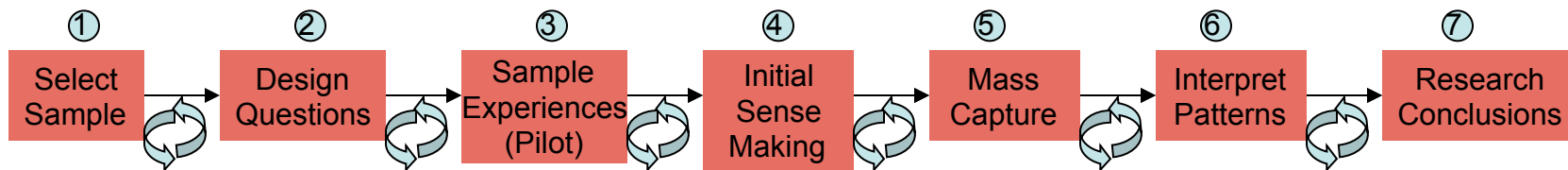
Hypothesis Vs Pre-hypothesis questioning

Hypothesis	Pre-Hypothesis
Do you think this company is a good place to work in? Answer on a scale of 1 to 5	Imagine that you are in a pub on Friday night and an old friend arrives and tells you that they have been offered a job with your company. What three stories from your own or others experience would you tell them if you wanted them to join? What three stories would you tell them if you didn't want them to join?

Intended to drive out anecdotal experiences:

- Looking for specific experiences
- Told from a specific perspective
- Centred around an event or series of events
- Contextually rich

Approach



- Who knows about this topic and has direct experience of it?
- What are the extreme views?
- What contextual questions will stimulate the memory?
- How can I minimise bias?

- What sense can be made of the sample data?
- Which variables are operating in this system? Which should we include as indexes?
- What initial hypos should we test as filters?
- Who else should we consult given the sample data?

- What patterns do we find in the metadata?
- How are the variables in the system relating to one another?
- What common themes and conclusions emerge from the data?
- What does the DATA say?

Discover —————> Index —————> Make-sense —————> Conclude

OMEGA Prompting Questions

A. Opening Question (to be asked in *all* interviews)

Interviewees' relationship to the project

“What is your relationship to the [Case Study] project. Please explain which aspect of the project you were responsible for, involved in or affected by.” Index their personal characteristics using the “About You” part of the index sheet.

B. Prompting Questions

- QUESTION 1 (to be asked in *all* interviews)
Looking back, what in your mind were the most pivotal events that shaped the (Case Study Project) project? (Turning points or triggers of significance, not necessarily project milestones) Please consider:
 - Which of these were most surprising? Most predictable?
 - Which of these were planned? Which were unexpected?Specify the date the event occurred, who were the main people involved, where it took place and why it took place.
- QUESTION 2 - Tell me about a time when this project was rescued or sabotaged?
- QUESTION 3 - When were the moments of stagnation or breakthrough? What happened?
- QUESTION 4 - When have you or members of your community suffered or been inspired as a result of this project? What happened and why?
- QUESTION 5 - Imagine this project, 10 years ahead, is perceived as:
 - a total disaster or
 - a resounding successWhat stories would you share with others to convince or dissuade those who felt that way?

Web-Capture - approach

- ❖ Broad stakeholder typology – public/private, government, political, business, resident groups etc.
- ❖ Broad spectrum/variety of responses sought – critics/believers/residents/politicians
- ❖ Not a structured population sample at the outset
- ❖ Questionnaire (with indexes) despatched via web link
- ❖ To be completed online – min 2 anecdotes, self indexing
- ❖ 250 e-mails with covering note. E-mail addresses sourced from web and other documents in public domain
- ❖ Recipients asked to ‘pass-on’ questionnaire to 2 others
- ❖ Follow-up after 1 month – e-mail to all recipients
- ❖ Further follow-up after 6 weeks – by ‘phone, selected recipients

Naïve Interviews - Results

- ❖ Very rich, enlightening, surprising and contextual responses
- ❖ People love to talk about their experiences!
- ❖ Frequent discovery of additional stakeholders to contact
- ❖ Use of 'Hybrid Storytelling Approach' – essentially naïve but useful where interviewee wants to set the agenda. Often with very minimal prompting. Also a rich source of anecdotes.

The value of indexes


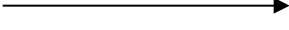
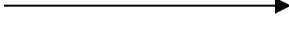
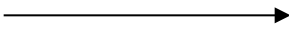
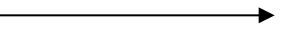
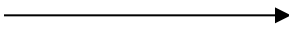
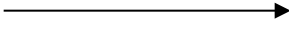
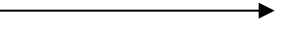
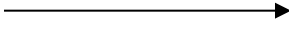
- Each anecdote is indexed by the interviewee
- Types of indexes – ‘lenses’ through which data can be seen and explored to search for Patterns of Knowledge. Can take a number of forms:
 - Filters (values, archetypal characters, themes, archetypal situations)
 - Questions about the anecdote (SMI) - (time of event, location, roles, emotional intensity, intent, origin)
 - Themes (once the story's been told, the teller is asked to identify particular themes and exposure to risk, uncertainty and complexity)
 - Sticky questions - demographic data about the teller, role, involvement with the project

OMEGA Indexes & Filters

- ❖ **What roles are represented in this story?**
- ❖ **How relevant do you think your story is to the outcome of the project?**
 - Very Relevant
 - Relevant
 - Not Relevant
 - Don't know
- ❖ **What key words or phrases would you associate with this story?**

	Advisor - Finance, Legal, Design, Technical, Business etc.		Entrepreneur/ Business Person
	Planner		Financier
	Other Design Professional		Scientist/Researcher
	Advocate/Representative		Media/Journalist
	Politician		Contractor/Constructor
	Bureaucrat		Consultant
	Lobbyist/Stakeholder Advocate		Ecologist/ Environmentalist
	Engineer		Developer
	Community or social worker		Local Resident
	Commuter		Other

OMEGA Indexes & Filters

	Risk: the degree to which future uncertainties and unexpected events may not be manageable within allocated resources	Uncertainty: where imperfect knowledge makes it impossible to describe an existing state or future outcome with accuracy, and where lack of knowledge could have significant consequences	Complexity: where many independent factors interact in multiple and unforeseen/ unforeseeable ways to generate unexpected outcomes
The circumstances (context) in which this project were planned and implemented were:	Very risky Not at all risky 	Totally Certain Completely uncertain 	Extremely complex Very straightforward 
The degree of control exerted over the planning and implementation of this project was:	Greatly affected by risk Not affected by risk 	Greatly affected by uncertainty Not affected by uncertainty 	Greatly affected by its complexity Not affected by its complexity 
How did this project compare with the Channel Tunnel project?	Much more risky Much less risky 	Much more uncertain Much less uncertain 	Much more Complex Much more straightforward 

Anecdotal Data

Were there any particular events or decisions that really shaped the project?

- At first the timetable was very short, we were going to produce a hybrid bill within a year and the director said 'we are going to do it'. It was done in such a hurry and it was such a rushed job they aborted it two weeks before deposit. And that was a very good decision, in fact it would have been a disaster if they hadn't aborted it.
- Coming on to the next question of the terminus, there was a memorable occasion one day when we were all called in by one of the middle management engineers who was very clever and he said ' gentlemen, we've got a problem, the tracks don't connect.....'

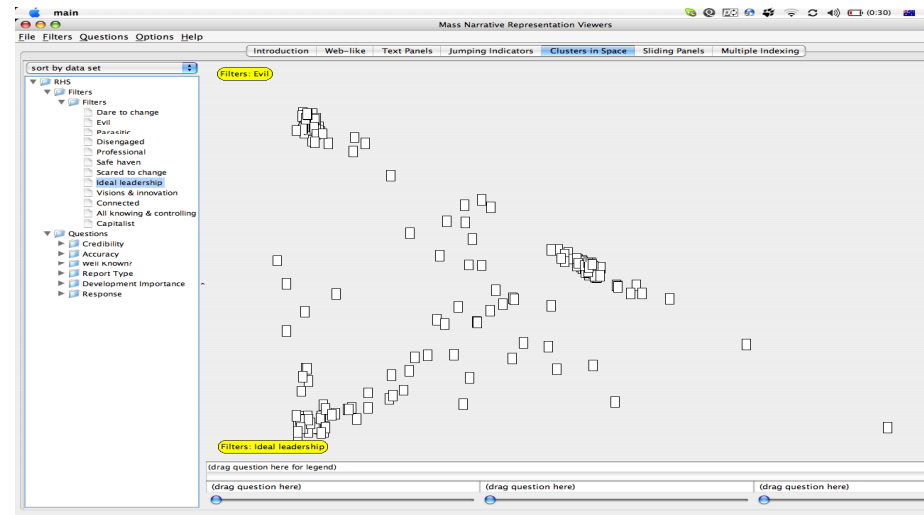
Pattern Analysis

Automating Data Capture and sense-making using Sensemaker™

Mass Capture – large volumes of narrative distributed over time and space

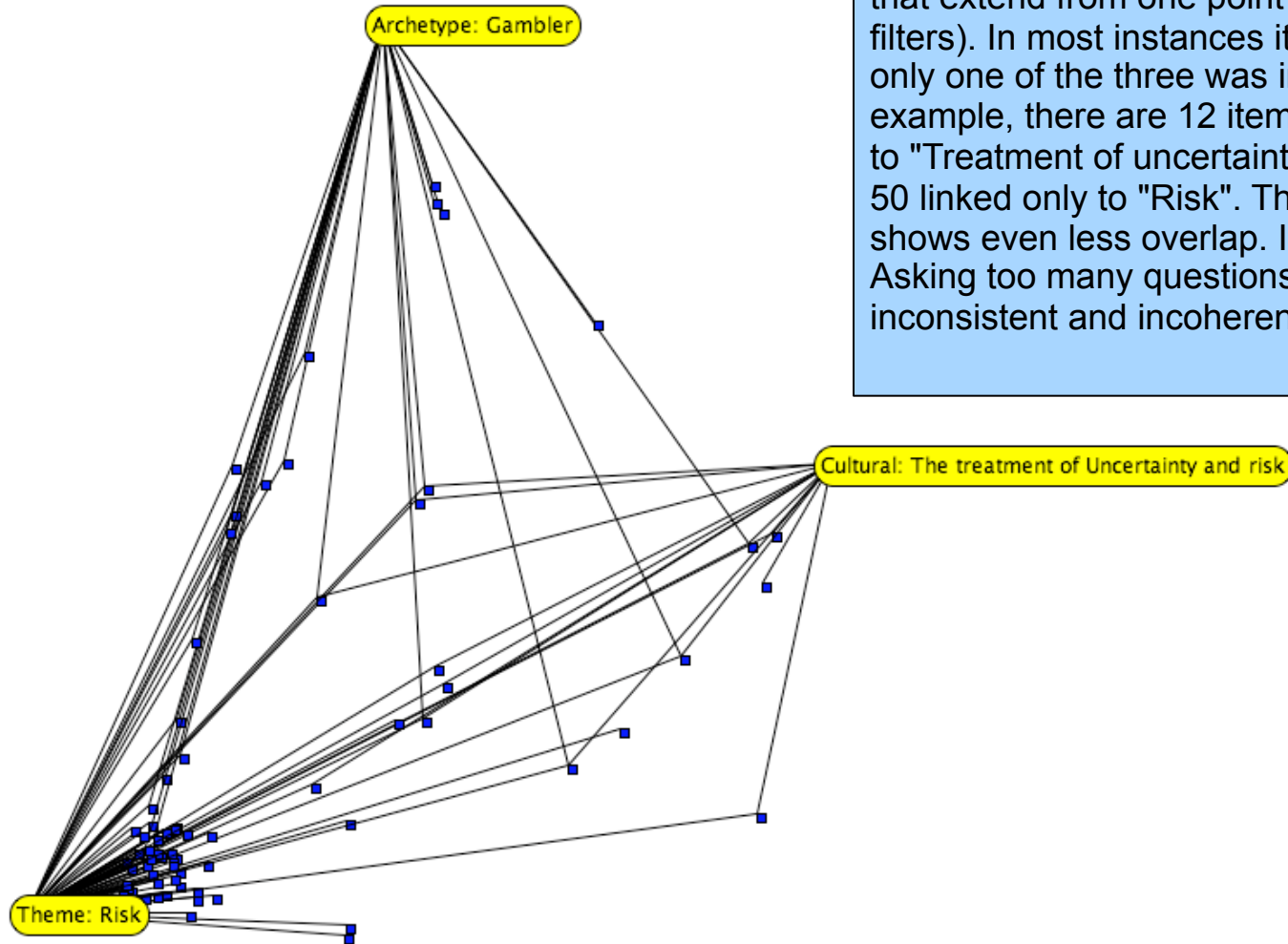
Collaborative Sense-making – pattern detection and indication of weak signals

Representation of Narrative Data – revealing perspectives



Humans have evolved to make decisions and form perspectives by sensing patterns in data. We don't make rational, logical, analytical decisions based on careful evaluation of large volumes of data.

Disassociation among filters



This screen shot shows three filters which all deal with risk. Note that there are few items in which all three are indexed (lines that extend from one point to all three filters). In most instances it appears that only one of the three was indexed. For example, there are 12 items linked both to "Treatment of uncertainty and risk" but 50 linked only to "Risk". The "Gambler" shows even less overlap. Interpretation: Asking too many questions gets inconsistent and incoherent answers.