“Extreme Scoping”
An Agile Project Management Approach for Data Warehouse Projects

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Outline

- Why traditional project management does not work on DW projects
- Software release concept with self-organizing project teams
- Different project planning process
- BI program management
- Organizational culture change
Traditional Development Method

Operational Systems (Legacy)  
- Finance (FA)
- Engineering (EN)

Decision Support Systems  
- Marketing (MK)
- Customer Support (CS)
- Product Sales (PS)

Business Units
- Marketing
- Finance
- Customer Support
- Product Sales
- Engineering

Uncoordinated Development

Do You Know Your Business?
- data redundancy
- process redundancy
- dirty data

“swim lane development”

Business Units
- Financial (KW)
- Product (KW)
- Customer (KW)
- Distribution (KW)
- Sales (KW)

Information Technology Units
- IT

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Using the Waterfall Approach

- Requirements are well defined
- Scope is manageable
- Scope and users are confined to one business unit (department, business function)
- Technology infrastructure is known and proven
- Data volumes are relatively small
- Development activities are the same on every project
- Development activities are not cross-organizational
- Project schedules are relatively easy to estimate

 Mistakes are less expensive to fix early in the development process!
Industrial-Age Mental Model

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Cost-based value proposition:
- Cheaper, faster, better
- Automate as quickly as possible

• Cheaper, faster, better

"Scrap and rework" (Larry English)

Time versus Quality

 genomod everyone wants quality, but rarely is the extra time given or taken to achieve it.

Quality and time are polarized constraints.

 genomod The higher the quality the more time it takes to deliver.

 genomod Companies are driven by shorter and shorter schedules.
The Time Trap

Redundancy increases
Quality decreases
User satisfaction decreases

Development time increases
Productivity decreases

Maintenance increases
Need for more staff increases
Employee burnout increases
Business value decreases

Inability to support business drivers

Proliferation of Redundancy

Operational Systems (Legacy) BI ? Decision Support Systems

Business Units
Marketing
Finance
Customer Support
Product Sales
Engineering

Framework?
Adding to the Data Chaos

The Lesson?

You cannot keep doing what you have always done and expect the results to be different.

"That wouldn't be logical"
Spock, Star Trek
From Chaos to Architecture

Information-Age Mental Model

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Project Constraints

- Reassemble the entire enterprise
- Reuse assets from inventory

"Reassemble reusable components" (John Zachman)

Investment-based value proposition
Coordinated Development

Cross-Organizational Development

- Commitment to data integration embedded in the methodology
- Cross-organizational program management
- Enterprise information management group
- Standards that include a common information architecture (enterprise data model)
- Coordinating the development/ETL processes
  - Disallowing stovepipe development
  - Extracting and cleansing source data only once
  - Reconciling data transformations and storing the reconciliation totals as meta data
Outline

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Spiral BI/DW Methodologies

Enterprise Infrastructure

Assessment & Strategy

Project Plan

Data Requirement

Business Analysis

Data Integration

Post-Impl. Review

Implementation

Testing

Development

Application Prototyping

BI & DW Applications

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Software Release Concept

“Extreme scoping”
- Larissa Moss

First Release
Final Release
Second Release
Third Release
Fourth Release
Fifth Release
BI Application

Projects

“feels like prototyping”
- Kent Beck

“Refactoring”
- Kent Beck

Project ≠ Application

Using the Software Release Approach

- Unstable requirements can be tested and enhanced in small increments
- Scope is very small and manageable
- Technology infrastructure can be tested and proven
- Data volumes (per release) are relatively small
- Project schedules are easier to estimate because the scope is very small
- Development activities can be iteratively refined, honed, and adapted

Mistakes are less expensive to fix early in the development process!
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And the quality of the release deliverables (and ultimately the quality of the BI applications) will be higher!

And the development process will get faster and faster!

Parallel Development Tracks

- Back-end DB + ETL
  - Analysis
  - Design
  - Construction
  - Data Management

- Front-end Application
  - Analysis
  - Design
  - Construction
  - Data Delivery

- Meta Data Repository
  - Analysis
  - Design
  - Construction
  - Meta Data Management
Team Organization

Project Team Structure

- Project core team
  - Self-organizing SWAT team
  - Optimum team size: 3 – 5 people; never more than 7
  - Full-time involvement on the project from beginning to end
  - Meet daily to control project activities

- Development track team
  - Self-organizing XP (extreme programming) team
  - Optimum team size: 2-3 people; never more than 5
  - Full-time involvement on their development track
  - Meet daily to control development activities

- Extended team
  - Involvement on an as-needed basis
  - Support roles
Project Team Staffing

- Project core team
  - One hands-on project manager
  - One business representative with some decision-making authority
  - One EIM person from IT (data administrator or enterprise information architect)
  - One technical lead person from IT (senior developer or architect)

- Development track team
  - One senior developer
  - One developer or systems analyst

- Extended team
  - Business sponsor
  - Technical support team
  - Operations
  - Etc.

Core Team Roles

- Application lead developer
- BI infrastructure architect
- Business representative
- Data administrator (EIM)
- Data quality analyst
- Database administrator/designer
- ETL lead developer
- Meta data administrator (EIM)
- Project manager
- Subject matter expert
Extended Team Roles

- Application developers
- BI support staff (helpdesk)
- Business sponsor
- Data Miner
- ETL developers
- IT auditor or QA analyst
- Meta data repository developer
- Network services
- Operations
- Security officer
- Stakeholders

- Technical services
- Testers
- Tool administrator
- Web developers
- Webmaster

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Software Release Planning Process

1. Estimate development effort for entire BI application

2. Break BI application into software releases
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1. Estimate development effort for entire BI application
2. Break BI application into software releases
3. Create milestones from DDD to YAH for first release

4. Organize and assign parallel development tracks

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Software Release Planning Process

1. Estimate development effort for entire BI application
2. Break BI application into software releases
3. Create milestones from DDD to YAH for first release
4. Organize and assign parallel development tracks
5. Create detailed work assignments for all milestones
6. Create Gantt chart showing milestones

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Software Release Planning Process

1. Review development effort for entire BI application
2. Review and adjust BI application software releases
3. Create milestones from DDD to YAH for next release
4. Organize and assign parallel development tracks
5. Create detailed work assignments for all milestones
6. Create Gantt chart showing milestones


Project Dynamics

BI/DW Project

- parallel
- iterative
- dynamic
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BI Program Management

- Common Development Methodology
- Common Enterprise Standards
- Common Ratified Business Rules
- Common Enterprise Infrastructure
- Coordinated ETL Processes
- Common Meta Data
- Common Enterprise Information Architecture

Enterprise Infrastructure Management

- Technical infrastructure (configuration management)
  - Hardware
  - Network
  - RDBMS
  - Tools
- Non-technical infrastructure
  - Development methodology
  - Data strategy with enterprise standards
    - Data (modeling, naming, defining)
    - Meta data (capture, maintenance, usage)
    - Testing and reconciliation
    - Security
  - Ratified business rules
  - Roles and responsibilities
Enterprise Information Management

- Data governance program
  - Data administration principles (data standardization)
  - Data ownership
  - Data stewardship
  - Data profiling and data audits
  - Data quality improvement processes
  - Data certification

- Enterprise data models
  - Business schemas (unnormalized transactions)
  - Conceptual schemas (normalized business views)
  - Logical schemas (refined and fully attributed views)
  - Physical schemas (denormalized database views)
  - Enterprise schema (integrated business views)

Enterprise Meta Data Management

- Meta data strategy
  - Buy or build
  - Centralized or decentralized

- Meta data infrastructure
  - Meta data sourcing
    - Business meta data
    - Technical meta data
  - Meta data content management
  - Meta data usage
    - Impact analysis
    - Data lineage
    - Trend analysis of data statistics
    - Query extensions
BI Application Portfolio Management

- Project prioritization based on BI application business values
- Project scheduling based on project and resource interdependencies
- Project funding and staffing
- Resolution of issues among interdependent projects

Beyond traditional PMO

BI Steering Committee

- Composed of business executives and senior business managers
- Collective sponsorship from business executives
- Communicate enterprise-wide data integration principles to all lines of business [ongoing championship]
- Stand behind a BI strategy appropriate for the organization
- Fund an enterprise information management group
- Identify data owners and data stewards in all LOB
- Assign business representatives to project core teams
BI Program Manager

- Led by a BI program manager or BI director
- Perform periodic readiness assessments
  - Identify new information needs
  - Ascertain user satisfaction
- Create and enforce a common technical and non-technical infrastructure (“Core Competencies”)
- Work with BI steering committee to prioritize BI and DW projects (BI portfolio management)
- Determine BI and DW project interdependencies
- Coordinate project resources and activities (Software release management)

BI Maturity Model

Source: Wayne Eckerson, TDWI

1. Prenatal
2. Infant
3. Child
4. Teenager
5. Adult
6. Sage

“Production Reporting”
“Spreadmarts”
“Data Marts”
“Data Warehouses”
“Enterprise DW”
“Analytic Services”

BUSINESS VALUE

Value
Cost
ROI

GULF
CHASM
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Organizational Impact

- No BI program management in place
- Cross-organizational tasks and responsibilities are not well defined
- New project dynamics are not understood
- Teams are still organized the traditional way
- Business people still don’t participate on project activities
- Project scopes are still too big
- Data quality responsibility is not clear or ignored
- BI/DW projects are usually cost justified using the industrial-age mental model (no ROA)
- No reward for data sharing
- Resistance to change
Inevitable Culture Shift

- Business and IT collaboration ("partnership")
- Business and business collaboration ("partnership")
- IT and IT collaboration ("partnership")
- Shifted roles and responsibilities
- Common architecture
- Enterprise standards
- Cross-organizational activities
- Software release concept

Power Shift

- Business people must play an increased role and assume responsibilities for:
  - Data ownership – *Information Architecture*
  - Enforcement of standardization – *Incentives*
  - Integration and standardization across all business units – *Cross-Organizational Disciplines*
  - Dispute resolution across all BI projects – *Leadership*
  - Governance – *BI Program Management*
Charge-Back Policy

**System ownership – by business unit**
- Automate a business process from scratch
- Cost-based value proposition
- Business units pay for their own systems
- System = programs coupled with data

**Information ownership – by the enterprise**
- Reassemble the entire enterprise quickly
- Investment-based value proposition
- Organization pays for enterprise data
- Business units pool to pay for shared BI applications
- BI application = BI tools and programs decoupled from data

New Incentive Policy

- Management and staff should be evaluated on:
  - Team work and collaboration (IT and business)
  - Data sharing (business)
  - Data quality (business)
  - Adherence to standards (IT and business)
  - Adherence to cross-organizational development approach (IT and business)
- Rewards (salary increases and bonuses) should be tied to above performance measures

Applicable to the business side as well as IT.
New Leadership

CEO

CFO  COO  CKO  CIO

collaboration

LOB Execs

Data Governance

Chief Knowledge Officer

IT Execs

Chief Executive Officer

Chief Knowledge Officer

Chief Officers

Data Governance

Chief Knowledge Officer

LOB Execs

IT Execs

Thank You

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