32. Course Review

DE + IA (INFO 243) - 7 May 2007

Bob Glushko
Today's Agenda

In Class Self-Graded Final Exam

10 Things to Remember About Document Engineering
"Accelerating RosettaNet"
10 Things to Remember About Document Engineering (#1)

DOCUMENT ENGINEERING ISN'T ABOUT XML

IT'S ABOUT D-O-C-U-M-E-N-T
A Checklist for Describing Case Studies

D -- data types and document types
O -- organizational processes
C -- context (types of products or services, industry, geography, regulatory considerations)
U -- user types and special user requirements
M -- models, patterns, or standards that apply
E -- enterprises and eco systems (e.g., trading communities, standards bodies)
N -- the needs (business case) driving the enterprise(s)
T -- technology constraints and opportunities
D-O-C-U-M-E-N-T in the Document Engineering Approach
# D-O-C-U-M-E-N-T in Analysis

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10 Things to Remember About Document Engineering (#2)

DOCUMENT ENGINEERING ISN'T ABOUT PAVING THE COW PATHS
Generic Justifications for DE + IA (Chapter 16)

- Reduce processing costs for goods and services
- Improve operational visibility and control
- Accelerate existing processes and enable new ones
- Publish cheaper, faster, better - reuse, repurpose, repackage information
- Reduce system development, maintenance, and integration costs
- Enhance employee and customer satisfaction
10 Things to Remember About Document Engineering (#3)

NARRATIVE AND TRANSACTIONAL DOCUMENTS ARE ON A CONTINUUM
The Document Type Spectrum
The Data/Document Chasm

It's obviously a continuum... but transactional and narrative documents have traditionally been analyzed with different disciplines and use different tools, terminology, and techniques – little intersection

Very different intellectual and domain roots

- "Document analysis" for narrative documents: literary criticism, graphical design; electronic publishing
- "Data modeling" for transactional documents: philosophy, linguistics, systems analysis; data automation
Crossing the Data/Document Chasm

Document Engineering harmonizes the terminology and emphasizes what they have in common rather than highlighting their differences

Identifying the presentational, content, and structural components and defining their relationships to each other

Identifying "good" content components

Designing, describing, and organizing components to facilitate their reuse

Assembling hierarchical document models that organize components according to the requirements of a specific context for information exchange
10 Things to Remember About Document Engineering (#4)

DOCUMENTS AND PROCESSES ARE YIN AND YANG
Modeling Documents {and, vs, or} Modeling Processes

A document exchange -- or any web-based service -- consists of both the documents and the processes that produce and consume them.

By understanding the information in the documents, we learn what kinds of processes (or services) are possible.

By understanding the processes (or services), we learn what kinds of information are needed.
A Process-Centric Depiction

Product Catalog → Order → Invoice

Buyer Creates Order
Seller Processes Order & Creates Invoice
A Document-Centric Depiction

Seller Process

Product Catalog

Order

Invoice

Buyer Process

Seller Process
10 Things to Remember About Document Engineering (#5)

OVERLAPPING INFORMATION IS THE GLUE OF PROCESSES
Overlapping Information Components as "Process Glue"
10 Things to Remember About Document Engineering (#6)

FRIENDS DON'T LET FRIENDS MODEL ALONE
“The expense of resolving ambiguous business terms over and over on a daily basis pales in comparison with the expense of NOT realizing that there is an ambiguity in the term”
The Equivalence Problem

**Problem:** Does my "purchase order" mean the same thing as everyone else's?
10 Things to Remember About Document Engineering (#7)

PATTERNS RULE!

REUSE WHEN YOU CAN

FOLLOW THE GOLDEN RULE WHEN YOU CAN'T
### The Model Matrix

<table>
<thead>
<tr>
<th>Granularity</th>
<th>Organization Level</th>
<th>Process Level</th>
<th>Information Level</th>
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</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>Dell Inc.</td>
<td>Make to Order</td>
<td>Date Sent</td>
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<tr>
<td>Computer Manufacturer</td>
<td>Dell's Make to Order Process</td>
<td>Laws and Codes of Practice</td>
<td>RosettaNet PIP 3A4</td>
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<tr>
<td>Negotiation</td>
<td>Dell's trading partner profile</td>
<td>Dell's Application Interface</td>
<td>UBL Order Document Instance</td>
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<tr>
<td>Offer and Acceptance</td>
<td>UBL Order Schema</td>
<td>Date Sent</td>
<td>UBL Order Document Instance</td>
</tr>
<tr>
<td>A term that denotes a day of the year</td>
<td>UBL Order Schema</td>
<td>UBL Order Document Instance</td>
<td>UBL Order Document Instance</td>
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#### Abstraction

- **Conceptual Models**: Manufacturing, Demand Chain, Negotiation, Offer and Acceptance, A term that denotes a day of the year
- **Physical Models**: Computer Manufacturer, Make to Order, Laws and Codes of Practice, RosettaNet PIP 3A4
- **Implementations**: Dell Inc., Dell’s Make to Order Process, Dell’s trading partner profile, Dell’s Application Interface
Learn to Love the PIPs

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Segments</th>
<th>Partner Interface Processes (PIPs)</th>
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<tbody>
<tr>
<td>1 Partner Product &amp; Service Review</td>
<td>3A Quote &amp; Order Entry</td>
<td>3A1 Request Quote</td>
</tr>
<tr>
<td>2 Product Information</td>
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<td>3A2 Request Price &amp; Availability</td>
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<td>3 Order Management</td>
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<td>3A3 Request Shopping Cart Transfer</td>
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<td>3A4 Request Purchase Order</td>
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<td>3A5 Query Order Status</td>
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<td>3A6 Distribute Order Status</td>
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<td>3A7 Notify of Purchase Order Update</td>
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<td>3A8 Request Purchase Order Change</td>
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<td>3A9 Request Purchase Order Cancellation</td>
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<td>3A10 Notify of Quote Acknowledgment</td>
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<td>3A11 Notify of Authorization to Build</td>
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<td>3A12 Notify of Authorization to Ship</td>
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<td></td>
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<td>3A13 Notify of Purchase Order Information</td>
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<td>3A14 Distribute Planned Order</td>
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Design Issues for the Information Supply Chain

What information is exchanged?
Which entities in the supply chain are able to exchange information?
What is the frequency of this information exchange?
10 Things to Remember About Document Engineering (#8)

BALANCE ANTHROPOLOGY AND ARCHEOLOGY
Creators/Users in Document Analysis

What will they know?
What won't they know?
What factors will constrain their interactions with you?
Experts / Consultants in Document Analysis

This is YOUR role

What will you know?

What won't you know?

What factors will constrain your interactions with others?
Requirements Categories in Document-Intensive Contexts

**Solution** requirements – the functional, performance, quality attributes

**Information** or **data** requirements – what information is needed, what are its datatypes, possible values

**Document** or **structure** requirements – how is the information organized / assembled / packaged into sets of related information

**Processing** and **usage** requirements – what relationships between documents have a business purpose, what constraints on access or presentation are mandated by business relationships – process / choreography / orchestration model or adjuncts to document models

**Presentation** or **syntactic** requirements – how is the information presented or formatted or rendered
Context is a Point of View
10 Things to Remember About Document Engineering (#9)

RIDE THE SNAKE!

INVENTORY / SAMPLE / HARVEST / CONSOLIDATE / REFINE / ASSEMBLE / ENCODE
Modeling Methodologies Can Contain or Define:

Processes / Activities / Steps -- what to do and when to do it

Artifacts -- the documents or other representation of the results of the processes / activities / steps; different parts or views of the overall model

Meta-models -- models that specify the type of information to be recorded in the artifact

Notations -- the presentational constructs used in the modeling artifacts

Tools -- technology used to create the artifacts
Modeling Perspectives on the Domain Model

Most domains or systems to be analyzed/built are too big or complex to be understood "all at once" -- multiple modeling perspectives are implied by different parts of the model, and these might require more than one analyst with different skills.
Converging Modeling Perspectives in Document Engineering
So the steps of the modeling methodology develop the domain model "in pieces" -- the modeling artifacts -- and the methodology is designed so that these pieces logically fit together to create the complete model.
The Modeling Artifacts of Document Engineering

Analyzing the Context -- UML use case diagrams

Analyzing/Designing Business Processes -- Worksheets, UML Activity and Sequence Diagrams

Applying Patterns to Business Processes -- Document Checklist

Analyzing Documents -- Document Inventory

Analyzing Document Components -- Consolidated Table of Content Components

Assembling Document Components -- UML Class Diagram

Assembling Document Models -- UML Class Diagram or Spreadsheet

Implementing Models -- XML Schemas
10 Things to Remember About Document Engineering (#10)

PRESERVE YOUR MODELING INVESTMENTS IN YOUR IMPLEMENTATIONS
The Big Red Button
Many Small Red Buttons?

An alternative to the search for the BRB is the goal of partial automation for user interface generation:

Tools that generate prototype from specifications

Tools that synthesize use cases into sequence diagrams

Tools that merge sequence diagrams to hide states that have no UI implications

Tools that generate UI skeletons or scaffolds while enforcing layout constraints

Tools that generate a family of UIs via "graceful degradation"

UI Design Patterns
10 Things to Remember About Document Engineering

1. Document Engineering isn't about XML; it's about D-O-C-U-M-E-N-T
2. Document Engineering isn't about Paving the Cow Paths
3. Narrative and Transactional Documents are on a Continuum
4. Documents and Processes are Yin and Yang
5. Overlapping Information Is the Glue of Processes
6. Friends don't let Friends Model Alone
7. Patterns Rule!
8. Balance Archeology and Anthropology
9. Ride the Snake!
10. Preserve your Modeling Investments in your Implementations
THIS IS NOT THE END OF DOCUMENT ENGINEERING
What Are the Common Themes in These News Items?

Enormous amounts of existing (paper) documents and legacy processes would benefit from automation, process re-engineering, transformation to SOA.

New business processes are created / coordinated / choreographed via the management and exchange of electronic documents.

Standards / patterns for documents and business processes are essential.

Information technology and business processes are co-evolving with many ways to create business value.

But projects can be challenging, and their success depends on many factors besides technology.