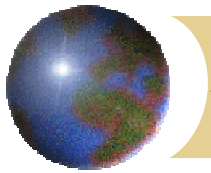


Quality

2003 and Beyond

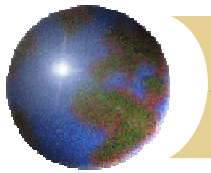


● *Top 10 Luxury Vehicles in America*

- BMW – 3 series
- BMW – 7 series
- ***Cadillac – XLR***
- Bentley Arnage
- BMW – Z8
- BMW – 5 series
- Infiniti – G35
- ***Cadillac – CTS***
- Lexus – SC430
- Volvo – C70

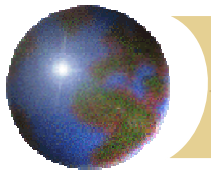
● *45% of all new cars sold are imports*

● *20% of all new trucks sold are imports*

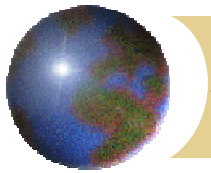


✚ *Big 3 Auto makers*

- *From 72% U.S Market share in 1986 to 63% in 2001*
- ✚ Prediction is **50% by 2006**
- ✚ Foreign makers are delivering
 - i.e. 100,000 mile warranties
 - More perceived reliability
 - More affordable
- ✚ Consumers are looking for
 - Quality
 - Affordability
 - Safety
 - In that order

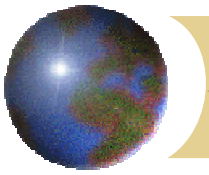


What's Going On !!



- 1. Now a global market*
- 2. Quality is the consumer's top concern*
- 3. Consumers will go wherever they must to satisfy need*





Some definitions

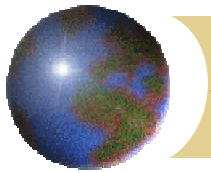
⊕ *Quality*

- An inherent feature; a degree of excellence; superiority in kind

⊕ *Quality Assurance*

- A program for the systematic monitoring and evaluation of the various aspects of a project, service, or facility to ensure that standards of quality are being met.

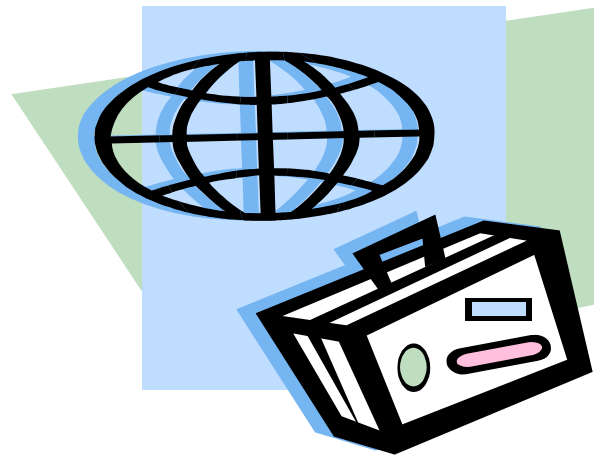
– Merriam-Webster Collegiate Dictionary, Tenth Edition

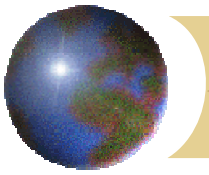


What are we doing ?

Where are we going?

The Quality Journey





The Journey Begins -

- *Early 1900's –*

- Frederick Taylor developed work specialization – inspectors

- *Late 1920's –*

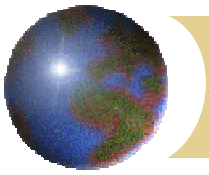
- Walter Shewhart developed control charts

- *1940's - WWII*

- Goal – to improve quality (usefulness) of munitions
- Depended on inspection and testing to detect defects

- *1951 –*

- Armand Feigenbaum published Total Quality Control which initiated TQM



The Journey(con't)

⊕ *1960's – 1970's –*

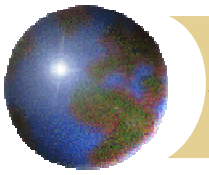
⊞ Quality Circles

⊕ *1980's –*

⊞ SPC came back into vogue

⊕ *1990's –*

⊞ ISO 9000, Malcolm Baldrige National Quality Award

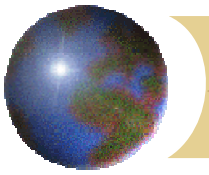


The Journey(con't)

❁ *Late 1990's to Present* – more methodologies

- ❁ Value engineering
- ❁ Lean manufacturing
- ❁ Kaizen
- ❁ Poka-Yoke
- ❁ Theory of constraints
- ❁ Six Sigma

❁ *2003 -*



So what are we doing

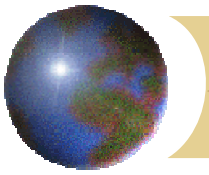
✚ *Major initiatives*

▣ **ISO 9000/QS-9000**

- An architecture for business enterprise
 - a way of doing business
- Originated in manufacturing sector
 - now applied to all businesses

▣ **Malcolm Baldrige**

- Criteria for successful business
- Companies evaluated
 - Feedback provided to afford improvements



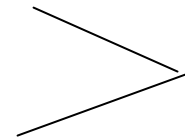
So what are we doing (con't)

■ CMMI(Capability Maturity Model Integrated)

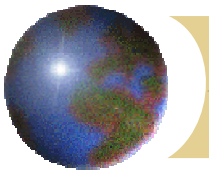
- Started as CMM
 - applied to software industry
- Similar to ISO 9000
 - applies to all businesses entities
 - provides a business enterprise structure
- More in depth than ISO 9000
 - 750 pg manual with 26 major elements

■ Six Sigma

- Set of tools to
 - Improve products and processes
 - Reduce defects
 - Improve efficiency
- Green Belts/Black Belts
 - Facilitate improvement teams in the organization



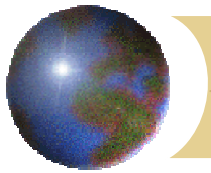
\$Increased Profits \$



So what are we doing (con't)

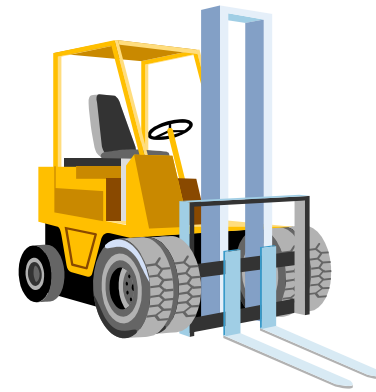
⊕ Lots of programs

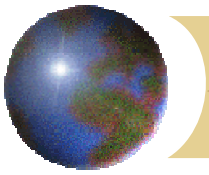
- ❑ For the most part, we are paying lip service
 - “Let’s get ISO certified so we can win that contract”
- ❑ We didn’t pay attention in 1945 – Japan did
- ❑ We recouped in the 80’s and 90’s
 - Now were slipping again
- ❑ Short term profit versus long term profitability is the status quo



❖ *Let's look at the two
general areas*

- ❖ Manufacturing
- ❖ Services (education,
medicine, other)





Manufacturing

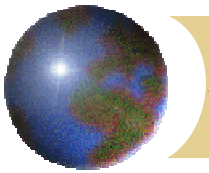
✚ *DoD spends \$1.5 billion annually to identify and fix quality issues*

✚ *Past*

- Product goes to production with an incomplete design
- Inspectors identify problems and then they are fixed

✚ *Now*

- Design quality into the product
 - Design reviews
 - Prototypes
- Complete and test the design prior to production



Manufacturing (Con't)

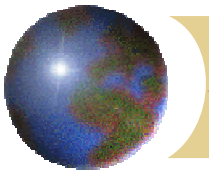
⊕ *Moving towards prevention versus inspect/fix*

- However, many still behind

⊕ *More use of*

- Baldrige criteria
- Six Sigma
- TQM

⊕ *Relationships with suppliers*



Services

✚ Education

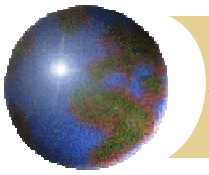
✚ Past

- Limited control of process
- Result – valedictorians that cannot pass SAT

✚ Now

- Identify standards and criteria
- Evaluate faculty credentials
 - Determine individual's knowledge base subject taught
- Evaluate course rigor and curriculum
- Level of support services
- Interaction with students





Services (con't)

Medicine

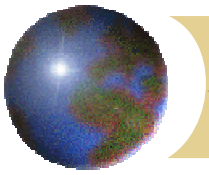
Past

- “We are professionals and know what we are doing”
- Difficult to weed out incompetence
- Close knit, ‘hands off’ environment for outsiders

Now

- Measure/evaluate competency of service provided -
 - Require continuing education – so many CEU per year
 - Periodic reviews by independent agencies





Services (con't)

✿ *Other* (Banking, postal etc)

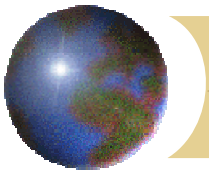
▣ Past

- Based on management's desires
- Really didn't understand quality
- If profits dropped, increase price of service

▣ Now

- Competition
- Implementing measurements to reduce defects
- Training staff to be knowledgeable of services
- Learning to tactfully deal with complaints
- Listening to the 'Voice of the Customer'





Quality in the Future (con't)

⊕ **In Manufacturing,**

- ⊕ more dependency on robotics to fabricate and detect flaws/discrepancies
- ⊕ prevention versus inspect and fix

⊕ **In medicine,**

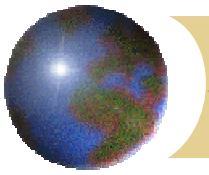
- ⊕ consumer will demand more and better controls
- ⊕ More continuing education
- ⊕ More effective means of eliminating incompetence

⊕ **In education**

- ⊕ More accountability
- ⊕ More testing of teachers in their specialty
- ⊕ More continuing education

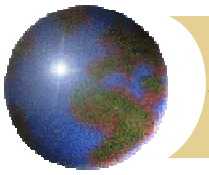
⊕ **In service**

- ⊕ More 'Voice of the Customer'
- ⊕ Benchmarking



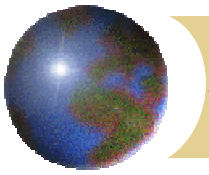
Quality in the Future (con't)

- ✚ More companies will
 - ▣ Implement and use business models
 - Baldrige
 - ISO 9000
 - CMMI
- ✚ Less significance placed on certifications
 - ▣ i.e. ISO 9000
- ✚ More emphasis placed on improving quality
 - ▣ i.e. Six Sigma
- ✚ Competition will increase
 - ▣ Only those with quality products/services will survive



Quality in the Future

- ✿ *“The successful companies of the future will have quality ingrained into their processes and psyche at all levels of the organization”*

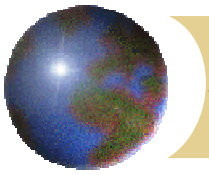


QA's Role

⊕ *Now*

⊞ *Very simple –*

- *Ensure that products/services perform the way they are supposed to by*
 - Ensuring that all standards are specified, met and followed
 - Keeping up with new technologies
 - Keeping communication lines open across the organization
 - Reporting problems

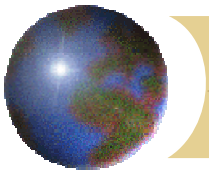


QA's Role

✚ Future

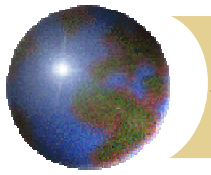
▣ *QA will morph into role of consultant/facilitator*

- Help other departments improve the quality of their products/services by
 - Helping select and implement improvement strategies
 - FMEA
 - Design of Experiment
 - SPC
 - Process charts
 - Statistical analysis
 - The next new methodology
 - Training organizational personnel in Quality techniques

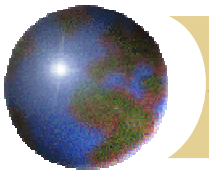


Summary

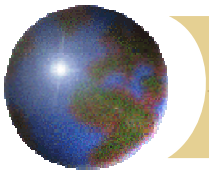
- ❖ We've come a long way
 - ❑ A long way to go
- ❖ To succeed
 - ❑ American industry must ingrain quality into their everyday practices
 - There are no short cuts
- ❖ We are good at getting immediate results
 - ❑ But not so good at looking at long range impacts
- ❖ We need to honestly and critically evaluate our processes
 - ❑ Implement necessary changes



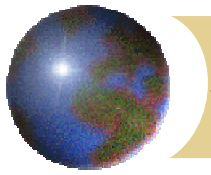
‘Quality is a Journey’



*‘To be successful, a company must
be led into quality by top
management’*



*‘Quality is free. It’s the lack of
quality that costs’*



Questions?