

AVOIDING CRASHES ON THE INFORMATION HIGHWAY

Creating High Quality Information

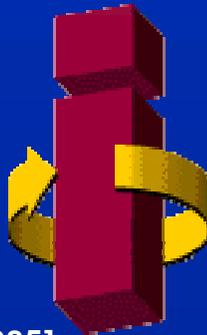
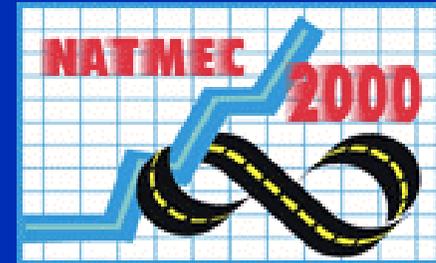
NATMEC 2000

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by:

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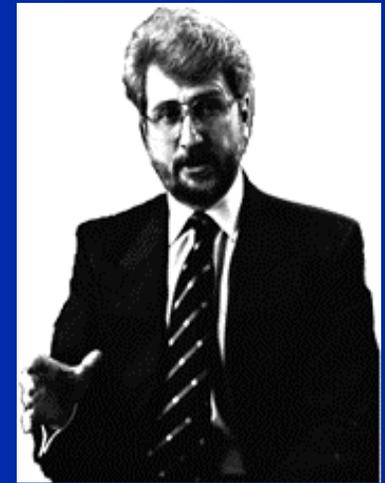
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Larry P. English

President and Principal



Mr. English is an internationally recognized speaker, educator, author and consultant in information and knowledge management and information quality improvement. He also provides consulting and education in information stewardship, strategic information visioning, information technology evaluation, information resource management and data administration, data modeling and facilitation, and value-centric application development methods. Mr. English has developed the Total Quality data Management (TQdM®) methodology applying Kaizen® quality principles to information quality management. He chairs Information Quality Conferences around the world.

Prior to founding INFORMATION IMPACT INTERNATIONAL, Inc. (www.infoimpact.com), Brentwood, TN, over twelve years ago, Mr. English was Vice President of an international IRM consulting firm. Before that, he was manager of systems development and then for information management with a large publishing firm. Before positions as Senior Instructor for a computer manufacturer and Information Systems Training Coordinator for a major insurance firm, Mr. English began his career with Sears, Roebuck, and Co., as a programmer and systems analyst.

He was featured as one of the “21 Voices for the 21st Century” in the January, 2000 issue of *Quality Progress*. DAMA awarded him the 1998 “Individual Achievement Award” for his contributions to the field of information resource management. Mr. English has served as an Adjunct Associate Professor in computer science. Active in several professional organizations, he has been an officer of the Nashville DPMA Chapter and is a co-founder of the Nashville DAMA Chapter. He is a member and a strategic business partner of the American Society for Quality (ASQ). Mr. English has been an active member of various ANSI (American National Standards Institute) standards committees, and he is an editorial advisor for *DM Review*.

A magna cum laude graduate of Hardin-Simmons University, Mr. English holds a Masters Degree from the Southern Baptist Theological Seminary where he was a Luther Rice Scholar and a Garrett Fellow. He is listed in Outstanding Young Men in America and Who’s Who Worldwide. He has provided consulting and educational services in more than 25 countries on five continents to such organizations as Aera Energy, Air Canada, American Express, Belgacom, Boeing, British Telecom, Capital Bank, Coca-Cola Foods, Dow Chemical, Eastman Kodak, Eli Lilly, the FDIC, Hewlett-Packard, The Hartford, IBM, L. L. Bean, NTT DATA, Optical Fibres, Sprint, Telenor, UNUM Life Insurance Co., the U.S. Navy, Western Health Alliance and Weyerhaeuser.

A frequent keynote speaker, Mr. English writes the monthly “Plain English on Data Quality” column for *DM Review*, and is the author of the highly acclaimed *Improving Data Warehouse and Business Information Quality*, now available in Japanese, and numerous articles for publications in the US and Europe.

AVOIDING CRASHES ON THE INFORMATION HIGHWAY: *Creating High Quality Information* **Agenda**

- ❑ **Why is quality information imperative in transportation design and management**
- ❑ **What is information quality?**
- ❑ **Customers and suppliers of information and their accountability**
- ❑ **Applying quality management principles to information**
- ❑ **Measuring business information quality**
- ❑ **Improving information quality: process improvement and error proofing**
- ❑ **How to create an information quality environment for win-win**

COST OF NONQUALITY INFORMATION

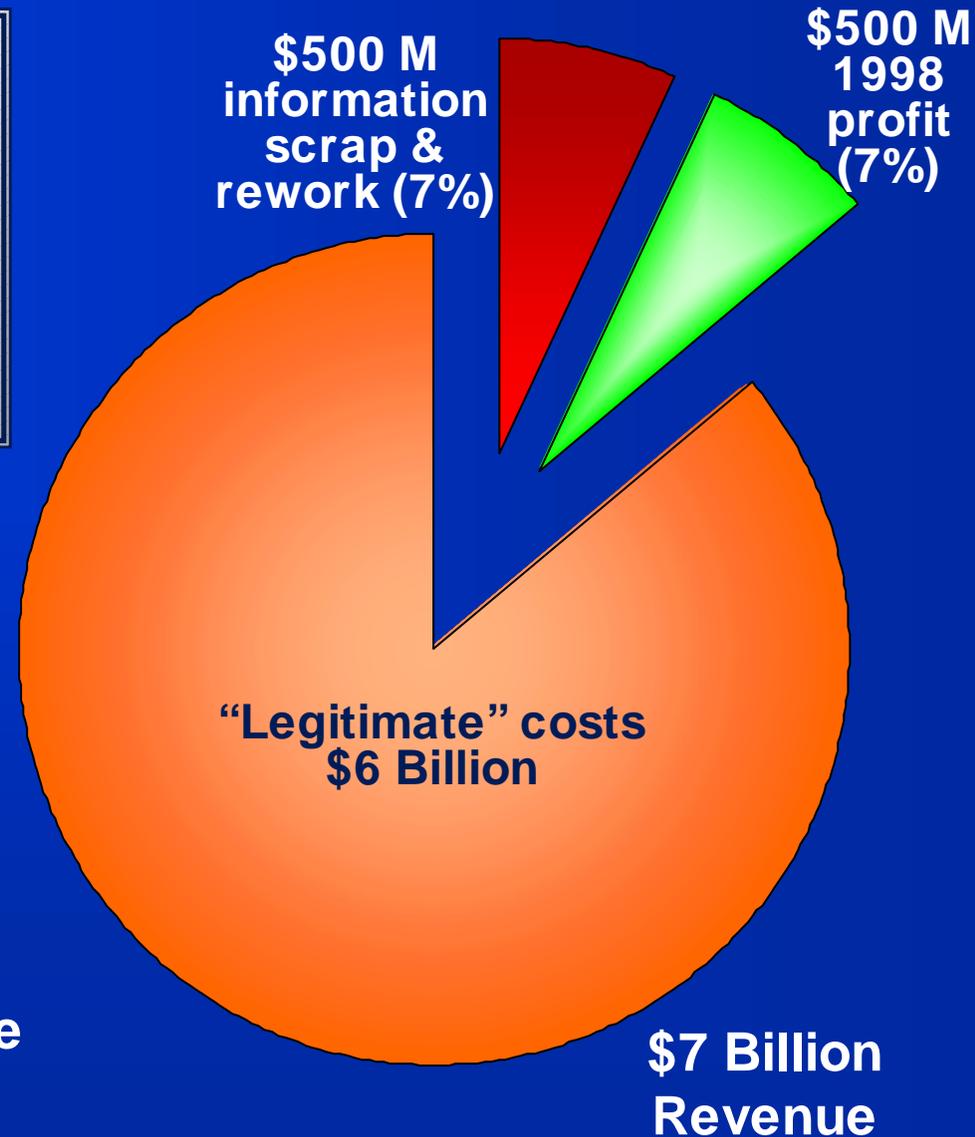
Perception and Reality

“Our data quality isn’t so bad.
We haven’t heard any
complaints from users.”

-Data Quality manager

Cost of nonquality information
case study:

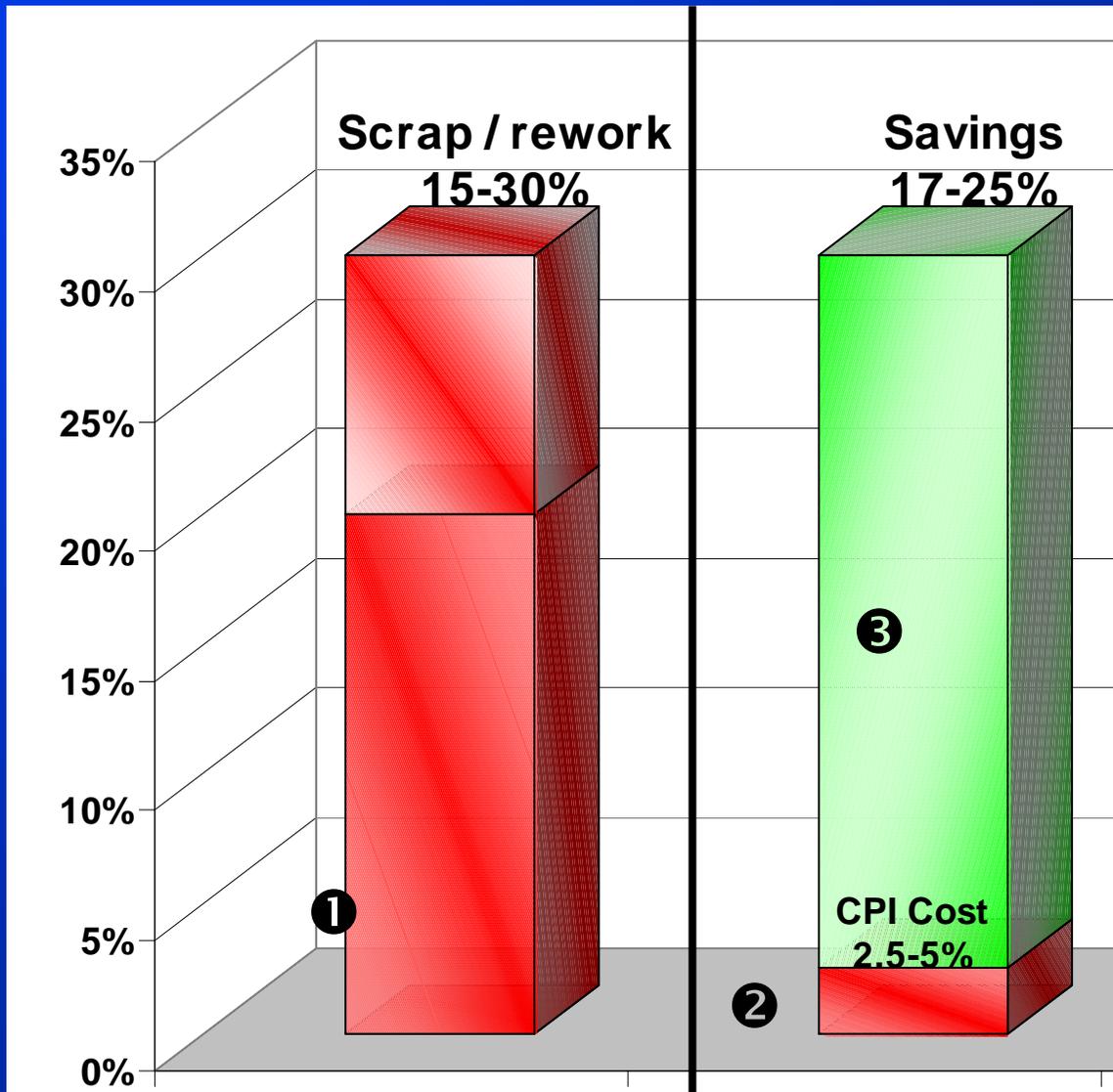
Labor costs *alone* in Information
scrap and rework = 7% of revenue



DIRECT COSTS OF QUALITY AS A PERCENT OF REVENUE

Organization with no quality improvement process

Organization with mature quality improvement process



* Does not include opportunity loss

Source: P. Crosby, *Quality is Free*

① Direct costs (inc: non-recoverable, re-work, cust complaint handling)

② Cost of defect prevention program

③ Savings

INFORMATION QUALITY

**“Consistently
meeting
knowledge worker and end-customer
expectations”
through information and information services**

Larry English, TQdM®

Quality of:

- **Data Definition (*all* business metadata)**
- **Data Content**
- **Data Presentation**

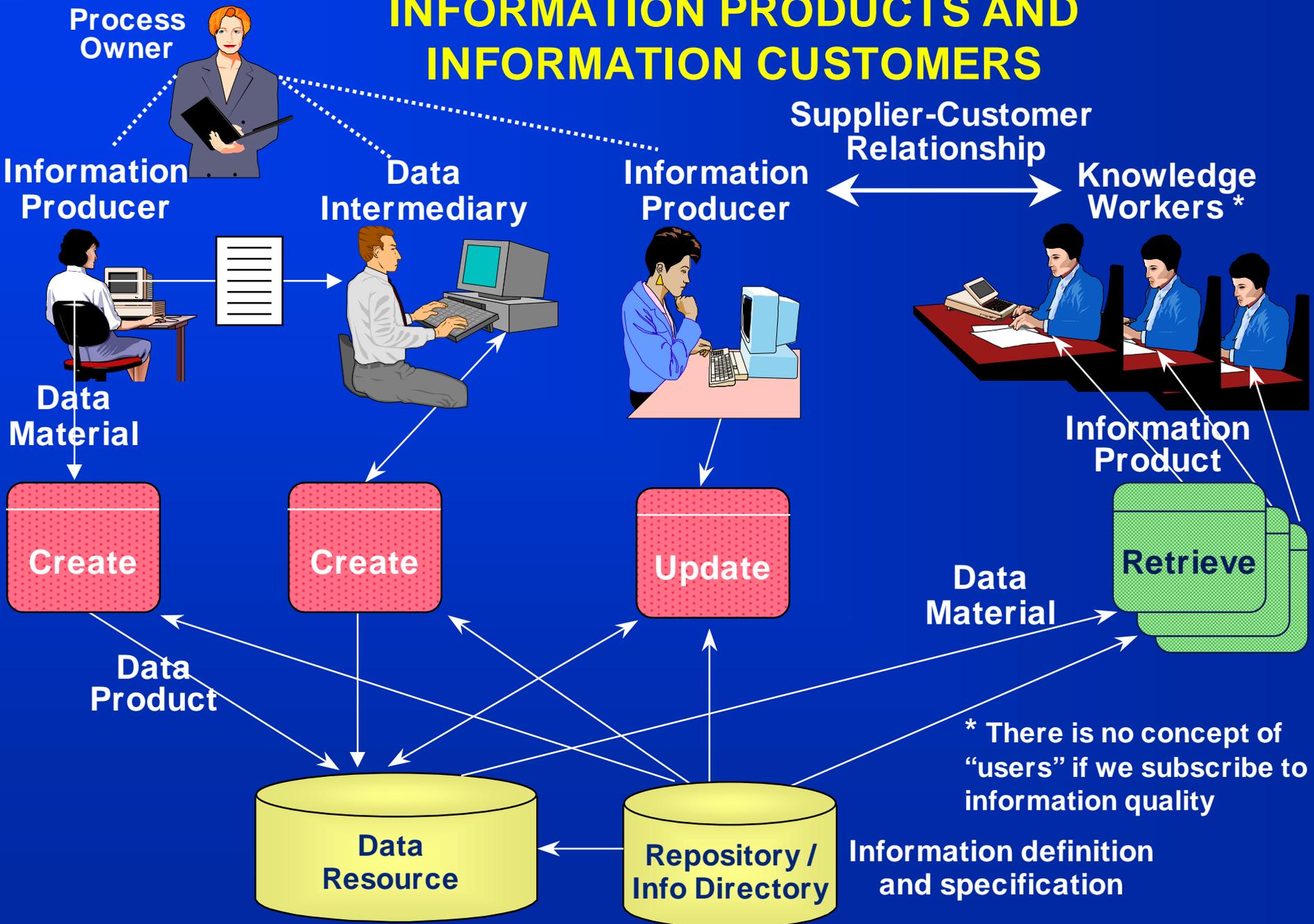
INFORMATION QUALITY

Characteristic:

Knowledge Worker Benefit:

- ❑ The *right* data = the data I *need*
- ❑ With *completeness* = *All* the data I need
- ❑ in the right *context* = whose *meaning* I know
- ❑ with the right *accuracy* = I can *trust* and rely on it
- ❑ in the right *consistency* = I have a *single* version of the *truth*
- ❑ in the right *format* = I can *use it easily*
- ❑ at the right *time* = *when* I need it
- ❑ at the right *place* = *where* I need it
- for the right *purpose* = *so I can accomplish our objectives and delight our customers*

INFORMATION PRODUCTS AND INFORMATION CUSTOMERS



KAIZEN® : THE ART OF CONTINUOUS IMPROVEMENT

“Kaizen® simply means continuous improvement involving everybody in the organization. I think the two key words, one is improvement and the other is continuous. And it is possible for people to make improvement once, but to keep people making improvements year after year is another challenge”

Masaaki Imai, Founder, Kaizen Institute

- Kaizen objectives: To continually improve everything in the business by encouraging everybody to take responsibility for the process**

Kaizen is a registered trademark of the Kaizen Institute

KAIZEN AND INFORMATION QUALITY

Major Concepts

Kaizen and Management. Two major functions:

- Maintenance of current management and operating standards for information quality
- Improvement, elevating information quality standards, including innovation

The next process is the customer. Every information process has a supplier and a customer

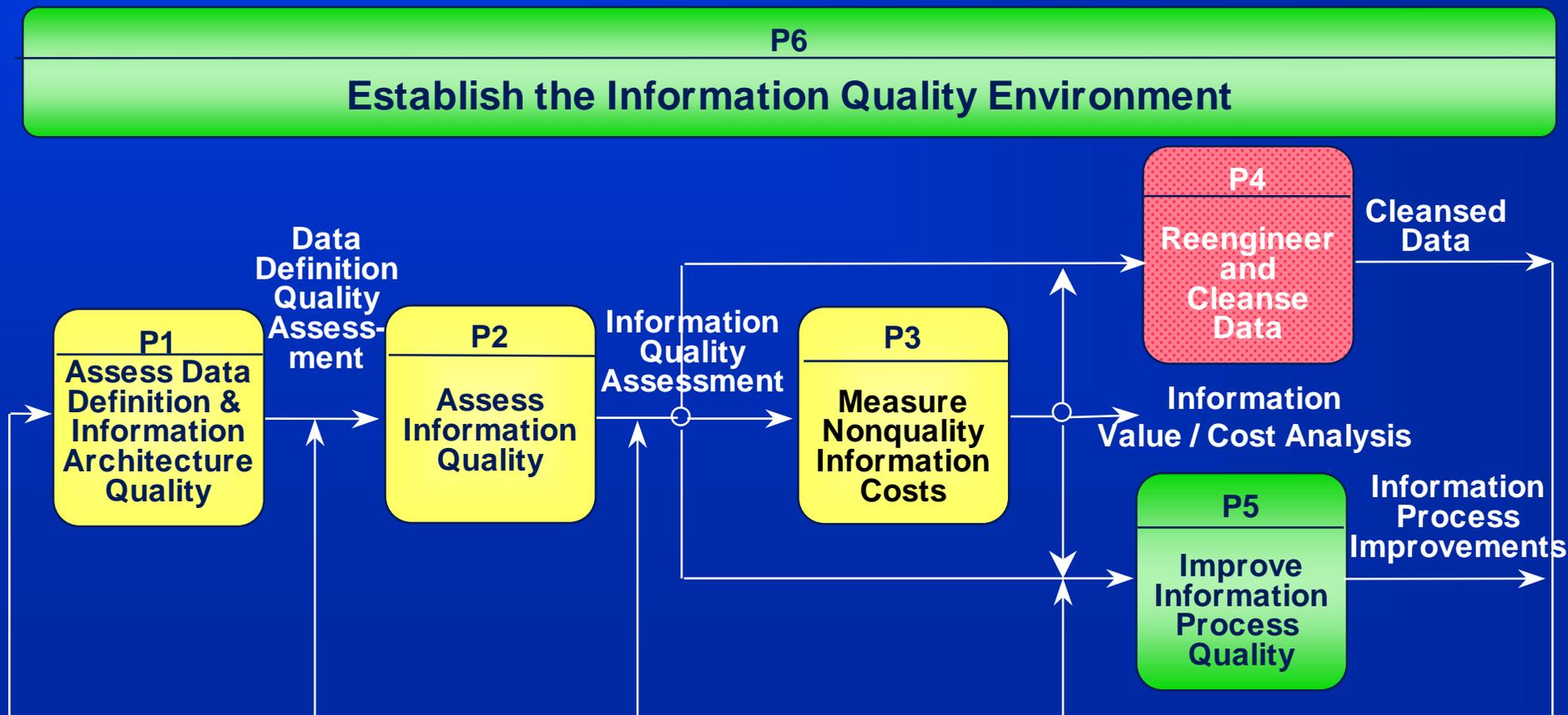
- ❑ ***Process versus result.*** Focuses on human effort, and therefore fosters process-oriented thinking
- ❑ ***Following the Plan-Do-Check-Act and Standardize-Do-Check-Act cycles.*** Stabilize and ***standardize*** the process, then ***improve*** it
- ❑ ***Putting quality first.*** Sacrificing information quality for price risks the life of the business
- ❑ ***Speak with data.*** To solve a problem, you must understand the facts

TOTAL QUALITY data MANAGEMENT (TQdM®)

TQdM® is *not* a program; it is a *value system, mind set,* and *habit* of continuous improvement of:

1. *Application and data development processes*
2. *Business processes*

By integrating *quality* management *beliefs, principles* and *methods* into the *culture*



DATA DEFINITION QUALITY MEASURES

Meaningful enterprise data standards / guidelines

- ❑ Conformance to *meaningful* enterprise standards
- ❑ Meaningful business names, terms and abbreviations
- ❑ Consistency of data names
- ❑ Clear, precise, complete, consensus definition
- ❑ Singularity of definition
- ❑ Complete, exact definition of domain values
- ❑ Completeness, correctness and usefulness of business rules

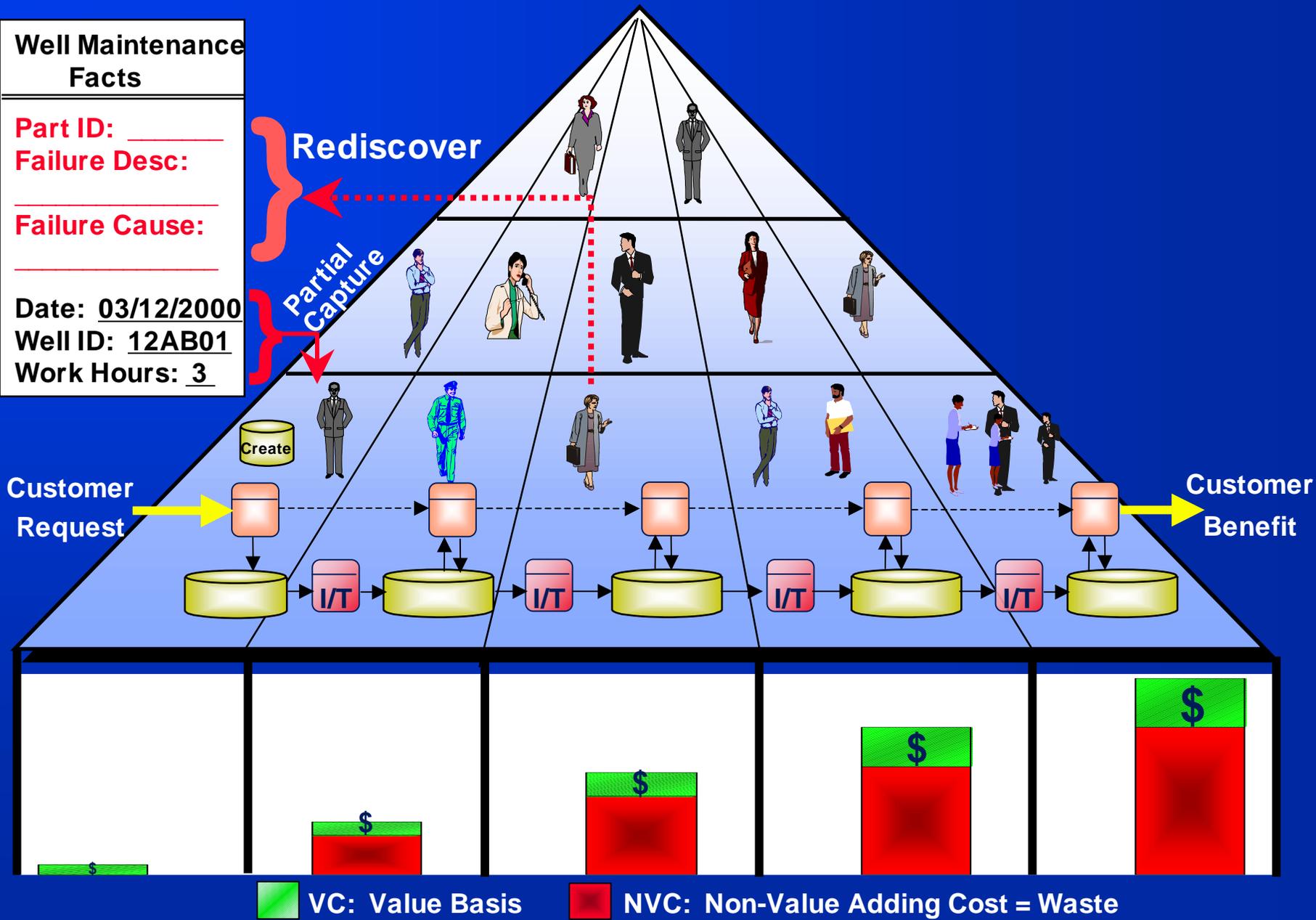
Understandable to knowledge workers and information producers using customer satisfaction surveys

DATA CONTENT QUALITY MEASURES

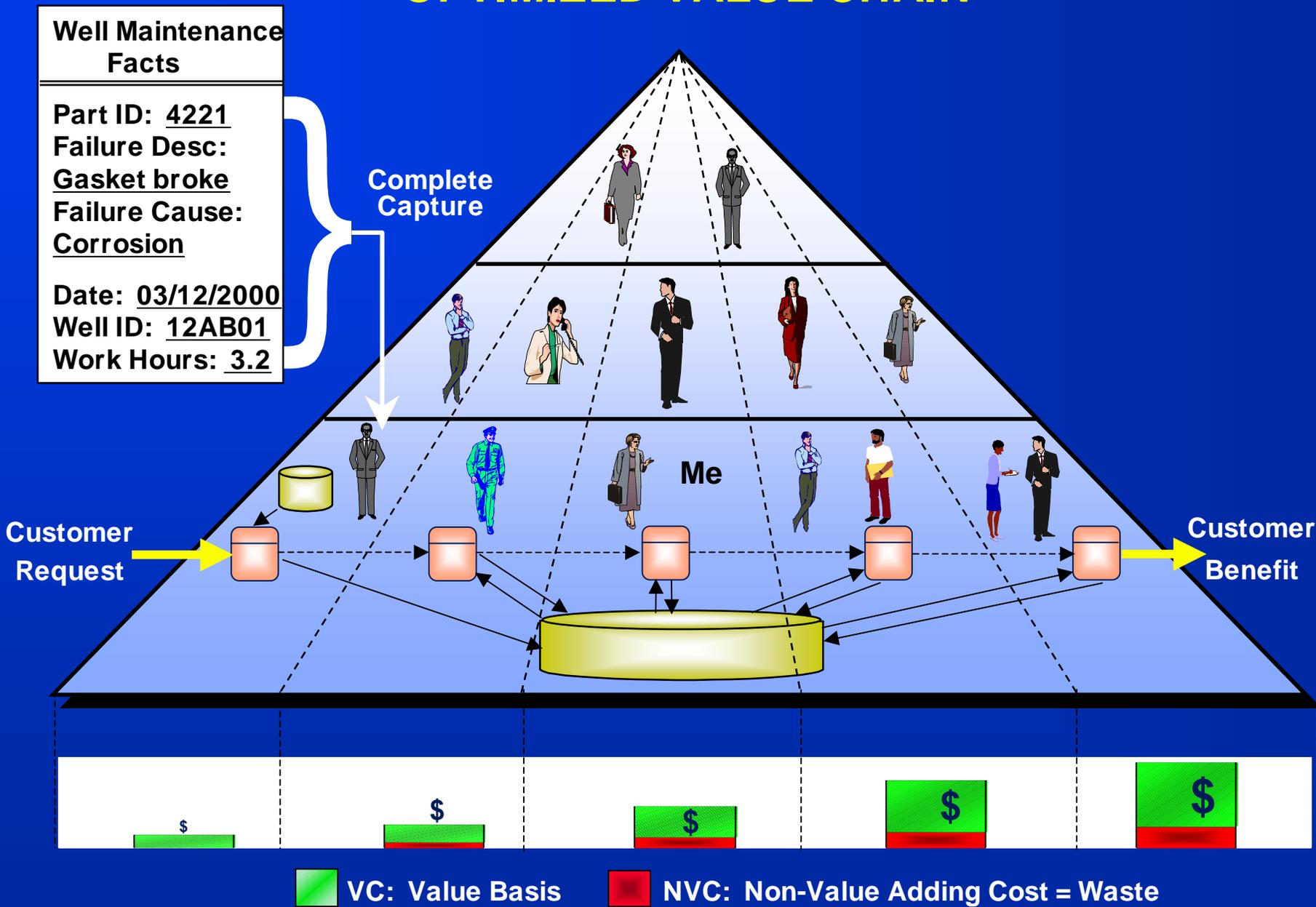
- ❑ **Completeness** of data: both *kind* of data and *values*
- ❑ **Validity** of data as to conformance to business rules
- ❑ **Accuracy** of data as measured by a physical data assessment of a random sample
- ❑ **Precision** of data values
- ❑ **Non-duplication** of occurrences
- ❑ **Consistency** of replicated, distributed, redundantly maintained or derived data
- ❑ **Timeliness** of data for knowledge worker use
- ❑ **Rightness** of the data as measured by customer satisfaction surveys of knowledge workers and information customer “retention”

SUB-OPTIMIZED VALUE CHAIN

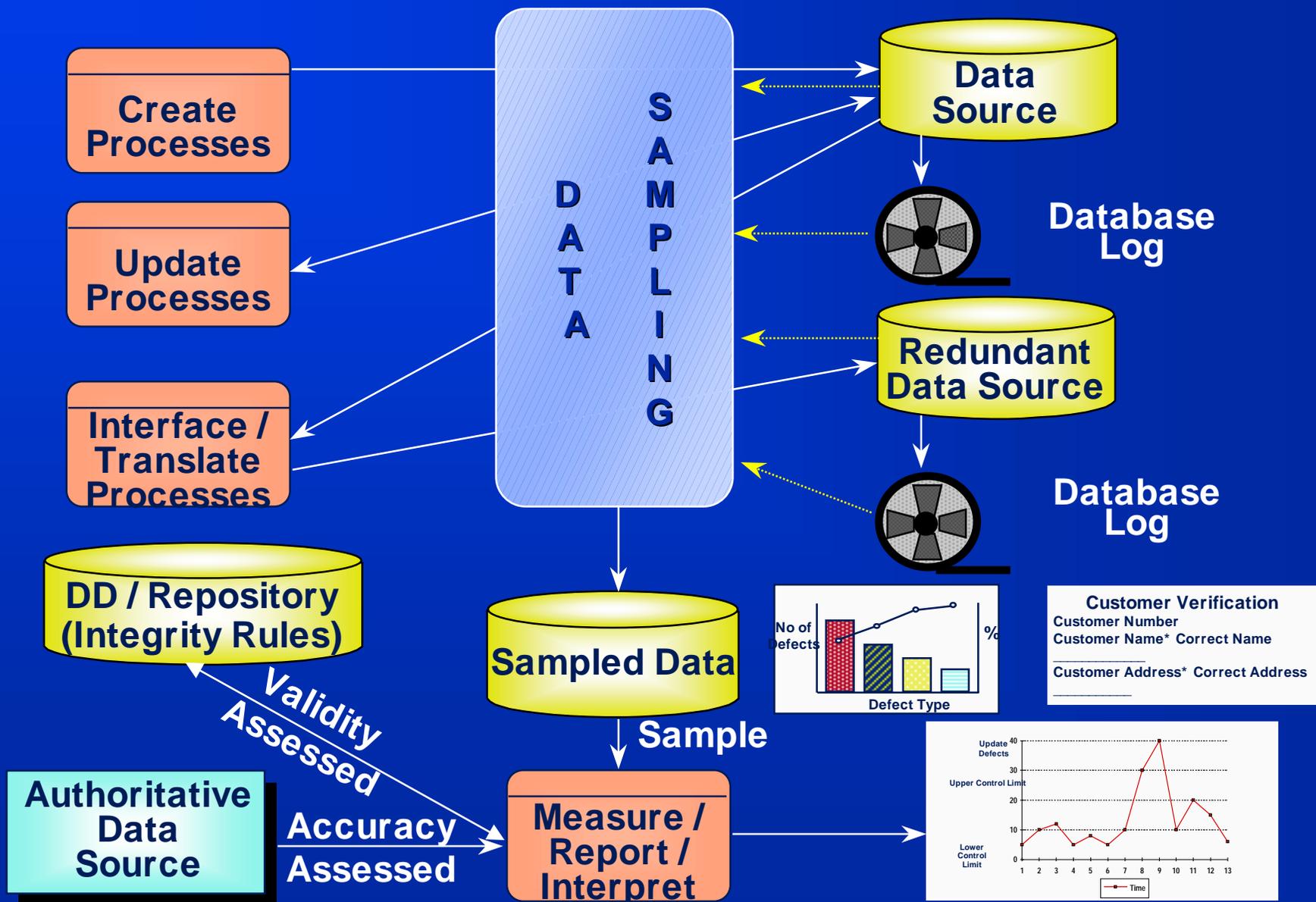
Well Maintenance Facts	
Part ID:	_____
Failure Desc:	_____
Failure Cause:	_____
Date:	03/12/2000
Well ID:	12AB01
Work Hours:	3



OPTIMIZED VALUE CHAIN



DATA MEASUREMENT AND ASSESSMENT SYSTEM Components



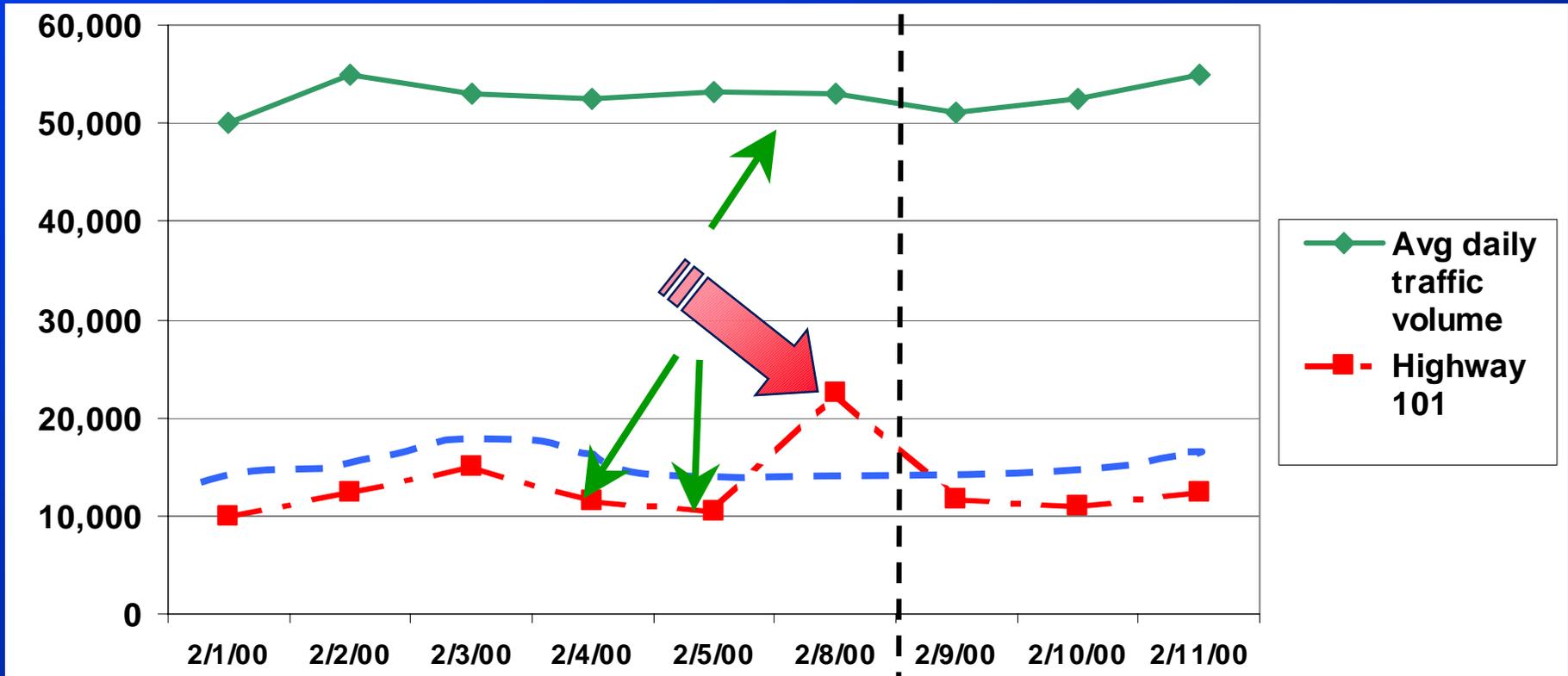
ANALYZE DATA RELATIONSHIPS



<u>Highway ID</u>	...	Highway Construction Start Date	Highway Construction Completion Date	Hourly Traffic Volume	Audit Code	Audit Description
		6/15/1994	7/14/1992	42,000	X	Error
		6/15/1994		10,000	X	Error
		6/15/1994	6/19/1995	14,000	V	Valid
		6/15/1994	6/19/1994	12,000	?	Suspect

RECOGNIZING "PATTERNS" OF ERRORS

- Consistency of trend data
- Standard deviation of domains
- ⇒ "Average daily traffic volume"



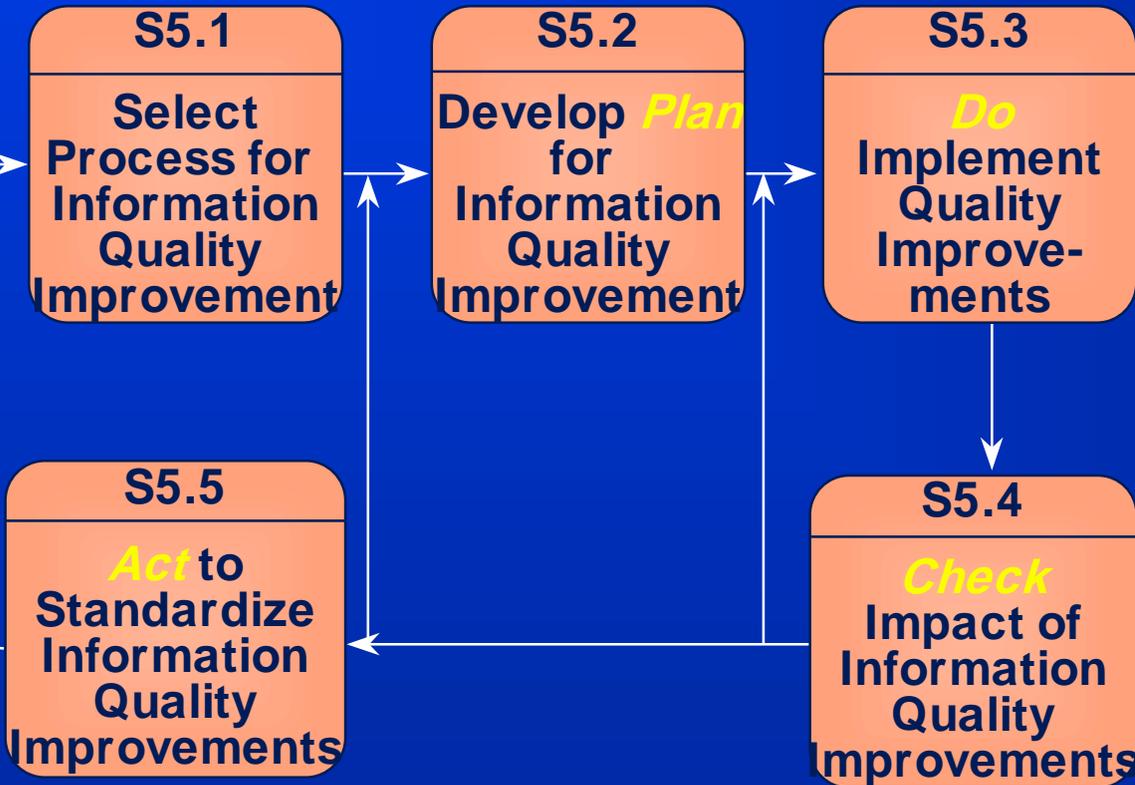
- To what degree does the sample correlate to your market or the population in general
- To what degree do the values fit normative behavior

TQdM[®] METHODOLOGY

PROCESS P5: Improve Information Process Quality

L. English, *Improving Data Warehouse and Business Information Quality*, p. 290.

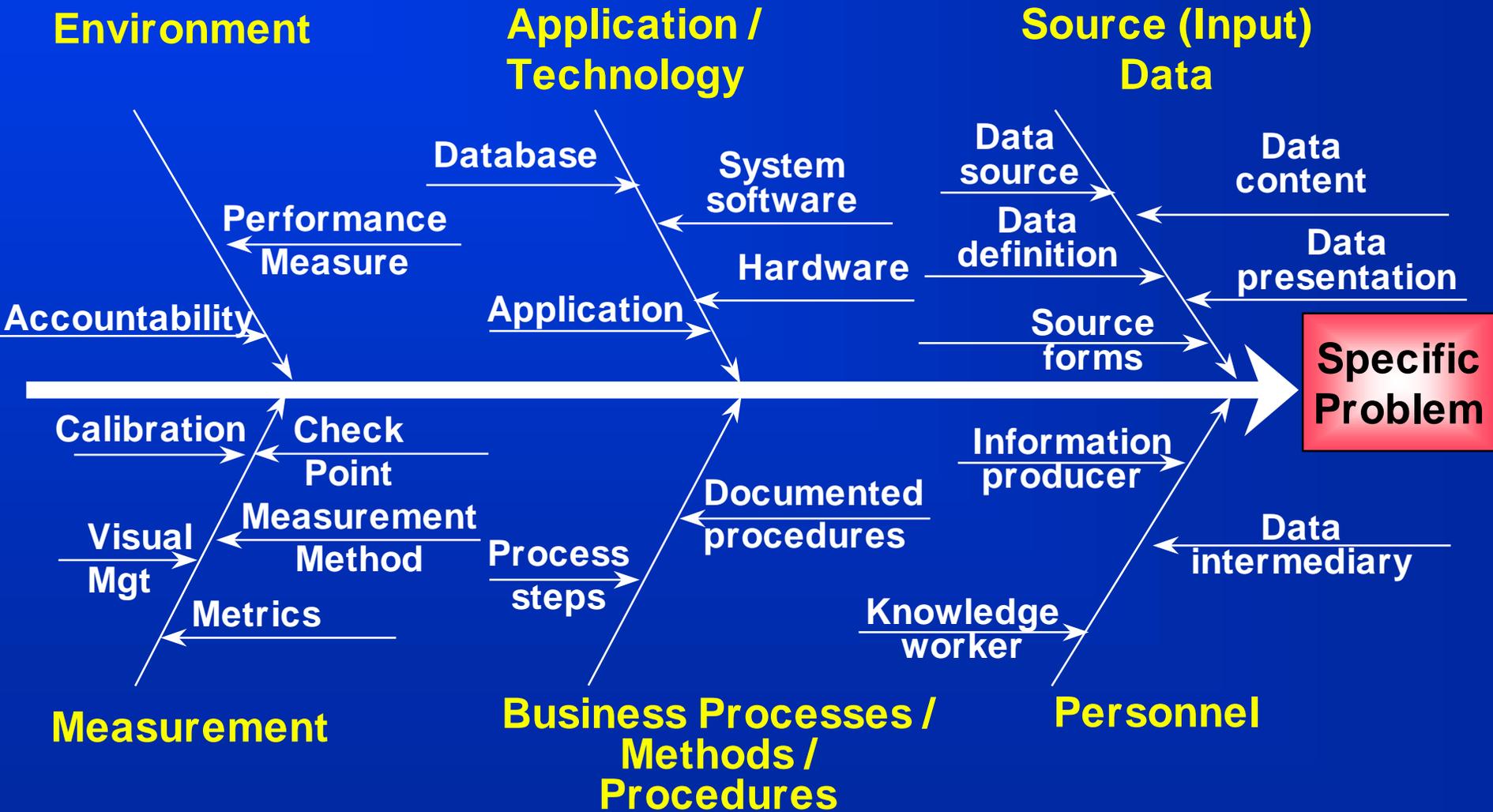
S1.4, 5, 6
S2.3, 8
S3.6
S4.6



Plan-Do-Check-Act (PDCA)

Information Quality Improvements

CAUSE-AND-EFFECT DIAGRAM For Information Quality (Business Process Quality)



INFORMATION QUALITY GUIDELINES

Business Procedures (1)

- ⇒ Don't accept bad data—send it back to the originator
- ⇒ Provide immediate feedback—positive and negative
- ⇒ Develop data update process that empowers *any* employee to get data updated in the record of reference (origin) database
- ⇒ Don't force knowledge workers to create private databases reports or un-integrated files
 - Provide access to the authoritative record of reference or *controlled* replication

L. English, *Improving Data Warehouse and Business Information Quality*, pg. 306-308

INFORMATION QUALITY GUIDELINES

Business Procedures (2)

- ⇒ Use every point of contact with customers and volatile data sources to keep information current
- ❑ Use “clean” templates; don’t use old correspondence or completed forms for new letters or forms
- ❑ Maintain frequent contact with customers and data sources to assure currency of volatile information
- ❑ Verify third party information

L. English, *Improving Data Warehouse and Business Information Quality*, pg. 306-308

INFORMATION QUALITY GUIDELINES

Data Capture (1)

- ⇒ Capture **all** data required for downstream processes
- ⇒ **Train** information producers & intermediaries adequately
- ⇒ Assure information producers **know** their information “customers” and the uses and costs of their data
- Capture data **as soon as** it is known at the **origin, one** time
- Capture data **electronically** if possible
- **Verify** accuracy of electronic-captured data regularly
- **Repeat** vital information given verbally

INFORMATION QUALITY GUIDELINES

Data Capture (2)

- ❑ Don't assume you know correct spelling; **confirm** spelling
- ❑ Don't scan data without a quality control process
- ❑ Don't automatically use **default** spell check options
- ❑ Capture and maintain **historical** customer data
- ❑ Capture attributes for customers that do not change
- ❑ Develop easy to follow data capture procedures
 - Use standard guidelines
 - Observe training of new information producers
 - Observe process execution in the workplace (Gemba)

PRESENTATION QUALITY GUIDELINES

- ❑ Design for information consumer(s)
- ❑ Intuitive, standard and “correct” data names, labels and terms
- ❑ Data definition available
 - Standardized definition among all information stakeholders
- ❑ Intuitive presentation format in context
 - “Minimalist” and concise with drill down as needed
 - Order of data
 - Type: graphic versus text
- ❑ Anomalies identified
- ❑ Source of data identified
- ❑ Sample size, confidence level and sampling technique of sampled data known

BUSINESS ROLES IN INFORMATION MANAGEMENT

- ❑ Knowledge worker (data consumer) = *knowledge steward*
 - Requires or uses data to perform their job processes
 - Accountable for integrity of *data usage*
- ❑ Information producer = *operational information steward*
 - Captures or creates data as a part of their job function
 - Accountable for integrity of *data content*
- ❑ Manager (process owner) = *managerial information steward*
 - Manages a business process
 - Accountable for integrity of *process* and *data content*
- ❑ Data definer (subject matter expert) = *strategic / business information steward*
 - Defines / validates data definition and business rules in their subject of expertise to meet knowledge worker and information producer needs
 - “Accountable” for integrity of *data definition*

MANAGERIAL INFORMATION STEWARD

Position Description: Manager / Supervisor,

Position Purpose / Summary:

Overall responsibility for all activities of the department including financial, safety, security, education and training . . .

Responsible to / authority relationship: Director,

Responsibilities / Accountabilities:

1. Responsible for management and control of fiscal resources. Develop budgets and manage expenses within approved guidelines.
2. Responsible for personnel management of the department. Provide employee development. Uphold policies, schedule, oversee salary administration of staff, resolve staff problems.
3. *Responsible for management, control and use of information. Maintain integrity of data created within the process* or department. Implement and enforce information policy. Provide training of personnel in information quality principles and standards and provide resources to accomplish information quality goals.

. . .

Education: . . .

Experience: . . . * Italics denote process owner accountability

Skills / Abilities: . . .

HOW DO WE GET THERE?

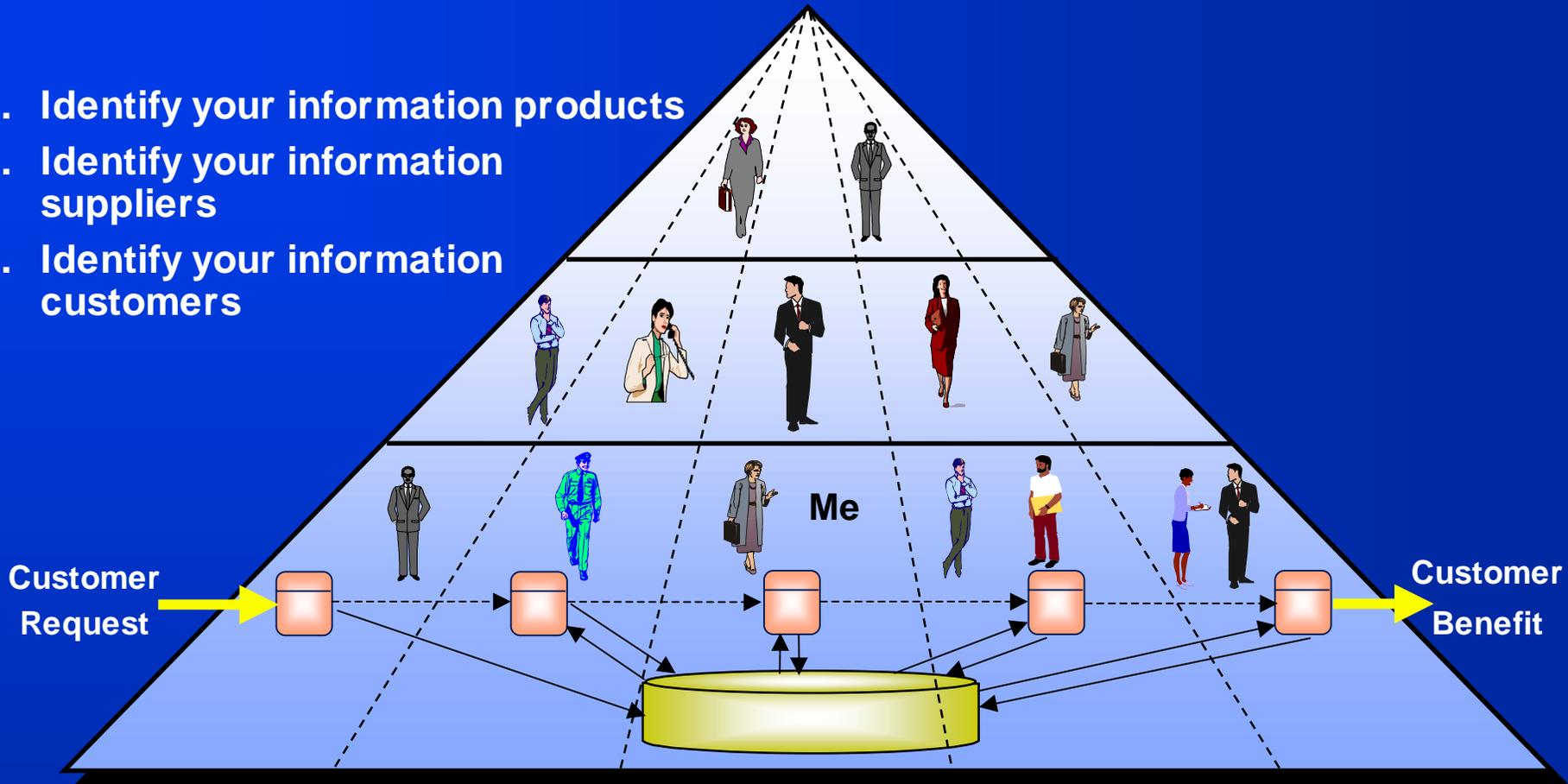


HOW TO START A TQdM® PROGRAM

- ❑ Adopt the new philosophy: Quality data reduces costs
- ❑ Revisit / revise the information management mission
- ❑ Empower or become an information quality leader
- ❑ Conduct a “customer” survey
- ❑ Select small, manageable area to begin
- ❑ Perform an inventory and quality/cost assessment of select mission critical data
- ❑ Develop rapport and support of change sponsor
- ❑ Conduct a pilot process improvement
- ❑ Measure benefits compared to cost of status quo
- ❑ Define information quality roles, responsibilities and procedures and provide training
- ❑ Measure and post results regularly for critical data
- ❑ Change reward mechanisms/performance measures
- ❑ Communicate results, improve the process and expand

INFORMATION CUSTOMERS AND INFORMATION SUPPLIERS

1. Identify your information products
2. Identify your information suppliers
3. Identify your information customers



2. My Information Suppliers

1. My Information Products

3. My Information Customers

AN INFORMATION QUALITY IMPROVEMENT ASSIGNMENT

1a. Go find and meet with your information *customer(s)*

1b. Ask,

“What are your expectations and needs of the information I produce?”

“How can I improve to make your work more effective?”

1c. Go improve the process and *get* feedback

2a. Next, find and go meet your information *supplier(s)*

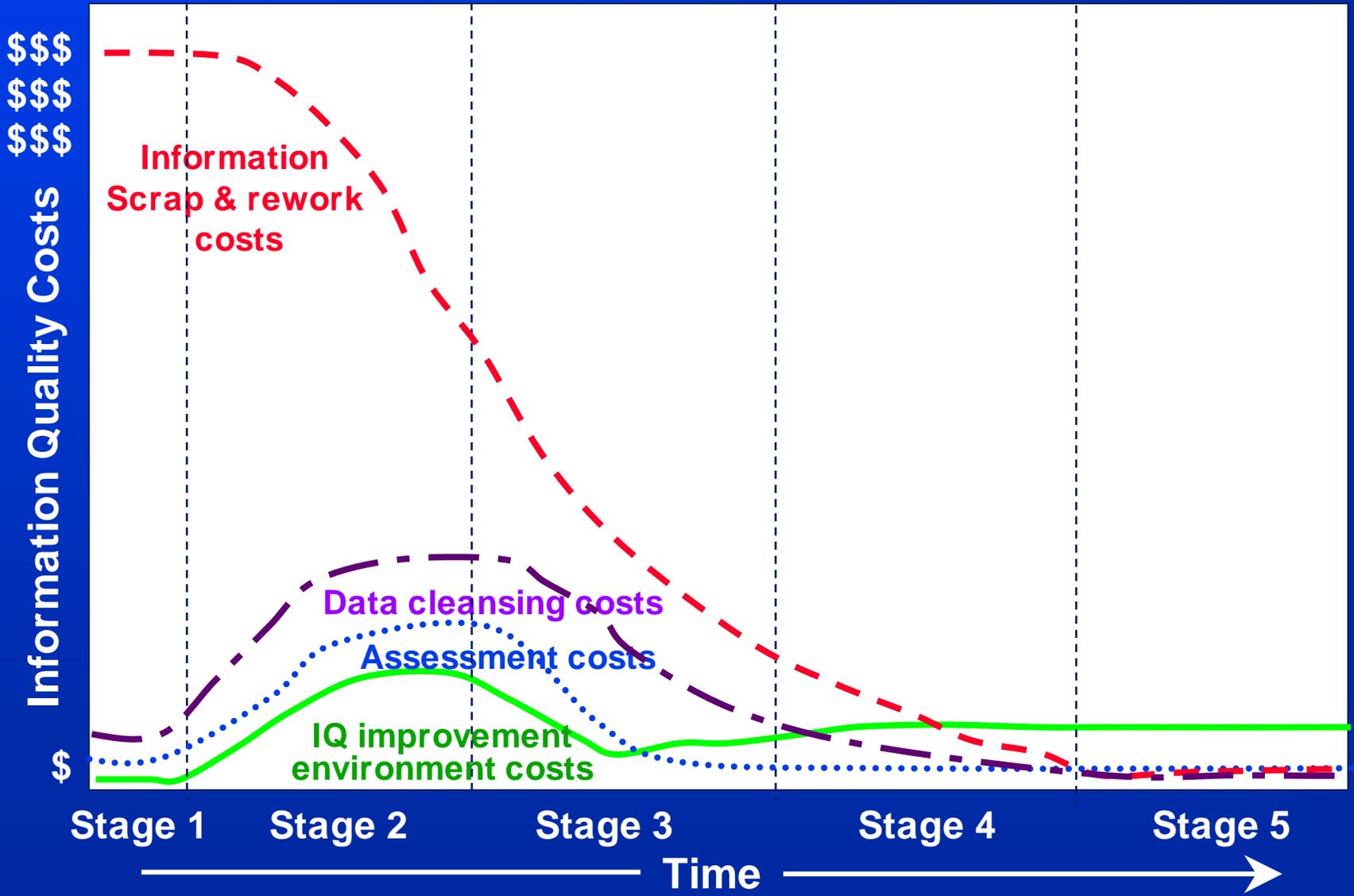
2b. Next, ask,

“What barriers are hindrances to creating the information your create?”

“How can I help overcome those barriers?”

2c. Then go help them improve their process and *give* feedback

INFORMATION QUALITY MANAGEMENT MATURITY AND THE COSTS OF QUALITY



INFORMATION QUALITY VISION

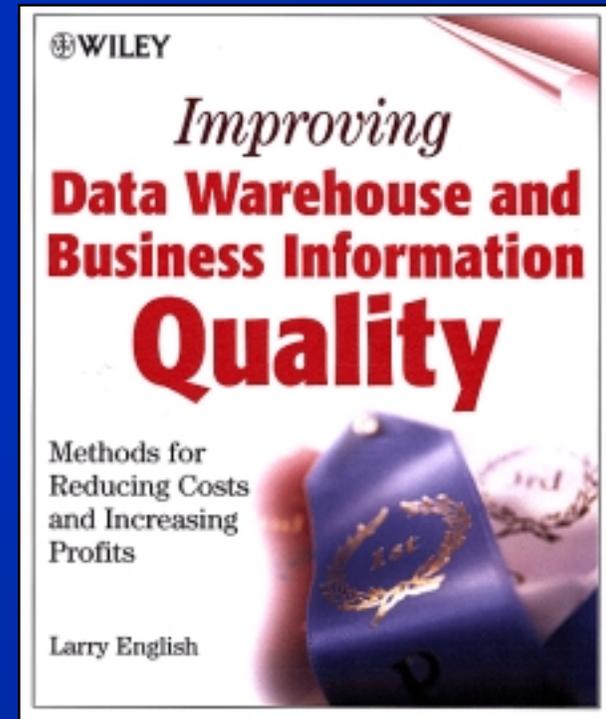
Shared Vision + **Capable Empowered People** + **Quality Just-In-Time Information** =

\$UCCESS !!!

The Information Quality Book with a money-back warranty

- 1) “This book is not for everyone. It is for people who care about their customers and their information customers. This book is for people who do not like to see people and money resources wasted on information scrap and rework when they could be doing things that add value.” (Pg xvii)
- 2) **Author’s warranty:** “If you are not able to apply ideas contained in this book to achieve value to your organization worth multiple times the cost of the book, I will personally refund to you the purchase price you paid for this book.” (Pg xxvi)
- 3) In addition to several information quality resources, you may preview the introduction and first chapter at:

www.infoimpact.com



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