

1970

1980

1985

1990

2000

2010

2020

2030

1960

U.S. Quality Leaders Emerging

- Dr. Walter A. Shewhart
- Dr. W. Edwards Deming
- Dr. Armand V. Feigenbaum
- Dr. Joseph M. Juran
- Philip B. Crosby

'Conformance to Requirements'

1979 Concept Emerged

1960 Articles & Books on Quality

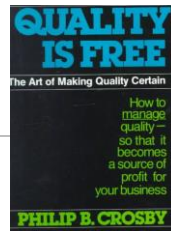
1960 Major Emphasis on Quality | Safety

1946 ISO Formed

1971 OSHA Regulations

'Cost of Poor Quality' U.S. Military Supply Chain

1979 TMI Accident - Major Design | Build | Knowledge Transfer Gap



Quality Management Systems (QMS)

- 1987 U.S. Baldrige Performance Excellence (Department of Commerce)
- **1987 ISO 9001 QMS Standards Released**

Quality Management Tools

- SixSigma, QFD, FEMA, PDCA, C&E Diagraming, Mapping, Software, Assessments
- **1995 ISO QMS Certified 75K**

Enterprise Software

- Intra- & Internet
- CMM Site Wide

Integrated Management Systems (IMS)

- IMS, QMS, EMS, RM, SCM, Others
- Requirements Matrix (Advanced)
- Process Hazards Mgt
- Enterprise Software (Advanced)
- Cyber Security
- Supply Chain Mgt (Advanced)
- **Post 911 Safety / Security**
- **2006 ISO 9001 QMS Certified .6 million, among 155 Countries**

2012 ISO 9001 QMS Certified 1.1 mil, among 178 Countries

ISO 9001 ISO 19443 N ISO 14001 ISO 45001 Other Management System Certs.

60 YEARS

1960 ~ 2020

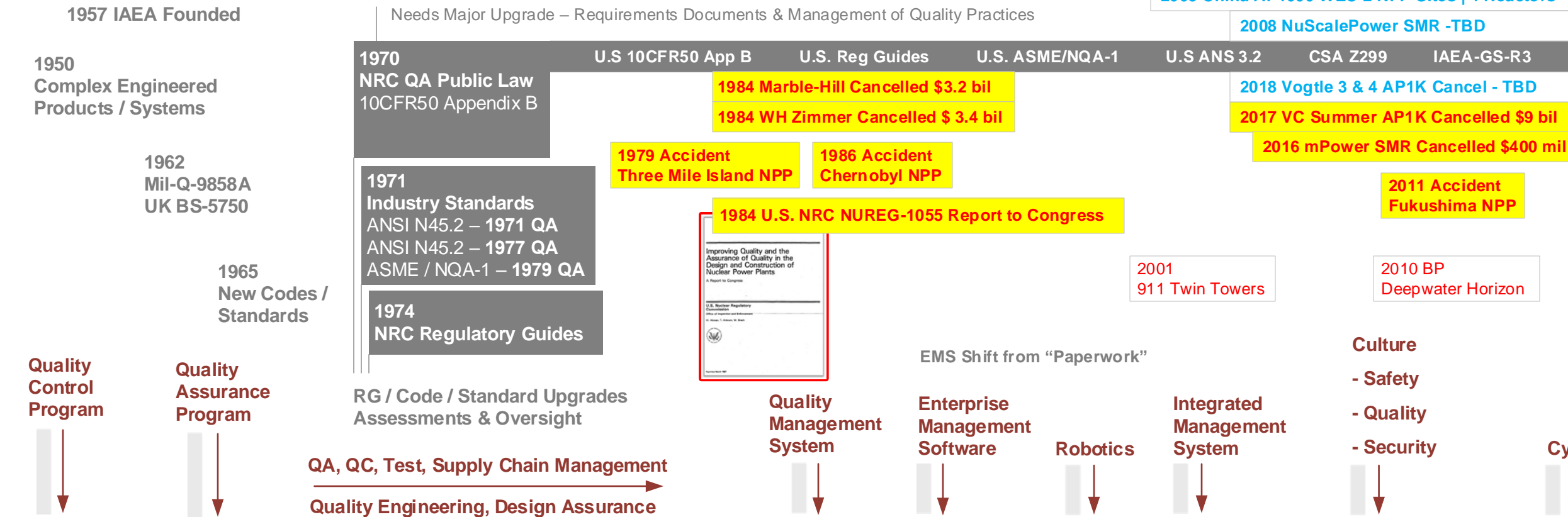
Numerous global non-nuclear industry sectors have been implementing ISO 9001 Quality Management Systems & quality tools since 1987. QMS certifications now exceed 1.5 million. Many nations require QMS certification as a part of product / service / system safety-basis certifications.

The U.S. NRC recognized ISO9001:2000 in 2003. This model also suggests the industry may require provisions for implementing "Integrated Management Systems."

1950 ~ 1999 LNPP Design | Build Period 65 LNPP Sites & 100 Power Reactors 2000 Renaissance ~ LNPP & SMR NPP

2005 China AP1000 WEC 2 NPP Sites | 4 Reactors

2008 NuScalePower SMR -TBD



Will U.S. Nuclear Industry executives recognize & integrate advanced Quality Management Tools to enhance overall operational effectiveness?

2018 New ISO 19443 Nuclear QMS

The U.S. chemical, oil, and gas industries have a history of QC, Inspection, & Testing as the methods for ensuring safety & specification compliance. In the mid-'60s, the nuclear industry initiated QA with the goal of "error prevention."

- Does the nuclear industry recognize the 'Management of Quality' & its focus is driven by company executives?
- Do executives recognize & embrace advanced 'Quality Management Tools' available to enhance, safety, effectiveness, & compliance?
- Will industry members realize the benefits by unconditional support?