

Austin GDC

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CCP GAMES

Economic Design and Management of Virtual Worlds with a Large Shard Population

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Overview

- Assumptions and general framework for the economic design of Massively Multiplayer Online Games
- Game design and management of MMOG economies
 - EVE Online
- Game design and economics
 - Examples from Eve Online and other games



MMOG

- Massively Multiplayer Online Role Playing games
- Massively Multiplayer
 - Means hundreds, thousands or even hundreds of thousands of players participating in the same *persistent* world.
- Online
 - Single universe vs. multiple copies of the same universe



It is not a computer game....

- ... as we generally understand computer games
- It is a place where people come together....
- It is a place where people enjoy the same experience...
- It is a place where people have fun together.....



Virtual Worlds

- Virtual realities
 - Trying to mimic the real?
 - Not so!
- Alternate worlds/Alternate experience
 - Communicate with other humans under different sets of rules and regulations
 - But the same economic principals apply
- Theme parks, Social worlds, Sandboxes, coffee shops....



Scarcity

- Fundamental assumption
- Would the gameplay be any fun if there is no scarcity? Why not?
- The pleasure is in the journey - not the destination



Behavior

- Individual decisions
- Evaluating options given constraints
- Results in valuation of options, i.e. prices
 - Relative prices and relative scarcity
- The objectives are as many as the players
 - Impossible for the designer to “value” items
 - Allow the players to exchange – player driven market



Exchange

- Division of labor
 - Allows for specialization
 - Calls for exchange of items, i.e. market
- Competitive advantage
 - Absolute advantage kills interaction



Market

- Conditions for a perfect market
 - Large number of participants
 - Homogenous products in quality
 - Free entry/exit into/from markets
 - Perfect information
- What are the conditions for a fun market?



Other topics

- Monetary theory
- Trade theory – exchange between Real World and the virtual world
- Consumer theory – return from gameplay



Monetary Theory

- Price stability
 - Growth in money must match growth in **wealth**
 - Game balance issues
- Too much monetary growth
→ Inflation
- Too little monetary growth
→ Deflation



Controlling the money supply

- Sinks or drains
 - NPC Consumables
 - Item Maintenance
 - Transportation
 - Special Rentals
 - Taxes



Principles

- Scarcity
 - Local scarcity / “Economic Landscape”
 - Overall scarcity
- Exchange
 - Not self-sufficient
 - Design with interactions in mind
- The Invisible Hand
 - Applies to players, not static NPCs

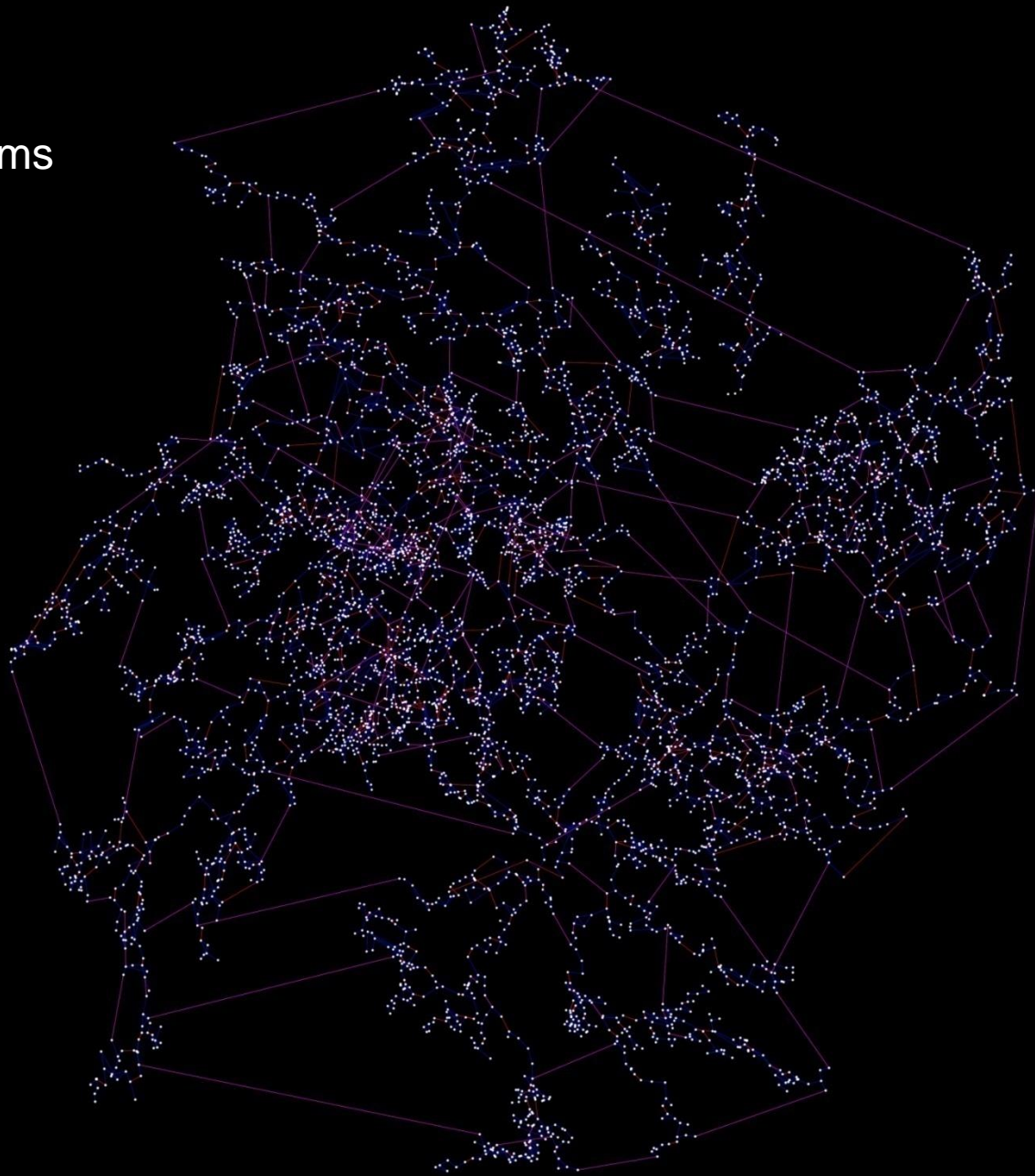


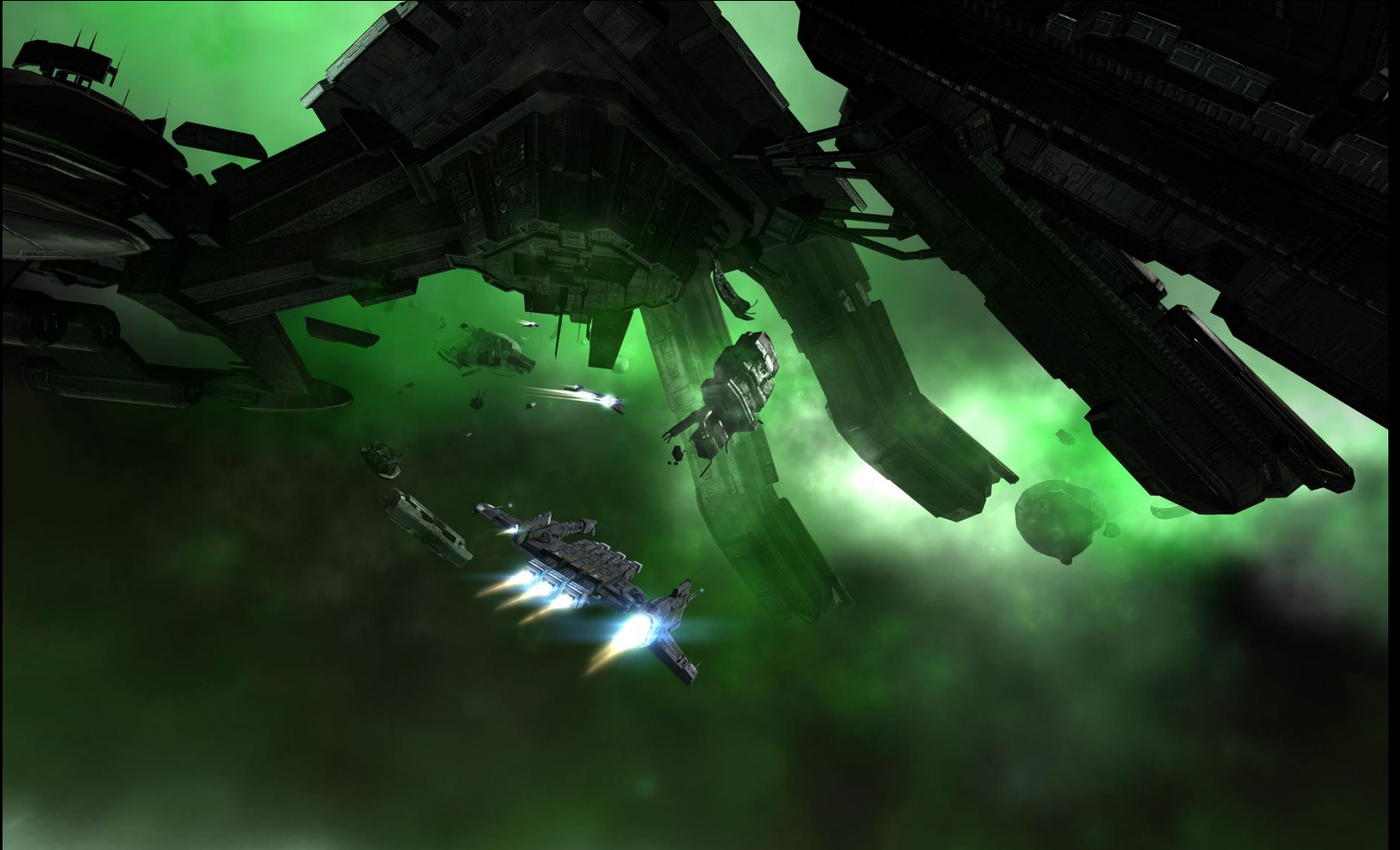
EVE Online

- Play on One Server - 245.000
 - EVE Online is a leader in online gaming technology, hosting hundreds of thousands of players in the same persistent universe.
- Liberating advancement
 - Never "grind" for a skill again. Because the EVE universe is persistent, skills increase even while offline.
- PvP based on strategy, not levels
 - Tactics have value in EVE Online. Experience and treachery will often beat top-of-the-line modifications and fancy ships.
- Free EVE Online expansions
 - Never be charged for an EVE expansion – as the EVE universe grows, so do the benefits of the subscription.

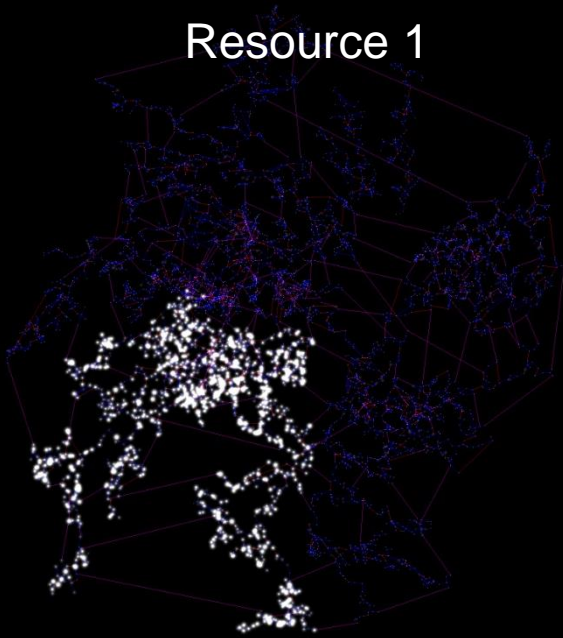


One Universe
66 regions
500 Solar systems

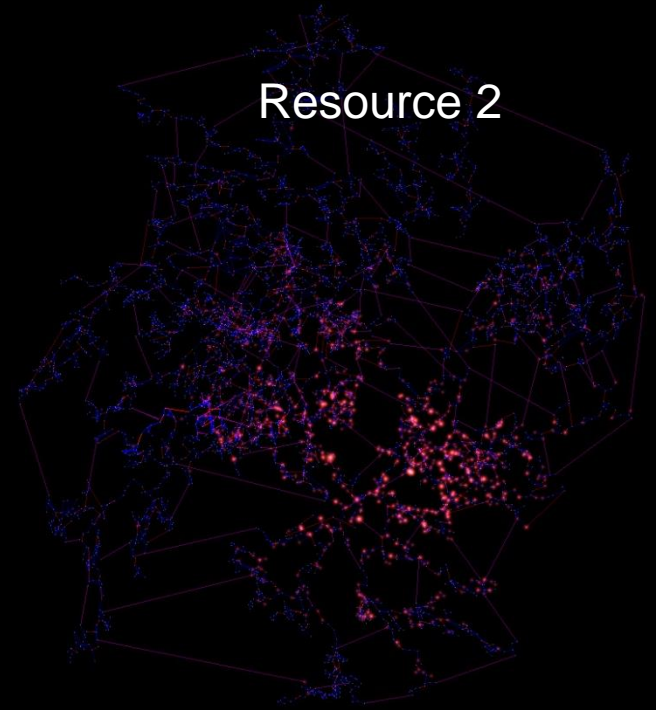




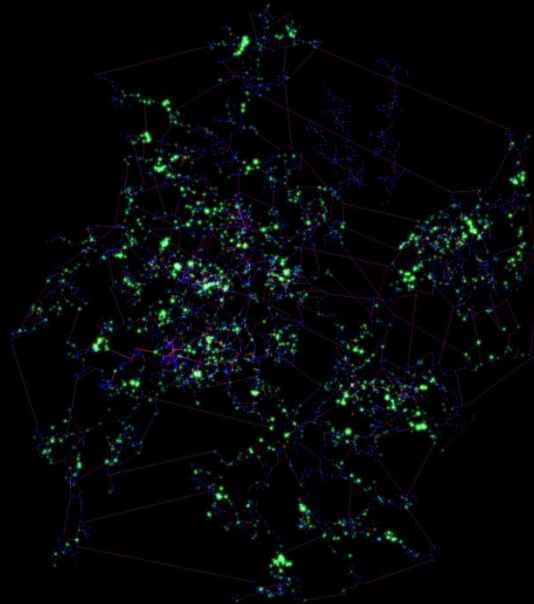
Resource 1

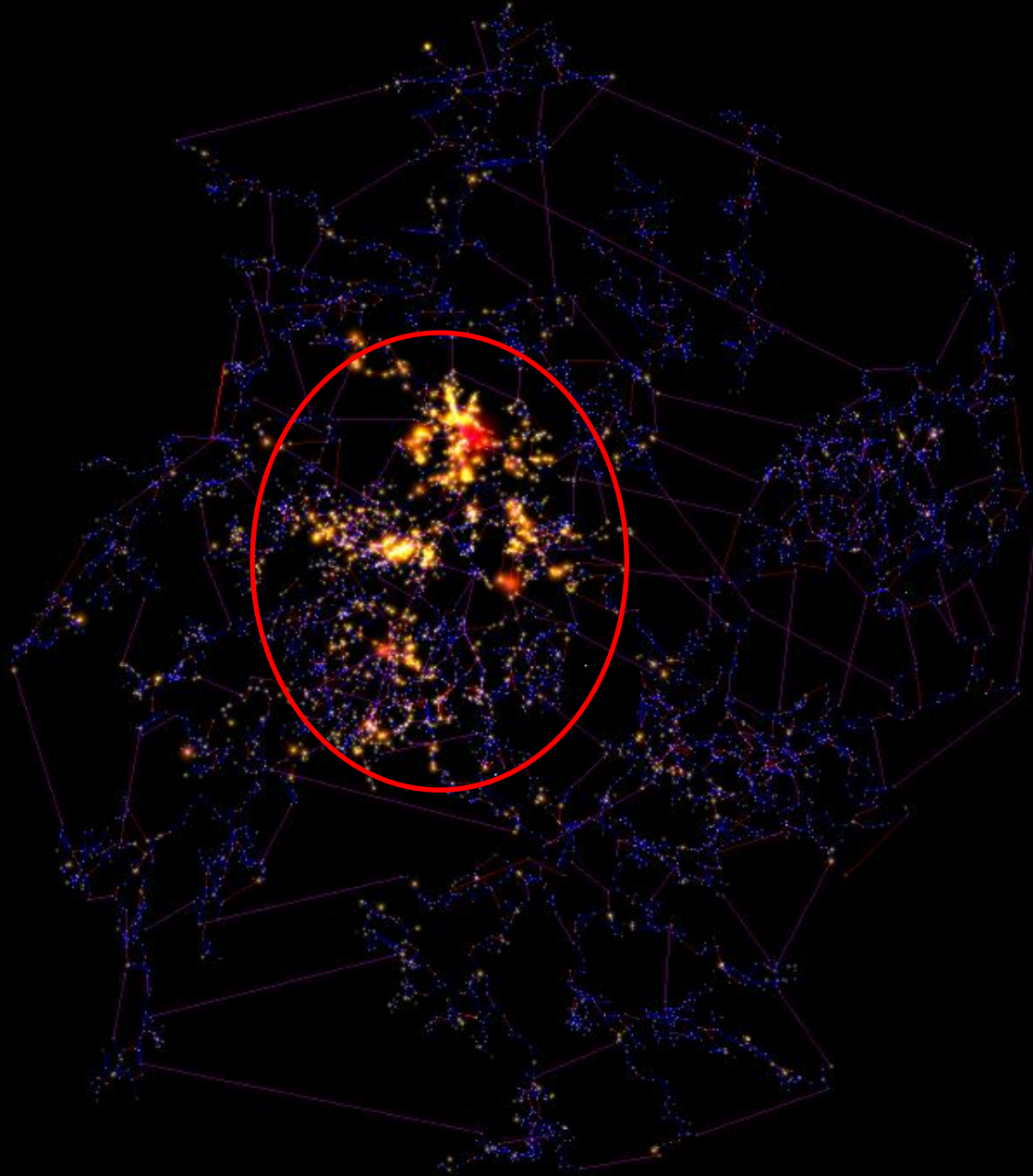


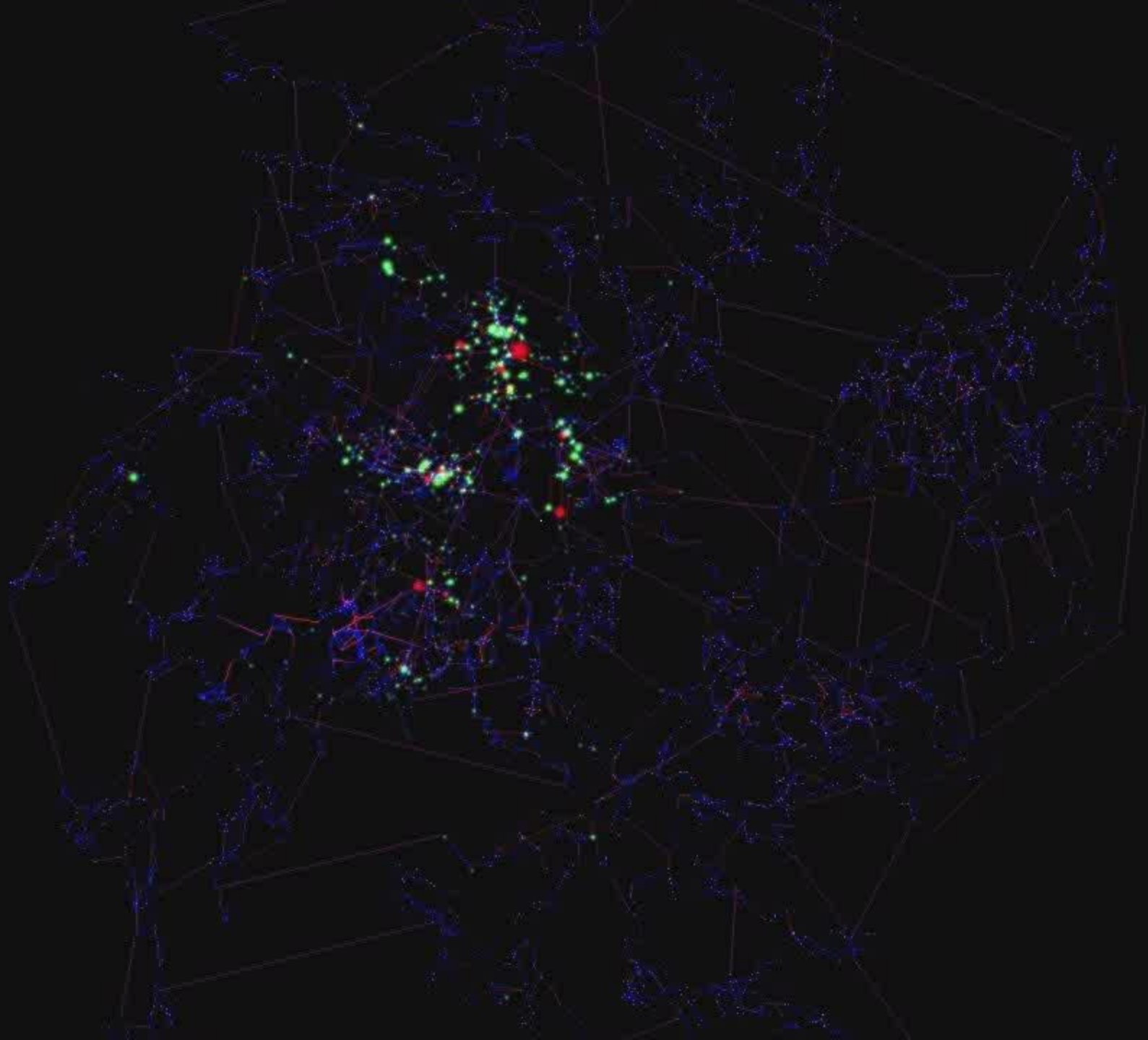
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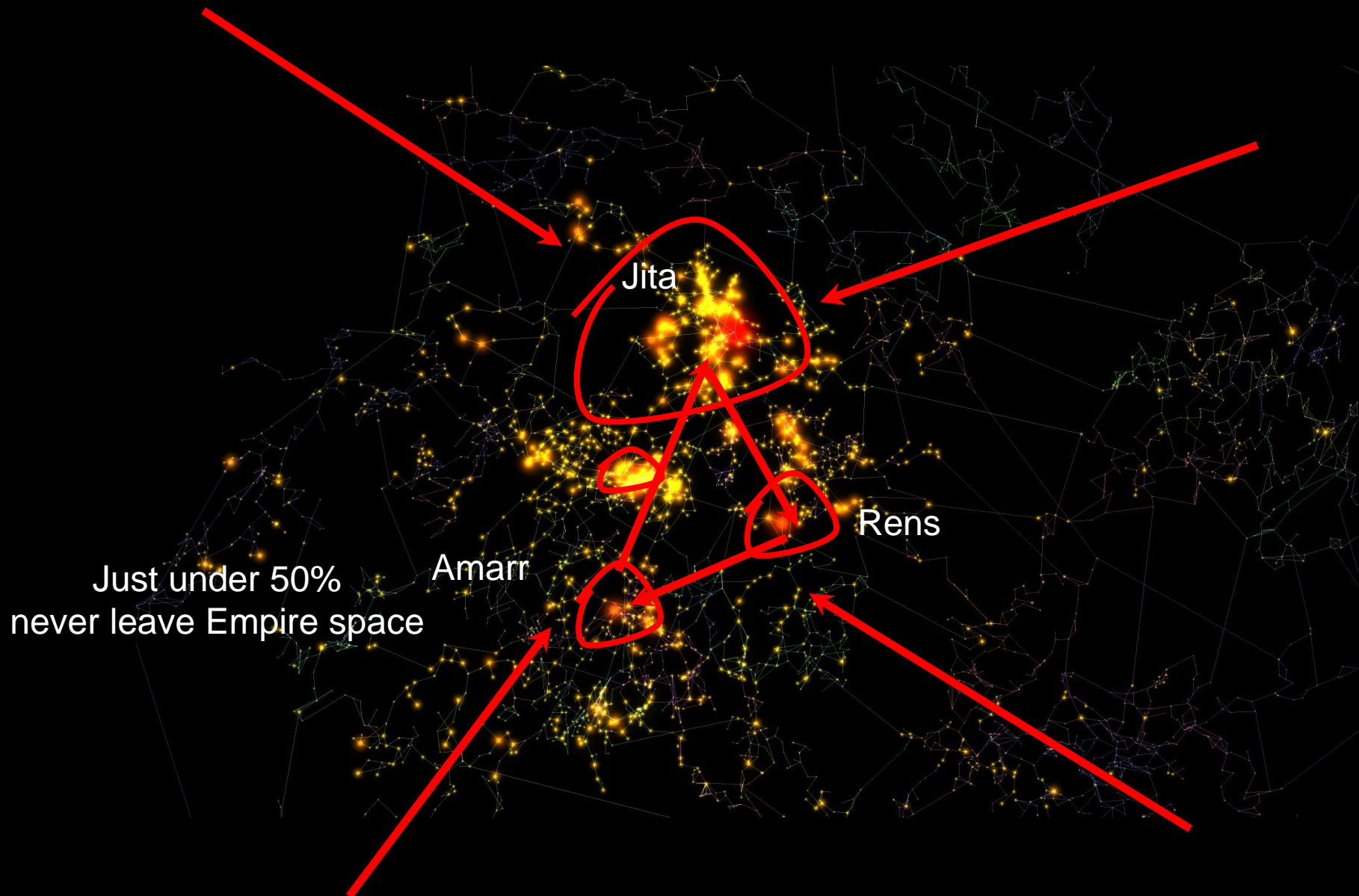
Resource 3







Population distribution



Quarter million players with with close to 500,000 characters

Daily trade value of more than 2.1 Trillion ISK

More than 5000 items

Daily trade orders range between 0,000 – 1,000,000

MARKET

Domain

RANGE FILTER

Station

BROWSE

SEARCH

QUICKBAR

Ammunition & Charges

Blueprints

Drones

Implants & Boosters

Manufacture & Research

Components

Materials

Ice & Ice Products

Ice Products

Moon Materials

Advanced Materials

Processed Material

Raw Materials

Ore & Minerals

Ore

Kernite

Ombur

Pyroxeres

Scordite

Veldspar

Minerals

Isogen

Megacyte

Mexallon

Morphite

Noxium

Pugetite

Reactions

Equipment

Ship Modifications

Ships

Skills

Starbase Structures

Trade Goods

SHOW ONLY AVAILABLE

CORP

LOCAL

2007

MARKET DATA

PRICE HISTORY

SELLERS

JUMP	QUANTITY	PRICE	LOCATION	EXPIRES IN	
Station	78,498,278	3.99 ISK	Amarr VIII (Oris) - Emperor Family Academy	790 21H 13M 29S	
Station	77,174,917	3.69 ISK	Amarr VIII (Oris) - Emperor Family Academy	890 22H 37M 34S	
Station	22,184,606	3.25 ISK	Amarr VIII (Oris) - Emperor Family Academy	890 11H 32M 22S	
Station	21,912,991	5.99 ISK	Amarr VIII (Oris) - Emperor Family Academy	630 3H 10M 31S	
Station	10,319,466	3.60 ISK	Amarr VIII (Oris) - Emperor Family Academy	770 12H 22M 37S	
Station	7,086,980	3.45 ISK	Amarr VIII (Oris) - Emperor Family Academy	210 22H 28M 26S	
Station	4,929,683	3.60 ISK	Amarr VIII (Oris) - Emperor Family Academy	770 2H 29M 45S	
Station	1,992,375	3.30 ISK	Amarr VIII (Oris) - Emperor Family Academy	60 4H 54M 17S	
Station	184,689	5.98 ISK	Amarr VIII (Oris) - Emperor Family Academy	630 8H 14M 24S	
Station	1	4,000,000.00 ISK	Amarr VIII (Oris) - Emperor Family Academy	840 14H 5M 47S	
System	83,555,182	9.00 ISK	Amarr VI (Zorast) - Moon 2 - Expert Distribution Warehouse	890 12H 40M 32S	
System	269,150	3.20 ISK	Amarr VIII (Oris) - Moon 4 - Expert Distribution Warehouse	890 12H 40M 32S	
System	1	3,800,000,000.00 ISK	Amarr VI (Zorast) - Moon 2 - Theology Council Tribunal	890 12H 40M 32S	
1	13,900,521	3.50 ISK	Bhizheba VIII - Navy Logistic Support	740 10H 28M 6S	
1	7,788,137	3.50 ISK	Bhizheba VIII - Navy Logistic Support	740 10H 28M 6S	
1	6,407,882	3.40 ISK	Bhizheba VIII - Navy Logistic Support	740 10H 28M 6S	
1	760,000	3.40 ISK	Bhizheba VIII - Navy Logistic Support	740 10H 28M 6S	
1	651,795	3.40 ISK	Bhizheba VIII - Navy Logistic Support	740 10H 28M 6S	
1	515,433	3.40 ISK	Bhizheba VIII - Navy Logistic Support	740 10H 28M 6S	
1	1	3.40 ISK	Bhizheba VIII - Navy Logistic Support	740 10H 28M 6S	
PRICE <th>LOCATION</th> <th>RA</th> <th>EXPIRES IN</th> <th></th>	LOCATION	RA	EXPIRES IN		
3.49 ISK	Misaba V - Moon 3 - Zoar and Sons Factory	1	890 23H 10M 0S		
15,033,575	3.48 ISK	Avair VII - Moon 12 - Impro Factory	1	290 6H 22M 21S	
14,999,999	3.48 ISK	Misaba V - Moon 3 - Zoar and Sons Factory	1	890 17H 34M 32S	
10	27,319,562	3.46 ISK	Misaba V - Moon 3 - Zoar and Sons Factory	1	840 8H 36M 58S
9	718,223	3.40 ISK	Mamet IV - Moon 10 - Imperial Armaments Factory	1	870 8H 57M 8S
9	27,431,207	3.33 ISK	Rajl VII - Moon 7 - Carthum Conglomerate Factory	1	60 13H 40M 58S
9	18,940,704	3.31 ISK	Mamet IV - Moon 6 - Zoar and Sons Factory	1	230 19H 44M 32S
5	24,900,605	3.20 ISK	Sharhelund VIII - Moon 5 - Sarum Corporation Factory	1	130 2H 32M 58S
1	659,201	3.17 ISK	Sarum Prime III - Moon 2 - Impro Factory	1	280 6H 38M 23S
9	1	3.13 ISK	Sieh III - Moon 16 - Jor and Sons Factory	1	18H 13M 58S
Station	215,286,572	3.11 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	890 11H 30M 41S
Station	35,405,458	3.10 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	890 10H 57M 27S
5	28,210,223	3.10 ISK	Sharhelund VIII - Moon 5 - Sarum Corporation Factory	1	870 13H 7M 29S
2	134,685,391	3.08 ISK	Penicillium - Ministry of Internal Order Assembly Plant	1	870 23H 35M 31S
1	71,636,768	3.08 ISK	Sarum Prime III - Moon 2 - Impro Factory	1	870 19H 6M 2S
2	999,385,658	3.07 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	870 18H 56M 6S
Station	4,545,729	3.06 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	270 10H 32M 51S
9	25,361,826	3.05 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	890 21H 11S
Station	37,689,369	3.04 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	280 12H 34M 4S
Station	131,131,131	3.03 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	860 16H 39M 56S
Station	1	3.02 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	860 16H 39M 56S
Station	1	3.01 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	860 16H 39M 56S
Station	1	3.00 ISK	Amarr VIII (Oris) - Emperor Family Academy	1	860 16H 39M 56S

EXPORT TO FILE

PLACE BUY ORDER

Quarter million players with

with close to 500,000 characters

More than 5000 items

Daily trade value of more than 2.1 Trillion ISK

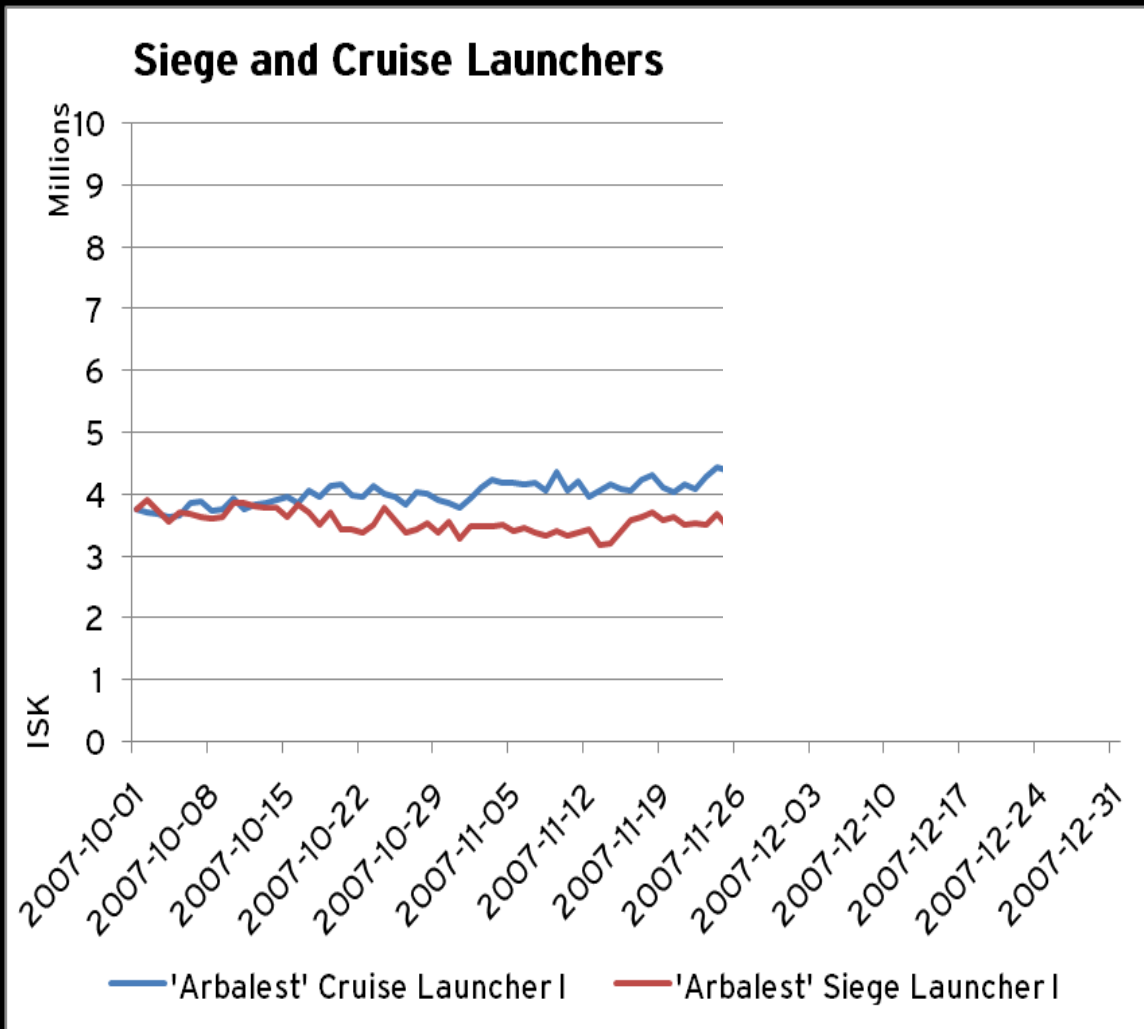
Daily trade orders range between

0,000 - 1,000,000

Supply changes



Changes in demand



Two types of weapons that where sold at a similar price.

Attributes of one of them was changed – shorter range but more explosive power for torpedoes (Siege Launcher)

Immediately changed the pricing structure

Price Expectations



Scalability

- The world must scale with population
- Examples from the early days of MMOs
 - UO
 - Asheron's Call



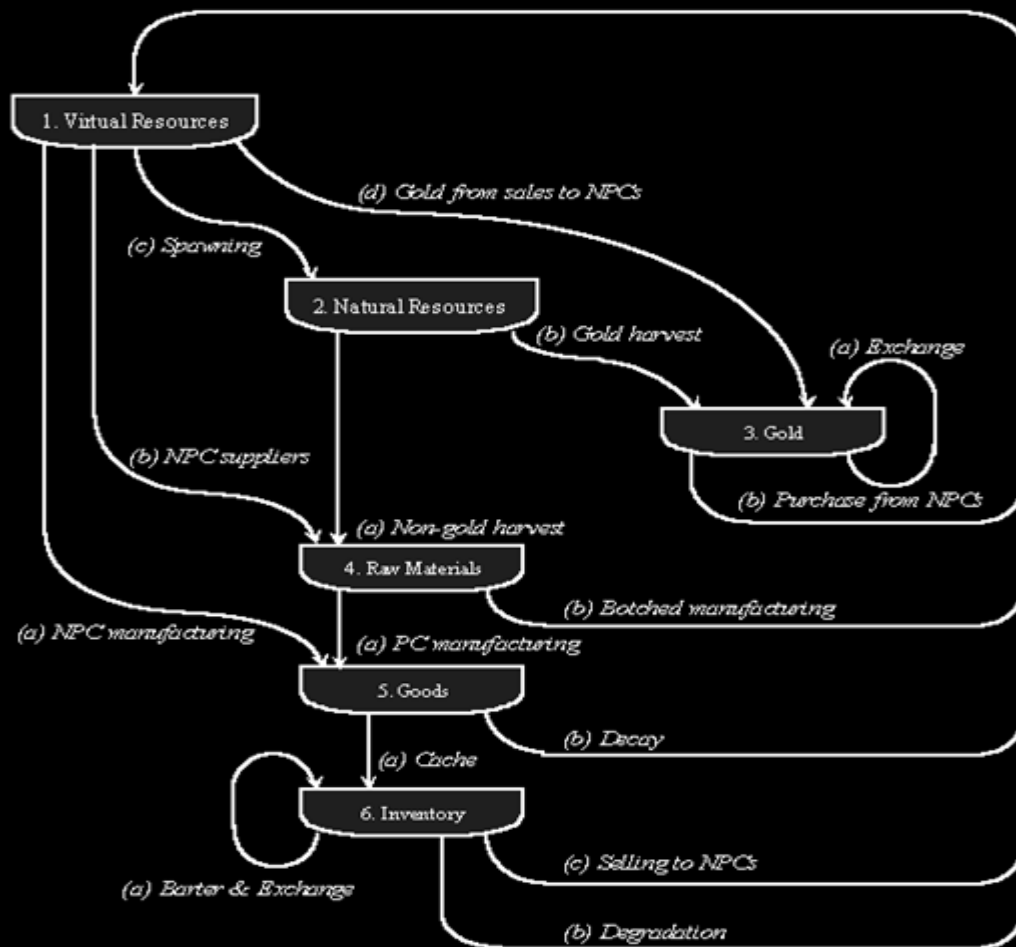
Deflation in Ultima Online

- Started with a closed system
- Players outgrew available resources ingame
 - Access to gold was limited
- Resulted in severe deflation and resource shortage



Case Study: Ultima Online

Original Economic Flow

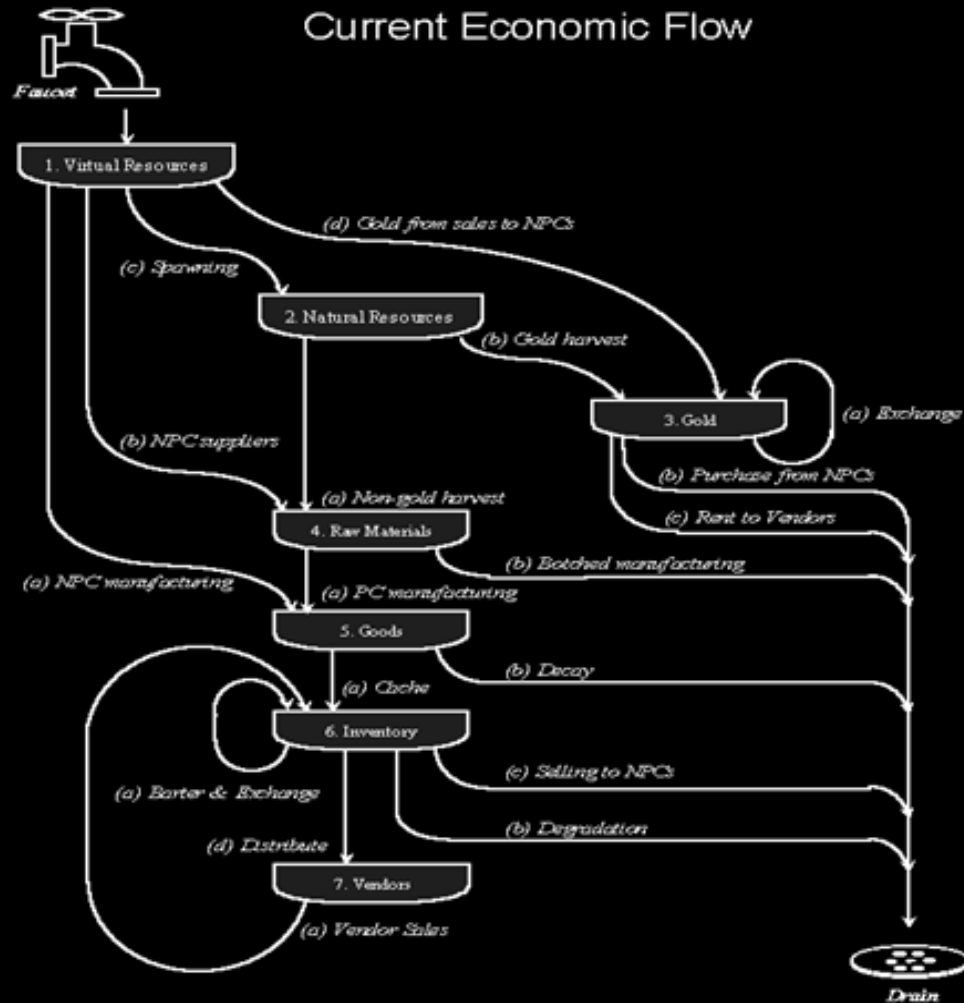


Source:

Zachary Booth Simpson

<http://www.mine-control.com/zack/uoekon/uoekon.html>

Case Study: Ultima Online

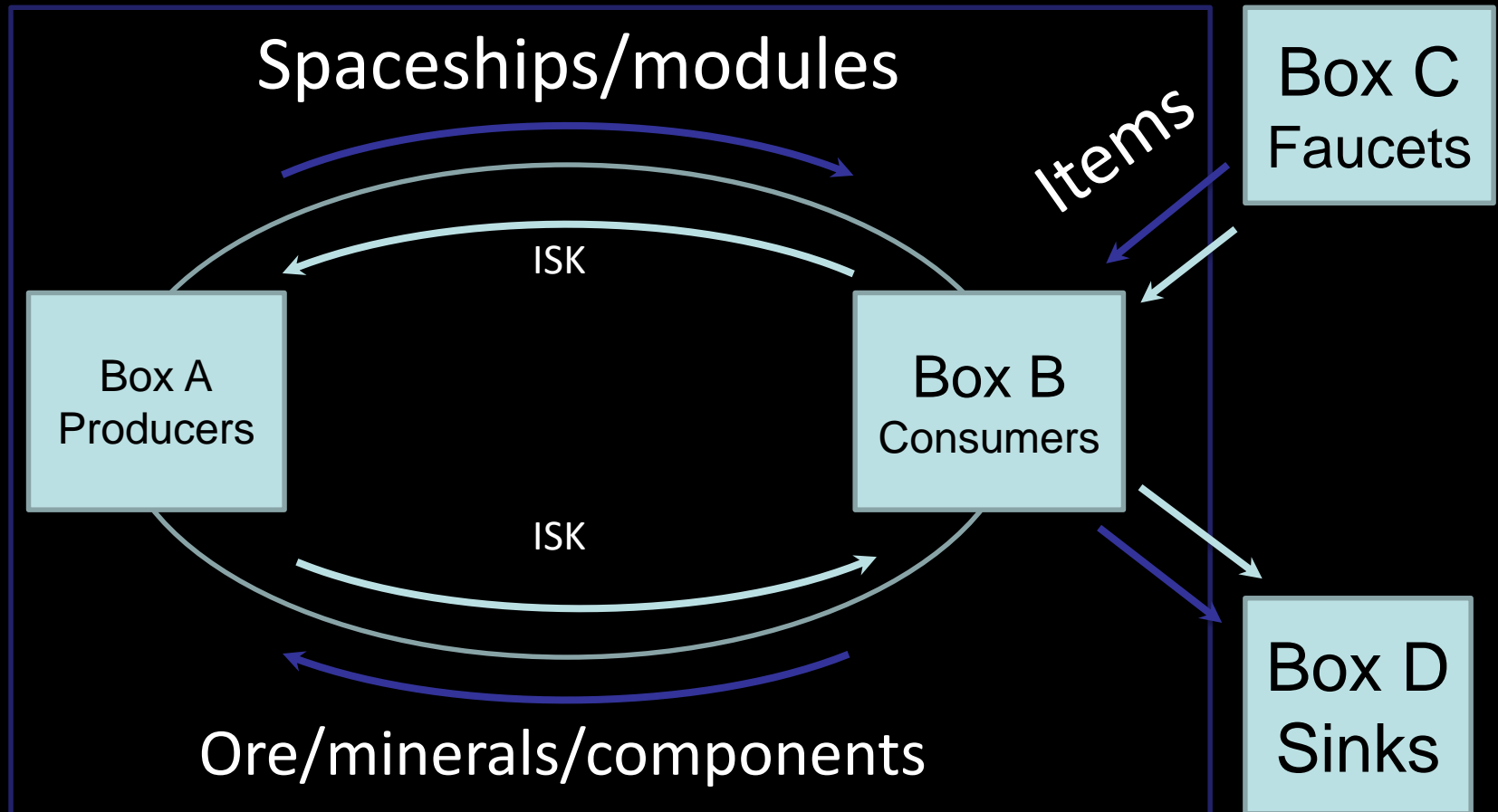


Source:

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<http://www.mine-control.com/zack/uocon/uocon.html>

Macroeconomic system



Inflation in Asheron's call

- Easy gold making
- Relatively few popular items
- Hyperinflation
 - Players reverted to barter



Scalability

- Requires investment in tools
 - Economically reactive systems
 - Resource seeding
 - Design for data mining upfront
 - Quickly identify problems
- And Self Restraint!

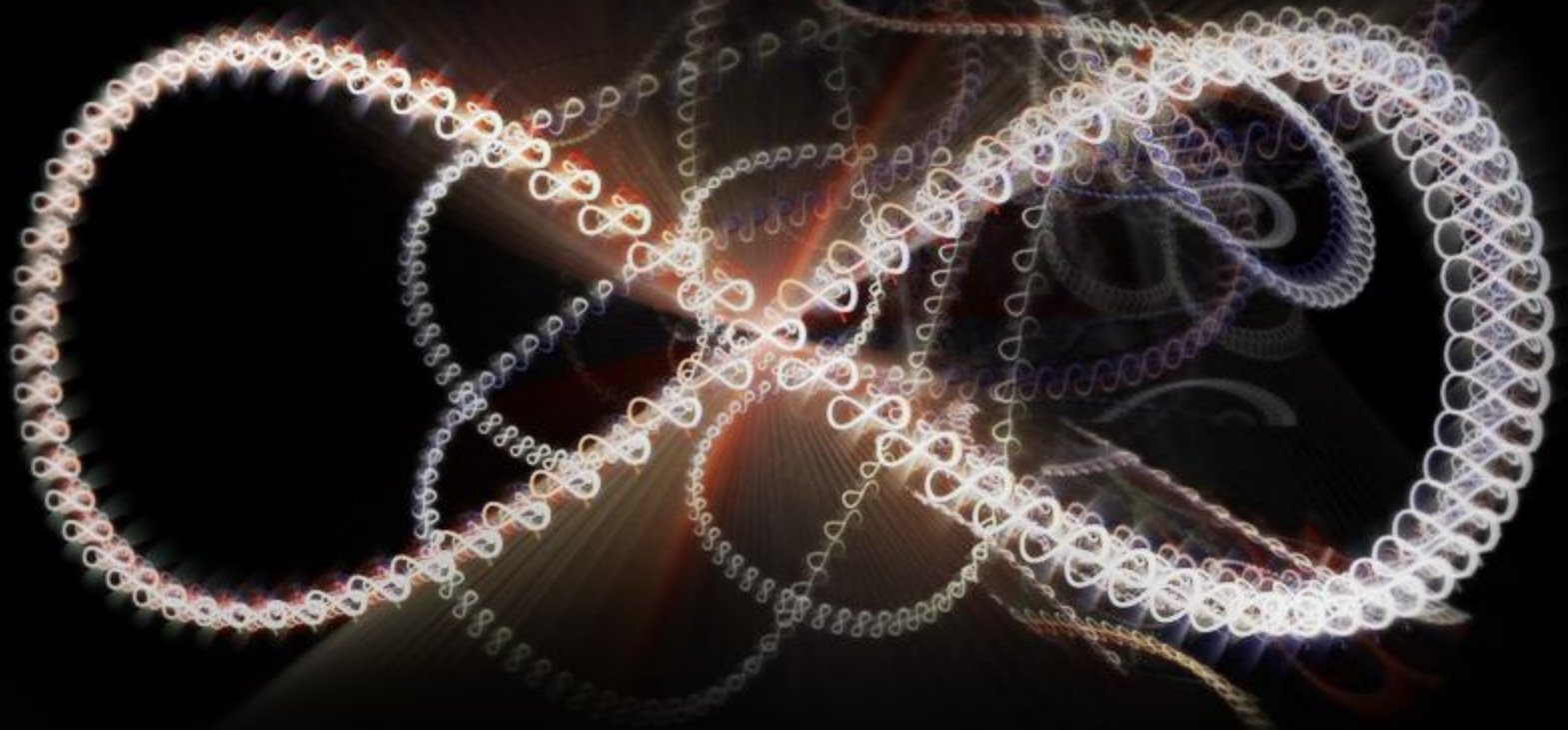


Conclusions

- For *Massively* Multiplayer Online games designer must:
- Use economic principles in the initial design
- Account for scalability
- Design effective monitoring and management tools for daily operation



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