MATURING FROM DATA QUALITY TO INFORMATION QUALITY TO BUSINESS QUALITY:
Keys to Business Performance Excellence

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by:
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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 (TQM®) 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, Belagco, Boeing, British Telecom, Coca-Cola Foods, Dow Chemical, Eastman Kodak, Eli Lilly, the FDO, 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.
MATURING FROM DATA QUALITY TO INFORMATION QUALITY TO BUSINESS QUALITY

- The Stages of IQ Management Maturity
- Taking Inventory: Where are You?
- Establishing a Vision: “Begin with the End in Mind”
- Planning your Next Steps: “Put First Things First”
- Controlling Processes to “Hold the Gain”
- Moving to Certainty: Measuring the Value Delivered
**COMMON MISCONCEPTIONS**

1. IQ is “data cleansing”
2. IQ is data assessment
3. IQ is “fitness of purpose”
4. Quality is best-of-breed or zero defects
5. IQ problems are created by the information producers
6. IQ improvement is what the Information Quality Team does
7. IQ problems can be edited out
8. TQM or TIQM® is a program / project
9. IQ is quality of data in databases
10. IQ is too expensive

IQ = Information Quality
TQM = Total Quality Mgt
TIQM® = Total Information Quality Mgt

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**TOTAL INFORMATION QUALITY MANAGEMENT**

- Information Quality is **NOT** about what is in databases (*well, it is, but that is not all)
- Information Quality (IQ) is **ABOUT business, service and manufacturing performance excellence** by improving processes to increase information quality

Information Quality addresses:
- Quality of information *definition, models, DB designs*
- Quality of information *content*
- Quality of information *presentation*
- Quality of *business communication*

**Total** Information Quality Management results in:
- Increased *Customer* satisfaction
- Increased *Employee* satisfaction and *productivity*
- *Decreased* costs and *increased* profits / surplus
THE DISCIPLINE OF INFORMATION QUALITY MANAGEMENT

The application of proven Quality Management principles, processes and practices to information as a product of the enterprise processes (business, manufacturing & service) to meet or exceed information consumers’ expectations

Larry P. English

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 Information Quality:

• Information Product Specifications and Information Architecture (Definition & Rules)
• Data Content
• Information Presentation

World-class organizations do not stop here—they strive to “delight” their customers

Larry P. English, TIQM®
THE FUNDAMENTAL QUALITY PRINCIPLES

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

- Process **Improvement** to reduce waste
  - Process definition
  - Product specification (customer-focused)
  - Team work
  - Continuous Process Improvement (CPI)
  - Business Process Re-engineering (BPR)

- Proven, scientific **Methods**
  - Statistical quality control
  - PDSA or PDCA (Shewhart cycle)

- Management **Accountability**

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INFORMATION QUALITY MATURATION

- GIGO = GIGO
- GIGONOK
- GICUQO
- QIQUO

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### INFORMATION QUALITY MANAGEMENT MATURITY (IQMM™)

**Stage 1: Uncertainty**

“We don’t know *why* we have problems with information quality.”

**Stage 2: Awakening**

“Is it absolutely necessary to always have problems with information quality?”

**Stage 3: Enlightenment**

“Information quality problem prevention is a *routine and pervasive* part of our enterprise operations.”

**Stage 4: Wisdom**

“Through mgt commitment and information quality improvement *we are identifying and resolving our problems.*”

**Stage 5: Certainty**

“We know *why* we do NOT have problems with information quality.”

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### INFORMATION QUALITY MANAGEMENT MATURITY GRID

<table>
<thead>
<tr>
<th>Measurement Categories</th>
<th>Stage 1: Uncertainty</th>
<th>Stage 2: Awakening</th>
<th>Stage 3: Enlightenment</th>
<th>Stage 4: Wisdom</th>
<th>Stage 5: Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Management understanding and attitude</strong></td>
<td>Recognizing that information quality management may be a problem but not solving it</td>
<td>Proactively working through information quality improvements and learning more about quality management, becoming supportive and helpful</td>
<td>Acquiring informed management commitment and understanding of information quality improvement</td>
<td>Continuing information quality management as an essential part of company strategy</td>
<td></td>
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*Note: Adapted from P. B. Crosby and Capability Maturity Model.*

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*IQMM™ is a trademark of Information Impact Int’l*
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+

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

Management must put everyone to work to transform org.

- Must organize itself to administer the other 13 points
- Senior management must feel the pain of 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

1. Study a defective process to identify root cause(s) and define improvement(s)
2. Implement the improvement in a controlled way
3. Observe the effects of the “improvement”
4. Roll the process out and study the results—what did we learn?

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

Customer-Centered, Shared Vision + Capable, Trained, Empowered People + Defined, Improved, Controlled Processes that delivers Quality Just-In-Time Information

SUCCESS $!!!

INFORMATION QUALITY MANAGEMENT

Mission / Vision

By implementing and performing sound and proven quality management principles and processes to our information processes, we enable the accomplishment of:

[ ENTERPRISE MISSION HERE ]

We do this by [e.g., “Increasing customer satisfaction” by preventing errors in customer information, such as name misspelling, invoicing, sending wrong items.” or,

“Decreasing operating costs” by decreasing costs of process failure, recovery and information “scrap and rework” caused by poor quality information.”]
**TOTAL INFORMATION QUALITY MANAGEMENT (TIQM®)**

**Methodology Overview**

1. **Long range Plan**
   - Process P6: Establish the IQ environment

2. **Immediate “Improvement Initiative” Plan(s)**
   - Processes P1-P5: (1 or more)

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**“Success is a journey, not a destination”**

*Improving Data Warehouse and Business Information Quality, Chapter 13, pp 421 - 454*
WHY YOU MUST MEASURE ACCURACY NOT JUST VALIDITY

CUSTOMER INFORMATION ACCURACY

p Control Chart 2000-2003
TOTAL INFORMATION QUALITY MANAGEMENT (TIQM®)

P5: Improve Information Process Quality

“There is absolutely no reason for having errors or defects in any product or service.”
P. B. Crosby

“Measure twice, cut once.”
Carpenter’s Rule of Thumb

P1. Assess Data Definition & Information Architecture Quality

P2. Assess Information Quality

P3. Measure Poor Quality Information Costs & Risks

P4. Reengineer and Correct Data

P5. Improve Information Process Quality

P6. Establish the Information Quality Environment

Plan-Do-Study/Check-Act (PDS/CA)

P5.1 Define Project for Information Quality Improvement

P5.2 Develop Plan for Information Quality Improvement

P5.3 Do Implement Quality Improvements

P5.4 Check/Study Impact of Information Quality Improvements

P5.5 Act to Standardize Information Quality Improvements
Application / Database Technology
Duplicate Customer records created
Customer look-up algorithm faulty
Slow response time
System "down"
Customer does not tell they have moved
Does not remember previous order
Name change

No emphasis on training
No accountability
DB reloaded with duplicates
Quota system customer does not understand customer’s name
Does not ask customer if customer has placed order before
Rushes to meet quota
No step to ask all information to determine duplicate
Conflicting procedures
No standards for name & addr
Does not ask if customer has placed order before
Lack of knowledge of customer look-up procedures

Order Process / Procedures
Measurement

Order Producer
Information
Machines
Materials
Customer

CAUSE-AND-EFFECT DIAGRAM
Order Entry Errors

INFORMATION QUALITY IMPROVEMENT TECHNIQUES

"Customer" Feedback;
Accountability;
Performance Measures

Form Design,
Presentation Design;
Process Re-design;
Procedure Simplification;
Defect Prevention

Standardization;
Training;
Procedures;
Checklists

Std Data Definition;
Stable, Flexible
Data Design; Improve
Requirement Specs;
QFD & Optimized
Application Workflow;
Intuitive Screen & Report Design

"Customer" Feedback;
Accountability;
Performance Measures

Internal Data
Manager

Information Producer

External Data
Create
Update

Strategic/ Decisional Knowledge Worker

Repository

Operational Knowledge Worker

Operational Record of Reference

Cleanse/ Enhance

Redundant Data Movement Control

L. English, Improving Data Warehouse and Business Information Quality, Best Practices, p. 302-309

QFD = Quality Function Deployment

IQ Defect Prevention and Quality Control

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**The Myth of “Functional” Optimization**

- **Optimized for “My” Process**
  - Process A
  - Process B
  - Information scrap and rework
  - Value work

- **Optimized for Value Chain**
  - Process A
  - Process B
  - Information scrap and rework
  - Value work

**Defective Data**
- From source (correct / complete) @ 70-80%
- Defective data from source (correct / complete)

**Re:Create / Correct**
- Redundant data
- Quality data from source (correct / complete) @ 100%

**Customer Benefit**
- 1 hour + 11 hours = 12 hours
- 2 hours + 1 hour = 3 hours

**Information Quality 5-Year Cost of Ownership**
- Defective Process Data Cleansing Only
- Process Improvement
- One-time Improvement Cost
- Incremental Improvement Cost
- Information Scrap & Rework Cost

**Savings of $46.1 M (41%)**

**$113.2 million**

**$114.7 million**

**$67.1 million**
VALUE OF QUALITY INFORMATION TO TARGET MARKETING CAMPAIGN RESULTS

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
TOTAL QUALITY MANAGEMENT
Deming’s 14 Points

1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.

2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.

3. Cease dependence on mass inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.

4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.

5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.

6. Institute training on the job.

7. Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of... workers.

8. Drive out fear, so everyone may work effectively for the company

9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.

10. Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.

11. a. Eliminate work standards (quotas) on the factory floor. Substitute leadership.
    b. Eliminate management by objective. Eliminate management by numbers, numerical goals, numerical goals. Substitute leadership.

12. a. Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.
    b. Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, inter alia, abolition of the annual or merit rating and of management by objective.

13. Institute a vigorous program of education and self-improvement.

14. Put everyone to work to accomplish the transformation. The transformation is everybody’s job. Management will explain by seminars and other means why change is necessary, and that the change will involve everybody. Deming, Out of the Crisis

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

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TOTAL INFORMATION QUALITY MANAGEMENT: 14 Points

1. Create constancy of purpose for improvement of information product and service: Long term plan; the obligation to the knowledge worker never ceases

2. Adopt the new philosophy of quality shared information as a tool for business improvement: “Reliable (quality) shared information reduces costs”
   - Means transformation of I / S & business management

3. Cease reliance on data and application inspections alone to achieve information quality: Design quality in to the information design and production processes

4. End the practice of developing applications on the basis of “on-time,” “within budget” measures alone and capturing data at the lowest cost: Develop single data creation programs and trust in information producers*

5. Improve constantly and forever the processes of application and information development and service and of information production, through a habit of continuous “information defect prevention”

6. Institute training on information quality for all employees, especially management and producers

7. Institute leadership for information quality: appoint a full-time information quality leader; management must assume accountability for information quality

8. Drive out fear of data uncertainty or data correction: Implement incentive programs for finding / and correcting problem causes; do not blame or punish

9. Break down barriers between business areas: information management and application development; IT and business; business area and business area units

*Note: Contract with your information suppliers

* Adapted from Deming’s 14 Points, See L. English, Improving Data Warehouse & Business Information Quality, ch 11

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TOTAL INFORMATION QUALITY MANAGEMENT: 14 Points

10. Eliminate slogans and exhortations [only]; replace with actions for information quality improvement: Implement a Plan-Do-Check-Act process for information quality improvement.

11. Eliminate quotas of “productivity” that increase errors and costs of scrap and rework: Customer satisfaction.

12. Remove barriers to pride of workmanship; empower information producers to fix the broken processes.

13. Institute a vigorous program of education and self-improvement for all people: understand the paradigm shift and learn tomorrow’s skills.

14. Take action to accomplish the transformation for IQ: Senior management must feel the pain of the status quo, organize itself and communicate to a critical mass.
   - Every process is a candidate for improvement.

* Adapted from Deming’s 14 Points, See L. English, Improving Data Warehouse & Business Information Quality, ch 11.

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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