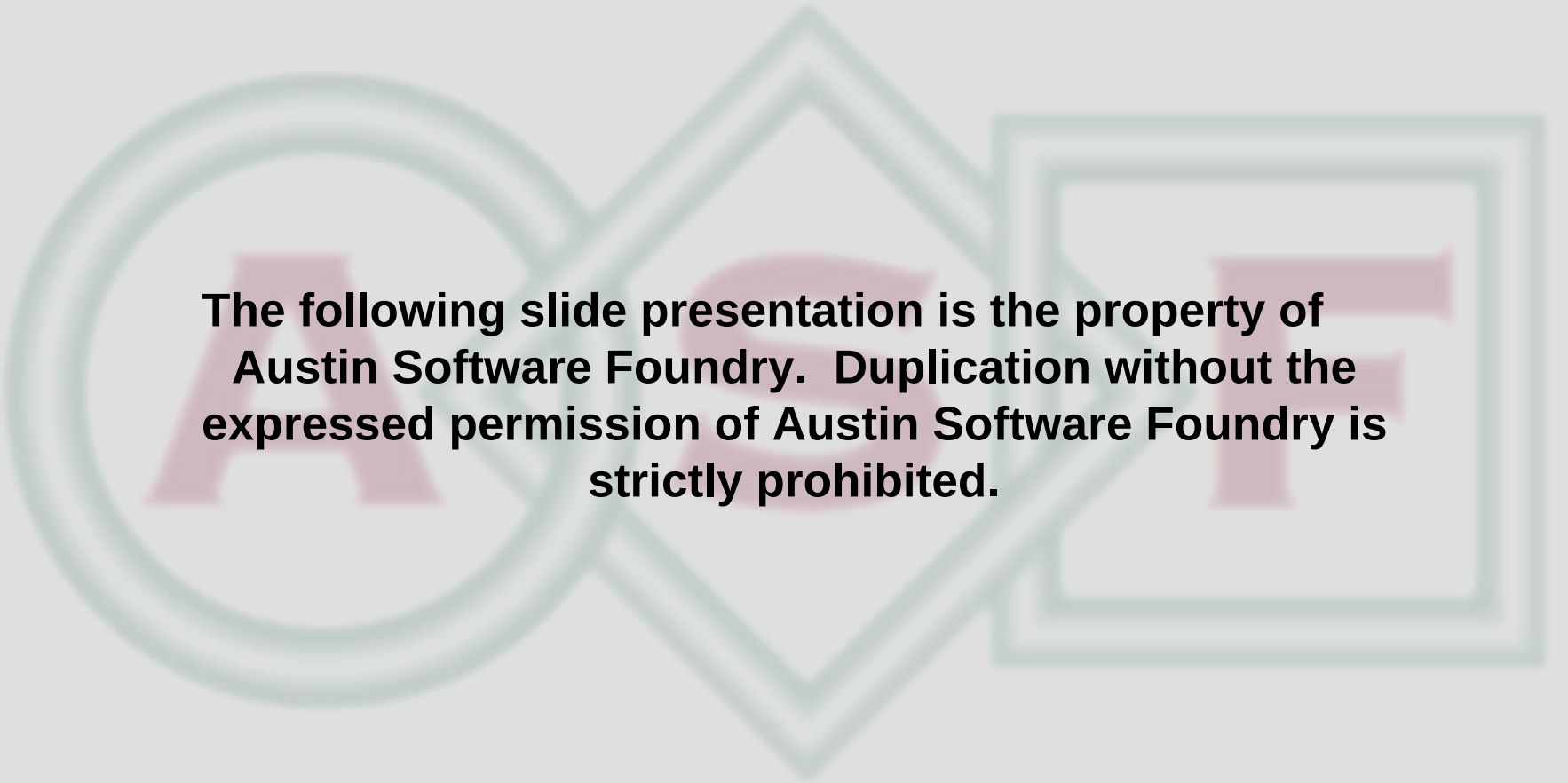

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Implementing an Object-Oriented Software Development Environment Using Rose/PowerBuilder

Rational Software User Conference

February 10, 1997

Bill Reynolds Austin Software Foundry

Agenda

- **Introduction**
- **Establishing a Strategic Direction**
- **Creating a Transition Plan**
- **Evaluating Results and Iterating**
- **Rose/PowerBuilder Demo**

Objectives

- Present ***management issues*** related to transitioning “traditional” PowerBuilder development to true object-oriented PowerBuilder development
- Provide a ***road map*** for moving an organization through that transition
- Demonstrate ***actual use*** of Rose/PowerBuilder on a PowerBuilder project
- Present ***actual experiences/results***

Company Profile

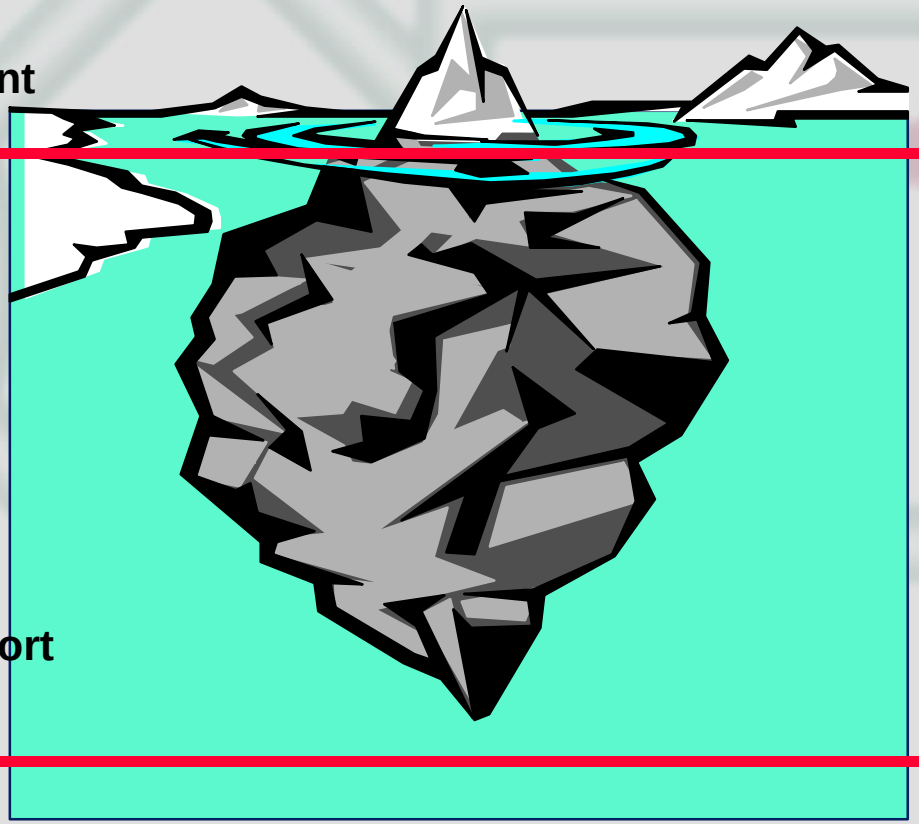
- **Size: Fortune 100**
- **Industry: Manufacturing**
  - **Discrete Manufacturing**
  - **Continuous Manufacturing**
  - **Natural Resource Management**
  - **Financial Services**
- **Locations: North America (U.S. and Canada)**

Company IT Profile

- **Standards-based Technical Architecture in place and evolving**
- **PowerBuilder selected as standard development tool for 300+ developers**
- **Experience in C/S Applications with Remote Data Management Architecture**
- **Need to move from *tactical* to *strategic* application development**

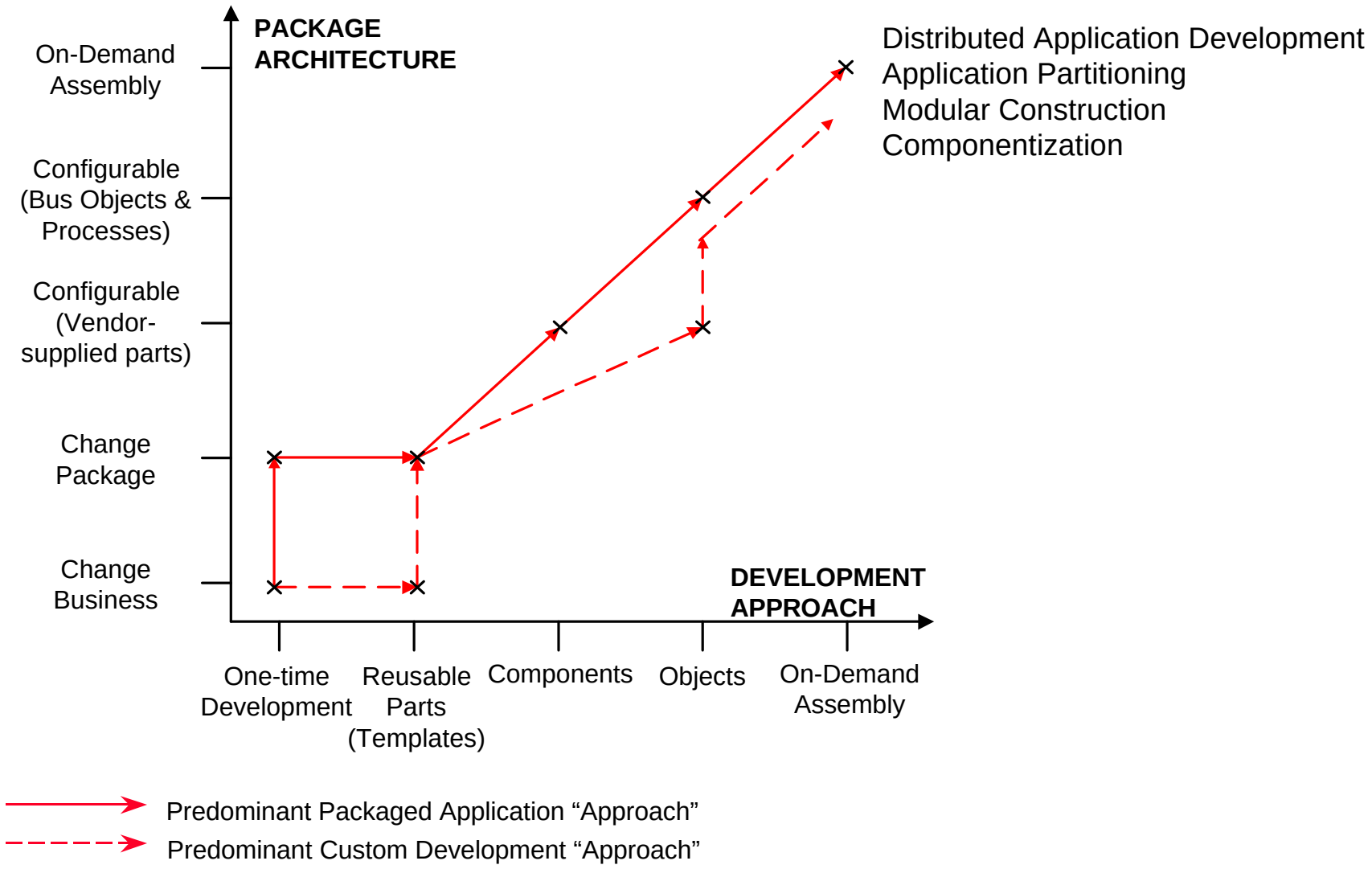
C/S Application Development:
Strategic Business Drivers

C/S Application Development



Time-To-Market
Quality
Total Lifecycle Cost
Application Integration
Business Process Support
Packaged Application
Adaptation/Extension
Electronic Commerce Support

C/S Application Development:
Strategic Technology Drivers



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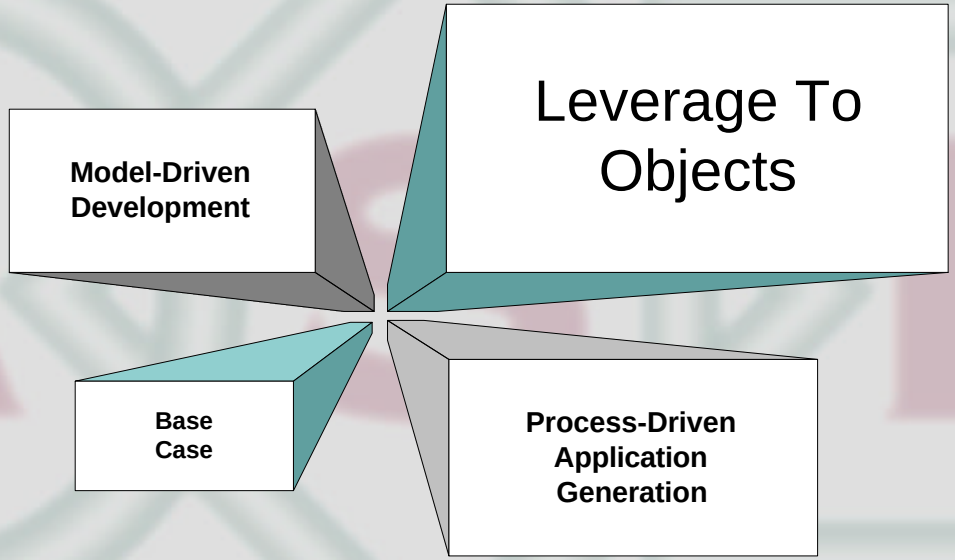
Software Delivery Environment: Charter

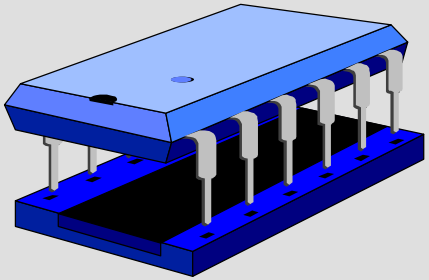
- **Produce a set of *end states* (5 year targets) that describe outcomes and capabilities needed by software and development organization**
- **Clearly identify the value to the business of these end states**
- **Identify the transition strategies and resources required for implementation**
- **Establish linkages between required core competencies and the priorities of strategic education programs**

Software Delivery Environment: Process

- **Strategic Planning Retreat**
- **Target End State/Transition Plan Approval**
- **Proof-of-Concept Project: Architecture**
- **PathFinder Project: Architecture+Process**
- **Pilot Project(s): Refinement+Metrics**
- **Organizational Rollout/Standardization**

Software Delivery Environment: End States

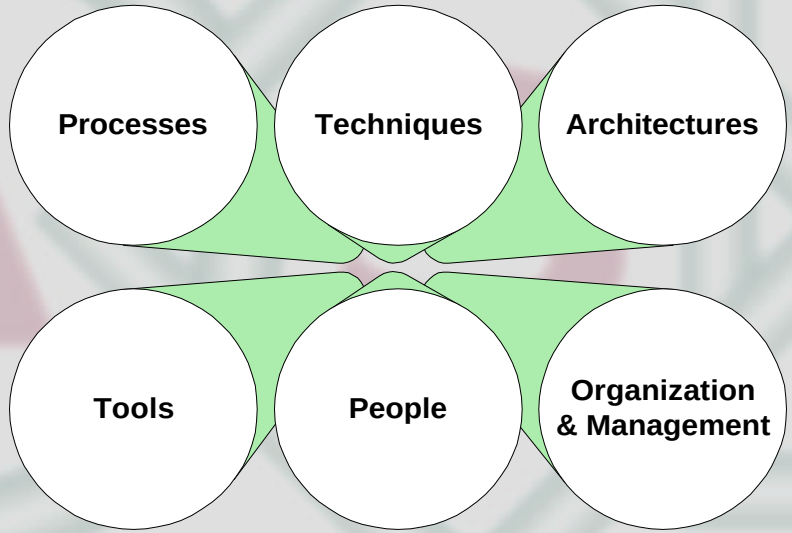


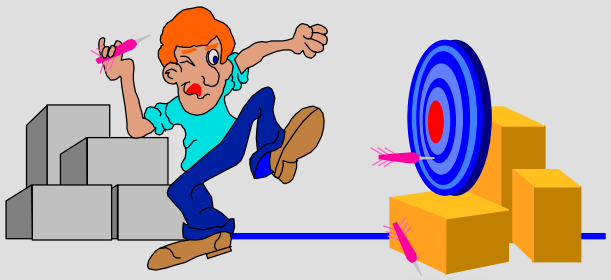


Leverage To Objects

- **Delivers solutions when needed, meeting JIT requirements**
- **Harvesting and sharing reusable components**
- **Standard processes & tools to integrate, adapt and extend enterprise application packages as needed**

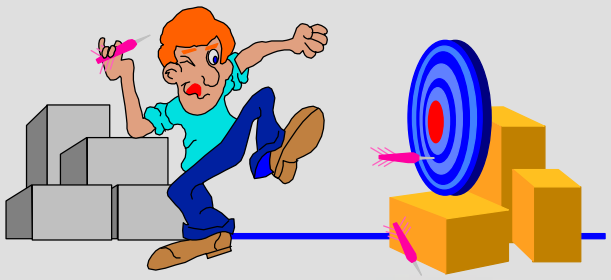
Software Delivery Environment: Characteristics





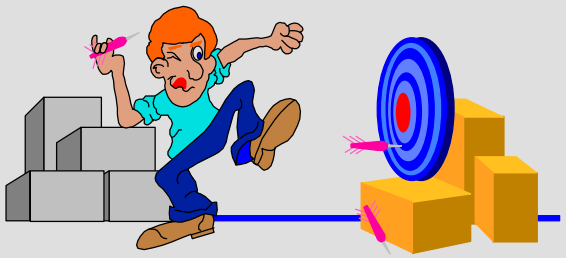
Target End State
Processes

- **Multiple methods for varying needs**
  - **Adaptive, accelerated system delivery**
  - **Package selection and integration**
  - **Software implementation**
  - **Maintenance**
- **Object Oriented methods**
  - **Harvesting technology**
  - **Component certification**
  - **Reuse enablement**



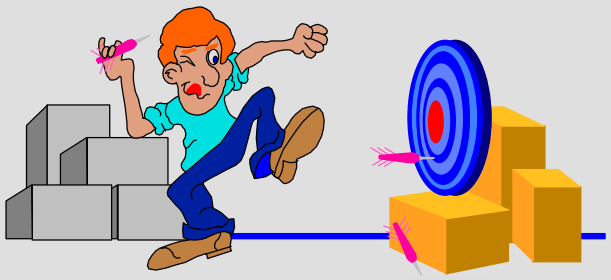
Target End State
Techniques

- **Solutions assembled from components**
  - **Purchased components**
  - **Internally developed components**
- **Business Object Modeling**
- **Package adaptation uses package toolsets**
- **OO wrappers used to ease interfaces**
- **Techniques monitored for continuous improvement**



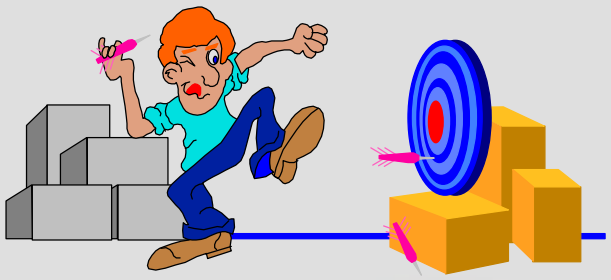
Target End State
Architectures

- **Supports n-tier implementations**
- **Solutions are deployed as one to n-tier**
- **Implementation of business / information architecture**
  - **Configuring / extending purchased applications**
  - **Developing niche applications**
  - **OO Wrapping for interfaces**



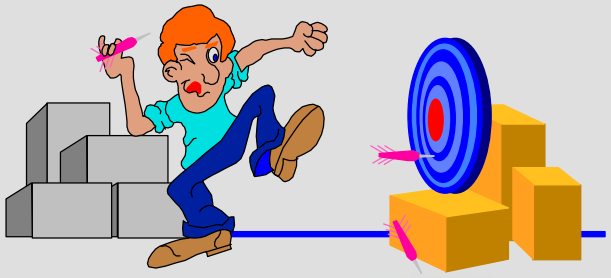
Target End State
Tools

- **Standard tools used where possible**
- **Object modeling tool supports forward & reverse engineering - “ROUND-TRIP”**
- **Appropriate tool integration through process management**
- **Repository provides facilitation of object reuse**
- **Browsing technology provides easy identification of available components**



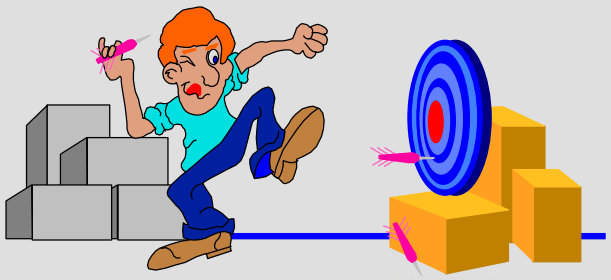
Target End State
People and Core Competencies

- **Object Oriented competencies**
  - **Analysis and design**
  - **Component design and construction**
  - **Design, prototyping and assembly of solutions**
- **Multiple roles, each with multiple competencies**
  - **Reuse architect, solution developer**
  - **Component developer, wrapper specialist**
- **Adaptive, accelerated system delivery**



Target End State
Organizational Changes

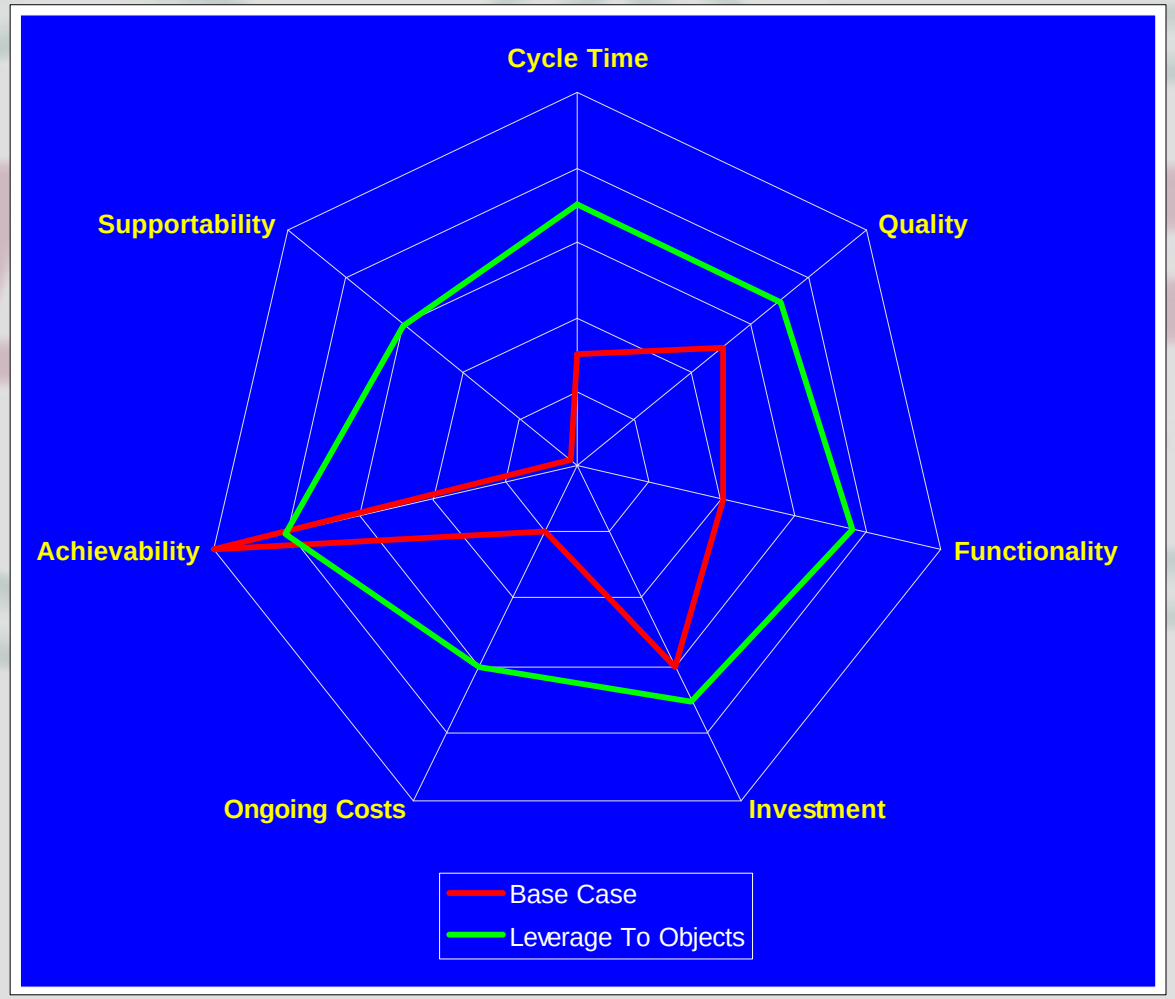
- **Central object library support**
  - **Browsing support**
  - **Component certification**
- **HR support encourages new roles**
  - **Build reusable components**
  - **Submit components for reuse**
  - **Reuse available components**



Target End State
Management Changes

- **Ensure end state characteristics are used to meet business expectations**
- **Management challenges**
  - **Understanding and implementing the end state characteristics**
  - **Balancing and prioritizing IT opportunities**
  - **Teaming IT staff and user domain specialists**
  - **Encouraging reuse**

Software Delivery Environment: End State Results



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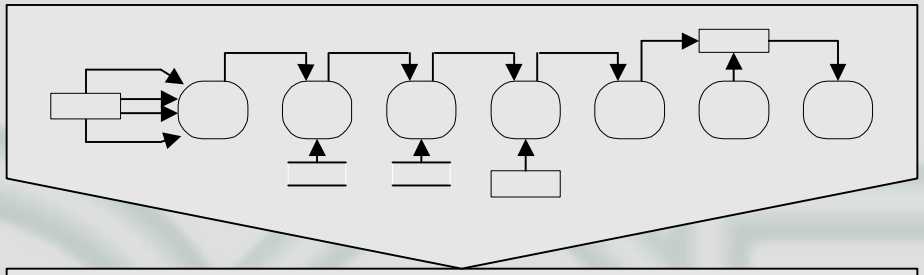
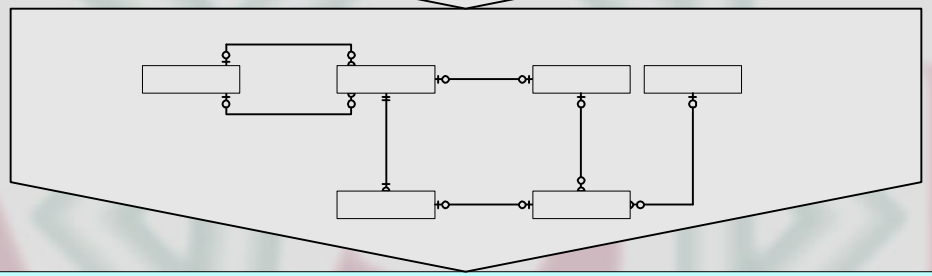
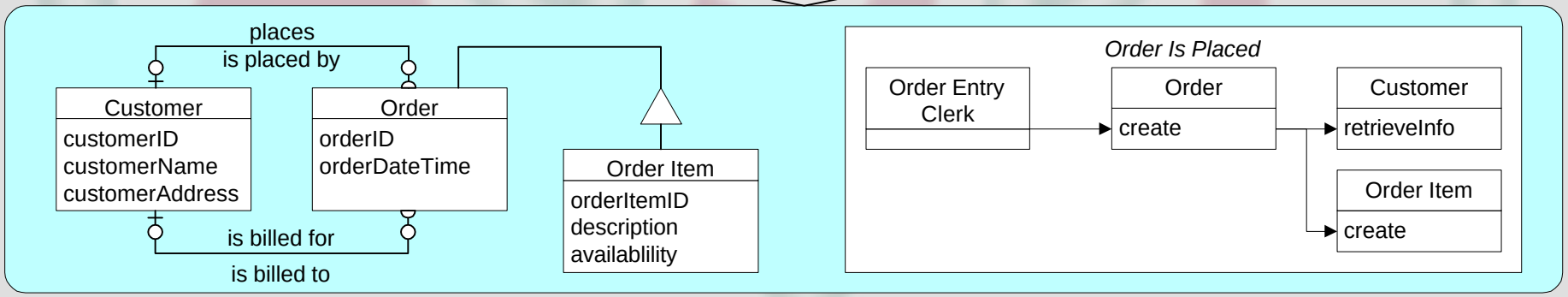
Transition to Objects



Process

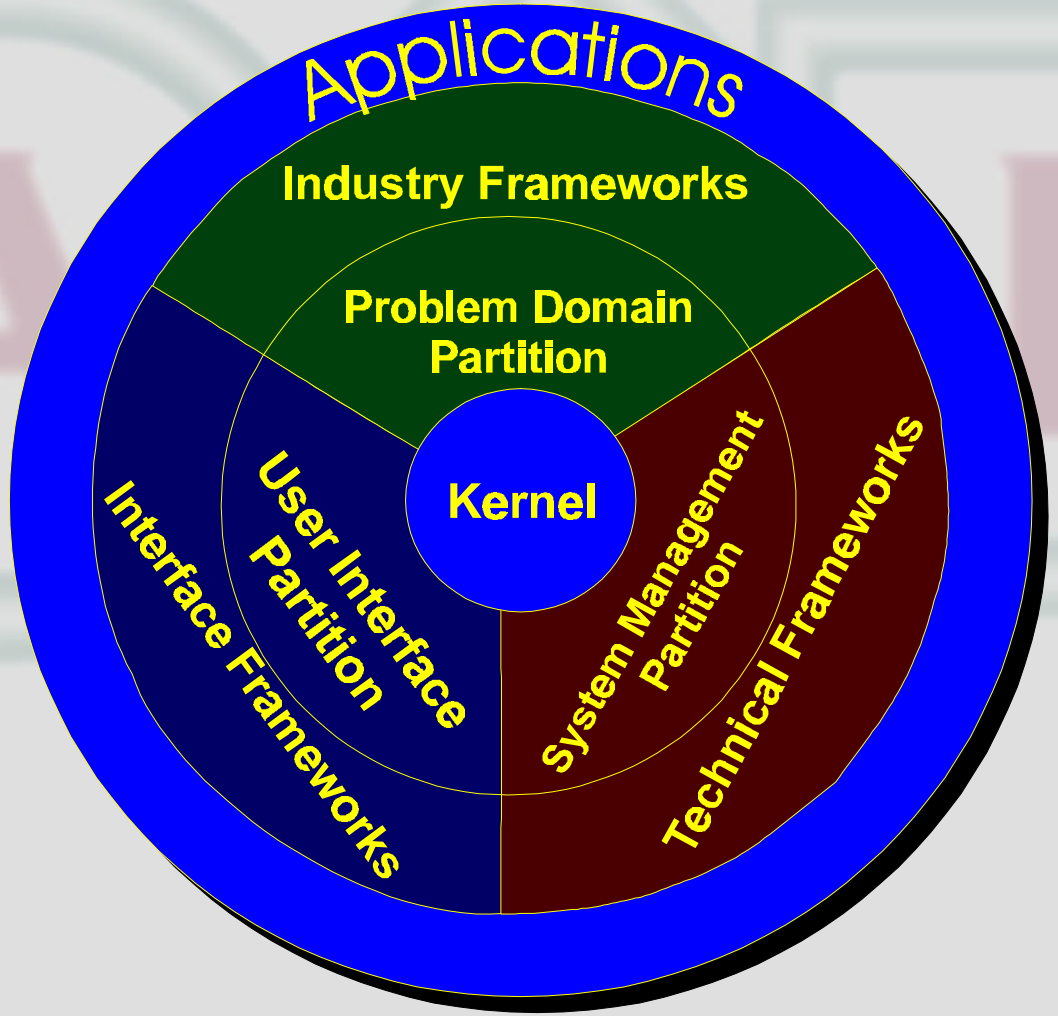


Data/Entity

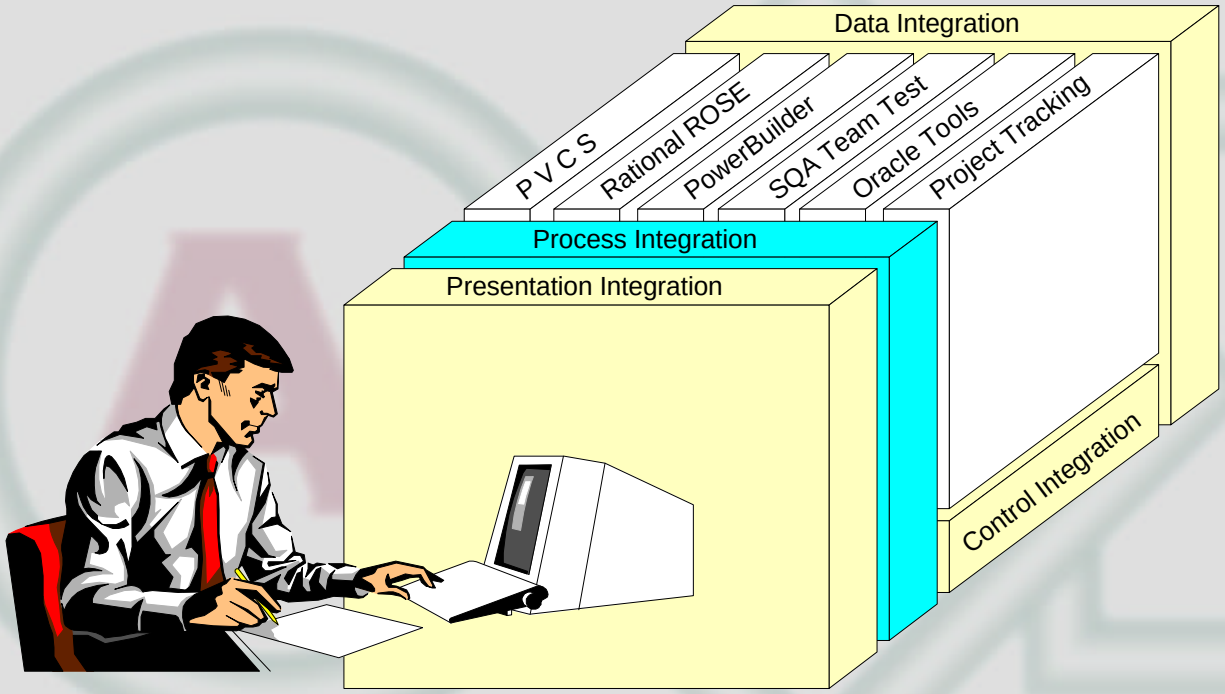


- **OO Programming 1975, OO Design 1983, OO Analysis 1988**
- **Both static and dynamic view of systems**
- **Provides a well-defined interface data structures**

Transition to Architecture



Transition to Tools

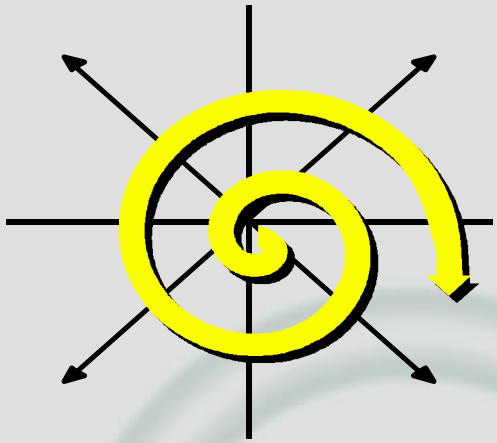


Presentation Integration = **Common Look & Feel for all tools**

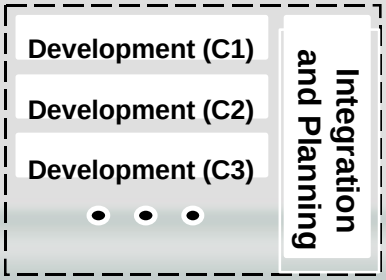
Data Integration = **Data shared through common repository**

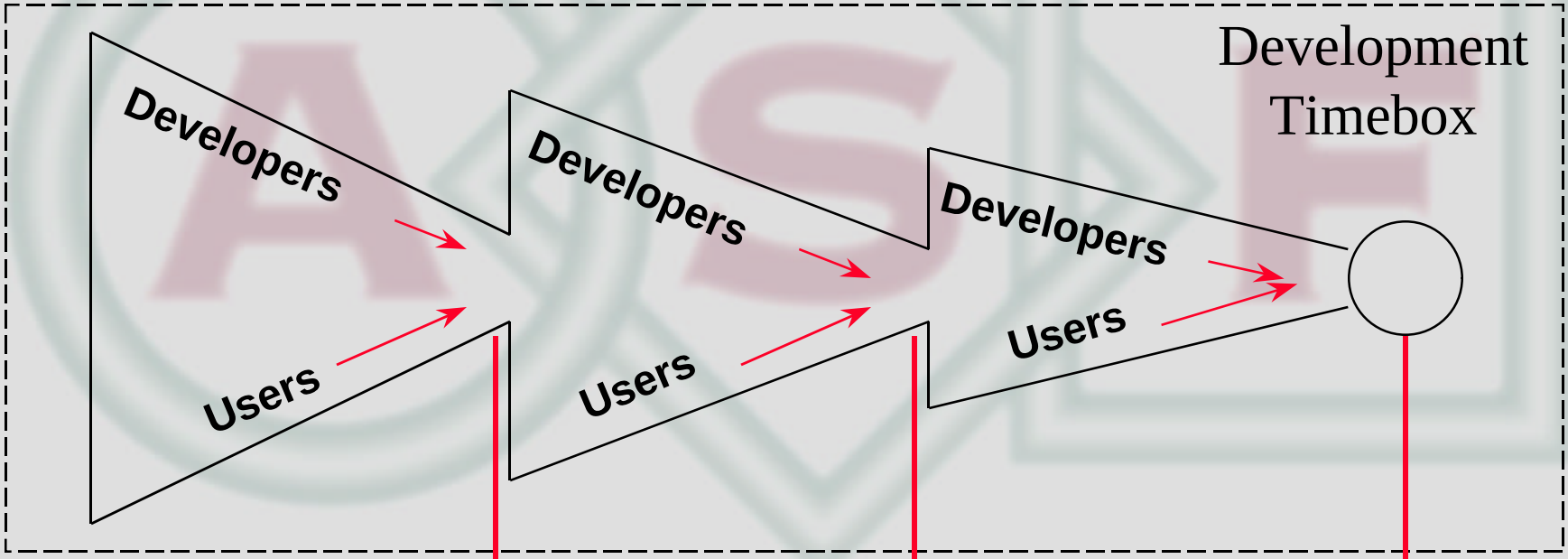
Control Integration = **Tool can request services from another tool**

Process Integration = **Only those tools necessary for user's role are accessible**



Transition to Process



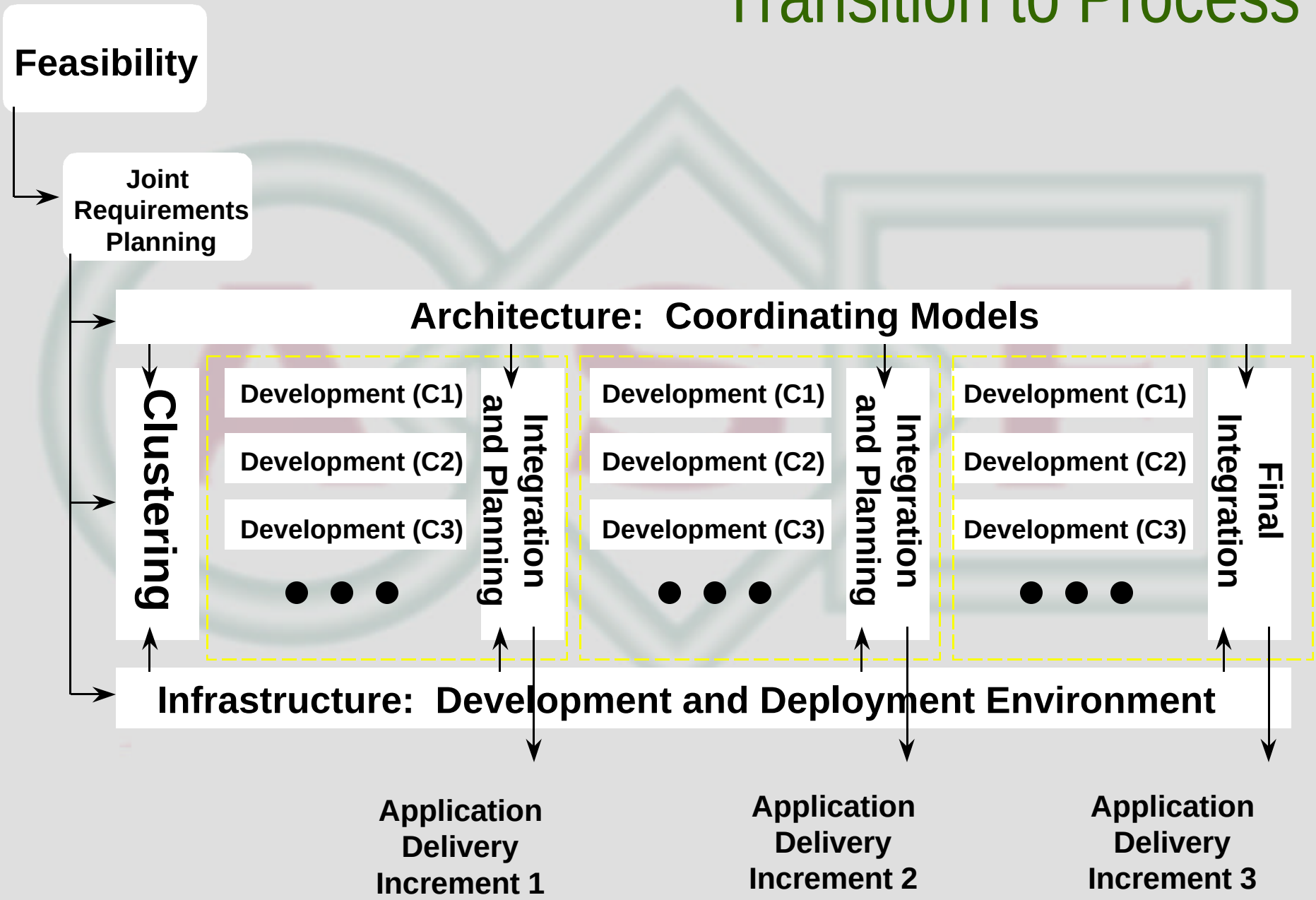


Prototype Iteration Review 1

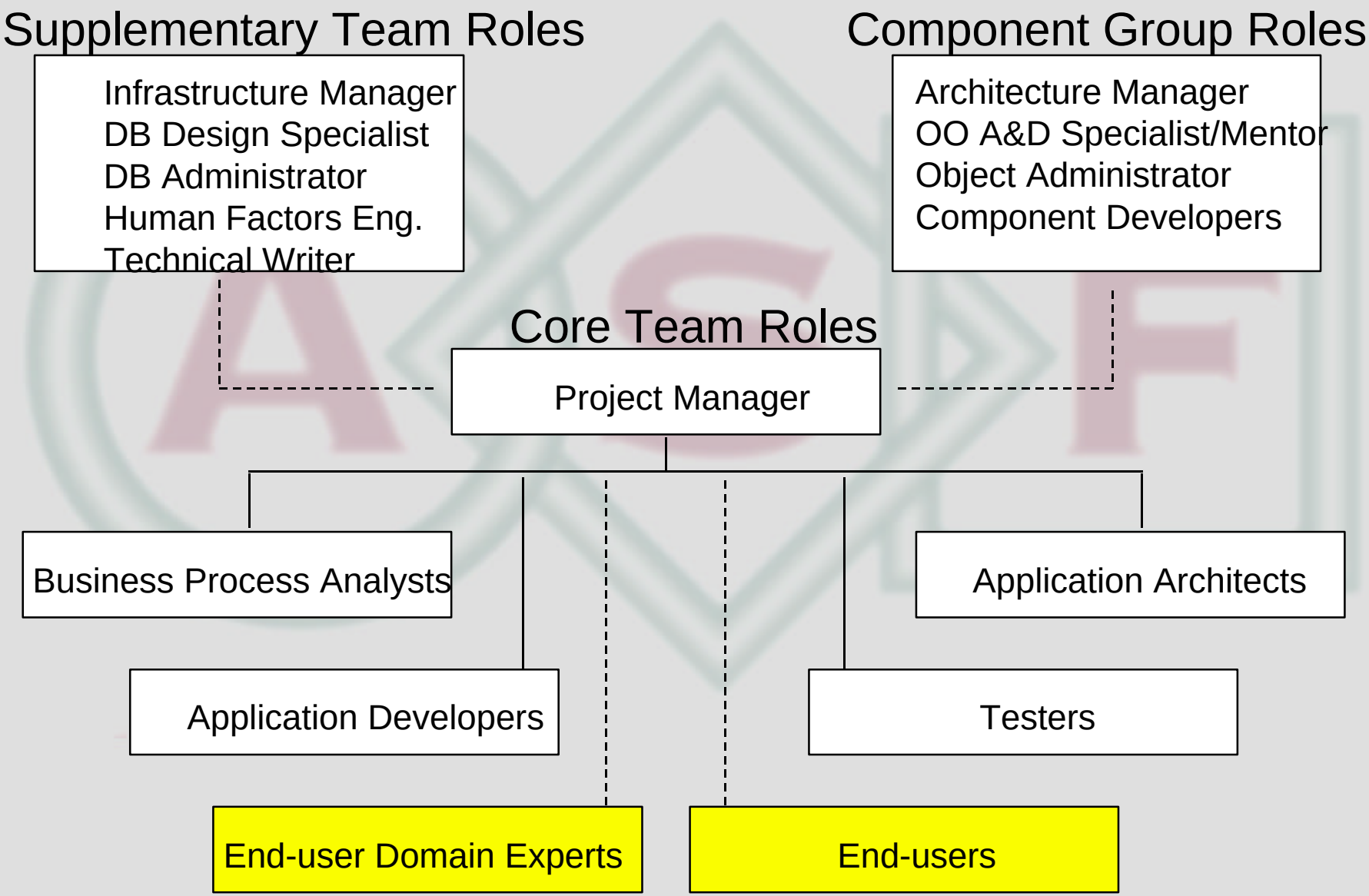
Prototype Iteration Review 2

Application Delivery Increment *n*

Transition to Process



Transition People to new Roles



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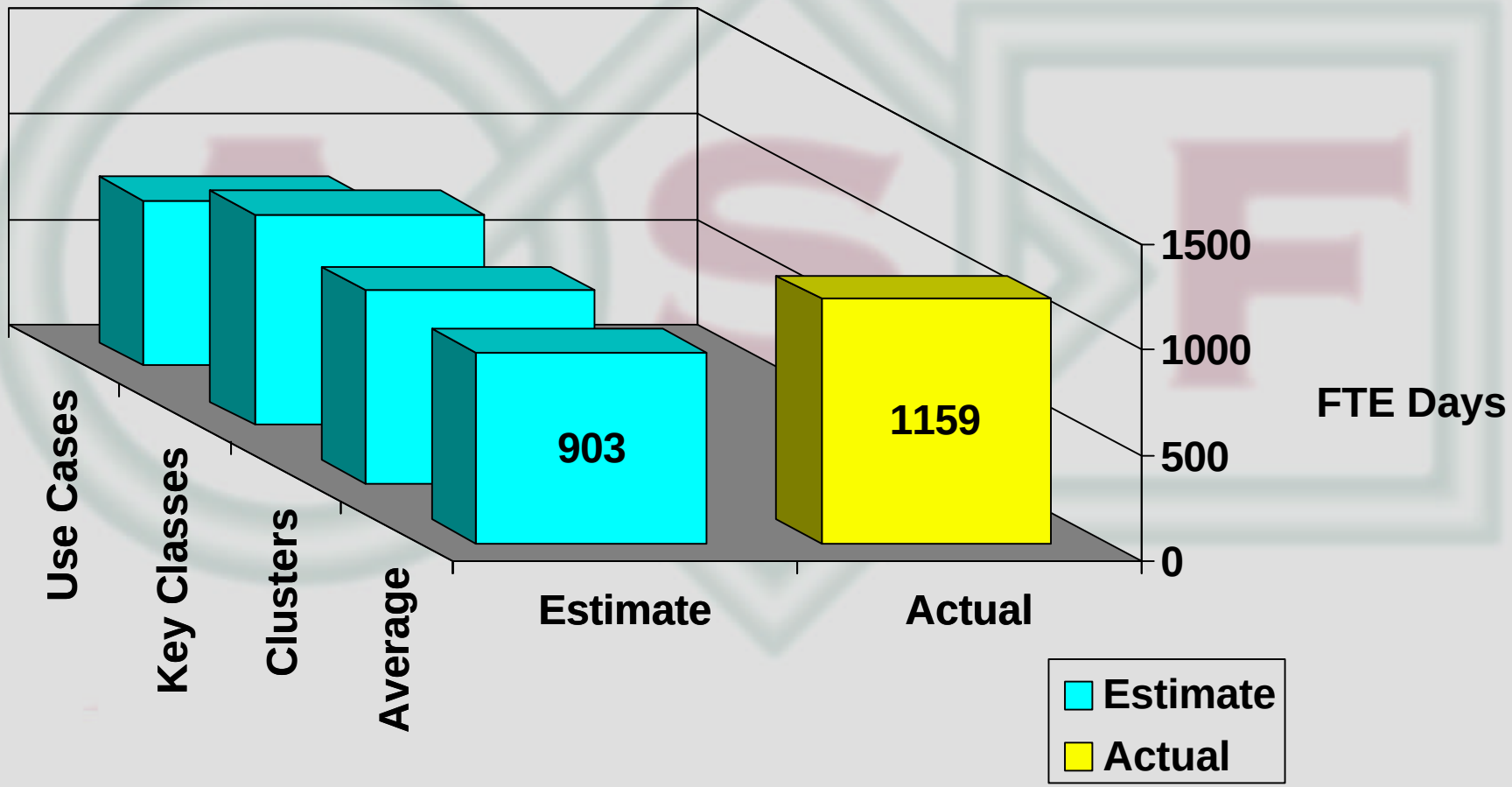
Proof-of-Concept Project: Raw Material Acquisition

- **Track the acquisition of raw materials as they are acquired and moved into plant inventory**
- **Develop a common core of components to standardize the development of raw material systems company wide**
- **Managed and mentored heavily by ASF**

Proof-of-Concept Status

- **Implementation of first timebox complete**
- **Proof-of-concept**
  - **partitioned application architecture**
  - **Rational ROSE/PB modeling tool**
  - **iterative development process**
- **User collaboration key to success**

Proof-of-Concept Status



Key Learnings

- **Education must be a full-time pursuit**
- **Business analysts and developers must meet in the middle to fill “design gap”**
- **Use of Rose/PB modeling tool facilitates collaboration between users/developers**
- **Use of Rose/PB “Round-Trip” engineering is difficult for cultural, not technical reasons**
- **There is no substitute for discipline and rigor in the development process**

Next Steps

- **Launch Pathfinder project**
- **Begin design of Object Technology Center**
- **Communicate learnings and progress to corporate audience**
- **Create comprehensive learning program with immersion training and OO reading library**

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