Exploring the Design of Online Handheld Games
Important Factors & Considerations

Karthik Bala, CEO
Henry Letteron, Network Programmer
Issam Khalil, Network Programmer
About Vicarious Visions

- Leading developer of video games for handheld and home consoles
- Offices in Albany, NY and Mountain View, CA with 140 employees
- Founded in 1994, now part of Activision.
- VV titles have sold over 19MM copies, nearly $750MM in retail sales.
- We’ve worked on top selling franchises such as Tony Hawk, Spider-Man, X-Men, Crash Bandicoot, Shrek, Spongebob Squarepants, Finding Nemo, Doom 3 and others.
- Our current primary focus is developing titles for next gen handheld (Nintendo DS, Sony PSP) as well as next gen console systems (PS3, 360, Revolution).
- We’re also big believers in online gaming…especially on portable systems.
The Future of Handheld Gaming…is Online!

- The potential to unlock new game play experiences

- Handheld online games have the power to change consumer behavior patterns
  Parallel trends: IPod changing how music is consumed

- Online gaming is becoming massively mainstream.
  Far greater accessibility/usability
  Not just on your PC
  WiFi Networks (Free public WiFi hotspots) rapidly influencing adoption rate

- Finally a significant part of the Big 3’s strategy:
  Microsoft – Xbox Live (Xbox, 360)
  Nintendo – Nintendo WiFi Connection (DS, Revolution)
  Sony – Playstation Network Platform (PSP, PS3)
WiFi Online on PSP & NDS

- First WiFi Online RPG for PSP
  - Using Gamespy
- First 3rd Party WiFi Online title
  - Using Gamespy & Nintendo WiFi Connection
Terminology

- Sony PSP
  - ADHOC vs. Infrastructure

- Nintendo DS
  - Local Wireless vs. WiFi
  - DWC
  - Strangers / Friends
X-Men Legends 2 PSP

- Developed by Raven software for the XBOX, PS2, and GameCube
- Built using Vicarious Visions’ Alchemy
- Networking framework developed by SuperVillain Studios
- First online X-Men Legends game
- First online 4 player RPG for the PSP
Tony Hawk’s American SK8land

- First online third party title for the Nintendo DS
- WiFi H2H
- Website connectivity (Agora Games)
- Full 3D game on the DS
Overview

- Online game design considerations:
  - Number of players
  - Usability
  - Player communication
  - Community

- How do these considerations differ from their console/PC counterpart?
- XML2 and SK8land case studies for each area.
Number of Players  “When is more better?”

Areas of consideration:

Legacy constraints
  - Maintain console-level experience

Budget and time constraints
  - Only one month to implement online play on SK8land

Memory and CPU constraints
  - XML2 was designed with consoles in mind
  - SK8land had a large memory constraint
    - 300kb for networking libraries alone (>7% of total memory!)

Debugging
  - Hardware resources (wireless network, multiple devkits)
  - QA resources
Number of Players (continued)

System limitations

- 17 PSP limit in ADHOC mode
- Hardware limited polygon count (2,000) on the DS
  - SK8land example: 500 polys per skater (250 culled)
  - 4 skaters would use 1,000 polys (half the budget!)

Expectations

- Console versus handheld, PSP versus DS
- Console port

Time to configure and launch a game

- More players equal longer delays

Player disconnections

- More common on wireless networks
- More common on handheld games
Number of Players

Existing Design:
- 4 players onscreen at once
- ADHOC and Infrastructure modes

Future Possibilities:
- Maintain existing 4 player experience
- Incorporate more sophisticated player/player and player/environment interactions
Number of Players

Existing Design:
- 2 player local wireless and WiFi game modes
- No player/player collisions or prediction

Future Possibilities:
- 4 player local wireless and WiFi
- Add player/player collisions
- Play against downloadable ghosts
Usability  “How smooth is the player experience?”

Areas of consideration:

- Translating console UI to handheld systems is hard!
  - Limited screen size, and thus limited information

Allow the user to enter the game quickly

- Control and flexibility versus speed
- Know your target audience
Usability: XML2 Online UI Flow

- Geared towards a more hardcore audience
  Deeper, more complex UI, with numerous options
Usability: SK8land Online UI Flow

- Geared towards a more casual audience
  Auto-match features with fewer options available
Usability (continued)

Player disconnections are common, and both the UI and game design should account for this:

- Wireless networks are often less dependable
- Duration of play on handhelds is typically short
- Batteries die
Usability

Existing Design:

- 4 players onscreen at once
- Colored rings used for differentiation
Usability (continued)

Allowed user to select their region & server
- Displays the number of active/allowed players

Didn’t provide latency information

No join in progress
- Server browser didn’t display games that had already started
  - Creates a perceptual issue that people are not playing
Usability (continued)

Future Possibilities:
- Easier server browsing experience
- Allow players to join games in progress
- Show more player information
- Allow the user to see latency
  - More informed server choices
- Allow the user to see full servers
  - Give appearance that people are actively playing
Usability

Existing Design:

- Easy way to connect
- No server browsing (auto-match only)
- Tons of options, but not laid out well
  - Overwhelming to players
- Friend matching was not easy to understand
Usability (continued)

Future Possibilities:

- Advanced auto-match feature when playing WiFi
  - Auto-match takes into account latency, skill
- Additional gameplay options with a more streamlined UI
- Friend game requests
Player Communication

“Facilitating teamwork.”

Areas of consideration:

Communication on a handheld is tricky
- Text entry: limited screen size, slow to type
- Voice chat: potential memory & CPU restraints
  - Built-in microphone on the DS – potential for feedback
  - Headset for the PSP – no guarantee players will have one
- Pre-defined messages: limited in scope

Nintendo prohibits communication with strangers
- Only option is pre-defined messages
  - Impossible to account for every situation

Affects game play
- Level of communication affects players’ ability to coordinate tasks and work together
Player Communication

Existing Design:

There was none?!
- Consoles had voice chat, but no PSP API

Future Possibilities:

- In-game voice chat
- Lobby text chat
- Pre-defined voice messages
  - “I need help!”
Player Communication

_existing Design:
System for issuing challenges to players
  Selecting new game modes, levels, etc

Future Possibilities:
Walkie-talkie mode voice chat when in game
Text chat when in the lobby
  Virtual keyboard on the touchscreen
Pre-defined messages
  Communication with people who are not on your friends list
Online Community

“Building culture, and connecting people of like minds.”

Areas of consideration

Extend the single player experience
- Score boards, replays, downloadable features

Facilitate the multiplayer experience
- Swapping friend keys for the DS
- Sharing custom data

Increased space for saving custom content
- Limited space to save content on DS cartridge
  - Website acts as a giant file server for game data

Data sharing between console/PC
- DS & Revolution, PSP & PS2/PS3
Online Community (continued)

Powerful marketing tool
- Direct link to core audience
- Advertise upcoming titles
- SK8land MOTD
- Word of mouth – viral marketing
- Useful for gathering statistics
Community

Existing Design:
Nothing. How bland.

Future Possibilities:
Web site integration
- Host player-created custom data (generated on the PC)
  - Texture swapping
- Ranking and player stats
- Community unlockables
Community

Existing Design:
http://www.american-sk8land.com
Custom art sharing
Community (continued)
Community (continued)
Community

Future Possibilities:

- Augment data sharing
  - Custom shirt, pants, deck, logo
  - Allow players to view and rate artwork on the DS
- Unique author ID
  - Prevent theft of artwork
- Record head-to-head wins and losses
  - Online tournaments and ladders
- Additional dynamic content
  - Weekly newsletter, SK8blog
  - RSS feed of top player data to be used on other websites
- More in-depth player profiles
  - Avatars, percent of game completed, favorite tricks
Summary
Questions?