UPDATING THE ALIGNMENT OF BUSINESS NEEDS AND ORGANIZATIONAL RESOURCES

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Deploying Practical Solutions with Lean Techniques & Knowledge Management

A FHWA Accelerated Innovation Deployment Demonstration

Business Process Map
Mapping the existing process and applying lean principles to develop a business process model that supports Practical Solutions.

Knowledge and Information Architecture
Clarifying multi-disciplinary competencies and capabilities as well as data and information needed throughout the process. This will promote efficient access to people and information.

Knowledge Transfer
The project activities will inform development of a learning strategy that facilitates use and continual improvement of Practical Solutions.

Pilot project: engineering manuals.
Organizational Business Process

- Facilitate cross organizational understanding
  - Take a systems view
  - Focus on effectiveness, not just efficiency
  - Engage others, collaborate
  - Clarify functions and roles
  - Establish shared visions
Information that supports the Practical Solutions lifecycle

- Many repositories
- Concerns about
- Authoritative source
- Version control
- Records management
- Basis for decision-making

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Information Sources

- Many sources
- Lack clarity about what to put where
- Some resources have limited access
Common Information Needs

- Many common information needs across the lifecycle
- Often independent collection
- Likely to have different levels of rigor and management
Applications that supports the Practical Solutions lifecycle

Approximately:
• 370 IT applications maintained by IT (2016)
• 60% (231) are end user applications supporting Practical Solutions
• 40% provide administrative functions
• Complex environment in which to deploy improvements
• Consumes substantial resources to keep the connections functioning and secure
**Recommendations**

**Objectives**

- Build and maintain a common pool of information needed by people across the Department engaged in the Practical Solutions life cycle;
- Maximize use of available information resources;
- Provide the agility needed to respond to a changing environment; and
- Facilitate learning and collaboration.

**Four foundational ingredients**

- Vision and Strategy
- Decision Making Structures and Processes
- Resources
- Culture
The Enterprise Architecture Layer Cake

- Know what you’re baking – start at the top with a shared understanding of goals
- Business capabilities & processes clarify the operating model
- People & knowledge support the processes
- The bottom three layers enable the people to do the work

Based on the work of Dr. Denise Bedford, Georgetown University
## Operating Models

Courtesy “Enterprise Architecture as strategy – creating a foundation for Business Execution” by Peter Weill, Jeanne W. Ross and David C. Robertson

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<th>Replication</th>
<th>Unification</th>
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<td>High</td>
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<td>- Few shared customers, partners etc</td>
<td>- Shared customers, partners etc</td>
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<td>- Independent transactions</td>
<td>- Transactions can impact across business units</td>
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<td>- Operationally similar Business Units</td>
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<td>- Largely autonomous business unit management</td>
<td>- Centralised management</td>
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<tr>
<td>- Central control over business process design</td>
<td>- Organisational wide process owners with control over business process design</td>
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<td>- Shared data standards across business units</td>
<td>- Shared customer, partner, product and/or supplier data</td>
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<td>- Centrally controlled IT investment decisions</td>
<td>- Central funding for all IT investment</td>
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<td>- Mandated shared services</td>
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<td>High</td>
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<tr>
<td>- Few shared customers, partners etc</td>
<td>- Shared customers, partners, products or suppliers across business units</td>
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<td>- Independent transactions</td>
<td>- Transactions can impact across business unit</td>
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<tr>
<td>- Operationally unique Business Units</td>
<td>- Operationally unique Business Units</td>
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<tr>
<td>- Largely autonomous business unit management</td>
<td>- Largely autonomous business unit management</td>
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<tr>
<td>- Individual Business Unit control over business process design</td>
<td>- Business unit control over business process design</td>
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<tr>
<td>- Few shared data standards across business units</td>
<td>- Shared customer, partner, product and/or supplier data</td>
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<tr>
<td>- Most IT investment decisions made within business units</td>
<td>- Cross business unit design and funding for IT shared services (e.g., Customer services) and infrastructure</td>
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<td>- Remainder of IT investment decisions made within business units</td>
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**Level of cross business unit process standardisation**

**Level of cross business unit process integration**
The World Bank Business Function Classification

- **Business Areas** represent the organization’s high level strategy and performance goals. Business Areas are defined by the strategic direction of the organization.

- **Lines of Business** reflect an organization’s strategic choices and levels of business risk, and are closely aligned with the organization’s performance management.

- **Business Processes** are a set of one or more linked procedures or activities which collectively realize a business objective or policy goal, normally within the context of an organizational structure defining functional roles and relationships.

- **Business Subprocess** is a process that is enacted or called from another (initiating) process, and which forms part of the overall (initiating) process.

- **Business Activity** is a description of work that forms one logical step within a process. An activity is the smallest unit of work which is scheduled in a process, and may result in multiple work items being assigned to a participant or actor.
A Conceptual Business Function Classification Schema for WSDOT

• Multimodal Transportation System Information
  – Information about the multimodal transportation system is core to all business functions and must be managed as an enterprise resource.

• Multimodal Transportation Services
  – We must be able to know and provide information to travelers about the current status of transportation services on the state system.

• Multimodal System Management
  – We must be able to access and share information on the transportation system infrastructure, system performance, and local context in order to efficiently and collaboratively operate, maintain, preserve, and improve the state transportation system.

• External Relations
  – We must manage information on customer relationships and commitments in order to ensure consistent information and support inclusive practices.

• Resource Management
  – We must be accountable and demonstrate that our practices are efficient and effective.
Words Matter

• Difficult to find data and information resources
  – Know the data/information exists but can’t find it
  – Not sure that the data/information exists

• Uncertainty about the data and information resources found
  – Is it the most current source?
  – Is it comprehensive?
  – Is it the appropriate source for the task?

• Collaboration challenges
  – Term use is inconsistent
  – The same word is used by different disciplines in different ways resulting in confusion or uncertainty
  – Some terms are defined, others are not
  – Lack a common glossary to look up term definitions and capture variations

• Industry practices are inconsistently applied
  – Term and definitions are created with different practices
Vocabulary Management

Glossary
Organizes terms alphabetically or by topic and defines meaning. Terms may have more than one meaning in different contexts. Supports common understanding of a term.

- Bicycle: Any device propelled solely by human power upon which a person or persons may ride, having two or more wheels, each of which is 14 inches or more in diameter, or three wheels, any one of which is more than 20 inches in diameter.
- Bus Stop: A place designated for transit vehicles to stop and load or unload passengers.
- Highway: A general term denoting a street, road, or public way for the purpose of vehicular travel, including the entire area within the right of way.
- Light Rail System: A passenger railway system characterized by its ability to operate single cars or short trains along rails on exclusive right of way.
- Park and Ride Lot: Parking at a facility which serves as a transfer terminal for automobiles and bikes and which is normally served by public transportation.

Term Governance

Metadata
Enriches documents with information that allows more automated and more accurate retrieval of digital resources

- Core Metadata
  - Title
  - Description
  - Keyword
  - Contact
  - Content Type
  - Create Date
  - Date Modified

Thesaurus
Manages horizontal term relationships to enrich navigation across subjects. Helps maintain access to legacy resources by tracking changes in term use.

Taxonomy
Manages hierarchical term relationships to help connect related information and support search and navigation.
Manual Modernization Project

WSDOT interested in improving the management of agency manuals

- Sustain/improve access to manual content and interactive capability
- Streamline improvements to manual content and expedite delivery
- Connect process to resources to do the work
- Support robust search
- Manage versions of content and find them as needed
- Implement effective security for protected content
- Provide open access for content that is not sensitive/protected

- Current WSDOT Engineering Manuals site:
  http://www.wsdot.wa.gov/Publications/Manuals/index.htm

- Pilot Project site:
  http://wsdot.iknow.us/
Evolving Concept: Knowledge Domains

**Domain**: An area of knowledge with an explicit scope established for the purpose of creating a knowledge organization system.

- **Subject Domain**: characterized by engagement with a specific topic.
- **Functional Domain**: encompasses an area of work that involves the same or closely related tasks.
- **Disciplinary Domain**: encompasses an area of work performed by workers with a similar disciplinary background and who employ a consistent approach or set of approaches.
Why use domains?

Domains help meet business needs by:

- Providing a forum of business users
- Clarify term preferences and relationships
- Identify authoritative data & information sources
- De-duplicate data, weed out of date inaccurate data, and prioritize data improvement needs

Provide a foundation for communities of practice

- Support best practice
- Knowledge sharing
- Innovation.

The design of good houses requires an understanding of both the construction materials and the behavior of real humans.

Peter Morville
Culture

• Knowledge workers drive success of the process
• Culture is key to change
• Elements of Culture
  – Governance – how we provide for common needs and safety
  – Mission & Values – our meaning and purpose
  – Customs & Traditions – accepted rules of behavior and traditional practices
  – Social Organization – how people and places are divided into smaller groups
  – Economy – how limited resources are used, how recognition and reward are used
  – Symbols – how we express ourselves, products we produce
  – Language – the way thoughts, feelings, and knowledge are passed on – not always verbal
• Strengthening our learning culture
Related Reports

- **WA-RD 895.3**: Strengthening a Learning Culture for Practical Solutions
  [Link](http://www.wsdot.wa.gov/research/reports/800/strengthening-learning-culture-practical-solutions)

- **WA-RD 896.1**: Improving Knowledge and Information Management for Practical Solutions at WSDOT: Executive Summary
  [Link](https://www.wsdot.wa.gov/research/reports/800/improving-knowledge-and-information-management-practical-solutions-wsdot)

- **WA-RD 896.2**: Resource Models for Practical Solutions at WSDOT
  [Link](https://www.wsdot.wa.gov/research/reports/800/resource-models-practical-solutions-wsdot)

- **WA-RD 896.3**: Improving Information Management for Practical Solutions at WSDOT
  [Link](https://www.wsdot.wa.gov/research/reports/800/improving-information-management-practical-solutions-wsdot)

- **WA-RD 896.4**: Enterprise Information Architecture: An Overview
  [Link](https://www.wsdot.wa.gov/research/reports/800/enterprise-information-architecture-overview)

- **WA-RD 896.5**: Words Matter: Managing Vocabulary Resources to Support Productivity
  [Link](https://www.wsdot.wa.gov/research/reports/800/words-matter-managing-vocabulary-resources-support-productivity)
Contact Information

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