Integrated System Diagnostics INCORPORATED

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

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SEI Partner

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ITSQC Authorized

ISD - Who We Are

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

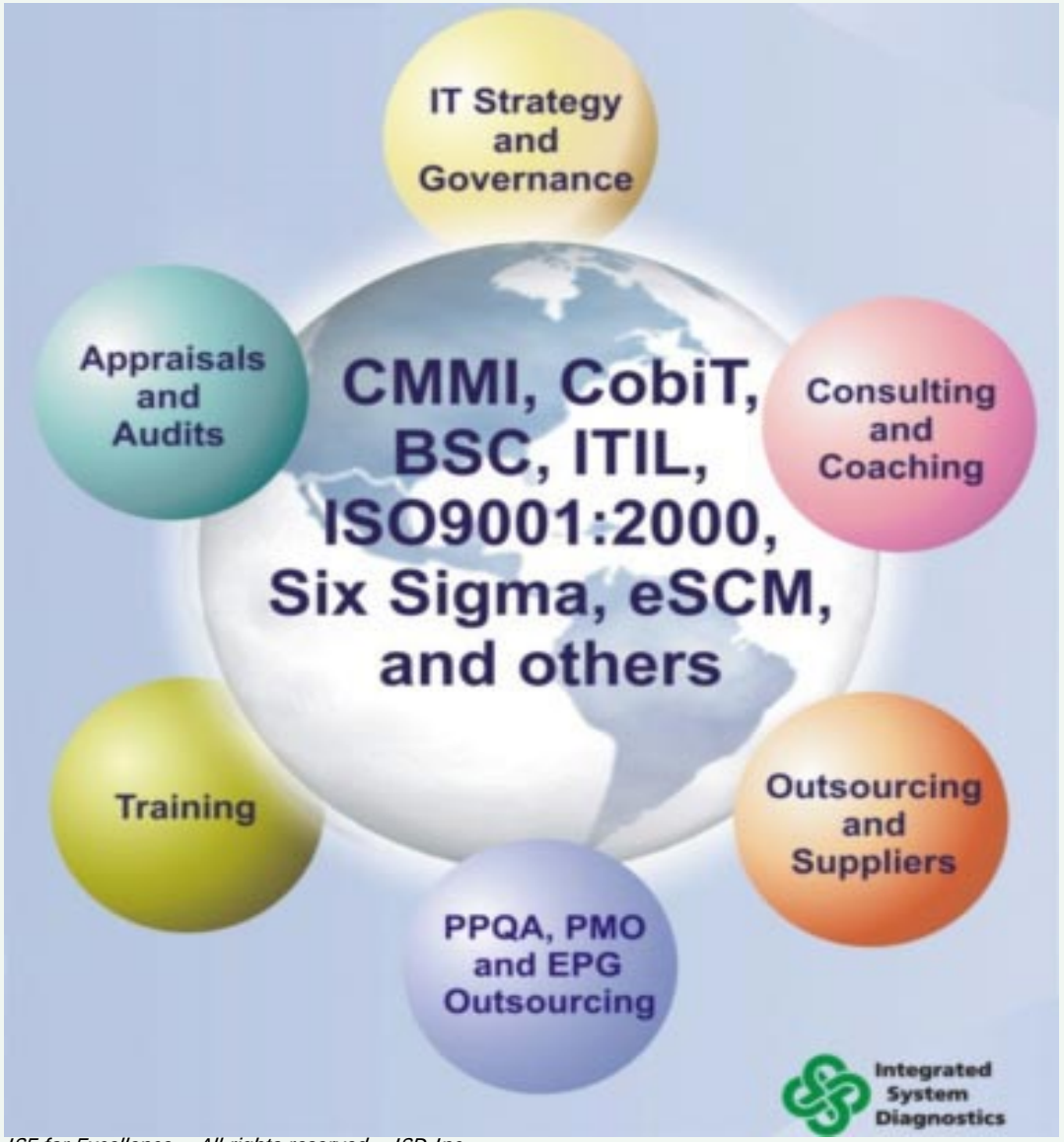
ISD Principals were Senior Members of the Technical Staff at the SEI prior to "spinning off" the company under a Cooperative Research and Development Agreement with SEI in 1994.

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



ISD - Where We Operate

- ISD Offices world wide
  - Cape Cod, MA
  - Melbourne, FL
  - Pittsburgh, PA
  - Washington, DC
  - Las Vegas, NV
  - Sao Paulo, Brasil
  - Hong Kong, China

Agenda

- Refresh on the Need for Integrated Enterprise Improvement
- Refresh on the Integrated System Framework (ISF)
- Current Case Studies: Using ISF
- Next Steps

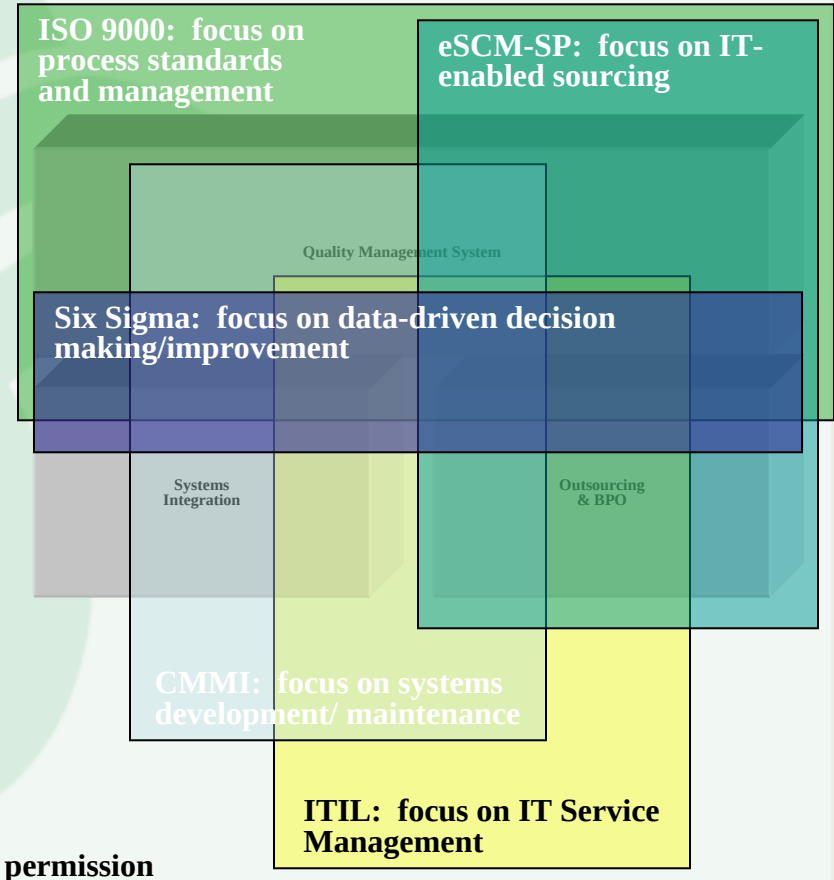
A Global Problem: *"A Frameworks Quagmire"*

- 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

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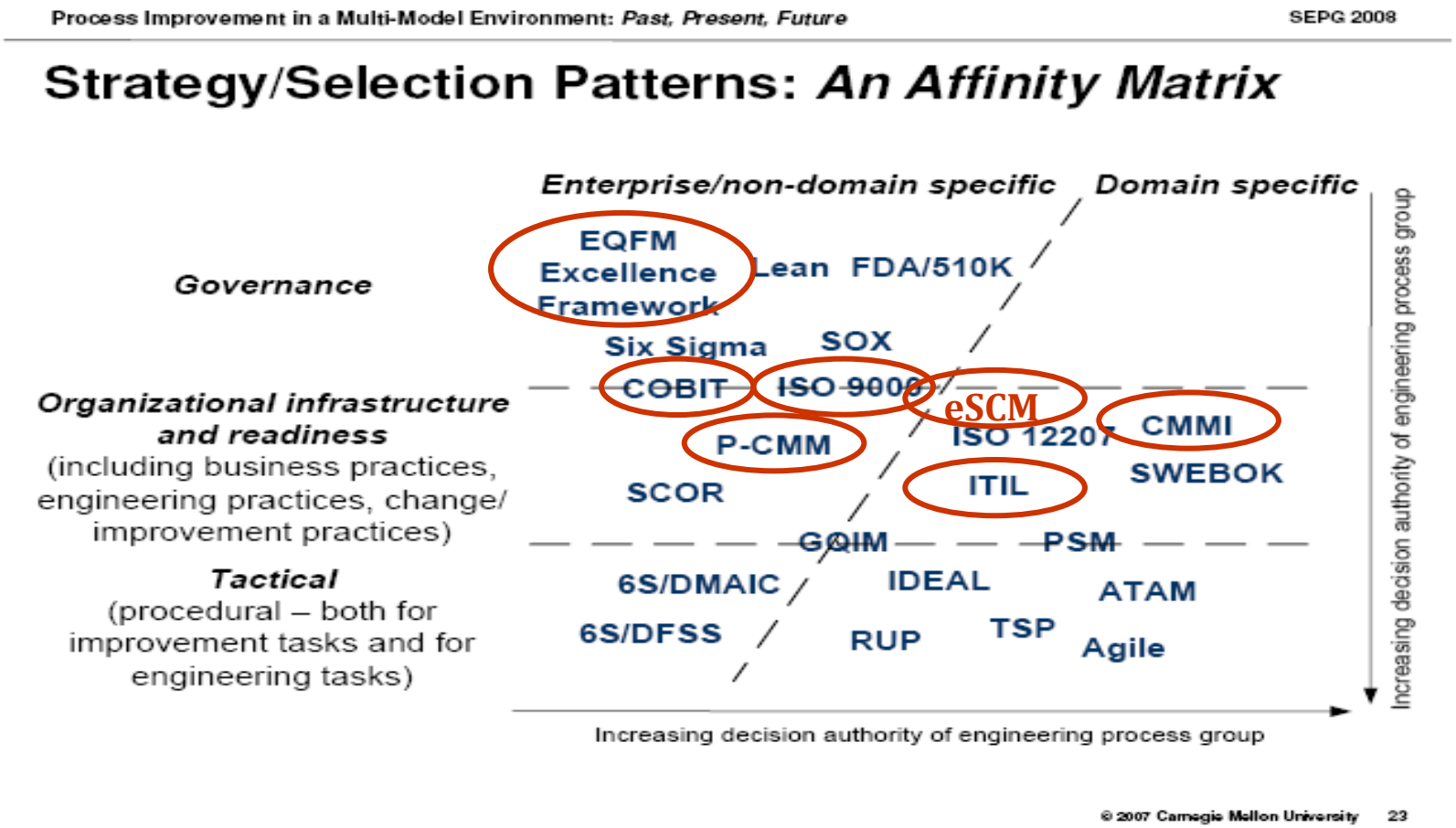
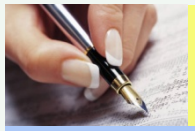
An Affinity Diagram: Positioning of Key Models



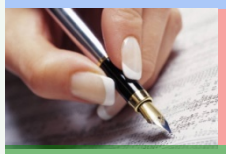
* Used under permission of SEI

Management and Governance requires *Systemic Thinking!*



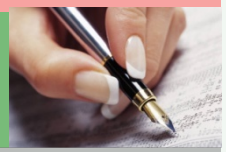
Strategic Alignment and Execution – know your business and align with it

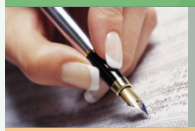
Performance Management – manage your performance qualitative and quantitativ



Innovation Strategic Projects – select and manage the right projects and add value to the organization

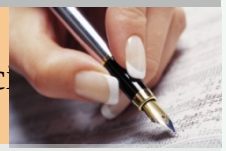
Risks and Operations – manage your risks and operations and take preventive and corrective actions in incidents





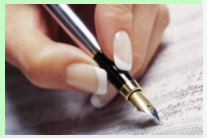
Structured and Facts-Based Decision – take decisions appropriately (time and discipline)

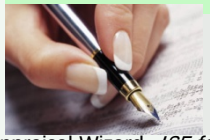
Suppliers and Sourcing – use the best balance between insourcing and outsourci and manage your external and internal suppliers



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!



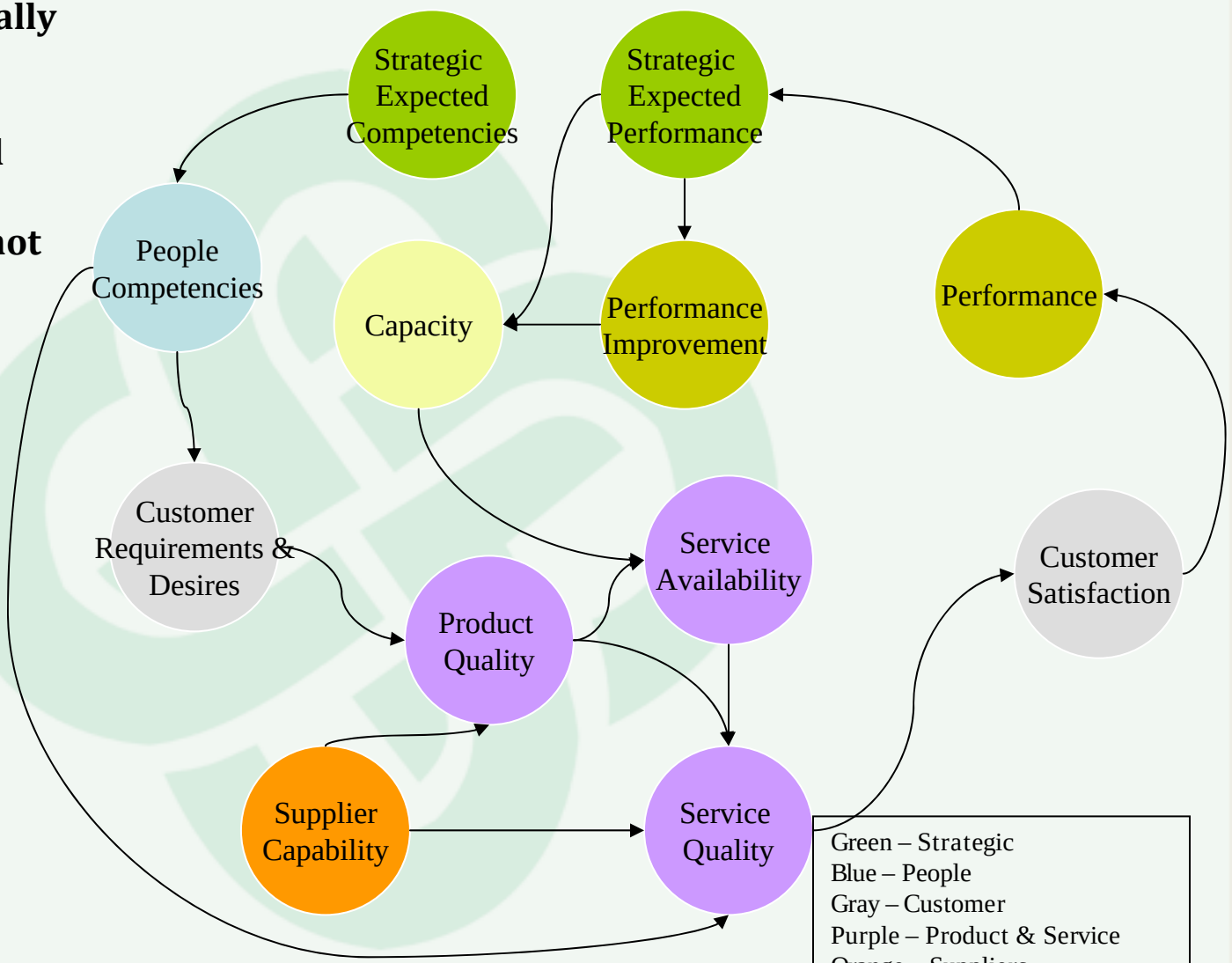


People Management – cultivate, manage and retain your talents

"Systemic" Thinking

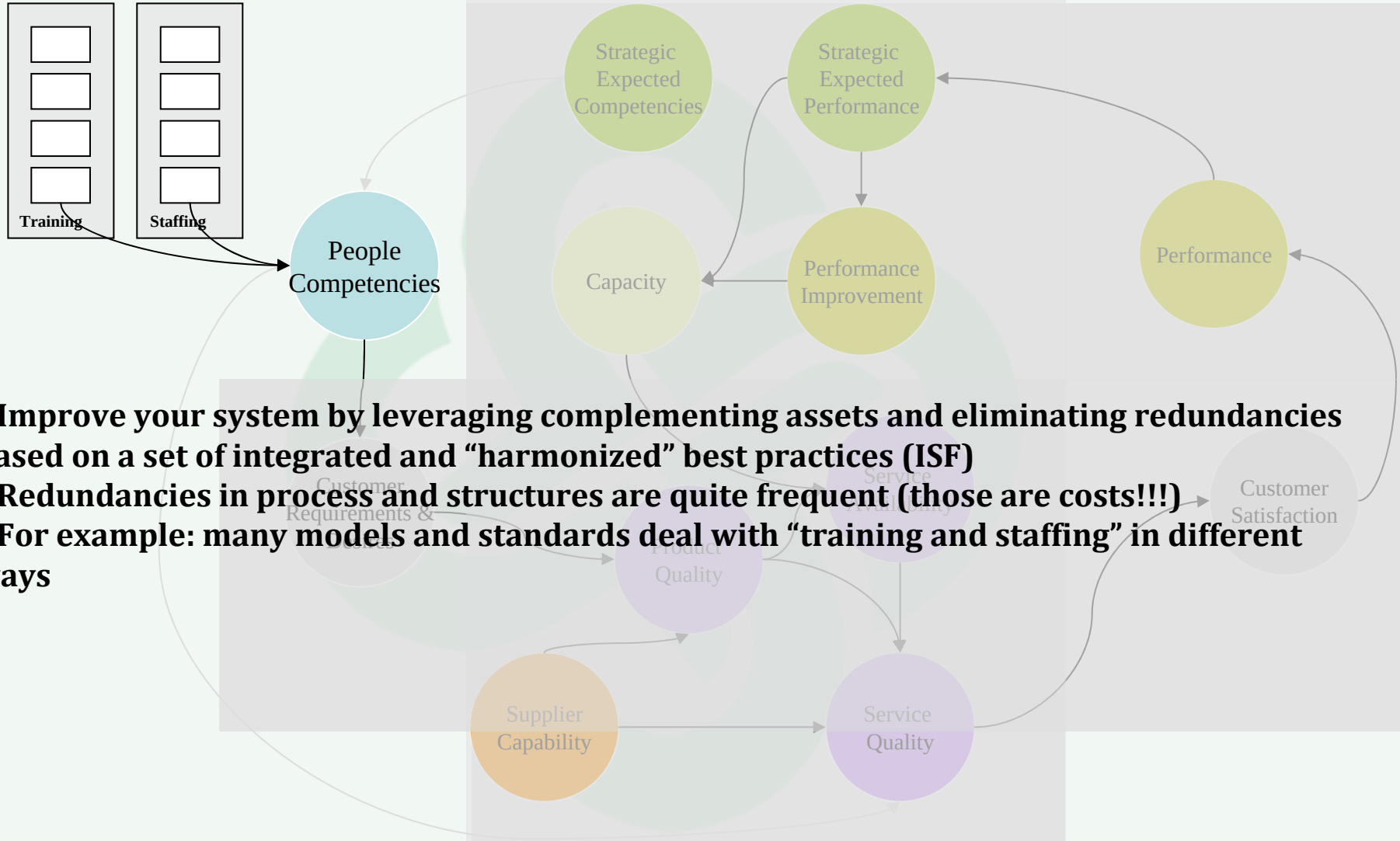
Reason 1 – Big problems and Opportunities

- **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**



"Systemic" Thinking

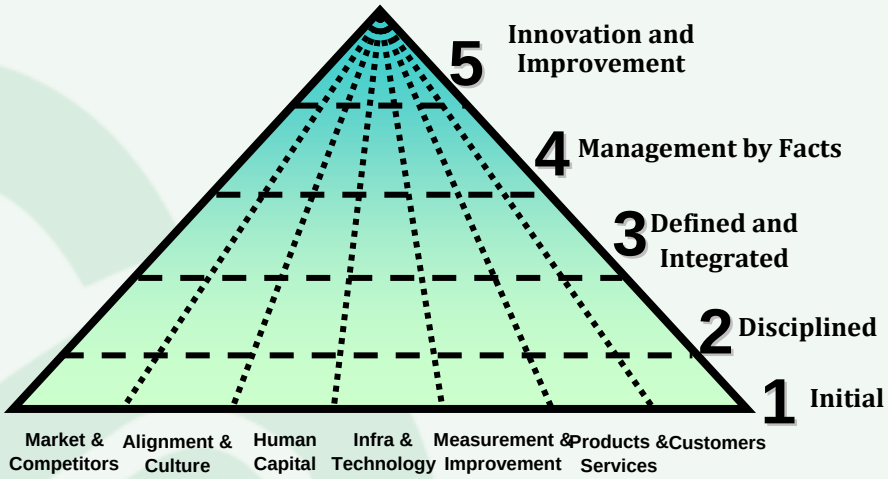
Reason II – Complementarities and Redundancies



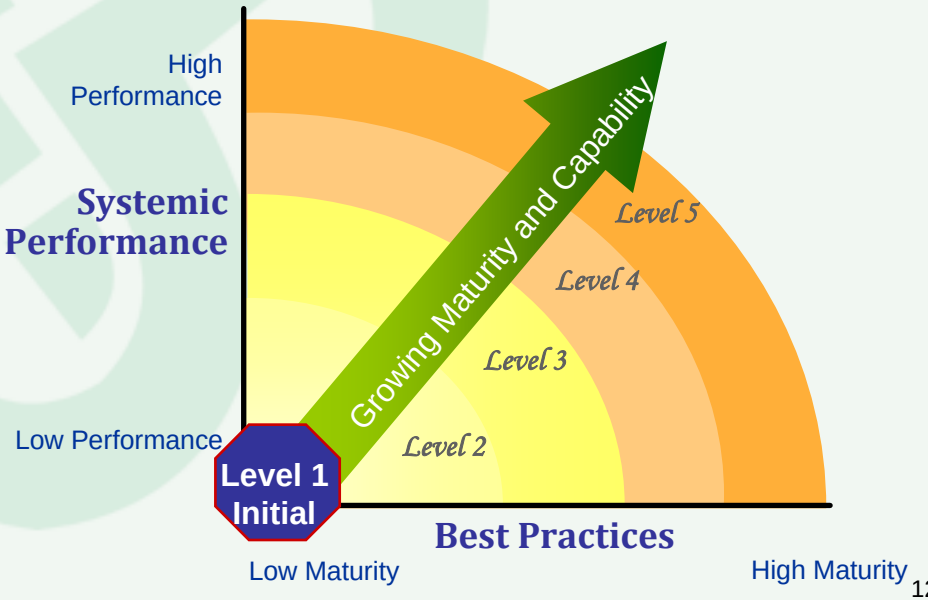
- **Improve your system by leveraging complementing assets and eliminating redundancies based on a set of integrated and "harmonized" best practices (ISF)**
- **Redundancies in process and structures are quite frequent (those are costs!!!)**
- **For example: many models and standards deal with "training 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

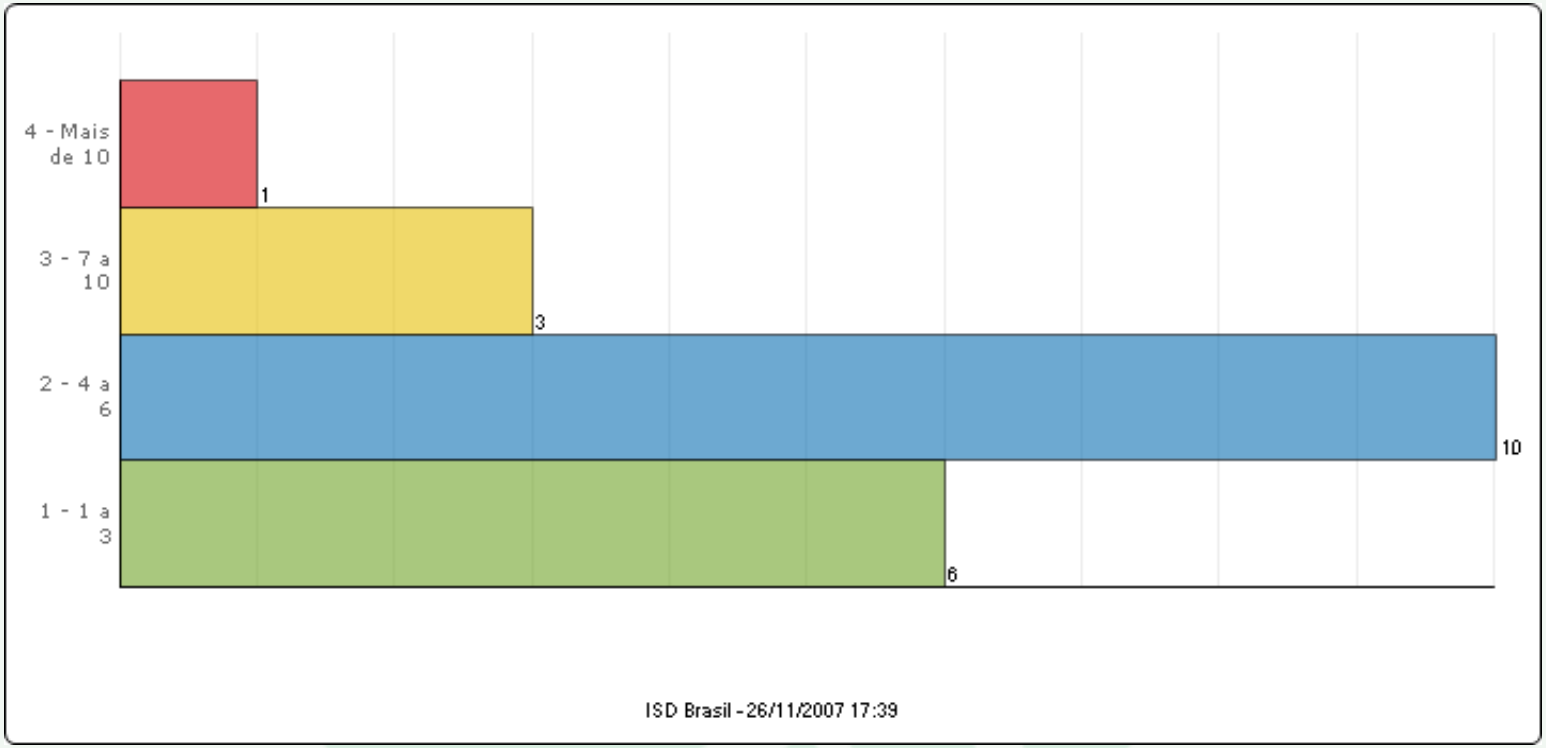


Objectives:
- ***Reduce redundancy***
- ***Improve integration***
- ***Create synergy***
- ***Leverage best practices***
- ***Make frameworks transparent***



"Systemic" Thinking

Reason IV – Reduce Appraisal / Audit Costs

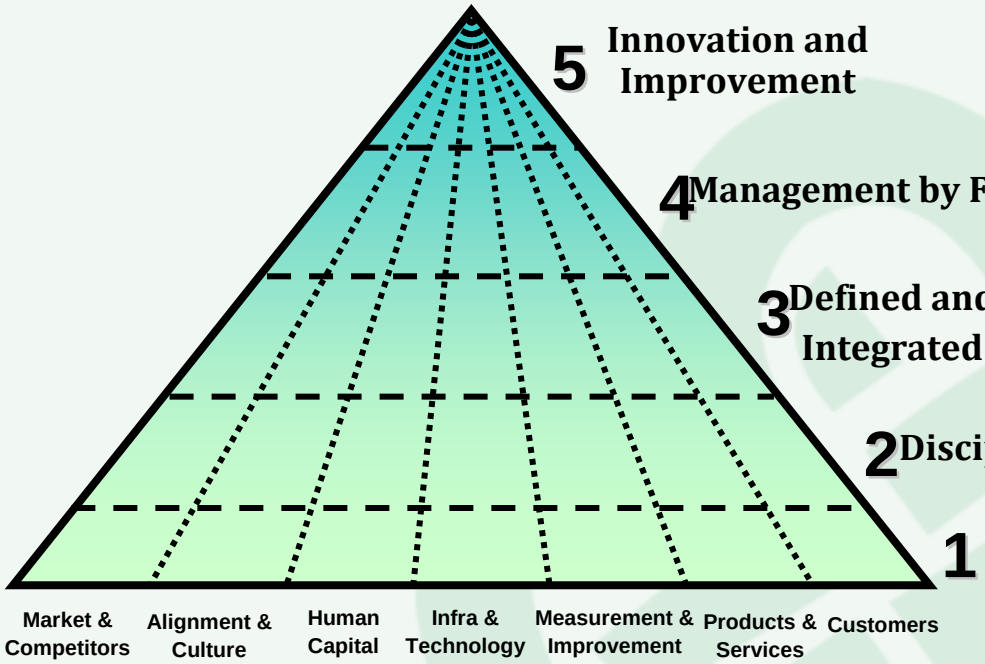


The question is: how many appraisals and audits your organization was submitted to during a year?

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

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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

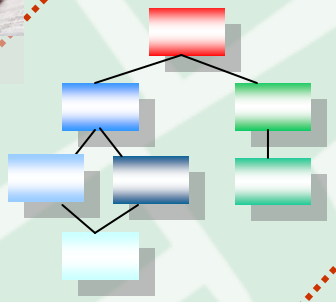
- ISD has performed various multi-model appraisals since the late 1990's.
- ISF was first envisioned in 2001 as a mechanism for ISD to support customers in multi-model environments.
- ISD has developed ISF since 2003 following customers needs and requirements related to appraisals and consultancy demands.
- 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*

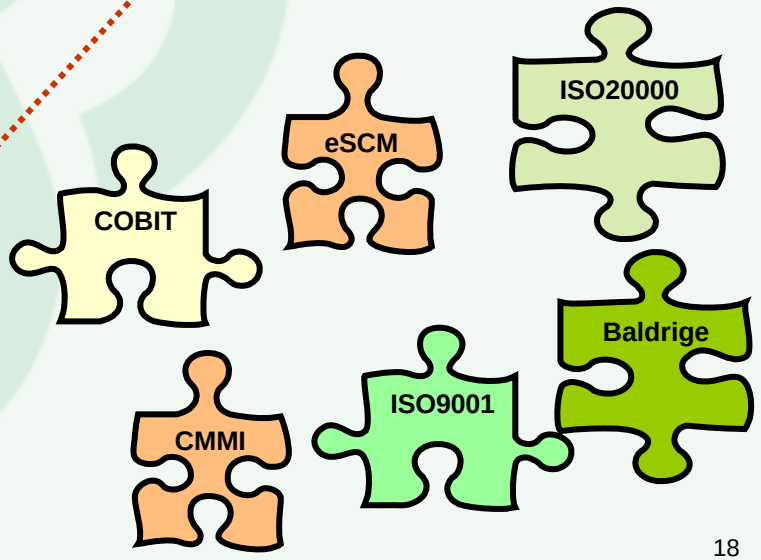
Management and Governance Themes

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

ISF *for Excellence*



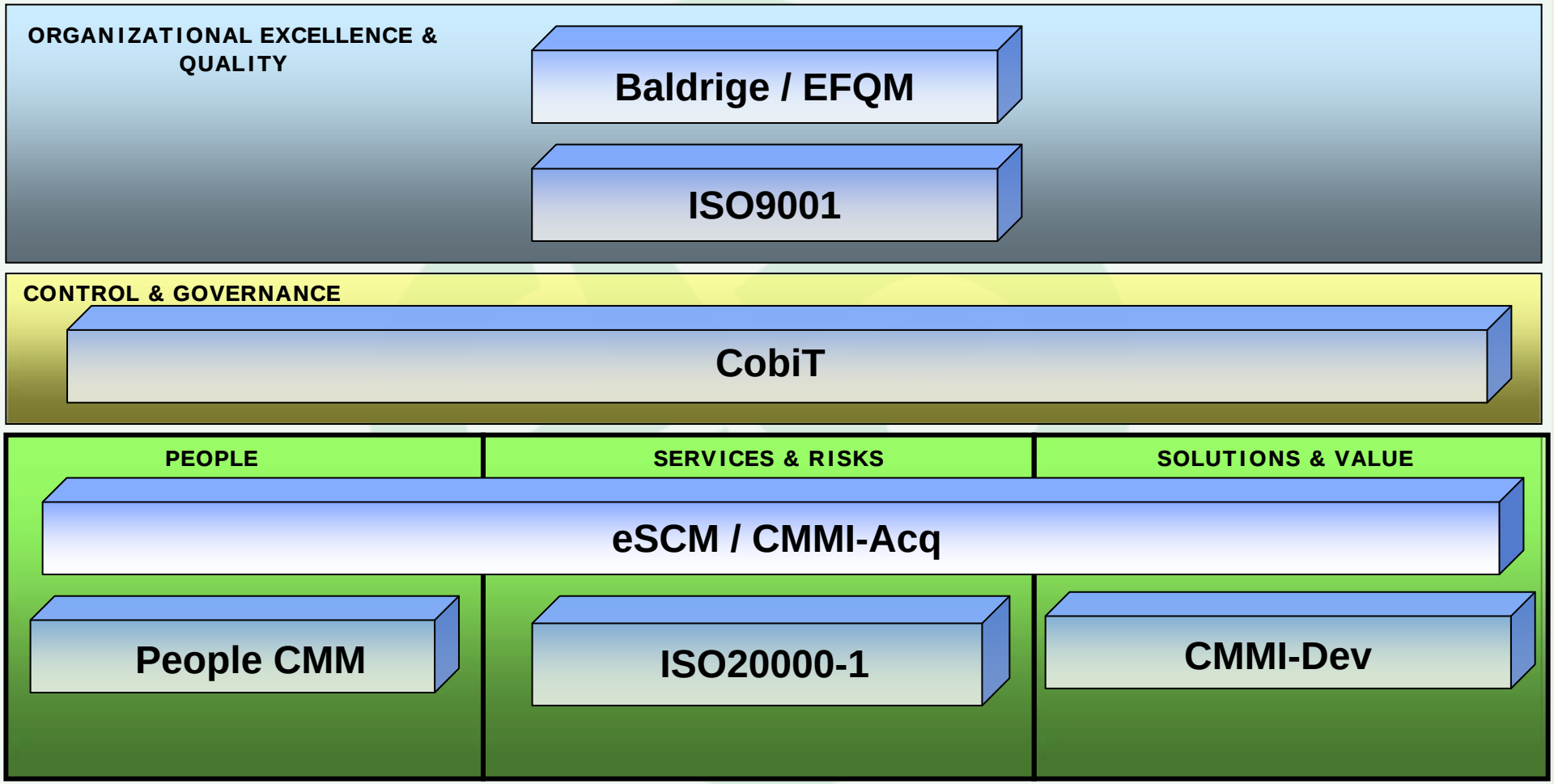
World of Best Practices



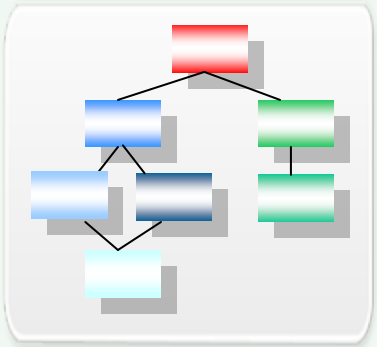
Objectives:

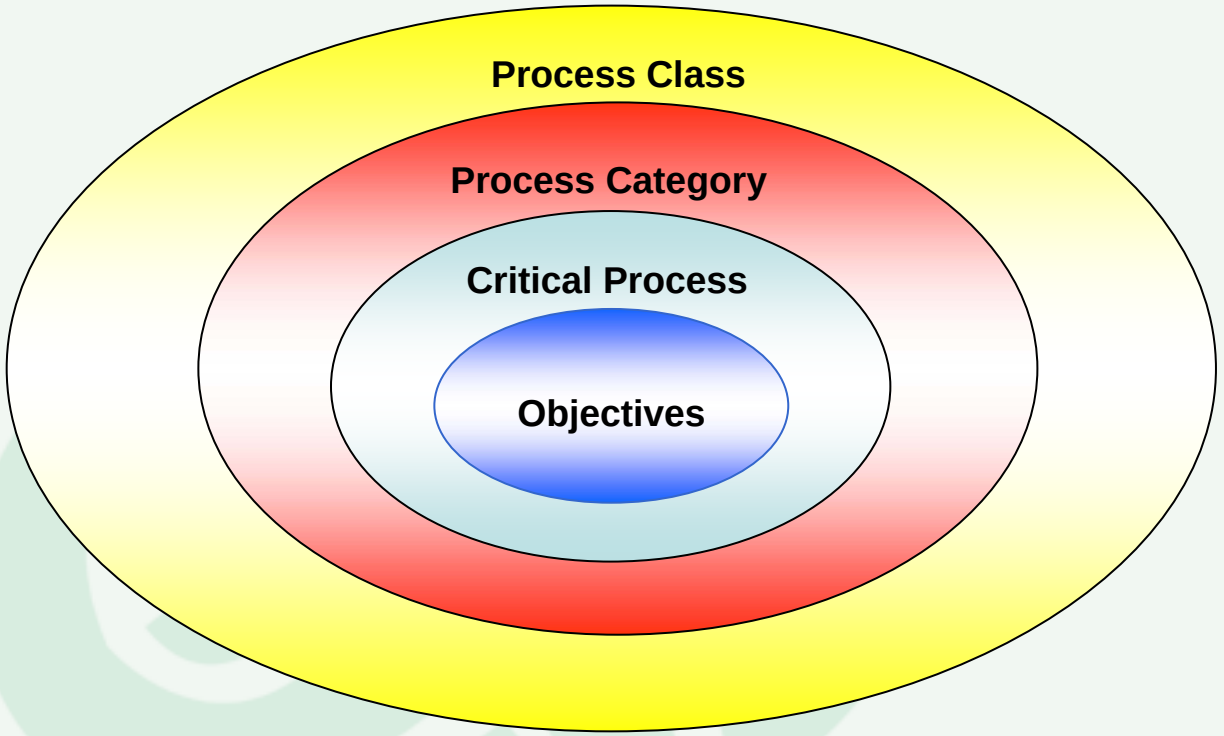
- ***Reduce redundancy***
- ***Improve integration***
- ***Create synergy***
- ***Leverage best practices***
- ***Make frameworks transparent***

ISF *for Excellence* – Models Relationship View



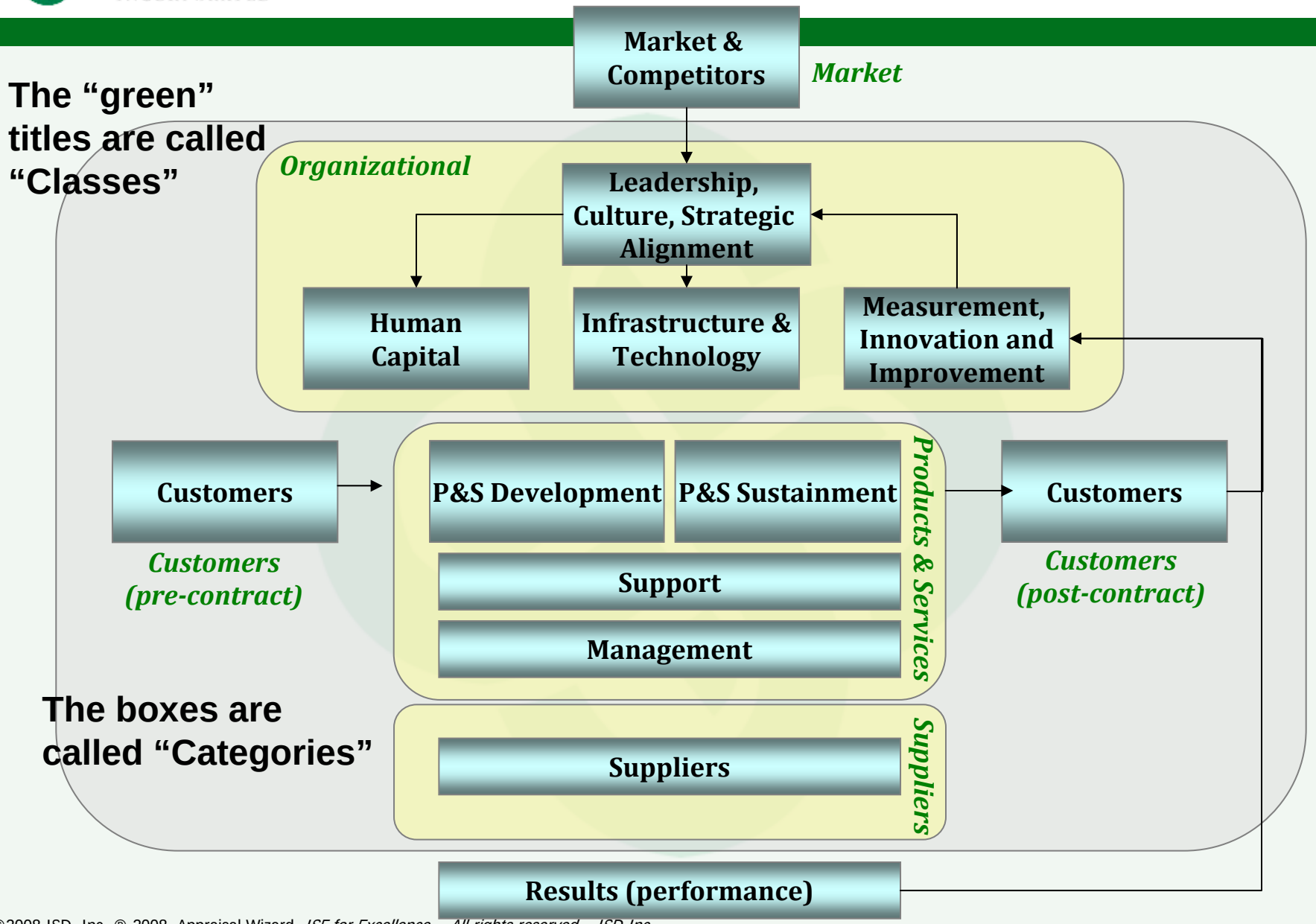
ISF *for Excellence* Architecture



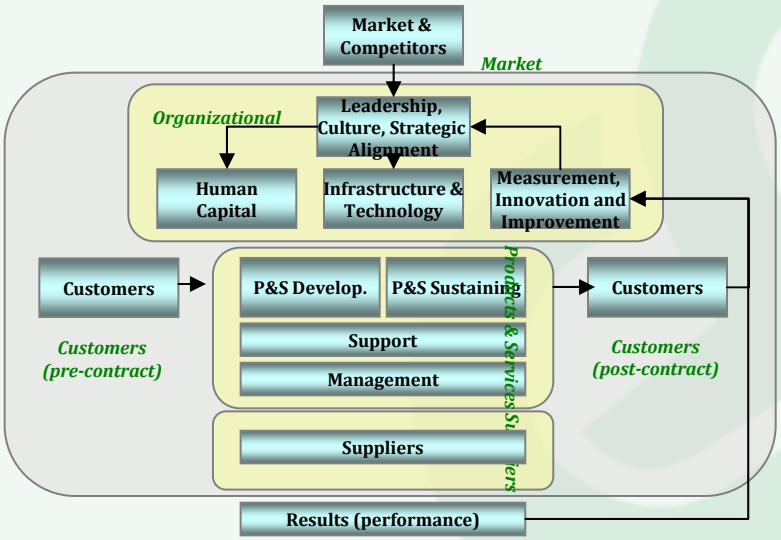


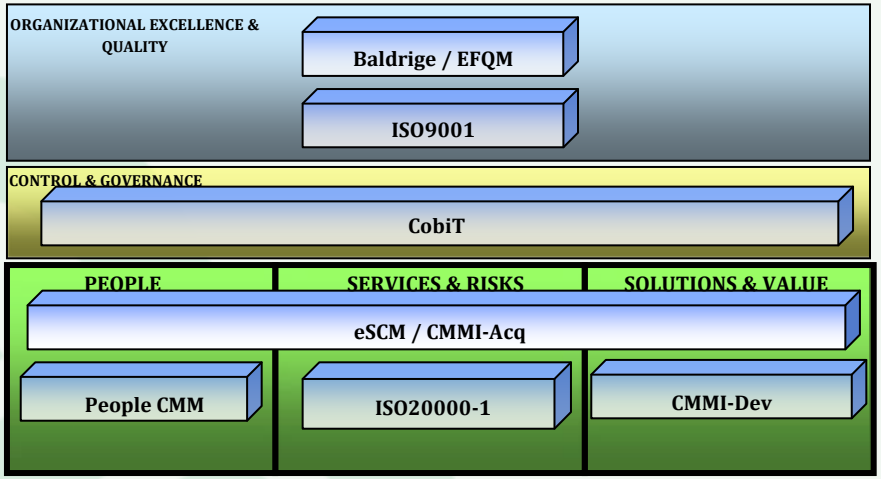
For each process "class" and "category" there will be an unique set of "CPP" (critical process for the performance) that will address (map) all the models and best practices minimizing or eliminating redundancy and respecting the overlaps.

ISF *for Excellence* – Systemic View



ISF *for Excellence* – Examples of Areas

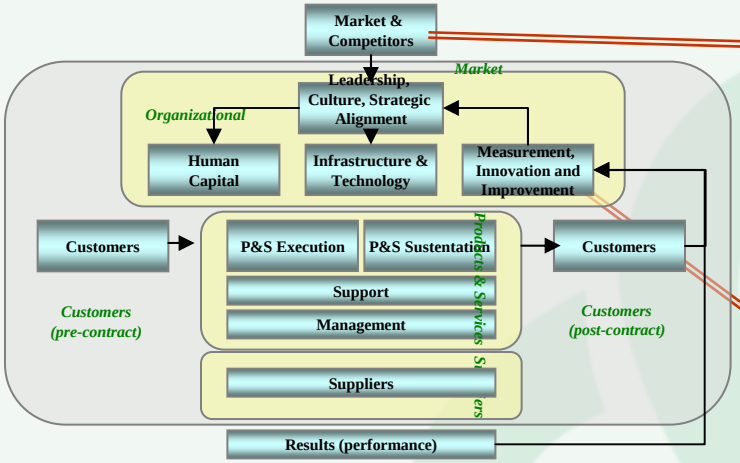




Customer

- Incident and Request Management
- Negotiations
- Requirements Management
- Service Level Management
- Contract Management
- Customer Relationship and Knowledge

ISF *for Excellence* – CPP Examples



Category: Market and Competitors

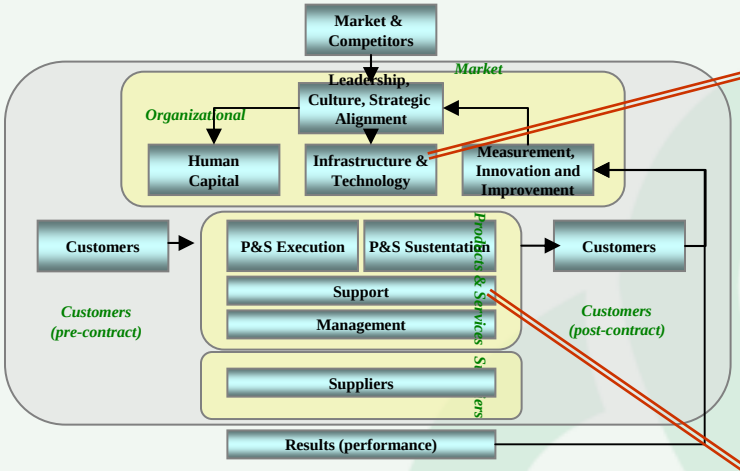
- Benchmarking
- Brand Management
- Market Knowledge
- Stakeholders Management

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."

ISF *for Excellence* – CPP Examples



Infrastructure and Technology

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

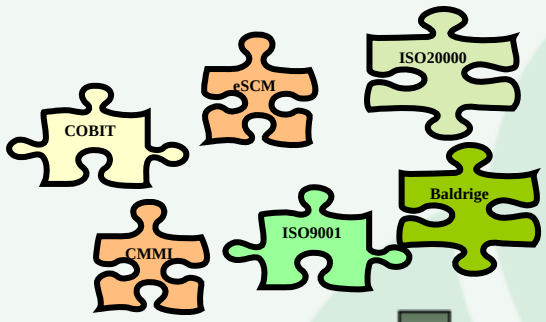
Support

- Incident Management
- Problem Management
- Configuration Management
- Release Management
- Change Management
- Quality Assurance Management

Critical Process Performance ("CPPs") streams are similar to the concept of "process areas."

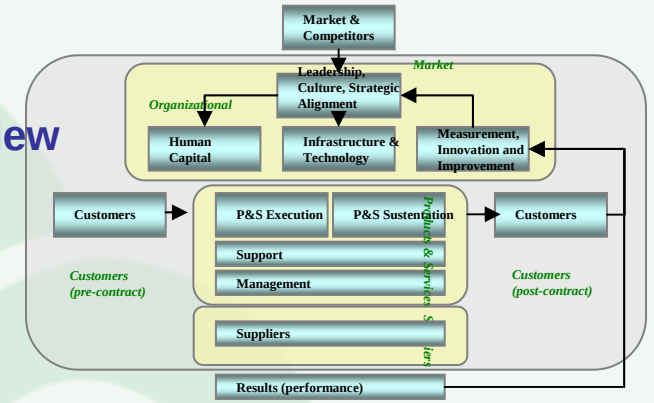
Relationships process architecture, best practices, audits

Best Practices



Integrated View

ISF for Excellence



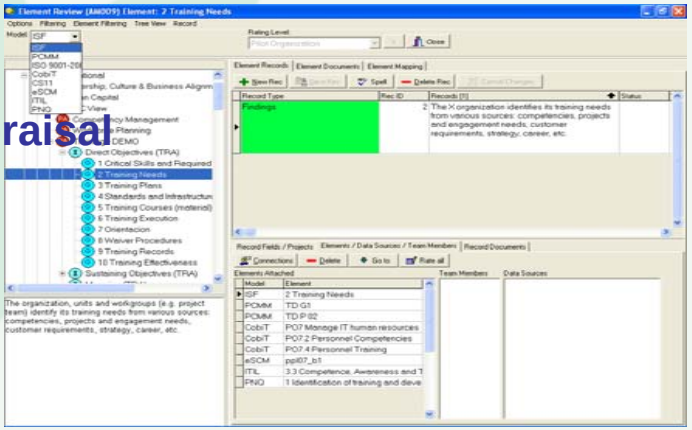
Process Definition

Diagnostic Tools

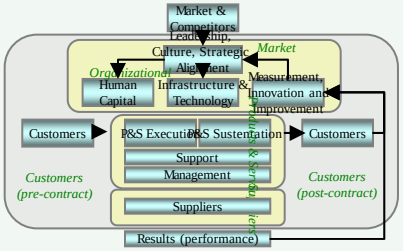
Customer Process Architecture

Enterprise Appraisal

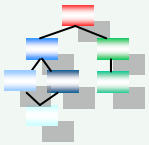
Appraisal Wizard



Relationship: Enterprise Architecture, Best Practices, Process Improvement



Business Architecture



Activity A – Missing Process

ISF CPP X Objective Z
ISO Clause X
PCCM Practice Y

Activity B – Needs Process Improvement

ISF CPP X Objective Z
ISO Clause B
CMMI Practice SP #.#

Process Improvement Implementation Guidance

Best Practices

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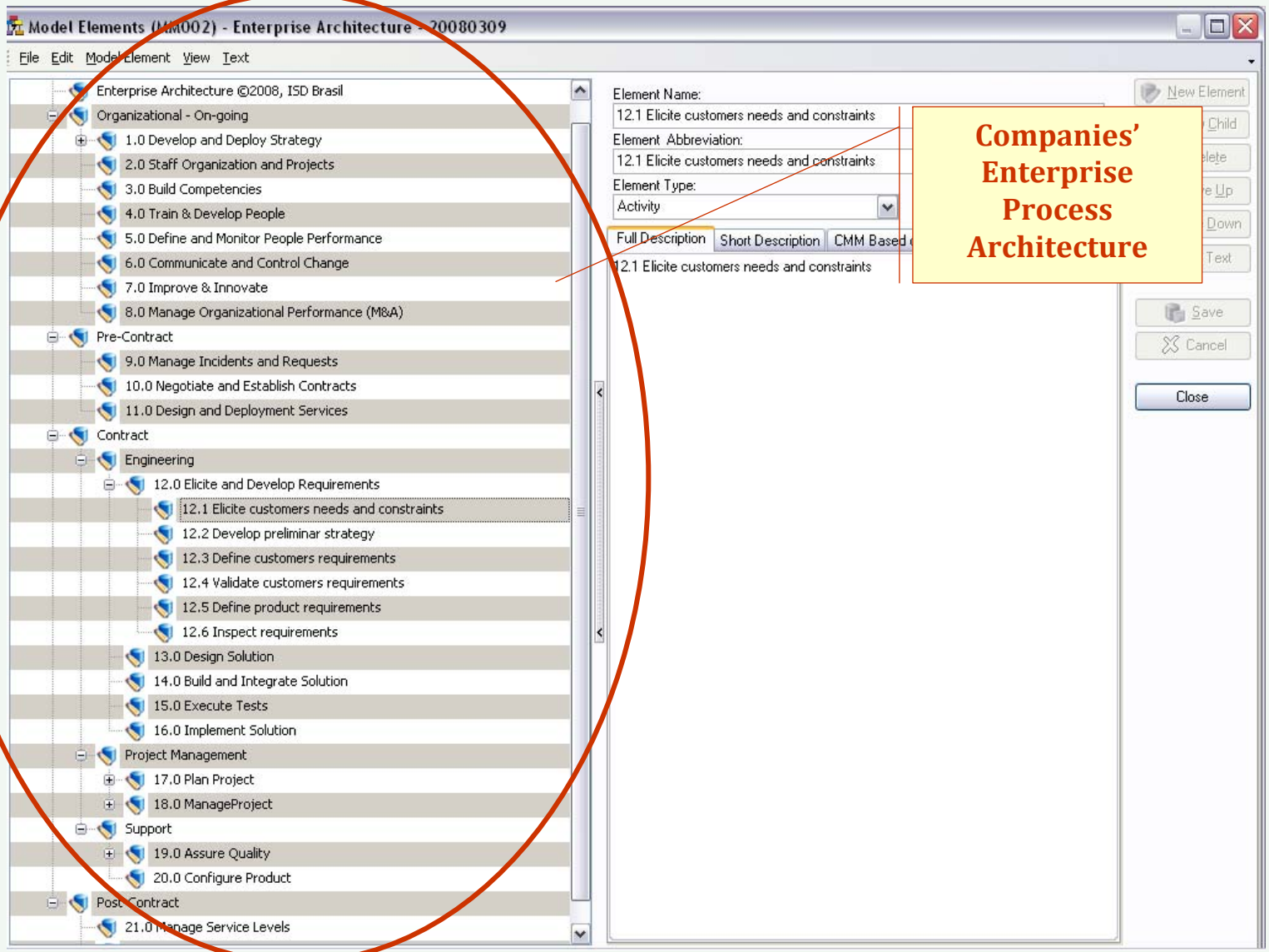
Example of an appraisal "in action" using Integrated System Framework®

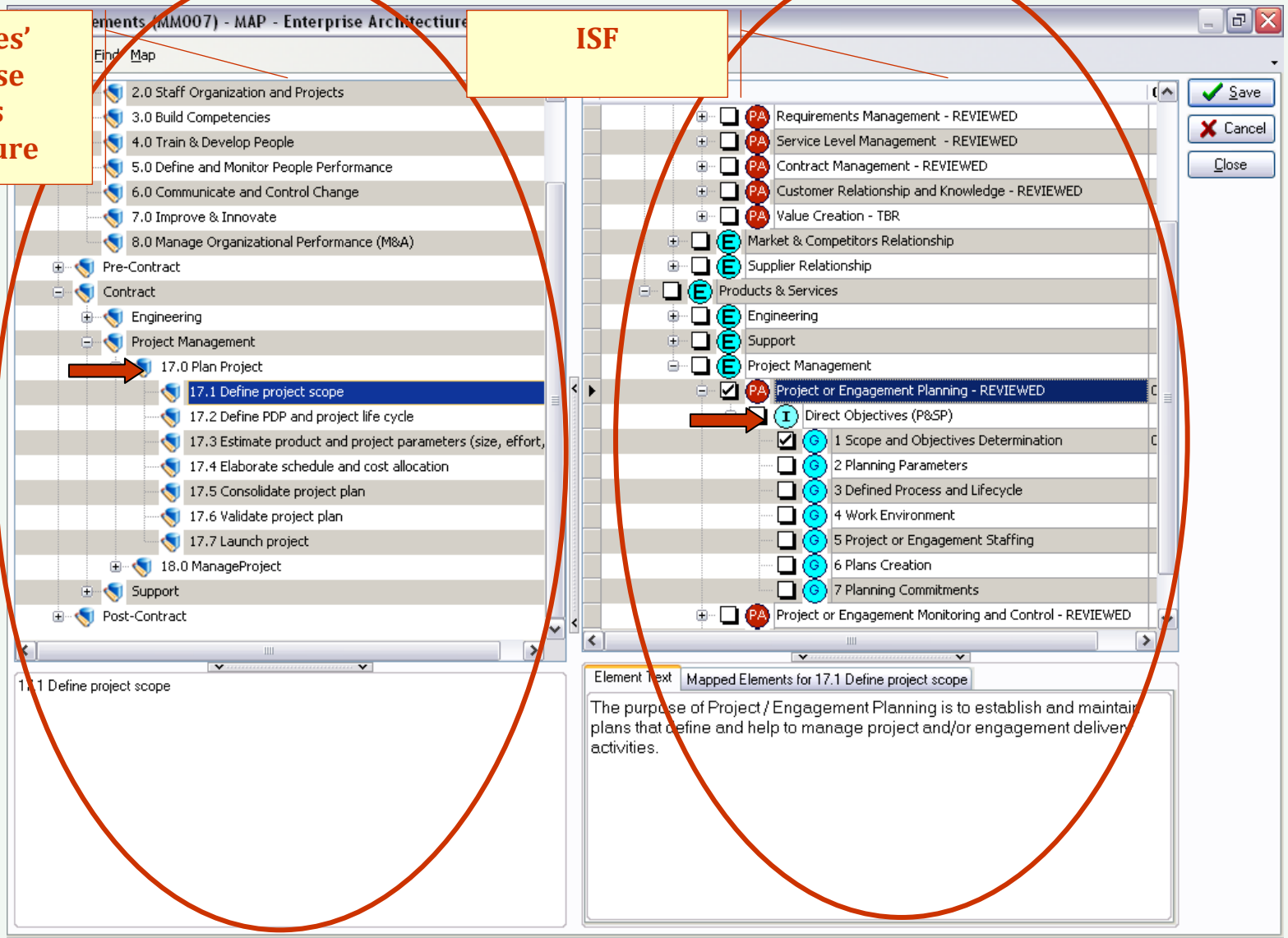
ISF® "in action" – Step 1
Model your Enterprise Architecture within Model Wizard™



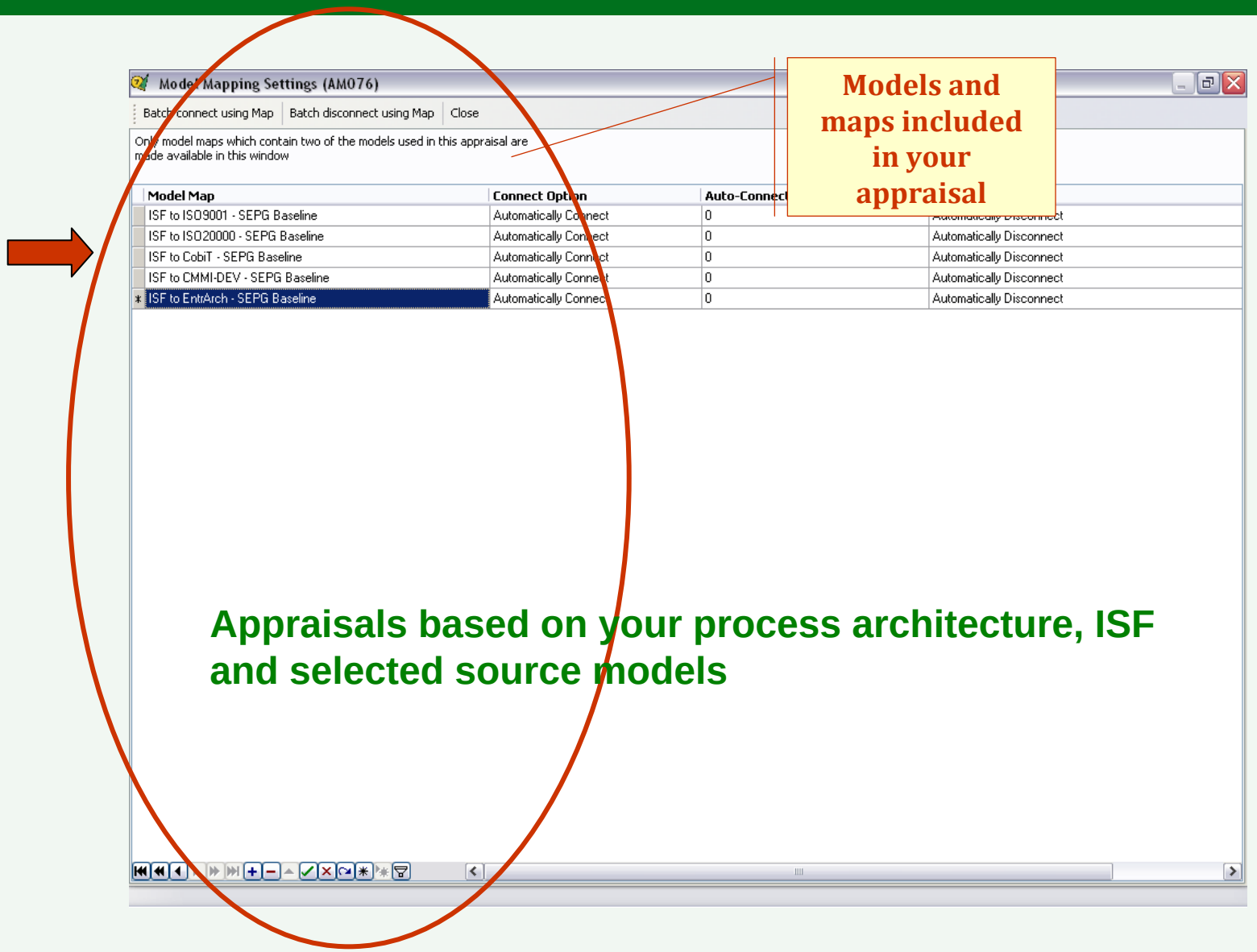
ISF® “in action” – Step 2
Map your Enterprise Architecture to ISF using Model Mapper™

Companies’ Enterprise Process Architecture

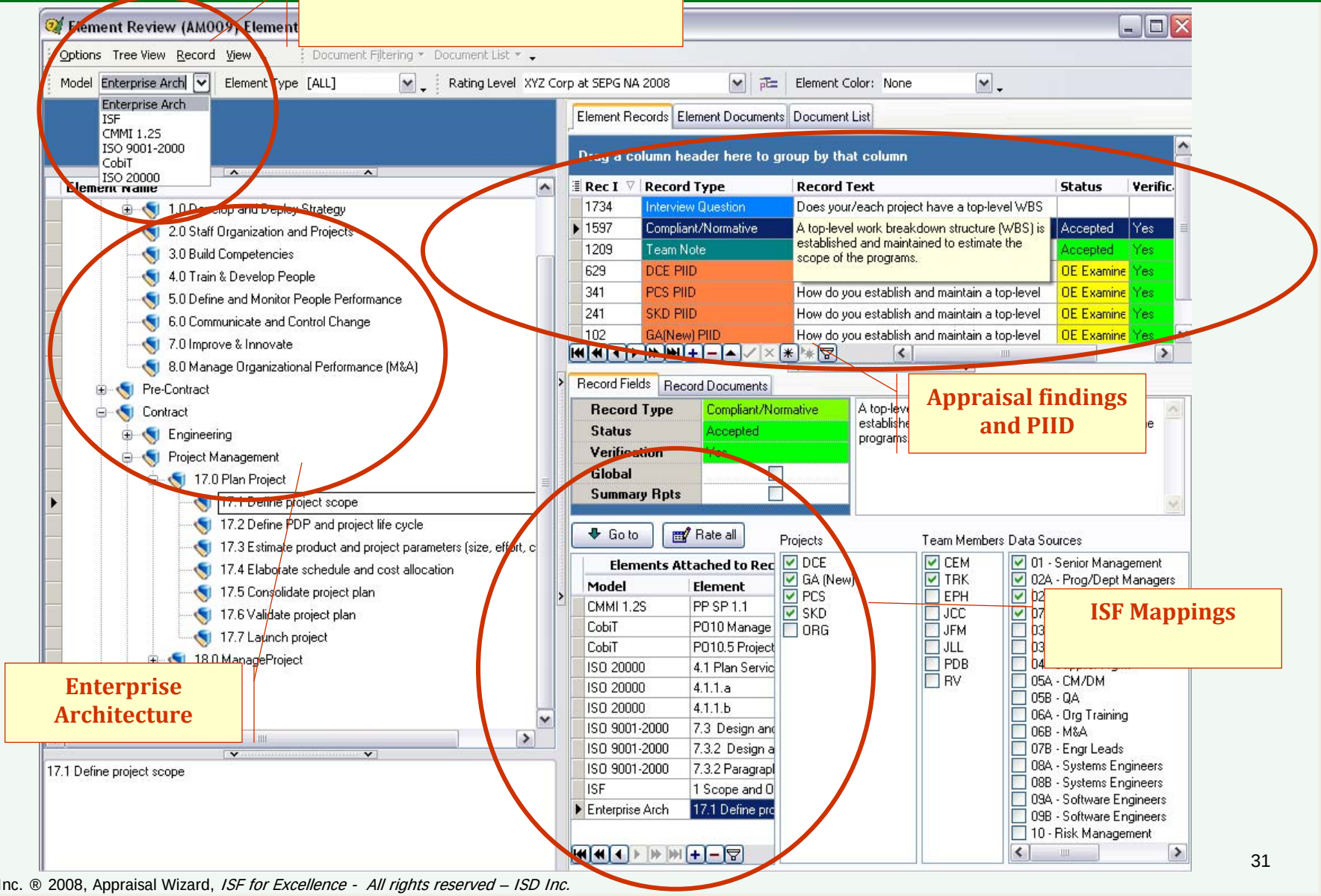
ISF



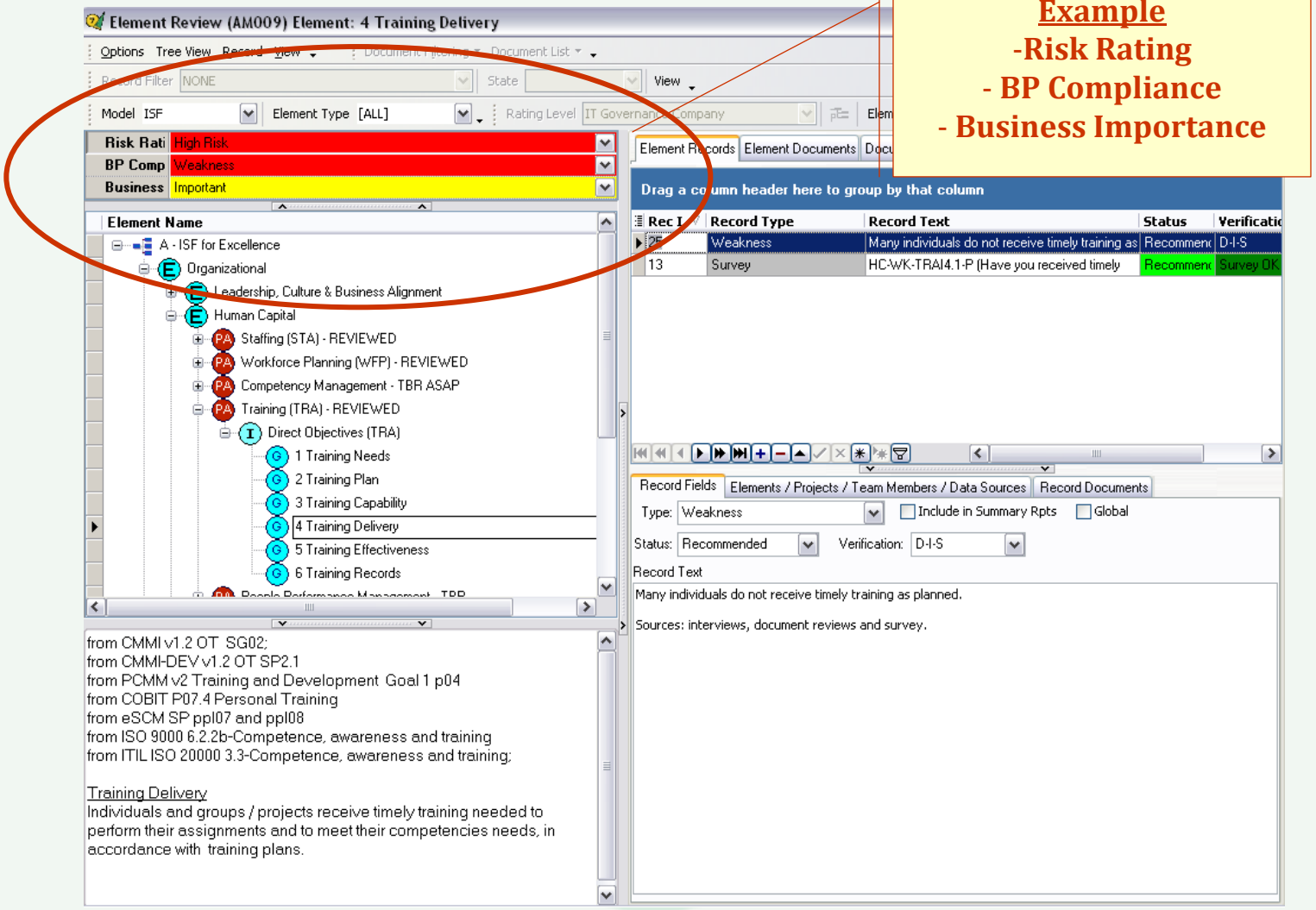
ISF® "in action" – Step 3
Scope and Plan your Appraisals using Appraisal Wizard™



ISF® "in action" – Step 4
Perform your Appraisals using Appraisal Wizard™

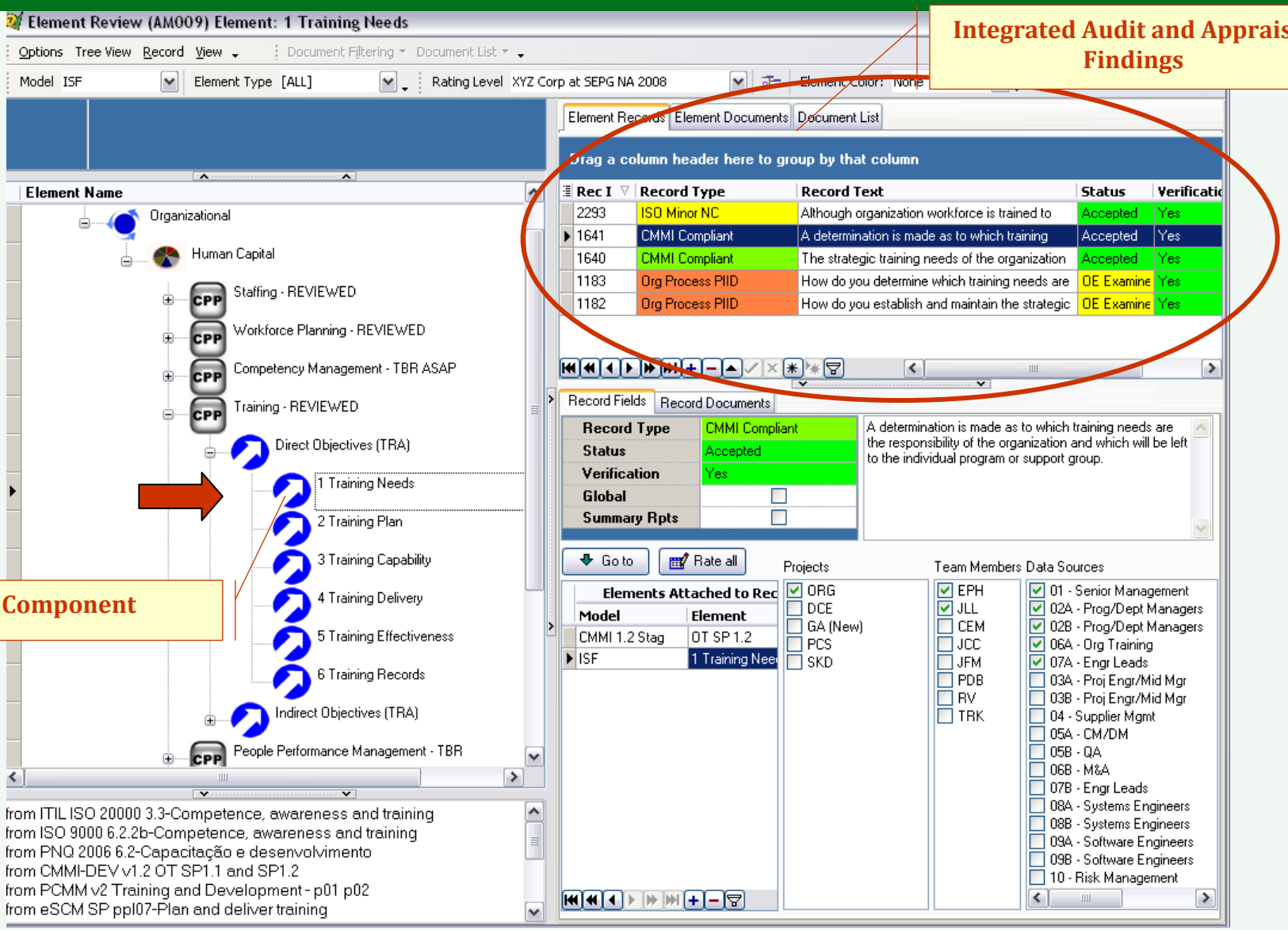


ISF® "in action" – Step 5
Rate elements against your Architecture, ISF and selected source models



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

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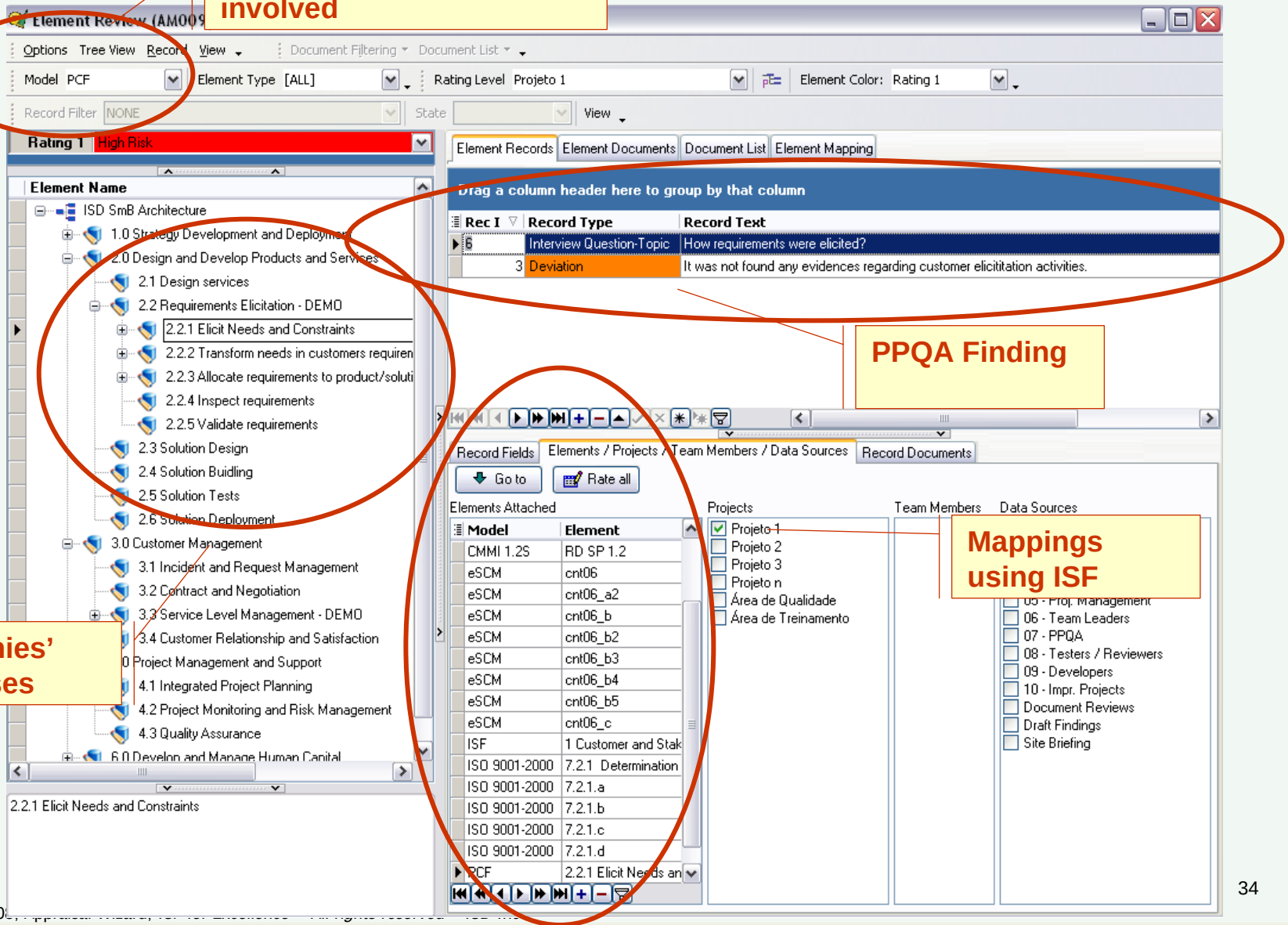
Models and standards involved



PPQA Finding

Mappings using ISF

Companies’ Processes

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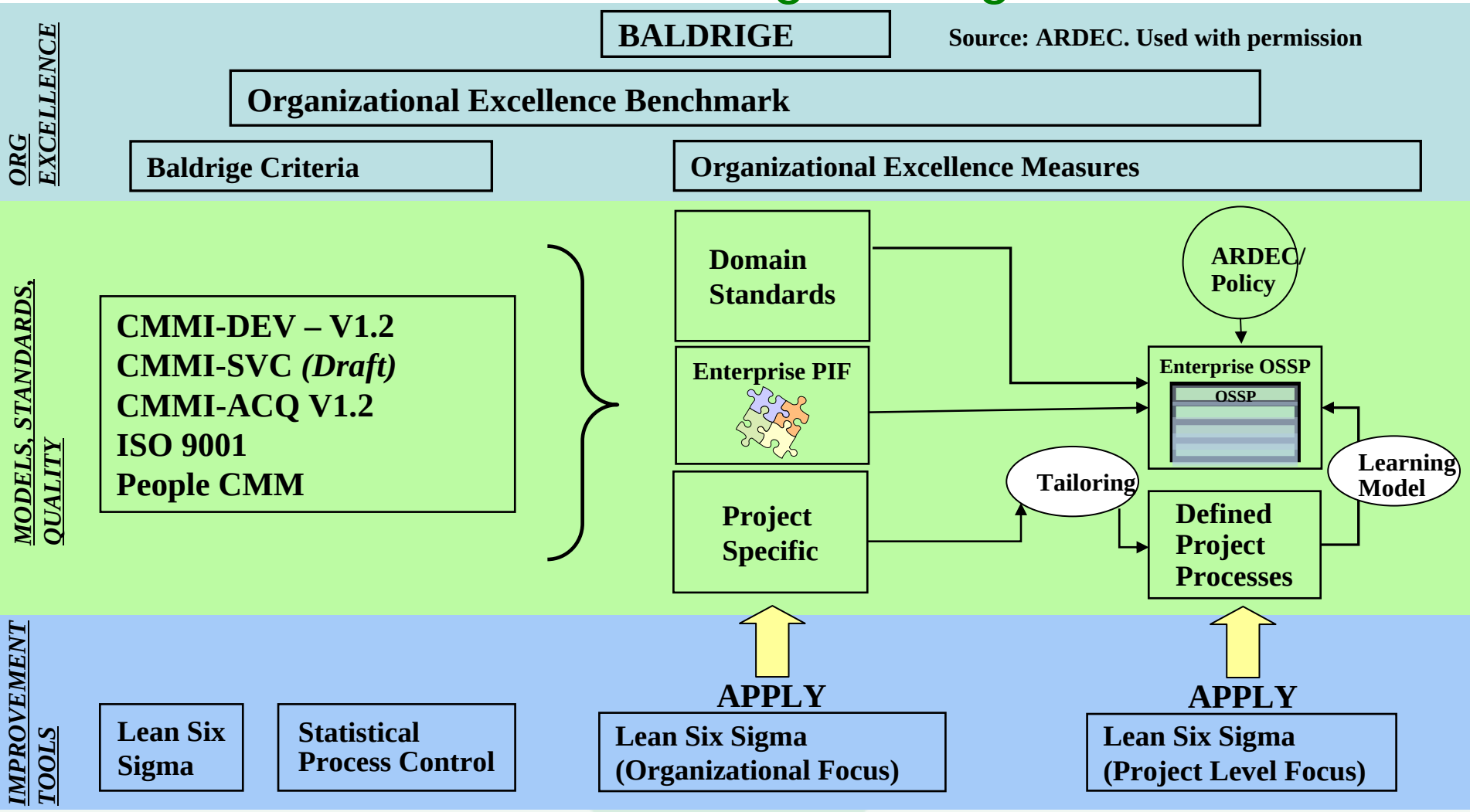
Some Current Case Studies

- Large Military Software Development and Maintenance Organization
- Very Large Global Enterprise
- Small Commercial Company

Case Study 1 – RDECOM Armament Software Engineering Center

Source: ARDEC. Used with permission



Benchmarks, Models, Standards, Toolsets

Resolve Organizational Improvement Redundancies & Design Solutions to Improvement Gaps

ID Project Redundancies & Design Solution to Project Process Gaps

Sources | **Best Practice** | **Tailored Implementation**

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)

Business Objective	Improvement Objective
Reduce the redundancies in the processes deployed across ARDEC	Increase efficiency and effectiveness of improvement program.
Reduce rework and quality issues	Reinforce training and develop new skills and capabilities Reduce the number of costly “false-starts”
Enable achievement of growth	Targeted at facilitating high value activities: • key start-up decisions • appraisal program management • ongoing expert process improvement advice
Consolidate audits and process compliance reporting	Implement standard processes. Increase portability of resources. Transfer lessons learned. Leverage best practices.

Case Study 2 – Multi-Mapped PPQA Reviews (Small Commercial Firm)

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1

Use **Model Wizard** to create or import a model that represents your Organizational Standard Model and/or the desired QA Reference Model.

2

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.

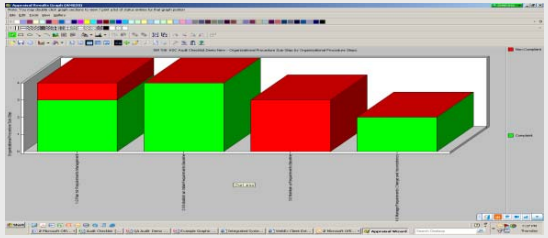
3

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

4

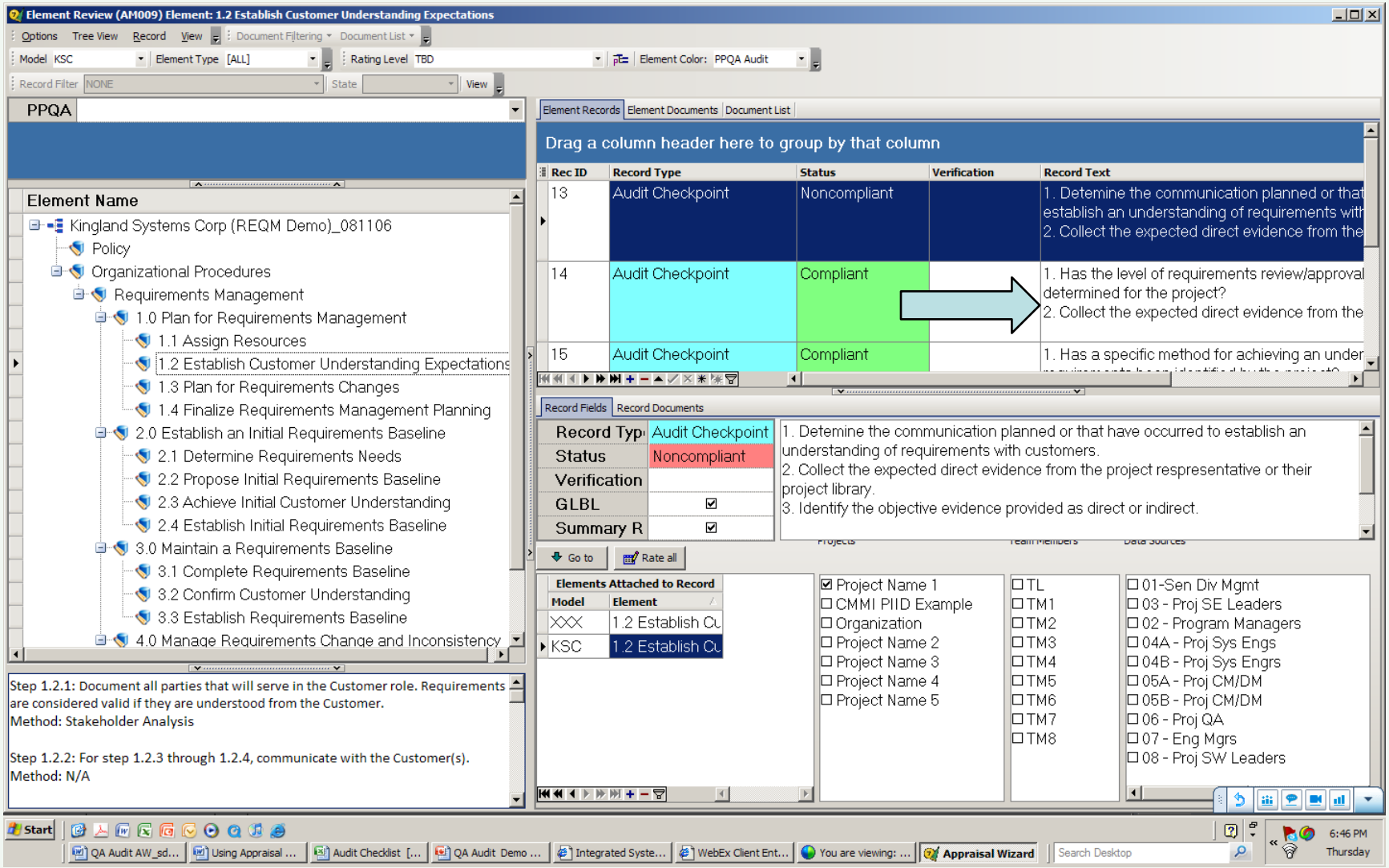
Use the **AW tool** to build various reports of the audit finding(s) (e.g. Reports of % compliant/% non-compliant findings; List N/C Action Items; etc.) to prepare for follow-on audits.



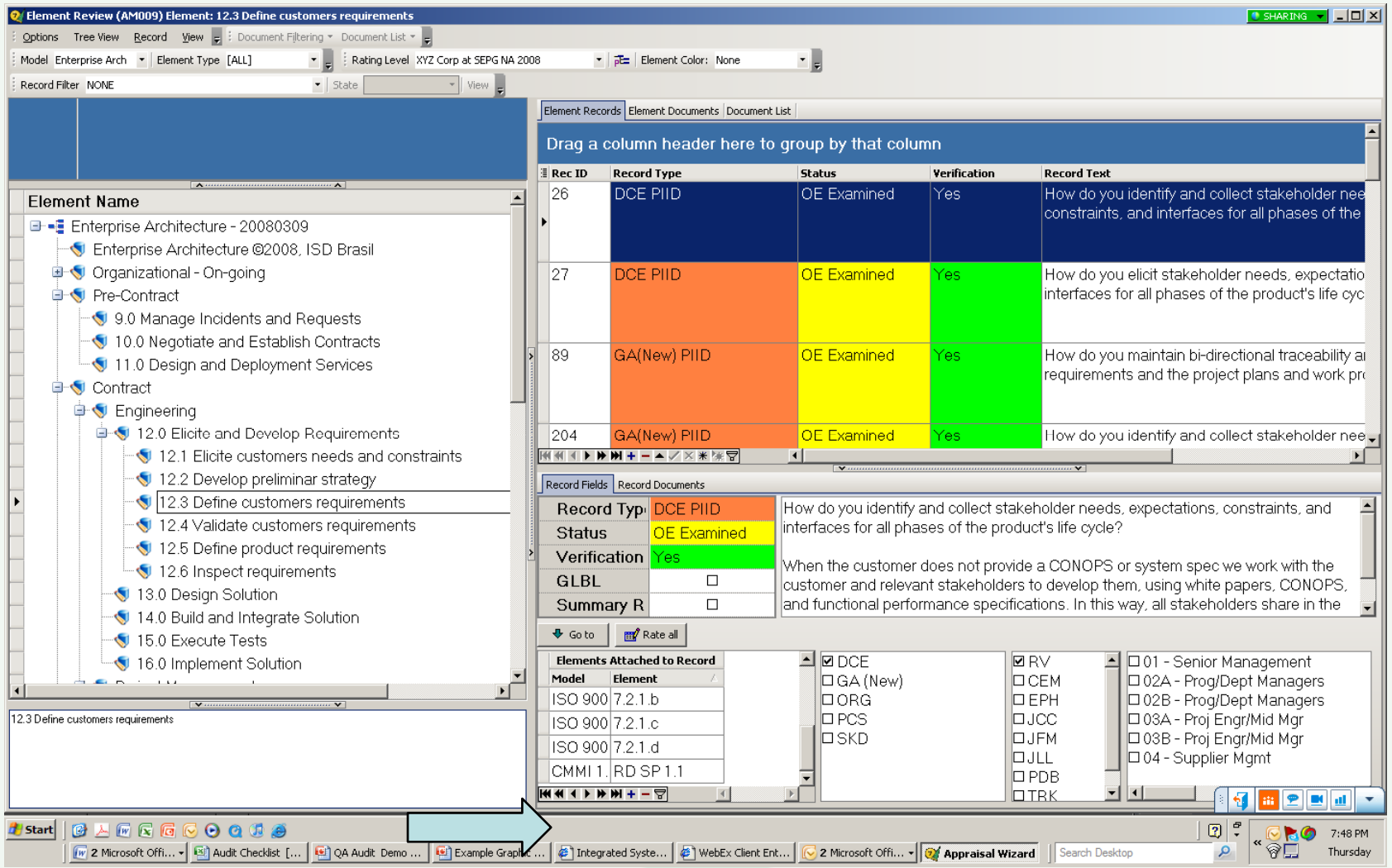
5

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

Embed Templates Using a PPQA Reference Model into Appraisal Wizard



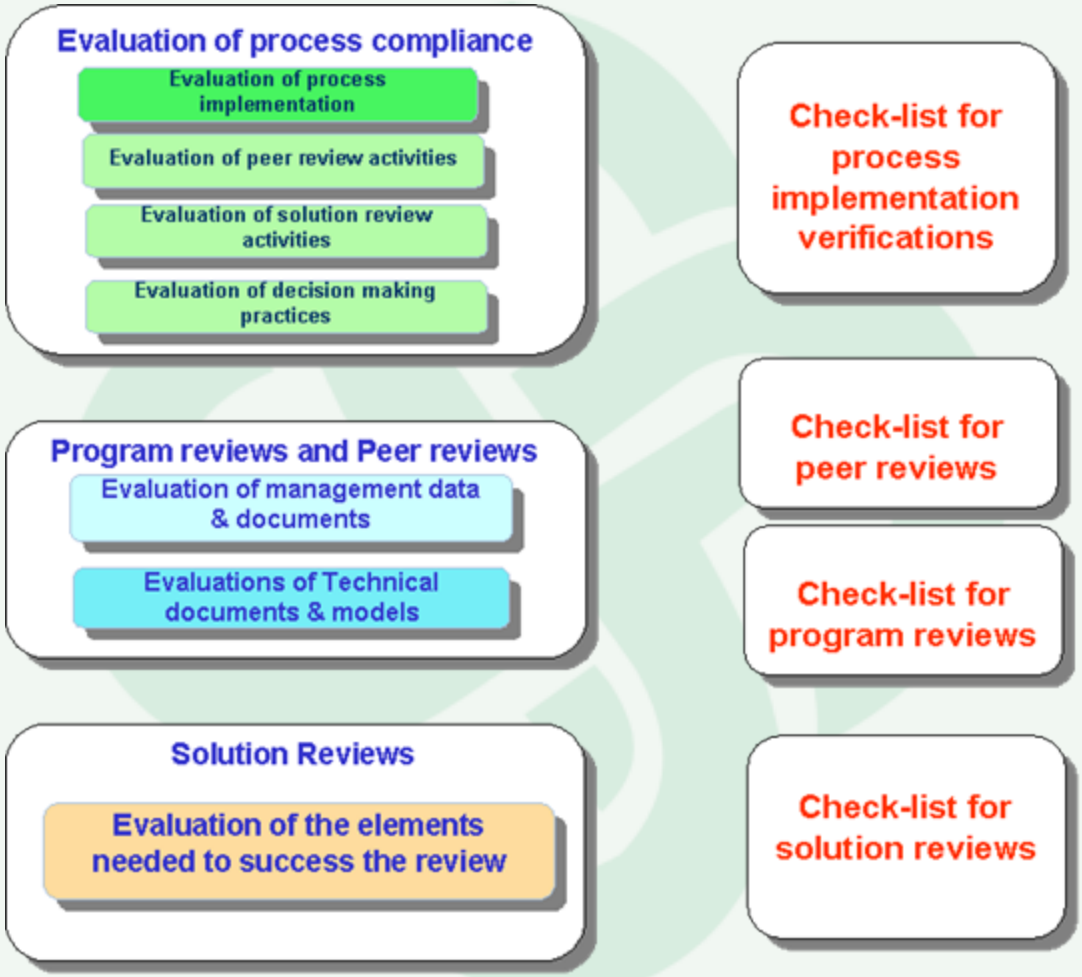
Audit Results Tie to Mapped Standards/ Models



Cased Study 3 - An Integrated Set of Reviews (Global Compliance Activity)

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

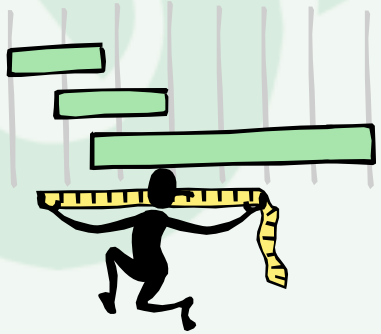
Integrating the around the ISF, using Appraisal Wizard, facilitates common reporting and comparisons



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**

Near Term Plans

- 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)



Back Up Material

- 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/

Issues, Directions, and Opportunities

Issues	❖ Distribution and/or importation/integration support for models (IP questions, permissions; not a technical issue) ❖ Definition, coordination, acceptance, and maintenance of the model maps (more a political than technical issue)	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.
Directions	❖ Continue technical development and piloting with current interested parties (e.g. CMU ITSqc; global clients with current CMMI and ISO requirements; SSCI) ❖ Continue to investigate and develop solutions to legal and political "issues" in collaboration with specific large influential clients, industry groups, and "stewards"	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.
Opportunities	❖ Direct sponsorship and collaboration ❖ Collaboration invitations from Consortium / Industry Association / Government working groups ❖ Participation in independent AW user group with subcommittees ❖ Creation and/or participation in a new cross community consortium	Status: Joined the Enterprise SPICE initiative as part of Steering Group and Development team. Status: SSCI sponsored AW User Group meeting conducted November 2007.

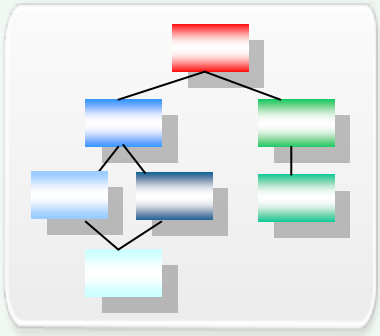
A "System Approach" is Needed to Maximize Improvement Benefits

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

Comprehensive Appraisal Method (CAM[sm]) – Integrated Appraisal Method

ISF® – Meta-Model Framework

Enterprise Process Improvement/Appraisal Life Cycle Implementation Model



Appraisal Wizard™ and Model Wizard™ – Operational Tool Suite

System Component Positioning

System Component	Positioning
The Integrated System Framework®	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.
The Comprehensive Appraisal Method (CAM℠)	Provides a integrated, tailorable, rigorous, extensible, model-"neutral" appraisal method for use across models Is suitable for conducting Process Assurance, Project Progress Tracking, Enterprise Process Oversight, and Formal Benchmark compliance determinations/audits.
Appraisal Wizard™/Model Wizard™ V7	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.
Enterprise Process Improvement/Appraisal Life Cycle Implementation Model	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]

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)

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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

Operationalize an Enterprise Improvement Strategy	Provides an enterprise strategy to implement best practices from multiple models.
Reduce compliance costs	Leverages the commonalities among models to reduce overall costs of compliance.
Increase efficiency	Appraisals can be conducted using multiple models simultaneously.
Provide a unified implementation approach	Provides management a common, unified "roadmap" to achieve high maturity, high performance goals.