

Literary Worlds Javascript Client

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December 2, 2014

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Background

Introduction

Design Decisions

Implementation

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Terms and Definitions

- ▶ MUD (Multi User Domain)
 - ▶ a networked, shared virtual environment
 - ▶ provides a text based game for multiple users over the network
 - ▶ Users move around rooms defined in the world
- ▶ MOO (MUD, Object Oriented)
 - ▶ A MUD with objects that the user can interact with, create, and extend
- ▶ Client
 - ▶ A program used to connect to a MUD server.
- ▶ Java applet
 - ▶ A small application which is written in Java and can be executed in a web browser
- ▶ Telnet
 - ▶ A network protocol used to provide an interactive text-oriented communication

Background

- ▶ Literary Worlds is an MOO used for English education at many schools
- ▶ Many worlds have been created by students, teachers and professors based on various source material
- ▶ *1984, Brave New World, Of Mice and Men*

Client

- ▶ Client: Allen Webb
- ▶ Professor of Comparative Literature and Postcolonial Studies at Western Michigan University's Department of English
- ▶ In 2003, Robert Rozema, a PhD student under Allen Webb created the prototype Literary World
- ▶ The Literary Worlds project was one of seven projects to receive funding from the Western Michigan University President's Innovation Fund

Goal of Project

- ▶ Existing interface is a Java applet
- ▶ Provide a new interface for Literary Worlds that works in modern browsers
 - ▶ Google Chrome
 - ▶ Firefox
 - ▶ Internet Explorer
- ▶ Use existing technology, unmodified

Literary Worlds

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress...Client/vertical_layout

[about](#) [help](#) [look](#) [who](#) [guide](#) [out](#)

<i>Bogart</i> [PP] to Pied Piper Courtyard Entrance, [BW] to
<i>Native Son</i>
- Bigger's World, [MM] to Midsummer Madness, [TOS] to Taming of the Shrew,
[DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immutable Hill,
[I] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i> - GOM to
<i>Glass Menagerie</i> The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon
Mad-Hall, [AZA] to Angels in America, [WIG] to Wild Irish Girl,
[OG] to <i>The Great Gatsby</i>, [SBI] to Shelter Bay, [CD] to Charles Dickens -
London Bridge, [TI] to Virtual Tempest, [MMI] to <i>Of Mice and Men</i>, [LOTF]
to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside,
[#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to
La Mancha

.....

MESSAGE OF THE DAY: Lord, what fools these mortals be!

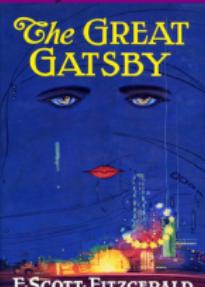
#ampc version: 2.1 to: 2.1
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!
Name Connected Idle time Location

Dickens_Guest (#169) a minute 0 seconds Literary Worlds
Welcome Center

Total: 1 person, who has been active recently.
You move to <i>The Great Gatsby</i>. You view <i>The Great Gatsby</i>...
Obvious exits: [To_Gatsby's_American_Dream] to Gatsby's American Dream
[To_Kie's_Place] to <i>Number the Stars</i>, [#4196] to Literary Worlds
Welcome Center

normal
 say
 emote

The Great Gatsby



F. SCOTT FITZGERALD

Welcome to the staging center for the virtual world based on F. Scott Fitzgerald's "The Great Gatsby".

To explore this world, click on the links below. To learn more about this world, visit <http://www.literaryworlds.wmich.edu/gatsby/index.htm> or email the creator at dykema.meghan@gmail.com

You see:

 Dickens Guest (idle 1h)

Links:

 [Gatsby's American Dream](#)
 [Number the Stars](#)
 [Literary Worlds Welcome Center](#)

Literary Worlds

- ▶ Within these worlds, users can:
 - ▶ Interact with characters
 - ▶ Manipulate and interact with objects
 - ▶ Explore virtual environments

Example

Login (Literary Worlds) – Mozilla Firefox

brn227.brown.wmich.edu:7000

enCore Xpress 4.0
Copyright (C) 1997-2004
enCore Open Source
Project. All Rights Reserved

This program is Free
Software and comes
WITHOUT ANY WARRANTY!

User ID Guest
Password
Log in

System Requirements
Telnet Browse

WC XHTML 5.0 ✓

Literary Worlds
Portal

To visit login as "guest." For worlds requiring passwords contact
the literary world designer listed in the [index](#).
Pop-up blockers should be turned off and firewalls opened.
[Who is currently online?](#)

00030297

Example

Login (Literary Worlds) – Mozilla Firefox

brn227.brown.wmich.edu:7000

enCore Xpress 4.0

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Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout



about help look who guide quit

*** Connected ***
Literary Worlds Welcome Center
You view Literary Worlds Welcome Center...

You see couch, table, chair, and <chair>. You see Literary Worlds Newspaper, Coffee bar, and Johnson the Literary Worlds Security Guard. Obvious exits: {To_Teaching_to_Exceed} to Teaching to Exceed Virtual School, [north] to Campus, [BNW] to Brave New World, [TFA] to <i>Things Fall Apart</i>, [SL] to Shakespeare Learning Library, [1984 (Thoughtcrime)] to <i>1984</i>, [PP] to Pied Piper Courtyard Entrance, [BWL] to <i>Native Son</i> - Bigger's World, [MM] to Midsummer Madness, [TOS] to Taming of the Shrew, [DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immobile Hill, [ILY] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>, [GM] to "Glass Menagerie" The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon Mead-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl, [GG] to <i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens - London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF] to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside, [#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha
.....
MESSAGE OF THE DAY: Lord, what fools these mortals be!
.....
##mcp version: 2.1 to: 2.1
Johnson the Literary Worlds Security Guard says, "Hi Dickens Guest!"
go bnw

normal
 say
 emote

To Literary Worlds. Enjoy your visit! **Welcome** to Literary Worlds. Enjoy!

Literary Worlds Welcome Center



Follow the links below to virtual museums and interactive worlds!

You see:

-  [Literary Worlds Newspaper](#)
-  [Coffee bar](#)
-  [Johnson the Literary Worlds Security Guard](#)
-  [Dickens Guest](#)

Links:

-  [Teaching to Exceed Virtual School](#)
-  [Campus](#)
-  [Brave New World](#)
-  [Things Fall Apart](#)
-  [Shakespeare Learning Library](#)
-  [1984](#)
-  [Pied Piper Courtyard Entrance](#)

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

TEXTUI

*** Connected ***
Literary Worlds Welcome Center
You view Literary Worlds Welcome Center...

You see couch, table, chair, and <chair>. You see lamp, news paper, coffee bar, and Johnson the Security Guard. Obvious exits: [To_Teaching_to_Exceed] to Teaching to Exceed Virtual School, [north] to Campus, [BNW] to Brave New World, [TFA] to <i>Things Fall Apart</i>, [SL] to Shakespeare Learning Library, [1984 (Thoughtcrime)] to <i>1984</i>, [PP] to Pied Piper Courtyard Entrance, [BWL] to <i>Native Son</i>, - Bigger's World, [MM] to Midsummer Madness, [TOS] to Taming of the Shrew, [DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immobile Hill, [ILY] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>, [GM] to "Glass Menagerie" The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon Mead-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl, [GG] to <i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens - London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF] to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside, [#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha
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normal
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GRAPHICAL UI

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Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

about help look who guide quit

*** Connected ***
Literary Worlds Welcome Center
You view L

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Obvious ex:
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<i>1984</i>
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- Bigger's
Shrew,
[DL] to M
Immutable I
[ILY] to -
45!</i>, [
"Glass Men
Anglo-Saxon
Mead-Hall
[GG] to
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go bmw

normal
say
emote

Links:

- [Teaching to Exceed Virtual School](#)
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You see couch, tab
You see Literary W
Literary Worlds
Security Guard
Obvious exits: [To
School,
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(Thoughtcrime) to
<i>1984</i>, [PP]
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[North] to Campus. [EDM] to Brave New World. [TF4] to <x>Things
Fall.
[parts] to [SL] to Shakespeare Learning Library. [1984]
[Thoughts] to
[1984/x] to Pied Piper Courtyard Entrance. [BW] to
<relative_Song>
[Tamerlane's World] [HM] to Midsummer Madness. [TOS] to Taming of the
Shrew.
[EL] to Mrs. Galloway's London. [ID] to -i-Democracy-is - The
Immobility Hill.
[ILv] to iLike Island Like Relevancy. [P4H] to -i-Fahrenheit
451is. [RM] to
"Glass Menagerie" The Wingfield Apartment. [ASB] to Hiddangeard
Anglo-Saxon
Head-Hall. [XIA] to Angels in America. [WIG] to Wild Irish Girl.
[D] to
-i-The Great Gatsby-ix. [DB] to Shelter Bay. [CD] to Charles
Dickens -
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Menin. [LETTER]
to -iLord of the Flies-ix. [AGC] to General Prologue--Tabard Inn
Cheapse.
[edc] to -iHamlet the Stars-ix. [edc] to Moll's World. [edc] to
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MESSAGE OF THE DAY: Lord, what fools these mortals be!
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##mcp version: 2.1 to:
Johnson the Literary Worlds Security Guard says, "Hi Dickens Guest!
```

go bnw

Follow the links below to virtual museums and interactive worlds!

You see:

- Literary Worlds Newspaper
- Coffee bar
- Johnson the Literary Worlds
- Security Guard
- Dickens Guest

Links:

- Teaching to Exceed Virtual School
- Campus
- Brave New World
- Things Fall Apart
- Shakespeare Learning Library
- 1984
- Pied Piper Courtyard Entrance

normal
say
emote

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

about help look who guide quit

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MESSAGE OF THE DAY: Lord, what fools these mortals be!

##ncp version: 2.1 to: 2.1
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!
You view Brave New World...

Obvious exits: [in] to Main Lobby, London Center of Hatchery and Conditioning,
[south] to Literary Worlds Welcome Center
You feel that you are entering a brave new world.
Never put off to tomorrow the fun you can have today.

go in normal say emote

Brave New World
Brave New World

Brave New World is a futuristic novel written by Aldous Huxley in 1932. A visionary of sorts, Huxley believed that the rapid increase of technology and industry would ultimately undermine the social fabric of civilization. He foresaw the rise of powerful totalitarian governments that would control every aspect of their citizens' lives. In this world, human beings would be genetically, psychologically, and socially conditioned to play highly specialized roles in society.

What might these covers, taken from different editions of the novel, tell us about the book?

You see:

- [About the BNW MOO](#)
- [Web Projector](#)
- [Dickens Guest](#)

Links:

- [Main Lobby, London Center of Hatchery and Conditioning](#)
- [Literary Worlds Welcome Center](#)

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

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<i><1>1984</i></i>], [Native Son - Bigger's Son], [Shrew, [DL] to Mrs. Immutable Hi] to [ILY] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>, [GM] to "Glass Menagerie" The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon Head-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl, [GG] to <i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens - London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF] to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside, [#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha
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You feel that you are entering a brave new world.
Never put off to tomorrow the fun you can have today.

go in normal say emote

Links:

[Main Lobby, London Center of Hatchery and Conditioning](#)

You see:

[About the BNW MOO](#)
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bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

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You feel that you are entering a brave new world.
Never put off to tomorrow the fun you can have today.
You view Main Lobby, London Center of Hatchery and Conditioning...

Obvious exits: [out] to Brave New World, [east] to Hallway, [west] to The Lift

look soma

normal
 say
 emote

Main Lobby, London Center of Hatchery and Conditioning

You are in the main lobby of the London Center for Hatchery and Conditioning. The room is large and industrial looking, with polished green marble floors and stark white walls. Sitting at a large metallic desk in the center of the room is a Beta-minus receptionist. Exits include an elevator to the west and a hallway to the east.

You see:

scrap of paper
 Beta Receptionist
 Soma Station
 Dickens Guest

Links:

[Brave New World](#)
 [Hallway](#)
 [The Lift](#)

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

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45L</i>, [GM] to "Glass Menagerie" The Wingfield
Anglo-Saxon Head-Hall, [AIA] to Angels in America, [WLO] to Wild Irish Girl,
[GG] to <i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens -
London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF]
to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside,
[#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha

MESSAGE OF THE DAY: Lord, what fools these mortals be!

#\$#mcpl version: 2.1 to: 2.1
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!
You view Brave New World...

Obvious exits: [in] to Main Lobby, London Center of Hatchery and Conditioning,
[south] to Literary Worlds Welcome Center
You feel that you are entering a brave new world.
Never put off to tomorrow the fun you can have today.
You view Main Lobby, London Center of Hatchery and Conditioning...

Obvious exits: [out] to Brave New World, [east] to Hallway, [west] to The Lift

look soma

normal
 say
 emote

Main Lobby, London Center of Hatchery and Conditioning

You are in the main lobby of the London Center for Hatchery and Conditioning. The room is large and industrial looking, with polished green marble floors and stark white walls. Sitting at a large metallic desk in the center of the room is a Beta-minus receptionist. Exits include an elevator to the west and a hallway to the east.

You see:

scrap of paper
 Beta Receptionist
 Soma Station
 Dickens Guest

Links:

[Brave New World](#)
 [Hallway](#)
 [The Lift](#)

Example

The screenshot shows a browser window for enCoreXpress/4.0 (Literary Worlds). The menu bar includes icons for 'about', 'help', 'look', 'who', 'guide', and 'quit'. The main content area displays a text-based adventure game. A sidebar on the left lists exits and descriptions for locations like 'Main Lobby', 'London Center of Hatchery and Conditioning', and 'Soma Station'. The 'Soma Station' section is highlighted, featuring a 'drinking' icon and a description: 'A soma bar, complete with all of your favorite soma beverages and snacks. Works the same way as the coffee bar. Type 'drink/eat whatever from bar.' Overindulging in beverages or food items from the soma bar may result in some side effects.' Below this, there's a message from 'Johnson' and a response from 'Brave New World'. The bottom of the screen shows a text input field with the command 'eat pizza from soma' and three radio button options: 'normal', 'say', and 'emote'.

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

<1>Native Son</i>
- Bigger's World, [MM] to Midsummer Madness, [TOS] to Taming of the Shrew,
[DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immobile Hill,
[ILY] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>, [GM] to
"Glass Menagerie" The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon
Mead-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl,
[GG] to
<i>The Great Gatsby</i>, [SBI] to Shelter Bay, [CDI] to Charles Dickens -
London Bridge, [T] to V Men</i>, [LOTF] to <i>Lord of the Flies</i>
Cheapside, [#62] to <i>Number the La Mancha

Soma Station

A soma bar, complete with all of your favorite soma beverages and snacks. Works the same way as the coffee bar. Type 'drink/eat whatever from bar.' Overindulging in beverages or food items from the soma bar may result in some side effects.

Soma Station

A soma bar, complete with all of your favorite soma beverages and snacks. Works the same way as the coffee bar. Type 'drink/eat whatever from bar.' Overindulging in beverages or food items from the soma bar may result in some side effects.

MESSAGE OF THE DAY: Lord Johnson the Literary Wor

Obvious exits: [in] to Main Lobby, London Center of Hatchery and Conditioning,
[south] to Literary Worlds Welcome Center
You feel that you are entering a brave new world.
Never put off to tomorrow the fun you can have today.
You view Main Lobby, London Center of Hatchery and Conditioning...

Obvious exits: [out] to Brave New World, [east] to Hallway, [west] to The Lift
You view Soma Station...

One cubic centimeter cures ten gloomy sentiments.
Beta Receptionist [to Dickens_Guest]: What about your sentiments?

eat pizza from soma

normal
 say
 emote

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

about help look who guide quit

< Native Son</i>
- Bigger's World, [MM] to Midsummer Madness, [TOS] to Taming of the Shrew,
[DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immobile Hill,
[ILY] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>, [GM] to
"Glass Menagerie" The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon
Mead-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl, [GG] to
<i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens -
London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF]
to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside,
[#62] to <i>Number the La Mancha

MESSAGE OF THE DAY: Lor

#\$ncp version: 2.1 to:
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!
You view Brave New World...

Obvious exits: [in] to Main Lobby, London Center of Hatchery and Conditioning,
[south] to Literary Worlds Welcome Center
You feel that you are entering a brave new world.
Never put off to tomorrow the fun you can have today.
You view Main Lobby, London Center of Hatchery and Conditioning...

Obvious exits: [out] to Brave New World, [east] to Hallway, [west] to The Lift
You view Soma Station...

One cubic centimeter cures ten gloomy sentiments.
Beta Receptionist [to Dickens_Guest]: What about your sentiments?

eat pizza from soma

normal
 say
 emote

Soma Station

A soma bar, complete with all of your favorite soma beverages and snacks. Works the same way as the coffee bar. Type 'drink/eat whatever from bar.' Overindulging in beverages or food items from the soma bar may result in some side effects.

← ?

eat pizza from soma

normal
 say
 emote

eat pizza from soma

normal
 say
 emote

eat pizza from soma

normal
 say
 emote

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout

Dickens
London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF] to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside, [#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha
.....
MESSAGE OF THE DAY: Lord, what fools these mortals be!
.....
##mcnp version: 2.1 to: 2.1
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!
You view Brave New World...

Obvious exits: [in] to Main Lobby, London Center of Hatchery and Conditioning,
[south] to Literary Worlds Welcome Center
You feel that you are entering a brave new world.
Never put off to tomorrow the fun you can have today.
You view Main Lobby, London Center of Hatchery and Conditioning...

Obvious exits: [out] to Brave New World, [east] to Hallway, [west] to The Lift
You view Soma Station...

One cubic centimeter cures ten gloomy sentiments.
Beta Receptionist [to Dickens_Guest]: What about your sentiments?
You take a pizza from the Soma Station.
You take a bite out of your pizza.
Beta Receptionist [to Dickens_Guest]: Mmm . . . where's that soma dispenser?
You are empty-handed.
You pick up your pizza and eat a little more.
Our Fordship is our lordship.
Beta Receptionist says, "Never? Surely you exaggerate..."
You eat about half your pizza.
You finish off your pizza.
Everyone belongs to everyone else.
Beta Receptionist says, "Suppose Fordship were not our lordship?
What then?"

normal
 say
 emote

Main Lobby, London Center of Hatchery and Conditioning

You are in the main lobby of the London Center for Hatchery and Conditioning. The room is large and industrial looking, with polished green marble floors and stark white walls. Sitting at a large metallic desk in the center of the room is a Beta-minus receptionist. Exits include an elevator to the west and a hallway to the east.

You see:

[scrap of paper](#)
 [Beta Receptionist](#)
 [Soma Station](#)
 [Dickens Guest](#)

Links:

[Brave New World](#)
 [Hallway](#)
 [The Lift](#)

Example

enCoreXpress/4.0 (Literary Worlds) – Mozilla Firefox

bm227.brown.wmich.edu:7000/Xpress_Client/vertical_layout



Dickens London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF] to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside, [#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha
MESSAGE OF THE DAY: Lord, what fools these mortals be!
##mcip version: 2.1 to: 2.1

John You take a pizza from the Soma Station.
Obvz You You take a bite out of your pizza.
Cond [so Beta Receptionist [to Dickens_Guest]: Mmm . . . where's that soma
Never You dispenser?
You You are empty-handed.
Obvz to T You You pick up your pizza and eat a little more.
Beta Our Fordship is our lordship.
One Beta Receptionist says, "Never? Surely you exaggerate..."
You You You eat about half your pizza.
Beta disp You You finish off your pizza.
You You are empty-handed.
You You pick up your pizza and eat a little more.
Our Fordship is our lordship.
Beta Receptionist says, "Never? Surely you exaggerate..."
You You eat about half your pizza.
You You finish off your pizza.
Everyone belongs to everyone else.
Beta Receptionist says, "Suppose Fordship were not our lordship?
What then?"

Main Lobby, London Center of Hatchery and Conditioning

You are in the main lobby of the London Center for Hatchery and Conditioning. The room is large and industrial looking, with polished green marble floors and stark white walls. Sitting at a large metallic desk in the center of the room is a Beta-minus receptionist. Exits include an elevator to the west and a hallway to the east.

normal
 say
 emote

Example

GUI only and Text only modes are available

The image displays two side-by-side browser windows illustrating different user interfaces for a game environment.

Left Window (Soma Station): This window shows a graphical user interface for the "Soma Station" location. The title bar reads "Soma Station (Literary War...)" and the address bar shows "brm227.brown.wmich.edu:7000/445/". The main content area is titled "Soma Station" and contains descriptive text about the soma bar, mentioning it's complete with all favorite soma beverages and snacks, and noting that overindulging may result in side effects. A small icon of a question mark with a double arrow is visible next to the title.

Right Window (MOOtcan): This window shows a text-based user interface for "MOOtcan" located at "brm227.brown.wmich.edu:7000/mootcan/standalone.html". The text output describes a large, industrial-looking room with polished green marble floors and stark white walls. It features a large metallic desk in the center. A Beta-minus receptionist is present. Exits include an elevator to the west and a hallway to the east. The text also mentions a Beta Guest (idle 8m) is here, and provides details about the soma bar, its offerings, and the consequences of overindulgence. The text concludes with a conversation between the Beta Receptionist and a Blue Guest about a pizza.

Bottom Right Panel: A small panel in the bottom right corner of the text-based window contains three radio buttons labeled "@normal", "say", and "emote".

Only The Basics

- ▶ Entire classrooms with many users
- ▶ Log on as characters from the text
- ▶ Village of Umuofia created by Dr. Allen Webb

Village of Umuofia

An Interactive Learning Environment

Things Fall Apart



Village of Umuofia

- ▶ Users may use this environment in a variety of ways
 - ▶ A gallery of images of Igbo village that show life and traditional West African music
 - ▶ An interactive space for live action role play activities based on the novel (Things Fall Apart)

Village of Umuofia

- ▶ Literary Worlds allows users to further understand the novel's characters, environments, and themes

http://brn227.brown.wmich.edu:7000 – enCoreXpress/4.0 (Literary Worlds)

about help look who guide request quit

This is free software, and you are welcome to redistribute it under certain conditions. (See the file COPYING in the source-code distribution, or the GNU GENERAL PUBLIC LICENSE Version 2, June 1991, at <http://www.gnu.org/copyleft/gpl.html>)

trying to connect to
brn227.brown.wmich.edu on port 7777
** Connected ***
literary Worlds Cafe
you view Literary Worlds Cafe...

'ou see couch, table, and chair.
'ou see Literary Worlds Newspaper, table, and Coffee bar.
Obvious exits: [north] to Campus, [BNN] to Brave New World, [LOFT] to
ard of the Files, [TVA] to Things Fall Apart, [SL] to Shakespeare Learning
library,
[1984 (Thoughtcrime)] to 1984, [PP] to Pied Piper Courtyard
entrance, [SW] to
Bigger's World, [MW] to Midsummer Madness, [TOS] to Taming of the
Shrew, [DL] to
to Mr. Dalloway's London, [D] to The Immobile Hill, [island] to An
Island
Like You
\$#mpc version: 2.1 to: 2.1
'ou move to Things Fall Apart.
Things Fall Apart
'ou view Things Fall Apart...
'ou see Dean_of_AAS, English_Department_Chair, NWU_President,
Anthropology_Department_Chair, News_Reporters, Investigator,
Curious_Visitor,
Kalamazoo_Gazette_Reporters, Dr._Mirseler, Dr._Ginsberg, and Allen.
Obvious exits: [To_Village_Center] to Village Center, [swc] to
literary Worlds
cafe
'ou move to Village Center.
Village Center
'ou view Village Center...
'ou see Music, Disguised Man, Akueke, Ikemefuna, Nkechi, Unoka,
Nwakibie, and
Village_Crier.
Obvious exits: [To_Compound_Path] to Compound Path, [To_Forest_Path]
o Forest
Path, [To_Meeting_Path] to Meeting Path

You see:
 Music
 Disguised Man
 Akueke (asleep)
 Ikemefuna (asleep)
 Nkechi (asleep)
 Unoka (asleep)
 Nwakibie (asleep)
 Village Crier (asleep)

Links:
 [Compound Path](#)
 [Forest Path](#)
 [Meeting Path](#)

normal
say
emote

Village Center

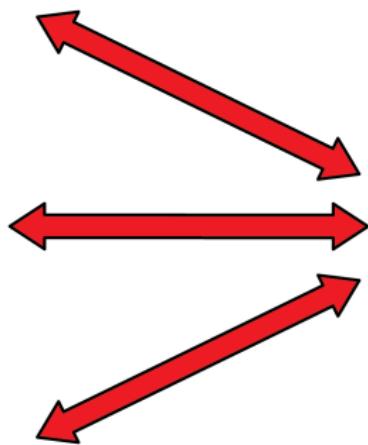


Current Technology

- ▶ LambdaMOO
 - ▶ A MUD server software package
 - ▶ Provides telnet interface
- ▶ enCore Xpress
 - ▶ A MOO database and interface
 - ▶ provides HTML interface

enCore Client-Server Diagram

PCs with Java installed
in their browsers

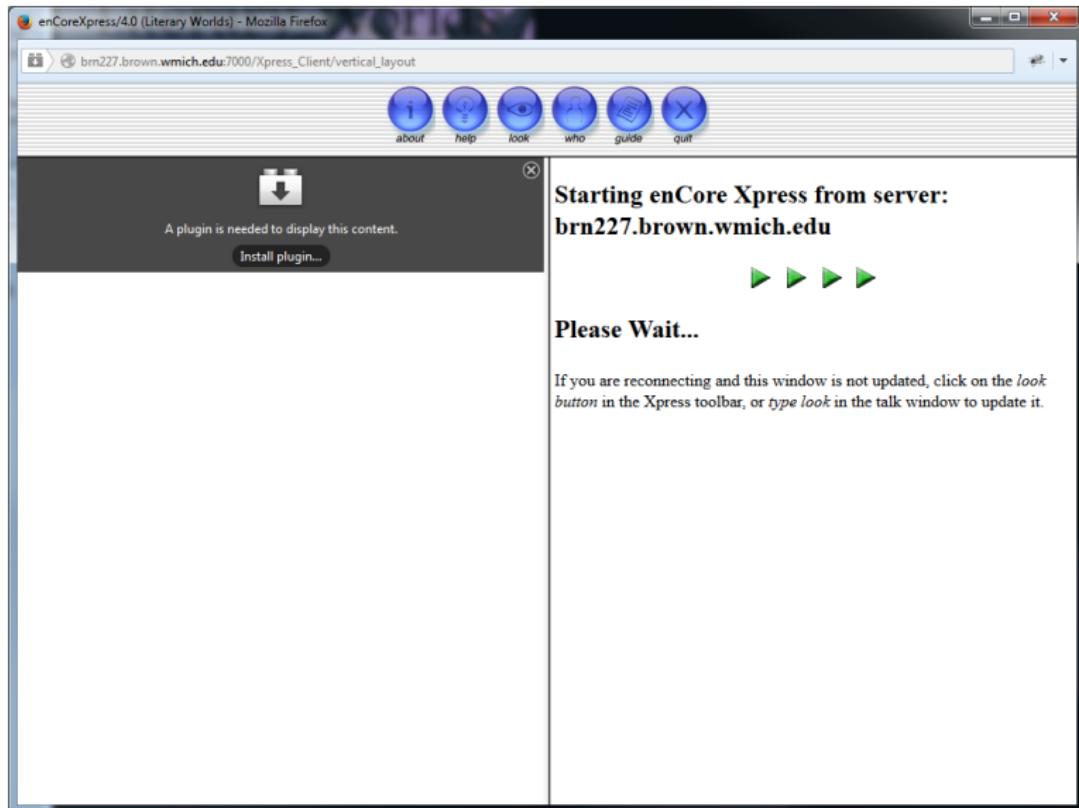


Connection via telnet
and HTTP

LambdaMOO server with
enCore database



Problems - Java



Things to Keep in Mind

- ▶ Over 20 virtual worlds currently make up Literary Worlds
- ▶ Any replacement interface needs to keep the virtual worlds functioning, as they are.
 - ▶ No change to the current server
- ▶ Need to remove the Java dependency

New Client-Server Design

- ▶ Not possible for javascript in browser to use Telnet
- ▶ Therefore, we need an intermediate server to handle Telnet
- ▶ Must support concurrent users and handle asynchronous events
- ▶ Must keep the graphical and text modes in sync as the user moves in the world

New Client Technology



socket.io



BACKBONE.JS



Bootstrap



- ▶ Socket.io
 - ▶ A websocket library for realtime communication
- ▶ Backbone.js
 - ▶ A templating library for Javascript web applications
- ▶ Bootstrap
 - ▶ A popular frontend layout toolkit
 - ▶ Provides grid system for responsive design
- ▶ Coffeescript
 - ▶ A simple language that translates to Javascript

Intermediate Server Technology



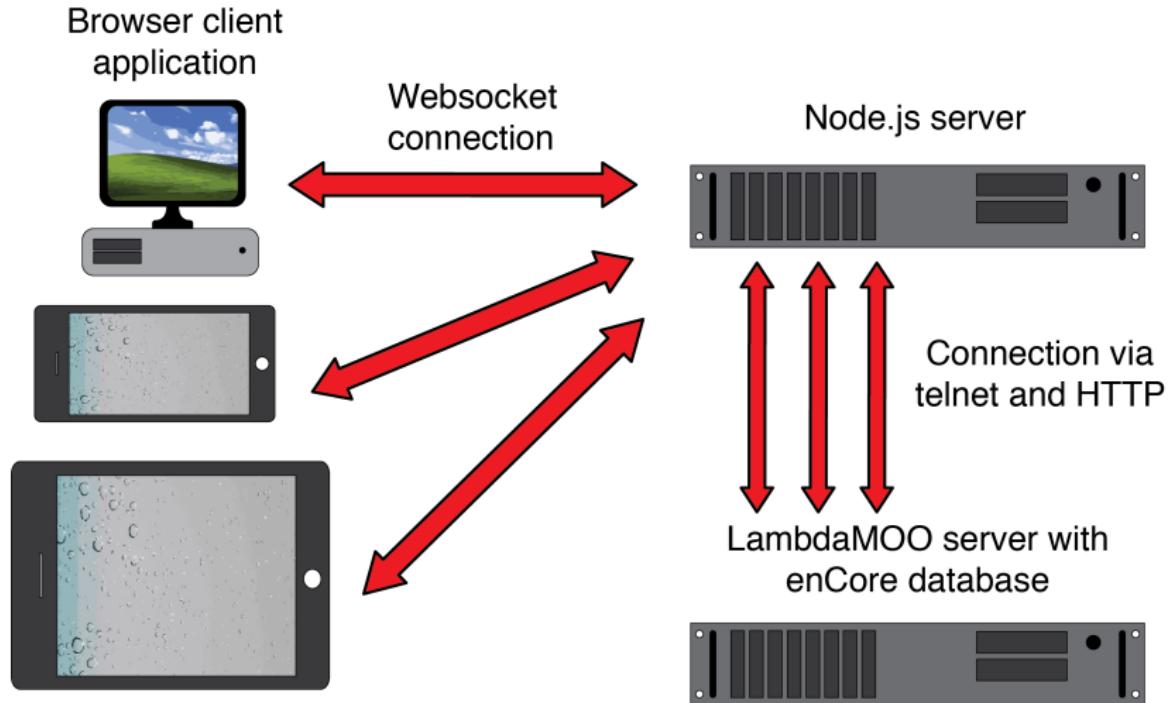
socket.io

- ▶ Node.js
 - ▶ server side runtime for Javascript built on Google's V8
- ▶ Express
 - ▶ Web app framework for Node.js
 - ▶ provides tools for REST, URL routing, cookies, etc.
- ▶ Socket.io
 - ▶ Websocket server
- ▶ Request
 - ▶ simple HTTP request library
- ▶ Cheerio
 - ▶ provides a subset of jQuery on a server
- ▶ CoffeeScript

Syncing User Experience

- ▶ enCore uses a cookie system to sync graphical and text interfaces
- ▶ New graphical and text interfaces work independently
- ▶ New client has to hook into old sync system

New Client-Server Diagram



New Client Text Interface

The screenshot shows a web browser window with the following details:

- Title Bar:** Literary Worlds, Commits - rhinoceraptor/LitWorlds, New Tab.
- Address Bar:** 127.0.0.1/#text
- Header:** Literary Worlds, Disconnect, Login, Options ▾
- Content Area:** Displays a text-based interface.

```
You see couch, table, chair, and <chair>.
You see Literary Worlds Newspaper, Coffee bar, and Johnson the Literary Worlds
Security Guard
Obvious exits: [To_Teaching_to_Exceed] to Teaching to Exceed Virtual School,
[north] to Campus, [BNW] to Brave New World, [TFA] to <i>Things Fall
Apart</i>, [SL] to Shakespeare Learning Library, [1984 (Thoughtcrime)] to
<i>1984</i>, [PP] to Pled Piper Courtyard Entrance, [BW] to <i>Native Son</i>
- Bigger's World, [MM] to Midsummer Madness, [TOS] to Taming of the Shrew,
[DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immutable Hill,
[ILY] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>, [GM] to
'Glass Menagerie' The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon
Mead-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl, [GG] to
<i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens .
London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LOTF]
to <i>Lord of the Flies</i>, [#62] to General Prologue-Tabard Inn Cheapside,
[#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha
.....
MESSAGE OF THE DAY: Lord, what fools these mortals be!
.....
$##mcp version: 2.1 to: 2.1
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!
Name           Connected   Idle time   Location
...
Dickens_Guest (#169)    8 seconds    0 seconds   Literary Worlds Welcome Center

Total: 1 person, who has been active recently.

Enter text here
```

New Client Graphical Interface

Literary Worlds Commits - rhinoceraptor/LitWorlds New Tab

127.0.0.1/#graphic

Literary Worlds Disconnect Login Options ▾

Welcome to Literary Worlds. Enjoy your visit!

Literary Worlds Welcome Center

Follow the links below to virtual museums and interactive worlds!

You see:

- Literary Worlds Newspaper
- Coffee bar
- Johnson the Literary Worlds Security Guard
- Dickens Guest

Links:

- Teaching to Exceed Virtual School
- Campus

New Client Mixed Interface

Literary Worlds Commits - rhinoceraptor/LitWorlds

127.0.0.1/#encore/62

Literary Worlds Disconnect Login Options ▾

Shrew,
[DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immutable
Hill,
[ILV] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>,
[QM] to
'Glass Menagerie' The Wingfield Apartment, [ASP] to Middangeard Anglo-
Saxon
Head-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl, [GG] to
<i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens -
London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>,
[LOTF]
to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn
Cheapside,
[#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La
Mancha

MESSAGE OF THE DAY: Lord, what fools these mortals be!

##mcp version: 2 1 to: 2 1
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!
Name Connected Idle time Location
.....
Dickens_Guest (#169) 8 seconds 0 seconds Literary Worlds Welcome
Center

Total: 1 person, who has been active recently.

Enter text here

◀ ▶

Welcome to Literary Worlds. Enjoy your visit!

Literary Worlds Welcome Center



Follow the links below to virtual museums and interactive worlds!

You see:

-  [Literary Worlds Newspaper](#)
-  [Coffee bar](#)
-  [Johnson the Literary Worlds Security Guard](#)
-  [Dickens Guest](#)

Links:

-  [Teaching to Exceed Virtual School](#)
-  [Campus](#)

Choosing Layout

Literary Worlds Disconnect Login Options ▾

127.0.0.1/#mixed

Literary Worlds

Apart</i>, [SL] to Shakespeare Learning Library, [1984 (Thoughtcrime)] to <i>1984</i>, [PP] to Pied Piper Courtyard Entrance, [BW] to <i>Native Son</i> - Bigger's World, [MM] to Midsummer Madness, [TOS] to Taming of the Shrew, [DL] to Mrs. Dalloway's London, [D] to <i>Democracy</i> - The Immutable Hill, [ILV] to <i>An Island Like You</i>, [F451] to <i>Fahrenheit 451</i>, [QM] to 'Glass Menagerie' The Wingfield Apartment, [ASP] to Middangeard Anglo-Saxon Mead-Hall, [AIA] to Angels in America, [WIG] to Wild Irish Girl, [GG] to <i>The Great Gatsby</i>, [SB] to Shelter Bay, [CD] to Charles Dickens - London Bridge, [T] to Virtual Tempest, [MM] to <i>Of Mice and Men</i>, [LDTF] to <i>Lord of the Flies</i>, [#62] to General Prologue--Tabard Inn Cheapside, [#62] to <i>Number the Stars</i>, [#62] to Moll's World, [#62] to La Mancha

MESSAGE OF THE DAY: Lord, what fools these mortals be!

##mcpl version: 2.1 to: 2.1
Johnson the Literary Worlds Security Guard says, "Hi Dickens_Guest!"

Enter text here

Text Mode Graphic Mode Mixed Mode

Settings Licenses

Welcome to Literary Worlds. Enjoy your visit!
Literary Worlds Welcome Center



Follow the links below to virtual museums and interactive worlds!

You see:

- Literary Worlds Newspaper
- Coffee bar
- Johnson the Literary Worlds Security Guard
- Dickens Guest

Links:

- Teaching to Exceed Virtual School
- Campus

HTML sequence

Browser client
application



Websocket
connection



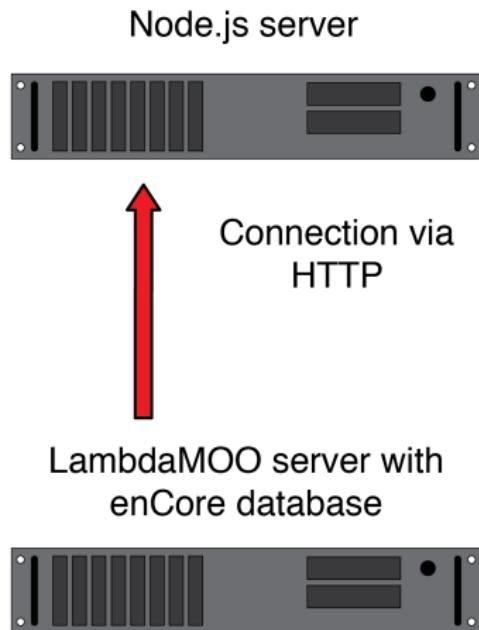
Node.js server



Step 1: Browser client requests
a page from enCore from Node.js

HTML sequence

Step 2: Node.js server scrapes
the HTML for that page



HTML sequence

Browser client
application



Websocket
connection

Node.js server



Step 3: Node.js sends the HTML, and the browser client inserts the HTML it received on the websocket into the graphical window

HTML sequence

Browser client application



Step 4: The inserted HTML will load image, sound and video assets from the enCore server over HTTP

Connection via
HTTP

LambdaMOO server with
enCore database



Future of the New Client

- ▶ Source code is hosted on Github
 - ▶ Git is popular
 - ▶ Github has a large community
- ▶ Documentation will be created using Docco
 - ▶ HTML documentation is created
 - ▶ Comments displayed alongside code
 - ▶ Comments written in markdown
- ▶ Grant may be obtained for updating Literary Worlds

Testing

- ▶ Unit Testing
 - ▶ Each individual piece of code is tested
 - ▶ This proves that the tested behaviour works
- ▶ Functional Testing
 - ▶ Test each world to compare functionality
- ▶ Considerations
 - ▶ Require.js is used to load client code
 - ▶ Testing this is difficult
 - ▶ Code structure provided by Backbone.js

Testing - Jasmine



- ▶ Jasmine - A testing framework for Javascript
- ▶ Pros
 - ▶ Works with Node.js or browser code
 - ▶ Large community
 - ▶ Good documentation
 - ▶ Readable, descriptive syntax
- ▶ Cons
 - ▶ Loading code, dependencies and tests is difficult

Security

- ▶ Security is not a main concern
- ▶ Telnet is vulnerable to eavesdropping
- ▶ Future project could implement SSL

Summary

- ▶ Literary Worlds uses a Java applet
- ▶ Used modern web technology to build new interface
- ▶ Did not change the users experience
- ▶ Removed the need for Java in browsers

Questions

