

SOCOM: Bringing a Console Game Online

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Why should we listen to you?

- **SOCOM has sold “thru” over 1 million units in North America alone since its release on August 28th, 2002.**
- **There are over 300,000 active SOCOM players that have played online in the last 30 days.**
- **50,000 to 60,000 people play SOCOM everyday.**
- **On the weekends, players log over 170,000 hours of game time for a very high average of 3 hours per person.**

No really, why should we listen to you?

- **In the last 7 days, consumers have logged 1,038,134 hours on SOCOM.**
- **During peak hours (3-7pm PST), there are 11,000 to 12,000 simultaneous people playing SOCOM.**
- **On an average day, SOCOM has more simultaneous players than all but one of the competing online "PC Games"; including Battlefield 1942, UT2003, Medal of Honor, America's Army or Quake3.**
- **The only reason why we are here is because we want to see many more successful, online console games.**

Design Goals for SOCOM Online

1. Create 2 separate, full games

- A full online game and a full single player game
 - This equals double the work/resources

2. Provide the player with a “full” online game experience

- 16 players
 - Required client/server, which is \$\$\$
- Voice Chat
- Built in community support
 - Clans and ladder rankings

Design Goals for SOCOM Online (continued)

3. Make it easy for console players

- UI Screens need to be very well designed
 - Quick and easy to navigate
 - Use familiar interface conventions
 - Persistent appearance
 - Psychological grouping

4. Focus the online gameplay

- Don't try to do everything; try to do one thing really, really well and build upon that
 - You have to ship before the console hardware changes

5. Enable the community to police itself

- Password protected games
- Easy to vote out players

Major Production Hurdles

- **Everything was brand new, everything...**
 - A dependency nightmare
- **Testing, testing, testing...**
 - Be sure to perform a “real” Public Beta test
- **NAT and Firewall Devices**
 - AKA – A peer to peer nightmare
- **Post game release server deployment**
 - You mean we’re not done?
- **Localization**
 - Japanese and Korean text input... ☹
 - We need to display 5,000+ Kanji and 2350 Hangul???

Advice for Creating an Online Console Game

- **Look at online PC games for guidance**
- **Don't look at online PC games for guidance**
- **Enable player to player communication**
 - **No communication = no community**
- **Add community features**
 - **Ladders, clans, stat tracking, etc...**
- **Bring console production values to online gaming**

Advice for Creating an Online Console Game (continued)

- **Try to anticipate the worst**
 - **Because the reality will be much worse than what you can anticipate**
 - **Cheating**
 - **Exploits**
 - **Rude behavior**
 - **Spamming**

SCE-RT Networking SDK - Architecture

Glen Van Datta

Director of Online Technology

Sony Computer Entertainment America

SCE-RT SDK/Infrastructure

- **SCE-RT PS2 Online Titles**
- **SCE-RT Medius SDK**
- **SCE-RT DME SDK**
- **SCE-RT Client Simulations**
- **SCE-RT Server Monitoring tools**

SCE-RT PS2 Online Titles

- **Currently integrated into 28 1st party titles world wide**
- **Growing by 2-3 per month**
- **Good PS2 Title sells millions**
 - **Expect > 20,000 simultaneous online**
- **Easily > 200,000 simultaneous World Wide soon**
- **Over 500,000 Network Adapter units sold in U.S (Projected for 3/2003)**
 - **Network Adapter sales give accurate online user base**
 - **XBox Live kits similar information**
 - **Unlike PC**
- **Internet Game Soon Required for competitive edge**

SCE-RT Medius SDK

- **The SCE-RT Medius SDK is the player matching service for the online experience.**
- **Infrastructure**
 - **Medius Universe Manager**
 - **Medius Lobby Server**
 - **Medius Authentication Server**
 - **Medius Proxy Server**
 - **Medius Database Caching Server**
 - **Medius Universe Information Server**
- **Client Side Coding Requirement**
 - **Medius Client**
 - **Medius Game Communication Library (MGCL)**

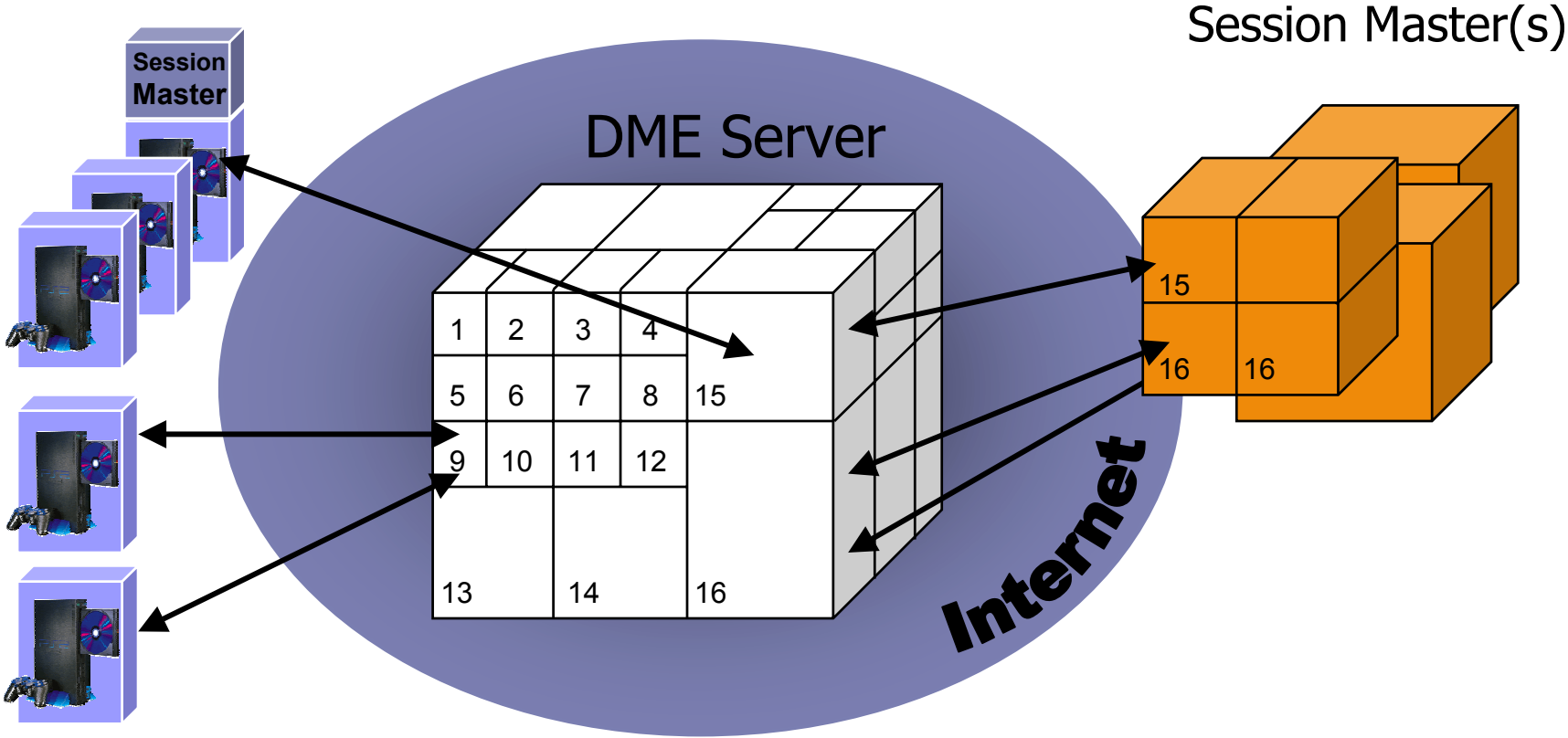
SCE-RT Medius SDK (Continued)

- **Client/Server architecture**
 - **Composes all backend services for online gaming**
 - **User authentication and security engine**
 - **Player matching and game list management**
 - **Create a game, join a game, play the game**
 - **Persistent player statistic tracking**
 - **Lobby and in-game chat**
 - **Buddy Lists and Instant Messaging**
 - **Clan and Ladder support**
 - **Client platform: PlayStation 2, Linux, Windows**
 - **Server platforms: PlayStation 2, Linux, Windows**

SCE-RT DME SDK

- **The RTIME Distributed Memory Engine (DME) SDK is a central part of the game application. The DME SDK is packaged into 3 components, DME client, DME Session Master and DME Server**
- **Native object interface**
- **Broadcast scheduling**
- **Client-side & server-side filtering**
- **Global timebase**
- **Reliable & latency critical communications**
- **Security**
- **Peer to peer client connections**
- **Integrated Server**
- **Client platform: PlayStation 2, Linux, Windows**
- **Server platforms: PlayStation 2, Linux, Windows**

DME Client/Session Master/Server



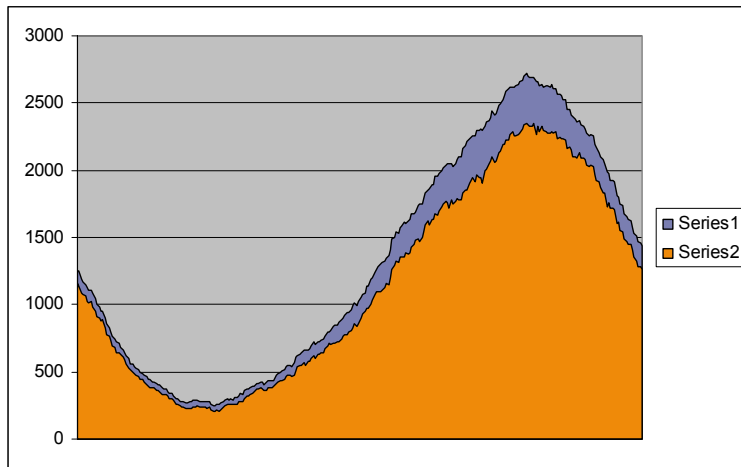
Client Simulations

- **Linux Based**
- **Runs on Production or Development machines**
- **1000 clients on production, 500 client on development**
- **Represents identical Medius capability**
- **Mimics Game Traffic rates**
- **Loosely based on User behavior**
 - **85-92 percent in game**
 - **Creating games**
 - **Joining games**
 - **Playing games**
 - **4% in lobby**
 - **5% in lobby/game transition**
 - **1-6%% chatting**

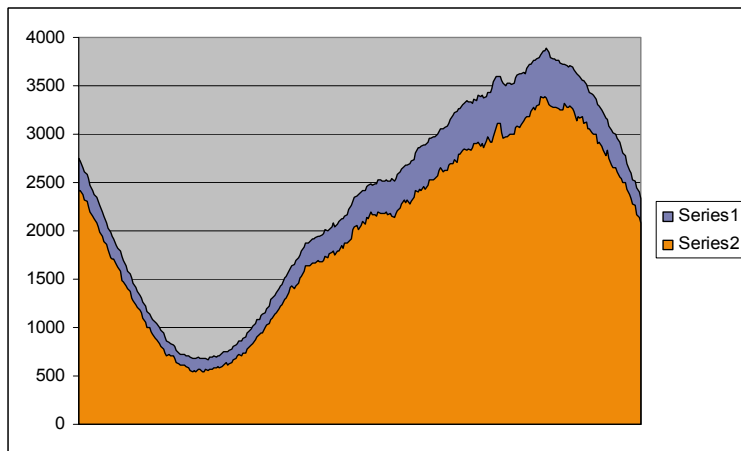
Server Monitoring tools

- **Backend Monitoring (Server Executables)**
 - System Health Monitoring
 - CPU, Memory, IO, Frame times, Connections
 - User Monitoring
 - Application Counts
 - Chat
 - User IP addresses
 - Hours played
 - Logins
- **User data very valuable**
 - What features/games users like most
 - Where users are coming from and what times
 - Sine wave usage graphs

Server Monitoring tools (Continued)



- **2 weeks after Launch**



- **10 weeks after Launch**

SOCOM In-Game Multiplayer

Bob Gutmann

Software Engineer

Zipper Interactive, Inc.

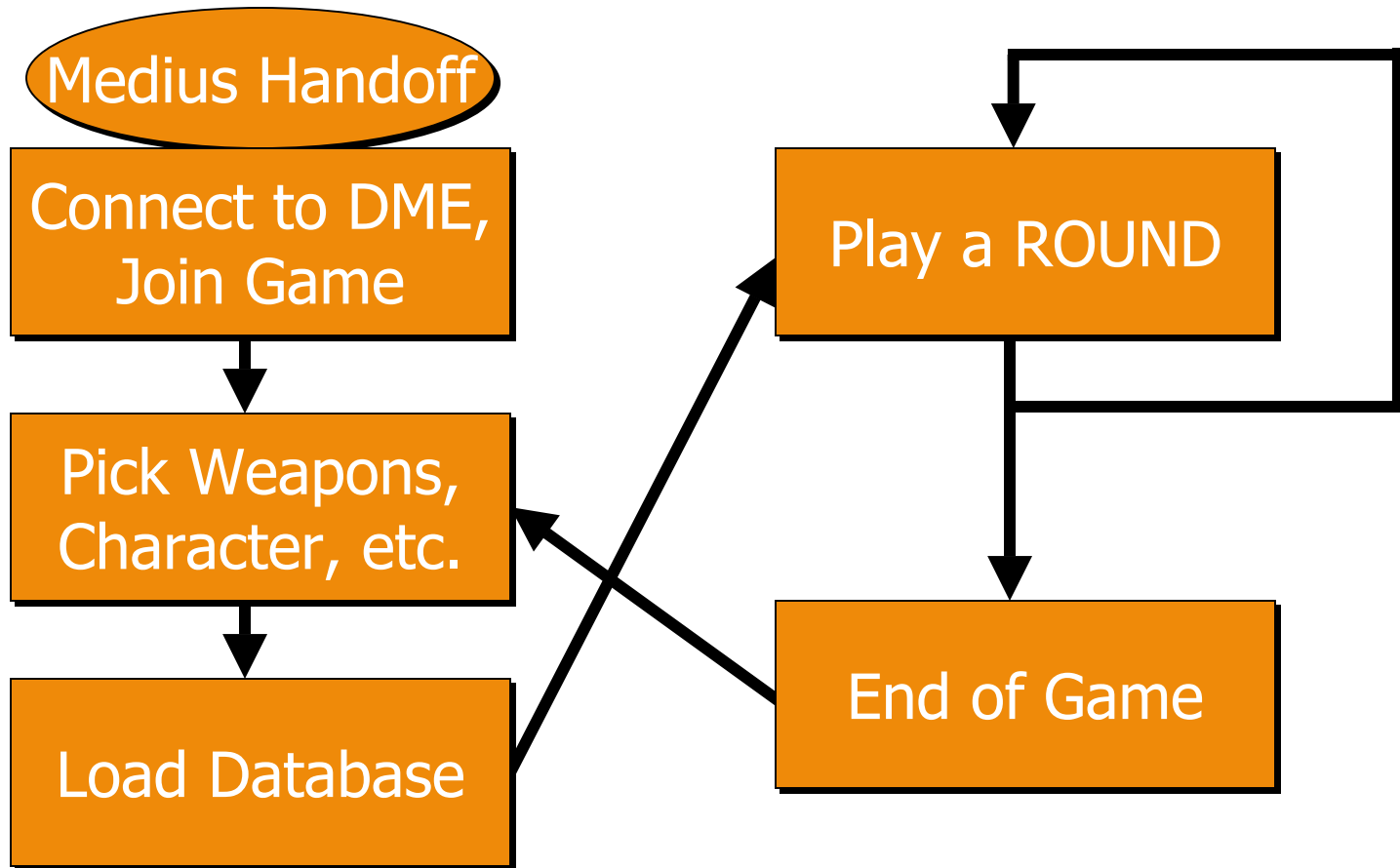
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Game Based on SCE-RT DME Architecture

- **Client-Server network**
- **Two modes of data transmission**
 - **Objects – Sent on a “schedule”**
 - **Messages – Sent on demand**
- **DME takes care of network interface**
- **One player is the “Session Master”**
- **Voice chat not based on SCE-RT code**

SOCOM Online Game Flow



DME Network Objects

- **Basically a C-struct**
- **Each field is registered with the DME**
 - **Data type (size)**
 - **Associate with a schedule**
- **Define callbacks**
 - **Create – When a new object is born**
 - **Update – When any field is updated**
 - **Destroy – When the object is removed**

SOCOM Network Objects

- **Persona – Created as you join**
- **Game – Created by the SM**
- **SEAL – Created at end of DB load**
- **Grenade – Created on demand**
- **FootBomb – Created at end of DB load for demolition games**

SEAL Object Example

- **Contains avatar information (position, velocity, health, and so on)**
- **Position data (floats) @ 2.0 units, 100 ms**
- **Velocity data (8 bits) @ 0.0 units, 100 ms**
- **Horizontal velocity applied to position between updates**
- **Smooth position changes when update comes in**

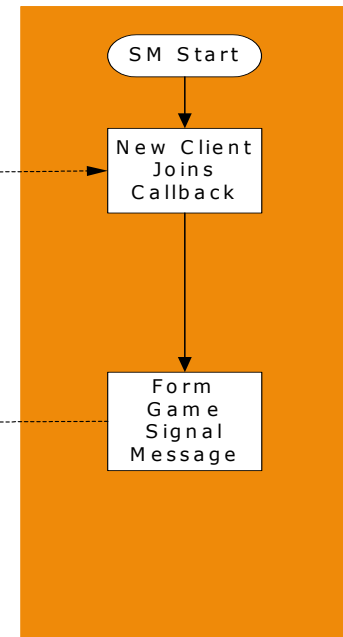
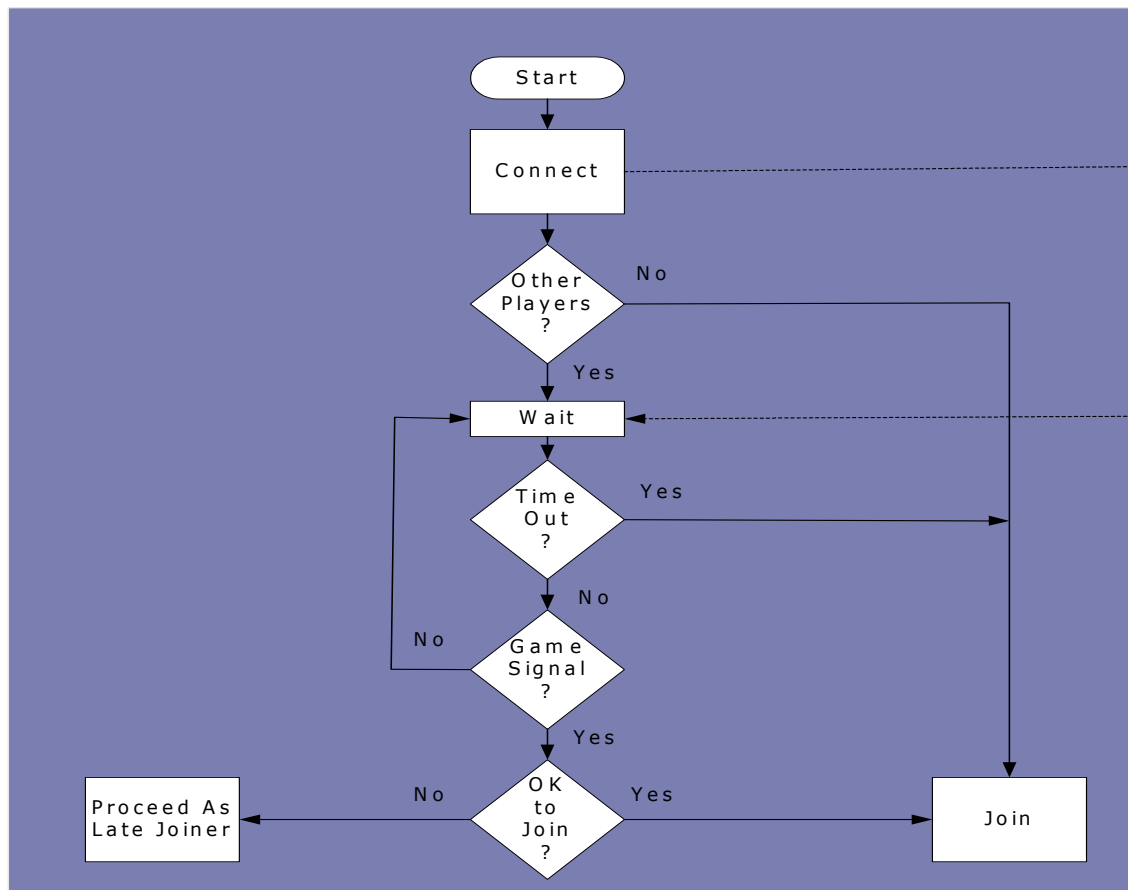
DME Network Messages

- **For relatively rare updates**
- **Also C-struct based**
- **Register message & callback (handler)**
- **Register each field**
- **Can be variable length**

Housekeeping Messages

- **New client connects**
- **Client disconnects**
- **Client joins**
- **Client leaves – possibly a new SM assigned**

SOCOM Join Logic



Voice Chat Overview

- **Developed by Secret Level Inc.**
- **Public domain G.723 CODEC (3KB/sec)**
- **UDP protocol (point-to-point)**
- **Walkie-talkie type with one talker per channel at a time (256 channels)**
- **Channel arbitration required**
- **UDP/NAT problem**

How to Stay Out of MP Trouble

- **Get out of single player mindset (player actions)**
- **Limit animations that move (important) stuff**
- **Establish interfaces with other code segments**
- **Understand what causes data transmissions**
- **Test as many ways as possible (“Squiggle”, etc.)**

What Went Wrong

- **SCE-RT Issues**
 - **Developing code as we were**
 - **Changing the API as we go**
 - **Documentation**
 - **Server scalability**
- **Too Much Logic in UI Scripts**
- **Test Tools - ?**
- **Voice chat integration**

What Went Right

- **SCE-RT Issues**
 - Very responsive to reported bugs
 - DME Code finally stabilized
- **Reasonably Good I/F With Other Code**
- **Good I/F Between BEI-Medius and Zipper**



Thank you!

Q&A Time