Using the Power of Layered Animation to Expand Premium Content in Battlefield 4

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Goals of the talk

- Story/post-mortem of a feature

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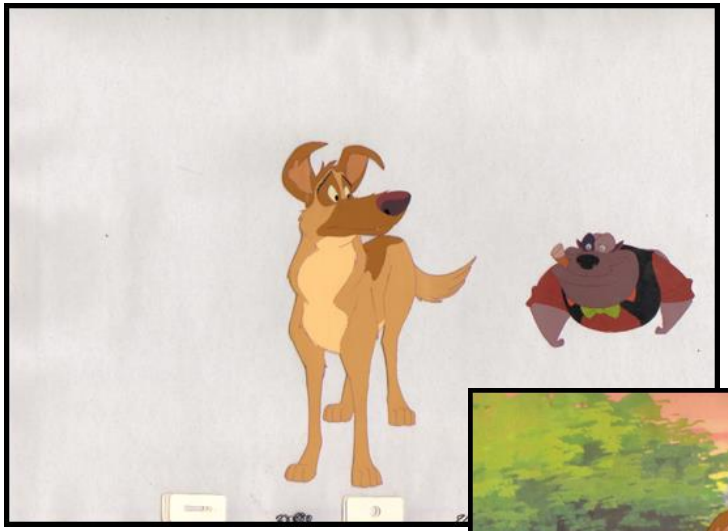
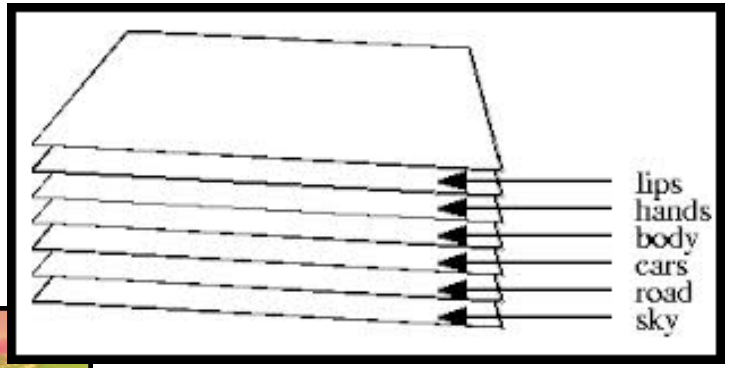
- Story/post-mortem of a feature
- Solving problems unique to adding features to a shipped game
- Not too high level
- Not too low level

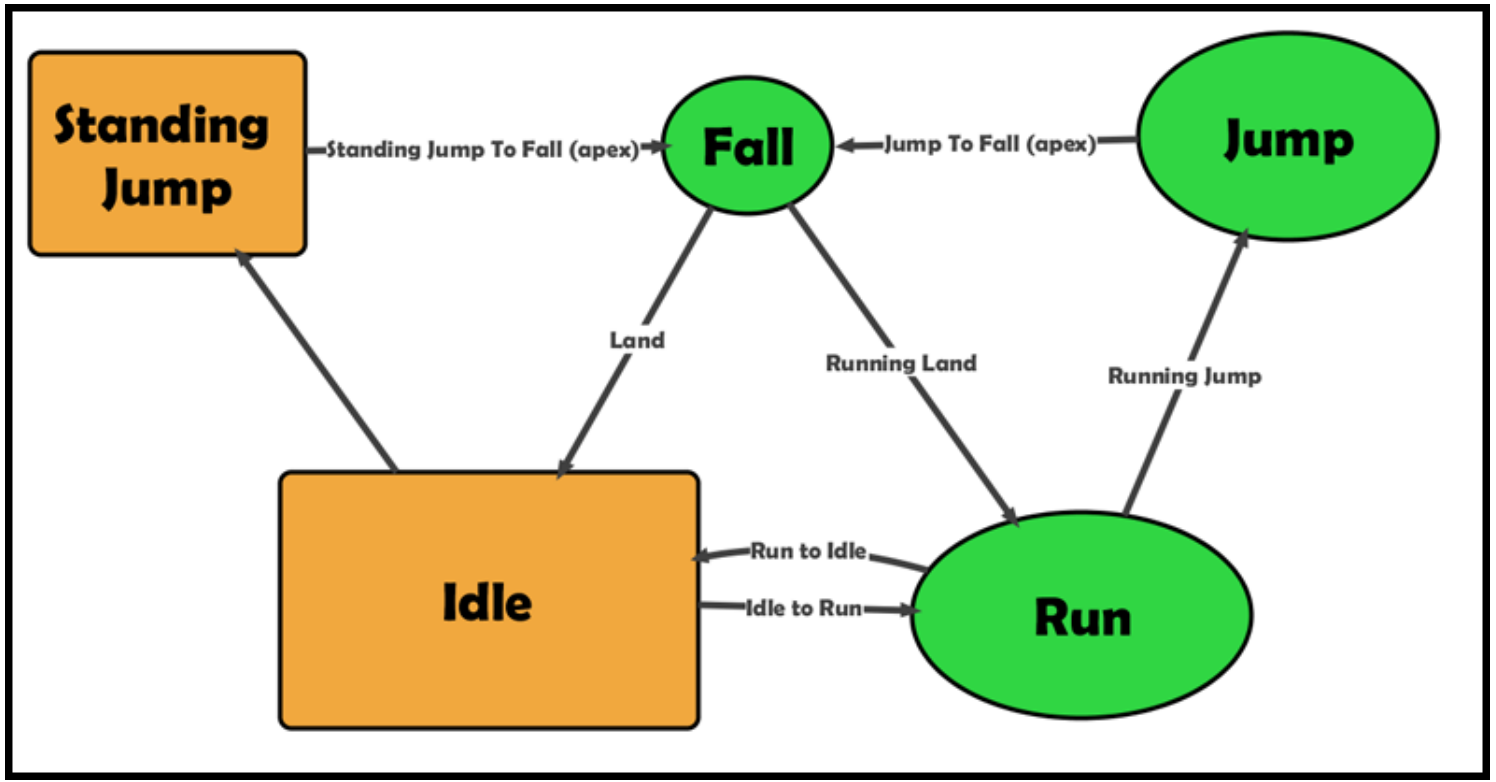
What are Additive & Layered Animations?

- Ways to add, subtract & otherwise modify an animation while still preserving it’s original integrity




lips
hands
body
cars
road
sky

What is a State Machine?



What is a State Machine?

What is a State Machine?

Why do layers & additives matter in games?

- PS2/Xbox action game animation counts:
  - 20-80+ per character?
    - Idles & Fidgets
    - Directional movements
    - Combat
    - Transitions(?)

Why do layers & additives matter in games?

- PS2/Xbox action game animation
  - Unique, hand-keyed animation sets
  - Unique skeletons
  - Not as much need to share animations
  - Achievable with smaller teams

Why do layers & additives matter in games?

- PS3/Xbox360 animation counts: Hundreds or even in the thousands!
  - More states + more fidelity= exponetially more transitions

Xbox360/PS3 Games Animation

- Pros
  - Our games look and move better than ever
- Cons
  - More complexity & expense (fiscal & memory)
  - Animation scope less forgiving of variety in skeletons & character-specific movesets

Downsides of “next gen”

The Battlefield 4 Animation System

- Many layers running concurrently
  - Some blend (override), some additive
  - Idle animations, aiming, hit reacts
  - Basic locomotion sets

The Battlefield 4 Animation System

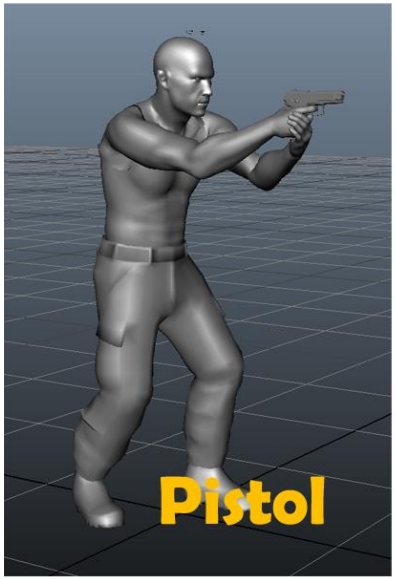
- Basic animation “families”
  - Based on weapon type/posture
  - Pistol, Rifle, Anti-Tank, Hand etc
- Unique weapons in 3p via additives to these sets
  - Streamed in client-side; only loads what sets are used

What happens when design asks for something that doesn’t fit?

Ballistic Shield!

- Shield and handgun combination

How to make these...



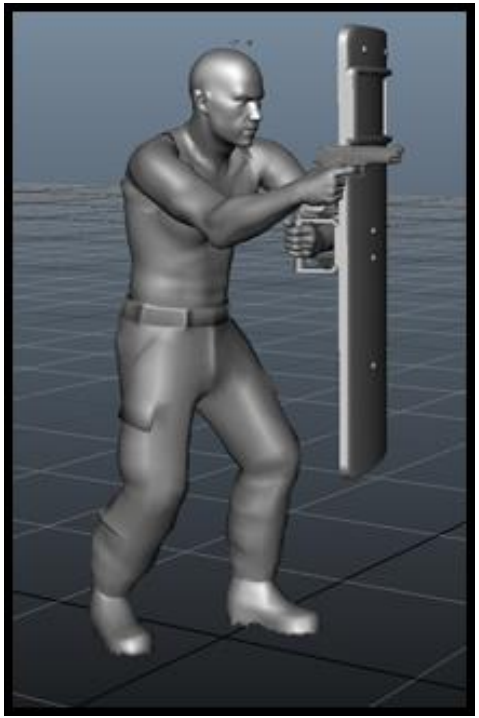
...into this:

Risks

- How long will it take?
- Worth the time & effort?
- Asset archaeology
- Can we match the existing quality bar for animation?

Approach #1: New anim set

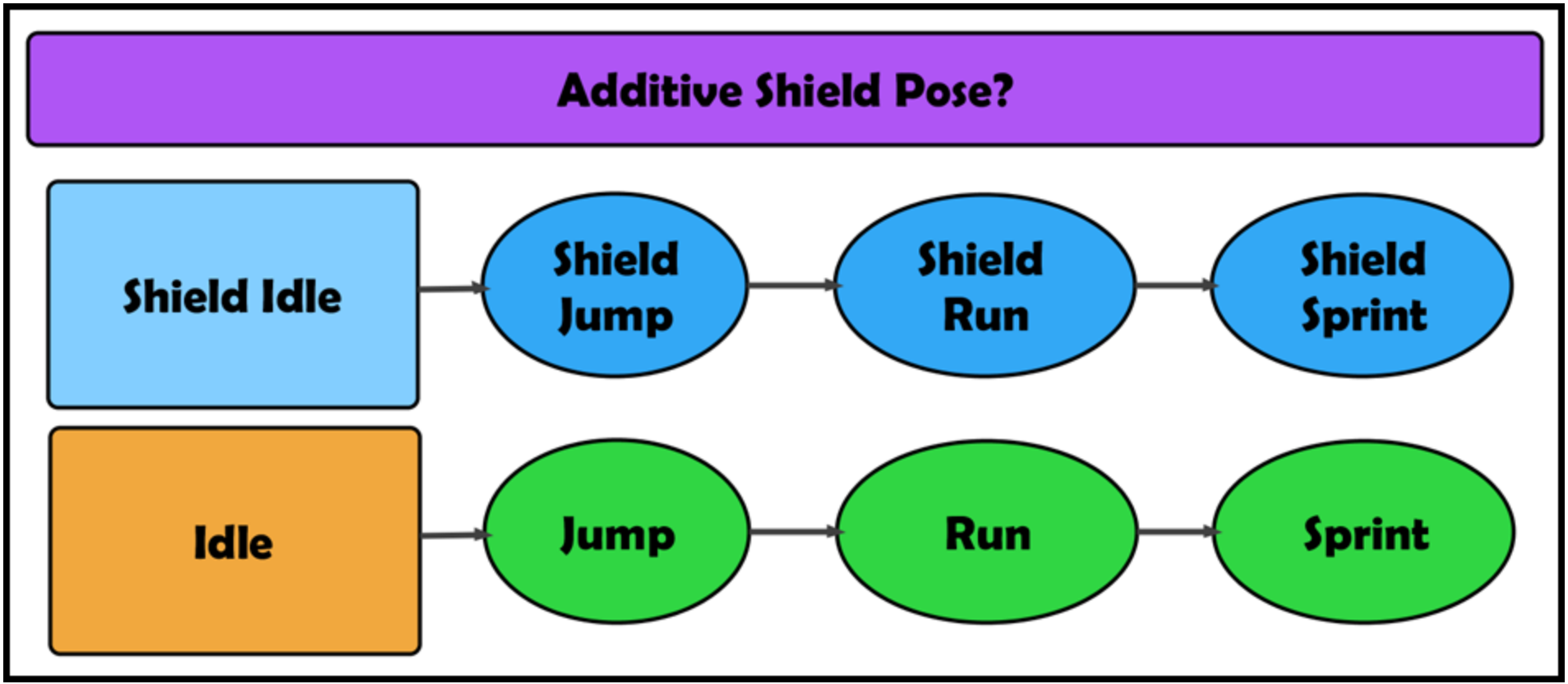
- Full, bespoke animation set/weapon type
  - Shield as a new weapon type
  - Based on existing source files



Approach #2: Layers

Approach #2: Layers

- The Layers/Additive approach
  - Add a corrective layer to an existing anim set
  - Heightened awareness of memory budget


Additive Shield Pose?
Shield Idle
Shield Jump
Shield Run
Shield Sprint
Idle
Jump
Run
Sprint

Approach #2: Layers

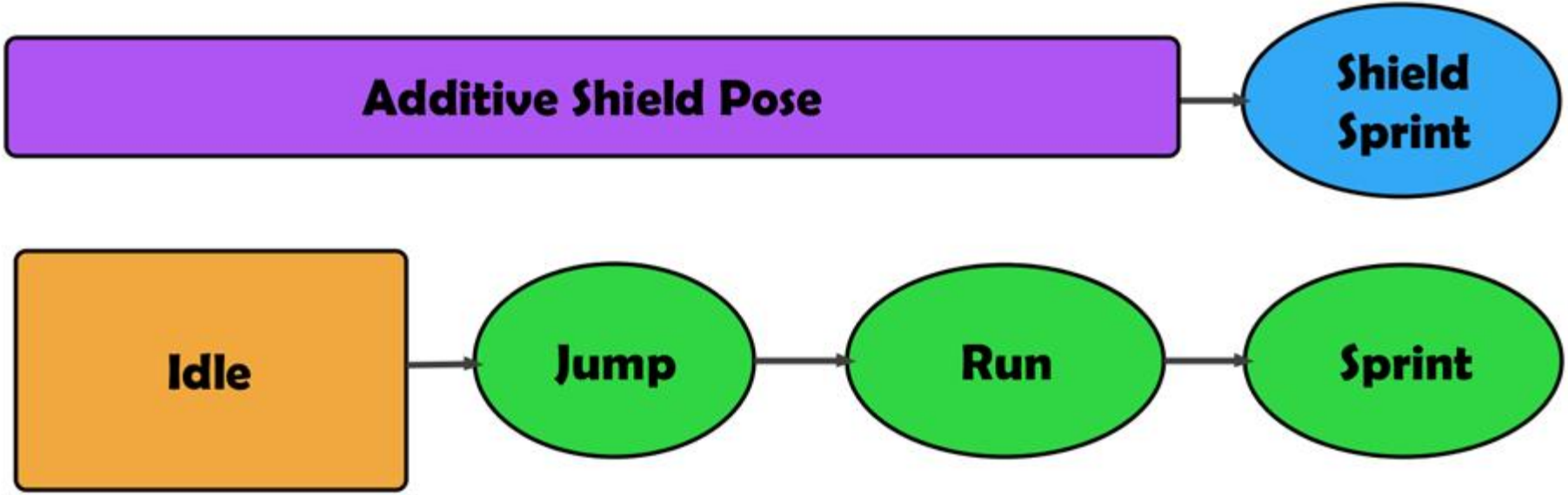
Aim Fwd_90
Frame 1

Aim Fwd_90
Frame 2

Aim Left_90
Frame 1

Aim Left_90
Frame 2

Approach #2: Layers



Approach #2: Layers

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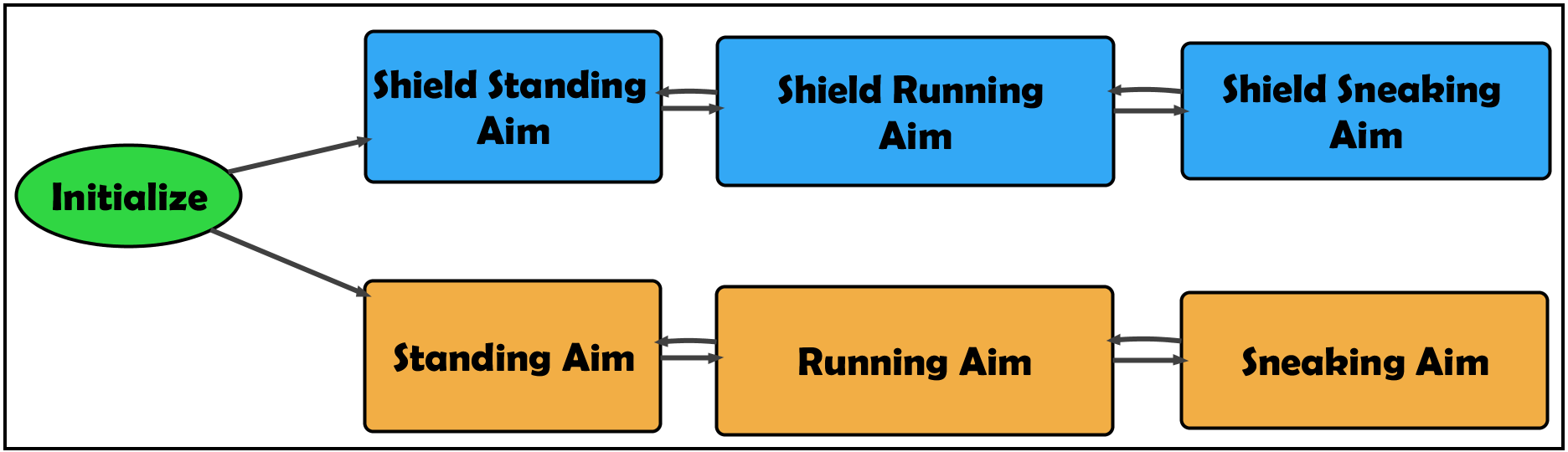
Aim Up and Down Layer



MISSION ACCOMPLISHED

Approach #3: Bargaining

- Arms only blend/override layer?
- Left arm only blend layer?
- Left arm only, no fingers?

Approach #3: Bargaining

- Risks
  - Stateflow cost still exists
  - Increased risk of exceptions/glitches
  - Keeping source files synced
  - Running out of time

Other compromises

- Shield, no pistol
  - Pros:
    - Unique anim set no longer required
    - Best chance to “Save the patient”
    - Solves the UI/progression problems
    - Solves “partial exposure”
    - Dramatically reduces design & balancing variables

Other compromises

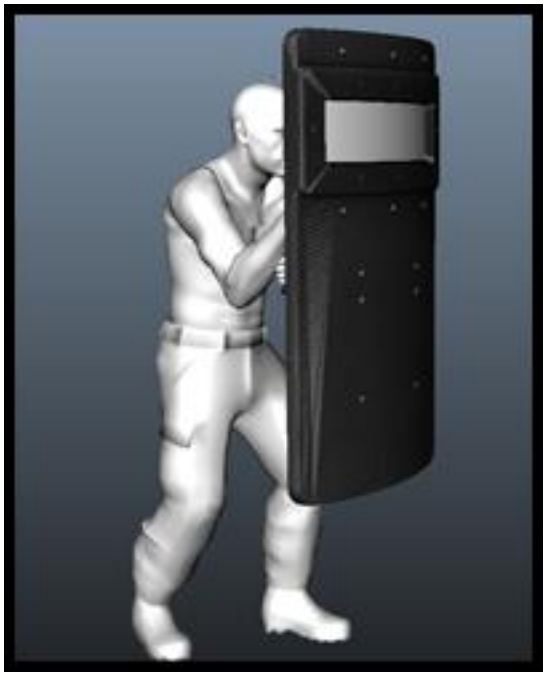
- Shield, no pistol
  - Cons:
    - Was it worth it?
    - Would it still be fun?
    - Were we bringing enough new to the table?

Approach #4: Shield only

Approach #4: Shield only

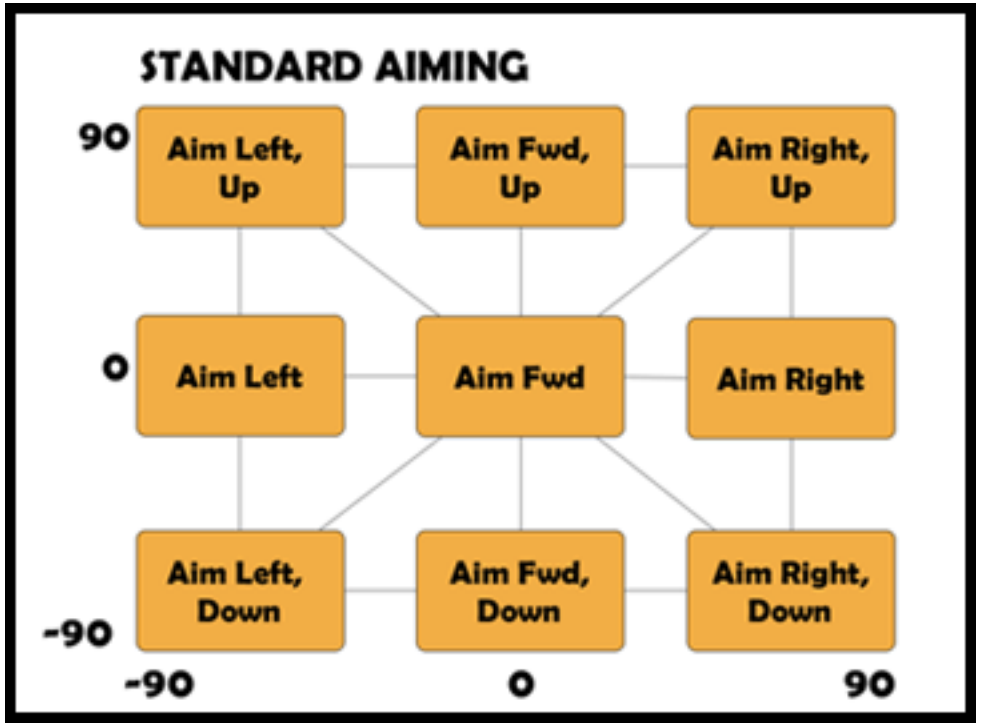
- Risks
  - Still very much not like a weapon in proportions
  - Will any existing animation set accommodate this?

Approach #4: Shield



Approach #4: Shield

- Solutions:
  - Aiming



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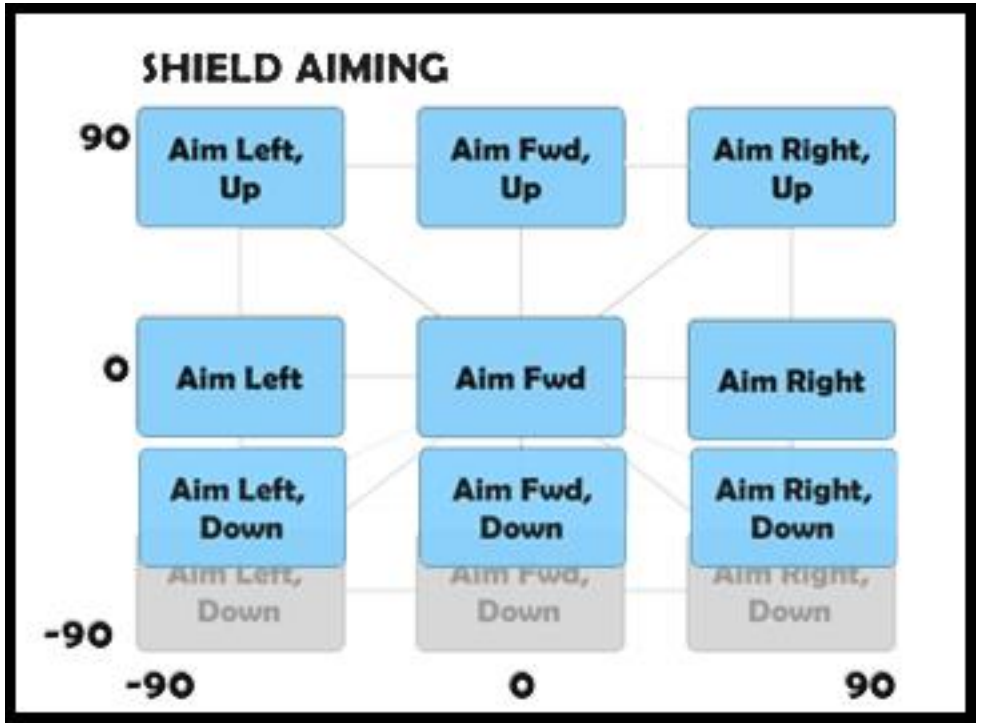

Approach #4: Shield

- Solutions: Shield Bash/Melee Attack
  - New fire animation in 1st person: bash
  - New stateflow offshoot in 3rd person:
    - Reload layer=full body, blend
    - Melee could be full body!
  - Had to stay mostly in-place/no pushback
  - Damage=point blank range “shot”

Approach #4: Shield

- Solutions: Sprinting

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Approach #4: Shield

- Solutions:
  Ladders

Approach #4: Shield

- Solutions:
  Pointing

Approach #4: Shield

- Solutions:
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The Results…

Questions?

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