

# Special Considerations toward Managed Ubiquitous Information Society

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# Ubiquitous Information Society

- A large number of computers, devices, and chips are located anywhere.
- They are connected by wired and/or wireless networks.
- Providing context-aware services for anyone, anytime with a number of devices collaboratively.
- Users are not aware of the networked systems.

# Key Issues

- Interoperability
- Scalability
- Invisibility
- Security and Privacy
- Personalization
- Context management
- User Satisfaction
- Safe/Secure and Sense of Secure

# Management Categories

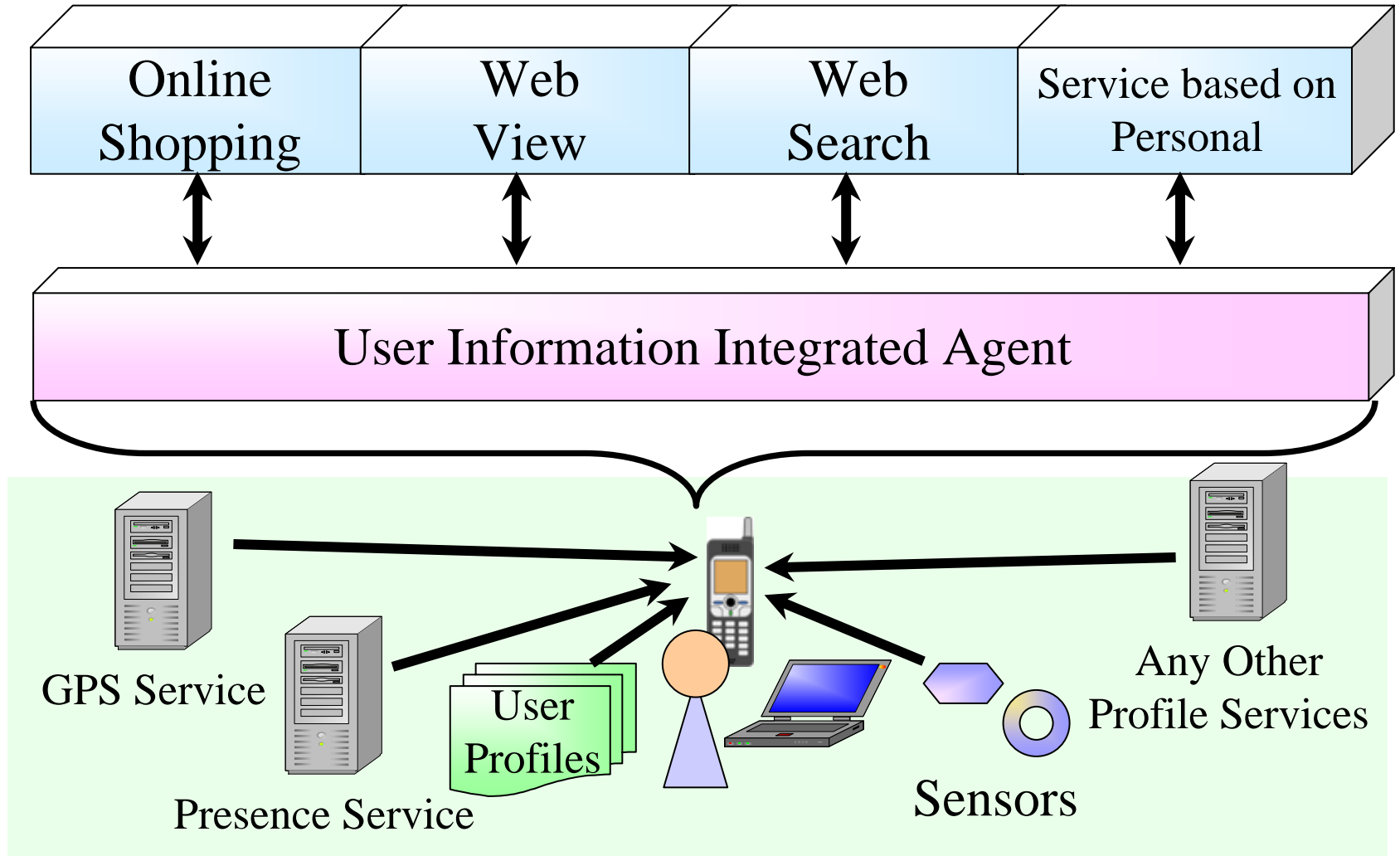
- Configuration Management
- Fault Management
- Performance Management
- Security Management
- Account Management

FCAPS have to be considered in the view points of ubiquitous networks.

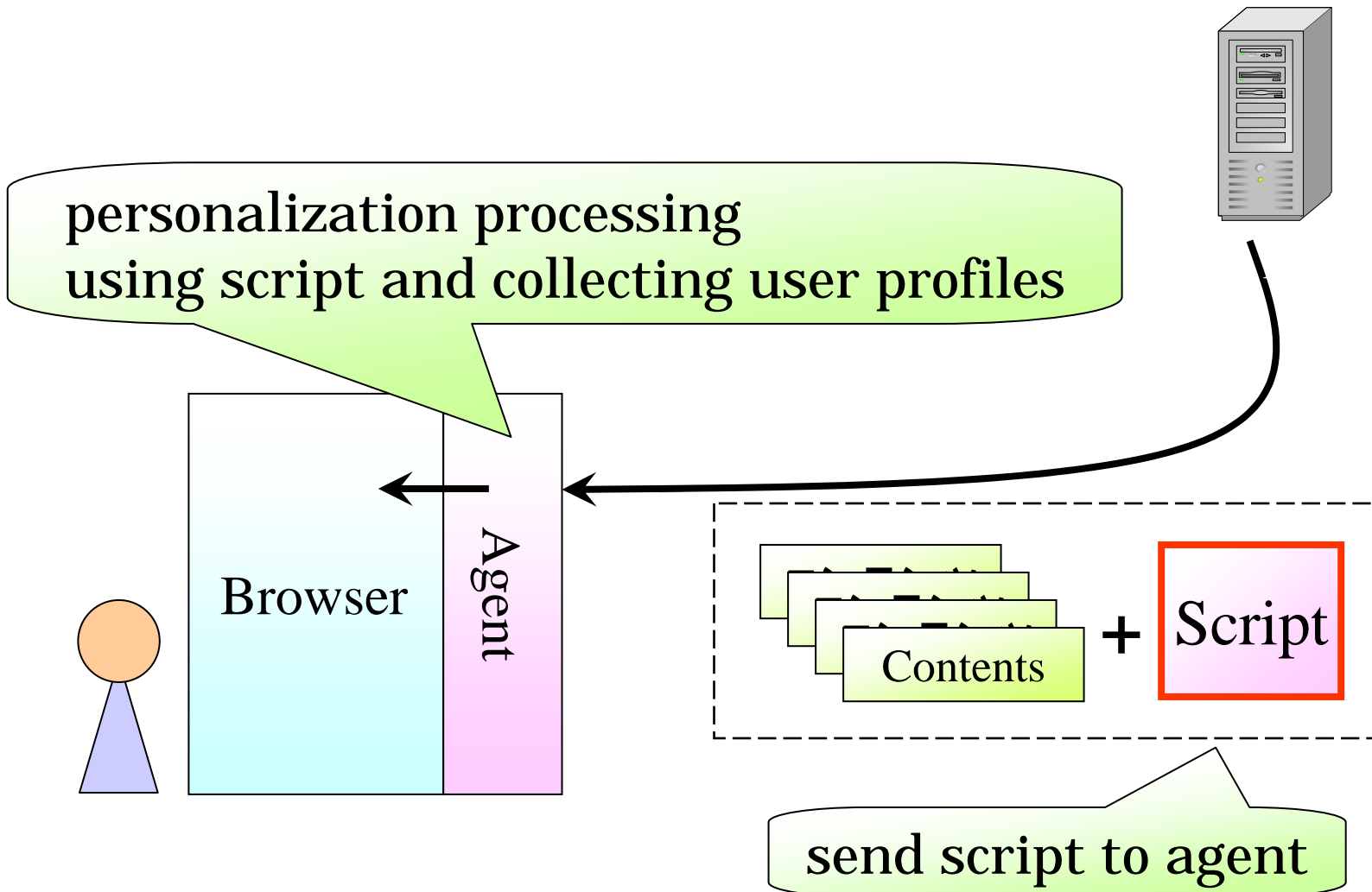
# User-oriented Information Society

- Personalization
  - User profiles have to be open to the other people or sites.
- Privacy Protection
  - Only limited profiles will be open.

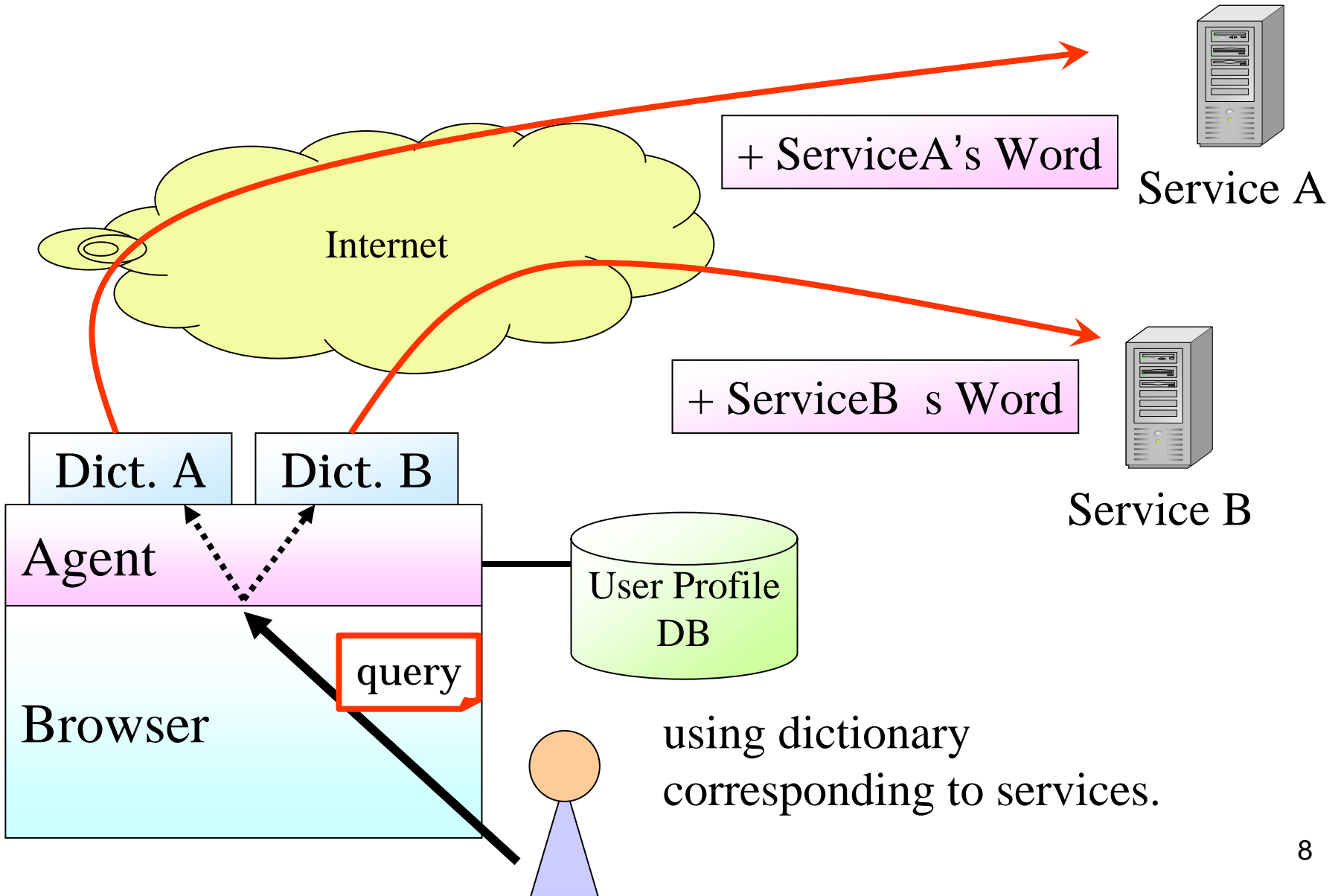
# New Personalized Architecture



# Personalization by Using Personalization Script



# Personalization by profile mining



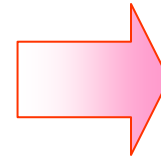
# User-oriented Information Society 2

- User Satisfaction
  - Consideration of new criteria
  - Seamless, comfortable environment
  - Media hand over from a cellular network to a wireless LAN

# Traffic management according to users' requests

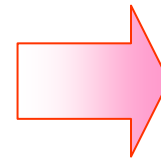
– User's requests

Providing many connections simultaneously



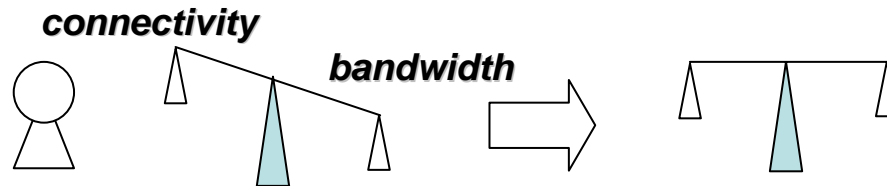
***connectivity***

Guaranteeing required bandwidth



***bandwidth***

– Balance of user's requests

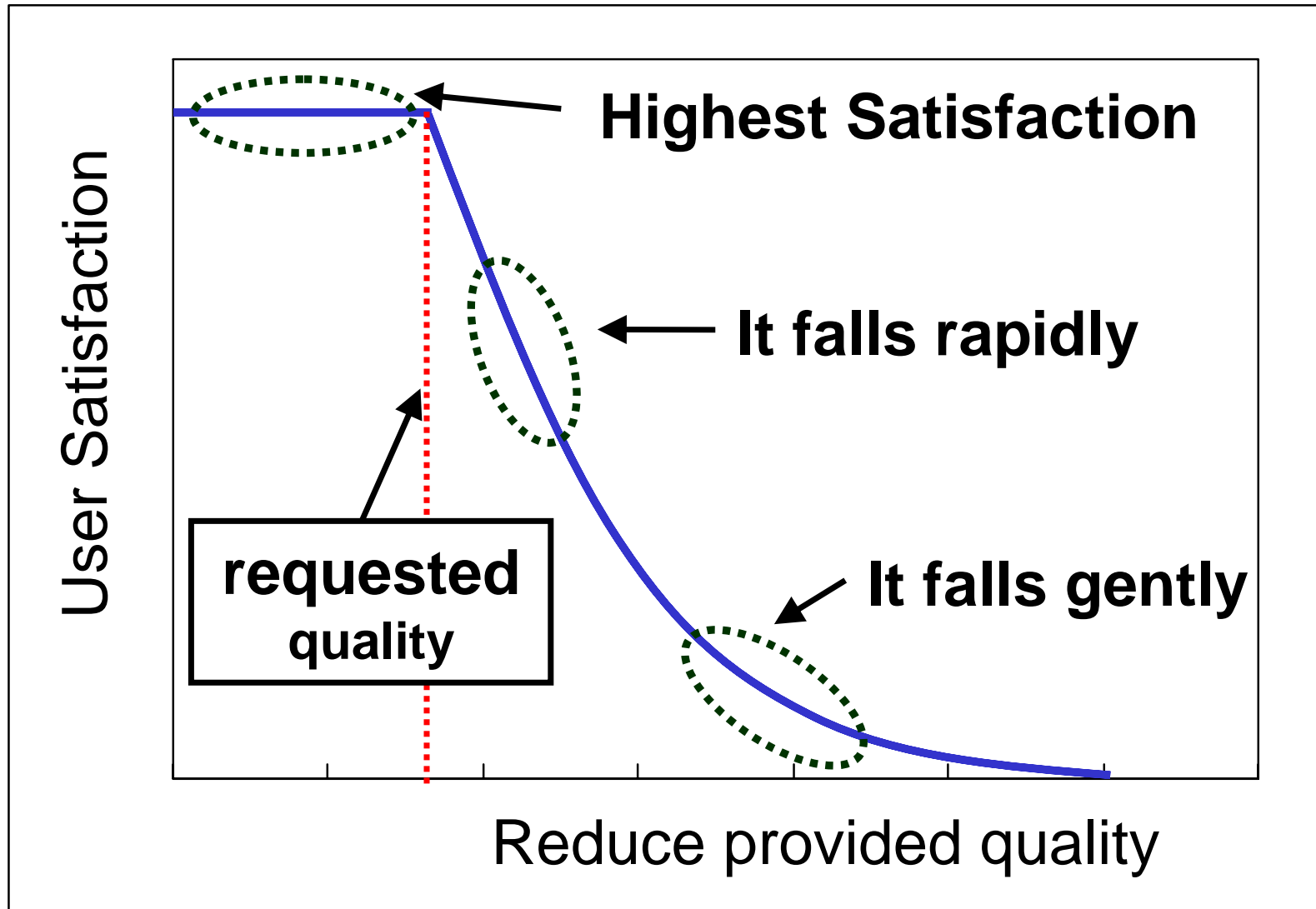


**How to measure?**



***User's satisfaction rate***

# Function of User Satisfaction



# User's Satisfaction Rate (USR)

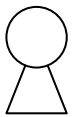
- Degree of how much users are satisfied with provided QoS
- What kind of USR is defined?

USR of connectivity  **C-USR**

USR of bandwidth  **B-USR**

 **For example**

User's requests



Session blocking rate : 3%

Acquired bandwidth: 1Mbps

Provided QoS

3.5%

C-USR High

10%

C-USR Low

800kbps

B-USR High

200kbps

B-USR Low

# Definition of USR Functions

- **C-USR function**

- **Session request blocking rate**
- Approximate function from results of questionnaire for 20 respondents

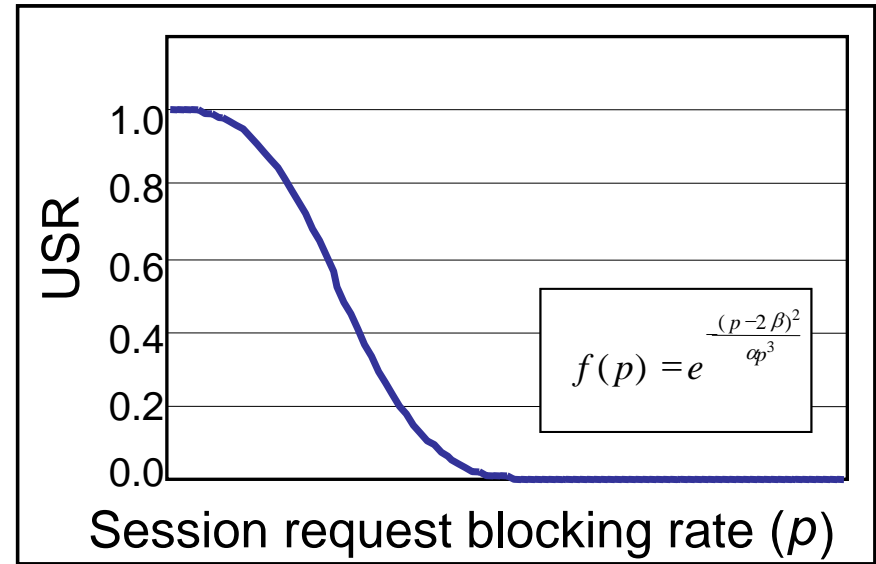


Fig. 2 User's satisfaction rate of "Connectivity"

- **B-USR function**

- Specific to streaming service
- **Acquired bandwidth**
- Approximate function from report of Real Networks on quality evaluations about encoding rate

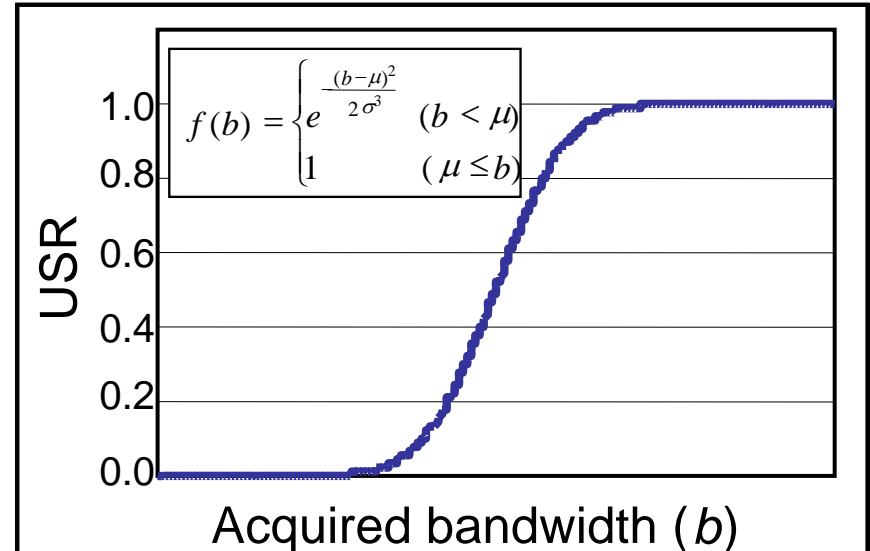


Fig. 3 User's satisfaction rate of "Bandwidth"

# Security Issues

## Security Architecture

- ISO7498 OSI Reference Model Part2 : Security Architecture
- Develop a principle and a structure for secure information transfer
- Define security services and mechanisms

# Security Issues 2

Security Architecture gives

- Confidentiality
- Integrity
- Authentication
- Access Control
- Non-repudiation
- Audit

New security architecture based on recent security incidents, such as virus, worms, bots, spam mails, spyware should be studied.

# Safe/Secure and Sense of Secure

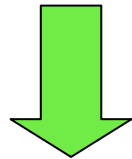
- Safe/secure (An-zen 安全)  
Assured by outside of himself/herself
- Sense of Secure (An-shin 安心)  
Recognize an-zen and assured by inside  
of himself/herself

An-Shin (安心)  
安:easy      心:mind

An-Shin == Sense of Security

State of mind: no fear

Knowledge of probabilistic risk and its scope  
would help?



modelling

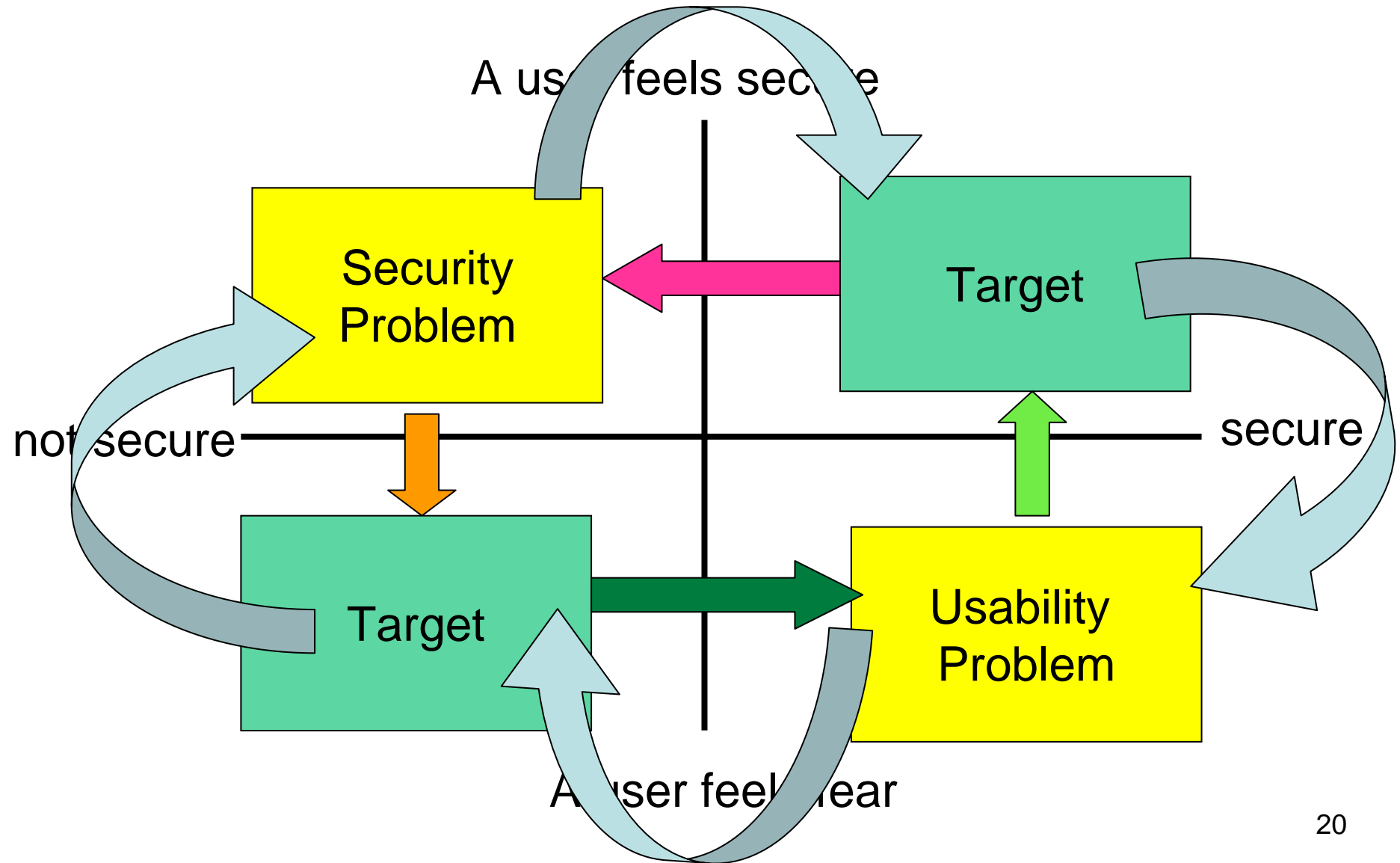
# What is a fear?

- To loose one's personal possessions:
  - Life and health
  - Property
  - Family
  - Identity
  - Country and citizenship
  - Jobs
  - Skill and career
  - ...

# Should be studied

- To make it clear the factors of fear and sense of security
- To apply the findings to internet services

# Security Technologies and Sense of Security



# Security vs. Sense of Security

**Security :**

**cognition (logical & rational)**

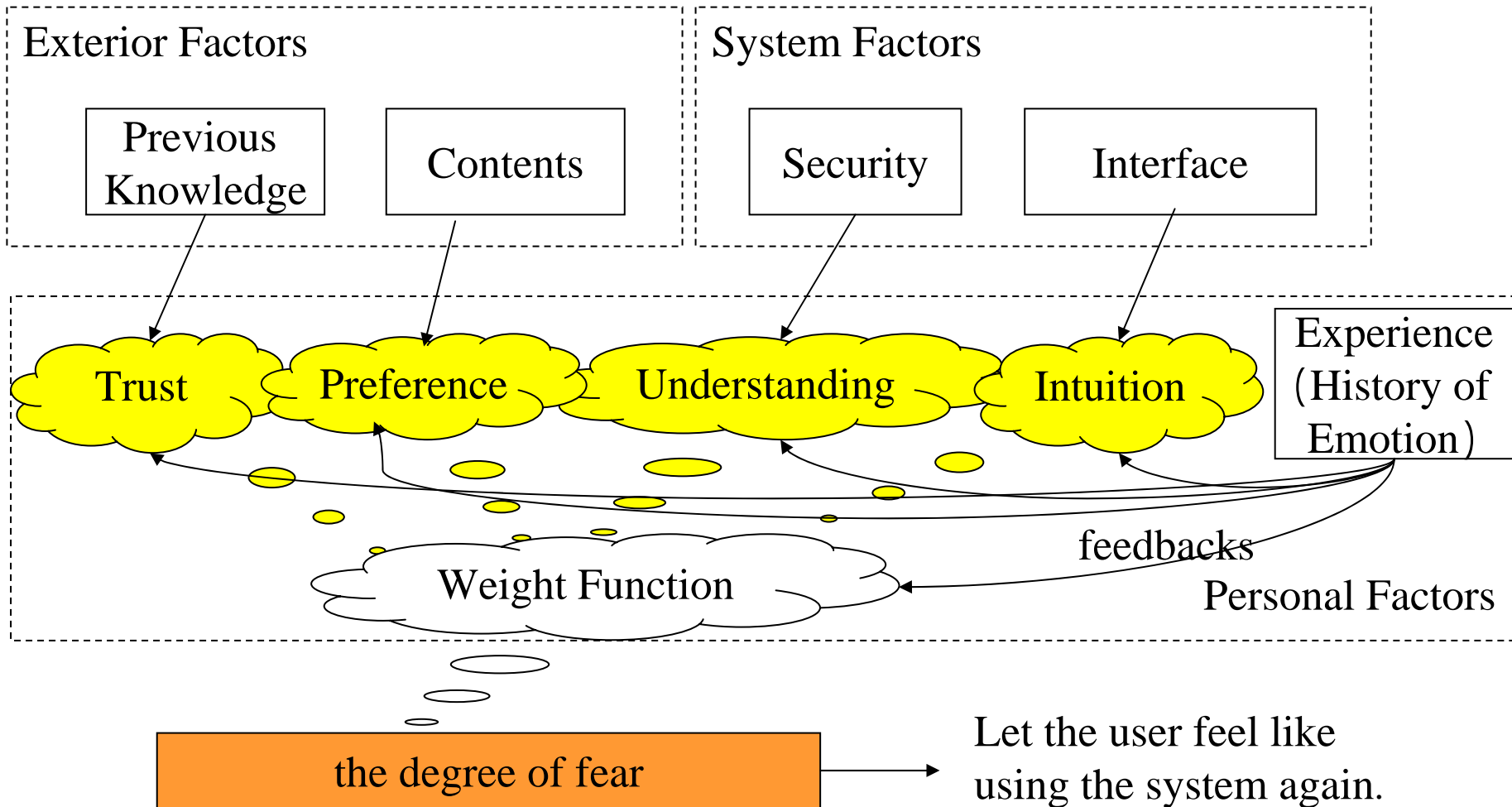
- Cognition is based heavily on the ability of understanding

**Sense of Security:**

**emotion (not logical & irrational)**

- Emotion is based on more factors

# A model of fear



# Cognition Factors

- Users fear of the followings:
  - Trust factor
    - The service provider and their security policy
  - Preference factor
    - The items and services
  - Understanding factor
    - Security techniques and risks
  - Intuitive factor
    - User interface

# Safe/Secure and Sense of Secure

- + Satisfaction  
Comfortableness  
Use and Gratification

In addition, the managed ubiquitous information society will give

- Enjoyment
- Happiness

Thank you for your  
kind attention.