

# Modern Interactive Internet Services

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# Changing Internet in a Changing World

- Now Internet is really ubiquitous
- Internet now is not only for restricted number of professionals (as several years ago) but is really world-wide
- After the autumn 2001 (famous "DotCom Bubble") crisis perspectives of Internet and web-services were considered to be exhausted
- As usual only some specific technologies were really exhausted but not the whole Internet



# Web 2.0

- 30 of September 2005 is a birthday of new Internet paradigm - Web 2.0
- Tim O'Reilly – godfather of Web 2.0
- Main features of Web 2.0
  - Interactivity
  - Web access to databases
  - Software as a Service
- «The bigger the number of users the better is information quality»



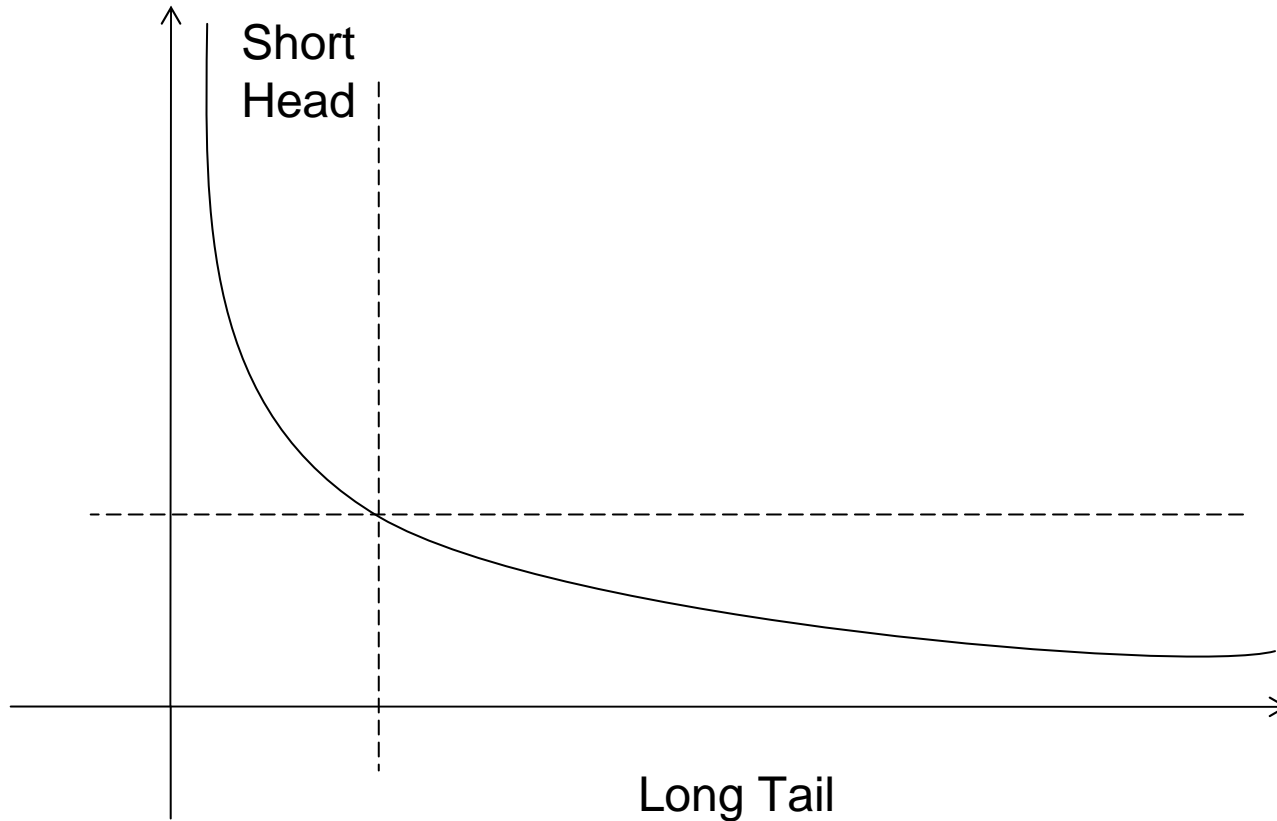
# Examples of Web 2.0 services

- Social Networks (FaceBook, MySpace, etc)
- Wikipedia
- Peer-to-peer services (every user is not only an information receiver but also retransmits it)
- Car routers (there is small radio router in every car (30-50 m) but if there are many cars information could be transmitted for many km)
- Traffic jam indicators (almost every driver has a mobile phone in his pocket, it sends car's position to some server)



# Long Tail

- 15 percent of customers generate 85 percent of income





# Examples

Another 85% of customers which generate 15% of income (usually called “long tail”) was hard to be covered and many sellers ignored them:

- Rare content (old films, music which is not too popular, etc)
- Specific communities (SAP, classic ballet lovers, functional programming languages society)



# Current Internet trends

- More and more wide coverage and modern services expansion on to new user categories
- Internet, Personal Computers (PC) and Mobile Devices (MD) Convergence
  - Today MD is a powerful computer
  - More and more users work in Internet and receive e-mails on mobile phones
  - There are specific and widely used tools for PC and MD synchronization
  - In Internet already appeared sites with expansion .pda oriented for MD usage



# Difficulties of PC and MD convergence

- The largest part of information in Internet is formatted in accordance with PC requests (screen size and resolution, expected Internet traffic, etc.)
- We can't use simple porting of «PC-based» services on to MDs, redesign is necessary
- Technological restrictions (there is no convenient, universal and simple enough technology)
- The most successful mobile online services were initially created specifically for mobile platforms (Google Maps, Opera Mini, YouTube-client)





# MDs' advantages

Fast growth of MDs' possibilities gives new opportunities for new mass Internet services because of several advantages of MDs:

- Always switched on
  - Always in your pocket
- } proactive
- High level of personal identification
  - Possibility of positioning (geo-location )
  - Additional (as on PC) user groups:  
housewives, drivers, etc



# MDs' restrictions

- Restricted input possibilities
- Restricted screen size
- Radiochannel (traffic) capacity restrictions
- Battery supply (weak «hibernate» mode)



# Current application development trends

Specific for every MD type clients for definite services

- High cost of applications because of individual development
- “Long tail” of users is not covered by services, in this cases only poor Web is provided
- 2 approaches are popular now:
  - Native Platform-centric – development of services as native applications for each specific platform
  - Service-centric - creation of services on the base of unified middleware operating equally on different platforms



# Native platform-centric approach

- Rich functionality
- Advanced UI provided by native platforms:
  - iPhone
  - Android
  - Nokia (Qt)
  - Samsung (Bada)
- Restrictions:
  - high complexity of native applications development
  - isolation of native applications within their platform ecosystems



# Service-centric approach

- More suitable for development of mass services that should be able to work on different types of mobile devices (Mobile AJAX as the only current example)
- The main advantage of such approach is its universality
- Main drawbacks
  - functional restrictions
  - high resource consumption



# Ubiq Mobile platform

- Terminal architecture
- Interactive graphical interface
- Proprietary binary protocol over TCP/IP
- Support of various mobile platforms (Symbian, Java EE, Windows Mobile)
- Easy-to program
- Traffic savings
- Positioning abilities
- Targeted to wide range of MDs including relatively simple phones



## Web 2.0 services in essence

- Leveraging energy of people’s social activities (communications, content exchange or even just driving in the city with a mobile device in the pocket)
- Demonstrating self-growing, self-development behavior
- Efficient if potentially infinite
- Can be considered as a particular case of wider category of “social-like” systems



# Other examples and adjacent areas

- Open-source communities
- FIDOnet
- Social software
- Self-managing adaptive systems
- Large-scale distributed systems (LSDS)
- Autonomic systems





## Unexplored research area

- Clear and strict definition of the class of systems under consideration
- Classification of systems
- Understanding nature of feedbacks that drive systems' growth and development
- Building simple models
- Analysis and research of systems' dynamic behavior; looking for some numeric criteria



# New paradigm of software development for Web 2.0 systems

- Rick Kazman: self-growing Web 2.0 services relate to the traditional software applications in much the same as the city relates to individual buildings
- Traditional notions like architecture, efficiency, reliability, security, scalability etc. differ for mobile applications
- Compact and tight kernel vs loose periphery
- Usability as key factor for success



# Business models

- In spite of fast growth and plenty of users of Web 2.0 systems – lack of adequate business models
- Free expansion vs necessity to collect money
- Google AdSense/AdWords as one of a few successful approaches
- Most of business models come to
  - Advertisement-based
  - Basic package is free; extra fee for additional functions/components/services/...
  - Subscription fee (for professional services)
- Micro payments



# Mobile Web 2.0 Services

- Expand target auditory by providing “non-computerized” people with modern online services
- Work always and everywhere (including slow GPRS connections and cheap \$100-\$200 mobile phones)
- Easy-to-program, easy-to-deliver
- Service-centric approach rather than platform-centric

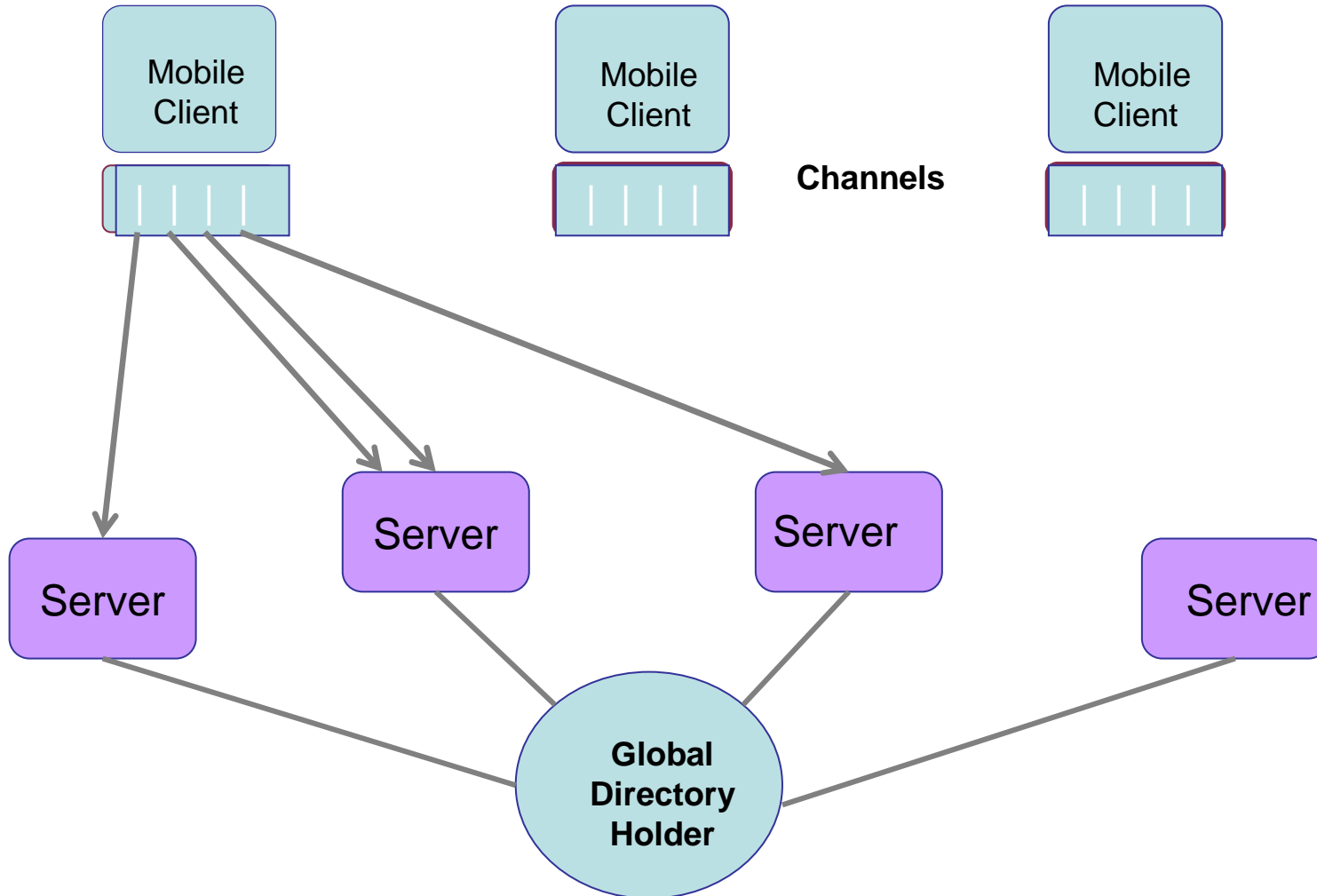


# Ubiq Mobile – objectives

- Providing ability of creation Web 2.0 mobile services for broad mass of “regular” developers
- Target category of applications – specialized “niche” services
- Providing wide auditory of users (including those with simple and cheap handsets) with modern, efficient and non-expensive Web 2.0 services



# Ubiq Mobile network





# Ubiq Mobile – key points

- Terminal “mainframe-like” architecture
- Uniform client component for all supported devices
- Graphical data exchange via custom protocol
- Using sophisticated mathematical algorithms
- Server for Microsoft.NET
- Clients for Symbian, Windows Mobile and Java ME



## Ubiq Mobile – key features

- High interactivity
- Rich user experience
- Traffic optimization
- Energy saving standby mode
- Users' sessions persistence
- Support of positioning
- Work on slow connections (GPRS, EDGE)
- Easy development of applications



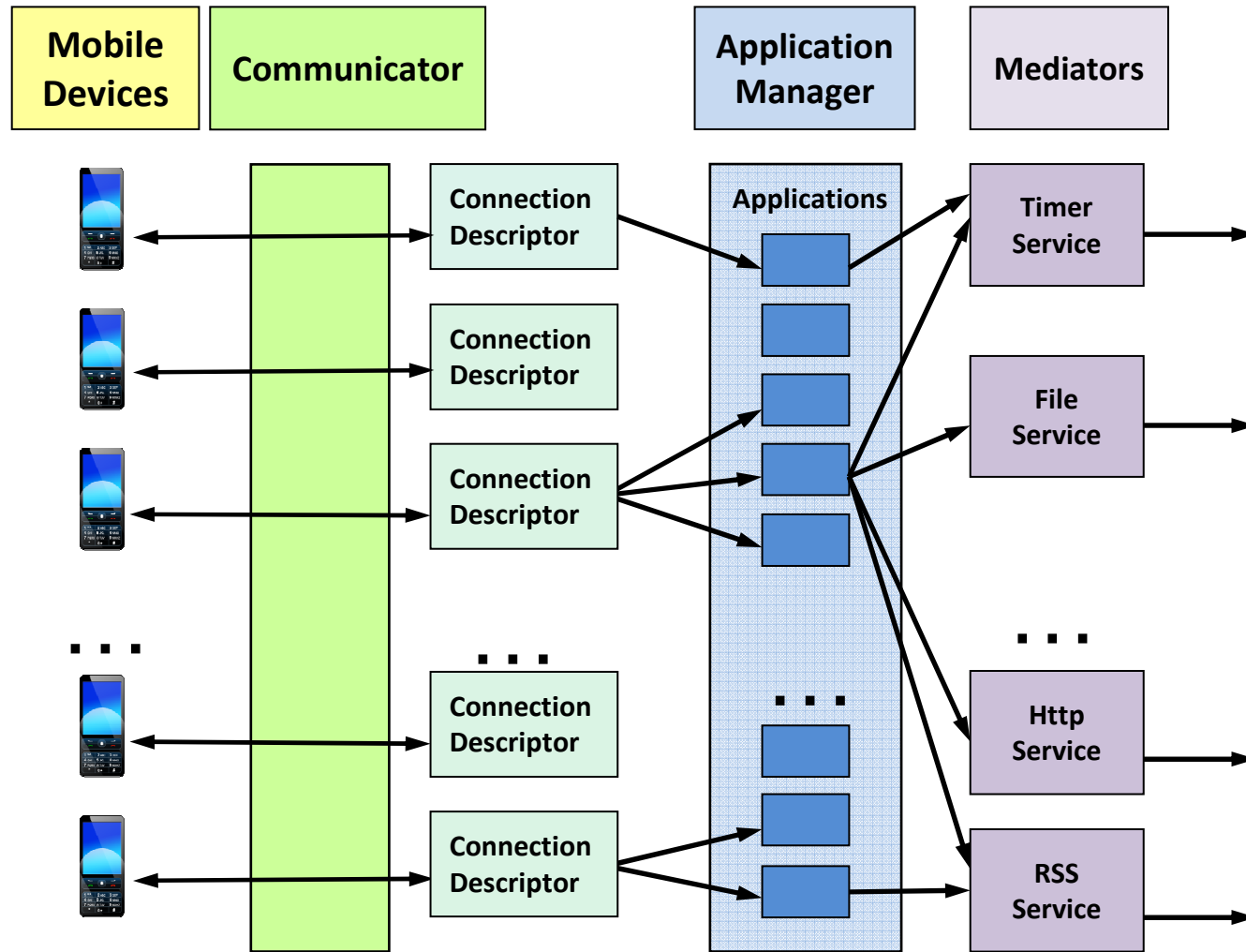


# Target Application Types

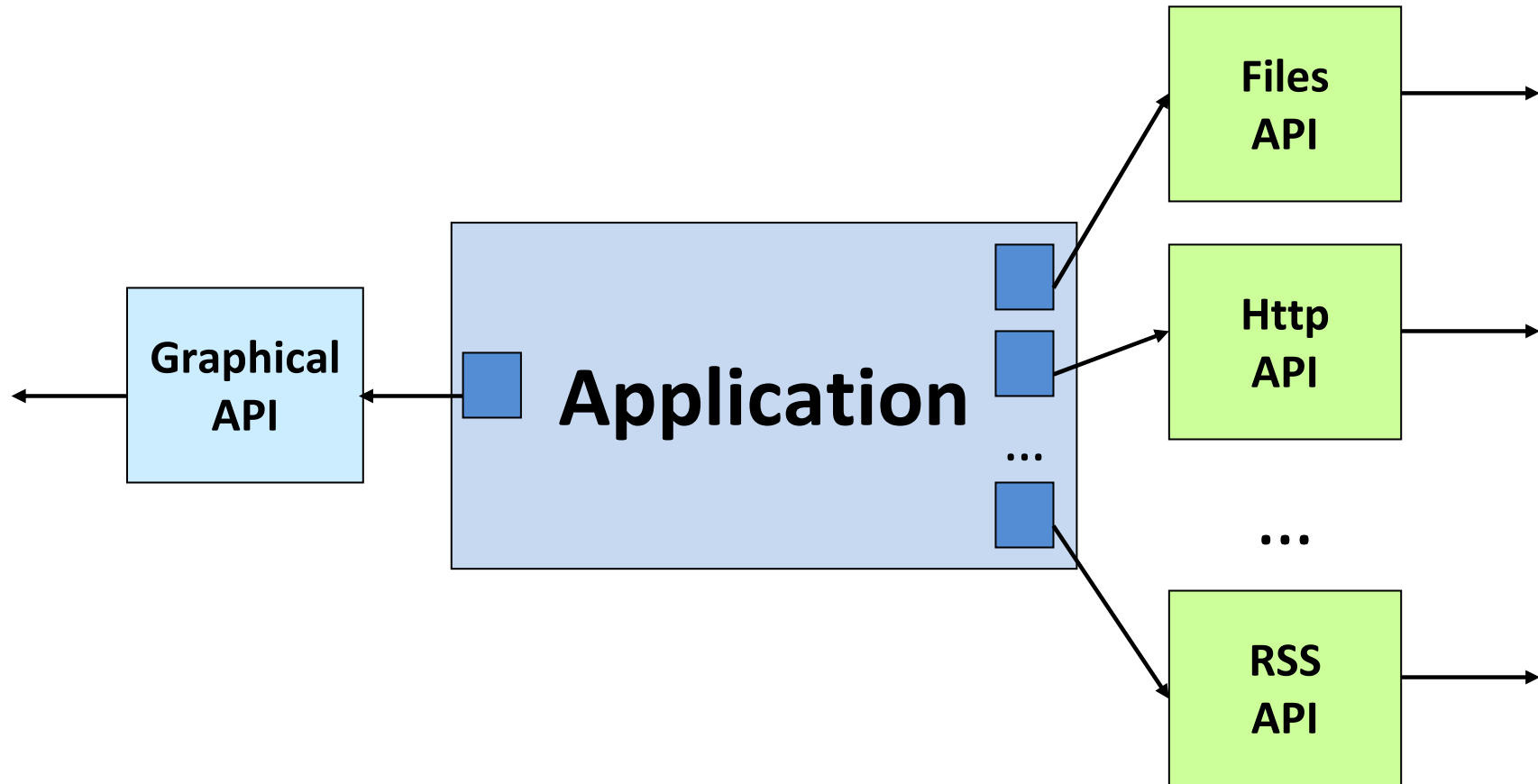
- Information services with dynamic content
- Dynamic advertisement
- Complex mashups
- Mobile banking services
- Location-based services
- Multi-user online games
- Monitoring and controlling of remote devices



# Server architecture



# Application APIs





Thank you!