DoD Efforts in ISO Standardization Initiatives

"Some Observations on Creating IT Standards"

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A Few Observations

1 – Enigma

- Standards are Boring!
- Special Interests and Egos are Involved
- Significant Opportunities to Make a Real Difference

2 - IT Standards Are Important to DoD

- Public Law & Policy Rely on Private Sector
- DoD participation essential
- "Right" Standards Are Key to DoD's Complex Needs
  - *Interoperability - Information Superiority - Logistics Transformation*

3 - Lessons Learned

- Good Process Characteristics
- Failure Attributes
- Value of 'Seed Funding'

OBSERVATION #1

Attitudes:

Standards are Boring!

They get in the way!

They cost too much!

They don't generate profits!

Capturing the Hearts and Minds of People

Reality: **Standards and the Standardization Process is Not of Much Interest (Indeed, Boring!) to Most People.**

- **Standards & the standardization process does not generate high interest and excitement among Engineers and Technologists**
- **Program/Project Managers are keenly interested in budget and schedule but frequently view standards as obstacles.**
- **Not considered to be a high profile issue with Politicians.**
- **CEO's don't see standards/participation in standards activities, as a positive influence on stock price for the next quarter**
- **Users are only interested in the final product and fail to appreciate the role, value, or process of standards in helping them obtain interoperable products and services.**

An effective standards approach needs to consider these realities.

OBSERVATION #2

- **The Global IT Standards Development Environment is immense**
  - **Growing recognition that standards are important for information exchange**
  - **Many focused players working in specific technology areas**
  - **Special Interests and Egos are Involved**
  - **Lots of Duplication, Fragmentation, Waste**

DoD & NSS Standards Landscape

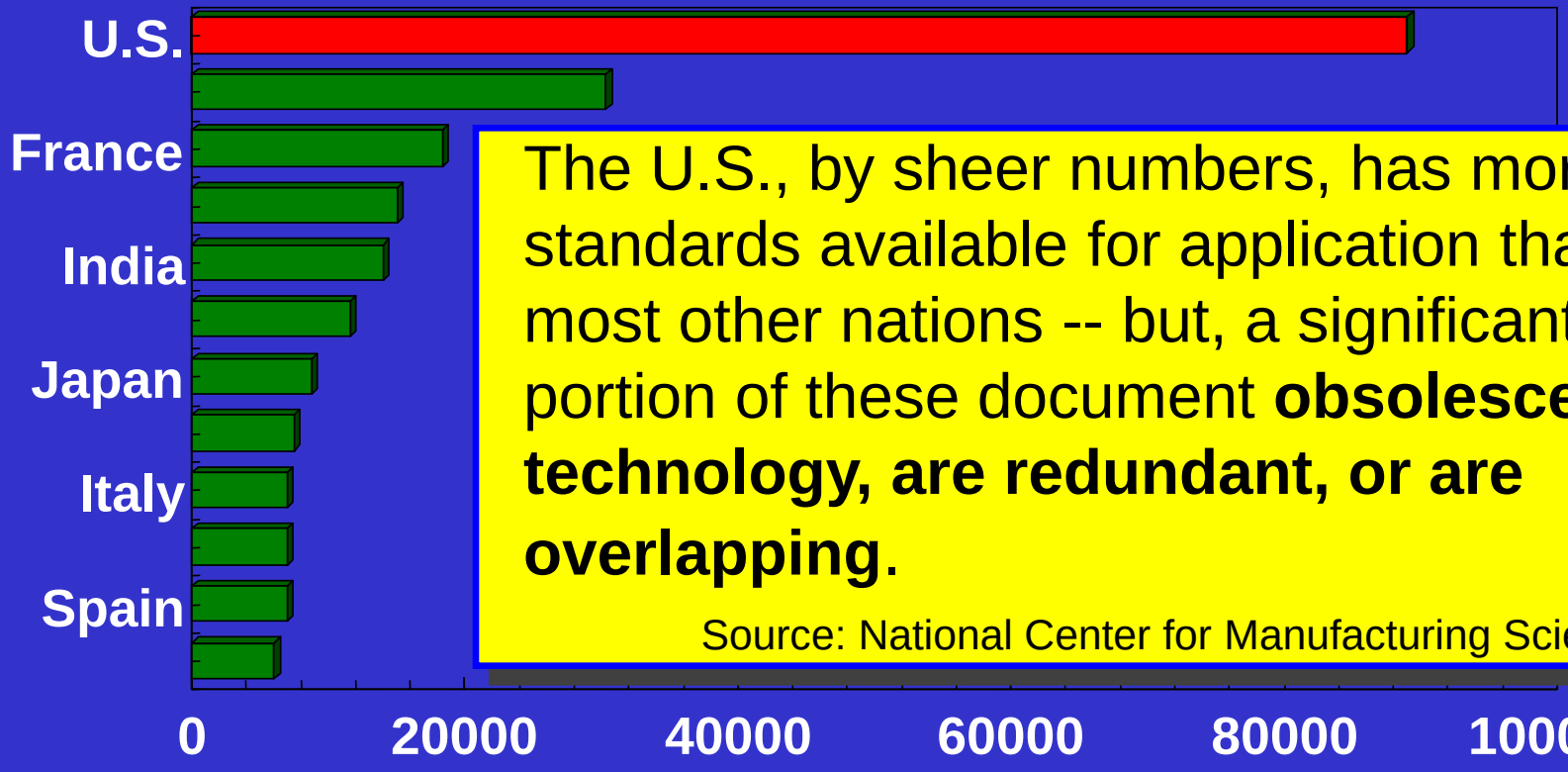
Some Causes of Fragmentation in global IT standards setting

- Desire for standards process speed to keep pace with rapid technology evolution.
- Increasing national and regional economic competition.
- Growing acceptance that standards can convey strategic advantage.
- Desire to challenge early market leader dominance in discrete product areas (e.g., operating systems).
- Realization that standards are key to interaction with business partners
- Egos

OBSERVATION #3

- Too Many Standards
  - Gross overabundance
  - Many are conflicting
  - Often document old technology
- They Are Produced
  - With Little Consideration of User Real Needs
  - Without Market Place Support
- Many Are the Product of Ego Trips

STANDARDS OUTPUT



The U.S., by sheer numbers, has more standards available for application than most other nations -- but, a significant portion of these document **obsolescent technology, are redundant, or are overlapping**.

Source: National Center for Manufacturing Sciences

Source: ANSI

PARETO STRIKES AGAIN!

80% of the orders for individual standards are for only 15% to 20% of the total number published.

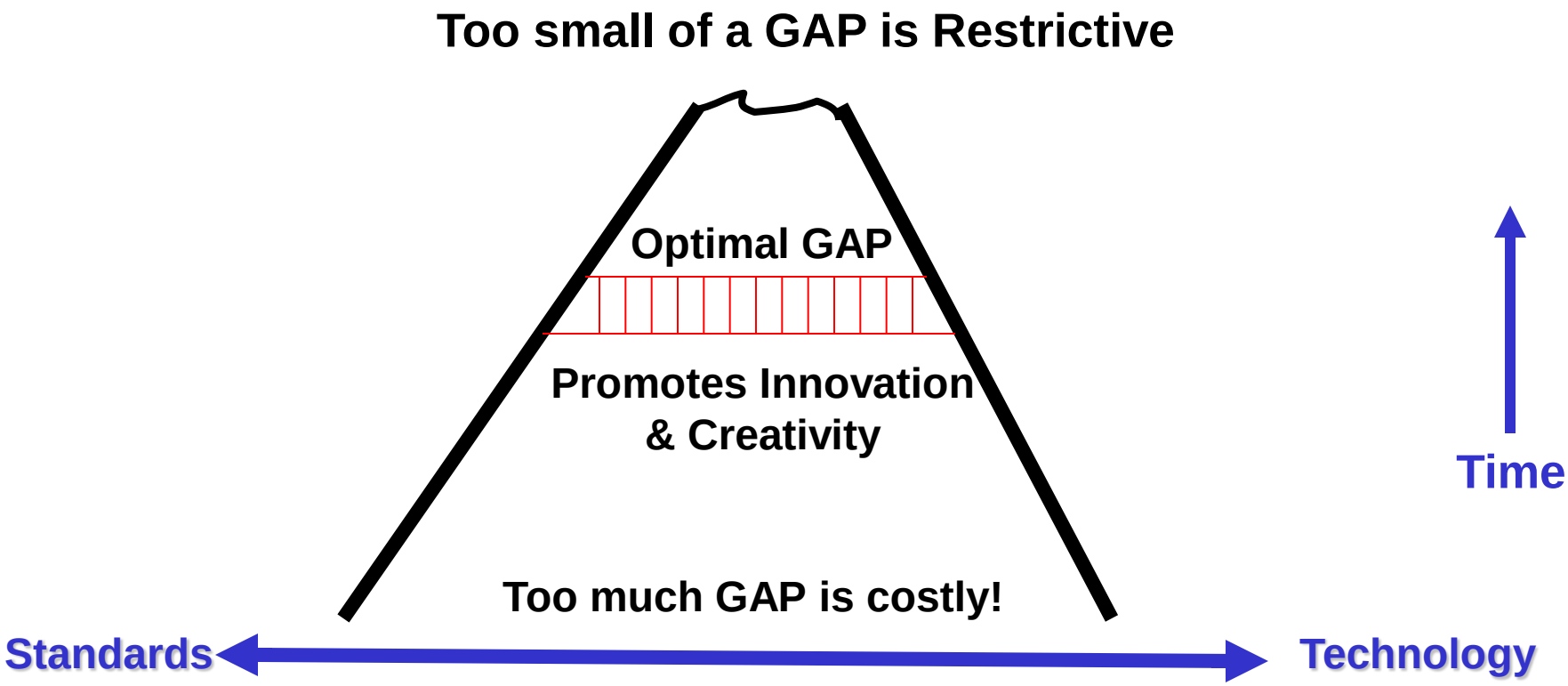
Source: ANSI

CONCLUSION: *Most Published Standards are Seldom Used!*

OBSERVATION #4

Timing **of standards with technology is critical**

Natural Tension



The GAP between Standards & Technology is the link that associates the two.

OBSERVATION #5

- **DoD must care deeply about IT standards development**
  - **Must select the "right" standards to meet DoD's complex needs**
  - **Standards are the key!**
    - **Interoperability**
    - **Netcentricity**
    - **Information superiority**
    - **Logistics transformation**

INTERDEPENDENCE

STRONG DEFENSE

HEALTHY ECONOMY

Maintain Global Leadership of Standards to Enhance U.S. Competitiveness!

DoD Interest in External Standards Activities

- **Driving the incorporation of Warfighter and DOD business operations requirements into non-government *de jure* and 'commercial' standards, encourages industry to develop and build compliant commercial products *(available as open standards conforming COTS)***
- **As more and more vendor's offer compliant COTS, prices go down, the number of standardized products goes up, and reliability, robustness, and interchangeability increases**
- **This significantly enhances scalability and interoperability**
- **Thus, by influencing the specification of international standards, competition to deliver required products increases while making newly developed US-built products more marketable globally**


What Does A Good IT Standards Strategy Look Like?

OBSERVATION #6

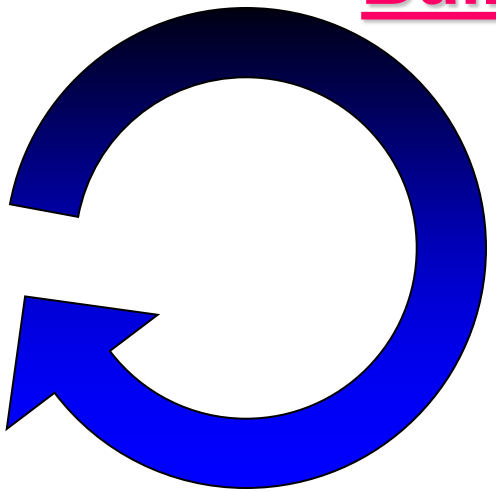
Much Similarity in SDO/SSO Process of Standards Creation

IT Standards Development Processes

- International Standards Development
- De jure Process
- Professional Society Process
- Industry Association Process
- Consortia Process
- Government Process

Generic IT Standards Life Cycle

Consistency Via Accredited Process



- Choosing the right "process" is not trivial
- Accreditation affords consistent process
- Committees don't reinvent wheel
- Accredited process is well-tested and *"off the shelf"*
- Consensus is significant
- Broad participation yields better quality results but make for slower process

Goals of Standards Process

- **Well-Defined Product:**
  - **Consistent implementations**
  - **Coherent functionality**
- **Commercial Viability:**
  - **Allows range of implementations**
  - **Commercial products are possible**
  - **Promotes wide adoption**
  - **No "Standards-for-Standards-Sake" (e.g., some standards consultant dominated projects)**
- **Wide acceptance:**
  - **Many conforming implementations**
- **Few bugs:**
  - **Low number of defect reports**

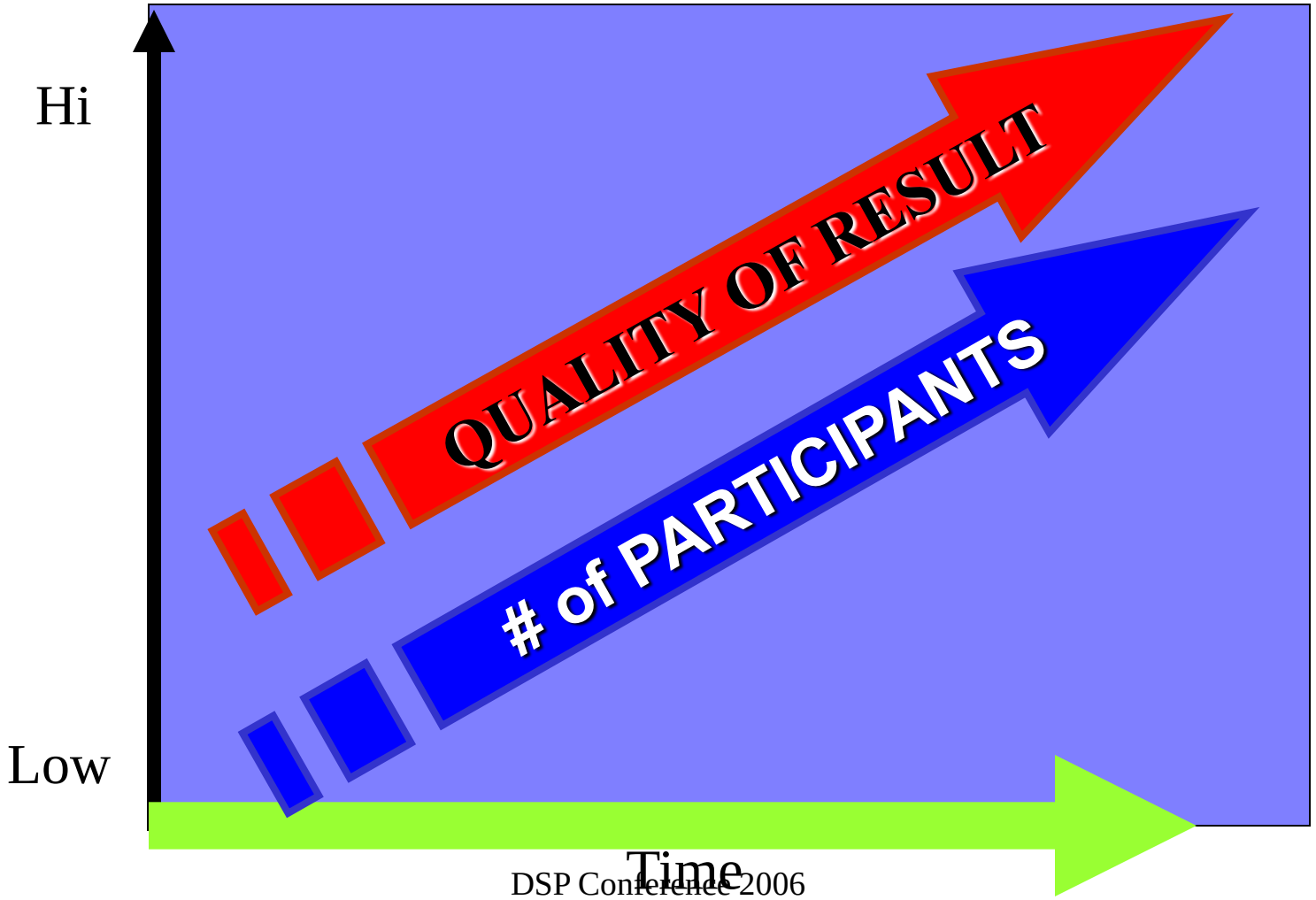
Openness ….

- **Significance:**
  - **Important for users to specify as ‘mandated’ only “open” IT Standards and Specifications**
    - **Avoid Lawsuits**
      - **Perceived endorsement**
    - **Avoid Royalty Liabilities**

CONSENSUS ….

- **Most useful and stable standards come from a voluntary consensus process**
- **The broader the range of consensus, the higher quality the resulting specification**
- **Consensus Building**
  - **Collaboration, harmonization, refinement**
  - **Public reviews as soon as possible**
  - **Public comments**
  - **Resolution of comments**
  - **Approval stages:**
    - **Working draft**
    - **Committee draft**
    - **Draft Standard**
    - **Approved Standard**

Consensus Process Experience & Implications



Success Attributes

- Conformance:
  - need to measure it
  - should have working definition ASAP
- Target audience: commercial systems and users
- Quality: fix bugs immediately!
- Process: have faith in consensus process -- it works!

Failure Attributes

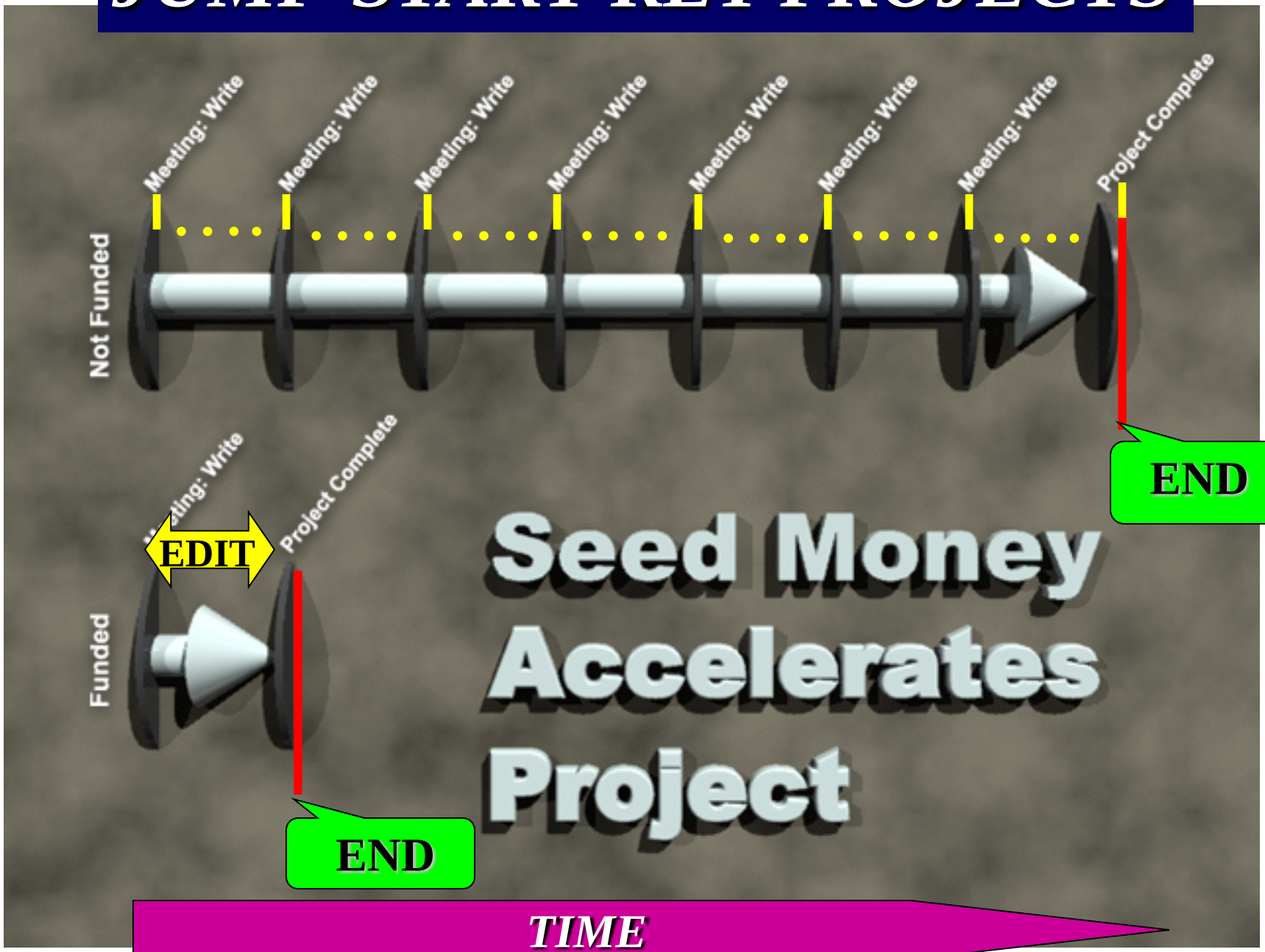
Failures: only recognized years later

- **Incorporate new/untried technology**
  - **Why waste committee time?**
- **Ignore commercial interests**
  - **Who will implement the standard?**
- **Ignore public comments**
  - **Who will buy standardized products?**
- **Creeping featurism**
  - **The schedule killer!**

OBSERVATION #7

‘Seed Funding’ to jump start a project works well!

JUMP-START KEY PROJECTS



PREMO Example

- New Technology
- Market Place Need
- Vendor Support
- Broad Active Support
- ***Schedule Slip***

BUT LOST THE BUBBLE!

VRML Example

- New Technology
- Market Place Need
- Vendor Support
- Broad Active Support
- ***Fast Process***

WIN - WIN - WIN!

OBSERVATION #8

Cultural Differences Have An Impact on Standards and Their Use

Observations of Cultural Differences With Respect to Standards Compliance

Country	Requirement		Compliance Rules
U.S.	Permitted	EXCEPT	Prohibited
Germany	Prohibited	EXCEPT	Permitted
Russia	Prohibited	EVEN	Permitted
France	Permitted	EVEN	PROHIBITED!


A Few
Lessons
Learned

Management of IT Standards Activities

- **Governing concept needs to separate the management of standardization activities from the technical work**
  - **standards manager owns the process**
  - **sponsors and stakeholders own the specific substantive content**
- **Manage IT standards activities by employing a lifecycle portfolio with real accountability**
- **Decisions based upon**
  - **mission goals**
  - **architecture**
  - **risk**
  - **performance**
  - **expected return on investment (ROI)**

"Watch Out"

- **When participating in an international standards development project, be aware of competing national goals. E.g., EU strategy of *"strangulation by meeting schedule"* – They sometimes try to schedule back-to-back meetings spaced a few days apart in Europe to effectively preclude US active participation.**

Standards vs. Technology

- **Need to keep pace with technology evolution**
- **Natural tension between standards setting and technology evolution**
- **Timing is critical**
- **Standards set too early**
  - **stifle innovation and creativity (the fuel of technology evolution)**
- **Standards set too late**
  - **engenders social and economic costs (e.g., Beta vs. VHS)**

Replicate Proven Practices

- **Replicate good, proven engineering and business practices**
- **Good practices manifested in open solutions from recognized authorities (authentic SDO/SSO)**

Performance vs. Process

- **Successful standards specify performance and interface requirements**
- **Telling a vendor how to build a product (process specific standards) is a poor example of how to establish effective standards**
- **Interested in the final product - not the process used to get there**
- **Beware of "management" standards**
- **Certain "best practice" guides and specifications such as "configuration management" are generally OK**

Market Place Support

- **The market place - not a Standards Committee - determines which standards are the winners!**
- **Need good, desirable, useful, workable, and effective standards that:**
  - **realistically solve user problems**
  - **possess genuine utility**
  - **supported in the market place**
  - **else, they become 'shelf ware'**
- **Need vendors to build COTS that employ open standards**

"Success of a standard is measured by the number of competing implementations that build upon that standard, not in the creation of the specification itself."

Carl Cargill

Avoid Government Unique Standards

- **Government unique (vs. *de jure* or 'commercial') standards are**
  - **expensive**
  - **usually counterproductive**
    - **Do not achieve a cost effective solution**
    - **Are usually not interoperable**
- **ditto proprietary solutions. Use MIL-STDS and specifications only when nothing else is available**

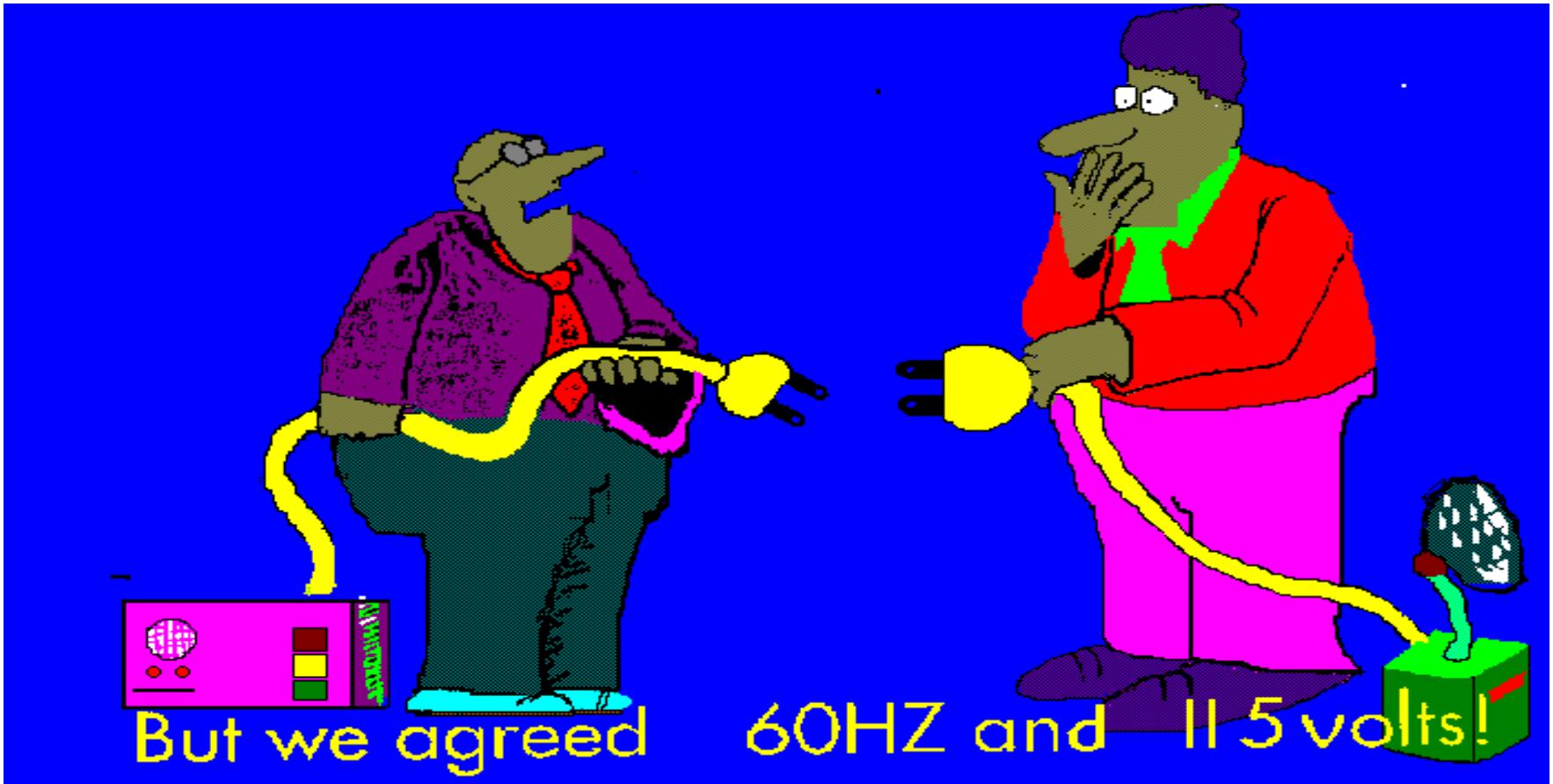
CONCLUSIONS

- **Knowledge of the standards process can be very helpful for internal projects:**
  - **Specification development and consensus-building techniques are widely useful**
  - **Quality is recognized at the end with few defect reports and consistent spec interpretation**
  - **Standards process is a "best practice" to develop high quality specs within a reasonable technical horizon**

Current Challenges

- Open Source Phenomena
- Resourcing
- Keeping Pace with Technology
- Spreading “the Word”
- Incorporating the Lessons

WE NEED MORE THAN STANDARDS!



Both Are Using A Mature, Internationally Accredited Standard With Vast Marketplace Support -- But No INTEROPERABILITY!!


Questions?

Credits

- ***"Future Generations"*** **book, Sherrie Bolin, Editor**
- **Various ISO, ANSI, ISOC, IEEE archives & publications**
- **Personal conversations with/materials from:**
  - **Ollie Smoot, ISO Past President**
  - **Jim Moore, General Counsel, Congressional Government Reform Committee**
  - **Carl Cargill, SUN Director of Standards**
  - **Andy Updegrove, Attorney**
  - **Sophie Clivio, ISO Central Secretariat**
  - **Anna Moreno, TC184/SC4 Education and Outreach Chair**
  - **Frank Farance, Consultant**
  - **Steve Carson, Consultant**
- **Various presentations & white papers by Jerry Smith**