

VIRTUAL WORLDS

WHERE THEY CAME FROM AND WHERE THEY'RE GOING

13TH JULY, 2007

GAMELAB, UNIVERSITY OF OVIEDO

PROF. RICHARD A. BARTLE

ESSEX UNIVERSITY, ENGLAND

INTRODUCTION

- TODAY, I'M GOING TO BE TALKING ABOUT **VIRTUAL WORLDS**
 - WHERE THEY **STARTED**, WHERE THEY **WENT**, WHERE THEY ARE **NOW**, AND WHERE THEY'RE **GOING**
- OK, SO WHAT DO I **MEAN** BY "VIRTUAL WORLD"?
- IT'S AN **UMBRELLA** TERM THAT COVERS A **WIDE** RANGE OF SEEMINGLY **DISPARATE** ONLINE PLACES
 - ALTHOUGH IT'S SLOWLY COMING TO MEAN MORE *SECOND LIFE* THAN *WORLD OF WARcraft*
- THIS STILL DOESN'T EXPLAIN WHAT THEY **ARE** THOUGH
- ACTUALLY, THE DEFINITION IS QUITE **TRICKY**

DEFINITION

- THESE ARE THE CHARACTERISTICS OF A VIRTUAL WORLD:
- IT OPERATES USING AN UNDERLYING **AUTOMATED** RULE SET – ITS **PHYSICS**
- A **PLAYER** REPRESENTS AN **INDIVIDUAL** “IN” THE VIRTUAL WORLD – THEIR **CHARACTER**
- **INTERACTION** WITH THE WORLD TAKES PLACE IN **REAL TIME**
- THE WORLD IS **SHARED**
- THE WORLD IS **PERSISTENT**
 - **IT'S** STILL THERE WHEN **YOU'RE** NOT
- IF IT FAILS ON **ANY** OF THESE, IT'S NOT A VIRTUAL WORLD

DID YOU KNOW?

- **GOLF** WAS INVENTED IN **CHINA**
- THE *DONGXUAN RECORDS* RELATE THAT A GAME CALLED *CHUIWAN* (“HITTING BALL”) WAS PLAYED AS EARLY AS **945**

- *THE AUTUMN BANQUET*
 - MING DYNASTY



AUDIT TRAIL

- SO, IF WE WANT TO TRACE THE **HISTORY** OF VIRTUAL WORLDS, WHERE SHOULD WE **BEGIN**?
- ```
VW *FirstVW(VW *v)
{
 VW *p = Parent(v);
 return NULL == p ? v : FirstVW(p);
}
```
- WORK **BACK** FROM WHERE WE ARE **NOW** UNTIL WE RUN OUT OF THINGS THAT FIT THE DEFINITION

#### THE LORD OF THE RINGS ONLINE

- *THE LORD OF THE RINGS ONLINE*, TURBINE, 2007:



## WORLD OF WARCRAFT

- **WORLD OF WARCRAFT, BLIZZARD, 2004:**



## EVERQUEST

- **EVERQUEST, SONY ONLINE ENTERTAINMENT, 1999**



## DIKUMUD

### • DIKUMUD, COPENHAGEN UNIVERSITY, 1990

```
[x2] A barrel has been left here.
An angry-looking statue of Hoturi is standing here.
An angry-looking statue of Priapus is standing here.
A statue of Odin is standing behind the altar.
A Sign for Newbies is here.
You are a guest here until you save yourself.
```

```
If you need
to get to your guild, use the guild medallion in your inventory. If you lose
it, pray to the statue of Odin for another.
```

```
105m/202e/38hlook
```

```
Temple of Udgaard
```

```
You are inside the small and humble village temple in Udgaard. A simple
stone altar, with strange stone carvings, is placed against the north wall. A
small humble donation room is to the east. The temple exit is south to the
Village Square.
```

```
[x2] A barrel has been left here.
An angry-looking statue of Hoturi is standing here.
An angry-looking statue of Priapus is standing here.
A statue of Odin is standing behind the altar.
A Sign for Newbies is here.
```

```
105m/202e/38h
```

## ABERMUD

### • ABERMUD, ALAN COX, 1987

```
Your wimpy value is set to 15. See 'help change' to see what that means.
```

```
The Temple Of Paradise
```

```
You stand in the Temple of Paradise, a huge sandstone structure whose
walls are decorated with ancient carvings and runes, some so old that even
the priests no longer know their meanings.
```

```
A single set of steps lead south, descending the huge mound upon which the
temple is built and ending in the forests below.
```

```
A roaring fire burns here. Its flames make the temple sparkle and glitter.
```

```
At your feet a huge sacrificial pit allows you to give valuables to the gods
in the hope of being rewarded.
```

```
A furled umbrella lies here.
```

```
Obvious exits are:
```

```
North : Welcome Center
```

```
South : Forest Track
```

```
Down : Forest Track
```

```
Last login: Wed Sep 7 17:43:26 2005
```

```
>
```

## MUD

- *MUD*, ROY TRUBSHAW & RICHARD BARTLE, 1978

Narrow road between lands.

You are stood on a narrow road between The Land and whence you came. To the north and south are the small foothills of a pair of majestic mountains, with a large wall running round. To the west the road continues, where in the distance you can see a thatched cottage opposite an ancient cemetery. The way out is to the east, where a shroud of mist covers the secret pass by which you entered The Land. It is raining.

\*w

Narrow road.

You are on a narrow east-west road with a forest to the north and Gorse scrub to the south. It is raining. A splendid necklace lies on the ground.

\*

- *MUD* DIDN'T COME FROM **ANYTHING**
- THIS IS WHY **I** GET TO GIVE THIS TALK AND YOU **DON'T!**

## FAMILY TREE

- YOU CAN START AT ALMOST **ANY** MODERN VIRTUAL WORLD AND TRACE BACK TO *MUD*
  - THIS **INCLUDES** THE ONES IN THE FAR EAST
- THERE ARE **TWO** WITH **DIFFERENT** MAIN PROGENITORS
  - *DARK AGE OF CAMELOT* COMES FROM *DRAGON'S GATE*, WHICH CAME FROM *ARADATH*
  - *HERO'S JOURNEY* COMES FROM *GEMSTONE*, WHICH CAME FROM *SCEPTRE OF GOTH*
- EVEN SO, THE *MUD* LINE **ALSO** INFLUENCED THEM

NOTE

- *MUD* WAS A **TEXTUAL** WORLD
- A LOT OF WHAT WAS **POSSIBLE** IN TEXT **CEASED** TO BE POSSIBLE IN GRAPHICS
  - IN DESIGN TERMS, THEY WENT **BACKWARDS**
- AT LAST, THOUGH, GRAPHICS ARE **CATCHING UP**
  - SOON, **ANYONE** WILL BE ABLE TO CREATE ONE
- **GRAPHICAL** WORLDS ARE FOLLOWING THE **SAME** EVOLUTIONARY PATH THAT **TEXTUAL** ONES DID
  - SO **PAY ATTENTION!**

DID YOU KNOW?

- **GOLF** WAS INVENTED IN **FRANCE**
- HERE'S AN ILLUSTRATION FROM *LES HEURES DE LA DUCHESSE DE BOURGOGNE*, CIRCA **1500**
  - A MONTH-BY MONTH PRAYERBOOK
  - IN PARTICULAR **SEPTEMBER**



#### MUD VERSIONS

- THERE WERE **THREE** EARLY VERSIONS OF *MUD*
- VERSION **1** (1978) WAS A SIMPLE **PROTOTYPE** TO TEST THE BASIC PRINCIPLE
  - IT TOOK A COUPLE OF HOURS TO WRITE
- VERSION **2** (1978) WAS THE **REAL THING**
  - WRITTEN IN DECSYSTEM-10 ASSEMBLER
  - FEATURED DYNAMIC OBJECT CREATION
- IT WOULD **STILL** BE RECOGNISABLE AS A VIRTUAL WORLD **TODAY**

#### MUDI

- VERSION 2 BECAME **TEDIOUS** TO MAINTAIN, SO ROY REWROTE IT FROM SCRATCH IN **BCPL**
- VERSION **3** WAS PLAYABLE BY **EASTER 1980**
  - THIS IS WHEN **I** TOOK OVER DEVELOPMENT
- IT WAS BUILT AS A **GAME**, NOT AS A **TOY**
  - **ORIGINAL** IDEA, TO MAKE A TOY FROM WHICH GAMEPLAY EMERGED, WAS TOO HARD TO IMPLEMENT
- LATER, "MUD" WAS USED FOR THE ENTIRE **GENRE**, SO THIS *MUD* WAS DUBBED *MUDI*
  - EVEN THOUGH IT WAS **ACTUALLY** VERSION 3



#### PHILOSOPHY

- *MUD* WAS ALL ABOUT **FREEDOM**
- WE **DELIBERATELY** MADE THE WORLD OPEN-ENDED, WITH **NO** IMPOSED NARRATIVE
- WE WANTED A PLACE WHERE PEOPLE COULD **BE** AND **BECOME** THEMSELVES
  - **VERY** IMPORTANT TO US
- WE SPECIFIED AS **LITTLE** ABOUT PLAYER CHARACTERS AS WE COULD
  - NAME AND GENDER **ONLY** - NO DESCRIPTIONS
    - AND WE ONLY HAD **GENDER** BECAUSE **ENGLISH** FORCED IT ON US

#### CHILDREN

- PEOPLE SAW *MUD*, AND WERE INSPIRED BY IT TO WRITE THEIR **OWN** VIRTUAL WORLDS
- **SEVERAL** VIRTUAL WORLDS WERE WRITTEN BY **PLAYERS** OF *MUDI*
- THE **BIG 3** WERE *MUDI*, *SHADES* AND *GODS*
- THEN THE **BIG 4** WITH *MIRRORWORLD*
- THEN THE **BIG 5** WITH *FEDERATION II*
  - THERE NEVER WAS A *FEDERATION I...*
- (NONE OF THESE ACTUALLY **WERE** BIG COMPARED TO WHAT WAS TO COME, OF COURSE)

## RANGE

- 10 YEARS LATER, WE HAD A **FLOWERING** OF NEW *MUDI* DESCENDENTS:
  - *FEDERATION II* - SPACE OPERA
  - *THE ZONE* - ADULT (SCORE TO SCORE)
  - *DARK CITY* - CYBERPUNK
  - *STRAT* - HOLIDAY ON THE MOON
  - *TRASH* - "FIRE-BREATHING **CABBAGES** AND INFLATABLE HOVER-CARS"
  - *VOID* - MAGICAL ADULT
  - *PRODIGY* - ANCIENT BRITAIN
  - *EMPYRION* - UNDERWATER CITY
  - *SPACERS* - GENERATION SPACESHIP

## FANTASY

- EVEN THE **FANTASY** WORLDS **VARIED** CONSIDERABLY
  - *GODS* - END GAME PLAYERS CAN CREATE OBJECTS USING POINTS GIVEN BY WORSHIPPERS
  - *MIRRORWORLD* - ROLLING RESETS
  - *AVALON* - GRID-BASED IN PLACES
  - *BLOODSTONE* - OBJECT DECOMPOSITION (HUMANS MADE OF **260** PARTS)
  - *AMP* - OBJECTS WITH SHAPE
  - *STRATA* - INTERNAL CURRENCY
  - *WARLORD* - HIGHLY COMBAT-INTENSIVE

#### BREAKING FREE

- UP UNTIL THIS POINT, VIRTUAL WORLD DEVELOPMENT WAS MAINLY A **UK** THING
  - FOR LARGE **MAINFRAMES** OR HOME-BUILT KIT
- *ABERMUD* WAS DIFFERENT: IT RAN UNDER **UNIX**
- WHEN IT WAS RELEASED, IT *RAPIDLY* SPREAD ACROSS UNIVERSITY MACHINES **WORLDWIDE**
  - TENS OF **THOUSANDS** OF PEOPLE PLAYED IT
  - THEY **DIDN'T** SEE THE **OTHER** EARLY WORLDS
- THEY WERE INSPIRED BY *ABERMUD* TO WRITE THEIR **OWN** VIRTUAL WORLDS

#### THE GREAT SCHISM

- THERE HAD ALWAYS BEEN A MIX OF ACHIEVERS AND SOCIALISERS IN THE OLD VIRTUAL WORLDS
  - MOST APPEALED TO **BOTH**
- *ABERMUD* WAS MORE ON THE **GAME** SIDE
  - SOCIALISERS FELT **SHUT OUT**
- IN 1989, **JIM ASPNES** AT CARNEGIE MELLON WROTE *TINYMUD*
- IT DROPPED ALL **GAME** ELEMENTS AND CONCENTRATED ON **BUILDING**
  - BASED ON IDEAS FROM RICH SKRENTA'S *MONSTER*

#### SOCIAL WORLDS

- *TINYMUD* **BURNT OUT** QUICKLY, BUT NOT BEFORE INSPIRING STEPHEN WHITE TO WRITE *TINYMUCK*
- HE THEN USED *TINYMUCK* AS A **TEMPLATE** FOR *MOO*
- *TINYMUCK* **ALSO** INSPIRED LARRY FOARD TO WRITE *TINYMUSH*
- THUS, WE GOT **THREE** MAIN SOCIAL WORLD BRANCHES FROM *TINYMUD*: THE **MUCKS, MUSHES** AND **MOOS**
- MOST **FAMOUS** OF THESE WAS *LAMB DAMOO* – THE *SECOND LIFE* OF ITS DAY
  - FULL OF JOURNALISTS, EDUCATORS AND SELF-SATISFACTION...

#### BACKLASH

- **FREED** FROM HAVING TO SATISFY SOCIALISERS, THE ACHIEVERS WENT **HARD CORE**
- *DIKUMUD* WAS **ALL GAME**
  - IT INCORPORATED MANY ELEMENTS FROM *DED*
  - **HARD-CODED**, IT RAN **FAST**
- IT WAS VERY EASY TO SET UP, AND WE GOT OVER A **THOUSAND** OF THEM AS A RESULT
  - MAINLY **CLONES** OF EACH OTHER, BUT SOME WERE **EXTENSIVELY** REWRITTEN
- *DIKUMUDS* HAVE A **LARGE** BRANCH OF THE *MUD* FAMILY TREE, WITH **MANY** SPIN-OFFS

#### MIDDLE WAY

- LARS PENSJO'S *LPMUD* WAS A MIDDLE WAY
- IT HAD **GAME** MECHANICS, BUT WAS PROGRAMMABLE USING ITS **LPC** LANGUAGE
- LPMUDS WERE CHARACTERISED BY *originality*
  - THEY TENDED TO BE VERY **DIFFERENT** FROM EACH OTHER
- THEY WERE HARDER TO INSTALL, THOUGH, AND APPEALED MORE TO **PROGRAMMERS** THAN **GAMERS**
- DIKUMUDS **BRUSHED** THEM ASIDE

#### END OF AN ERA

- AFTER THE SPLIT, THINGS SETTLED DOWN:
  - 1989 *TINYMUD*
  - 1989 *LPMUD*
  - 1990 *DIKUMUD*
  - 1990 *MOO*
  - 1990 *TINYMUCK*
  - 1991-PRESENT ONE OF THE ABOVE...
- THE CAPACITY FOR INNOVATION WAS **REDUCED** ONCE GAME ENGINES BECAME A **VIABLE** OPTION

#### LONGEVITY

- IN 1994 (IMMEDIATELY PRE-WWW), **10%** OF **ALL** INTERNET TRAFFIC BELONGED TO **MUDS**
- AT LEAST **20** OF THESE ARE **STILL RUNNING**, 15 YEARS OR MORE LATER
  - IN *MUDS*' CASE **25** YEARS LATER...
- AROUND **1,700** ARE LISTED AS **OPEN** TO THE PUBLIC
  - THE FIGURE HAS HELD STEADY FOR OVER A **DECADE**
- MOST OF THEM ARE **FREE** TO PLAY

#### DID YOU KNOW?

- **GOLF** WAS INVENTED IN **ANCIENT EGYPT**
  - FROM THE TOMB OF KHETI AT BENI-HASAN, 2600BC



- THIS ROCK TOMB'S WALLS ARE **COVERED** IN PAINTINGS OF ANCIENT EGYPTIAN **SPORTS**

## OTHERS

- AS I HINTED AT EARLIER, *MUD* WASN'T THE **ONLY** EARLY VIRTUAL WORLD
- WHETHER IT WAS **CHRONOLOGICALLY** FIRST DEPENDS ON YOUR DEFINITION OF "VIRTUAL WORLD"
  - IT IS BY **MINE**, BUT THEN IT **WOULD** BE...
- THESE OTHER EARLY **FLOWERS** DIDN'T **FLOURISH**
  - THEY DIDN'T DEVELOP **SEEDS** OF THEIR OWN
- SURPRISINGLY, **GRAPHICAL** WORLDS SUFFERED MOST

## AVATAR

- *AVATAR*, BRUCE MAGGS, ANDREW SHAPIRA & DAVID SIDES, 1979

```
Enguin
*Enguin
1st player of 1
Good (Good)
Traveler (25)
Magically locked.
+ 1. 2 Footpads

1. Hands
2. Potion of Neutralization [1]
3. Elven Potion [2]
4. Potion of Curing [4]
5. Potion of Health [4]
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.
21.
22.
23.
24.
25.
26.
27.
28.
29.
30.
31.
32.
33.
34.
35.
36.
37.
38.
39.
40.
41.
42.
43.
44.
45.
46.
47.
48.
49.
50.
51.
52.
53.
54.
55.
56.
57.
58.
59.
60.
61.
62.
63.
64.
65.
66.
67.
68.
69.
70.
71.
72.
73.
74.
75.
76.
77.
78.
79.
80.
81.
82.
83.
84.
85.
86.
87.
88.
89.
90.
91.
92.
93.
94.
95.
96.
97.
98.
99.
100.

Hits 149/149
Spells 88
Spell level 13
Att/Def 57/69
Exp 153,114
Gold 8
Age 18
Gnome male
Str 16
Int 13
Wis 13
Con 18
Cha 12
Dex 14

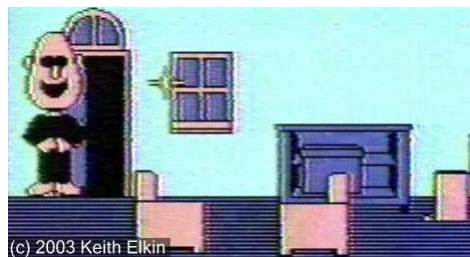
7. Flask
* You spent 2 days recovering.
"charm of opening" thrown.
```

#### ISOLATION

- *AVATAR* RAN ON THE **PLATO** SYSTEM
- BASED ON A 1977 GAME CALLED *OUBLIETTE*
  - CLAIMED BY SOME AS THE “FIRST” VIRTUAL WORLD
- PLATO’S ADVANTAGE: ALL USERS HAD **IDENTICAL** VECTOR GRAPHICS **DISPLAYS**
  - IMAGES WERE **EASY** TO DO!
- PLATO’S DISADVANTAGE: **NOT** TRANSPORTABLE
- *AVATAR*’S **INFLUENCE** ON VIRTUAL WORLD DEVELOPMENT WAS PRETTY WELL **ZERO**

#### HABITAT

- *HABITAT*, F. RANDALL FARMER AND CHIP MORNINGSTAR, 1985



- A **SOCIAL** VIRTUAL WORLD, IT WAS TOO SPECIFIC TO COMMODORE 64S TO HAVE CHILDREN



## ASCII GRAPHICS

- *ISLAND OF KESMAI*, KELTON FLINN & JOHN TAYLOR, 1981:

```
[][][][]- -[] orc sword shield chain
[] A S [] A Jennie.c
/ > +++++ [] A 2 skeletons
[] +++++ [] B trolls
[] B dn []
[][][][][][]

Swing hits with moderate damage
Skeleton is slain
Orc is blocked by your armour
Troll: kia ardata luuppatar ne

>throw bottle at troll
R mace Hits Hits On Stamina Exper. M. Pnts.
L bottle 35 5 10 6523 9
```

- THEY WERE primitive, BUT THEY WERE STILL **GRAPHICS...**

## INSPIRED

- *ISLAND OF KESMAI* DID INSPIRE OTHERS
- *NEVERWINTER NIGHTS*, 1991



*KINGDOM OF DRAKKAR*, 1992

## UNINSPIRED

- HOWEVER, AFTER 15 YEARS OR SO THE *10K* LINE **ALSO** DIED OUT
- REASON: THERE WERE MANY **MORE** WOULD-BE **DESIGNERS** AND **DEVELOPERS** WITH A **MUD** BACKGROUND
  - BECAUSE OF ALL THOSE **FREE** GAMES
- COMPANIES WANTING TO MAKE **GRAPHICAL** WORLDS HAD A **LARGE** POOL OF *MUD* TALENT TO DRAW ON
  - VERY **FEW** PEOPLE HAD WORKED ON *10K*-LINE GAMES
- THERE WAS SO **MUCH** SPARE TALENT THAT SOME STARTED UP THEIR **OWN** DEVELOPMENT COMPANIES

## DEAD ENDS

- OF COURSE, NOT **ALL** THOSE IDEAS HAD A **FUTURE**
- *SHADOWS OF YSERBIUS*, 1992



*THE REALM*, 1997

CLOSE...

- **MERIDIAN 59**, MIKE SELLERS & DAMION SCHUBERT, 1996



- **M59** WAS **ALMOST** A BREAKTHROUGH PRODUCT, BUT IT NEEDED TOO HIGH A SPECIFICATION **PC** AND **MODEM**

ULTIMA ONLINE

- THINGS CHANGED WITH **ULTIMA ONLINE**, 1997



## STATS

- *ULTIMA ONLINE* OBTAINED **100,000** SUBSCRIBERS WITHIN A YEAR
- NOW, **10 YEARS LATER**, IT **STILL** HAS SOMETHING LIKE **100,000** SUBSCRIBERS
  - AFTER PEAKING AT 250,000 IN 2003
- IT **STILL** TAKES OVER **\$1,000,000** A MONTH
  - AND IT'S BEEN RUNNING FOR NEARLY **120 MONTHS!**
- *UO* MADE **REGULAR** COMPUTER GAMERS **NOTICE** VIRTUAL WORLDS
  - AND REGULAR COMPUTER GAME **DEVELOPERS...**
- *LINEAGE* DID THE SAME THING IN **KOREA**

## LINEAGE

- *LINEAGE*, NC SOFT, 1997



#### BIG REVISITED

- **GRAPHICAL** WORLDS WERE WRITTEN BY PLAYERS OF **TEXTUAL** WORLDS
- IN THE WEST, THE **BIG 3** WERE *ULTIMA ONLINE*, *EVERQUEST* AND *ASHERON'S CALL*
- THEN THE **BIG 4** WITH *ANARCHY ONLINE*
- THEN THE **BIG 5** WITH *DARK AGE OF CAMELOT*
- NONE OF THESE ACTUALLY **WERE** BIG COMPARED TO WHAT WAS TO COME, OF COURSE...
- (IS THIS SOUNDING **FAMILIAR** AT ALL?)

#### THE POINT

- **BIG N** WORLDS SHOW WHAT'S **FEASIBLE**
- IN THE MINDS OF THE **IMAGINATIVE**, THEY ALSO SHOW WHAT'S **POSSIBLE**
- **ALL** PLAYERS WANT TO BE **DESIGNERS**
- ONLY A FEW ACTUALLY **ARE** DESIGNERS
  - MOST JUST WANT TO **PLAY** THEIR DESIGNS
- BUT WHEN YOU GET A **CRITICAL MASS** OF DESIGN TALENT, YOU GET A **FLOWERING**
  - A **BRIEF** PERIOD BEFORE GAME ENGINES APPEAR AND **CONSTRAIN** CREATIVITY



SCIENCE FICTION

- NOT **ALL** THESE ARE WORLDS OF **HIGH FANTASY**
- *MATRIX ONLINE BETA, 2004*



COMIC BOOKS

- THIS IS A **COMIC BOOK** WORLD



- *CITY OF HEROES, 2004*

#### NON-GAMES

- SOME VIRTUAL WORLDS AREN'T EVEN **GAMES**



- *SECOND LIFE, 2003*

#### THE FUTURE (I)

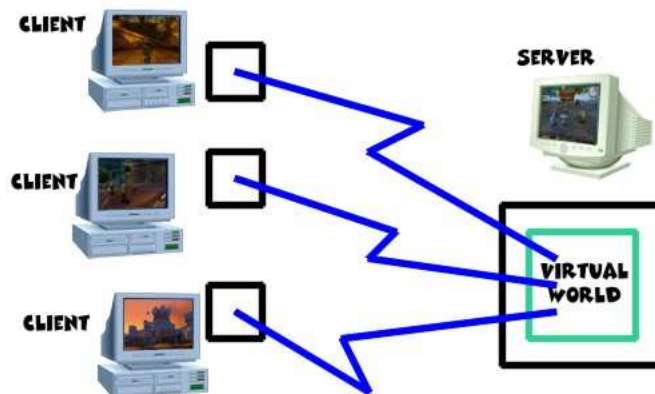
- BY SEEING WHAT HAPPENED TO **TEXTUAL** WORLDS, WE CAN PREDICT WHAT WILL HAPPEN TO **GRAPHICAL** ONES
- **FIRSTLY**, WE'RE ABOUT TO SEE AN INFUX OF ORIGINAL **NEW** VIRTUAL WORLDS
  - MAINLY **SMALL-SCALE**, ~10,000 PLAYERS
- **SECONDLY**, THERE WILL BE **SDKS** AND **ENGINES** AVAILABLE TO ASSIST CONSTRUCTION
  - GETTING THIS NOW, *EG.* MULTIVERSE AND AREA
  - **ART** ASSETS ARE WHAT'S HOLDING THINGS UP

## THE FUTURE (2)

- **THIRDLY**, ONCE INDIVIDUALS **HAVE** THE ABILITY TO MAKE THEIR **OWN** VIRTUAL WORLDS, MOST CREATIONS WILL BE **AWFUL**
- SOME, THOUGH, WILL BE **AMAZING!**
- IF EVEN ONLY **1%** IS, THAT COULD **STILL** MEAN WE HAVE **MILLIONS** OF THEM
  - LIKE WITH PERSONAL **WEB** SITES
- **FOURTHLY**, THERE'S MORE TO COME
  - **MUCH** MORE!

## ARCHITECTURES I

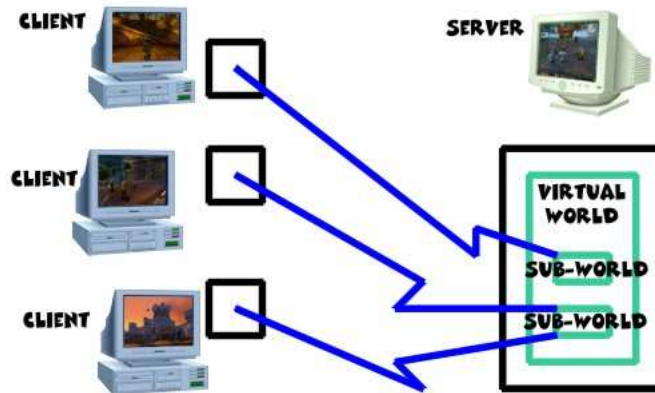
- CLASSIC **CLIENT/SERVER** ARCHITECTURE, EG. *WOW*
  - (ACTUALLY, MULTIPLE SERVERS USING 5-10 COMPUTERS EACH)





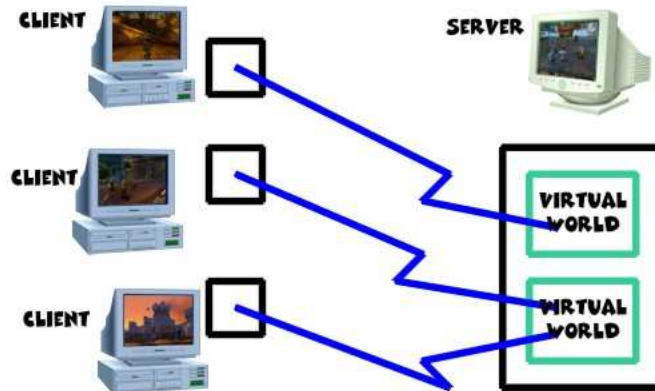
ARCHITECTURES 2

- **SUB-WORLD** HOSTING, EG. *SECOND LIFE*  
– (ONE SERVER USING SEVERAL HUNDRED COMPUTERS)



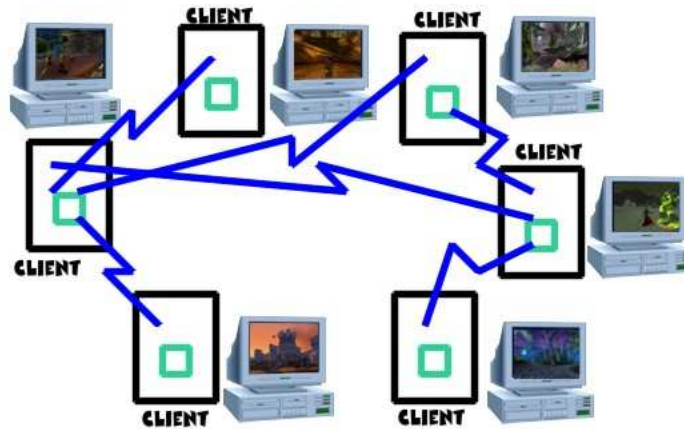
ARCHITECTURES 3

- INDEPENDENT VIRTUAL WORLD HOSTING (EG. TEXT MUDS)



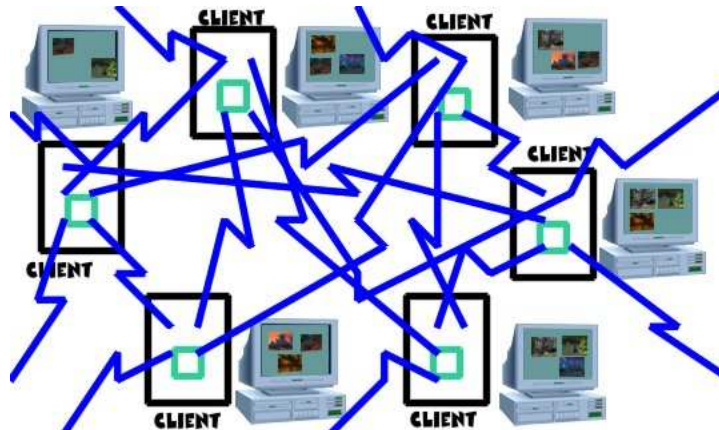
#### ARCHITECTURES 4

- **DISTRIBUTED** SYSTEM
- MANY COMPUTERS, MANY VIRTUAL WORLDS



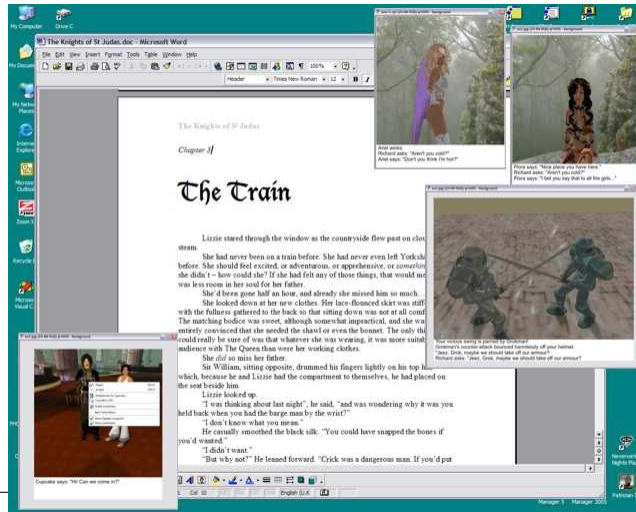
#### ARCHITECTURES 5

- **FULL** DISTRIBUTION
- MULTIPLE VIRTUAL WORLD CLIENT/SERVERS PER PC



COMING SOON

- **PERSONAL** WORLDS AS **EASY** TO USE AS IM!

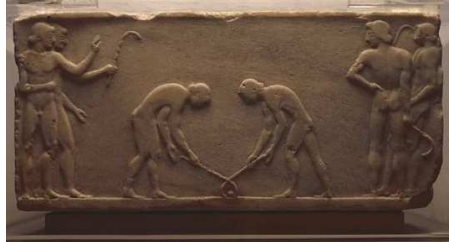


THAT'S IT!

- OK, SO IT WAS ONLY A **BRIEF** HISTORY, BUT I HOPE IT'S GIVEN A **FLAVOUR** OF WHAT VIRTUAL WORLDS ARE ABOUT
- IF YOU **REALLY** WANT TO KNOW MORE, JUST **PLAY** ONE AND **IMAGINE**
- OH, **ONE** LAST THING...

### DID YOU KNOW?

- **GOLF WAS INVENTED IN ANCIENT GREECE**  
– ATHENS NATIONAL MUSEUM, 1300BC



- GOLF WAS **ALSO** INVENTED IN **ANCIENT ROME (PAGANICA)**, **ENGLAND (CAMBUCA)**, **IRELAND (CAMANACHD)** AND THE **NETHERLANDS (KOLF)**

### OBVIOUSNESS

- HITTING A **BALL** INTO A **HOLE** WITH A **STICK** IS AN **OBVIOUS** IDEA
- THE **SAME** APPLIES TO **VIRTUAL WORLDS**
- HAVING A **COMPUTER** SIMULATE AN IMAGINARY **WORLD** IS AN **OBVIOUS** IDEA
- VIRTUAL WORLDS HAVE BEEN INDEPENDENTLY **INVENTED** AT LEAST **7** TIMES:
  - MUD, SCEPTRE OF GOTH, AVATAR, ISLAND OF KESMAI, ARADATH, HABITAT, MONSTER
- WE WERE **ALWAYS** GOING TO GET THEM

#### HOW IT HAPPENED

- THE MODERN GAME OF GOLF IS **ENTIRELY** THE PRODUCT OF **SCOTLAND**
- FOLLOW THE **AUDIT TRAIL** FROM THE **US MASTERS** BACK IN TIME, AND IT ENDS AT **SCOTLAND** – JUST HOW IT **HAPPENED**
- FOLLOW THE AUDIT TRAIL FROM **LOTRO** BACK AND YOU REACH **MUD**
- **ALSO** JUST HOW IT **HAPPENED**: WRITING **MUD WAS NOT AN ACT OF GENIUS**
- THAT SAID, IT **WAS** A LOT OF **FUN**, THOUGH!