

# 14 Visions and Outlook

14.1 Putting the Pieces Together

14.2 Innovation and Prognoses

14.3 Trends and Visions

# Fictitious Example: University Video Platform

- Assume a large university with high international reputation wants to build upon its growing pool of video recordings from lectures and other teaching-related events
  - Large pool of video material of varying length and quality exists
  - Video pool is being expanded on a daily basis
  - Many different authors with different attitudes can potentially contribute
- Goals:
  - Material shall be made available through a common and unique portal
  - Video clips shall be retrievable based on scientifically relevant keywords (e.g. "growth", "awareness", "collaboration", "eigenvalue")
  - Foreign material (from the Web) shall be integrated
  - Composition, structuring, linking shall be created in an online community process

# Platform Considerations

- Use commercial platform (e.g. Apple iTunes U)?
  - Extensibility?
  - Control, restrictions?
- Which degree of interactivity?
- What are the target platforms?
  - Operating systems (Windows, MacOS, Linux, Android, iOS, Symbian, ...)
  - Media players (QuickTime, Flash, HTML5 etc.)
- Mobile devices (Mobile phones, tablets)

Signalling Protocols for Multimedia
Multimedia Conferencing
Multimedia Content Prod. & Management
Electronic Books and Magazines
Web Radio, Web TV and IPTV
Streaming Architectures
Multimedia Content Description
Cryptographic Techniques
Copyright and Rights Management
Communities, the Web, and Multimedia
Media on the Web, Web Applications

# Content Considerations

- Which rights do we get from the content producers?
- Do we need to protect the content against unallowed use?
- Which security measures are adequate?
  - How big is the overhead for security in terms of performance and usability?
- Do we want to create open channels with high public visibility also?

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# Metadata Considerations

- How can users find the video clip they are interested in?
- How get video clips segmented and annotated with tags/keywords?
- Who produces the standard metadata (author, duration, title, location, date, ...)?

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# Network Considerations

- Which network capacity is required, which is available?
- How can multi-user request be used to optimize distribution? (multicast etc.)
- Which organizational constraints shall be observed? (centralized / decentralized control)
- How shall responsibilities be distributed? (master/peer)

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# Collaboration Considerations

- Which degree of adaptation to users is required?
- To which degrees can users enter information into the system?
  - To which degree can we trust the users?
- Which kind of communication among users shall be integrated into the solution?
- Which kind of community shall be created? (e.g. specialized / integrated into other social networks)

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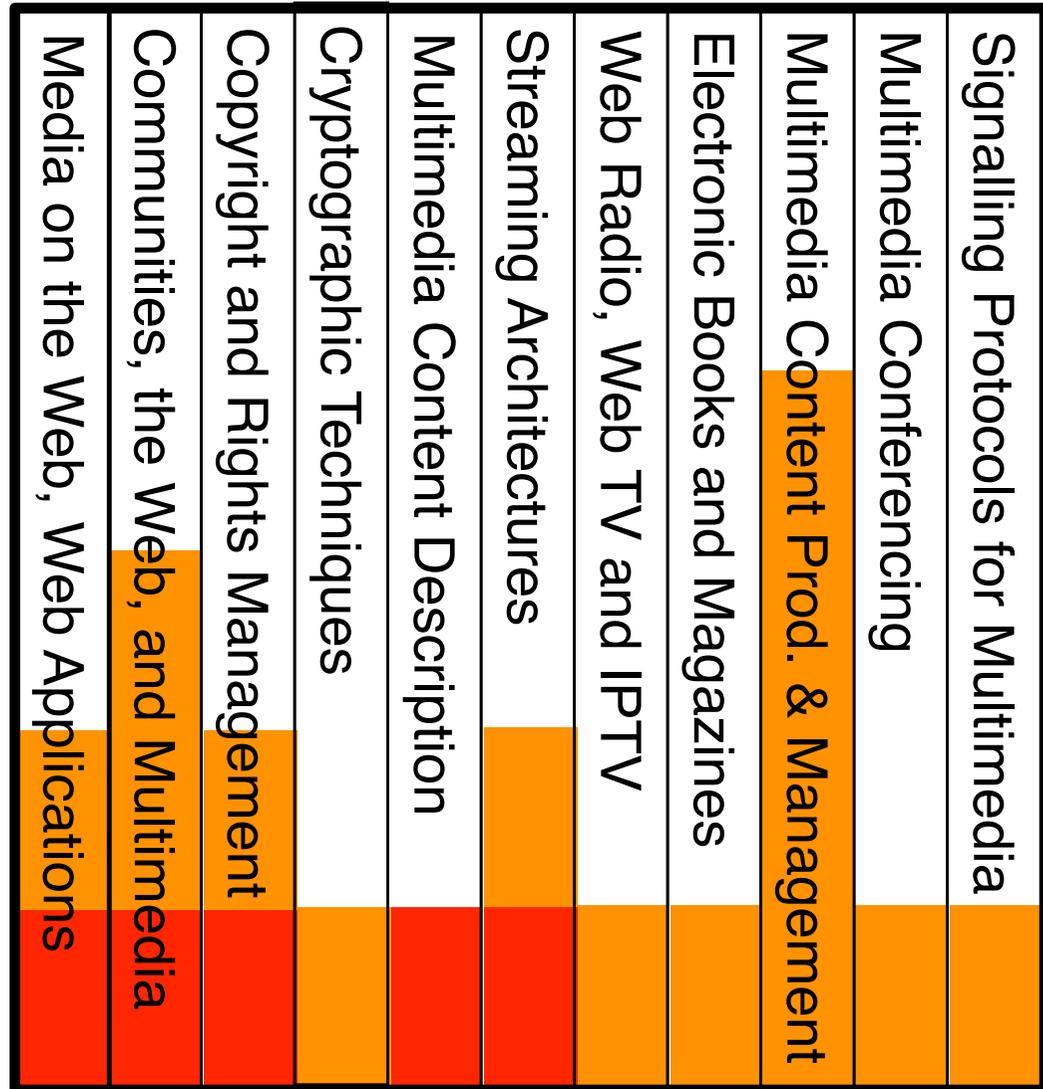
# Economic Considerations

- Which is the underlying business model?
- How can revenues be generated?
- What are the involved production chains, and how does the solution fit into them?

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# Summary: All Aspects

- All aspects are relevant for a practical project
  - Some to a higher, some to a lesser degree
  - Individual profiles of projects (in relevance of aspects) are likely
- A *system engineer* or a *product innovation responsible* needs to be aware of all the technical and non-technical aspects mentioned here **and their interplay**
  - Technical innovations
  - Social developments



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# Prognosen (1)

"Das Auto ist fertig entwickelt. Was kann noch kommen?"

Karl Benz um 1920

Quelle: Frankfurter Allgemeine Sonntagszeitung, 19.5.2002

"Das Telefon hat zu viele ernsthaft zu bedenkende Mängel für ein Kommunikationsmittel. Das Gerät ist von Natur aus von keinem Wert für uns."

Western Union, Interne Kurzinformation, 1876

"Das Radio hat keine Zukunft"

Lord Kelvin, Mathematiker und Physiker, 1897

Quelle: Newsweek 27.01.1997

"Die drahtlose Musikbox hat keinen denkbaren kommerziellen Wert. Wer würde für eine Nachricht bezahlen, die zu niemanden direkt gesendet wird?"

David Sarnoff in einer Rückmeldung zur Investition in das Radio um 1925

"Das Fernsehen wird nach den ersten sechs Monaten am Markt scheitern. Die Menschen werden es bald satt haben, jeden Abend in eine Sperrholzkiste zu starren."

Darryl F. Zanuck, Chef der 20th Century-Fox, 1946

[maxeiner-miersch.de](http://maxeiner-miersch.de)

# Prognosen (2)

"Ich glaube, es gibt einen weltweiten Bedarf an vielleicht fünf Computern."  
IBM-Chef Thomas Watson im Zweiten Weltkrieg  
*Quelle: Ute Dorau und Peter Woeckel, "Jobreport Informationstechnologie", München 2001*

"Es gibt keinen Grund, warum irgendjemand einen Computer in seinem Haus wollen würde."  
Ken Olson, Präsident, Vorsitzender und Gründer von Digital Equipment Corp., 1977  
*Quelle: NZ-Herald, 15.12.2008*

"Also gingen wir zu Atari. Und sie sagten, ‚Nein‘. Dann gingen wir zu Hewlett-Packard, und sie sagten, ‚Hey, wir brauchen Sie nicht, Sie haben das College noch nicht abgeschlossen‘."  
Apple Computer Inc. Gründer Steve Jobs über seine Versuche, Atari und H-P an seinem Personal Computer zu interessieren

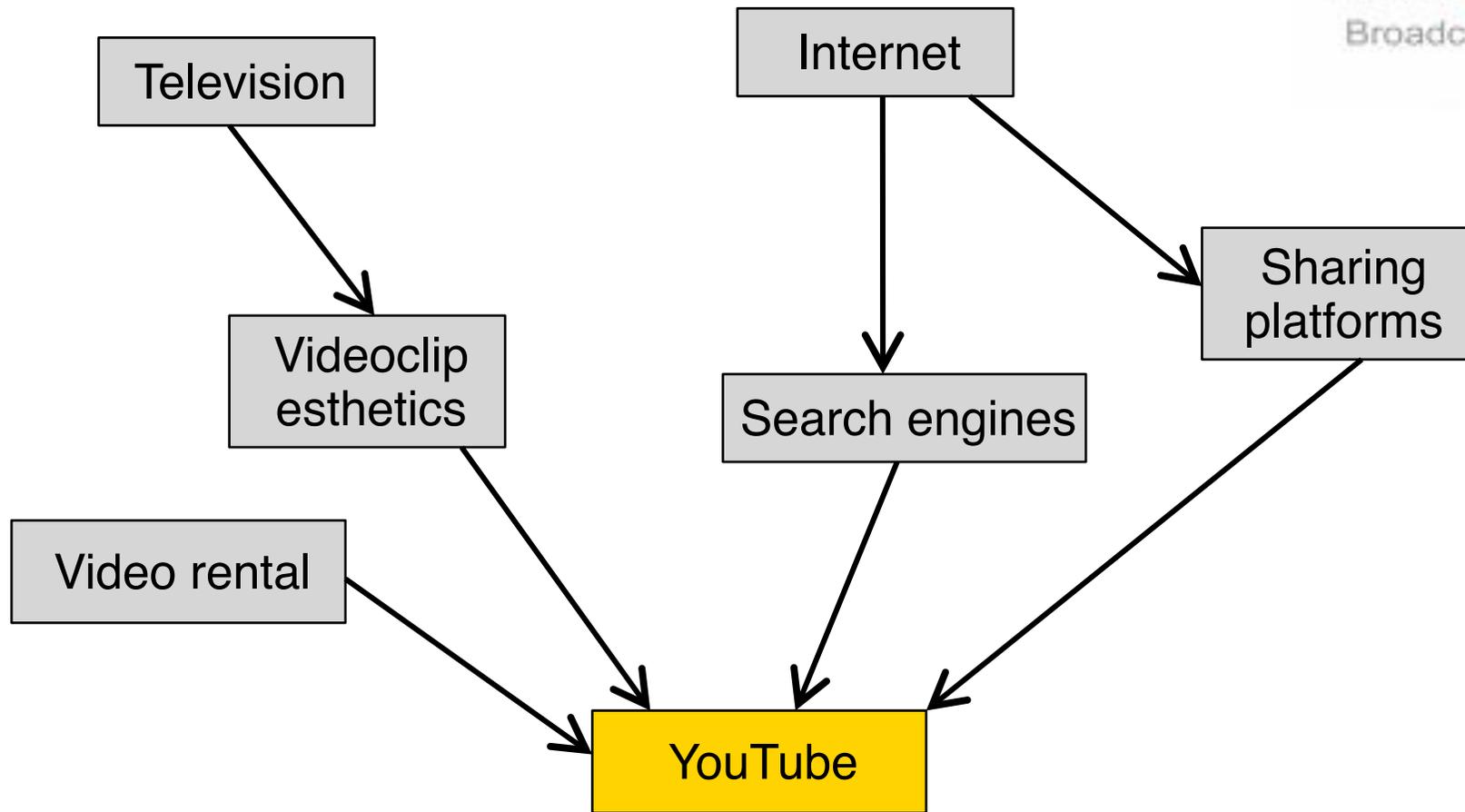
"In zwei Jahren wird das Spam-Problem erledigt sein."  
Bill Gates, 2004  
*Quelle: NZ-Herald, 15.12.2008*

"Das Internet wird kein Massenmedium, weil es in seiner Seele keines ist."  
DIE WELT, 24.03.2001

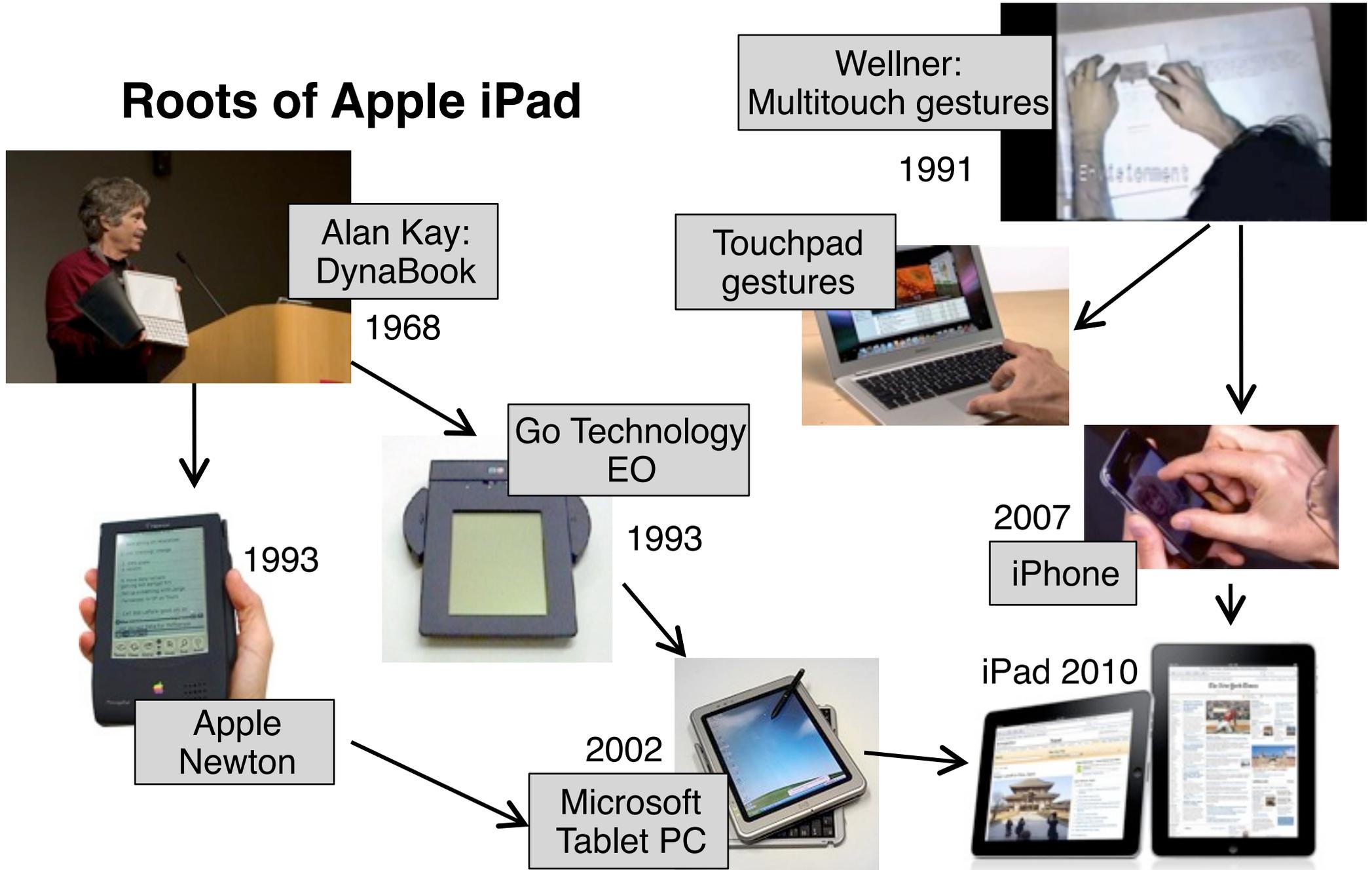
# Revolutions and Evolution

- Technological revolutions:
  - Roots in different areas of science (e.g. Laser, Public/Private-Key)
- Transfer revolutions:
  - Known techniques applied in new domain (e.g. Bezier curves)
- Recombination revolutions:
  - New combination of known techniques (e.g. Smartphones)
- *Appropriation* of new technologies does not follow revolutionary scheme but proceeds in evolutionary way:
  - Slow social processes
  - Adaptation of behavioral patterns
  - Learning processes
  - Reputation building

# Roots of YouTube



# Roots of Apple iPad



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# Obvious Trends

- Multimedia is not dead at all
  - Modern devices (see iPad) target multimedia mainly
    - » Example multimedia newspaper
  - Multimedia Revolution is still going on
- Networks are being expanded all the time
  - Higher bandwidth
  - Better interoperability
  - Convergence of technologies
- So "Networked Multimedia" is the future, simply?

# Speculations (1)

Home environment:

- Assumptions:
  - Network capacity sufficient for mass-delivery of HD video
  - Text input "from the couch" (in a TV setting) is solved satisfactorily
    - » Mobile phones or tablets replacing remote control?
- Consequences:
  - There is no real need for home storage of media data
  - All consumed media can be streamed
  - Terrestrial/satellite/cable broadcasting may disappear
  - No CD/Blu-Ray players, video recorders, home media servers anymore
  - Personal Video Recording becomes a "cloud" service
- Forces against this trend:
  - Industry interest in selling diverse specialized devices (home electronics vs. Internet-based service providers)
  - Human interest in physical ownership of property, in haptic experience

# Speculations (2)

Mobile environment:

- Assumptions:
  - Mobile network capacity sufficient for mass-delivery of low-resolution video
  - Power consumption / battery capacity problem sufficiently solved (E.g. better batteries, lower energy consumption in screens and networks)
- Consequences:
  - Newspapers and magazines may be replaced by online multimedia
    - » Print media usage goes down, new interactive media evolve
  - Mobile music/video players have unlimited access (at most locations) to owned media content
    - » No synchronization, media "left home"
- Forces against this trend:
  - Technological assumptions may be too optimistic
  - Human interest in independence from electric power, haptic experience of reading a newspaper/magazine

# Experience is More Than Trends

- Steve Jobs said several times during the iPad presentation:
  - "You have to feel this experience." (or similar)
  - Better graphics plus good design plus immediate response **make** a difference in experience
- New media solutions can be successful only
  - if the experience during usage is at least as fascinating / convenient as with traditional media
  - if they build on existing behavior patterns and product concepts (e.g. book, magazine, TV channel) but go beyond them
- Completely new concepts may appear at any time
  - The term "Internet" exists since less than 30 years! (1974)

“When we stop talking about the technology,  
that’s when it will be here.”

Norman Gaut