

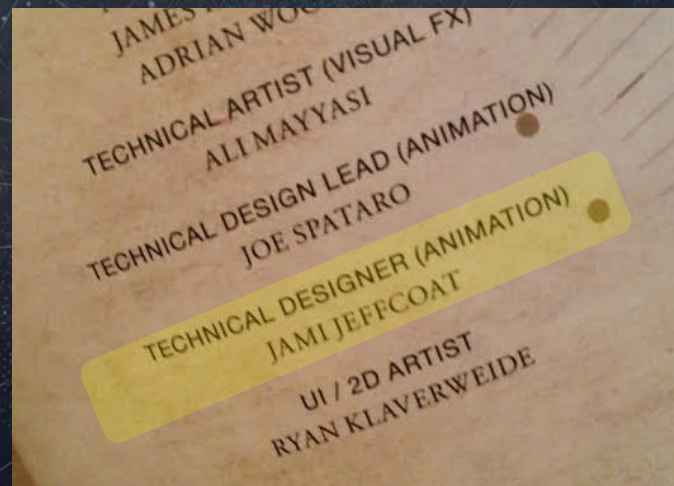


BUNGiE®

The Missing Link: Technical Designers in Animation

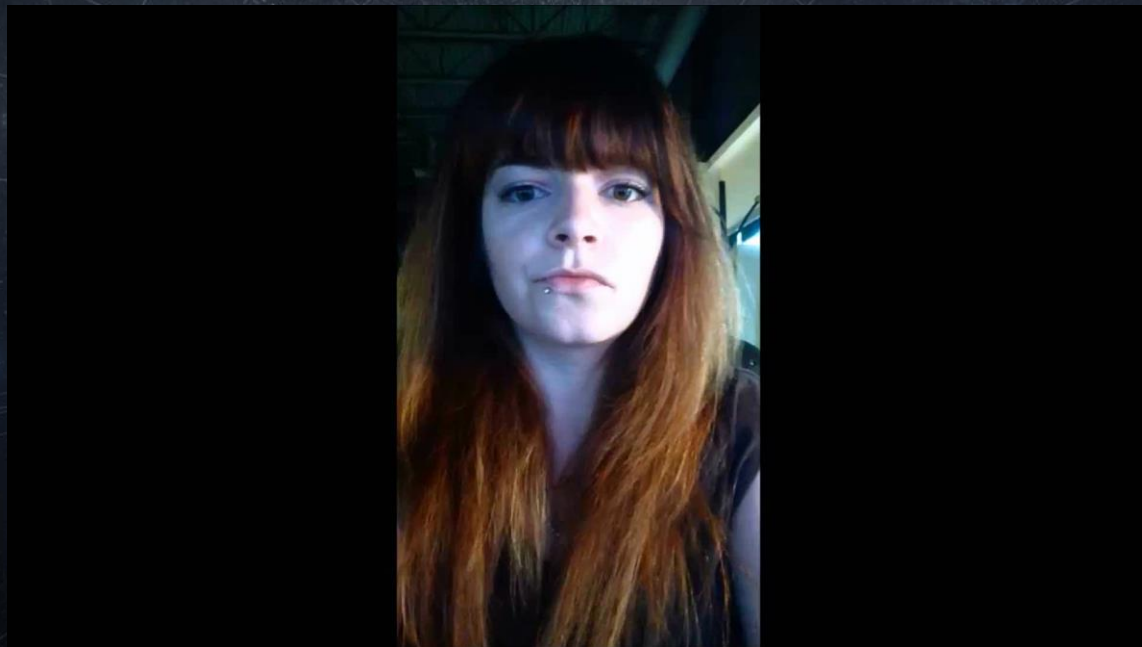
Jami Jeffcoat
Bungie, Inc.

Who Am I?



What is a Technical Designer in Animation?

LIVE DEMO



Outline

- What is your name?
- What is your quest?
- Getting across the bridge

WHAT IS YOUR NAME?

Technical Designer in Animation

=

TDiA

THE EVOLUTION OF THE ANIMATION TEAM

Looking Back

Halo 3



Rigging



Animator



Cinematic Animator



Technical Animator



Manager



Technical Designer in Animation



Animation Engineer



Producer

Looking Back

Halo 3



Rigging

Reach



Rigging

Mo-cap



Animator



Cinematic Animator



Technical Animator



Manager



Technical Designer in Animation



Animation Engineer



Producer

Looking Back

Halo 3



○ Rigging

Reach



○ Rigging

● Mo-cap



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Rigging

Reach



Rigging

 Mo-cap

Destiny



Cinematics



Spec-Ops



Animator



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Animation Engineer



Producer

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Halo 3



Rigging

Reach



Rigging

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Destiny



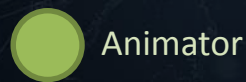
Mo-cap



Cinematics



Spec-Ops



Animator



Cinematic Animator



Technical Animator



Manager



Technical Designer in Animation



Animation Engineer



Producer

Looking Back

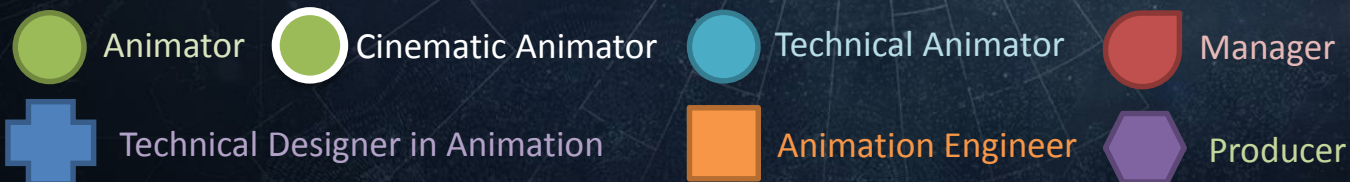
Halo 3



Reach



Destiny



TDiA in a Sentence

- A crossdisciplinary bridge between animators, designers and engineers, who works to support and build the animated world of Destiny, and sustain content requirements.



WHAT IS YOUR QUEST?



Liberate Creative People
Reduce Cost
Always Be Looking Forward



Liberate Creative People

Reduce Cost

Always Be Looking Forward

“The Creatives”

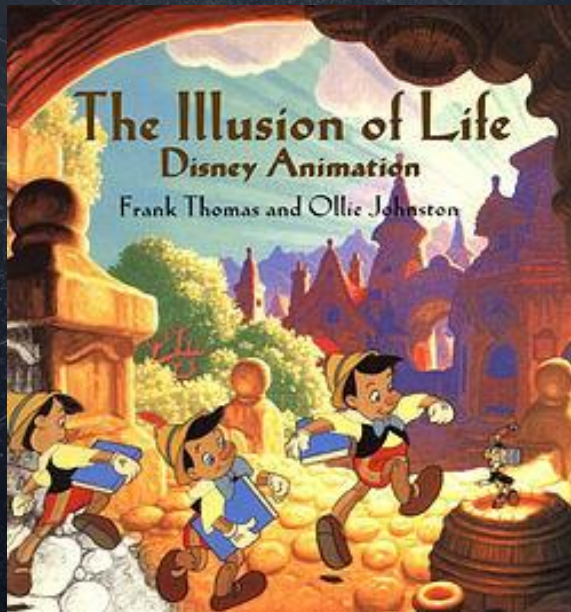


Animators



12 Principles of Animation

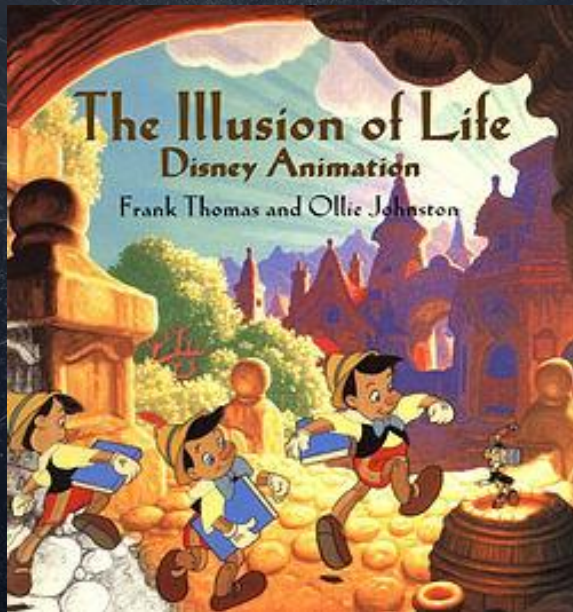
1. Timing/Spacing
2. Anticipation
3. Straight Ahead/Pose to Pose
4. Arcs
5. Follow Through and Overlapping Action
6. Staging



7. Slow Ins and Outs
8. Secondary Action
9. Exaggeration
10. Squash and Stretch
11. Solid Drawing
12. Appeal

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L i b e r a t e C r e a t i v e P e o p l e

GDC2015



D E S T I N Y 

L i b e r a t e C r e a t i v e P e o p l e

GDC2015



DESTINY





Designers

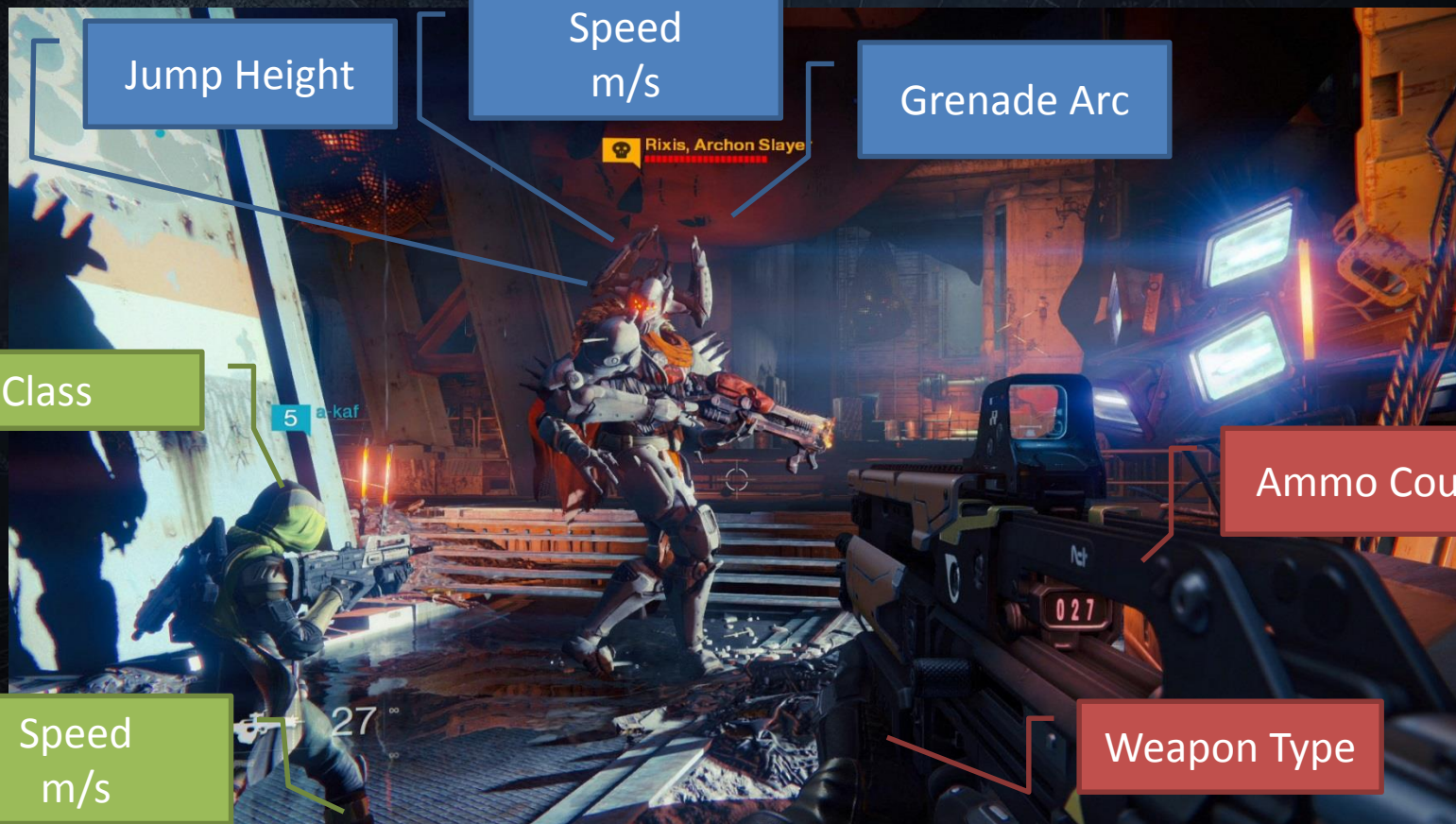


The Seven Pillars of Design

- A world player want to be in
- A bunch of fun things to do
- Reward players care about
- A new experience every night
- Shared with other people
- Enjoyable by all skill levels
- Enjoyable by the tired, impatient, and distracted

*Polygon, Michael McWhertor –
Destiny: Bungie's Brave New Worlds, February 17, 2013*







Engineers





“The Creatives”





WOO! EXAMPLES!

Creative Liberation Front

- Liberating Animators
 - Unblock animation content
 - Lift restrictions on content creation
 - Capable of editing content
 - Connecting with other departments
 - Desk-side support

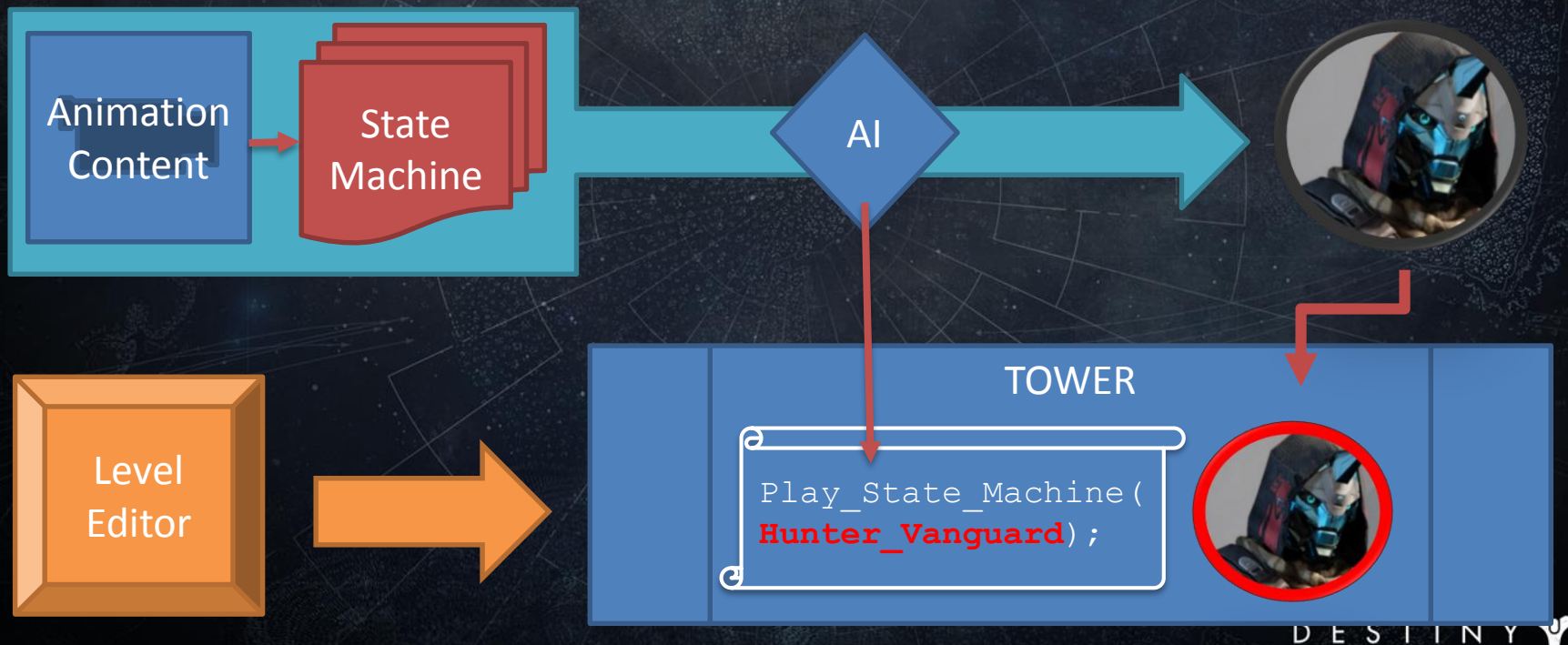


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Unblocking animators...





BUNGE

DESTINY



Creative Liberation Front

- Liberating Designers
 - Deep understanding of available systems
 - Prototype ideas to estimate workload and find missing elements
 - Use symptoms to identify unique issues/fix bugs
 - Even ourselves! – TDiA tools!

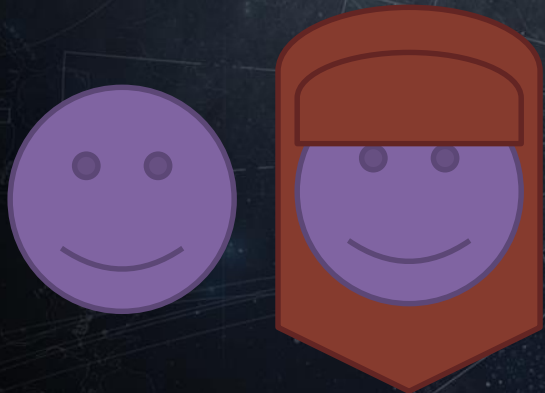


Creative Liberation Front

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Prototype ideas...



Prototype ideas...

- Where should the character be positioned in the animation?
- Where does the spawn point go in the level?
- How should the physics work?
 - Pill colliding with level geometry causes problems
 - Fallen jumps through the floor
 - How to achieve perfect alignment with environment
- NEW AI Physics setting for special cases
- Later developed even easier tools to set this up (seen in previous example)
- Now these features are used all over the game



Creative Liberation Front

- Liberating Engineers
 - Program animation features
 - Create analysis and validation tools
 - Translate import error strings to animator friendly language
 - Unblock new animation features by assisting with setup

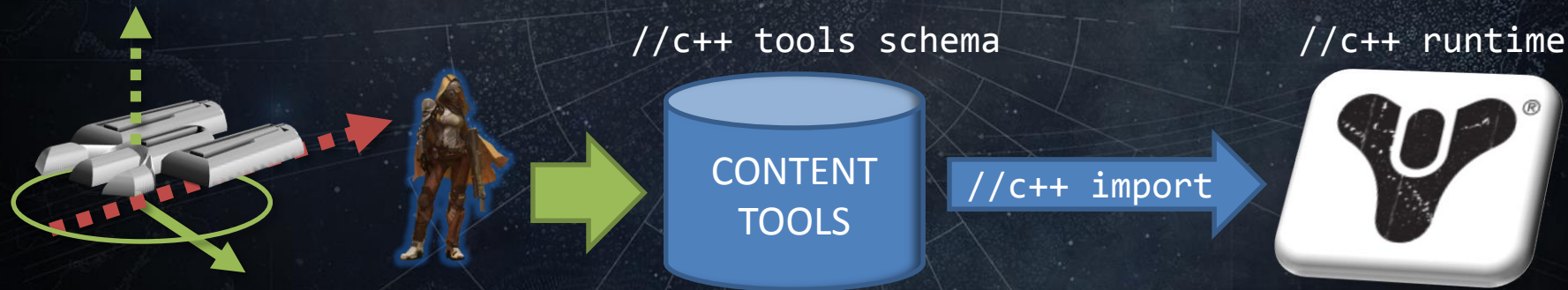


Creative Liberation Movement

- Liberating Engineers
 - Program animation features
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Program Animation Features







Pillars

Liberate Creative People

Reduce Cost

Always Be Looking Forward

Ways to Reduce Cost

- Improve Workflows
- Optimize Pipelines
- Collect animation data
- Optimize Data
- Prototype ideas quickly
 - Identify work and time requirements
- Facilitate “good” communication
 - Speed up communication by knowing which person or department to contact
 - Identify unnecessary meetings

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Reduce Cost

Improve Workflows

Ye Olde Animation Content Spec

State Machines

Use node graph ☒

State machines 9: spawn_act_base_kiosk

State machine name spawn_act_base_kiosk

Initial state 0: activity_idle

Initial state x 0

Initial state y 0

States 0: activity_idle

0: activity_idle

1: activity_exit_fast

2: combat_rifle_idle

3: non interruptible

4: use keyframed physics

5: allow weapon fire

Blend in animation frames 4

Status Labels None

Action resolution cue

Motion lookup name

Motion 82: world_rifle_alert_base_kiosk_idle

Motion pointer name storage

Transitions 0: kiosk_exit_fast

Transition name kiosk_exit_fast

Next State Selection

Which state to select next if the query below returns true.
The choices below are mutually exclusive. You can choose only one of these options.

Next state 1: activity_exit_fast

Next state machine -1: NONE

Next state machine reference -1: NONE

Next random state from set -1: NONE

Next random state machine from set -1: NONE

Override blend in time ☐

Blend in animation frames 4

Transition function

Friendly name activity_idle_to_activity_exit

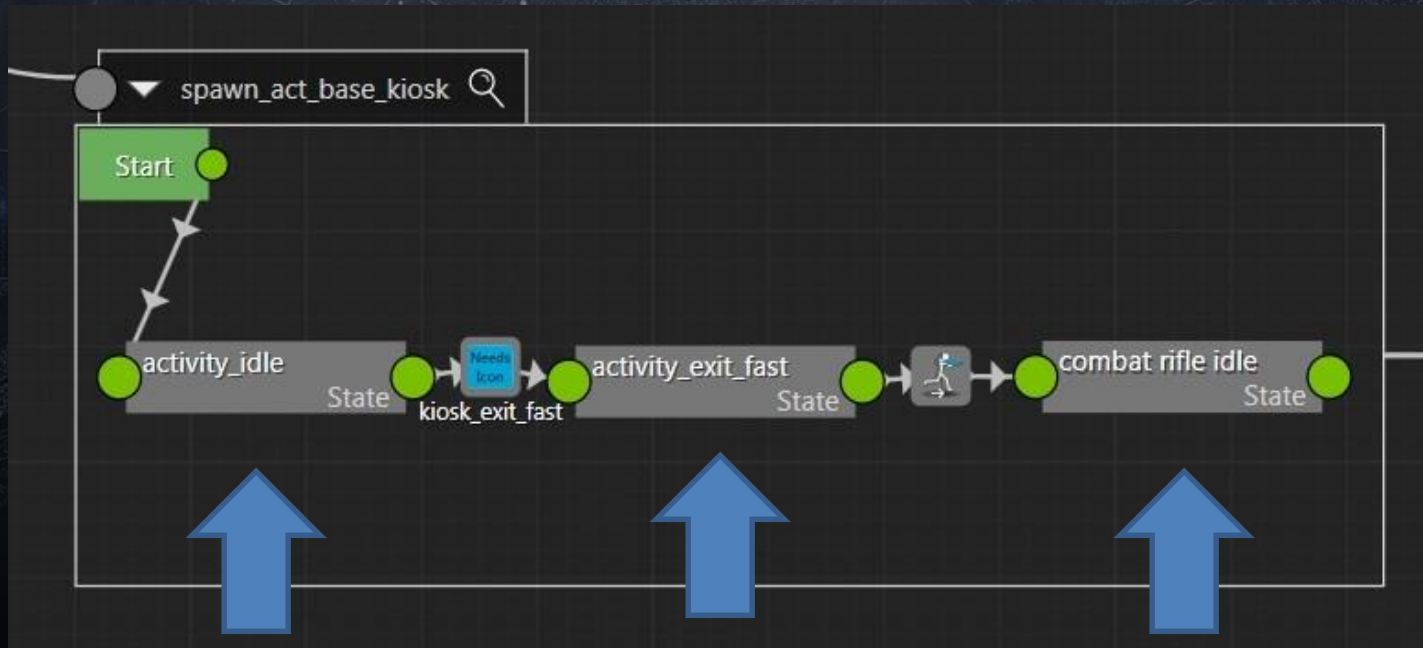
Query has status label

Status label interrupted_combat

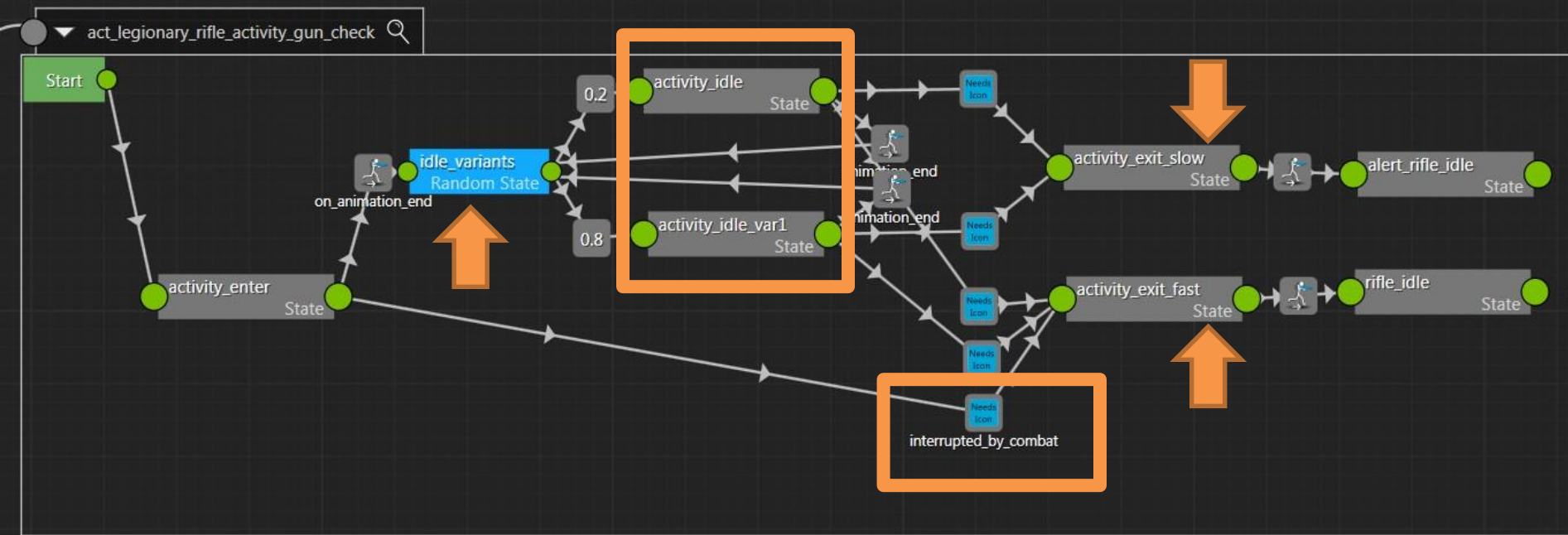
015



Improve Workflows



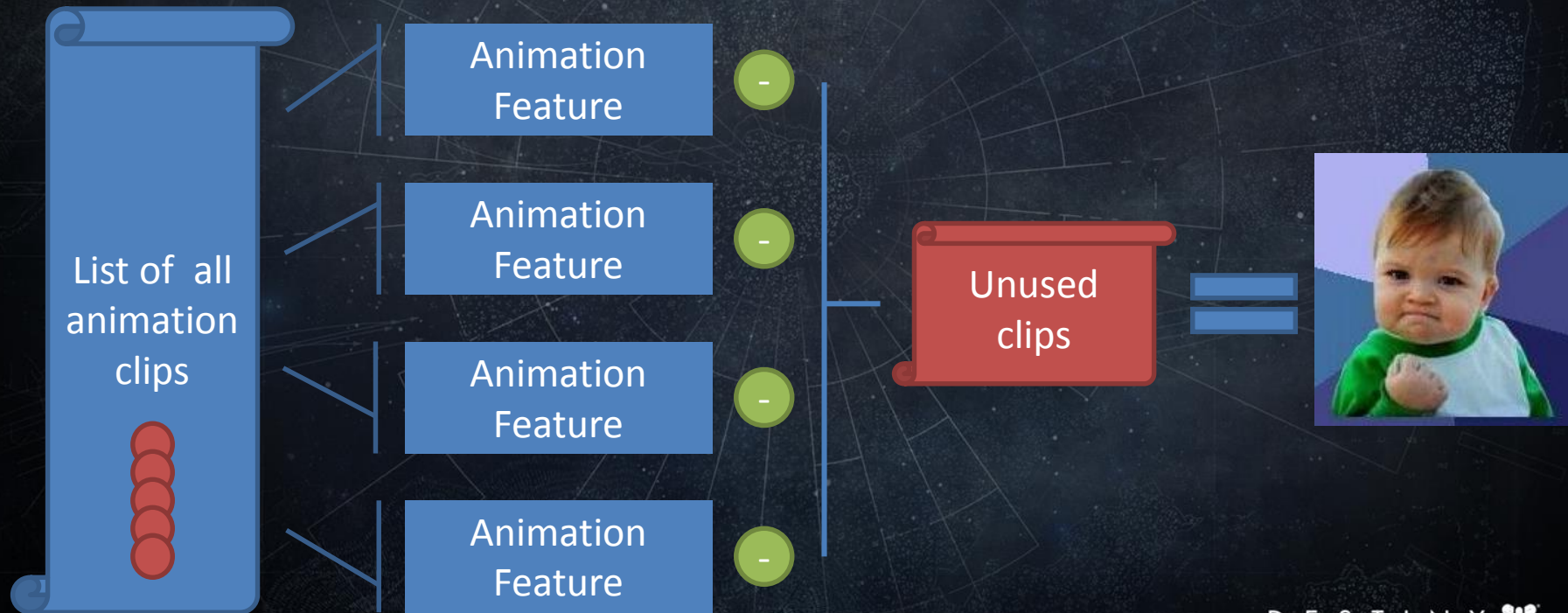
Improve Workflows



Ways to Reduce Cost

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Script to Find Unused Data



Pillars

Liberate Creative People

Reduce Cost

Always Be Looking Forward

Looking Ahead

- Prepare for sequels
 - Anticipate needs
 - Make sure content is robust and reusable throughout production
- Strive to understand how all systems work
- With every problem, brainstorm a solution
- ALWAYS MAKE OURSELVES OBSOLETE
 - Well documented guidance
 - Find inconsistencies: name dependent, user error, not fool proof
 - What isn't ideal? How can we improve existing systems?
 - Design better tools

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Runtime Damage Debug Vis



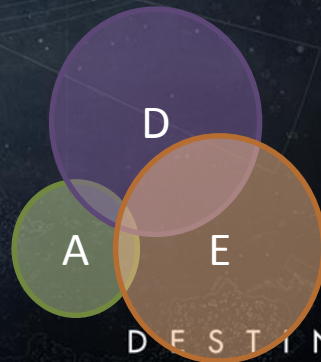
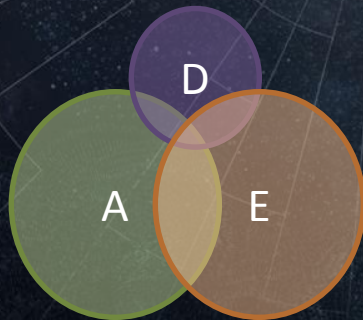


Liberate Creative People
Reduce Cost
Always Be Looking Forward

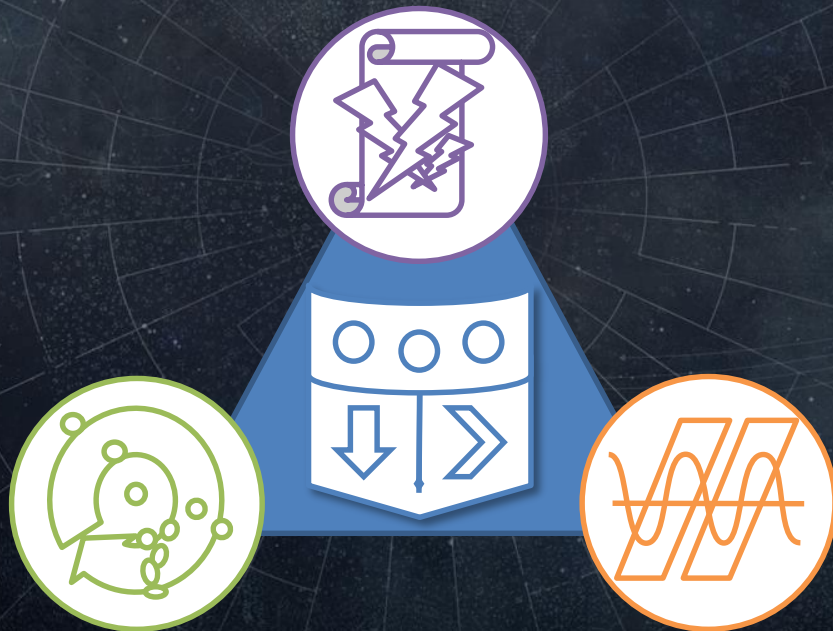
GETTING ACROSS THE BRIDGE

Where do we fit in?

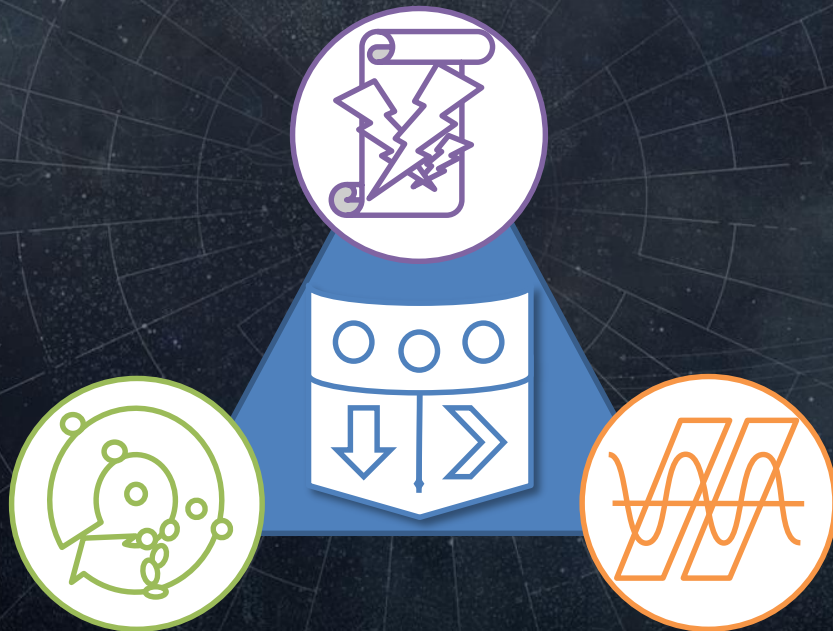
- Your team may already have one!
- Usually considered part of the animation team, but labeled a Technical Designer
- Cross disciplinary skill sets vary



Where Do We Go?



But Really...Where Do We Go?



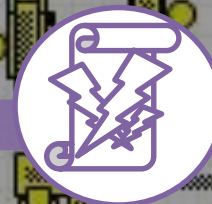
Effects



Graphics

Content Tools

User interface



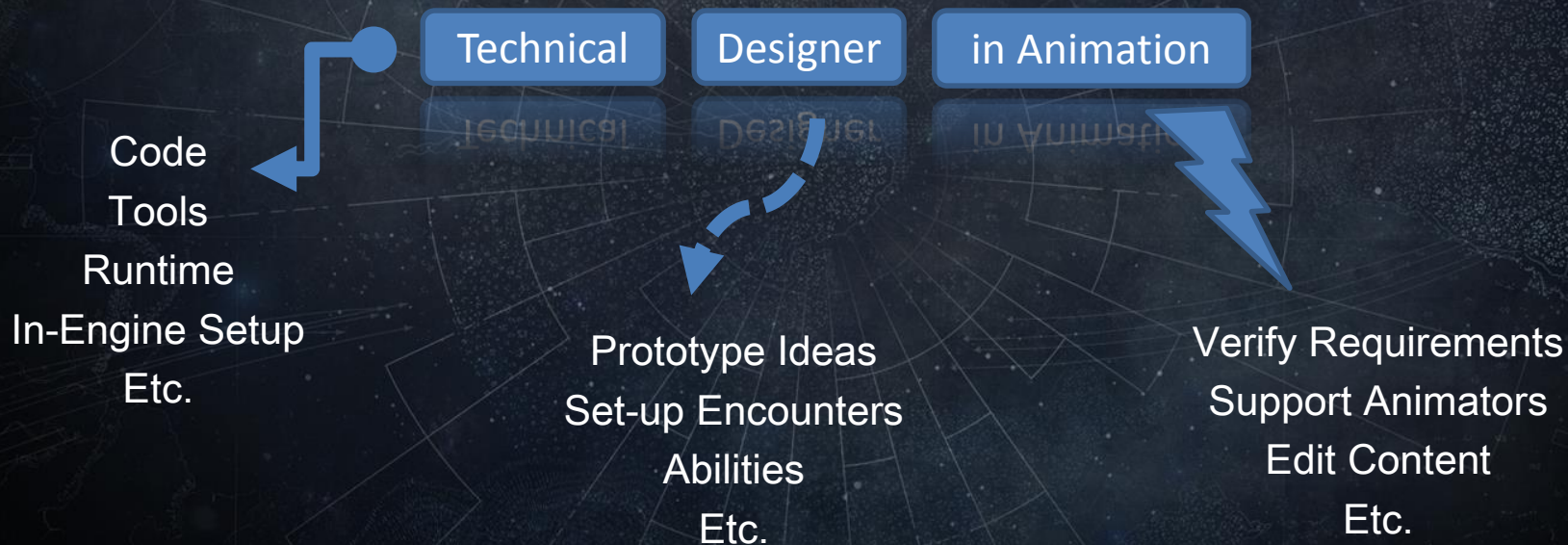
Writing

What makes a good TDiA?

- Spongey
- Breadth of knowledge
- Proactive
- Out-Spoken
- Facilitates communication
- Leadership Ninja
- Flexible schedule
- Known Priorities
- Available to animators, engineers, designers, etc.

REVIEW

What's in a name?



Goals

- Daily Goals
 - Support the game
 - Support the team
 - Unblocking content
 - Facilitate communication
 - Kicking butts
 - Taking names
- Future Goals
 - Find ways to improve existing systems
 - Implement or create better animations systems
 - Tools
 - In Game
 - Plan a smoother and simpler experience for working between disciplines

Thank you!

- The Art of First Person Animation For Destiny
David Helsby, Senior Animator
Room 3005, West Hall
Wednesday, March 4th, 5pm
- The Animation of Halo: Reach
Joe Spataro, TDiA
Tam Armstrong, Animation Engineer
GDC 2011

• Questions?

WE'RE HIRING



WWW.BUNGIE.NET/CAREERS

CAREERS@BUNGIE.COM

Bonus Slides

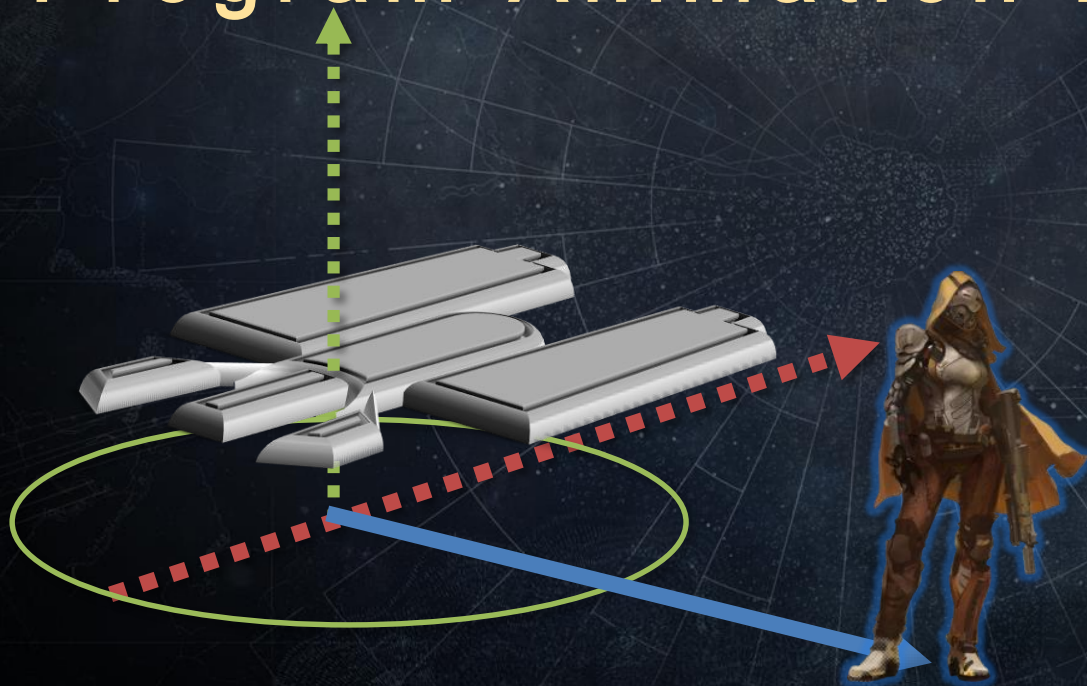
- Disambiguation between Technical Animator and TDiA Roll
- Breakdown of vehicle enter selection

Disambiguation

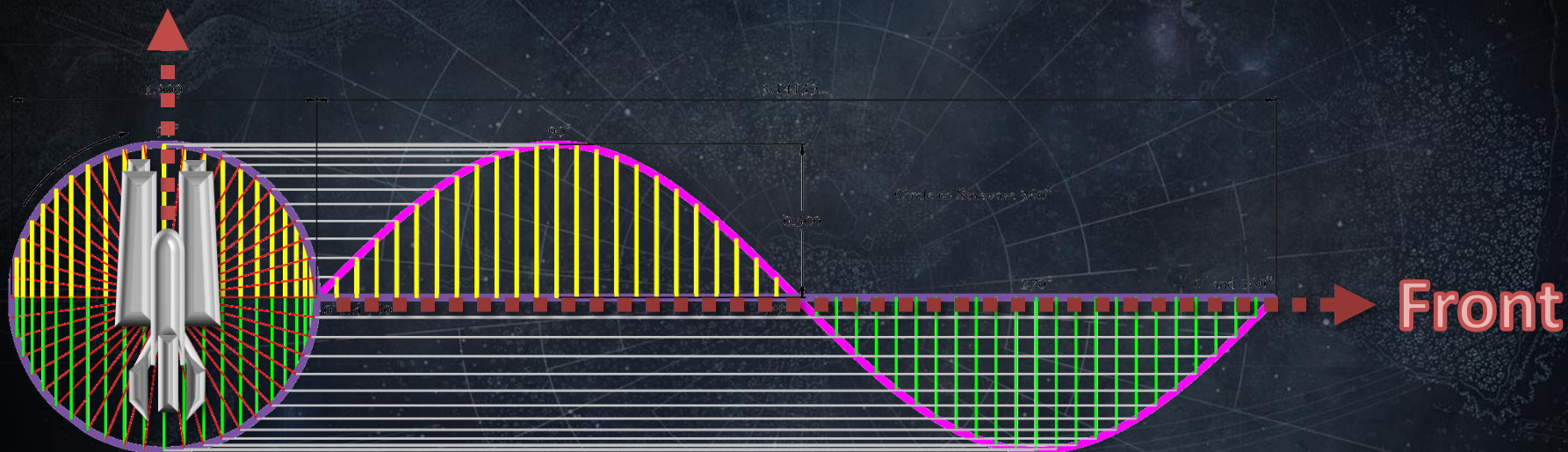
- Technical Animator
 - Creates content
 - Discovers and implements technical animation needs
 - Vehicles
 - Unique characters
 - Expression driven animated layers
- Technical Designer in Animation
 - Interested in content requirements
 - Getting results are in game
 - Prototype content only



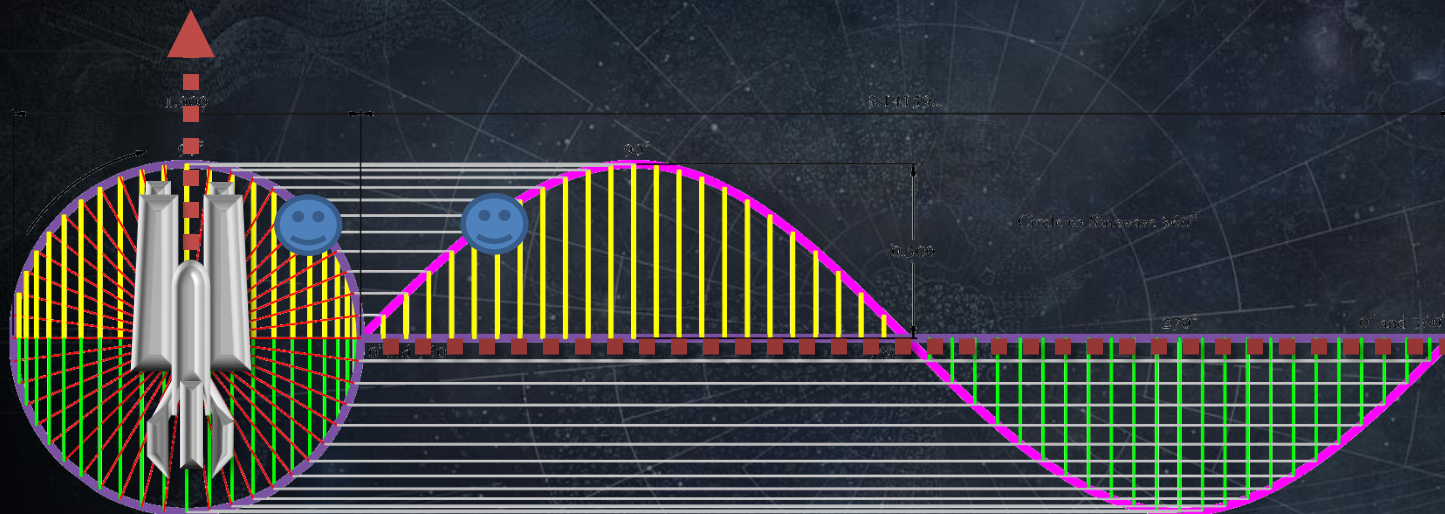
Program Animation Features



Front



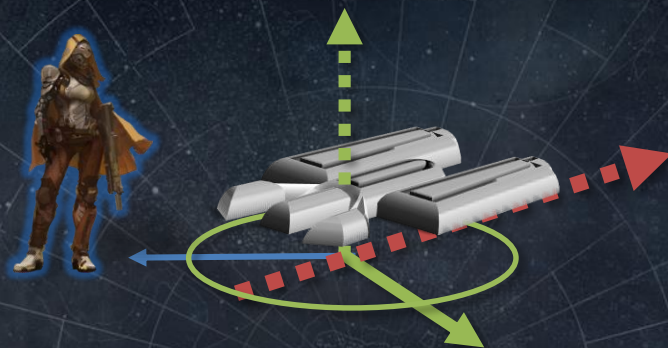
Front



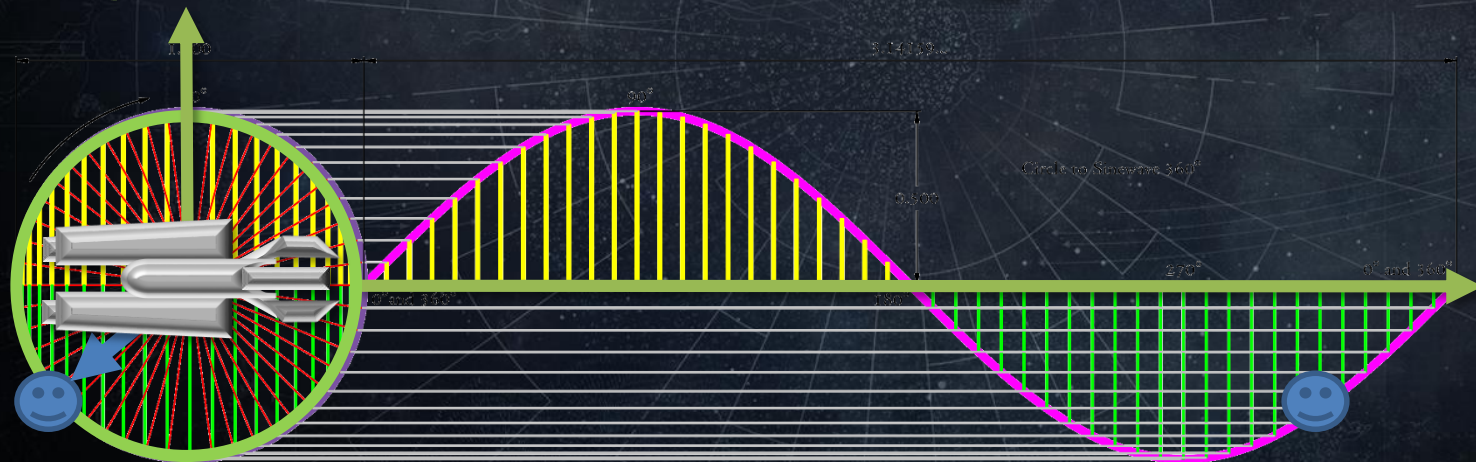
>0 Front

→ **Front**

<0 Back



Right Vector



>0 Right

Right Vector

<0 Left

