



NIST – GSA Symposium
Knowledge Based Authentication:
Is it Quantifiable?

February 9, 2004

Office of National Risk Assessment



“It is very important to concentrate on hitting the U.S. economy through all possible means... Look for the key pillars of the U.S. economy. Strike the key pillars of the enemy again and again and they will fall as one. ...”

Osama Bin Laden, Dec. 27, 2001

Office of National Risk Assessment Strategic Priorities



- Strengthen homeland security
 - ◆ Terrorist extreme risk assessment (TERA) programs
 - ◆ Optimize scarce security resources
- Strengthen privacy and civil liberties protections
 - ◆ Transparency via continuous audit of information and operational policy compliance
- Strengthen US economic competitiveness
 - ◆ Increased Terrorist Risk assessment effectiveness = increased economic risk management efficiency and financial system liquidity
 - ◆ Measurable results yield increased social and economic confidence and assurance

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Office of National Risk Assessment Mission



- Establish and support effective Terrorist Extreme Risk Assessment (TERA) programs for the United States Department of Homeland Security
 - ◆ Provide multi-modal information based identity risk assessment services and programmatic support to Homeland Security Critical Infrastructure Security Programs
 - ◆ Establish and manage extreme risk assessment effectiveness measurement programs to support DHS TERA programs
- Effective Terrorist Extreme Risk Assessment depends on effective entity identity risk assessment.
- Effective identity risk assessment depends on consistent programmatic support, and quantifiable metrics for measuring effectiveness of Type I & II errors

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- Can the effectiveness of knowledge based identity authentication be quantified?
- Short Answer: Yes
 - Doing it is more complicated
 - ◆ Requires consistent information taxonomy
 - ◆ Consistent Policy Ontology
 - ◆ Consistent Referential calculus to map one to the other
 - ◆ Continuous policy compliance auditing
 - Must know when one is out of compliance to quantify risk and cost of potential damages
- How does ONRA propose to measure the effectiveness of KBA risk assessments?
- Consistent measurement of the number and cause of Type I and II errors
 - Requires parallel operation of statistical testbed
 - Requires continuous audit of compliance with operational policies governing methods and processes used to measure type I & II errors
 - Believe it will require a standards based certification authority to enable replication in other domains
- Why we must do it now
 - Indemnification of private data owners
 - Most logistic, material, and financial supply chain data pertaining to persons that may contain indications of terrorist capabilities and intentions is privately owned and governed by existing policies that cannot be ignored.
 - Type I & II errors both have catastrophic implications