An IT Governance Solution: 
Performing Integrated Process Improvement 
and Appraisals Using an Integrated System 
Framework (ISF®)

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Integrated System Diagnostics (ISD) is a multinational company dedicated to process improvement, quality and performance management.

ISD Principals were Senior Members of the Technical Staff at the SEI prior to “spinning off” the company under a Cooperative Research and Development Agreement with SEI in 1994.

ISD is a long standing and well respected Software Engineering Institute (SEI) Partner and ISD maintains a close collaboration with the SEI in researching, developing and delivering process and quality improvement solutions.

ISD is also an IT Services Qualification Center (ITSqc) Partner for delivering eSCM-SP and eSCM-CL (IT-Enabled Sourcing Capability Models) services.

*SEI and ITSqc are entities of Carnegie Mellon University*

*SEI – Software Engineering Institute*

*ITSqc – IT Services Qualification Center*
ISD - What We Do

- IT Strategy and Governance
- CMMI, CobiT, BSC, ITIL, ISO9001:2000, Six Sigma, eSCM, and others
- Appraisals and Audits
- Consulting and Coaching
- Training
- Outsourcing and Suppliers
- PPQA, PMO and EPG Outsourcing

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Agenda

- Refresh on the Need for Integrated Enterprise Improvement
- Refresh on the Integrated System Framework (ISF)
- Current Case Studies: Using ISF
- Next Steps
A Global Problem: “A Frameworks Quagmire”

- Process standardization and improvement efforts are expanding across the entire enterprise.
  - Process models and frameworks are proliferating to focus on different domains/disciplines within an enterprise.
  - The impact and implementation is global.
  - Compliance requirements levied by customers using these frameworks is driving costs in the opposite direction of management desires.

- Domain and business area specific reference models and frameworks
  - Directly address process needs of specific sub-communities on both the client and provider sides.
    - Can cause sub-optimal investments in process
    - Can cause counter productive implementations
    - Produce large expense side inefficiencies
  - Can be successfully integrated into an enterprise improvement effort.
A Business Imperative: Key Models Have Overlapping Content

- Most standards/models have content overlap
  - Often based on Total Quality Management (TQM) and Deming’s plan-do-check-act principles
  - Some core topics show up in most models
- Each industry standard/model has a ‘sweet spot’ or particular area of focus. For example:
  - CMMI is particularly focused on systems development and maintenance
  - eSCM-SP is focused on IT-enabled sourcing
  - COPC is focused on customer care
  - ITIL is focused on IT Service Management

Source: Accenture. Used with permission
An Affinity Diagram: Positioning of Key Models

Strategy/Selection Patterns: An Affinity Matrix

* Used under permission of SEI
Management and Governance requires Systemic Thinking!

- **Strategic Alignment and Execution** – know your business and align with it
- **Performance Management** – manage your performance qualitative and quantitatively
- **Innovation Strategic Projects** – select and manage the right projects and add value to the organization
- **Risks and Operations** – manage your risks and operations and take preventive and corrective actions in incidents
- **Structured and Facts-Based Decision** – take decisions appropriately (time and discipline)
- **Suppliers and Sourcing** – use the best balance between insourcing and outsourcing and manage your external and internal suppliers
- **Resource Management** – minimize costs and make the best use of all assets and resources
- **Management Process and Systemic View** – continuously improve your value chain and grow!
- **People Management** – cultivate, manage and retain your talents
“Systemic” Thinking
Reason 1 – Big problems and Opportunities

- Big problems are generally intrinsically systemic
- Big opportunities and actions must be deployed through your system
- Working on parts may not improve the system
- Improvements must be done where the system is not working properly

- People Competencies
- Strategic Expected Competencies
- Performance Improvement
- Performance
- Customer Requirements & Desires
- Capacity
- Product Availability
- Service Quality
- Supplier Capability
- Service Quality
- Strategic Expected Performance
- Customer Satisfaction

Green – Strategic
Blue – People
Gray – Customer
Purple – Product & Service
Orange – Suppliers
Brown – Improvement
“Systemic” Thinking
Reason II – Complementarities and Redundancies

- Improve your system by leveraging complementing assets and eliminating redundancies based on a set of integrated and “harmonized” best practices (ISF)
- Redundancies in process and structures are quite frequent (those are costs!!!)
- For example: many models and standards deal with “training and staffing” in different ways
“Systemic” Thinking
Reason III – Problems and Opportunities

- To detect systemic problems and opportunities, we have to perform integrated improvement and appraisals.
- By “integrated” we mean:
  - Compliance and Performance
  - Multiple Models and Best Practices
  - Multiple Processes and Areas

Objectives:
- Reduce redundancy
- Improve integration
- Create synergy
- Leverage best practices
- Make frameworks transparent
The question is: how many appraisals and audits your organization was submitted to during a year?

Source: ISD Brasil Survey 2007
“Systemic” Thinking
Reason IV – Reduce Appraisal / Audit Costs

Scenario – Organization “X”
• ISO9001 Certified
• ISO20000 Certified
• CMMI-DEV Level 3
• eSCM-SP Level 3

This organization will go through:
• At least 4 appraisals / audits a year
• At least 8 appraisals / audits in 2 years
• At least 20 appraisals / audits in 5 years

Now, imagine a company with at least 5 organizations like this one!

Now, calculate all costs including opportunity costs!

Requirements for Organization “X”
• ISO Surveillance audits during the year
• Progress CMMI Classes C and B appraisals during the year
• eSCM “Progress” Mini-Evaluations during the year
Integrated System Framework® for Excellence

“Many Standards, One Solution!”
ISF® Purpose and Objectives

- Address a global, systemic enterprise problem of implementing, managing, maintaining, and complying with multiple process models, frameworks, and methods.

- The Integrated System Framework® provides one part of a technical solution to client requirements for
  - Optimizing cost to effectively demonstrate ongoing process adherence to multiple standard models.
  - Leveraging process investments across the enterprise to increase effectiveness of process improvement efforts.
  - Increasing synergy across business areas to improve process implementation efficiency

- Contribute to the professional model based process improvement community and positively influence its future.

- ISF® can make it easier to deal with a multi-model improvement
  - Systemic view (causal system)
  - Business, investment, and performance focus
  - Common language, robust measures
  - Use “best” of breed best practices
ISF Project History

- ISD has performed various multi-model appraisals since the late 1990’s.

- ISF was first envisioned in 2001 as a mechanism for ISD to support customers in multi-model environments.

- ISD has developed ISF since 2003 following customers needs and requirements related to appraisals and consultancy demands.

- Since 2006, ISF has been developed by ISD Brasil and PUC-RS (Brazilian Catholic University) as a formal research project.
ISF for Excellence
Integration, Systemic view, Balance

Management and Governance Themes
- Strategic Alignment and Execution
- Performance Management
- Innovation Strategic Projects
- Risks and Operations
- Structured and Facts-Based Decision
- Suppliers and Sourcing
- Resource Management
- Management Process and Systemic View
- People Management

Objectives:
- Reduce redundancy
- Improve integration
- Create synergy
- Leverage best practices
- Make frameworks transparent

World of Best Practices
- COBIT
- eSCM
- ISO 20000
- CMMI
- ISO 9001
- Baldrige
ISF for Excellence – Models Relationship View

ORGANIZATIONAL EXCELLENCE & QUALITY

Baldrige / EFQM
ISO9001

CONTROL & GOVERNANCE

CobiT

PEOPLE

People CMM

SERVICES & RISKS

eSCM / CMMI-Acq

ISO20000-1

SOLUTIONS & VALUE

CMMI-Dev
For each process "class" and "category" there will be an unique set of "CPP" (critical process for the performance) that will address (map) all the models and best practices minimizing or eliminating redundancy and respecting the overlaps.
The boxes are called “Categories”

The “green” titles are called “Classes”

Market & Competitors

Leadership, Culture, Strategic Alignment

Human Capital

Infrastructure & Technology

Measurement, Innovation and Improvement

Customer (pre-contract)

P&S Development

Support

Management

Suppliers

P&S Sustainment

Customers (post-contract)

Results (performance)

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ISF for Excellence – Examples of Areas

- Incident and Request Management
- Negotiations
- Requirements Management
- Service Level Management
- Contract Management
- Customer Relationship and Knowledge
Critical Process Performance ("CPPs") streams are similar to the concept of "process areas."

Category: Market and Competitors
- Benchmarking
- Brand Management
- Market Knowledge
- Stakeholders Management

Category: Measurement, Analysis and Improvement
- Measurement and Analysis
- Performance Management
- Continuous Improvement Management
- Process Assets Management
- Innovation and Performance Management
- Causal Analysis and Resolution
- Knowledge Management
Critical Process Performance (“CPPs”) streams are similar to the concept of “process areas.”

- **Infrastructure and Technology**
  - Capacity management
  - Continuity Management
  - Availability Management
  - Security Management
  - Portfolio Management
  - Infrastructure Management
  - Financial and Cost Management

- **Support**
  - Incident Management
  - Problem Management
  - Configuration Management
  - Release Management
  - Change Management
  - Quality Assurance Management
Relationship: Enterprise Architecture, Best Practices, Process Improvement

Business Architecture

Activity A – Missing Process

Activity B – Needs Process Improvement

Process Improvement Implementation Guidance

Best Practices

ISF CPP X Objective Z
ISO Clause X
PCCM Practice Y

ISF CPP X Objective Z
ISO Clause B
CMMI Practice SP #.#
Example of an appraisal “in action” using Integrated System Framework®
ISF® “in action” – Step 1
Model your Enterprise Architecture within Model Wizard™

Companies’ Enterprise Process Architecture
ISF® “in action” – Step 2
Map your Enterprise Architecture to ISF using Model Mapper™

Companies’ Enterprise Process Architecture

ISF

The purpose of Project/Engagement Planning is to establish and maintain plans that define and help to manage project and/or engagement deliverables.
ISF® “in action” – Step 3
Scope and Plan your Appraisals using Appraisal Wizard™

Appraisals based on your process architecture, ISF and selected source models

Models and maps included in your appraisal

<table>
<thead>
<tr>
<th>Model Map</th>
<th>Connect Option</th>
<th>Auto-Connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISF to ISO9001 - SEPG Baseline</td>
<td>Automatically Connect</td>
<td></td>
</tr>
<tr>
<td>ISF to ISO/IEC - SEPG Baseline</td>
<td>Automatically Connect</td>
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<tr>
<td>ISF to CMMI - SEPG Baseline</td>
<td>Automatically Connect</td>
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<tr>
<td>ISF to EN25019 - SEPG Baseline</td>
<td>Automatically Connect</td>
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<tr>
<td>ISF to EN3,4,5,6 - SEPG Baseline</td>
<td>Automatically Connect</td>
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</table>
ISF® “in action” – Step 4
Perform your Appraisals using Appraisal Wizard™

Models and Standards involved
Appraisal findings and PIID
Enterprise Architecture
ISF Mappings
ISF® “in action” – Step 5
Rate elements against your Architecture, ISF and selected source models

Example
- Risk Rating
- BP Compliance
- Business Importance
ISF® “in action”
integrating Multiple Appraisal and Audit Results
Using ISF and Appraisal Wizard™

Integrated Audit and Appraisal Findings

ISF Component
ISF “in action” in a PPQA Review

Models and standards involved

PPQA Finding

Mappings using ISF

Companies’ Processes
Some Current Case Studies

- Large Military Software Development and Maintenance Organization
- Very Large Global Enterprise
- Small Commercial Company
Case Study 1 – RDECOM Armament Software Engineering Center

Baldrige Criteria

CMMI-DEV – V1.2
CMMI-SVC (Draft)
CMMI-ACQ V1.2
ISO 9001
People CMM

Organizational Excellence Measures

Domain Standards
Enterprise PIF
Project Specific

ARDEC Policy
Enterprise OSSP
OSSP
Tailoring
Defined Project Processes

Application

Lean Six Sigma
Statistical Process Control

Resolve Organizational Improvement Redundancies & Design Solutions to Improvement Gaps

ID Project Redundancies & Design Solution to Project Process Gaps

Sources

Best Practice

Tailored Implementation

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Statement of Need (In REVIEW)

- Transform the business by significantly improving the efficiency of model based process improvement activities.

- Build on established internal capability and new organization to restructure how process improvement is implemented across organization.

- Use standard processes, coupled with model based improvement and appraisal implementation, to better integrate center functions.

- Eliminate redundancies in our OSP without losing any of our current process capability.
### Program Objectives (In REVIEW)

<table>
<thead>
<tr>
<th>Business Objective</th>
<th>Improvement Objective</th>
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<tbody>
<tr>
<td>Reduce the redundancies in the processes deployed across ARDEC</td>
<td>Increase efficiency and effectiveness of improvement program.</td>
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<tr>
<td>Reduce rework and quality issues</td>
<td>Reinforce training and develop new skills and capabilities</td>
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<tr>
<td></td>
<td>Reduce the number of costly “false-starts”</td>
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<td>Enable achievement of growth</td>
<td>Targeted at facilitating high value activities:</td>
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<tr>
<td></td>
<td>• key start-up decisions</td>
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<td></td>
<td>• appraisal program management</td>
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<td>• ongoing expert process improvement advice</td>
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<tr>
<td>Consolidate audits and process compliance reporting</td>
<td>Implement standard processes.</td>
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<td>Increase portability of resources.</td>
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<td></td>
<td>Transfer lessons learned.</td>
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<td></td>
<td>Leverage best practices.</td>
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</tbody>
</table>
Use **Model Wizard** to create or import a model that represents your Organizational Standard Model and/or the desired QA Reference Model.

**1. Use Appraisal Wizard (AW)** to setup Appraisal Wizard Audit Template(s) for each type of Audit you want to perform (e.g. setup unique record types, status values, and document types, etc.)
   - Create Audit Question records to build audit checklist for set of audit checkpoints.
   - Use the Record Documents tab and the document list to identify the expected objective evidence for each audit question.

**2. Use the AW tool** during the audit to document the audit finding(s) (e.g. “Compliance,” “Non-Compliance (N/C),” “Information Needed” record types).
   - Write up N/C Action Item records
   - Determine compliance ratings

**3. Use the AW tool** to build various reports of the audit finding(s) (e.g. Reports of % compliant/% non-compliant findings; List N/C Action Items; etc.) to prepare for follow-on audits.

**4. Use Model Mapper** to map QA Reference model to a standard or model (e.g. CMMI) for use in appraisals.
**5. Import new “Mapped Model” into AW to use audit results and organization's existing data to support Readiness Reviews and Appraisals.**

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**Case Study 2 – Multi-Mapped PPQA Reviews (Small Commercial Firm)**
Embed Templates Using a PPQA Reference Model into Appraisal Wizard
Audit Results Tie to Mapped Standards/Models
Cased Study 3 - An Integrated Set of Reviews (Global Compliance Activity)

A series of reviews for different purposes
• Process compliance
• Program performance
• Technical quality

Integrating the around the ISF, using Appraisal Wizard, facilitates common reporting and comparisons

Evaluation of process compliance
- Evaluation of process implementation
- Evaluation of peer review activities
- Evaluation of solution review activities
- Evaluation of decision making practices

Program reviews and Peer reviews
- Evaluation of management data & documents
- Evaluations of Technical documents & models

Solution Reviews
- Evaluation of the elements needed to success the review

Check-list for process implementation verifications
Check-list for peer reviews
Check-list for program reviews
Check-list for solution reviews

All types of reviews can be integrated into Appraisal Wizard
• Map reviews against ISF
• Cascade maps to relevant models
• Does not need to be a complete map
In 2008, ISD partners with SEI PRIME project to bring ISF to a larger, long term multi-model development effort (work starting Q1 2009).

ISF full scale pilot(s) with several base models and maps Q4 2008 through 2009.

ISF V1.0 initial release with base models and “approved” maps 2009 (full AW tool and CAM method support)
• For Enterprise SPICE, see the following web site, under “initiatives/Enterprise SPICE
  – www.spiceusergroup.org

• For Sarah Sheard’s current contact info:
  – Principal, Third Millennium Systems LLC; sheard@3MilSys.com

• For ISD technical papers or AW download demo
  – http://www.isd-inc.com/
  – http://members.isd-inc.com/resources.papers/
  – http://members.isd-inc.com/support.downloadArea/
<table>
<thead>
<tr>
<th>Issues</th>
<th>Distribution and/or importation/integration support for models (IP questions, permissions; not a technical issue)</th>
<th>Status: ISD had obtained rights to distribute CMMI models, eSCM, and ISO in Appraisal Wizard. Status: ISF itself, although ISD registered, is expected to be in the public domain.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definition, coordination, acceptance, and maintenance of the model maps (more a political than technical issue)</td>
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<tr>
<td>Directions</td>
<td>Continue technical development and piloting with current interested parties (e.g. CMU ITSqc; global clients with current CMMI and ISO requirements; SSCI)</td>
<td>Status: Engaging 3 global clients regarding pilot appraisals and development tasks (adding client specific models of concern to ISF). Status: Announced collaboration in the SEI PRIME initiative.</td>
</tr>
<tr>
<td></td>
<td>Continue to investigate and develop solutions to legal and political “issues” in collaboration with specific large influential clients, industry groups, and “stewards”</td>
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</tr>
<tr>
<td>Opportunities</td>
<td>Direct sponsorship and collaboration</td>
<td>Status: Joined the Enterprise SPICE initiative as part of Steering Group and Development team. Status: SSCI sponsored AW User Group meeting conducted November 2007.</td>
</tr>
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<td></td>
<td>Collaboration invitations from Consortium / Industry Association / Government working groups</td>
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<td>Participation in independent AW user group with subcommittees</td>
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<td>Creation and/or participation in a new cross community consortium</td>
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A “System Approach” is Needed to Maximize Improvement Benefits

4 important system components:
• Process Model
• Appraisal Method
• Improvement Approach
• Automated Tooling

ISF® – Meta-Model Framework

Comprehensive Appraisal Method (CAMsm) – Integrated Appraisal Method

Enterprise Process Improvement/Appraisal Life Cycle Implementation Model

Appraisal Wizard™ and Model Wizard™ – Operational Tool Suite
## System Component Positioning

<table>
<thead>
<tr>
<th>System Component</th>
<th>Positioning</th>
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<tbody>
<tr>
<td>The Integrated System Framework®</td>
<td>✿ Is a conceptual vehicle to relate an organization’s process architecture to multiple standard models; and ✿ Helps to maintain and measure process compliance across multiple models simultaneously.</td>
</tr>
<tr>
<td>Appraisal Wizard™/Model Wizard™ V7</td>
<td>✿ Provides robust support for operationalizing the conceptual framework, and ✿ Enables conducting Process Assurance monitoring and Formal Benchmarking compliance activities in an effective, efficient, automated manner.</td>
</tr>
<tr>
<td>Enterprise Process Improvement/Appraisal Life Cycle Implementation Model</td>
<td>✿ Provides a framework for integrating often disparate internal process management activities [e.g., quality audits, project process status reporting, gap analyses, interim appraisals, benchmark assessments]</td>
</tr>
</tbody>
</table>
### Closing Thoughts

| Process standardization, modeling, and improvement efforts are expanding. | Process models and frameworks proliferation will continue.  
Independent model/framework bodies/owners are not really interested in giving up their “space.”  
The enterprise cost impacts are significant  
Increased customer drivers for compliance is driving costs higher when lower is desired. |
| --- | --- |
| Domain and business area specific reference models and frameworks… | Directly address process needs of specific sub-communities.  
Do have positive impacts within their constituencies and niche areas.  
But…Can cause sub-optimal investments in process, cause counter productive implementations, and produce large expense side inefficiencies |
| Mechanisms being developed and implemented by ISD accept and address reference model realities and synergies | ISF®, appraisal life cycle model, Appraisal Wizard™ and Model Wizard™ V7, and CAM™. |
| The models can be successfully integrated to improve enterprise performance. | Improve both the quality and efficiency of enterprise process improvement (standardization, implementation, management oversight, appraisals) |
Appraisal Benefits

- Make use of an **integrated** framework of **best practices** (ISF for Excellence)
- Make use of a tool suite that optimizes the full life cycle of an appraisal process
- Reduced number of appraisals and audits and a more effective and useful results
- These enterprise appraisals and audits can be used to:
  - Maintain maturity and certifications
  - Check progress against goals and plans
  - Appraise and identify potential systemic problems and issues
  - Benchmark internally and externally
  - Achieve resource optimization and cost reduction in appraisals and process improvement programs
  - Appraise and monitor enterprise suppliers capability in sourcing programs
  - Perform QA reviews against enterprise process architecture
  - Reuse of already performed appraisal and audit results around a more robust and complete set of best practices
## ISF for Excellence Benefits

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Description</th>
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<tbody>
<tr>
<td>Operationalize an Enterprise Improvement Strategy</td>
<td>Provides an enterprise strategy to implement best practices from multiple models.</td>
</tr>
<tr>
<td>Reduce compliance costs</td>
<td>Leverages the commonalities among models to reduce overall costs of compliance.</td>
</tr>
<tr>
<td>Increase efficiency</td>
<td>Appraisals can be conducted using multiple models simultaneously.</td>
</tr>
<tr>
<td>Provide a unified implementation approach</td>
<td>Provides management a common, unified “roadmap” to achieve high maturity, high performance goals.</td>
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</tbody>
</table>