Standards, Open Systems and Design

> University of Tokyo January 17, 2012

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Design Goal

- "Design is the fundamental soul of a humanmade creation that ends up expressing itself in successive outer layers of the product or service." -Steve Jobs
- From the presentation of: Fumiko Ichikawa, Innovation Lab, Hakuhodo November 29, 2011

Definitions

Standard: Model, document or <u>concept</u>

Standardization: Process of <u>creating</u>, <u>implementing</u>, or <u>using</u> a standard

Definitions

Reference - A rule applied to define something Standard - A codified and quantified rule imposed by an authority, committee or market (F.A. Hayek, *Rules and Order*, 1973).

Established References

Established by	Term
Accident, assumption, convention	common reference
Government	regulation
Private entity	specification
Committee	standard
Market	de facto standard

Succession of Standards

Standards	Examples	Purpose	Effect
1. Symbols	Number systems	Identity	Communications
2. Measurement	Units of Measure, Monetary system	Measurement	Quantify abstractions
3. Similarity	Cellular mobile and base, ISO9000, 14000, X.3 PAD	Repeatability	Maintain sameness
4. Compatibility	Nuts & bolts, Group 3 facsimile, telephone modems, X.25 interface, cellular air interfaces	Interworking	Sender compatible with receiver
5. Adaptability	Aloha protocol, CSMA/CD, Modem handshakes, XML, SIP, fax T.30	Variability	Negotiate the variation

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		Age			
	Hunter Gatherer (before 3000 BC)	Agrarian (3000 BC - 1750 AD	Industrial (1750 - 1950)	Information (1950 - 2000)	Post- Information (2000 +)
Value System	Property (private)	Currency	Invention (patents)	System (public utilities)	Concept (copyright, brands)
Technology	Counting	Units of Measure, Monetary Systems	Powered machines	Sequential processes (railroad, telephone, utilities)	Adaptive processes (computers)
Communi- cations	Barter	Commerce	Mechanized transport	Electronic (telegraph, telephone)	Internet
Standards Successions	Symbols	Measurement	Similarity	Compati- bility	Adaptability

Successions of Technical Standards: Political/Economic Effects

	Age					
	Hunter Gatherer (before 3000 BC)	Agrarian (3000 BC - 1750 AD	Industrial (1750 - 1950)	Information (1950 - 2000)	Post- Information (2000 +)	
Standards Succession	Symbols	Measurement	Similarity	Compatibility	Adaptability	
Authorities' involvement in standard- ization	Dominate	Authoritarian	Oversight	Limited or none	Future: Guidelines?	
Entrepreneurs' view of standards	Unknown	Undesirable	Distrustful	Winner-take- all	Future: Fair?	
Economic Self-rein- forcing mechanisms	Communi- cations	Coordination effects	Scaling and learning effects	Network- effects	Gateway effects	

8

Part II Open Standards are a part of Open Systems

9

Once all stakeholders participated in standardization:

- Users/carriers
- Implementers
- Government

Now implementers dominate the standardization processes.

When SDOs and Consortia no longer focus on everyone's needs, some are disenfranchised.

> This creates the desire for "open standards."

Open Standards mean different things to different people

Implementers want:

- A single process for worldwide standards
- A fair process to negotiate intellectual property rights (IPR)

Users/carriers want:

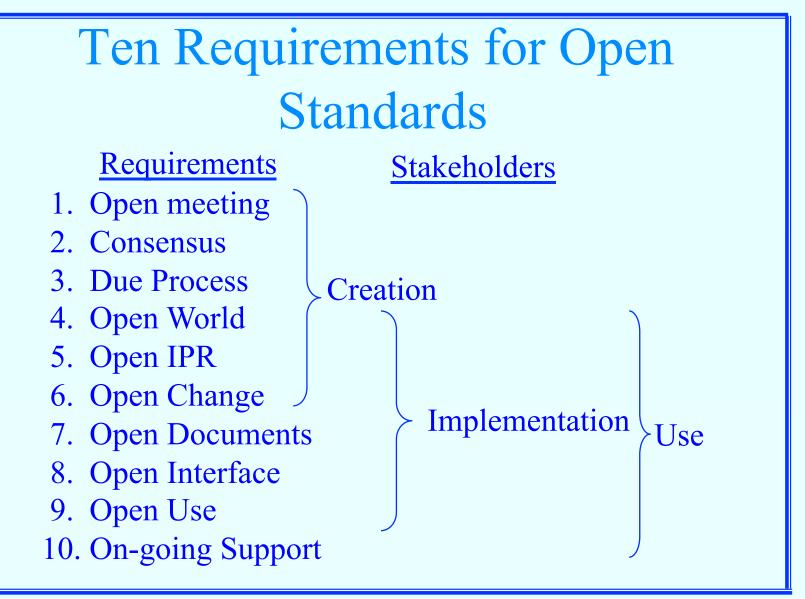
- Backward and forward compatibility
- Maintained standards
- Public (low fees) technology

Government wants:

 A means to address the standardization aspects of political problems.

Everyone wants:

• A fair, fast and efficient standardization system.



Part III Open Systems are Adaptable

Current Problems With Controlled Compatibility Standards

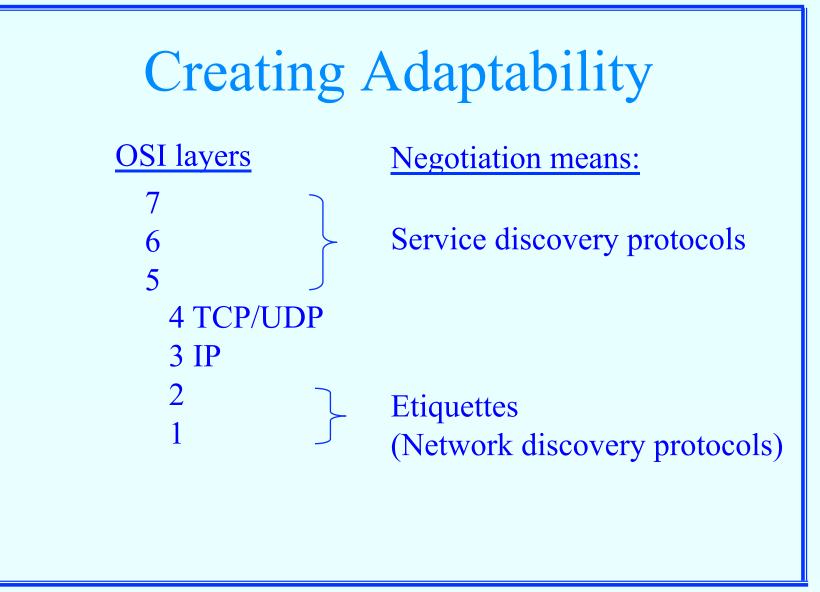
- The EU's concern that only Apple iPods can download music from Apple iTunes web sites.
- The Chinese government's push for their own communications technology in Chinese communications systems.
- The EU and previous US anti-trust actions over Microsoft's proprietary software interfaces.

Adaptability

The means to create and maintain interoperation between autonomous heterogeneous systems at all OSI layers.

Adaptability includes three processes:

- Identification
- Negotiation
- Selection



The properties of an etiquette include

- Negotiation services without operational functionality.
- Single tree, unambiguous, logical structure.
- Deletions are not allowed.
- An etiquette receiver ignores what it does not understand.
- Mechanism available to prioritize each branch.
- Supports proprietary functionality.
- Etiquette revision level.

The testing of an etiquette is different from a protocol.

The Benefits of Adaptability - 1

- Supports the rapid introduction of new technology.
- Supports proprietary, national and regional functions and features within public standards.
- Supports negotiation of modes, features and options.
- Selects compatible modes between different multi-mode systems while increasing system capacity.

The Benefits of Adaptability - 2

- Maintains interoperation between multiple implementations or revisions of standards.
- Moves intellectual property issues to the market.
- Identifies the specific reason(s) when interoperation fails.
- •Avoids interfering communications.

Insights Offered by the Succession of Standards

- Adaptability standards support new value systems
- Government should promote guidelines, not solutions
- Patents best applied to similarity
- Need to limit patents in compatibility standards
- Need to avoid patents in adaptability standards

Thank you

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