

Delivering large-scale national science initiatives:

Ideals, compromise and stakeholder roles in developing national nanotechnology programmes:

3 Stages of Large Scale National Science

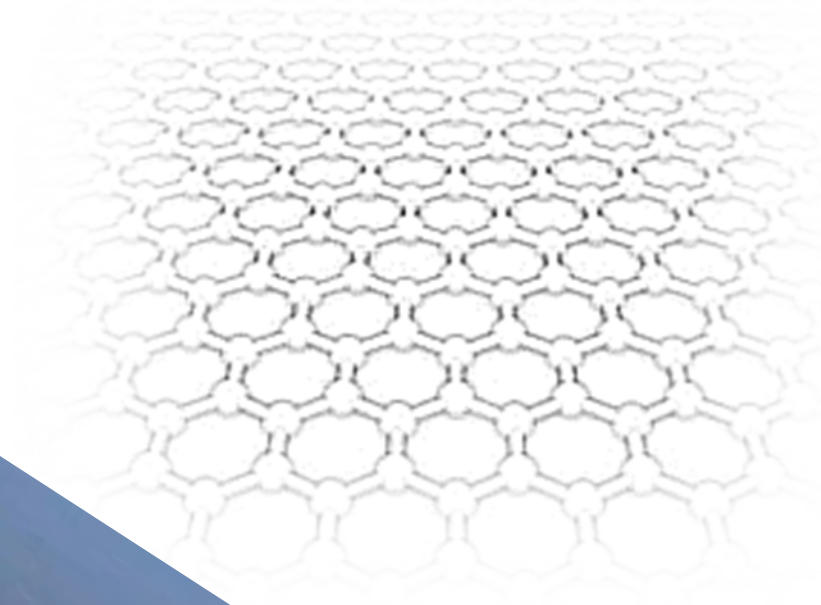
~~1. Big Science- Military Focus- Manhattan Project,
NASA?~~

2. Big Industry- Sectoral Focus-, Alvey Program,
Semiconductors

3. Big Challenges- Societal Focus (Grand Challenges)
Human Genome

National Nanotechnology Initiatives
USA- 2001 Caltech. 2003 Formed.
Reassessed in 2013
Germany- 2006/07
Russia 2007/08

Big Science



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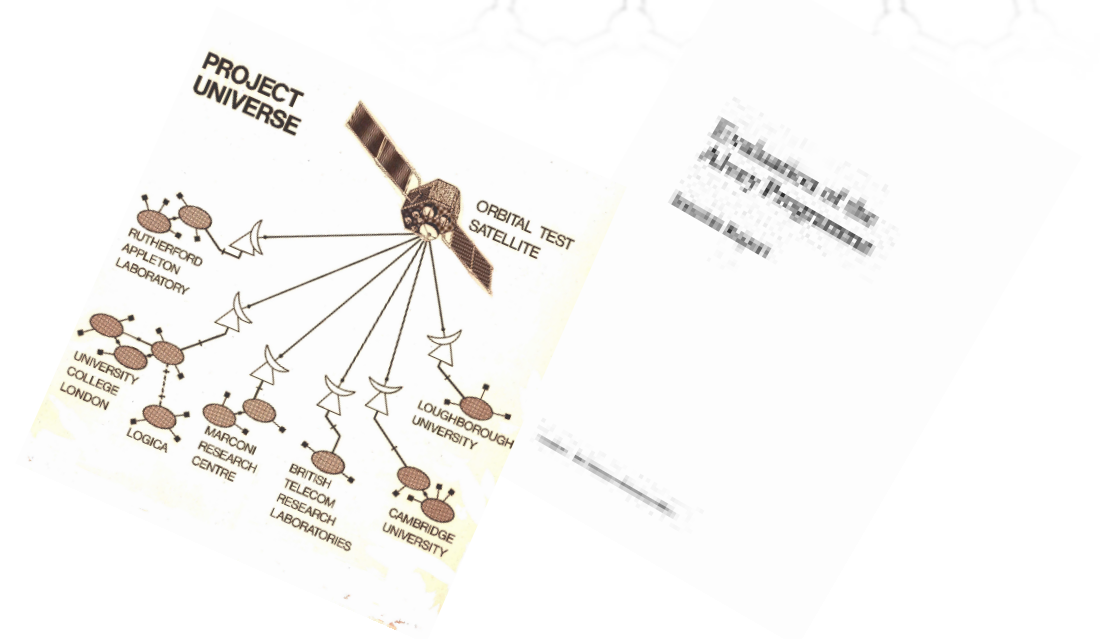
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Big Technology



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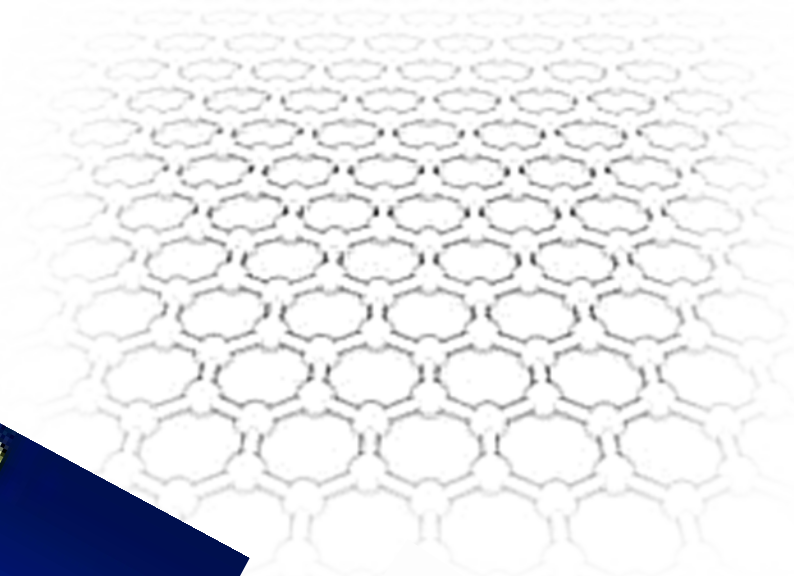
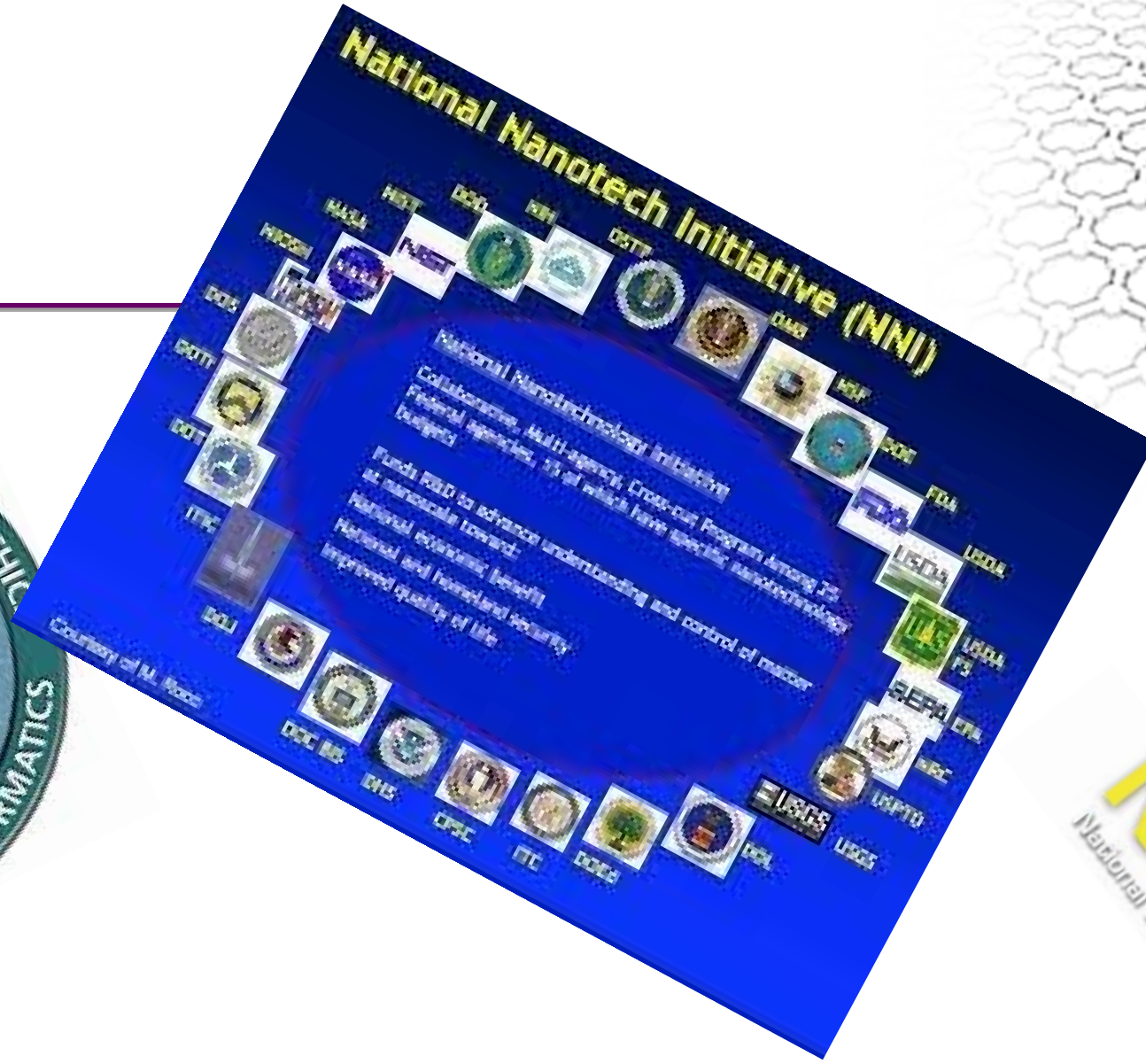
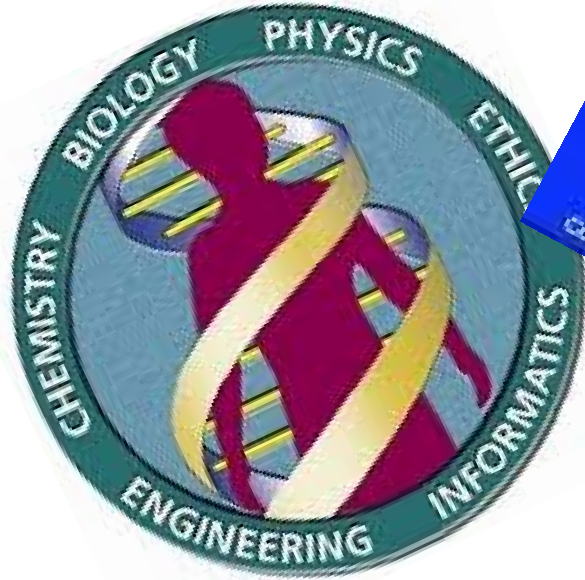
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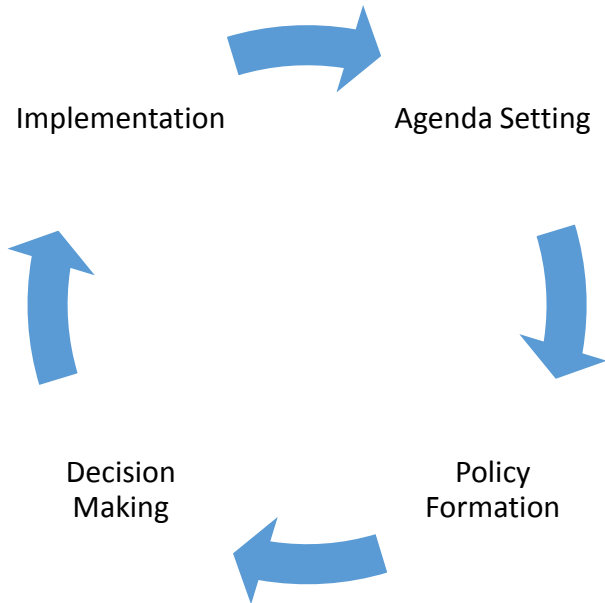
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Big Challenges



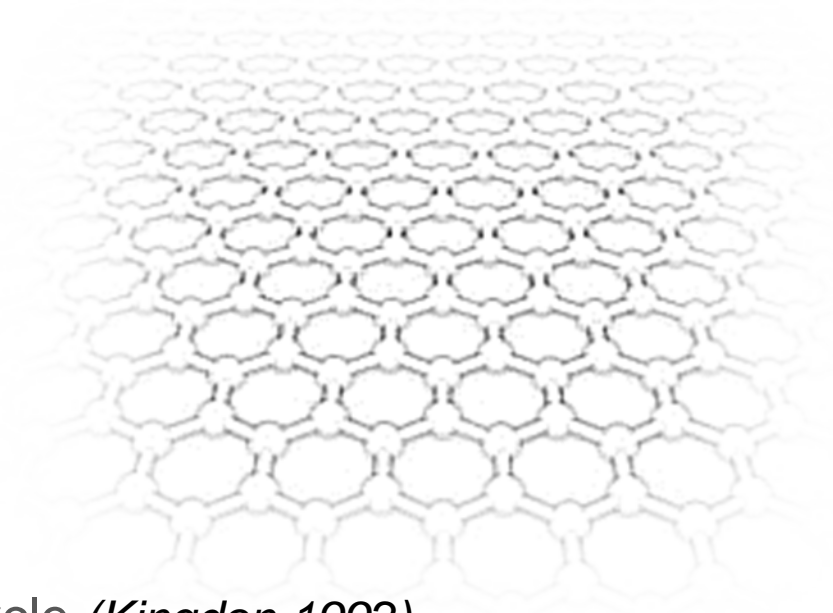
Conceptual Framework 1.)



Illustrative- Policy Cycle (*Kingdon 1992*)

Who is involved in this process?

Policy Interactions beneath the Cycle.
*One assumption- policy making is rational.
But how rational are science and policy
interactions?*



Conceptual Framework 2.) Innovation Systems

National Systems of Innovation- NIS (Nelson 1993)

National comparative tool, economic development perspective.

Innovation Systems- Interactions at it's core. Institutions and Organisations (Lundvall 2002, Edquist 1997)

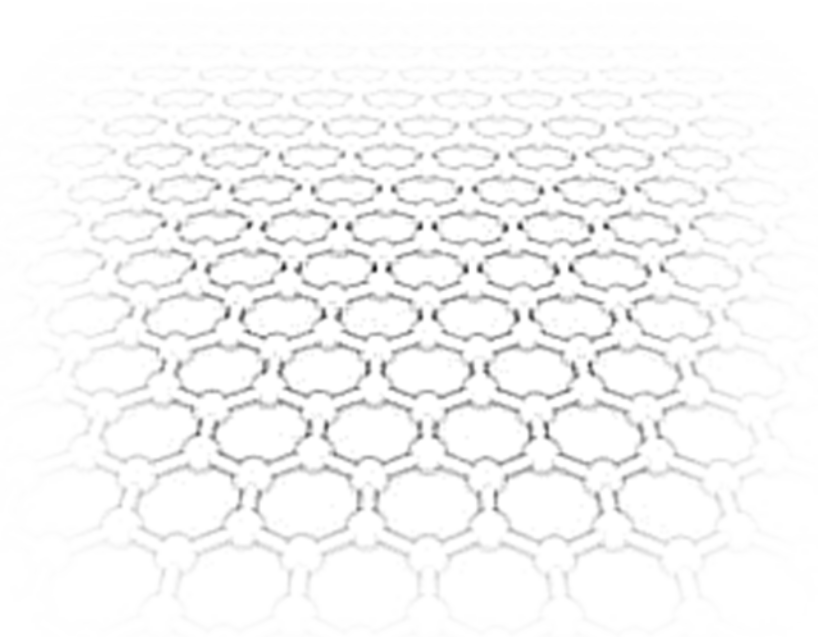
Actor Network Focus-

Innovation studies has focussed more on the outcomes and implementation, and limited work on the building blocks of policy interaction.

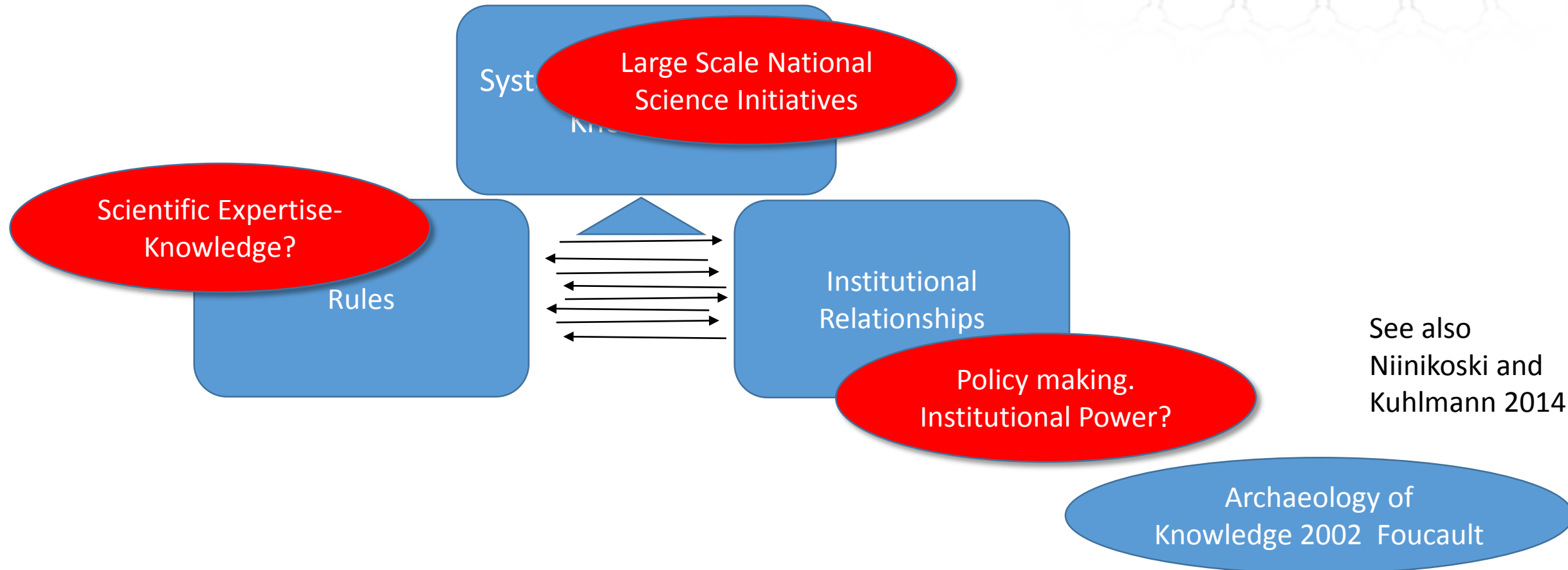
Critics have begun to question the makeup of the decision systems, and how they interact in the "Policy Mix" (Flanagan et al 2011)- What do these actors do?

"No discourse develops in a tabula rasa " (Niinikoski and Kuhlmann, 2014, p. 4.)

Recent considerations- Sutherland et al 2012- Open source paper- How should policy makers interact with expertise for good policy?



Conceptual Framework 3.) Discourse/Knowledge Negotiations



See also
Niinikoski and
Kuhlmann 2014

Question

How do we evaluate the interaction between science and policy in the creation of LSNSI?

Multi Level Governance- *Developed out of European Political Science.
Focus on hierarchies and institutional interactions.*

Vertical and Horizontal interactions

Top-Down/ Bottom Up.

Issues of Joint decision trap? Decisions watered down?

Question- How do the levels of MLG influence the interaction of science and policy communities?

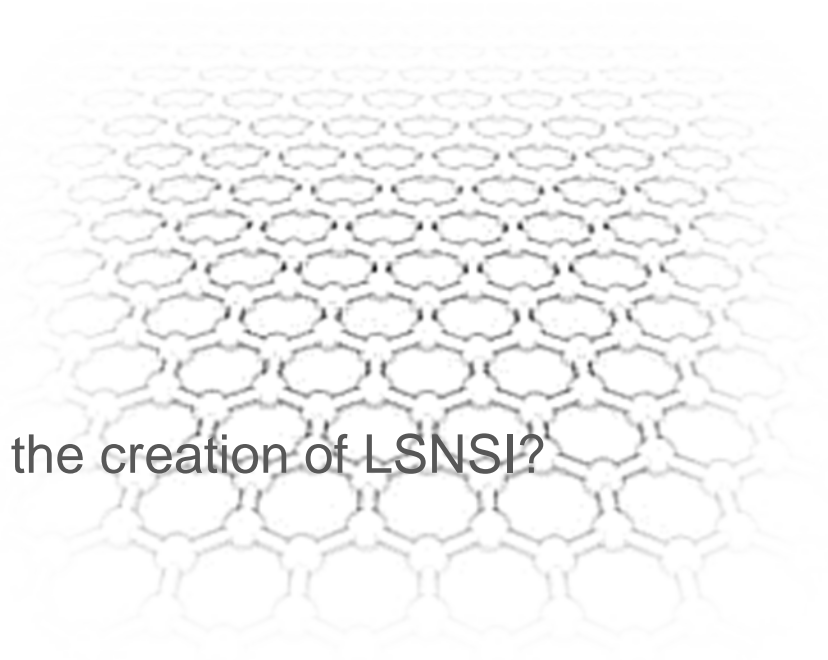
Frequency of interactions,

Levels of policy making

Advisory roles

National/Local Governance Agendas

Feedback loops?



Proposed Methodology

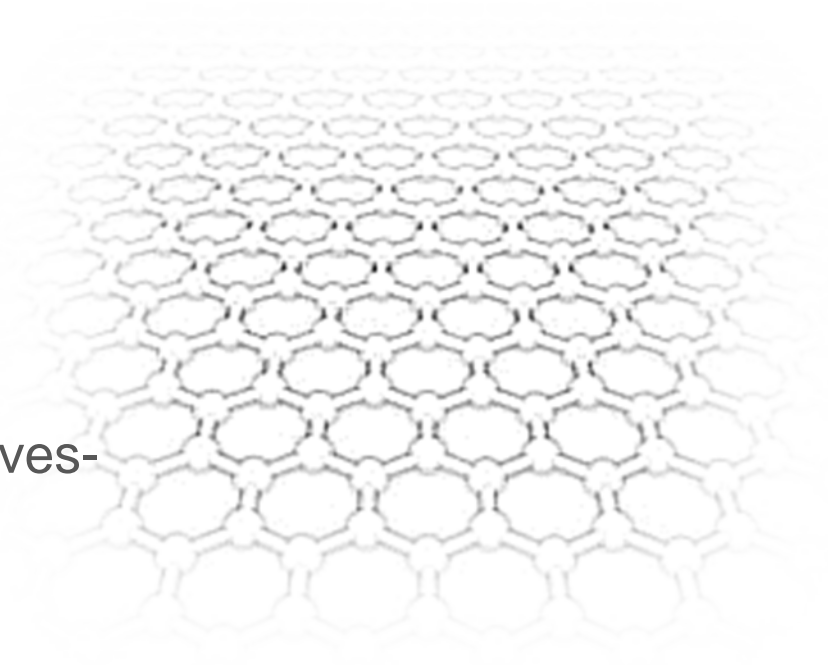
Case Study ((3 Cases) of National Nanotechnology Initiatives-
USA, Germany, Russia,

Policy Analysis-

Outline system, Identify key players, organisations and institutions

Semi Structured Interviews-

Science and Policy makers perspectives on pre NNI development interactions



Case Studies

	USA	Germany	Russia
NNI	2003	2007	2007
Governance Characteristics	First NNI Programme. History of engagement in Large Scale National Science Initiatives, Science system built around universities and research labs. Industrial links as per previous LSNSI. Social Responsibility element of the NNI highlights need for wider stakeholder participation. How important was this during the initial stages?	Distributed governance structure built on regional Lander Government and Federal System in dialogue with advisory bodies. Influences European policy as a result of strength and size in union.	Top-Down approach to governance from political side with decrees developing science policy made with major political players. Centralising of research agendas rather than devolving powers to bodies.
	Bottom-Up?	Bottom-Up	Top Down
Policy Communities	NSF, Committee on Nanotechnologies, State and City development organisations. Presidents Advisory Council	Ministry of Education and Science (BMBF) Ministry of Economics and Technology (BMWI) Regional Ministries.	Ministry of Education and Science, Office of The President Quasi Policy- Rusnano Science- Russian Academy of Science, Foundation for Basic Research Universities
Science Communities	Science- National Labs? Universities?	Science- German Council of Scientific Research, Universities	Science- Russian Academy of Science, Foundation for Basic Research Universities
Pre NNI	Grew out of Final speeches on HGP. Public discourse on Nano had existed through pop culture (Drexler, Crichton). Bucky Balls Nobel Prize-1996. Reorganisation of policy targets after Cold War research. End of synchrotron funding offered space for other research. Societal Impact was an element of HGP including economic value to state and nation.	Focus was on 'Material Science' until 2002 when discourse changed to nano. Research community engaged in local level and cross border research before NNI. Nanotruck initiative to educate public on nano began in 2004. Den Jahre der technik. Involved in EU FTP programmes	Russian Research increased in line with other national research between 1990-2000 but was significantly less than US and Germany. Focus around Academy of Science- Issue of brain drain in 1990's. Universities also involved, but limited in funding until NNI. System in change.
Interviews Planned	10 Science 10 Policy	10 Policy 10 Science	10 Science 10 Policy (1 Pilot interview completed)

Any Questions?

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