CDO Best Practices for Creating Truth, Trust and Traceability
“Information about the package is as important as the package itself”
Frederick W. Smith, CEO FedEx,
Panel

• Robert Lutton
  o VP Sales and Marketing, Sandhill Consultants

• Donald Soulsby, EDME
  o VP of Architecture Strategy, Sandhill Consultants

• Stan Christiaens
  o Chief Technology Officer, Collibra

• Bill Winkler
  o Chief Technology Officer, Global IDs
Major Challenges – Data Assets

- Lack of Senior Executive support, do not see data assets on the books.
- Data in many distributed systems with no common data model and multiple repositories of metadata with limited search capabilities.
- Difficulty in getting funding centralized and strategically planned.
- IT project culture, limited support for cross project data programs – master data.

That which is Everybody’s business is Nobody’s business

Izaak Walton (17th Century)
Process Oriented Systems Engineering

Process Decomposition

Input → Process → Output

Data derived from Process

SANDHILL
The Business Need

DIKW Pyramid

1955

SIGNALS, MESSAGES
INFORMATION
KNOWLEDGE
WISDOM

Adding
• Meaning
• Context
• Understanding

SANDHILL
Trust

FROM FIN TO FORK

1. **Code the Catch**
   Fish harvesters identify their catch with a unique code using a tag or label.

2. **Upload Info**
   Info about when, where and how your seafood was caught is uploaded to ThisFish.info.

3. **Handle + Ship**
   Other folks in the supply chain can also upload info about its handling and shipping.

4. **Trace to Discover**
   Trace your seafood’s code at ThisFish.info to discover its story and connect to your harvester.

SANDHILL
You cannot manage what you cannot measure,
You cannot measure what you cannot define.

You have a **Finding** problem!
Data Management Process
DM Process Improvement

Initial (1)  
ad hoc Process

Repeatably (2)  
Stable Process

Defined (3)  
Standard Process

Managed (4)  
Measured Process

Optimizing (5)  
Improving Process

Continuing Improvement

Basic Management Control

Process Definition

Process Control

Process Measurement

Consistent Execution

Controlled Environment

Quality and Productivity Improvement

Chaotic

SANDHILL
CMMI Institute

- CMMI Institute, powered by Carnegie Mellon
- The CMMI Institute is a Carnegie Mellon corporation, the new home of the Capability Maturity Model Integration (CMMI)
- Formerly managed by the Software Engineering Institute (SEI)
- CMMI for Development, CMMI for Services
The DMM model, first announced in May 2014, was developed using the principles and structure of CMMI Institute’s Capability Maturity Model Integration (CMMI®).

The DMM℠ model outlines data process improvement across business lines — allowing executives to make better and faster decisions using a strategic view of their data.
Data Management Maturity (DMM)
Best practices for ensuring broad participation in the practice and senior oversight of the effectiveness of data management.
Best practices for defining and implementing a collaborative approach for detecting, assessing, and cleansing data defects to ensure fitness for intended uses in business operations, decision making, and planning.
Data Management Oversight

- Watchful and Responsible Care
Data Governance – Data Quality

Data Management Maturity (DMM) Model

- Data Governance
- Infrastructure Oversight
- Platform & Architecture
- Supporting Processes
- Data Infrastructure
- Data Operations
- Business Process
- Data Requirements
- Quality Rules / Criteria
- Business IT Alignment
- Stakeholder Alignment
- Data Quality
- METADATA INTELLIGENCE
- METADATA OVERSIGHT
- Quality Needs Quality Strategy
- Implementation Oversight
- Collaboration
- Direction & Compliance
- Data Quality

CMMI Institute
SANDHILL
Metadata Intelligence

Big Data
Models
Data Bases
ERP

Scanner

Metadata Repository

Business Glossary

Business Intelligence for IT
Traditional Meta-driven approach

Drill Down

HUH?
Help Understanding Heuristics
Data Quality going Forward

OBSERVATIONAL Analytics

DQ%

ALGORYTMIC Analytics

DQ%

SANDHILL
"You can't manage, what you can't measure"

Measure = Observation Standard

You can’t measure, what you can’t define
Wine Ontology

http://www.delongwine.com/products/wine-grape-varietal-table
Index for Searching

- **Country**: France
- **Region**: Burgundy
- **Type**: Red
- **Body**: Light
- **Grape Variety**: Pinot Noir

*Sandhill*
Blended Solution

Unique Identification

Pinot Noir

Pinot Meunier

Chardonnay
Many wines do not have barcodes:
- Older releases do not have codes
- Newer releases from smaller wineries
The same wine can have many barcodes:
- Each importer can set their own code.
- Different sizes, different releases of non-vintage wines
The same barcode can be used for many wines:
- Producers and importers do not have high levels of quality about ensuring that each new wine gets its own code.
- Vintage variations are often glossed over.

12-digit UPC (US-only) to 13-digit EAN codes
Structure follows Strategy

Alfred D. Chandler, Jr.

The Visible Hand: The Managerial Revolution in American Business

SANDHILL
Louis Sullivan

‘Form (ever) follows function"

The principle is that the shape of a building or object should be primarily based upon its intended function or purpose.
Critical Data Elopements can vary between People, Places and Periods.
Tribal Behavior

Unambiguous Business Terminology

Transformation NOT Translation

CRITICAL DATA ELEMENT

Conceptual Data Model

Logical Data Model

Data Delivery Model

SANDHILL
Critical Data Element

- **Business Term**
  - Name
  - Description
  - Workflow Status
  - Abbreviation
  - Acronym
  - Synonym

- **Term Type**
  - Topic
  - Term
  - Qualified Term

- **Origin**
- **Business Rule**
- **Authority**
- **Scope**
- **Organization**
- **Domain**
Glossary is not a Dictionary

- Business Concept or Category
- Business Term
- Qualified Term

It is a
- Dictionary
- Thesaurus
- Model

- Subject Area
- Entity
- Attribute

Relationship

ASSOCIATIVE ENTITY

Data Element

KEYS

SANDHILL
Finding Critical Data Elements
Business/Technology Strategy

INNOVATION & CHANGE

Business Strategy

INFLUENCES

Technology Strategy

DRIVES

Technology Domain

INFLUENCES

Business Domain

INFLUENCES

INNOVATION & CHANGE

Business Operating Model

Data Mgmt. Operating Model

DATA GOVERNANCE

CRITICAL DATA ELEMENT

Business Information Model

Technical Data Model

DATA GOVERNANCE

SANDHILL
The "Wisdom of Crowds"

The author suggests that a crowd (or group) is usually more accurate than an expert alone.
Data Reference Model
Identifying Critical Data Elements

Regulatory Compliance
Data Intelligence

Big Data

Textual ECL

Data Model

Data Warehouse

Data Mart

BI Analytics

Information Delivery

Digital Signage

Table Data

Conventional ETL

ERP Data

Data Intelligence

ECL

Table Data

Conventional ETL

ERP Data

Big Data

Data Model

Data Warehouse

Data Mart

BI Analytics

Information Delivery

Digital Signage

SAP

ORACLE FINANCIALS

PeopleSoft

SANDHILL
Big Data Model
Critical Master Data

Q UANTITY

V ALUE

T IMESTAMP

Process

Calendar

Product

Location

Customer

Transaction Molecule
Critical Data Element - Risk

Confidentiality

Accessibility

Reliability

Privacy
Metadata Intelligence

DATA SOURCE TRACEABILITY

Metadata Repository

ETL

MODEL

Traditional BI

Big Data

SANDHILL
The Only Thing That Is Constant Is Change*

External Pressure

Internal Pressure

* Heraclitus – 500 BCE
The Corporate Brain Challenge

SOFTWARE
Programming Language

DATABASE
(code)
Technical Metadata

WETWARE
Human Language

TAXONOMY
(text)
Business Metadata
Metadata Integration

The integration of business and technical metadata has become the holy grail of Data Governance.

“But just like the holy grail, it seems to be a never-ending quest fueled by the belief that technology is going to solve all our problems.”

Rick Sherman
DM Review Magazine
"... please which way I ought to go from here?" said Alice.

"That depends a good deal on where you want to get to," said the Cat.

"I don't much care where----" said Alice.

"Then it doesn't matter which way you go," said the Cat.
Data Management Maturity Assessment

POWER OF 3

EDME
Data Management

That which is Everybody’s business is Nobody’s business
Izaak Walton

Everybody’s business is Nobody’s business, and Nobody’s business is My business
Clara Barton