



Security Risk Assessment Methodologies and Chemical Facility Security

**Security Systems and Technology Center
Sandia National Laboratories**

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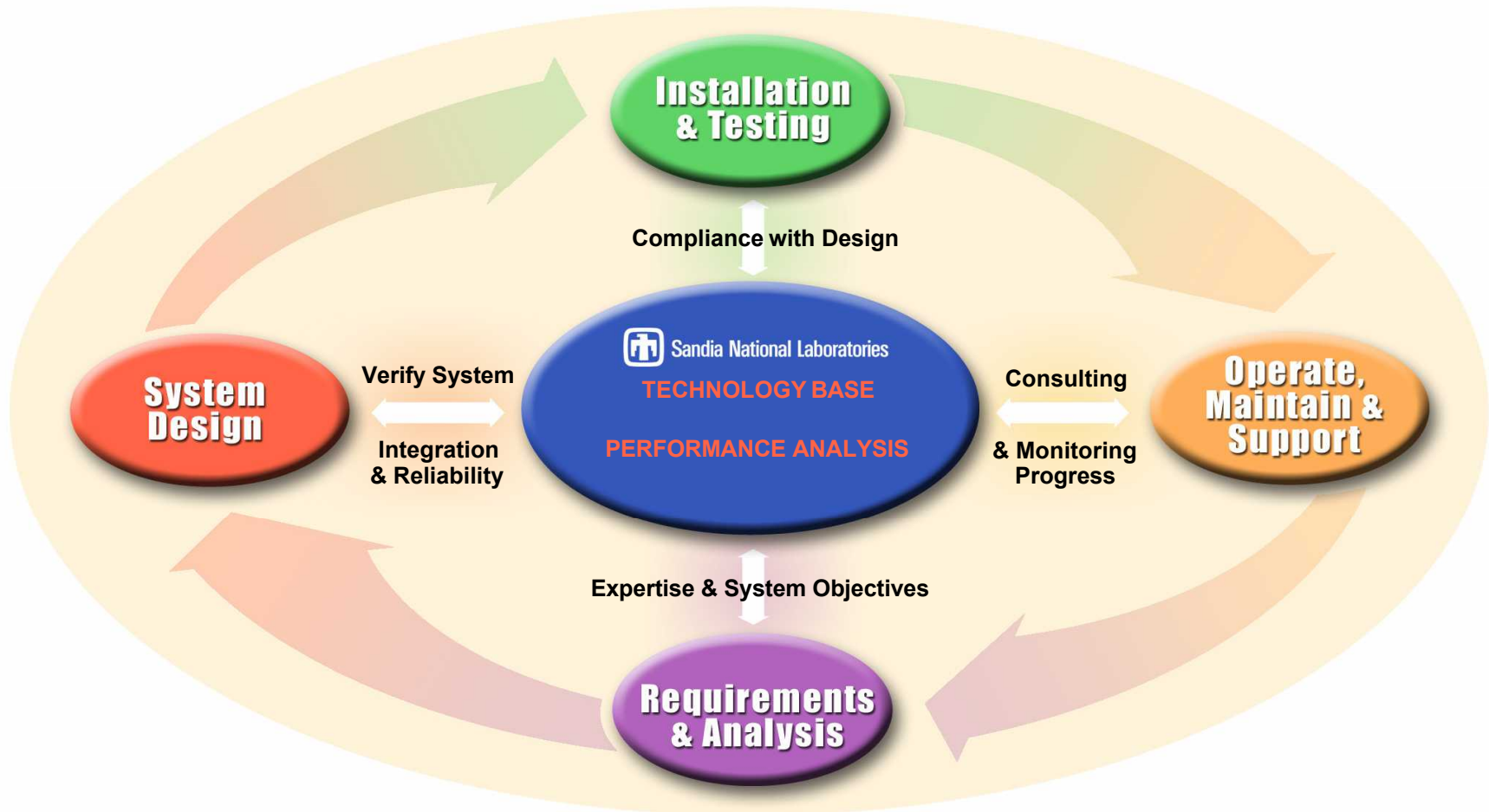


- **Overview of Security Risk Assessment**
- **Chemical Facility Security Activities**

How Much Security Is Enough?

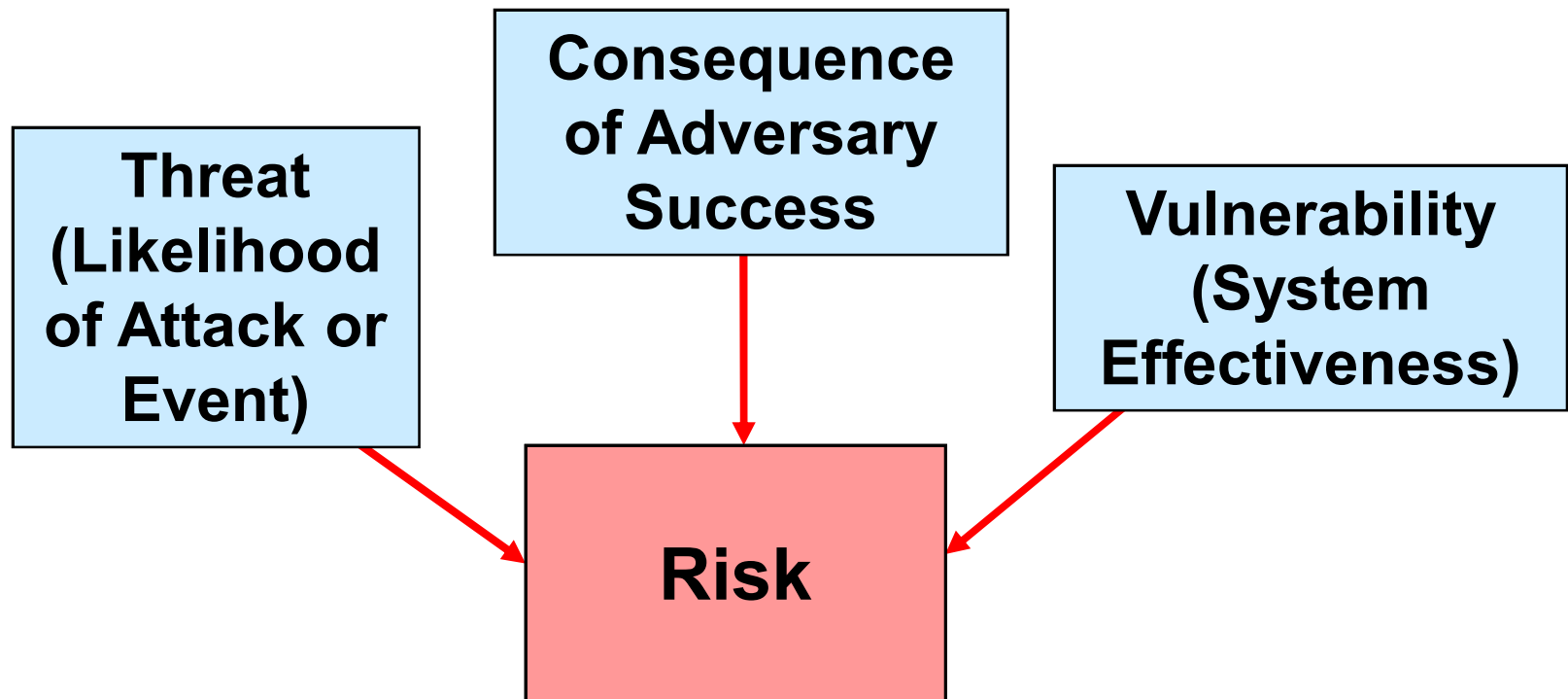


Systems Engineering Approach To Security

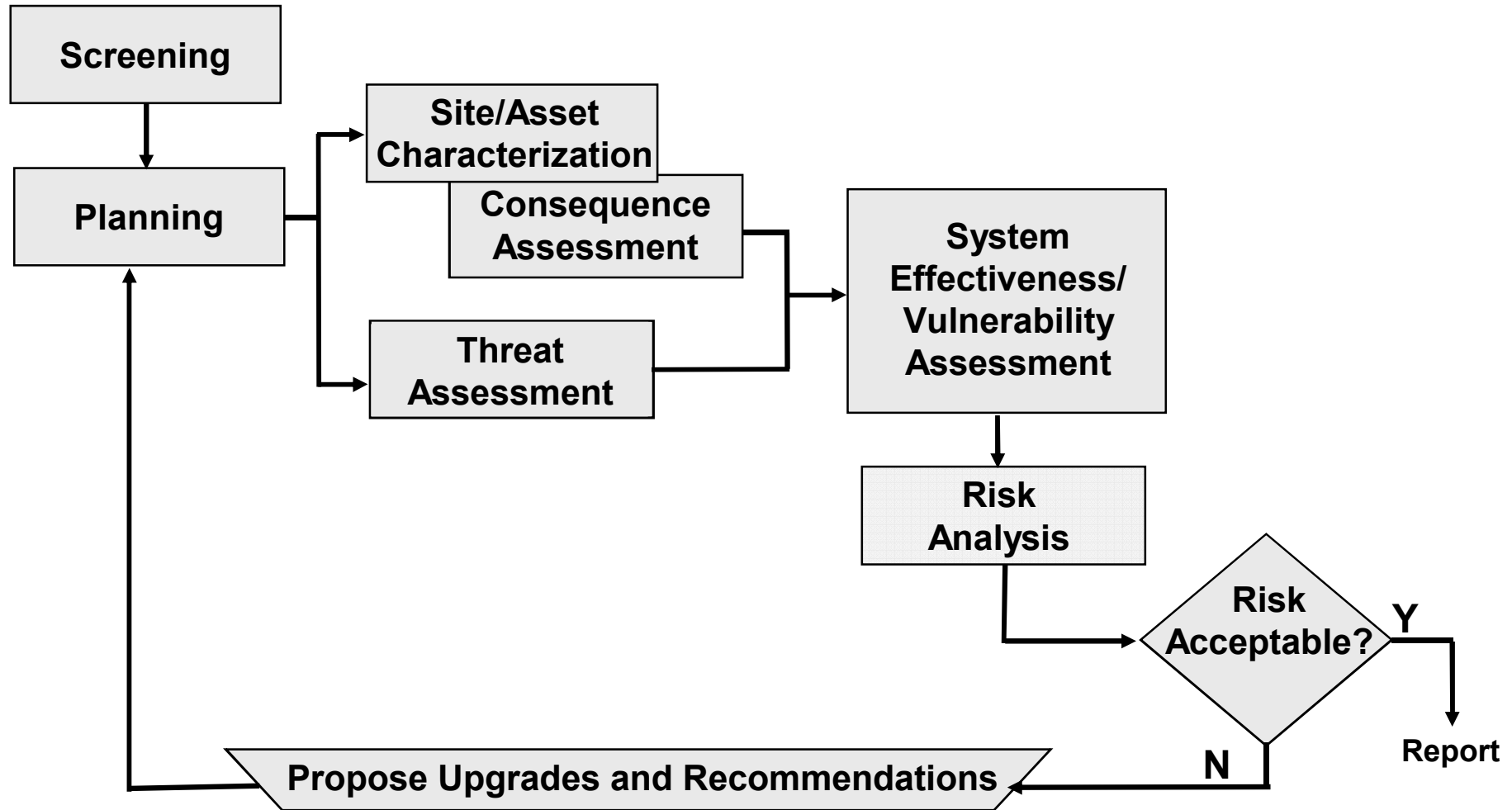




Risk Assessment Methodology (all-hazards)



RAM Process



SNL Security Risk Assessment Methodologies



- **RAM-D (Dams)**
 - Interagency Forum for Infrastructure Protection
- **RAM-T (Electrical Utility Transmission Systems)**
 - Interagency Forum for Infrastructure Protection
- **RAM-W (Municipal water systems)**
 - American Waterworks Research Foundation, EPA
- **RAM-C (Communities)**
 - Partnerships w/communities and law enforcement agencies
- **RAM-CF (Chemical facilities)**
 - DOJ, EPA, many chemical industry stakeholders
- **RAM-P (Prisons)**
 - DOJ, State Department of Corrections
- **RAM-E (Pipelines, Electric Power Generation, in development)**
 - DOE, Gas Associations, Oil/Gas Industry
- **RAM-FAA (airspace management facilities)**
- **RC RAM-W (RAMCAP/NIPP compliant version)**
 - Under direction of ASME with support from DHS, EPA, SCC

See www.sandia.gov/ram

Critical Infrastructure and Key Resource Sectors



CI/KR sectors in **red** are ones where 6460 has made contributions

- **Chemical** (*also refineries, LNG*)
- **Transportation Systems**
- **Emergency Services**
- **Postal and Shipping**
- **Dams**
- **Government Facilities**
- **Commercial Facilities**
- **Nuclear Reactors, Materials, and Waste**
- **Agriculture and Food**
- **Public Health**
- **Water**
- **Energy**
- **Banking and Finance**
- **National Monuments and Icons**
- **Defense Industrial Base**
- **Information Technology**
- **Telecommunications**

Chemical Facility Security Activities



- Started the end of 2000 with the development of RAM-CF (formerly known as VAM-CF) [see fact sheet for more details]
- Participated in DHS/ASME chemical sector working group which developed screening tool and security vulnerability assessment (SVA) approach for chemical manufacturing facilities, refineries and LNG facilities.
- Provided comments to Chemical Facility Security regulation 6 CFR 27.
- Continue informal participation in various chemical facility security activities.
- Supporting DOS and others in areas involving international chemical facility security.

Stakeholders Contacted during RAM-CF

Development (partial list)

- DOT - HazMat Tech Safety Program Lead, Office of Security and Intelligence
- American Chemistry Council
- Environmental Protection Agency, CEPPO
- Institute of Explosive Makers, HazMat Trans Group
- Office of Science and Technology Policy
- Synthetic Organic Chemical Manufacturers' Association
- National Infrastructure Protection Center, NDPO, WMD Opns Unit (FBI)
- Chemical Safety & Hazard Investigation Board
- Association of American Railroads & AAR's Transportation Technology Center
- Center for Chemical Process Safety, AIChE
- National Petrochemical & Refiners Association
- Office for State and Local Domestic Preparedness Support
- National Fire Protection Association
- American Trucking Association's Safety & Loss Prevention Council
- DOE Critical Infrastructure Protection
- Texas Chemistry Council
- National Institute of Standards & Technology, Process Control Secty Reqs forum
- Defense Threat Reduction Agency, CWC Treaty Inspection
- Dept of Commerce, Treaty Compliance Division
- American Petroleum Institute
- National Academy of Sciences Board on Chemical Sciences & Technology
- Selected Local Emergency Preparedness Councils
- State and local agencies, and public
- Numerous chemical manufacturers

Contact Information



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