Why do large construction projects always perform badly? The MEGAPROJECT experience

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1

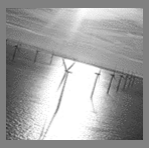
Aims of the Session

- To place the performance of European nuclear new build megaprojects in the context of other European megaprojects
- To highlight the megaprojects characteristics that are associated with megaproject performance
- To understand the implications for Nuclear Megaprojects

2

What is a Megaproject?

Megaprojects are extremely large-scale investment projects typically costing more than € 0.5 billion. Megaprojects include powerplant (conventional, nuclear or renewable), oil and gas extraction and processing projects and transport projects such as highways and tunnels, bridges, railways, seaports and even cultural events such as the Olympics. Megaprojects are united by their **extreme complexity** (both in technical and human terms) and by a long record of **poor delivery**.


3

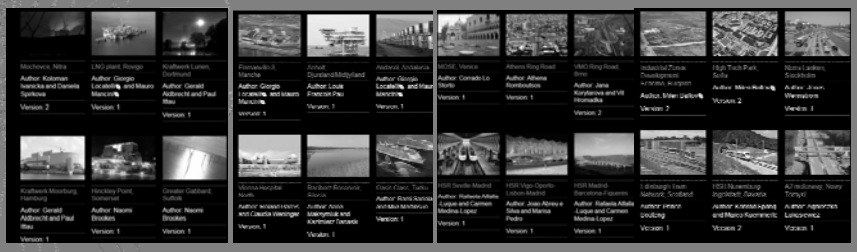
MEGAPROJECT - The Effective Design and Delivery of Megaprojects in the European Union

- A network of ~80 researchers from 22 European countries
- Funded under the auspices of the ESF COST Action programme by the European Commission
- Looking at what can be learnt across sectors
- Started May 2011. Current funding until 2015.




4

The MEGAPROJECT Portfolio

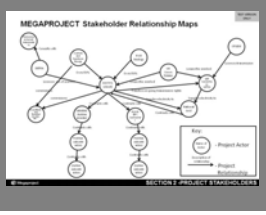


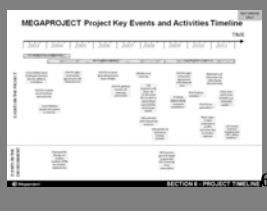
www.mega-project.eu/portfolio

5

The Meta Cross Case Analysis

- Capture MEGAPROJECT cases in a standard template
  - Project Stakeholders
  - Project Management
  - Project Performance
  - Project Environment
  - Project Timeline
- Look across cases to see how performance relates to key features of the MEGAPROJECT Case





6

Megaproject

European MEGAPROJECT Performance Comparisons

Transport Megaprojects	Energy Megaprojects	Nuclear Megaprojects
		
~ 19 yr	**~ 10 yr**	Mochovce
~ 40%	**~ 80%**	Hinkley Point Flamanville Olkiluoto

7

Megaproject

megaproject characteristics

megaproject performance

independent variables

dependent variables

8

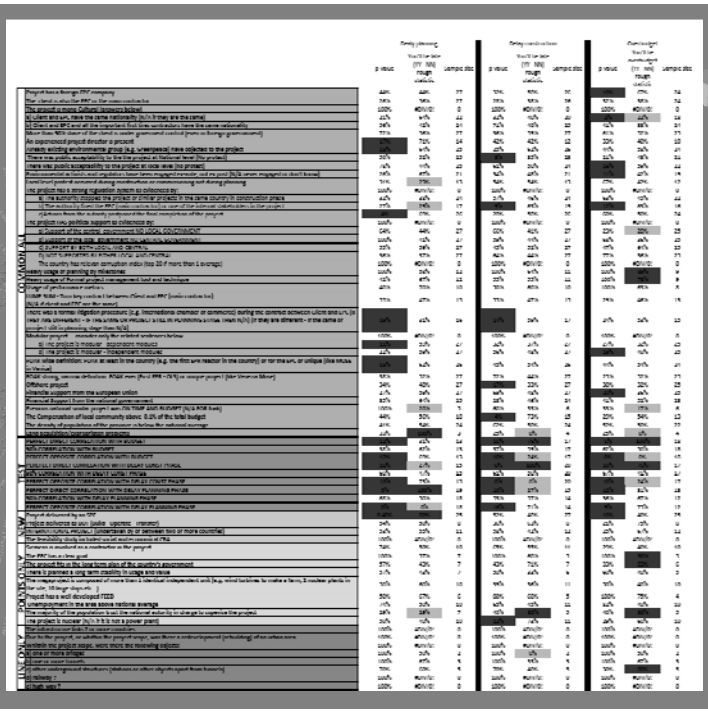
Megaproject

Relating megaproject characteristics and meagproject performance

Protocol

1. Delineation of ~50 megaproject characteristics (independent variables binary in nature)
2. Simple expression of megaproject performance against time and cost(dependant variables in binary nature)
3. Capture both of the above in an excel matrix
4. Perform statistical analysis (Fisher exact test)
5. Analyse the results.

9



Megaproject

10

Megaproject

A word about measuring relationship strength .....

11

Megaproject

Whole megaproject population findings .....

- Very few characteristics have statistically significant relationships
- Energy megaprojects have a completely different pattern of relationships than transport megaprojects apart from:
  - The effect of using SPEs in governance
  - Modularity (plant level and site level)

12

Characteristics that are not statistically significant for energy megaprojects

First of a kind (FOAK)

- FOAK-megaprojects tend to be over budget and delayed because technology is difficult to predict or control

X

Project under government control

- Government interferes in the project and causes problems

X

Strong FEED and usage of PM techniques

- High usage of PM tools and techniques makes the project perform better

X

Project has clear strategic imperative

- Clear strategic organisational intent helps the project

X

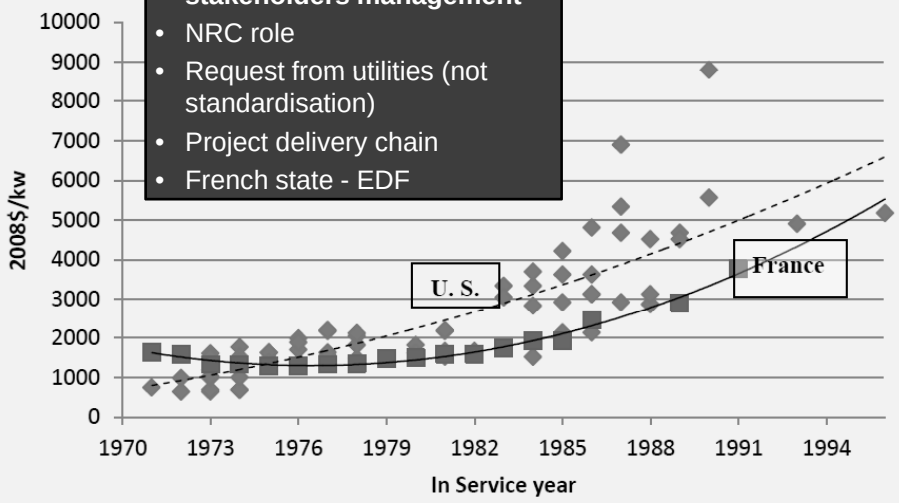
Different size of dataset for each attribute

13

Is FOAK really that strange?

Project Governance and stakeholders management

- NRC role
- Request from utilities (not standardisation)
- Project delivery chain
- French state - EDF



Megaproject

Characteristics that are statistically significant for energy megaprojects .....

15

Megaproject

	Category	Independent Variables	Correlating with	strength of association
1.	Modularity	Project is modular	delay in planning on budget on-time construction	80% 89% 89%
2.	Regulatory Environment	Project has a strong regulatory environment	on-time planning over budget delay in construction	83% 80% 80%
3.	External Stakeholder Interactions	No protest at a local level	delay in construction over budget	86% 86%
4	Governance	The project uses an SPE structure	delay in planning on-time construction	90% 88%

16

Megaproject

Characteristics that could help nuclear megaproject performance (in the long run)

- SPEs

- Modularity

Characteristics that could hinder megaproject performance (in the long run)

- strong regulatory environments: *"learn how to build what it has been designed"*

17

Megaproject

Diary Date

WHERE: Brussels
WHEN: 2/04/14
WHAT: **Learning Across Megaprojects**

Bringing together the rich experience of over 50 megaproject cases to understand what works in megaproject management.

Megaproject omega centre

18

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19

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20