EAI Industry Consortium

Integration Methodology Workshop
February 3, 2004

Enterprise Application Integration

Def'n: the process of integrating multiple applications that were independently developed, may use incompatible technology, and remain independently managed

Topics

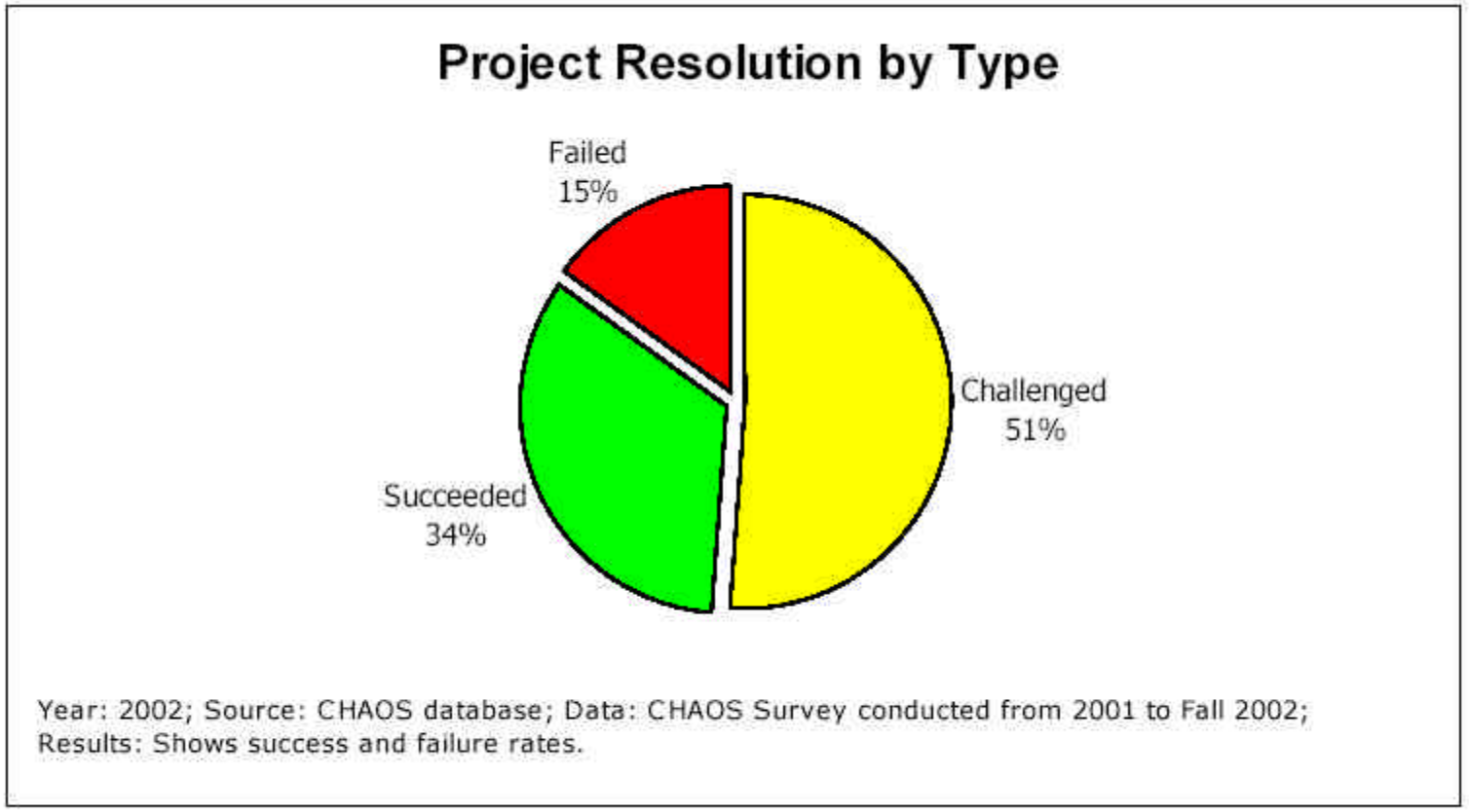
- **Global Integration Framework**
  - J. Schmidt, EAI Industry Consortium Director
- **EAI Principles & Foundation for TBI**
  - J. Schmidt, EAIIC Chairman Methodology Committee
- **Total Business Integration**
  - S. Field, Chairman Best Practices Committee
  - A. Anand, Architecture & Integration, Johnson & Johnson
- **Vendor Perspective**
  - S. Winters, IBM Industry Solutions
- **End User Perspective**
  - D. White, Integration Evangelist, Johnson & Johnson
  - A. Anand, Architecture & Integration, Johnson & Johnson
- **Next Steps**

Just because it's a best practice, doesn't necessarily mean it works.

- ***"...at no period, perhaps, has it been held in higher estimation, or more frequently resorted to, than in the present day..."***
- ***"...opinions are still vague and unsettled on the subject, and, in some respects, contradictory."***
- ***"...it is impossible to comprehend a variety of phenomena that present themselves in the movement and distribution of the blood."***

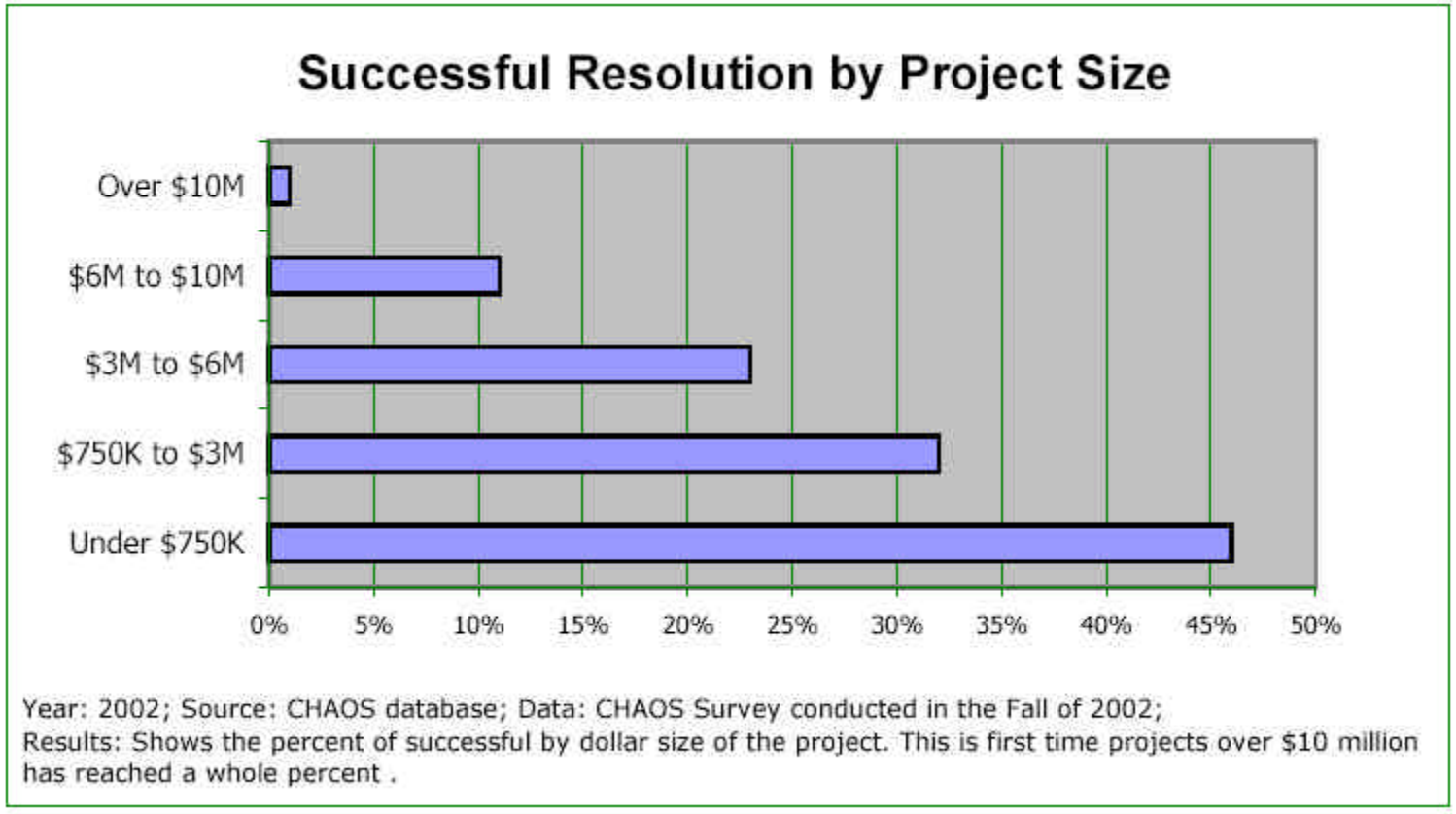
Henry Clutterbuck, M.D.,
Royal College of Physicians,
London, 1840

Chaos Study



Year: 2002; Source: CHAOS database; Data: CHAOS Survey conducted from 2001 to Fall 2002;
Results: Shows success and failure rates.

Chaos Study

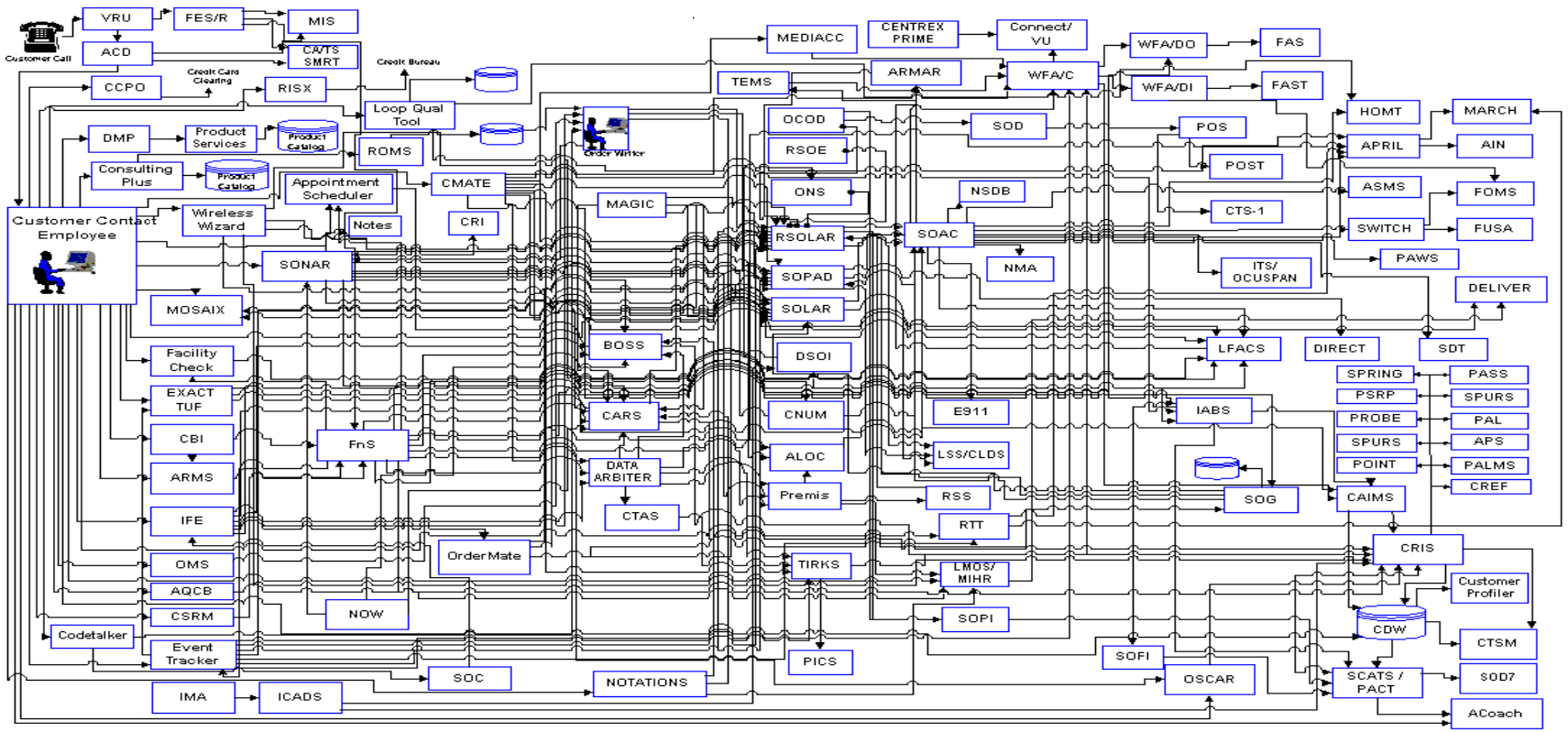


Year: 2002; Source: CHAOS database; Data: CHAOS Survey conducted in the Fall of 2002;
Results: Shows the percent of successful by dollar size of the project. This is first time projects over $10 million has reached a whole percent .

Chaos Study

2003 CHAOS Top Ten	
Success Factors	**Points**
User Involvement	17
Executive Support	15
Experienced Project Manager	14
Clear Business Objectives	14
Minimized Scope	12
Agile Requirements Process	7
Standard Infrastructure	6
Formal Methodolgy	5
Reliable Estimates	5
Skilled Staff	5
Year: 2003; Source: Do You Know Your Requirements? 2003; Data: CHAOS Survey conducted from 2001 to the Fall of 2002.	

The Integration Hairball



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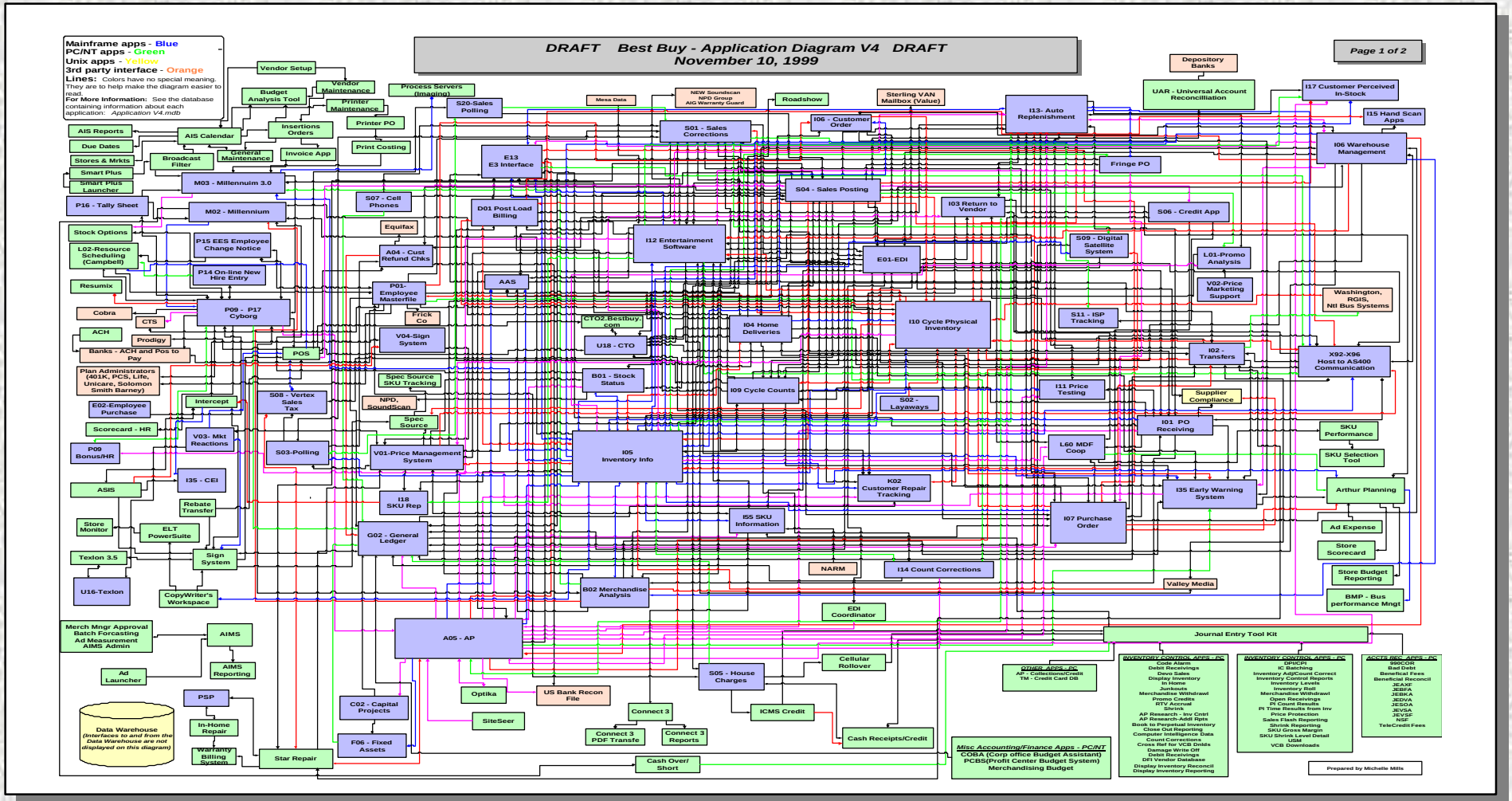
Another Integration Hairball



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Best Practice Maturity Survey

- EAI Methodology 1.7
- Business Process 1.7
- Enterprise Architecture 1.8
- Integration Design 1.9
- Modeling & Metadata 1.4

On a scale of 1-5, most organizations are below 2 on all five dimensions, and virtually no-one is operating at levels 4 or 5.

EAI Methodology Maturity

Maturity Level	EAI Methodology Maturity	Count	Average
1	Ad hoc EAI processes with success dependent on individual efforts. Few integration processes are defined formally or are focused primarily on the initial deployment life-cycle.	16	
2	Basic EAI processes are established to track cost, schedule and functionality. The discipline is in place to repeat earlier successes on EAI initiatives with similar characteristics.	12	
3	EAI Management processes for the full life-cycle are standardized, documented and universally applied across the enterprise.	3	1.7
4	Continuous improvement is enabled by quantitative feedback from processes and from piloting innovative ideas. Internal and external integration processes are unified.	0	
5	Detailed measures of the integration process and resultant solution quality are collected. Costs to sustain deployed integrations are budgeted like other shared infrastructure.	1	

Business Process Maturity

Maturity Level	Business Process Maturity	Count	Average
1	Business processes are not fully documented or not followed and even routine activities are highly people intensive. Replication of information across systems is highly manual and slow.	9	
2	Business processes are documented and followed, but may not be consistent. Replication of information across systems is mostly automatic, but generally through batch processes.	21	
3	Process modeling is done using a standard language/notation; models are validated and stored in a repository. Information is captured once at the source and flows to other systems in (near) real-time.	1	1.7
4	Business processes are measured by "process owners" in terms of time, cost and effectiveness and are controlled using quantitative data. Information flow between applications and business units use BPM (Business Process Mgmt) tools and automated decisioni	0	
5	Business processes are optimized through scientific principles including controlled experimentation of new processes in production. A CPO (Chief Process Officer) has overall responsibility for continuous improvement of enterprise and supply chain processe	0	

Enterprise Architecture Maturity

Maturity Level	Enterprise Architecture Maturity	Count	Average
1	The role of a systems architect is well defined and actively practiced in most projects.	14	
2	A formal, documented enterprise architecture exists including definition of tool standards and a reference framework. Standard models are used to capture the systems architecture.	12	
3	An enterprise-wide governance process is in place to ensure that all new initiatives conform to documented standards. Projects are not considered "done" until the exceptions are resolved.	4	1.8
4	Application and integration usage is constantly monitored. Investments are made to actively retire or consolidate unused or low-value systems.	0	
5	Tight integration between business and IS as evidenced by a strong alignment between the architecture framework and the organizational structure. Architects are formally held accountable for their designs and how they function in production.	1	

Integration Design Maturity

Maturity Level	Integration Design Maturity	Count	Average
1	Application interfaces do not follow a standard architecture. The most common interface pattern is custom-built point-to-point.	12	
2	Applications are decoupled through the use of middleware and an abstraction layer so that changing one does not affect the other.	12	
3	Application interfaces are standardized across the enterprise. Integration systems are separated from and designed independently of individual applications.	6	1.9
4	The EAI architecture includes a business process layer which provides end-users with the ability to directly control the operational integration processes.	1	
5	Applications are designed with an integration layer as an essential prerequisite. Integration requirements carry as much weight as functional requirements.	0	

Modeling and Metadata Maturity

Maturity Level	Modeling & Metadata Management Maturity	Count	Average
1	Most projects use static models and unstructured tools such MS word, Excel or Visio to document requirements and designs.	22	
2	Modeling standards are defined and most teams across the enterprise use the same tools and the same notation and naming conventions.	7	
3	An enterprise data model is defined which identifies all data elements and their source. A common metadata repository is in place that accurately reflects the production environment.	2	1.4
4	Metadata repositories are used to model future states and perform systematic impact analysis on the current state environment and changes to it.	0	
5	Simulators are used to test requirements before design or development begins and multiple future states can be modeled to identify and quantify impacts.	0	

GIF Vision

- GIF: A global integration framework that defines non-functional software requirements with enough specificity and ubiquity that end-users will mandate it.
- Analogies:
  - CMM from SEI
  - PMBOK from PMI
  - ITIL from OGC
  - Basic Profile from WS-I
  - WWRE & UCCNET

October 27, 2005

Dear Valued IT Vendor:

This letter is intended to update our information technology (IT) vendor community on Best Buy's position with the Global Integration Framework (GIF). We are striving to improve efficiencies in our IT operations, increase speed to market, and ultimately improve our customer's experience in our stores. The bottom line outcome of GIF is fast and reliable integration of our internal systems and the systems of our suppliers and partners.

Our intent is to utilize the EAI Industry Consortium GIF Repository solution. The GIF Repository is a global, standards-based industry solution for end-to-end integration. The GIF allows us to model business processes based on repository objects and, with the push of a button, migrate the process specifications to our IT systems. The GIF supports the entire life-cycle of business processes from inception thru deployment and ongoing changes. At all times the end users have direct control of IT Systems and visibility to their impact on business operations.

We are making this solution a high priority to drive down costs in our IT operations and improve reliability of production systems. Our expectation is that you will support this initiative by publishing your software interface specifications to the EAIIC GIF Repository by the end of 2006. Further, our expectation is that your products will support open API's that permit direct and automatic exchange of our business process specifications with your product.

The EAIIC offers a direct connection to the registry, as well as essential training and compliance expertise to help software suppliers, at any level of readiness, prepare for this capability. For next steps, we encourage you to become familiar with your options and contact the EAIIC to understand the data requirements and the process for interfacing with the GIF Repository.

We look forward to working together with you on this mutually beneficial industry initiative.

John Schmidt,

VP Integration

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Enterprise Applicati

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Definitions

- Enterprise Application Integration
  - Def'n: ***The process of integrating multiple applications that were independently developed, may use incompatible technology, and remain independently managed.***
- Global Integration Framework
  - Def'n: ***A <u>prescription</u> for using models, patterns, standards, techniques and tools to build and <u>sustain</u> the common shared elements of integration solutions.***

GIF – What is it

- a universal lexicon for integration terminology,
- a formal definition of integration patterns and components,
- a vendor-neutral architectural reference framework,
- a guidebook of integration best practices,
- a central registry of GIF-compliant interfaces,
- an education program to disseminate the knowledge, and
- a certification process to validate the skills and knowledge of individuals, the conformance of products, and the maturity of organizations.

Proposed GIF Starting Point

- **Methodology**: Total Business Integration (TBI) from Johnson & Johnson
- **Architecture**: Open Group Architecture Framework (TOGAF)
- **Integration data model**: UML Profile for EAI from the OMG and the integration meta-models developed and implemented at Best Buy

- Approach:
  - Extreme Standards
  - Mandatory end-user involvement
  - All results in active repository

Roadmap to Banff

- Dec 1, 2003: Draft GIF Charter document prepared
- Jan 1, 2004: EAI Methodology paper finalized
- Feb 3, 2004: Initial workshop with the Open Group
- Feb – May, 2004: Sub-committee activities
- May 24, 2004: Global EAI Summit in Banff
  - Review work to-date
  - Detailed roadmap for the next 12 months
  - Prepare a public or member release of available material

Topics

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EAI Laws

There is no end-state.

All details are relevant.

There are no universal standards.

Information adapts to meet local needs.

The whole is greater than the sum of its parts.

EAI Principles

- Align EAI plans with business strategy
- Consolidate first, integrate second
- Use a process-driven approach for end-to-end solutions
- Establish clear lines of ownership and accountability
- Enforce an EAI architecture
- Mandate integration requirements for new applications
- Develop a common representation of data and process
- Test early and often
- Re-factor interfaces constantly
- Evolve business processes through experimentation

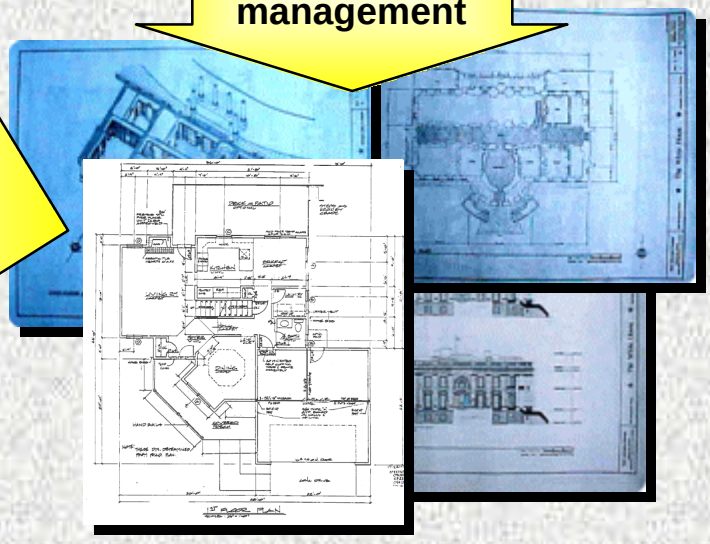
The Case for Modeling

The
Real World

Traditional practices result in inconsistent, incompatible and difficult to maintain models

Moving from "freeform" to structured knowledge management

Metadata provides a structured and consistent way to describe our systems



Metadata: a consistent & repeatable way to blueprint global solutions and act as the base for an ***ERP System for IS***.

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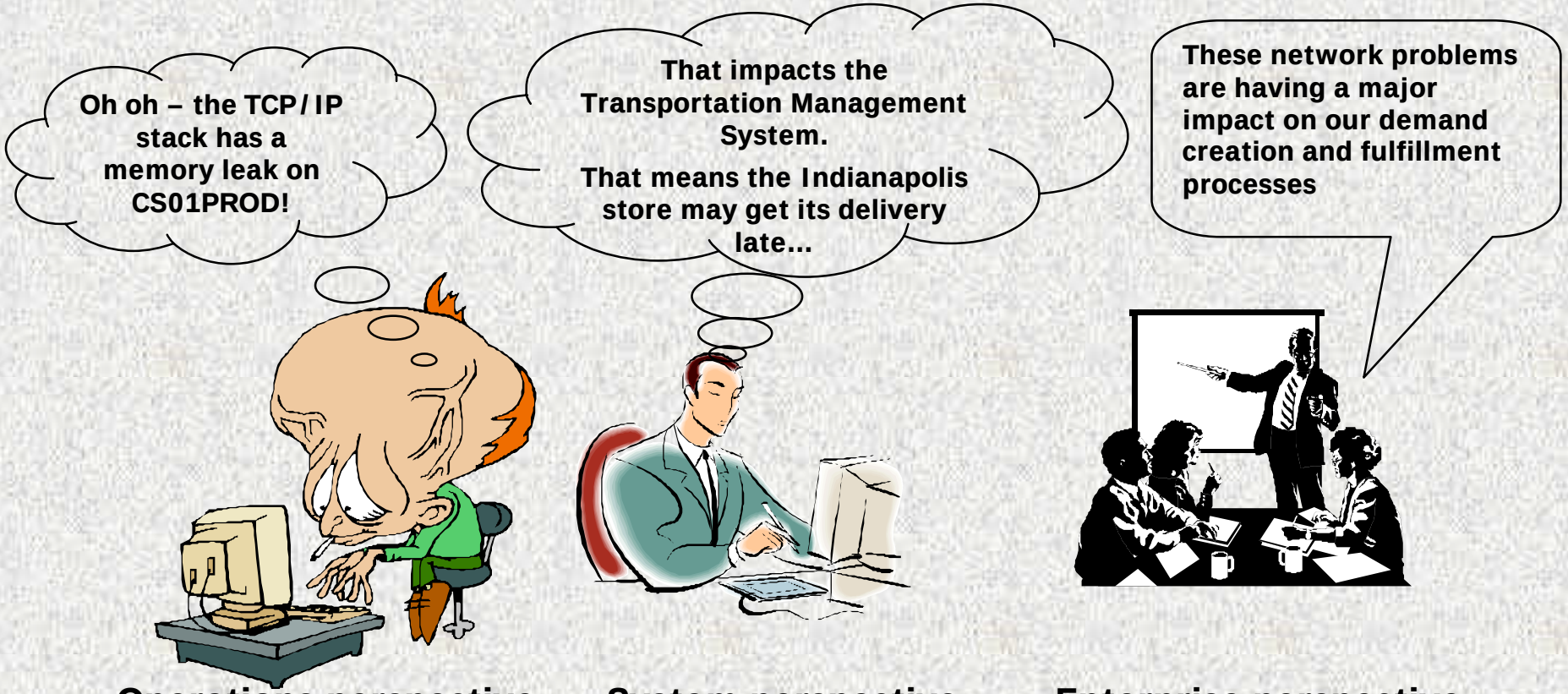
Metadata: the foundation of ERP for IS



Operations perspective **System perspective** **Enterprise perspective**

Metadata is knowledge about our IT environment that provides a critical linkage between the business and technology.

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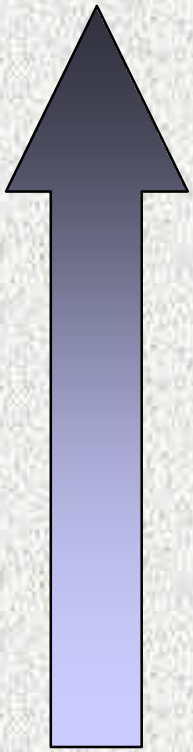
Improving Metadata Maturity

One dimension of the TBI development roadmap is to move it up the metadata maturity scale.



CMM Level	CMM for Software	CMM for Modeling
Level 5	Optimizing	Learning
Level 4	Managed	Predictive
Level 3	Defined	Dynamic
Level 2	Repeatable	Active
Level 1	Initial	Static

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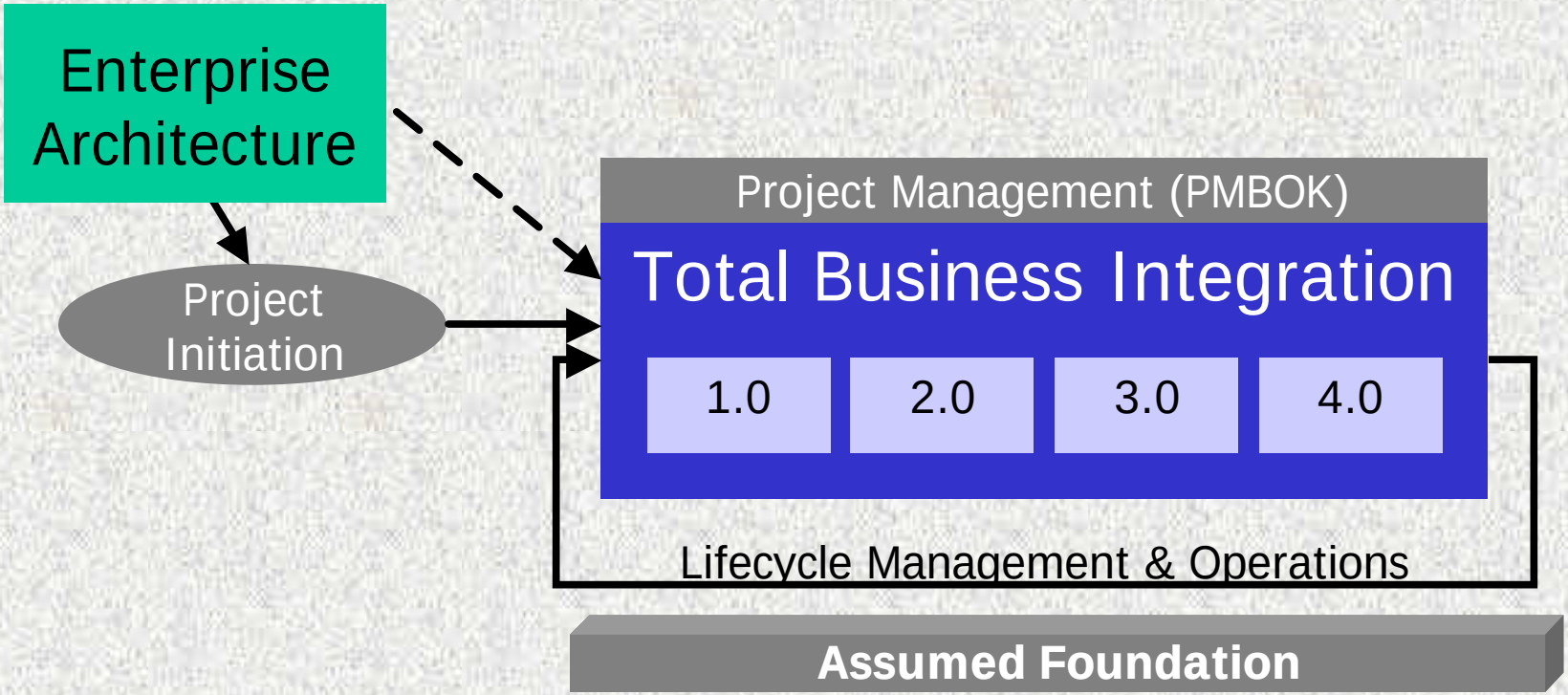
Methodology Objectives

- Guidelines to practitioners
  - Unique aspects of delivering integration
  - Best Practices – methods, models, tools…
- Over time include many aspects
  - EAI – of course
  - Also Architecture, Business Process Mgt, etc
- Total Business Integration starting point
  - Created at J&J in 2002…proven on several integration projects in 2003
  - Being applied on other projects

TBI Context



Assumed Foundation

- Architecture Analysis and Design
- Standards
- Software Selections
- Development methods and tools
- Operations management

Problem Definition

- **Increase in Point to Point integrations**
  - **Increased complexity**
  - **Increased maintenance costs – Higher percentage of IT budget spent in maintenance; lower spend on new projects**
- **Increased cycle time; Poor Project Estimation**
- **Built to last vs. Built to change**
  - **Lack of flexibility - Technology or Business Process changes can be absorbed easily**
  - **Limited life of IT Investments**
- **Limited Reuse Opportunities**

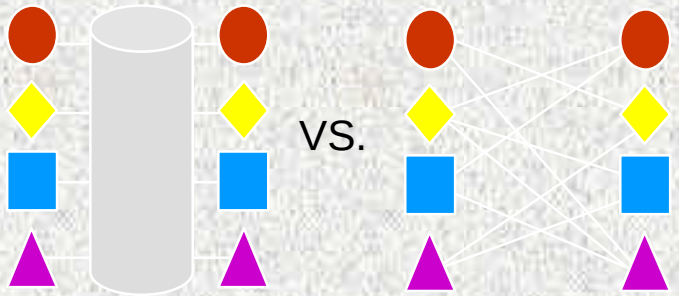
What is TBI ?

Total Business Integration Framework

- a business process oriented model consisting of an end-to-end integration methodology (with templates) for J&J's integration projects
  - ✓Business Process Analysis
  - ✓Integration Design Best Practices
  - ✓Comprehensive Quality Assurance and Governance
  - ✓Artifacts Management
  - ✓Best practices from Industry Standards:
    - ebXML (created by UN/CEFACT and OASIS) and OAGIS
    - DMAIIC (Six Sigma) & DMADV (Design Excellence) Methodologies
    - UML (Object Management Group)
    - GEAR (webMethods)
    - CMM (Capability Maturity Model from SEI)
- IM processes for utilizing XML, TIBCO repository and Webmethods for business process integration

Value Proposition

- **Speed to Market for projects**
  - Changes in business processes
  - Merger and Acquisition systems assimilation
  - External partner connectivity



Application-to-application integration

- **Reusable architecture and processes**
  - Reduced integration time & costs for follow-on projects/companies
  - Setting standard for future integration

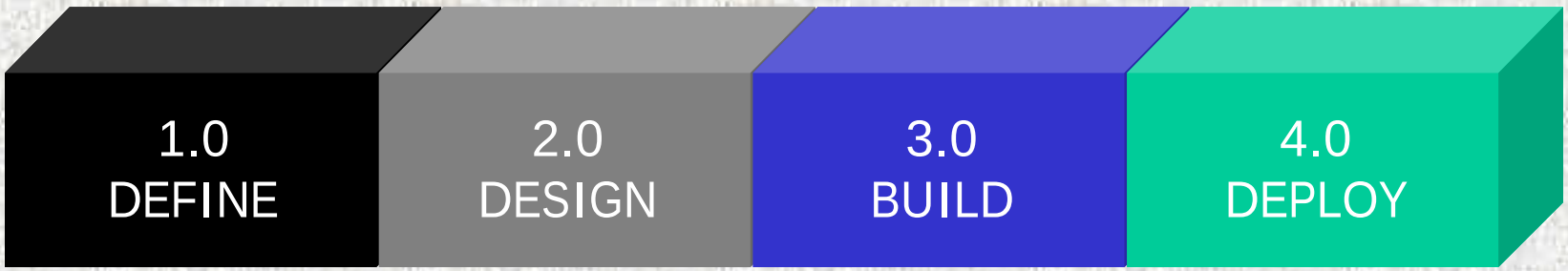
- **Reduced complexity & Total Cost of Ownership**
  - Minimizes point-to-point interfaces
  - Long term reduction in change management and maintenance costs

- **Future-Proof : Buffers from future changes in application architecture**

TBI Highlights

- Top-down, process oriented
  - Process Excellence drives requirements
- Requirements unique for integration
  - Business Process
  - Functional / Non-Functional
  - Technical / Data
- Incremental End-to-end Testing
- Software Quality Assurance built-in
- Change management
- Prototype when approach needs validation

TBI Methodology



Objectives

- Scope, goals, and objectives
- Detailed business process analysis
- Technical requirements
- Software quality assurance plan
- Establish change management approach
- Testing methodology

- Develop the logical design
- Select XML standards
- Map data and define schemas
- Prepare and solution-architect the integration
- Design integration test

- Develop the integration solution
- Complete the technical design
- Execute tests:
  - unit
  - system
  - load/stress testing

- Validate solution meets req's
- Migrate solution to production
- Start operations

TBI Deliverables

Sub-Phases

1.1 Project Definition
1.2 Business Process Analysis

2.1 Logical Design
2.2 Architecture

3.1 Integration Design
3.2 Coding
3.3 Testing

4.1 QA & User Acceptance Test
4.2 Production

Major Deliverables

- Project Definition
- Use Cases
- Requirements
- Quality Plan
- System Test Cases
- Formal Design Review

- Logical Design
- Architecture
- Integration Test Cases
- Prototype Analysis
- Formal Design Review

- Software Components
- Error Handling Guides
- Test Results
- Formal Design Review

- Software in Production
- Trained Operations/Support Personnel

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Microsoft
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Next Steps
Prepare for Global EAI Summit

- Sub-committees:
  - TBI Pilot Implementation (P. Jacobsen, Best Buy)
  - TOGAF & TBI Alignment (S. Field, Tier1 Innovation)
  - Terminology alignment (tbd)
  - 3-Year Roadmap (tbd)
  - Tool Development (tbd)
  - …other areas of interest to TOGAF?

- **Volunteer: 6-8 hours over next 3 months (respond to email follow-up)**
- **Conf. call working session beginning in March**
  - **Expect 3 -4 sessions**
  - **Expect to help with documentation**
- **Go to Global Summit**

Comments & Discussion