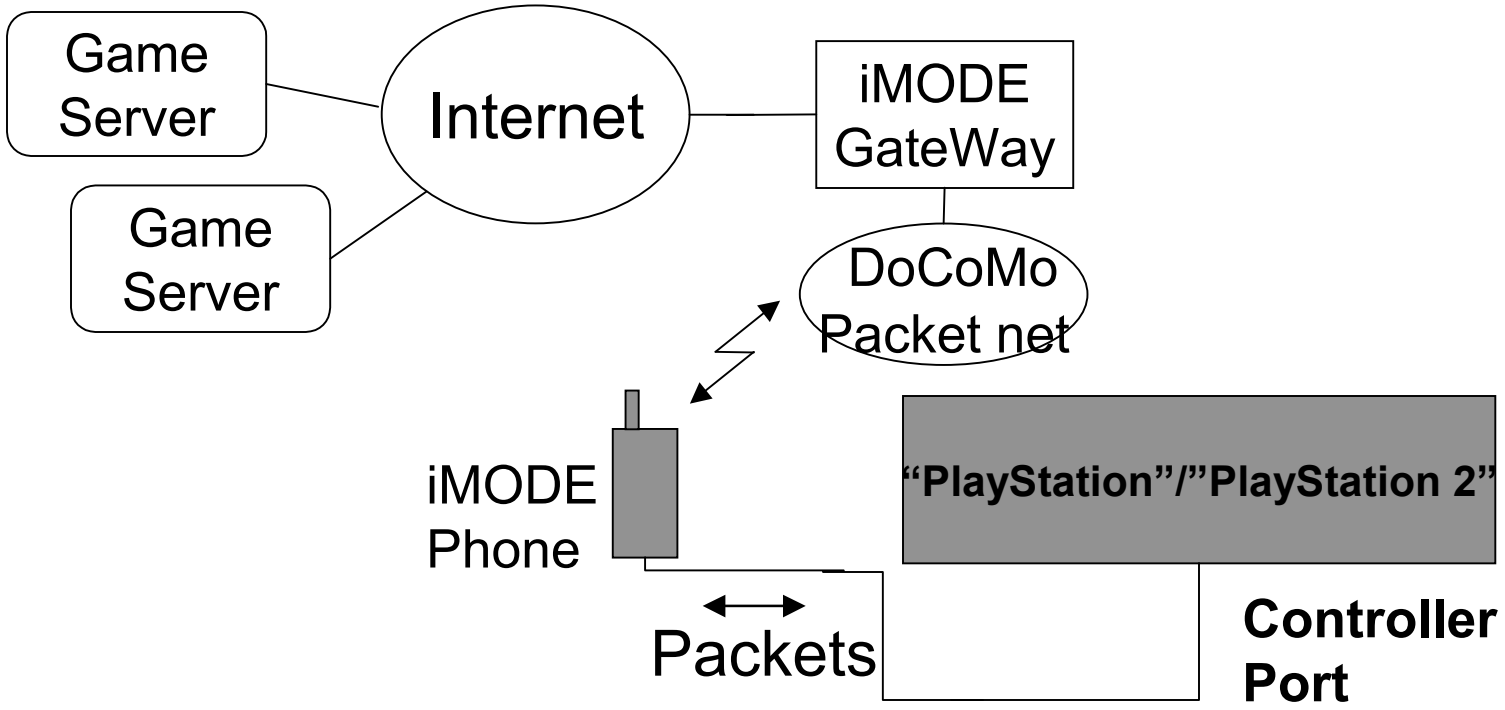
Software Development Seminar

Sony Computer Entertainment Inc.

iMODE System

Concept 1 : Net gateway

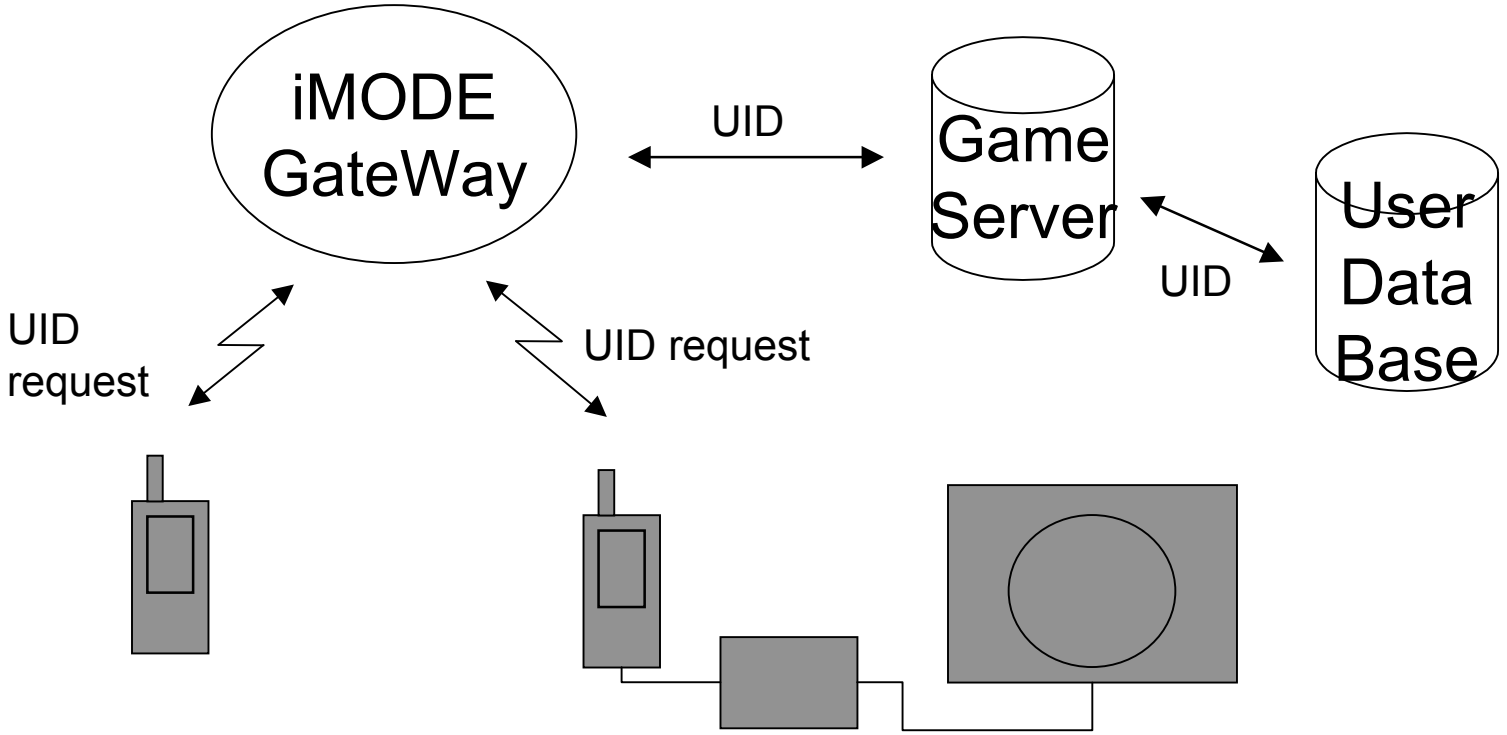
- The portable iMODE connects “PlayStation”,”PlayStation 2” to the Internet
- Because it is a packet-based transmission, it creates a feeling of "Always connected to the net".
- Once the iMODE contract is done, it is not necessary to configure or contract anew.
- The authentication/accounting system of iMODE can be used.



Concept 2 : Working cooperatively with iMODE mobile content

- Data of a “PlayStation”,”PlayStation 2” game which is progressing is put on the net, and both players can be synchronized by accessing mobile iMODE content.

-When accessed from the “PlayStation”, “PlayStation2”, and the iMODE portable, the same terminal ID (UID) is sent to the server so it is easy to synchronize user data from each player.



iMODE cable

・Cable

- Connected to the controller terminals
- Compatible with “PlayStation”(including “PSone”） and “PlayStation 2”
- A multitap cannot be previously installed
- Compatible only with the iMODE mobile phone that supports “I Navilink”. Currently, compatible only with P502i, F502it, N502it . After this winter, the 503 series will be sold and all units will be compatible.

Software accompanying iMODE cable

Accompanying software is planned only for “PlayStation”. The “PlayStation 2” will support compatibility mode.

• Browser

- Compact HTML which conforms to iMODE.
- Can access local (CD-ROM) files. (planned)
- Can access memory card data (planned)
- Support for some “PlayStation” native file formats is planned.
- K-JAVA will not be supported.

• Mailer

- Can edit/send/receive iMODE mail

• Others

- Undecided, but other utilities are being considered.

Library

Browsers will be provided for both “PlayStation” and “PlayStation 2” (native).

• Cable Library

- **iMODE cable physical layer library**

• iMODE Library

-**iMODE transport layer - application layer library**

-**Initialization, exit, communications, protocol management API**

-**The communications API makes calls during communications every 1V(1/60sec)**

-The library puts received data on the receive buffer specified by the application, and transmits the data of the specified transmission buffer**.The buffer contents consist of a block of HTTP.**

-**Communications settings such as the buffer address are specified in a structure passed to the library API.**

-**The communications state (completed, error, etc.) is recognized in the status of a structure which is passed to the library API. Status is updated whenever the communications API completes.**

API

Initialize library
int scelmodeInitialize (void)

Exit library
int scelmodeFinalize (void)

Communications processing
int scelmodeComm (scelmode_Param* param)

Protocol processing
int scelmodeProc (scelmode_Param* param)

What is possible? (1)

・HTTP data: Get, Post, Head

-The communications library works at the HTTP level and sends and receives blocks of HTTP （consisting of status / header / body) (In other words, arbitrary data can be exchanged with an HTTP server.)

-In the body, arbitrary data can be received, but send data must be in TEXT format.

- Details of the protocol are indicated separately.

・Push (distributed communications)

- Without the client making a request, HTTP data from the server can be pushed.

- Without polling the server, server events can be initiated asynchronously.

・Accounting & Authentication

- The iMODE terminal authentication system can be used. For more information, see the explanation of “UID” under “Server”.

- The iMODE account agent can be used. For more information, see the explanation of “accounting” under “Server”.

- These features can be used arbitrarily.

What is possible? (2)

・Sending and receiving iMODE mail

-iMODE mail is Web-based, and is sent and received in a format which extends HTTP.

-When creating an application for accessing iMODE mail, it is necessary to follow the published user interface guidelines. Details are provided separately.

・Communicating with the CPU/memory of a mobile phone

-There is a port used to communicate with the CPU of a mobile telephone. Directory Down/Up, Load, etc. allow access to a unique mobile phone. However, because of differences between manufacturers, only the lowest level of communication is supported.

What is NOT possible?

・Communications using protocols other than HTTP

-The library that is provided communicates at the HTTP level, using a low layer protocol. Therefore applications that use application protocols other than HTTP（SMTP, FTP, etc.）cannot be used.

・K-JAVA

-There are plans to support the K-JAVA VM on “PlayStation” and ”PlayStation 2” but not currently.

-It is possible to communicate with a K-JAVA VM running on a mobile phone.（HTTP protocol via the server）

Server (1)

・Server software

- Ordinary server software（Apache, Netscape Enterprise, etc.) can be used.

- The protocol is basically HTTP, but, there are extensions for iMODE and parts are restricted. Details are provided separately.

・UID

-On sites that have been regularly registered, DoCoMo allows the Ids of users (UID) making accesses to be obtained. One UID corresponds to one mobile phone. This is part of DoCoMo's accounting agent.

-Using the UID, private user data can be managed. Requiring ID and password to be input is easily done.

- With the UID, when a connection is made with the iMODE unit, there is a simultaneous connection via "PlayStation","PlayStation 2". Consequently, user data from both sides can be linked.

- How to perform regular registration of a site and obtain the UID is described separately.

Server (2)

• User agent

- When connecting to the server from “PlayStation”,”PlayStation 2”, in order to recognize this connection, it is necessary to specify the private user agent in the request header.

- There are plans to include “Vendor ID” and “Title ID” information in the User Agent when connecting to ”PlayStation”,”PlayStation 2”. Details provided separately.

• Accounts

- On sites regularly registered with DoCoMo, the DoCoMo account agent service can be used. An account costs 100 to 300 yen per month. DoCoMo collects the payment together with the telephone fee, and the content provider receives a commission.

- It is not necessary to use this accounting system, and other means of charging are acceptable.

Design precautions (1)

・iMODE packet characteristics

- When the packet charge paid by the user becomes too high, the user will disconnect. . Both the design and the technology should allow the number of skipped packets that are requested to decrease as much as possible .

-**As much as possible, required content should be put on CD. We recommend limiting the content to be downloaded to only that which is absolutely necessary.**

・Accessing general sites

-（**Inputting a URL for the user**）**Please contact us separately if you plan to create an application that accesses general sites. The authentication procedure of NTT DoCoMo may be required.**

Design precautions (2)

- Guidelines exist for specific operations

- Although they are explained separately, it is necessary to create My Menu-related operations according to the operating procedure and messages specified here.

- Consider the response

- In iMODE-based communications, there normally is a response within several seconds. However, when the broadcast signal is bad, or the sender is having trouble, it may take longer which can lead to a timeout Try to avoid confusing the user in these cases.

Technical precautions

・The iMODE library must guarantee 1V operation

- For iMODE library send and receive functions, it is necessary to make calls every 1V(1/60sec) during communications. For this reason, the send and receive functions make calls with a V-Sync interrupt. Please design your application so that this does not create overhead in the main loop. （Processing for “PlayStation” and “PlayStation 2” is done on the IOP.）

・Consider communication failures

- For starters, the Internet is unstable. And iMODE communication will not always be stable. Applications should be designed for recovery in case of communication failures.

・Consider the arrival of telephone and mail messages

- During data communication、telephone and mail messages can arrive. Because that state comes up from the library, it is necessary to do appropriate processing. Guidelines are provided separately.

- It is possible to specify that an application not necessarily accept mail and not take from the center. However, even in this case it is still necessary to notify the user of the arrival of the message.

Q & A