UNDERSTANDING CONSTRAINTS: A FRAMEWORK FOR TECH ART DECISION MAKING

Alexander Zotikov, Technical Artist

“Decision making in Technical Art”, “Decision Making”.. sounds like a title for a thick book or DVD with a training course.
Relax, I’m not going to give you detailed instructions on how to decide what to do in a given situation, or even worse, pretend, that I know how to do it myself.

In the next 25 minutes I’m going to tell you the story about Remedy Environment team and how we decided to changed a big part of our pipeline, why was it possible, how hard was it and what findings we collected during this process.
You’ll hear a bit about uncertain technical artists and brave environment artists and far-sighted tools programmers.
I’ll supplement the story with some technical solutions as well.

INTRODUCTION

- 7 years in the industry
- 6 as a Technical Artist
- Previously worked on:

My name is Alexander Zotikov. I've been working in the game industry for about 7 years. Started my career as a 3D Artist, but quickly switched to the Technical Art role.
I was responsible for different areas starting from exporting and setting up content in the game engine, making destruction to developing tools for the team of 50+ artists.

As a Technical Artist I've shipped World of Warships at Wargaming, and then was contributing to the Rainbow Six: Siege.

REMEDY ENTERTAINMENT

BEST KNOWN FOR:

- Founded in 1995
- Based in Espoo, Finland
- 200+ employees

REMEDY

One and a half years ago I've joined Remedy Entertainment team. Remedy is an independent game studio based in Espoo, Finland. You may know us for the games like Max Payne, Alan Wake and Quantum Break.

REMEDY ENTERTAINMENT

CURRENTLY WORKING ON:

nOrthlight®
REMEDY STORYTELLING TECHNOLOGY

REMEDY

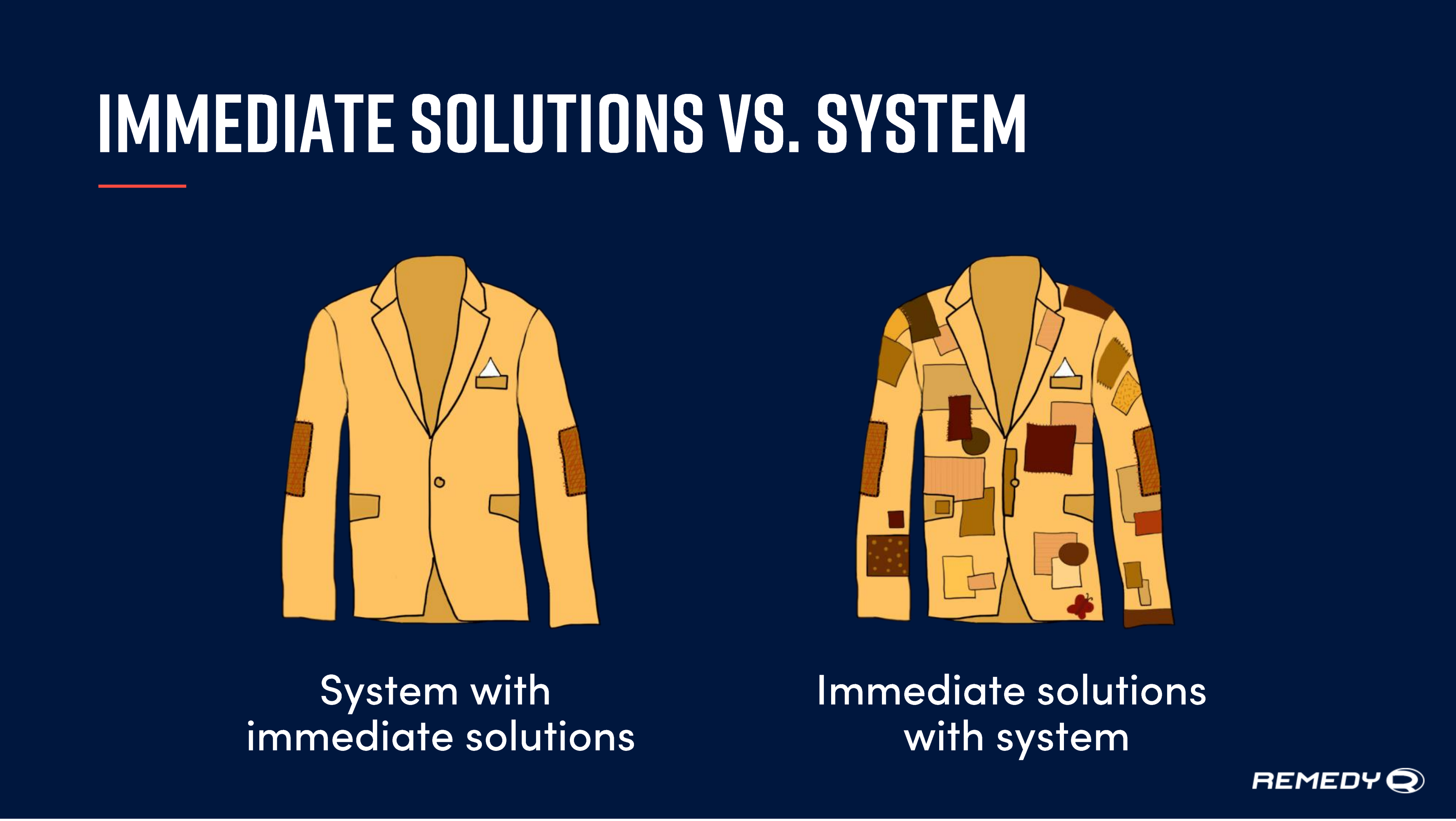
At the moment, we are working on the game called Control (supernatural third-person action-adventure) and also, we are making the story mode for the CrossFire 2 (FPS).
Need to mention, that both games are based on our own game technology called Northlight.
Speaking about technologies and game development, we all use pre-production to plan ahead, build the systems that will solve our future issues.

IMMEDIATE SOLUTIONS VS. SYSTEM

System with
immediate solutions

REMEDY

In the middle of production or later you need immediate solutions, that works “now”.
If you support tools for multiple projects which overlap, you are often in “production”/”shipping” mode, so you may end up creating a lot of temporary solutions or “patches”.
Some of those solutions migrate from project to project.
It doesn’t necessary mean that immediate solutions are bad. While most of them were made to solve some current issues, good solutions were at the same time aiming for the future evolution.



IMMEDIATE SOLUTIONS VS. SYSTEM

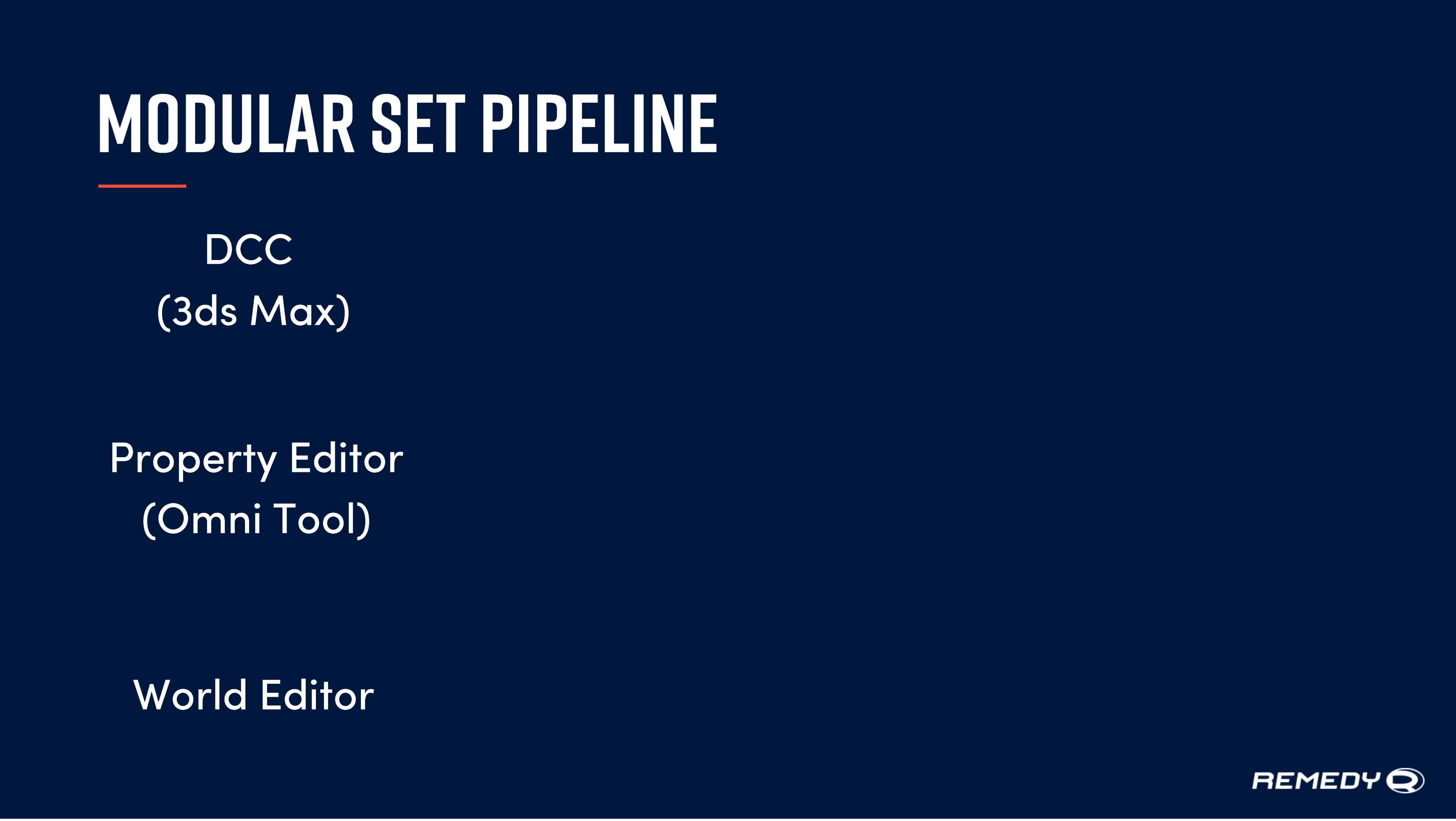
System with immediate solutions

Immediate solutions with system

If production is based on immediate solutions more than on system, it’s time to revise the system and make some major updates.
This new system should keep in mind original intentions of the immediate solutions and may keep some of them.

It’s important to find a good time for changes.

As an example, let me show you the original artists workflow at Remedy and how we were making modular sets of 3d objects.



MODULAR SET PIPELINE

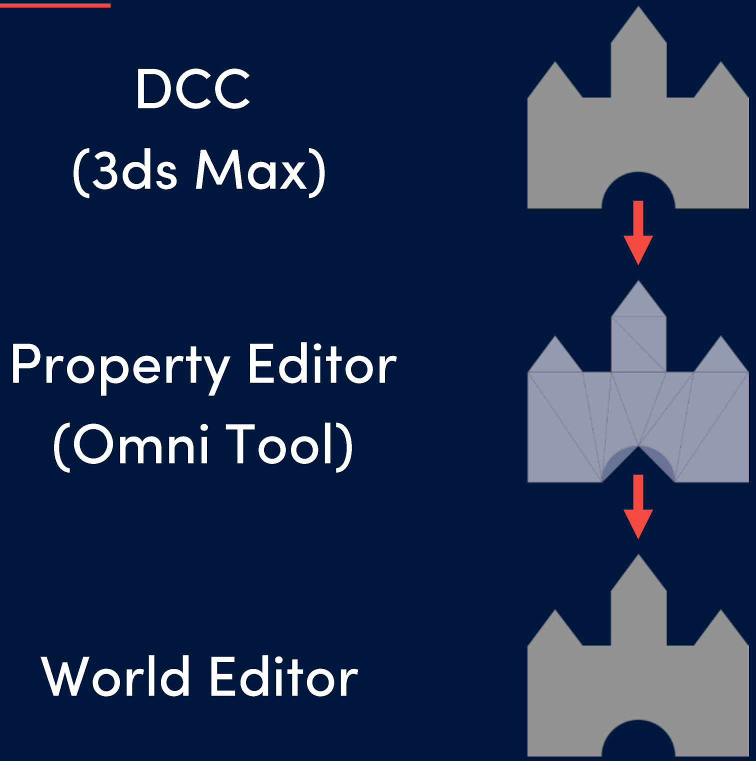
DCC
(3ds Max)

Property Editor
(Omni Tool)

World Editor

Our team consists mostly of Level Artists, who work on the edge of Level Art and Level Design. 3d-models are mostly outsourced.
One of the main concepts used – modular environment design.

MODULAR SET PIPELINE



DCC
(3ds Max)

Property Editor
(Omni Tool)

World Editor

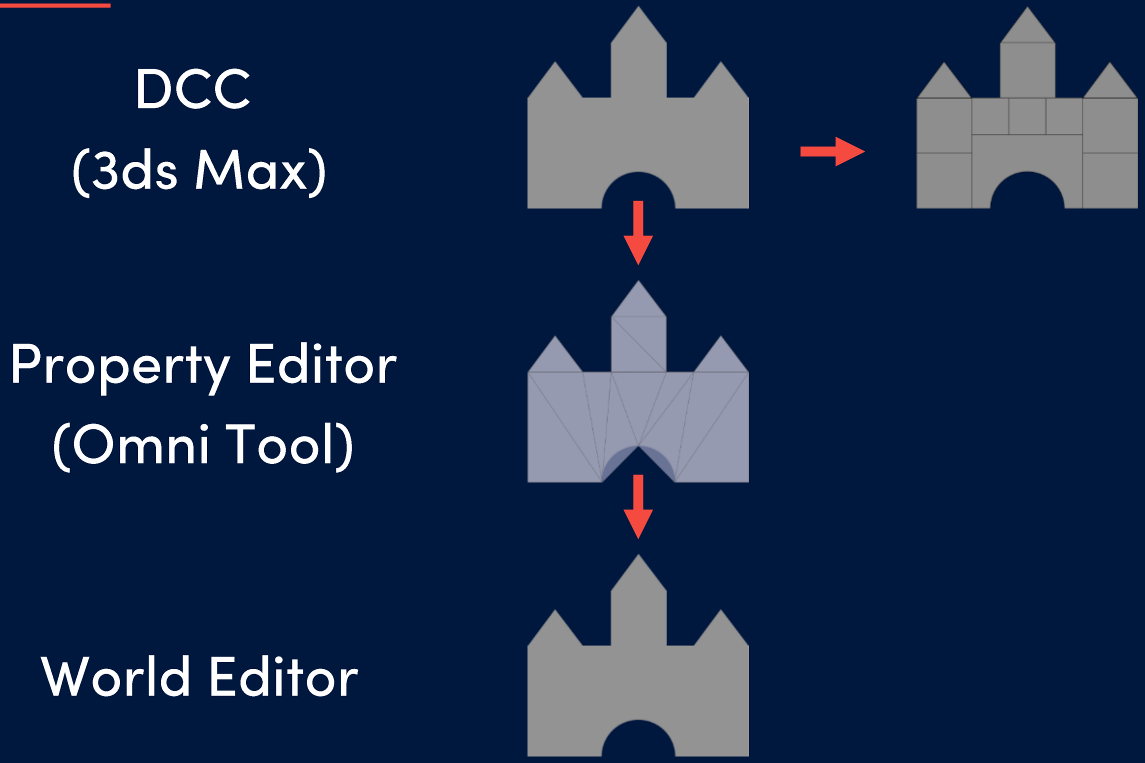
Workflow:

- Artists create a rough model of a building in 3dsMax
- Export to fbx
- Setup collisions in Omni Tool (our asset manager and property editor)
- Place in World Editor
- Test in Game

Iteration loop: change the model -> export -> if the model has new meshes, setup collision -> test in game

Weak point: setting up collisions. Patch: generate them based on the meshes names in Omni.

MODULAR SET PIPELINE



REMEDY

When Level Artist is satisfied with the building, it’s time to create modules for it.

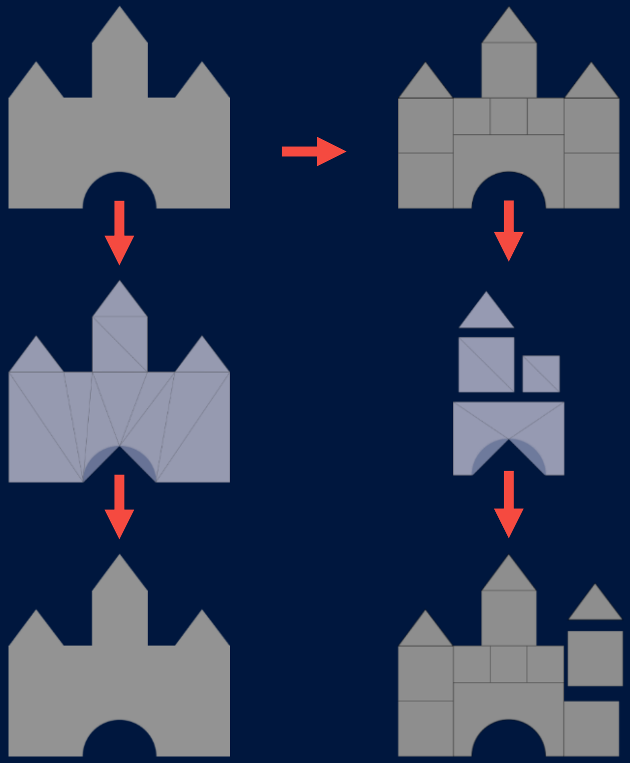
- Make visual decomposition of the building
- Create needed modules while assembling the original building out of it. Doing that simultaneously is necessary as artists need to adjust modules and see, how they fit in the final building.

MODULAR SET PIPELINE

DCC
(3ds Max)

Property Editor
(Omni Tool)

World Editor



Now we have a module kit and assembled building in Max.

- Export modules one by one
- Setup collisions
- Reassemble building from modules in World Editor

Iteration loop: change module -> move instances in the building (to check if it still works) -> export -> reassemble in World Editor

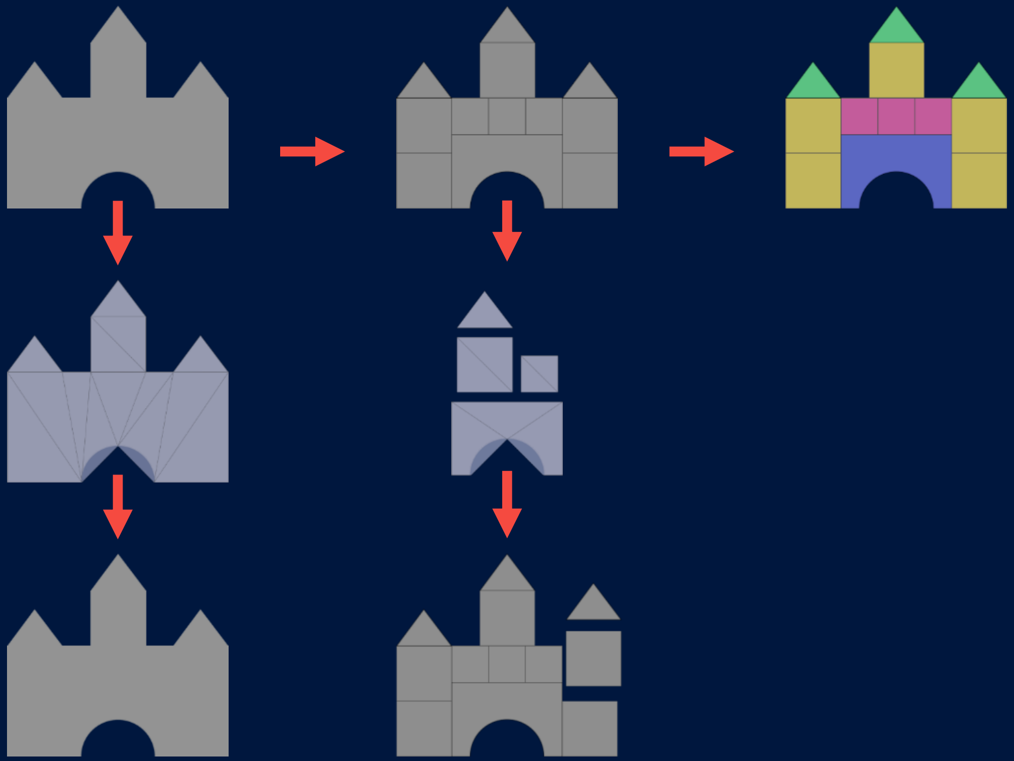
Patch: ability to copy position in Max and paste in WED

MODULAR SET PIPELINE

DCC
(3ds Max)

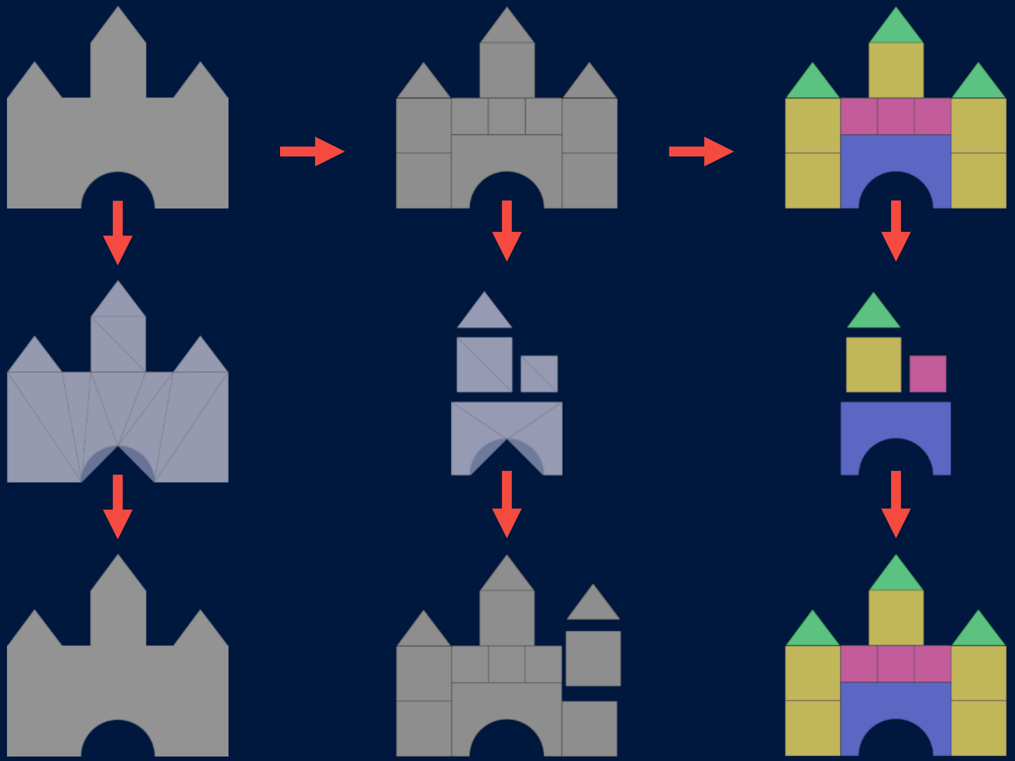
Property Editor
(Omni Tool)

World Editor



The last stage is material assignment.

MODULAR SET PIPELINE



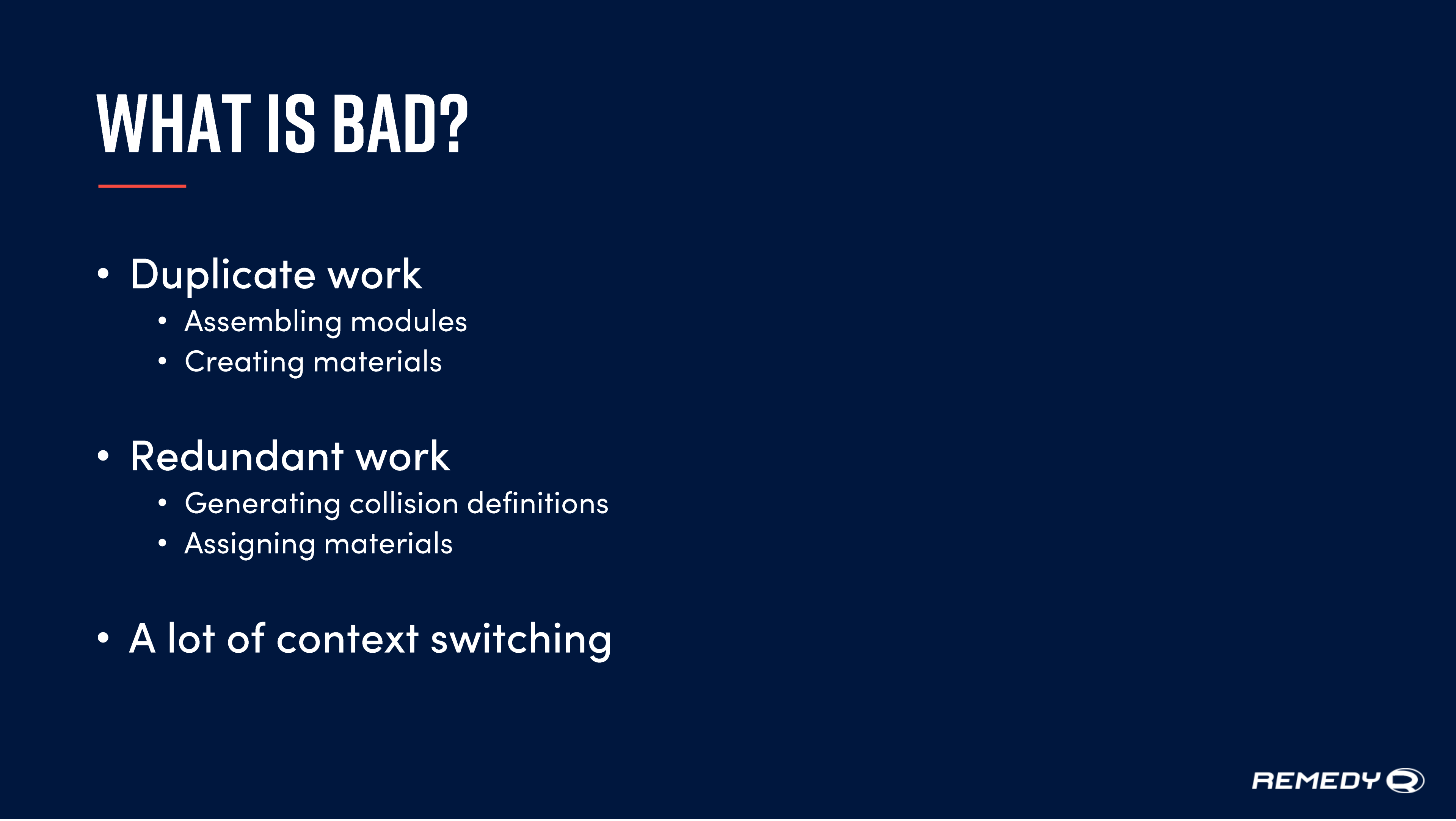
DCC
(3ds Max)

Property Editor
(Omni Tool)

World Editor

- Create and assign needed materials
- Export meshes
- Create and setup materials in Omni Tool

Patch: “Create materials from FBX”. Doesn’t really work if you want to reuse materials across the meshes.



WHAT IS BAD?

- Duplicate work
  - Assembling modules
  - Creating materials
- Redundant work
  - Generating collision definitions
  - Assigning materials
- A lot of context switching

What's bad in the current pipeline?

WHAT IS GOOD?

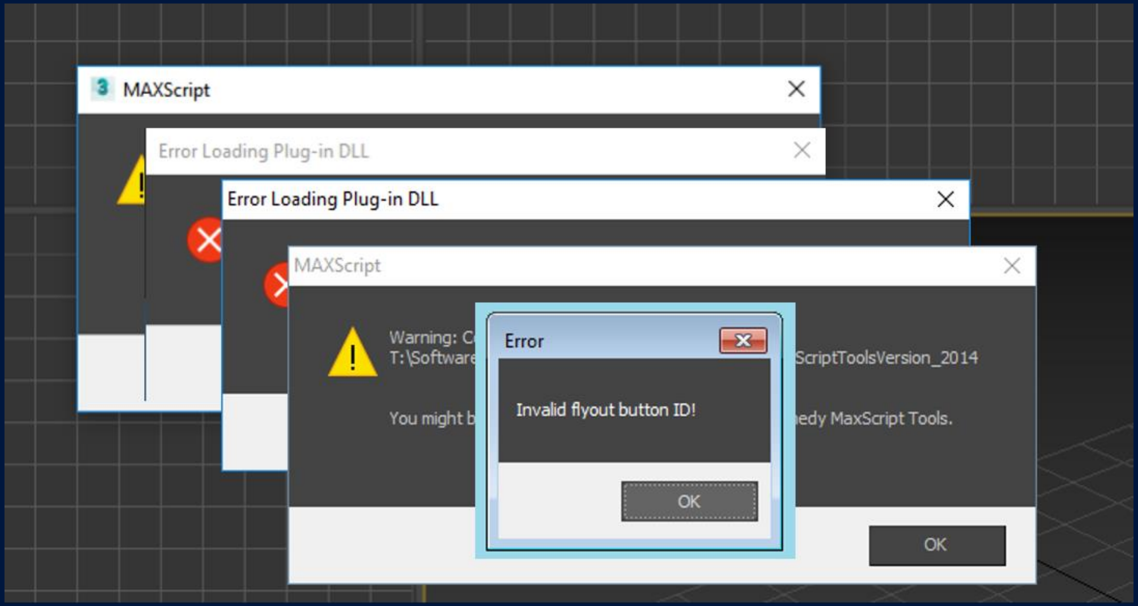
We've shipped games with it!

What is good? It works.

We have very talented artists, I was looking at how fast they work with that pipeline and thinking “how much faster can they be with the proper workflow”.

It means that people get used to any tools. And sometimes it creates bad practices.
Just look over the shoulder on how people work, and you will find a lot of unexpected things.

BAD PATTERNS



Warning: C T:\Software ScriptToolsVersion_2014

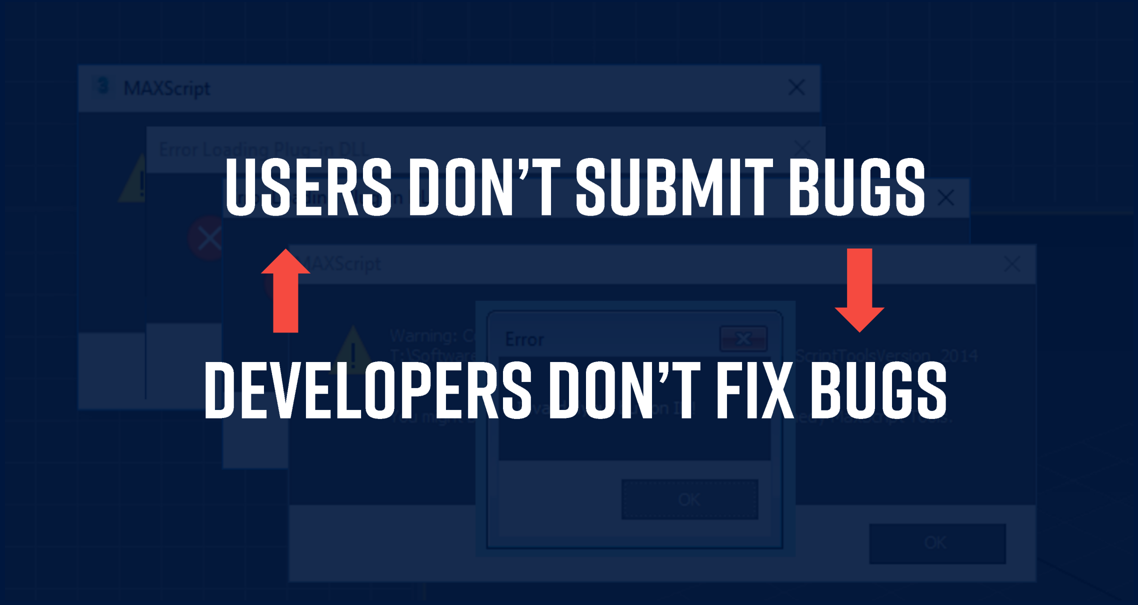
You might b edy MaxScript Tools.

Invalid flyout button ID!

Once I saw artist opening 3ds Max file. Once file was opened, his thumb automatically started hitting the Space bar to close several appearing dialogs.
I asked if he had them every time and found that it’s common issue of having unnecessary dialogs on startup.
So artists just didn’t report bugs and didn’t believe the would be fixed.

This produces a vicious circle. User doesn’t submit bugs -> developer doesn’t fix bugs -> user doesn’t submit bugs.

BAD PATTERNS



USERS DON'T SUBMIT BUGS

DEVELOPERS DON'T FIX BUGS

This produces a vicious circle. User doesn't submit bugs -> developer doesn't fix bugs -> user doesn't submit bugs.

GOOD TIME FOR CHANGE

As you see, we needed to change something.
And it’s important to find a good time for changes.

Our Tech Art team was lucky enough to find a good time for making steps forward. Traditionally, July is a month of vacation in Finland. So Remedy’s office is not an exception: 70% of people are out – perfect time for RnD!

VISION FIRST

So let’s take a look. We know:

- Where we are
- What issues we have

Before concrete actions we need to understand what do we want to achieve? Imagine an ideal result.

VISION FIRST

- “What do we want?”
- High-level requirements
- Can use User Stories as a tool:
  - ~~“Add support of importing 3dsMax scene in the World Editor”~~
  - “As an artist, I want to easily transfer assembled modular sets to the World Editor”

The answer should not consist of the technical solutions, but would rather have a list of “user stories”, very high-level definitions of requirements.
For example, compare :

- “Add support of importing 3dsMax scenes in the World Editor”
- “As an artist, I want to transfer assembled modular sets to the game faster”

Both call for solving the same issue, but the first restricts the technical solution while the second aims for improvement.

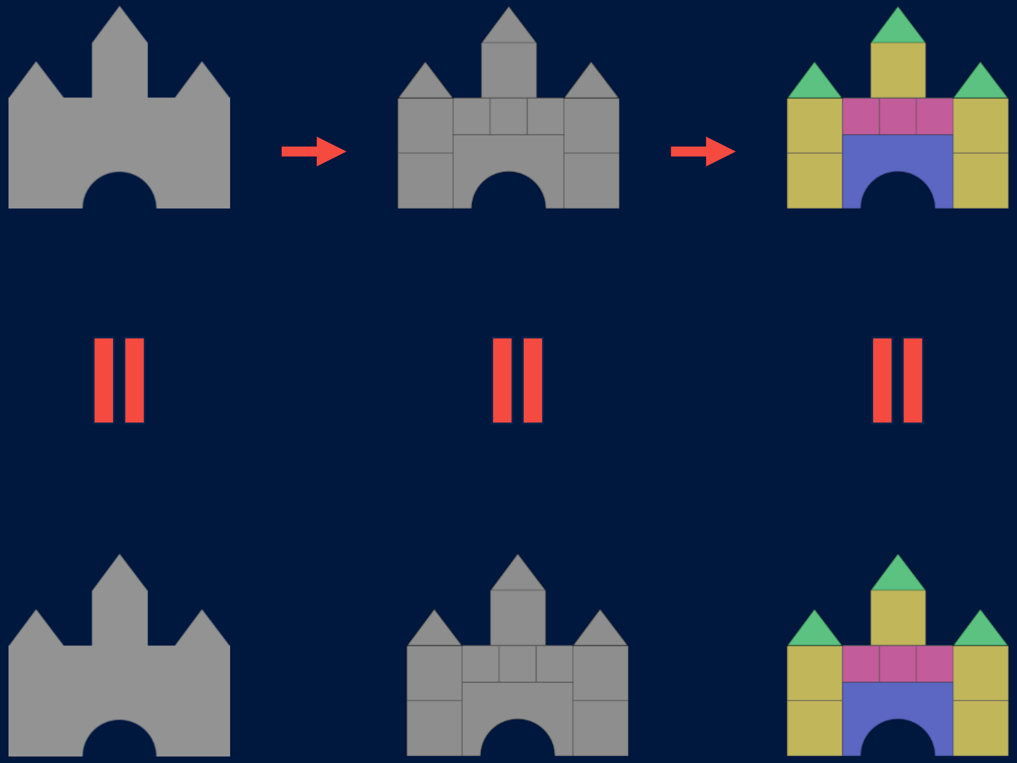
WHAT DO WE WANT?

- WYSIWYG
- Less context switching
- Predictable content
- Procedural workflows

So what do we want to achieve with our Art pipeline?

- What you see in DCC is what you get in the engine – assembled modular sets in DCC should be easily transferred to the Engine and back. The same for materials
- Less context switching – more time artist spend in one application, less time he/she spend on alt+tab and less possibility of any of those to crash. If we need to set something up, do that in one application.
- Predictable content – even before launching the game engine, we want to be sure, that asset will be loaded correctly. Assets should respect naming conventions (or other meta-information) and follow other rules.
- Procedural workflows – something we didn’t really have before, but will need in the new projects.

WHAT DO WE WANT?



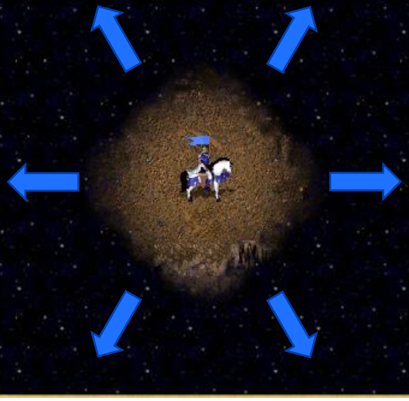
DCC

Property Editor
(Omni Tool)

World Editor

That’s an ideal situation – artist may do the art in application that suits better for the current needs while having the same result in the other application.

SOLUTIONS



So we found the goal, what to do next?

There are a lot of solutions available in the industry (GDC provides a good portion of them).
These solutions look tempting, but you rarely can just apply them out of the box.
To find a proper one and adjust it, we must identify constraints the team operates under.

FINDING CONSTRAINTS

What technical limitations do we have?
What resources are available?
How much time do we have?

Those constraints don’t give you an exact path to the goal but may help to find direction. They let you know the paths you cannot take or that may be difficult.

Addressing these questions help us define the direction that would ultimately guide the decision-making process later.

CONSTRAINTS AT REMEDY

- Proprietary game engine (Northlight)
- Tight tools team schedule
- Multiple projects
- Existing 3ds Max tools
- Experienced artists

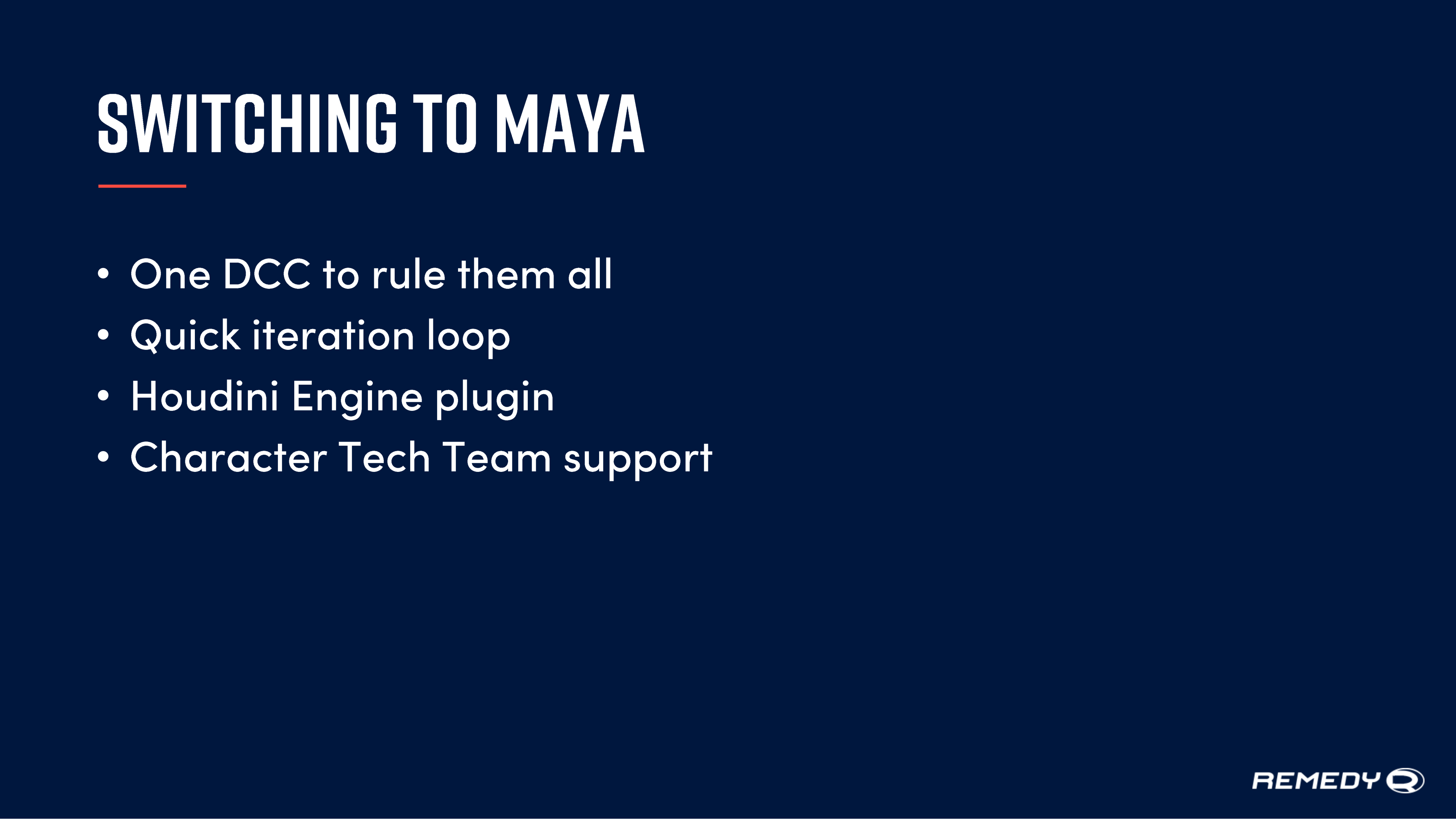
REMEDY

Let’s take a look at the constraints for Tech Artists in Remedy and try to define our path:

- Proprietary game engine (Northlight) - > No 3rd party solutions available -> Need to make a custom one
- Tight tools team schedule -> Long iteration loop -> Need to move iterations to the techart side
- Multiple projects -> Artists rotate between the projects -> Need to unify the workflow on the content creation side
- Existing 3ds Max tools -> Time (and money) spent on their development -> Hard to throw away -> Need to use them as a base
- Experienced artists -> Established workflows -> Existing culture that sometimes resists changes

DEFINING DIRECTION

Given all above we now can establish our main direction.
Decided: switching to Maya.
How come??



SWITCHING TO MAYA

- One DCC to rule them all
- Quick iteration loop
- Houdini Engine plugin
- Character Tech Team support

Let’s see:

- One DCC = unified workflow, predictable content
- Quick iteration loop for tools for tech art (as we have more proficiency in Maya)
- Houdini Engine plugin to proof the concept before implementing it in the Northlight (saving tools team time)
- Also Character techart team uses Maya: library sharing and common launchers with character techart will help to optimize resources.

But we had a couple more constraints, right?

3DS MAX CONSTRAINT?

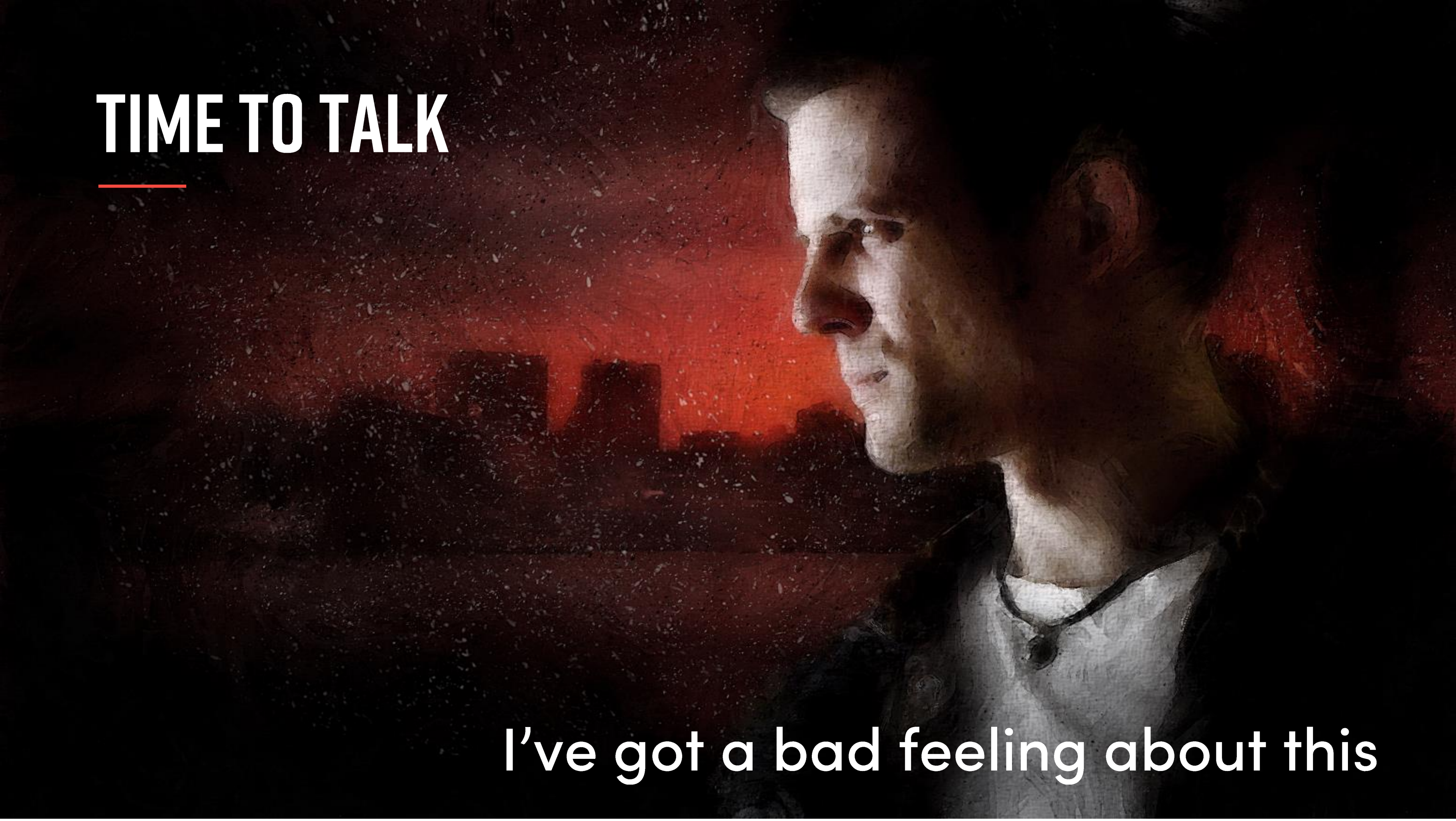
Tools used:

- Checkout 3ds Max file in P4
- Create “Remedy Root”
- Export selection

What about “3ds Max tools” constraint?

Can we just switch to Maya without regrets?
Fortunately, constraints may be challenged. We made a quick hook for tracking statistics and results gave us a clear answer:
Just 3 tools with basic functionality were regularly used.
We can mark the constraint as a “weak” and remember to bring some features from our Max tools.

Also I mentioned “experienced artists”. What about them?



TIME TO TALK

I’ve got a bad feeling about this

We already made decision for ourselves, now we need to discuss it with the team. Get their reaction and understand if it is possible to proceed.

Changing 3d package is definitely not the news you want to present to artists.

Just imagine, we have a Senior Artist in the team who was working on the Max Payne. And I’m going to come to his desk and tell: “You know, you were working in the 3ds Max for the last 15 years, but now you are going switch to the Maya cause I have some ideas about Maya”. Sounds a bit terrifying.
//Everything works, should we change?? Global changes are frightening.

PRESENTING IDEA

- Touching the ground
- Spreading idea
- Receiving feedback
- Getting people involved

The good thing is people at Remedy are very open to initiatives, so we talked to couple of artists and they were understanding. I would say, they were unexpectedly understanding.

Artists needed to have some time to think and discuss the idea.

In a few weeks after we've spoken with a few lead artists, people had started to ask me something like "I heard, we are moving to Maya? What to expect?" Speaking with people more about future abilities and technical details makes them involved in the process. They start thinking about their workflow in Maya, start giving you feedback on not yet existing tools.

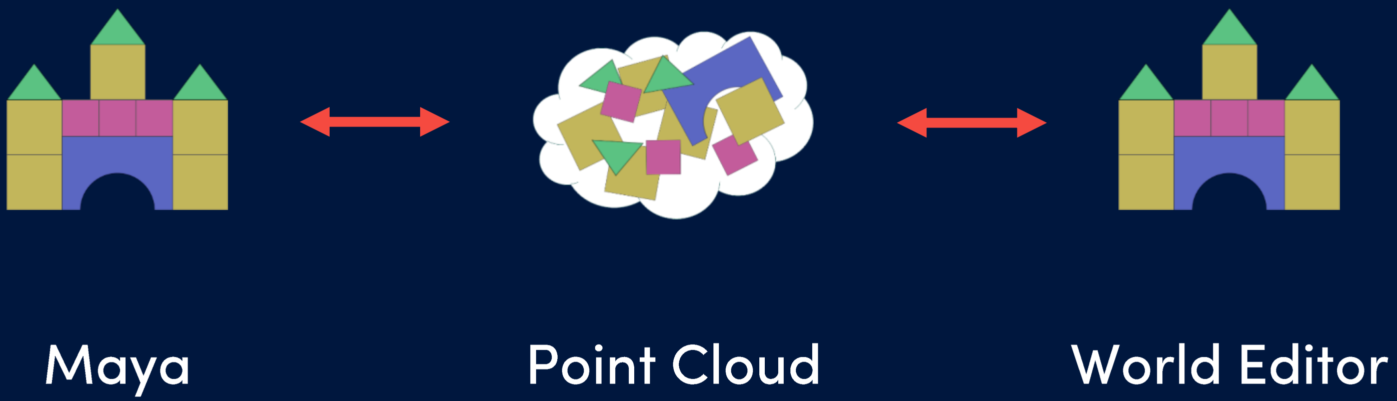
Originally idea was ours, but now it's shared. That's when it became real, so there is no way back.

So turns out, the anxiety was mostly inside.

FIRST STEPS

Decision made, moving forward.
We don’t know if every aspect is going to work, but we aim for it.
Not everything will be exactly as planned, but we always keep the picture in mind.

FIRST STEPS : POINT CLOUD



Maya

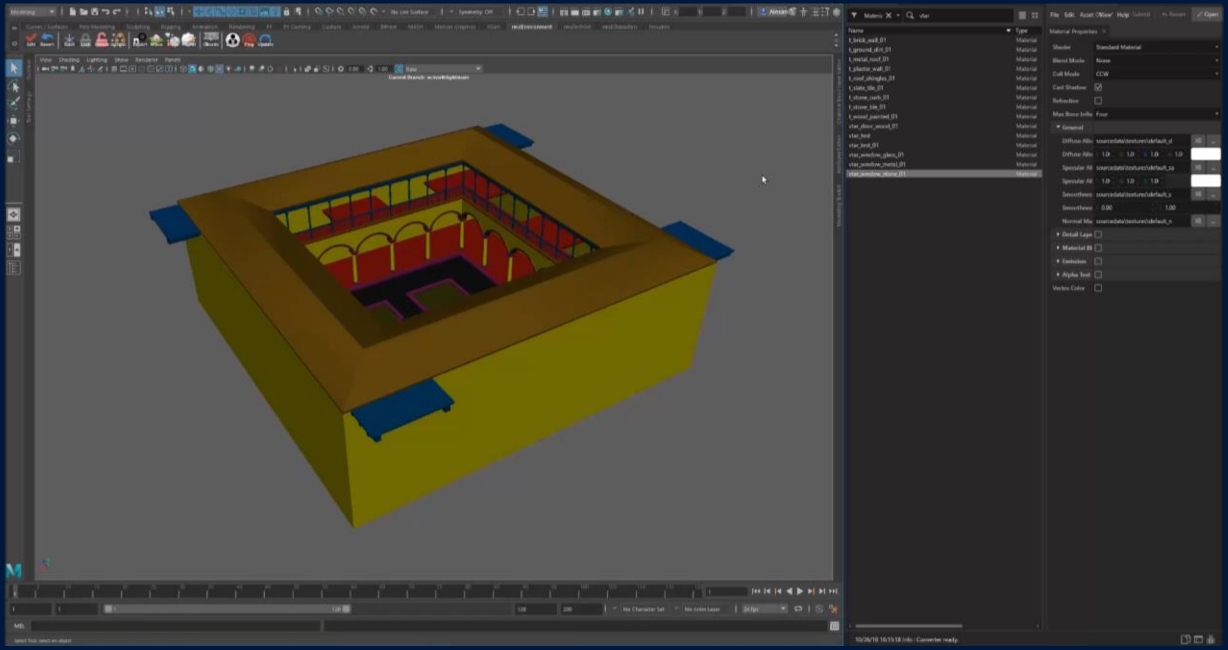
Point Cloud

World Editor

First things first. After making the basic tools for exporting and checking out scene in Perforce we started with making “proof of concept” prototypes.

To solve the issue of transferring assets, assembled from modules, we introduced Point Clouds. Point Cloud is a simple file format that for each instance stores it’s fbx path and transformation matrix. We can read and write this format in both Maya and game engine, which allows artists to make their modular layouts in Maya and see the result instantly in the World Editor.
As a side effect we got ability to easily export instance information from Houdini, which at the same moment allowed us to start testing procedural workflows.

FIRST STEPS : DRAG & DROP



Name	Type
t_brick_wall_01	Material
t_ground_dirt_01	Material
t_metal_roof_01	Material
t_plaster_wall_01	Material
t_roof_shingles_01	Material
t_slate_tile_01	Material
t_stone_curb_01	Material
t_stone_tile_01	Material
t_wood_painted_01	Material
vtar_door_wood_01	Material
vtar_test	Material
vtar_test_01	Material
vtar_window_glass_01	Material
vtar_window_metal_01	Material
vtar_window_stone_01	Material

Shader: Standard Material
Blend Mode: None
Cull Mode: CCW
Cast Shadow ☑
Refractive ☐
Max Bone Influ: Four
General
Diffuse Alb: sourcedata\textures\default_d
Diffuse Alb: 1.0 1.0 1.0 1.0
Specular Al: sourcedata\textures\default_sa
Specular Al: 1.0 1.0 1.0
Smoothness: sourcedata\textures\default_s
Smoothness: 0.00 1.00
Normal Ma: sourcedata\textures\default_n
Detail Laye ☐
Material Bl ☐
Emission ☐
Alpha Test ☐
Vertex Color ☐

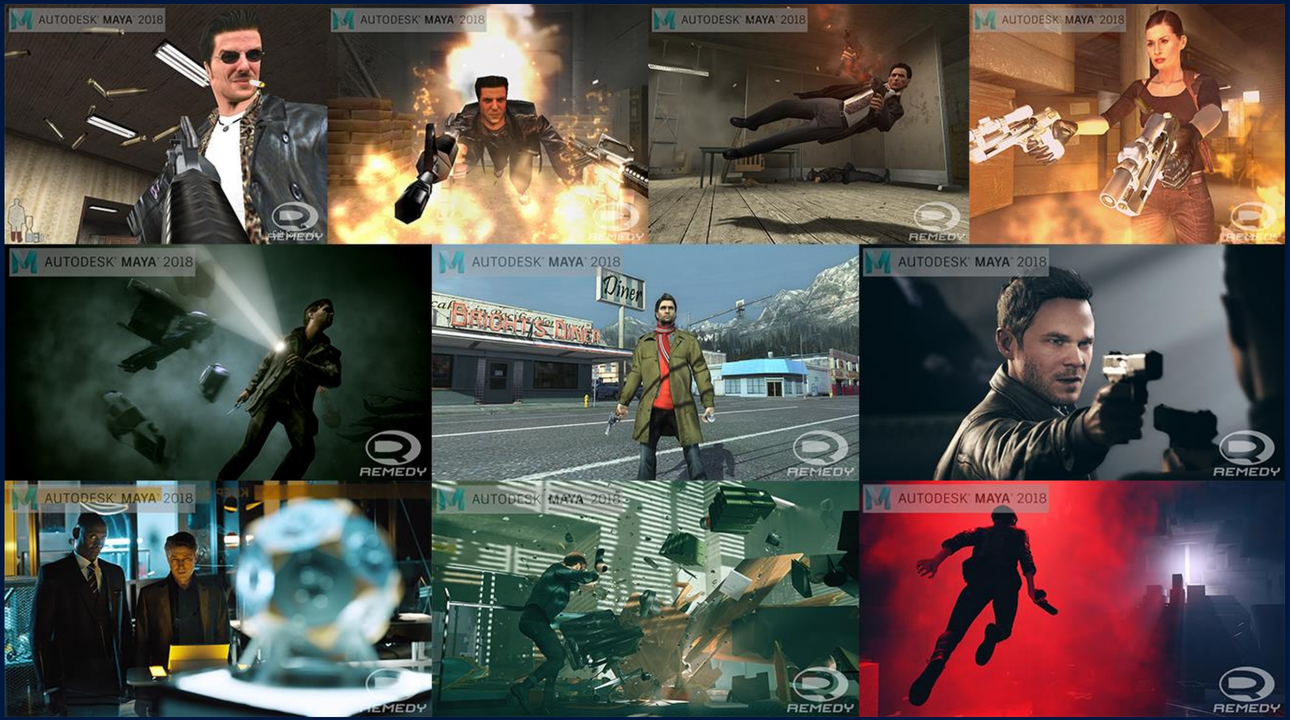
10/26/18 16:15:18 Info : Converter ready.

REMEDY

One of the next things to solve was material assignment. We had to remove duplicate work and desynchronization between DCC and game engine.
We were definitely understanding, that artists needed to have all the proper materials assigned before they press the export button.

Without having a solid solution for that we made a prototype where we could drag'n'drop materials from the Omni Tool to Maya.
Then on export we could use the path of the dropped material and automatically assign it in the engine.
(Omni Tool, our standalone property editor, is on the right side of the image.)
Drag and drop is not a must have feature, but it explains the vision way better than any words.

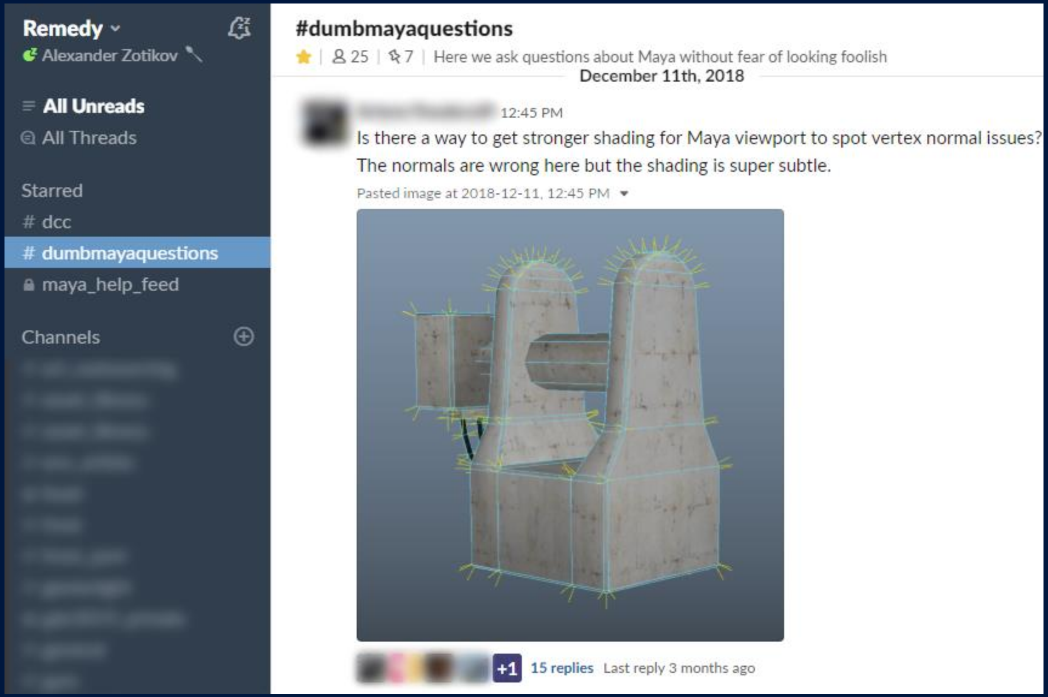
TRANSITION: SPLASH SCREENS



It was clear that we should've started smoothly and created a comfortable environment to remove discomfort from switching to the new DCC.

A small trick that can make Maya a bit friendly from the first launch is to change default splash screen to something more familiar. We've changed it to various images from the Remedy games.

TRANSITION : #DUMBMAYAQUESTIONS



#dumbmayaquestions

25 | 7 | Here we ask questions about Maya without fear of looking foolish

December 11th, 2018

12:45 PM

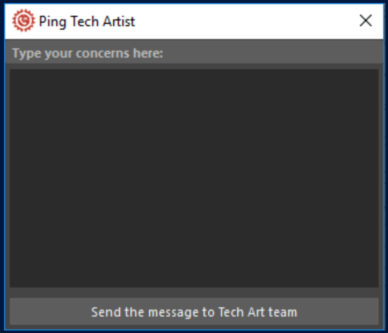
Is there a way to get stronger shading for Maya viewport to spot vertex normal issues? The normals are wrong here but the shading is super subtle.

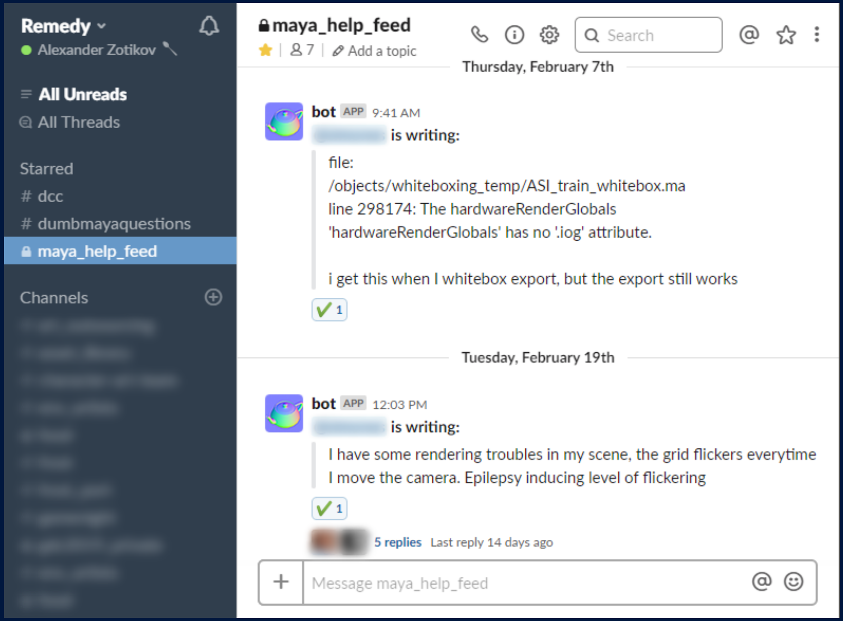
Pasted image at 2018-12-11, 12:45 PM

+1 15 replies Last reply 3 months ago

Then we've created a #dumbmayaquestions Slack channel, where people without any hesitation can ask "how to open UV Editor" or "what do you mean, there are no smoothing groups in Maya?". Aside from just solving issues, it created a nice platform for sharing ideas about the new small tools.

TRANSITION : PING TA





[redacted]

Thursday, February 7th

bot APP 9:41 AM
[redacted] is writing:

file:
/objects/whiteboxing_temp/ASI_train_whitebox.ma
line 298174: The hardwareRenderGlobals
'hardwareRenderGlobals' has no '.iog' attribute.

i get this when I whitebox export, but the export still works

✓ 1

Tuesday, February 19th

bot APP 12:03 PM
[redacted] is writing:

I have some rendering troubles in my scene, the grid flickers everytime I move the camera. Epilepsy inducing level of flickering

✓ 1

5 replies Last reply 14 days ago

Message maya_help_feed

Also, one of the first buttons we created was “Ping Technical Artist”. It sends user’s message via Slack to the Tech Art Team, so we can quickly react on the issues artists have. This simple and effective mechanism creates a “positive reinforcement” for the user. So, every time a user report an issue that we resolve, it encourages new to report the next issue.

Needless to say, that part of artists from the other project have already started working in Maya preparing for the future changes.

EVEN TOOLS NEED A GOOD MARKETING

It’s clear, that even tools need a good marketing to support the tech.

DIRECTION ≠ PATH

No implementation should be set in stone. By doing that you may narrow down your possibility space for new solutions. Failing is a natural process during the evolution of ideas. So that’s out false trail.

OUR FALSE TRAIL

Let’s:

- Write data from Maya
- Do “everything else” in Maya
- Make a Maya Asset Browser

REMEDY

We had a naive idea that we would implement “everything artist need” on the Maya side without any extra support cause we didn’t want to bother the tools team.
One of the aspects was Maya Asset Browser to remove an extra context switching.

OUR FALSE TRAIL

Let’s:

- Write data from Maya
- Do “everything else” in Maya
- Make a Maya Asset Browser

Questions:

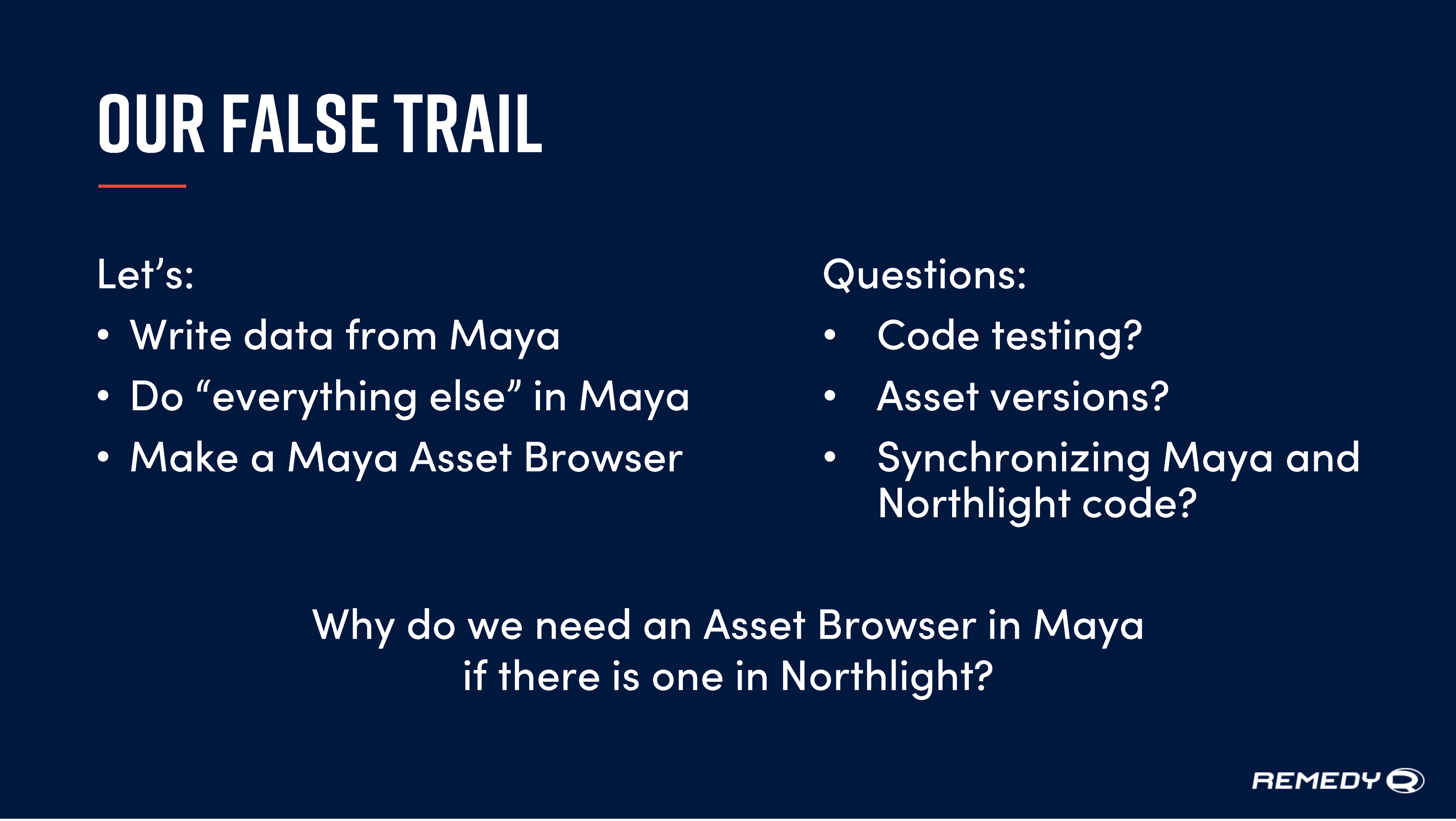
- Code testing?
- Asset versions?
- Synchronizing Maya and Northlight code?

REMEDY

Tools team found out and asked reasonable questions:

- What about asset versions?
- What about code testing?
- What about synchronizing engine and Maya code?

Original idea of quick iteration loops faced the difficulties of real-life development.



OUR FALSE TRAIL

Let’s:

- Write data from Maya
- Do “everything else” in Maya
- Make a Maya Asset Browser

Questions:

- Code testing?
- Asset versions?
- Synchronizing Maya and Northlight code?

Why do we need an Asset Browser in Maya
if there is one in Northlight?

The last question was: why do you need an Asset Browser in Maya if we have it in the game engine?
The fair answer turned out to be: because there is no thumbnails for assets and it’s hard to search for something.

UPDATED PATH

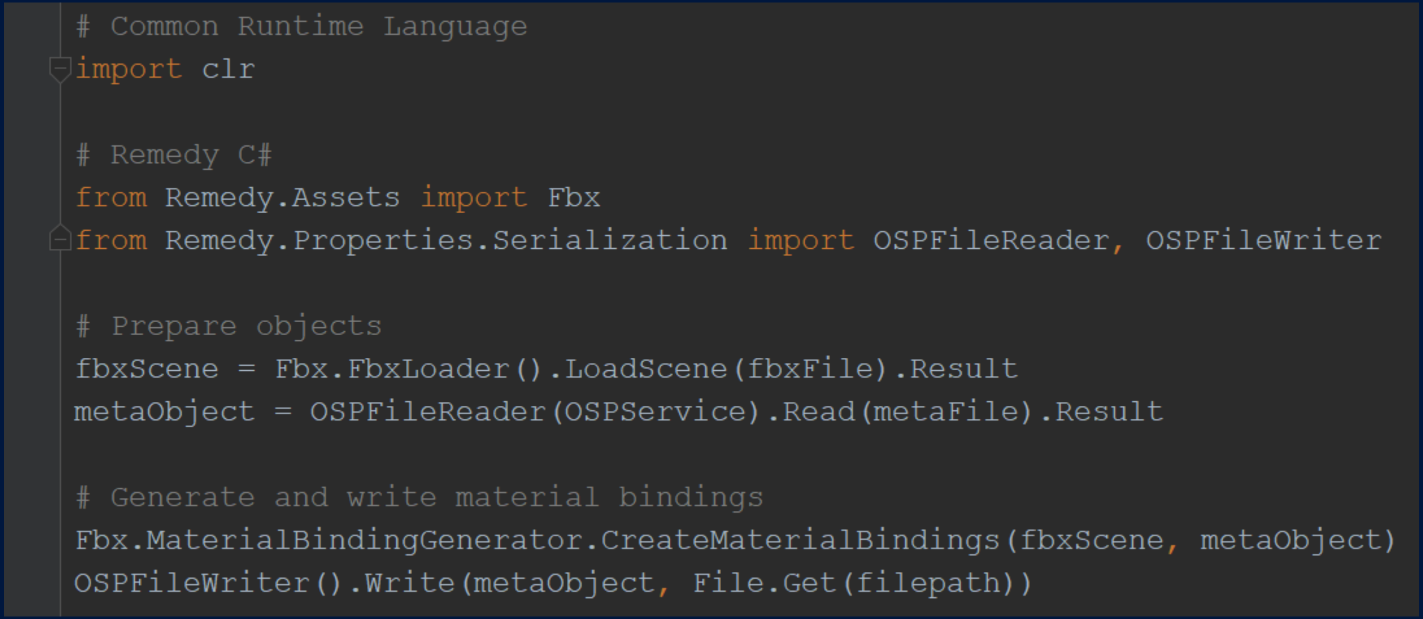
- Drag & Drop as a main tool
- Use Northlight API
- Thumbnails in Omni Tool

So we decided to drop our original plan and to go with updated one:

- Using Omni Tool (Property Editor) as an Asset Browser for Maya (Drag n Drop now is a main concept, not just a prototype)
- Use engine API (well tested code) to run different actions for the assets
- Get thumbnails support on the engine side as a bonus (Yay!)

So talking is always a good idea.

TECHNICAL DETAILS: C#/PYTHON API

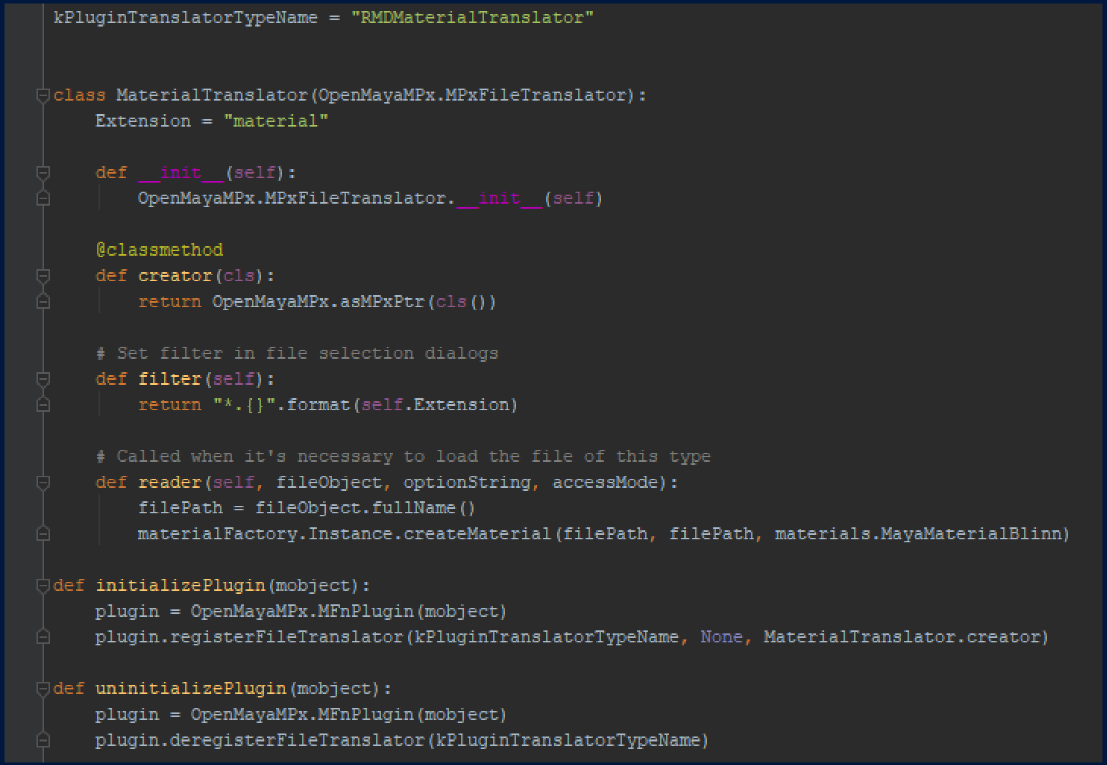


```python
# Common Runtime Language
import clr

# Remedy C#
from Remedy.Assets import Fbx
from Remedy.Properties.Serialization import OSPFileReader, OSPFileWriter

# Prepare objects
fbxScene = Fbx.FbxLoader().LoadScene(fbxFile).Result
metaObject = OSPFileReader(OSPService).Read(metaFile).Result

# Generate and write material bindings
Fbx.MaterialBindingGenerator.CreateMaterialBindings(fbxScene, metaObject)
OSPFileWriter().Write(metaObject, File.Get(filepath))
```

A bit about technical implementations on the new path.
Omni Tool (our Asset Browser) is written in C# and uses .NET framework.
This allow us to use API, provided by the tools programmers right from Python.

We just use “clr” package to load libraries in Python and then operate with data as with the native objects.
So we can easily read and modify the information about the assets and use well-tested functionality of Omni Tools.
This let us remove redundant steps from the pipeline as we setup most of the objects parameters right during the export.

TECHNICAL DETAILS: FILE TRANSLATOR

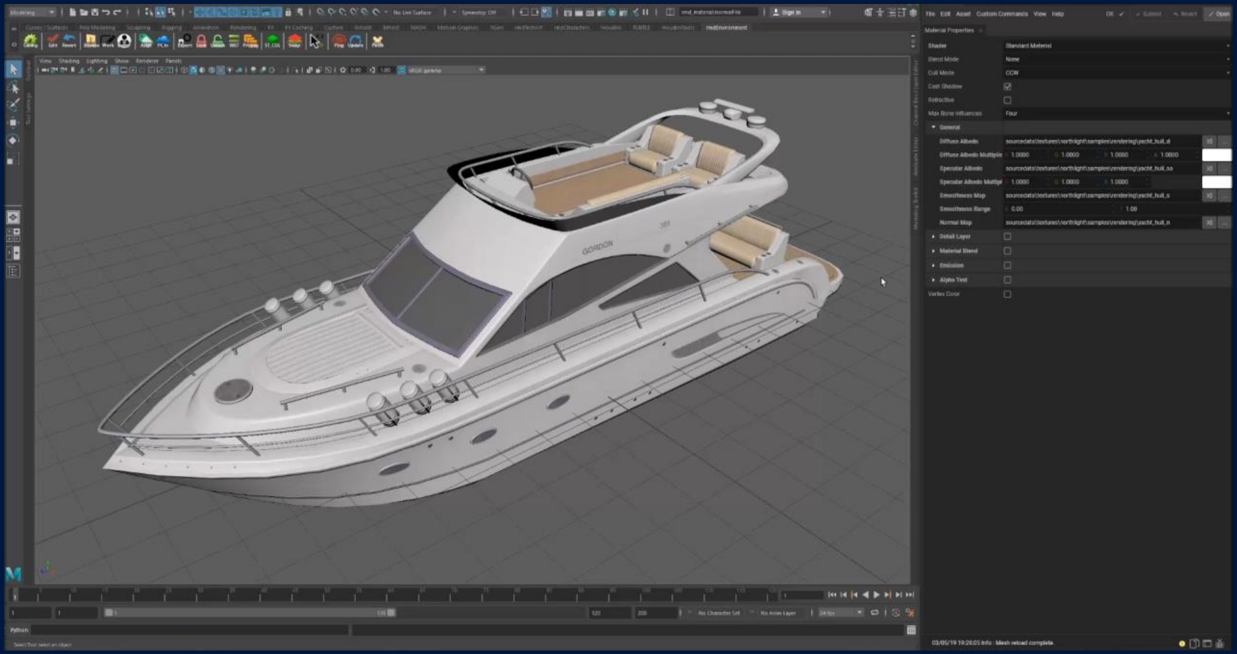


```python
kPluginTranslatorTypeName = "RMDMaterialTranslator"


class MaterialTranslator(OpenMayaMPx.MPxFileTranslator):
    Extension = "material"

    def __init__(self):
        OpenMayaMPx.MPxFileTranslator.__init__(self)

    @classmethod
    def creator(cls):
        return OpenMayaMPx.asMPxPtr(cls())

    # Set filter in file selection dialogs
    def filter(self):
        return "*.{}".format(self.Extension)

    # Called when it's necessary to load the file of this type
    def reader(self, fileObject, optionString, accessMode):
        filePath = fileObject.fullName()
        materialFactory.Instance.createMaterial(filePath, filePath, materials.MayaMaterialBlinn)

def initializePlugin(mobject):
    plugin = OpenMayaMPx.MFnPlugin(mobject)
    plugin.registerFileTranslator(kPluginTranslatorTypeName, None, MaterialTranslator.creator)

def uninitializePlugin(mobject):
    plugin = OpenMayaMPx.MFnPlugin(mobject)
    plugin.deregisterFileTranslator(kPluginTranslatorTypeName)
```

File Translator is a mechanism in Maya to interpret files of different extensions.
Once you write it for needed extension, you can import, export, reference files of any formats.

We wrote File Translators for our engine side assets: materials and pointclouds.
Now we use drag’n’drop from Asset Manager and reference objects in Maya.

TECHNICAL DETAILS: HOT LOADING



Shader	Standard Material
Blend Mode	None
Cull Mode	CCW
Cast Shadow	☑
Refractive	□
Max Bone Influences	Four
General	
Diffuse Albedo	sourcedata\textures\northlight\samples\rendering\yacht_hull_d
Diffuse Albedo Multiplie	R 1.0000 G 1.0000 B 1.0000 A 1.0000
Specular Albedo	sourcedata\textures\northlight\samples\rendering\yacht_hull_sa
Specular Albedo Multipl	R 1.0000 G 1.0000 B 1.0000
Smoothness Map	sourcedata\textures\northlight\samples\rendering\yacht_hull_s
Smoothness Range	0.00 1.00
Normal Map	sourcedata\textures\northlight\samples\rendering\yacht_hull_n
Detail Layer	□
Material Blend	□
Emission	□
Alpha Test	□
Vertex Color	□

03/05/19 19:26:05 Info : Mesh reload complete

REMEDY

File Translator allows us to easily reload references with Maya's build-in "reload".
We run file watcher for each file in the background and reload references on request.
So now, changing the texture of material in the Asset Manager will update it automatically in Maya.
Also when you open your scene, you get the last updates of the referenced objects from Perforce

#REMIND_ME_LATER

- Check the system behind the patches
- Find your vision
- Leverage constraints
- Don’t underestimate colleagues will for changes
- Change on a fly
- Talk and talk

Making the first step doesn’t mean achieving the result, but without it you cannot really move forward.
Our Maya tools are still in development, we iterate on the workflow as well. But we clearly see now, why we made this uneasy move.

I created this small list of statements to remind myself from time to time to step back and look at the bigger picture instead of firefighting the issues via immediate solutions.

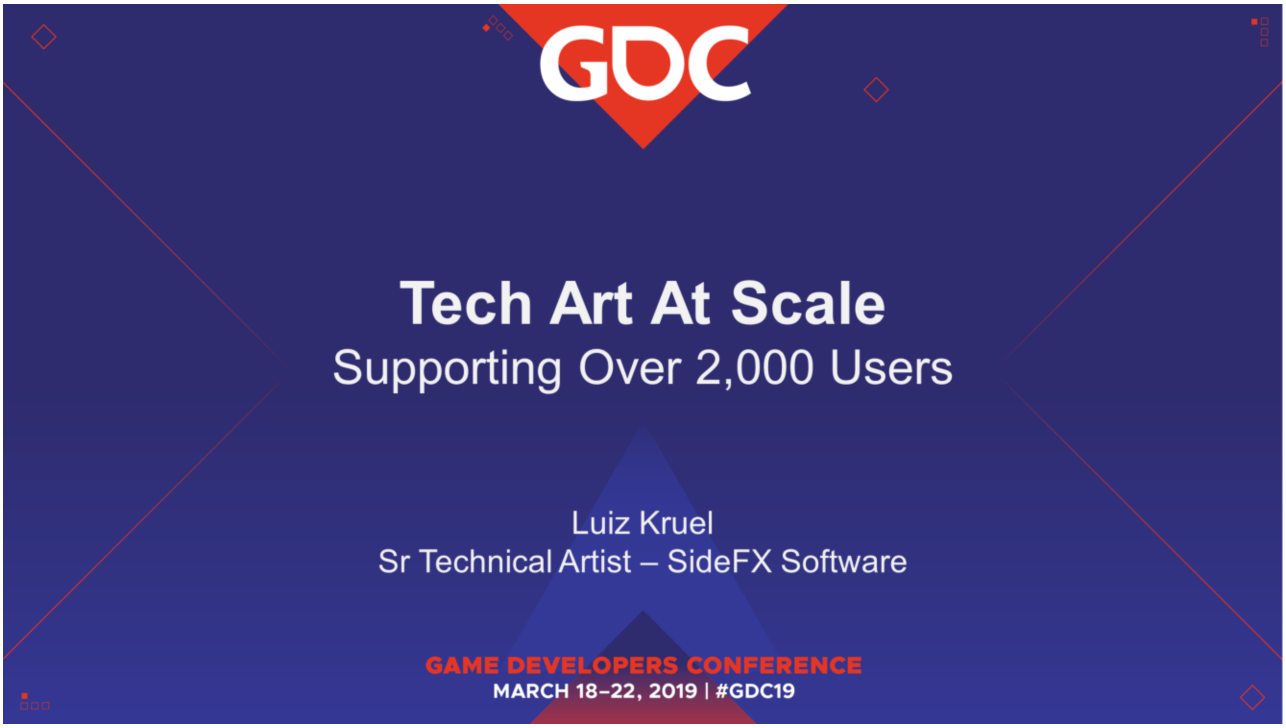
THANK YOU

We are hiring:
remedygames.com/careers

I am tweeting:
@z_fighting

If you are ready for challenges and interesting projects take a look at open positions at Remedy.
If you have any questions about the presentation or just want to chat, feel free to ping me on Twitter: @z_fighting

References:
To create the slides with the maps I used *Heroes Might & Magic 3* map editor provided with the original game from *New World Computing*



GDC

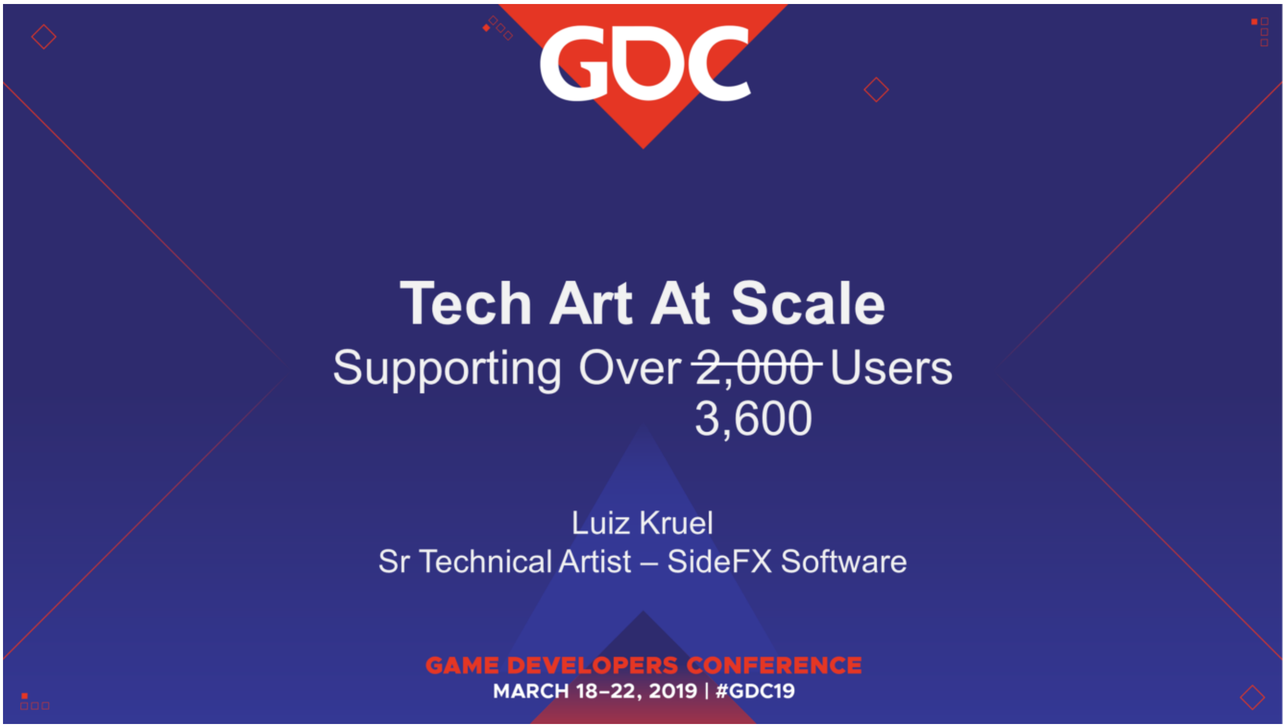
Tech Art At Scale

Supporting Over 2,000 Users

Luiz Kruel
Sr Technical Artist – SideFX Software

GAME DEVELOPERS CONFERENCE
MARCH 18–22, 2019 | #GDC19

Hey everyone, Thanks for coming to my GDC talk



Tech Art At Scale

Supporting Over ~~2,000~~ Users
3,600

Luiz Kruel
Sr Technical Artist – SideFX Software

GAME DEVELOPERS CONFERENCE
MARCH 18–22, 2019 | #GDC19

Hey everyone, Thanks for coming to my GDC talk

Outline

Introduction

Tech Art outside of Production

3 Main Problems at Scale

Recap & Q&A

Disclaimer

The views and opinions expressed in this talk are my own and do not necessarily reflect the official policy or position of SideFX.

Introduction

FORMERLY
GAME DEVELOPER

Houdini™

TECH ARTIST
@ SIDEFX

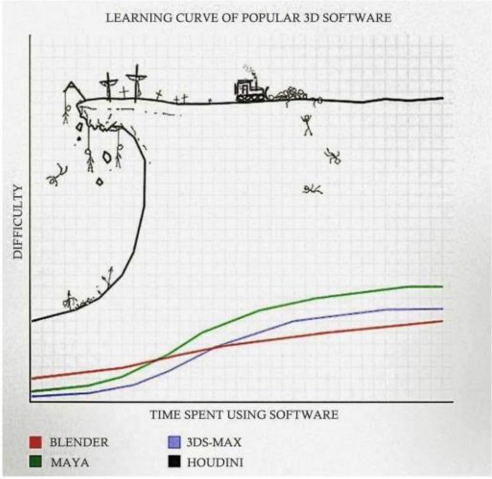
SideFX®

Games Team

LUIZ KRUEL
PAUL AMBROSIUSSEN
MIKE LYNDON

Primary Directive

Increase
Houdini Adoption



SMOOTHING THE LEARNING CURVE

2 Schools of Thought

BACK IN MY DAY WE HAD TO GO TO CHANNEL 3 TO PLAY VIDEO GAMES
AND WE LIKED IT!

INCREASE EDUCATION

2 Schools of Thought

BACK IN MY DAY WE HAD TO GO TO CHANNEL 3 TO PLAY VIDEO GAMES
AND WE LIKED IT!

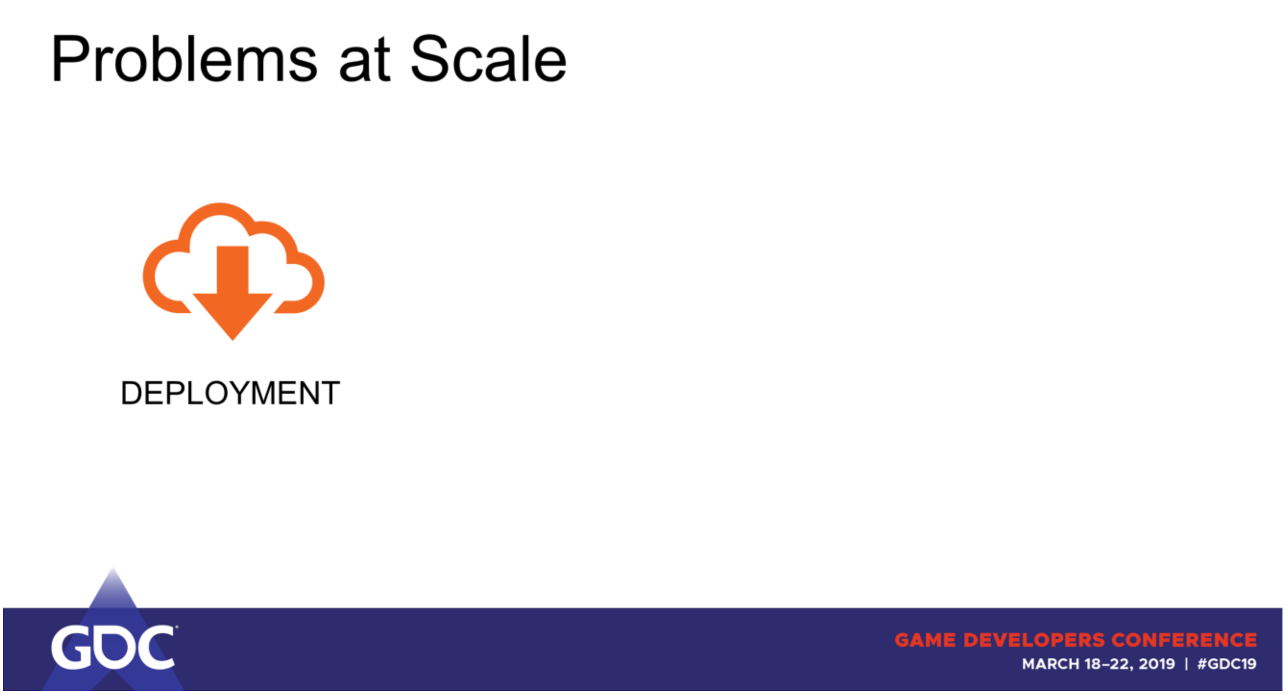
INCREASE EDUCATION

REDUCE COMPLEXITY

GAME DEVELOPMENT TOOLSET

GAME DEVELOPMENT TOOLSET

Problems at Scale



Problems at Scale

DEPLOYMENT

GAME DEVELOPERS CONFERENCE
MARCH 18–22, 2019 | #GDC19

Deployment

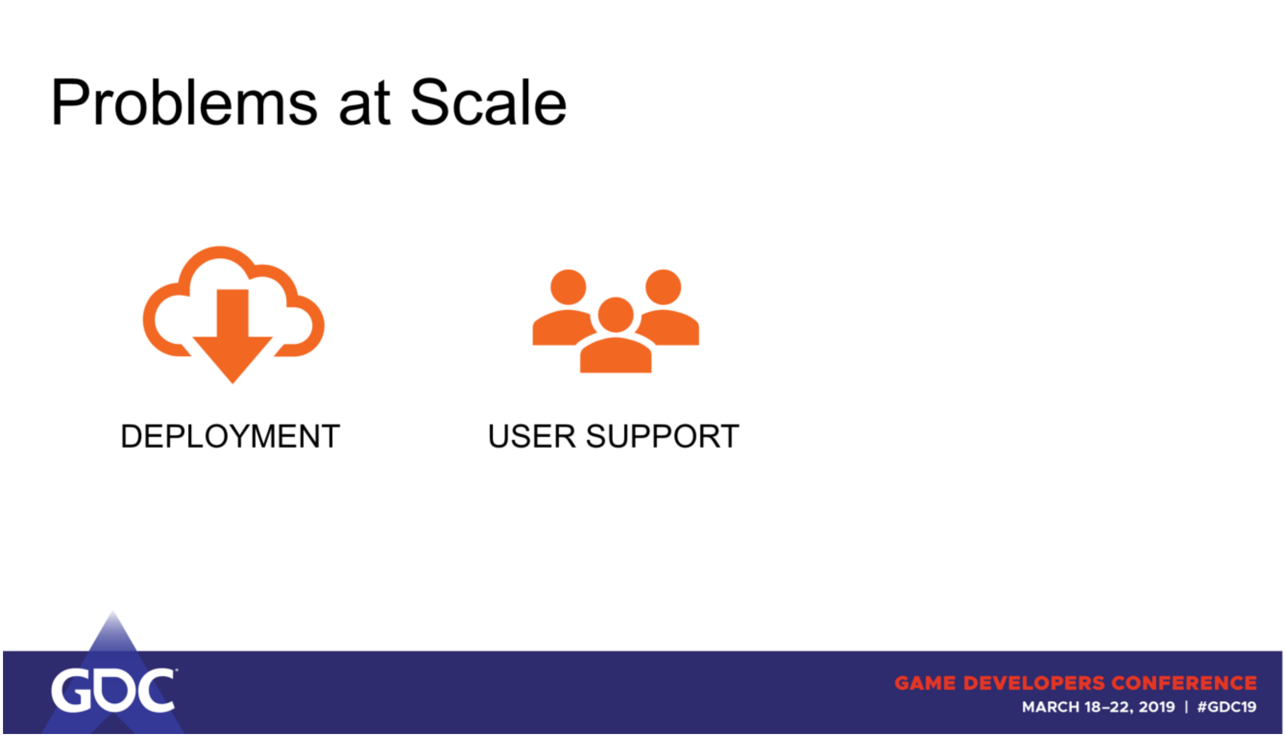
Can they get the tools ?

Support

Can they ask for help ? Can we ask for feedback ?

Relevance

Are we building what they need ?



Problems at Scale

DEPLOYMENT

USER SUPPORT

Deployment

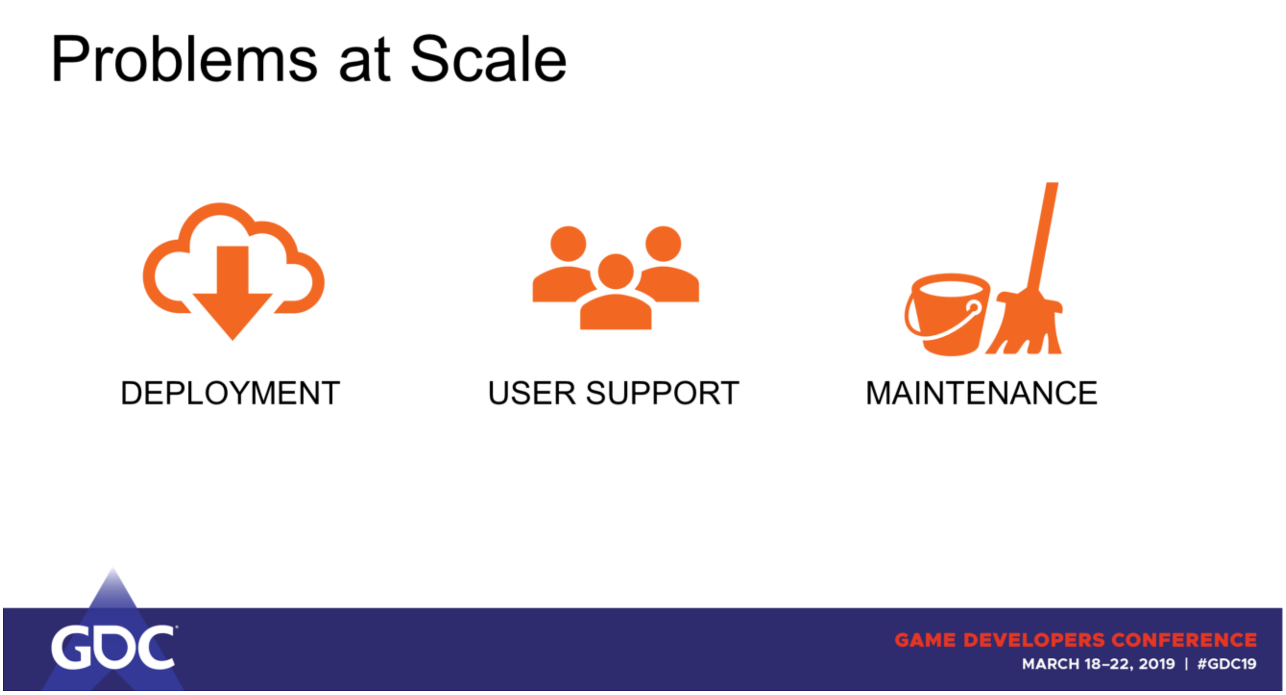
Can they get the tools ?

Support

Can they ask for help ? Can we ask for feedback ?

Relevance

Are we building what they need ?



Problems at Scale

DEPLOYMENT

USER SUPPORT

MAINTENANCE

Deployment

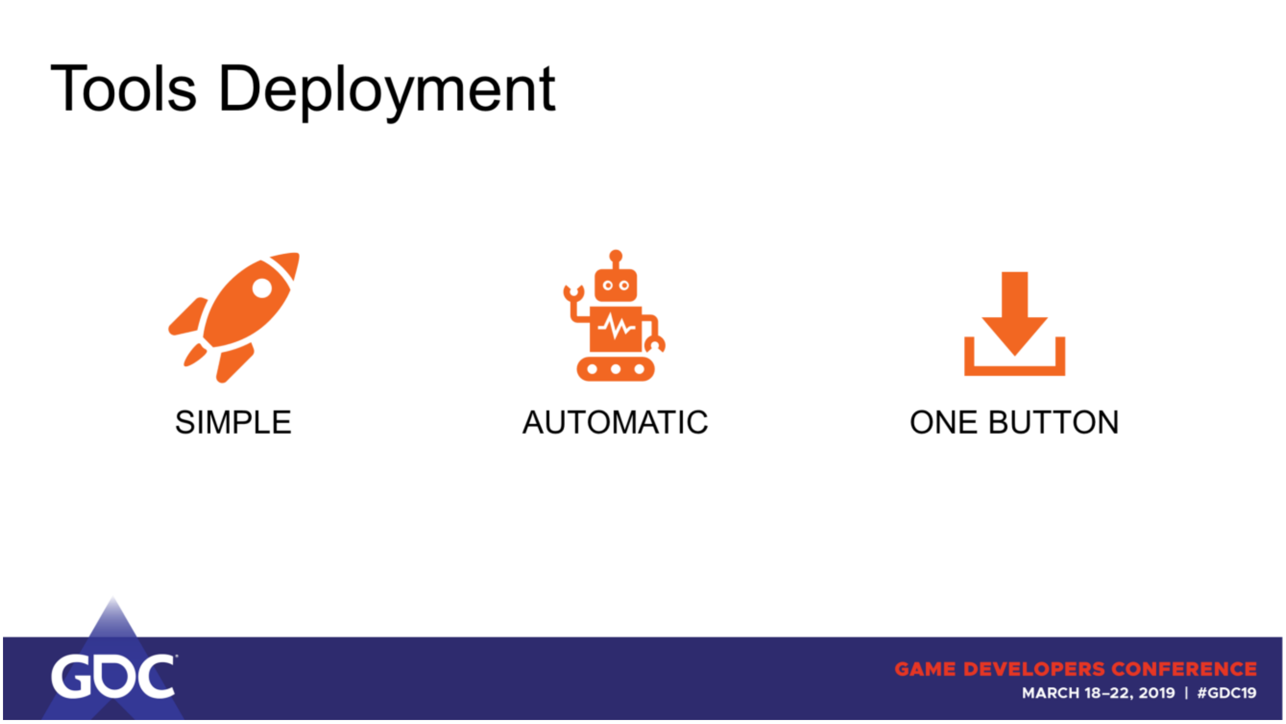
Can they get the tools ?

Support

Can they ask for help ? Can we ask for feedback ?

Relevance

Are we building what they need ?



Tools Deployment

SIMPLE

AUTOMATIC

ONE BUTTON

Don’t just assume people will use P4 and download your tools

Force Update the tools

For each step in the setup process you lose half your audience

Tools Deployment History

1 - GitHub Clone (H15.5)

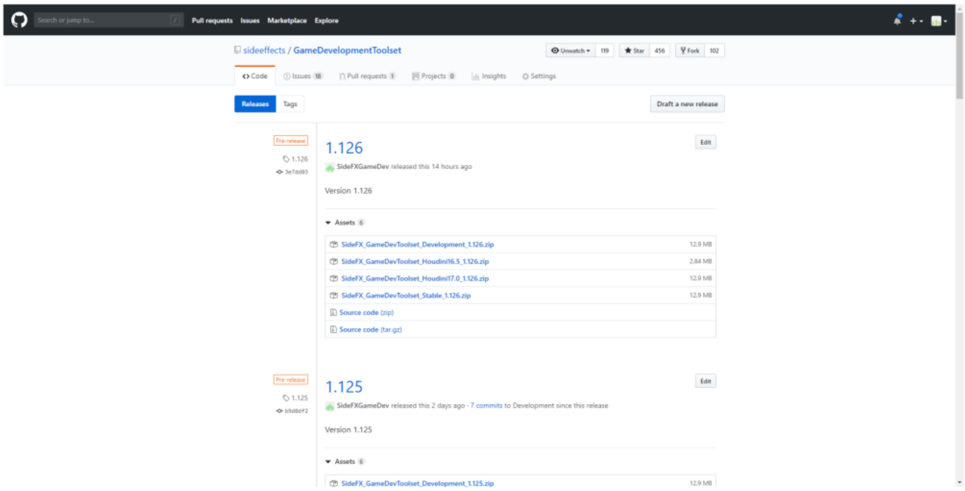
Tools Deployment History

1 - GitHub Clone (H15.5)
2 – Built Into Houdini, but kinda

Tools Deployment History

1 - GitHub Clone (H15.5)
2 – Built Into Houdini, but kinda
3 – Automatic Setup of GitHub Releases

GitHub Releases



Pre-release

1.126

3e7dd83

1.126

SideFXGameDev released this 14 hours ago

Version 1.126

Assets 6

SideFX_GameDevToolset_Development_1.126.zip	12.9 MB
SideFX_GameDevToolset_Houdini16.5_1.126.zip	2.84 MB
SideFX_GameDevToolset_Houdini17.0_1.126.zip	12.9 MB
SideFX_GameDevToolset_Stable_1.126.zip	12.9 MB
Source code (zip)	
Source code (tar.gz)	

Pre-release

1.125

b9d8df2

1.125

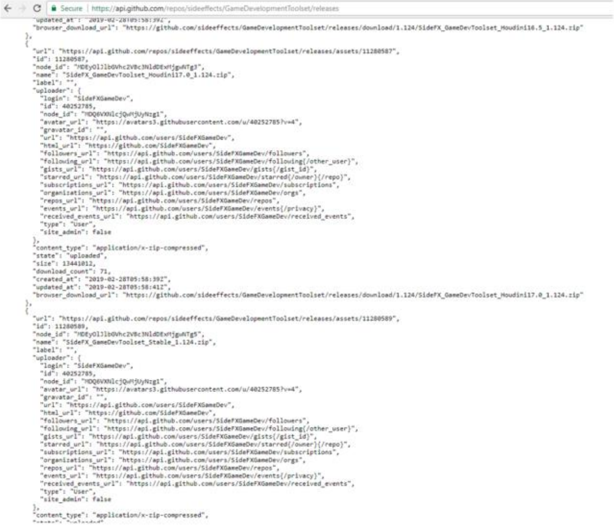
SideFXGameDev released this 2 days ago · 7 commits to Development since this release

Version 1.125

Assets 6

SideFX_GameDevToolset_Development_1.125.zip	12.9 MB

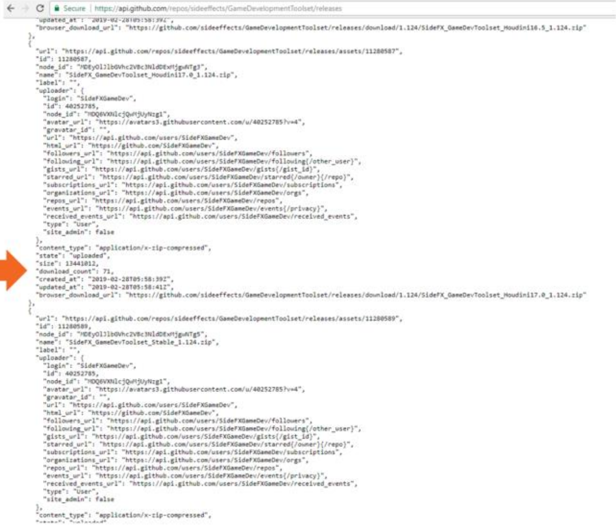
GitHub Releases API



Secure | https://api.github.com/repos/sideeffects/GameDevelopmentToolset/releases

```
    "updated_at": "2019-02-28T05:58:39Z",
    "browser_download_url": "https://github.com/sideeffects/GameDevelopmentToolset/releases/download/1.124/SideFX_GameDevToolset_Houdini16.5_1.124.zip"
  },
  {
    "url": "https://api.github.com/repos/sideeffects/GameDevelopementToolset/releases/assets/11280587",
    "id": 11280587,
    "node_id": "MDEyOlJlbGVhc2VBc3NldDExMjgwNTg3",
    "name": "SideFX_GameDevToolset_Houdini17.0_1.124.zip",
    "label": "",
    "uploader": {
      "login": "SideFXGameDev",
      "id": 40252785,
      "node_id": "MDQ6VXNlcjQwMjUyNzg1",
      "avatar_url": "https://avatars3.githubusercontent.com/u/40252785?v=4",
      "gravatar_id": "",
      "url": "https://api.github.com/users/SideFXGameDev",
      "html_url": "https://github.com/SideFXGameDev",
      "followers_url": "https://api.github.com/users/SideFXGameDev/followers",
      "following_url": "https://api.github.com/users/SideFXGameDev/following{/other_user}",
      "gists_url": "https://api.github.com/users/SideFXGameDev/gists{/gist_id}",
      "starred_url": "https://api.github.com/users/SideFXGameDev/starred{/owner}{/repo}",
      "subscriptions_url": "https://api.github.com/users/SideFXGameDev/subscriptions",
      "organizations_url": "https://api.github.com/users/SideFXGameDev/orgs",
      "repos_url": "https://api.github.com/users/SideFXGameDev/repos",
      "events_url": "https://api.github.com/users/SideFXGameDev/events{/privacy}",
      "received_events_url": "https://api.github.com/users/SideFXGameDev/received_events",
      "type": "User",
      "site_admin": false
    },
    "content_type": "application/x-zip-compressed",
    "state": "uploaded",
    "size": 13441012,
    "download_count": 71,
    "created_at": "2019-02-28T05:58:39Z",
    "updated_at": "2019-02-28T05:58:41Z",
    "browser_download_url": "https://github.com/sideeffects/GameDevelopmentToolset/releases/download/1.124/SideFX_GameDevToolset_Houdini17.0_1.124.zip"
  },
  {
    "url": "https://api.github.com/repos/sideeffects/GameDevelopementToolset/releases/assets/11280589",
    "id": 11280589,
    "node_id": "MDEyOlJlbGVhc2VBc3NldDExMjgwNTg5",
    "name": "SideFX_GameDevToolset_Stable_1.124.zip",
    "label": "",
    "uploader": {
      "login": "SideFXGameDev",
      "id": 40252785,
      "node_id": "MDQ6VXNlcjQwMjUyNzg1",
      "avatar_url": "https://avatars3.githubusercontent.com/u/40252785?v=4",
      "gravatar_id": "",
      "url": "https://api.github.com/users/SideFXGameDev",
      "html_url": "https://github.com/SideFXGameDev",
      "followers_url": "https://api.github.com/users/SideFXGameDev/followers",
      "following_url": "https://api.github.com/users/SideFXGameDev/following{/other_user}",
      "gists_url": "https://api.github.com/users/SideFXGameDev/gists{/gist_id}",
      "starred_url": "https://api.github.com/users/SideFXGameDev/starred{/owner}{/repo}",
      "subscriptions_url": "https://api.github.com/users/SideFXGameDev/subscriptions",
      "organizations_url": "https://api.github.com/users/SideFXGameDev/orgs",
      "repos_url": "https://api.github.com/users/SideFXGameDev/repos",
      "events_url": "https://api.github.com/users/SideFXGameDev/events{/privacy}",
      "received_events_url": "https://api.github.com/users/SideFXGameDev/received_events",
      "type": "User",
      "site_admin": false
    },
    "content_type": "application/x-zip-compressed",
    "state": "uploaded"
```

GitHub Releases API



Secure | https://api.github.com/repos/sideeffects/GameDevelopmentToolset/releases

```
    "updated_at": "2019-02-28T05:58:39Z",
    "browser_download_url": "https://github.com/sideeffects/GameDevelopmentToolset/releases/download/1.124/SideFX_GameDevToolset_Houdini16.5_1.124.zip"
  },
  {
    "url": "https://api.github.com/repos/sideeffects/GameDevelopmentToolset/releases/assets/11280587",
    "id": 11280587,
    "node_id": "MDEyOlJlbGVhc2VBc3NldDExMjgwNTg3",
    "name": "SideFX_GameDevToolset_Houdini17.0_1.124.zip",
    "label": "",
    "uploader": {
      "login": "SideFXGameDev",
      "id": 40252785,
      "node_id": "MDQ6VXNlcjQwMjUyNzg1",
      "avatar_url": "https://avatars3.githubusercontent.com/u/40252785?v=4",
      "gravatar_id": "",
      "url": "https://api.github.com/users/SideFXGameDev",
      "html_url": "https://github.com/SideFXGameDev",
      "followers_url": "https://api.github.com/users/SideFXGameDev/followers",
      "following_url": "https://api.github.com/users/SideFXGameDev/following{/other_user}",
      "gists_url": "https://api.github.com/users/SideFXGameDev/gists{/gist_id}",
      "starred_url": "https://api.github.com/users/SideFXGameDev/starred{/owner}{/repo}",
      "subscriptions_url": "https://api.github.com/users/SideFXGameDev/subscriptions",
      "organizations_url": "https://api.github.com/users/SideFXGameDev/orgs",
      "repos_url": "https://api.github.com/users/SideFXGameDev/repos",
      "events_url": "https://api.github.com/users/SideFXGameDev/events{/privacy}",
      "received_events_url": "https://api.github.com/users/SideFXGameDev/received_events",
      "type": "User",
      "site_admin": false
    },
    "content_type": "application/x-zip-compressed",
    "state": "uploaded",
    "size": 13441012,
    "download_count": 71,
    "created_at": "2019-02-28T05:58:39Z",
    "updated_at": "2019-02-28T05:58:41Z",
    "browser_download_url": "https://github.com/sideeffects/GameDevelopmentToolset/releases/download/1.124/SideFX_GameDevToolset_Houdini17.0_1.124.zip"
  },
  {
    "url": "https://api.github.com/repos/sideeffects/GameDevelopmentToolset/releases/assets/11280589",
    "id": 11280589,
    "node_id": "MDEyOlJlbGVhc2VBc3NldDExMjgwNTg5",
    "name": "SideFX_GameDevToolset_Stable_1.124.zip",
    "label": "",
    "uploader": {
      "login": "SideFXGameDev",
      "id": 40252785,
      "node_id": "MDQ6VXNlcjQwMjUyNzg1",
      "avatar_url": "https://avatars3.githubusercontent.com/u/40252785?v=4",
      "gravatar_id": "",
      "url": "https://api.github.com/users/SideFXGameDev",
      "html_url": "https://github.com/SideFXGameDev",
      "followers_url": "https://api.github.com/users/SideFXGameDev/followers",
      "following_url": "https://api.github.com/users/SideFXGameDev/following{/other_user}",
      "gists_url": "https://api.github.com/users/SideFXGameDev/gists{/gist_id}",
      "starred_url": "https://api.github.com/users/SideFXGameDev/starred{/owner}{/repo}",
      "subscriptions_url": "https://api.github.com/users/SideFXGameDev/subscriptions",
      "organizations_url": "https://api.github.com/users/SideFXGameDev/orgs",
      "repos_url": "https://api.github.com/users/SideFXGameDev/repos",
      "events_url": "https://api.github.com/users/SideFXGameDev/events{/privacy}",
      "received_events_url": "https://api.github.com/users/SideFXGameDev/received_events",
      "type": "User",
      "site_admin": false
    },
    "content_type": "application/x-zip-compressed",
    "state": "uploaded"
```

47,856

DOWNLOADS

Aug 17,2017 -> Mar 13, 2019

Need More Granular Metrics

HOW MANY USERS?

Need More Granular Metrics

HOW MANY USERS?

GLOBAL LOCATION?

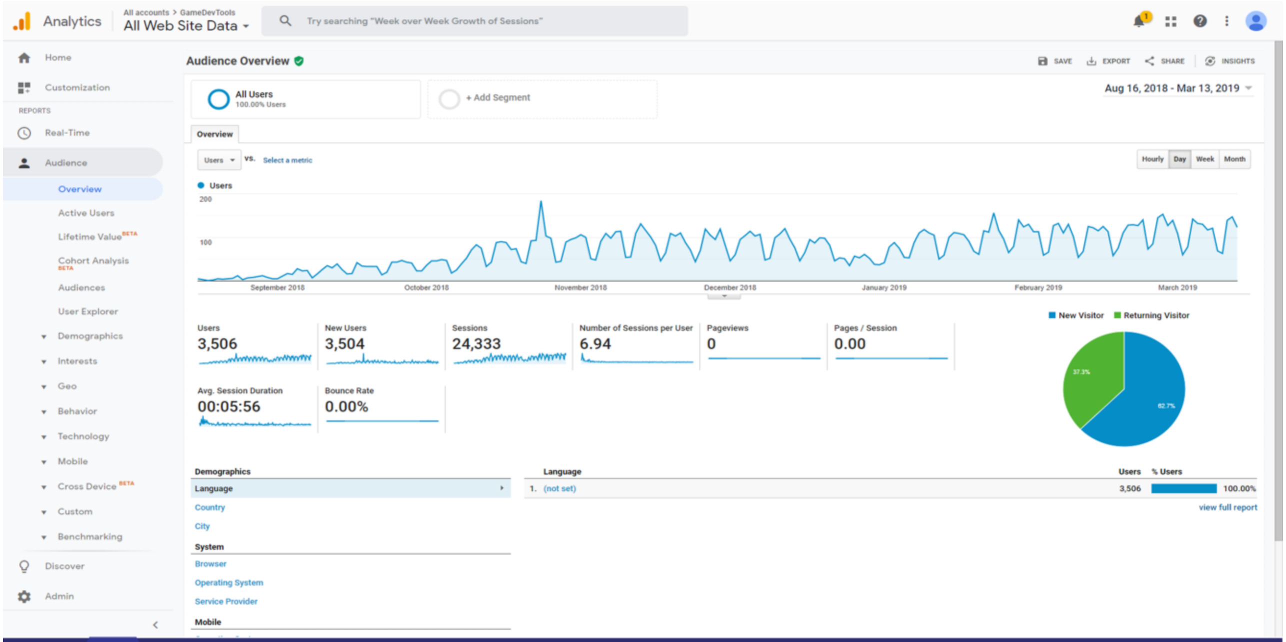
Need More Granular Metrics

HOW MANY USERS?

GLOBAL LOCATION?

WHICH TOOLS?

Google Analytics



Audience Overview

All Users
100.00% Users

Aug 16, 2018 - Mar 13, 2019

Users	New Users	Sessions	Number of Sessions per User	Pageviews	Pages / Session
3,506	3,504	24,333	6.94	0	0.00

Avg. Session Duration	Bounce Rate
00:05:56	0.00%

Demographics

- Language
- Country
- City

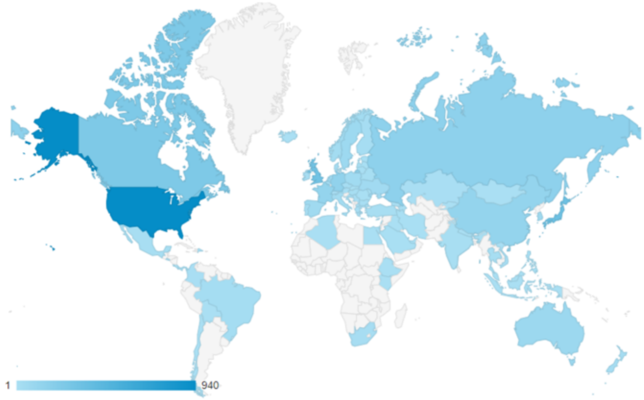
System

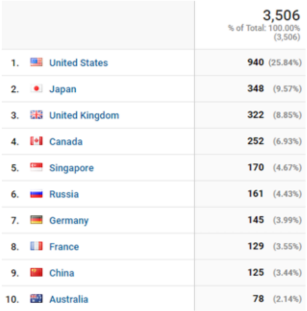
- Browser
- Operating System
- Service Provider

Mobile

	Language	Users	% Users
1.	(not set)	3,506	100.00%

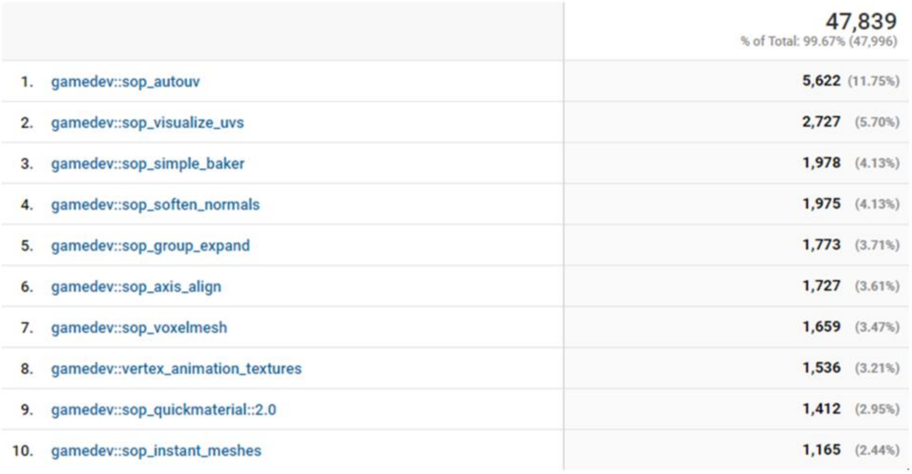
view full report





		3,506 % of Total: 100.00% (3,506)
1.	United States	940 (25.84%)
2.	Japan	348 (9.57%)
3.	United Kingdom	322 (8.85%)
4.	Canada	252 (6.93%)
5.	Singapore	170 (4.67%)
6.	Russia	161 (4.43%)
7.	Germany	145 (3.99%)
8.	France	129 (3.55%)
9.	China	125 (3.44%)
10.	Australia	78 (2.14%)

Most Used Tools



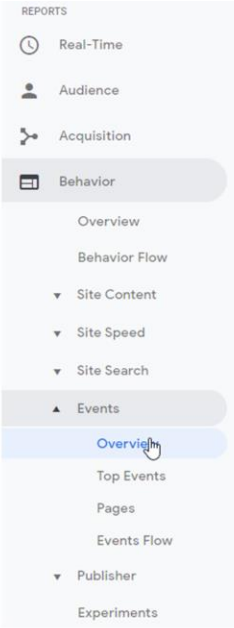
		47,839 % of Total: 99.67% (47,996)
1.	gamedev::sop_autouv	5,622 (11.75%)
2.	gamedev::sop_visualize_uvs	2,727 (5.70%)
3.	gamedev::sop_simple_baker	1,978 (4.13%)
4.	gamedev::sop_soften_normals	1,975 (4.13%)
5.	gamedev::sop_group_expand	1,773 (3.71%)
6.	gamedev::sop_axis_align	1,727 (3.61%)
7.	gamedev::sop_voxelmesh	1,659 (3.47%)
8.	gamedev::vertex_animation_textures	1,536 (3.21%)
9.	gamedev::sop_quickmaterial::2.0	1,412 (2.95%)
10.	gamedev::sop_instant_meshes	1,165 (2.44%)

How are we tracking this?

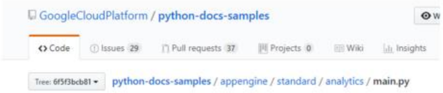
Pageview Tracking

vs.

Event Tracking (Measurement Protocol)

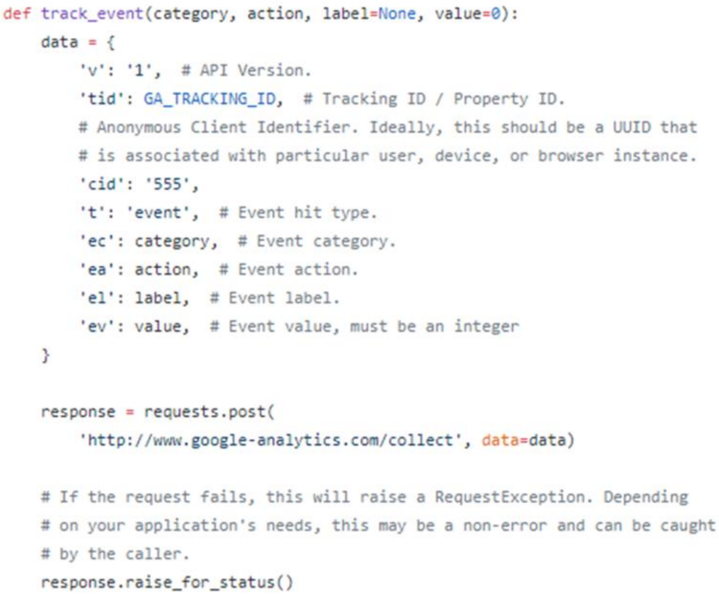


Track Event



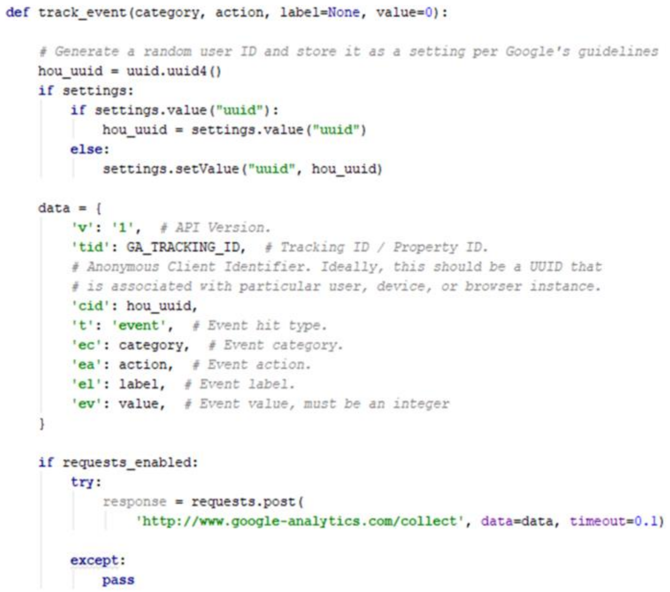
GoogleCloudPlatform / python-docs-samples

python-docs-samples / appengine / standard / analytics / main.py



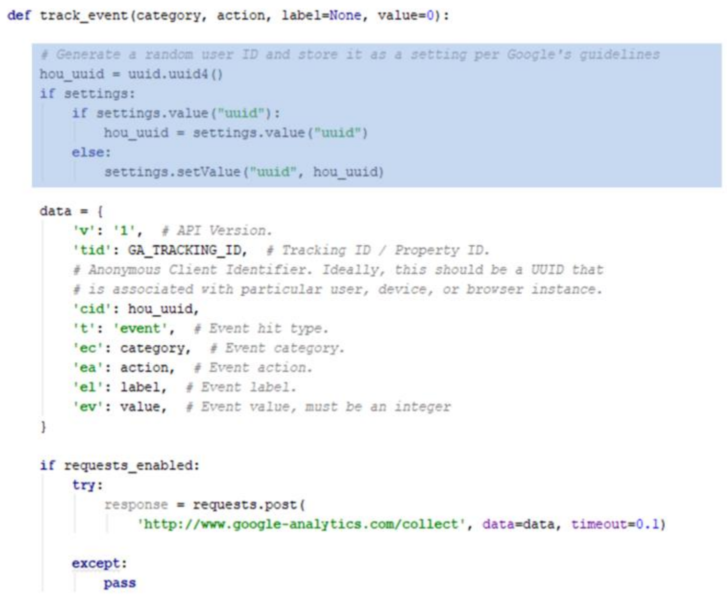
```
def track_event(category, action, label=None, value=0):
    data = {
        'v': '1',  # API Version.
        'tid': GA_TRACKING_ID,  # Tracking ID / Property ID.
        # Anonymous Client Identifier. Ideally, this should be a UUID that
        # is associated with particular user, device, or browser instance.
        'cid': '555',
        't': 'event',  # Event hit type.
        'ec': category,  # Event category.
        'ea': action,  # Event action.
        'el': label,  # Event label.
        'ev': value,  # Event value, must be an integer
    }

    response = requests.post(
        'http://www.google-analytics.com/collect', data=data)

    # If the request fails, this will raise a RequestException. Depending
    # on your application's needs, this may be a non-error and can be caught
    # by the caller.
    response.raise_for_status()
```

Track Event



```python
def track_event(category, action, label=None, value=0):

    # Generate a random user ID and store it as a setting per Google's guidelines
    hou_uuid = uuid.uuid4()
    if settings:
        if settings.value("uuid"):
            hou_uuid = settings.value("uuid")
        else:
            settings.setValue("uuid", hou_uuid)

    data = {
        'v': '1',  # API Version.
        'tid': GA_TRACKING_ID,  # Tracking ID / Property ID.
        # Anonymous Client Identifier. Ideally, this should be a UUID that
        # is associated with particular user, device, or browser instance.
        'cid': hou_uuid,
        't': 'event',  # Event hit type.
        'ec': category,  # Event category.
        'ea': action,  # Event action.
        'el': label,  # Event label.
        'ev': value,  # Event value, must be an integer
    }

    if requests_enabled:
        try:
            response = requests.post(
                'http://www.google-analytics.com/collect', data=data, timeout=0.1)

        except:
            pass
```

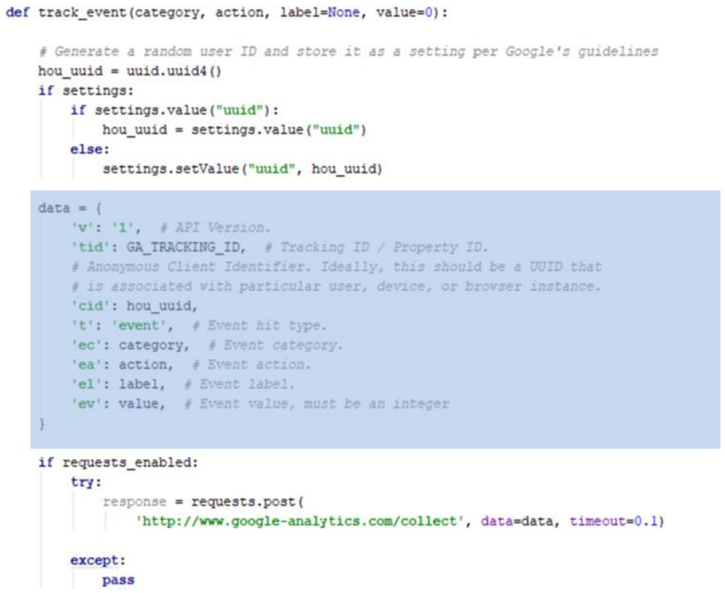
Track Event



```
def track_event(category, action, label=None, value=0):

    # Generate a random user ID and store it as a setting per Google's guidelines
    hou_uuid = uuid.uuid4()
    if settings:
        if settings.value("uuid"):
            hou_uuid = settings.value("uuid")
        else:
            settings.setValue("uuid", hou_uuid)

    data = {
        'v': '1',  # API Version.
        'tid': GA_TRACKING_ID,  # Tracking ID / Property ID.
        # Anonymous Client Identifier. Ideally, this should be a UUID that
        # is associated with particular user, device, or browser instance.
        'cid': hou_uuid,
        't': 'event',  # Event hit type.
        'ec': category,  # Event category.
        'ea': action,  # Event action.
        'el': label,  # Event label.
        'ev': value,  # Event value, must be an integer
    }

    if requests_enabled:
        try:
            response = requests.post(
                'http://www.google-analytics.com/collect', data=data, timeout=0.1)

        except:
            pass
```

Track Event

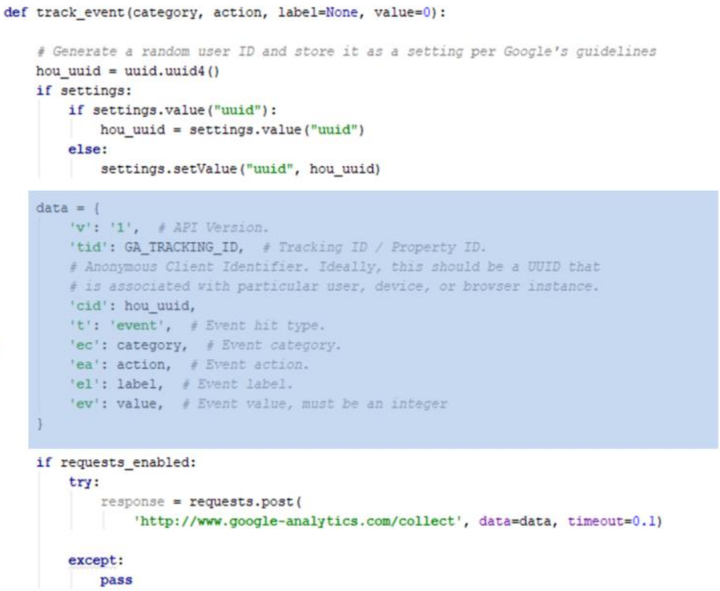
GA_TRACKING_ID



```
def track_event(category, action, label=None, value=0):

    # Generate a random user ID and store it as a setting per Google's guidelines
    hou_uuid = uuid.uuid4()
    if settings:
        if settings.value("uuid"):
            hou_uuid = settings.value("uuid")
        else:
            settings.setValue("uuid", hou_uuid)

    data = {
        'v': '1',  # API Version.
        'tid': GA_TRACKING_ID,  # Tracking ID / Property ID.
        # Anonymous Client Identifier. Ideally, this should be a UUID that
        # is associated with particular user, device, or browser instance.
        'cid': hou_uuid,
        't': 'event',  # Event hit type.
        'ec': category,  # Event category.
        'ea': action,  # Event action.
        'el': label,  # Event label.
        'ev': value,  # Event value, must be an integer
    }

    if requests_enabled:
        try:
            response = requests.post(
                'http://www.google-analytics.com/collect', data=data, timeout=0.1)

        except:
            pass
```

Category

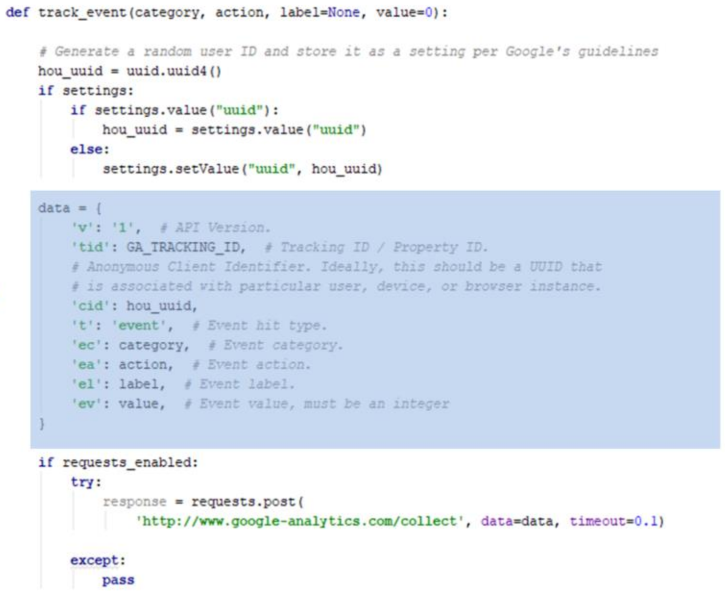
Category – Type of Event
Action – What happened
Label (Optional) – User data
Value (Optional) (int) – User Data



```python
def track_event(category, action, label=None, value=0):

    # Generate a random user ID and store it as a setting per Google's guidelines
    hou_uuid = uuid.uuid4()
    if settings:
        if settings.value("uuid"):
            hou_uuid = settings.value("uuid")
        else:
            settings.setValue("uuid", hou_uuid)

    data = {
        'v': '1',  # API Version.
        'tid': GA_TRACKING_ID,  # Tracking ID / Property ID.
        # Anonymous Client Identifier. Ideally, this should be a UUID that
        # is associated with particular user, device, or browser instance.
        'cid': hou_uuid,
        't': 'event',  # Event hit type.
        'ec': category,  # Event category.
        'ea': action,  # Event action.
        'el': label,  # Event label.
        'ev': value,  # Event value, must be an integer
    }

    if requests_enabled:
        try:
            response = requests.post(
                'http://www.google-analytics.com/collect', data=data, timeout=0.1)

        except:
            pass
```

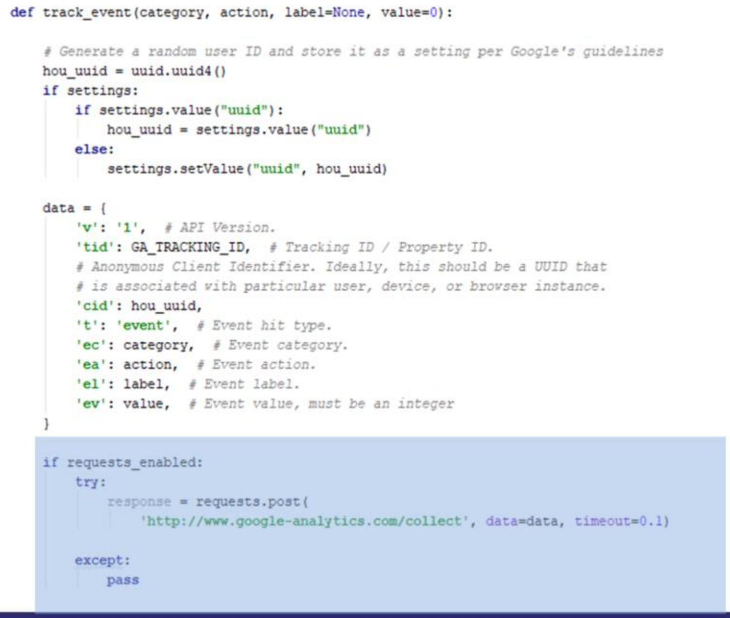
Node Created

Category – Node Created
Action – Node Name
Label (Optional) – Node Version
Value (Optional) (int) – Unused



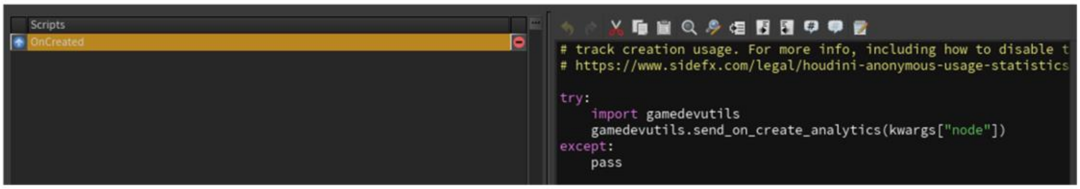
```python
def track_event(category, action, label=None, value=0):

    # Generate a random user ID and store it as a setting per Google's guidelines
    hou_uuid = uuid.uuid4()
    if settings:
        if settings.value("uuid"):
            hou_uuid = settings.value("uuid")
        else:
            settings.setValue("uuid", hou_uuid)

    data = {
        'v': '1',  # API Version.
        'tid': GA_TRACKING_ID,  # Tracking ID / Property ID.
        # Anonymous Client Identifier. Ideally, this should be a UUID that
        # is associated with particular user, device, or browser instance.
        'cid': hou_uuid,
        't': 'event',  # Event hit type.
        'ec': category,  # Event category.
        'ea': action,  # Event action.
        'el': label,  # Event label.
        'ev': value,  # Event value, must be an integer
    }

    if requests_enabled:
        try:
            response = requests.post(
                'http://www.google-analytics.com/collect', data=data, timeout=0.1)

        except:
            pass
```

Post Request

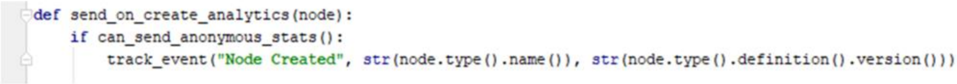


```
def track_event(category, action, label=None, value=0):

    # Generate a random user ID and store it as a setting per Google's guidelines
    hou_uuid = uuid.uuid4()
    if settings:
        if settings.value("uuid"):
            hou_uuid = settings.value("uuid")
        else:
            settings.setValue("uuid", hou_uuid)

    data = {
        'v': '1',  # API Version.
        'tid': GA_TRACKING_ID,  # Tracking ID / Property ID.
        # Anonymous Client Identifier. Ideally, this should be a UUID that
        # is associated with particular user, device, or browser instance.
        'cid': hou_uuid,
        't': 'event',  # Event hit type.
        'ec': category,  # Event category.
        'ea': action,  # Event action.
        'el': label,  # Event label.
        'ev': value,  # Event value, must be an integer
    }

    if requests_enabled:
        try:
            response = requests.post(
                'http://www.google-analytics.com/collect', data=data, timeout=0.1)

        except:
            pass
```

When is this called?



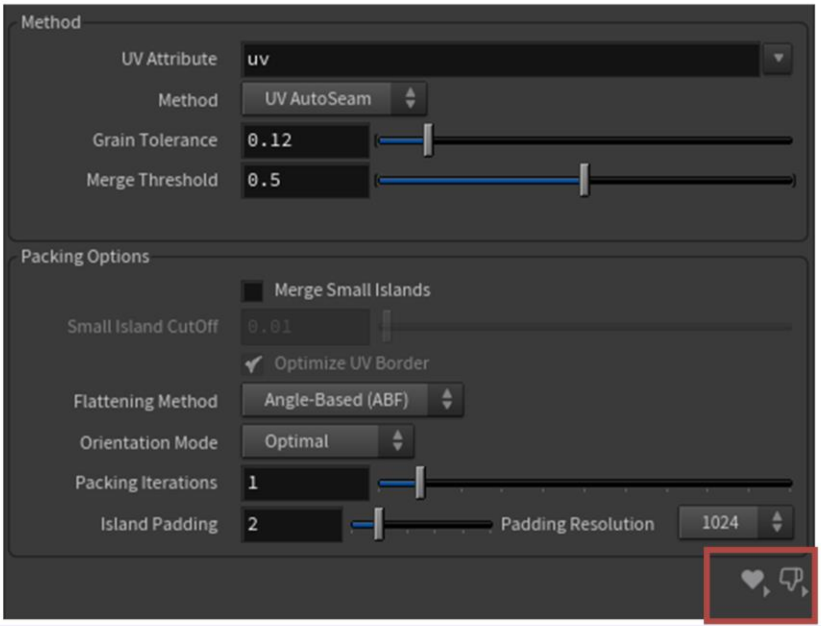
```
# track creation usage. For more info, including how to disable t
# https://www.sidefx.com/legal/houdini-anonymous-usage-statistics

try:
    import gamedevutils
    gamedevutils.send_on_create_analytics(kwargs["node"])
except:
    pass
```



```
def send_on_create_analytics(node):
    if can_send_anonymous_stats():
        track_event("Node Created", str(node.type().name()), str(node.type().definition().version()))
```

Other Uses

Like/Dislike



Method

UV Attribute: uv

Method: UV AutoSeam

Grain Tolerance: 0.12

Merge Threshold: 0.5

Packing Options

□ Merge Small Islands

Small Island CutOff: 0.01

✓ Optimize UV Border

Flattening Method: Angle-Based (ABF)

Orientation Mode: Optimal

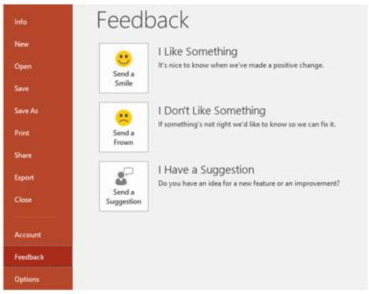
Packing Iterations: 1

Island Padding: 2

Padding Resolution: 1024

Other Uses

Like/Dislike

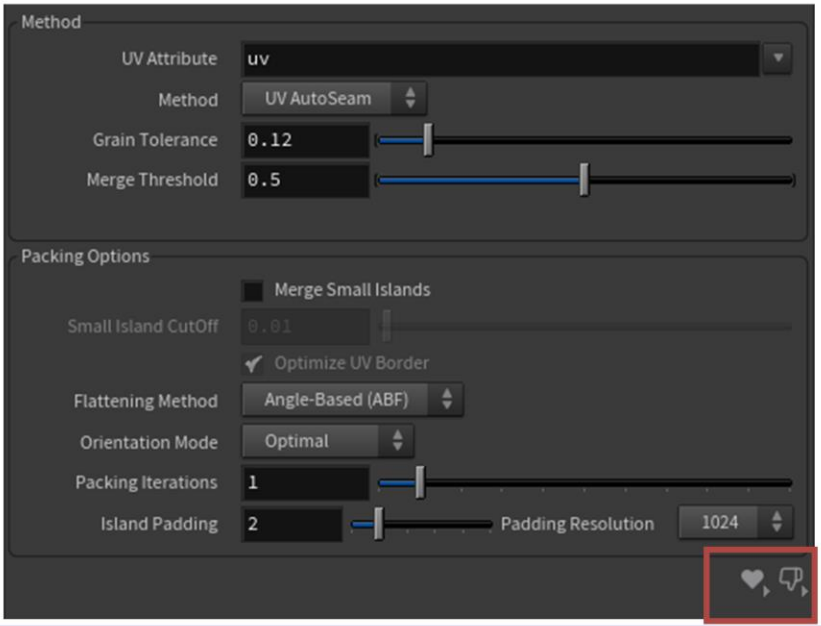


Feedback

I Like Something
It's nice to know when we've made a positive change.

I Don't Like Something
If something's not right we'd like to know so we can fix it.

I Have a Suggestion
Do you have an idea for a new feature or an improvement?



Method

UV Attribute: uv

Method: UV AutoSeam

Grain Tolerance: 0.12

Merge Threshold: 0.5

Packing Options

□ Merge Small Islands

Small Island CutOff: 0.01

✓ Optimize UV Border

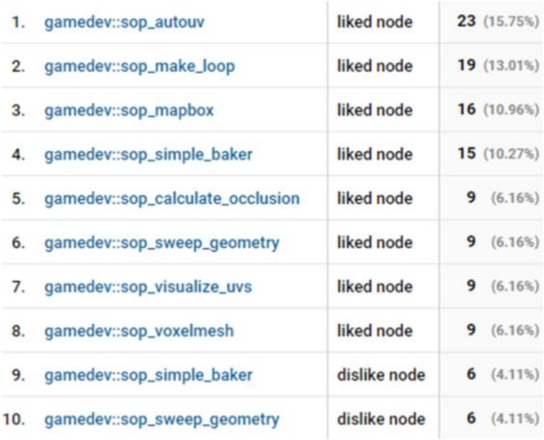
Flattening Method: Angle-Based (ABF)

Orientation Mode: Optimal

Packing Iterations: 1

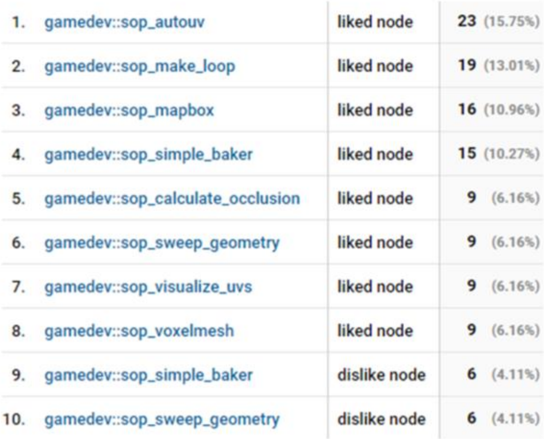
Island Padding: 2 Padding Resolution: 1024

Like/Dislike Data



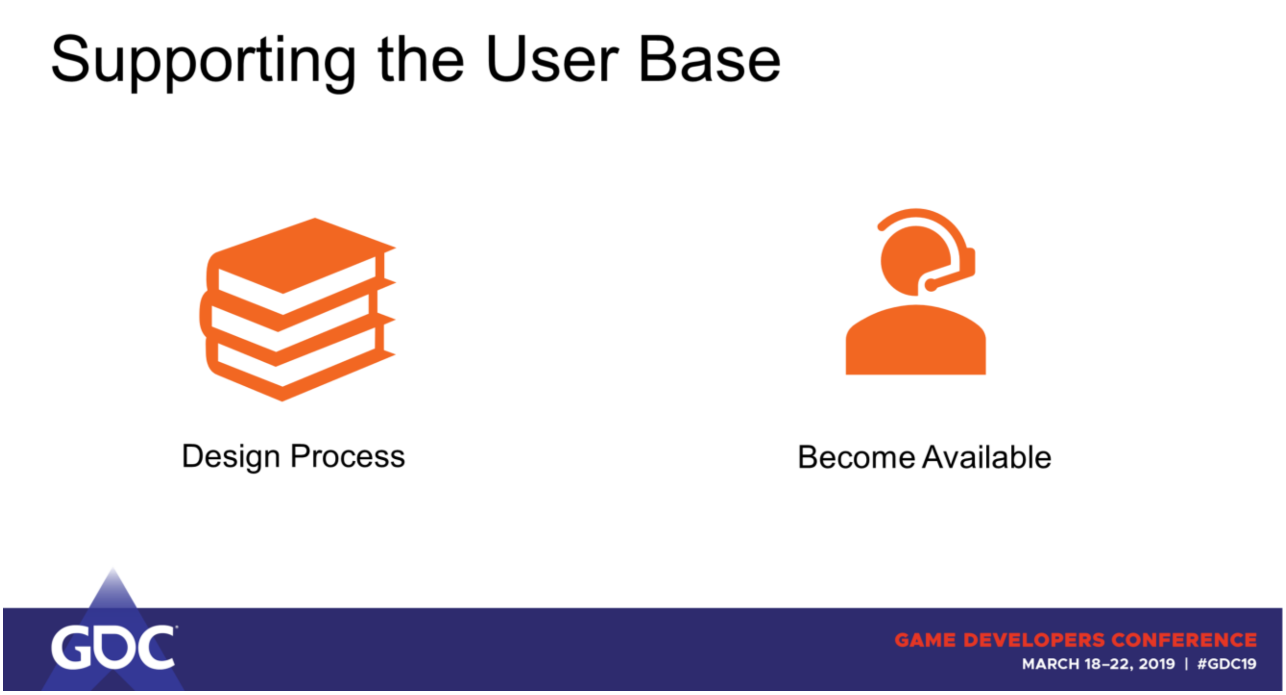
1.	gamedev::sop_autouv	liked node	23 (15.75%)
2.	gamedev::sop_make_loop	liked node	19 (13.01%)
3.	gamedev::sop_mapbox	liked node	16 (10.96%)
4.	gamedev::sop_simple_baker	liked node	15 (10.27%)
5.	gamedev::sop_calculate_occlusion	liked node	9 (6.16%)
6.	gamedev::sop_sweep_geometry	liked node	9 (6.16%)
7.	gamedev::sop_visualize_uvs	liked node	9 (6.16%)
8.	gamedev::sop_voxelmesh	liked node	9 (6.16%)
9.	gamedev::sop_simple_baker	dislike node	6 (4.11%)
10.	gamedev::sop_sweep_geometry	dislike node	6 (4.11%)

Like/Dislike Data



1.	gamedev::sop_autouv	liked node	23 (15.75%)
2.	gamedev::sop_make_loop	liked node	19 (13.01%)
3.	gamedev::sop_mapbox	liked node	16 (10.96%)
4.	gamedev::sop_simple_baker	liked node	15 (10.27%)
5.	gamedev::sop_calculate_occlusion	liked node	9 (6.16%)
6.	gamedev::sop_sweep_geometry	liked node	9 (6.16%)
7.	gamedev::sop_visualize_uvs	liked node	9 (6.16%)
8.	gamedev::sop_voxelmesh	liked node	9 (6.16%)
9.	gamedev::sop_simple_baker	dislike node	6 (4.11%)
10.	gamedev::sop_sweep_geometry	dislike node	6 (4.11%)

How do you keep 3k users engaged?



Supporting the User Base

Design Process

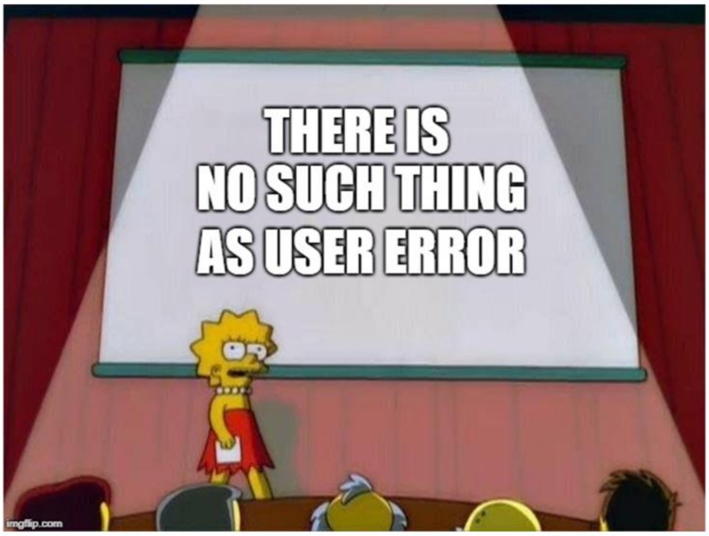
Become Available

Trust

Users will ask for help once (+- 3) , then stop using or suffer in silence

Supporting them when they come to you

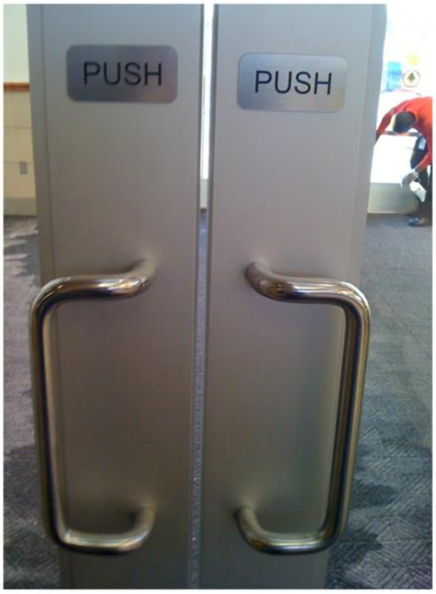
Physical Separation


THERE IS
NO SUCH THING
AS USER ERROR
imgflip.com

UX

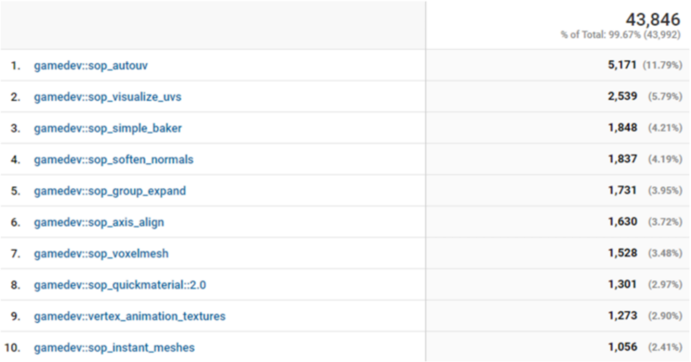
Am I doing this wrong or is the tool poorly designed?

If you have to ask,
the tool is poorly designed.



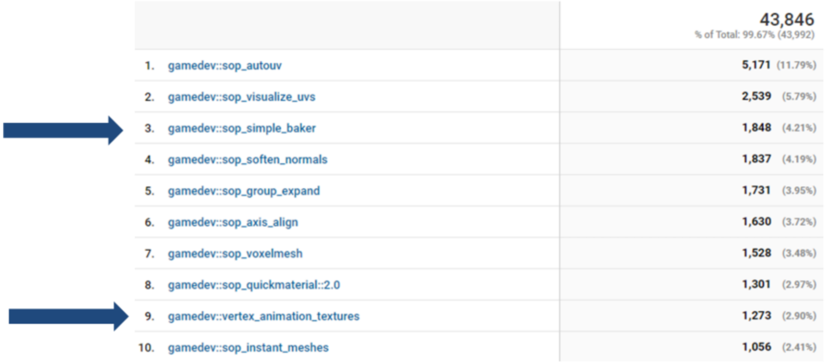
You only need to support the tools that break

Fragile Tools



		43,846 % of Total: 99.67% (43,992)
1.	gamedev::sop_autouv	5,171 (11.79%)
2.	gamedev::sop_visualize_uvs	2,539 (5.79%)
3.	gamedev::sop_simple_baker	1,848 (4.21%)
4.	gamedev::sop_soften_normals	1,837 (4.19%)
5.	gamedev::sop_group_expand	1,731 (3.95%)
6.	gamedev::sop_axis_align	1,630 (3.72%)
7.	gamedev::sop_voxelmesh	1,528 (3.48%)
8.	gamedev::sop_quickmaterial::2.0	1,301 (2.97%)
9.	gamedev::vertex_animation_textures	1,273 (2.90%)
10.	gamedev::sop_instant_meshes	1,056 (2.41%)

Fragile Tools



		43,846 % of Total: 99.67% (43,992)
1.	gamedev::sop_autouv	5,171 (11.79%)
2.	gamedev::sop_visualize_uvs	2,539 (5.79%)
3.	gamedev::sop_simple_baker	1,848 (4.21%)
4.	gamedev::sop_soften_normals	1,837 (4.19%)
5.	gamedev::sop_group_expand	1,731 (3.95%)
6.	gamedev::sop_axis_align	1,630 (3.72%)
7.	gamedev::sop_voxelmesh	1,528 (3.48%)
8.	gamedev::sop_quickmaterial::2.0	1,301 (2.97%)
9.	gamedev::vertex_animation_textures	1,273 (2.90%)
10.	gamedev::sop_instant_meshes	1,056 (2.41%)

Fixing The Tools > Fire Fighting

Work Around It

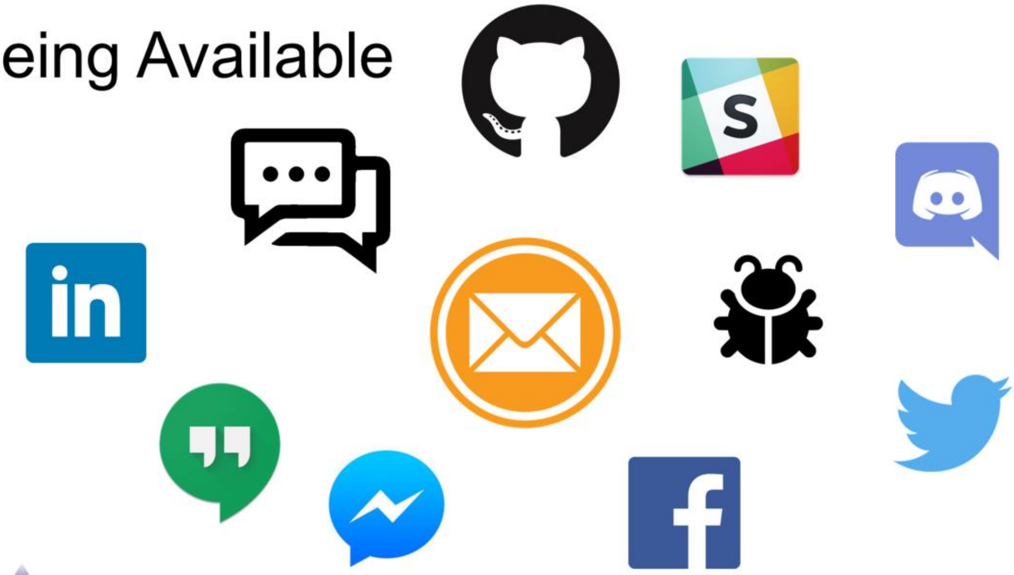
Wrapper Tools

Start Over

Being Available

✉

Being Available



If you're hearing it from your canaries, there's probably around 10x people running into the same issue and eating it.

Robot Canaries

Knowing things are broken
as quickly as possible.
Ideally before anyone hits the users.

Automation

Unit/Smoke Tests

Unit Test

Smoke/Pre Flight Test

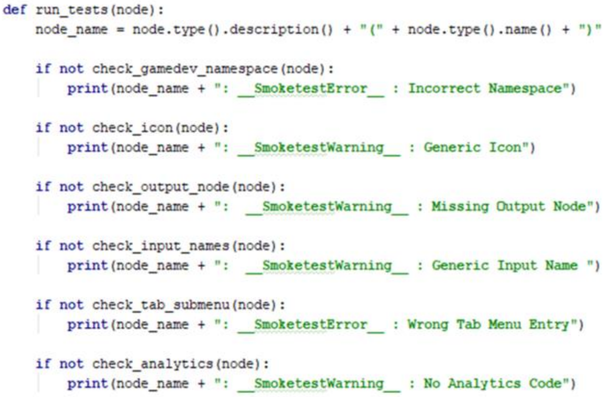
Regression Test

SmokeTests at SideFX Games

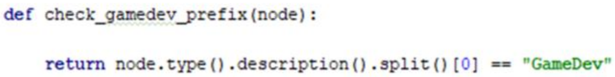
Namespace
Tool Name contains “GameDev”
Tab Menu
Analytics Code
Non Default Icon
Input Names
Output Node

ToolTips
Help

SmokeTests at SideFX Games



```python
def run_tests(node):
    node_name = node.type().description() + "(" + node.type().name() + ")"

    if not check_gamedev_namespace(node):
        print(node_name + ": __SmoketestError__ : Incorrect Namespace")

    if not check_icon(node):
        print(node_name + ": __SmoketestWarning__ : Generic Icon")

    if not check_output_node(node):
        print(node_name + ":  __SmoketestWarning__ : Missing Output Node")

    if not check_input_names(node):
        print(node_name + ":  __SmoketestWarning__ : Generic Input Name ")

    if not check_tab_submenu(node):
        print(node_name + ": __SmoketestError__ : Wrong Tab Menu Entry")

    if not check_analytics(node):
        print(node_name + ": __SmoketestWarning__ : No Analytics Code")
```



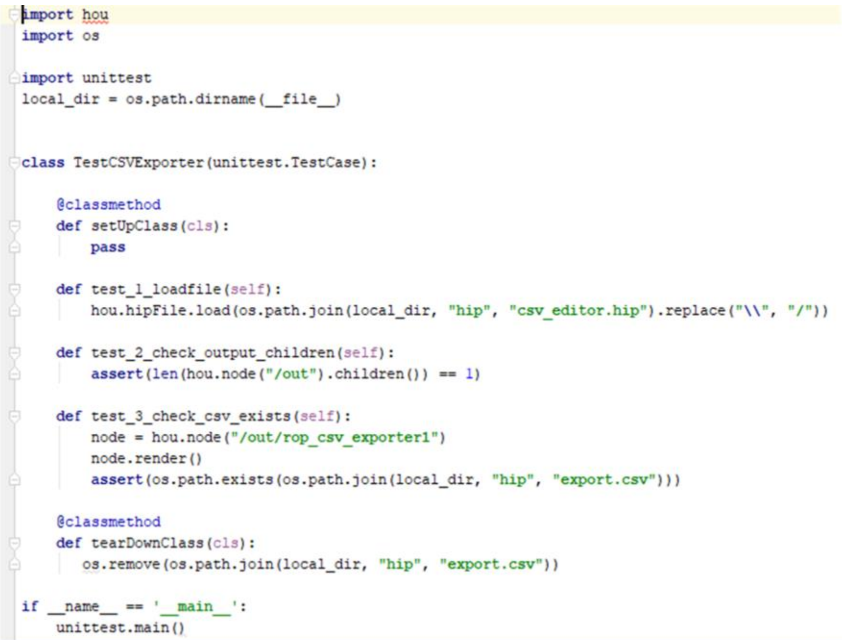
```python
def check_gamedev_prefix(node):

    return node.type().description().split()[0] == "GameDev"
```

Regression Tests at SideFX Games

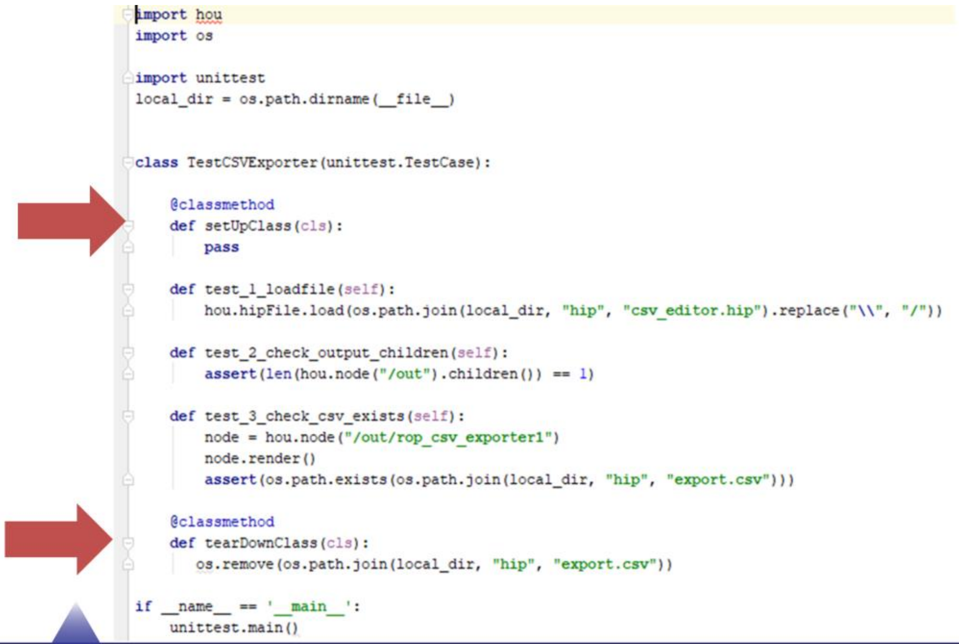
Drop a Node without errors

Example Files open without errors

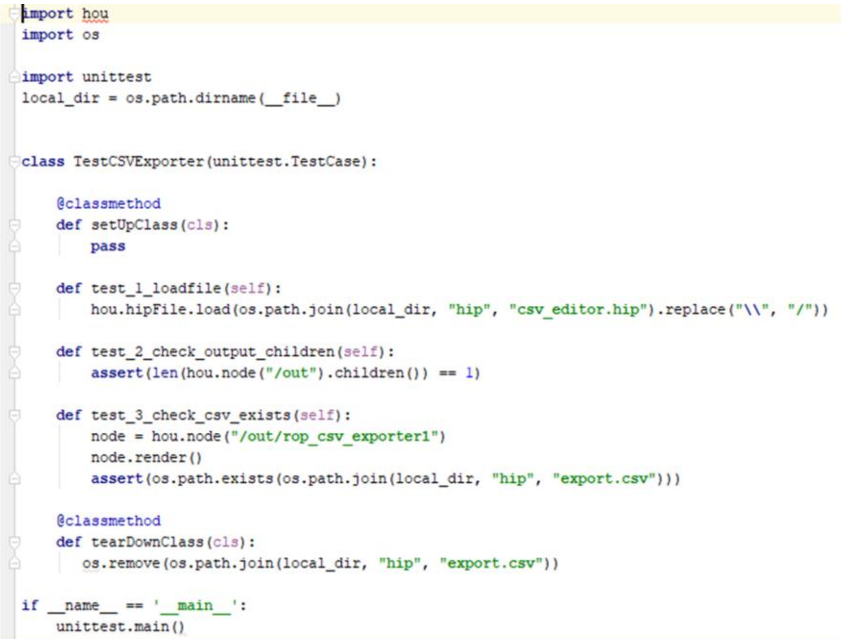
Check Output and Compare against Known Good



```python
import hou
import os

import unittest
local_dir = os.path.dirname(__file__)


class TestCSVExporter(unittest.TestCase):

    @classmethod
    def setUpClass(cls):
        pass

    def test_1_loadfile(self):
        hou.hipFile.load(os.path.join(local_dir, "hip", "csv_editor.hip").replace("\\", "/"))

    def test_2_check_output_children(self):
        assert(len(hou.node("/out").children()) == 1)

    def test_3_check_csv_exists(self):
        node = hou.node("/out/rop_csv_exporter1")
        node.render()
        assert(os.path.exists(os.path.join(local_dir, "hip", "export.csv")))

    @classmethod
    def tearDownClass(cls):
        os.remove(os.path.join(local_dir, "hip", "export.csv"))

if __name__ == '__main__':
    unittest.main()
```



```python
import hou
import os

import unittest
local_dir = os.path.dirname(__file__)


class TestCSVExporter(unittest.TestCase):

    @classmethod
    def setUpClass(cls):
        pass

    def test_1_loadfile(self):
        hou.hipFile.load(os.path.join(local_dir, "hip", "csv_editor.hip").replace("\\", "/"))

    def test_2_check_output_children(self):
        assert(len(hou.node("/out").children()) == 1)

    def test_3_check_csv_exists(self):
        node = hou.node("/out/rop_csv_exporter1")
        node.render()
        assert(os.path.exists(os.path.join(local_dir, "hip", "export.csv")))

    @classmethod
    def tearDownClass(cls):
       os.remove(os.path.join(local_dir, "hip", "export.csv"))

if __name__ == '__main__':
    unittest.main()
```

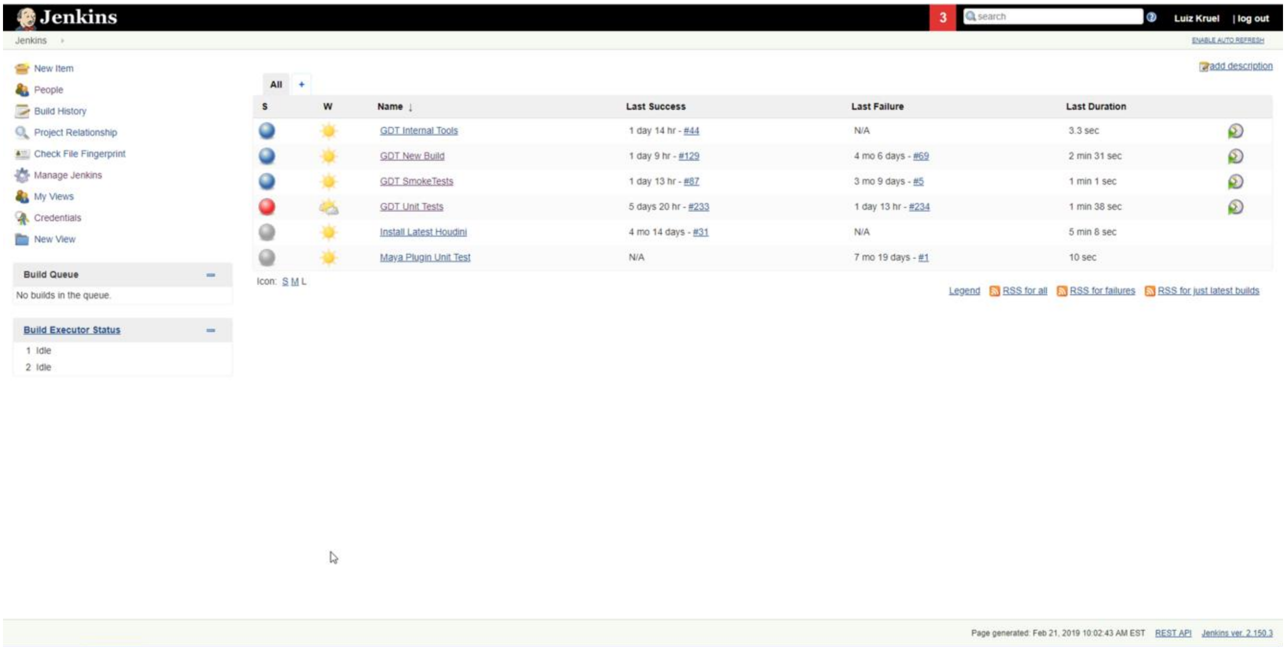


```python
import hou
import os

import unittest
local_dir = os.path.dirname(__file__)


class TestCSVExporter(unittest.TestCase):

    @classmethod
    def setUpClass(cls):
        pass

    def test_1_loadfile(self):
        hou.hipFile.load(os.path.join(local_dir, "hip", "csv_editor.hip").replace("\\", "/"))

    def test_2_check_output_children(self):
        assert(len(hou.node("/out").children()) == 1)

    def test_3_check_csv_exists(self):
        node = hou.node("/out/rop_csv_exporter1")
        node.render()
        assert(os.path.exists(os.path.join(local_dir, "hip", "export.csv")))

    @classmethod
    def tearDownClass(cls):
       os.remove(os.path.join(local_dir, "hip", "export.csv"))

if __name__ == '__main__':
    unittest.main()
```

How to Automate it

How to Automate it

How to Automate it



Build Queue

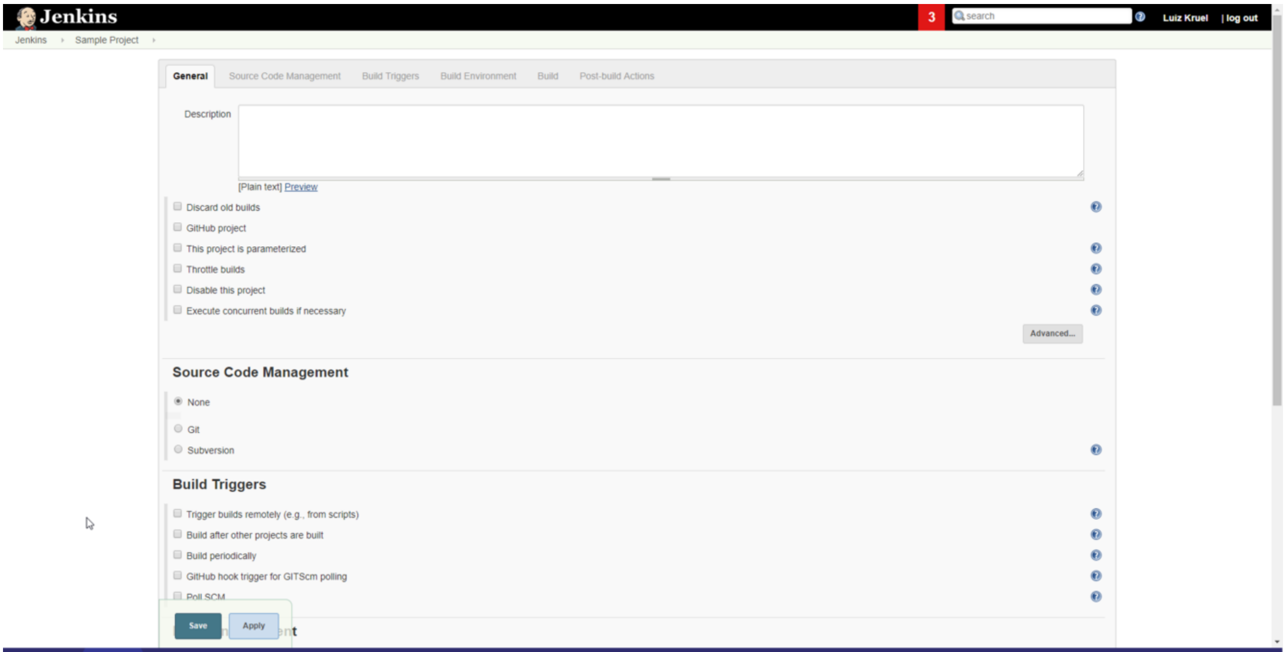
No builds in the queue.

Build Executor Status

1 Idle
2 Idle

S	W	Name ↓	Last Success	Last Failure	Last Duration	
🔵	☀	GDT Internal Tools	1 day 14 hr - #44	N/A	3.3 sec	⟳
🔵	☀	GDT New Build	1 day 9 hr - #129	4 mo 6 days - #69	2 min 31 sec	⟳
🔵	☀	GDT SmokeTests	1 day 13 hr - #87	3 mo 9 days - #5	1 min 1 sec	⟳
🔴	⛅	GDT Unit Tests	5 days 20 hr - #233	1 day 13 hr - #234	1 min 38 sec	⟳
⚪	☀	Install Latest Houdini	4 mo 14 days - #31	N/A	5 min 8 sec	
⚪	☀	Maya Plugin Unit Test	N/A	7 mo 19 days - #1	10 sec	

Page generated: Feb 21, 2019 10:02:43 AM EST REST API Jenkins ver. 2.150.3



Jenkins 3 search Luiz Kruel | log out

Jenkins › Sample Project ›

General | Source Code Management | Build Triggers | Build Environment | Build | Post-build Actions

Description

[Plain text] Preview

- □ Discard old builds
- □ GitHub project
- □ This project is parameterized
- □ Throttle builds
- □ Disable this project
- □ Execute concurrent builds if necessary

Source Code Management

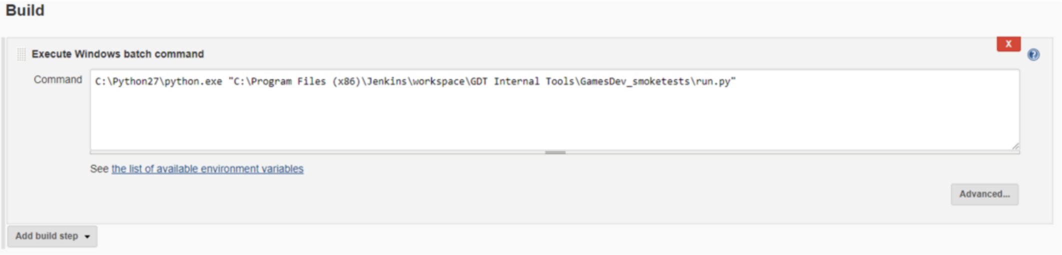
- ● None
- ○ Git
- ○ Subversion

Build Triggers

- □ Trigger builds remotely (e.g., from scripts)
- □ Build after other projects are built
- □ Build periodically
- □ GitHub hook trigger for GITScm polling
- □ Poll SCM

Setup a Jenkins Job

Build Command Line



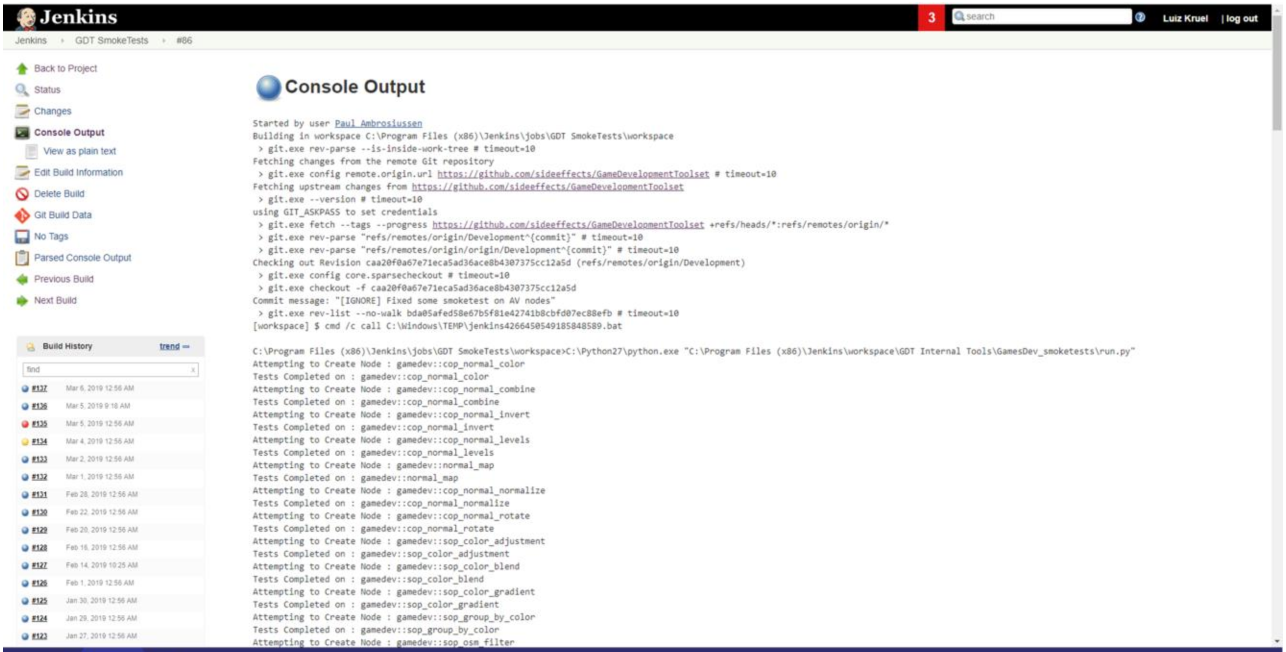
Build

Execute Windows batch command

Command

```
C:\Python27\python.exe "C:\Program Files (x86)\Jenkins\workspace\GDT Internal Tools\GamesDev_smoketests\run.py"
```

See the list of available environment variables



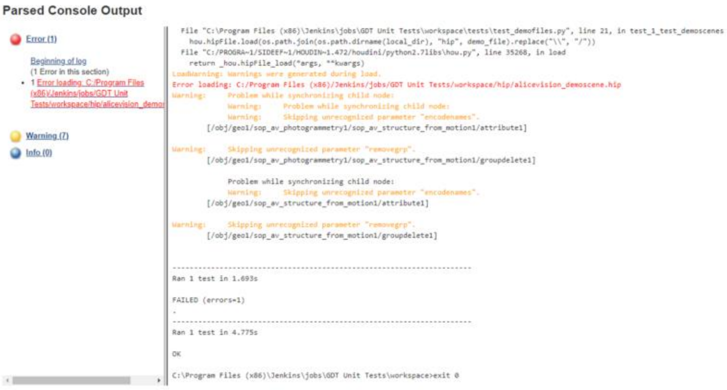
#137	Mar 6, 2019 12:56 AM
#136	Mar 5, 2019 9:18 AM
#135	Mar 5, 2019 12:56 AM
#134	Mar 4, 2019 12:56 AM
#133	Mar 2, 2019 12:56 AM
#132	Mar 1, 2019 12:56 AM
#131	Feb 28, 2019 12:56 AM
#130	Feb 22, 2019 12:56 AM
#129	Feb 20, 2019 12:56 AM
#128	Feb 16, 2019 12:56 AM
#127	Feb 14, 2019 10:25 AM
#126	Feb 1, 2019 12:56 AM
#125	Jan 30, 2019 12:56 AM
#124	Jan 29, 2019 12:56 AM
#123	Jan 27, 2019 12:56 AM

Console Output

```
Started by user Paul Ambrosiussen
Building in workspace C:\Program Files (x86)\Jenkins\jobs\GDT SmokeTests\workspace
 > git.exe rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
 > git.exe config remote.origin.url https://github.com/sideeffects/GameDevelopmentToolset # timeout=10
Fetching upstream changes from https://github.com/sideeffects/GameDevelopmentToolset
 > git.exe --version # timeout=10
using GIT_ASKPASS to set credentials
 > git.exe fetch --tags --progress https://github.com/sideeffects/GameDevelopmentToolset +refs/heads/*:refs/remotes/origin/*
 > git.exe rev-parse "refs/remotes/origin/Development^{commit}" # timeout=10
 > git.exe rev-parse "refs/remotes/origin/origin/Development^{commit}" # timeout=10
Checking out Revision caa20f0a67e71eca5ad36ace8b4307375cc12a5d (refs/remotes/origin/Development)
 > git.exe config core.sparsecheckout # timeout=10
 > git.exe checkout -f caa20f0a67e71eca5ad36ace8b4307375cc12a5d
Commit message: "[IGNORE] Fixed some smoketest on AV nodes"
 > git.exe rev-list --no-walk bda05afed58e67b5f81e42741b8cbfd07ec88efb # timeout=10
[workspace] $ cmd /c call C:\Windows\TEMP\jenkins4266450549185848589.bat

C:\Program Files (x86)\Jenkins\jobs\GDT SmokeTests\workspace>C:\Python27\python.exe "C:\Program Files (x86)\Jenkins\workspace\GDT Internal Tools\GamesDev_smoketests\run.py"
Attempting to Create Node : gamedev::cop_normal_color
Tests Completed on : gamedev::cop_normal_color
Attempting to Create Node : gamedev::cop_normal_combine
Tests Completed on : gamedev::cop_normal_combine
Attempting to Create Node : gamedev::cop_normal_invert
Tests Completed on : gamedev::cop_normal_invert
Attempting to Create Node : gamedev::cop_normal_levels
Tests Completed on : gamedev::cop_normal_levels
Attempting to Create Node : gamedev::normal_map
Tests Completed on : gamedev::normal_map
Attempting to Create Node : gamedev::cop_normal_normalize
Tests Completed on : gamedev::cop_normal_normalize
Attempting to Create Node : gamedev::cop_normal_rotate
Tests Completed on : gamedev::cop_normal_rotate
Attempting to Create Node : gamedev::sop_color_adjustment
Tests Completed on : gamedev::sop_color_adjustment
Attempting to Create Node : gamedev::sop_color_blend
Tests Completed on : gamedev::sop_color_blend
Attempting to Create Node : gamedev::sop_color_gradient
Tests Completed on : gamedev::sop_color_gradient
Attempting to Create Node : gamedev::sop_group_by_color
Tests Completed on : gamedev::sop_group_by_color
Attempting to Create Node : gamedev::sop_osm_filter
```

Additional Setup

- Parsed Console Logs
- Mail Notifications
- Graphs



Parsed Console Output

● Error (1)

Beginning of log
(1 Error in this section)
- 1 Error loading: C:/Program Files (x86)/Jenkins/jobs/GDT Unit Tests/workspace/hip/alicevision_demo

● Warning (7)

● Info (0)

```
  File "C:\Program Files (x86)\Jenkins\jobs\GDT Unit Tests\workspace\tests\test_demofiles.py", line 21, in test_1_test_demoscenes
    hou.hipFile.load(os.path.join(os.path.dirname(local_dir), "hip", demo_file).replace("\\", "/"))
  File "C:/PROGRA~1/SIDEEF~1/HOUDIN~1.472/houdini/python2.7libs\hou.py", line 35268, in load
    return _hou.hipFile_load(*args, **kwargs)
LoadWarning: Warnings were generated during load.
Error loading: C:/Program Files (x86)/Jenkins/jobs/GDT Unit Tests/workspace/hip/alicevision_demoscene.hip
Warning:     Problem while synchronizing child node:
             Warning:     Problem while synchronizing child node:
             Warning:     Skipping unrecognized parameter "encodenames".
        [/obj/geo1/sop_av_photogrammetry1/sop_av_structure_from_motion1/attribute1]

Warning:     Skipping unrecognized parameter "removegrp".
        [/obj/geo1/sop_av_photogrammetry1/sop_av_structure_from_motion1/groupdelete1]

             Problem while synchronizing child node:
             Warning:     Skipping unrecognized parameter "encodenames".
        [/obj/geo1/sop_av_structure_from_motion1/attribute1]

Warning:     Skipping unrecognized parameter "removegrp".
        [/obj/geo1/sop_av_structure_from_motion1/groupdelete1]


----------------------------------------------------------------------
Ran 1 test in 1.693s

FAILED (errors=1)
.
----------------------------------------------------------------------
Ran 1 test in 4.775s

OK

C:\Program Files (x86)\Jenkins\jobs\GDT Unit Tests\workspace>exit 0
```

Recap

- Get the tools to your Users Reliably
- Collect Metrics to prioritize your efforts
- Make your tools as intuitive as possible
- Automate the grunt work

Thanks!

luiz@sidefx.com
@luizkruel