DEMING'S 14 POINTS OF QUALITY APPLIED TO INFORMATION QUALITY MANAGEMENT

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Presented By:

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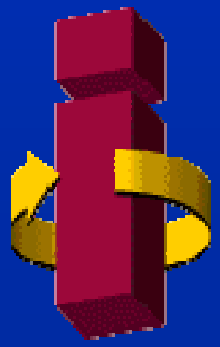

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President and Principal

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 (TIQM®) methodology applying Kaizen® quality principles to information quality management. He chairs Information Quality Conferences around the world and he is a co-founder of the International Association of Information and Data Quality (IAIDQ).

Prior to founding INFORMATION IMPACT International, Inc. (www.infoimpact.com), Brentwood, TN, over nineteen 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. He is a member of the American Society for Quality and is a former advisor for DAMA. He has also been an active member of various ANSI (American National Standards Institute) standards committees, and he is an editorial advisor for *DM Review*.

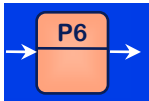
A magna cum laude graduate of Hardin-Simmons University, Mr. English holds a Masters Degree from the Southern Baptist Theological Seminary where he was a Luther Rice Scholar and a Garrett Fellow. He is listed in Outstanding Young Men in America and Who's Who Worldwide. He has provided consulting and educational services in more than 30 countries on five continents to such organizations as Aera Energy, Air Canada, American Express, Belgacom, Boeing, British Telecom, 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, Toyota Motor Sales, UNUM Life Insurance Co., the U.S. Navy, Western Health Alliance and Weyerhaeuser.

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

DEMING'S MANAGEMENT THEORY IN THE INFORMATION AGE
Learning Objectives

- Understand How Dr. Deming's Theory of Management applies to Management in the Information Age

- Understand How Deming's 14 Points of Transformation Apply to Information Quality Management

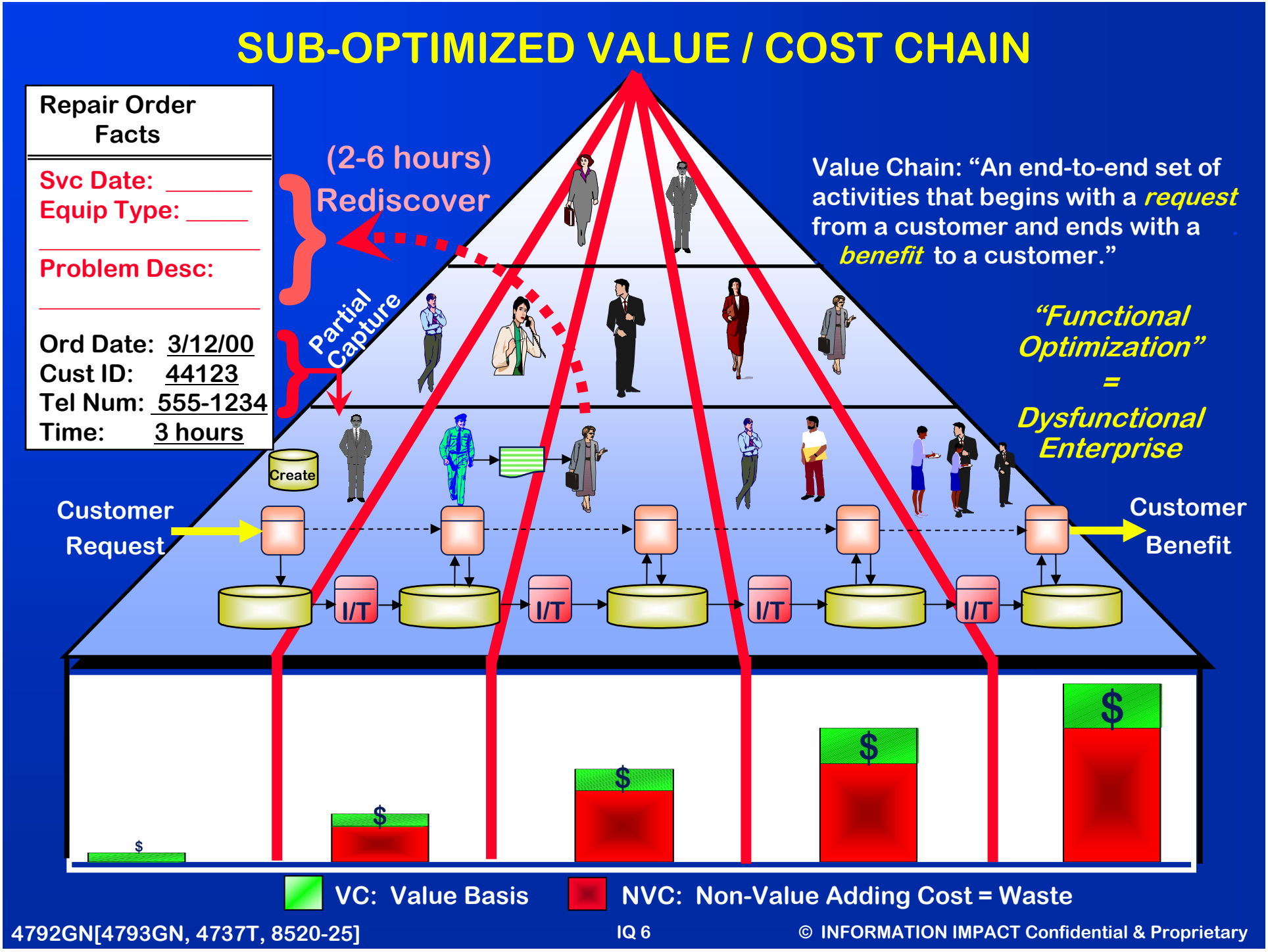


W. EDWARDS DEMING'S SYSTEM OF PROFOUND KNOWLEDGE*

- Appreciation of the Organization as a *System*
- Knowledge about *Variation*
- Theory of *Knowledge*
- Understanding of *Psychology*

*W. Edwards Deming, *The New Economics*, pp. 92ff.

SUB-OPTIMIZED VALUE / COST CHAIN



OPTIMIZED VALUE CHAIN

Repair Order Facts

Svc Date: 3/15/00
Equip Type: M12AB01
Problem Desc: Poor volume out
Ord Date: 3/12/00
Cust ID: 44123
Tel Num: 555-1234
Time: *3.2 Hrs*

2-6 hours Rediscover

Complete, Accurate Capture

Customer Request

Me

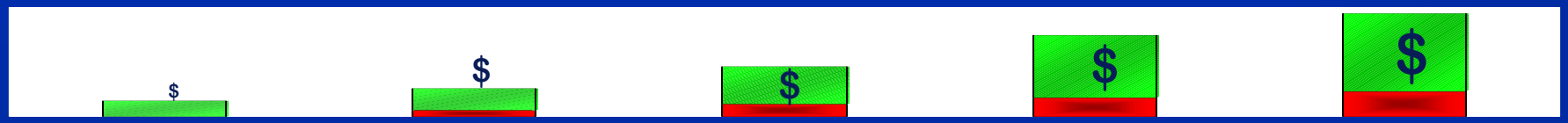
Customer Benefit

Shared Data

Controlled Distribution

IQ Point 9: "Break down barriers between business areas."

"Value chain" (Enterprise) Optimization = Effective Learning Organization



VC: Value Basis

NVC: Non-Value Adding Cost = Waste

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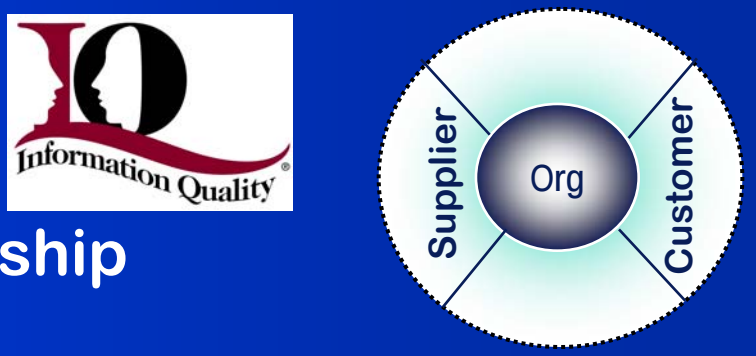
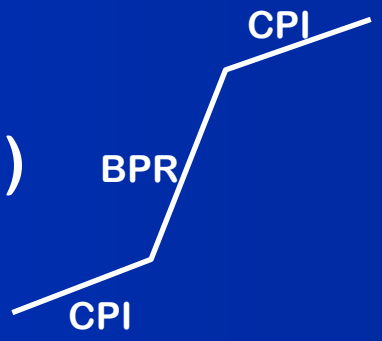
THE FUNDAMENTAL QUALITY PRINCIPLES

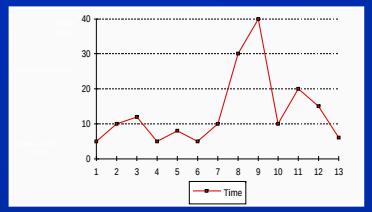
- ***Customer*** **Focus**
  - Customer satisfaction
  - Supplier / Customer Partnership



- **Process** ***Improvement***
  - Process definition
  - Product specification (customer-focused)
  - Process Improvement (CPI) and Reengineering (BPR)



- **Proven, scientific** ***Methods***
  - Statistical quality control
  - PDS/CA (Shewhart) cycle



- **Management** ***Accountability***

CPI = Continuous Process Improvement

BPR = Business Process Reengineering

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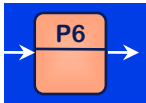
TOTAL QUALITY MANAGEMENT
Deming's 14 Points

1. Create constancy of purpose for improvement of product and service
2. Adopt the new philosophy. In a new economic age
3. Cease dependence on mass inspection to achieve quality . . . but from improving the production process
4. End the practice of awarding business on the basis of price tag alone. Instead, minimize total cost
5. Improve constantly and forever the system of production and service to improve quality and decrease cost
6. Institute training
7. Adopt and institute leadership with the aim to help people and machines do a better job

Source: Deming, *Out of the Crisis*
Larry English, *Improving Data Warehouse and Business Information Quality,* p338



TOTAL QUALITY MANAGEMENT
Deming's 14 Points (Cont.)

8. Drive out fear, so everyone may work effectively
9. Break down barriers between staff areas
10. Eliminate slogans, exhortations and targets for the work force
11. Eliminate numerical quotas for the work force and numerical goals for people in management
12. Remove barriers that rob people of pride of workmanship
13. Institute a vigorous program of education and self-improvement for everyone
14. Take action to accomplish the transformation. Put everyone to work to accomplish the transformation

Source: Deming, *Out of the Crisis*
Larry English, *Improving Data Warehouse and Business Information Quality,* p338

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Pt 1

IQ 1. CREATE CONSTANCY OF PURPOSE FOR IMPROVEMENT OF *INFORMATION* PRODUCT & SERVICE

- Management's two sets of problems:
  - Those of today: "It is easy to stay bound up in the tangled knots of the problems of today, becoming even more efficient in them."
  - Those of tomorrow: "No company without a plan for the future will stay in business." *Deming*
- "The *obligation* to the *customer* never ceases"
- ⇨ Information Quality ramifications:
  - Define IM / IQ Mission, Vision and Objectives based on enterprise mission and vision to include quality for information products & services to meet information consumers' needs
  - Develop IM / IQ plans with both long term and short term deliverables that enable *strategic* business objectives
  - Implement and define IM / IQ processes & tools with customer focus that leads to quality & process improvement
- "The *obligation* to the *knowledge worker* never ceases"

IM = Information Management

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 339+

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INFORMATION QUALITY

"Consistently
meeting*
all knowledge workers' and end-customers'
expectations"
through information and information services so:

- *Knowledge workers* accomplish enterprise objectives
- *Customers* are successful

Larry P. English, TIQM®

⇨ *Components* of Data and Information Quality:

- Definition (and Architecture)
- Content
- Presentation

*World-class organizations do not stop here—
they strive to "delight" their customers

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Pt 2

IQ 2. ADOPT THE NEW PHILOSOPHY—*QUALITY INFORMATION REDUCES COSTS*

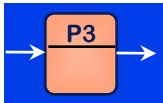
- The economic realities of today require new standards
  - "Reliable service reduces costs" *Deming*
  - "Point two really means . . . a transformation of management" *Deming*
- Information Quality ramifications:
  - Enable a paradigm shift to information as a shared business resource and quality information as a product
  - Implement quality information philosophy and policy:
    - "Reliable, *managed* information reduces costs and increases value"
    - "Reliable, *quality* shared information reduces costs and increases value"
  - *This means a transformation of business and information systems management*
    - Business management *accountability* for information
    - Systems management *accountability* for value delivery

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 342+

P5.2a

THE REAL CAUSES OF POOR QUALITY INFORMATION

- *Precipitating* causes:
  - Failure to treat and manage information as a strategic *enterprise resource*
  - Failure to treat and manage information as a *product* of business, manufacturing and service processes
- *Root* causes:
  - Overlaying information technology on top of obsolete industrial organization & management structure
  - Building information technology *"solutions"* using the "systems approach" instead of *"systems thinking"*
    - ➢ i.e., automating the Industrial-Age functions versus transforming the cross-functional value chain



THE BUSINESS CASE FOR IQ MANAGEMENT: Poor Quality Information Costs

- "As much as 40 to 50 % or more of the typical IT budget is really 'information scrap and rework'" and waste of moving and transforming data to disparately defined redundant databases*

- "Poor quality information often causes 40 to 60 % of manufacturing scrap and rework costs"

- ***"The direct costs of poor quality information, including irrecoverable costs, rework of products and services, workarounds, and fines and customer compensation can be as high as 15 to 25+ percent of a large organization's [operating] revenue or budget."****

*L. English, *Improving Data Warehouse and Business Information Quality,* p. 12

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Pt 3

IQ 3. CEASE DEPENDENCE ON DATA MODEL & DATA INSPECTIONS ALONE—DESIGN QUALITY INTO PROCESS

- Quality assurance (inspection) has a goal to discover faulty products and correct them (rework) or throw them out (scrap)

  "Quality comes not from inspection but from improvement of the process"
  Deming

- Information Quality ramifications:
  - Replace data model and definition "review and approval" with front-end; cross-functional, business-driven data modeling that builds quality in and produces databases that are *(1) stable, (2) flexible, and (3) reused*
  - Reengineer processes to eliminate causes of defects before automating them
  - Design error-proofing techniques into the databases, process, forms, application screens and programs, and procedures and training that prevent cause of defects

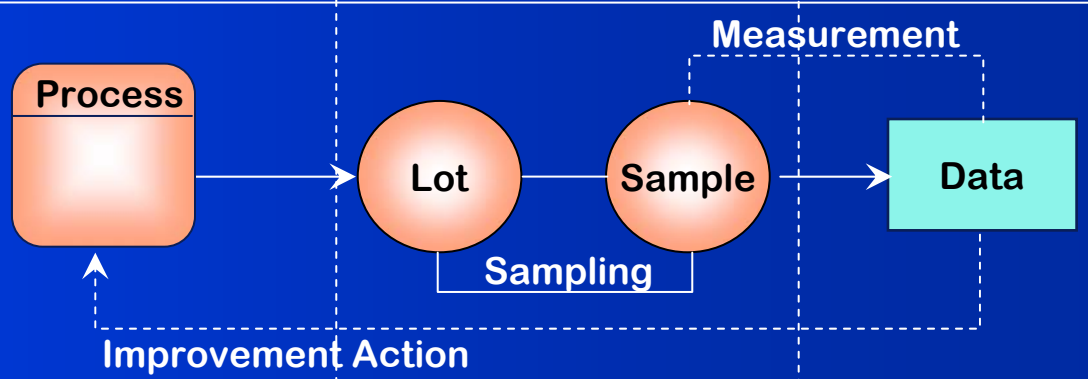
Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 345+

P2.7

QUALITY CONTROL: *MANUFACTURING vs INFORMATION*

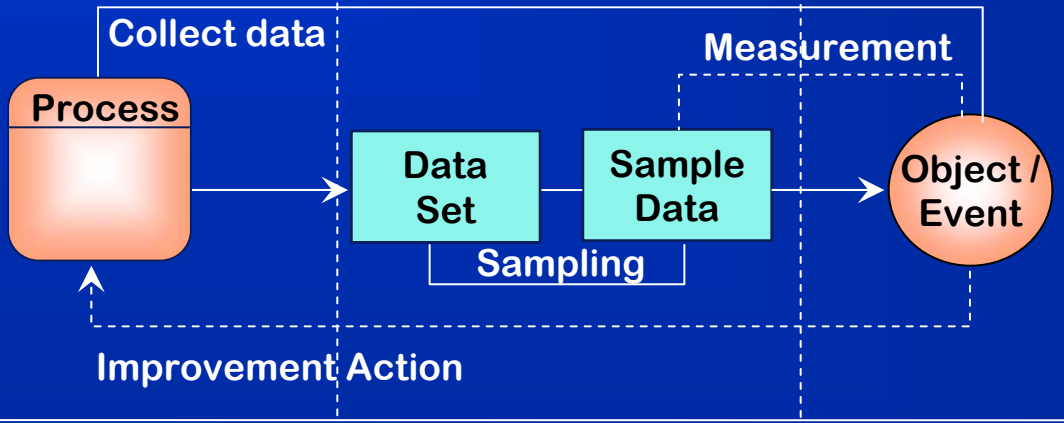
Objective	Population	Sample	Data

MANUFACTURING:
Improvement action on a production process
- Process control
- Process analysis
- Design of measurement experiments



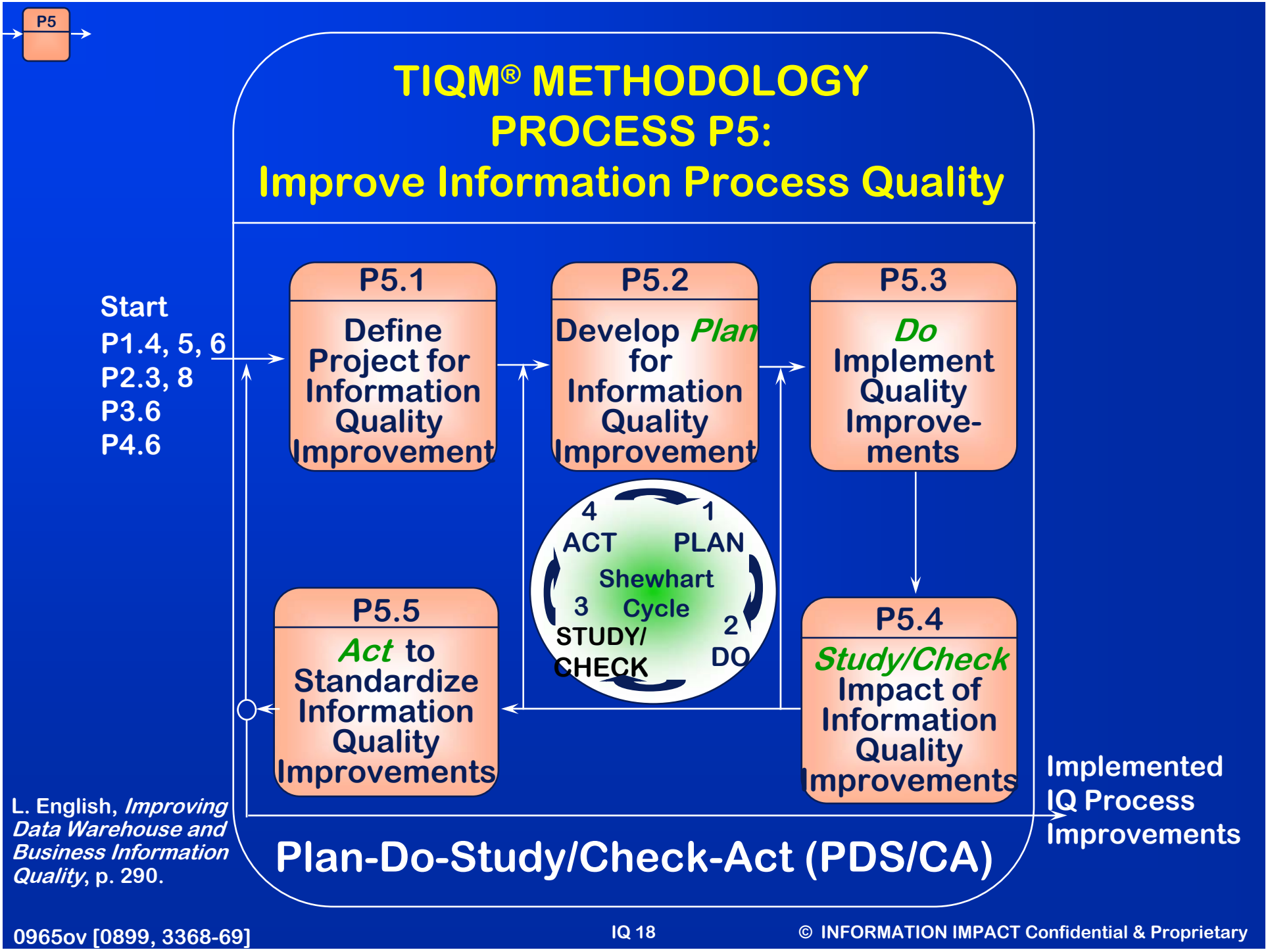
Objective	Data Population	Sample	Object / Event

INFORMATION:
Improvement action on a production process
- Process control
- Process analysis
- Design of assessments



The relation between ***products*** and samples, and ***data*** population and data samples and object / event

Source: Ishikawa, *Guide to Quality Control;* See L. English, *Improving Data Warehouse and Business Information Quality*, pg. 184



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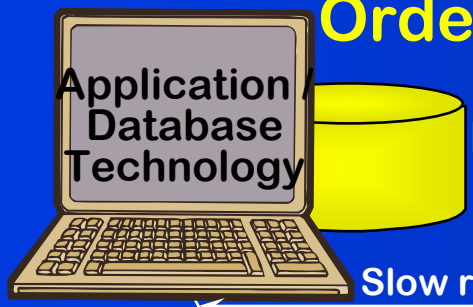
CAUSE-AND-EFFECT DIAGRAM
Order Entry Errors

Mgt environment



Machines

Cust-omer

Materials

Information Effect

Duplicate Customer records created

that causes us to

Business Effect

Alienate / lose Customers; Waste money on mail, resources, recovery & correction

No emphasis on training

Slow response time

Has privacy concerns

DB reloaded with duplicates

Quota

System "down"

Does not tell they have moved

No accoun-tability

Name change

Does not remember previous order

Multiple Customer system

Customer look-up algorithm faulty

Postal file to check addr is out of date

Conflicting procedures

Does not ask if customer has placed order before

No standards for name & addr

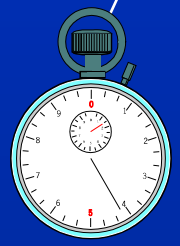
No step to ask all information to determine duplicate

Does not follow Info standards

Rushes to meet quota

Does not understand customer's name

Lack of knowledge of customer look-up procedures



Measurement

Order Process / Procedures

Methods

Infor-mation Producer

huMan

Wants to be "customer-service" oriented and does not ask for customer number

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Pt 4

IQ 4. END THE PRACTICE OF PROJECTS OR DATA CAPTURE ON COST OR TIME MEASURES ALONE

- The practice of lowest price has had the impact of actually *increasing costs* while increasing defects—instead, minimize *"total costs"* of ownership

  "Price has no meaning without a measure of the quality purchased" *Deming*

  "Purchasing should be a team effort and ... include ... representatives ... of [all] departments involved with the product" *Deming*

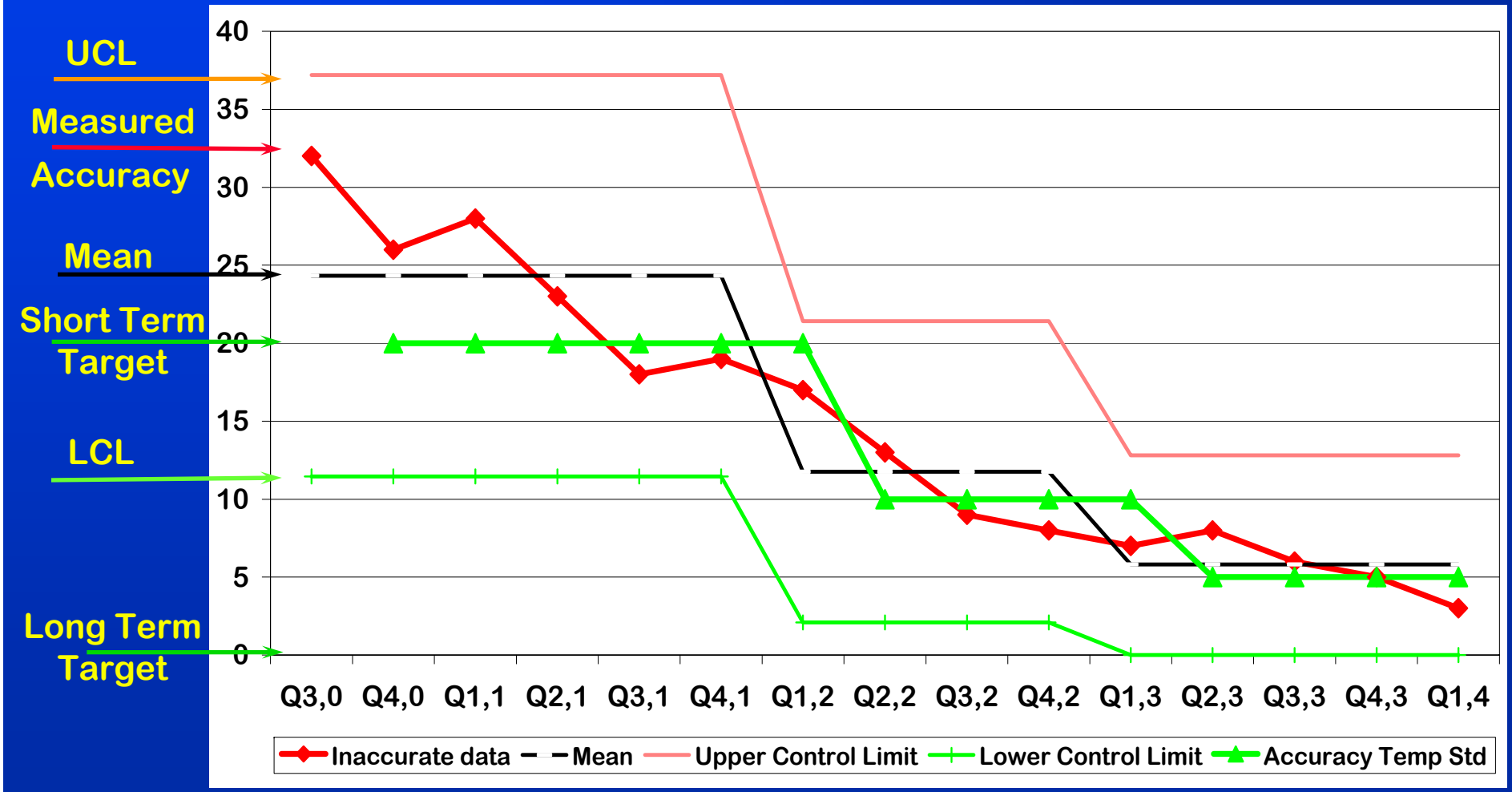
  "A buyer will serve his company best by developing a long-term relationship of loyalty and trust with a single vendor" *Deming*

- Information Quality ramifications:
  - Include quality guarantee / measures in cost estimate
  - Measure software & information "cost of ownership"
  - Develop databases to support *all* knowledge workers
  - Develop relationships of trust in information producers

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 350+

P2.8

CUSTOMER INFORMATION ACCURACY
Control Chart 2000-2003



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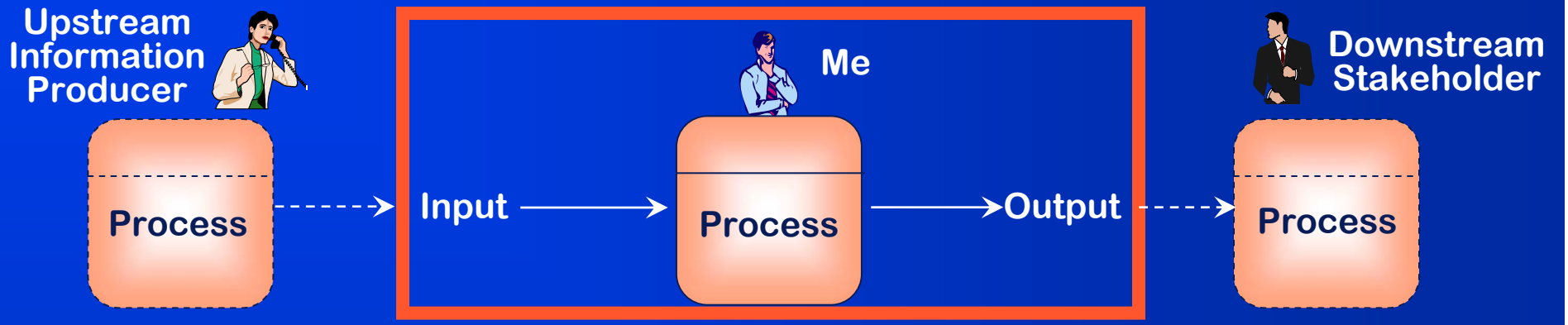
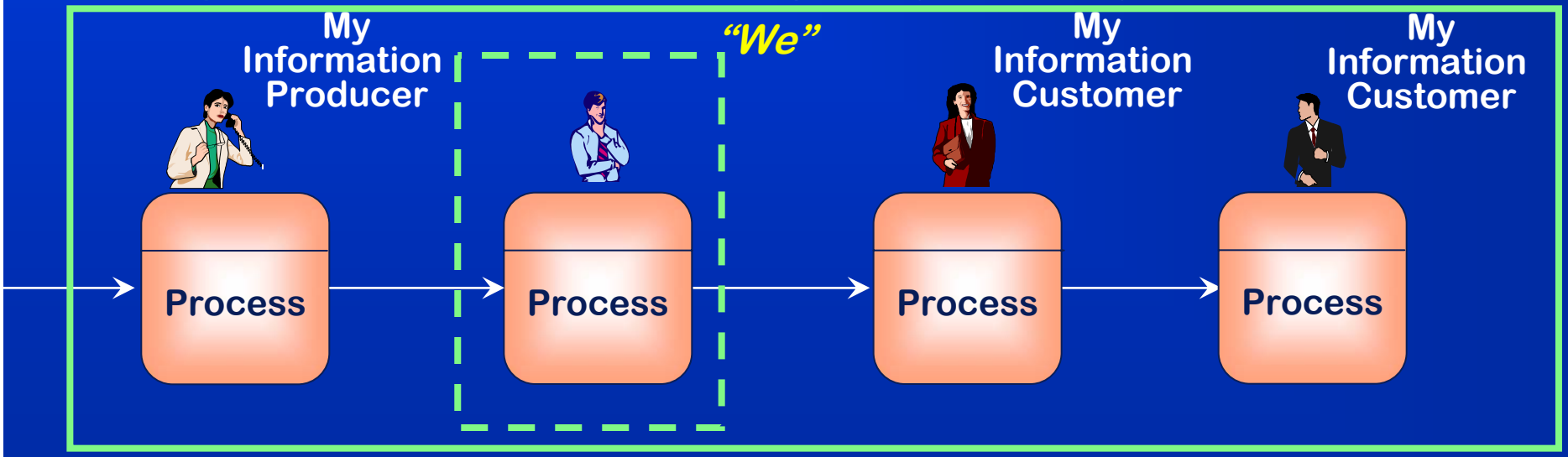
Pt 4

APPLICATION DEVELOPMENT PARADIGMS

❑ Wrong: Application Requirements Analysis ("IPO"*only)



❑ *Right:* *Value Chain Analysis (SIPOC*)



* Identify information *required by* downstream knowledge workers inherent to *create* processes & *information required* from upstream information producers

*SIPOC = Supplier-Input-Process-Output-Customer

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Pt 5

IQ 5. IMPROVE CONSTANTLY & FOREVER PROCESSES OF I/S+ DEVELOPMENT & INFORMATION "PRODUCTION"

- Improvement is not a one time effort–management is obligated to continual improvement
  - Quality "must be built in at the design stage" *Deming*
  - "Everyone and every department in the company must subscribe to constant improvement" *Mary Walton*
- Fixing a problem is not the same as process improvement
- ⇨ Information Quality ramifications:
  - Data cleansing is *not* same as *process improvement*
  - Identify and involve the customers of IRM products and services—understand their information req's
  - Design *quality into* process, application and database involving knowledge workers in the design (QFD**)
  - Everyone and every unit must participate in continual information process improvement

+I/S = Information Systems

*IRM = Information Resource Management
** QFD = Quality Function Deployment

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 358+

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Pt 6

IQ 6. INSTITUTE TRAINING FOR INFORMATION QUALITY

- Proper training is essential for workers to perform their jobs effectively

  "If someone learns how to play the piano from a self-taught piano teacher; they will learn a lot wrong, some right" and "neither pupil nor teacher will know what is right and what is wrong" *Deming*

- Information Quality ramifications:
  - Institute IQ education and training at all levels:
    - Executive Leadership
    - Business Management
    - Knowledge Workers and Information Producers
    - Information Systems Management
    - Information Resource Management staff
    - Application Developers
    - New employees (Orientation)

"14 Points of IQ," *Improving Data Warehouse & Business Information Quality,* pp. 337-399

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Pt 7

IQ 7. INSTITUTE LEADERSHIP FOR INFORMATION QUALITY

- Management is *Leadership*—not "supervision"
  - Leaders enable workers to improve their processes
  - Most supervisors are just the opposite, because they implement inappropriate measures and rewards
- Information Quality ramifications:
  - Take the *lead* in information quality improvement
  - Educate and *coach* executives
  - Implement management *accountability*
  - Learn how your customers use information
  - Measure and reward the right things:
    - ➢ Teamwork, customer satisfaction, waste reduction, total cost of ownership

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 367+

P6 Pt 8

IQ 8. DRIVE OUT FEAR SO INFORMATION PRODUCERS & KNOWLEDGE WORKERS CAN WORK EFFECTIVELY

- Improvement in quality requires people to feel secure
  - "Most people … do not understand what their job is, nor what is right or wrong" *Deming*
  - "So seldom is anything done to correct problems that there is *no incentive* to expose them" *Mary Walton*
- ⇨ Information Quality ramifications:
- ⇨ Establish a *non-blame, non-judgmental* environment
  - Provide producers training in information quality requirements, information customer expectations; and *empower them to improve processes*
  - Implement accountability and encourage eliminating information problem *causes and take action*
  - Create an *anonymous* information quality hotline
- ⇨ Allow risk to try and fail without punishment

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 372+

P6
Pt 9

IQ 9. BREAK DOWN BARRIERS BETWEEN STAFF AREAS (INFO SYSTEMS TO BUSINESS & BUSINESS TO BUSINESS)

- Enterprise failure occurs when organizational units *operate autonomously toward their own goals*
  - The parable of the shoes
- ⇨ Information Quality ramifications:
  - Develop IRM* / application development partnership
  - Develop information systems to business partnerships
  - Define *cross*-functional business *value chains*
  - Develop business area partnerships across business value chains
- ⇨ *Define supplier-customer "contracts" between business area managers for information quality*
- ⇨ *Provide training and resources to deliver quality*

*IRM = Information Resource Management

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 376+

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Pt 10

IQ 10. ELIMINATE SLOGANS AND EXHORTATIONS; REPLACE WITH ACTIONS FOR INFORMATION QUALITY

- Slogans do not help people do a good job
  - "Don't skate on an oil slick" (sign in a U.S. factory)

    versus
  - Elimination of oil slicks

⇨ Information Quality ramifications:

- Develop *effective* information management and information quality improvement processes
- Develop IQ improvement processes that prevent information "oil slicks" by eliminating the causes
- Then, when you discover data defects, don't just fix or ignore them–identify and eliminate the cause(s)

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 385+

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Pt 11

IQ 11. ELIMINATE QUOTAS OF "PRODUCTIVITY" WITH METRICS OF QUALITY

- Quotas and other work standards hurt quality probably more than any other single working condition
- Quotas cause above-average workers to slow their output and cause below-average workers frustration
- ⇨ Information Quality ramifications:
  - Replace "productivity" metrics with focus on real business performance:
    - ➢ Management ownership (total) costs of doing business
    - ➢ Reduced costs of information scrap and rework
    - ➢ Internal knowledge worker satisfaction surveys of information products, both immediate and downstream, and both after implementation and on continued basis
    - ➢ External end-customer satisfaction, including communication and information

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 387+

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Pt 12

IQ 12. REMOVE BARRIERS TO PRIDE OF WORKMANSHIP; LET PRODUCERS IMPROVE THEIR PROCESSES

- Workers, apart from management, know the problems of their jobs and given an opportunity, will fix them
- *Management must listen* to their employees, *involve them actively*, not with "quick fix" programs to defuse employee frustration but to solve the real problems
- ⇨ Information Quality ramifications:
  - Systems and business management must listen to their employees as sources of quality improvement
  - Involve employees actively in information planning, root cause analysis and process improvement
  - *And* incorporate their suggestions to improve information processes

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 390+

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Pt 13

IQ 13. INSTITUTE A VIGOROUS PROGRAM OF EDUCATION & SELF-IMPROVEMENT FOR EVERYONE

- It is not enough to have good people with today's skills
  - "What an organization needs is not just good people; it needs people that are improving with education"
  - Quality must not cost jobs. An organization "must make it clear that no one will lose their job because of improvement in productivity"
- ⇨ Information Quality ramifications: Information-Age Paradigm shift
  - Knowledge worker paradigm: "information products" and "information customers"
  - Information systems paradigm shift: information as a shared resource; value-centric applications
  - Mgt: the *Information Revolution requires* business management *across* value chains; not down functions

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 393+

IQ 14. TAKE ACTION TO ACCOMPLISH THE TRANSFORMATION FOR INFORMATION QUALITY

- Management must organize itself to administer the other 13 points of quality
  - Senior management must feel the pain of the status quo
  - Senior management must communicate to a critical mass of people why change is necessary for all
  - Every activity is a process that can be improved
- Use the Shewhart Cycle

4. Roll the process out and study the results– what did we learn?

3. Observe the effects of the "improvement"

1. Study a defective process to identify root cause(s) and define improvement(s)

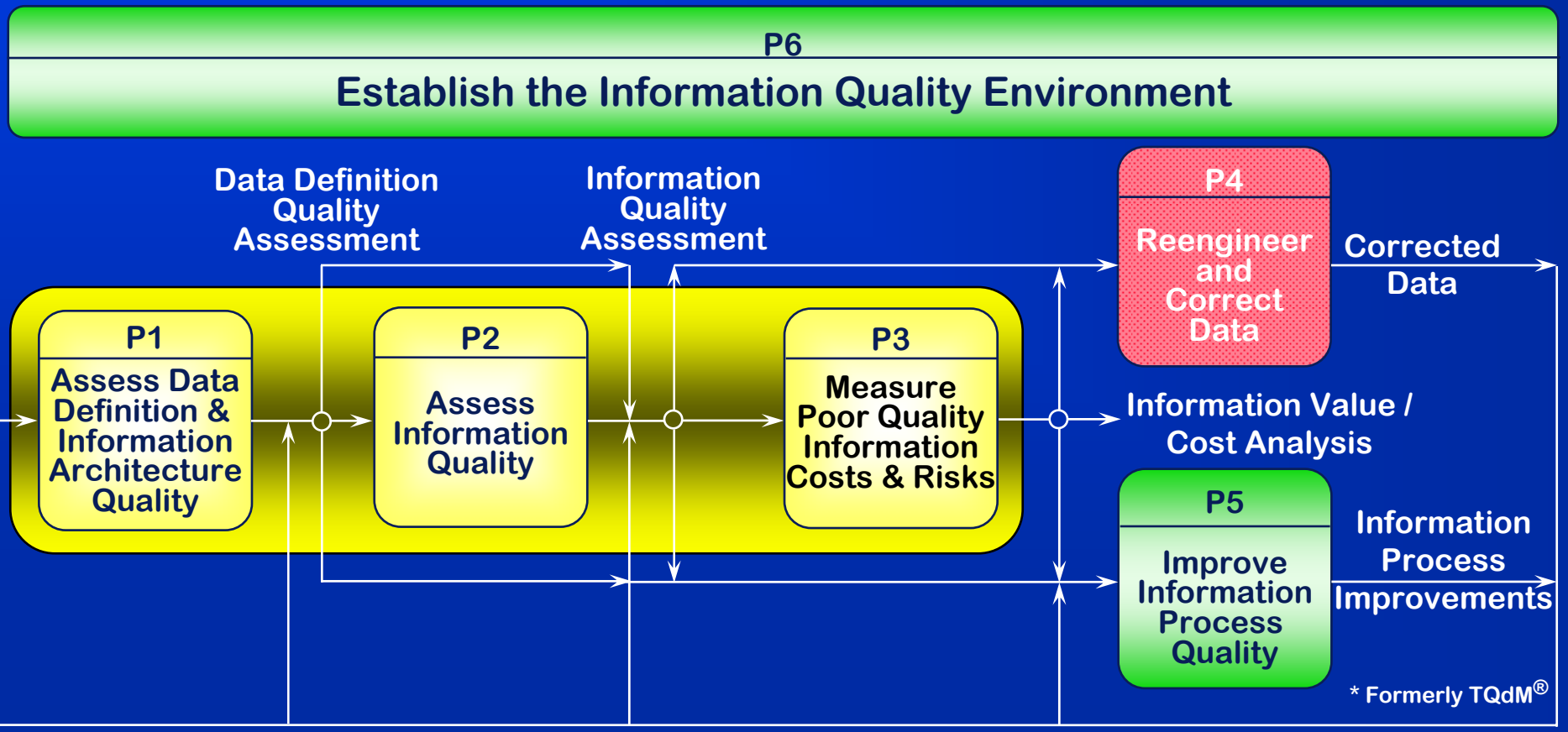
2. Implement the improvement in a controlled way

Source: L. English, *Improving Data Warehouse and Business Information Quality,* p 350+

TOTAL INFORMATION QUALITY MANAGEMENT (TIQM®)

- TIQM®* 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 *values*, *principles* and *methods* into the *culture*



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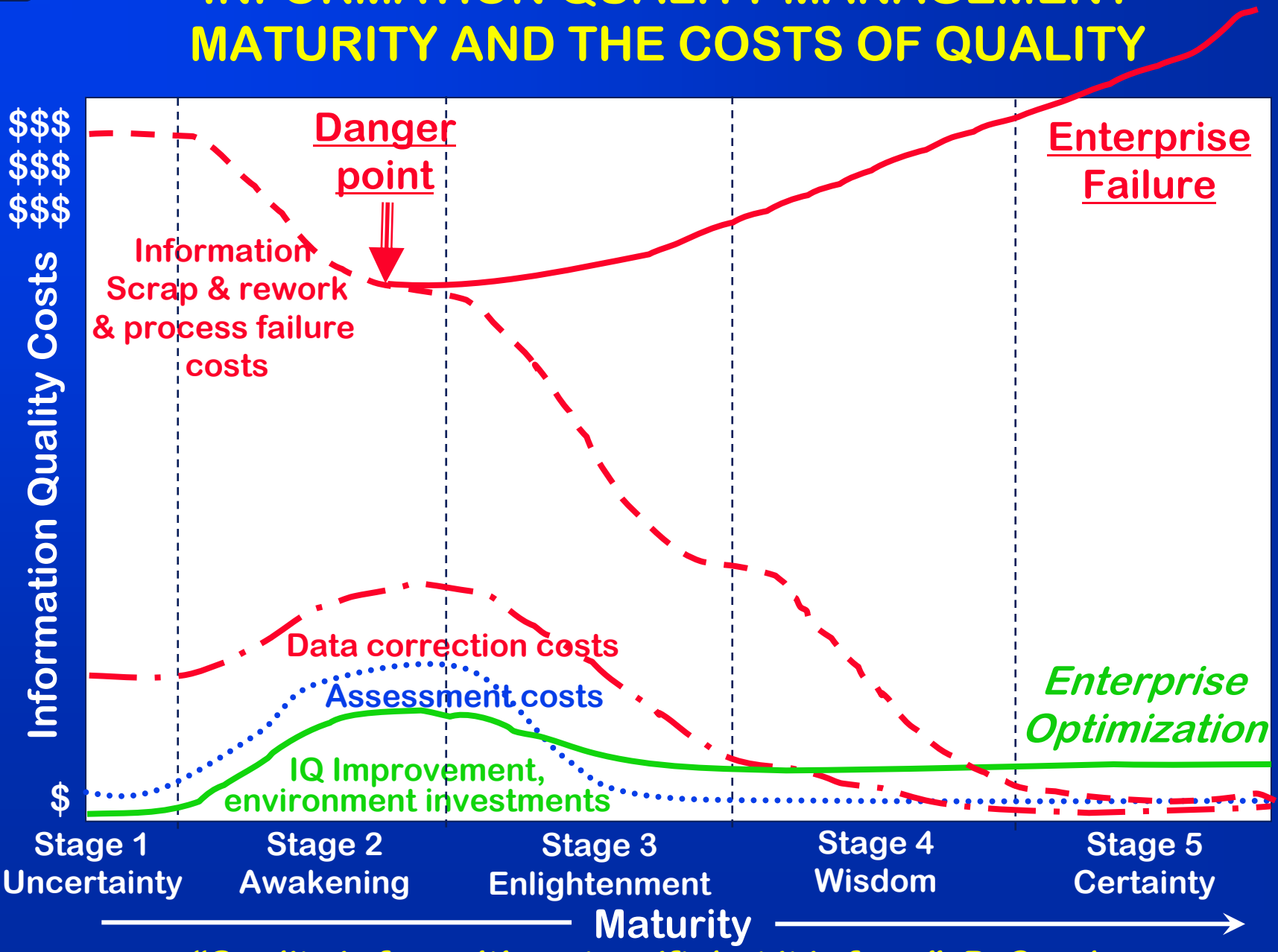
INFORMATION QUALITY MANAGEMENT MATURITY AND THE COSTS OF QUALITY



"Quality is free. It's not a gift, but it is free." P. Crosby

Thank you for your valuable time. Please share your feedback and comments as you apply your new knowledge (Larry.English@infoimpact.com)

Larry P. English

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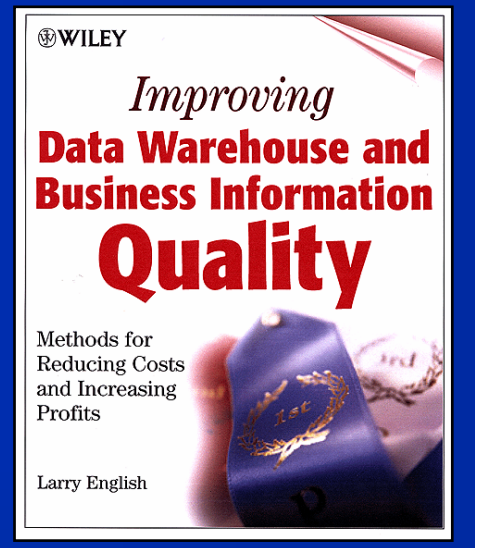
- And other information



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