Abstract

Device Sociality based on Human Network

① Approach One Smart Device to Another Smart Device
② Check Device Sociality
③ Support Zero Configuration Device Collaboration
④ Make Smart Device Display Area
⑤ Inter-Device Data Transfer and Application Execution

Smart Device Main Display Area
Smart Device Auxiliary Display Area

Personal Multi-Device Age
Desktop PC  Notebook  Smartpad  Smartphone
Main Issues

Most people use multiple devices.

What are the users really want to do?
- Seamless use of devices
Backgrounds

Main Issues

Personal Multi-Device
Main Issues

Personal Multi-Device
Backgrounds

Main Issues

1. Google
2. HP
3. Personal Multi-Device
Main Issues

Personal Multi-Device
Main Issues

Personal Multi-Device
User Requirement

- Zero configuration
- Mash-up UI
- Heterogeneous devices

Smart Devices
Most people enjoy SNS with multiple devices.

What can we do on this environment?
Idea

How about make device-centric sociality?
- Based on Human SNS
Concepts

Virtually Integrated Device (Share data, app, resource)
Device Sociality Graph Model

- **Node:** Device (Key/Value)
- **Relationship:** Share items between devices (Key/Value)

**Device ID: 0x01**
*UserName: Steve*

**Device ID: 0x02**
*UserName: Bill*

**Device ID: 0x03**
*UserName: Sophie*

**Device ID: 0x04**
*UserName: Andy*

**Device ID: 0x05**
*UserName: Eric*
Device Sociality Modeling

Service Reference Model

Device

D  S  I  R

Device-to-Device Networks

Device Management Server
- Device Sociality Broker
- Device Sociality Creation
- Device Sociality DB

Application Service Server
- Application Services
- Virtual Platform Connection

Application Service Client
- User Interface
- Application Service Activation

SW Module of Device
- Application Service Module
- Device Sociality Module
- Device Management Server Interface Module
- Device Resource/Function Management Module
- Device Function Collaboration Module
- Automatic Device Awareness Module

D: Data
S: Services
I: I/O
R: Resources
P: Attributes
Device Sociality Modeling

Device Description Model

Device
- Properties
- Functions
- Data
- Service
- Interface

Hardware
- CPU
- Storage
- Display
- PowerStatus

OS

User

Location

InputDevice

Sensor

MiscIO

Size

Protocol

Pointer

Name

Input

Output

Protocol

Pointer

Protocol

Pointer
Device Sociality Services

Implementation Example

1. Awareness of close devices
2. Finding sociality of devices using device social server
3. Make virtual computing environment
4. Providing application services
**File sharing service** between multiple devices

- **Device function collaboration**: file server and file client function
- **Application service**: remote file browser
- **Options**: file system share method (Samba, NFS)
Display sharing service between multiple devices
- Device function collaboration: remote server/client (ex: VNC, RDP)
- Application service: remote display
- Options: automatic display resolution setting
**Application sharing service** between multiple devices

- **Device function collaboration**: application virtualization server/client
- **Application service**: remote application service
- **Options**: remote file or display sharing