

## Managing the Real-Time Enterprise

**Dr. Richard Hackathorn**  
**Bolder Technology, Inc.**



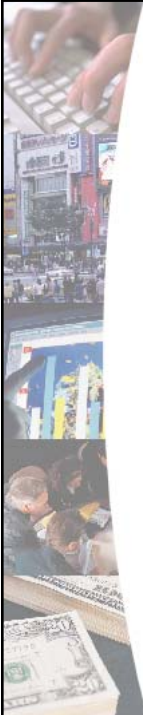
UVA CMIT Program  
November 2003

## Biography



- **Richard Hackathorn**  
**Bolder Technology, Inc.**
- **President and founder with thirty years of IT experience. Regular columnist for DM Review. Conducted seminars in eighteen countries. Author of three books: Web Farming for the Data Warehouse, Using the Data Warehouse, Enterprise Database Connectivity. Professor at the Wharton School, Univ. of Pennsylvania, and at the Univ. of Colorado. BS from Caltech; MS and Ph.D. from Univ. of California, Irvine.**
- **Contact:** **richardh@bolder.com**

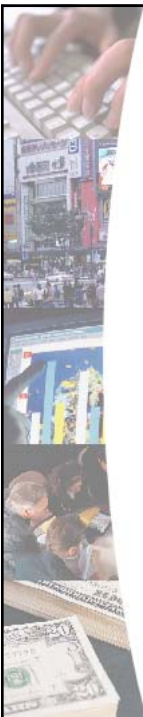





## Abstract

- **Business Intelligence has shifted from a lazy blue-sky support for the backroom executives to energetic in-your-face support for the frontline workers. Business processes that generate revenue and reduce costs are being redesigned, along with the systems to support those processes. Those processes must immediately react and even reorganize in response to critical business events happening within/outside the enterprise.**
- **This presentation will cover:**
  - What is the Real-Time Enterprise?
  - Case Studies
  - Common Themes
  - Success Factors, Challenges, Benefits, and Best Practices


© 2003 Bolder Technology, Inc. Slide 3

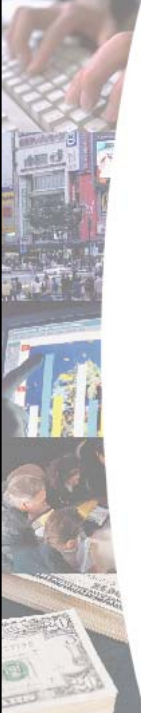


## What is the Real-Time Enterprise?

- **Is it “Real-Time” or is it...**
  - *Intelligent, Smart, Active, Agile, Adaptive, Zero-Latency...*
  - Much more than just a short duration of time
- **Implies a sense of urgency**
  - Fully engaged, proactive, intense, in-your-face...
  - Not passive, reactive, rigid...
- **Implies a maturity in applying IT**
  - More than data to information
  - More than information to decision
  - Must impact actions, people, and organization

© 2003 Bolder Technology, Inc. Slide 4

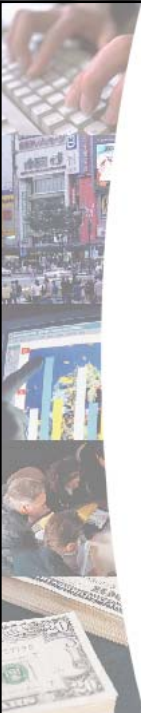





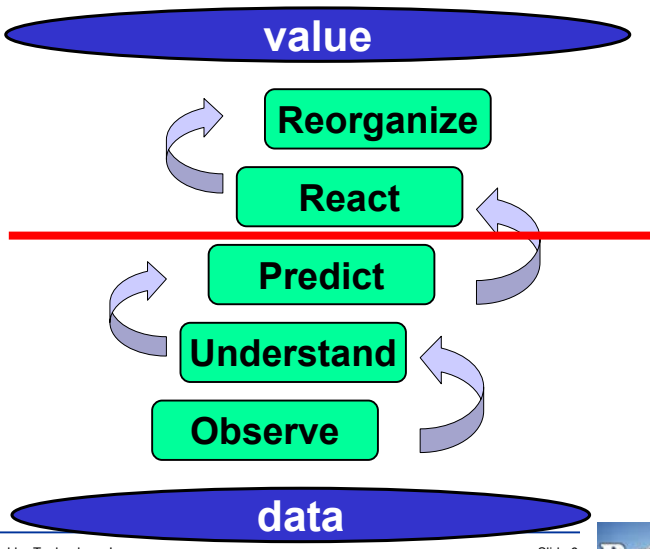
## What is the Real-Time Enterprise?

- 1. Doing the usual stuff with excellence**
  - *In Search of Excellence*, Peters & Waterman, 1982
- 2. Responding to unexpected demands**
  - From customers, suppliers, distributors...
  - By taking action intelligently and quickly
- 3. Adapting to fundamental trends**
  - In global competition, market, technology...
  - By continually redesigning business processes


© 2003 Bolder Technology, Inc. Slide 5




## Stages of Maturity



© 2003 Bolder Technology, Inc. Slide 6

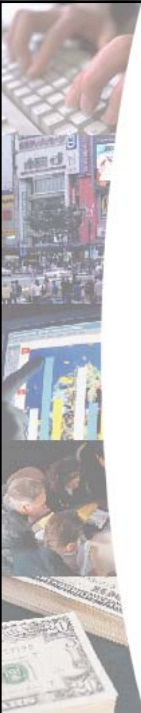





## Overview of Case Studies

- **3M Corporation** Al Messerli
- **Delta Technology** Wayne Hyde
- **Ford Motor Company** Jerry Hill
- **Harrah's Entertainment** Monica Tyson
- **Midwest Cards Service** John Folkerts
- **PING, Inc.** Kent Crossland
- **Strategy.com** Justin Langseth
- **Union Pacific Railroad** Paul Evans


© 2003 Bolder Technology, Inc. Slide 7

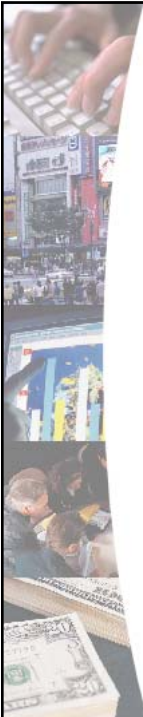


## Ford Motor Company

- **Themes**
  - Supply chain management
  - DW as a means to a business end
  - Operational analytics optimizing distribution
    - Evolution of alerting to operational analytics
  - Business need for data freshness
- **Inventory Mgt & Alerting System (IMAS)**
  - Nightly reprioritization of parts flowing in distribution channels
  - Determines which and how trucks get unloaded
  - Need for precise, just-in-time intelligence

© 2003 Bolder Technology, Inc. Slide 8

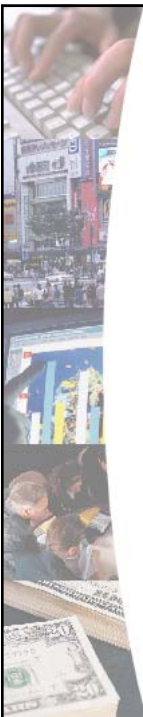





## Union Pacific Railroad

- **Themes**
  - Enterprise-wide data integration
  - Delivery consolidation to a single info. source
  - Closed the loop with 'automation' of application
  - Open information policy
  - 3NF design to aid data integration
- **Trains-held-for-crew situation**
  - Analysis of: customer impacts, contract obligations, cost estimate of deferring, etc.
  - Prioritizing and allocating a scarce resource
    - For example, crews assigned to trains


© 2003 Bolder Technology, Inc. Slide 9



## Common Themes

1. Minimizing Action Distance
2. Real-Time to **Right**-Time
  - Business value of time (the Time-Value Curve)
3. Strategic - Tactical - Operational
4. Unified Version of Reality
  - Where do you do for the truth?
5. Balancing Automating and Enabling

© 2003 Bolder Technology, Inc. Slide 10



# Managing the Real-Time Enterprise

## 1. Minimizing Action Distance

The diagram features a yellow airplane flying from left to right. Below the airplane, two clouds labeled "information set" and "action set" are connected by a double-headed arrow labeled "distance (latency)". Below the "information set" cloud is a gauge with a red needle pointing to the right, labeled "L" and "PH". Below the "action set" cloud is a printer with a sheet of paper coming out.

© 2003 Bolder Technology, Inc. Slide 11

## Real-Time to Right-Time

The graph plots "value" on the vertical axis and "time" on the horizontal axis. A downward-sloping curve represents the value of a business event over time. Key points on the curve are marked with callouts: "business event" (green triangle), "data stored" (pink dot), "information delivered" (pink dot), and "action taken" (green triangle). The intervals between these points are labeled as "data latency", "analysis latency", and "decision latency". A bracket at the bottom of the graph spans from the "data stored" point to the "action taken" point, labeled "action distance". A bracket on the left side of the graph spans from the "business event" point to the "action taken" point, labeled "value lost".

© 2003 Bolder Technology, Inc. Slide 12

## Real-Time to Right-Time

© 2003 Bolder Technology, Inc. Slide 13

## 3. Strategic - Tactical - Operational

- A confusion of terms!
- Classical organization theory states...

policy

→ procedure


→ execution

© 2003 Bolder Technology, Inc. Slide 14

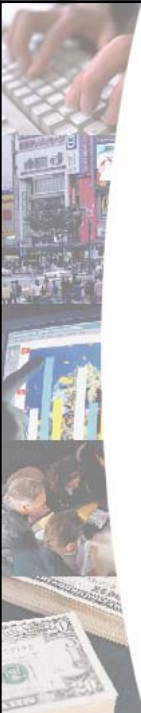


## 3. Strategic - Tactical - Operational

- **Strategic decision support**
  - Goal of better policies
  - Time scale of months to weeks
  - Impacts top management
- **Tactical decision support**
  - Goal of better procedures
  - Time scale of weeks to days
  - Impacts staff & middle-level management
- **Operational decision support**
  - Goal of better execution
  - Time scale of days to minutes → intraday
  - Impacts first-line supervisors




© 2003 Bolder Technology, Inc. Slide 15




## 4. Unified Version of Reality

- **Aka 'Single version of truth'**
  - integrated, united, amalgamated, fused, cohesive
- **It is a major, continuing struggle!**
- **Perspective of in-flow versus out-flow**



- **Only place to go for business information**
  - By the users... trust in the data and IT staff
  - By the IT staff... trust in the system and the users

© 2003 Bolder Technology, Inc. Slide 16

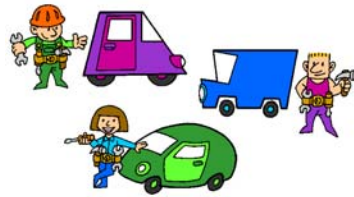


## 5. Balancing Automating and Enabling

- The best solution is a mixture of both
- Automate the stuff that is routine
  - Minimize human involvement - for scalability
- Enable people to handle the rest
  - Leverage human judgment - for intelligence



automation



enablement

© 2003 Bolder Technology, Inc.

Slide 17



## Success Factors

- Executive support 3M, PING
- Enabling business unit; get out of way Harrah's
- Simplification of architecture 3M, PING
- Knowing your customer Harrah's
- Enterprise-wide data integration UP, 3M
- Philosophy of open information UP
- Stable vendor with scalable platform UP, 3M...

© 2003 Bolder Technology, Inc.

Slide 18






## Business/Technical Challenges

- **Balancing local diversity with global unity** 3M
- **Discerning real business opportunities** several
- **Pursuing ADW driven by business needs** Harrah's

-----

- **Designing & maintaining terabyte DW** 3M
- **Managing unpredictable DW demands** UP
- **Moving DW from back-office to front-office** Ford


© 2003 Bolder Technology, Inc. Slide 19



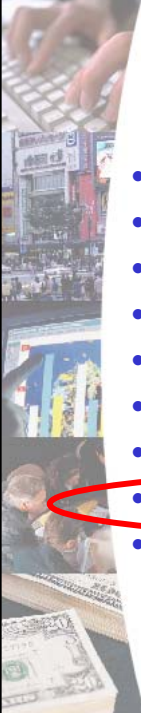
## Benefits Realized

- **Reduced inventory costs** 3M
- **Staff reductions** Midwest
- **Improved asset management** Norfolk
- **Reducing customer support costs** Midwest, UP
- **Auditing our billing practices** UP
- **Termination of unprofitable product** Midwest
- **“Being on top” of litigation cases** UP
- **Runs our business (period)** PING

© 2003 Bolder Technology, Inc. Slide 20



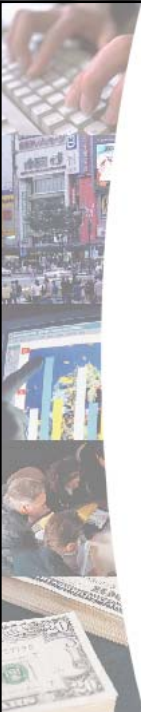

# Managing the Real-Time Enterprise



## Best Practices

- Executive support from beginning Midwest ...
- Unify your enterprise information -all-
- Analyzing global but acting local 3M
- Hands-on at project start-up Harrah's
- Incremental development (small steps) several
- Educate your users on the data Midwest, UP...
- Discerning the info-value potential Delta, Midwest
- Let alerting lead the way Ford
- Toward a single-DB architecture? PING

© 2003 Bolder Technology, Inc. Slide 21



## Summary

- **The business objectives are to be:**
  - Responsive to demands
  - Adaptive to trends
- **Focus on...**
  - Observe-Understand-Predict-React-Reorganize
- **Think about...**
  - Minimizing Action Distance
  - Right-Time, not Real-Time
  - Operational Decision Support
  - Unified Version of Reality
  - Automating and Enabling
- **And think out-of-the-box about BI**

© 2003 Bolder Technology, Inc. Slide 22

