

The Art of Not Reinventing the Wheel

in **LEAGUE OF LEGENDS** *WILD RIFT* Asset Pipeline

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Technical Art Director, Riot Games

About Me

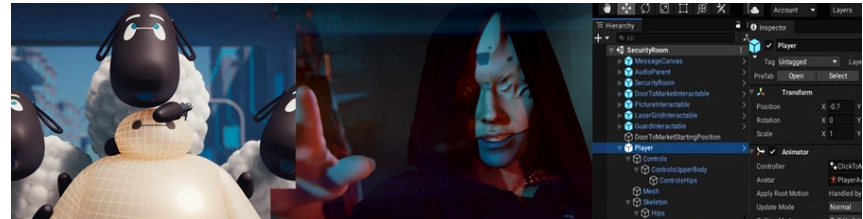
Disney Interactive

- Disney Infinity 2 & 3
- Unpublished titles



Unity Technologies

- ADAM
- Baymax Dreams
- 2019.3 New interface



Riot Games

- League of Legends: Wild Rift



LEAGUE^{OF} LEGENDS *Wild Rift*



Problem ?

Asset Tracking !

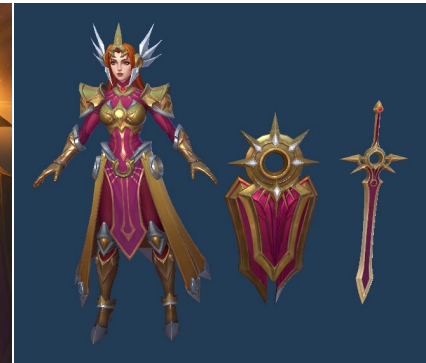
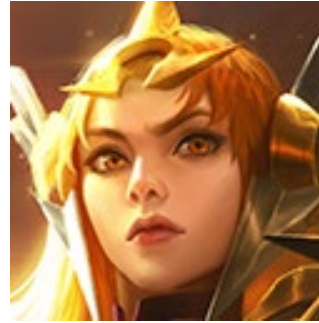




Champion Assets

Champion Asset - Leona

- Icon
- Splash Art
- In Game model
- Turntable model



ABILITIES

ULT



3



2



1



SHIELD OF DAYBREAK

EMPOWER NEXT ATTACK, STUN TARGET

P



ABILITIES

ULT



3



2



ECLIPSE

GAIN ARMOR AND MAGIC RESIST

1



P



ABILITIES

ULT



3



ZENITH BLADE
DEAL DAMAGE IN A LINE

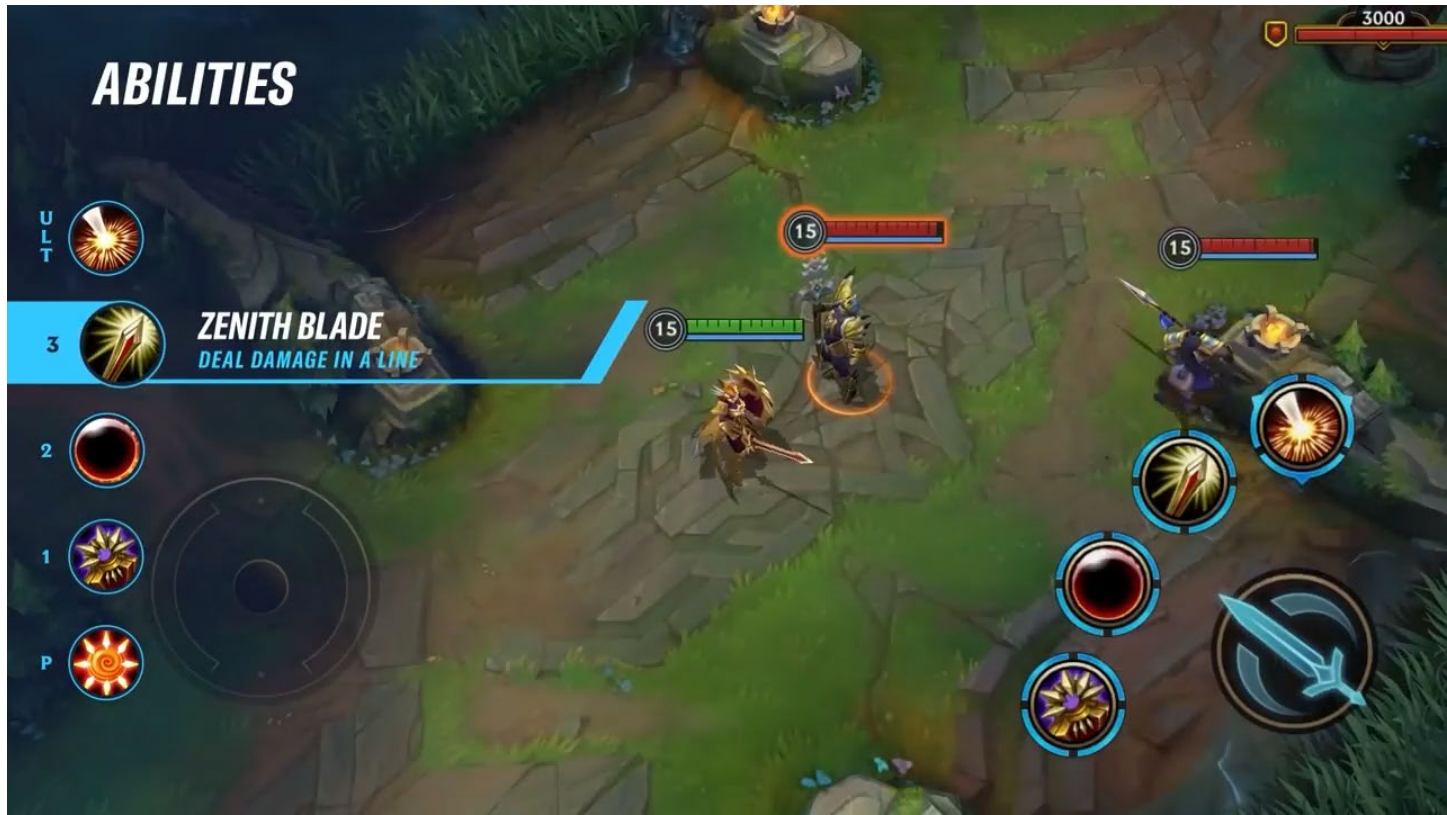
2



1



P



ABILITIES

ULT



SOLAR FLARE

CALL BEAM OF LIGHT TO DAMAGE AND SLOW

3



2



1

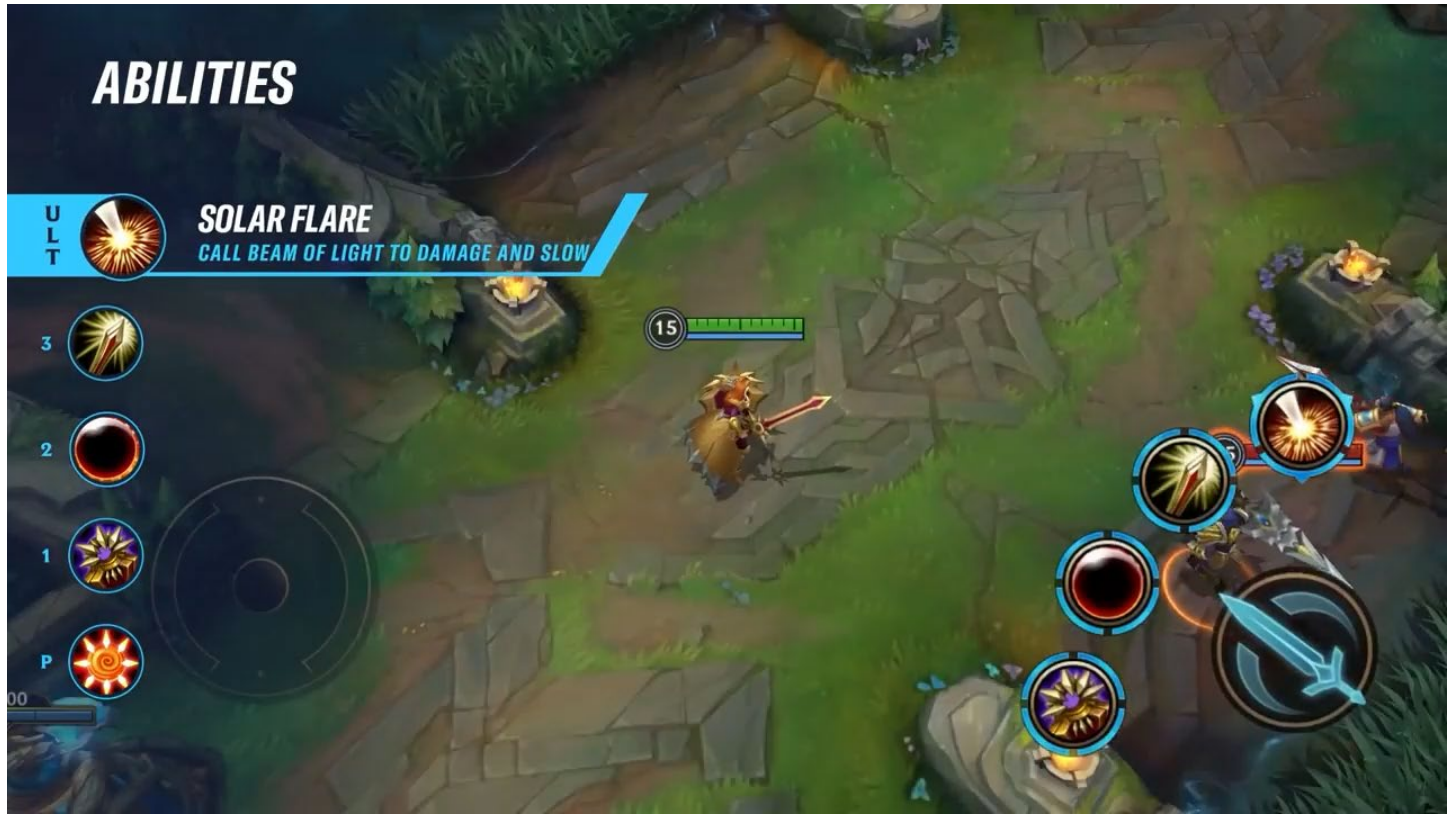
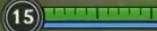


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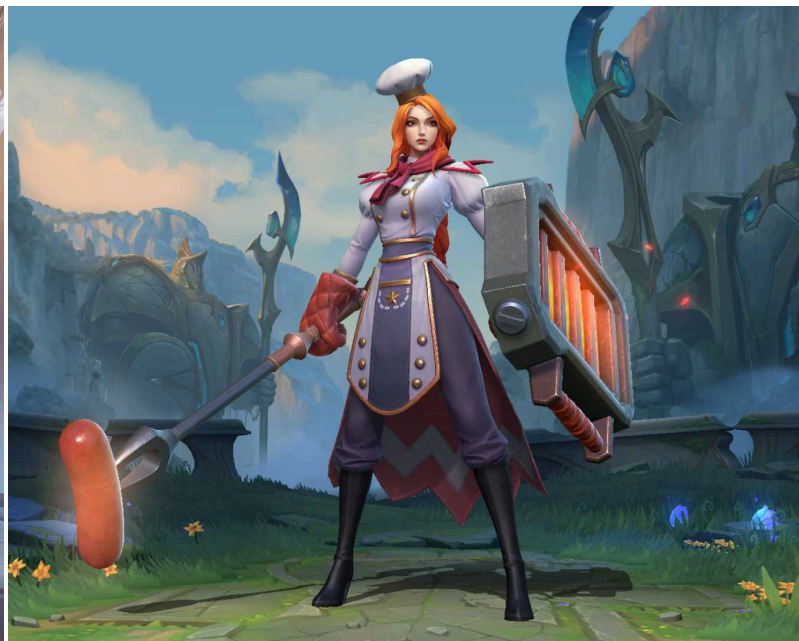
15



Leona Champion Skin



Base



Skin

Champion Asset Hierarchy

CHAMP	ABILITY1	ABILITY2	ABILITY3	ABILITY4	PASSIVE	...
BASE	anim/ vfx	anim/ vfx	anim/ vfx	anim/ vfx	anim	
SKIN1				anim/ vfx		
SKIN2		anim/ vfx	anim/ vfx	anim/ vfx	anim	
SKIN3	anim/ vfx	anim/ vfx	anim/ vfx	anim/ vfx	anim	
SKIN...						

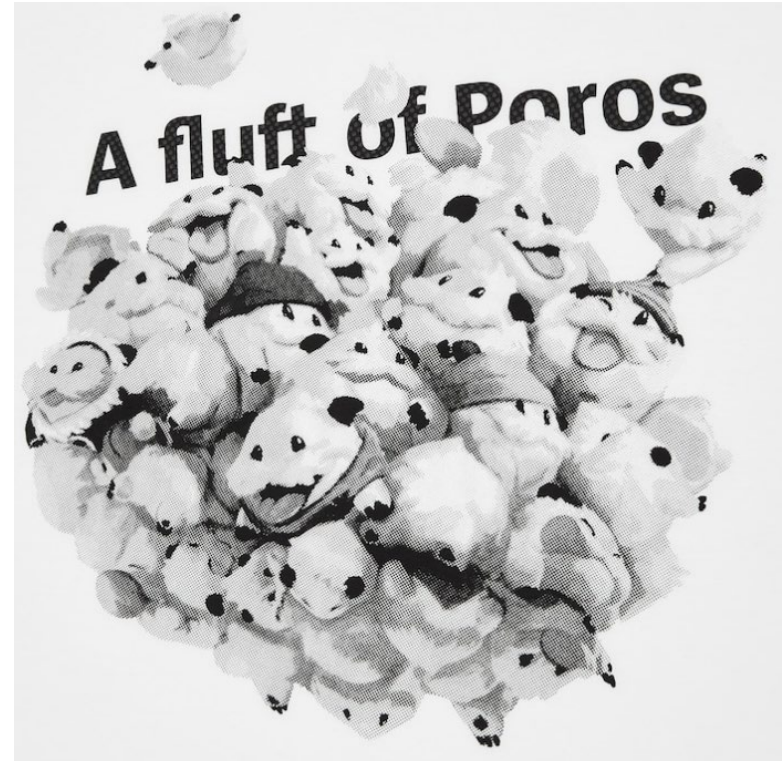
Champion Asset Dependencies



Expanded Scope

Small R&D to Global Live Mobile Game

- Asset scaled up rapidly
- Team scaled up rapidly





“Can I get the Ahri model?”

“Which one?”



“The latest”

“I mean do you want an in game or turntable”



“Ah, the turntable”

“Got it, just the base skin right?”



“Oh, actually I need the K/DA skin”



“Ok but which one? **OG** **K/DA** or **NEW** **K/DA All Out?**”

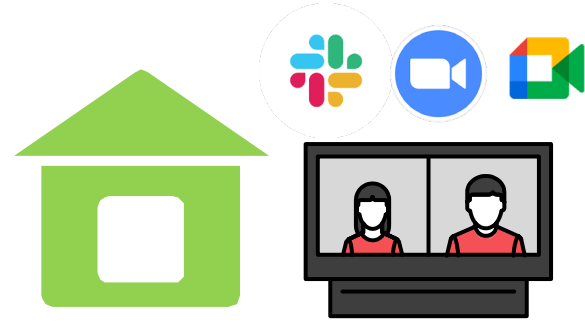
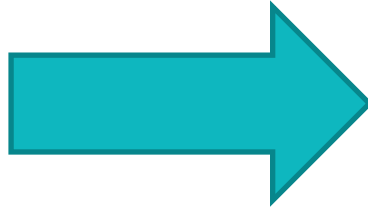


WFH Communication

POD to WFH



Small POD of 10 people



Slack & Google Meet/ Zoom

Summary of Problems

- Complicated asset hierarchy
- Team scaled up rapidly
- WFH

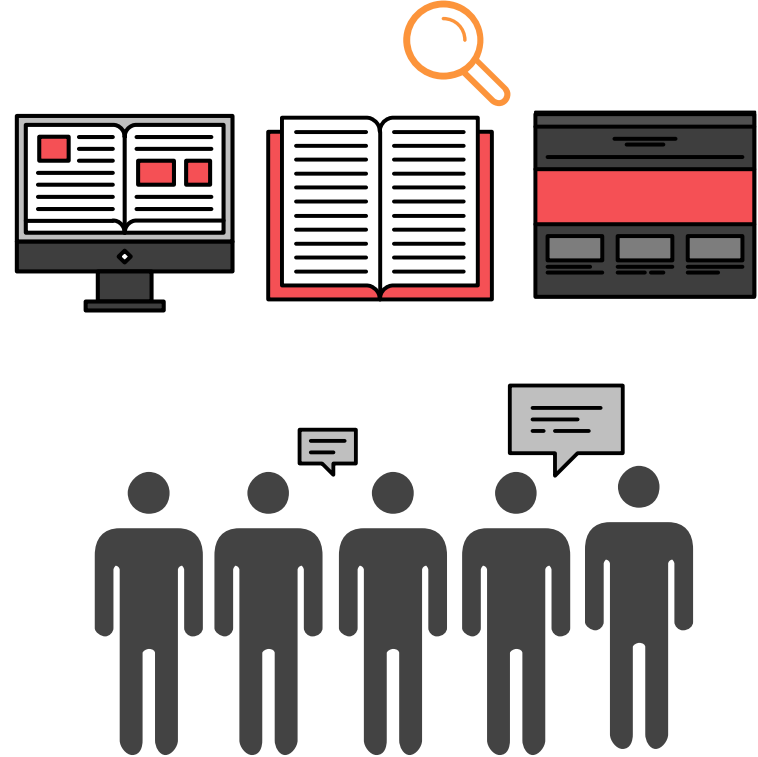
Tracking state of asset is a huge pain!



Goal & Restriction

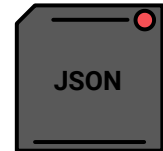
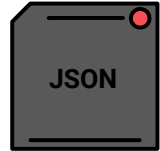
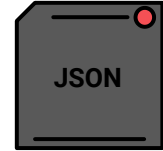
Discovery – Survey Existing Tech

- Documentation
- Communication with SME/ Lead



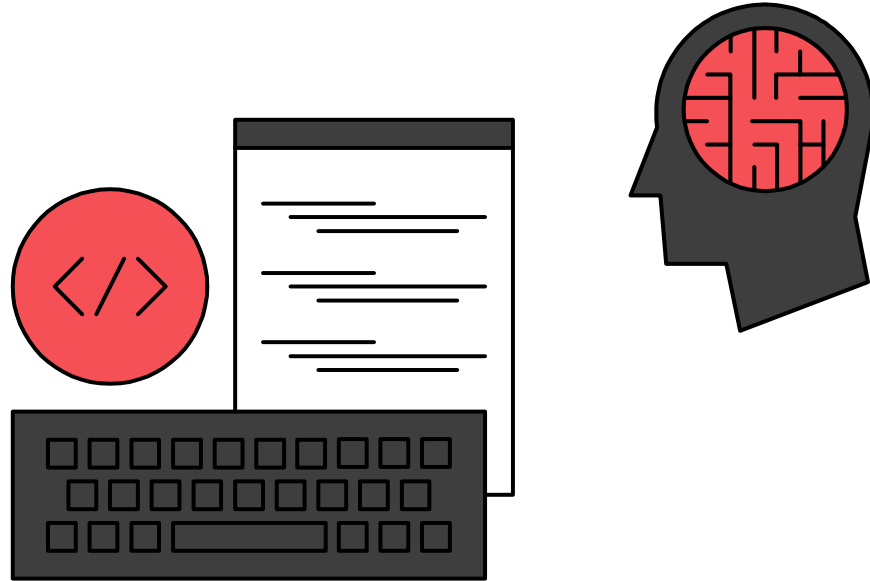
Discovery – Game Logic

- Control character animation & VFX
- Serialized in .json



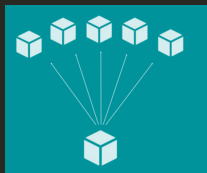
Discovery – Game Logic

- Document + individual
- Code



Discovery – Unity Asset System

```
YAML 1.1
%TAG !u! tags:unity3d.com, 2011:
--- !u1 80160132901264248964
GameObject:
  m_ObjectHideFlags: 0
  m_CorrespondingSourceObject: {fileID: 0}
  m_PrefabInstance: {fileID: 0}
  m_PrefabAsset: {fileID: 0}
  serializedVersion: 6
  m_Component:
  - component: {fileID: 6731287241648438541}
  - component: {fileID: 1309050250983793141}
  - component: {fileID: 924176348399381372}
  - component: {fileID: 5419655764292646249}
  m_Layer: 0
  m_Name: Leona
  m_TagString: Untagged
  m_Icon: {fileID: 0}
  m_NavMeshLayer: 0
  m_StaticEditorFlags: 0
  m_IsActive: 1
--- !u14 86731287241648438541
Transform:
  m_ObjectHideFlags: 0
  m_CorrespondingSourceObject: {fileID: 0}
  m_PrefabInstance: {fileID: 0}
  m_PrefabAsset: {fileID: 0}
  m_GameObject: {fileID: 9160132901264248964}
  m_LocalRotation: {x: 0, y: 0.17364816, z: 0, w: 0.9848078}
  m_LocalPosition: {x: 0, y: 1.5, z: 0}
  m_LocalScale: {x: 1, y: 1, z: 1}
  m_Children: []
  m_Father: {fileID: 0}
  m_RootOrder: 0
  m_LocalEulerAnglesHint: {x: 0, y: 20, z: 0}
--- !u133 81309050250983793141
MeshFilter:
  m_ObjectHideFlags: 0
  m_CorrespondingSourceObject: {fileID: 0}
  m_PrefabInstance: {fileID: 0}
  m_PrefabAsset: {fileID: 0}
  m_GameObject: {fileID: 9160132901264248964}
  m_Mesh: {fileID: 10202, guid: 0000000000000000e000000000000000, type: 0}
--- !u123 8924176348399381372
```



Prefab

```
fileFormatVersion: 2
guid: 8f0565f23a2b58541a475bd3c1393052
ModelImporter:
  serializedVersion: 23
  fileIDToRecycleName:
    100000: Leona_Root
    100002: Leona_Hips
    100004: Leona_Spine
    100006: Leona_Head
    100008: Leona_LeftArm
    100010: Leona_LeftFoot
    100012: Leona_LeftForeArm
    100014: Leona_LeftHand
    100016: Leona_LeftHandIndex1
    100018: Leona_LeftHandIndex2
    100020: Leona_LeftHandIndex3
    100022: Leona_LeftHandIndex4
    100024: Leona_LeftHandMiddle1
    100026: Leona_LeftHandMiddle2
    100028: Leona_LeftHandMiddle3
    100030: Leona_LeftHandMiddle4
    100032: Leona_LeftHandPinky1
    100034: Leona_LeftHandPinky2
    100036: Leona_LeftHandPinky3
    100038: Leona_LeftHandPinky4
    100040: Leona_LeftHandRing1
    100042: Leona_LeftHandRing2
    100044: Leona_LeftHandRing3
    100046: Leona_LeftHandRing4
    100048: Leona_LeftHandThumb1
    100050: Leona_LeftHandThumb2
    100052: Leona_LeftHandThumb3
    100054: Leona_LeftHandThumb4
    100056: Leona_LeftLeg
    100058: Leona_LeftShoulder
    100060: Leona_LeftToeBase
    100062: Leona_LeftUpLeg
    100064: Leona_Neck
    100066: Leona_Reference
    100068: Leona_RightArm
    100070: Leona_RightFoot
    100072: Leona_RightForeArm
    100074: Leona_RightHand
```

.fbx
.fbx.meta

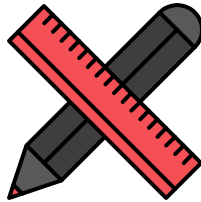
.meta

Discovery – Naming Convention

- Folder names
- Files names



- Rig: L/R/C
- Anim: IN, OUT, TRANS
- VFX: HIT, BUFF



Solution



Character Asset

CHAMP

PREFAB

3D FBX

IMAGES

CHAMP/ SKIN1

PREFAB

3D FBX

IMAGES

CHAMP/ SKILL1

PREFAB

3D FBX

IMAGES

CHAMP/ SKILL1 - SKIN2 variant

PREFAB

3D FBX

IMAGES

.meta

.json



Asset Analysis Tool

Mesh, Material, Animation, VFX of

- **Champions**
- **Skins**
- **Skills**

Example of data extracted:



Champ Name: Garen
Attack Range: Melee
Lane: Top

Champ data

Icon: Garen/UI/Headshot
Prefab: Garen/Prefab
Model: Garen/Ingame
Env: Demacia/Palace

Champ asset

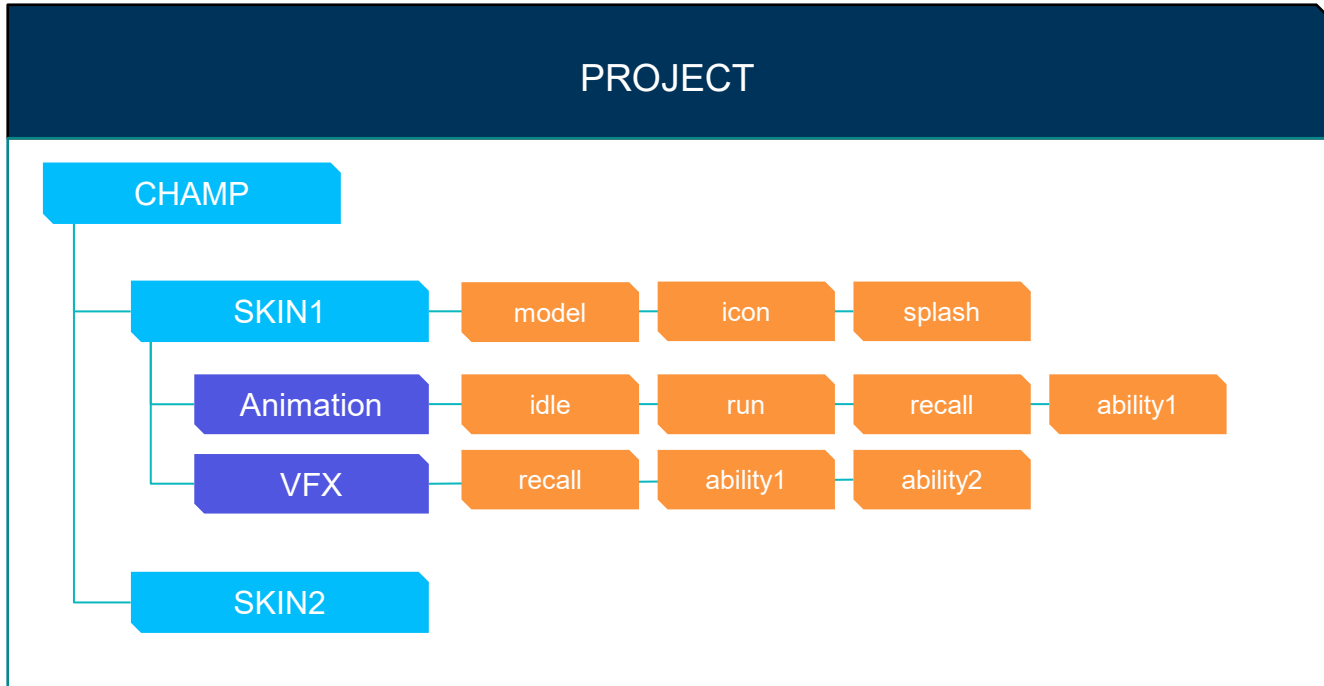
Skill 1: Decisive Strike
Anim: Garen/Skill1/Anim/q
Duration: 75 frames

Skill asset

Skin 1: Dreadknight Garen
FBX:Garen/Skin1/Ingame/FBX
Vert Count: 1125

Skin asset

Design the Solution: Asset Analysis Tool



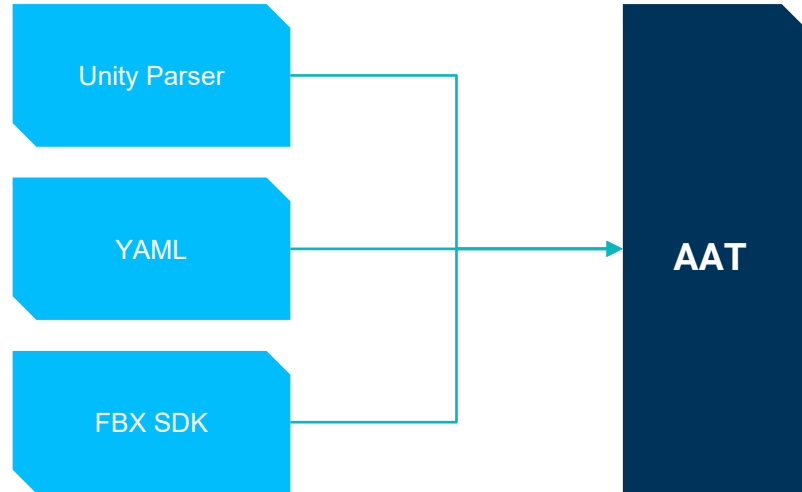
Design the Solution: API

- Easy data access point
- Flexible data formatting, manipulation

```
import aat

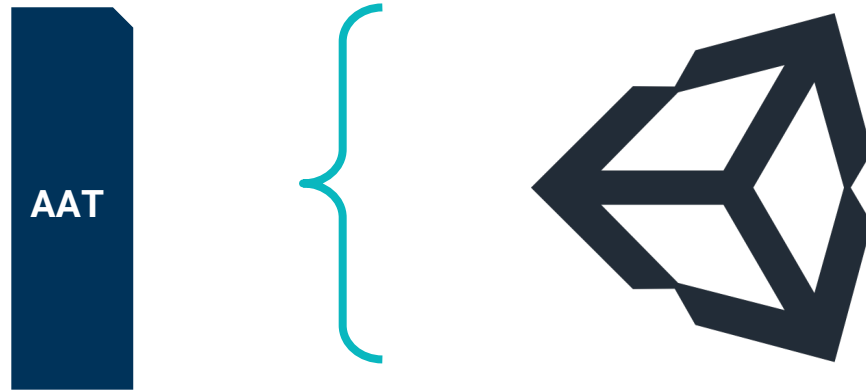
wr = aat.setup("project_depot_path")
ahri = wr.get_champ("Ahri")
ahri_skin1 = ahri.get_skin(1) # skin object
ahri_skills = ahri.get_skills() # list of skill objects
```

Design the Solution: Integration



Design the Solution: Python

- Fast - don't need to launch full project
- Standalone - no tech dependencies with actual project

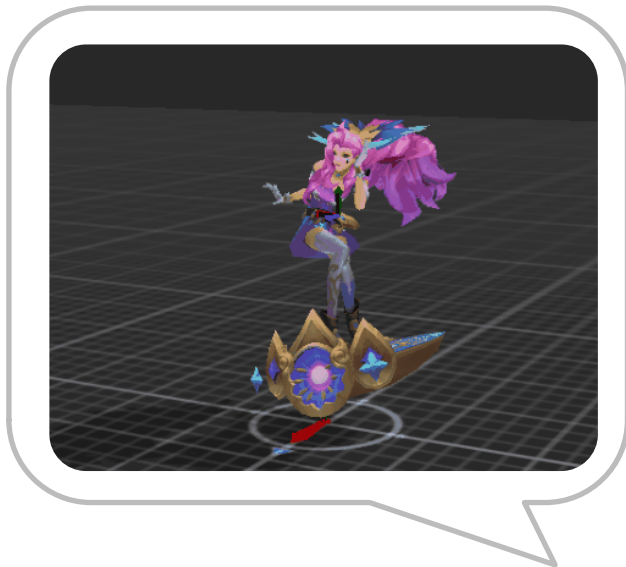


Result

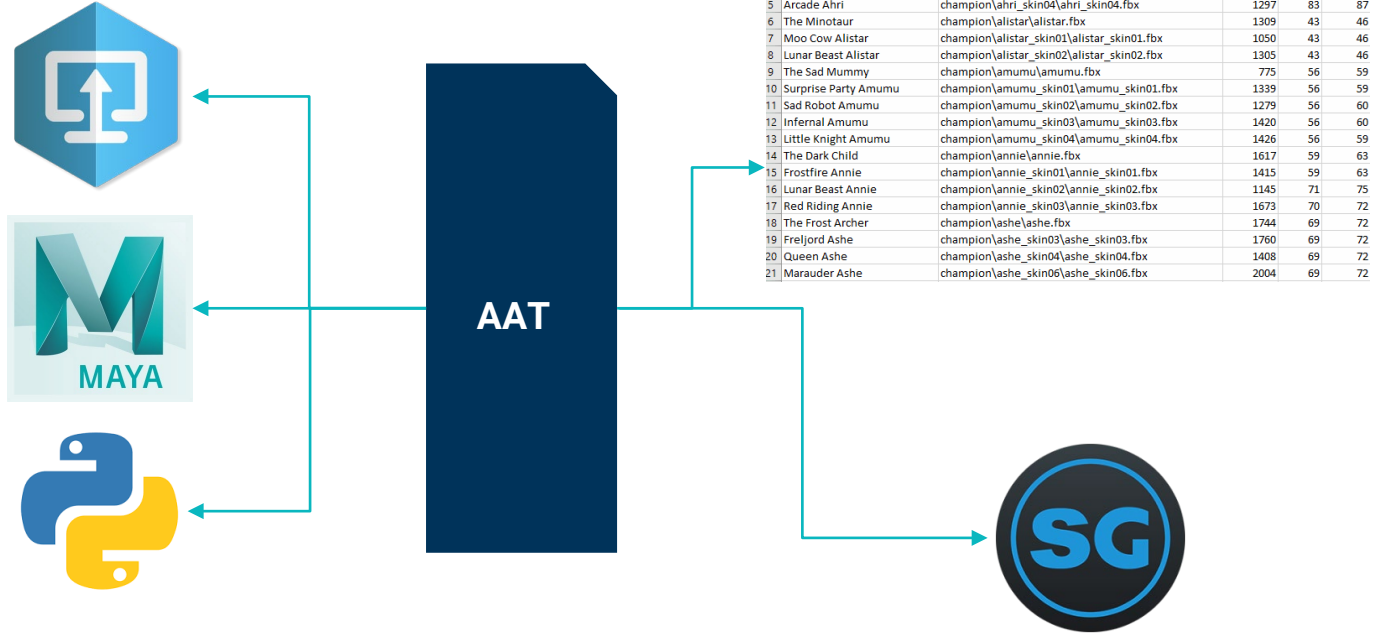
```
import aat

wr = aat.setup("project_depot_path")
all_champ = wr.get_all_champs()
for champ in all_champ:
    champ_base = champ.get_skin(0) # return skin object
    fbxstat = champ_base.ingame.get_fbx_stat() # return dict (vert count, animclips, etc)
```

Result



Result



Lesson Learned

Understand Your Playground

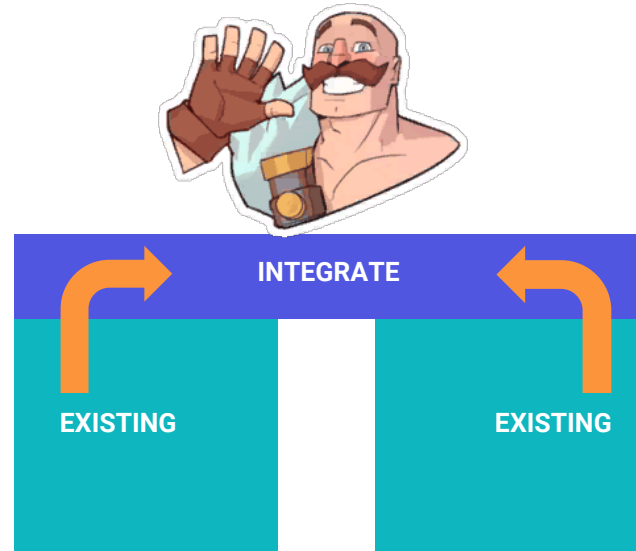
- Existing Data (ready-to-use & not)
- Existing Tools (custom & generic)



Playground during pandemic

Understand Your Playground

- Build upon foundation
- Faster, integrated
- Upfront communication cost, worth it



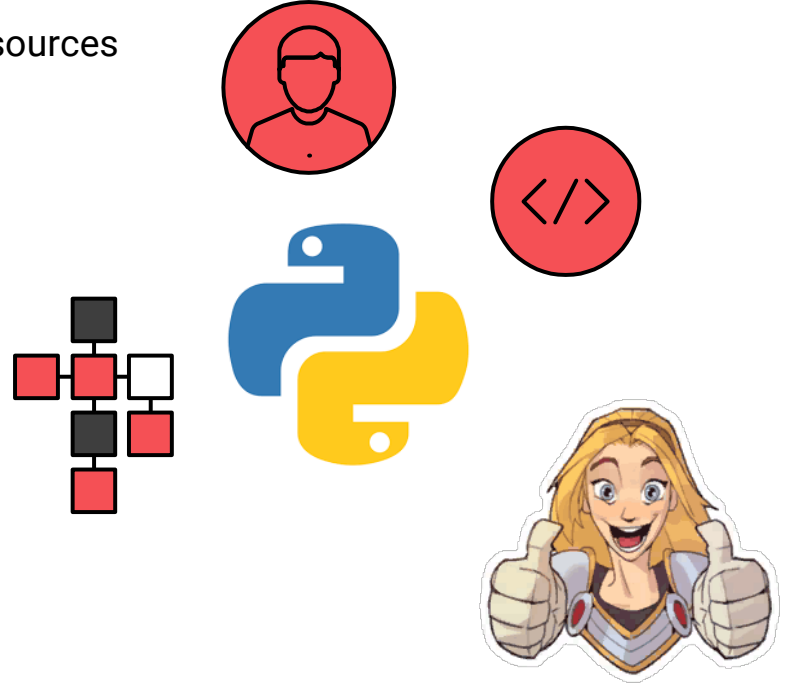
Future Proofing

- Long term supports
- Flexible, adjustment/ pivot if need to
- Minimal dependencies



Future Proofing

- Low barrier in learning curve/ more potential resources
- Publicly available support/ resources
- Less dependencies



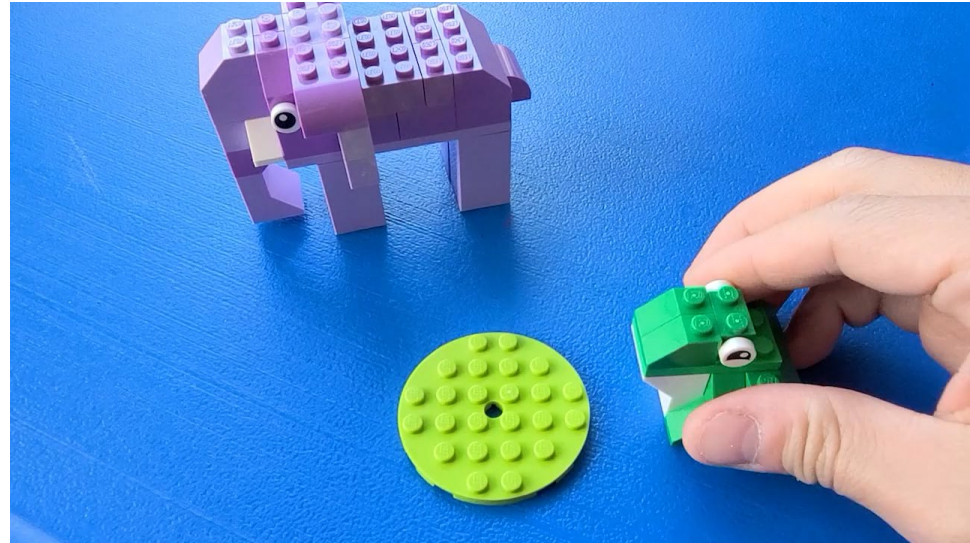
Start Small Start Fast (fail fast ?)

- Prototype – show result
- Modularize – easier to reuse, pivot
- Extension – layers



Start Small Start Fast (fail fast ?)

- Prototype – show result
- Modularize – easier to reuse, pivot
- Extension – layers



Partnership > Ownership



$$1 + 1 > 2$$



THANK YOU!

