



# Risk Assessment of Nuclear Proliferation and Nuclear Terrorism

Susan Voss  
Global Nuclear Network Analysis, LLC  
Los Alamos, NM

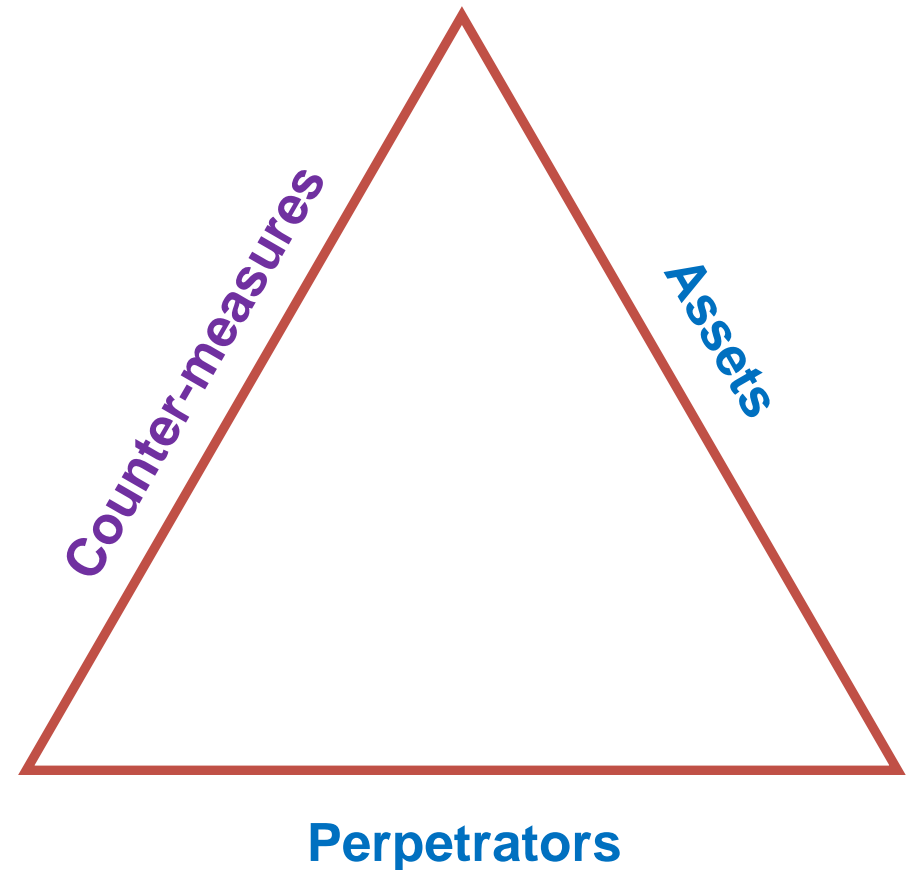
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# Defining the Nuclear Threat

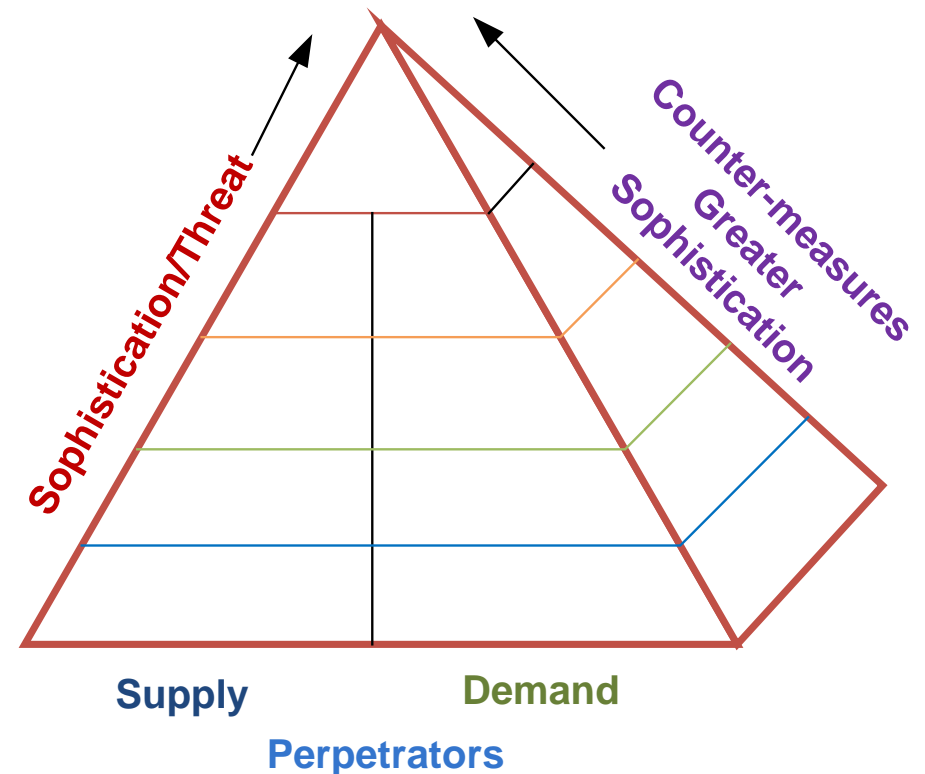
- The nuclear threat can range from:
  - an individual or group diverting and transporting NM with the goal of finding a buyer
  - to a government covertly transporting a weapon to another country.
- The deployed counter-measures need to be broad enough for the range of possibilities.
- The signatures and assets vary based upon the type of perpetrator.





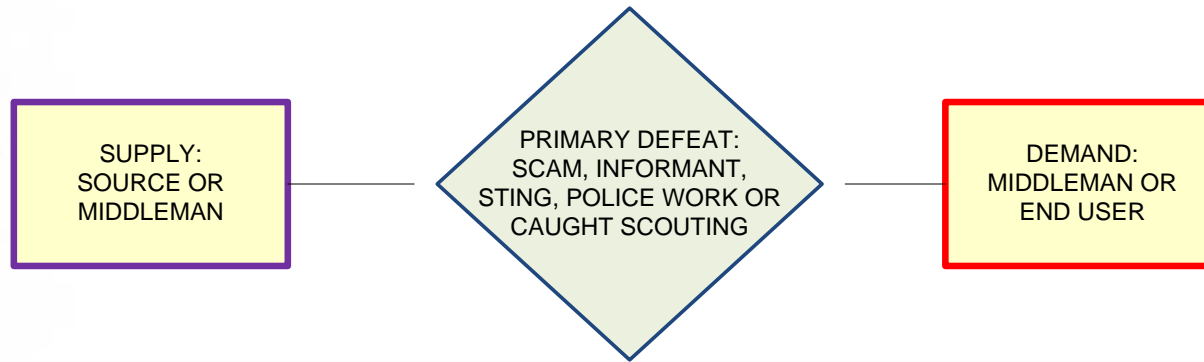
# Perpetrators

- Perpetrators divided into:
  - Supply or demand
  - Demand:
    - Seeking a buyer on the black market or
    - Access to an individual with access to NM
    - Seeking to obtain material directly through overt or covert operations





# Individual or Group

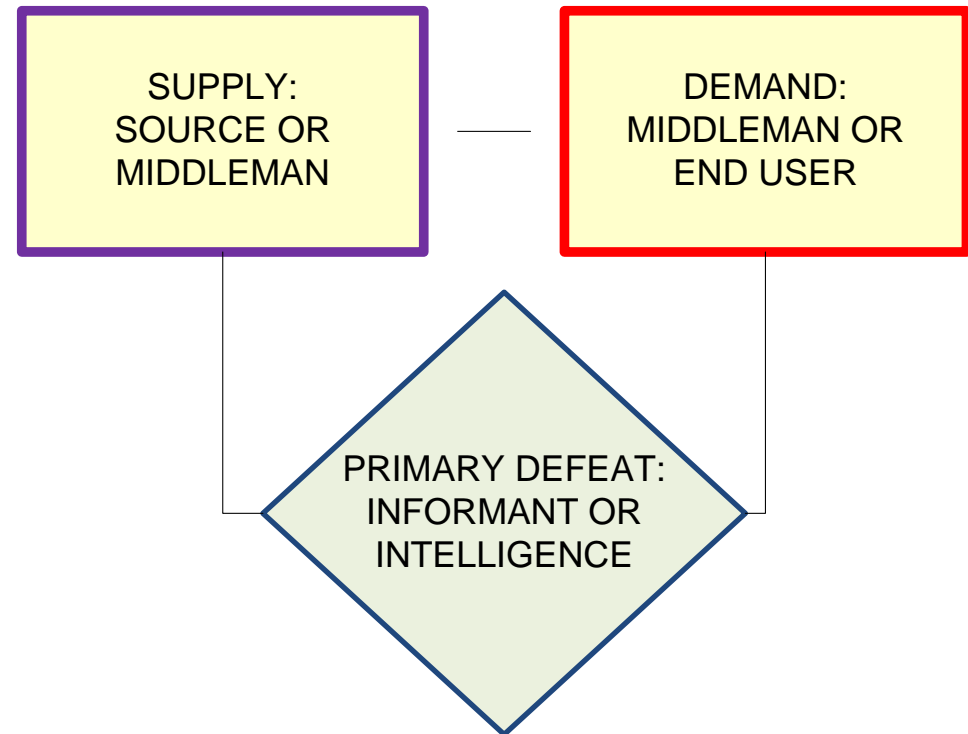


- Most diversion cases to-date have been individuals or groups that have obtained nuclear materials and are seeking a buyer.
- In early 1990's, NM was available for sale (supply) and Al Qaida was seeking HEU (demand) -connecting is the primary defeat.



# Country-Level

- Country-to-country interactions:
  - Country under IAEA safeguards can receive training in other countries with technical knowledge. Concern with Iran and DPRK.
  - Khan network using country-level capabilities to transfer technology to other countries.





# Nation, Gov. Entity or Subnational Group

- In this case – the nation, governmental entity or sub-national group is both supply and demand.
- Detection becomes more difficult.
- Assets and knowledge greater.

SUPPLY/DEMAND  
NATION OR  
SUBNATIONAL  
GROUP



# Integrated Nuclear Threat

A nation covertly transporting a NW to a target point or to another country.

Individuals or organization with possible ties to gov't organizations. Ex: Po-210 case.

A sub-group within a nation elects to divert nuclear materials or a weapon. Ex: concerns over Pakistan's military and security organizations.

Gov't organization with or without formal approval of the gov't. Ex: Khan network.

Nations seeking nuclear materials. Ex: Khan network working with DPRK, Iran and Libya

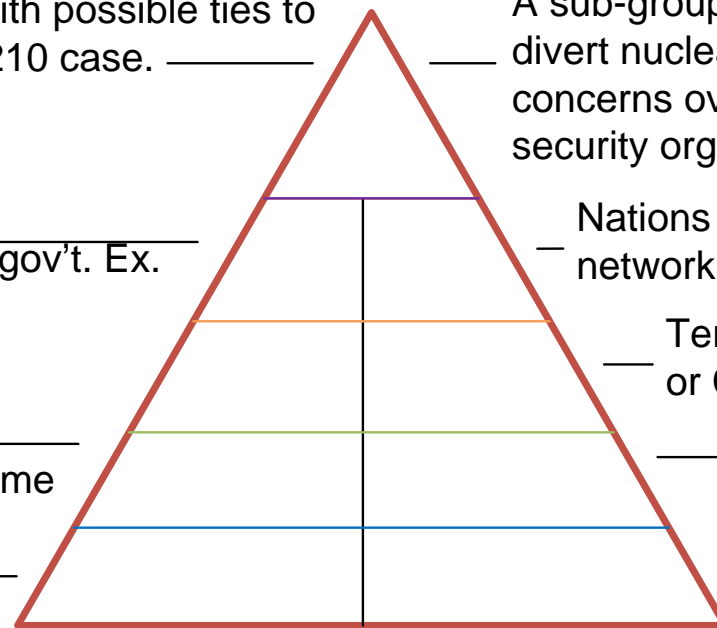
Terrorist organizations. Ex: Al Qaida or Chechen Separatists

Organized crime

Organized crime elements seeking profitable products with transnational networks.

Insider, group or middleman

Insider, group or middleman



Supply

Demand

Perpetrators

- Move from base to the tip:
  - Larger number of possibilities to fewer
  - Small quantities of nuclear material to nuclear weapons
  - Limited assets to national assets



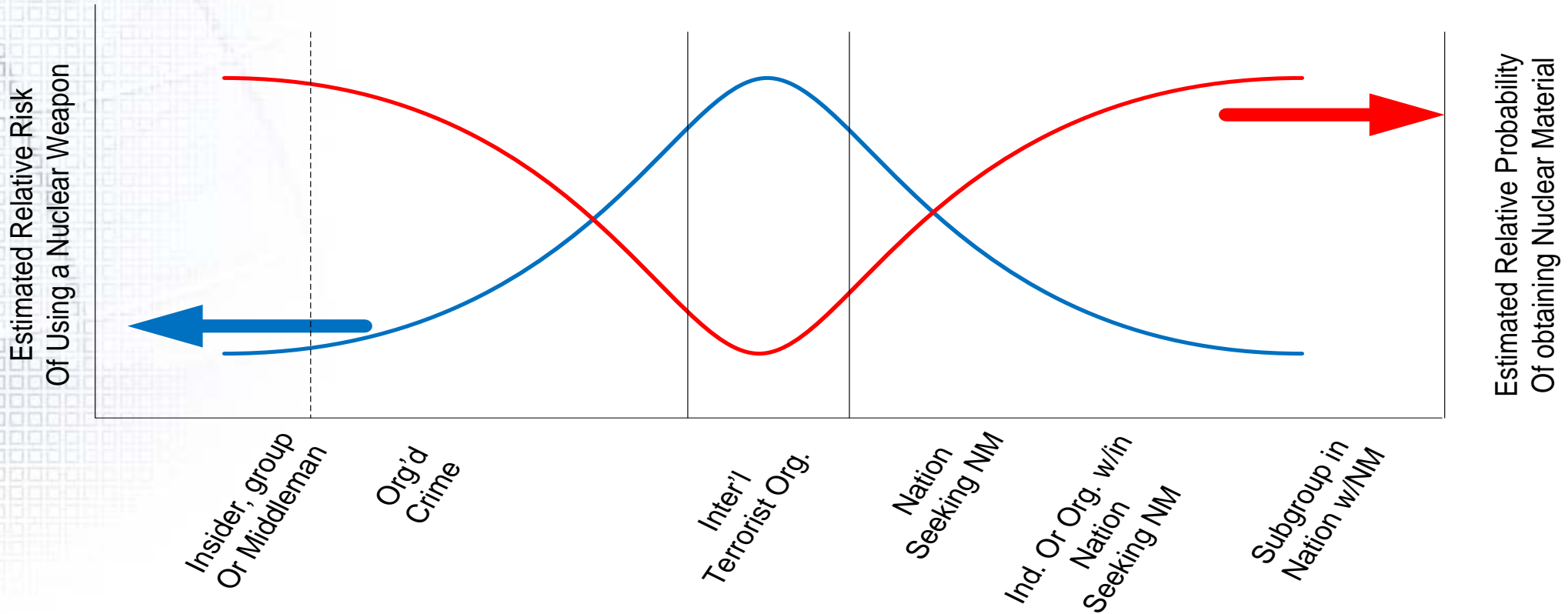
# Assets

- Assets vary based upon the perpetrator:
  - Knowledge of material
    - Handling and storage
    - Shielding
  - Knowledge of pathways
    - Points of entry
    - Corruption
    - Locations and sensitivities of rad monitors
    - By-pass routes
  - Financial backing
    - Currency, credit cards
    - Transportation options
  - Network Support
    - Number of trained personnel
    - Backup support
    - Operation setup
    - Scouts pre and post mission
    - Official or unofficial nation support.
- The assets in turn affect the signature.





# Risk versus Probability





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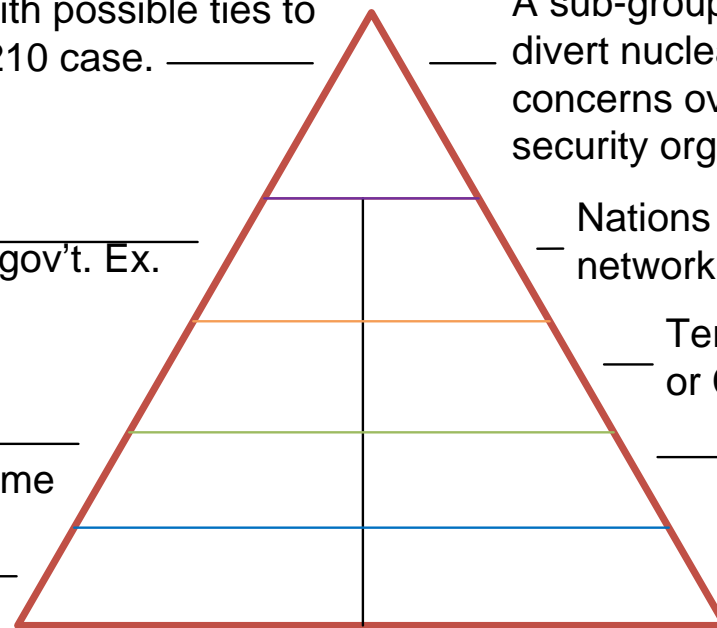
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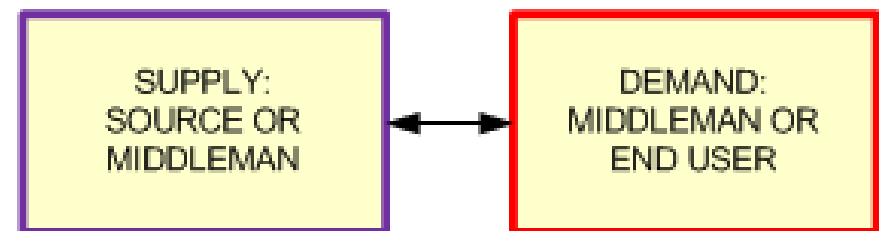
# Insider, Group or Middleman

- All reported SNM nuclear diversions to-date form the base of the triangle—
  - Some with possibility of sub-gov involvement.
  - Assets were limited.
    - Knowledge of materials ranged from good to little
    - Limited finances
    - Knowledge of pathway ranged from good to little
    - Threat object: smaller quantities of SNM
  - Russia reported as point of origin in most. After 2000 -cases decreased but – 2003 and 2006 HEU cases in Ga still an issue.
- Perpetrators caught:
  - Police investigation not involving nuclear material,
  - Informant provided key information,
  - Police sting,
  - Theft at the site was identified prompting an investigation,
  - Radiation detection equipment alarm, and
  - Insider or a middleman seeking a buyer is caught in transit, through an informant or a sting operation.
- Primarily caught looking for a buyer.
- Motivation: Financial with no concern for bigger issue.
- Issues: Is there a larger stash of SNM?



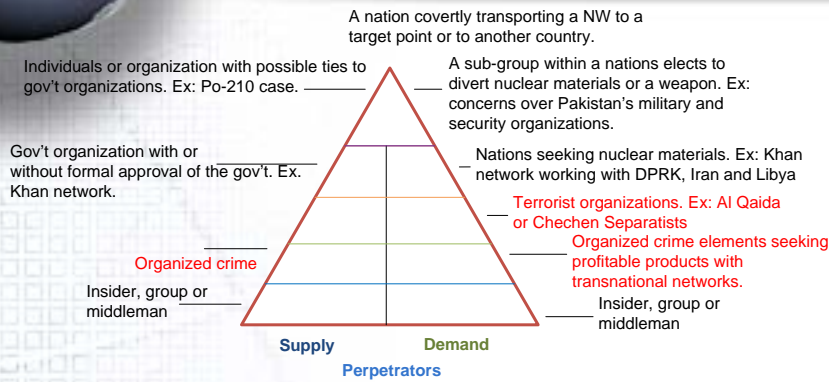
# Individual or Group to Country

- Much of the early nuclear trafficking was reportedly going to buyers from Iraq.
  - Difficult to ascertain the accuracy of the statements.
- Recent open Threat Assessment on Iran 2/08 states:
  - “We continue to assess with low confidence that Iran probably has imported at least some weapons-usable FM, but still judge with moderate-to-high confidence it has not obtained enough for a nuclear weapon.”
- Therefore, it is possible that the supply chain either from an individual or a group, or from a sub-governmental organization or government was able to connect either formally or informally and complete a SNM transaction.
- This would imply while it is difficult to connect between supply and demand it is plausible.





# Terrorist Organizations



- Seeking nuclear materials

- Al Qaida, Chechen militants and the Revolutionary Forces of Columbia (FARC) have reportedly tried to acquire nuclear materials or weapons.

- Assets

- Varied levels of knowledge, pathways, financial resources and network capability.
- Conservative and success oriented.

- Threat object:

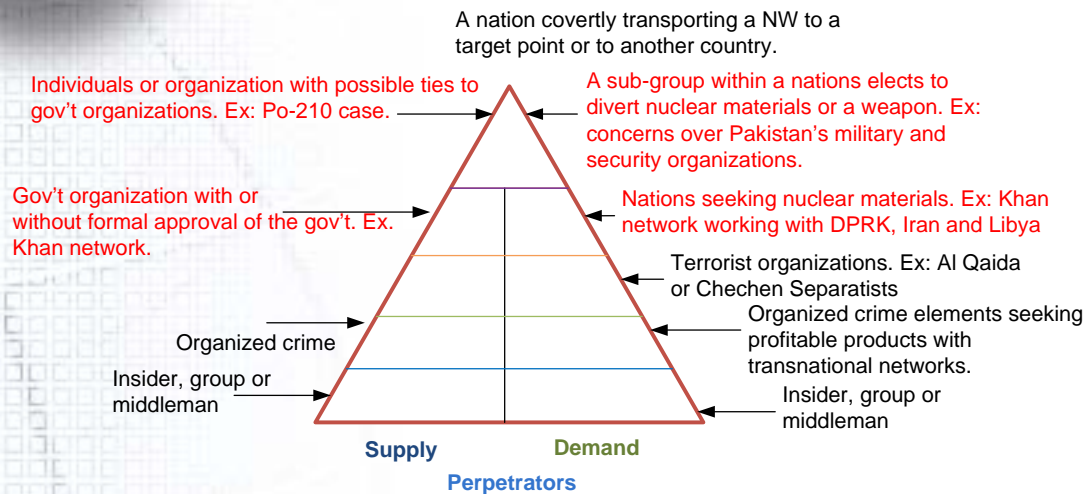
- Could range from material to improvised nuclear devise.

- Primary issue:

- Connecting with the suppliers.
- Early 1990's Al Qaida seeking HEU during the period that suppliers from Russia were seeking a buyer.
- Reportedly scammed during 1990's.
- Motivation: Political



# Government, Sub-government or Groups with Possible Affiliations to Government



– Examples: Khan network from Pakistan working with DPRK, Libya and Iran.

- Difficult to detect agreements between countries. Level of technology and possibly future transfer of materials greater.

- Reportedly government assets were used to support the transfers.
- Multiyear operation without detection. Recent report in NY Times claims informant provided key information.
- Interactions hidden under normal commerce.
- Assets are high and normal pathways were by-passed.
- Motivation: Khan financial or possibly nuclear David and Goliath.
- Discovered: Khan informant and intelligence investigation.

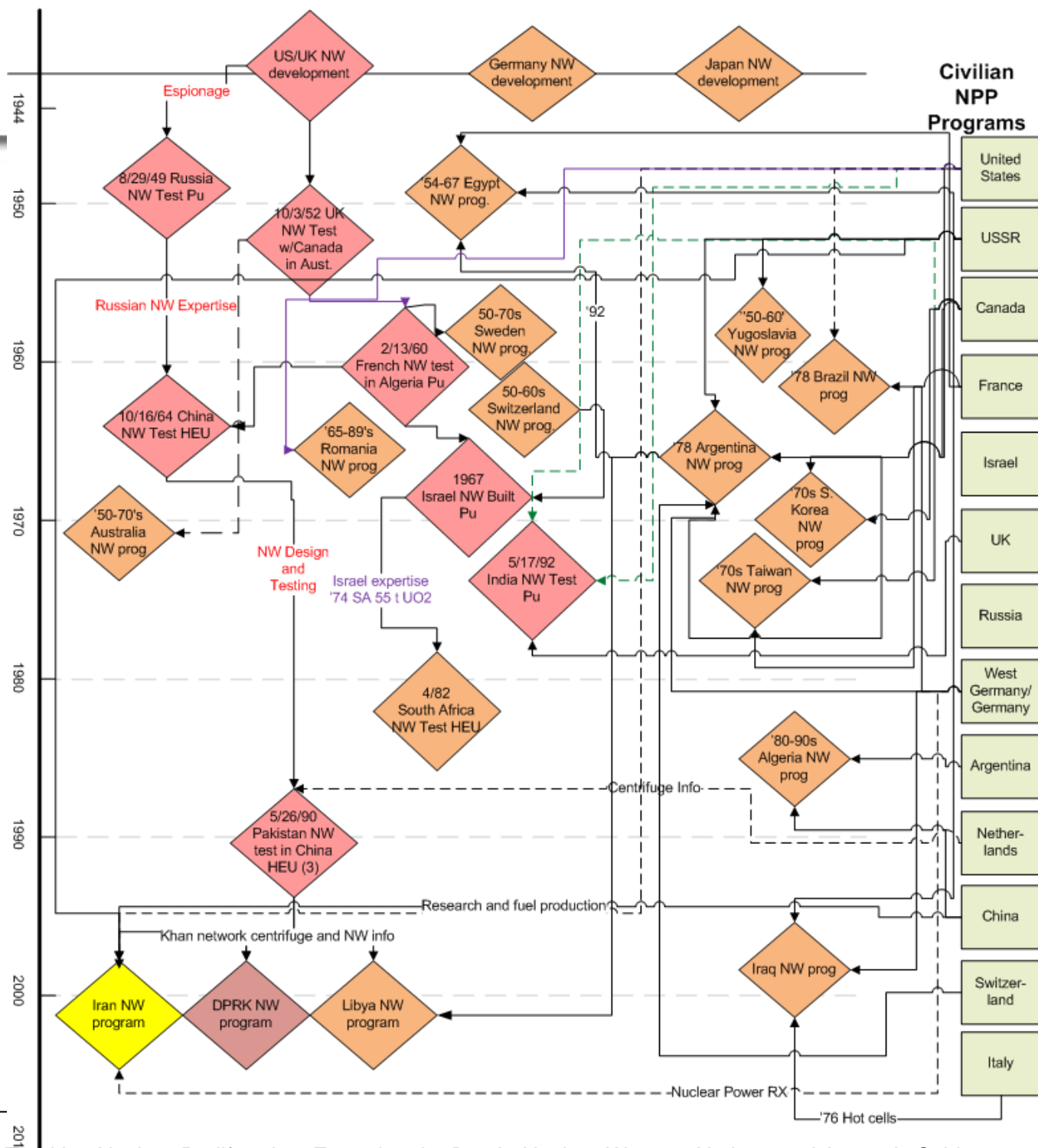


# Cases with Possible Government Ties

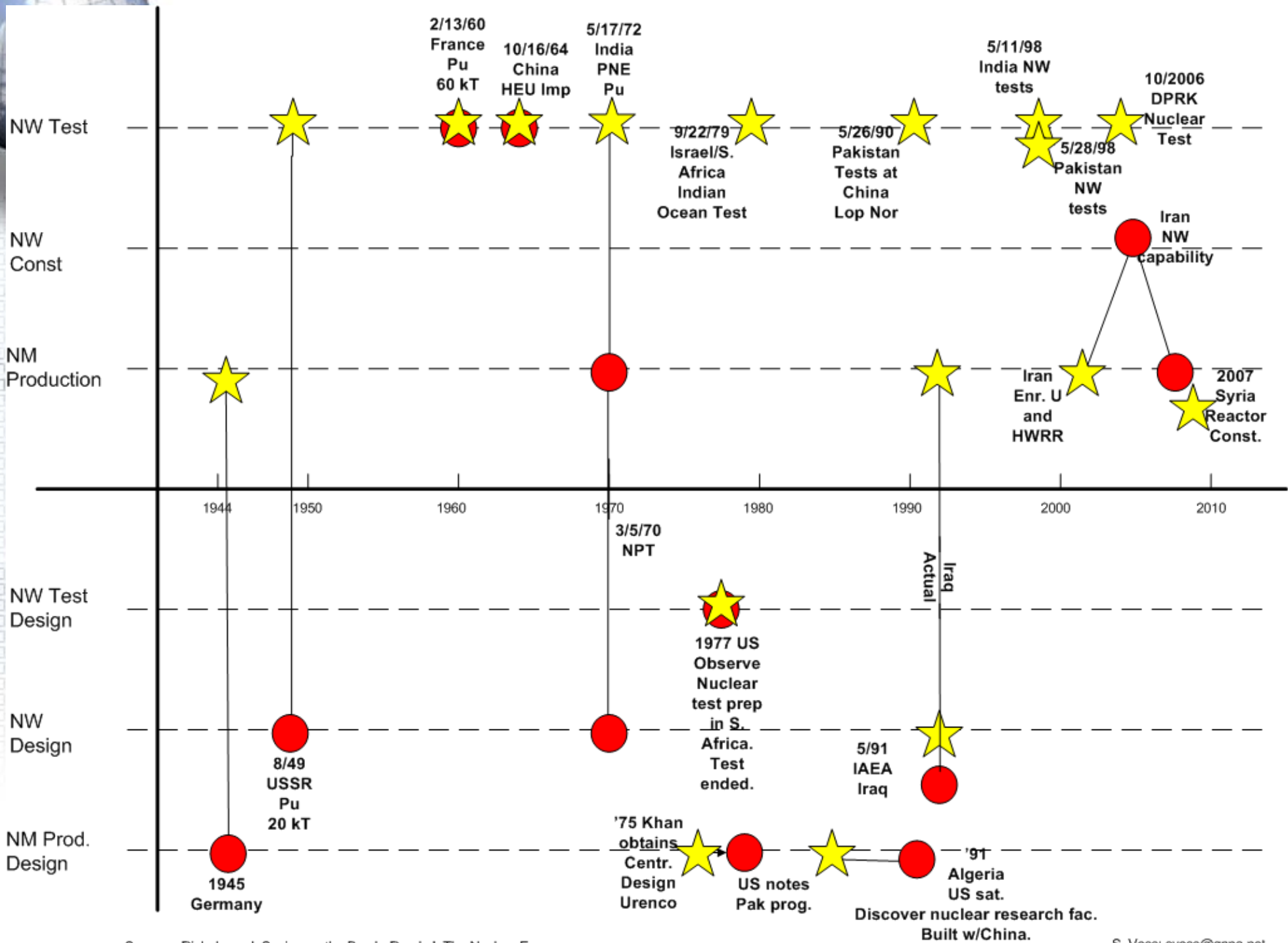
- Possible government affiliations.
  - 1994 trafficking cases in Landshut, Prague and Munich were suggested to have had sub-government ties.
    - Suggested much larger amounts of material were available.
  - Recent Po-210 case in the UK with reported ties to sub-government via the FSB.
    - Information on transfer of supply to demand unknown.
    - How did they obtain their knowledge of materials and how did the person bypass radiation monitors at the airport.
- In cases like these, even though the source of the material is known it is difficult to ascertain if it is an independent operation or not.
- Motivation: HEU financially motivated. Po-210 political motivation.
- Discovered: HEU case police sting and informant. Po-210 UK medical investigation.
- Assets: Variable. In cases like these, even though the source of the material is known it is difficult to ascertain the governments role.
- Threat object:
  - Gm and kg quantities of HEU.
  - Small quantity of Po-210



- Nuclear knowledge has been transferred between nations since the beginning.
  - Russia-China-Pakistan-Libya, Iran, DPRK
  - France-Israel-South Africa
- Also transferred via commercial nuclear programs.
- Political decisions often trump nonproliferation issues.







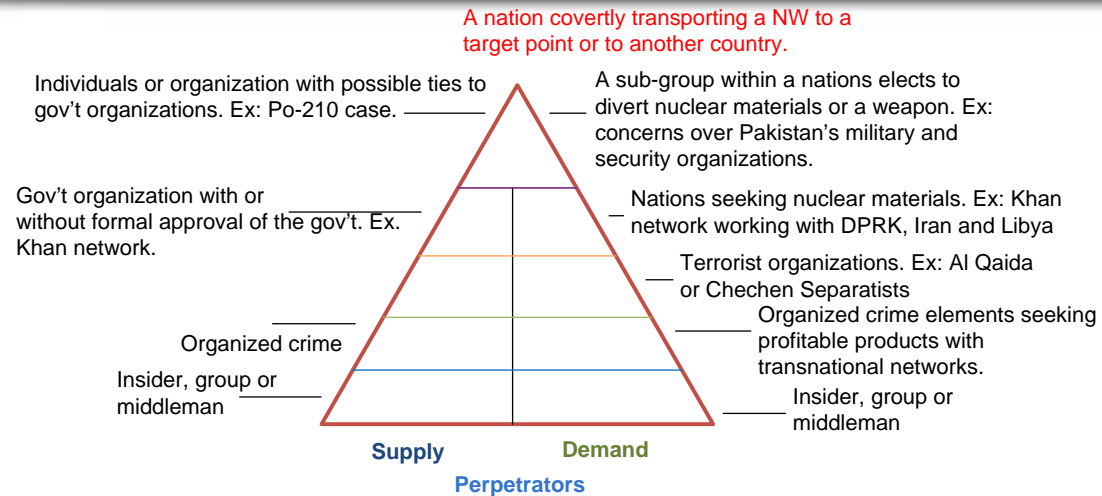
Sources: Richelson, J. Spying on the Bomb. Reed, J. The Nuclear Express.

S. Voss: svoss@gnna.net





# Covert Transfer by NW State



- A State that chooses to transport a NW covertly is the most difficult threat.
  - They have national assets, knowledge, training, financial and network to transport.
  - They have State level capabilities to move within other countries.
  - They have the highest level of nuclear technology.
- They represent both supply and demand.
- No known cases or examples to-date.
  - Concerns over sub-government group diverting nuclear weapons in Pakistan.
- Difficult to detect covert operation.
- Threat object could be nuclear components or a nuclear weapon.
  - Shielded or unshielded depending on pathway selected.
- Motivation: Political



# Global Transitions

- Global transitions are happening faster.
  - Impact nations decisions whether or not to pursue nuclear weapons and
  - Whether or not nations with nuclear technology will support the transfer to non-weapon states.
    - Bi-polar:
      - US and USSR
      - Establishing alliances and agreements
    - Uni-polar:
      - US – “regime change”
      - NWs provide a means to stand against a larger power militarily.
        - » India’s quote: Bhabha “atomic weapons give a State possessing them in adequate numbers a deterrent power against attack from a much stronger State.”
        - » Transfer of technology between Sub-state organization Khan and State organizations including Iran, Libya, and DPRK. Enemy of my enemy...
  - Is multi-polar next?
    - What will be the impact?



# Risk from Government Changes

- Changes in government can directly affect a nations decision on issues of nuclear weapons and nonproliferation:
  - South Africa
  - China
  - Iran
- Governmental changes also affect nuclear security and nuclear diversions:
  - Materials: Russia, Kazakhstan, Georgia
  - Expertise: Germany, South Africa, Russia
- Economic downturn can cause changes within a governments policy.



# Global Economic Crisis

- According to the March 2009 Intelligence Community Annual Threat Assessment:
  - “the primary near-term security concern of the US is the global economic crisis and its geopolitical implications.”
    - “Roughly a quarter of the countries in the world have already experienced low-level instability such as government changes because of the current slowdown.
    - “Statistical modeling shows that economic crises increase the risk of regime-threatening instability if they persist over a one to two year period.”
      - » Decrease in oil prices...”may put the squeeze on the adventurism of producers like Iran and Venezuela.”
- Will the global economic crisis impact the decision of one nation to develop NWs or another to provide technology or nuclear materials?
- Or impact the ability of a nation to secure their nuclear materials?



# Conclusions

- Designing the means to detect the different possible perpetrators who represent either the supply or demand side of the nuclear material threat need to consider:
  - The range of individuals or groups
  - Their assets
  - Possible signatures
  - Threat objects
  - What counter-measures are effective
- General
  - Individuals and groups are driven by financial gain yet their actions could result in catastrophic losses.
  - Role of the informant in all cases changes the odds.
  - Governments need to be open on internal investigations.
  - Forensics can identify a country but not the role of the government.
  - Keeping supply/demand separate is critical. Placing countries seeking NM within countries with technology or materials by-passes this problem.
  - Multinational sharing of information is critical.