2015-2019 GLOBAL GAMES MARKET
FORECAST PER SEGMENT TOWARD 2019

TOTAL MARKET
+6.6%
CAGR 2015-2019

2015
$91.8Bn
Smartphone: 28%
Tablet: 6%
Handheld: 30%
TV/Console: 9%
Casual Webgames: 3%
PC/MMO: 3%

2016
$99.6Bn
Smartphone: 27%
Tablet: 5%
Handheld: 29%
TV/Console: 10%
Casual Webgames: 6%
PC/MMO: 3%

2017
$106.5Bn
Smartphone: 26%
Tablet: 5%
Handheld: 28%
TV/Console: 11%
Casual Webgames: 3%
PC/MMO: 2%

2018
$112.5Bn
Smartphone: 26%
Tablet: 4%
Handheld: 27%
TV/Console: 11%
Casual Webgames: 1%
PC/MMO: 2%

2019
$118.6Bn
Smartphone: 25%
Tablet: 4%
Handheld: 26%
TV/Console: 11%
Casual Webgames: 1%
PC/MMO: 2%

Newzoo
HIGHWATER IS
A roguelike survival game

Survival
Manage health, warmth, and hunger
Permanent death

Procedural Cityscape
Different environment every playthrough
Intuitive Crafting System
Multipurpose and dynamic items

Discoverable Story
Integrated into the environment and radio system

Simulated Weather
Realistic weather system the player can predict
City slowly filling with water
### Weather System Comparisons

<table>
<thead>
<tr>
<th></th>
<th>Call of Duty</th>
<th>Banished</th>
<th>Highwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precipitation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Water</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Temperature</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Weather Based Events</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Wind Speed</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Based on Real Data</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Dynamic Pressure System</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Pressure Systems AND weather
Weather System

- Sea Level Pressure to Wind Speed
- Wind Speed Direction Compared to Pressure Centers
- Relative Humidity from Pressure and Temperature
Sampling point generation

Poisson Sample Point Generation

Item Placement
**Procedural City Generation**

- **Voronoi Diagram** with seed points created with *Poisson Distribution* to generate districts and city edges.
- **Voronoi Diagram** with regularly spaced seed points to create city blocks.
- Generate building meshes and pack buildings onto edges of each block.
Comparisons

Also block-based city layouts

Buildings are voxel which are more easily managed in memory

Subversion
Introversion Software
(Unreleased)
City Optimization

Load city buildings in **chunks**

Creature and item **pools**

Hide buildings with fog to save on rendering complex meshes in distance
Item Crafting
Development Pipeline

1. User creates pull request
2. Reviewer approves or denies
3. User merges pull request
Game Performance
Run at 60 FPS on machine with recommended requirements

XML Documented
All code required standard C# XML documentation for public methods and members

Coding Style
Followed Microsoft C# Coding Conventions as well as own Style Guide

Unity Best Practices
Proper asset naming, project settings, and directory structure, use of prefabs

Designer Friendly
All values were exposed to be changed by designers through Unity and configuration files

GOF Design Patterns
Including Bridge, Controller, Decorator, Factory, Observers, Singleton, etc.

Playtesting
Qualitative game testing in addition to software tests

Dynamic UI
Scalable, responsive, and user tested
Testing

NUnit & Unity Test Tools

NUnit Framework 2.6 for backend code tests

Qualitative testing done through playtesting in tandem with the DIGM Team
Continuous Integration
UNIT TESTING & UNITY CLOUD BUILD
Statistics

- 357 commits
- 35 branches
- 0 releases
- 12 contributors

23,219 lines of code
1041 lines of unit tests
368 closed pull requests
422 closed issues
46 play-tests
THANK YOU!