

Measuring the Cost of Low Quality Data with The ValueTree™

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Purpose:

- Introduce The ValueTree™ as a possible tool for measuring the cost of poor data quality
- Connect our data quality to business financials
- Create the insight required to determine if this approach addresses your requirements

Products:

1. Know The ValueTree™
2. Common perspective on data quality and its impact
3. Possibility: measuring the cost of poor quality data and contributing to increases in the business' value

- The financial performance of a business is the resultant of organizational assumptions, processes, systems and structure.
- Most people cannot connect their daily activities and decisions to an income statement and balance sheet.
- “Value” means how much something is worth, and we are either building or destroying institutional value every day through our actions.
- People have trouble visualizing their material flow in businesses that flow data as the product.
- Facilities and Maintenance Departments are to manufacturing what IT is to banking; IT puts in all the business infrastructure and maintains it.
- Lean, 6-s , BPM, CI in the hands of a skilled person directly drives improvement in value; it destroys value in the hands of a charlatan.
- The topic of data quality and process control is increasing in visibility and importance within the banking community; the company’s “data paradigm” is being challenged.

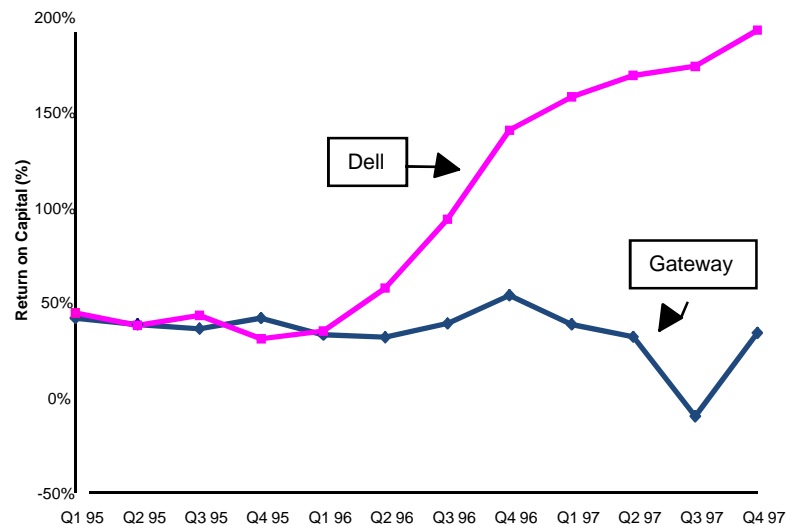
What is the Value Tree?

- Financial model of the business on one page
 - Visually oriented
 - Interactive
 - Easily understood by people
- Financial tool for developing business context
 - Interrelationships of various dollar flows
 - Drivers of business decisions
- Financial “range-finder”
 - Target identification
 - Target selection
- Financial-world de-mystifier
- Financial guidepost helping answer the essence question...“Is the institution increasing its value (how much its worth) or destroying its value?”

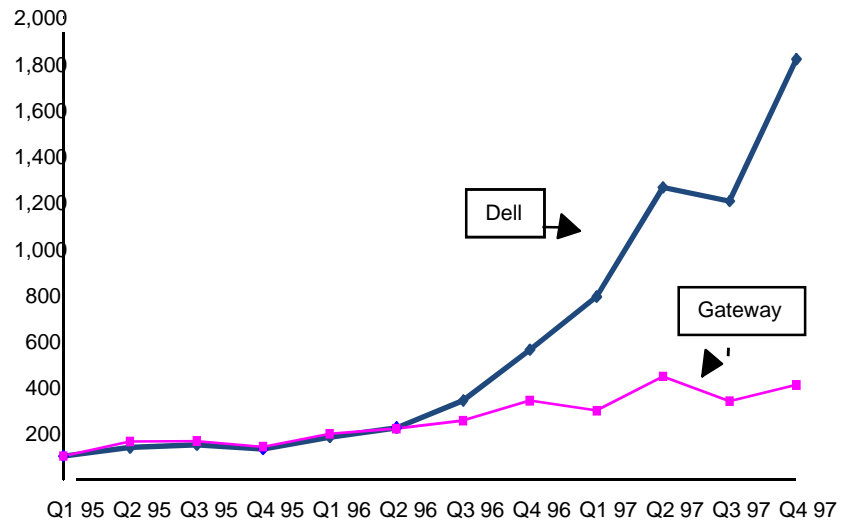
What determines a firm's worth?

The same relationship seems to exist at Dell and Gateway; strong ROIC, strong stock price.

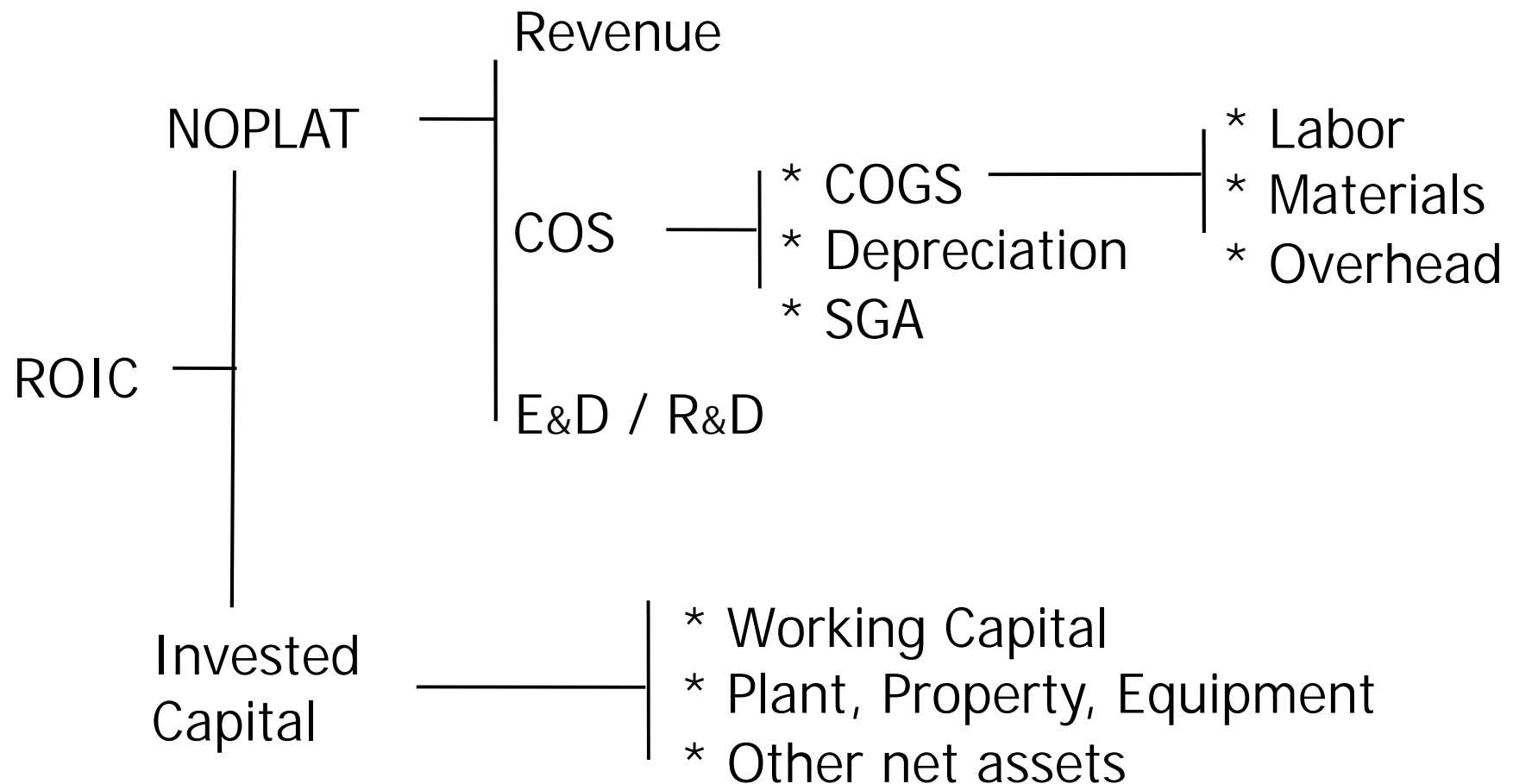
Return On Invested Capital



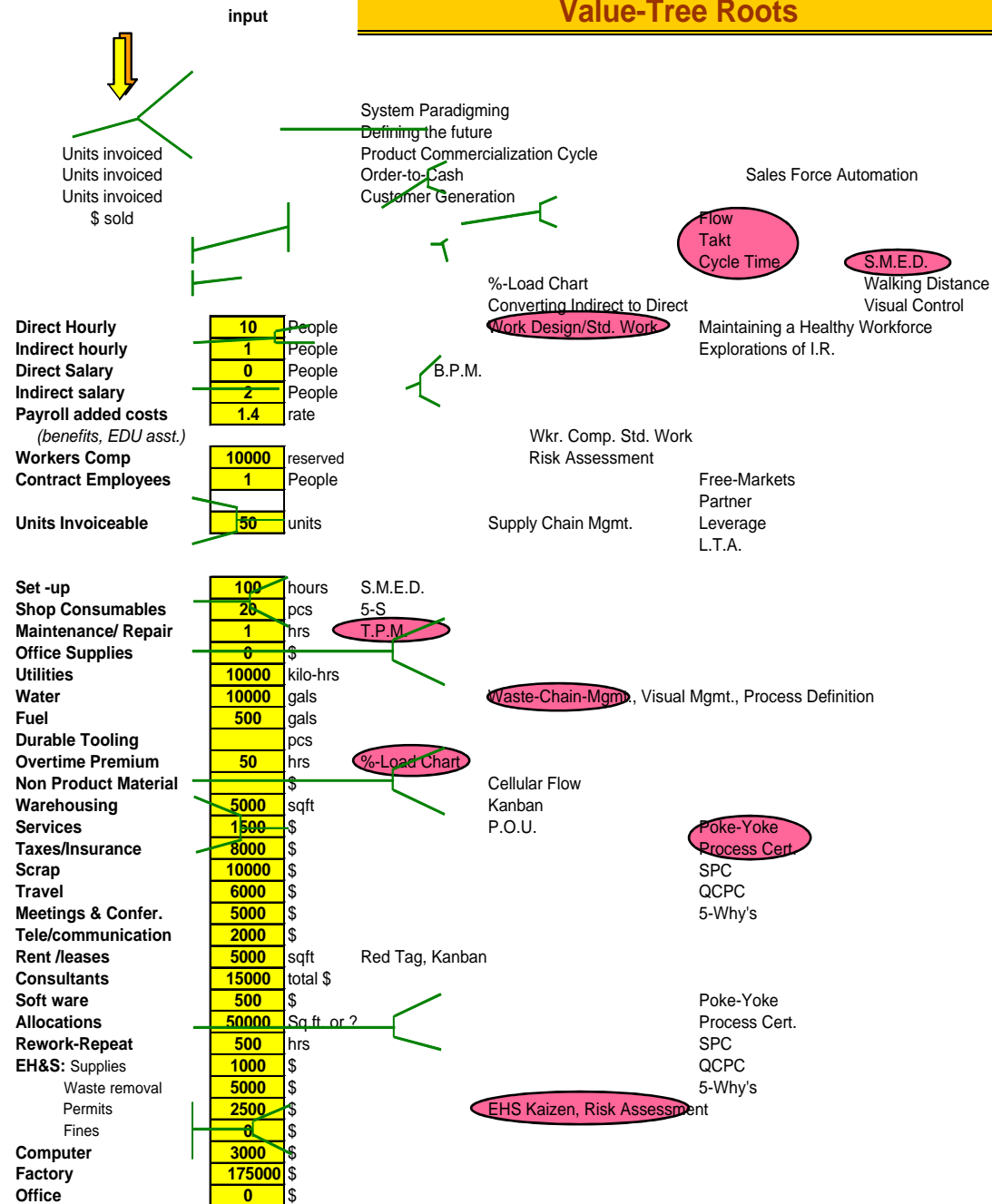
Stock Price



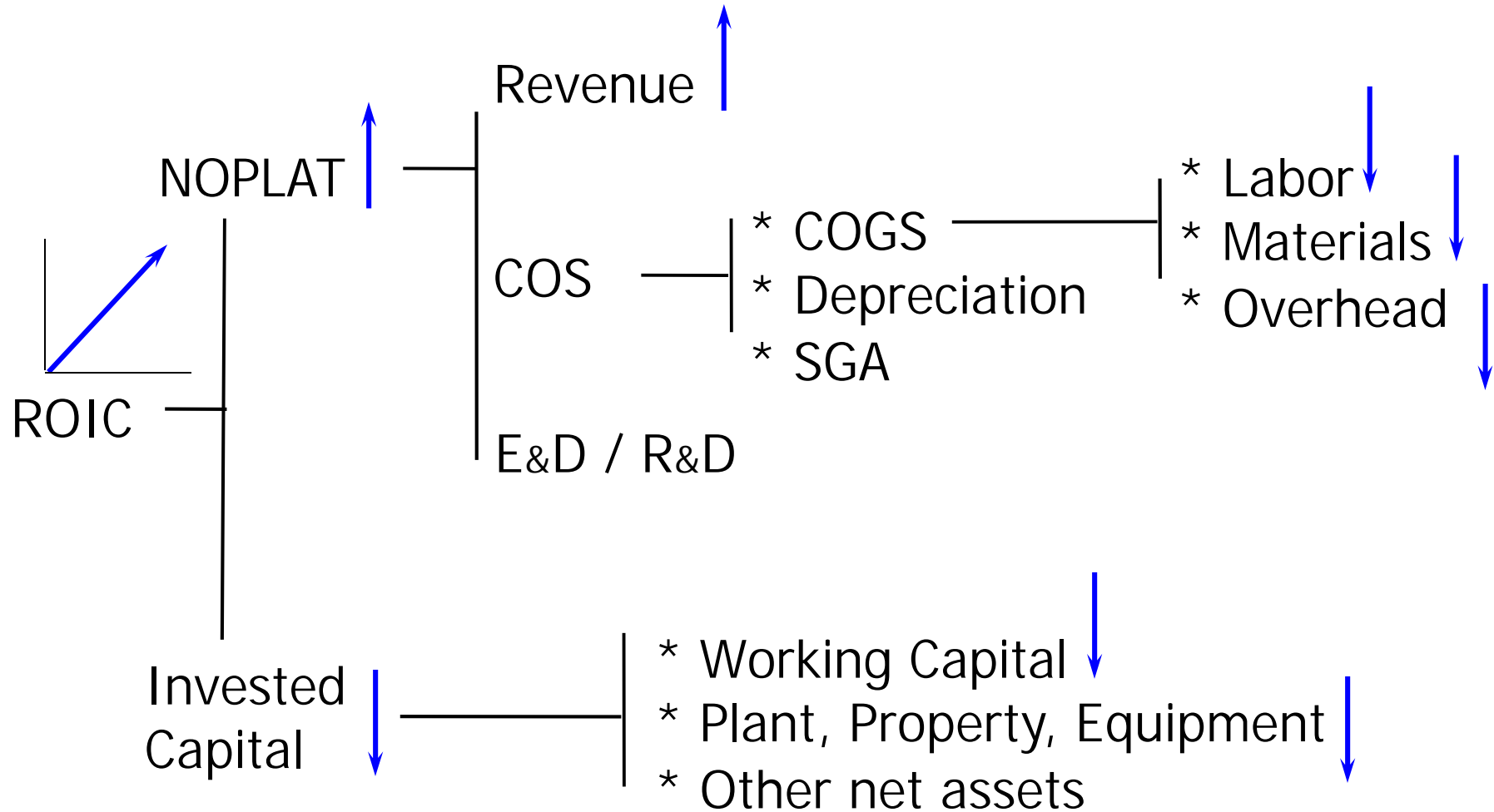
The Value Tree Exercise



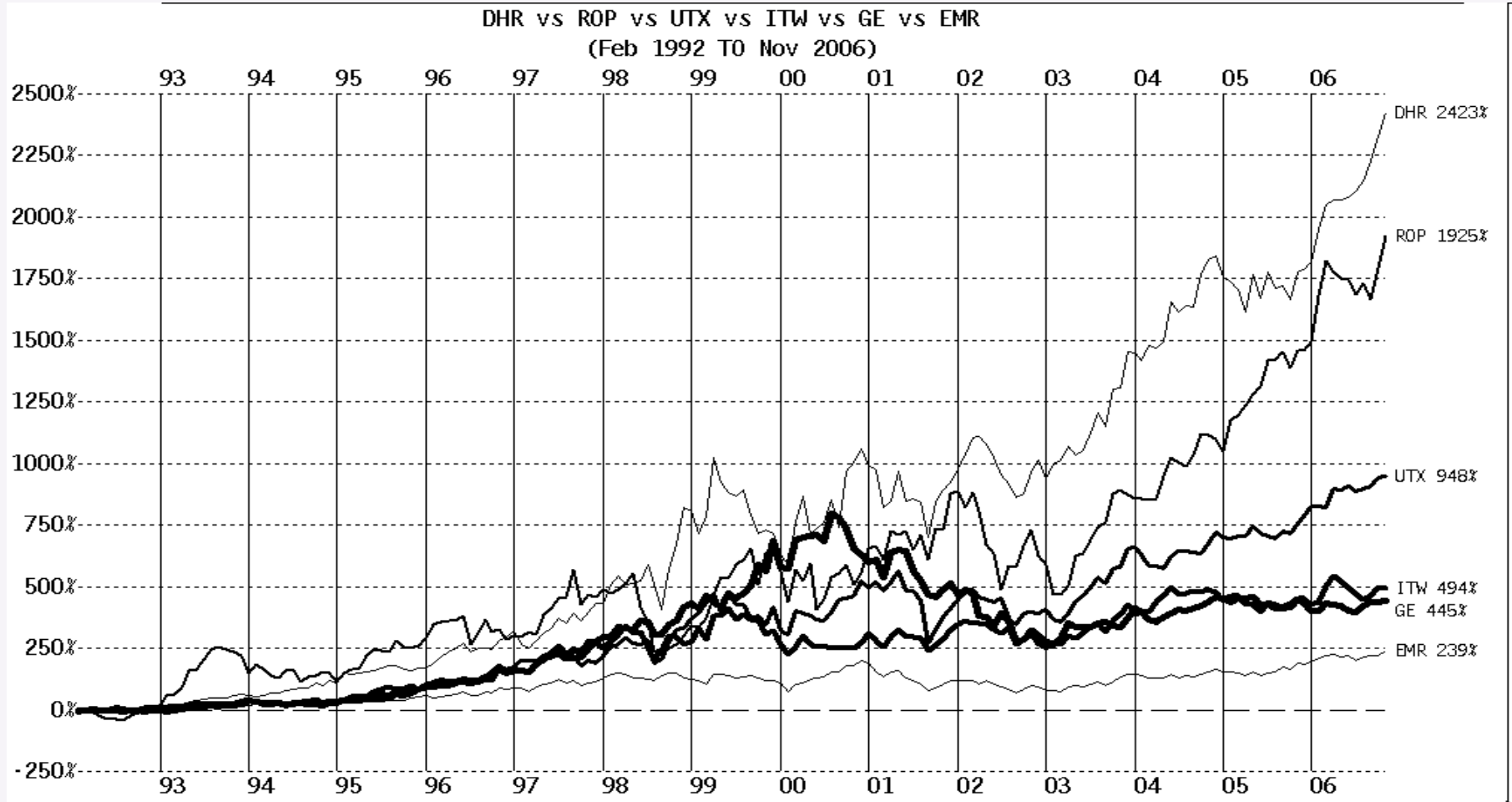
Value-Tree Roots



The Value Tree Exercise



Benchmark Only Against World Class!



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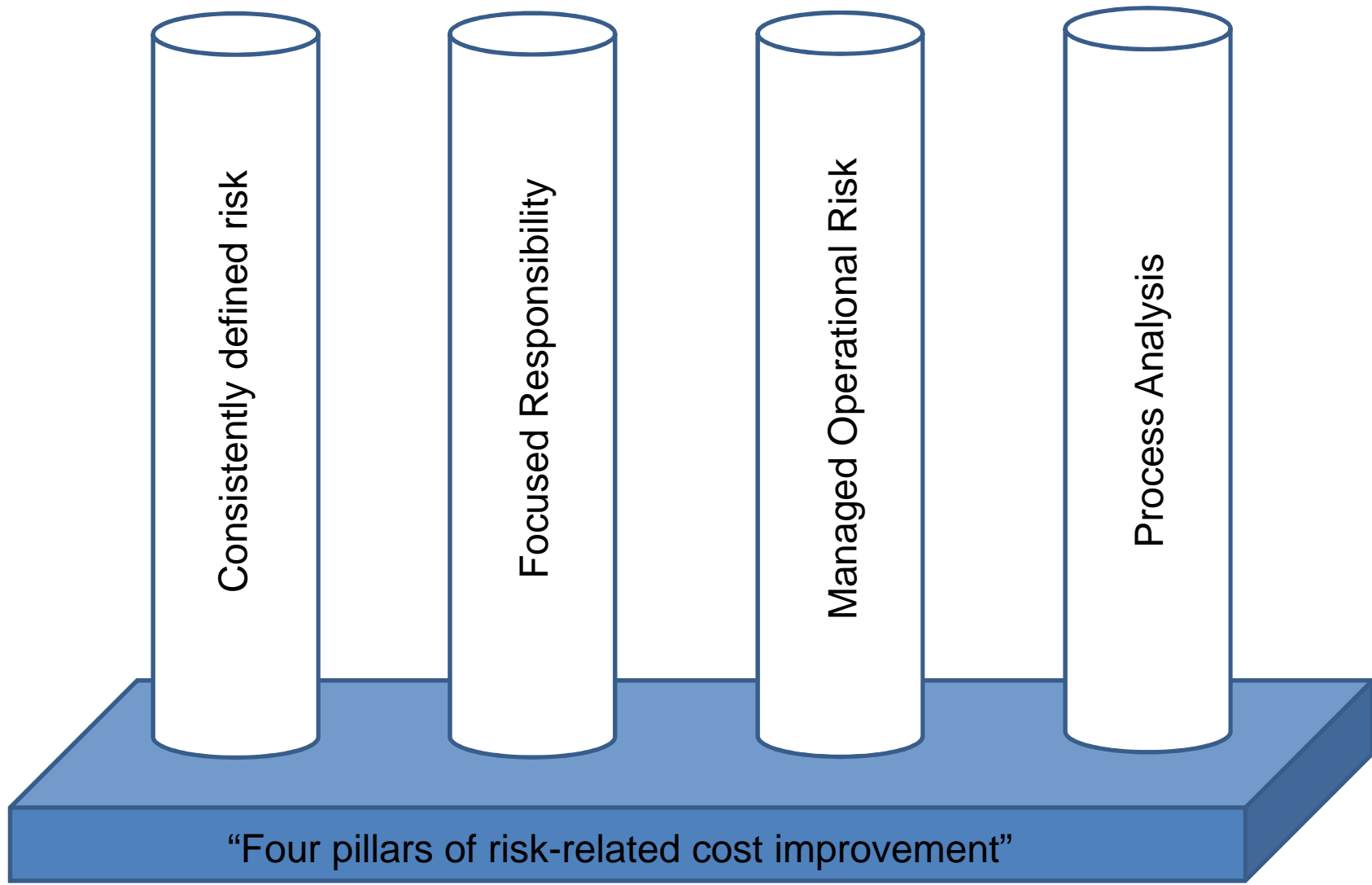


- Operational Risk*
 - Risk of loss resulting from inadequate or failed internal processes, systems, human factors or external events
 - Reputation risk
 - Franchise risk
 - Operational Risk Management Process
 - Identify and assess key operational risks
 - Establish key risk indicators
 - Produce a comprehensive operational risk report
 - Prioritize and assure adequate resources to actively improve the operational risk environment and mitigate emerging risks
 - 140 countries and 50% revenue from outside U.S.
 - “We are a bank...accept deposits, commit capital, lend, transact for customers and live up to the highest standards of trust and integrity.”

* Excerpts from 2009 Annual Report

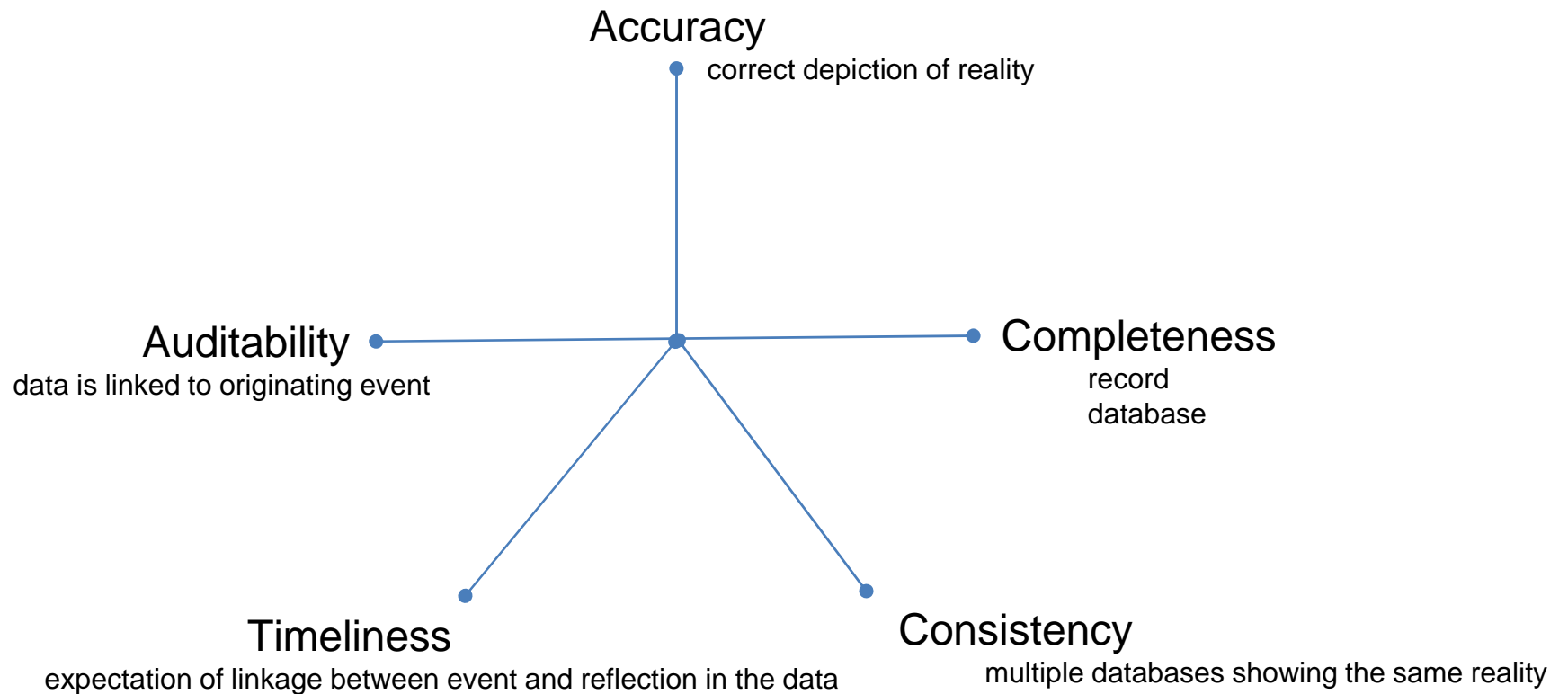
- Core business
 - Global transaction services
 - Securities and banking
 - Regional consumer banking
- Global reach draws 95% of Fortune 500 and 85% of global Fortune 1000
- Aspirations:
 - “A client of Citi anywhere is a client of Citi everywhere”
 - Be the digital bank of the future
- 200 million accounts at 140 locations globally and 265,300 full time people
 - ISO20022 (formally 15022) upcoming financial data model standard
- Cost pressures, increased transaction volumes, Sarbox and BaselII

- 4 Pillars of Risk
- Aspects of Data Quality
- Data Scenarios
- Data Quality Root Causes
- Reporting: data flows
- Data Impacts
- Data and Marketing



Barent W. Wemple, “Bankers Magazine”

Aspects of Data Quality



Data Scenarios

	Timeliness		Data Type		Data Class		Data Need	
	Real time	Batch process	Financial	Non-financial	Transaction	Analytic	Historical	Immediate Use
High Priority	✓		✓		✓			✓
Tolerant		✓		✓		✓	✓	
KYC	✓			✓		✓		✓

Data Quality Root Causes

1. Expansion into new markets
2. Merger/acquisition
3. Urgent reporting requirements requiring work-arounds
4. Home grown databases
5. Multiple versions of databases running on different platforms
6. Application evolution
7. System workarounds, using alternative fields for data entry, ie “comments”
8. Legacy systems
9. Fast tracking process re-engineering changes
10. Time decay of data
11. Lack of data standards/data warehouse/meta data
12. Careless data entry
13. No business data ownership for quality

Reporting: data streams

“Well capitalized” means
Tier 1 capital ratio of >6%

Citi's tier1 12/09 11.7%
6/10 12.0%

“we are one of the best
capitalized banks in the world”

$$66.9/750.3 = 8.9\%$$

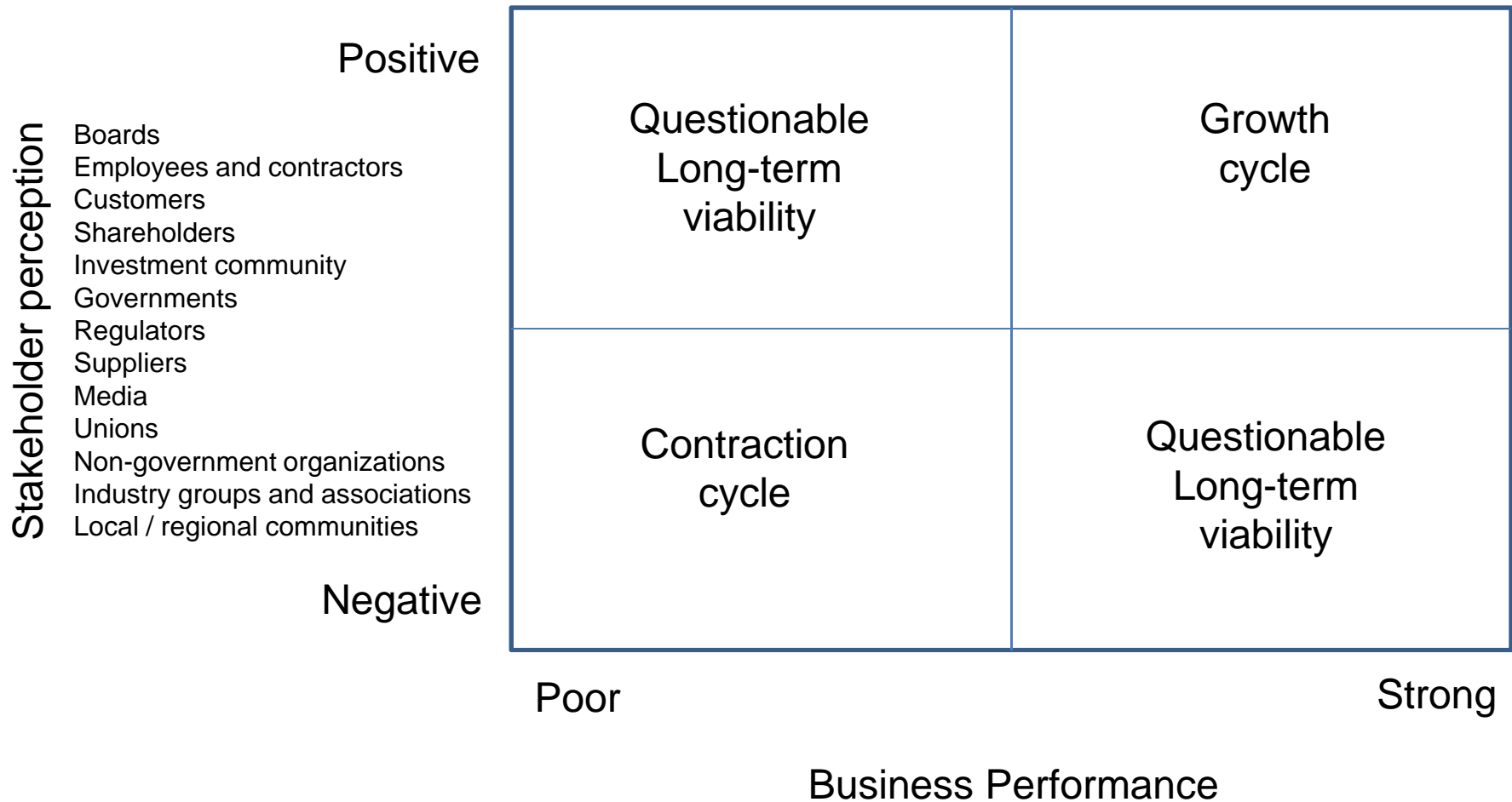
Components of Capital Under Regulatory Guidelines

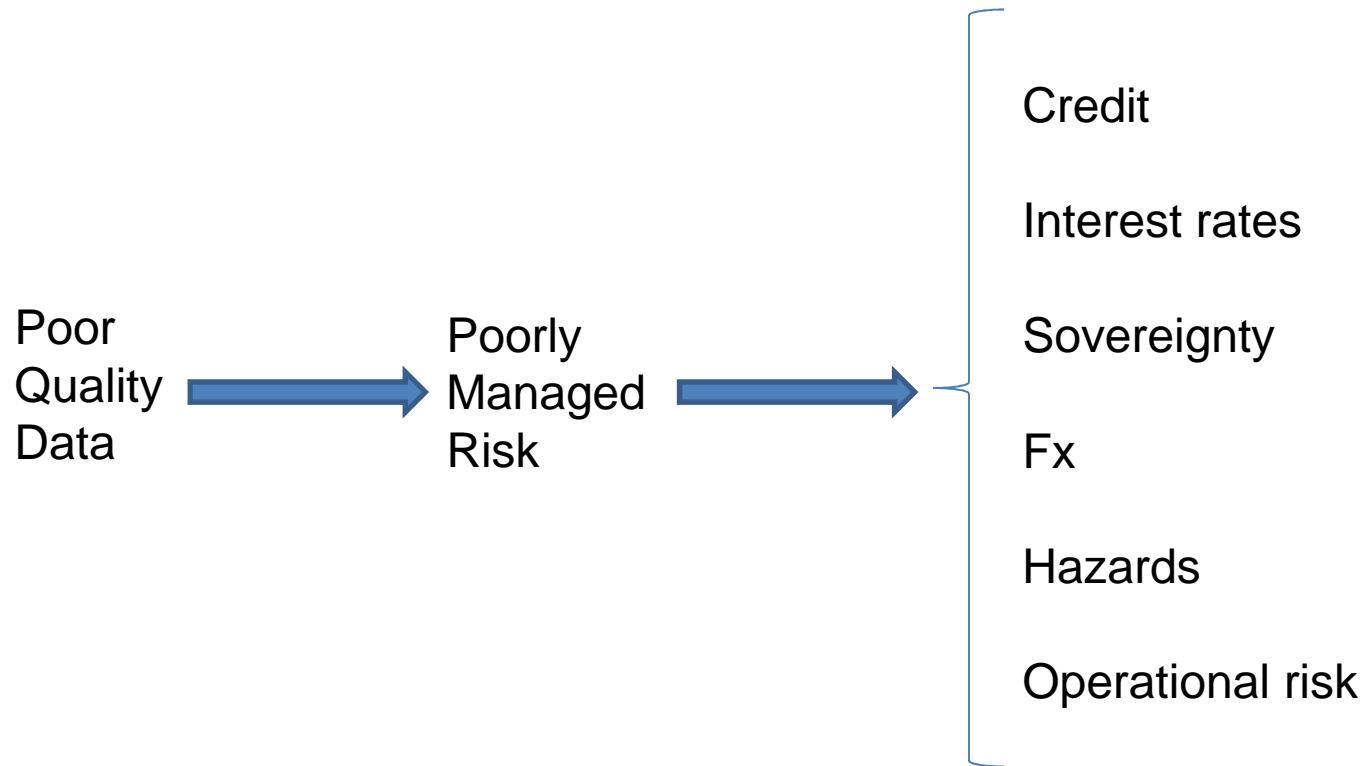
In millions of dollars at year-end	2003
Tier 1 capital	
Common stockholders' equity	\$ 96,889
Qualifying perpetual preferred stock	1,125
Qualifying mandatorily redeemable securities of subsidiary trusts	6,257
Minority interest	1,158
Less: Net unrealized gains on securities available-for-sale ⁽¹⁾	(2,908)
Accumulated net gains on cash flow hedges, net of tax (751) (1,242)	(751)
Intangible assets: ⁽²⁾	
Goodwill	(27,581)
Other disallowed intangible assets	(6,725)
50% investment in certain subsidiaries ⁽³⁾	(45)
Other	(548)
Total Tier 1 capital	66,871
Tier 2 capital	
Allowance for credit losses ⁽⁴⁾	9,545
Qualifying debt ⁽⁵⁾	13,573
	399
	(45)
	23,472
	\$ 90,343
	\$750,293

Massive data integration work process

- Asset liability management
- Liquidity management and contingency funding planning
- Financial institution analysis used to prepare for CAMELS ratings [**C**apital adequacy, **A**sset quality, **M**anagement, **E**arnings, **L**iquidity, **S**ensitivity to market risk] from regulatory oversight bodies like the Federal Reserve (the Fed), the Office of the Comptroller of the Currency (OTC), and the Federal Deposit Insurance Corporation (FDIC)
- Exploding data volumes, data complexity, questionable quality, and its many sources drive complexity in accessing, transforming, cleansing and integrating data from mainframe, midrange, tape, cloud computing, and third-party service providers and trading partners.
- Multiple data formats must be managed—structured, semistructured, and unstructured datatypes, such as SWIFT, NACHA, IFX, FpML, and FxML. Standards like MISMO can be very costly and difficult to manage when changes are occurring all the time.
- Ensuring data quality is necessary to comply with a variety of regulations. CAMELS, for example, emphasizes the completeness, conformity, consistency, accuracy, and deduplication history of data that goes into reporting. As a result, data lineage and reliable audit trails are necessary.

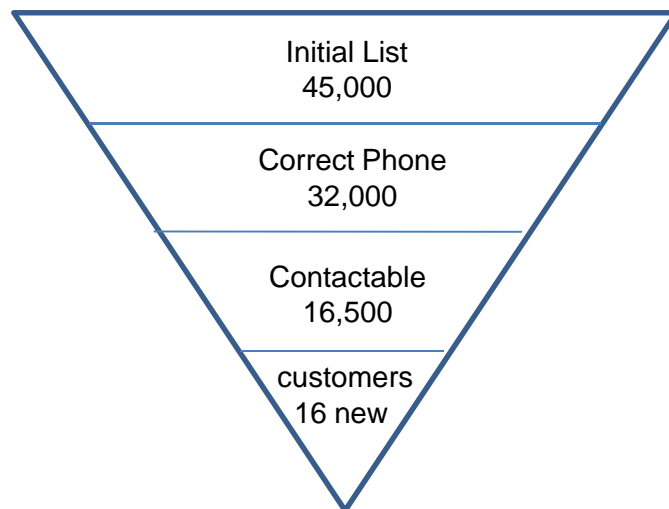
- Calculating total capital required to cover losses from risk such as credit or market depends on the statistical approach as well as data accuracy
- Unreconciled trades in fx operations age into accounting errors and can eventually create charges against earnings
- Dependent on data
 - Risk management
 - Capital reserves
 - Under or over estimated
 - Compliance
 - Reporting
 - Customer relationship management
 - Targeting services
 - Marketing
 - Sales





“Reducing the likelihood of undesirable outcomes.”

- Informatica creates quality index at Banco Popular
 - 23 data variables
 - Name, date of birth, education level, occupational code, transaction information
 - Data classified
 - Mandatory
 - Compliance
 - Necessary
 - Business requirements
 - Ideal
 - Marketing
 - » PFM: personal financial management to see the spending habits of customers



Vs.

Transactions with
high accuracy
rates

A study of more than 1,700 banks from 63 countries, conducted by AIM Software and Vienna University, sponsored by Reuters shows the following:

- 1 out of 10 institutions employ more than 50 people for reference data
- 54% regard workflow management as a major data management objective
- 52% regard event reporting as a major data management objective
- “financial institutions realize that they are facing serious operational risk and huge potential losses in this area.”

* www.dmstudy.info/2005

Bad Data Quality Impact*

1. Bad data quality leads to Internal Operational Inefficiencies
 1. Turnbacks and escapes i.e. stop payment on faulty checks, recalled credit cards on wrong addresses
2. Customer Retention impacts
 1. Wrong billing or statement leading to loss of confidence and trust
 2. Customer complaints leading to attrition
3. Customer acquisition impacts
 1. Undelivered mail leading to failed mailer campaigns
 2. Mailed products returned due to errors in names
 3. Dissatisfied sales and distribution people from incorrect compensation
4. Operational effectiveness
 1. Tracking status of delivered products
 2. Errors in delivered products
5. Reputation impacts
 1. Media exposure from loss of confidential information
 2. Major product recall

* www.executionmih.com/data-quality/accuracy-consistency-audit.php

6. Shareholder impacts

1. Faulty financial statements and low audit ratings could lead to loss of confidence by the investing community

7. Regulatory impact

1. Faulty submissions leading to legal exposure
2. Lawsuits by shareholders or customers

8. Decision impact

1. Quality of decision depends on quality of data. Bad data leads to misinformed or under-informed decisions

9. Business management impact

1. Lack of data, or inaccurate data on key performance indicators misguides performance management

The Value Tree

for Targeting Bad Data Quality

Operational Efficiency Impact: analysis, investigation, corrective action, IT fixes, continued monitoring

Customer Retention impacts

Customer acquisition impacts

Operational effectiveness

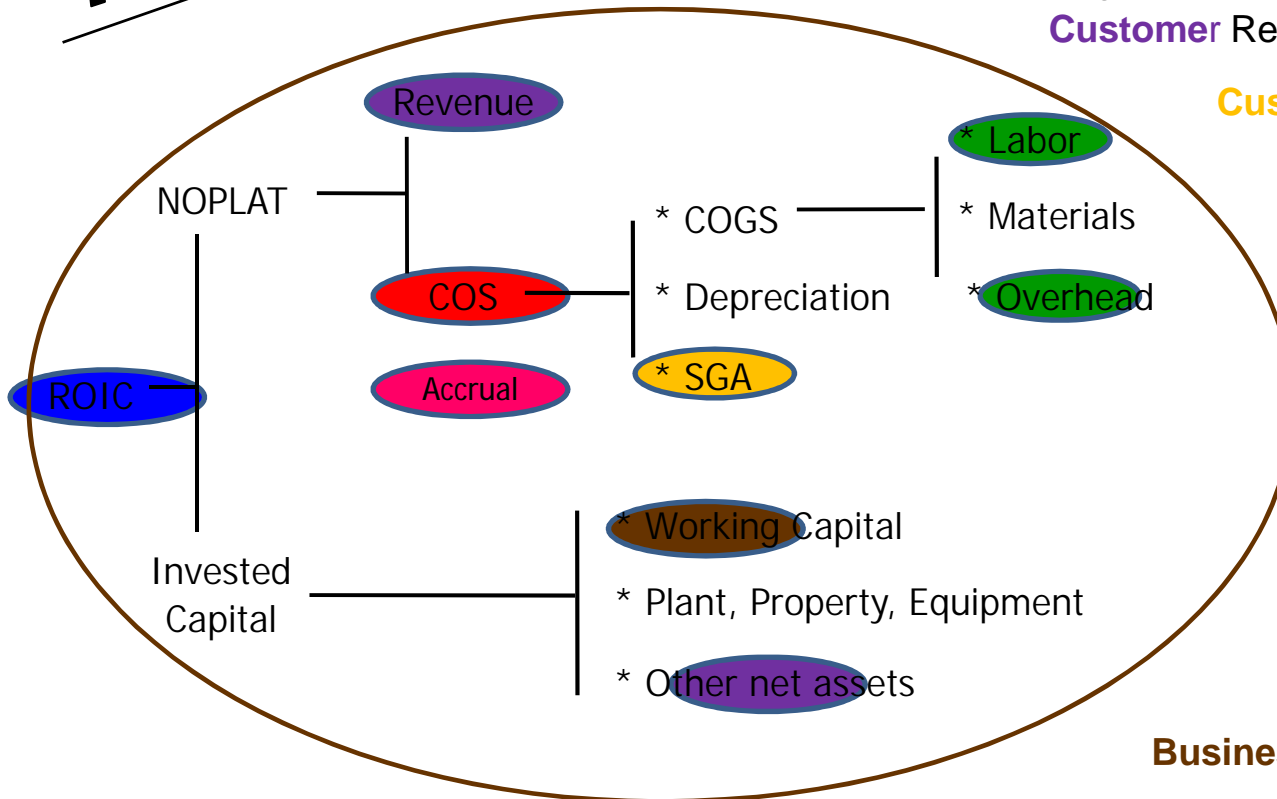
Reputation impacts

Shareholder impacts

Regulatory impact

Decision impact

Business management impact



The ValueTree™: Citi 2009

200M accounts

