## Modeling Development

Emerging Technologies & Emerging Markets.

If building systems is like making muffins, what kind of muffins are we making lately?

## The Big Message?

Emerging Technologies and Markets:

- Increasingly Require Systems that Directly Implement Business Value Chains
  - -> Increased Direct Customer Interaction
- Demands on Value Chain Systems are Increasing
- IT Practices need Help to Build These Systems

OO Tools & Techniques, transplanted from product development can Improve the *Development System* for Value Chain Automation.

## Kinds of Automation (Software)

Grouped by "Value to it's creators."

- Embedded Systems / Shrink-Wrap - Products
  - Producer gets Paid when Products Sell
  - Consumer Benefits from Steps their Value Chain
- Back-Office Automation / Personal Productivity
  - Producer is Consumer - Simplifies their own life
- Value Chain Automation
  - Producer gets Margin on Events in the Automated Process
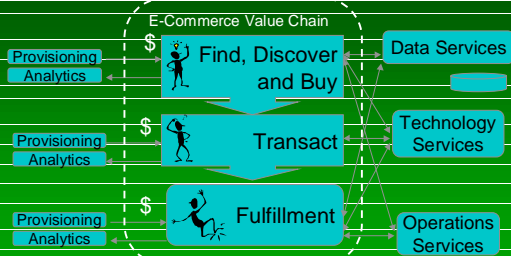  - Consumer is the Company's Customer

Emerging technologies are trying to reach the Value Chain directly - Customers

## Pattern for VC in an e-Commerce Site



E-Commerce Value Chain

Provisioning Analytics — $ Find, Discover and Buy — Data Services

Provisioning Analytics — $ Transact — Technology Services

Provisioning Analytics — $ Fulfillment — Operations Services

## Value Chain SW is Different

Risks to Value Chain SW

- Outage - Direct Loss of Revenue
- Outage / Feature Deficit - Direct Impact on Customer Experience, their Perception of the Company, Return Rate
- NF Attributes - Impact on Customer Experience

Agility of VC systems also Matters

- Harris Interactive, The Election Runoff Poll
- Amazon.com, Sept 11th Red Cross Page

Different from "Back Office" IT, or from Products

## So What's the Problem?

Integrated Value Chains, cross:

- Technologies
- Platforms & Deployment Targets
- Development Tools,
- Organizations (In Company & Cross Company)

Demands on the *Development System* producing the VC automation, increase as:

- More organizations go after VC directly - Raises Bar for Everyone
- Consumers Expect Better Experience - Implemented by VC

## The Development System?

**Definition - The *development system* is the collection of people, processes and tools that together produce the system under development.**

- **The development system is itself a system,**
- **It has functions, and attributes.**
- **It is amenable to analysis, and deliberate design, using systems techniques.**
- **A higher-performance development system can be created by turning OO techniques on the development system itself.**

TOOLS
Eastern
Europe
Modeling Development
Copyright © 2991, 2002 James Bullock
Rare Bird Enterprises
23 August, 2002
7

## Limits of Development System

Value Chain Systems produce severe (and increasing) demands on Development Systems

- Consumers always expect more - Features, Agility
- Businesses compete on VC Features & Agility
- Businesses compete on Development System Agility & Ability to integrate new technologies

Prior Art is Insufficient

- Product Development Systems have Agility Issues
- IT (Back Office) Development Systems have Reliability, Adaptability Issues

TOOLS
Eastern
Europe
Modeling Development
Copyright © 2991, 2002 James Bullock
Rare Bird Enterprises
23 August, 2002
8

## Improving the Development System How?

Example: *Automatic Composition of Systems From Components with Anonymous Dependencies* - Ioana Sora

- Automates a step in the Development Process
- Improves non-functional attributes (cycle time, precision, repeatability) of Development System
- Improved cost point for changes to target SW?

Example - OO tools and techniques applied to the Development System

TOOLS
Eastern
Europe
Modeling Development
Copyright © 2991, 2002 James Bullock
Rare Bird Enterprises
23 August, 2002
9

## Integration Example: Change Management

With *The Planet Project*:

- Changes to Survey impacted multiple components: Akami content, Weblogic App, DB Contents (Metadata) and DW / Data Cube
- CM deficit Prevented Responsiveness Like US-Election Survey - 24 Hour, immediate response.

With *Amazon.com*:

- 2001 Initiatives Require Stack Integration: Perfection in Order Promise, Deight-o-meter, Improved inventory Turns, Operational cost savings from Architecture Improvements
- Customer Expectation: Order Predictability, Order Tracking, set by Other Sites, e. g. Fed-Ex

TOOLS
Eastern
Europe
Modeling Development
Copyright © 2991, 2002 James Bullock
Rare Bird Enterprises
23 August, 2002
10

## Object Model for Change Management

Object Model for Change Management

- Supertype "Elements" have:
  - Version attribute,
  - "Promote Version" method
- Subtypes uniquely implement "Promote Version":
  - Database, middleware, app layer, presentation
- Object "System" contains Configuration

Now Value Chain Changes behave differently:

- Faster, more reliable, arbitrary reach, cost of operation scales differently (almost 0)
- Vs. "Promotion by Technology Team"

TOOLS
Eastern
Europe
Modeling Development
Copyright © 2991, 2002 James Bullock
Rare Bird Enterprises
23 August, 2002
11

## What's that have to do with this conference?

Any Presentation at this Conference:

- Directly Addresses Improvement to the Development System
- or
- Is an Example of Technology / Market Changes Driving the Need for Changes in the Development System

Emerging tools and Emerging Markets . . .

- Apply to automating Value Chains ($) Exposed to Customers
- Have Increased Demands of Integration, Agility, etc.
- The Development System Limits Integration, Agility, etc.

Apply OO Models & Tools to Development System, to Improve It's Performance in Creating Systems

TOOLS
Eastern
Europe
Modeling Development
Copyright © 2991, 2002 James Bullock
Rare Bird Enterprises
23 August, 2002
12

## New Technologies & Markets

"Kinds of Automation" plus e-commerce pattern, is a useful frame for thinking about:
- Technology Initiatives and Proposals - ".net"
- Products - PDA / Phones
- Offerings / Strategies - Amazon.com as Platform

Who's trying to get paid for what?
- e-commerce company - paid for steps in VC
- e-commerce platform company - paid for parts that implement steps in VC for someone else
- IT in an e-commerce company - any difference?

## The Development System

The system we use to create systems becomes:
- A requirement for playing in Value Chain Automation,
- A differentiator, among organizations
- And a Risk to organization's Success and Viability

Harris Interactive, Planet Project, Amazon.com all experienced risks, due to limitations of Development Systems

## OO Tools and Techniques

Apply directly to The Development System
- Will become necessary (but probably not sufficient) for creating successful development systems.

Can apply as paradigms to processes outside the reach of OO tools. Valuable ideas:
- Abstraction,
- Inheritance / Supertype, Subtype
- Loose Coupling, Late Binding

Drive into Process & Architecture Level

## What's a Keynote?

Provide some "Big Message" that:
- Connects to Conference
- Motivates, Intrigues, Informs, Stimulates
  "Why do I care about this other stuff?"
- Contains Some Ideas You can Use

Keynote Form:
- Buzzword Compliant / Curb Appeal
- Stories / Anecdotes - Experience Based
- "Big Picture" Point of View

Seem to have met these criteria . . .

## Conclusion: Useful Ideas

Contains Some Ideas You can Use
- 3 Kinds of Automation: Product, IT, Value Chain
- Emerging Markets: Direct Value Chain Automation
  Different Rules for System Behavior & Development
- The e-Commerce Pattern (Useful Analytical Tool)
- Concept - The Development System
  The System (People, Processes, Tools) We Use to Make Systems
- Turn Development Techniques Back on the Development System: Attributes, OO Paradigm, etc.