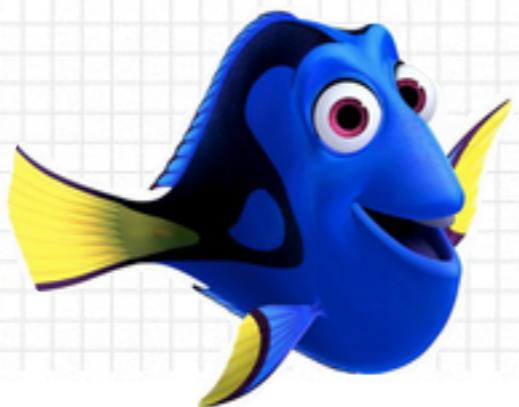




Just Keep Shipping

Thaddaeus Frogley, Lead Programmer
Boss Alien, Natural Motion, Zynga



Who Am I

- Thaddaeus Frogley, Lead Programmer, Boss Alien

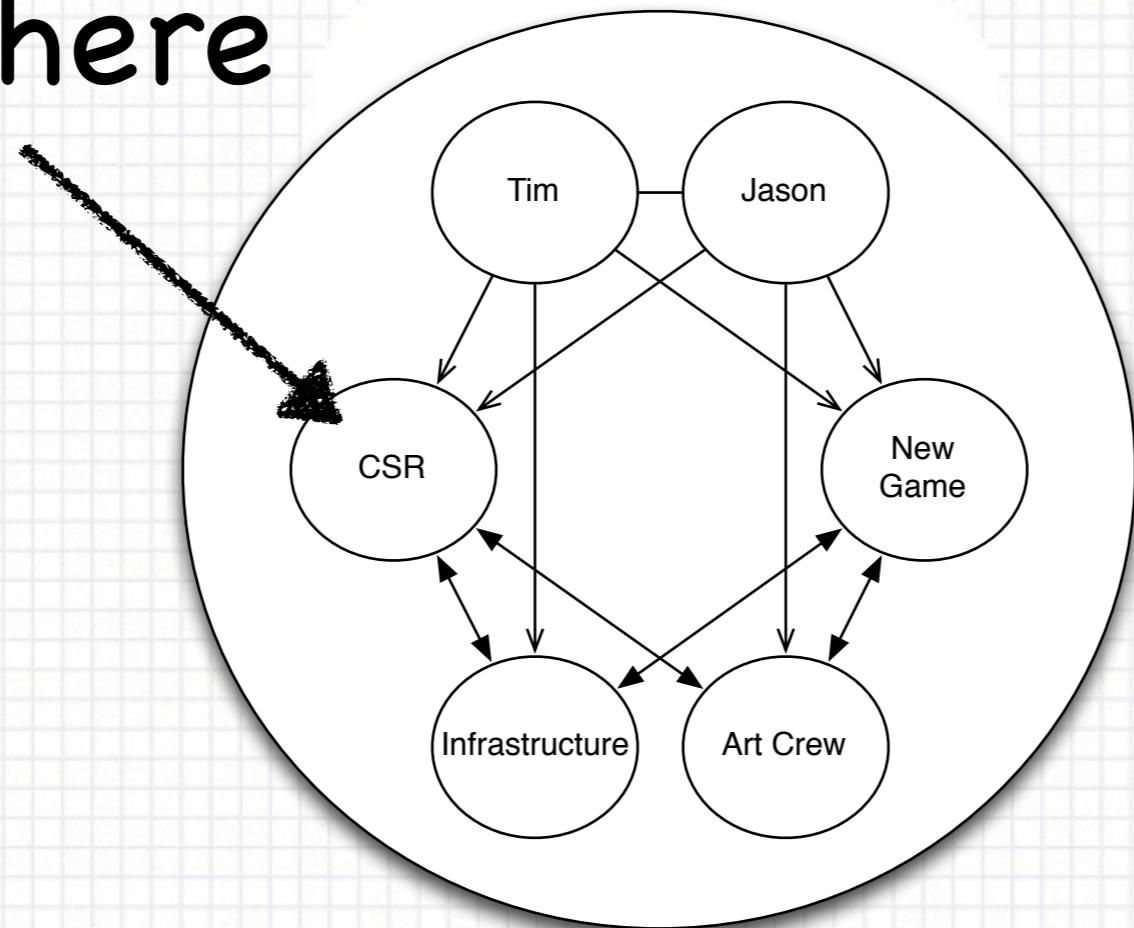


- 20 Years Industry Experience
- Previously: JAGEX, Climax, Rockstar, KotJ, CyberLife, & Mythos Games.
-  @codemonkey_uk
- <http://thad.frogley.info/>

BOSSALIEN

a NATURALMOTION STUDIO

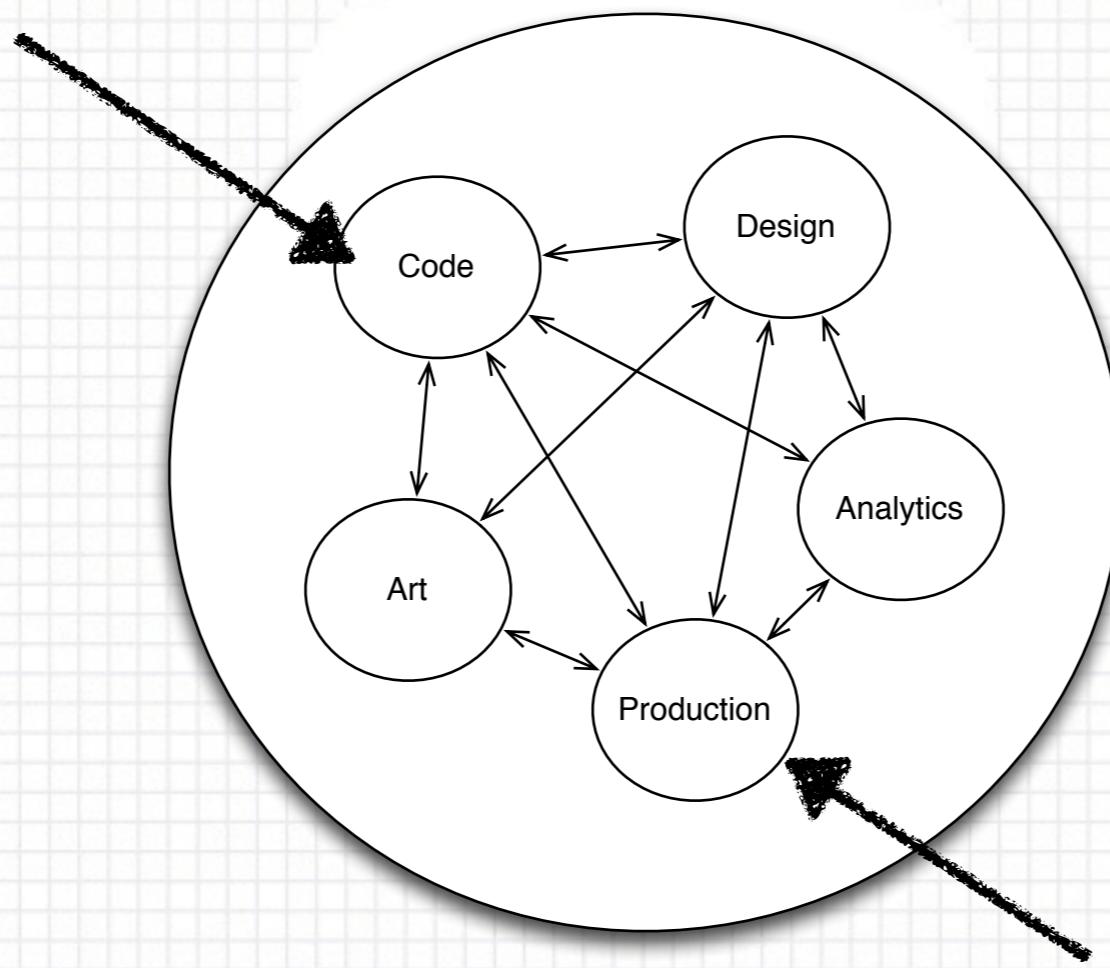
I am here







I am here



And here

What Is CSR Racing?

- A game built in Unity3D
- Features and Content on iOS and Android
- Infrastructure and Cloud Services
- 60-40 Split

What Is CSR Racing?

- Soft Launch 28th May 2012
- Global iOS Launch July 2012
- Current version 2.7.1 on iOS, GooglePlay, Amazon
- 32 Client Updates on iOS, 31 Data Pushes
- 120 million installs

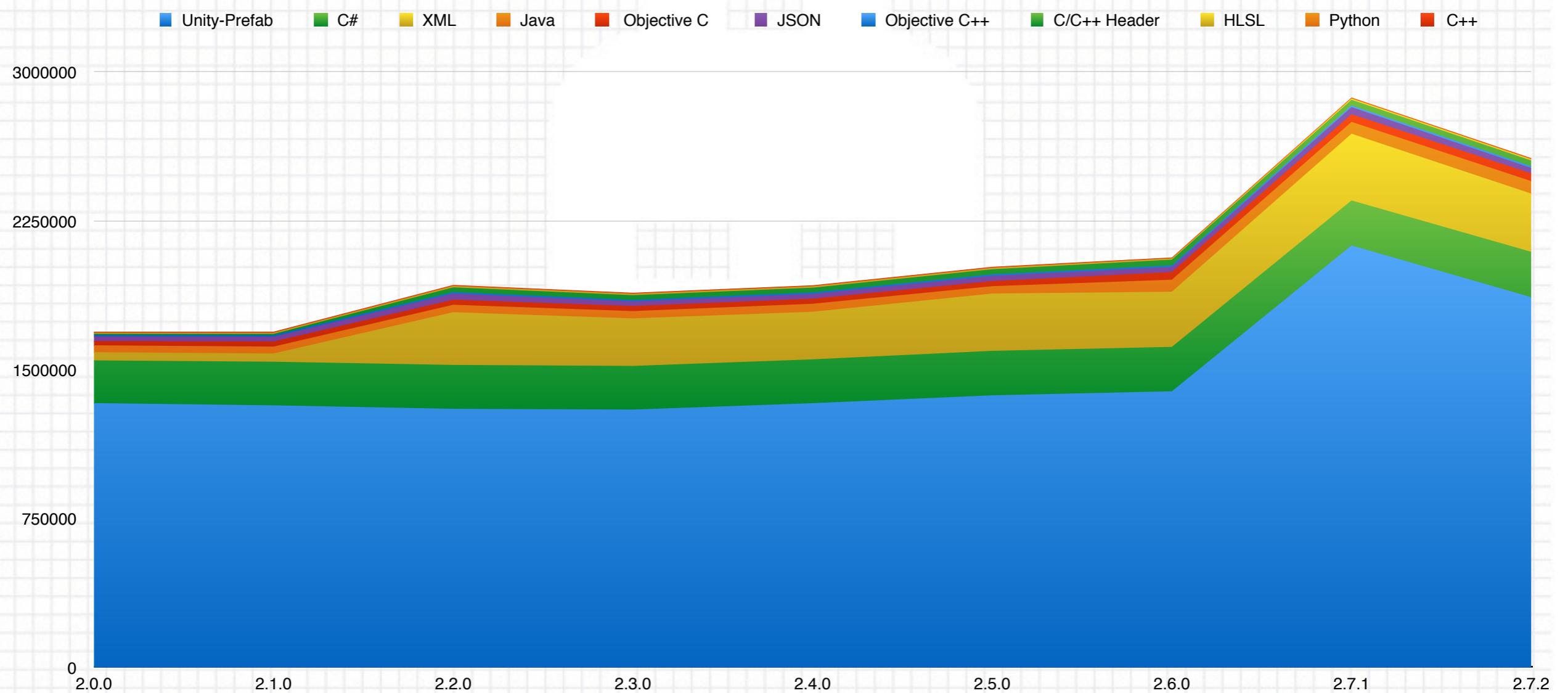
What Is CSR Racing?

- 221kloc C#
- 25kloc Objective C
- 34kloc Java
- 320kloc XML & JSON

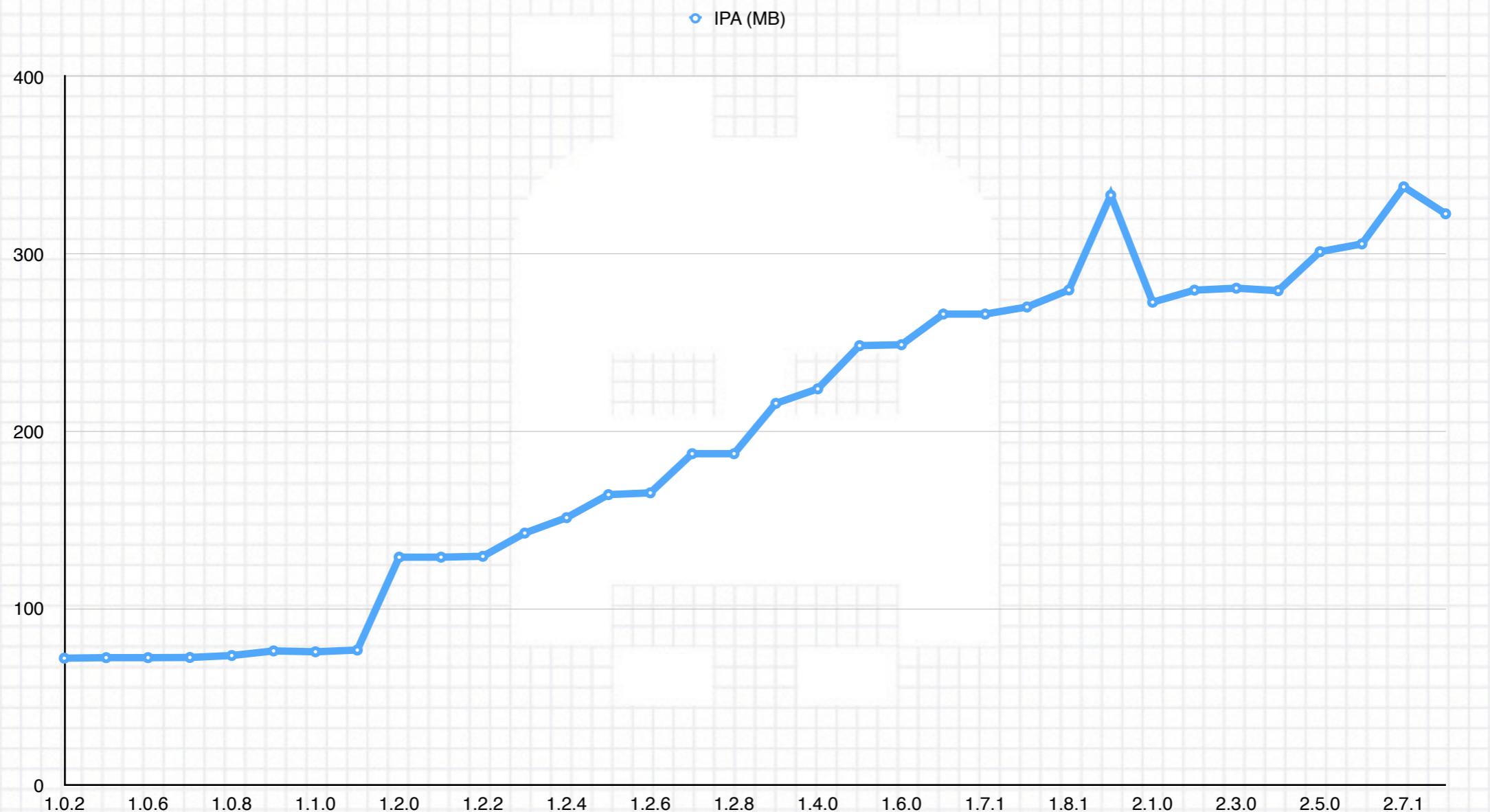
Why it is difficult

- PS2/PSP Game: 470K LOC
- Xbox360 game: 850K LOC
- New-gen middleware: 1580K LOC
- "One full-time maintenance person for every 20K LOC" - Thomas Pigoski

What Is CSR Racing?



What Is CSR Racing?



What Do We Do

- Regular Content Updates
- Frequent Feature Updates
- Constant Improvement
- As-required SDK Updates

What Do We Do

- Metronomic releases
- Painless
- Platform Parity

Content

- New Cars, Races, Crews and Narrative.
- Regular Multiplayer Seasons are an on-going Player Facing commitment.
- Date-locked.

Improvements

- Smaller
- Faster
- Better



Features

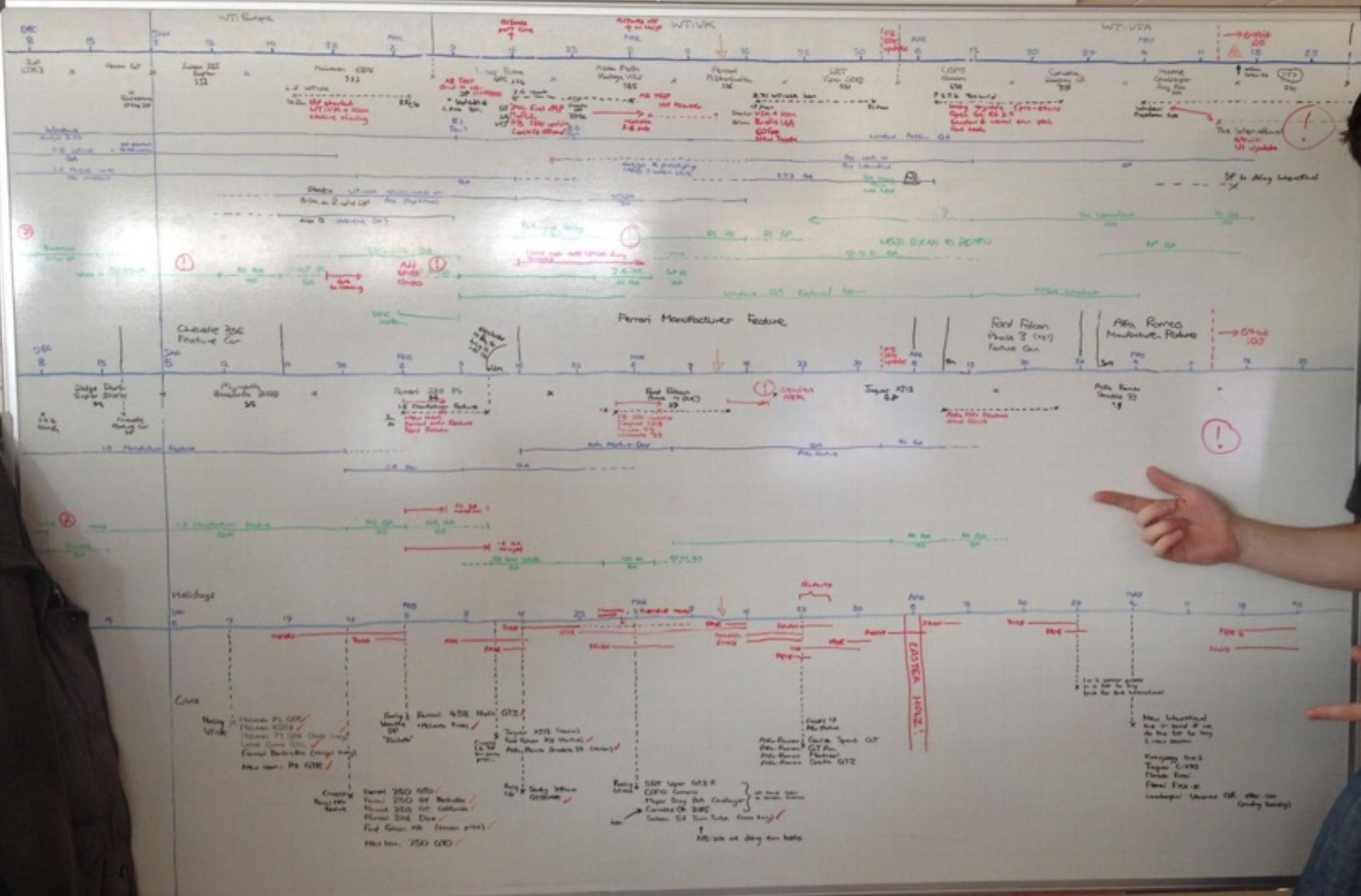
- New feature ideas come in all the time.
- Features come in a variety of sizes.
- Features surprise and excite fans.

SDKs

- Unity3D
- NmgMetrics
- Fabric
- Flurry
- Chartboost
- TapJoy
- AdColony
- MoPub
- Apsalar
- Upsight
- Apple
- Google
- Amazon
- Twitter
- Facebook

It's Not Straightforward

- Feature and Content Work Overlaps.
- Work for release N, N+1, N+2, and more, can all be happening concurrently.
- Features/content for release N might be moved to N+1 ... or N-1!



Surprise!

- Platform updates break the live game!
- Players discover problems QA missed in the live game!
- There is an amazing \$£¥ opportunity if we can make %CHANGE% to the game before %DATE%!

It Never Stops!

- Everybody has ideas.
- The game is always in development.
- The world is changing around us.

Communication

“Having a viable, compelling, clear, and well-communicated shared vision was more important than any other factor we looked at.” **Paul Tozour**

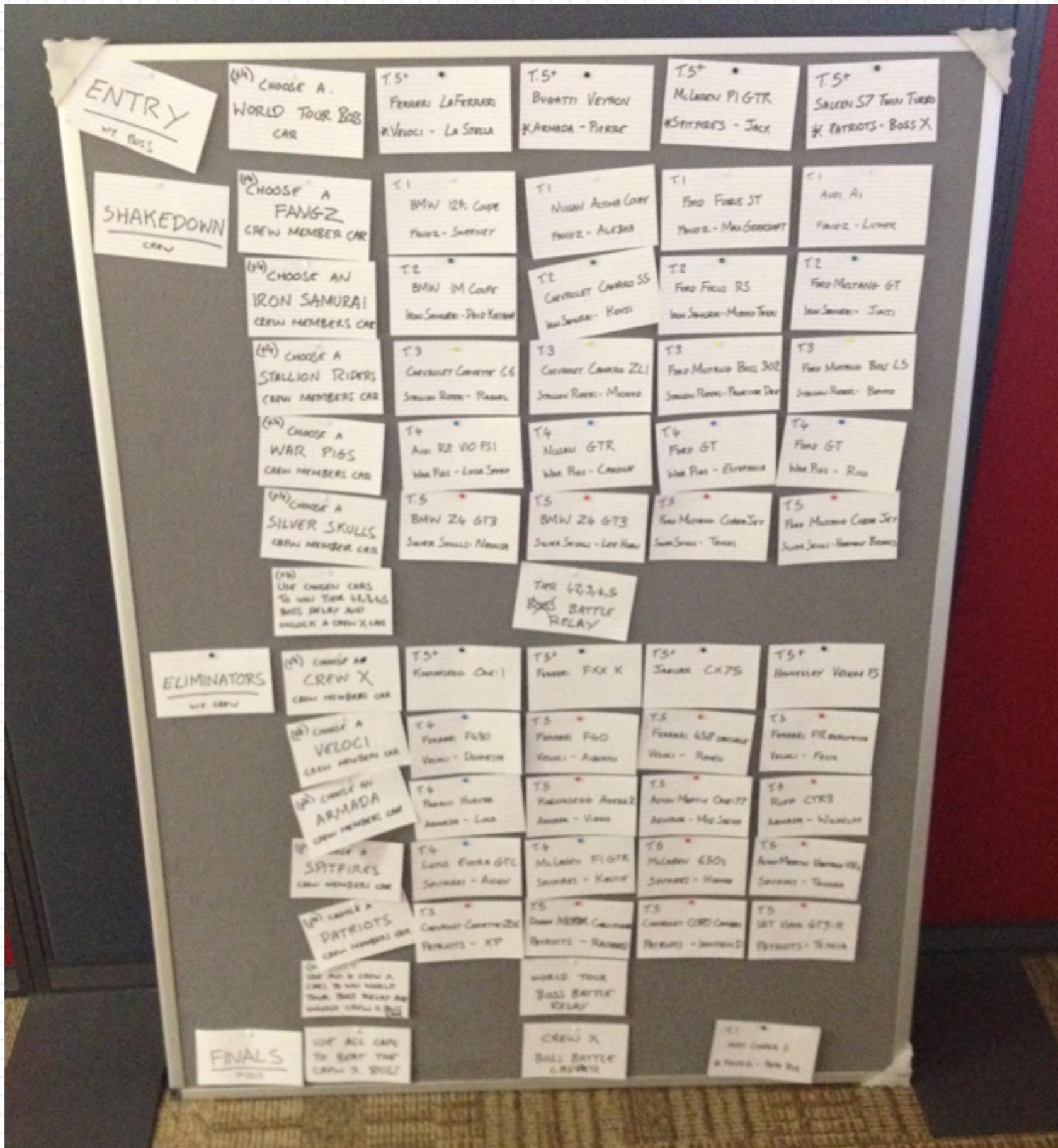
Communication

- Open plan office
- Whole team stand up meeting 2x week
- Email email email
- Code review
- JIRA, Spreadsheets, Whiteboards

I
SURVIVED
ANOTHER
MEETING
THAT
SHOULD
HAVE
BEEN AN
EMAIL







CSR Racing

2.7.1 ~~WT~~ WT: USA
Big Feature!

23 Mar sub? Mon
31 Mar launch
Bundle IAPs
GPG ID migration
New Track
60fps

2.7.2 Tech update

10 Apr sub? Mon
27 Apr launch
Unity upgrade (needed to get to 64 bit)
Car shadows
Wheel blur
OpenGL ES 3.0
Font tech update?

2.7.3 ?

"Gurney"
13 May pub
Pre-International DP
Cadillac ATS.V.R
Ferrari Enzo
++ ???
Big Feature!

2.8.0 ~~R~~ The International

? To be scoped Will likely need 64bit support

Backlog: UI rewrite - on hold

CSR Classics

1.6.0 Season & Feature cars

Jaguar XJ13
Ford Falcon XY
Alfa Romeo Stradale 33

Unity 4.6.1p4 upgrade

1.7.0 Alfa Romeo Mfr Feature

Mini store (not from OIP)
Replay system update
Bigger gas tank
Season Price cars
Ukrainian
Lamborghini

1.5.0 Ferrari Mfr. Feature

- Agent Deals Mon
- Tapjoy Mon
- New build system com

30 Jan sub

12 Feb launch

Silly racing for

Car Update
For NE platform

Jaguar XJ13

Ford Falcon XY

Alfa Romeo Stradale 33

4 Mar sub

17 Mar launch

(delayed due to E3 meeting)

1.6.0 FB SDK update

Mon

Unity 4.6.1p4 car

Season & feature cars

relaunch

17 Mar launch

(delayed due to E3 meeting)

1.7.0 Alfa-Romeo Mfr. Feature

- Mini Store Mon

- Replay system

Season Price

- Without (most) /

- ARM tasks

Car - Lambda Corvettes (most)

Last branch merging. Use Car of Gurney 1.7.0

9 APRIL SUB

13 APRIL LAUNCH

Bentley GT3 Q2 IAP
Lambo & 17

Getting to 64bit
WP8.0 issues

International Scoping

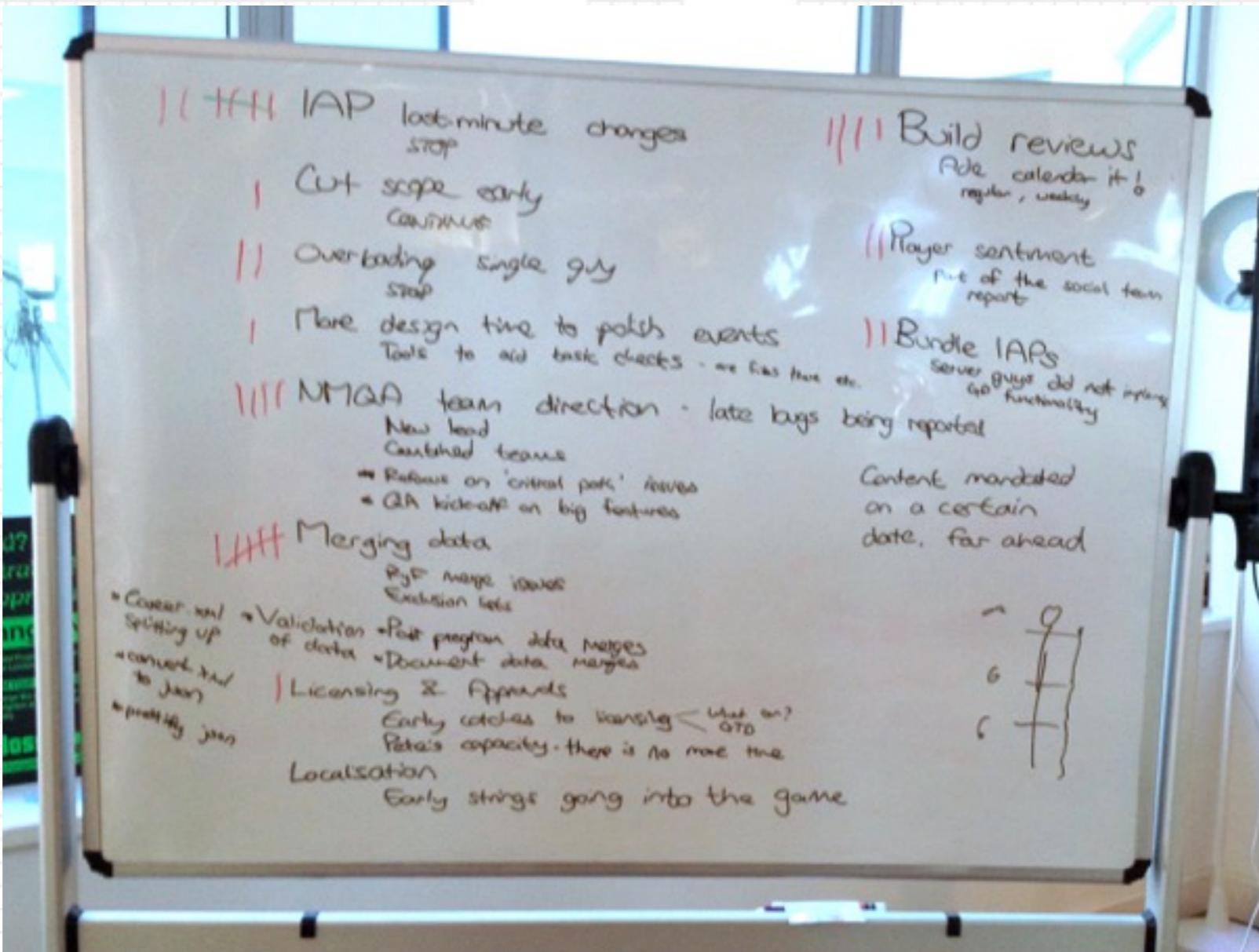
Git branch merging & car pool setup
for 1.7



Communication

- Feature kick-offs
- Feature Reviews, show-and-tell
- Post-mortems

Post-mortem: WT USA



Process and Change

- Deliberate
- Dynamic

It's a Marathon not a Sprint

- Don't crunch.
- Crunch is bad.
- Crunch has been unambiguously shown to be both bad for the product and bad for the team.
- Don't crunch.

Support your bottle-necks

- Identify bottle necks
- Allocate code-resource to improving their lives

Branches

- 50+ branches
- git is amazing
- the CSR asset system is also pretty good

CSR Asset System

- Any runtime loaded asset (bundle) in CSR can be branched, versioned and updated
- dev / qa / prod
- Data can be live as soon as QA approves
- AB Testing puts users on named versions

CSR Asset System

- Merging is difficult and error prone
- Focus for improvement in New Game

Branches

- Localisation DB doesn't support branching.

Estimation

- Estimate pessimistically
- Estimate concept to completion

Planning and Resources

- Planning to full capacity means you can't react to opportunities.
- Planning to full capacity means you can't absorb unexpected downtime.
- Planning to full capacity ~~virtually~~ guarantees missing your dates.

Planning and Resources

- Triage Early
- Triage Often

Planning and Resources

People

- Freedom to Innovate
- Space to Fail
- Ownership



Planning and Resources

People

- Know your team.
- Keep your team (happy).
- Trust your team.

Tech Debt Is Real

- Time constraints
- Knowledge constraints

Tech Debt Is Real

- Actively identify and address Tech-Debt.
- Pay the principle not just the interest.
- Not all Refactorings are made equal.
- Cost / benefits.

Backwards Compatibility

- Player Data
- DLC / Bought Content

Security

- Auto-ban system
- Public-key cryptography

Tips!

- source control
- code review
- jira

Source Control

Tips!

- Delete branches when you're finished.
- git: merge vs rebase
- Write useful commit messages. What you did, and why you did it. Include a JIRA ticket reference if there is one, but don't rely on that to fully explain the change.

Code Review

Tips!

- Do reviews promptly.
- Don't "Complete" code reviews with open issues.
- Mark issues as "Resolved" once they've been dealt with.
- Reply to comments. Add changes to a review where you've fixed issues.

Code Review Tips!

- Say something. Complements and questions as well as criticisms!
- Don't be defensive about your code, don't dismiss criticism with "its a work in progress" or "it's temporary code". Learn from it.

JIRA

Tips!

- Use the Workflow buttons.
- Un-assign and Stop Progress issues if you get interrupted to work on something else.
- Add comments with any information that would help other people make progress.

More Tips!

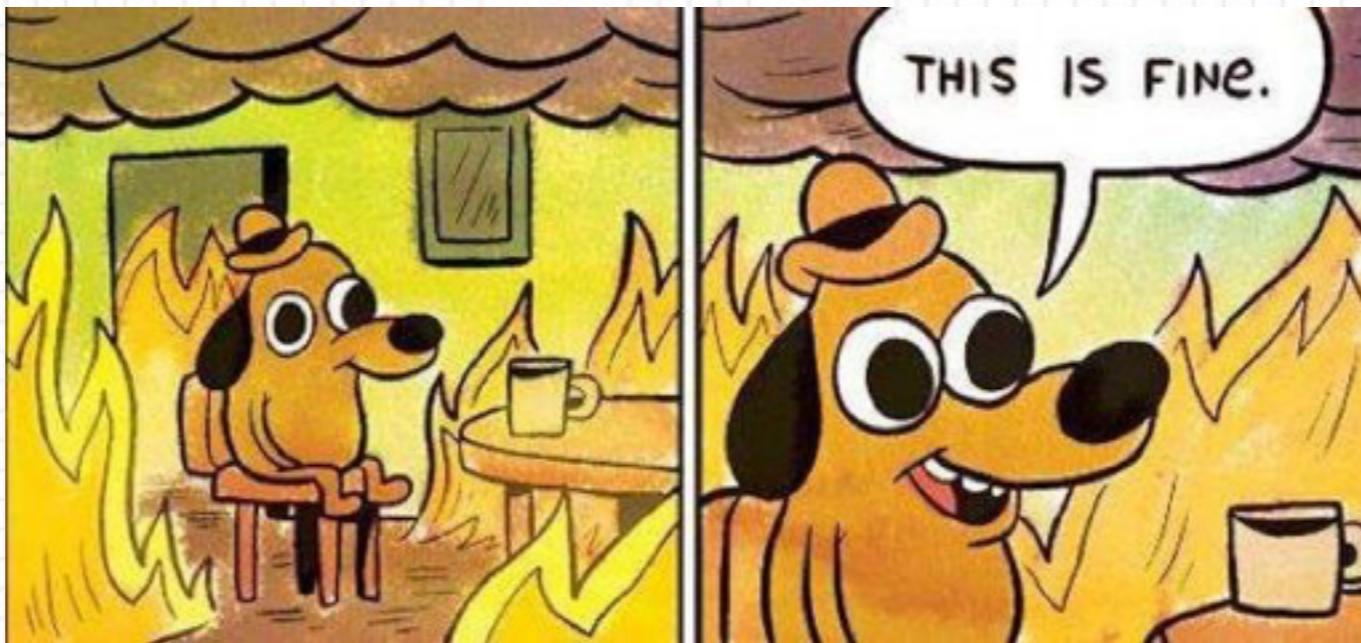
- Ship with a data-push system.
- Ship with a revenue generating feature that can be extended in data.

Finally

- Source Control
- Automated Builds
- Continuous Integration



Questions?



AMA

thad@bossalien.com