MMO Rapid Content Iteration

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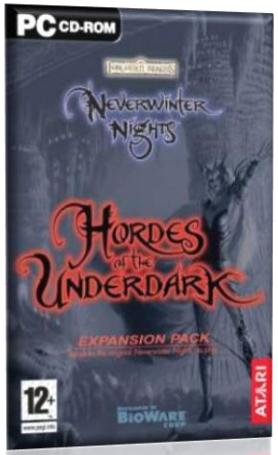
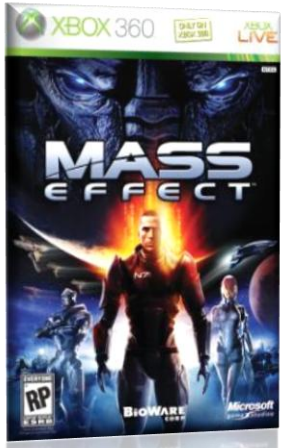
This presentation was modified to fit into Portable Document Format (pdf)

Animated elements have been replaced with static images and some slide comments have been inserted in some places to provide context.

You can download the original PowerPoint presentation with slide notes at http://gdc.gulbsoft.org





About

With 8.5 years with BioWare now in various roles.

Programming / database background in finance / telecom in Germany. Bored me to death, went into games.

Technical Background allows me to switch or blend between design, engineering and production tasks.

Was with BioWare Edmonton (aka BioWare Hoth) for 5 years before moving to Austin to help with The Old Republic.

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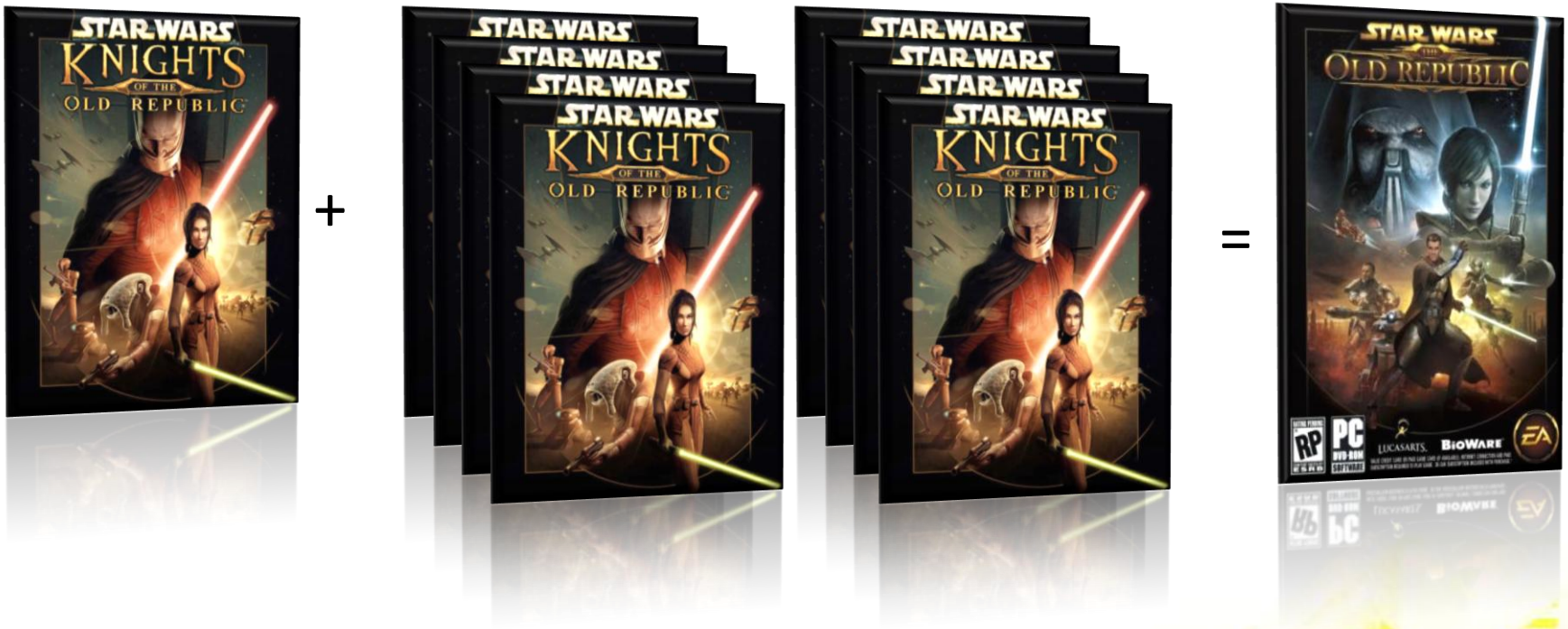
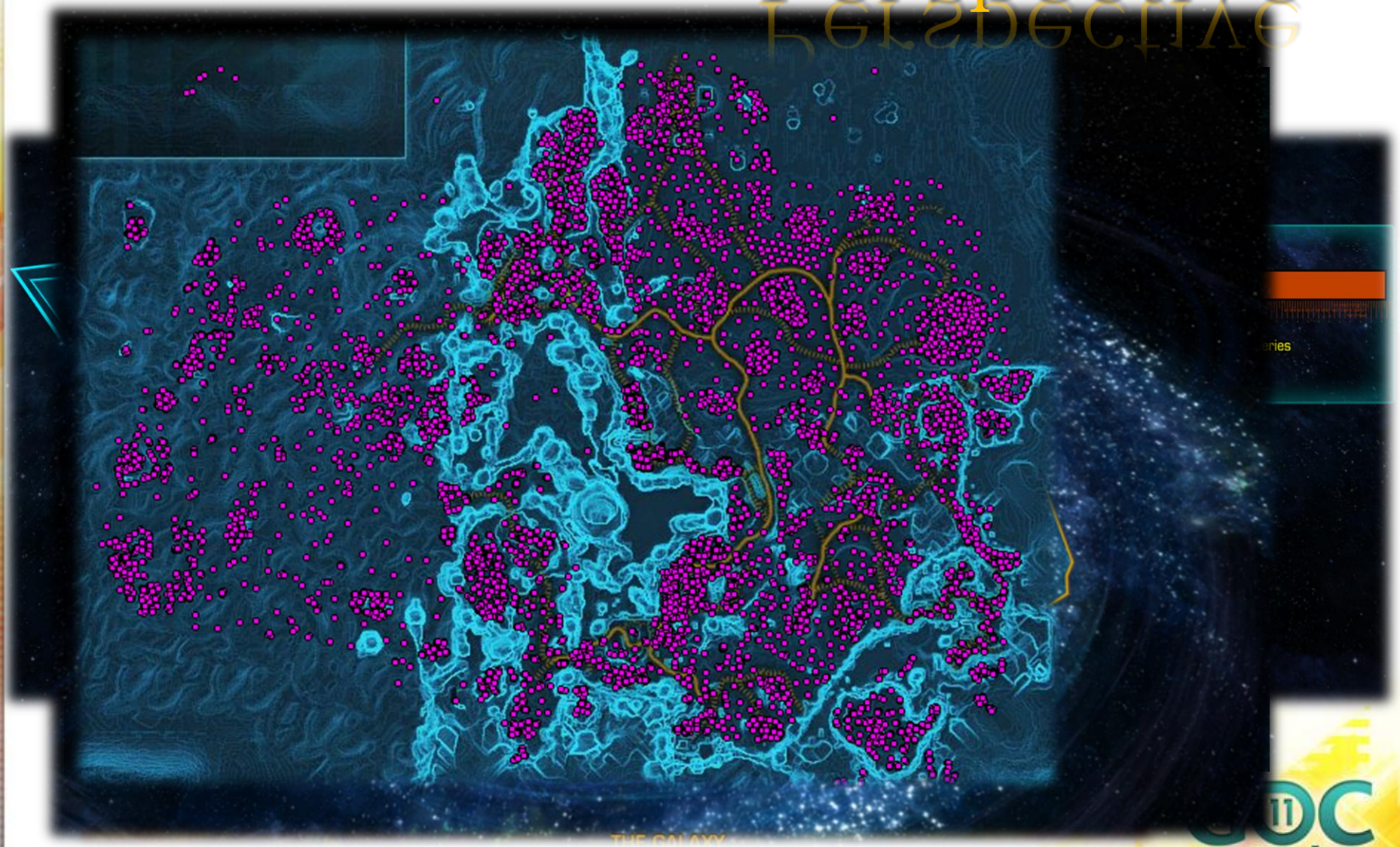
www.StarWarsTheOldRepublic.com

A BioWare MMO

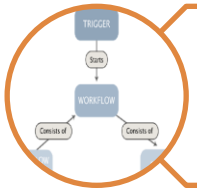


Perspective



How do you create and manage content on that scope?

Lots of resources



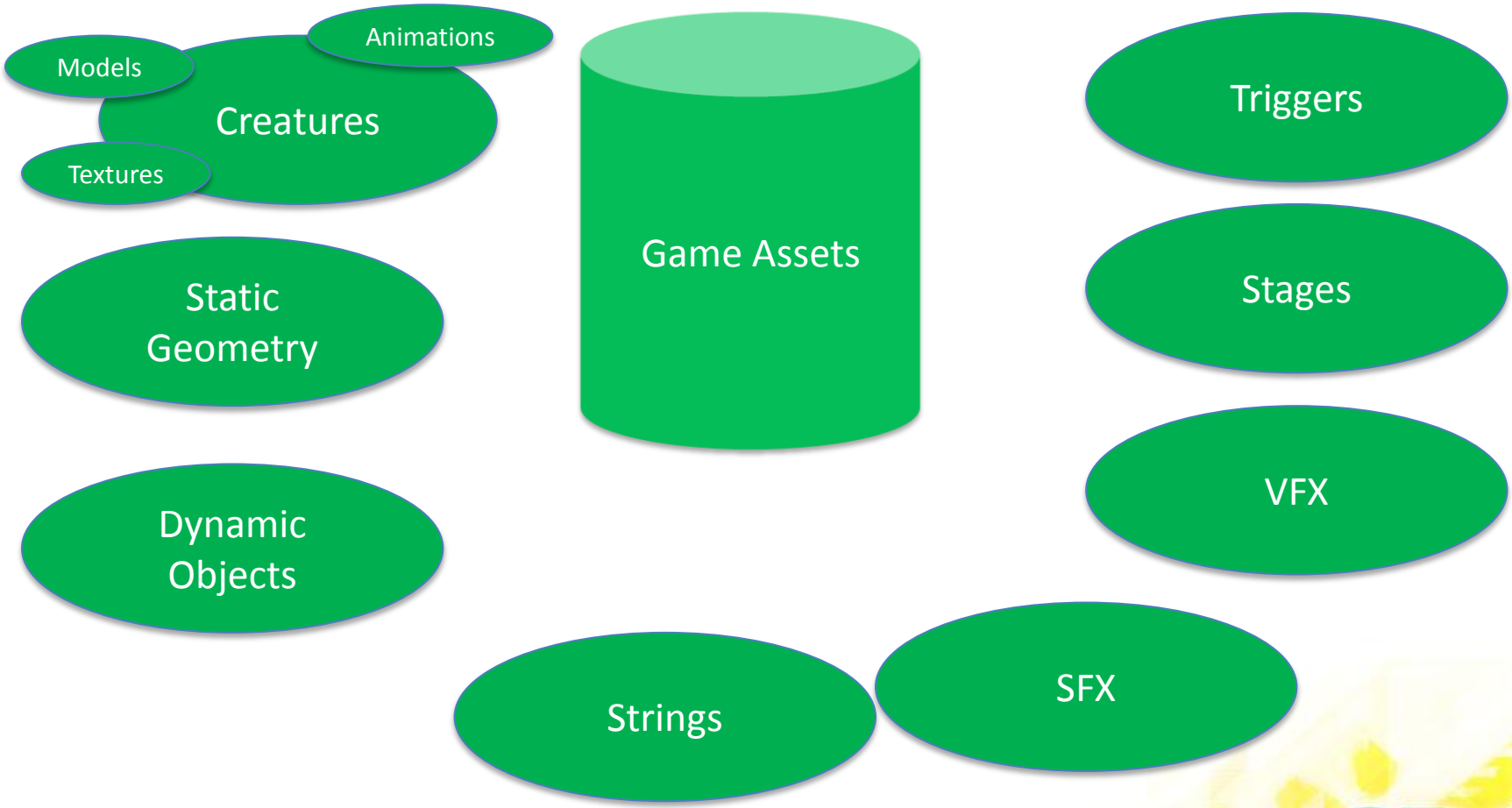
Smarter Workflow

Smarter Tools

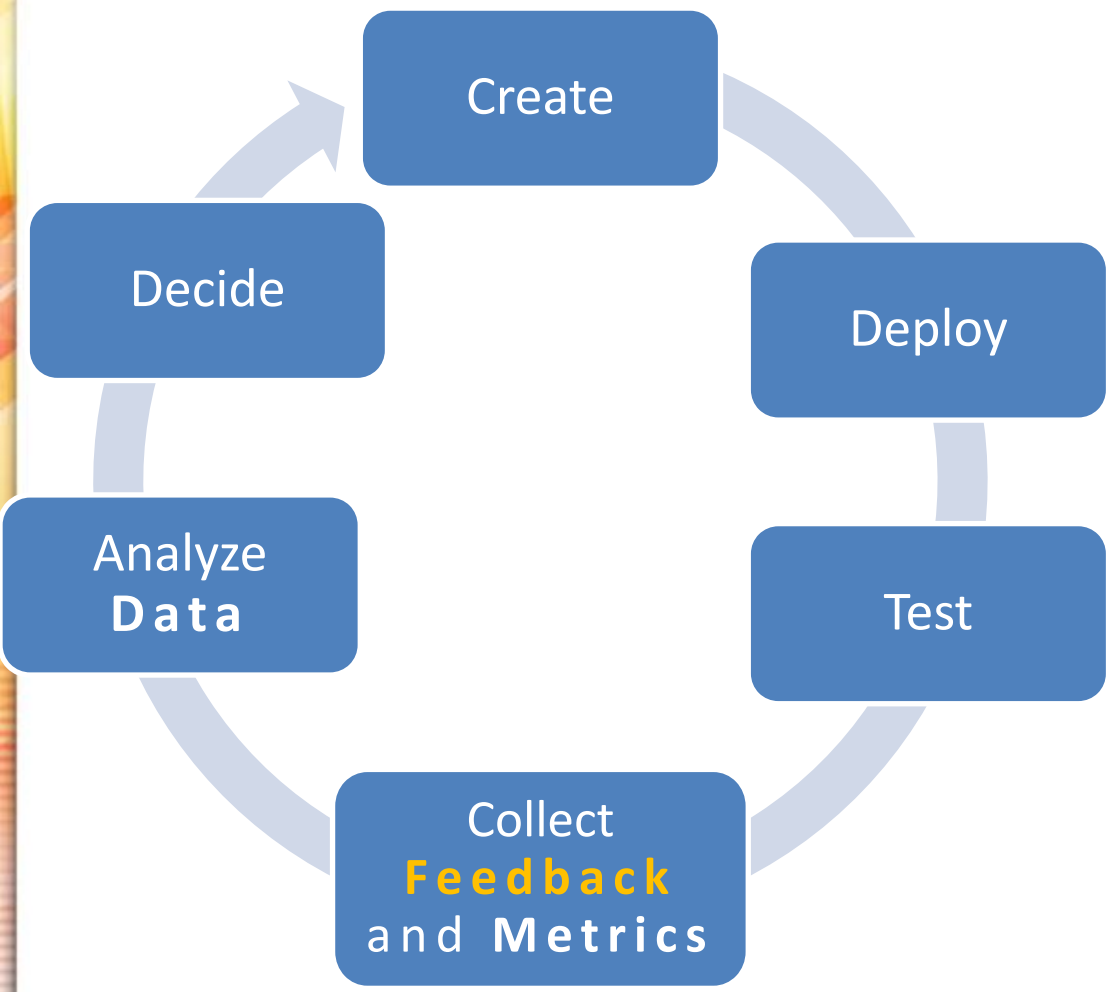
Defining Content

Content is the sum of all game assets, their instances, properties, locations, relationships and interactions.

Game Content



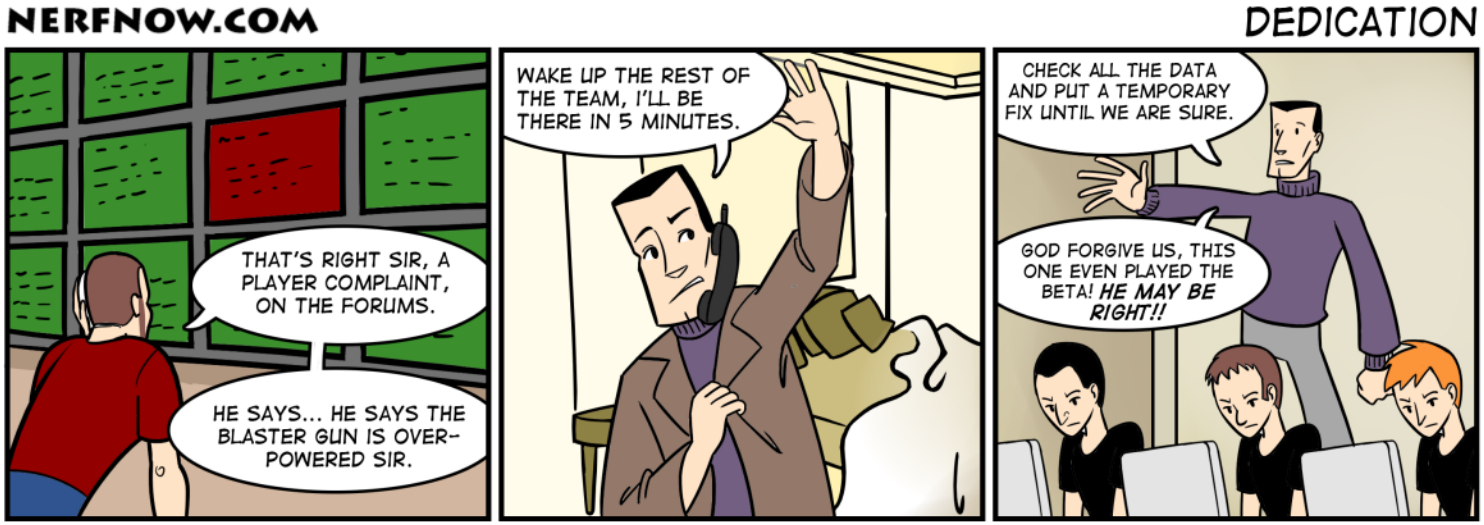
Content Iteration Cycle



The biggest issue is to reduce the length of a full cycle to a reasonable amount of time.
Otherwise, content developers will be too far ahead of testers and feedback grows stale and invalid with age.

This presentation deals with the last 3 steps: Collection of feedback, data analysis and decision making and how to speed them up.

Feedback



What people think testing looks like…

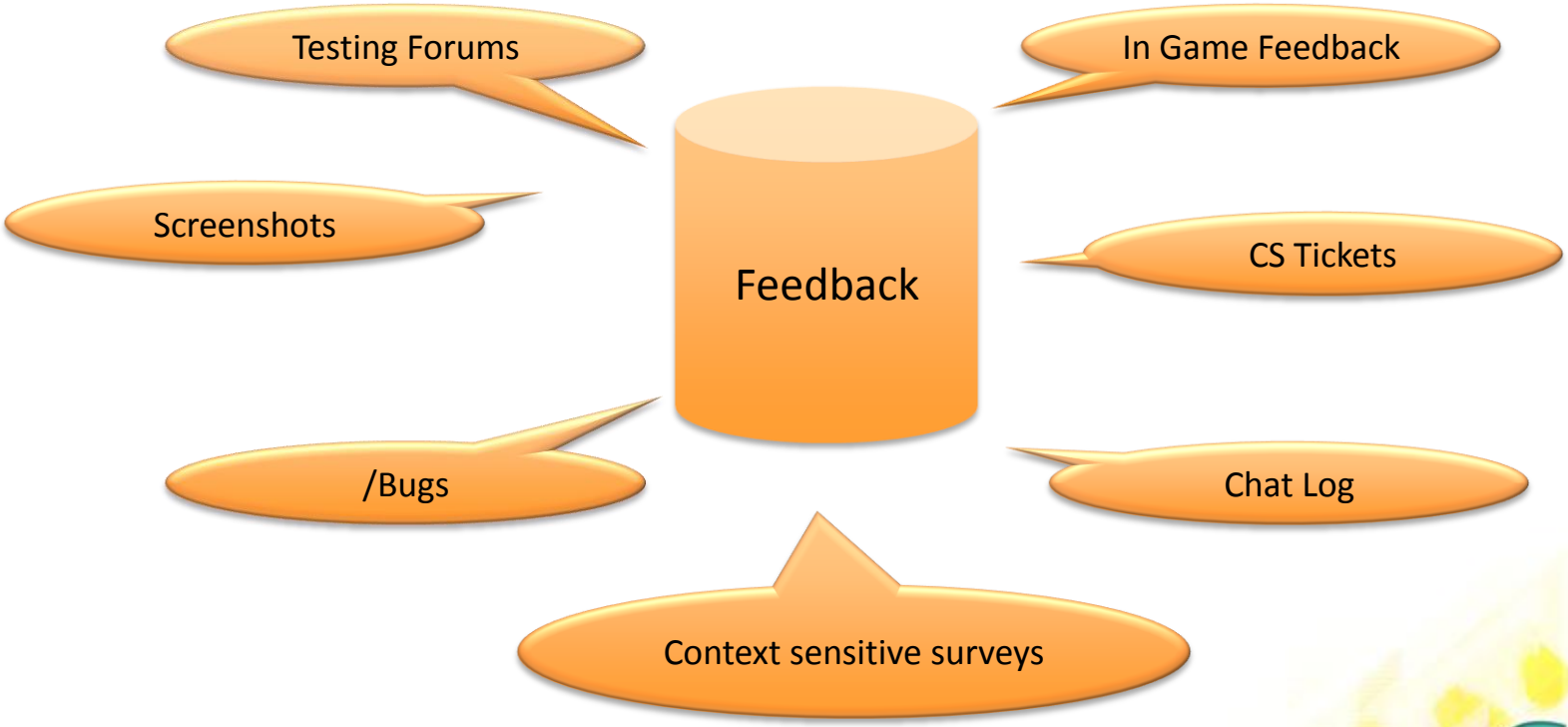
Feedback

Closer to the real world ;)

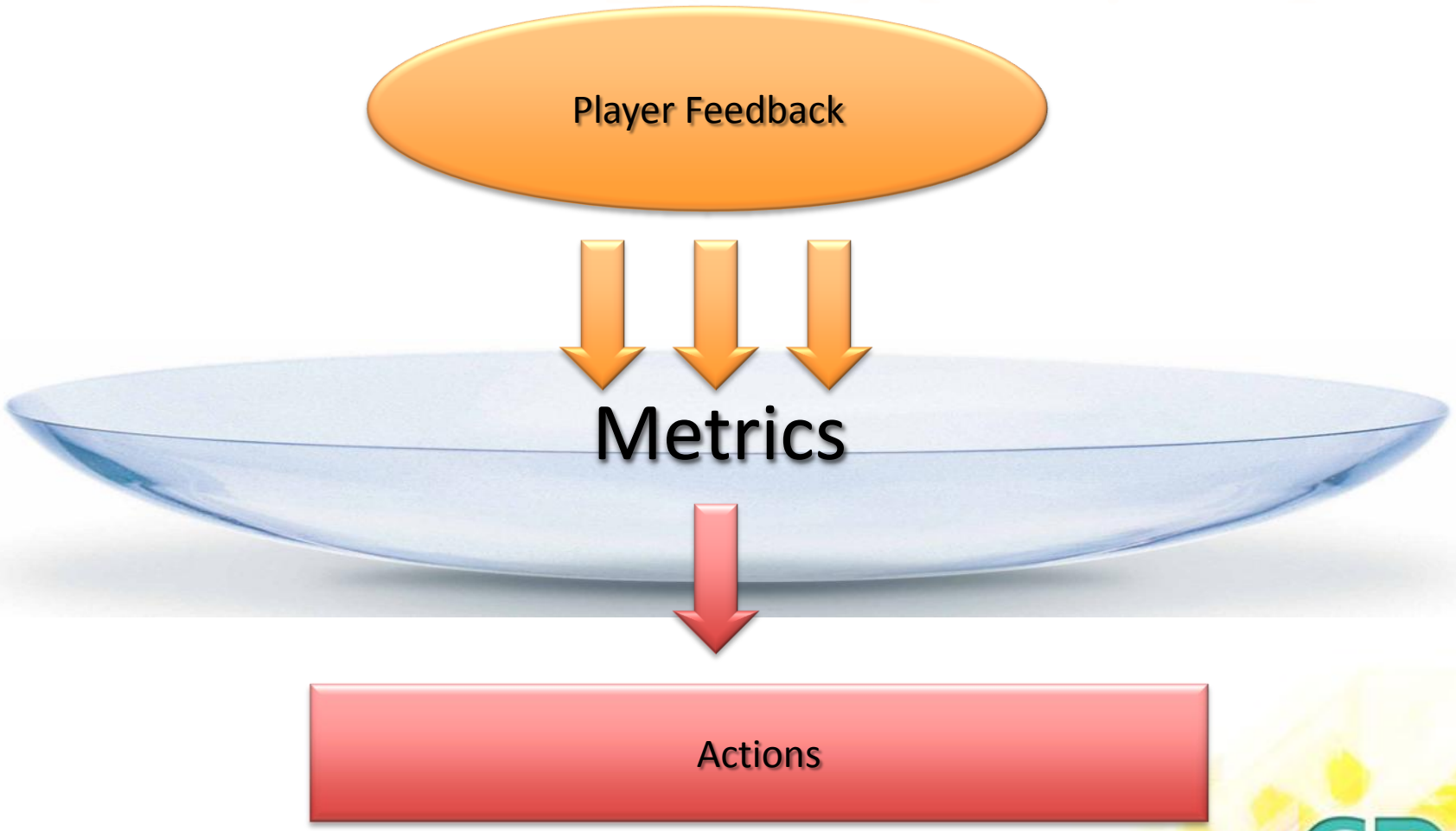
When you're getting 100.000 individual pieces of feedback in a single weekend, you need some smart methods of deriving value from that feedback.

Identifying actionable feedback and getting it to those people in the trenches that can make changes based on it is crucial for rapid iteration on content.

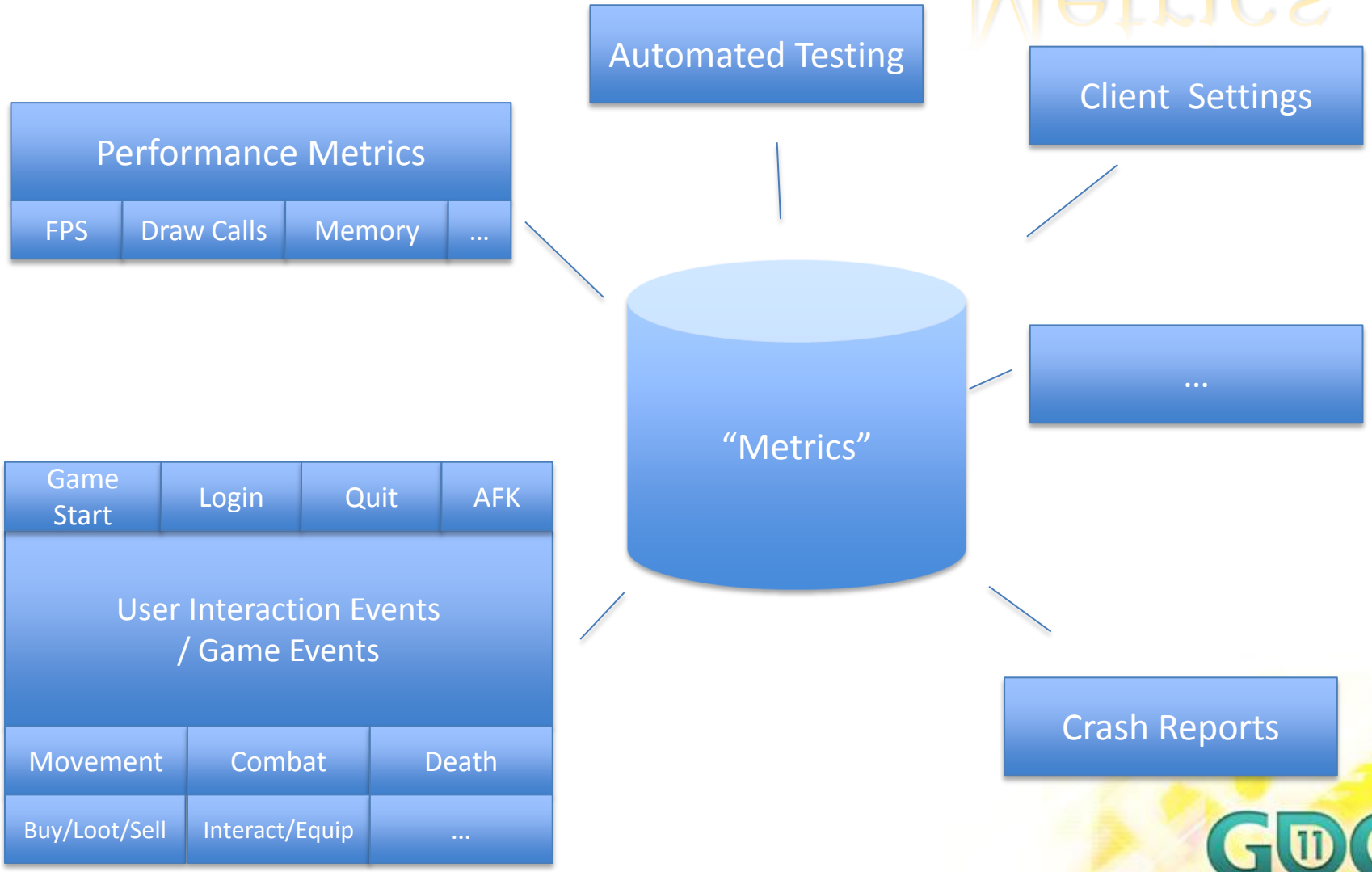
Active Feedback



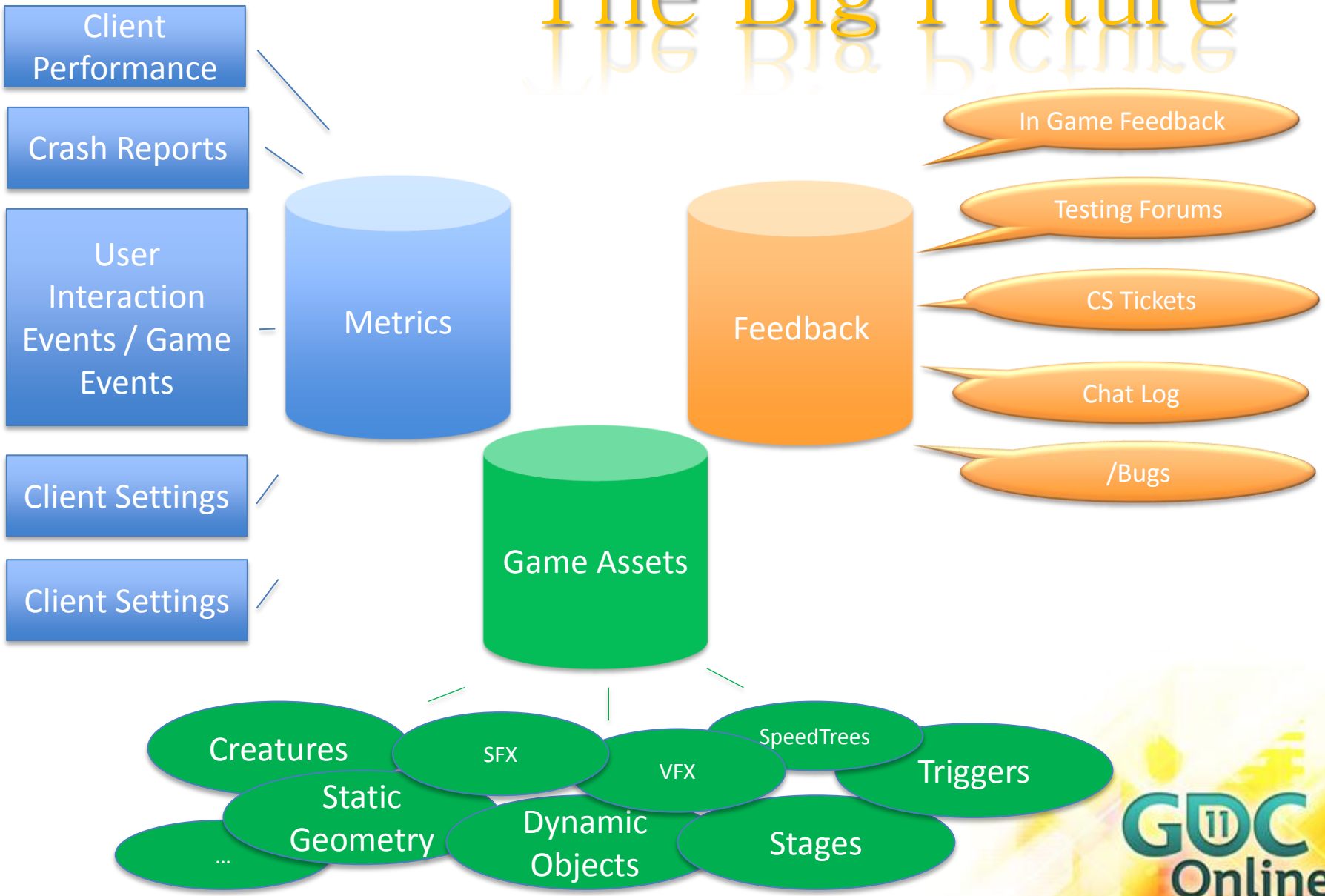
The Metrics Lens



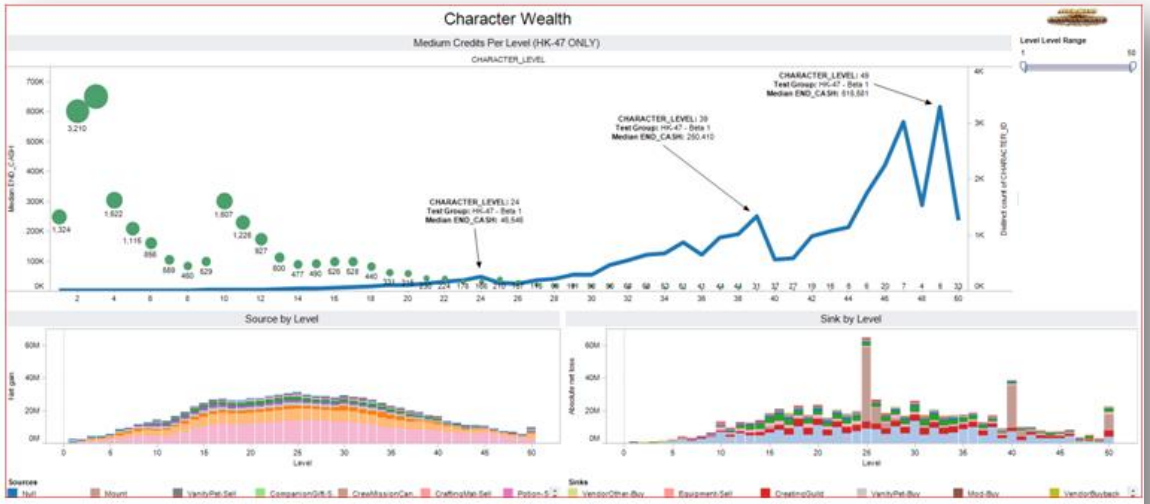
Metrics


Automated Testing
Client Settings
Performance Metrics
FPS
Draw Calls
Memory
...
"Metrics"
...
Game Start
Login
Quit
AFK
User Interaction Events / Game Events
Movement
Combat
Death
Buy/Loot/Sell
Interact/Equip
...
Crash Reports

The Big Picture



Analyzing Feedback



Charts / Dashboards work well analyzing game systems, not content.

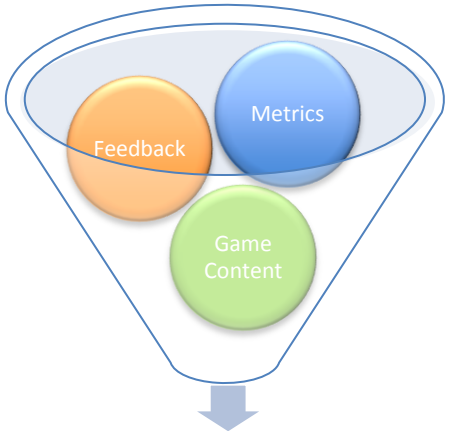
Most elements of the game have dual components: System and Supporting content, e.g. 'Combat Rules' (system) and Enemies you fight (Content).

Charts / Dashboards are great for analyzing SYSTEMS, not content. They are also relatively hard to read and understand and leave lots of room for error.

- Systems are created, tuned and maintained by few, usually experienced developers.

- Content is created by many people on the ground, often less experienced developers or even outsourcers

Analyzing Feedback

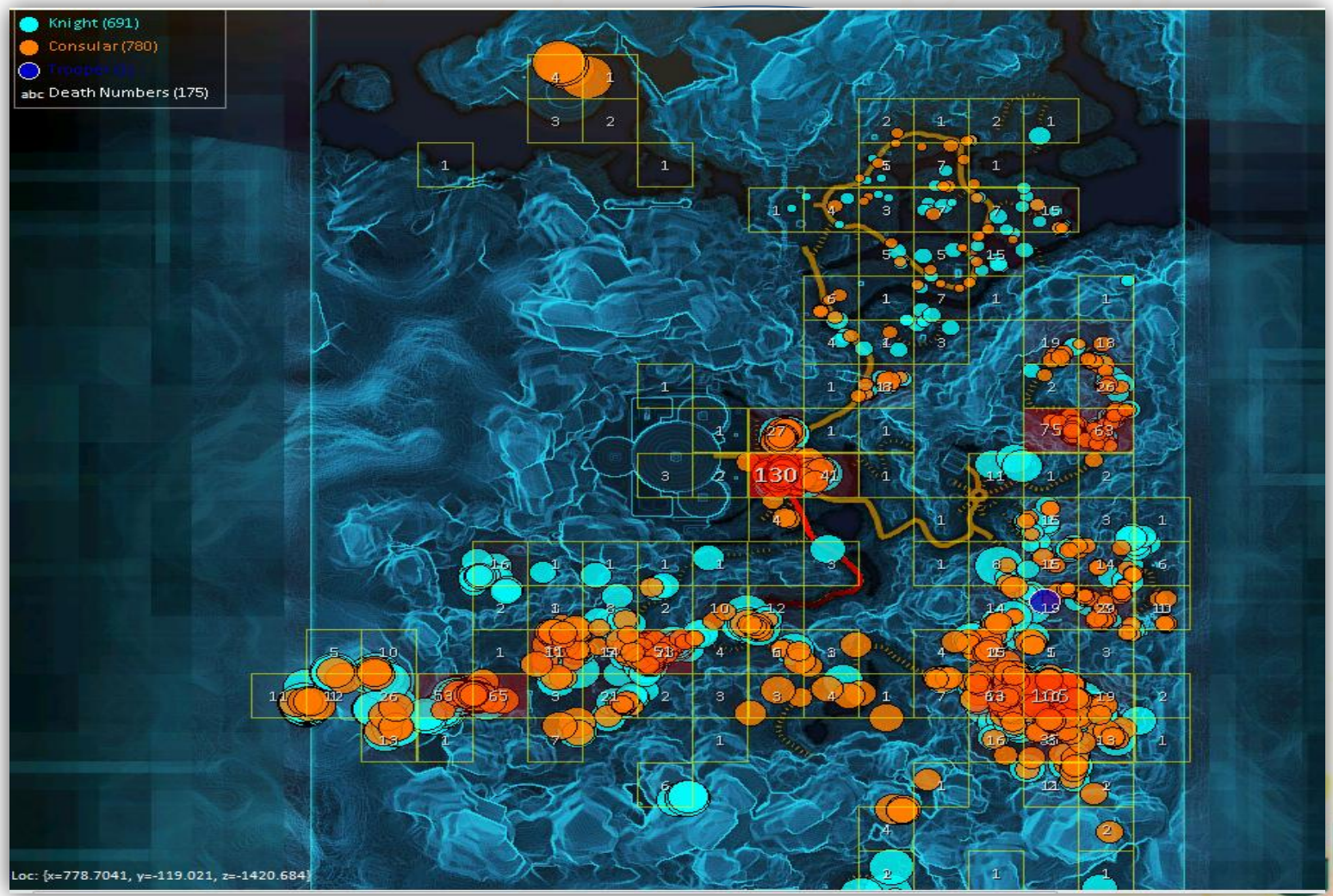


Content related feedback and data tends to be spatial.

Almost all actionable content feedback is more useful when you look at from a spatial or temporal perspective.

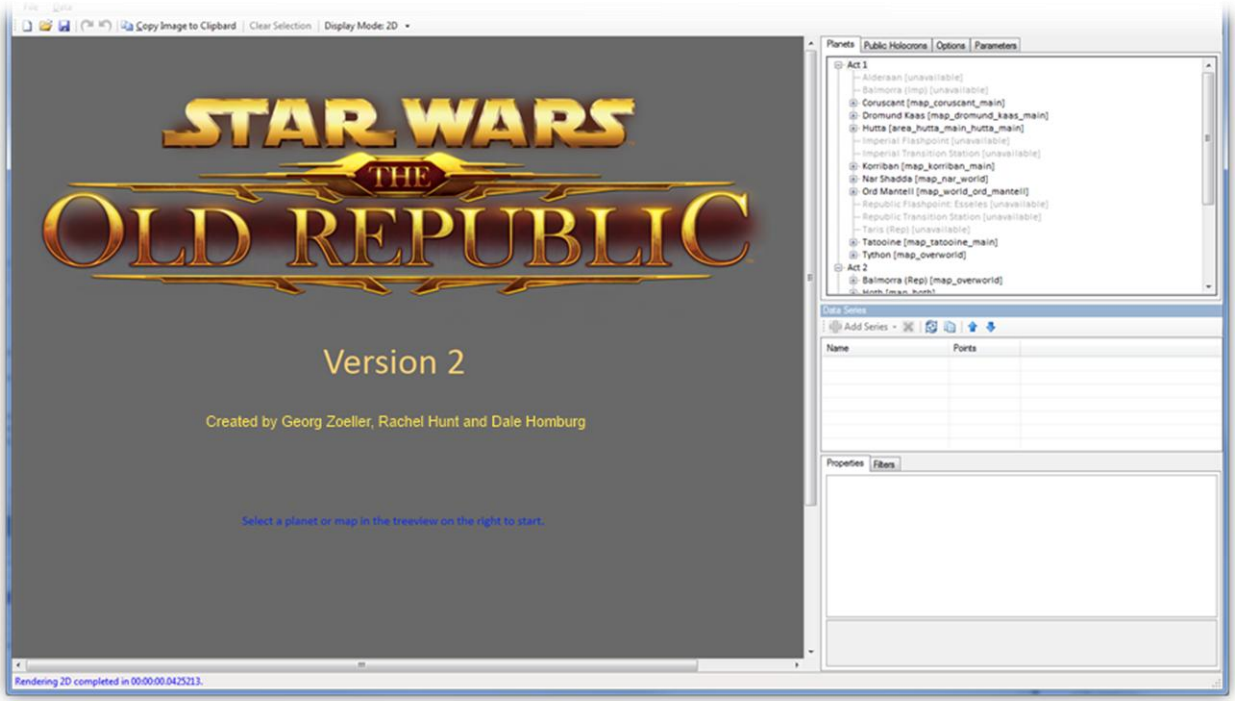
In order to create an efficient iteration process, we need to look at all three elements together.

Analyzing Feedback



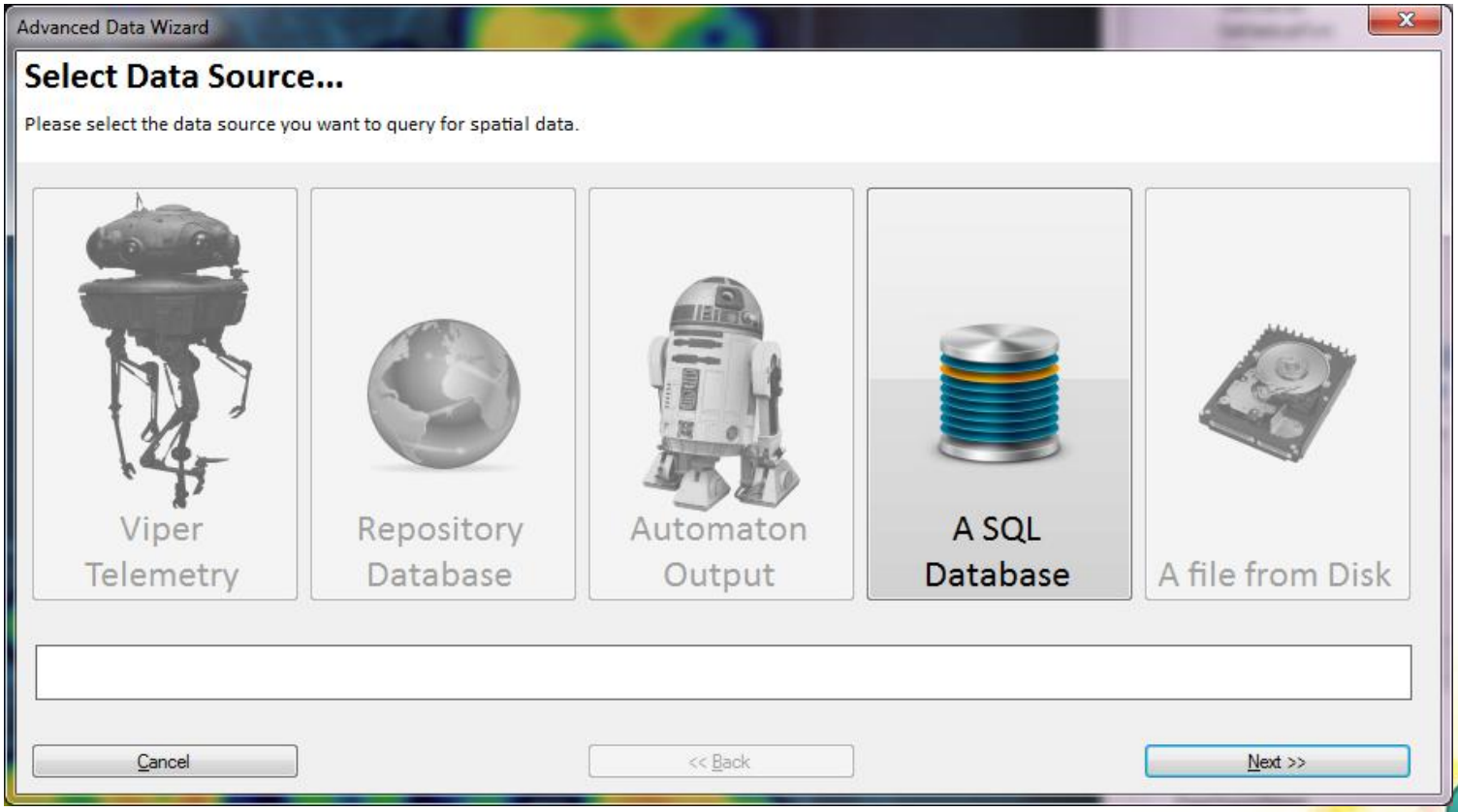
SWTOR

SPATIAL VISUALIZATION TOOLKIT

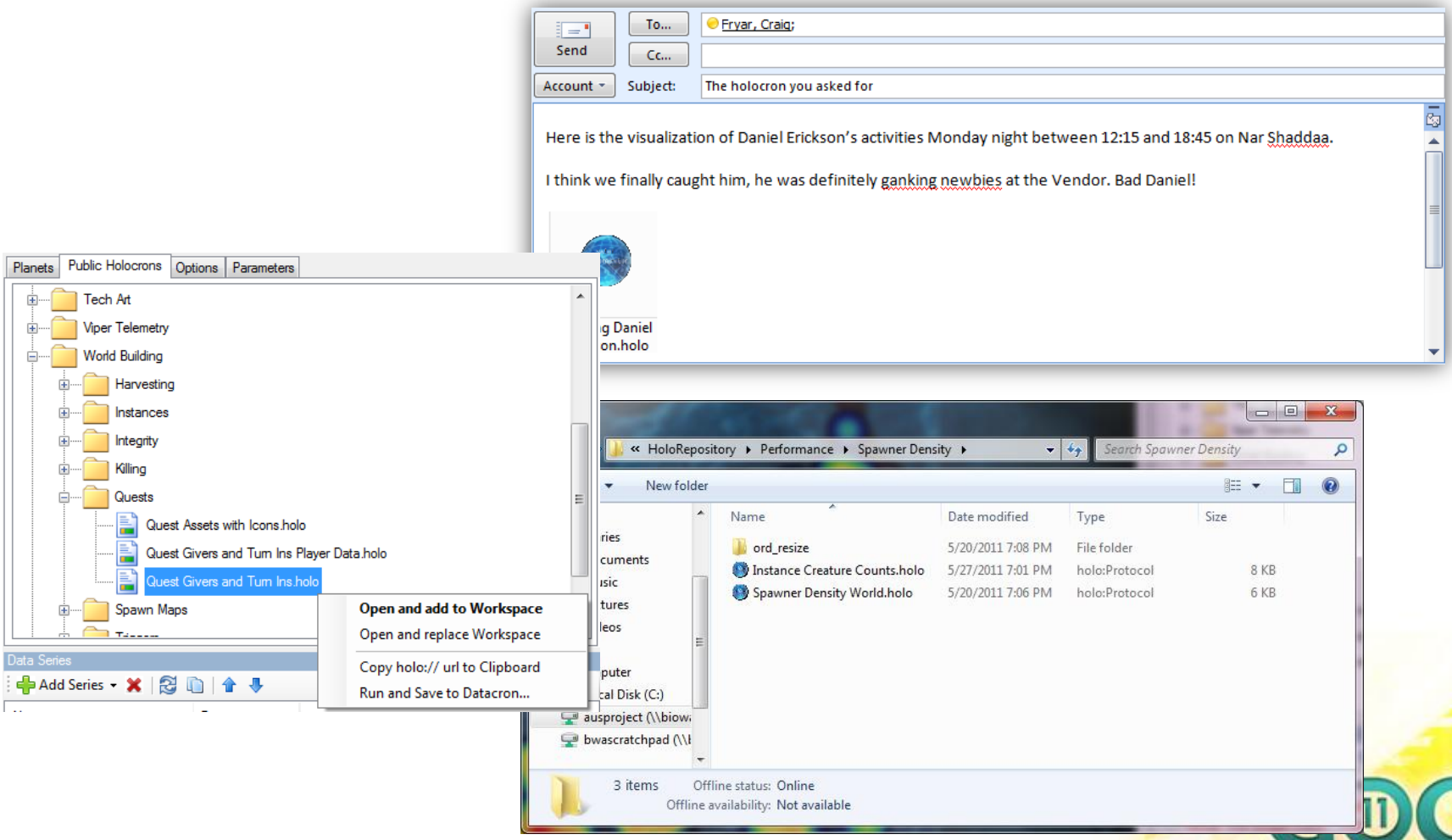


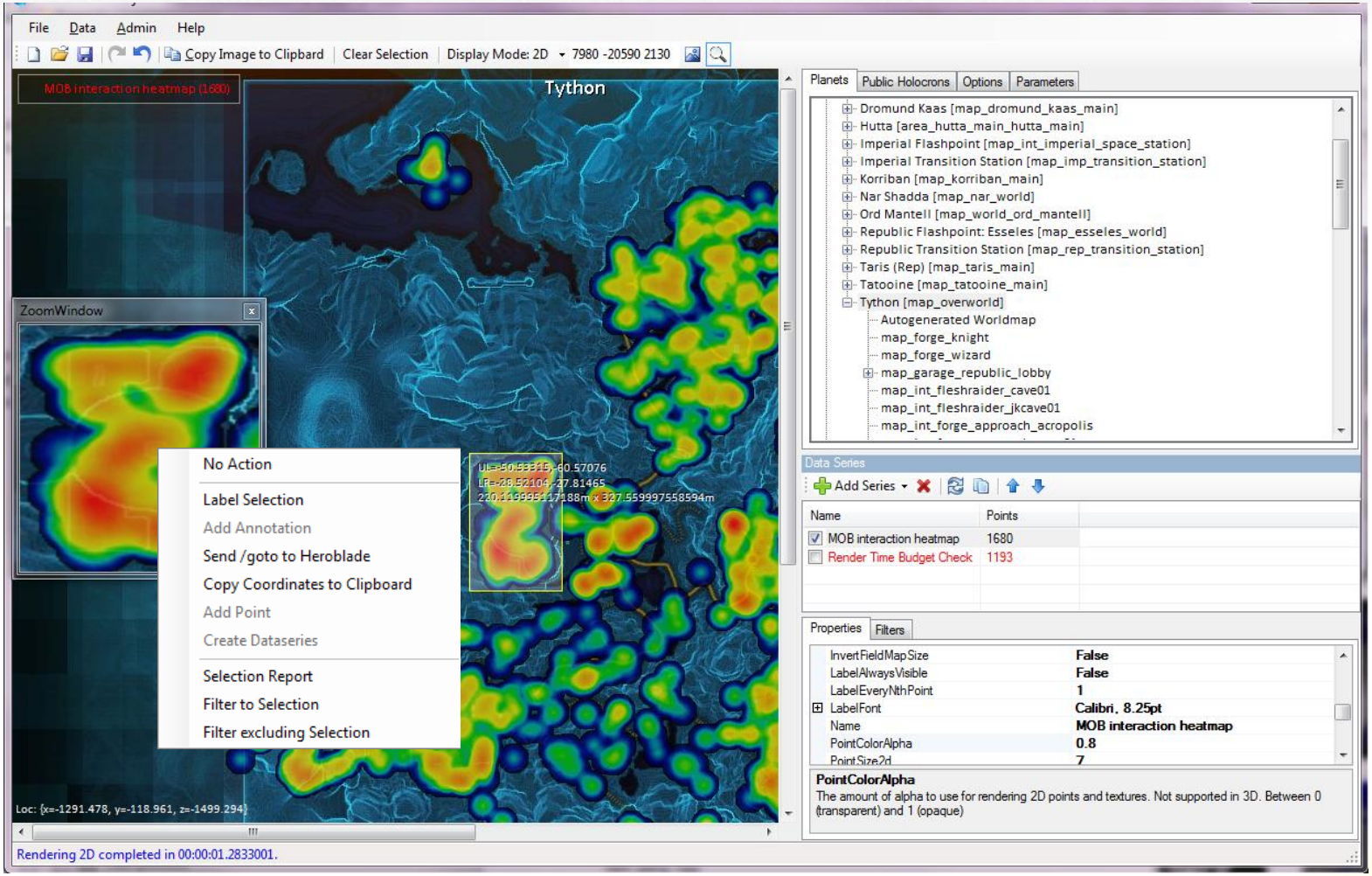
The Toolkit

- Winforms app written in C#/.Net 4 / DirectX
- Visualize any kind of data as long as it has x,y,z fields, from any source

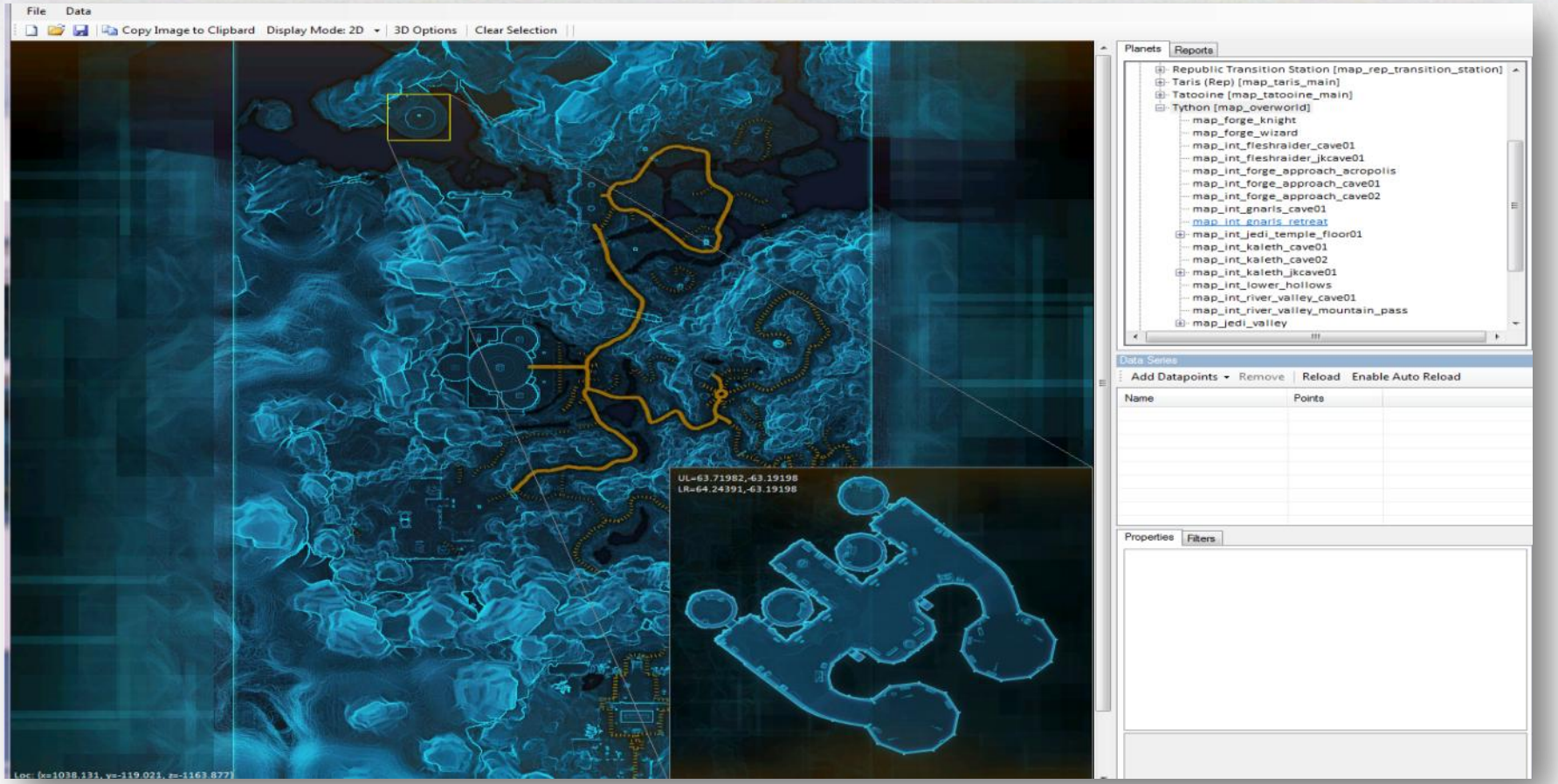


- One Click sharing via central library and holo:// hyperlinks
- Data can be filtered, edited, saved or refreshed from source.

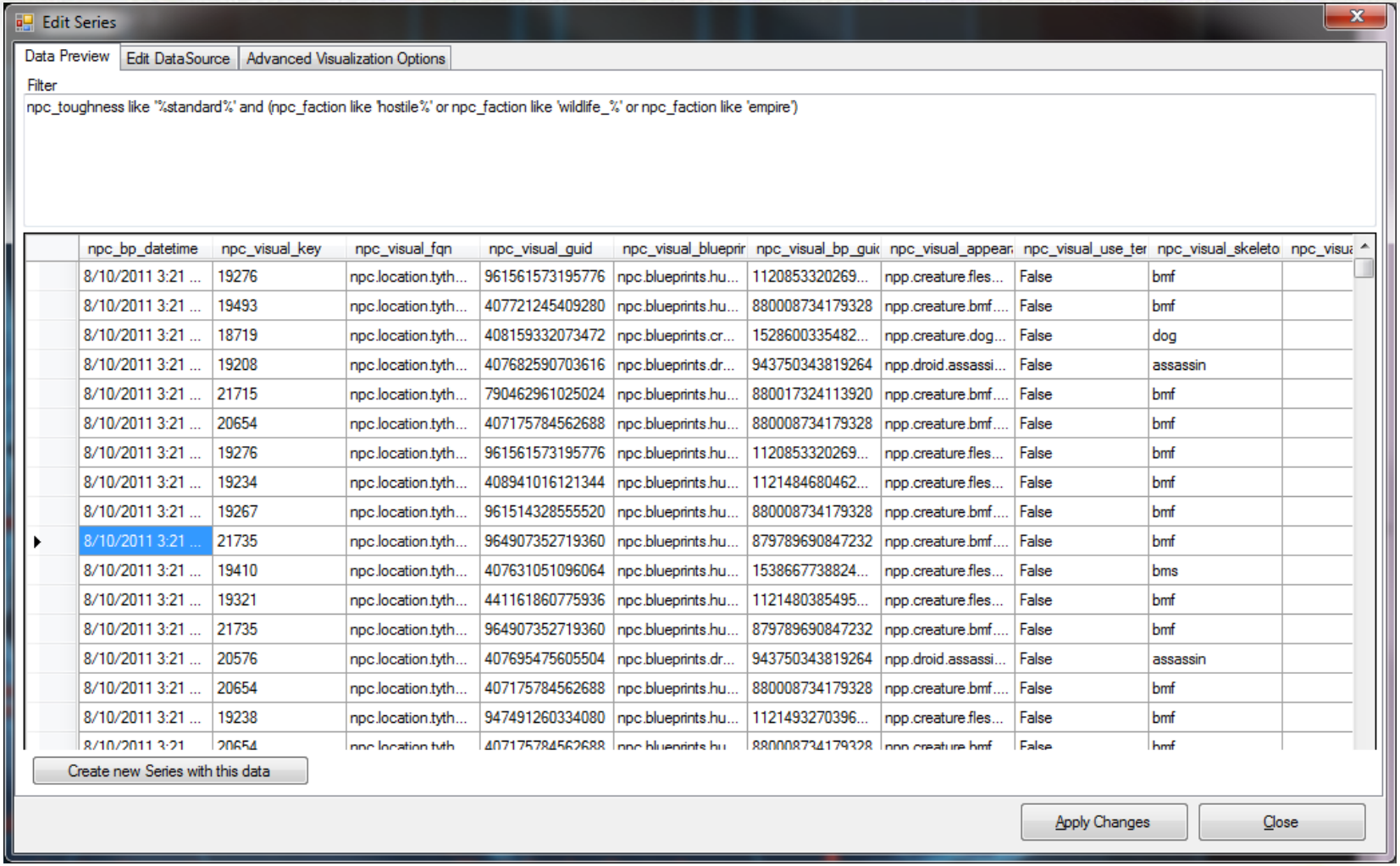




Context sensitive actions, including interaction with the game toolset.



- Drilldown / zoom into sub maps
- Built in convenience tools like distance measurement, path and object selection, diffing.



Data view, filter and edit controls

Export to Excel for additional analysis (no point in replicating those features in app)

Example
Combat Spawning

Feedback

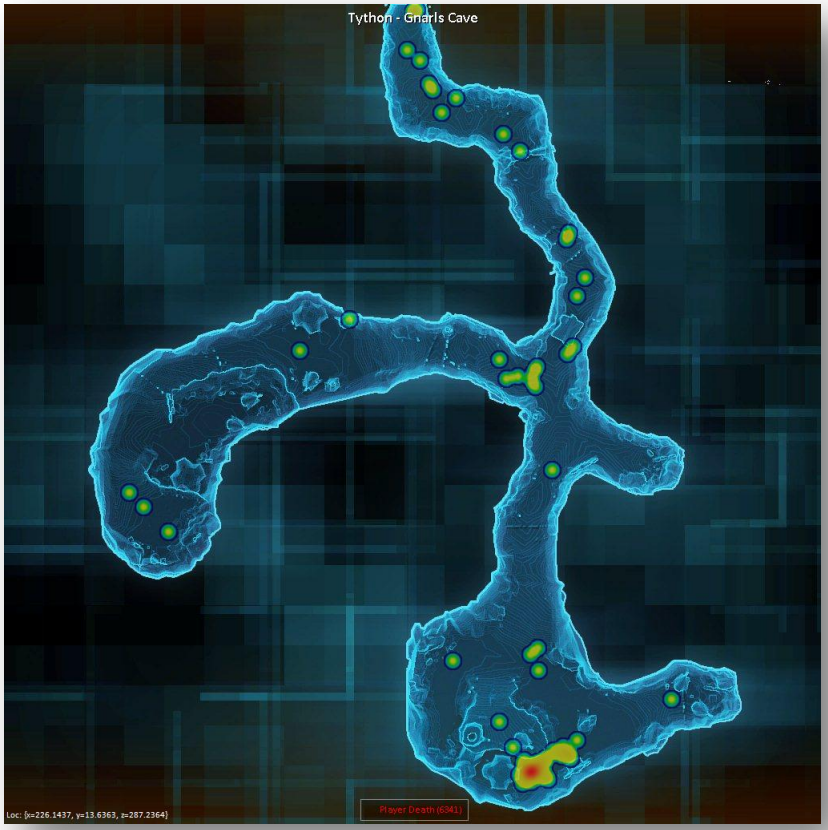
Player feedback indicates a Problem.

We want to make it possible for people in the trenches to analyze and suggest course of action to their leads.

We also want them to be able to spot mistakes on their own – something the tool can help with by highlighting common mistakes (2 strong enemies on a single encounter, etc.)

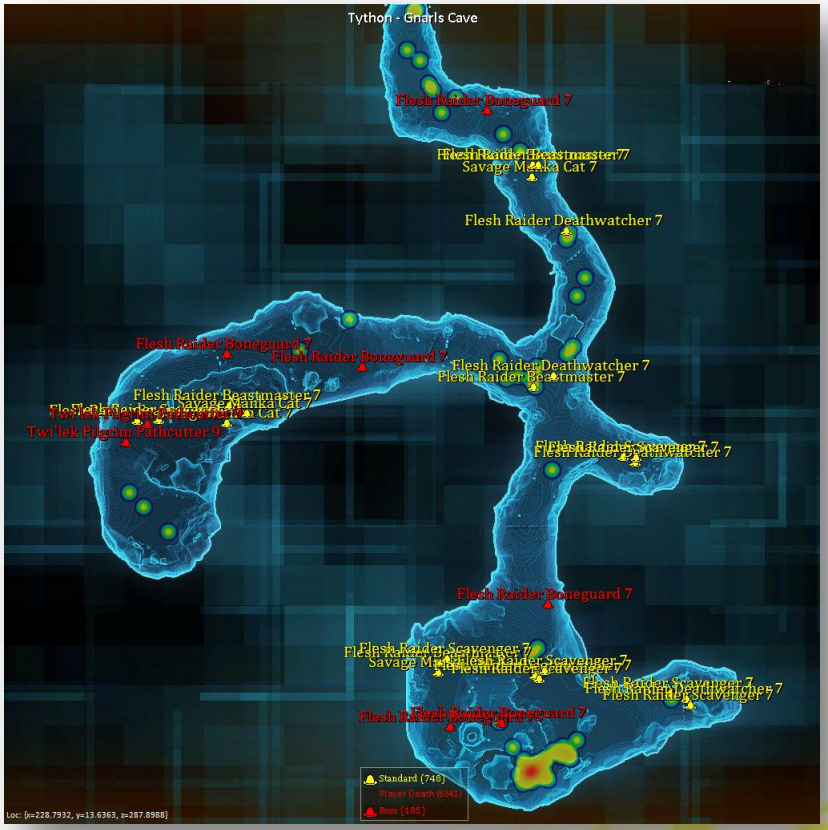
Metrics

Import Player Death Events



Data

Overlay Combat Assets



Tython: Fleshraiders

Tython: Homeworld of the Jedi Order.

A serene and peaceful planet … full of deadly fleshraiders.

So when people complain about fleshraiders being to hard, that's kind of saying 'Uh, the entire planet is too hard',

Feedback

"Fleshraiders kill me!"

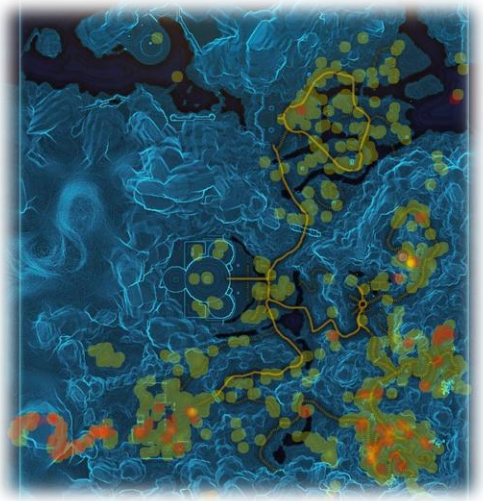
"OMG Fleshraider's *** me."

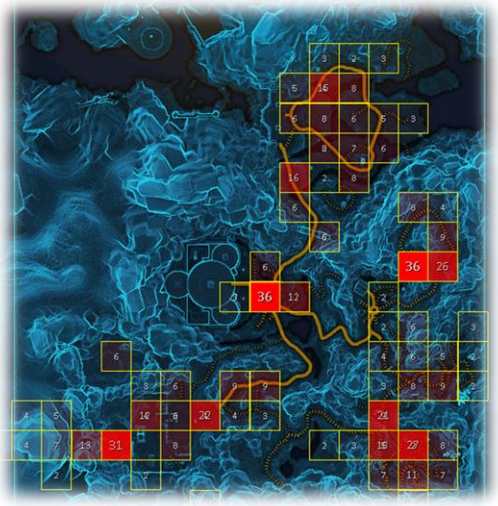
Several dozen forum complaints.

Metrics

1000s of fleshraider related incidents. Let's drill down…

Tython: Fleshraiders





Data

Even without pulling in data, We can see things are bad in 'Fleshraider Territory'

Adding 'level difference' between spawners and players gives us a hint.

Analysis

Players die even in groups in a solo area.

They hit the area between 1-2 levels below plan.

Fix Level Curve!

Korriban: The Tomb of Magna Ragnos

Feedback

9 forum threads, 42 posts, 9 /bugs: “The Tomb of Magna Ragnos is too hard”

Metrics

A planet from the original Knights of the Old Republic that we brought back for our game.

It’s the Ancient Homeworld of the Sith and Origin World for the Sith Inquisitor and Sith Warrior Classes.

Korriban: The Tomb of Magna Ragnos

Metrics

245 death on 200 players.
1.225 Death Ratio.
Unique Death Ratio 2.1
41% Warrior, 59% Inquisitor
Average player level 6.1

Data

Average NPC Level 6
Strong (Orange) Enemies present.
Patrolling Add present.
Overlapping Aggro Radii

Analysis

Area is spawned difficult, DR of 1.225 is not concerning

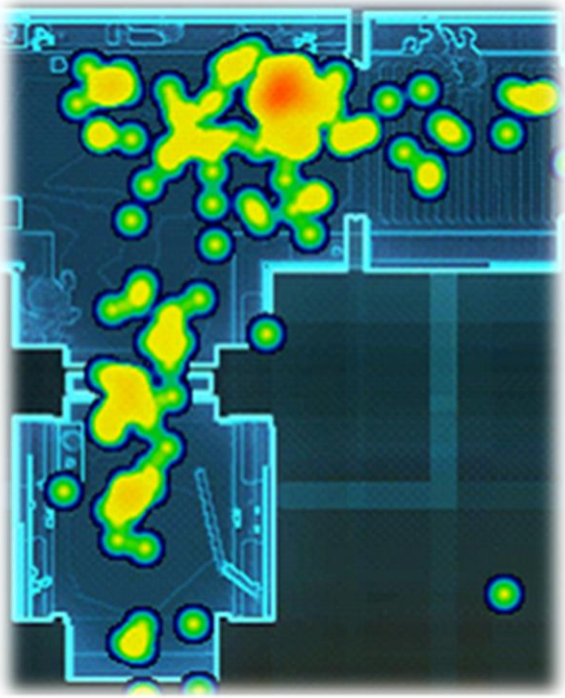
UDR 2.1 is concerning as this is early in the game and most players that die do so more than twice.

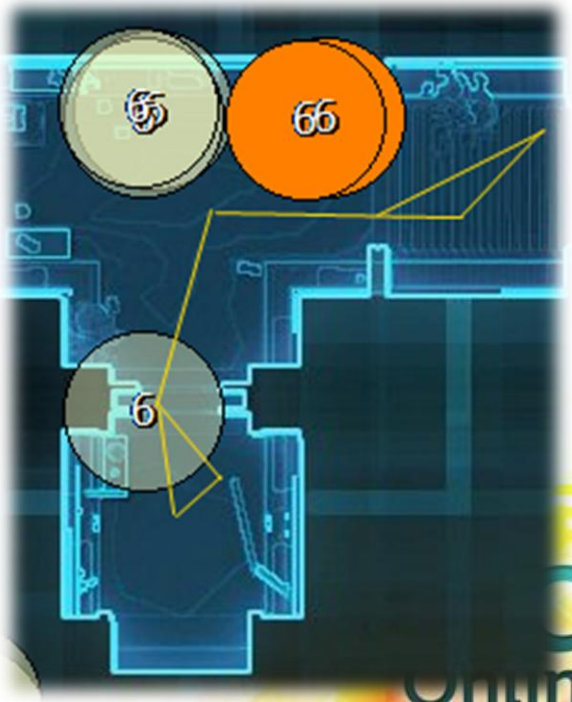
Players hit the area at the right level.

Conclusion:

Spawning mistake.. Players end up fighting up to 5 enemies, including 2 strongs, unless they are very careful.

Not appropriate for level 6.
Action: Move groups further apart.





Example
Spatial Chat Analysis

"How do I..."

Feedback

Players are confused about certain game features.

Analysis

Analyze the chatlog for common question indicators.
("How do I…", "How does…", etc.)

Build a word cloud and move words to the location with the highest frequency of occurrence.

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Quick Validation

Feedback

Reports about broken quest or quest with high 'abandon' rate.

Analysis

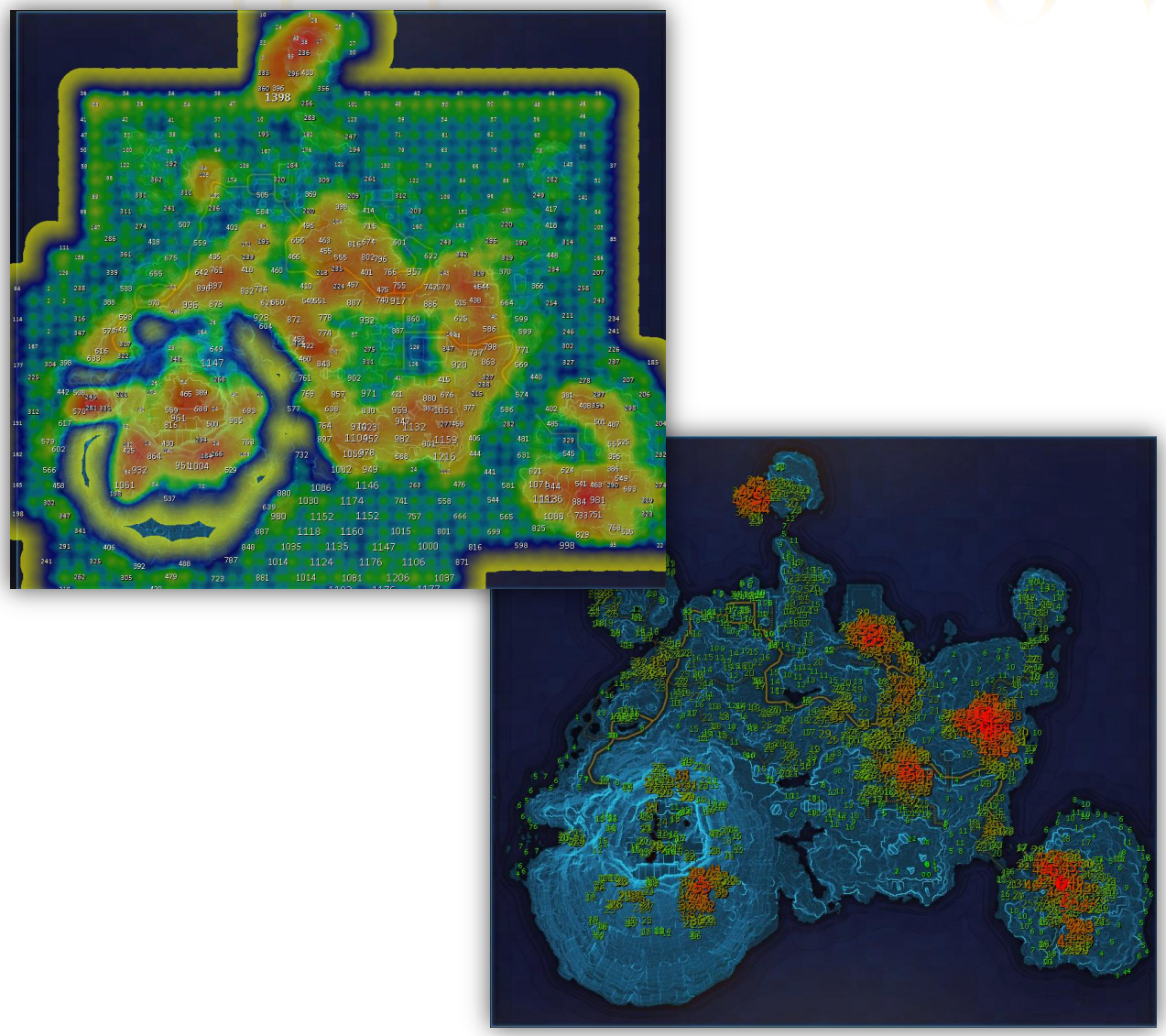
Visualize related phrases spatially in the quest area. ("bug", "broken", "bugged", quest name, etc.)

Players are likely to ask for help/confirmation in chat before

This can be used as a quick check on the frequency of a problem.

Example
Technical Art Optimization

Performance Optimiztion



Metrics

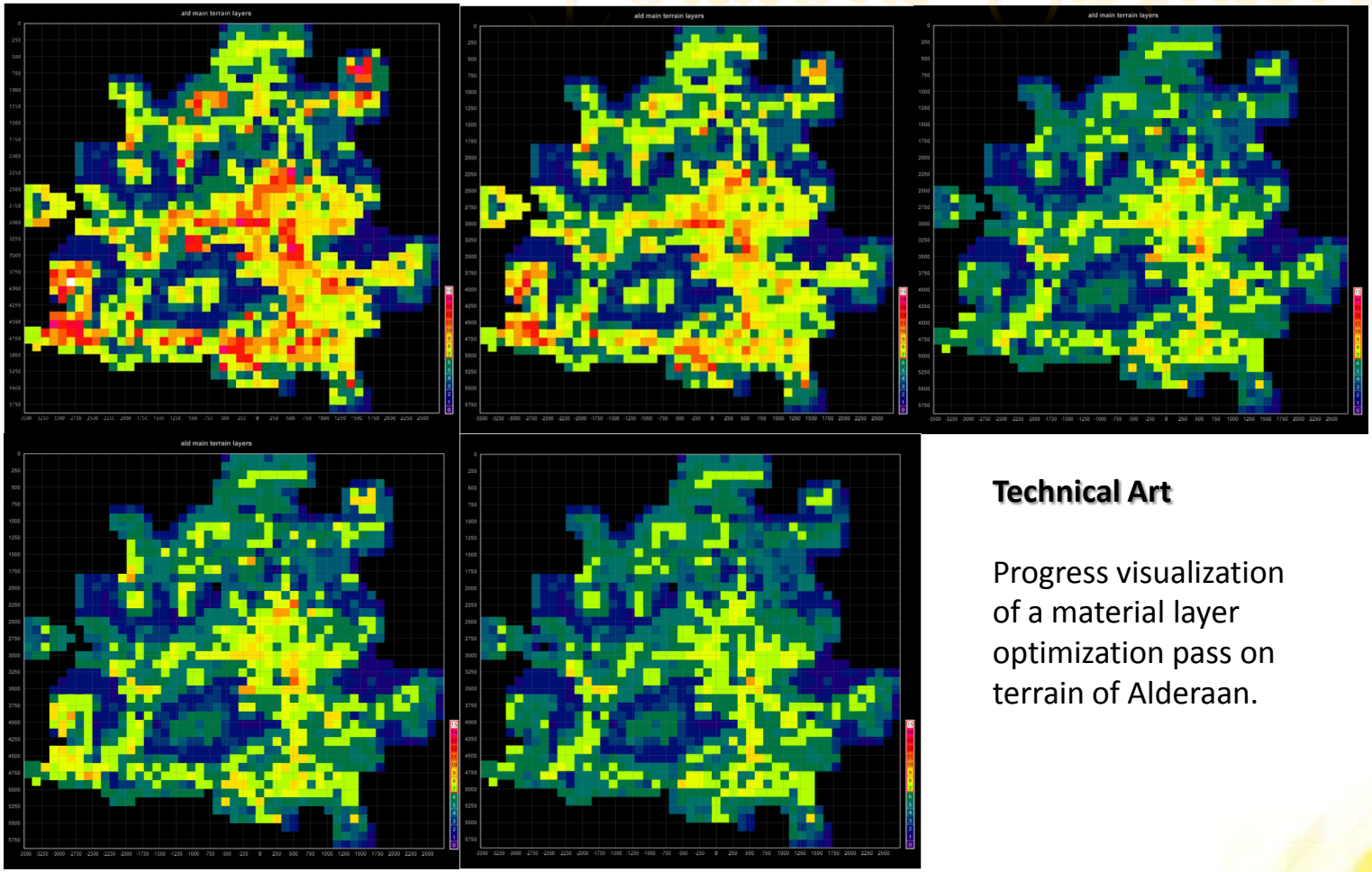
Drawcall metrics from bot driven sampling system.

Data

Add mobile object density counts to the map

Analyze

Terrain Optimization



Technical Art

Progress visualization of a material layer optimization pass on terrain of Alderaan.

Technical Art

Performance Optimization

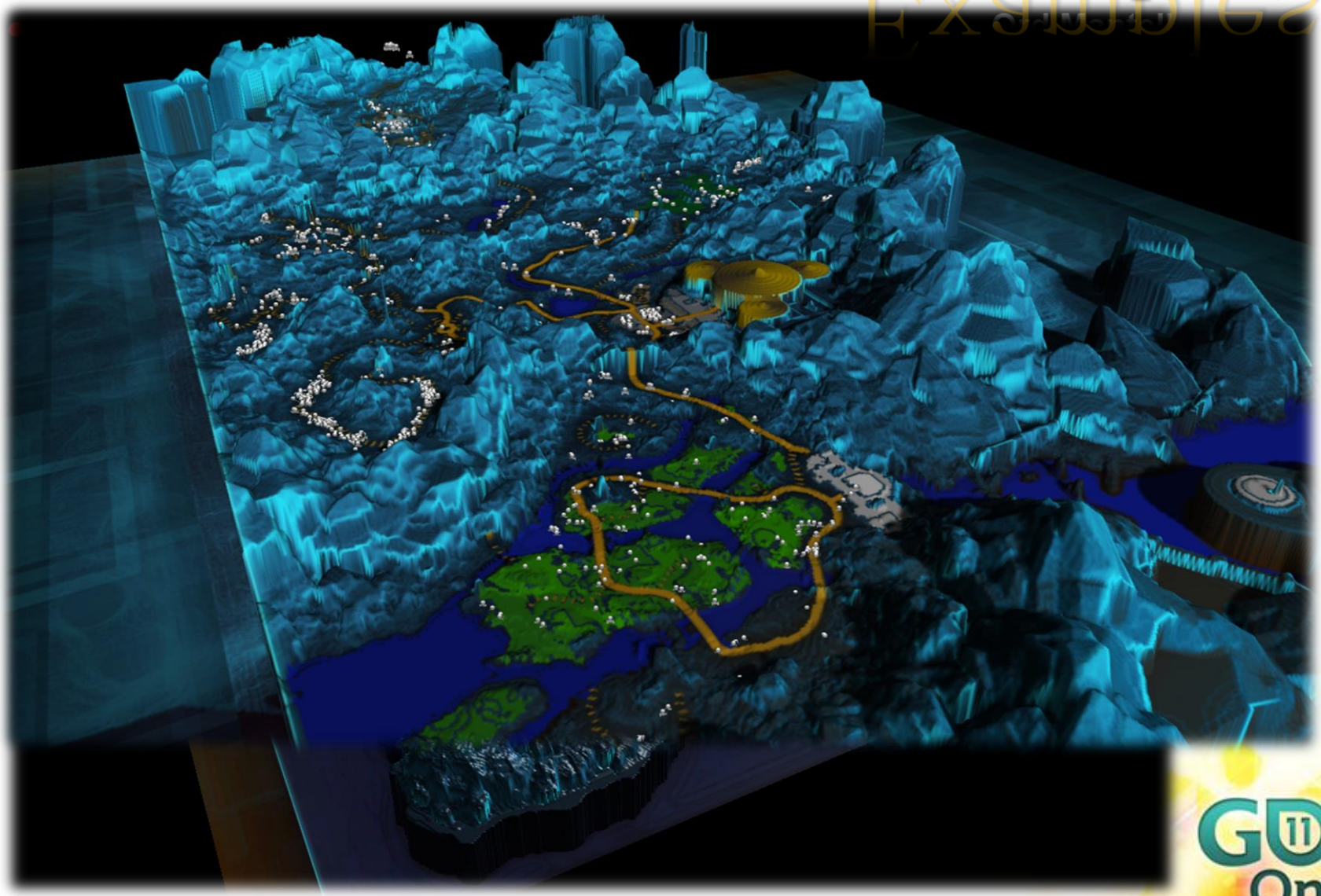
Speed Trees vs. Static Trees

Going 3D

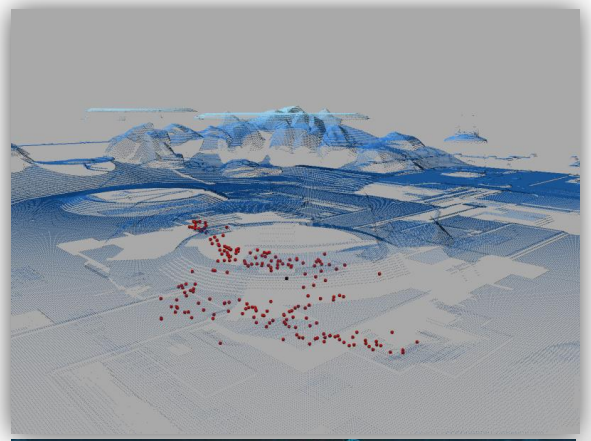
Why

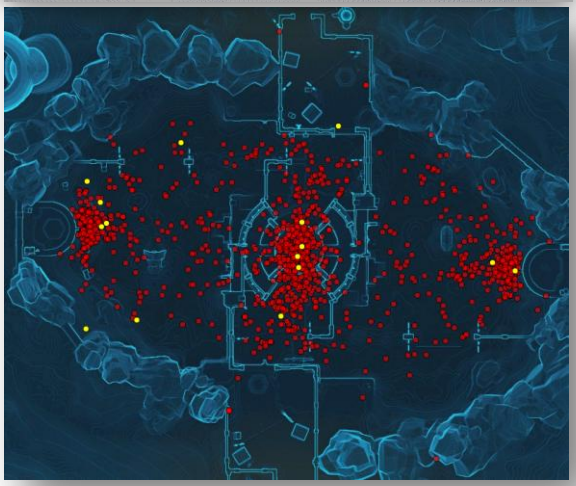
- The game is 3D. In overlapping areas, it's the sometimes the only way to understand the data.
- Unlike working with bitmaps, you can zoom to almost infinite resolution.
- It's much easier to read, especially for people not intimately familiar with the planet like testers.
- It stays easy to read even with 2+ layers of information.
- Because I can? … and it looks nice!

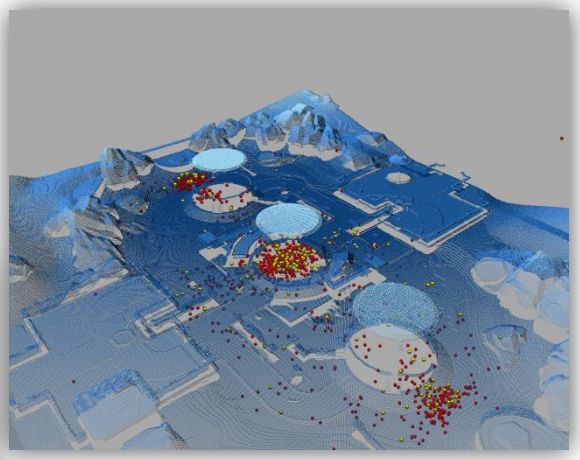
Examples



Perspectives

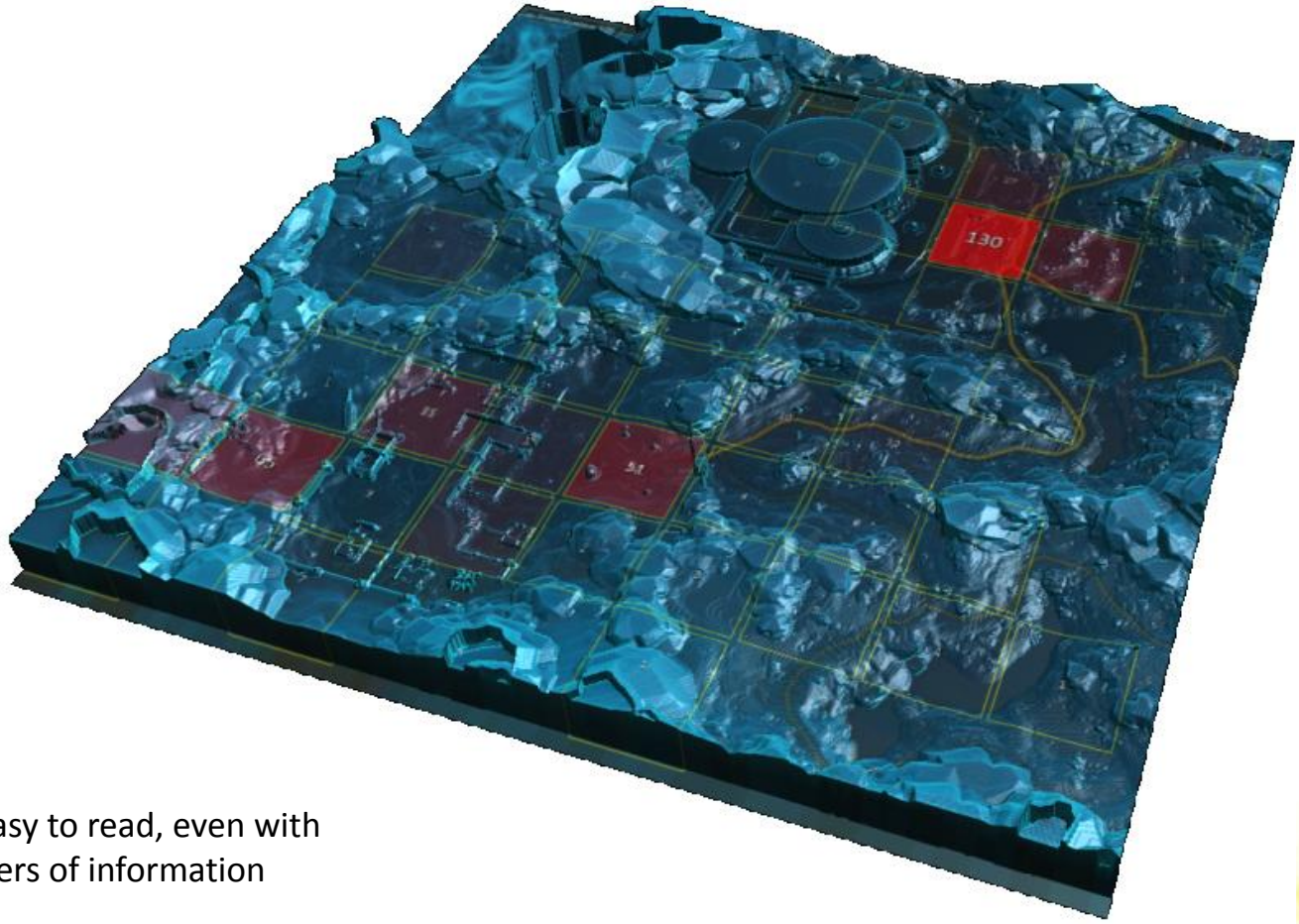






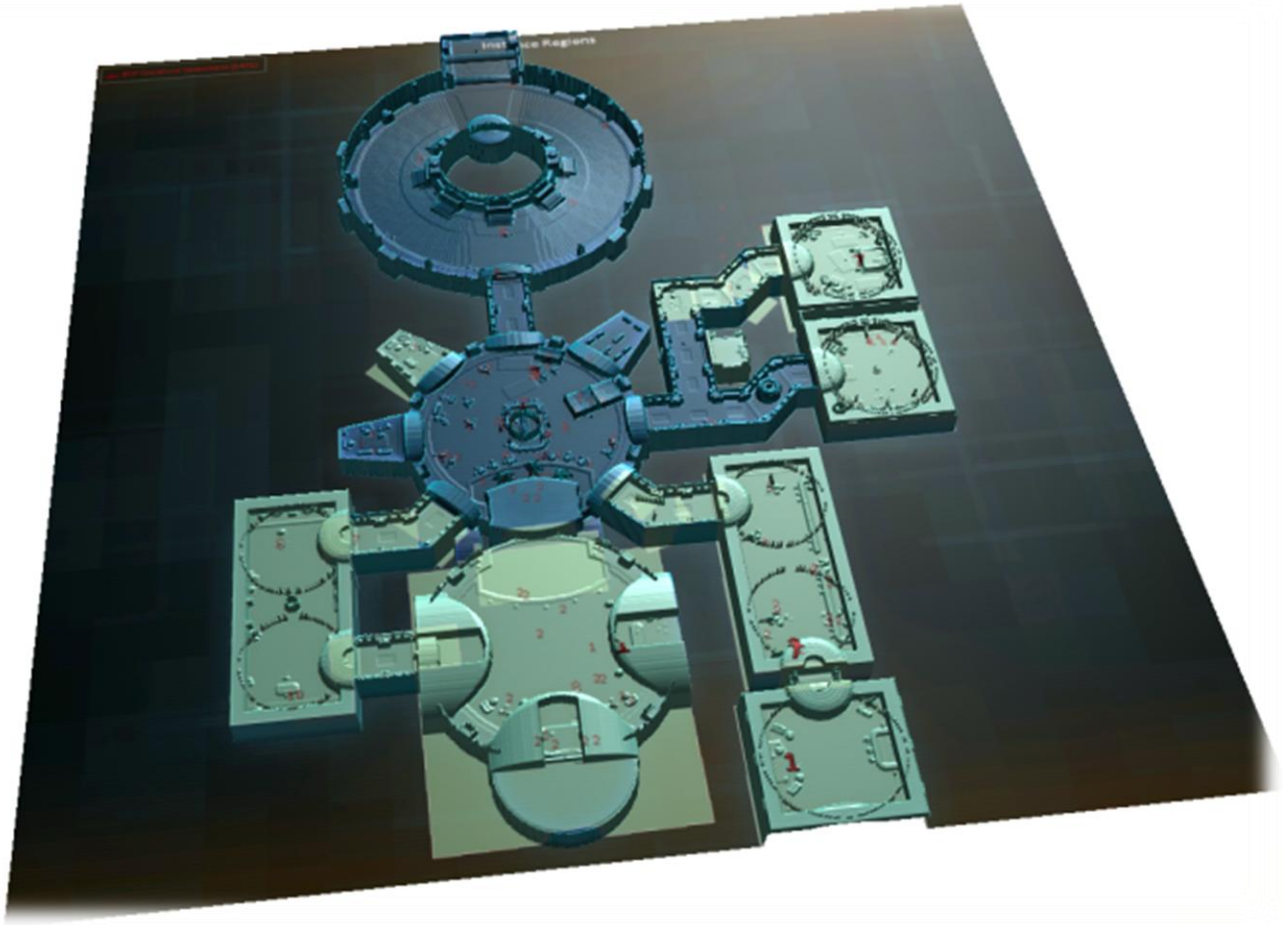
View what's happening in that tunnel under the map…

Z-Compressed 3D



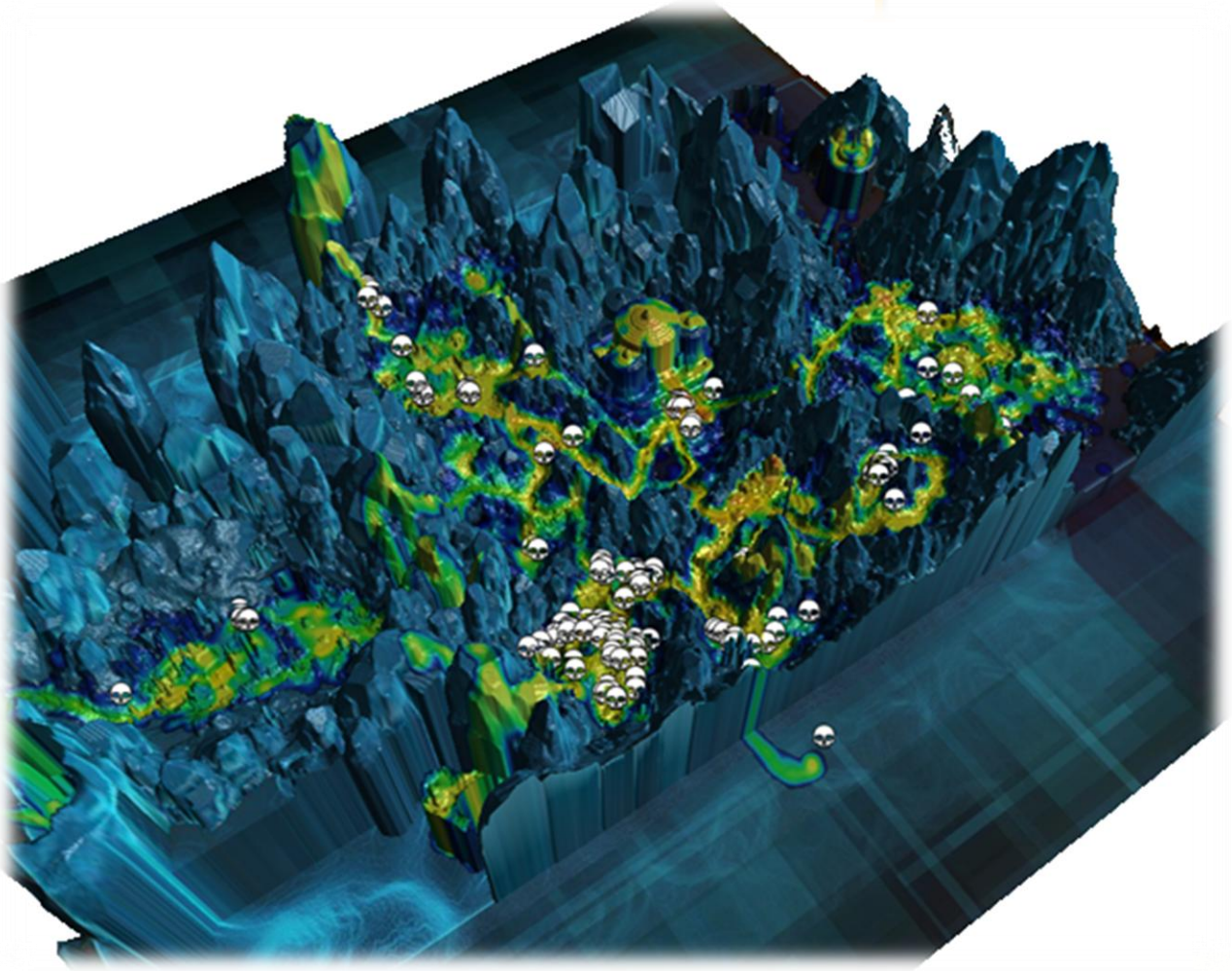
Very easy to read, even with
3-4 layers of information

Phase regions



Highlighted Instance Regions / Volumetric triggers

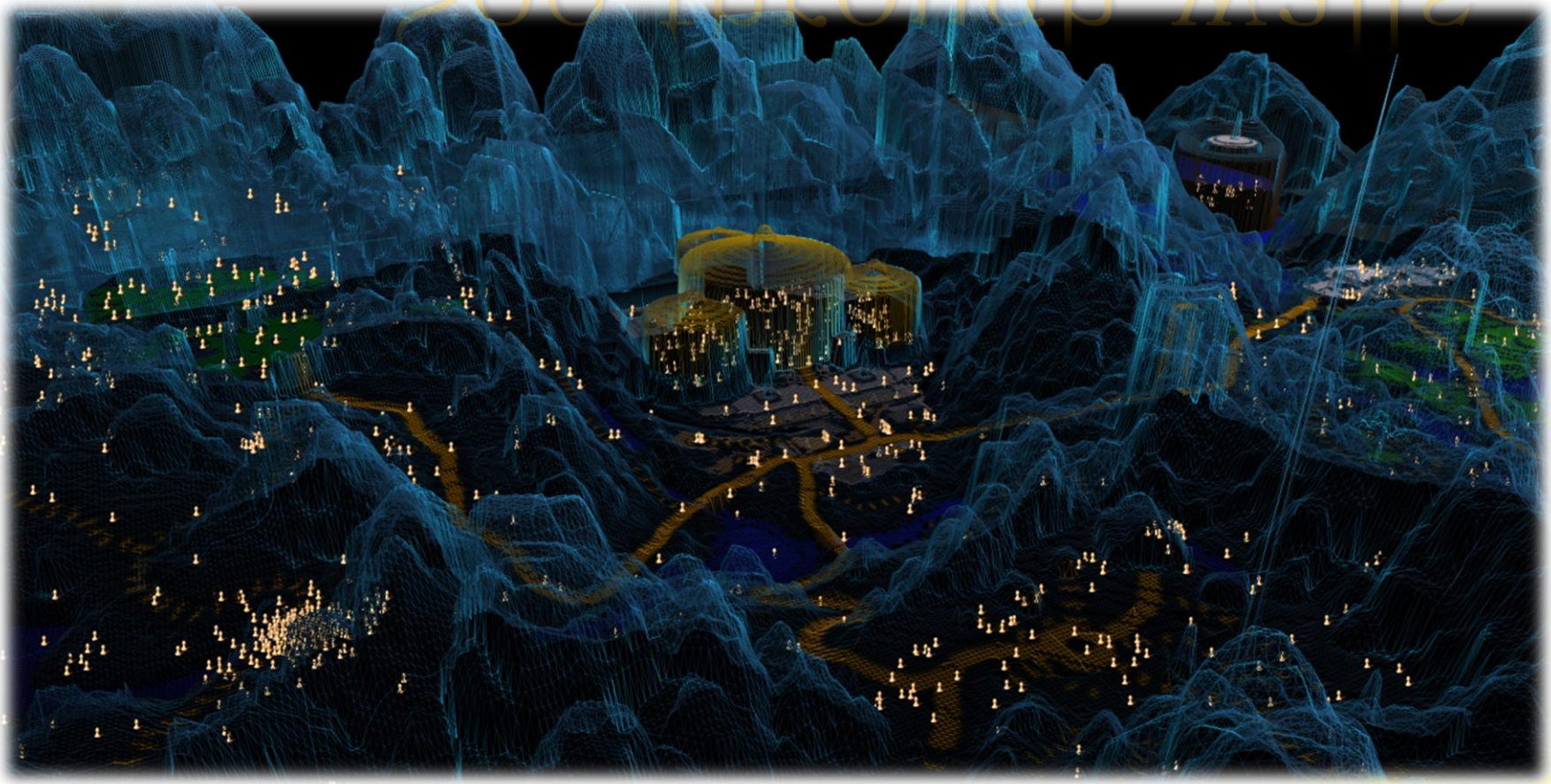
Layered Data



Ground Texture
Movement Heatmap

Icon Layer (Skull)
Death Locations

See through walls

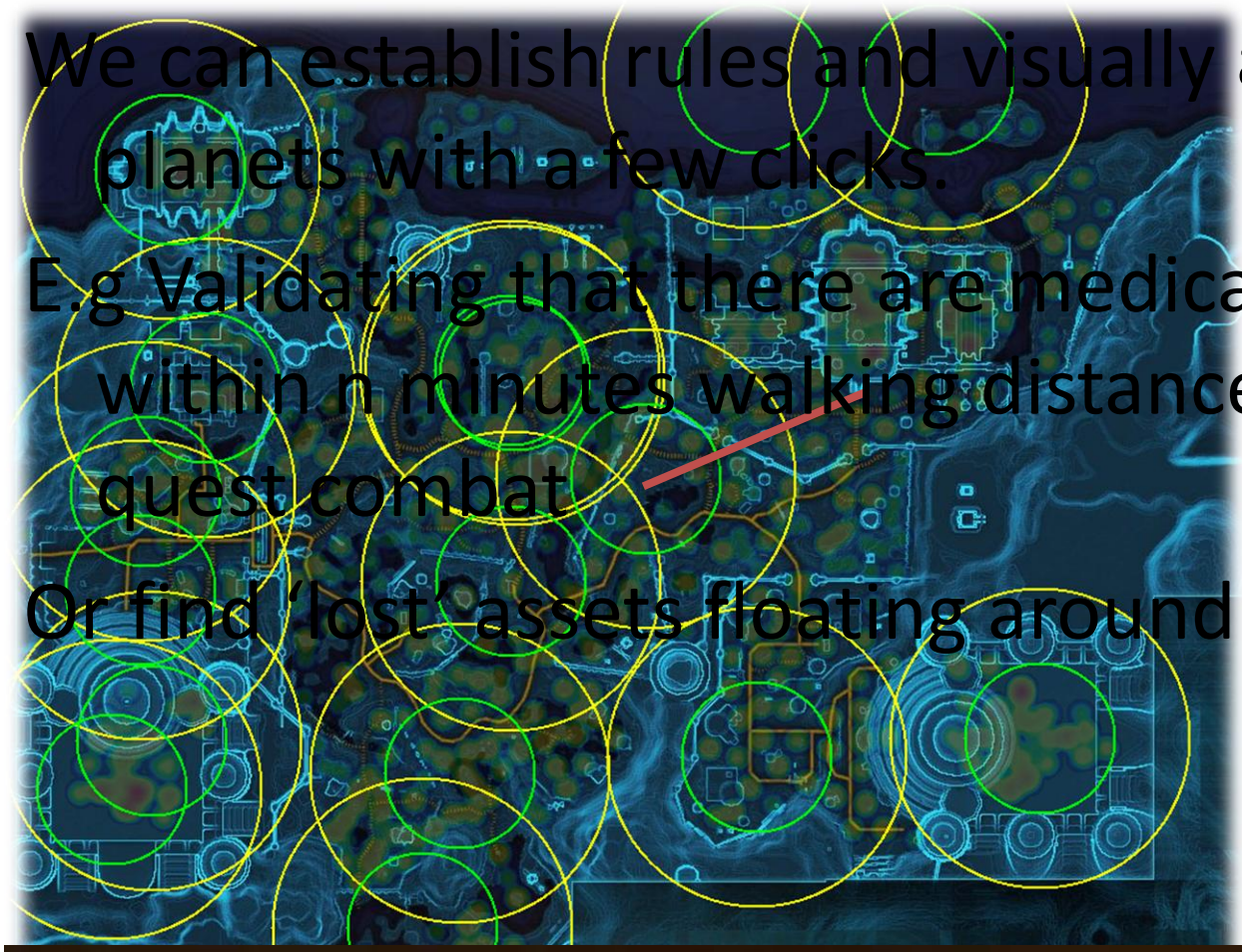


Content Auditing

We can establish rules and visually audit entire planets with a few clicks.

E.g Validating that there are medical centers within n minutes walking distance from major quest combat

Or find ‘lost’ assets floating around in space.



Other Applications

- Behavioral Analysis
  - Given a perfectly symmetric t-junction, ~68% of players go right.
  - Spatial UI feature use (e.g. Where people use the social interface or map)
  - Identify and validate group content.
  - Track individual players with ultra high detail.
- Feature Validation
  - Exploration behavior. How many players go off the beaten path
  - Fog of War dramatically increases the exploration behavior of players
- Tracking Leaks from trusted test groups.

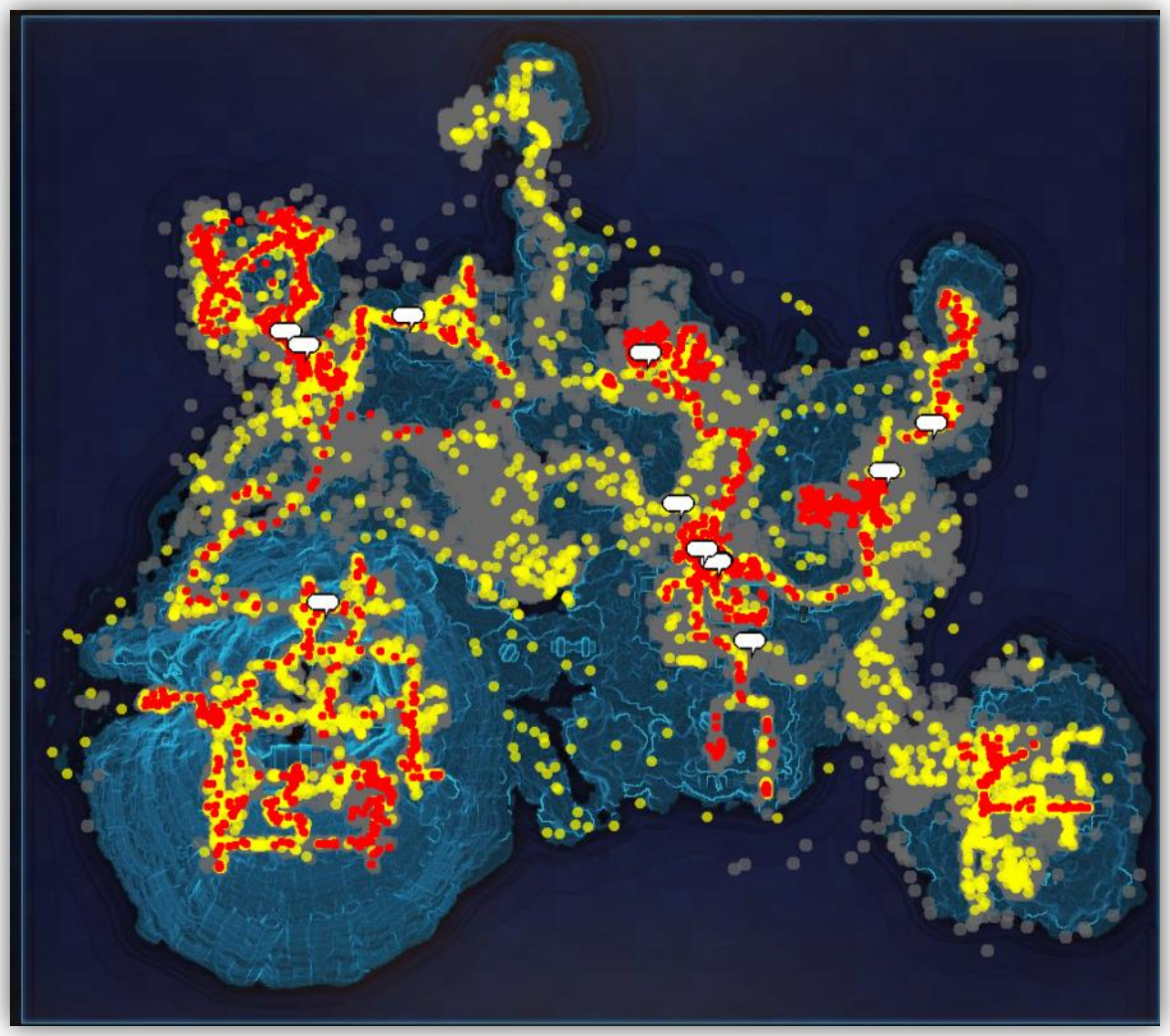
During testing, you likely have large scale datawarehouse capabilities sitting around that you'll plan utilizing for the much larger numbers of players when the game launches. Might as well put them to good use and crank metrics collection to the max.

By taking ultra high detail behavioral data (movement, etc.), it's fairly trivial to identify media leaks from trusted groups.

Chance for even two players to move the same path, wearing the same cloth or using the same ability in the same location are tiny. Drag a box on the map, it's just a question about how much you care and how much time you're willing to devote.

Definitely handy for making sure that your more trusted test groups stay confidential.

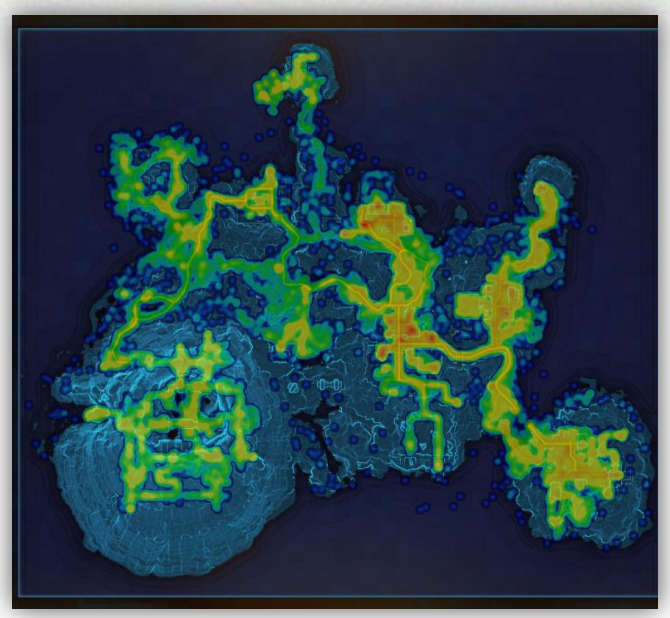
Group Movement

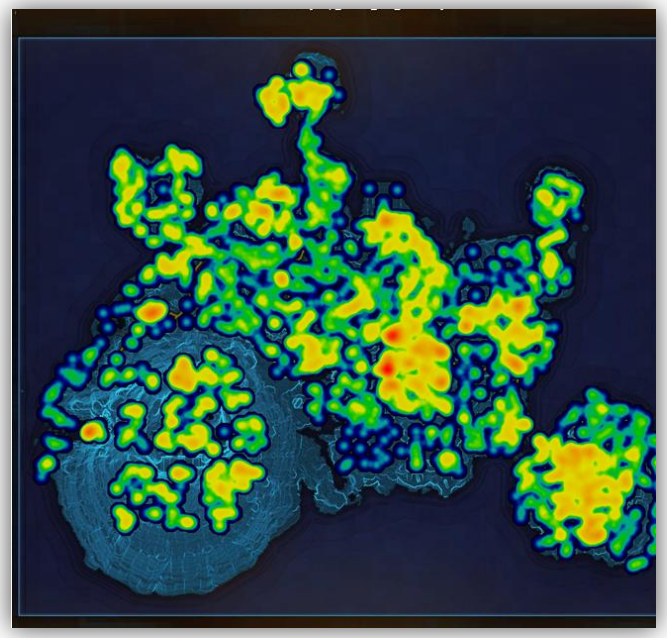


Validation of group content area.

We can visualize player behavior and validate against the design plans.

If players do things that are unexpected but fun, we may decide to change the design instead.





Fog of War

Fog of war dramatically impacts the exploration behavior by players.

We can clearly validate that the feature fills it's intended role (encourage exploration)

Snapshots were taken several month apart, so other changes also influenced the change in player behavior (e.g. the posting of datacron locations on the testing forums, etc.)

Second picture uses no alpha, so it appears more bright. That's not an increase in density

Getting Started

- You likely already have the data, but can the people on the ground actually get to it?
- Add spatial information to metrics events. Almost all information is more useful with that dimension.
- The easy way: Use existing software.
  - Tableau for example.
  - Google has some great visualization tools as well.
- DIY
  - Reuse existing game maps or generate textures from heightmaps.
  - Generate height maps or reuse existing ones from the game.

Tips

- All fancy metrics and visualizations do not replace playing the game. You **must** play your own game.
- Sometimes, just directly asking testers is easier than digging into metrics.
- Train people on the tools you create. Get their feedback to improve workflows. Log who is actually using them and cater to their needs.
- Time is another dimension that can easily be added to visualization tools (e.g. with a slider)

Questions?

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