

Workshop on Cooperation to Control Non-State Nuclear Proliferation:
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TRACKING NUCLEAR CAPABLE INDIVIDUALS

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The Nuclear Club

Category	States
Nuclear Non- Proliferation Treaty (NPT) declared nuclear weapons states	United States, Russian Federation (successor state to the Soviet Union), United Kingdom, France, China
Non-NPT undeclared nuclear weapons states	Israel
Non-NPT declared nuclear weapons states	India, Pakistan, North Korea
Nuclear weapons states that disassembled its arsenal before joining the NPT	South Africa
NATO nuclear weapons sharing states (U.S. nuclear weapons)	Belgium, Germany, Italy, Netherlands, Turkey, Canada (prior to 1984), Greece (prior to 2001)
Former Soviet Union nuclear weapons sharing states (Russian nuclear weapons)	Belarus (prior to 1996), Kazakhstan (prior to 1995), Ukraine (prior to 1996)
Aspiring nuclear weapons states	Iran, Burma
Nuclear capable and/or former weapons aspirant states that have renounced nuclear weapons (but who might reconsider).	Germany, Netherlands, Sweden, Romania, Turkey, Brazil, Argentina, Mexico, Egypt, Iraq, Syria, Libya, Saudi Arabia, Japan, South Korea, Taiwan

Nuclear Weapons Acquisition Paradigms

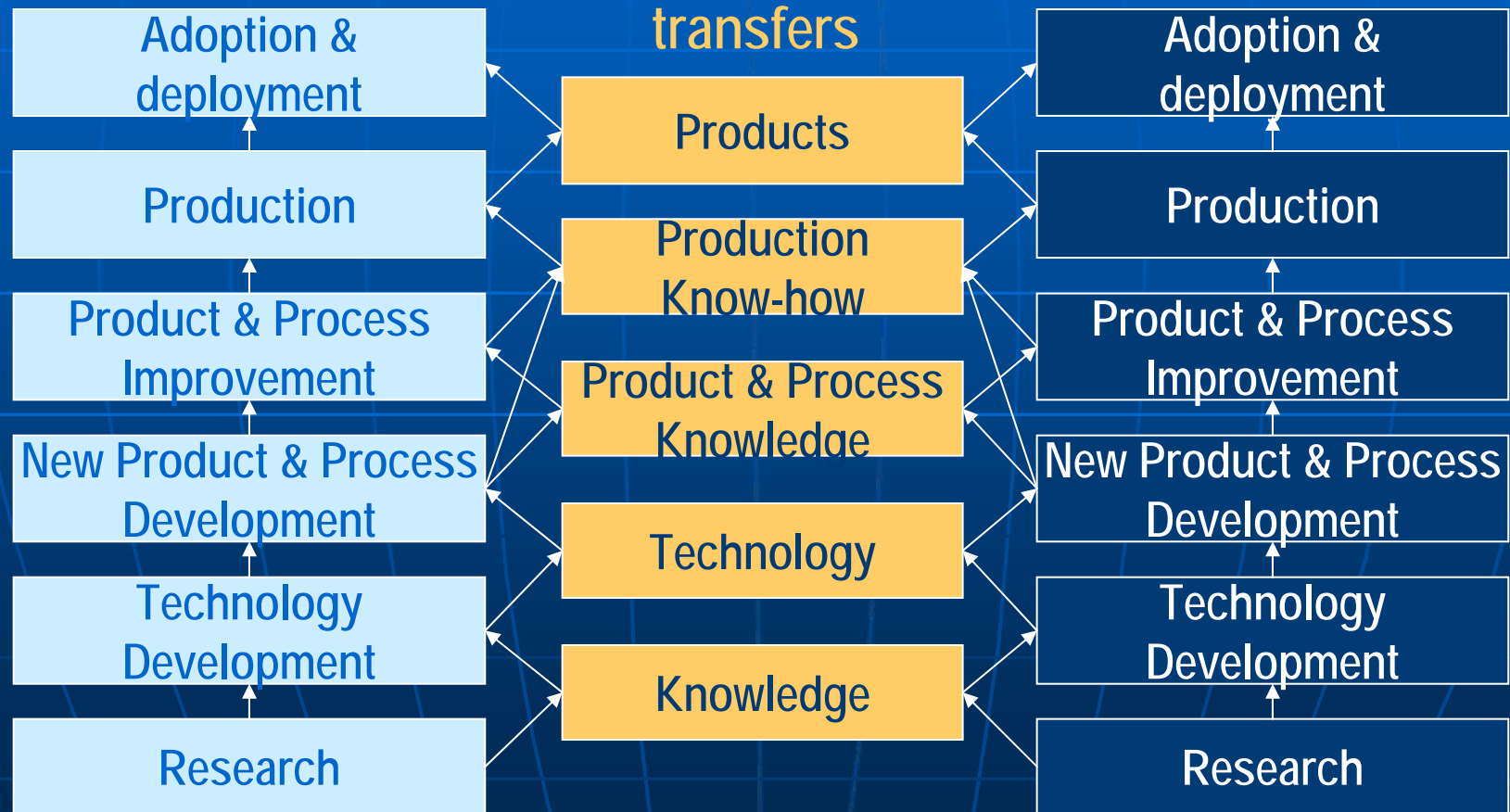
- Entrepreneurship paradigm or *forward integration of the system of innovation*
- Technology-economics paradigm
- Strategy paradigm
- Backwards integration of the system of innovation

Systems of Innovation





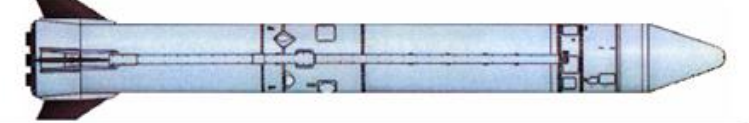



National System of Innovation

Global System of Innovation

International transfers



Nuclear Weapons Systems Hierarchy

System	Level	Depiction
Operational Force	8	 South African Defence Force 1966 - 1994
Combat Grouping	7	
User System	6	
Product System	5	
Products	4	
Product Sub-Systems	3	
Components	2	
Materials & Processes	1	

South Africa and the AQ Khan Network

- Krisch Engineering Co (Pty) Ltd
 - Agent for AEG Telefunken & Leybold Heraeus GmbH
 - 1970 – 1985: Level 1 equipment supplier to Uranium Enrichment Corporation of South Africa (UCOR)
 - Wisser, Geiges & Meyer
- 1994 – 2003: Contracted by Lerch (former employee of Leybold Heraeus) to supply gas centrifuge equipment & systems to India and AQ Khan network (Pakistan & Libya).
- Arrested in 2004. Sentenced in 2007.
- Why did this happen?

Tracking nuclear capable individuals: The South African case study

- Population: Levels 3-5 former PNE & Kentron Circle/Advena personnel
- 2004 Survey:
 - Population size – 400, Sample frame - 255 (Old boys club), Sample – 118.
- 55% had knowledge of proliferation concern.
- Problems
 - Secret dismantlement, downsizing, outdated HR records, “need-to-know” culture.

International Registry of Nuclear Capable Individuals and Organizations

- National registers
 - Resolution 1540 Committee 2008 report:
 - 36 States - reliability checks of personnel
 - 83 states - licensing of facilities or personnel.
 - Non-Proliferation Laws
 - South Africa - Act 87 of 1993 requires registration of individuals. Other countries?
 - Defense export control
 - Resolution 1540 - States to take cooperative action and exchanging information
 - Problem areas:
 - Classified information (International Convention for the Suppression of Acts of Nuclear Terrorism 2005)
- IAEA Safeguards to include international registration of nuclear capable individuals and organizations? Used to monitor and investigate suspicious affiliations and trade relations.

Conclusions

- Global pool of nuclear capable individuals and organizations is very large
- Not all have knowledge of proliferation concern (SA: 55%)
- Some national registers are already in place.
- International register possible but difficult.
- Can be used to track and monitor the activities of these individuals and organizations.