

Countrywide



Countrywide FinancialSM



Data Quality

MBA's National Technology in Mortgage Banking

Stan Reichhardt

March 26, 2007



Agenda

- Who am I
- Data as an enterprise asset
- Data vs. Information vs. Knowledge
- What is Data Quality
- Cost for Data Integrity Issues
- How Data changes over time
- Data Quality Process
- Data Profiling
- Data Cleansing
- Building better data stores – CM2



Treating Data as an enterprise Asset

Our objective is treating information as an enterprise asset much like people, money, and collateral are treated throughout the organization.

Data can be counted, assigned a dollar value, depreciate or appreciate in value, data can be bought and sold, data has legal consequences, and it can be damaged. Data can be individually owned, jointly owned, or have its ownership disputed. And most of all, data can be added to and have its value increased by combining with other data.



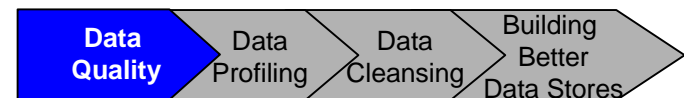
Data vs. Information vs. Knowledge

82 ° F Providence, RI
January 10, 2004

Data are atomic level pieces of information that by themselves have little meaning to humans.

Various data must be combined to achieve meaning to humans.
Information is a collection of data that is understandable to humans.

Knowledge is derived from or pieced together from information



 **Data Quality –Defined**

Data Quality may be a measure of timeliness, accuracy, validity, completeness and consistency. High data quality should have a specific definition which is clear, concise, and readily available. It results in information that is reliable and adds value to the enterprise.

Countrywide Data Quality Committee – March 2003



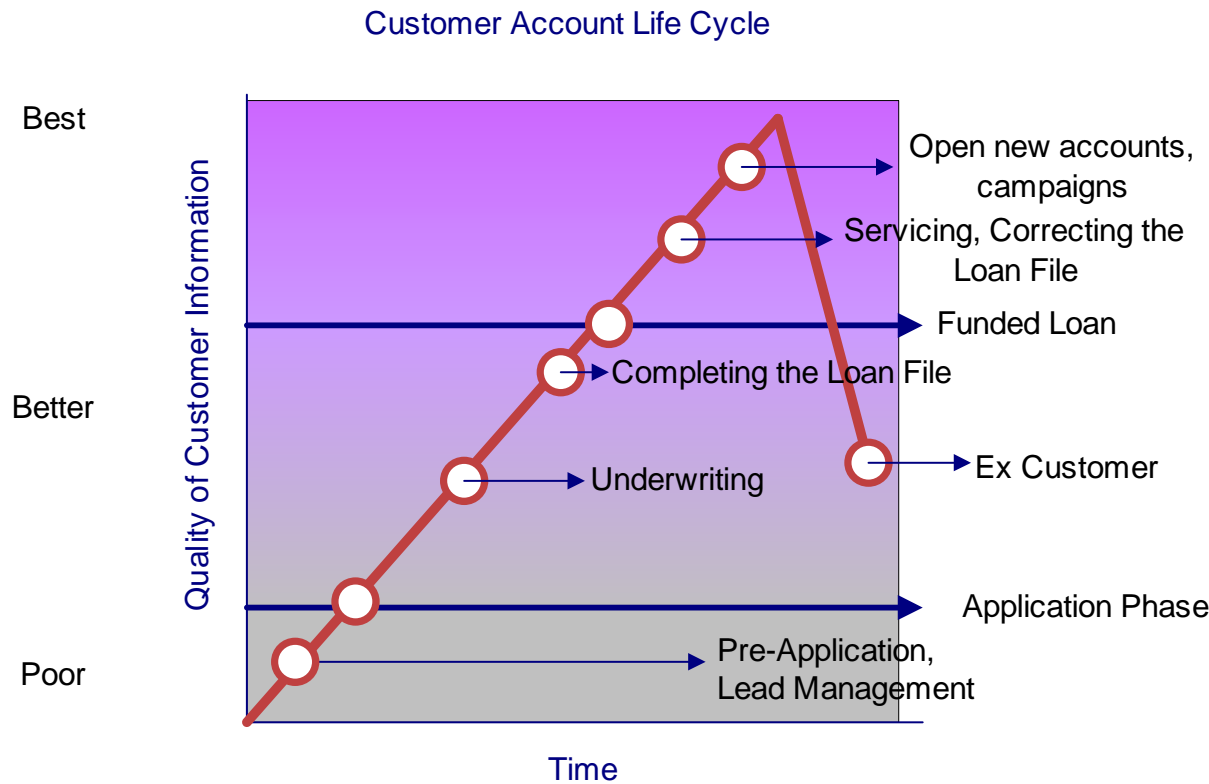
Data Quality

Data Profiling

Data Cleansing

Building Better Data Stores

↘ Quality of Customer Data Changes over time



➤ Information early on is often questionable, more mis-matches possible with existing data

➤ Information generally improves over time

➤ Information becomes stale after customer leaves Countrywide



Costs for Data Integrity Issues

The Costs of Poor Quality

Transaction Rework

- **Customer Complaints**
- **Rework loan details after funding**

NEW - IRS Penalties for invalid information

Cost Incurred in implementing new systems

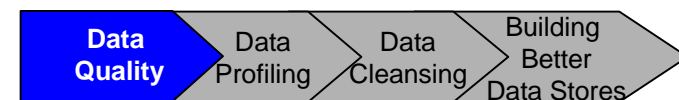
- **Presence of data errors jeopardize successful implementations**
- **Standish Group estimates only 13% of projects successful**

Delays in delivering data to decision makers

- **time period reporting with lots of manual massaging of information**
- **time wasted doing rework can be measured, poor quality of decisions cannot be measured**

Lost Customers

- **tell 10 other people**

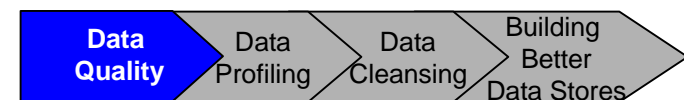




Costs for Data Integrity Issues

Fraud

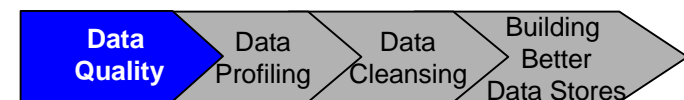
- **Fraudulent documents** - Technology has permitted the production and submission of high quality authentic looking but fraudulent documents such as W-2s, tax returns, financial statements, verification of deposits and employment forms, attorney's letters and credit reports
- **Targeting of Applicants** - The identification and recruitment of difficult to qualify applicants, who feel desperate enough to go along with the fraud.
- **Use of Insiders** - Employees are pressured to participate in the fraud by threat of job loss or the withholding of compensation.
- **Straw Buyers** - The production of fraudulent paper to obtain loans in excess of what is supportable by the underlying property and the use of "straw buyers".



Costs for Data Integrity Issues

Commonly recognized **mortgage fraud** can be divided into two main types: fraud for property and fraud for profit. In addition, there also exists fraud for other criminal purposes.

- 1. Fraud for property** - This is generally committed by home buyers attempting to purchase homes for their personal use. Examples are asset fraud, occupancy fraud, employment and income fraud, identity theft, and straw buyers.
- 2. Fraud for profit** - This is often committed with the complicity of industry insiders such as mortgage brokers, real estate agents, property appraisers, and settlement agents (attorneys and title examiners). Examples are appraisal fraud, fraudulent flipping, straw buyers, and identity theft.
- 3. Fraud for other criminal purposes** - This involves use of illegal funds in the real estate transactions. An example is a drug trafficker purchases a home for money laundering purpose.

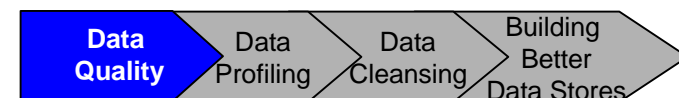


Reasons for Poor Data Quality



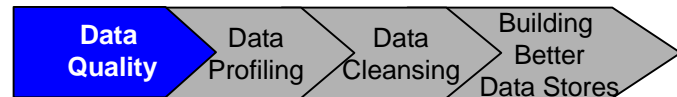
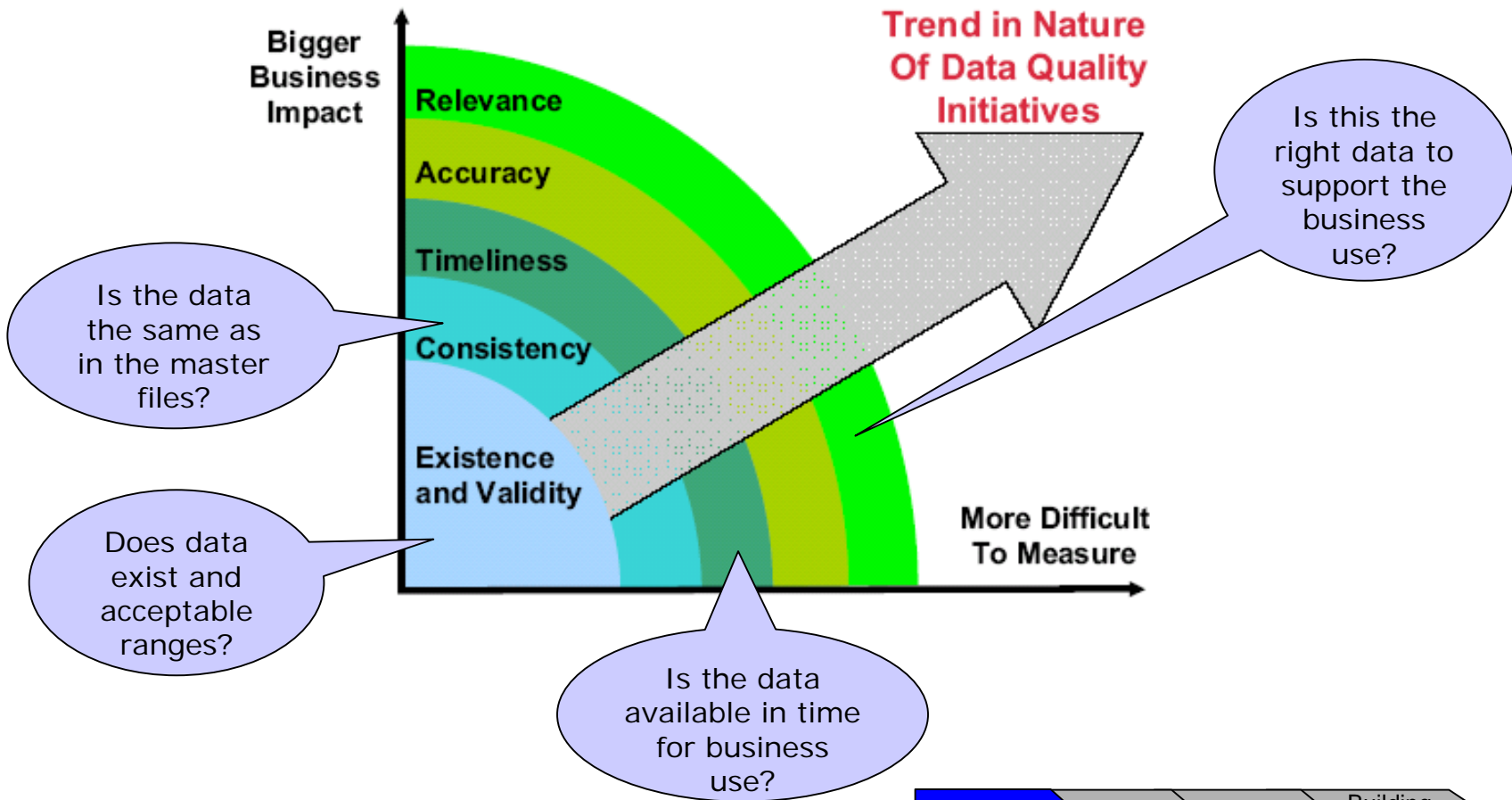
“How can there be significant discrepancy in data quality. The systems have been running for years...”

- Different systems have different data needs.
 - ❖ Tactical versus Strategic Information
 - ❖ Loan Origination vs. Loan Servicing
- Isolated applications and islands of databases each with their own rules for the data.
- Band-Aid fixes
- Mergers and Acquisitions
- Application Multiplication
- Automated Loan Processing with low or no documents
- Increasing Volume



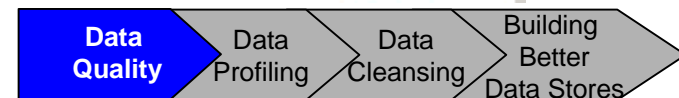
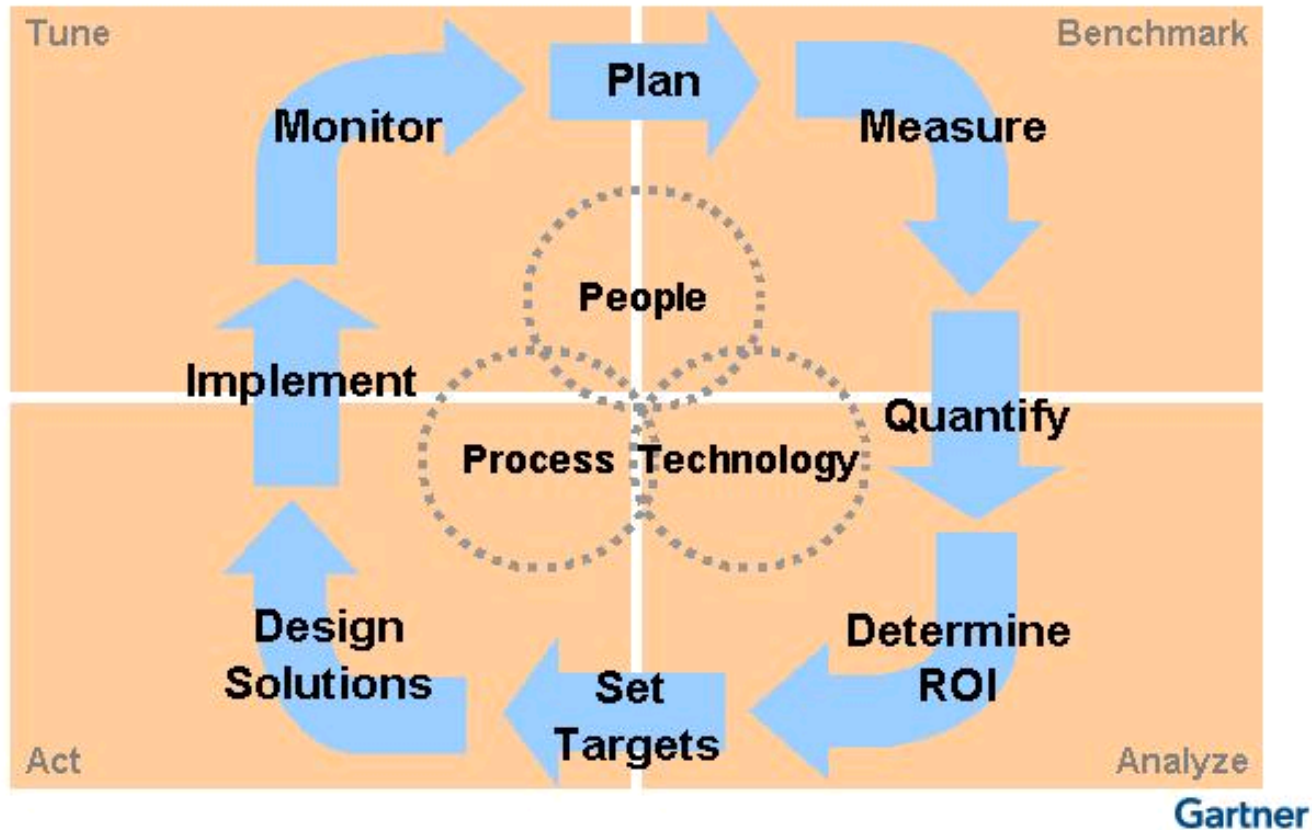
Data Quality – Different Quality metrics

Data Quality: A Working Definition



↓ Data Quality Initiatives Process

Methodology Is Critical To Success of Data Quality Initiatives



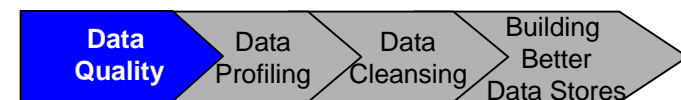


Best Practices



Maximize the value of our Data Asset enterprise-wide to help reach our business objectives

- ✓ Assign ownership and accountability
- ✓ Establish a governance structure and data stewardship program
- ✓ Establish data standards and definitions
- ✓ Design controls for continuous monitoring and improving quality
- ✓ Link Data Quality with business objectives

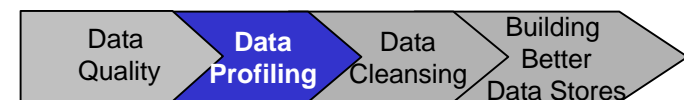




Data Profiling

How we utilize data profiling..

- data analysis for projects
- data analysis for problem resolution
- data analysis for continuous quality assurance (DQMS)
- Measuring the quality over time
- Metadata or data profiling repository
- To increase the quality of our data



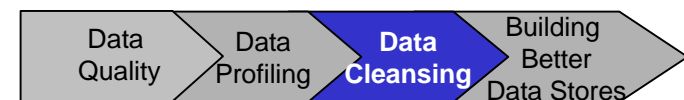
↓ Data Cleansing - defined

Identifying incorrect data values and then either correcting them or rejecting them.

This can be errors in single data elements or the correlation across multiple data elements.

Also referred to as data scrubbing, the act of detecting and removing and/or correcting a database's dirty data (i.e., data that is incorrect, out-of-date, redundant, incomplete, or formatted incorrectly).

Goal: The goal of data cleansing is not just to clean up the data in a database but also to bring consistency to different sets of data that have been merged from separate databases. Sophisticated software applications are available to clean a database's data using algorithms, rules and look-up tables, a task that was once done manually and therefore subject to human error.



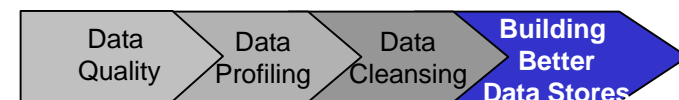
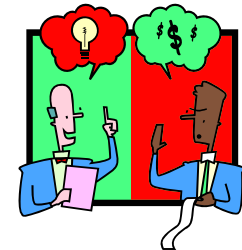
Building Better Data Stores

Putting it all together

- Knowledge is power in combating fraud
- Good Analysis – Data Profiling
- Data Cleansing for parsing, standardization, correcting, and supplementing data
- Flexible data models that can be leveraged across business units. Agile modeling techniques.

Best Practices for data management controls

- Automatic monitoring for out of sync conditions
- Self correcting data stores
- Supplement data with suspect flags, confidence factors
- Better matching – probabilistic matching
- Metadata management



Customer Master



Data Sources

Business Applications
 Mortgage
 Insurance
 Banking
 Corporate
 Other

Enterprise Masters
 Property
 DNS
 Other

Documents Management Archive


Customer Master Services



Customer 360 View Summary

Customer Summary		Customer Accounts				
Name: Reginald Lewistone	SSN: 605-08-13	Type	Number	State	Balance	Action
Address: 1627 East Palm Avenue Palmdale, CA 93550	Phone: 661-944-0772	Mortgage	30471249	Active	\$500,200.00	Details
Email: Stoneman@aol.com		Insurance	H50002731	Active	\$1,999.99	Details
		Bank	1202070255	Active	\$10,000.00	Details
Lifetime Value Gold (9 of 10)		Next Products - Offers				
		Type	Summary	Amount	Action	
		Refi	Fixed 30 Yr at 5.125%	\$500,200.00	Details	
		Heloc	Prime + 1.25%	\$50,000.00	Details	

Customer Activity History					
Activity Type	Business Unit	Date	Status	Acct Type	Acct #
eMail Offer	FSL	9/1/2003	Completed	Mortgage	30471249
Financial Transaction	Loan Admin	8/1/2003	Completed	Mortgage	30471249
Service Request	Countrywide Bank	7/8/2003	Closed	Bank	1202070255
Financial Transaction	Loan Admin	7/1/2003	Completed	Mortgage	30471249
Contact Log	OOP	3/22/2003	Closed	Mortgage	30471249



Customer Analytics



Customer Integrated View

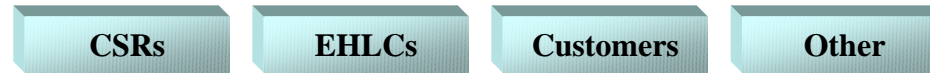
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Customer Analytics

17

Aggregating Customer Information



Customer 360 View Summary

Customer Summary

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 Palmdale, CA 93550
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 Email: Stoneman@aol.com

Lifetime Value
Gold (9 of 10)

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Financial Transaction	Loan Admin	7/1/2003	Completed	Mortgage	30471249
Financial Transaction	Loan Admin	5/1/2003	Completed	Mortgage	30471249
Financial Transaction	Loan Admin	4/1/2003	Completed	Mortgage	30471249
Contact Log	OOP	3/22/2003	Closed	Mortgage	30471249
Contact Log	OOP	3/20/2003	Closed	Mortgage	30471249
Service Request	OOP	3/17/2003	Closed	Mortgage	30471249
Contact Log	OOP	3/17/2003	Closed	Mortgage	30471249
Financial Transaction	Loan Admin	3/1/2003	Completed	Mortgage	30471249
Financial Transaction	Loan Admin	2/1/2003	Completed	Mortgage	30471249
Financial Transaction	Loan Admin	1/1/2003	Completed	Mortgage	30471249

Marketing
Generated using analytics engine

Marketing
Solicitations

Loan Admin

Loan Admin

Bank

Marketing
Generated by campaign system using analytics engine

Customer Service
Minimum meaningful data with links to the source systems for details.





Something to think about...

Poor Quality Costs!

The Data Warehouse Institute - poor customer data costs U.S. Businesses \$611 Billion a year.

Larry English – the business costs of non-quality data, including irrecoverable costs, rework of products and services, workarounds, and lost and missed revenue may be as high as 10 to 25 percent of revenue or total budget of an organization

Phillip Crosby - Quality is not only free, but is an honest-to-everything profit maker. Every penny we spend on NOT doing things wrong, over, or instead, becomes half a penny right on the bottom line.



Questions?



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