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Security & Privacy Services

Risk Management and Risk Catalog Point of View

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Agenda

Risk Management Principles

- Context
- Assessment
- Treatment
- Monitoring

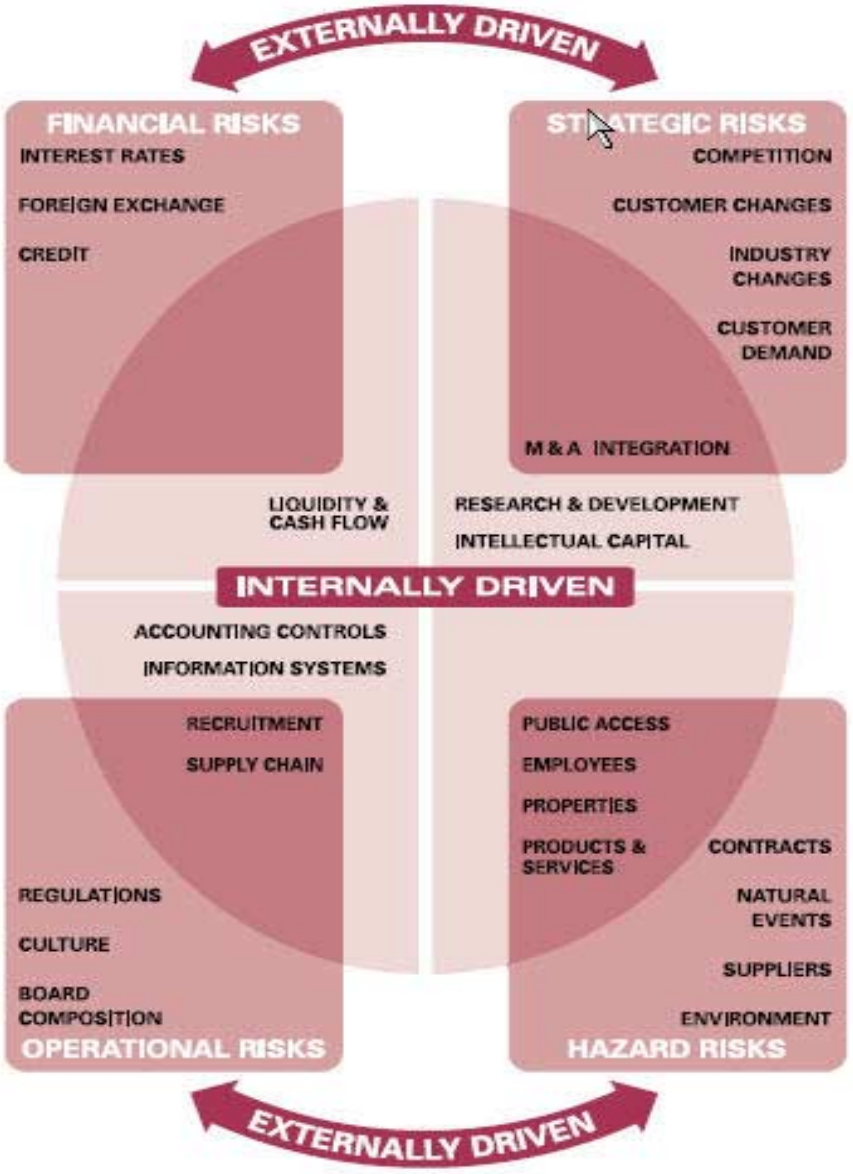
Risk Catalog Overview

- Drivers
- Solution
- Approach

Risk Management Principles

Risk Context

- What is Risk?
  - "Risk can be defined as the combination of the probability of an event and its consequences" [ISO/IEC Guide 73]
  - Likelihood and impact of an event
- Functional Risk Areas
  - The AIRMIC/ALARM/IRM Risk Management Standard states the risks facing an organization and its operations can result from factors both external and internal to the organization.
  - The diagram to the right provides some examples of functional risk areas.



Risk Context

- Authoritative Sources
  - We must work with business groups and legal counsel to identify their authoritative sources as this is the foundation of a successful risk management program (e.g. AICPA Privacy, COBIT, ISO/IEC 17799)
- Risk Methodology
  - Identify what risk management framework to use to structure the risk management program
  - There are many risk management frameworks, including but not limited to the following:
    - ISO/IEC 27001:2005
    - COSO ERM
    - AIRMIC/ALARM/ IRM Risk Management Standard
    - AS/NZS 4360:2004
    - NIST SP800-30
  - All of the frameworks are derived from the basic principle of: Risk = Likelihood x Impact

Risk Context

- Control Definitions
  - Individual risk and control requirements are combined to reflect 'integrated requirements'
  - Rationalized controls are designed to reflect the business' decision on how to address the risk and control considerations for a given Test Unit
  - The control design module works through a risk based analysis process that facilitates the control selection for a specific Test Unit by identifying options with associated proposed risks

Risk Assessment - Identify

- Environment Definition (Asset) – anything that has value to the organization [ISO/IEC 27001:2005]
  - Physical assets, Information/data, Software, The ability to provide a product or service, People, Intangibles
- Criticality refers to the availability requirements defined by the business
  - High criticality systems typically have high availability and redundancy requirements
- Sensitivity refers to the confidentially requirements defined by the business
  - Low sensitivity systems typically have less control requirements

Risk Assessment - Evaluate

Risk Determination

The impact and likelihood can be measured using a combination of qualitative and quantitative factors. The specific criteria will vary for each client and should be defined in conjunction with the clients management.

		Qualitative Impact	Quantitative Impact
Impact	High	Very Bad	> $100 Million
	Medium	Bad	Between $1 Million and $100 Million
	Low	Not So Bad	< $1 Million

		Qualitative Likelihood	Quantitative Likelihood
Likelihood	High	Very Likely	> Once A Day (0.9)
	Medium	Likely	Between Once A Day And A Month (0.5)
	Low	Unlikely	< Once A Month (0.1)

Risk Assessment - Evaluate

Risk Determination (continued)

The final determination of risk is derived by multiplying the ratings assigned for threat likelihood (e.g., probability) and threat impact.

- In this example, the probability assigned for each threat likelihood level is 1.0 for High, 0.5 for Medium, 0.1 for Low.
- The value assigned for each impact level is 100 for High, 50 for Medium, and 10 for Low.

Example Likelihood and Impact Scales			
Likelihood	**Impact**		
	Low (10)	Medium (50)	High (100)
High (1.0)	Low 10 x 1.0 = 10	Medium 50 x 1.0 = 50	High 100 x 1.0 = 100
Medium (0.5)	Low 10 x 0.5 = 5	Medium 50 x 0.5 = 25	Medium 100 x 0.5 = 50
Low (0.1)	Low 10 x 0.1 = 1	Low 50 x 0.1 = 5	Low 100 x 0.1 = 10

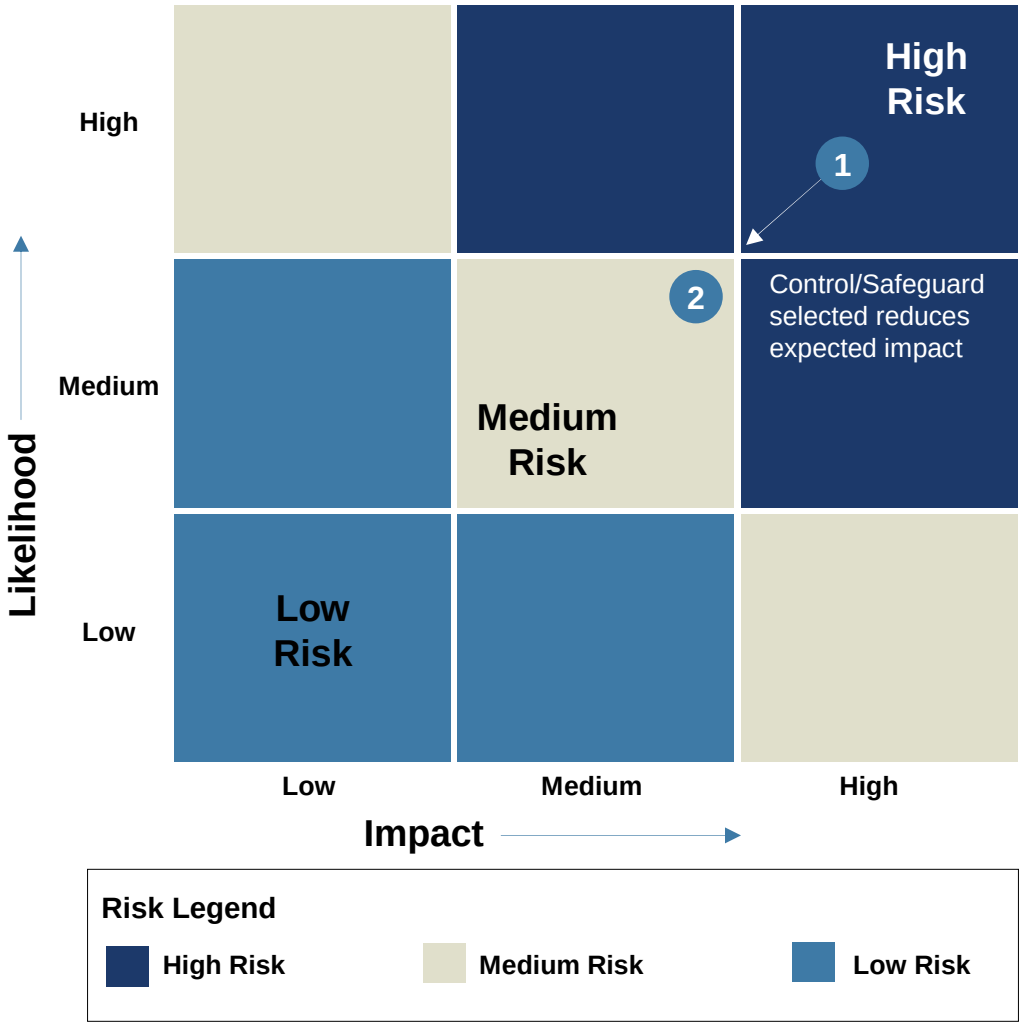
Example Risk Scale: High (50 to 100); Medium (>10 to 49); Low (1 to 10)

Risk Legend **High Risk** **Medium Risk** **Low Risk**

Risk Treatment – Select Target Risk

A two-pass risk process is used to determine controls: 1) Inherent Risk and 2) Target Risk…

Example Risk Methodology



1. **Inherent Risk** is the exposure to organization without control
2. **Proposed Residual Risk** is the exposure to organization based on the desired control following the cost-benefit tradeoff

Example Impact Scale

High – Greater than $10M

Medium – Between $10M and $1M

Low – $1M or Less

Example Likelihood Scale

High – Once a Month or Greater

Medium – Between Once a Month and Ten Years

Low – Once Every Ten Years to Never

…risk tolerance and criteria are calibrated for the business.

Risk Treatment – Select Target Risk

- *Control the Selected Risks*
- Control Baseline Cost Benefit – assess the cost benefit of each control option identified in the ‘risk assessment’ phase
- Strategy / Controls Selection – select the control option that best matches the organizations risk tolerance
- Key Controls – document whether the control option is key to satisfying the control objective; in other words, the control objective would not be met were this control not in place
- Proposed Residual Risk – the level of risk an entity would have if the selected control were implemented and effective (i.e., target risk)

Risk Treatment – Define Test

- Testing Criteria – the attributes of practices and activities that need to be present in order for a control to be deemed operating effectively
- Testing / Review Frequency – based on the inherent risk, automated or manual, and the frequency of control execution, the timing and frequency of how often the control needs to be tested is determined
- Sampling Guidance – based on the population of available examples of the control being performed, the selection requirements are established
- Tailored Test Procedures – the stepwise review, including documentation and evidence requirements, of controls to determine operating effectiveness
- Approved Statement of Applicability – document containing the risks, control objectives, selected controls, and any deviations for a given process or system (i.e., a systems control plan)

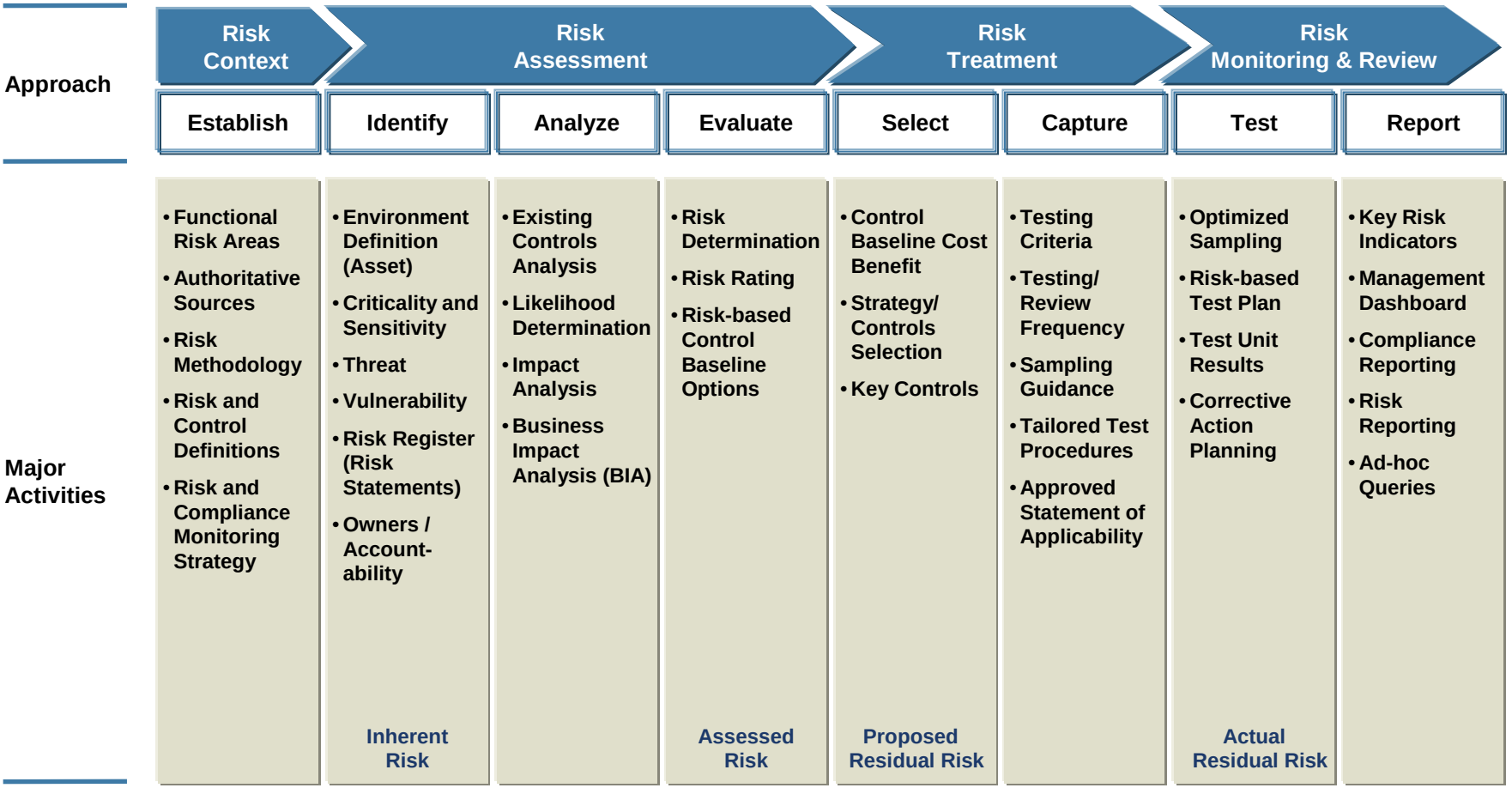
Risk Monitoring & Review – Test

- Optimized Sampling – based on sampling guidance, the sampling strategy used for testing
- Risk-based Test Plan – the documentation supporting the controls and test units to be tested which enables auditor reliance on self assessments
- Test Unit Results – the analysis of control design and operating effectiveness based on the testing performed
- Corrective Action Planning – the plan established to remediate any control deficiencies identified during testing
- Actual Residual Risk – the final risk rating based on the results of testing

Risk Monitoring

- Risk & Compliance Monitoring Strategy
  - Risk and compliance is monitored by multiple stakeholders
    - Internal Audit
    - External Audit
    - Third Party
    - Self Assessment, etc.
  - Risk and compliance can be monitored using various techniques
    - Questionnaire
    - Vulnerability Scanning
    - Testing with or without evidence
    - Key Risk Indicator or Key Performance Indicators, etc.
  - Timing of the monitoring varies but needs to be defined
    - Regulatory requirements
    - Types of risks involved (high risk system)

Summary of Methodology



Risk vs. Compliance

- Compliance
  - Measures adherence to internal policies, external regulations, laws, contracts, etc.
  - The compliance criteria needs to be established
  - Compliance is then a measurement of whether you are or are not meeting the established criteria

- Risk
  - Risk may be either good or bad
  - Based on a formal, documented decision process

Risk Catalog Overview

A common understanding

Business needs a *common* understanding of risk and corresponding control requirements between the CFO, Internal Audit, Compliance, Security, Privacy, Business Continuity, IT Risk and Third-Parties

Hard won client insights …

Root Causes	Conclusions
Organizational functions view the operating environment, risks and controls differently	Higher costs and extra work required for compliance – What is minimum necessary and why?
“Compliance” is confused with “Risk”	Business is often not provided with risk-based options
No single view of the organization’s IT control, security and privacy requirements	Duplication of effort due to a lack of a single source of business risk and control requirements
Audit, Compliance, Security, Privacy, Business Continuity, IT Risk and Third-Parties use different processes and tools that produce different results	More cost and time are required to de-conflict the standalone processes, tools and data

Hard won client insights…

What is Practical Pain Relief?

Common Requirements Repository	• Single requirements view • Rationalized multiple requirement sources • Common definitions for similar requirements • Traceability to sources
Rationalized Risk and Control Profiles	• ISO/IEC -based risk modeling • Top down risk decisions and control trade-offs • Linked COBIT -based controls
Control Level Testing and Reporting	• Test procedures linked to each control • Designed to support 404 testing requirements • Drill down and compliance reporting
Technology Enabled Management System	• Integrated workflow solution • Risk performance analytics • Event notification and tracking

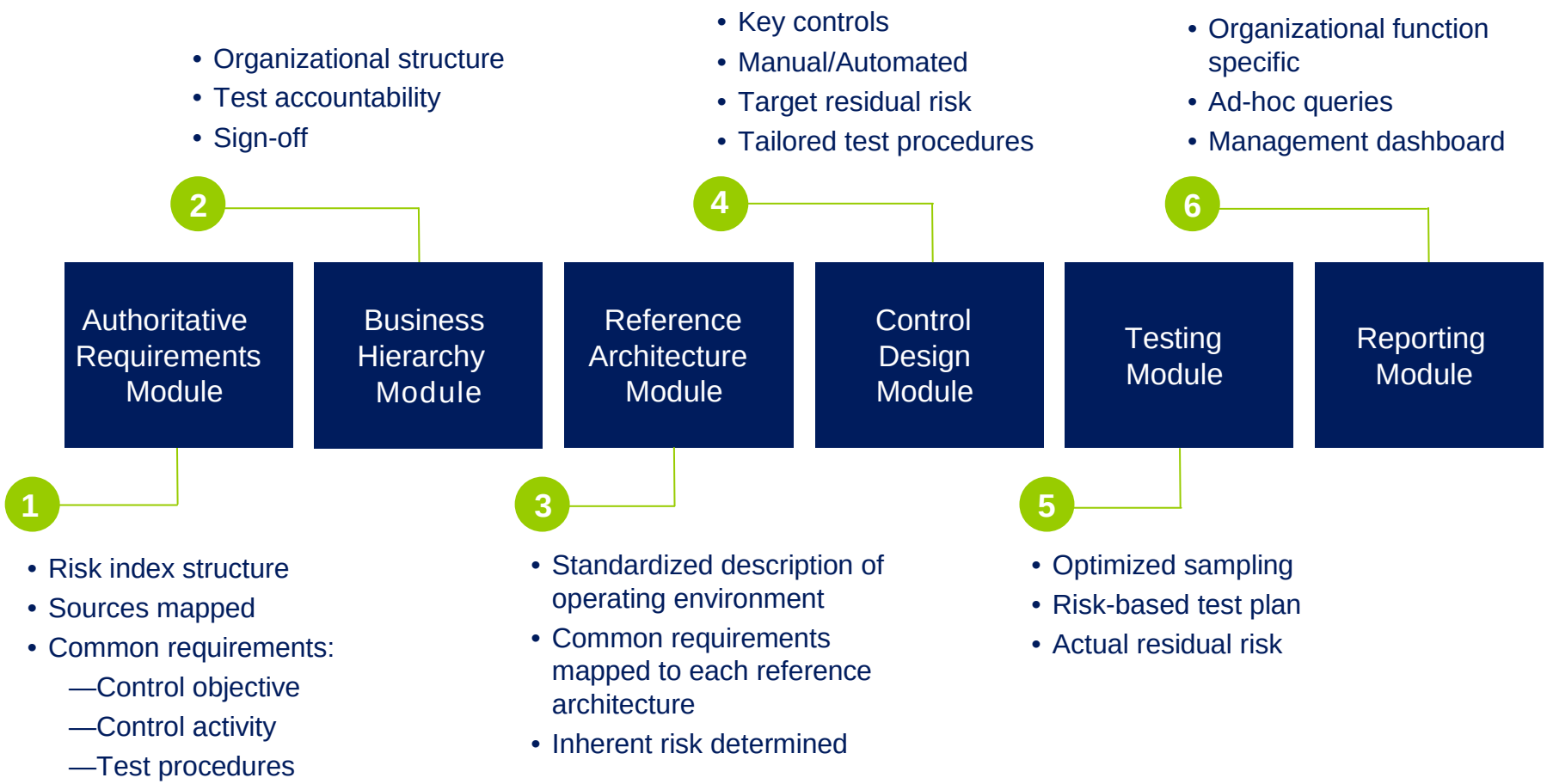
Our Response – Risk Catalog

Risk Catalog – an Integrated Risk Management Solution – provides a risk-driven, workflow solution that allows organizations to define and maintain risk and control profiles for their business systems and processes

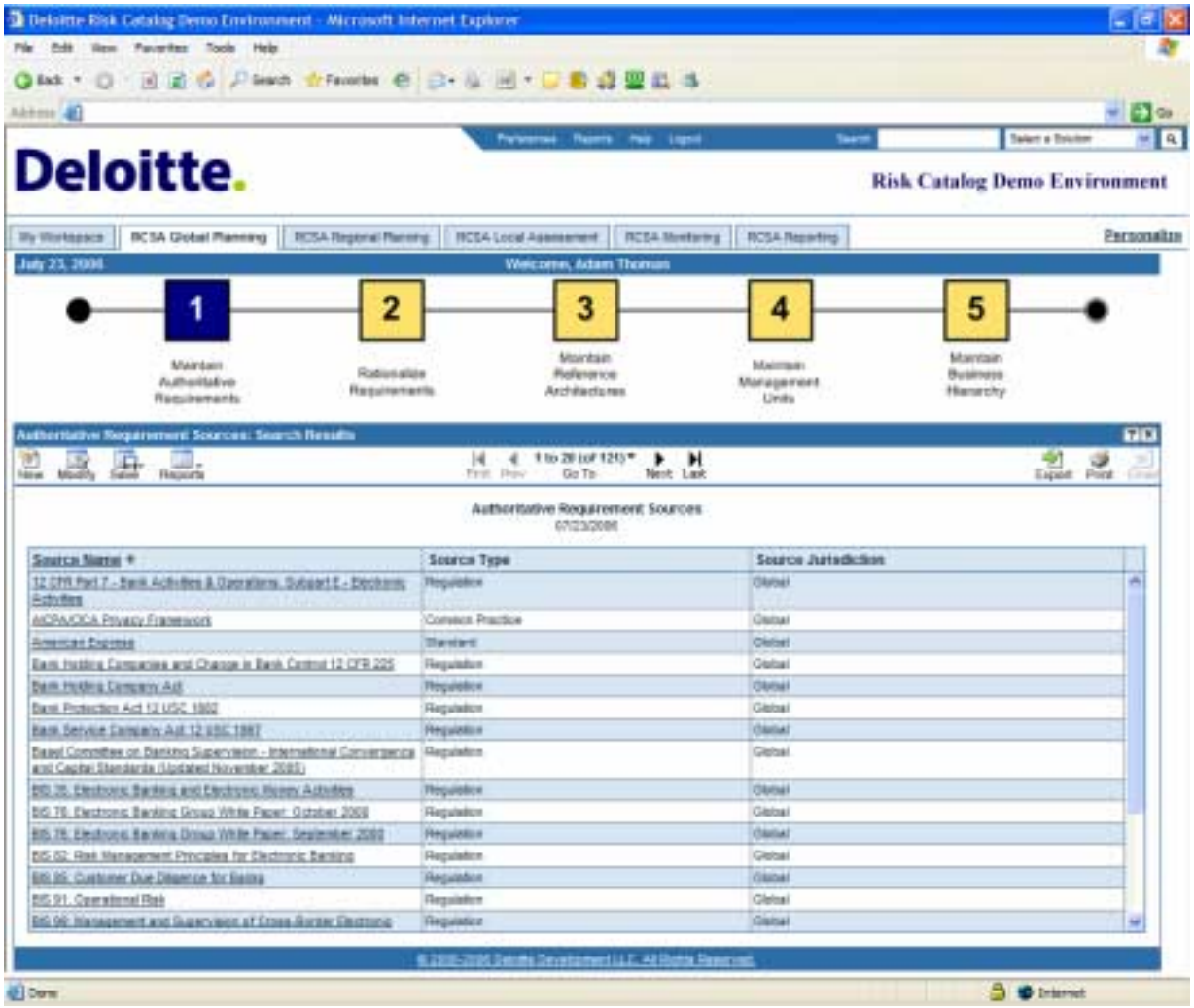
Authoritative Requirements	Risk Assessment	Risk Response	Risk Reporting
			
Common Repository for all security, IT control, and privacy requirements	**Common Risk Assessment** process applied to business	**Linked Risk and Control Profiles** for each business operating environment	**Linked Testing and Reporting** through key risk and performance criteria

Modular Approach

‘Starter Kits’ jump start the solution implementation

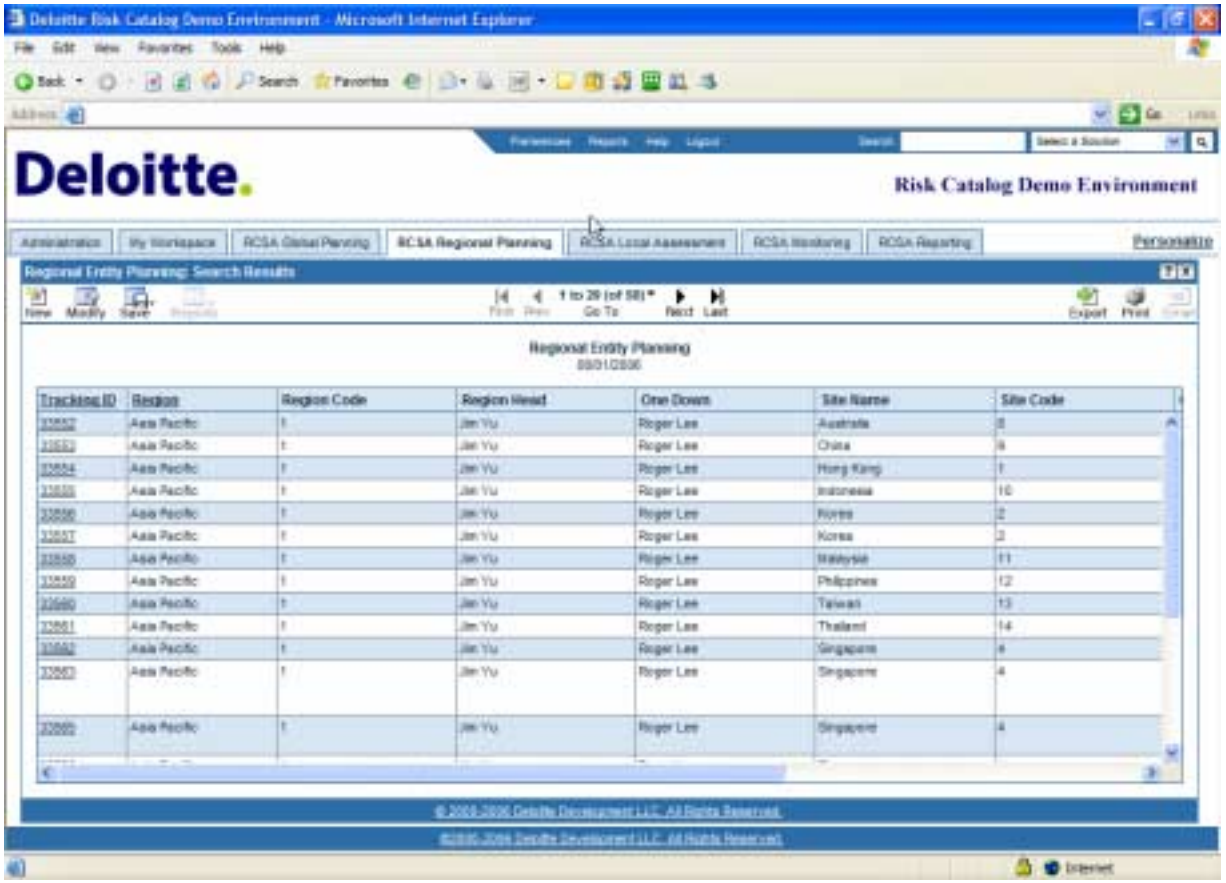


Authoritative Requirements Repository



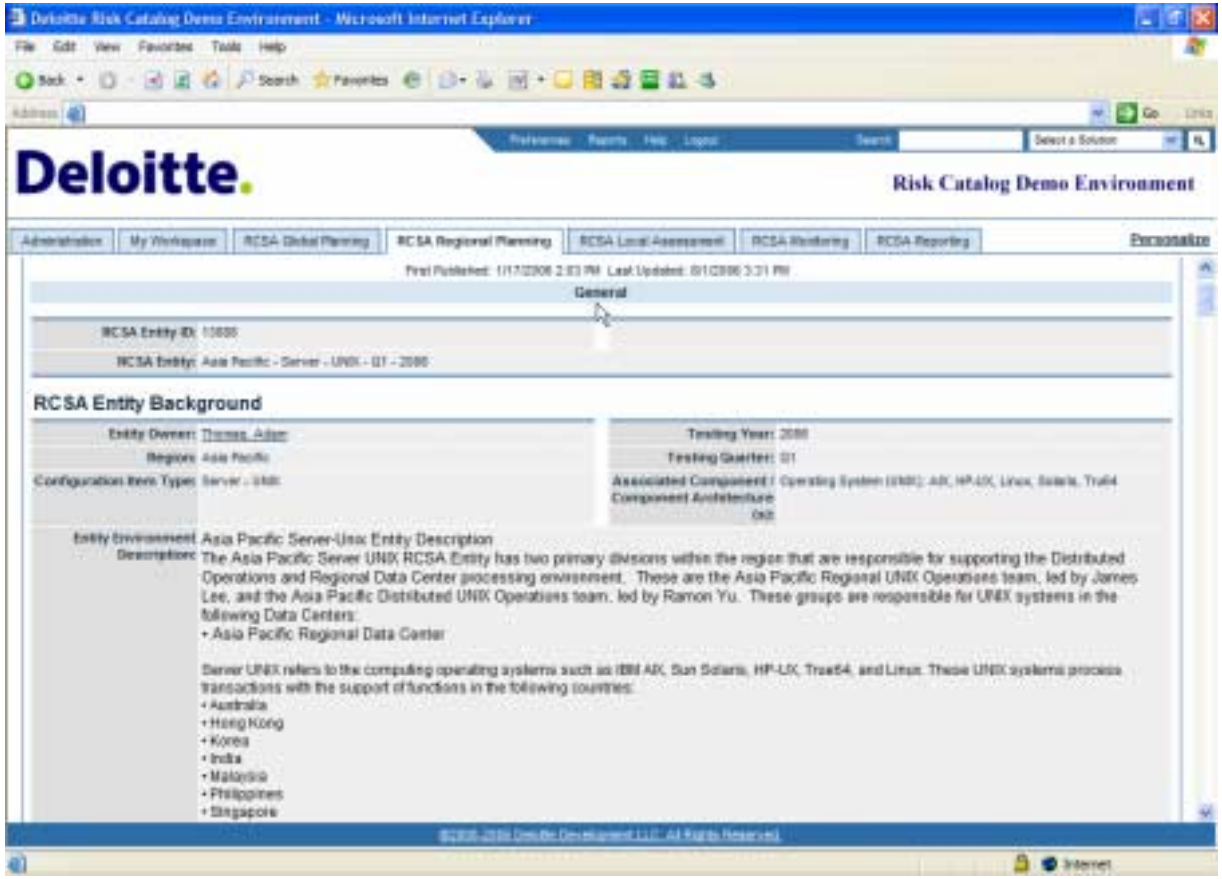
- Business risk requirements
  - Security
  - IT Controls
  - Privacy
  - Other
- Referenced to ISO, COBIT and AICPA
- Overlap removed
- Common definitions

Business Hierarchy Module



- Models organizational structure
- Tailored to operating environment
- Supports sign-off, accountability and ownership

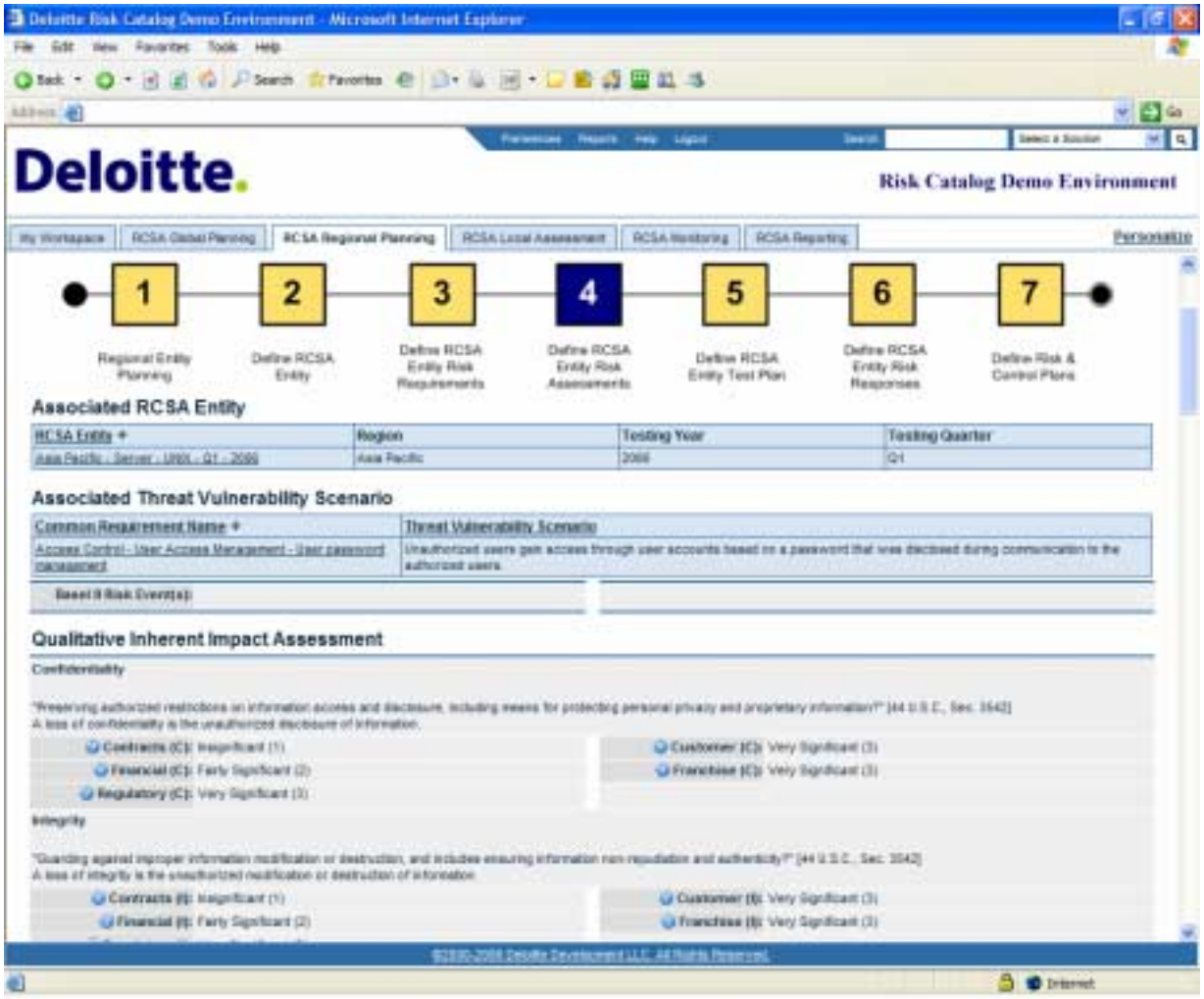
Reference Architecture Module



Entity Definition

- Establishes standard definition for the operating environment
- Associated with Authoritative Requirements
- Assists with the creation of Sarbanes Oxley (SOX) narratives

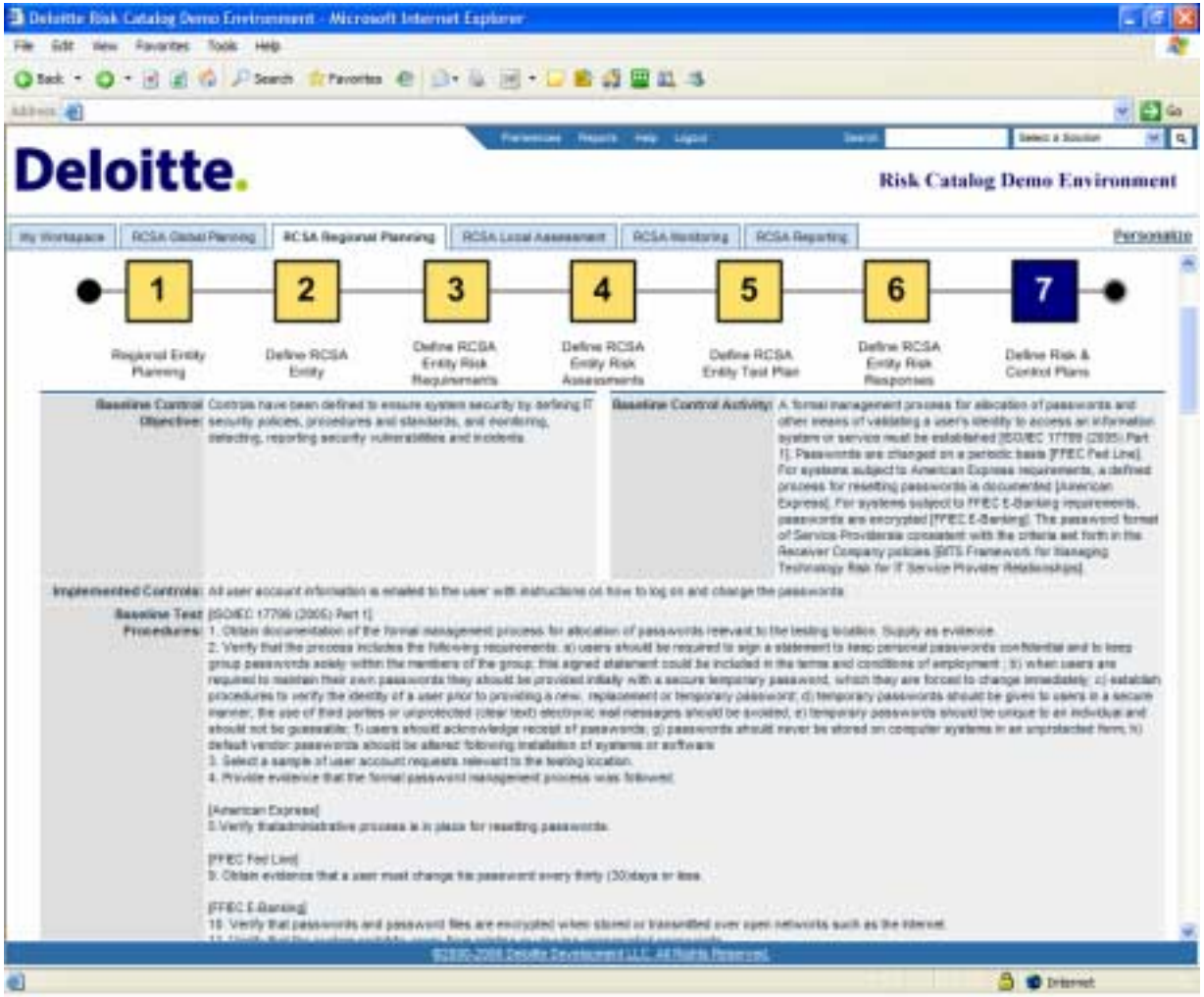
Reference Architecture Module



Risk Assessment

- Standard risk definitions
- Qualitative and quantitative
- Multiple dimensions of risk; e.g.
  - Franchise
  - Contract
  - Regulatory
  - Customer
  - Financial

Control Design Module

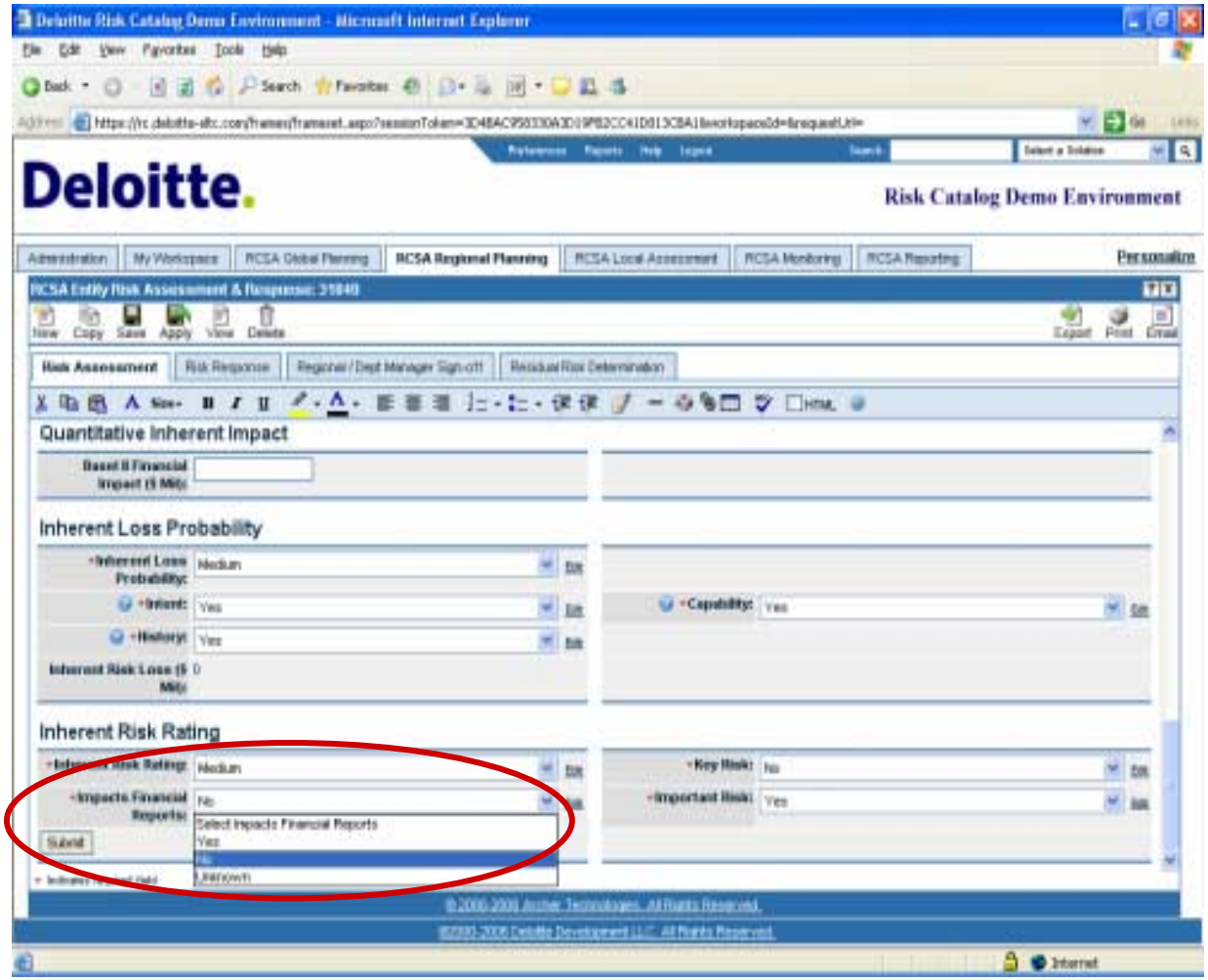


- Documents implemented controls and reasoning
- Links risk and control trade-offs and decisions
- Tailors baseline test procedures to implemented controls

Testing Module

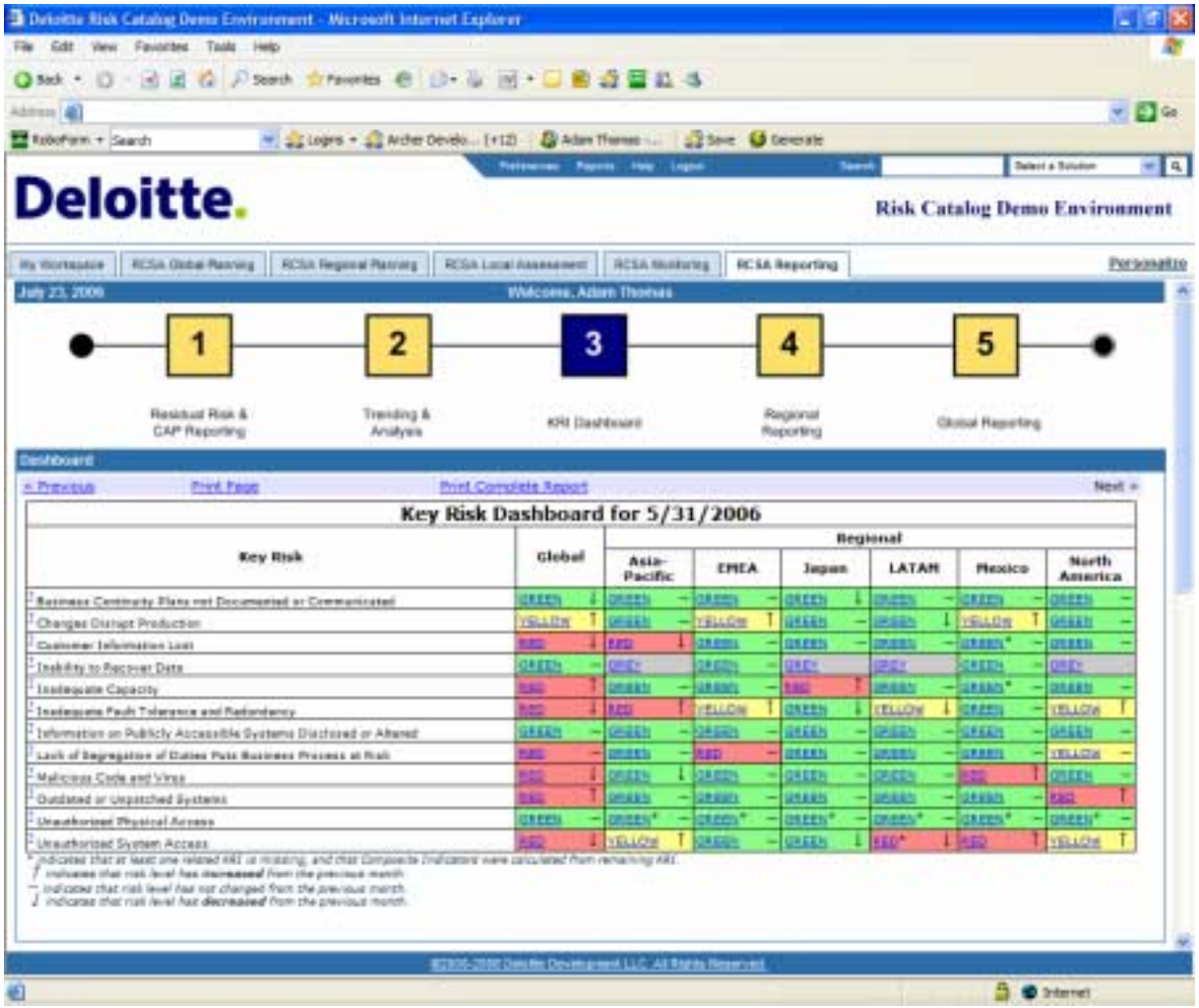
- Traceability
- Sampling
- Clearly defined test procedures
- Captured evidence

Testing Module



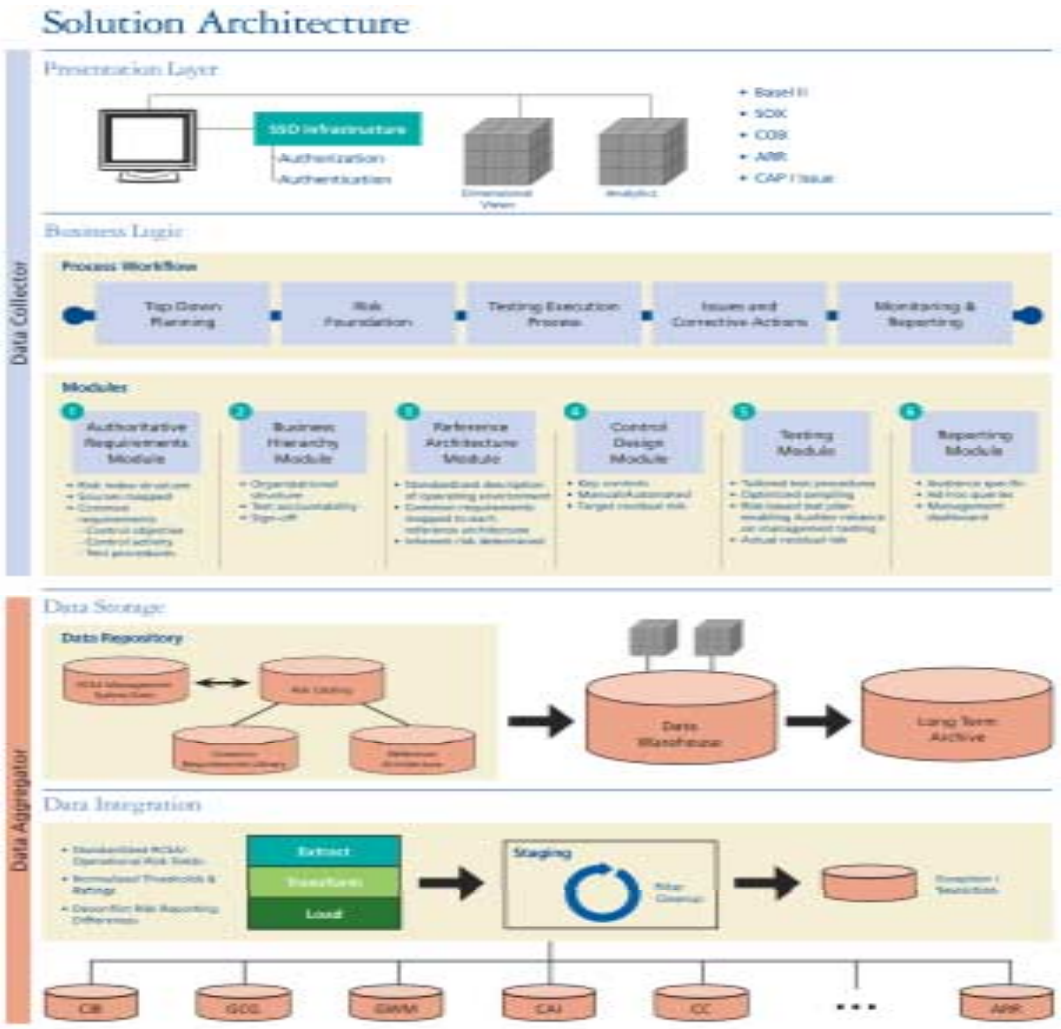
- Supports tracking SOX 404 IT controls
- Each risk and control can be tagged by the client as to whether or not they impact financial reporting

Reporting Module



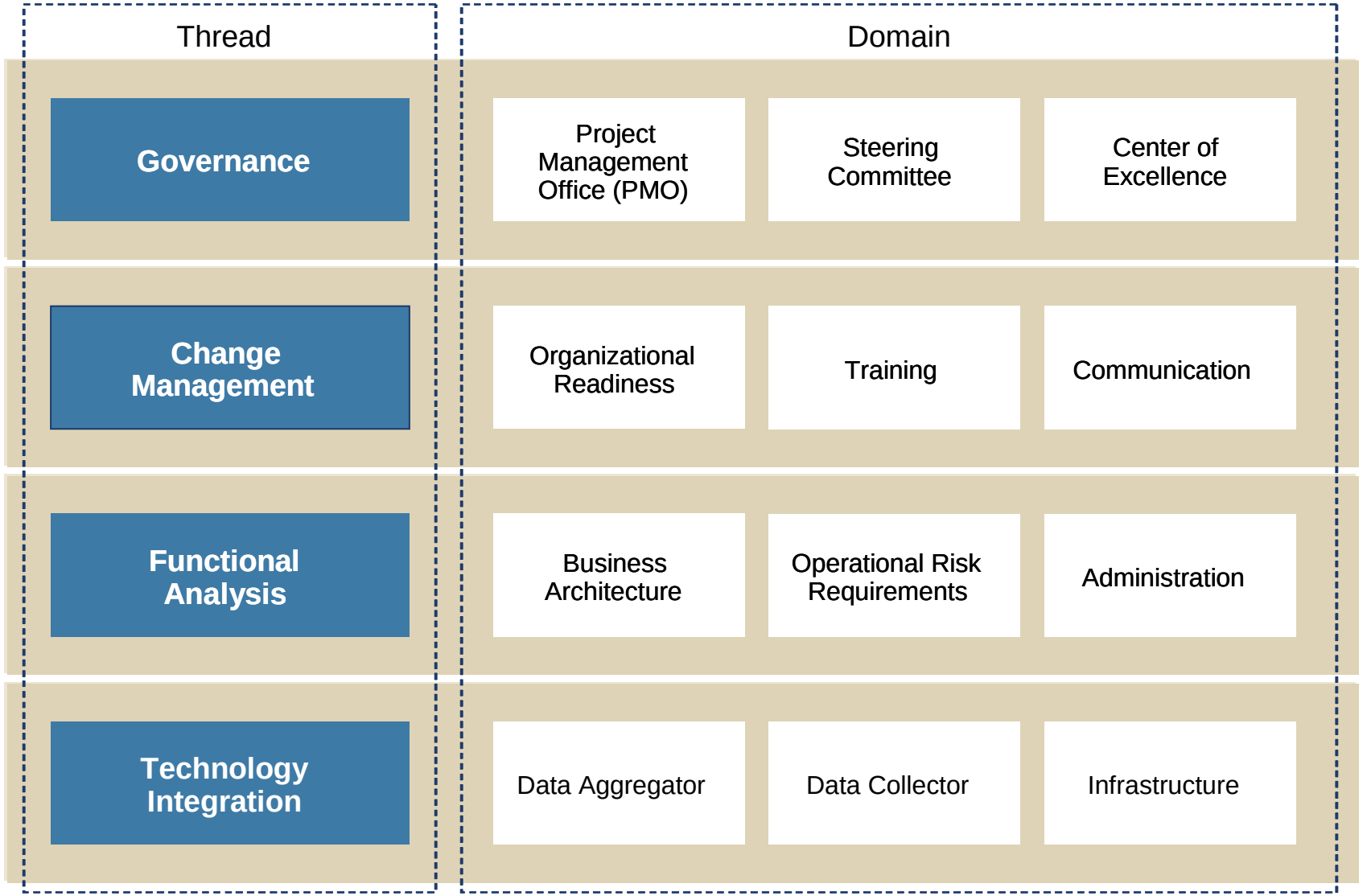
- Drill down reporting
- Compliance and risk monitoring
- Top down “Key Risk” management
- Trending

Risk Catalog Management System

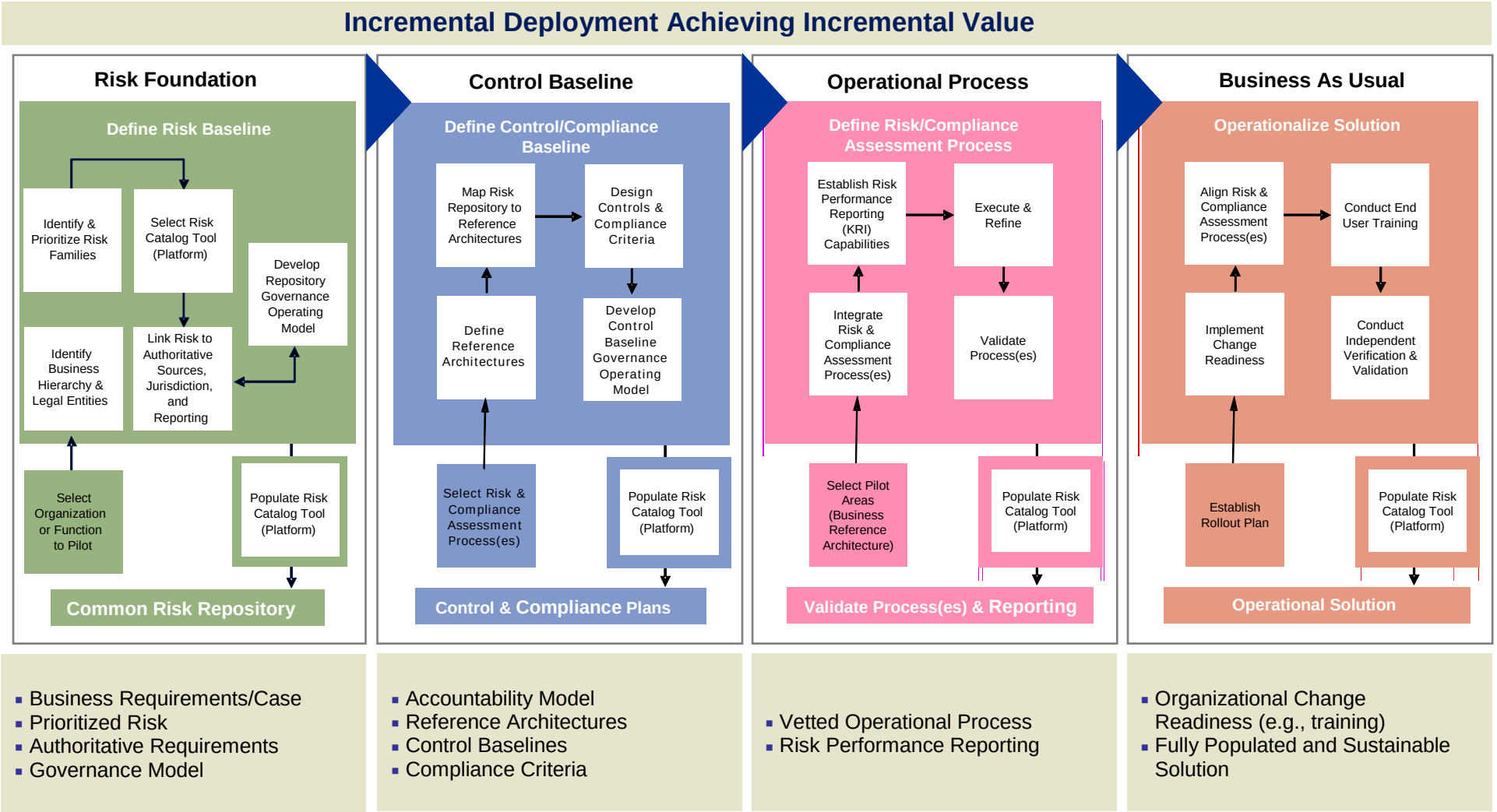


- Workflow enabled
- Event notification
- Database managed vs. spreadsheets
- Single management view
- Rapid reporting and trending

Risk Catalog Delivery Framework



Implementation Roadmap



- Business Requirements/Case
- Prioritized Risk
- Authoritative Requirements
- Governance Model

- Accountability Model
- Reference Architectures
- Control Baselines
- Compliance Criteria

- Vetted Operational Process
- Risk Performance Reporting

- Organizational Change Readiness (e.g., training)
- Fully Populated and Sustainable Solution

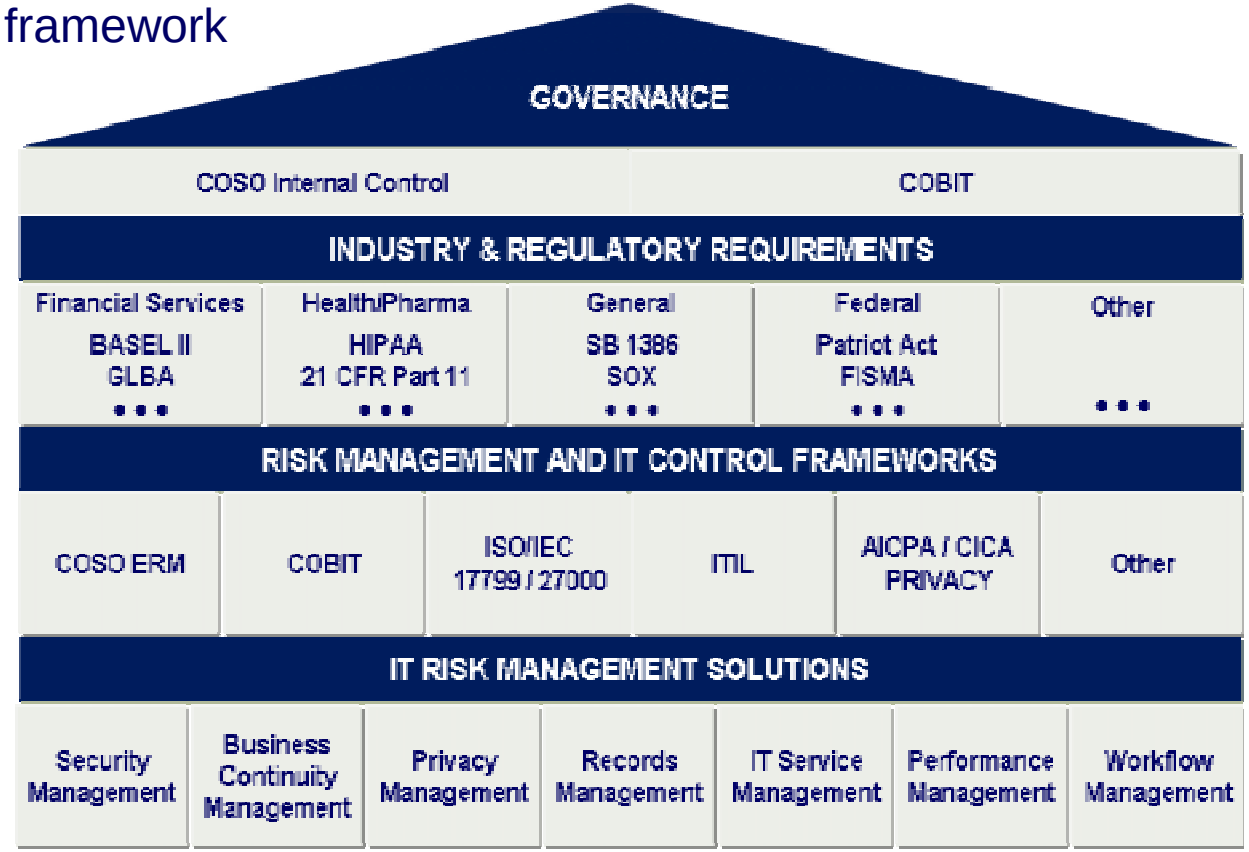
Adaptable to an Organization's Foundation

Different components of Risk Catalog are able to support an organization's overall risk management framework

Authoritative Requirements in a Common Repository

Risk Rationalized Controls for the Entire Business Operating Environment

Testing and Reporting Capability



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