Enterprise Application Security Practices: Real-world Tips and Techniques

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Agenda

Section One:
Program Overview

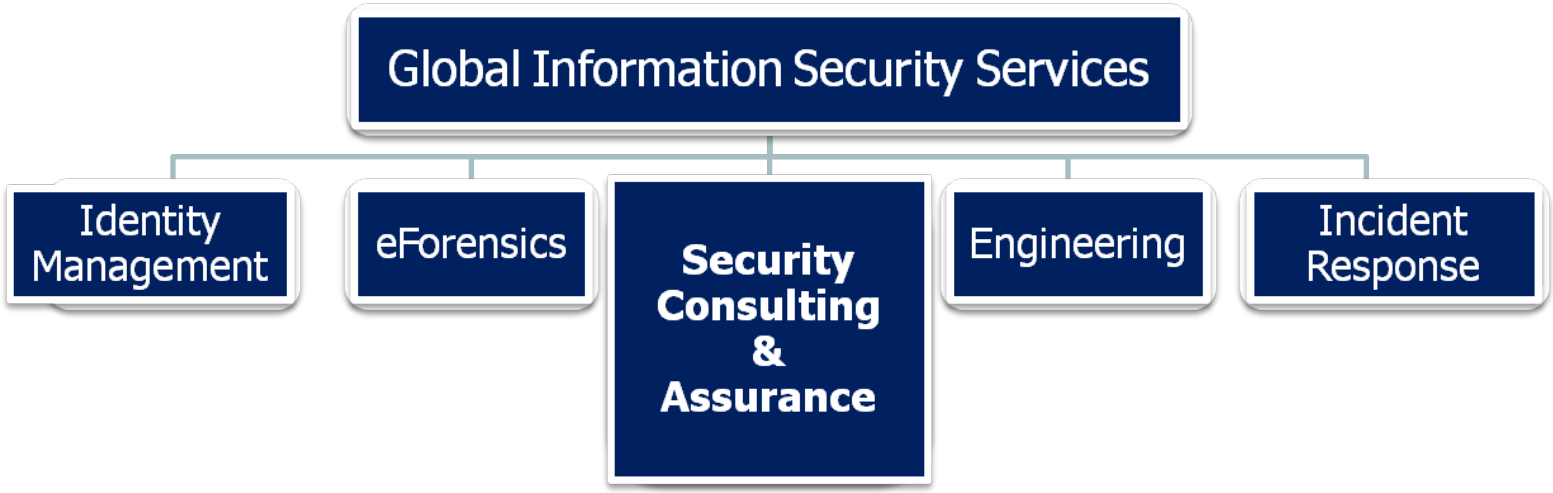
- Dell's Information Security Organization
- Policies / Standards for Secure Application Development
- Awareness/Education/Training
- Addressing Global Standardization Issues
- Deploying an SDL as an Overlay to the SDLC
- Partnerships with Privacy, Legal, Compliance

Section Two:
Consultant Team

- Security Consulting Staff Development
- Division of Labor for Security Consultants
- Risk Assessments
- Security Reviews
- Threat Modeling
- Source Code Scans
- Pre-deployment Scans
- Penetration Testing
- Q&A

Section One
Program Overview

Our Information Security Organization



Security Consulting is the outward-facing information security team; our mission is to manage and reduce security risks for our Dell Business Unit customers (IT, Services, Product Group, etc.)

Policies/Standards for App Dev

- Should be tied to root policy
- Formulation from zero; tool-agnostic
- Socialization with developers, testers, compliance team, and VPs
- Approval at CIO staff was easy to get
- Revisions at procedure-level after 2 years
- Exception management and escalation process

Overcoming concerns of developers, business partners, compliance, and IT execs requires front-line success stories and realistic goals.

Awareness, Education, and Training

- Outside speakers (Michael Howard from MS)
- Employee orientation
- Annual privacy/security course for all employees
- One-time first course for developers
- 30-minute crash courses on 10 topics via CBT
- Application Security portal
- Security User Groups
- Communities of Practice

Having a marketing/communications specialist on the team helps immensely

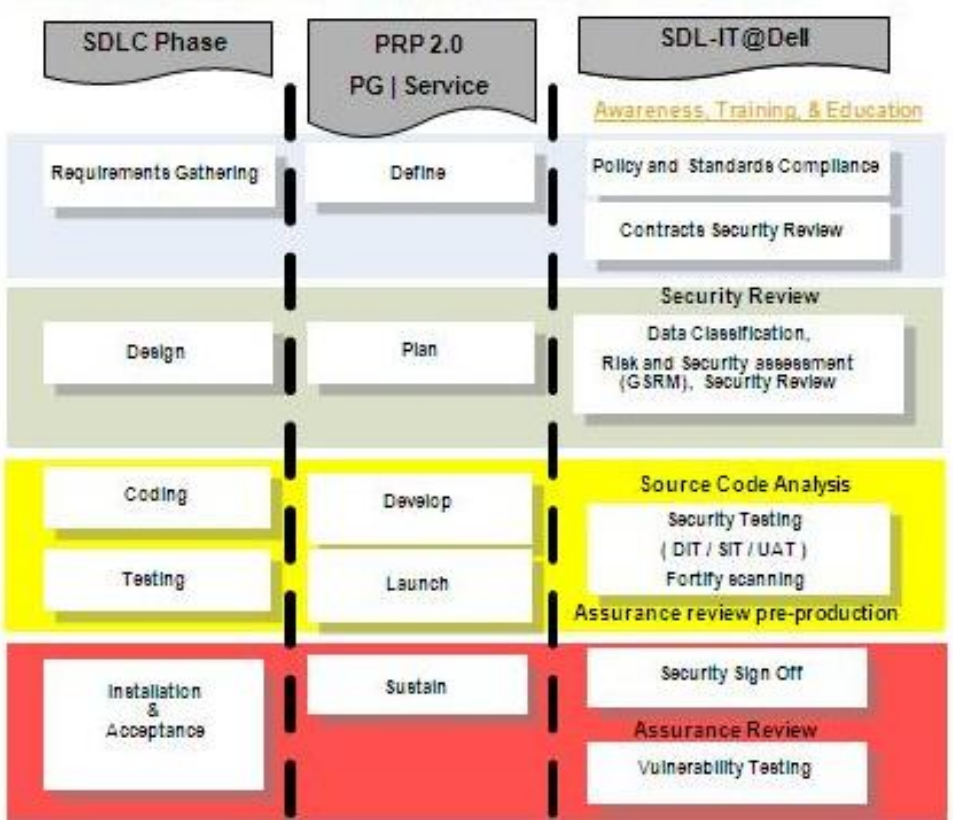
Addressing Global Standardization Issues

- Enterprise Architecture standards review board
- Java and .NET
- Eclipse Ganymede, Galileo
- VS 2003 / 05 / 08
- XP, Vista, Windows 7
- MS Team Foundation Server for source control
- ASP 3.0, C, C++, Python, Perl, PHP, VB, Cold Fusion, COBOL
- Red Hat, SUSE, Oracle Enterprise Linux
- Novell
- VMWare
- Acquisitions and divestitures

Lack of a standardized developer desktop has been one of our greatest challenges

SDL Checkpoints in the SDLC

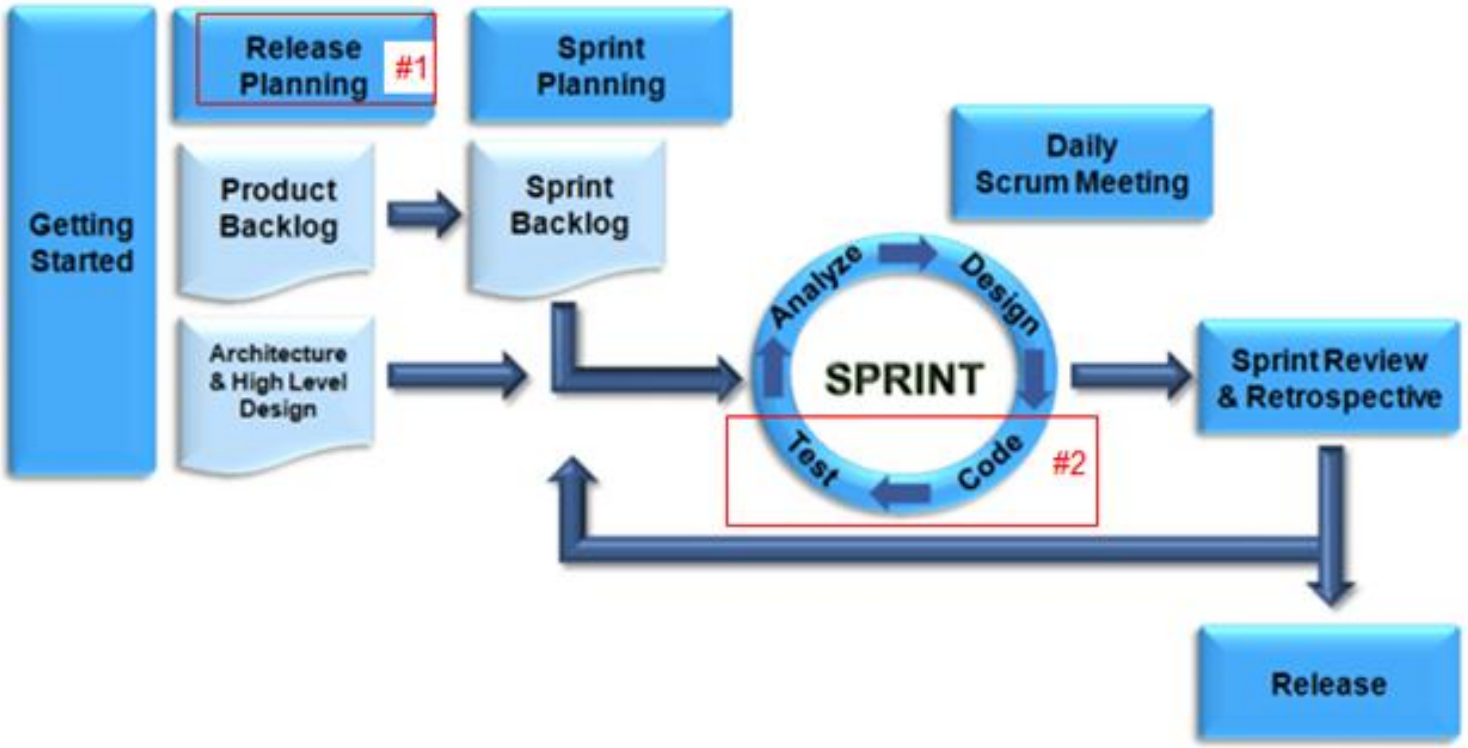
- Getting embedded early, with simple checkpoints
- IT / Services / Product Group tailoring
- Traditional versus Agile methods



Better to be a phase reviewer throughout, than a change ticket approver at the end

Agile SDL Checkpoints

- One Risk Assessment per Release (#1 on the diagram below)
- One Fortify scan per Sprint (#2 on the diagram below)



Partnerships with Privacy, Legal, etc.

- Privacy – having EU representation on our privacy team has been crucial
- Legal – lead security/privacy attorney
- Compliance – strong alliance with compliance reps for each IT org
- Vendor Management Office (IPSA)
- Product Group CTO
- Corporate Governance
- Enterprise Architecture / SDLC (Dev tools, processes)
- Service Oriented Architecture team

Having escalation points and allies in each of these areas has been essential

Section Two
Consultant Team

Security Consulting Staff Development

- Global reach – Brazil, Ireland, India, Malaysia, and US
- Hot Market, Retention issues
- DB, App, and Network subject matter experts
- Weekly meetings
  - Global staff; 1:1 Manager / IC
  - Scheduled, unstructured, and informal "around the cubes" discussions
  - Collaborative team training
  - CISSP training group (3 rounds through Shon Harris)

Onboarding deck and procedures docs for everything

Division of Labor for Security Consultants

- IT, Product Group, Services
- Mergers, acquisitions, and divestitures
- Interaction with Redteam
  - High-risk projects, at consultant's discretion
- Project management
  - Projects without a project charter
  - Informal project management within our team
- Outreach and Corporate Communications

We have at least one SME dedicated to Apps, DB, and Network

Risk Modeler Tool, Risk Assessments, etc.

- This is our primary engagement mechanism, and it is the first security checkpoint in the SDLC.
- Spreadsheet approach was used prior to rollout of this tool
- Triage helps align most of our resources to high-risk projects
- Tool enhancements: Audit trail, Automated emails, Search
- On-the-fly question customization and weighted risk calculation
  - Engagement types with targeted questions (internal software, infrastructure, and vendor apps)
- Major factors in risk calculation weightings
  - Data Classification
  - Internally / Externally facing
  - SOX, PCI
- Low-risk - directed to self-help documentation and to our allies in compliance
- High-risk - usually have a security consultant in attendance at major project meetings/milestones, as well as penetration testing prior to launch
- Statuses: Submitted, Resubmitted, Work in Progress, Cancel, Approved, Denied, Hold
- Need to mine data more deeply to follow up on some sorts of issues

420 projects in 2008;
726 projects in 2009

Threat Modeling

- Initial emphasis on Product Group, Services
- Requires culture shift to doing Data Flow Diagrams
- Very time-consuming
- Resulting artifact is less important; having the conversation between security consultant and dev team is the key
- Dev lead or architect must attend
- CBA: Low-yield; 8-16 hours for 1-2 significant findings
- Adopting a light-weight threat modeling program for IT with a quiet rollout

More experienced security consultants do this analysis intuitively

Source Code Scans

- Manual versus automated (MS 200, Dell 20)
- Great vendor partnership
- Evolving procedures for which rules are enforced
  - Started with "top 5" hot issues
    - XSS (MS Anti-XSS)
    - SQL Injection (Stored procedures, least privilege, input validation)
    - Buffer Overflow (C/C++, PG)
    - Hardcoded passwords (MS DPAPI)
    - Weak encryption (rare)
  - Now all hot issues, as well as certain mediums
    - Very little impact in sheer numbers after "top 5"
- Back doors
- Exploring cloud-based scans for 3rd-party code

Plan to start modestly and tighten the screws as the program matures. Plan for exception management.

Pre-deployment Scans

- Source code scans have a sweet spot. For high-risk apps, we have found a few additional issues via black/gray box testing
- May be our only option for languages/technologies not covered by source scans
- Host OS findings not in synch with enterprise patch windows / SLA's
- Entire redteam in one time zone
- Most teams are ok with 1 week turnaround; recently, that has become an issue
- Must build remediation time into the project timeline

Risk-based, and at the consultant's discretion

Penetration Testing

- Routine, regulatory requirement
- Scope is a moving target
  - Acquisitions
  - New apps
  - 10,000 legacy apps
- More thorough, manual testing

The real challenge is not issue discovery, but remediation.

Lessons Learned

- Adding ourselves into existing SDLC
- Partnering with other groups
- Leveraging regulatory compliance for adoption
- One step at a time, one org at a time, show metrics, build momentum
- Exception management process, executive escalation, roadmaps

We're doing fundamentals, not cutting edge work

Q & A, Suggestions for Improvement

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