

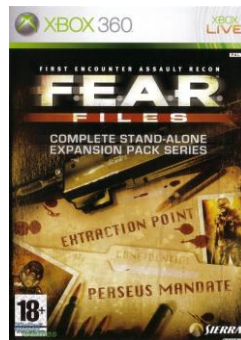
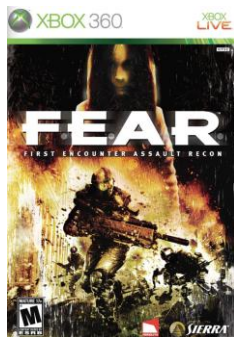
# Building Epic Worlds through the Strengths of Outsourcing

**Chris Mielke**

Program Manager, Epic Games

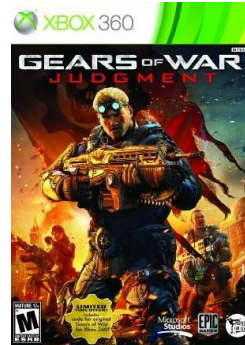
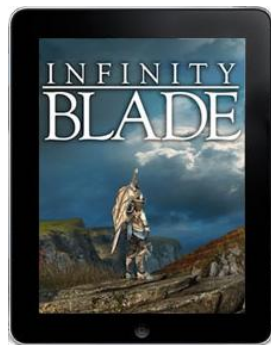
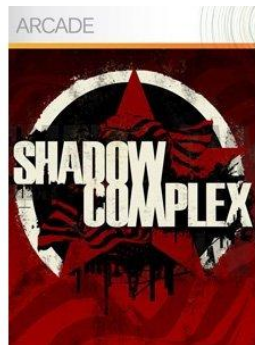
# About me

- **Started in the game industry at Day 1 Studios in 2003**
  - Content Manager -> Associate Producer



# About me

- **Went to Epic Games in 2007**
  - Art Production Manager -> Producer -> Program Manager



# About Epic Games

- **21 years in business**
- **Creators of the Unreal Engine**
- **182 employees in Cary, NC**
- **275 employees worldwide**
- **Additional locations in Seattle, Salt Lake City, Warsaw, Seoul and Yokohama**

# What we'll be discussing

- Why do developers outsource?
- What are the pros and cons of outsourcing?
- How does Epic bring outsourcers online in a production?
- Outsourcing for the Gears of War franchise
  - Environment art example
- Outsourcing for the Infinity Blade franchise
  - Character art example
- Outsourcing for cinematics
  - Cinematic example
- How to avoid common problems when outsourcing

# Why do developers outsource?

## **Larger project scope**

- Creating current titles (or worlds) is a big task

## **Additional manpower for smaller studios, but no overhead**

- Epic Games is a good example of this

## **Quality of work is excellent around the world**

- Lots of talented vendors from all parts of the industry

# What are the pros and cons of outsourcing?

## **Pro**

Frees up your staff for other tasks

## **Pro**

Content can be generated quickly

## **Pro**

Good outsourcers grow with you

## **Pro**

Properly directed, outsourcers can work independently

## **Con**

Outsourcers require management

## **Con**

Need to plan ahead for the assets

## **Con**

High degree of turnover of staff

## **Con**

May require multiple conversations to get what you want

# How does Epic bring outsourcers online in a production?

## Find Outsourcers

- Conferences
- Online portfolios (Polycount, Conceptart.org, etc.)
- LinkedIn
- Word of mouth
- Forwarded emails from Epic staff

# How does Epic bring outsourcers online in a production?

## Questions we ask

- Do you have the bandwidth to do the work?
- Do you have experience with Unreal?
- Will "test" artists be the ones doing the actual assignment?
- How large is your staff? How many project managers?
- How is your staff allocated in the areas of expertise you represent (3D, animation, concept, etc.)?
- What proportion of skill levels are in your company (Sr. to Jr.)?
- Are there any subcontractors we need to know about?
- Do you understand everything listed in the SOW and contract?



# How does Epic bring outsourcers online in a production?

## Questions we ask (continued)

- What's your day rate? Is this negotiable?
- What security measures do you have?
- Would you be willing to take an art test?
- How long has your company been in business?
  - What platforms have you shipped on? Which games?
- Can you give us any references we can speak to?



# How does Epic bring outsourcers online in a production?

## We give them a test

- For art - usually an asset that has been created before (but may be flawed)
  - Facial/animation uses an emotional scene from a shipped title
- Timeframe given is the same as our internal teams
- Outsourcer gets paid if we use the asset in the game
- Successful test puts them on the “preferred outsourcer” roster and then contracts are signed – the work begins!



# Yingpei Games Ltd. (formerly Epic Games China)

## Strategic Alliance

- Formed in 2008
- Located in Shanghai, China
- Changed their name in 2010  
(Ying Pei means “Epic” in Mandarin)



# Outsourcing for the Gears of War series

What did we outsource?



# Outsourcing for the Gears of War series

**What did we outsource?**

- Character artwork (NPCs)





Dizzy's Daughters



Asset: Dizzys\_Daughters\_V01  
Revision No [01]

Date: 15/04/10  
Client: Epic Games USA.



Asset: Riff\_Dizzy\_Daughters\_V02  
Revision No: [ 1 ]

Date: 15/04/10  
Client: Epic Games USA.

# Outsourcing for the Gears of War series

**What did we outsource?**

- Character artwork (NPCs)
- Environmental artwork





**Finished**

**S\_Cargo\_Truck**

Triangles:24905  
Vertices:19992

# **Outsourcing for the Gears of War series (cont'd)**

**As an example - how many environment  
assets did we outsource in Gears of War 3?**

# **520**

In a 2.5 year project this equals an average of 4 finished  
assets per week!

# **Outsourcing for the Gears of War series (cont'd)**

**As an example - how many environment  
assets did we outsource in Gears of War 3?**

# **30%**

That means approximately 70% of the assets  
were generated in-house.

# Outsourcing for the Gears of War series

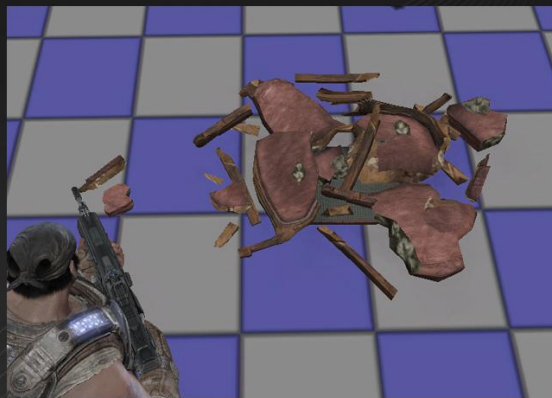
**What did we outsource?**

- Character artwork (NPCs)
- Environmental artwork
- Destructibles (furniture)





Finished



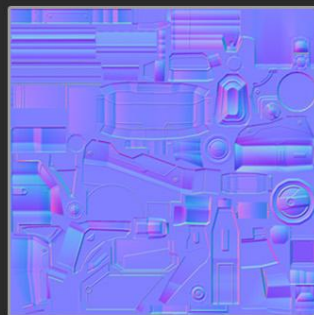
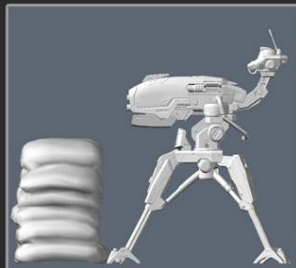
SM\_COG\_Azura\_Interior\_Decos\_Chair2

# Outsourcing for the Gears of War series

**What did we outsource?**

- Character artwork (NPCs)
- Environmental artwork
- Destructibles (furniture)
- Some weapons





Tris:2764  
COG\_TurretStand

# Outsourcing for the Gears of War series

**What did we outsource?**

- Character artwork (NPCs)
- Environmental artwork
- Destructibles (furniture)
- Some weapons
- Cinematic layouts



# Cinematic Layout Example

**Done by Metricminds**

- Initial placement of cameras
- Placement of characters
- Audio track hookup
- No final lighting or animation



# Cinematic Layout Example

## Scene set up

- Scene from Gears of War 3
- In the town of Char
- Delta Squad catches up with Ash Man



August 26th 2010

metricminds

GEARS OF WAR 3

Level 10 - Char

Cinematic #2 Weasel

# Cinematic Layout Example

## Final in-game cinematic

- Final placement of cameras and characters
- Final lighting and animation
- Final audio track hookup





# Outsourcing for the Gears of War series

**What did we outsource?**

- Character artwork (NPCs)
- Environmental artwork
- Destructibles (furniture)
- Some weapons
- Cinematic layouts
- Mocap cleanup, facial and secondary animation



# Outsourcing for the Gears of War series (cont'd)

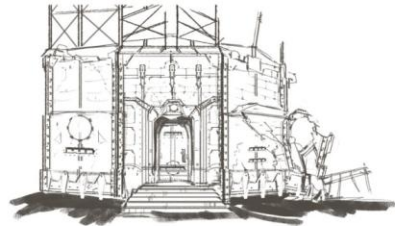
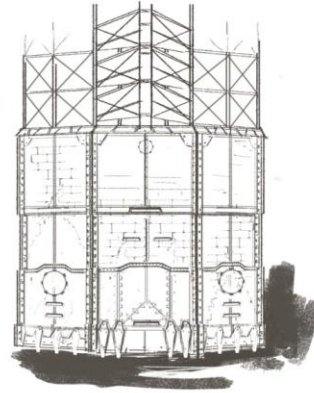
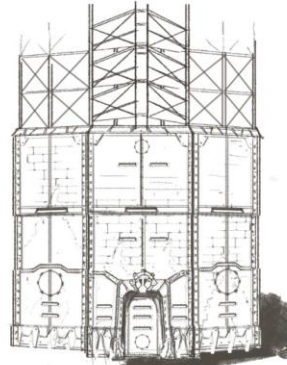
**How did we maintain the Epic quality bar for  
all these different assets?**

- Environmental artwork example
  - Establishment of look and feel
  - Breakdown of sketches into assets
  - Outline and confirm the specifications
  - Agreement on priority and timelines
  - Regular delivery and feedback dates
  - Monthly build updates

- Environmental artwork example
  - **Establishment of look and feel**
  - Design and art direction documentation is submitted

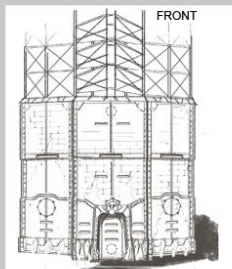


- Environmental artwork example
  - **Breakdown of sketches into assets (part 1)**



- Environmental artwork example
  - **Breakdown of sketches into assets** (part 2a)

Interior Set | Concrete and Steel



BUILD THIS SET WITHOUT THE MOSS  
AND GREEN, WILL ADD IT LATER

S\_PWFort\_Bunker2\_Wall\_Front\_Trim\_01

S\_PWFort\_Bunker2\_Wall\_Front\_Top

S\_PWFort\_Bunker2\_Wall\_Front\_Trim\_02

S\_PWFort\_Bunker2\_Wall\_Front\_Trim\_03

S\_PWFort\_Bunker2\_Wall\_Front\_Arch\_01

S\_PWFort\_Bunker2\_Wall\_Front\_Door\_01

S\_PWFort\_Bunker2\_Lattice\_02

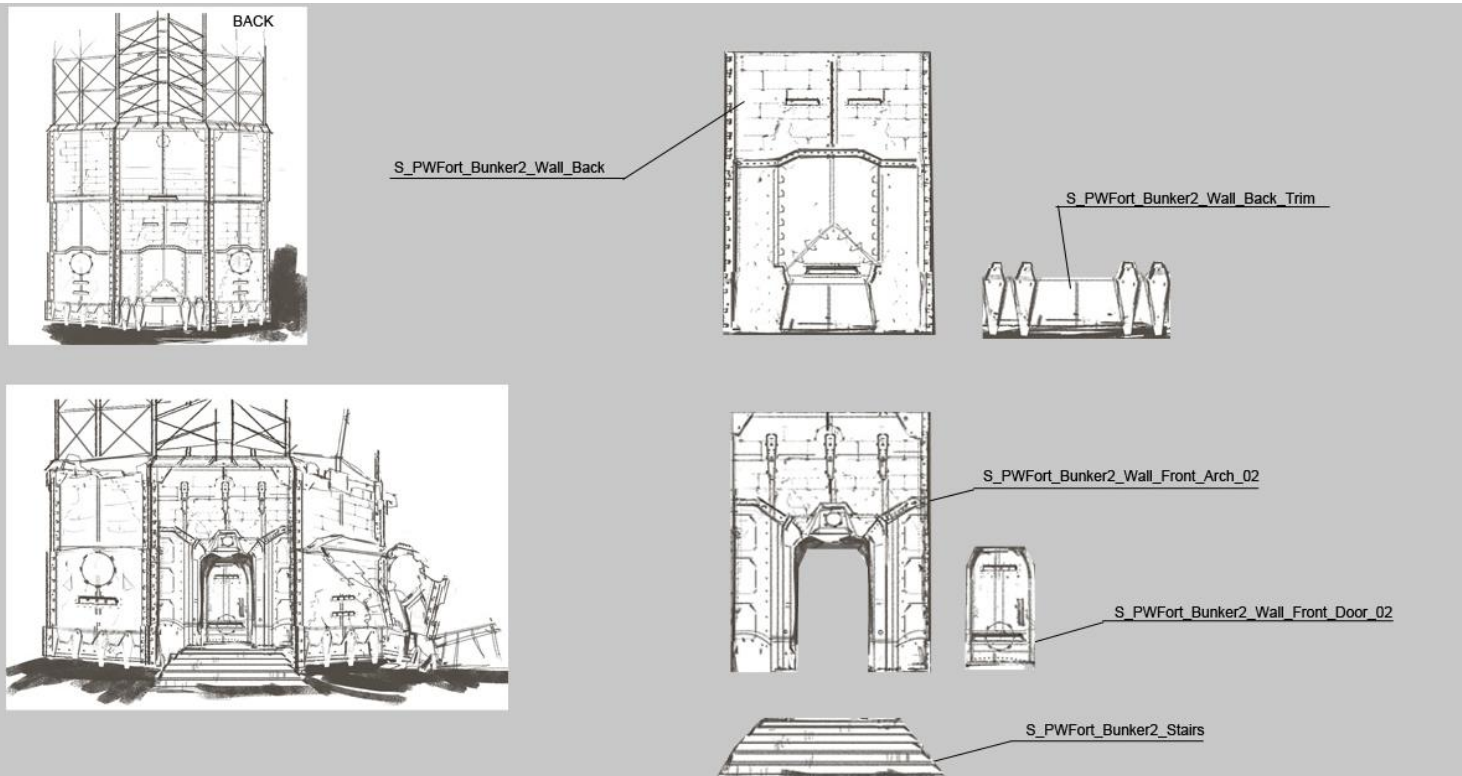
S\_PWFort\_Bunker2\_Lattice\_01

S\_PWFort\_Bunker2\_Wall\_Side\_Top

S\_PWFort\_Bunker2\_Wall\_Side\_Bottom

S\_PWFort\_Bunker2\_Wall\_Side\_Trim

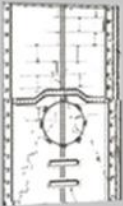


- Environmental artwork example
  - **Breakdown of sketches into assets** (part 2b)



- Environmental artwork example
  - **Outline and confirm the specifications**
    - Vertex count
    - Texture sizes
    - Material IDs
    - Modularity
    - Level of detail expectations
    - Color variants/shifts



- Environmental artwork example
  - **Agreement on priority and timelines**

Asset Name	Priority		High Poly	Low Poly	Processed	Textured	
S_PWFort_Bunker2_Wall_Side_Bottom							
			3	1	1	3	8
S_PWFort_Bunker2_Wall_Front_Arch_01							
			6	3	1	5	15
S_PWFort_Bunker2_Wall_Front_Door_02							
			3	1	1	2	7

- Environmental artwork example
  - **Regular delivery and feedback dates**
    - Drop days should be established
      - Character assets are delivered on Tuesdays
      - Environment assets are delivered on Thursdays
      - Rigged character assets are delivered on Fridays
    - Staff artist should be proofing assets
    - Feedback should be made within 24 hours of submission if possible



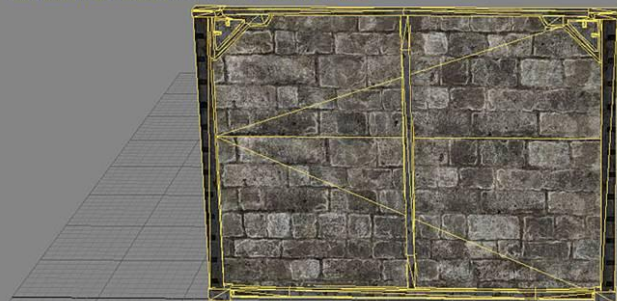
## - Environmental artwork example

- **Feedback example**

Using 2 textures to make 1 plain 300 m wall is bad.  
Making all the elements a separate element is bad, especially when they are small elements because they are too small to be worth while, adding them makes the lightmaps more fragmented and harder to optimize.



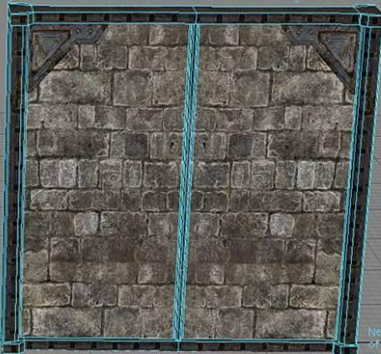
When this wall is repeated, it causes Z fighting, we should never give the level designers assets they cannot fix, it makes them unhappy and it slows down production of levels and the game.



This mesh is not really on the grid, it is almost on the grid, but it is not symmetrical and it does not align with itself, so it can never be used like a wall should be, i.e. a number of walls placed side by side.



I cut and pasted some of the bits required to make the mesh work in a more optimized way that will allow us to be free of dependency on anything carrying 2 textures and also cut the textures in the package down from 6 to 2 instead. You can see I was making one half of the metal walls, I did not finish.



Next I put things on the grid properly, made sure it was symmetrical and made sure the sides of the elements all looked ok so the wall can be robust enough for the level designers to put it in a level in any manner they wish to.



- Environmental artwork example
  - **Monthly build updates**
    - Monthly approved QA engine/and or build is sent to our outsourcers or they can sync to a label in Perforce
    - All assets are proofed for quality in the editor before they are returned to us





# Outsourcing for the Infinity Blade series

**What did we outsource?**

- Environmental artwork (non-hero assets)





Concept

Screen Shot



Detail



# Outsourcing for the Infinity Blade series

**What did we outsource?**

- Environmental artwork (non-hero assets)
- Character artwork



Project: Chair

Asset : Eyeless Noc

Stage : wip

Concept



Screen Shot



Detail



# Outsourcing for the Infinity Blade series

**What did we outsource?**

- Environmental artwork (non-hero assets)
- Character artwork
- Weapons



Chair

Asset: Cavalier

Stage : Final

Date : 01 06 2011



Concept



Detial

Screen Shot



Chair

Asset: ScaryAxe

Stage : FINAL

Date : 17 06 2011



Concept

ScaryAxe



Detial

Screen Shot



# Outsourcing for the Infinity Blade series

**How did we maintain the quality bar on the mobile platform?**

- Character artwork example
  - All or nothing
  - Identify the strengths and weaknesses of your outsourcer
  - Make sure your specs are clear
  - Find leaders within your outsourcer and let them lead
  - Always expect revisions

Project: Chair

Asset : Genno

Stage : final



Concept

Screen Shot



Detail



## - Character Artwork example

### ▪ **All or nothing**

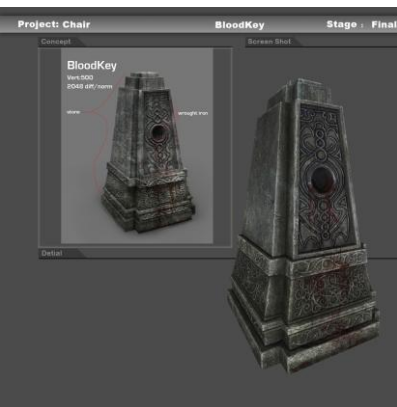
- Better to send a loose concept sketch than an immaculately detailed one
- Mixing the two can often confuse an outsourcer
  - E.g. If you concept out a realistically rendered character and scribble in details that you might not have the time to draw - it is common that the outsourcer will match the scribbles exactly
  - With the rough sketches they have been able to interpret and design the character rather than if we had provided a detailed drawing



- Character Artwork example

- **Identify the strengths and weaknesses of your outsourcer**

- We have found out over time that our outsourcers can produce machinery, environments and characters really well, but they really struggle with organics and geological structures



- In the future we decided to adjust our future character designs so that they would play to our outsourcer's strengths
    - One of the most expensive characters that we have made to date was the Moss Golem from IB2



13610

12

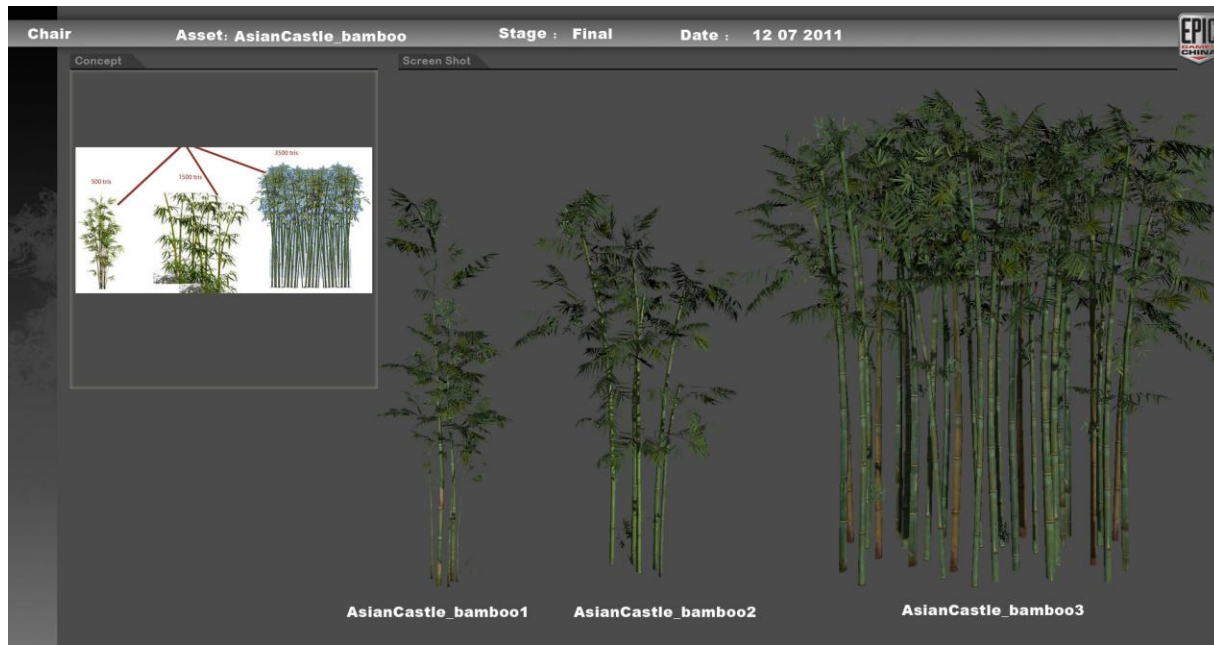
369165479

+101  
+101  
COMBO WAVE

2378  
-1592



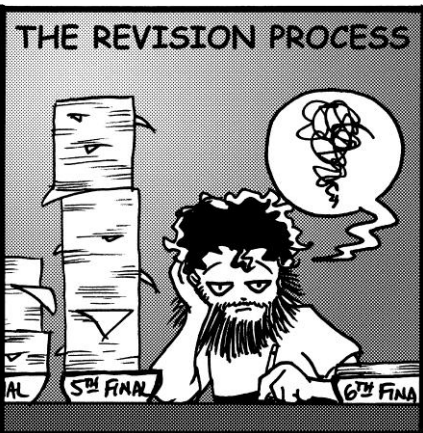
- Character Artwork example
  - **Make sure your specs are clear**
- Assets needed to stay within a certain vert count



- Character Artwork example
  - **Find leaders within your outsourcer and let them lead**
    - Infinity Blade II had a couple of characters that were not hitting the quality that we needed, but there was one character that looked great
    - We directed our outsourcer to have all characters go through the artist that was producing the higher quality level, and we saw an immediate jump in quality



- Character Artwork example
  - **Always expect revisions**
    - It will never be perfect the first time
    - Plan accordingly and identify issues early (24 hour feedback loop helps with this)



# Outsourcing for Cinematics

**What about cinematics on the big and small screen?**

- Cinematic example
  - It all starts with a story... board
  - Animatics are cheap and easy timesavers
  - You can always fix it in post...








- Cinematic example
  - **It all starts with a story... board**
    - Storyboards are the bedrock of our cinematic pipeline
      - Inexpensive and easy to change
      - Easy to get team and stakeholder buy-in
      - Provides a framework for the cinematic team
      - Storyboards trump all “Wouldn’t it be cool if...” arguments (most of the time...)



- Cinematic example
  - **It all starts with a story... board**

PROJECT: Epic - Tears of War 4 (cinc040)

PAGE 4 (30)

S.C.	PICTURE	CAM	DIALOGUE/NOTE	M.E.	SFC.
100			CINE 001 MISSION ZERO COTRO (TRAIL)		
			INT. COCKPITOM NIGHT		
			LOOMER: Caden. Talaris		
			LOOMER: I'm curious to hear		
			TOOMER: what it takes to survive in Caden's world. To a world that is the COTRO most powerful weapons.		
101			TOOMER: I was excited to hear		
102			TOOMER: I was excited to hear		
103			TOOMER: I was excited to hear		

Copyright Brain Zoo Studios, 2012



**BRAINZOO**  
STUDIOS

- Cinematic example
  - **Animatics are cheap and easy timesavers**
    - Good vendors can do wonders with just drawings
      - Storyboards come to life
      - Easy adjustment of shots and direction for mocap
      - Easily placed in the game without waiting for the cinema team to finish layouts and get renders made
      - Done in-house, gives rudimentary shot placement and timing



**ZOIC**  
(Visual Evolution.)

# Outsourcing for Cinematics

## **Comparison example - Storyboard vs. Mocap vs. Final**

- Shows how little we deviated from the storyboards
- Mocap is always outsourced – hire good local drama actors
- Mocap is video recorded so the animators can pick up the nuances from the actor to bring to the character



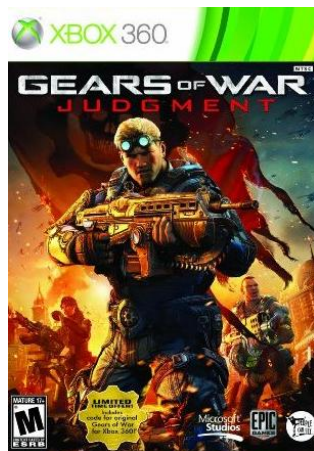
- Cinematic example
  - **You can always fix it in post...**
    - Final renders are just movies, and layers of cinematic polish can be added in-engine
    - Final audio mix is always outsourced
      - Feedback from all parties in 24 hours
      - Web-based or mobile phone access to a web portal for people offsite to review the cinematics

The logo for SOUNDELUX, featuring the word "SOUNDELUX" in a white, stylized, sans-serif font. The letters are slightly slanted and have a bold, blocky appearance. The logo is set against a dark red background.

# Outsourcing for Cinematics

## Final Cinematic for Gears of War: Judgment

- Brings all the outsourced parts together into the final product





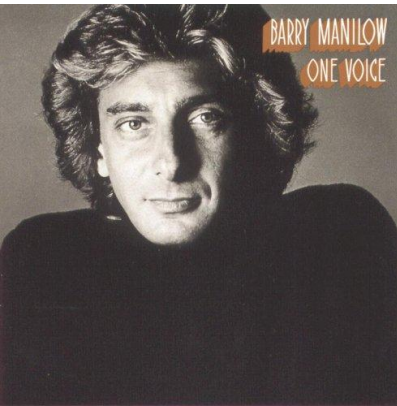
# How to avoid common problems when outsourcing

- What can possibly go wrong?
  - Common issues that arise for every project
  - Best practices from our experiences
  - Speaking the same “language”

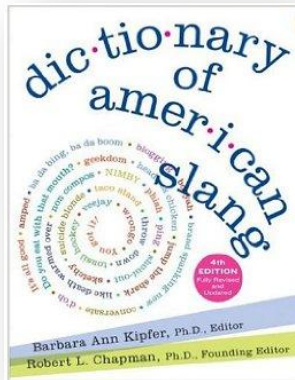
- What can possibly go wrong?
  - **Common issues that arise for every project**
    - Specs aren't clear from the art lead
      - If you don't understand what's being asked – your outsourcer certainly won't
    - Lack of lead time for the outsourcer
      - We always budget in 2 weeks of lead time to set teams and get them ready to go
    - Ramp up time for the outsourcer to get in the groove
      - New projects and expectations are always rocky in the beginning – if you build in time then you won't be behind

**PROBLEMS ARE  
ONLY  
OPPORTUNITIES  
WITH THORNS  
ON THEM**  
- HUGH MILLER

- What can possibly go wrong?
  - **Review of best practices from our past experiences**
    - English-speaking project managers onsite at the outsourcer
    - One voice comes from Epic – one person per discipline compiles all the feedback and cuts the redundant parts
      - Characters
      - Environment art
      - Other assets
    - We always try to point out even the small things outsourcers do right and minimize the morale hit on the incorrect items
      - “We can do this better next time...”

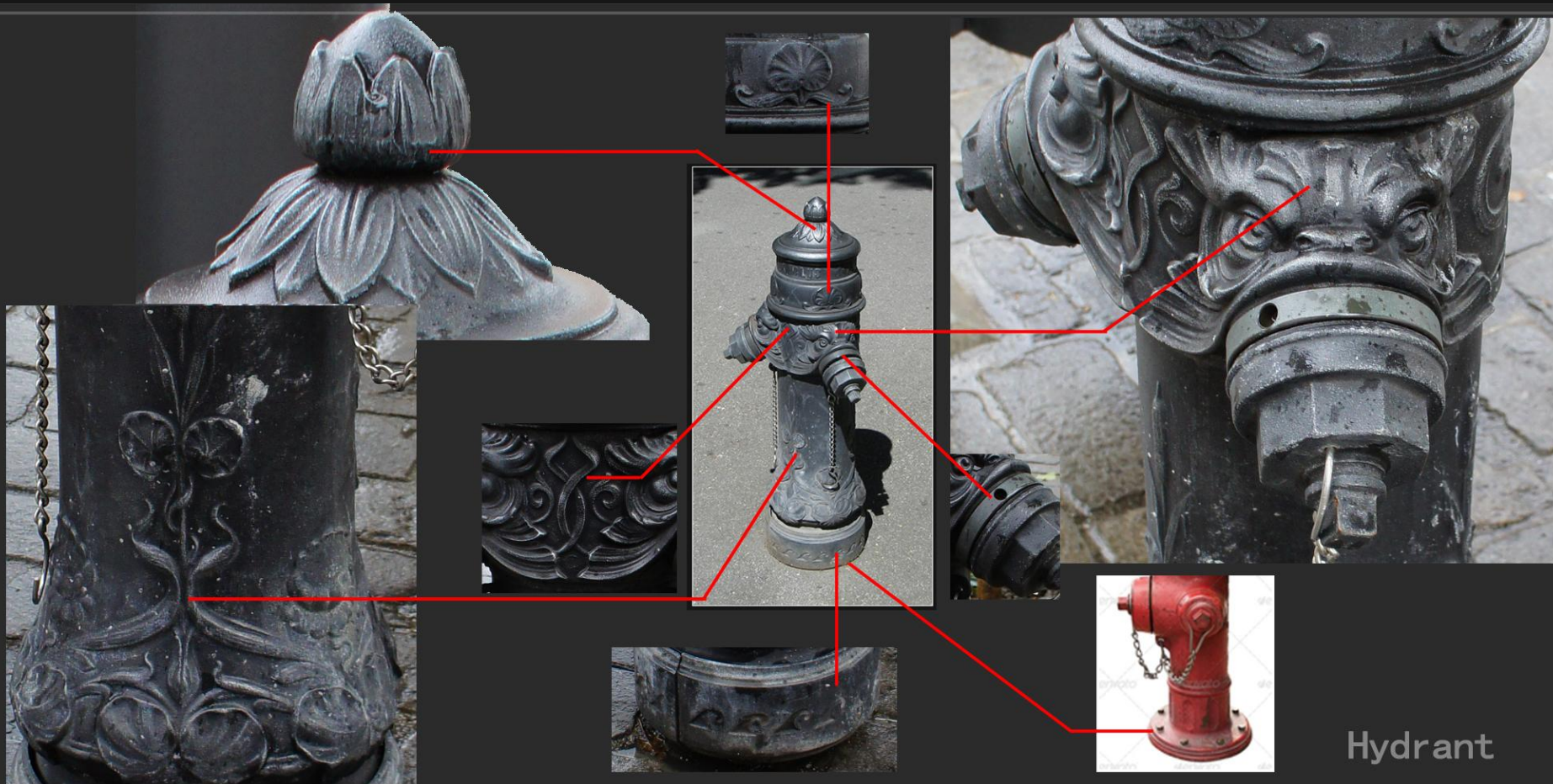


- What can possibly go wrong?
  - **Speaking the same “language”**
    - English is usually a second language
      - Avoid slang
      - The written word is sometimes more difficult
      - Email can be messy and an image speaks a thousand words
    - Everyone is on the same team – always use “we”
      - Easy to classify outsourcers as “them”
      - Everyone wants the project to be successful
    - The Internet is not 100% international
      - Outsourcers may not have access to the Internet
      - Security of your project is paramount (secure FTP)



- What can possibly go wrong?
  - **Speaking the same “language”**
    - Assignments can be done exactly as they are spec'd
      - If you show an image make sure a spin is put on it that fits with your project
      - Outsourcers will build exactly what you show them
      - Example - Gears of War: Judgment fire hydrant

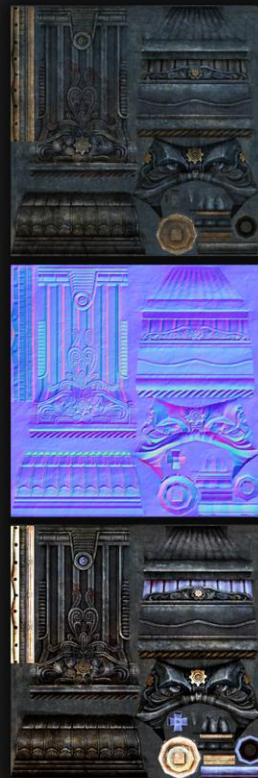




Hydrant



Polys: 664  
Tris: 1,198  
Verts: 601



COG\_Mansion\_Hydrant

- What can possibly go wrong?
  - **Speaking the same “language”**
    - Assignments can be done exactly as they are spec'd
      - If you show an image make sure a spin is put on it that fits with your project
      - Outsourcers will build exactly what you show them
    - Ensure delivery guidelines/deadlines are clear
      - A tracking sheet should be submitted with every drop and the dates clearly illustrated
      - Deadlines shift – outsourcers need to know
    - Flag items that are wrong and be straightforward
      - Outsourcers need to learn too – don't coddle them





THE ART OF

# GEARS OF WAR 3

/ BALLISTIC /



Armor: 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000

Armor: 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000



Asset: Char\_F\_Talk\_0001\_001  
Project: [REDACTED]

Date: 26/07/2015  
Lead: [REDACTED]

# Hey, what about Fortnite?

- That's a separate talk for another conference!



# **Thanks for listening!**

**Please fill out your email survey form.**