

VK Multimedia Information Systems

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Agenda



- Topics & goals
- Modalities & examination
- Schedule

- What is **information**?
- What are **information systems**?
- The information overload
- Current state in *MuMe* consumption

C.V.



- Technische Mathematik an der TU Graz
- Doktoratsstudium Telematik

- 98-01 Entwicklung von Web-Applikationen
- 01-06 Know-Center in Graz (KPlus)
- 05-06 Ass. am KMI / TU Graz
- 06-14 Ass. am ITEC / Uni Klagenfurt
- 14- .. Assoc. Prof. ITEC / Uni Klagenfurt

Course Topics



Multimedia Databases

Multimedia Management

Social Media Sharing

Video Analysis

Metadata

Data Mining

Digital Audio

Information Retrieval

Social Networks

Image Processing

Retrieval Evaluation

Goals I



Basic (and a little more) understanding of

- Multimedia retrieval
- Multimedia analysis
 - images in the spatial domain
 - audio & video processing
- Multimedia databases & meta data

Goals II



- Overview on state of the art
 - who is who in research
 - what to read if I want to know more?
 - available tools in development
 - de facto & de jure standards

Goals III



- Providing a solid base for
 - further research,
 - consulting and
 - practical development
- in the area of
 - multimedia information retrieval
 - multimedia information systems
- and: hands on experience!

Modalities



Multimedia Information Systems ist eine
„prüfungsimmanente Lehrveranstaltung“

A positive grade is based on

- some few mandatory exercises / readings
- ongoing collaboration
- and a project (implementation & presentation)

Modalities



Projects are

- Practical implementations of *MMIS* / *MIR*
- Research work & studies

Projects topics will be

- ... assigned after Easter holidays
- ... assigned to groups or individual students

Team Work



- Preferably teams of 2 students
- TEAM = „Toll-Ein-Anderer-Machts“ ?



Projects



- Topics:
 - LIRE
 - Applications using LIRE
 - Extensions to LIRE
 - LIRE Solr
 - Mobile apps using LIRE Solr
 - ...
 - Anything with MIR
 - Tracking the use of assets in documents
 - Finding duplicates in photo streams
 - Media monitoring
 - ...

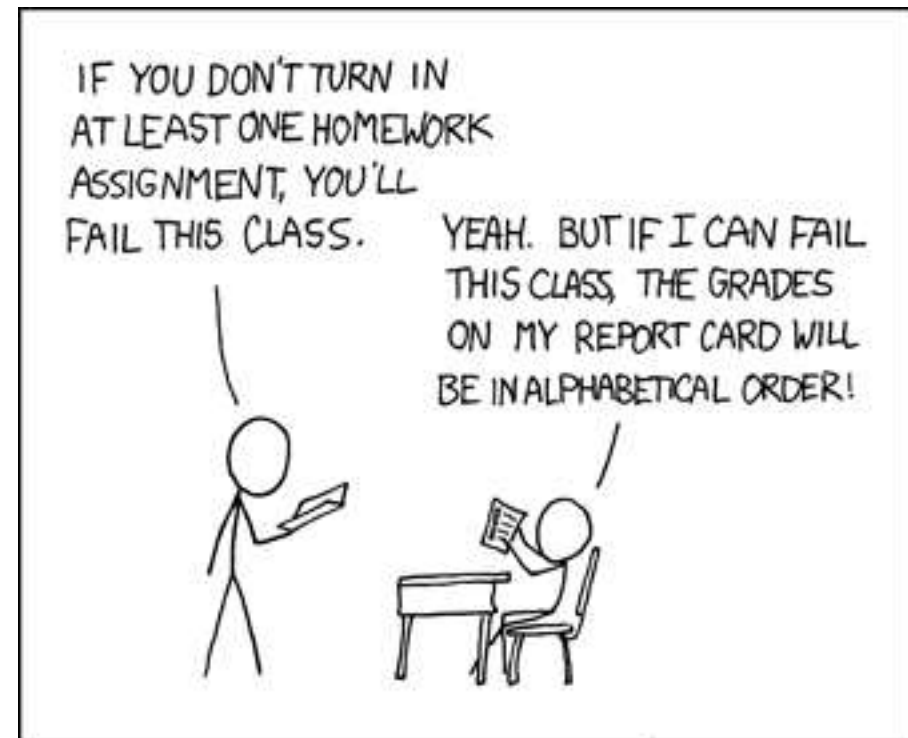
Grades



Grade is derived from:

- 1/3 Exercises
 - Pen & paper
 - Readings
- 1/3 Project
 - Implementation
- 1/3 Presentation

<http://www.xkcd.com>



Schedule



- See web page

Questions?



Any questions regarding organizational issues left?

Preliminaries



- What is research?

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What is Information?



Definition of Aamondt and Nygard (1995) :

- Data
- Information
- Knowledge

Aamodt, A. & Nygard, M. "Different roles and mutual dependencies of data, information, and knowledge - an AI perspective on their integration" Data Knowl. Eng., Elsevier Science Publishers B. V., 1995, 16, 191-222

Data

Aamondt und Nygard (1995)



Data are syntactic entities

- Patterns without meaning
- Input to an interpretation process

Example:

- Bits & Bytes of a JPEG encoded image

Information

Aamondt und Nygard (1995)



Information is interpreted data

- Information is data with meaning
- Output from interpretation
- Input to knowledge based process

Example:

- Decoded (and displayed) JPEG image

Knowledge

Aamondt und Nygard (1995)



Knowledge is learned information

- Incorporated in an agents (software / human) reasoning resources
- Ready for active use
- Output of learning process

Example:

- There is a dog shown on the JPEG image

What is Information?



Definition of Zeleny (1987):

- Data
- Information
- Knowledge
- Wisdom

Zeleny, M. "Management Support Systems: Towards Integrated Knowledge Management" Human Systems Management, 1987, 7, 59-70

What is Information?

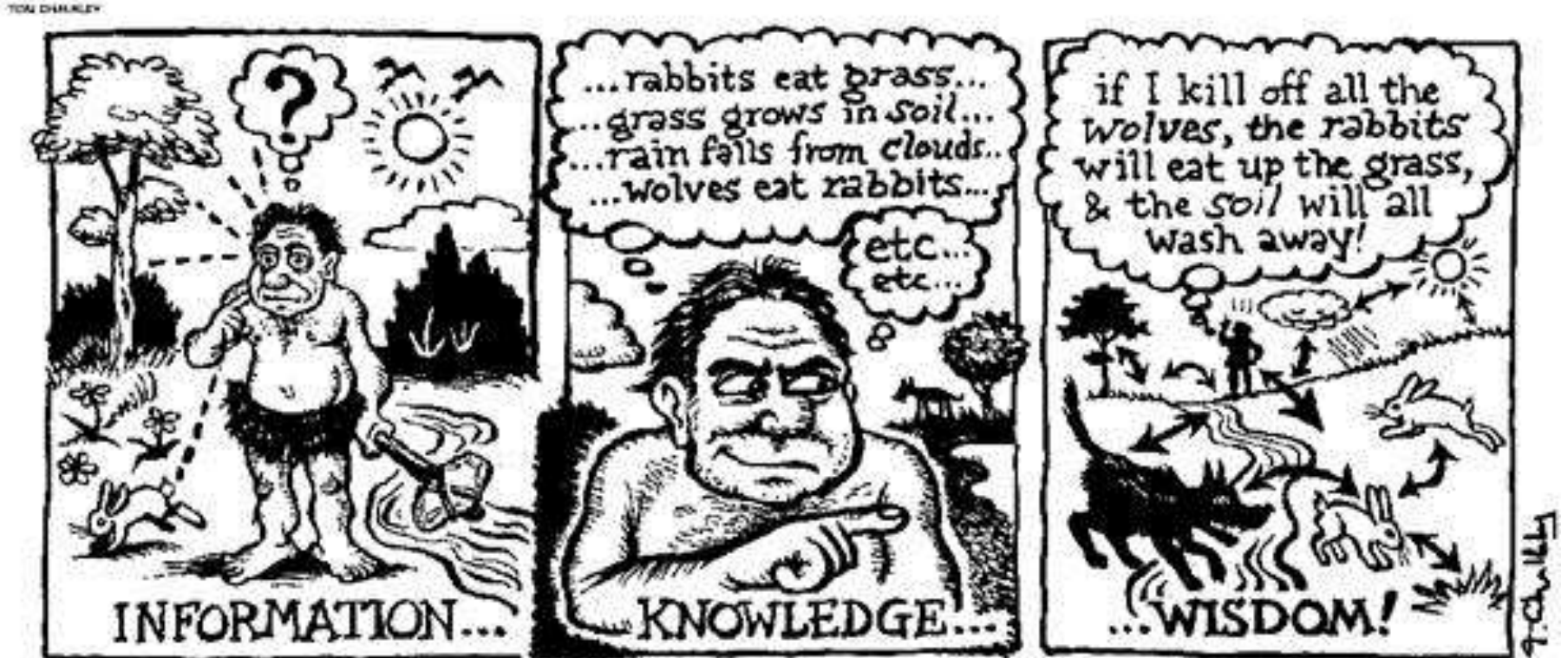


Image originally published in the December 1982 issue of THE FUTURIST, taken from http://www-personal.si.umich.edu/~nsharma/dikw_origin.htm

The DIKW Hierarchy



Definition of the DIKW levels:

Data	Know nothing
Information	Know what
Knowledge	Know how
Wisdom	Know why

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What are Information Systems?



- Systems for handling information
 - collect, store & organize
 - process, disseminate & transmit
- Three main parts in these systems
 - people,
 - machines &
 - methods

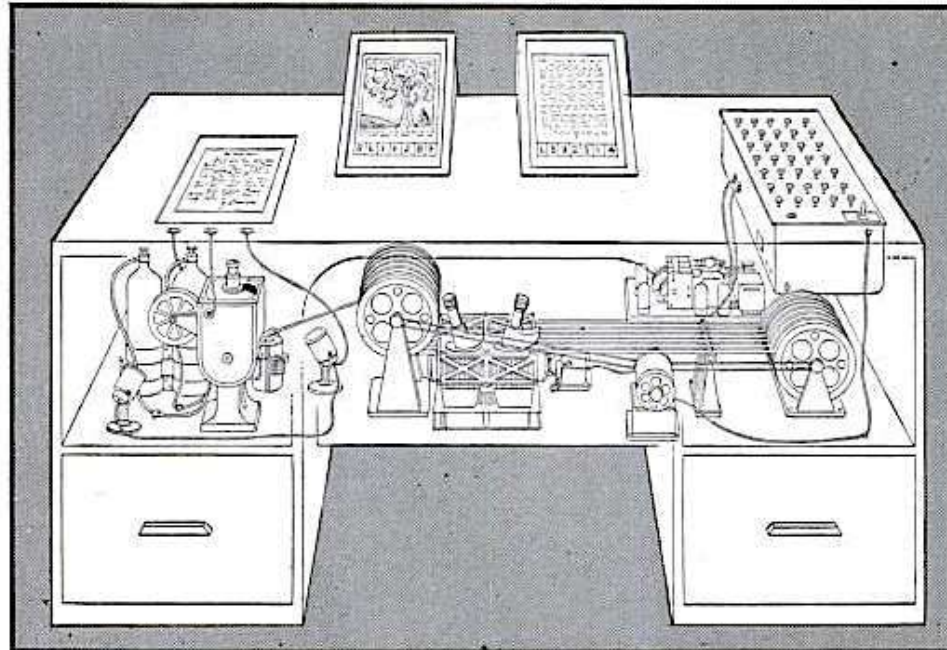
MEMEX



Memory Extender - Vannevar Bush

- Published in 1945 (Atlantic Monthly)
- An electromechanical device for
 - viewing books and films
 - adding information and comments
 - interlinking information
 - browsing links
- MEMEX is an early hypertext system

MEMEX



MEMEX in the form of a desk would instantly bring files and material on any subject to the operator's fingertips. Slanting translucent viewing screens magnify supermicrofilm filed by code numbers. At left is a mechanism which automatically photographs longhand notes, pictures and letters, then files them in the desk for future reference.

AS WE MAY THINK CONTINUED

Multimedia IS



- Focus on multimedia data & meta data
 - storage, transmission
 - search & retrieval
 - organization & dissemination
- Media types
 - textual / visual / auditive / haptic / olfactory
 - rastered or rendered / modelled
 - Midi vs. MP3
 - VRML vs. PNG
 - LASER vs. MPEG-2

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YouTube

(Mar 2013)



- Over 800 million unique users visit YouTube each month
- Over 4 billion hours of video are watched each month on YouTube
- 72 hours of video are uploaded to YouTube every minute
- 70% of YouTube traffic comes from outside the US

Source: <http://www.youtube.com>

fotocommunity

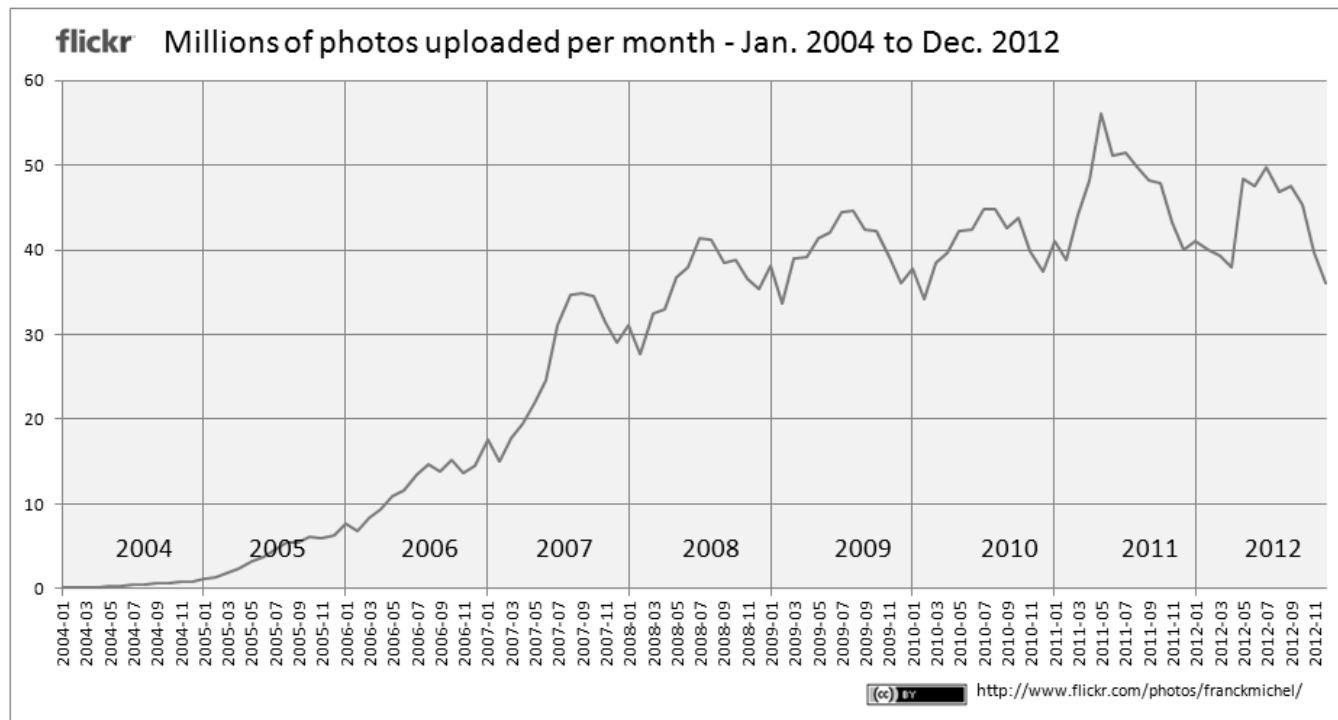


- Each day
 - 9,300 new photo uploads
 - 60,000 photo reviews (comments)
 - 450 new amateur photographers
- In the data base
 - 170 Million photo reviews (comments)
 - 20 million photos
 - 1,000,000 members

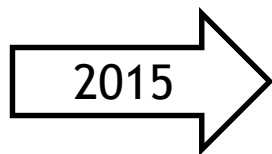
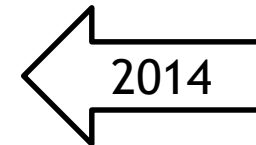
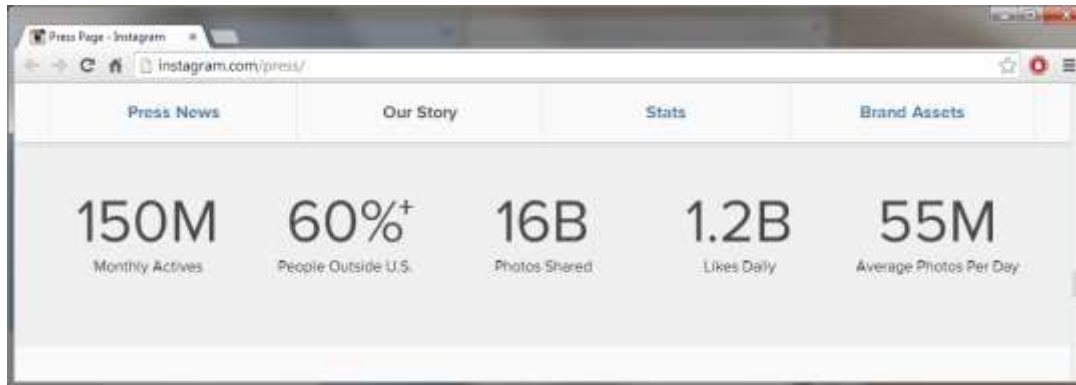
Source: <http://www.fotocommunity.net/en/about-us/the-fotocommunities.html>, 2014



How many photos are uploaded to Flickr every day, month, year?



Instagram



Src. <http://instagram.com/press/>, 2014-03-04 & 2015-03-03

Facebook

(Aug. 2012)



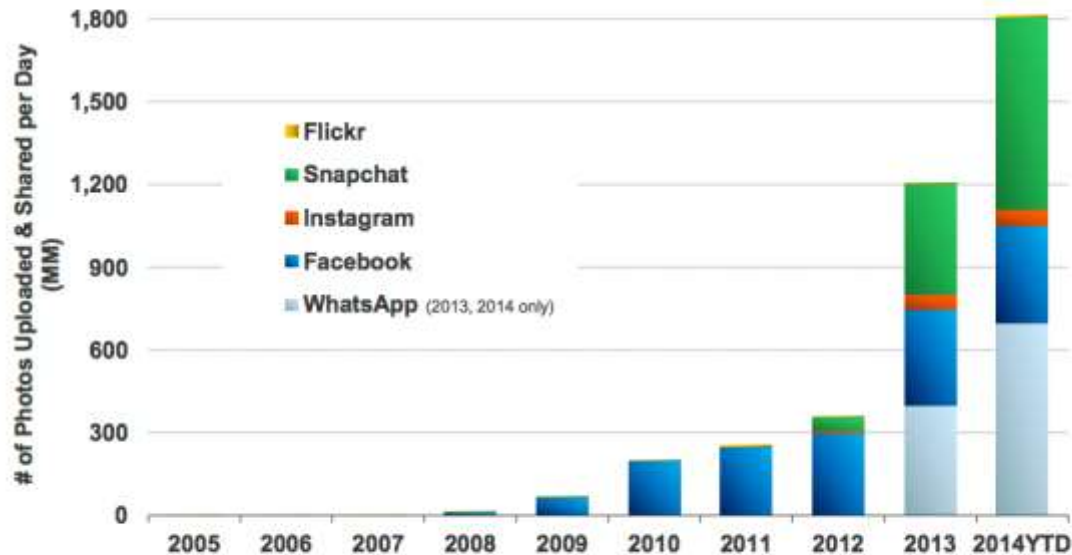
- Facebook processes more than 500 TB of data daily
- 2.7 billion likes made daily on and off of the Facebook site
- 300 million photos uploaded / day
- 1.1 billion photos uploaded on New Years Day & Eve 2012
- 70,000 queries executed by people and automated systems

up to 2014 ...



Photos Alone = 1.8B+ Uploaded & Shared Per Day...
Growth Remains Robust as New Real-Time Platforms Emerge

Daily Number of Photos Uploaded & Shared on Select Platforms,
2005 – 2014YTD



@KPCB

Source: KPCB estimates based on publicly disclosed company data, 2014 YTD data per latest as of 5/14.

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Agenda

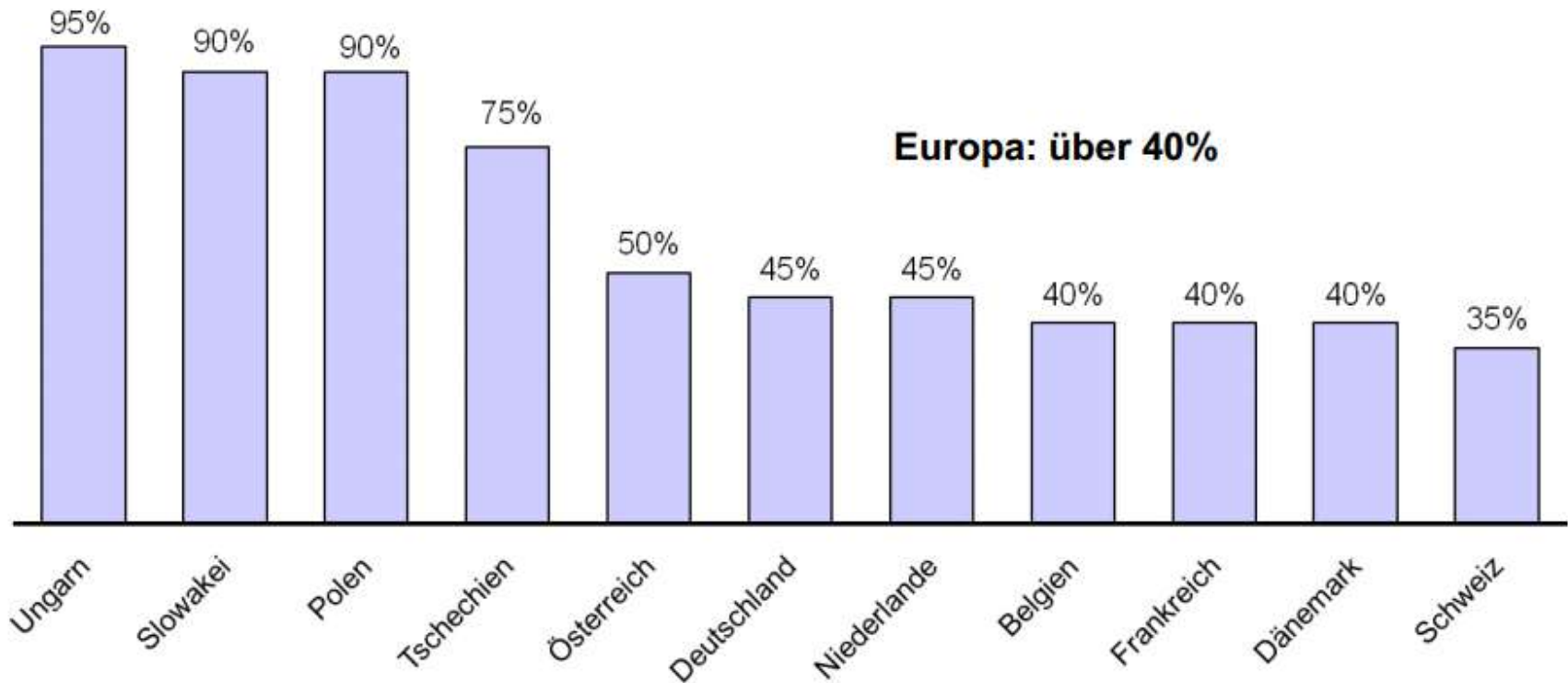


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- **Current state in MuMe consumption**

CEWE Color



Marktanteile CEWE COLOR am industriellen Fotofinishing

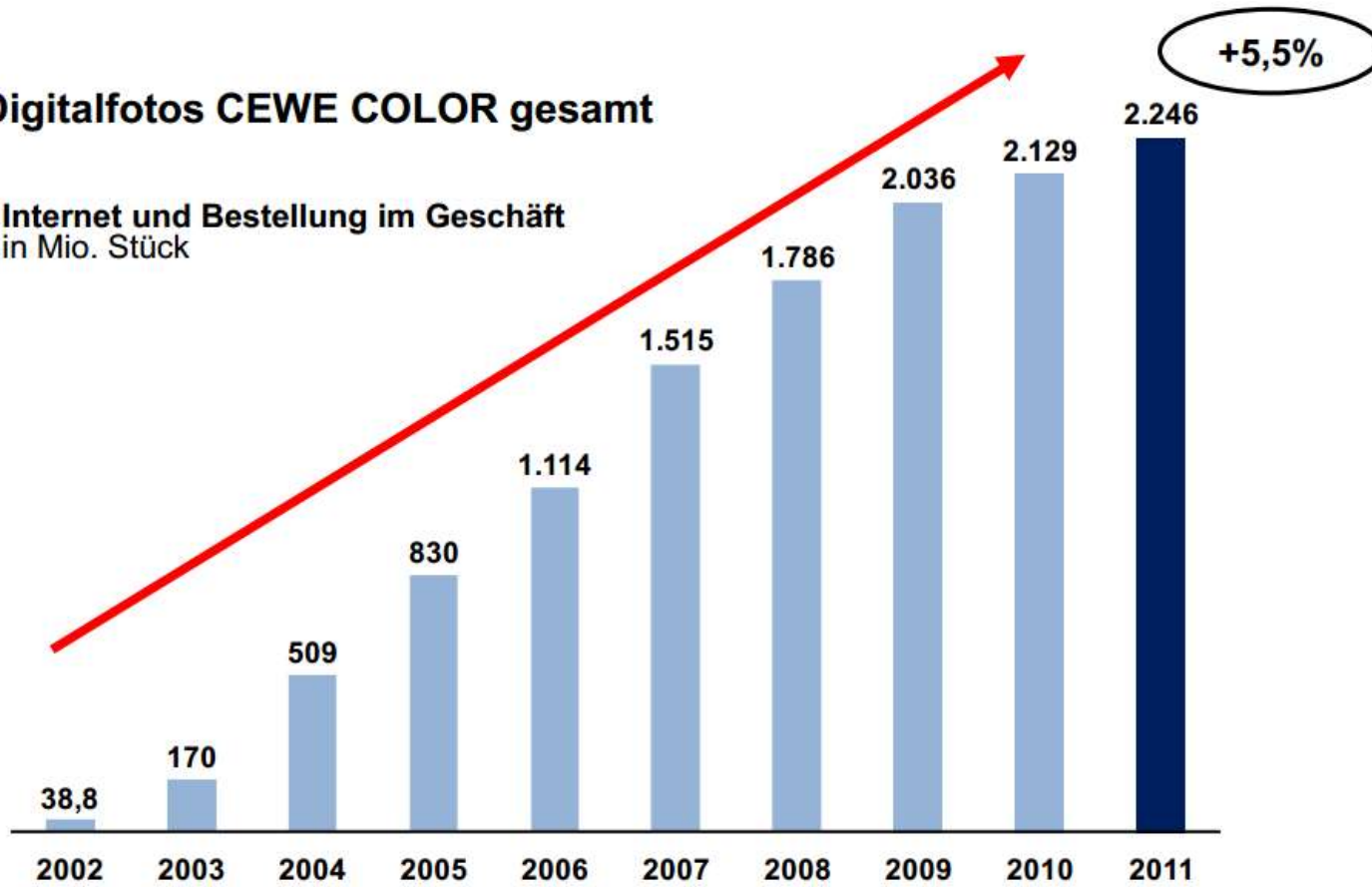


CEWE COLOR



Digitalfotos CEWE COLOR gesamt

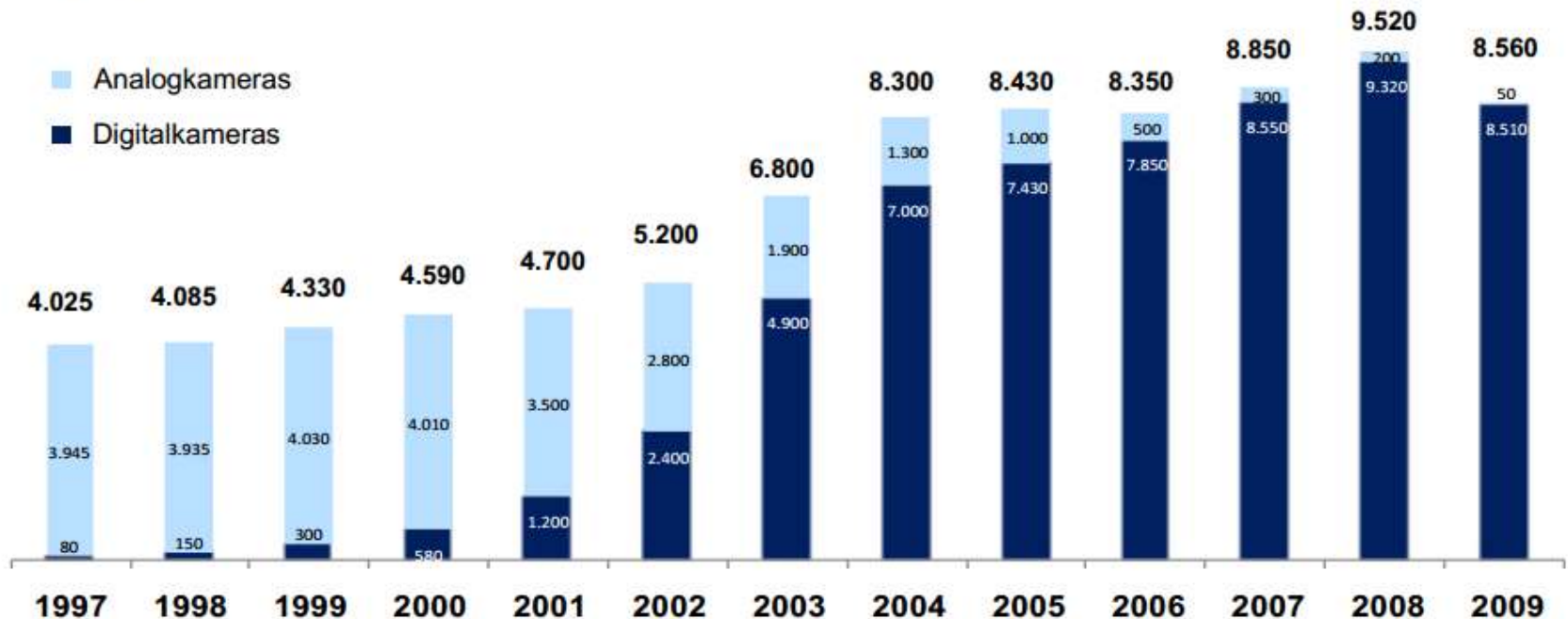
Internet und Bestellung im Geschäft
in Mio. Stück



CEWE COLOR

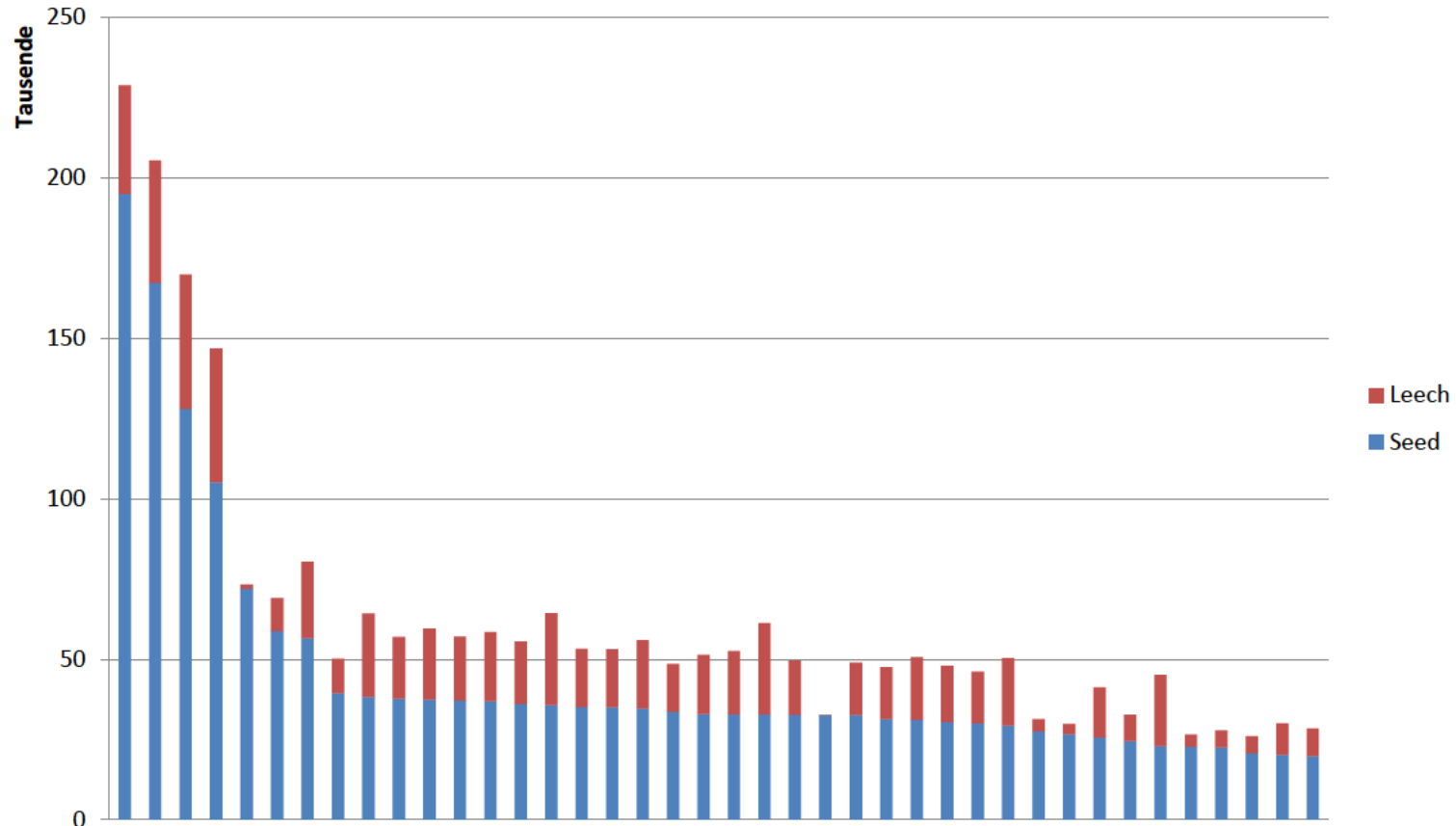


Kameraverkäufe in Deutschland in Tsd. Stück



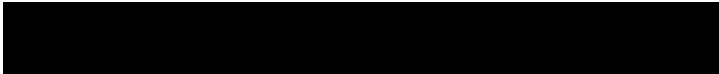
Top Movie Torrents

(*isohunt.com / Mar, 2013*)



Your Tasks ...



- Reading 01: Introduction to Rijsbergen's book
 - Data vs. Information
- Reading 02: Get started with Lire
 - Download the book (7z, )
 - Read chapter 1 and use chapter 1.2

Thanks ...



... for your attention!