



Podcasting Photogrammetry – A Contribution to Life-Long Learning

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1. Introduction

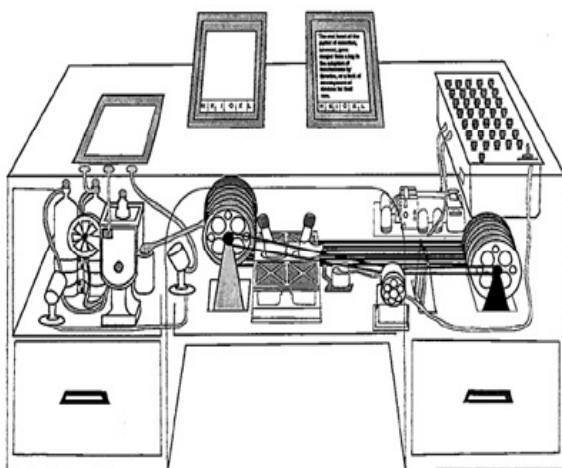


Vision of mankind: „Locations of diversified knowledge“

- Ancient library of Alexandria / Egypt (288 BC – 642 AD)
served as: academy, research center, meeting point of intellectuals



1. Introduction: The Memex of V. Bush



Drawing of Bush's theoretical Memex machine (Life Magazine, November 19, 1945)

Vision of V. Bush (1945)

- Rapid Selector: microfilm storage and retrieval device led to
- Memory Expander (Memex): A prototype hypertext system, foreshadowed modern computer and hypertext linking

Memex performance

- electronically linked to a library
- able to display books and films
- follows automatically cross-references (links)



1. Introduction: Internet trends

- Evolution of the Internet, the Web and Web-based services
 - Largest mankind's knowledge depository – Google Books
 - Web 2.0
 - Localized content
 - Easy access to content and services of all kind
 - 3D Imagery/Map interfaces: Google Earth, Microsoft Virtual Earth
 - Joining 3D Digital worlds and augmented worlds
 - News, music, movies, videos, teaching units, etc.
- Excellent mobile communication networks (2G, 2.5G, 3G)
- Broadband Internet access (LAN, WI-FI, WIMAX)
- Human Computer interaction and user generated content (YouTube - MySpace – Flickr – Digg - Facebook/StudiVZ/Xing, SecondLife)

1. The Apple iPod hype



The iPod family and the iTunes MusicStore



Copyright: Apple

1. Introduction: University teaching



- Past: **“Teaching was not sexy!”** (for most of the professors)
 - too time-consuming
 - more burden than fun and interest (for both, the profs and students)
 - prevents from research (where the profs get their acknowledgements)
 - often delegated to the professors associates
 - teaching material was hardcopy and often old-fashioned
- Present: **“Teaching is as important as research!”**
 - too less students in engineering and sciences
 - computer kid generation expects state-of-the-art teaching
 - today’s students are very flexible and mobile, use mobile devices
 - student’s don’t like the ‘dictatorship’ style teaching
 - teaching material must accessible anytime and anywhere
- Future: **“Advanced teaching is a driving force to fill the universities!”**
 - teaching units are rated (by worldwide student peers)
 - teaching/lecture archives generate business and revenues
 - Life long learning has to be TRAINED by advanced university teaching

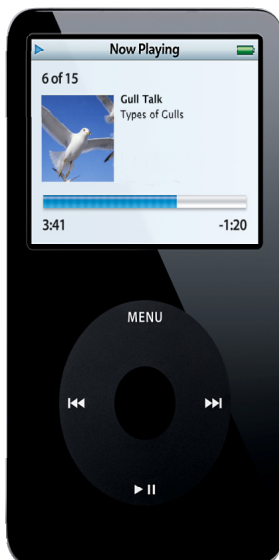
2. What is Podcasting?

iPod

Podcasting

Broadcasting

Mobile Access



audio
video
ppts
pdfs
...

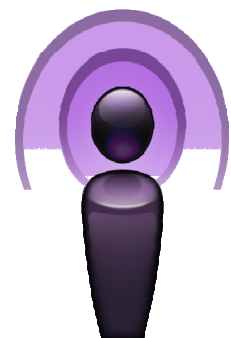
Delivering

Deliver and Access resources



Anywhere!

Anytime!



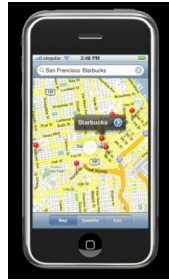
2. Podcast devices



- The iPods, notebooks and other computers



- Further devices



- devices tomorrow
 - hidden in your suit and shirt
 - small display devices for your regular glasses



3. Models for Podcasting – University Podcasts



In Class

| Curriculum | | | | Aggregation | | | |
|----------------|-----------|----------------|---------|---------------|------------|-----------|--------------|
| | | | | | | | |
| Course Podcast | Languages | Slides & Notes | USB Key | Documentaries | Newspapers | RSS Blogs | Edu Podcasts |

On Campus

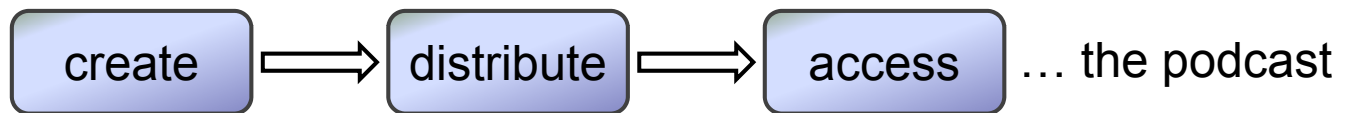
| Academics | | | Infrastructure | | |
|----------------|---------------|----------------|----------------|--------------------|----------------|
| | | | | | |
| Class Schedule | Announcements | Dean's message | Campus Tour | Driving Directions | Cafeteria Menu |

After Class

| Collaboration | | | | Leisure | | |
|---------------|------------|--------|--------------|---------|-------|-------|
| | | | | | | |
| Clubs | Group Work | Sports | School Radio | Videos | Music | Photo |



Models for Podcasting (video podcasts)



- (a) audio + screen: annotates the softcopy lecture notes (txt, doc, ppt, pdf files)
... all you need: presentation computer, 10 US\$ micro, SW (record, software generation)
- (b) audio + video: renders the (annotated) teaching unit with audio and video (although ext. of (a) by video)
... all you need: blackboard (or presentation computer), video camera, SW (video processing, podcast generation)
- (c) multiplexed classroom computer's podcast: Instruction and students look at individual computers, which are synchronized
... all you need: SW for computer synchronization (and possibly (a) or (a) + (b))



Models for Podcasting (video podcasts)



- decide about the video format



| resolution | bandwidth |
|-------------|-------------|
| 176 x 144 | 50-160 kbps |
| ⋮ | ⋮ |
| 640 x 480 | 1-2 Mbps |
| ⋮ | ⋮ |
| 1280 x 720 | 5-6 Mbps |
| ⋮ | ⋮ |
| 1920 x 1080 | 7-10 Mbps |

- Process the raw recording and generate the podcast



3. Models for Podcasting – Access through iTunes U



4. Podcasting photogrammetry + related disciplines

- Visions: „KISS (Keep It Simple Stupid)”
 - Avoid completely blackboard writing and notes
 - Deliver asap the annotated lecture notes in pdf format
 - Create two podcast formats: QVGA and VGA
- Tools : “Off-the-shelve HW and SW”
 - Notepad computer (to allow for digital notes)
 - Camtasia Studio 4 (of TechSmith) SW for recording
 - “off-the-shelve” micro for € 4.95

➔ Poor man's podcast production environment

4. Podcasting photogrammetry + related disciplines



ifp workflow for podcast creation

- (1) select the portion of the lecture notes (any data format) and convert it to a journal file (jnt)
- (2) start Camtasia Studio 4 recording SW, sampling ≥ 7 fps
- (3) present your lecture in front of the students, annotate the notes
- (4) store the annotated lecture in *.jnt, print a *.pdf and put it on the Web – store the raw video file for editing, postprocessing and podcast production

➔ Examples: Annotated lecture notes, Podcast 640*480



5. Conclusion



Present: Experiences

Pilot phase winter semester 2006, most of the lectures and exercises in photogrammetry, digital signal processing, statistical inference and geoinformatics were podcasted in summer semester 2007

- Excellent feedback by the students (extra student eval)
- Students don't miss the lectures, we present on-campus
- Just in case student cannot participate in the oral lecture the download help

Very simple, efficient with good echoe!

Future: Archive of teaching units, contribute to the "Best-of ..."

- Every presentation can be digitally archived (in any podcast format)
- New business models or Open Course Ware free-of-charge?
- Life-long-learning on demand, anytime and anywhere is easy to realize

