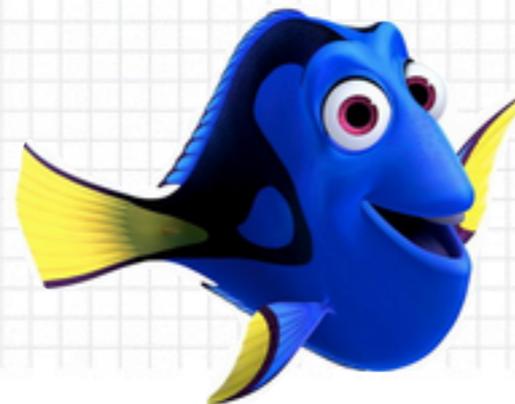




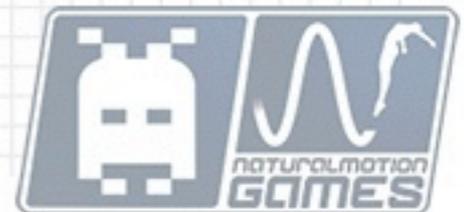
Just Keep Shipping

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



Who Am I

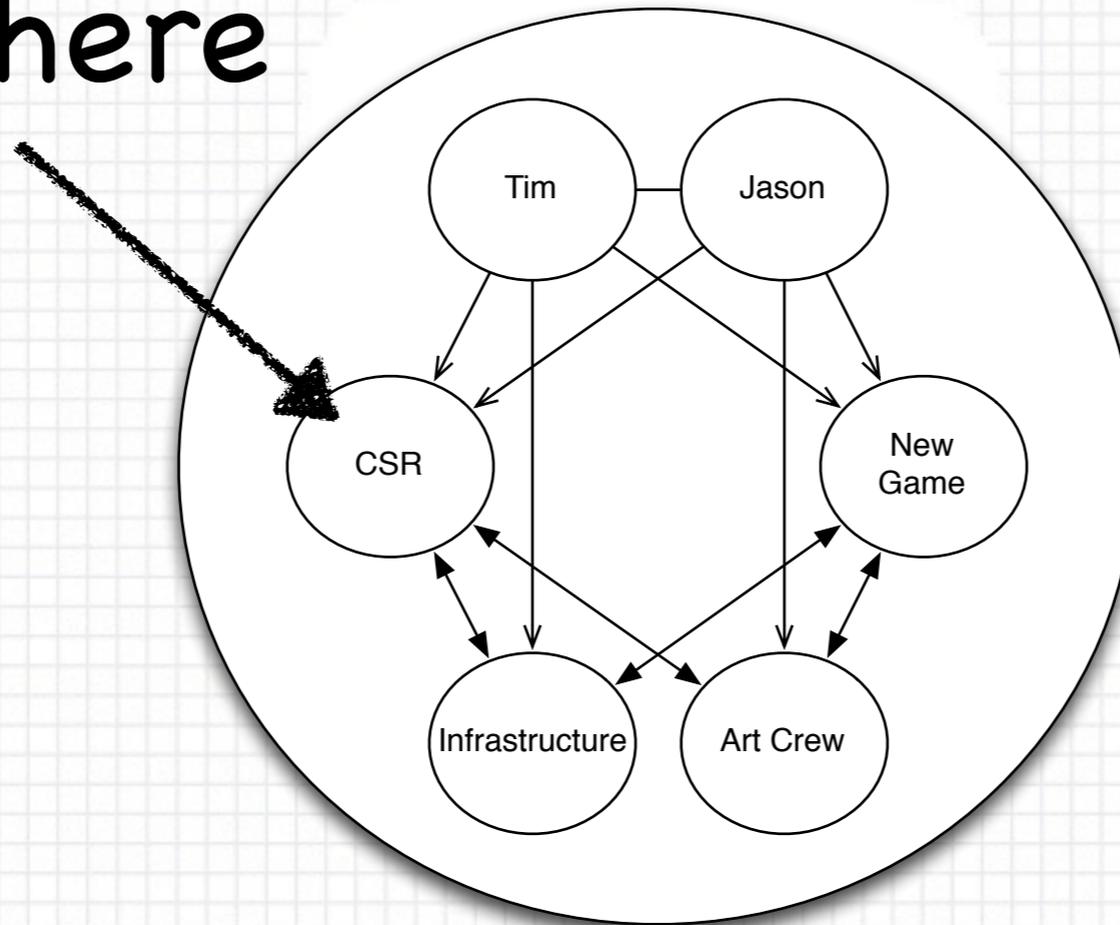
- Thaddaeus Frogley, Lead Programmer, Boss Alien
 - 20 Years Industry Experience
 - Previously: JAGEX, Climax, Rockstar, KotJ, CyberLife, & Mythos Games.
 -  @codemonkey_uk
 - <http://thad.frogley.info/>



BOSSALIEN

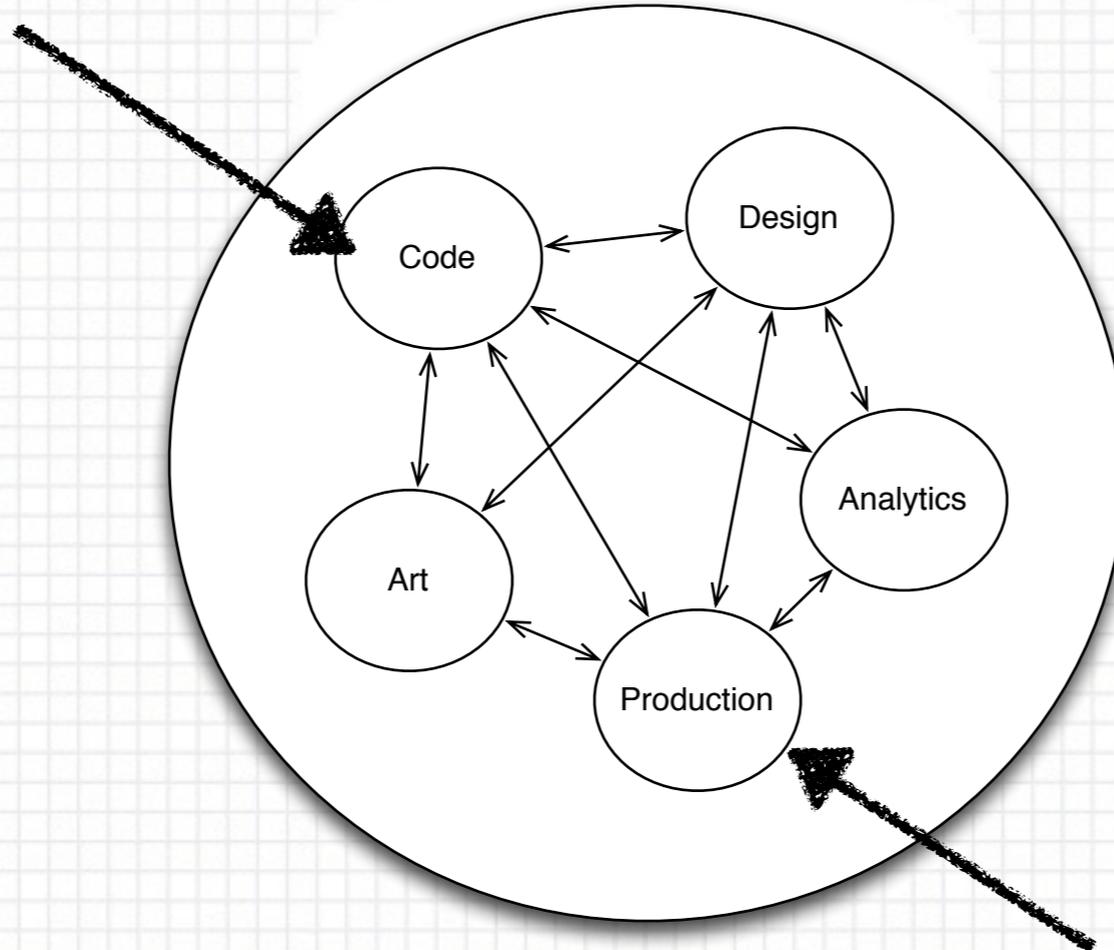
A NATURALMOTION STUDIO

I am here

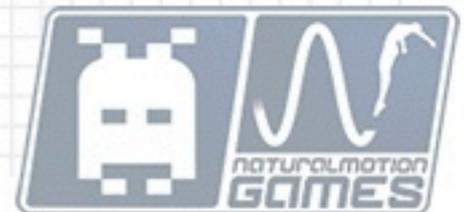




I am here

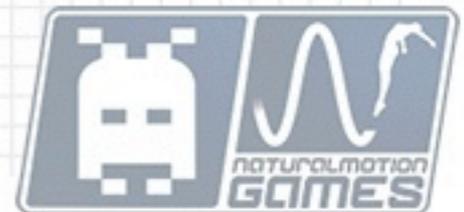


And here



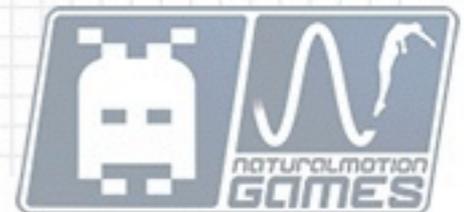
What Is CSR Racing?

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



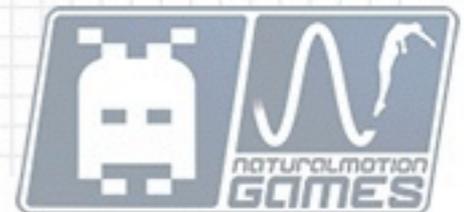
What Is CSR Racing?

- 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

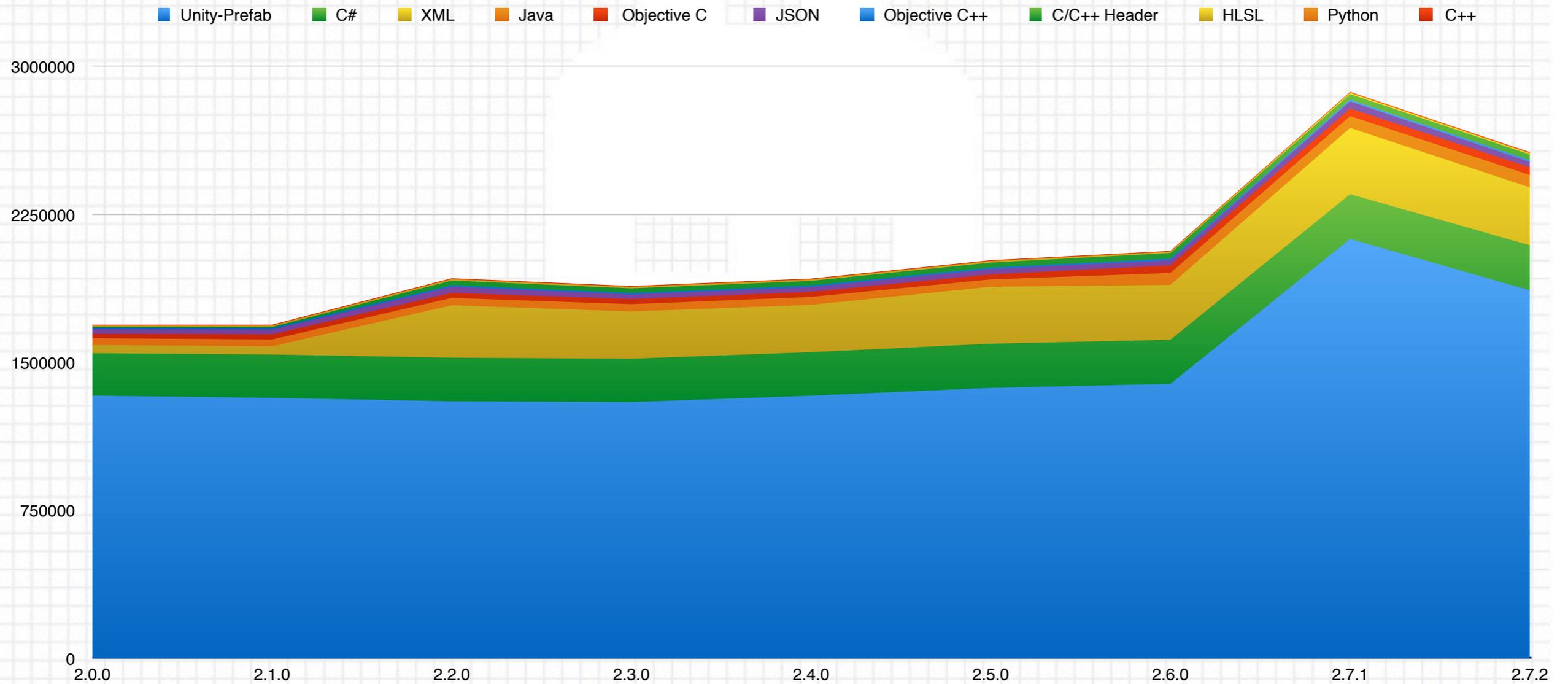


Why it is difficult

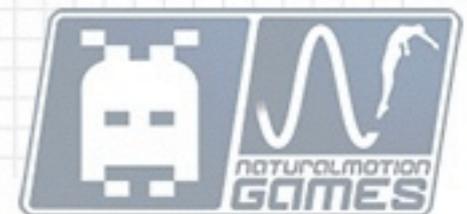
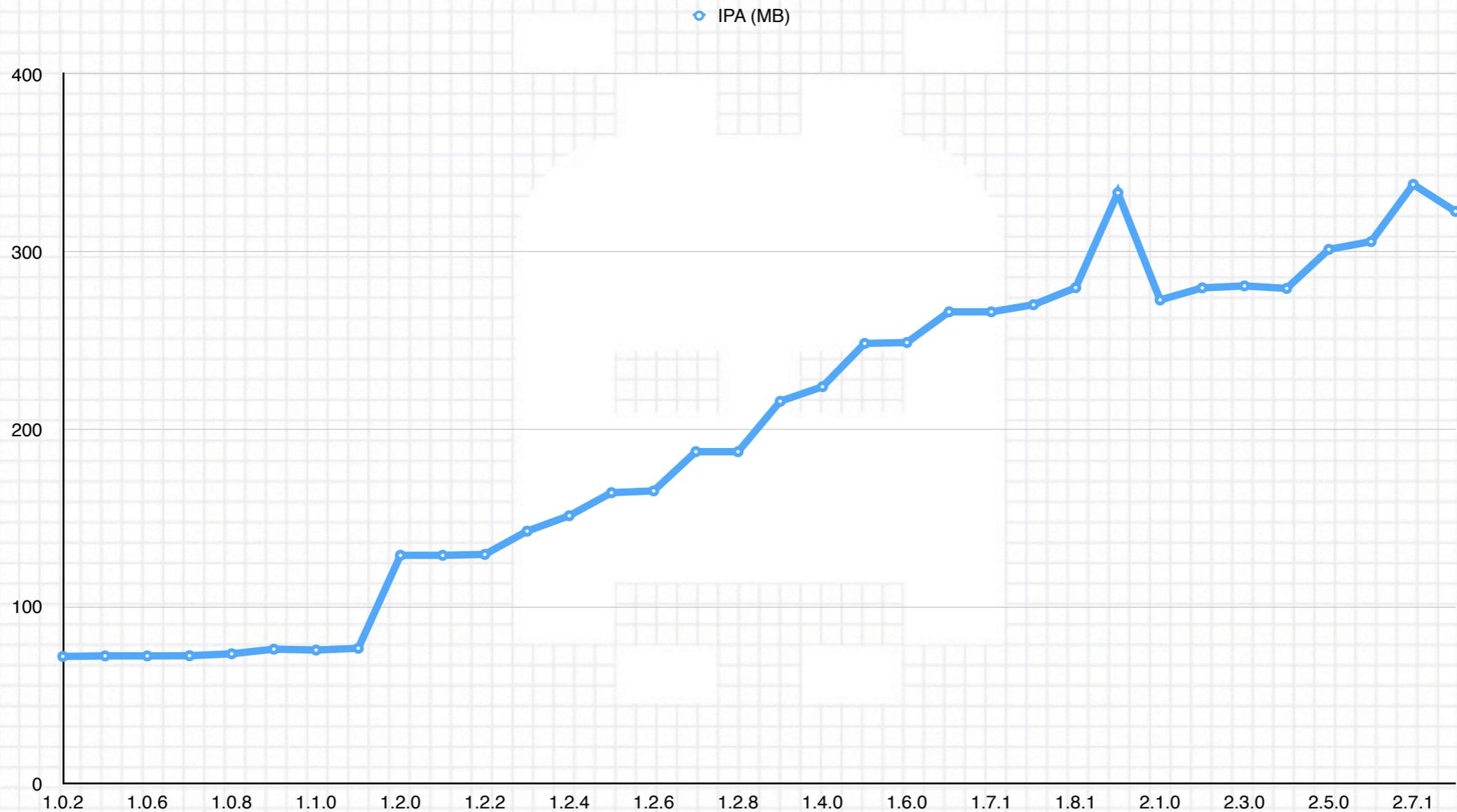
- PS2/PSP Game: 470K LOC
- Xbox360 game: 850K LOC
- New-gen middleware: 1580K LOC
- "One full-time maintenance person for every 20K LOC" - Thomas Pigoski



What Is CSR Racing?

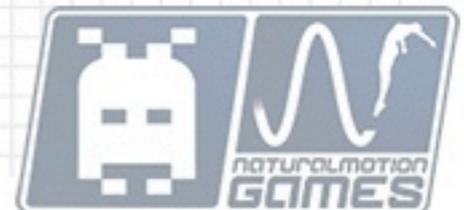


What Is CSR Racing?



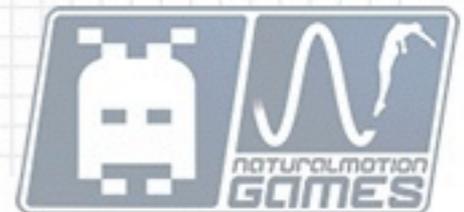
What Do We Do

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



What Do We Do

- Metronomic releases
- Painless
- Platform Parity



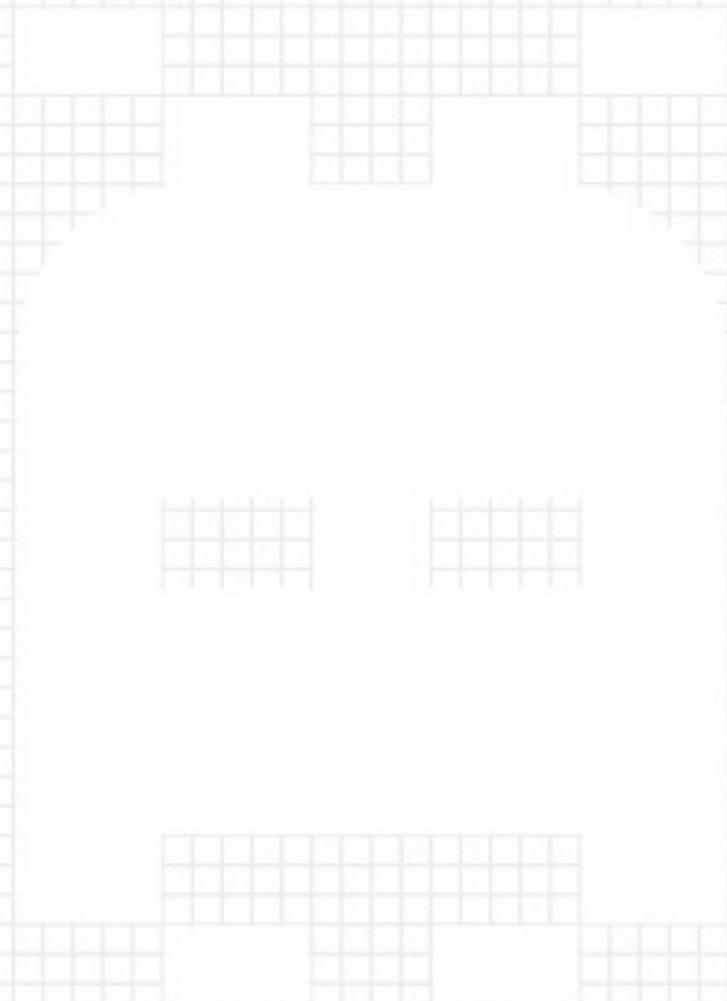
Content

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



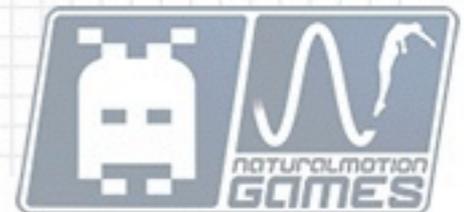
Improvements

- Smaller
- Faster
- Better



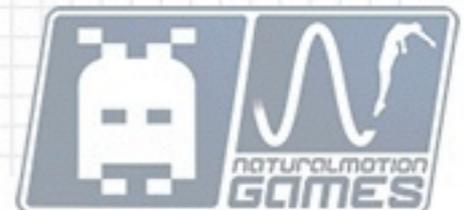
Features

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



SDKs

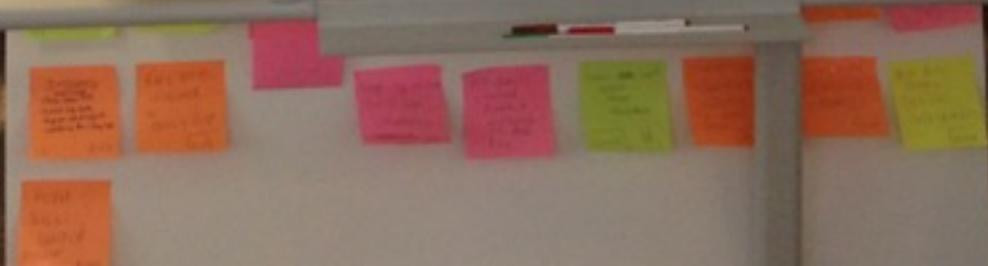
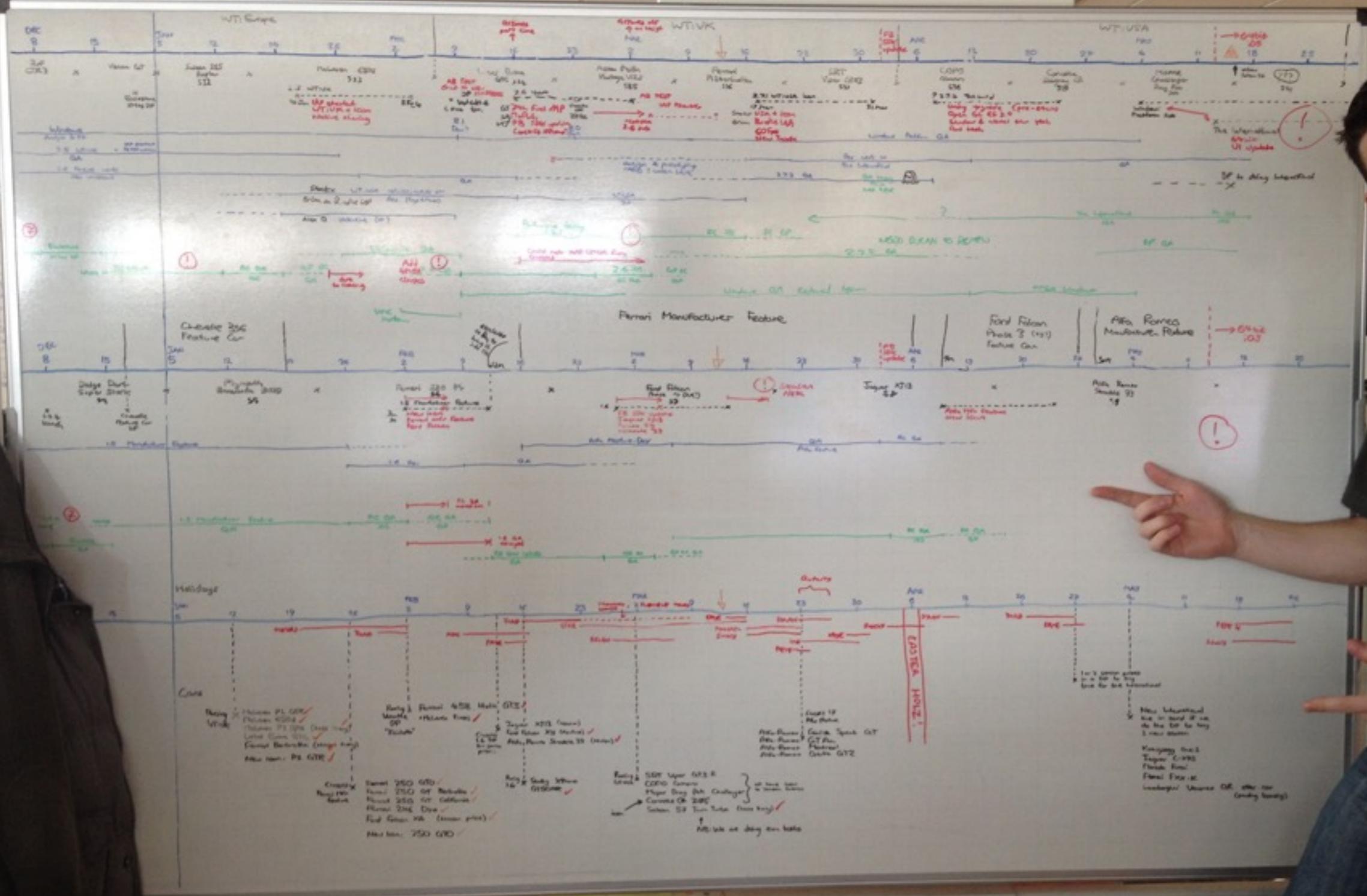
- Unity3D
- NmgMetrics
- Fabric
- Flurry
- Chartboost
- TapJoy
- AdColony
- MoPub
- Apsalar
- Upsight
- Apple
- Google
- Amazon
- Twitter
- Facebook



It's Not Straightforward

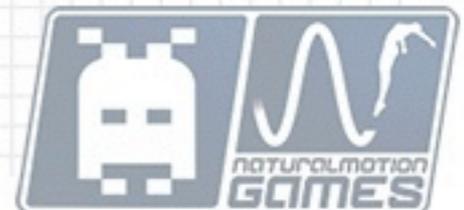
- Feature and Content Work Overlaps.
- Work for release N, N+1, N+2, and more, can all be happening concurrently.
- Features/content for release N might be moved to N+1 ... or N-1!





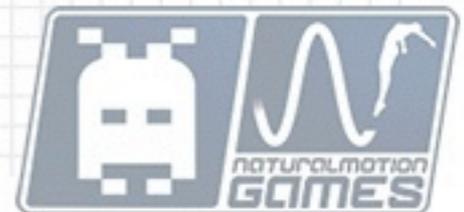
Surprise!

- 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%!



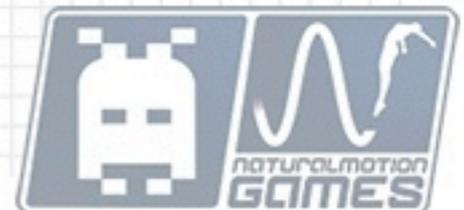
It Never Stops!

- 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**

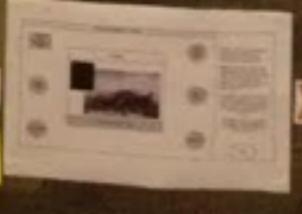
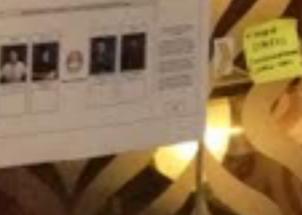
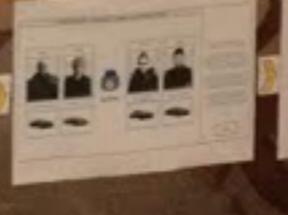
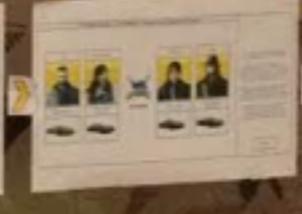
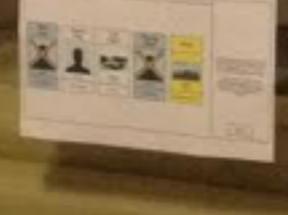
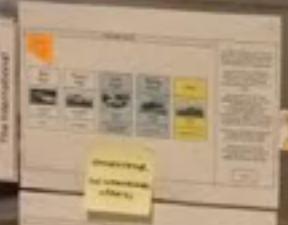
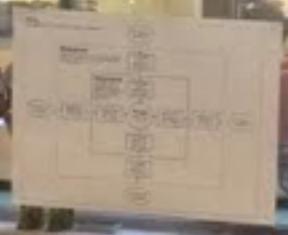


Communication

- 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**





ENTRY
BY BOSS

SHAKEDOWN
CREW

(14) CHOOSE A WORLD TOUR BOSS CAR

(14) CHOOSE A FANG-Z CREW MEMBER CAR

(14) CHOOSE AN IRON SAMURAI CREW MEMBERS CAR

(14) CHOOSE A STALLION RIDERS CREW MEMBERS CAR

(14) CHOOSE A WAR PIGS CREW MEMBERS CAR

(14) CHOOSE A SILVER SKULLS CREW MEMBER CAR

USE CHOSEN CARS TO WIN THEIR DETAILS BOSS BATTLE AND CHOOSE A CREW X LINE

ELIMINATORS
BY CREW

(14) CHOOSE AN VELOCI CREW MEMBER CAR

(14) CHOOSE AN ARMADA CREW MEMBER CAR

(14) CHOOSE A SPITFIRES CREW MEMBER CAR

(14) CHOOSE A PATRIOTS CREW MEMBER CAR

USE ALL CARS TO WIN THE BOSS BATTLE AND CHOOSE A CREW X LINE

FINALS
BY BOSS

USE ALL CARS TO WIN THE BOSS BATTLE

THE 1,2,3,4,5 BOSS BATTLE RELAY

WORLD TOUR BOSS BATTLE RELAY

CREW X BOSS BATTLE RELAY

T5* • FERRARI LaFERRARI
KVELOCI - La Stella

T5* • BUGATTI VEYRON
KARMADA - PIERRE

T5* • McLAREN P1 GTR
KSPITFIRES - JACK

T5* • SALEEN S7 Twin Turbo
K PATRIOTS - BOSS X

T1 • BMW 129i Coupe
FANGZ - SMITHY

T1 • NISSAN ACURA COUPE
FANGZ - ALEXIA

T1 • FORD FOCUS ST
FANGZ - MAX GERSCHT

T1 • AUDI A1
FANGZ - LUTHER

T2 • BMW 1M Coupe
Iron Samurai - Pato Keston

T2 • CHEVROLET Camaro SS
Iron Samurai - Kensi

T2 • FORD FOCUS RS
Iron Samurai - Marco Tean

T2 • FORD MUSTANG GT
Iron Samurai - Jazzy

T3 • CHEVROLET Camaro C6
Stallion Riders - Pagan

T3 • CHEVROLET Camaro ZL1
Stallion Riders - Micoed

T3 • FORD MUSTANG Boss 302
Stallion Riders - PhatTheDev

T3 • FORD MUSTANG Boss LS
Stallion Riders - Banno

T4 • Audi R8 V10 FSI
War Pigs - Lisa Sapp

T4 • NISSAN GTR
War Pigs - CAROLY

T4 • FORD GT
War Pigs - ESTERANIA

T4 • FORD GT
War Pigs - Riza

T5 • BMW Z4 GT3
Silver Skulls - Nemo

T5 • BMW Z4 GT3
Silver Skulls - Lee Han

T5 • FORD MUSTANG Cobra Jet
Silver Skulls - Tinas

T5 • FORD MUSTANG Cobra Jet
Silver Skulls - Hammer Bones

T5* • Kawasaki Ninja 1000

T5* • FERRARI FXX K

T5* • SAAB 9-5

T5* • HONDA VFR1200F

T4 • FERRARI F430
VELOCI - DANIEL

T4 • HONDA HORN
ARMADA - LISA

T4 • LAMBORGHINI GTR
SPITFIRES - ADRIAN

T4 • McLAREN P1 GTR
SPITFIRES - Kensi

T4 • DODGE NITRO Charger
PATRIOTS - RAJESH

T5 • FERRARI F430
VELOCI - RAMESH

T5 • AUDI MATRIX COUPE??
ARMADA - MOJIB

T5 • McLAREN 650s
SPITFIRES - HANNA

T5 • CHEVROLET COBALT COUPE
PATRIOTS - JAYSHIND

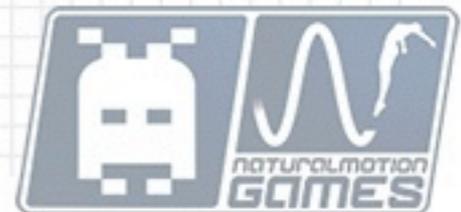
T5 • FERRARI F430
VELOCI - FEEL

T5 • RUF CTR3
ARMADA - WALEYAT

T5 • Audi Matrix Horch V8
SPITFIRES - THOMAS

T5 • SET Vaux GT3-R
PATRIOTS - THOMAS

T1 • HONDA CIVIC
K PATRIOTS - BOSS X



CSR Racing

2.7.1 ^{Big Feature!} WT: USA

23 Mar sub? ^{test}
31 Mar launch
Bundle IAPs
GPG ID migration
New Track
60fps

2.7.2 Tech update

10 Apr sub? ^{test}
27 Apr launch
Unity upgrade (needed to get to 64 bit)
Car shadows
Wheel tilt
OpenGL ES 3.0
Fore tech update?

2.7.3 ?

"Gurney" ^{Big Feature!}
13 May push
Pre-International DP
Cadillac ATS.VR
Ferrari Enzo
++ ???

2.8.0 ^{Big Feature!} The International

? To be scoped Will they need 64bit support

Backlog: UI rewrite - ON HOLD

CSR Classics

1.6.0 Season & Feature cars

Jaguar XJ13
Ford Falcon XY
Alfa Romeo Spider 33
Unity 4.6.1 patch upgrade

1.7.0 Alfa Romeo Mfr Feature

Mini store (not for CSR)
Replay system update
Bigger gas tank
Season Price cars
Ultrasuit
Lamborghini

1.5.0 Ferrari Mfr. Feature

- Agent Deals m
- Tappy m
- New build system cur
30 Jan sub
12 Feb launch

!ISI

1.6.0 FB SDK update

Unity 4.6.1 patch upgrade
Season & Feature cars
4 Mar sub
17 Mar launch (delayed due to 2.8 launch)

Silly casing for Cur. Update from 1.5.0

1.7.0 Alfa Romeo Mfr. Feature

- Mini Store
- Replay system
- ARM tasks
- Season Price
- Ultrasuit (m)
- Launch Cadillac (m)
- Launch Corvair (m)
- Launch Ferrari 1.7.0
9 APRIL SUB
13 APRIL LAUNCH

Bigger gas tank

Bentley GT3 Q2 IAP

Lambo & 1.7

Getting to 64bit

WP8.0 issues

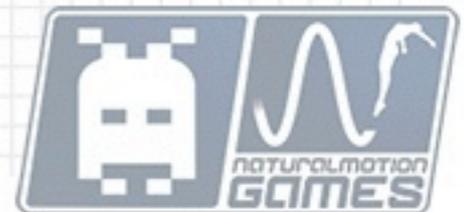
International scoping

Git branch merging & car pool setup for 1.7

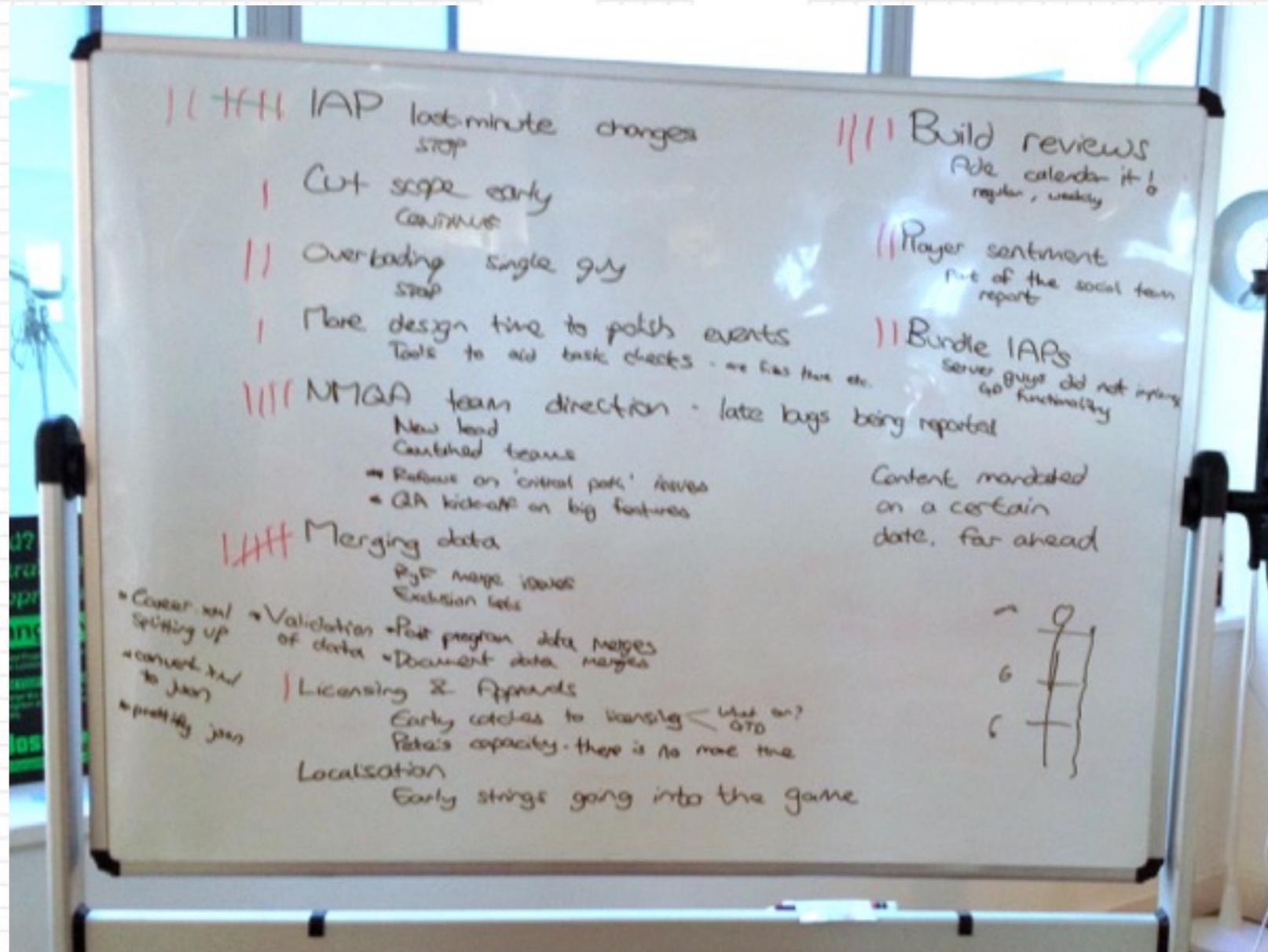


Communication

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

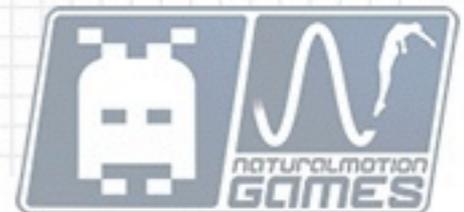
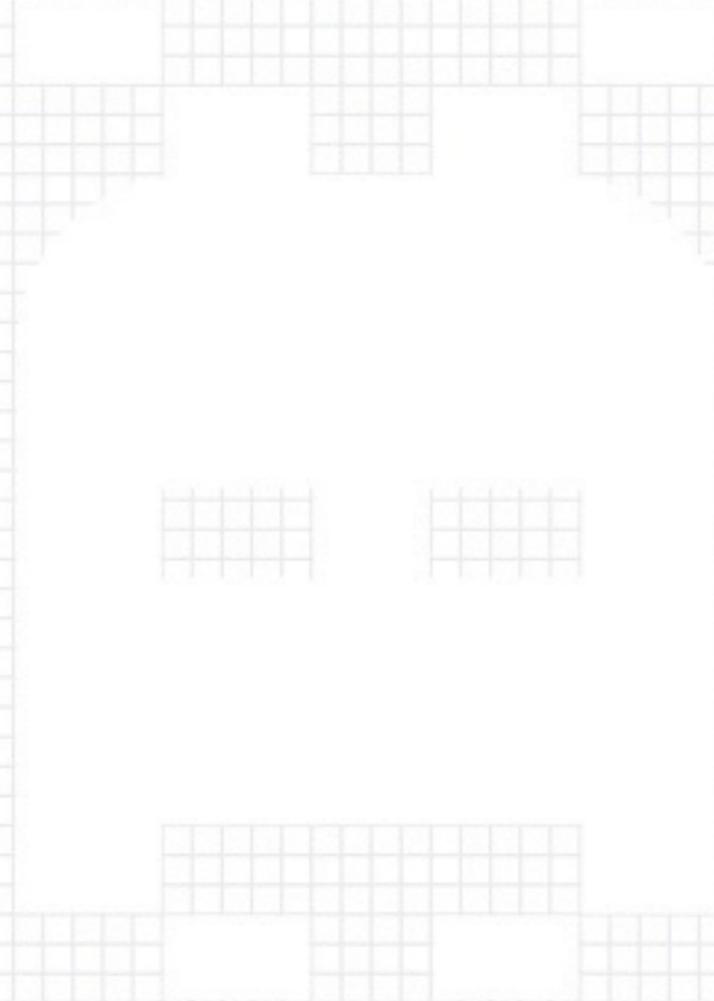


Post-mortem: WT USA



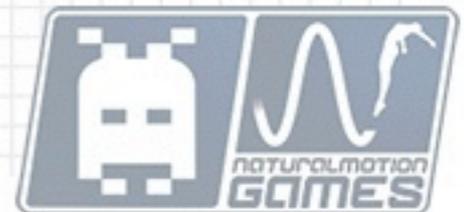
Process and Change

- Deliberate
- Dynamic



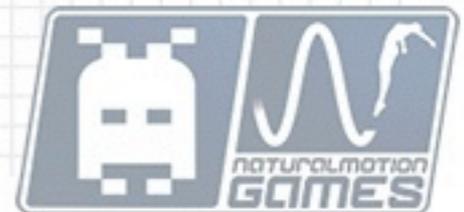
It's a Marathon not a Sprint

- 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.



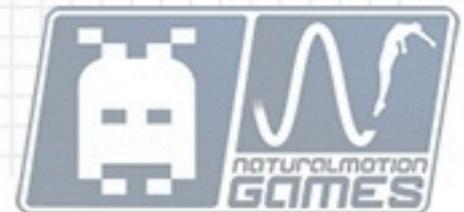
Support your bottle-necks

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



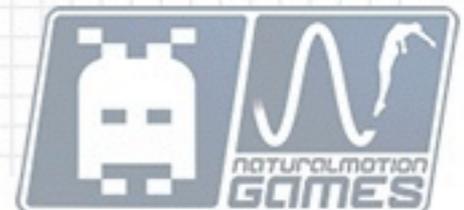
Branches

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



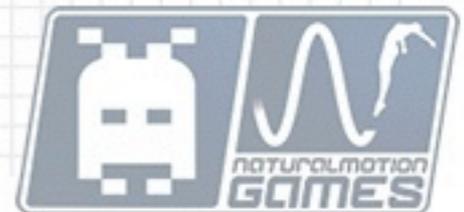
CSR Asset System

- 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

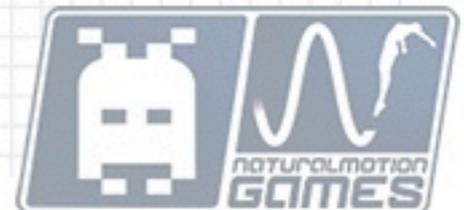


Branches

- Localisation DB doesn't support branching.

Estimation

- Estimate pessimistically
- Estimate concept to completion



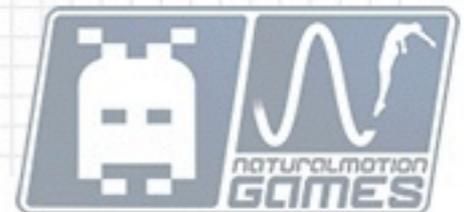
Planning and Resources

- 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.



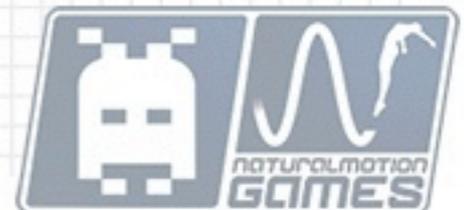
Planning and Resources

- Triage Early
- Triage Often



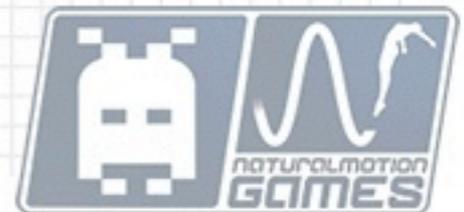
Planning and ~~Resources~~ People

- Freedom to Innovate
- Space to Fail
- Ownership



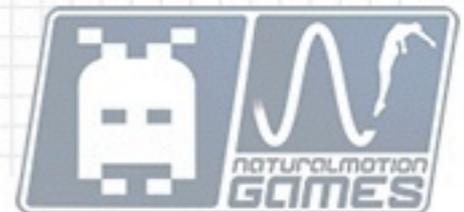
Planning and ~~Resources~~ People

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



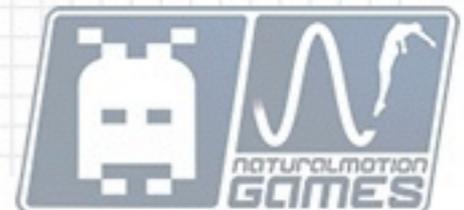
Tech Debt Is Real

- Time constraints
- Knowledge constraints



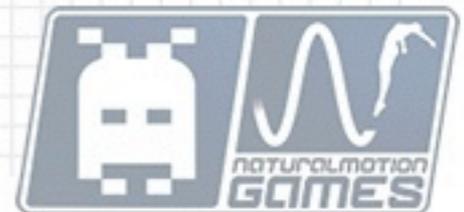
Tech Debt Is Real

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



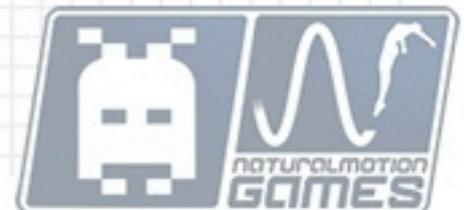
Backwards Compatibility

- Player Data
- DLC / Bought Content



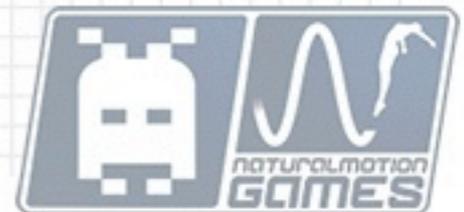
Security

- Auto-ban system
- Public-key cryptography



Tips!

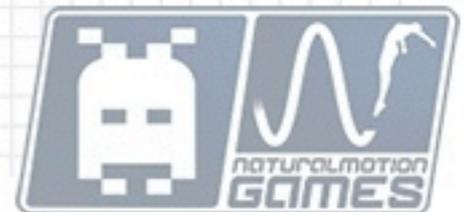
- source control
- code review
- jira



Source Control

Tips!

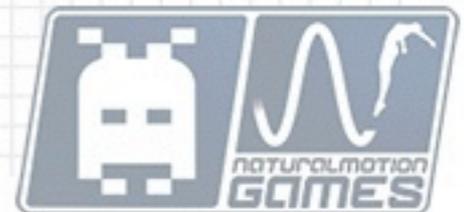
- Delete branches when you're finished.
- git: merge vs rebase
- Write useful commit messages. What you did, and why you did it. Include a JIRA ticket reference if there is one, but don't rely on that to fully explain the change.



Code Review

Tips!

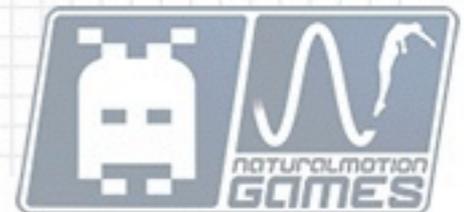
- Do reviews promptly.
- Don't "Complete" code reviews with open issues.
- Mark issues as "Resolved" once they've been dealt with.
- Reply to comments. Add changes to a review where you've fixed issues.



Code Review

Tips!

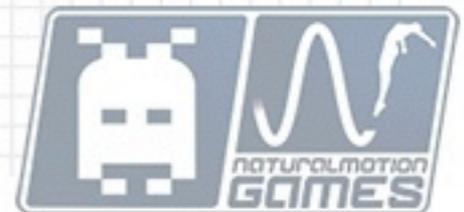
- Say something. Complements and questions as well as criticisms!
- Don't be defensive about your code, don't dismiss criticism with "its a work in progress" or "it's temporary code". Learn from it.



JIRA

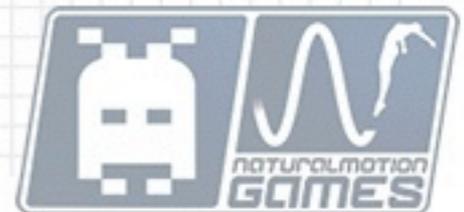
Tips!

- 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.



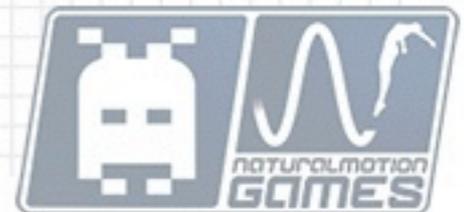
More Tips!

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

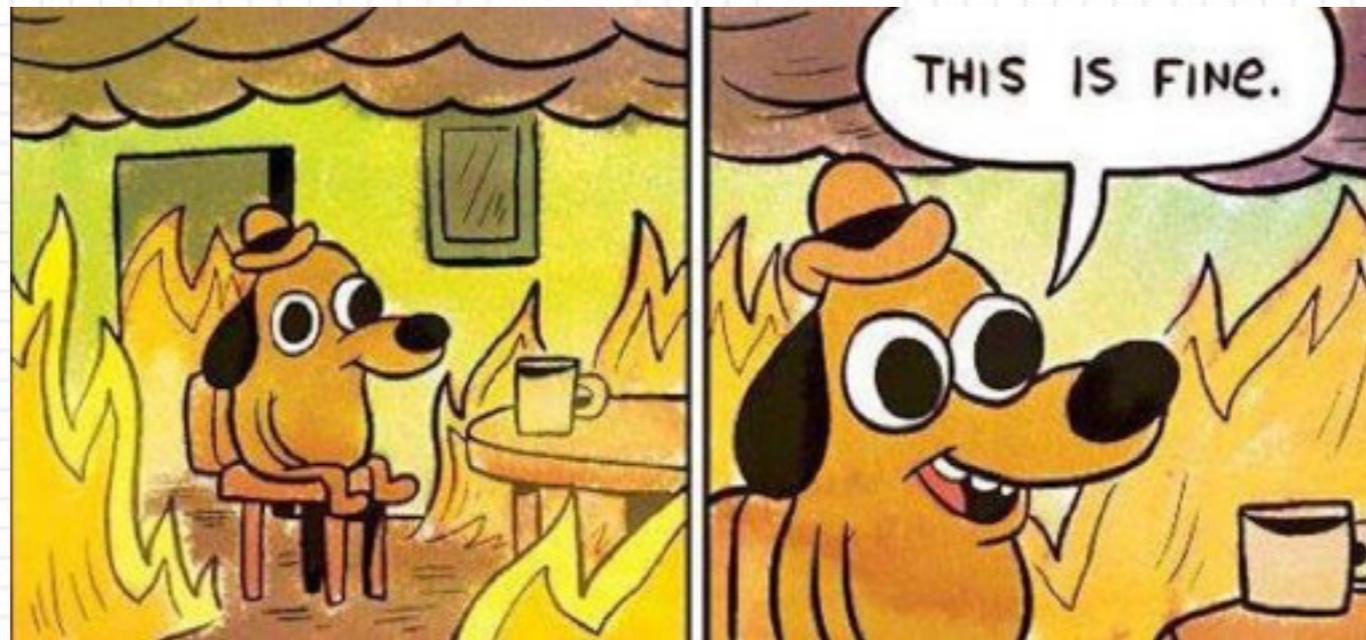


Finally

- Source Control
- Automated Builds
- Continuous Integration



Questions?



AMA

thad@bossalien.com