UNCHARTED 3
OUTSOURCING

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Art Director, XPEC

NAUGHTY DOG

XPEC™

Environment art team

Modeller (10)

Texture artist (10)

Uncharted Levels

Concept team (3)

Prop/dynamics team (4)

Environment art team

Modeller (10)

Block mesh to finish geometry mesh
Level Memory
Frame rate caused by polygons
Collision
Visibility culling
10 modellers

Environment art team

Modeller (10)

Texture artist (10)

Uving of the mesh
Texturing/surfacing
Frame rate due to GPU issuies
Texture memory
10 texture artists

Environment art team

Modeller (x10)

Texture artist (x10)

Concept team (3)

1 character concept artist
2 environment concept artists

Environment art team

Modeller (x10)

Texture artist (x10)

Concept team (3)

Prop/dynamics team(4)

4 prop/dynamics artists

Environment art team

Modeller (x10)

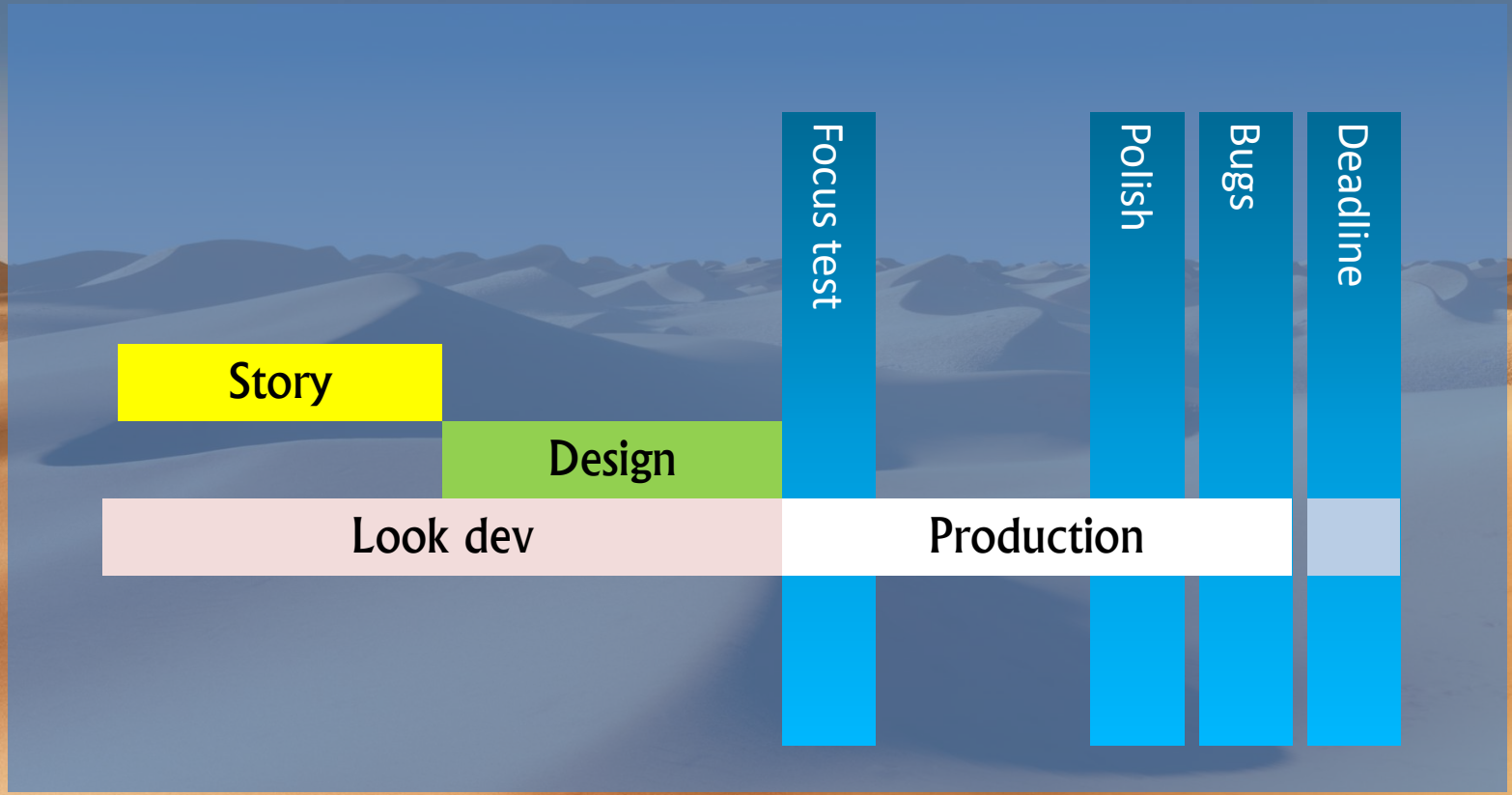
Texture artist (x10)

Uncharted Levels

Concept team (3)

Prop/dynamics team (4)

Ideal production schedule



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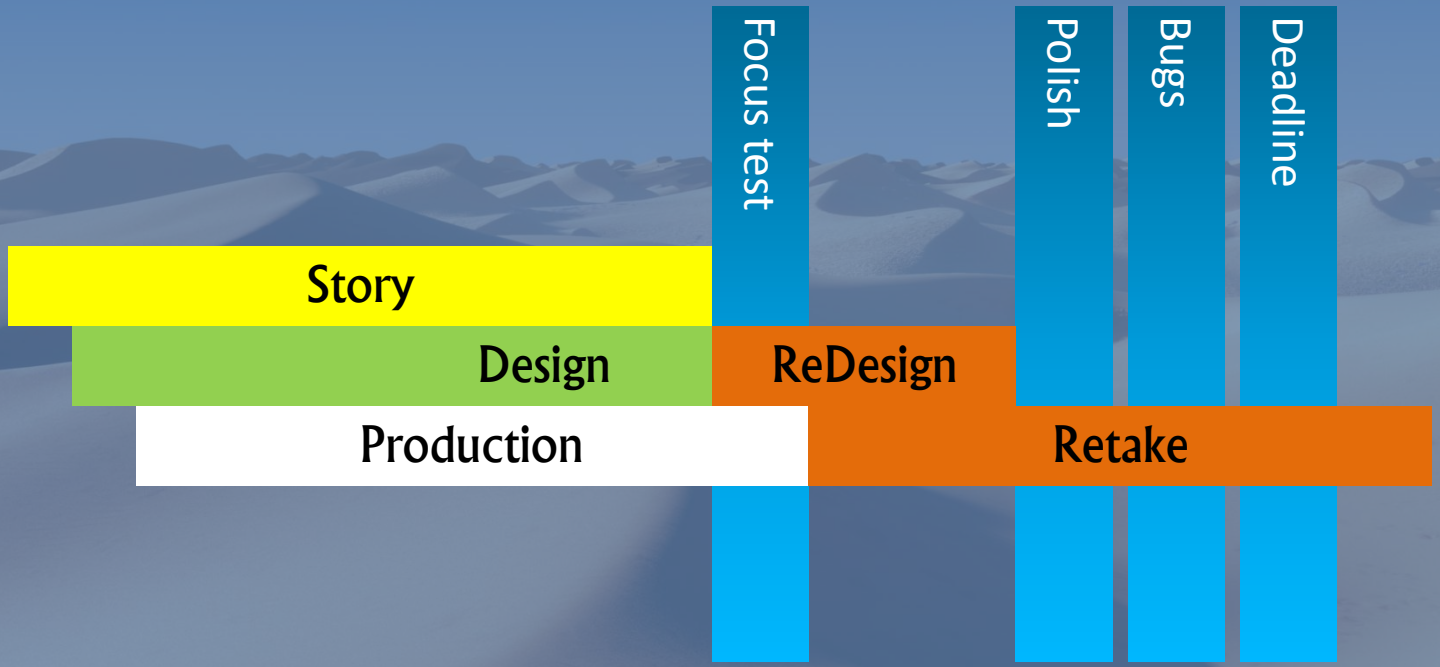
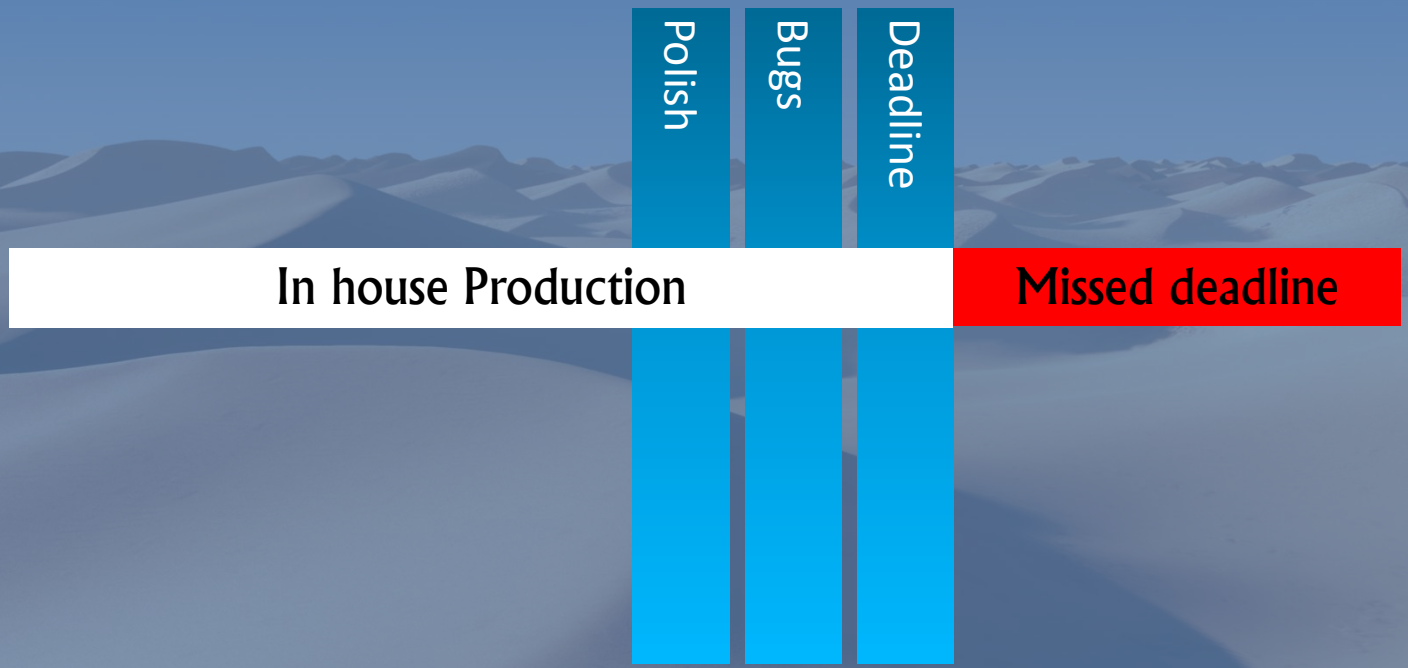
DRAKE'S DECEPTION

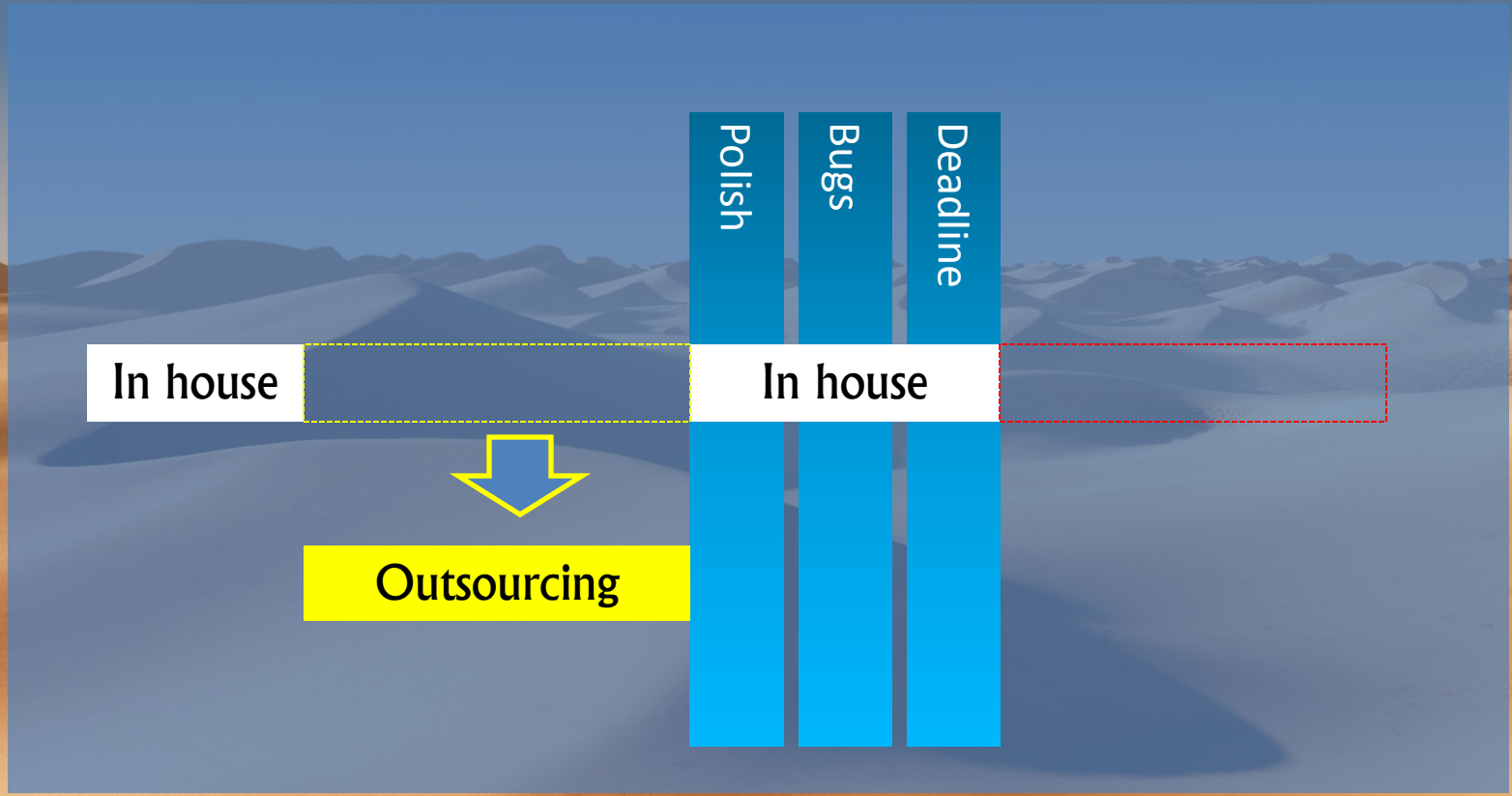
What actually happens….



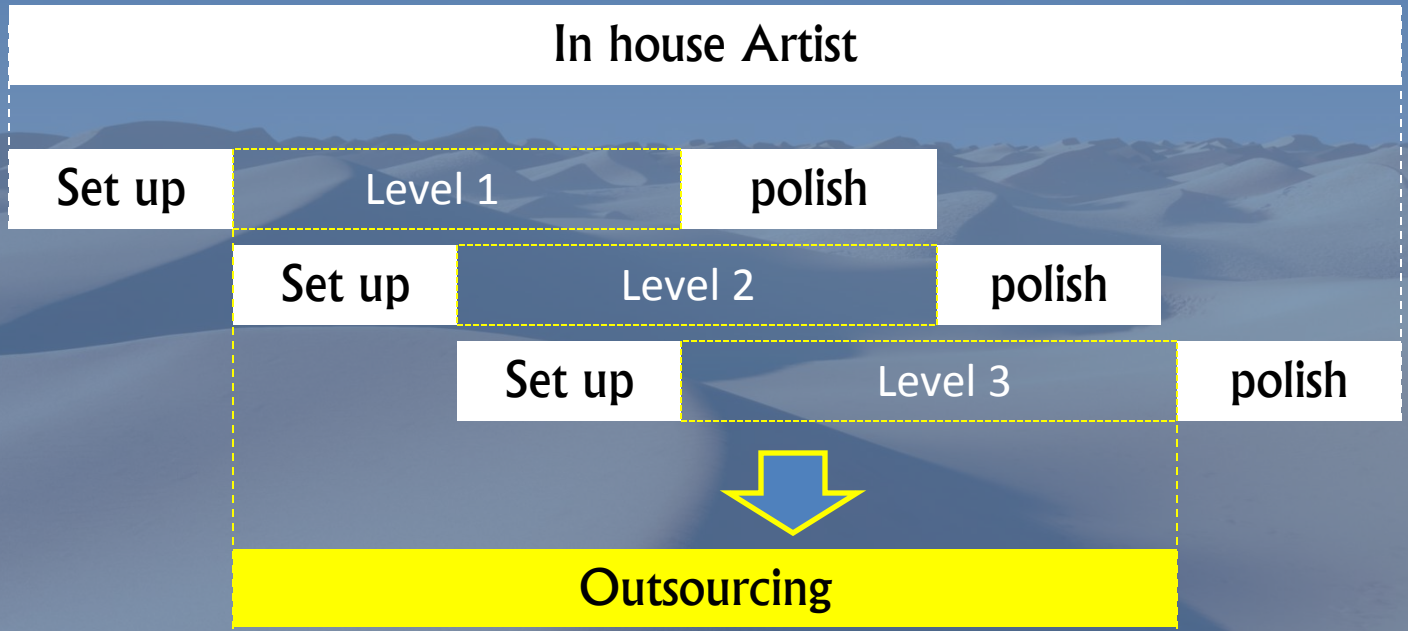
Production Problem.....



Proposed solution….



Scaling the process



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DRAKE'S DECEPTION

Uncharted 1: Drakes Fortune

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DRAKE'S DECEPTION

Uncharted 2: Among Thieves

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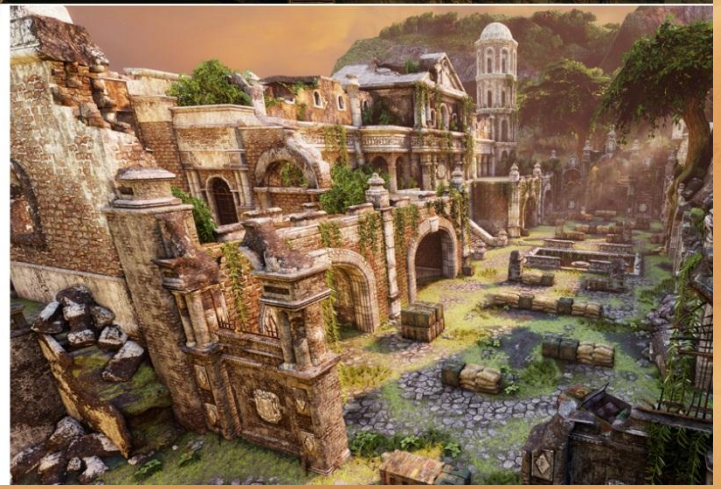
DRAKE'S DECEPTION

Uncharted 2: Among Thieves



Environment team post mortem

-Bad Normal maps
-Inefficient UVing and Modelling
-Noisy and Dark diffuse textures

Character team post mortem

-Bad anatomy skills
-Inefficient Uving and topology
-Random cloth folds
-bad silhouettes

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Uncharted 3 – environment modeling

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DRAKE'S DECEPTION
Uncharted 3 – characters and props

UNCHARTED 3
DRAKE'S DECEPTION
Uncharted 3 – vistas, statues and animations

Uncharted 3 – POST MORTEM

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How we select our vendors?

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DRAKE'S DECEPTION
TESTING the Vendors

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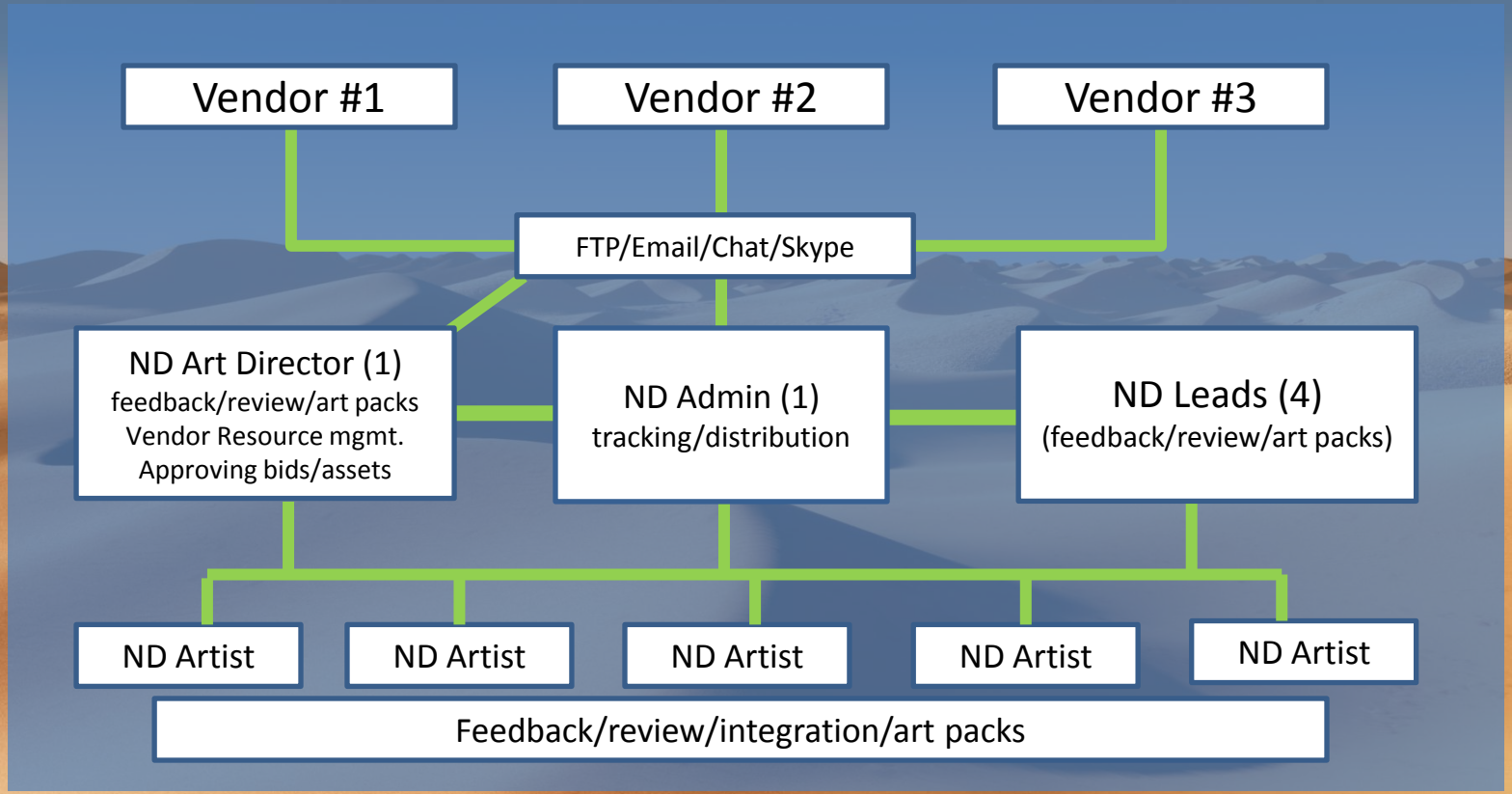
How do we organize ourselves?



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The ART and Technology Bible

Training the Outsourcing Vendors

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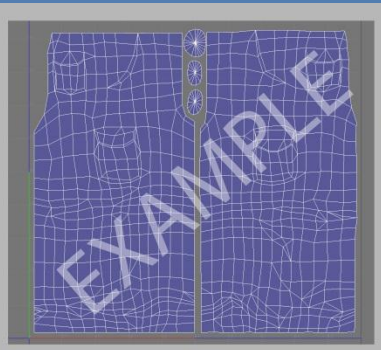
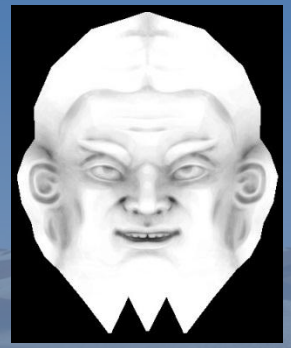
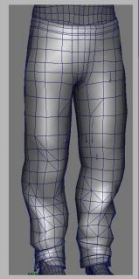
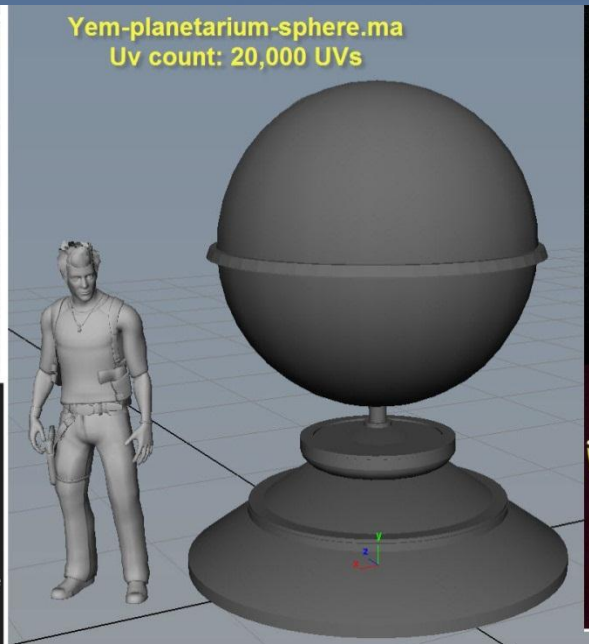
Sample files and our methods



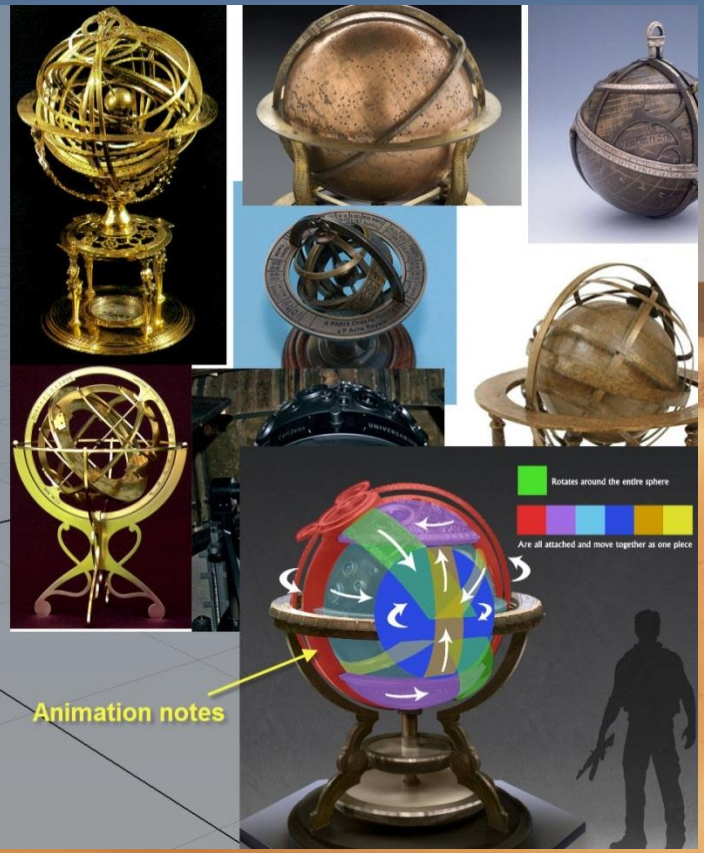




Art packs – intro

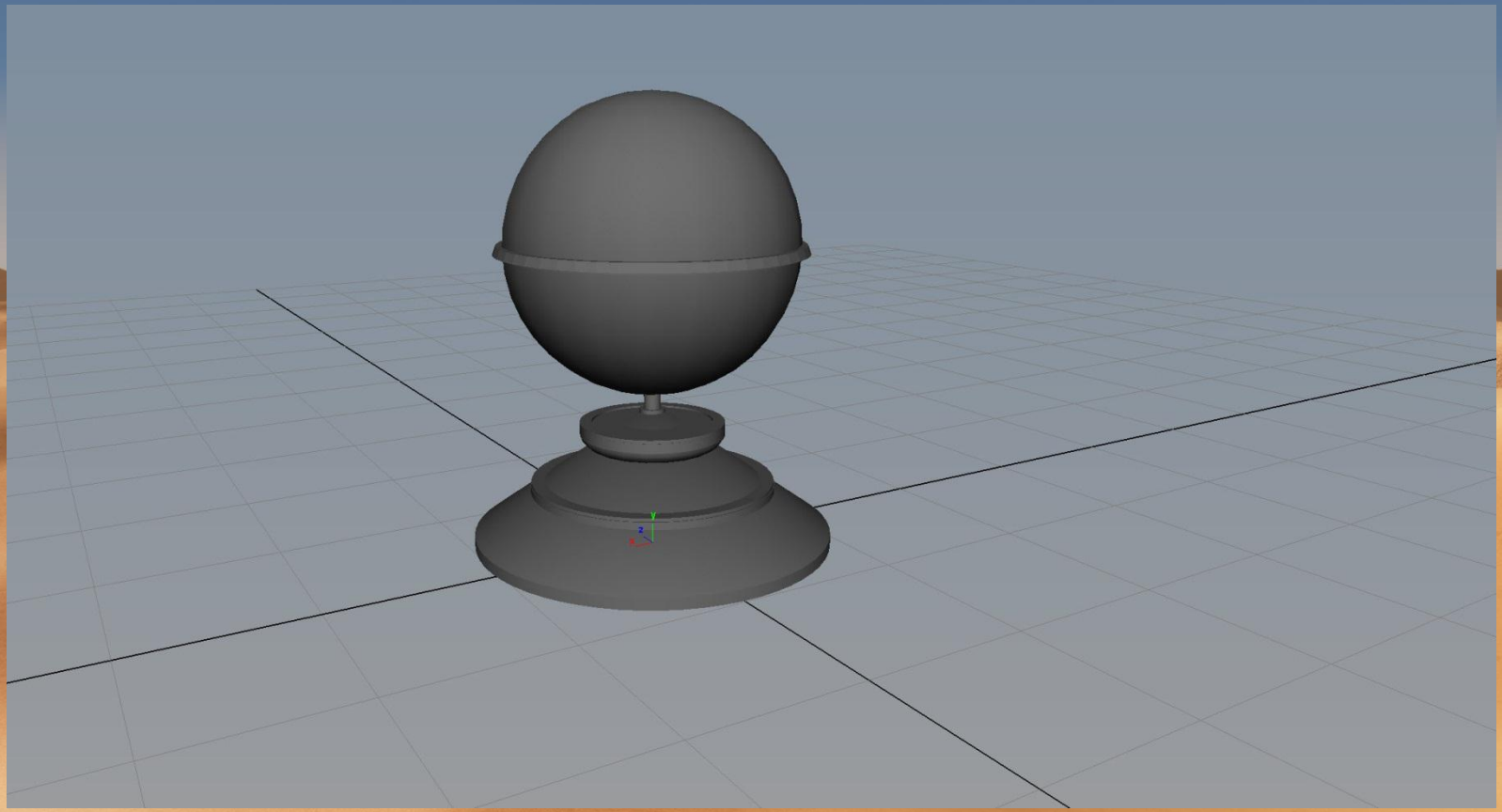


(4) textures sets.
1) trims for rings, tiling sideways
2) tiling metal on the globe
3) Decal page for overflow uniqu patterns
4) glass



Animation notes

Setting up an art package



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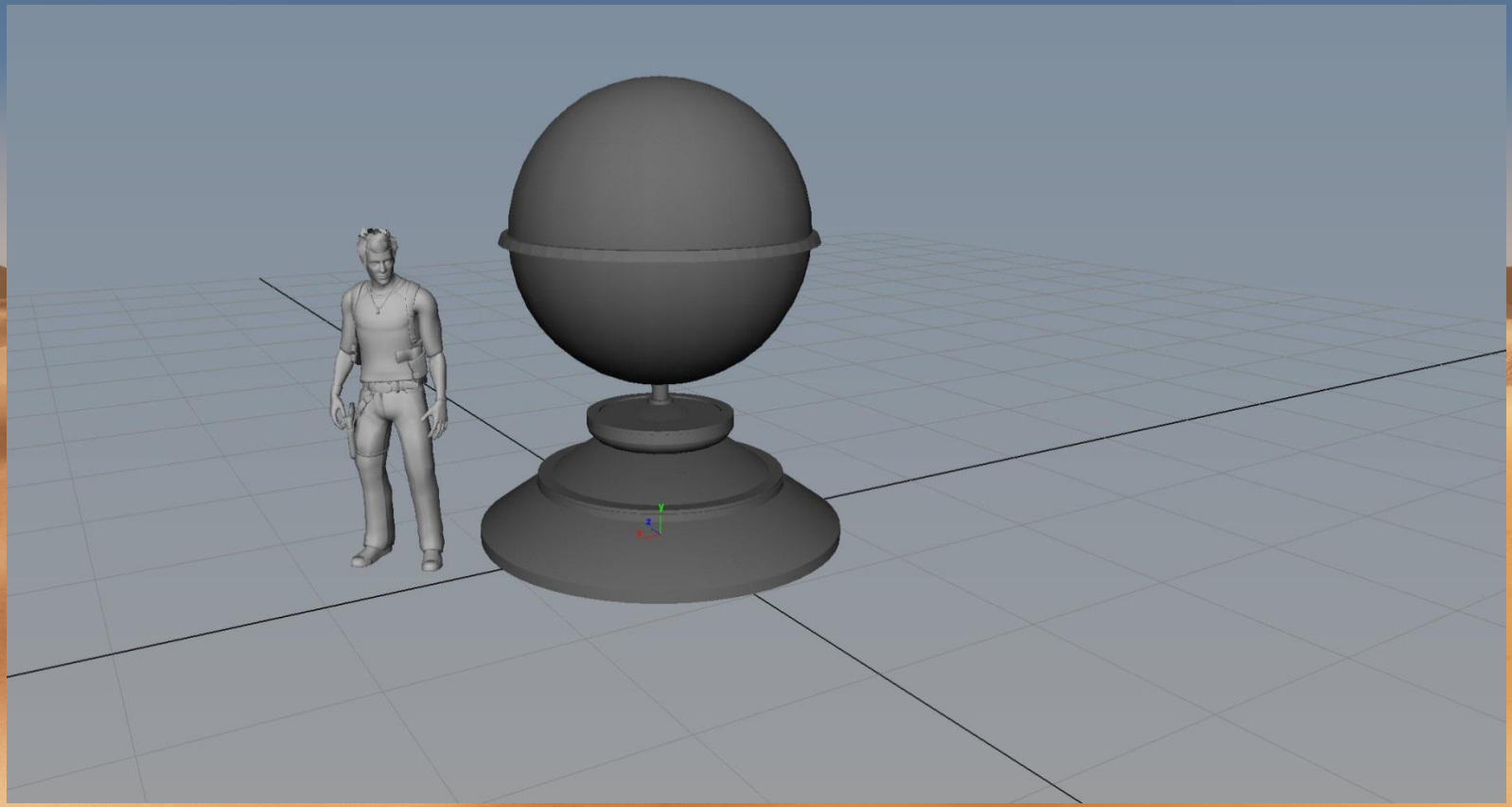
Art packs - Block mesh and size reference



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Art packs - Reference pictures

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Art packs – Visual instructions

Top view

3 legs

Reference

Texture

Texture

Texture

Art packs – Providing contextual concept art

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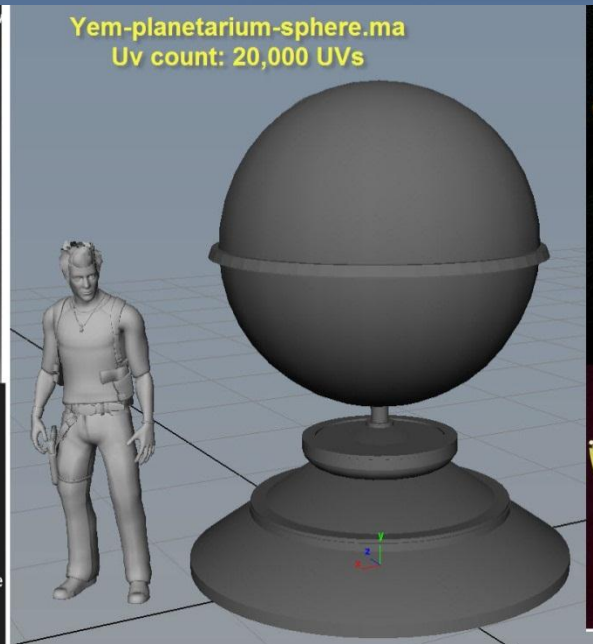
Art packs – Putting it all together in a page



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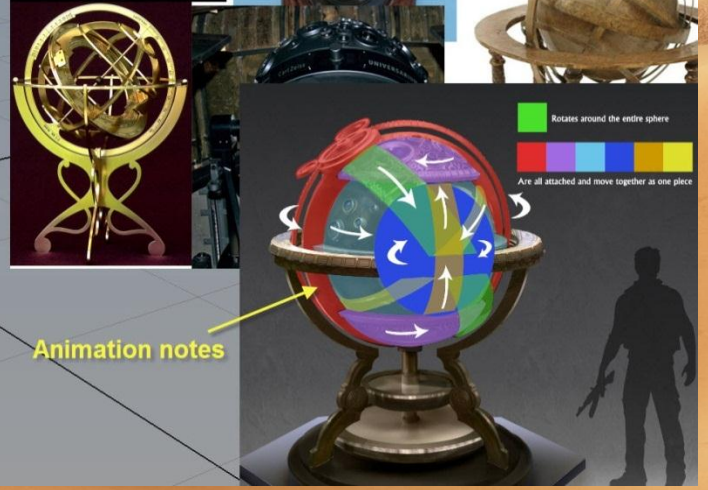

Animation notes

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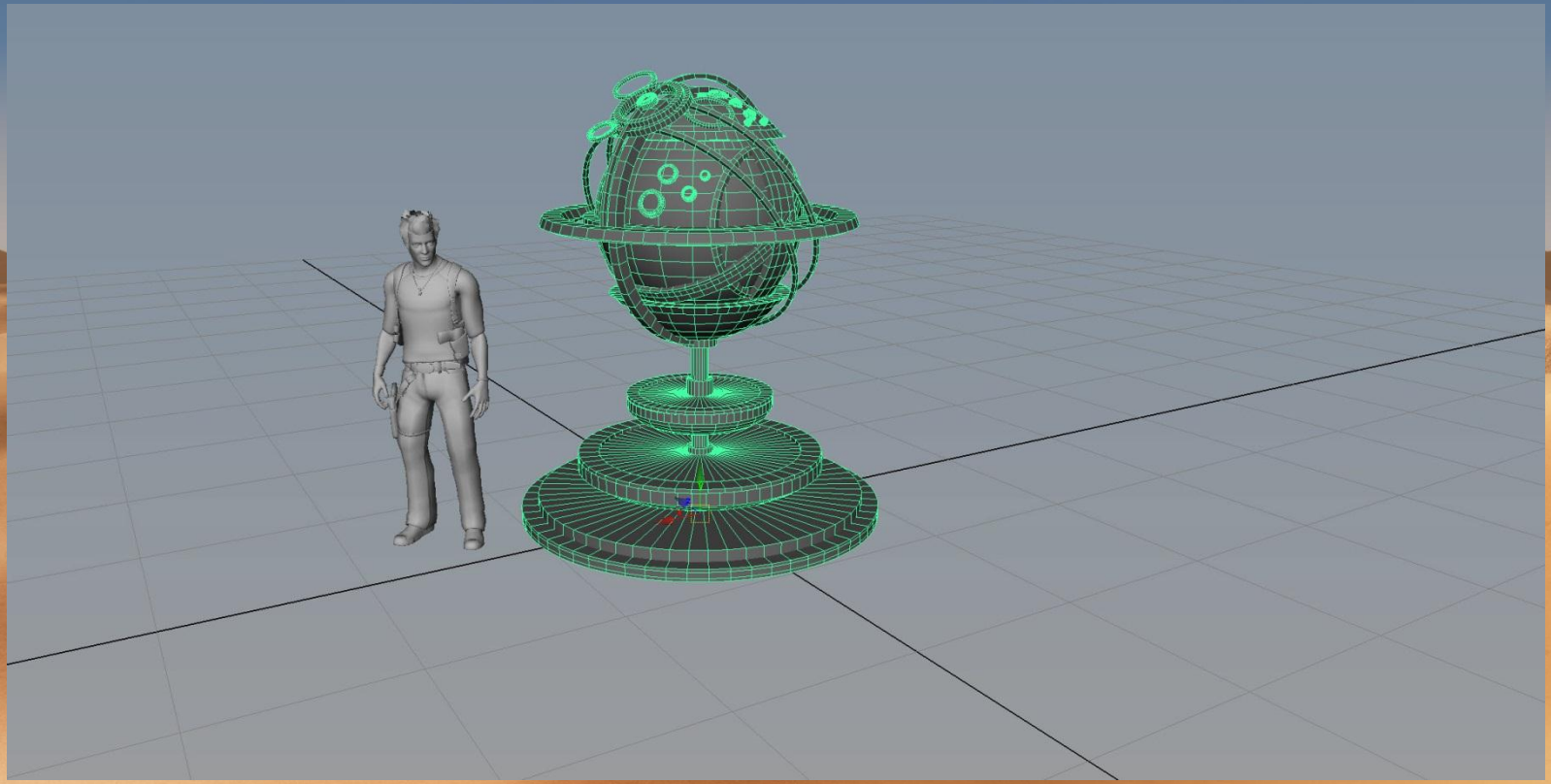
Art packs – First pass modeling



Art packs – Finished asset

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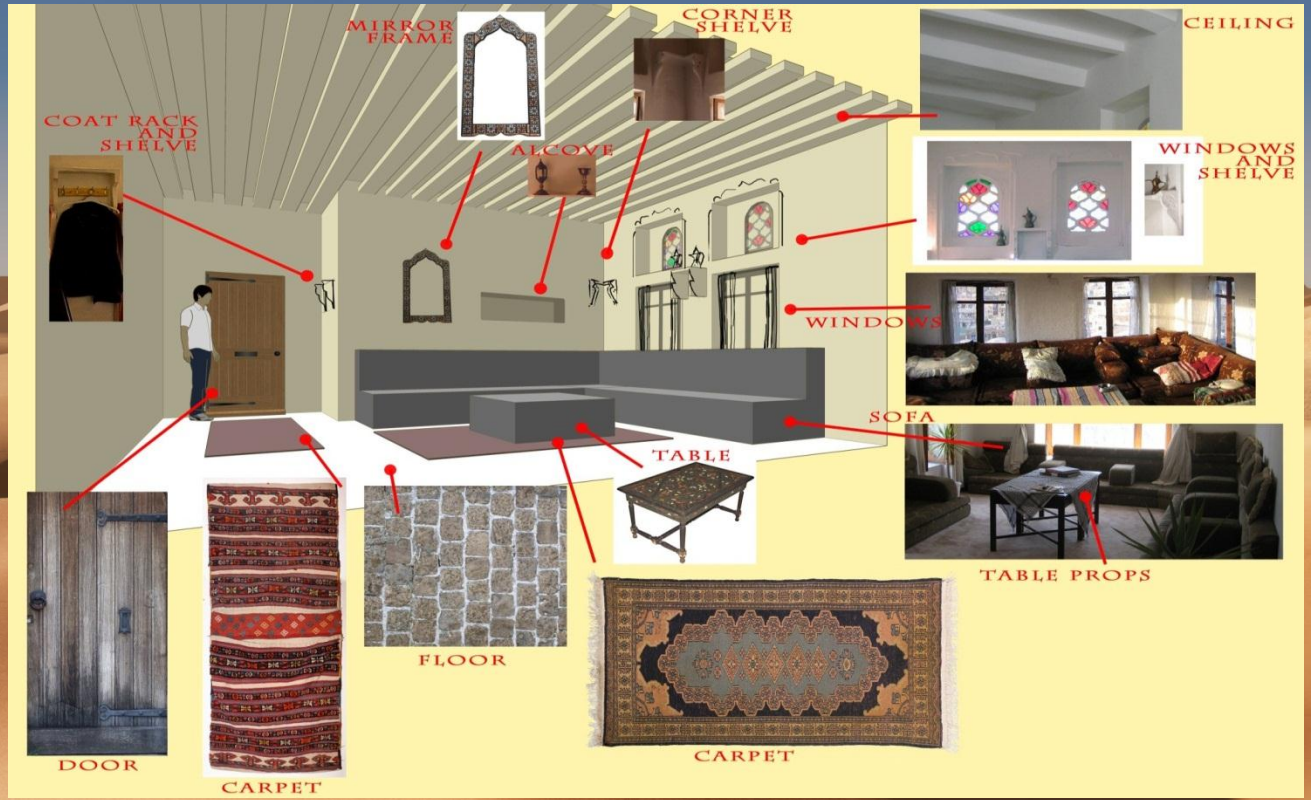
Art packs – quick call outs



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Art packs – Video in game

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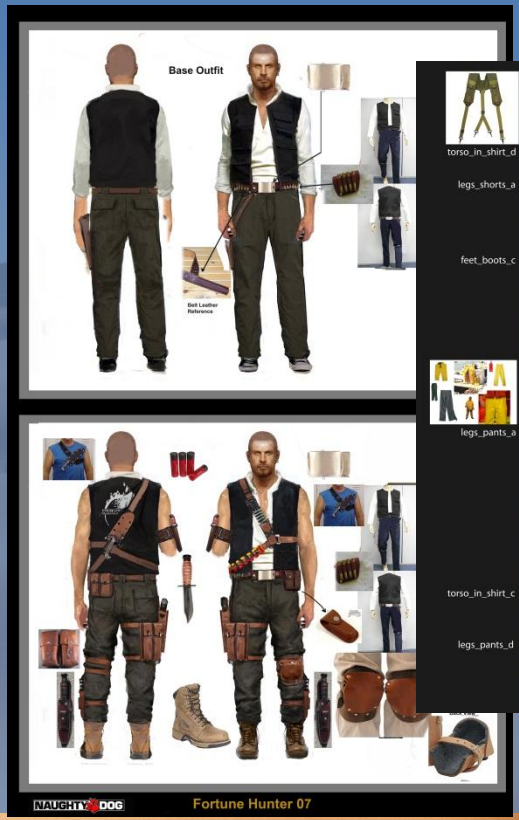
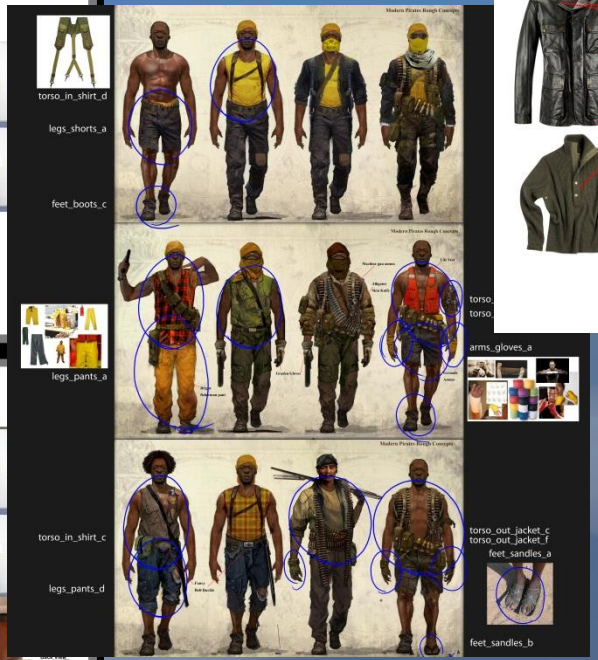
Art packs - Characters





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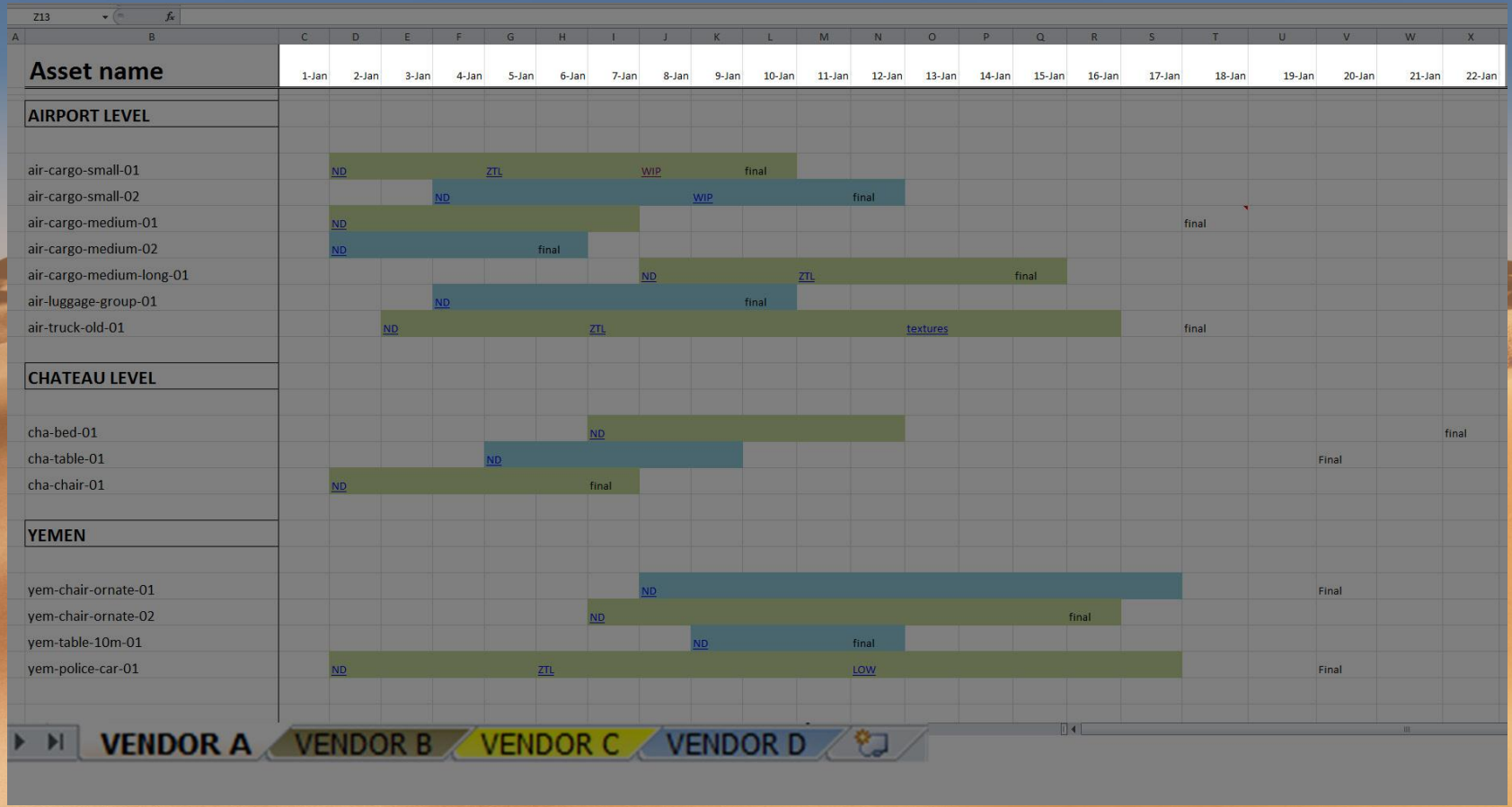
How we Track the assets



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AIRPORT LEVEL																						
air-cargo-small-01		ND			ZTL			WIP		final												
air-cargo-small-02				ND					WIP			final										
air-cargo-medium-01		ND																final				
air-cargo-medium-02		ND				final																
air-cargo-medium-long-01								ND			ZTL				final							
air-luggage-group-01				ND						final												
air-truck-old-01			ND				ZTL						textures					final				
CHATEAU LEVEL																						
cha-bed-01							ND															final
cha-table-01					ND															Final		
cha-chair-01		ND					final															
YEMEN																						
yem-chair-ornate-01								ND												Final		
yem-chair-ornate-02							ND								final							
yem-table-10m-01									ND			final										
yem-police-car-01		ND				ZTL						LOW								Final		

VENDOR A | VENDOR B | VENDOR C | VENDOR D

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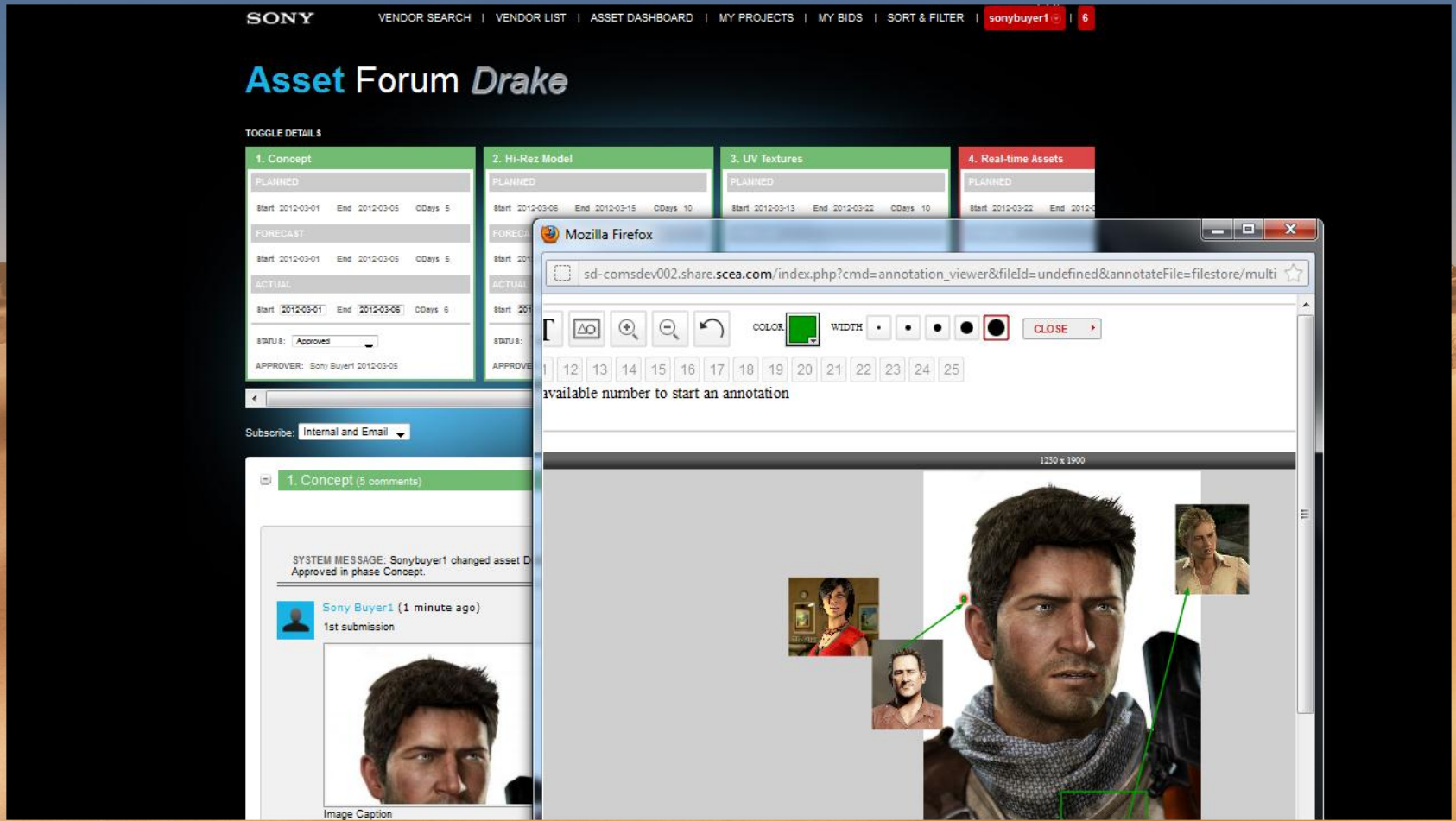
SCEA Visual Art Service Group COMS



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Outsourcing Environments

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Outsourcing Yemen Environment

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Yemen – Concept art

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Yemen – production art

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Yemen – Picture references

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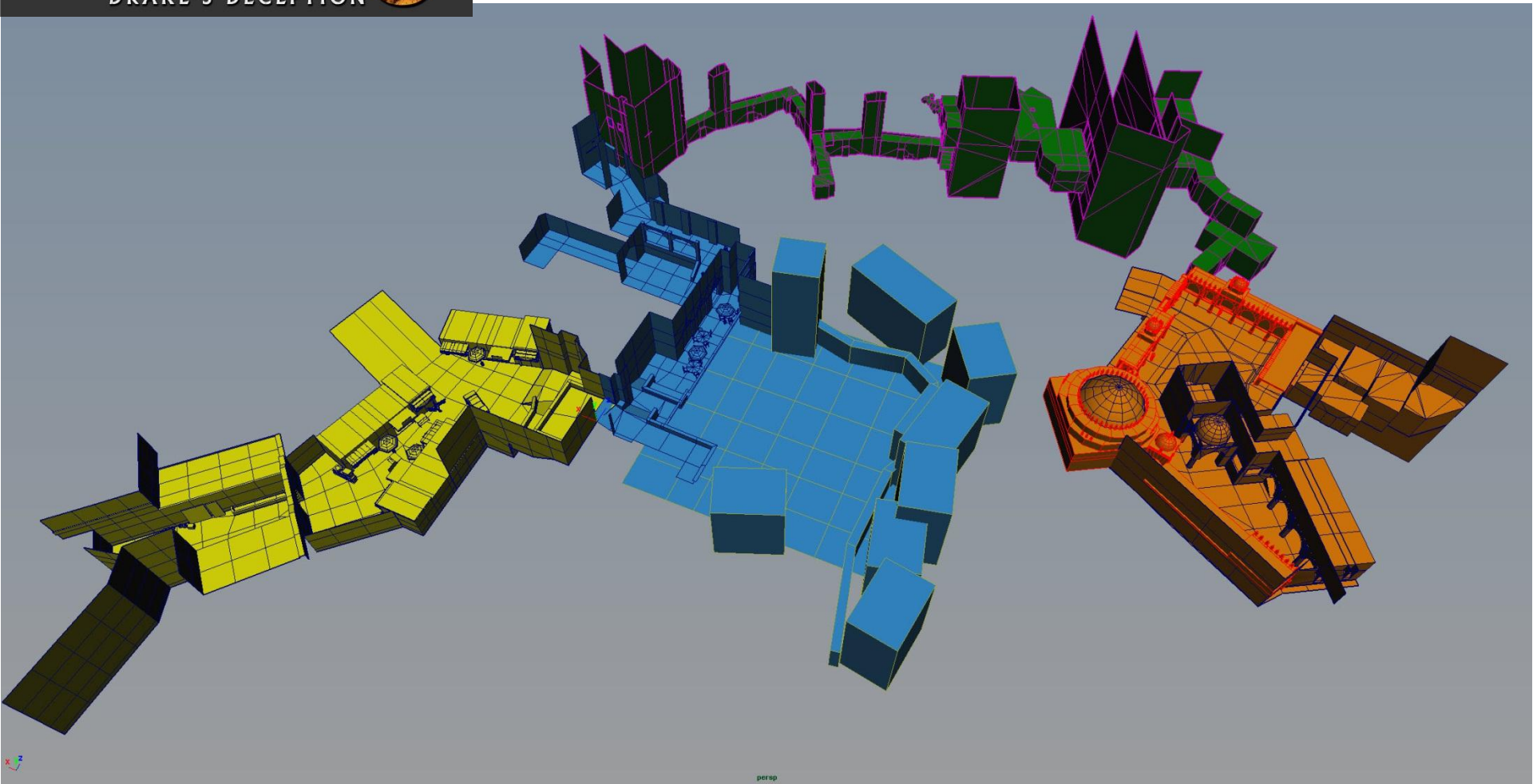
Yemen – level Block mesh



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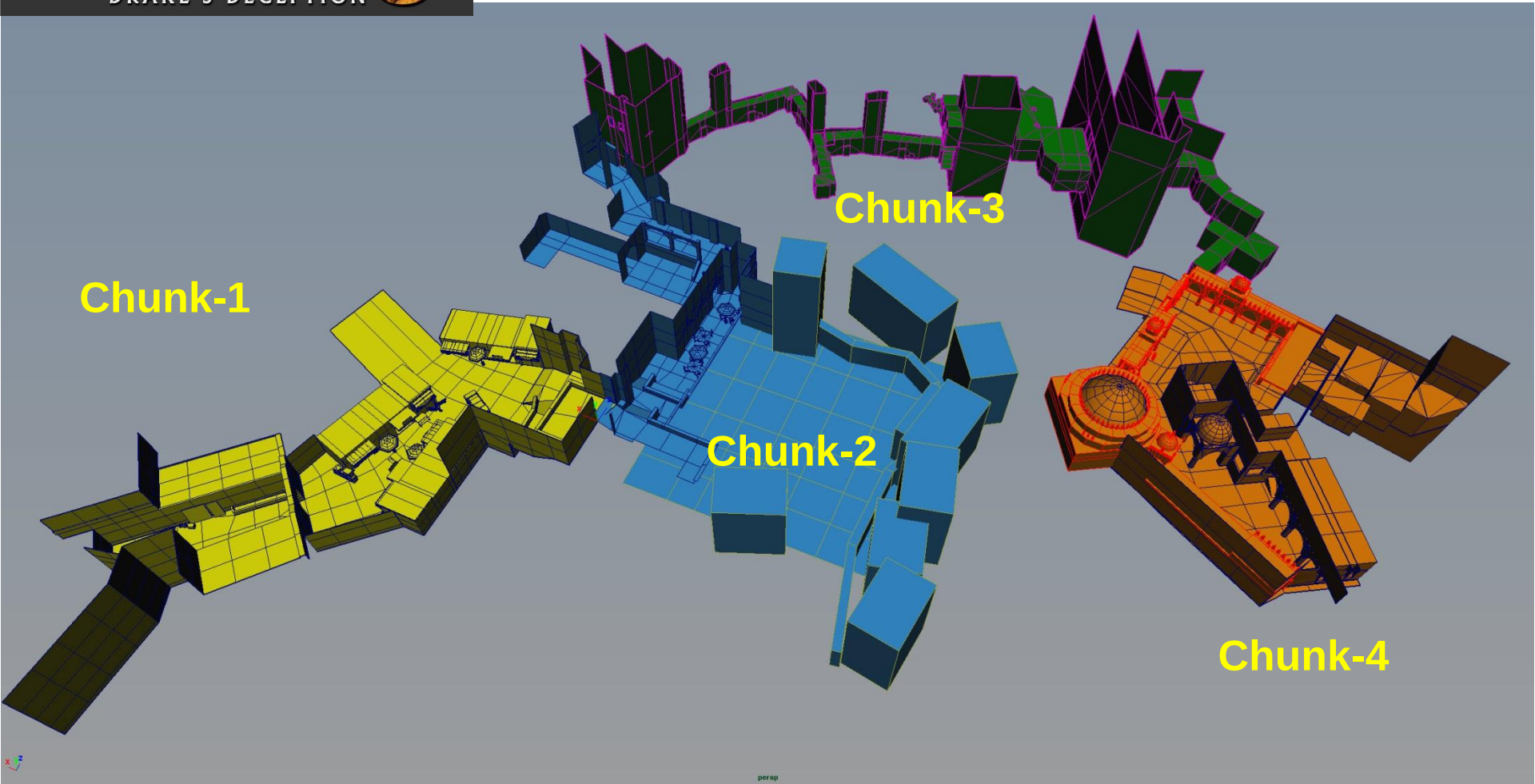
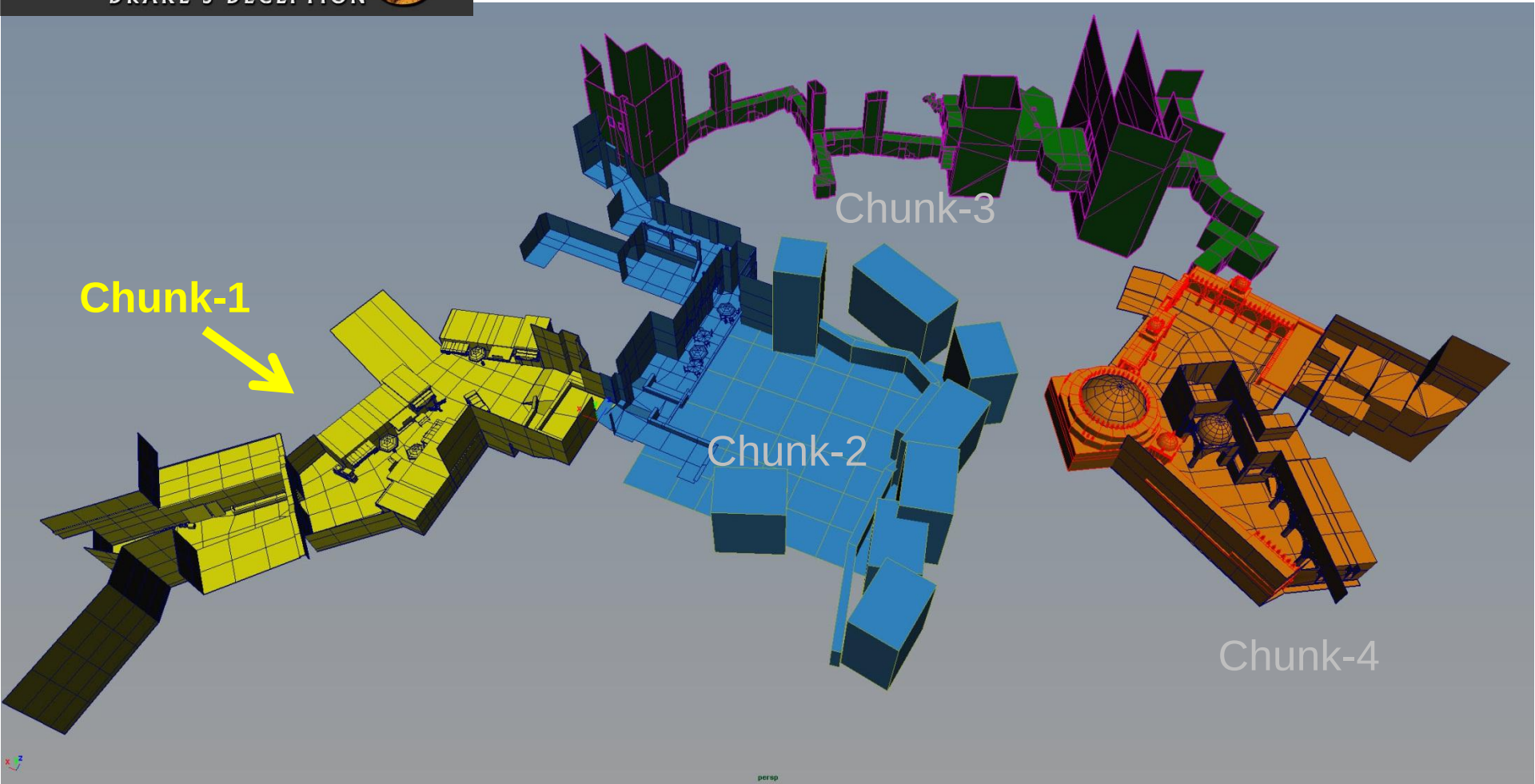
Yemen – level chunks



Yemen – Chunk 1



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Yemen – level Example

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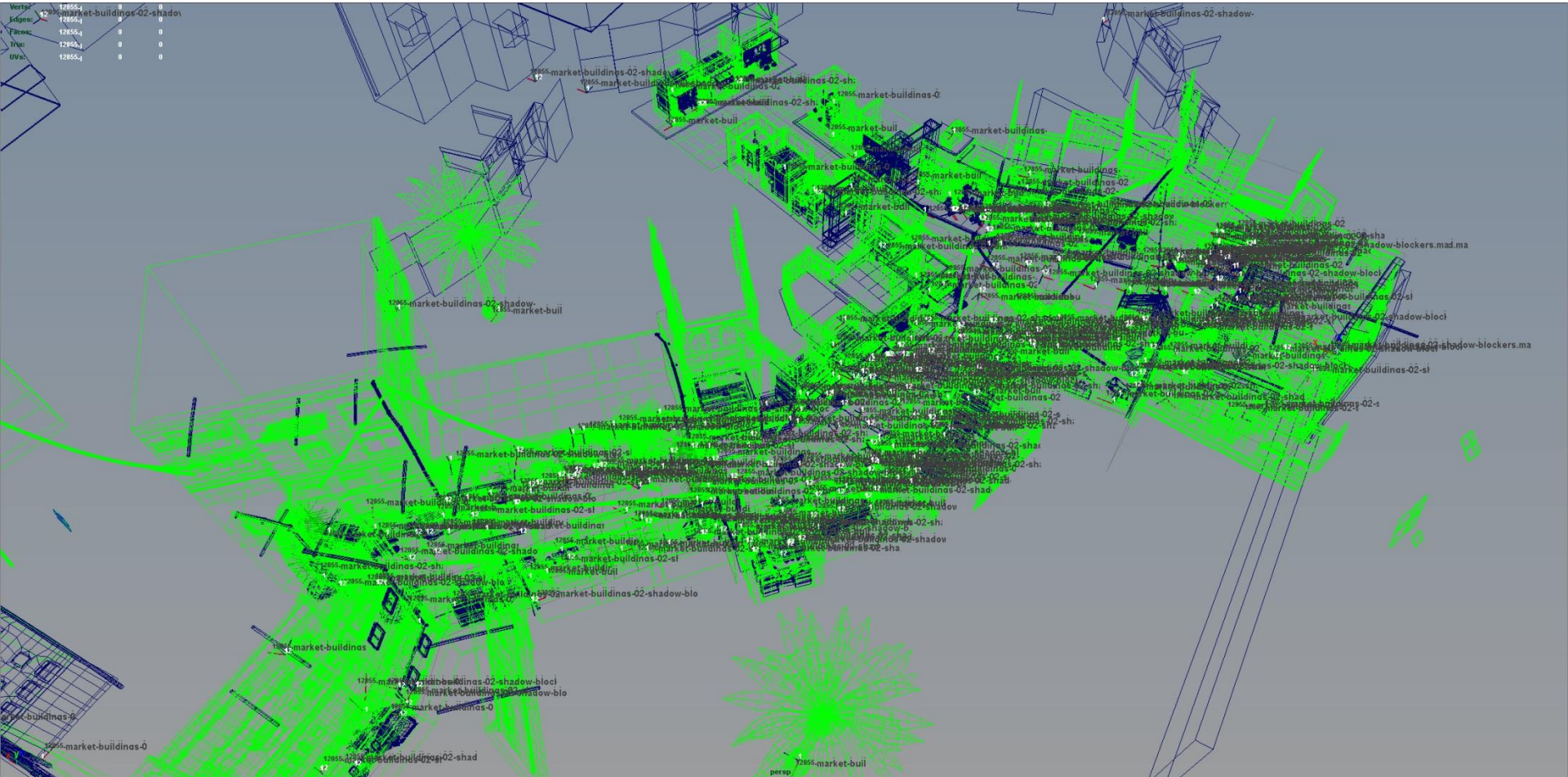
Yemen –Finished chunk with Prototypes



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Yemen – Sample textures

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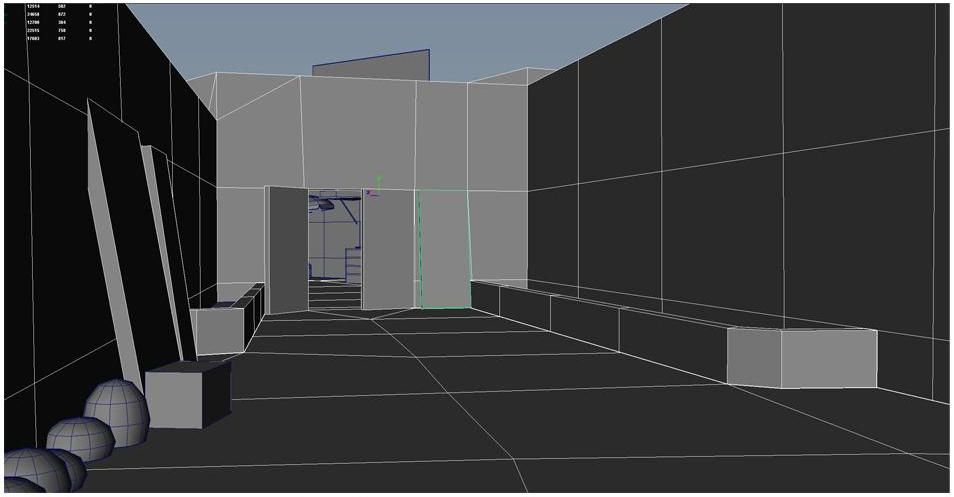
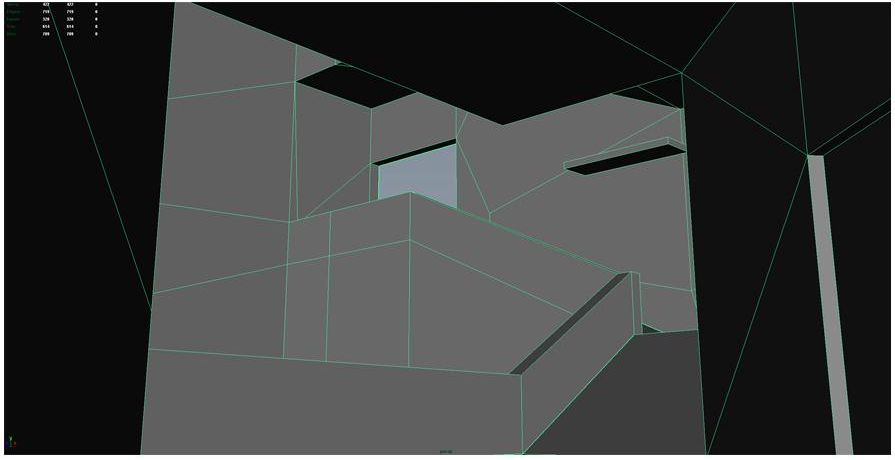
Yemen – screenshot of block mesh





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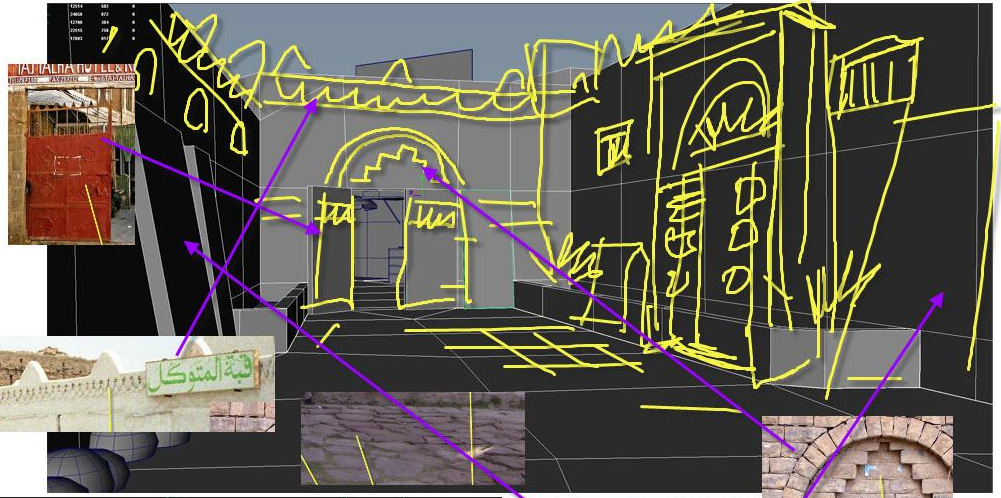
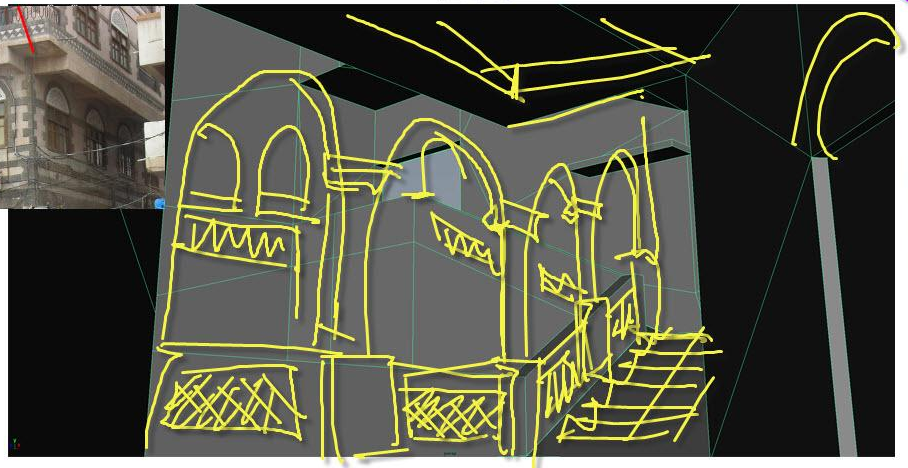
Yemen – draw over





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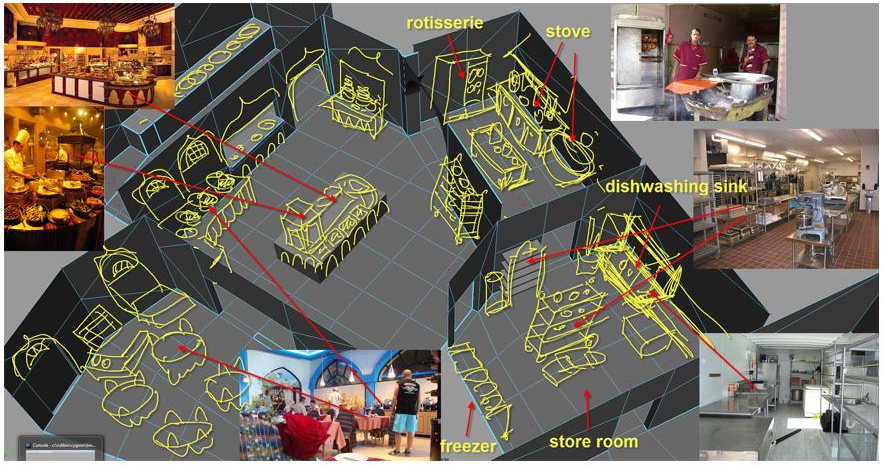
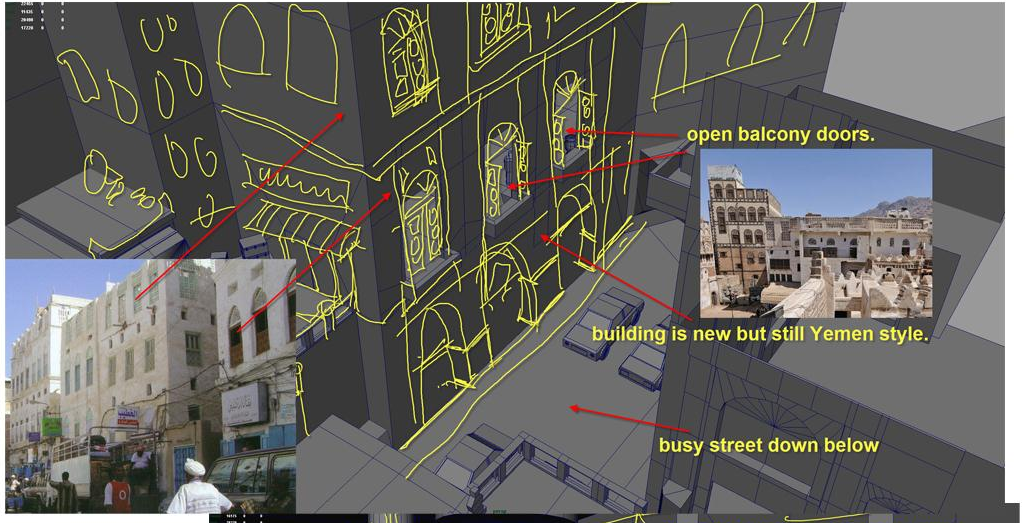
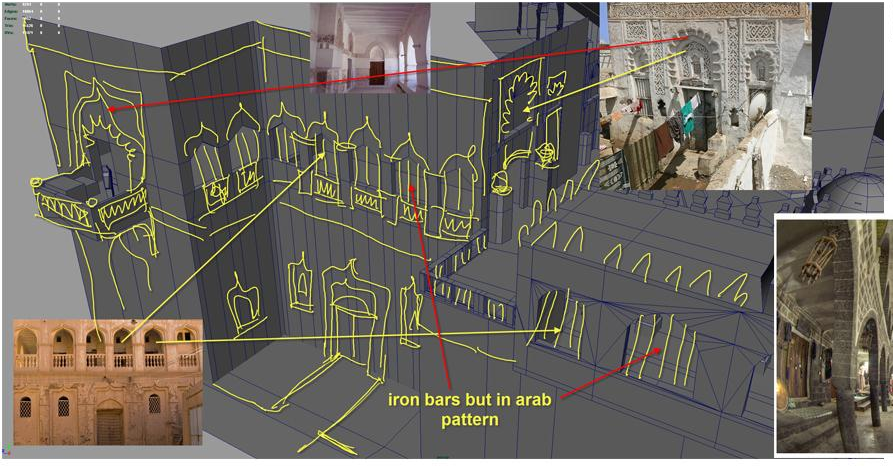
Yemen – draw over alternate view







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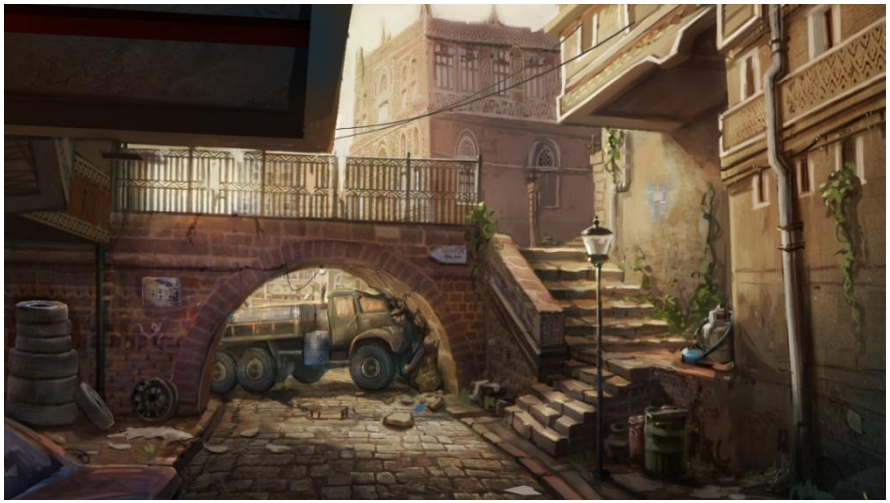
Yemen – quick production concept



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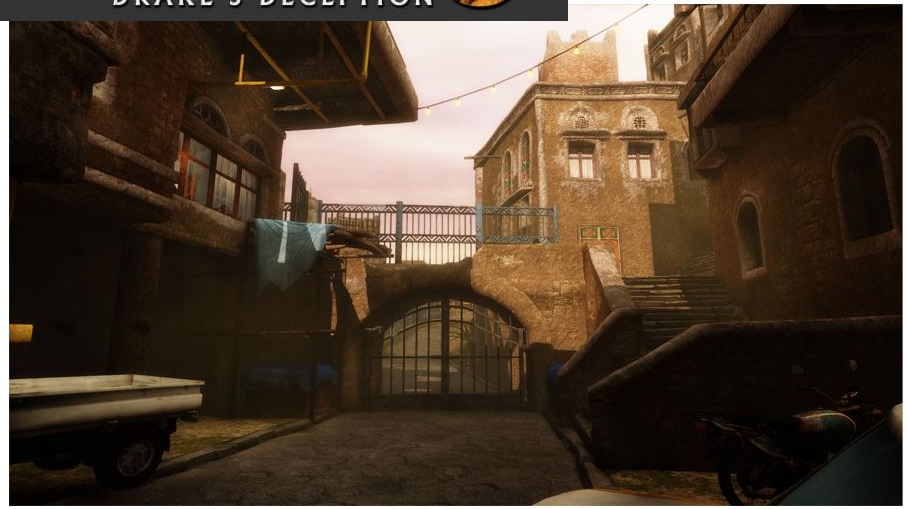
Yemen – screenshot of in-game



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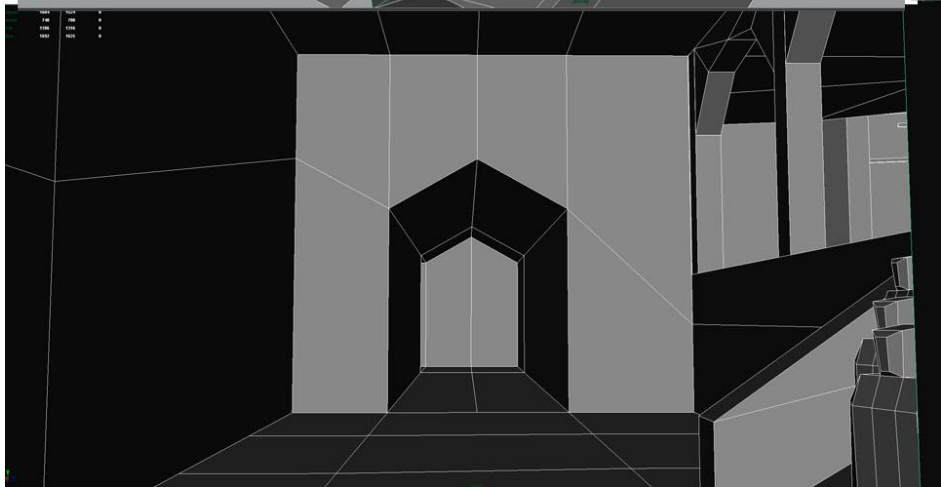
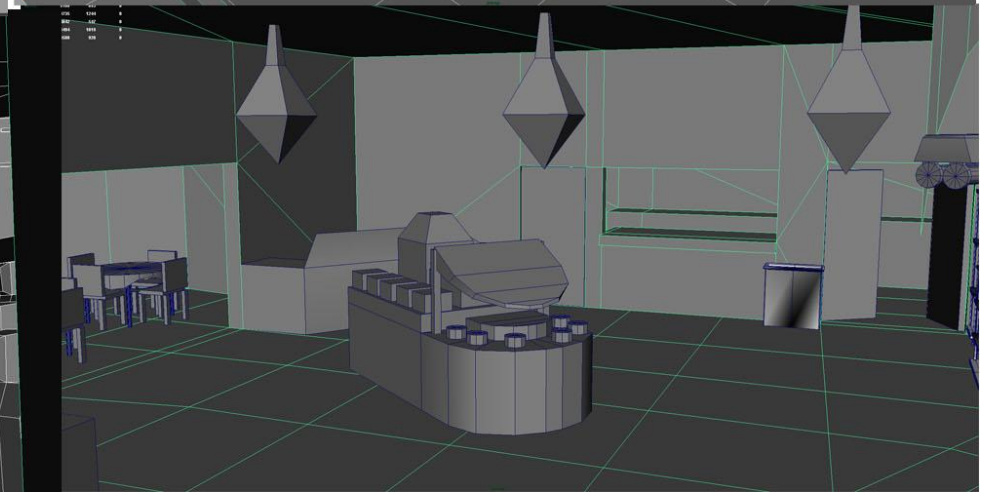
Yemen – screenshot of block mesh 2





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Yemen – draw over 2

UNCHARTED 3
DRAKE'S DECEPTION

Yemen – quick concept

UNCHARTED 3
DRAKE'S DECEPTION

Yemen – in-game screenshots

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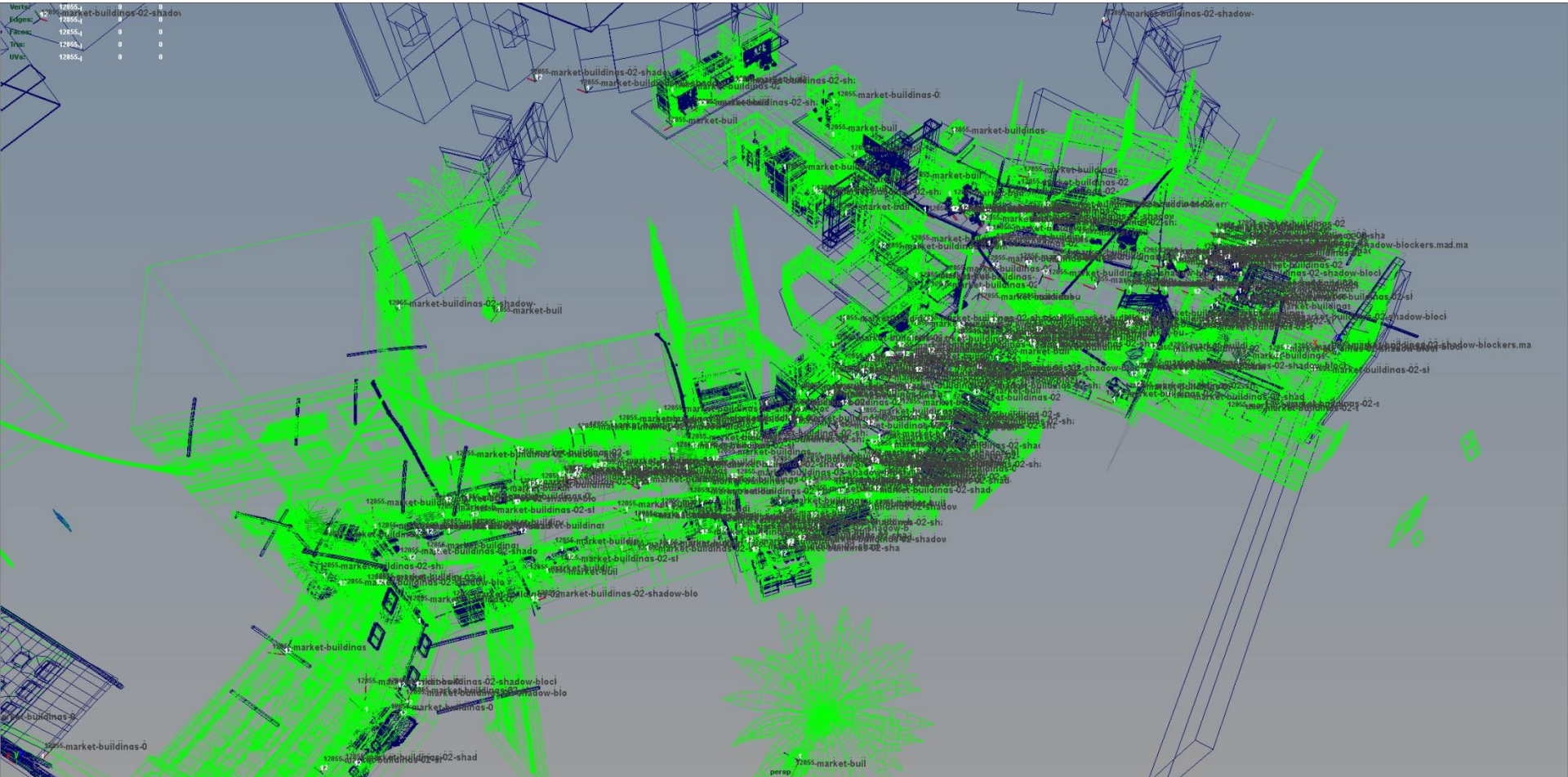
Yemen – Top view of the chunk



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Yemen – prototypes reference nodes

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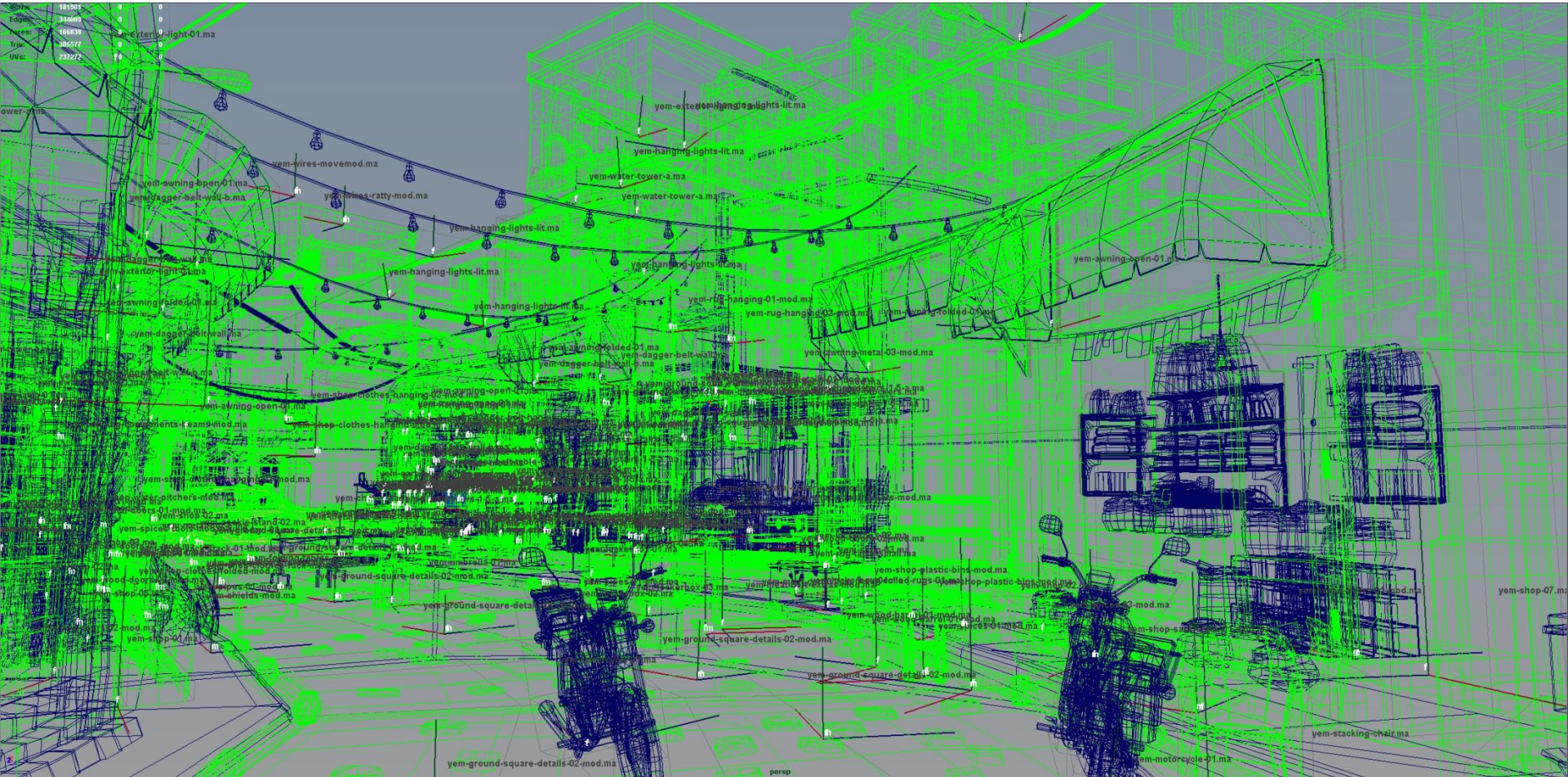
DRAKE'S DECEPTION

Yemen – expanded reference nodes



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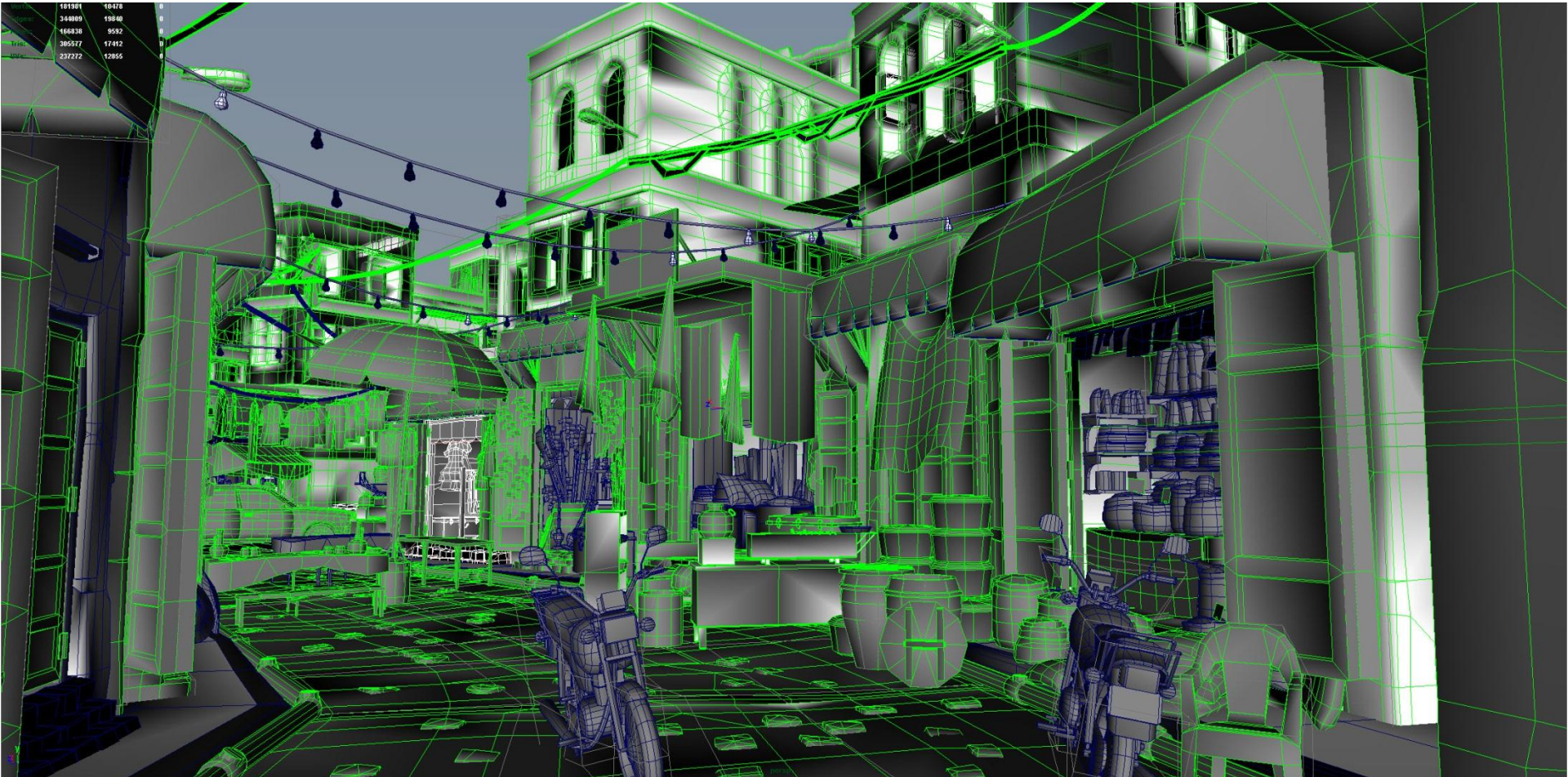
DRAKE'S DECEPTION

Yemen – shaded view



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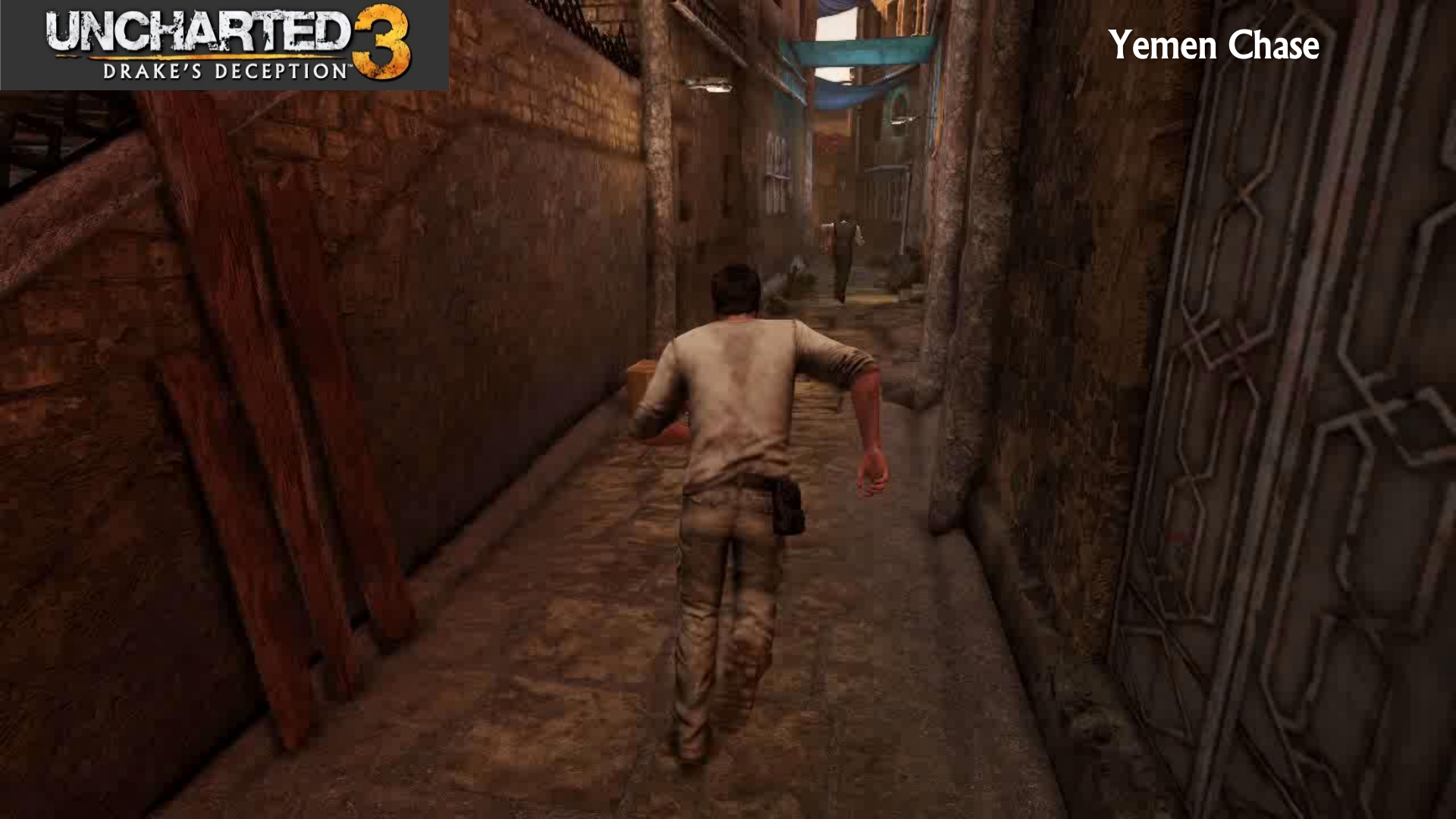
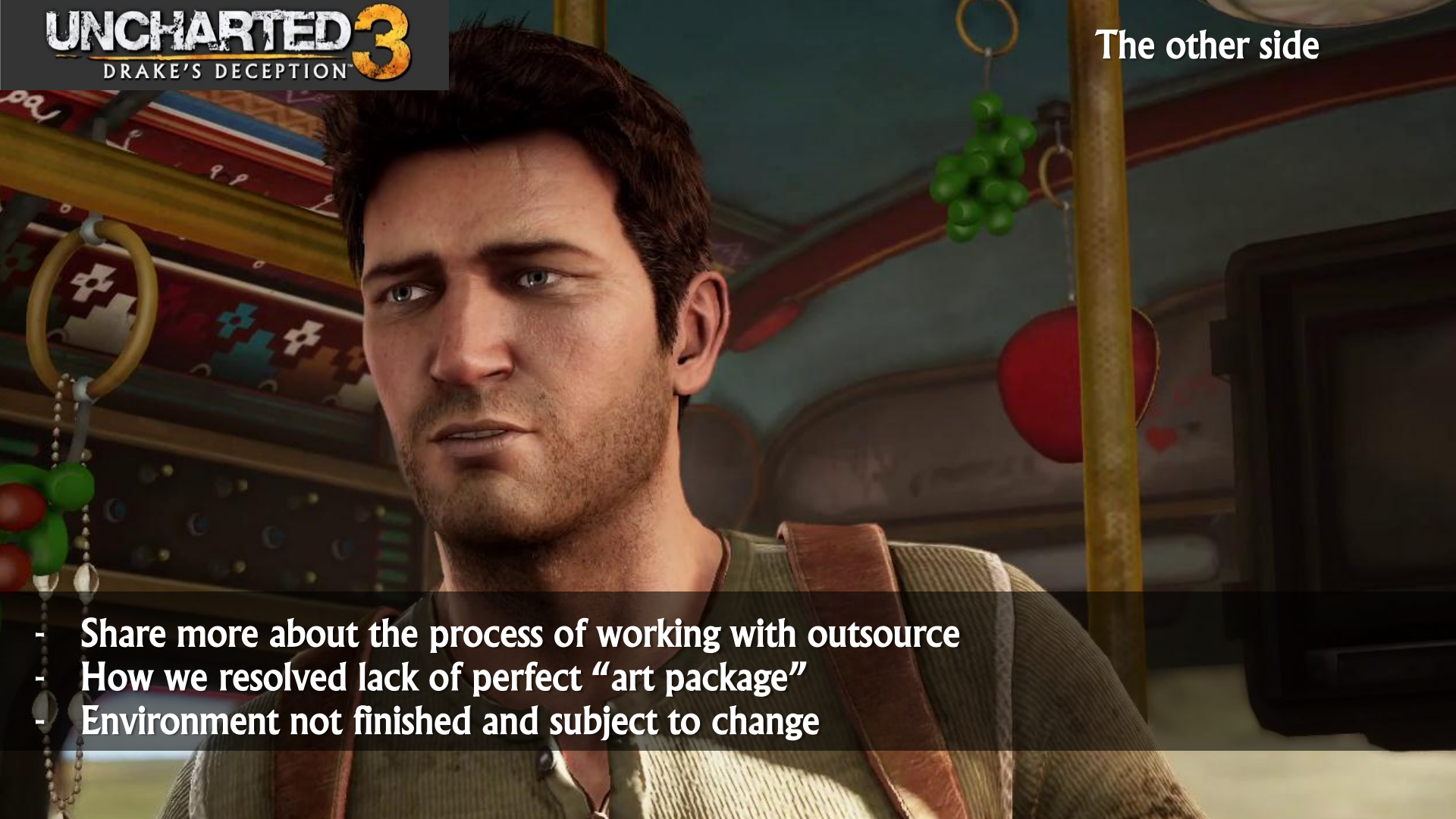
DRAKE'S DECEPTION

Yemen – texture view


UNCHARTED 3
DRAKE'S DECEPTION
Yemen Chase

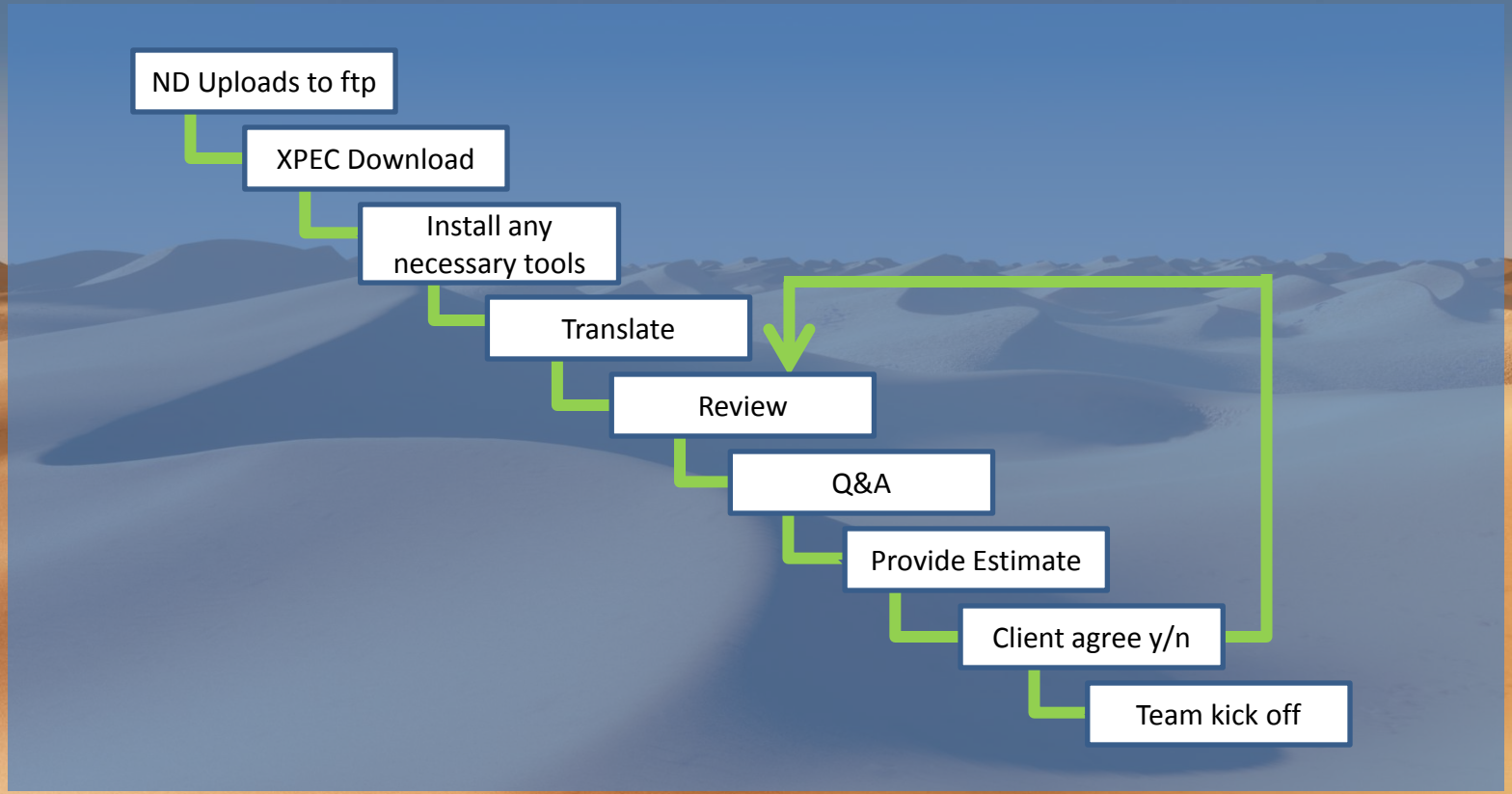


The other side

- Share more about the process of working with outsource
- How we resolved lack of perfect “art package”
- Environment not finished and subject to change

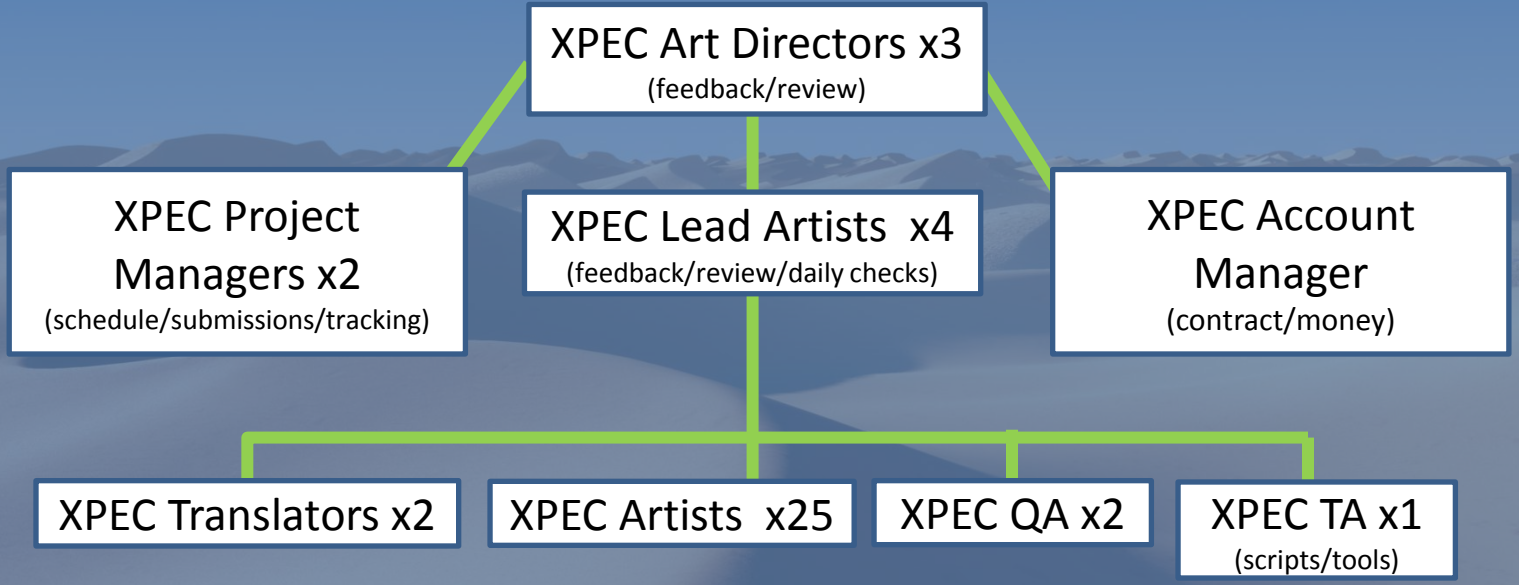
UNCHARTED 3 DRAKE'S DECEPTION

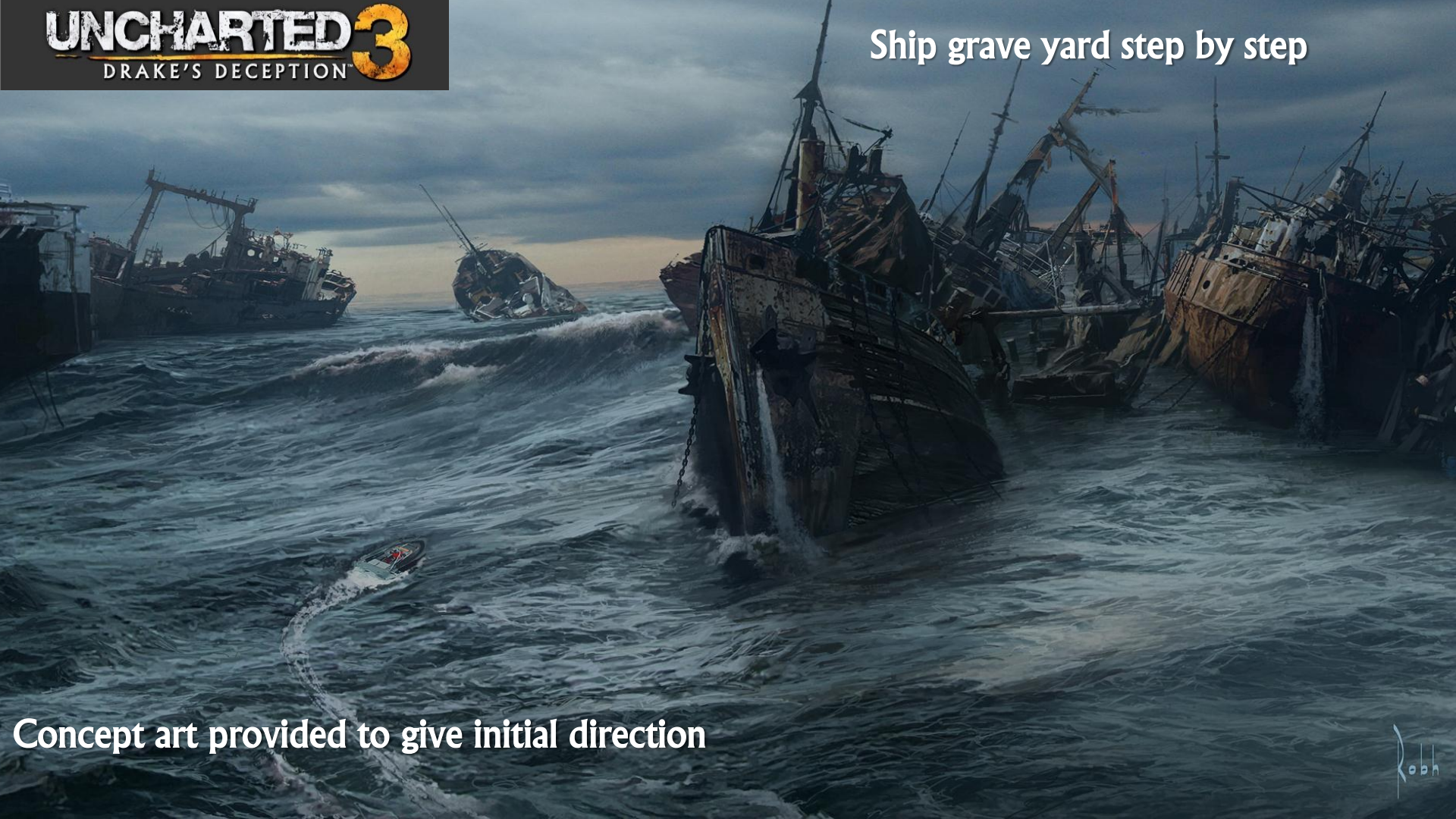
Receiving the art package

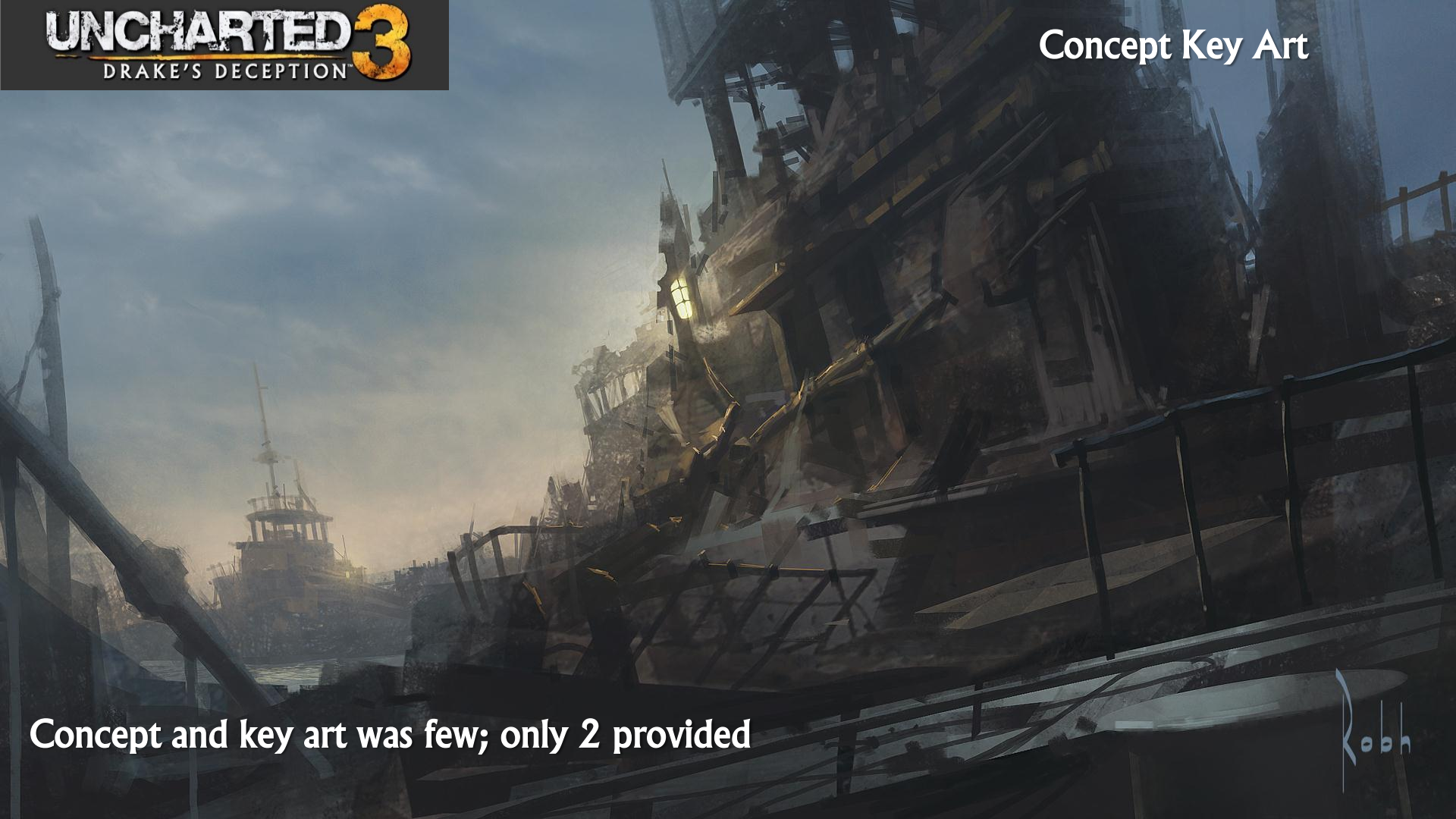


How do we organize ourselves?

Peak UC3 arrangement



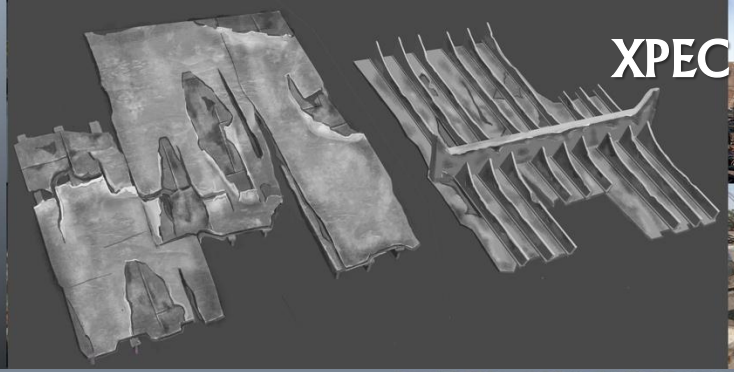

UNCHARTED 3
DRAKE'S DECEPTION
Ship grave yard step by step
Concept art provided to give initial direction

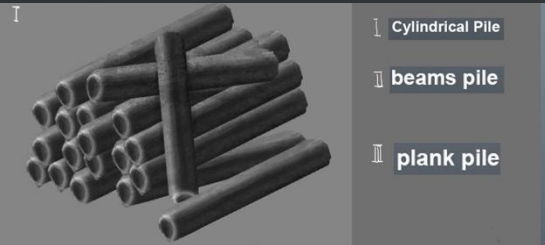

UNCHARTED 3
DRAKE'S DECEPTION
Concept Key Art
Concept and key art was few; only 2 provided

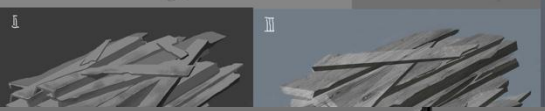
Block mesh and briefing notes

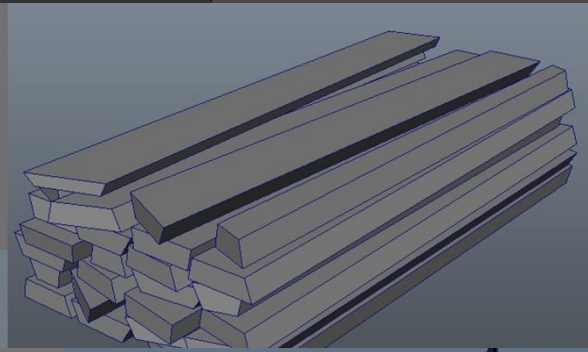
UNCHARTED 3
DRAKE'S DECEPTION

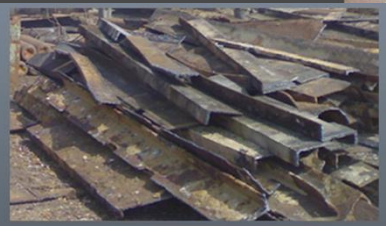
XPEC Concept Art





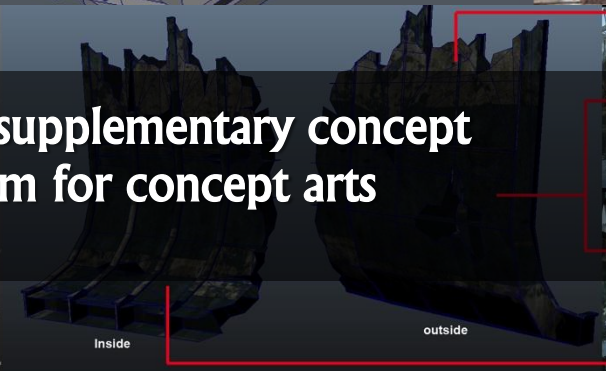


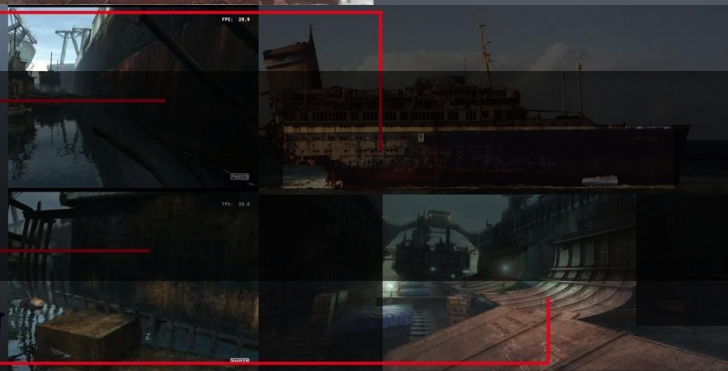




Make 3 variants;
1 wood plank pile.
1 Metal beams pile
1 Metal Cylindrical Pile

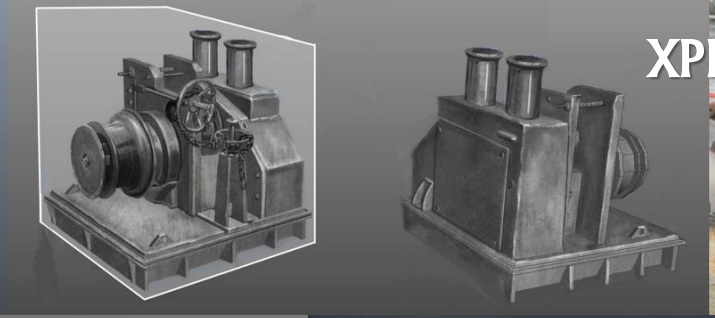
- Normally we would do supplementary concept
- Keep to 2 days maximum for concept arts

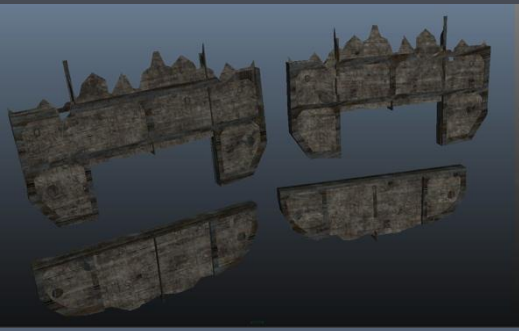


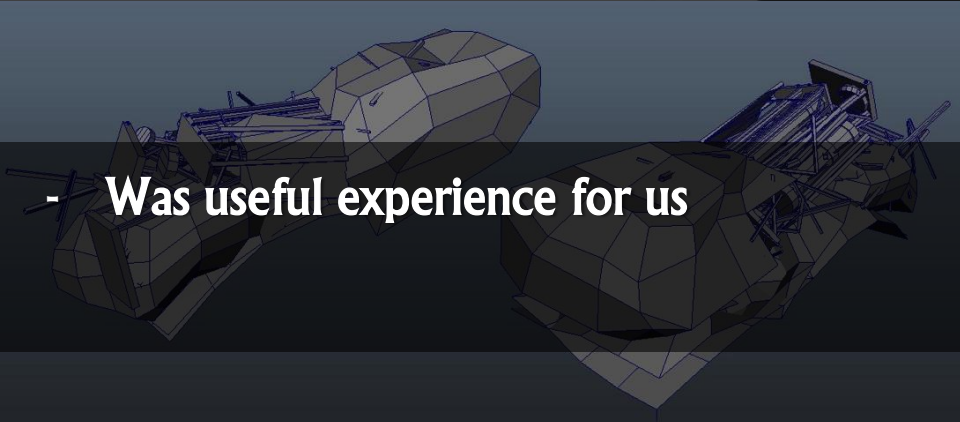


UNCHARTED 3
DRAKE'S DECEPTION

XPEC Concept Art







- Was useful experience for us

UNCHARTED 3
DRAKE'S DECEPTION

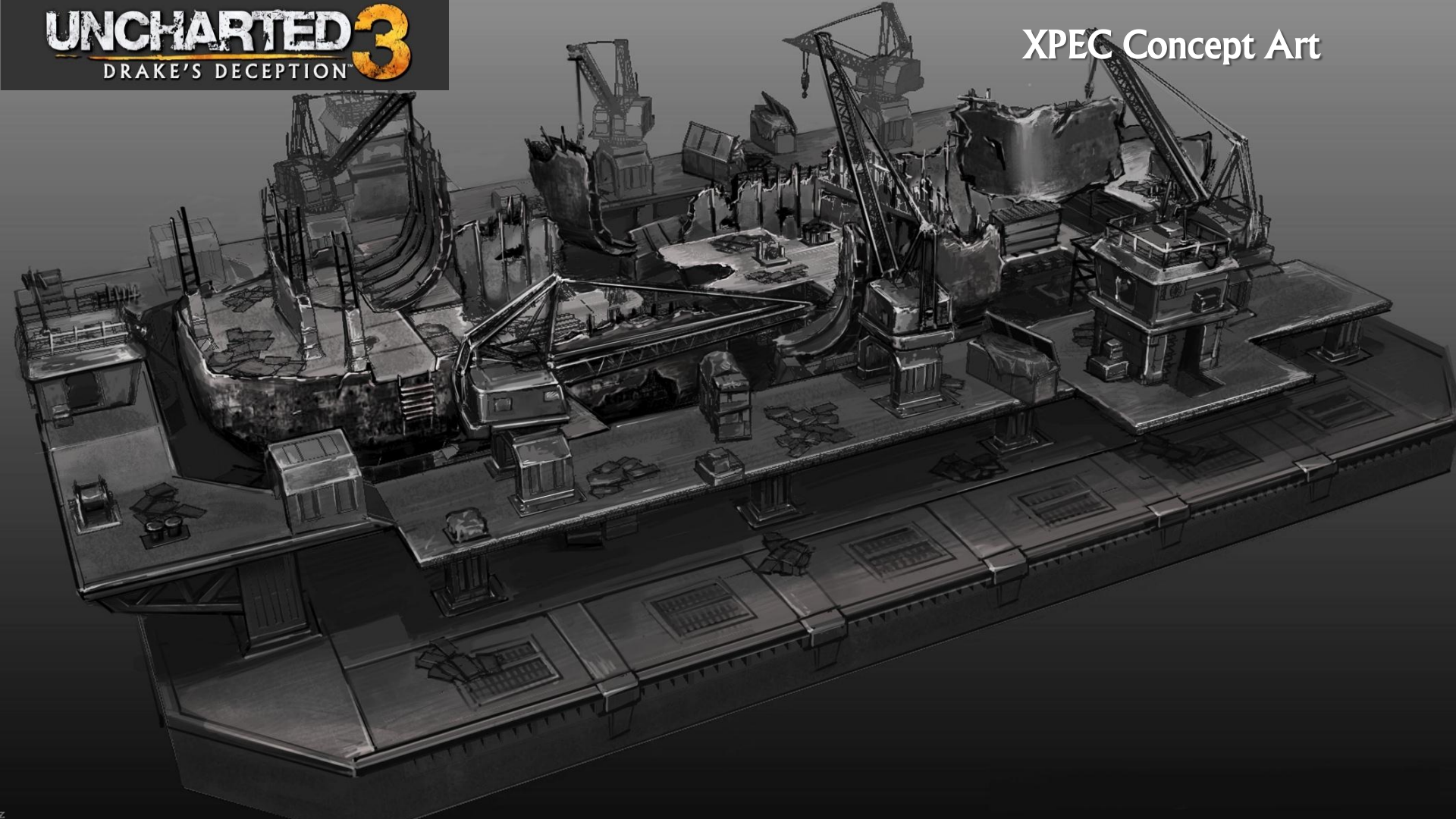
XPEC Concept Art

UNCHARTED 3
DRAKE'S DECEPTION

XPEC Concept Art

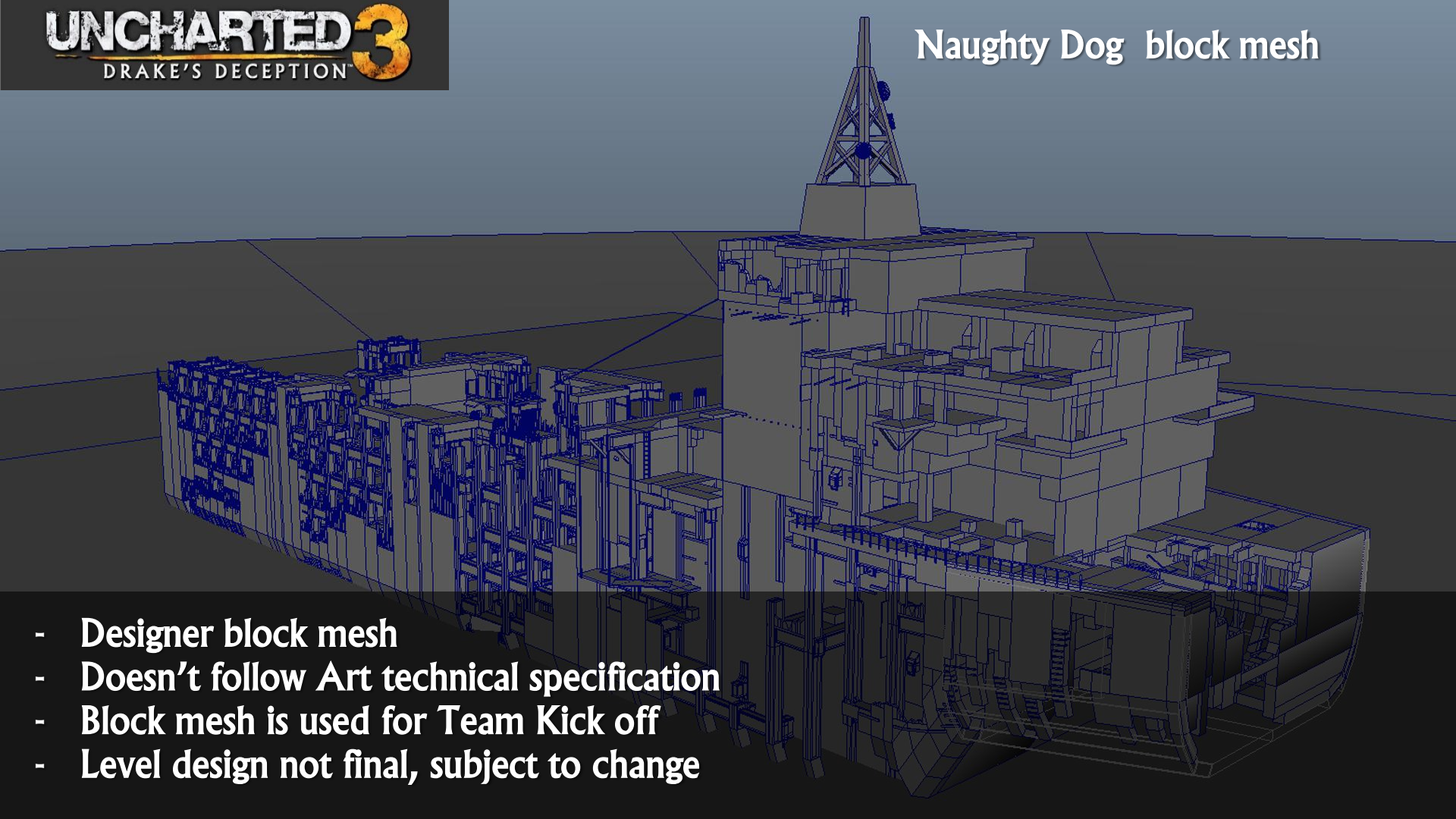
UNCHARTED 3
DRAKE'S DECEPTION

XPEC Concept Art



UNCHARTED 3
DRAKE'S DECEPTION

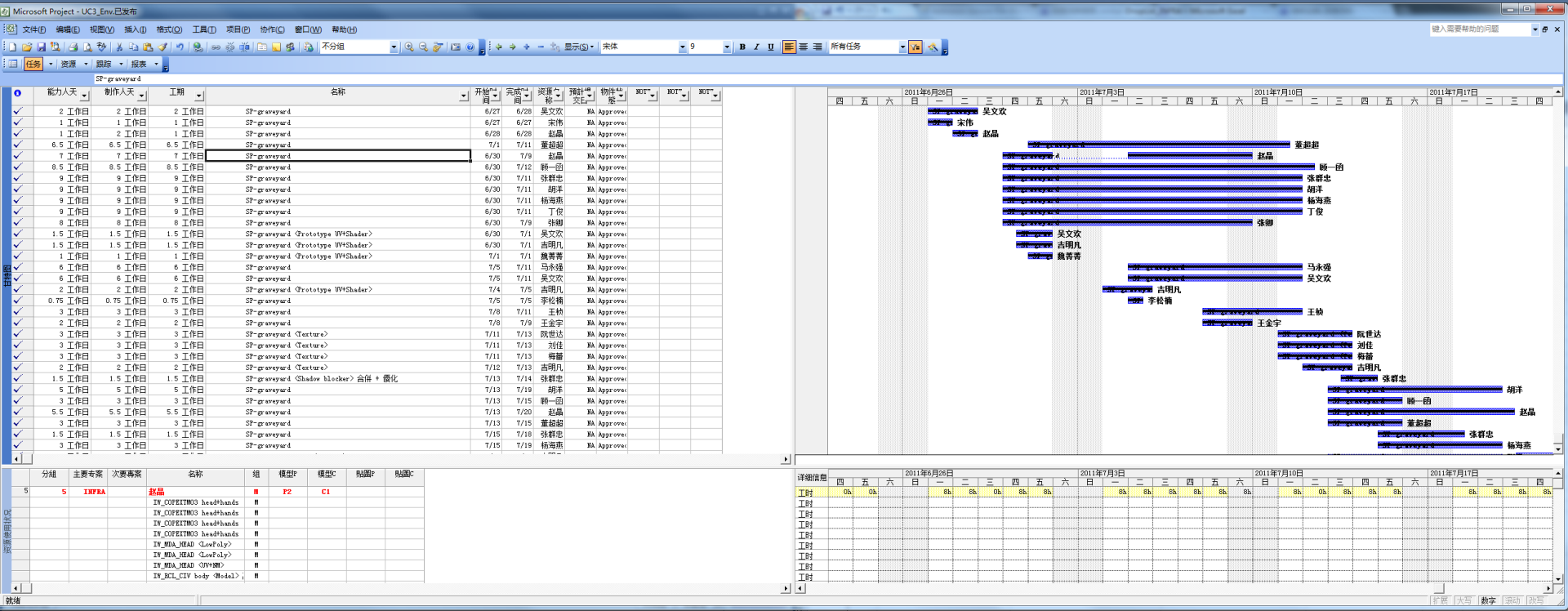
Naughty Dog block mesh



- Designer block mesh
- Doesn't follow Art technical specification
- Block mesh is used for Team Kick off
- Level design not final, subject to change

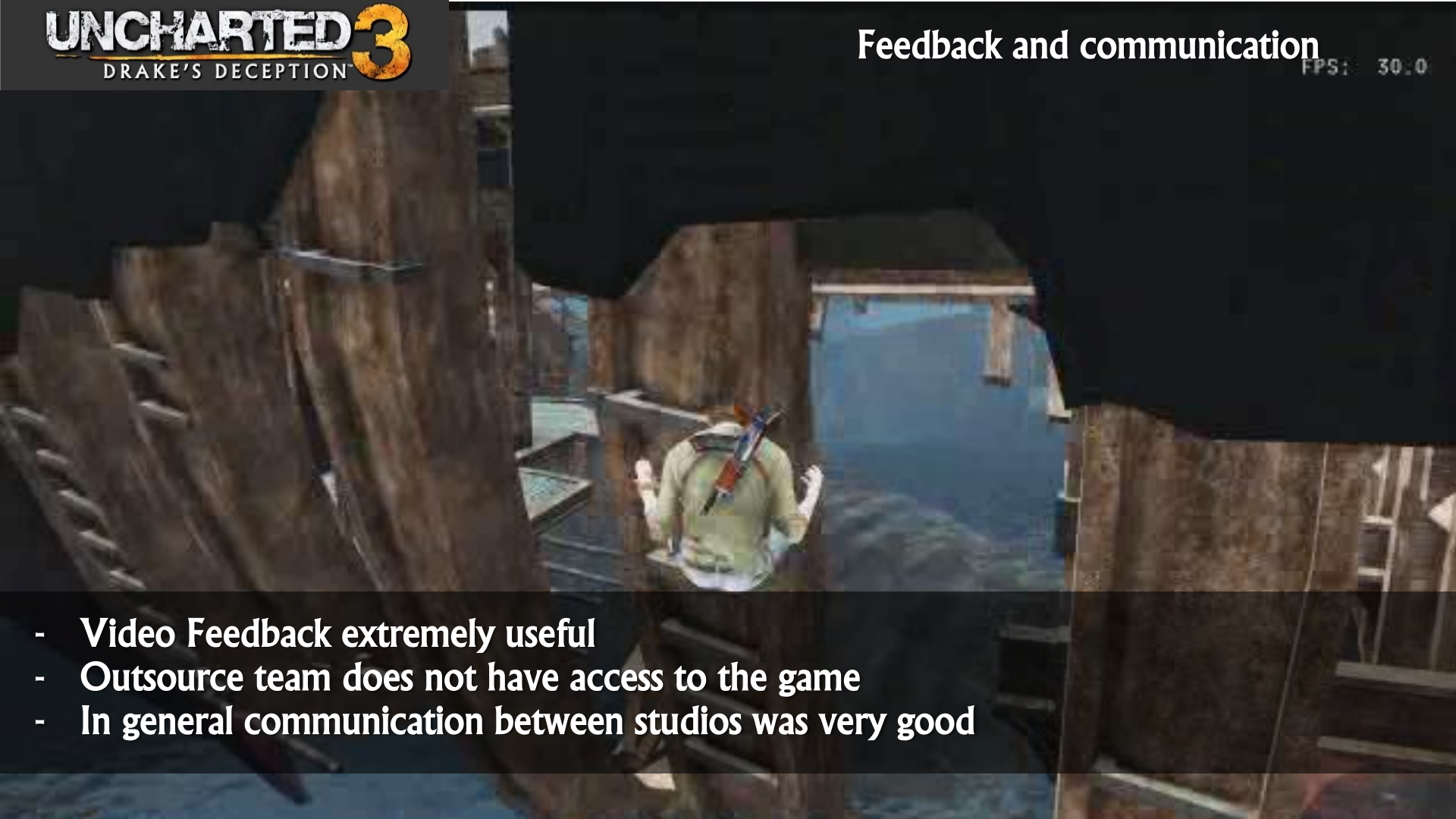
UNCHARTED 3
DRAKE'S DECEPTION

Tracking and management

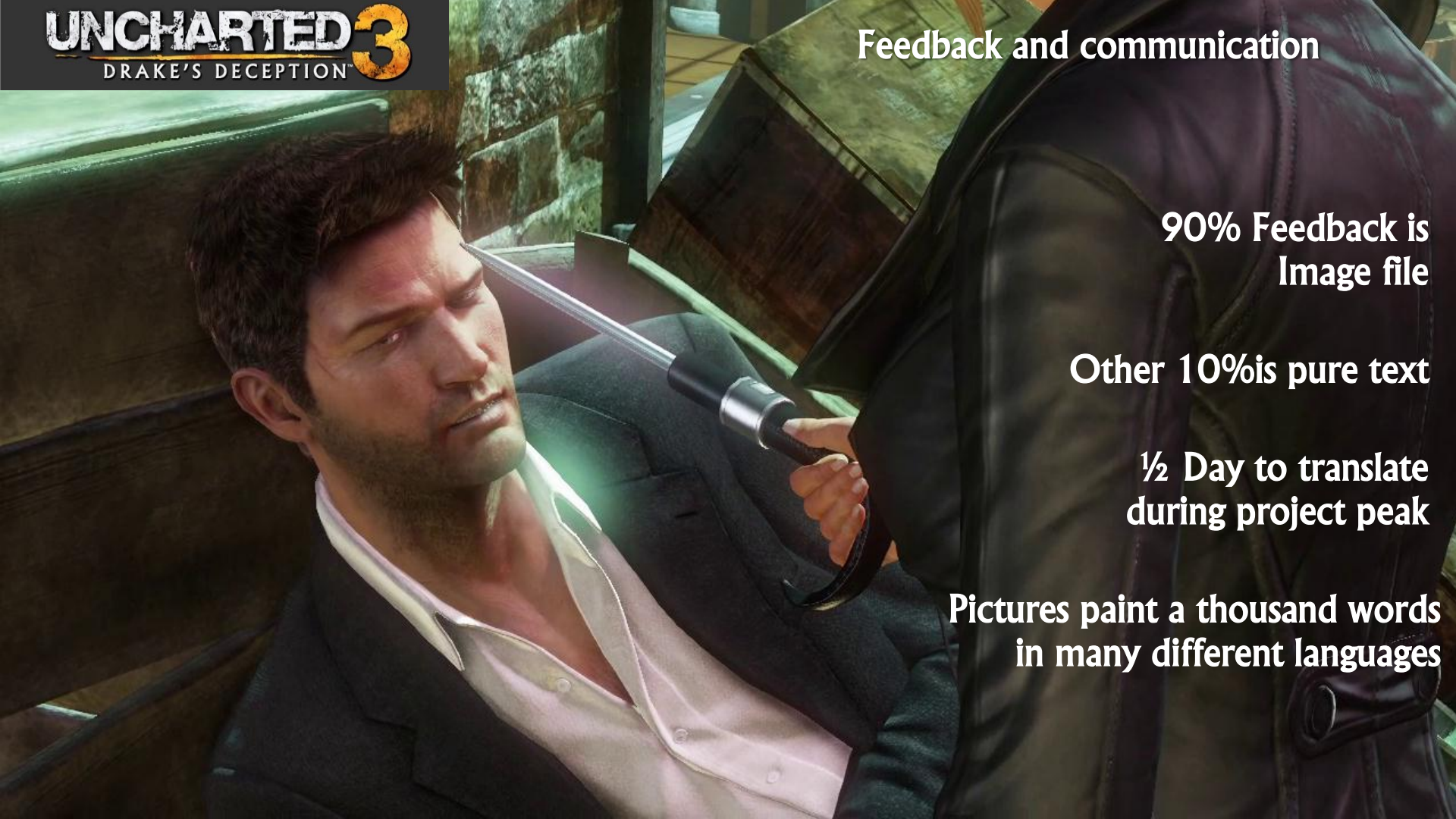


Project 2003

Feedback and communication



- Video Feedback extremely useful
- Outsource team does not have access to the game
- In general communication between studios was very good



Feedback and communication

90% Feedback is Image file

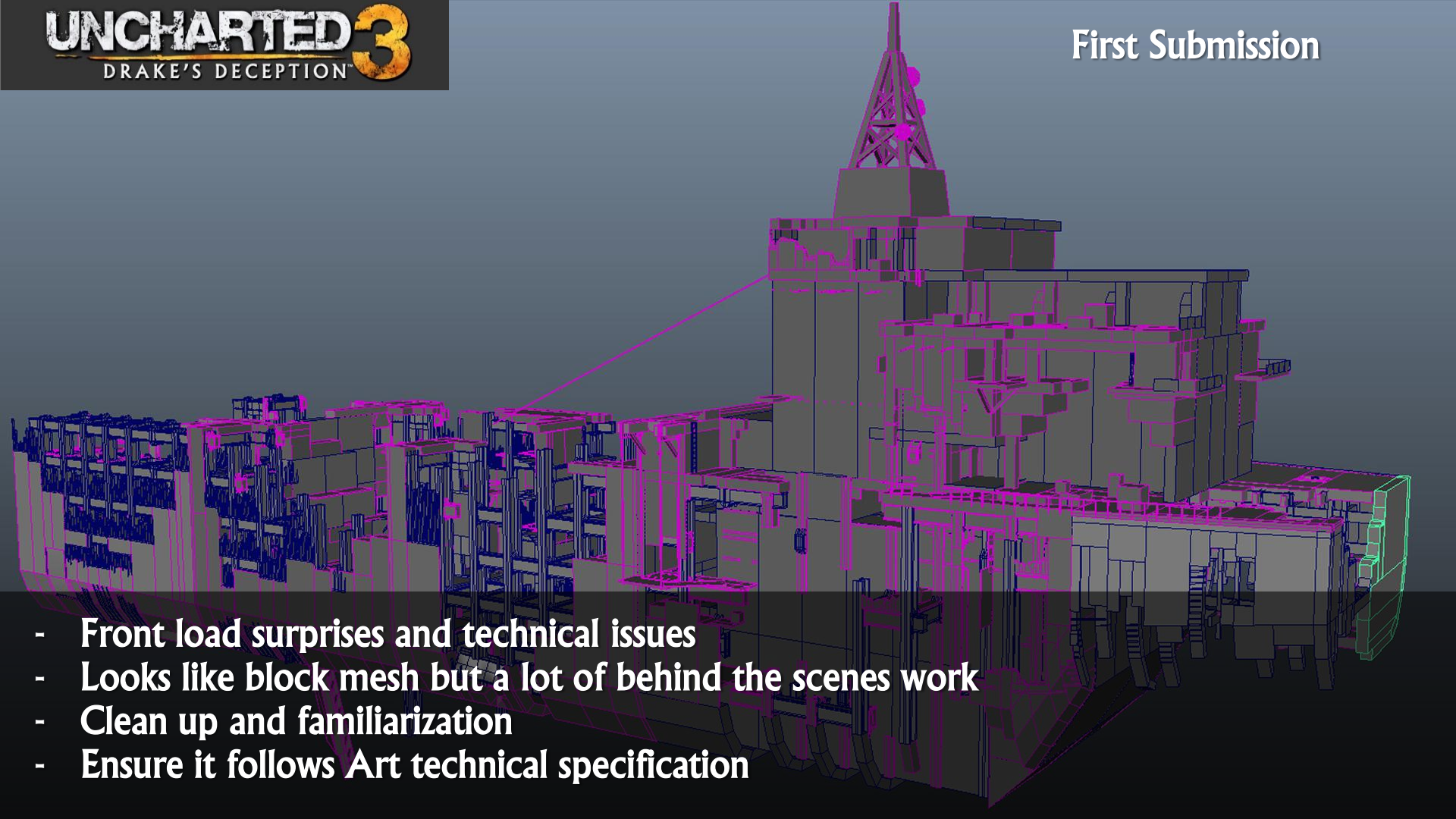
Other 10%is pure text

½ Day to translate during project peak

Pictures paint a thousand words in many different languages

UNCHARTED 3
DRAKE'S DECEPTION

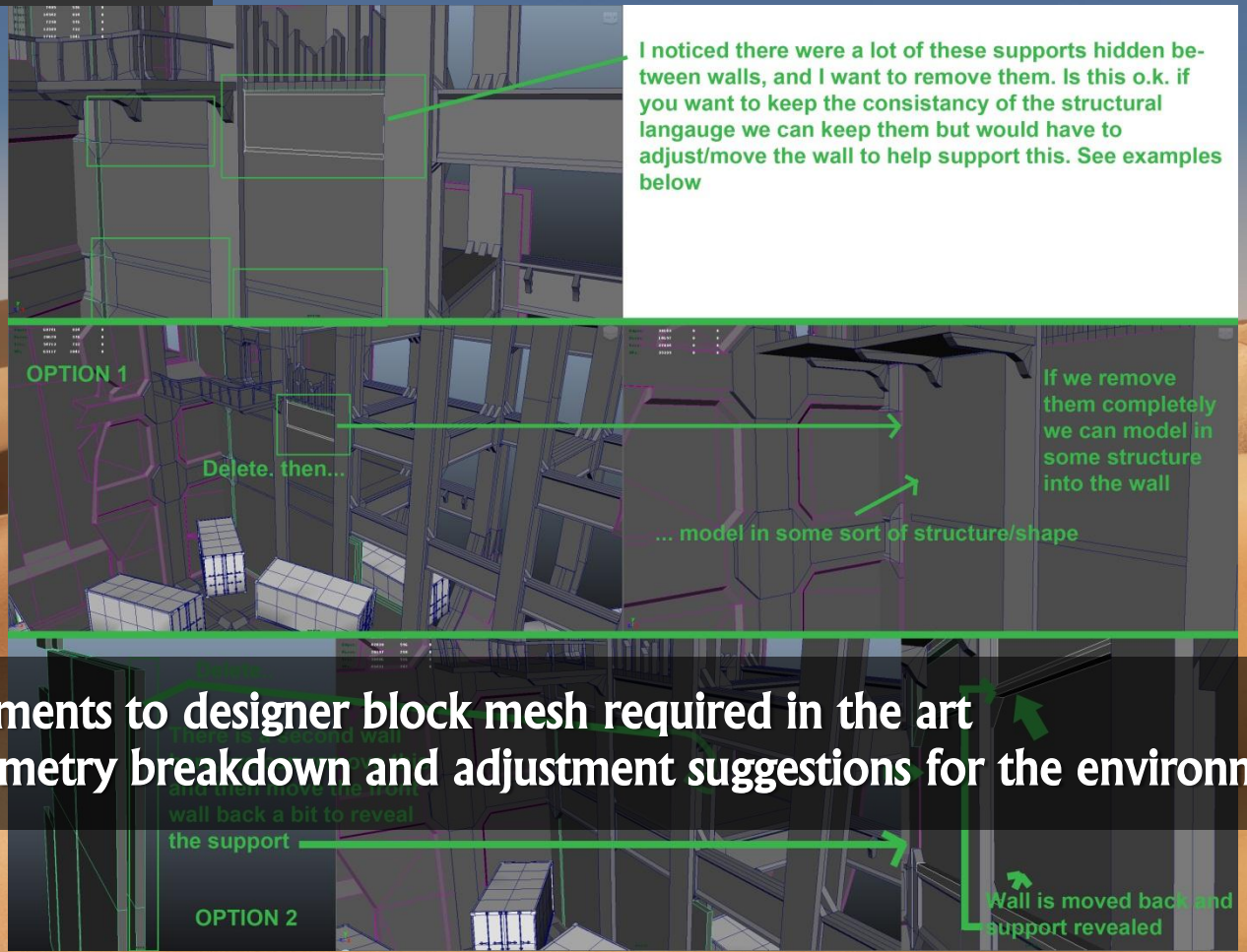
First Submission



- Front load surprises and technical issues
- Looks like block mesh but a lot of behind the scenes work
- Clean up and familiarization
- Ensure it follows Art technical specification

UNCHARTED 3
DRAKE'S DECEPTION

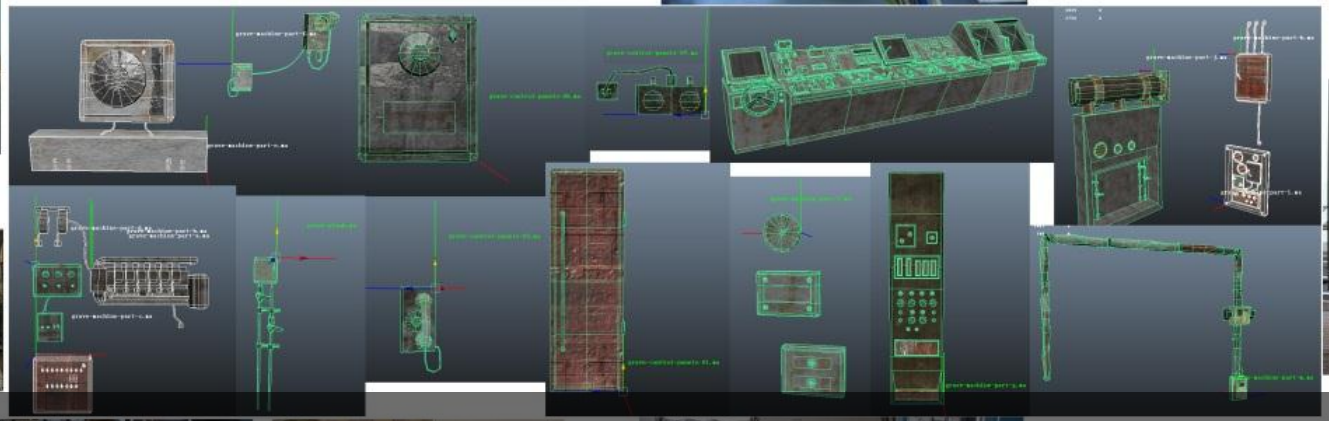
Breakdown suggestions



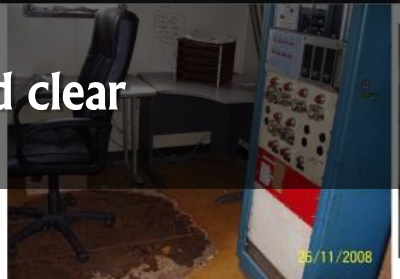
- Heavy adjustments to designer block mesh required in the art
- Provided geometry breakdown and adjustment suggestions for the environment

UNCHARTED 3
DRAKE'S DECEPTION

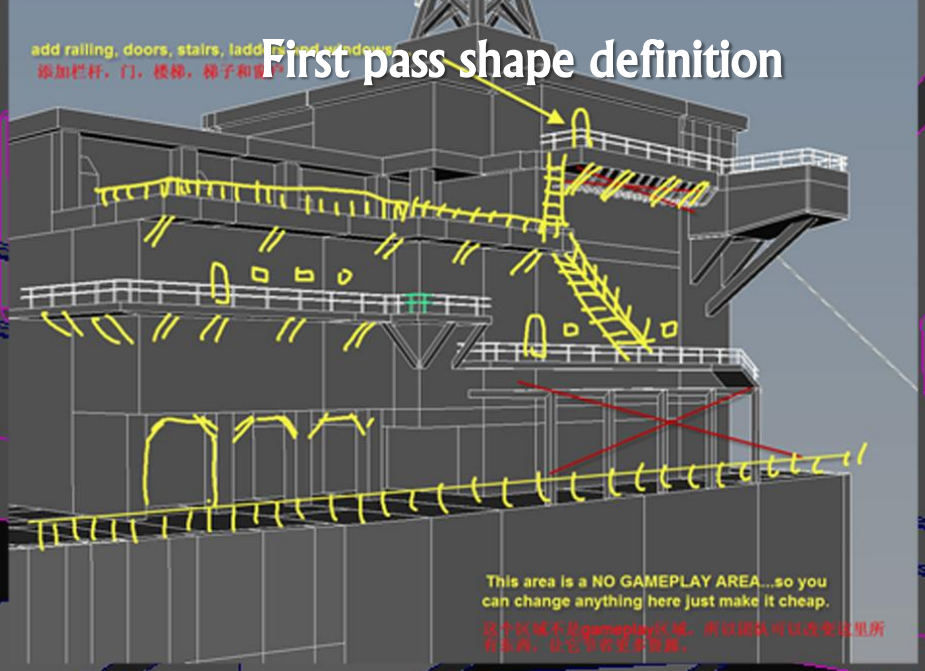
Additional Reference



- Found additional photo reference
- Short on time so kept things simple and clear

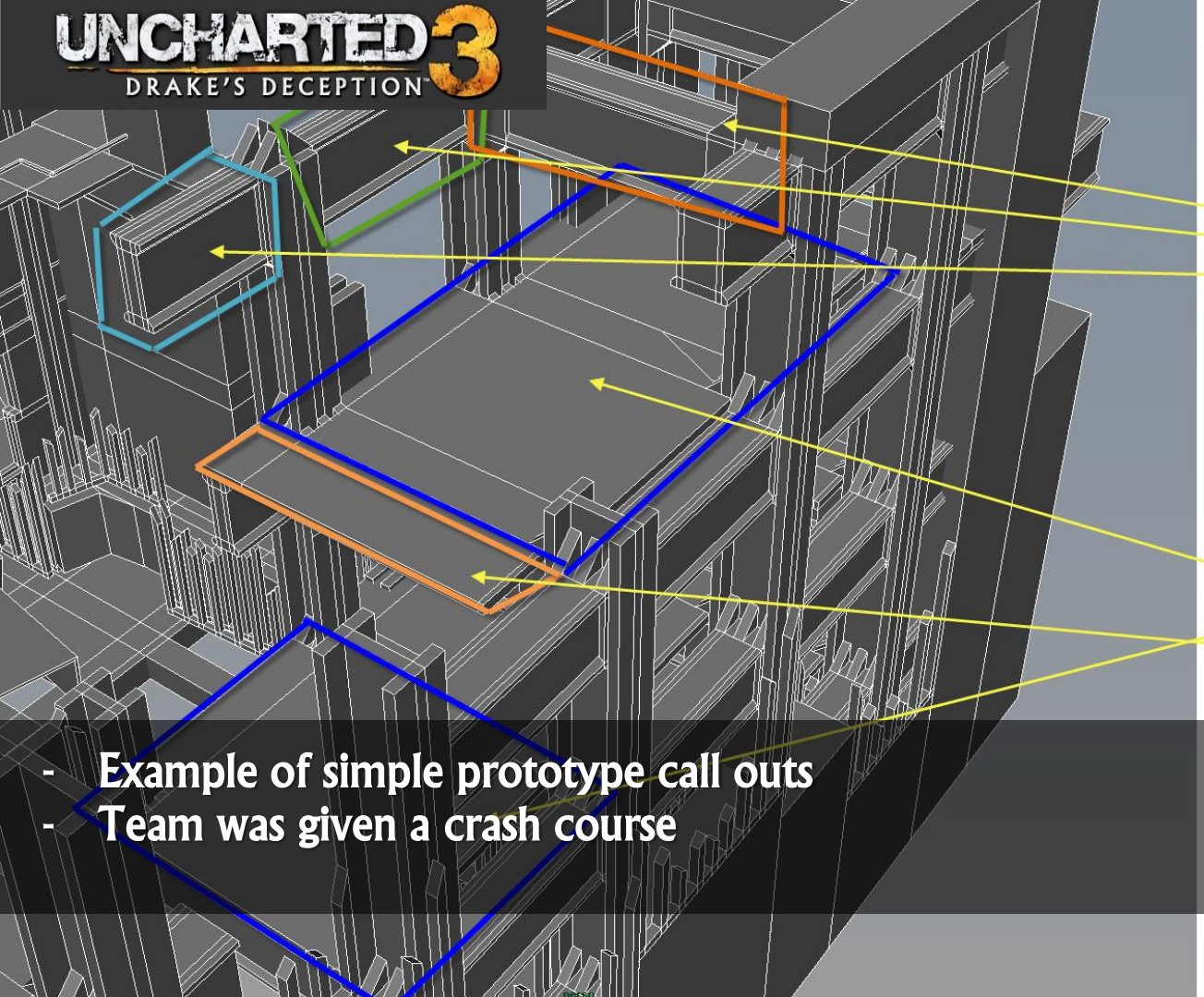


UNCHARTED 3
DRAKE'S DECEPTION



First pass shape definition

Defined a first pass shape definition submission that would be acceptable for the first pass block in and shape call out. The environment was still subject to change, too much detail at this early stage would be waste



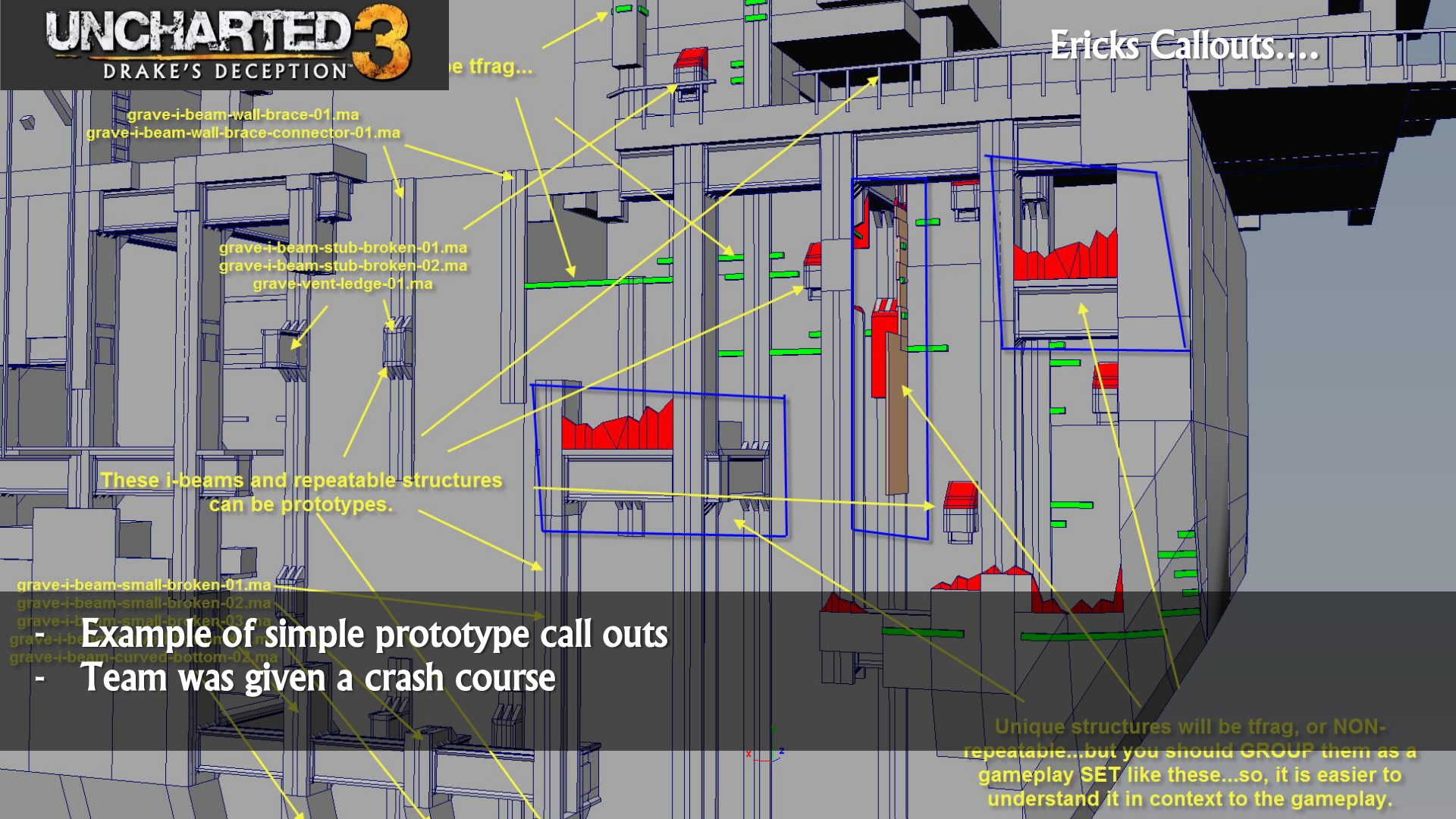
Ericks Callouts....

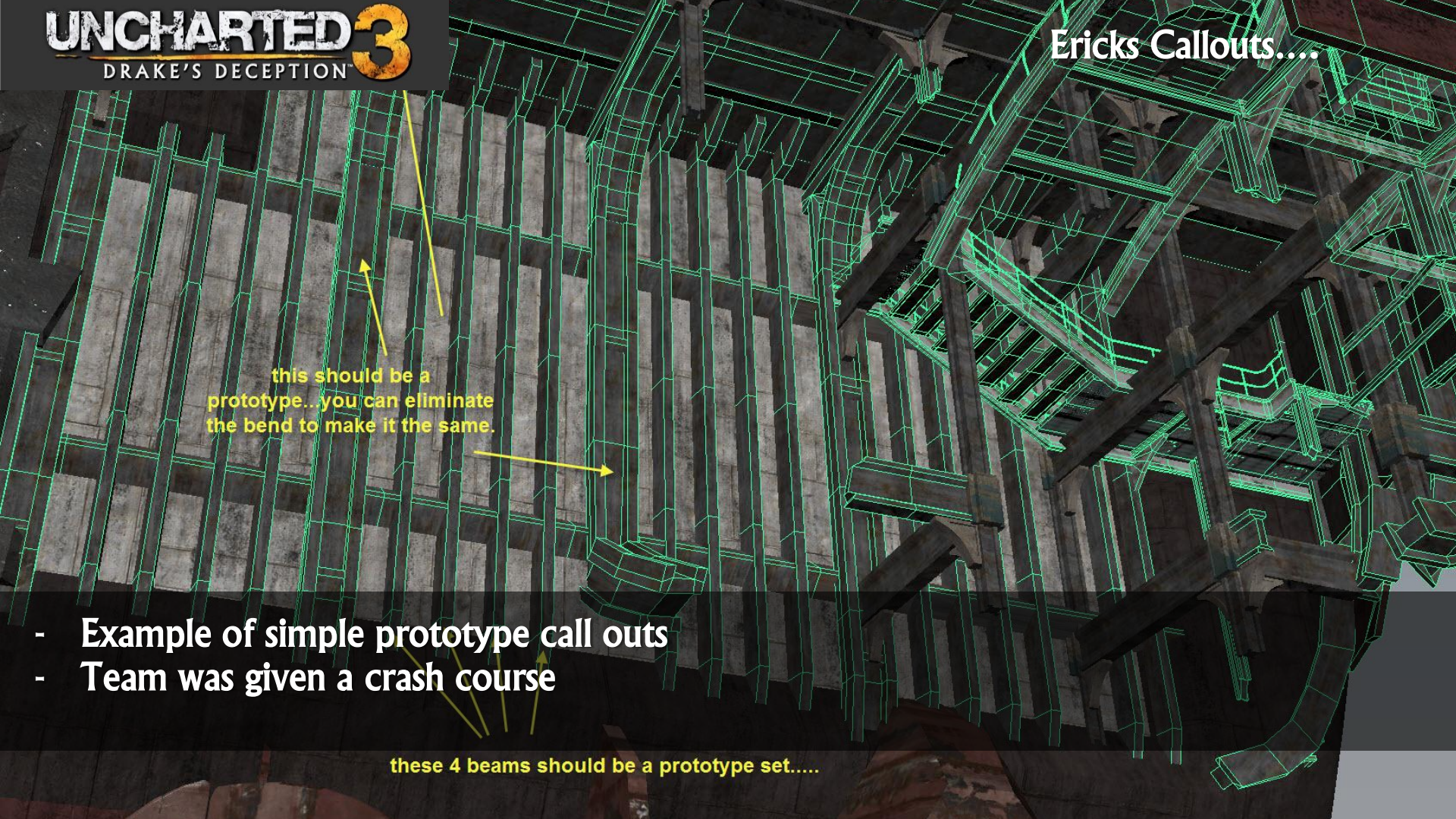
i-beams...you will probably need only 4-6 pieces...like this...
grave-i-beam-horiz-01.ma
grave-i-beam-horiz-02.ma
grave-i-beam-horiz-end-01.ma
grave-i-beam-horiz-end-02.ma

Create a floor panel prototype....you will probalby need about 5 kinds...
grave-floor-2section-01.ma
grave-floor-1section-01.ma
grave-floor-edge-01.ma
grave-floor-edge-02.ma
grave-floor-port-hole-01.ma

anything else...make it tfrag.

- Example of simple prototype call outs
- Team was given a crash course

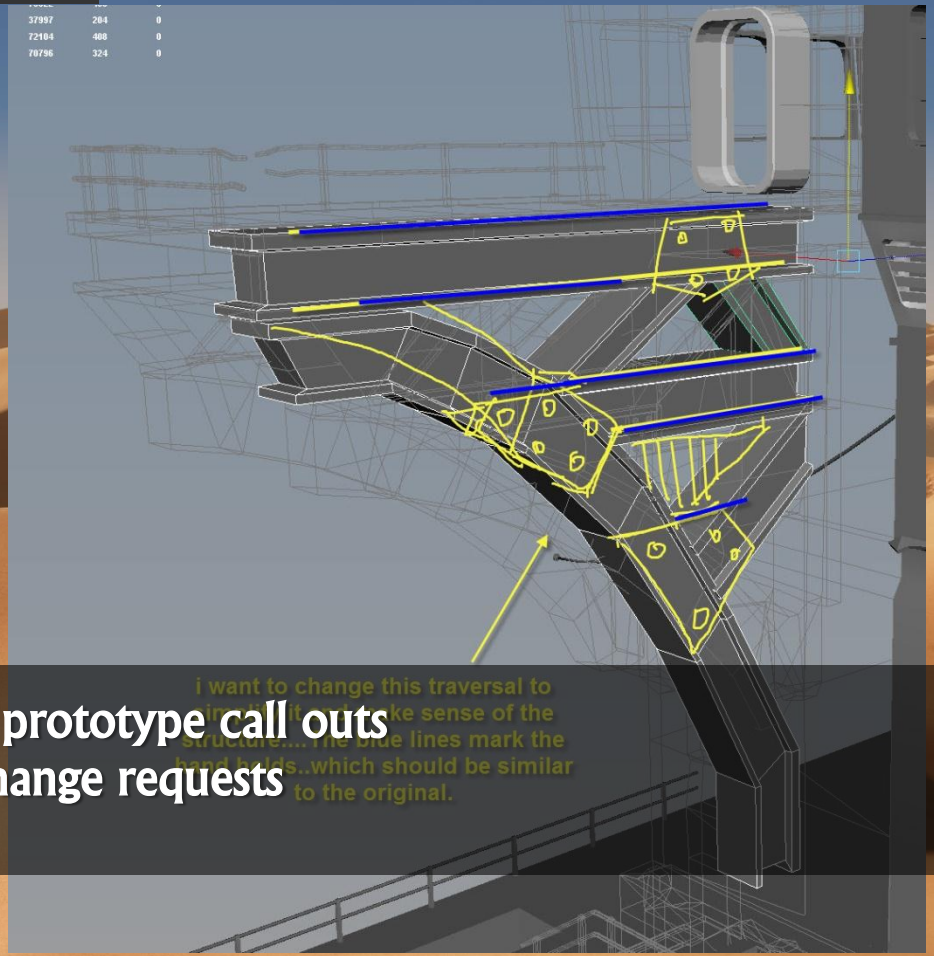

UNCHARTED 3
DRAKE'S DECEPTION
Ericks Callouts….
e tfrag...
grave-i-beam-wall-brace-01.ma
grave-i-beam-wall-brace-connector-01.ma
grave-i-beam-stub-broken-01.ma
grave-i-beam-stub-broken-02.ma
grave-vent-ledge-01.ma
These i-beams and repeatable structures can be prototypes.
grave-i-beam-small-broken-01.ma
grave-i-beam-small-broken-02.ma
- Example of simple prototype call outs
- Team was given a crash course
Unique structures will be tfrag, or NON-repeatable...but you should GROUP them as a gameplay SET like these...so, it is easier to understand it in context to the gameplay.



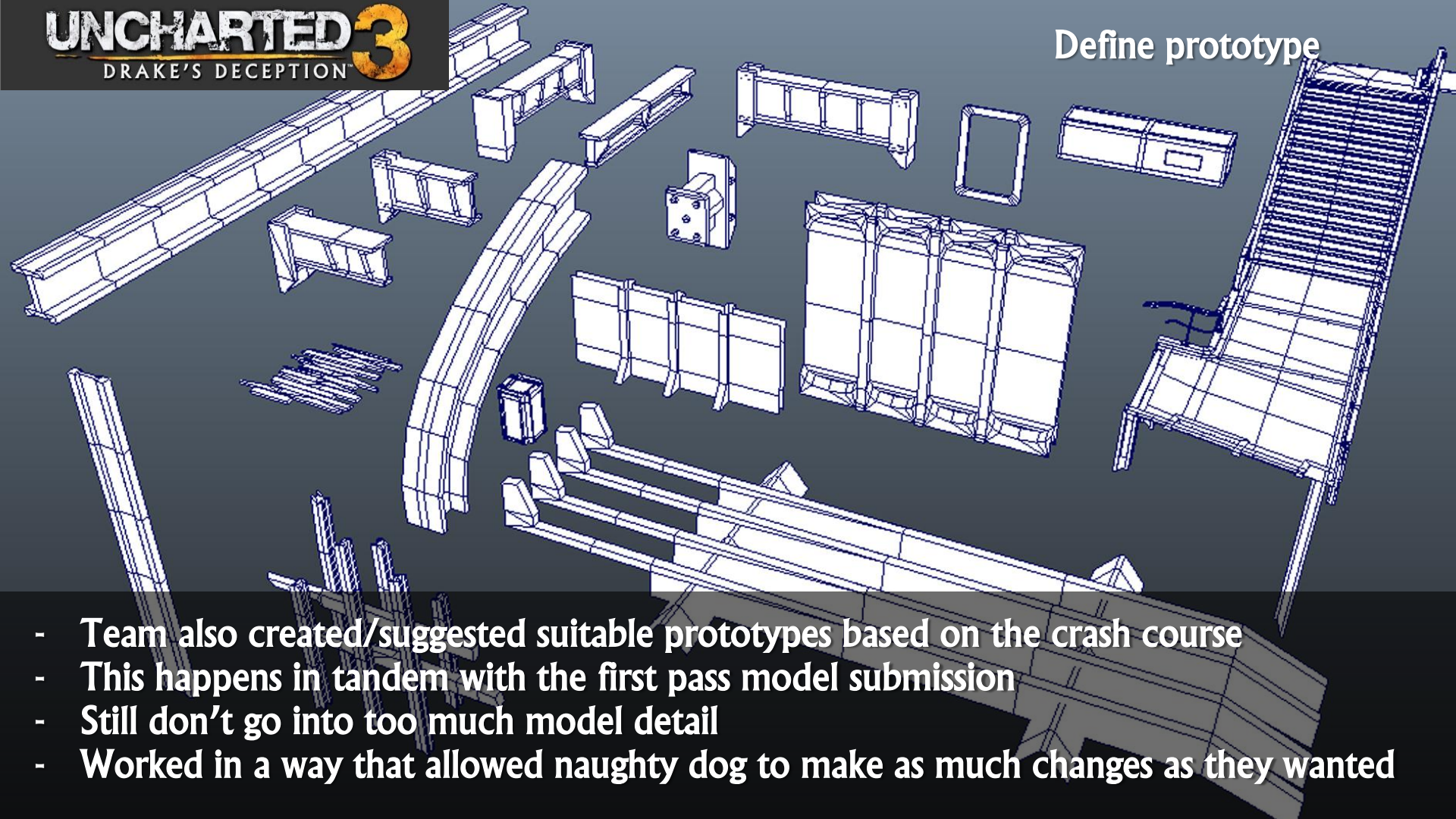
- Example of simple prototype call outs
- Team was given a crash course

UNCHARTED 3
DRAKE'S DECEPTION

First pass shape definition



- Example of simple prototype call outs
- Also example of change requests

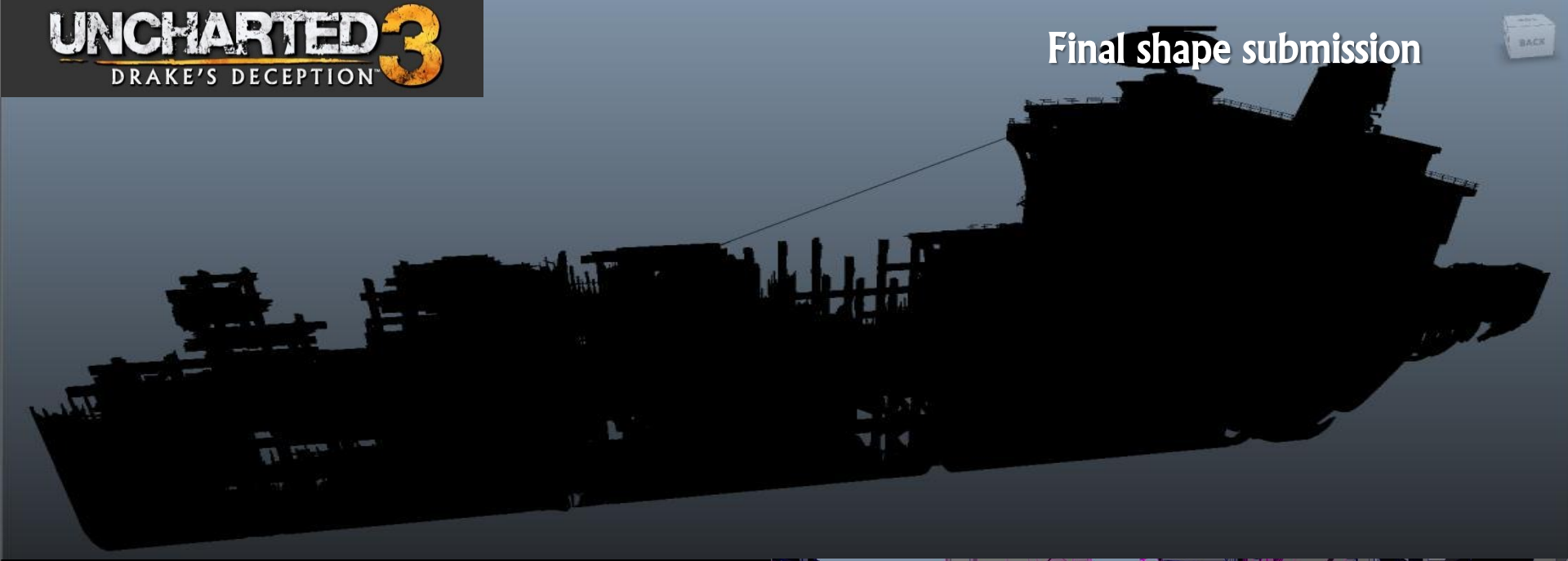


Define prototype

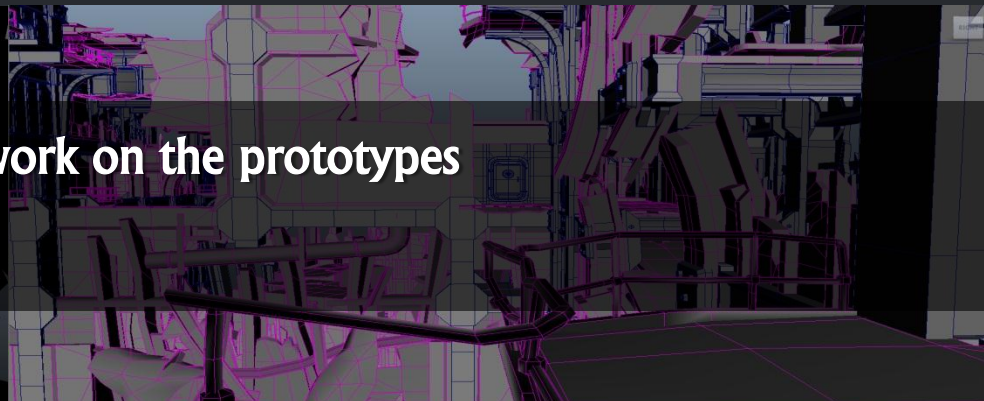
- Team also created/suggested suitable prototypes based on the crash course
- This happens in tandem with the first pass model submission
- Still don’t go into too much model detail
- Worked in a way that allowed naughty dog to make as much changes as they wanted

UNCHARTED 3
DRAKE'S DECEPTION

Final shape submission



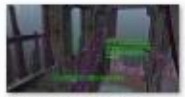
- Final shape comes about from iterative work on the prototypes
- First major Milestone
- Danger of being cut



UNCHARTED 3 DRAKE'S DECEPTION

Internal reviews

20110615_ship_grave_0000_Drake can take cover here. the detail i...


20110615_ship_grave_0001_Still not natural enough and the bend is ...

20110615_ship_grave_0002_Close up the gap. its too messy

20110615_ship_grave_0003_Drake can escape... close up this ga...

20110615_ship_grave_0004_Be consistant when you place this, i...

20110615_ship_grave_0005_Put in an obvious latch so the player ca...

20110615_ship_grave_0006_Also bend the others a little to add so...

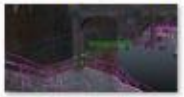
20110615_ship_grave_0007_Player never gets in this area so there ar...

20110615_ship_grave_0008_Too block_y and low poly. The player...

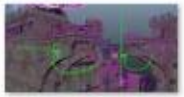
20110615_ship_grave_0009_Fix intersection

20110615_ship_grave_0010_We have a window but the view th...

20110615_ship_grave_0011_We have a window but the view th...


20110615_ship_grave_0012_Make the railings have a better intgrati...

20110615_ship_grave_0013_Layer 6


20110615_ship_grave_0014_Do the same on both sides

20110615_ship_grave_0015_Layer 3

20110615_ship_grave_0016_Glass window texturing is too repeitive. ...

20110615_ship_grave_0017_Client asked for broken glass windows ...

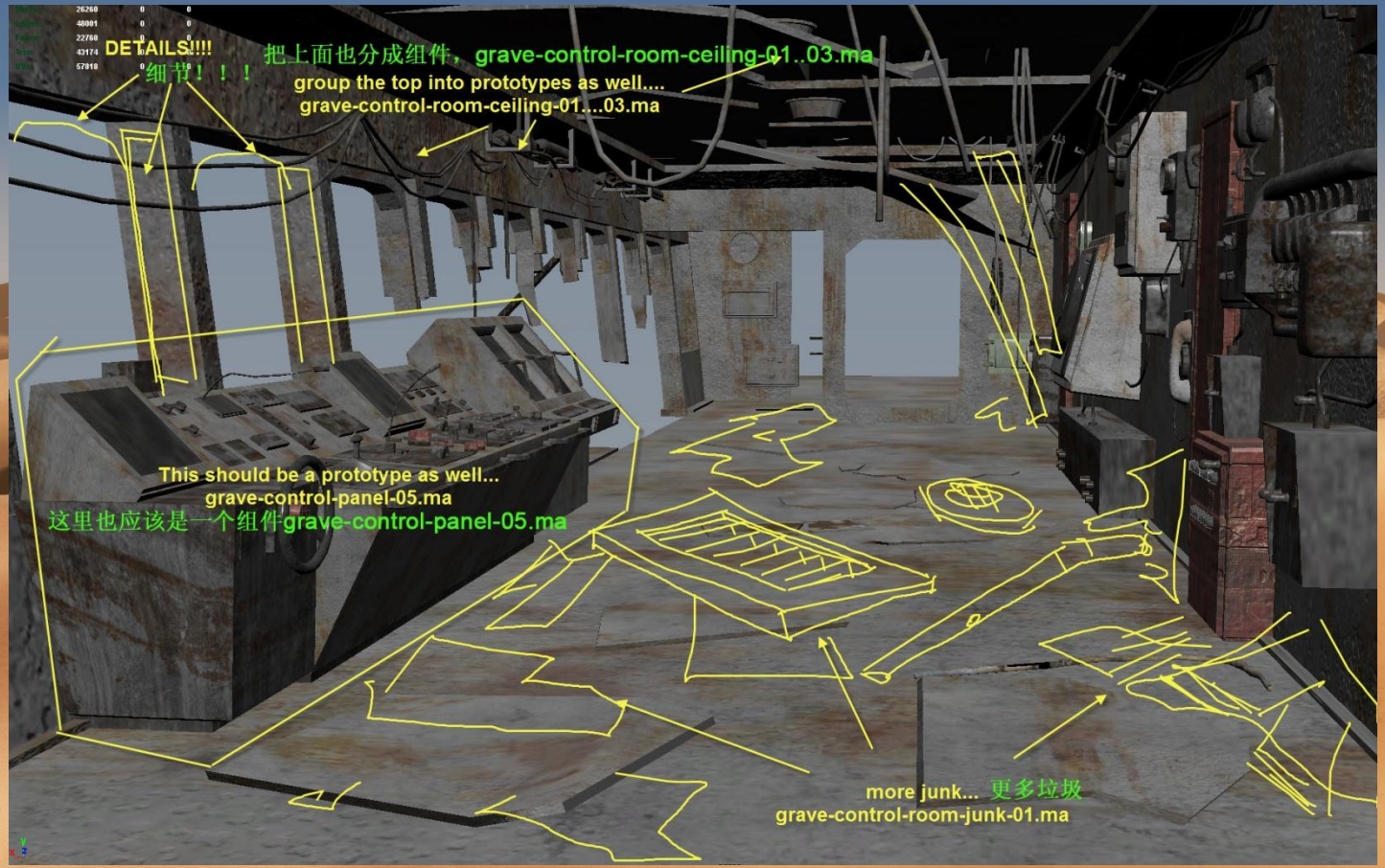
Subject: [UC3_ENV]Dailycheck_110602_update

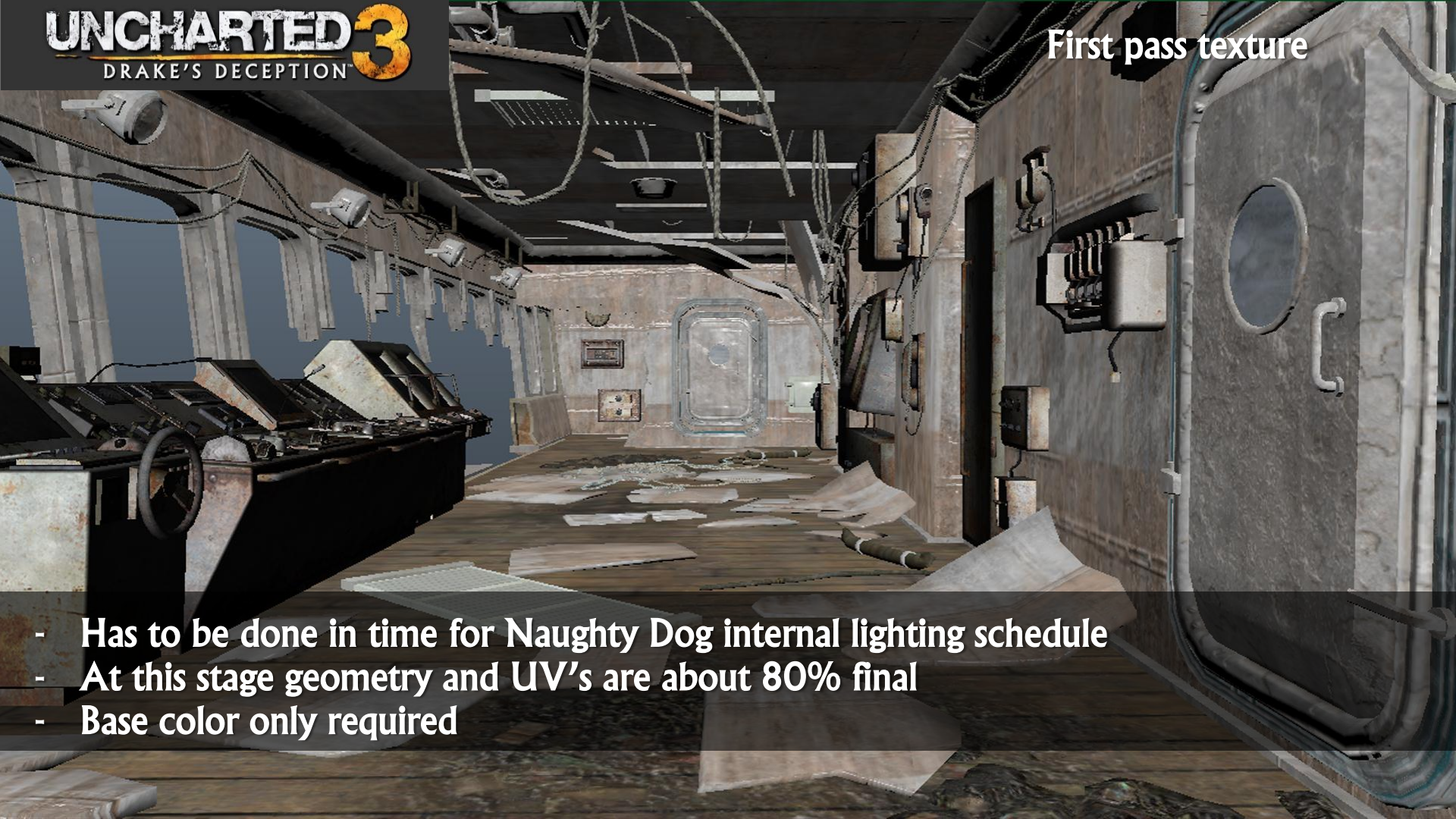
原定	工期	Asset	開始 日期	交叉檢查 原訂 上午/下午	Name	完成 百分比	备注	狀況說明 a.當日物件未完成,Delay 原因說明 b.第 2~3 天物件進度百分比,有 Delay 請說明
4	4	SP-graveyard <Model> 新增細节 feedback 20110528	2011-5-30 8:00	2011-6-2 17:00				
4	4	SP-graveyard <Model> 新增細节	2011-5-30 8:00	2011-6-2 17:00				
3	3	SP-graveyard <Model> 新增細节 feedback 20110528	2011-5-31 8:00	2011-6-2 17:00				
2	2	SP-graveyard <Collision>	2011-6-1 8:00	2011-6-2 17:00				
4	4	SP-graveyard <Model> 新增細节 feedback 20110528	2011-5-30 8:00	2011-6-2 17:00				
2	2	SP-graveyard <Collision>	2011-6-1 8:00	2011-6-2 17:00				
4	4	SP-graveyard <Model> 新增細节 feedback 20110528	2011-5-30 8:00	2011-6-2 17:00				
3	3	SP-graveyard <Model> 新增細节 feedback 20110528	2011-5-31 8:00	2011-6-2 17:00				
2	2	SP-graveyard <Collision>	2011-6-2 8:00	2011-6-3 17:00				

- Regular internal reviews
- Daily checks
- Prioritize feedback and assign ownerships
- Communicate what can not be fixed on time but offer a new date for when
- Missed feedback can be address

UNCHARTED 3
DRAKE'S DECEPTION

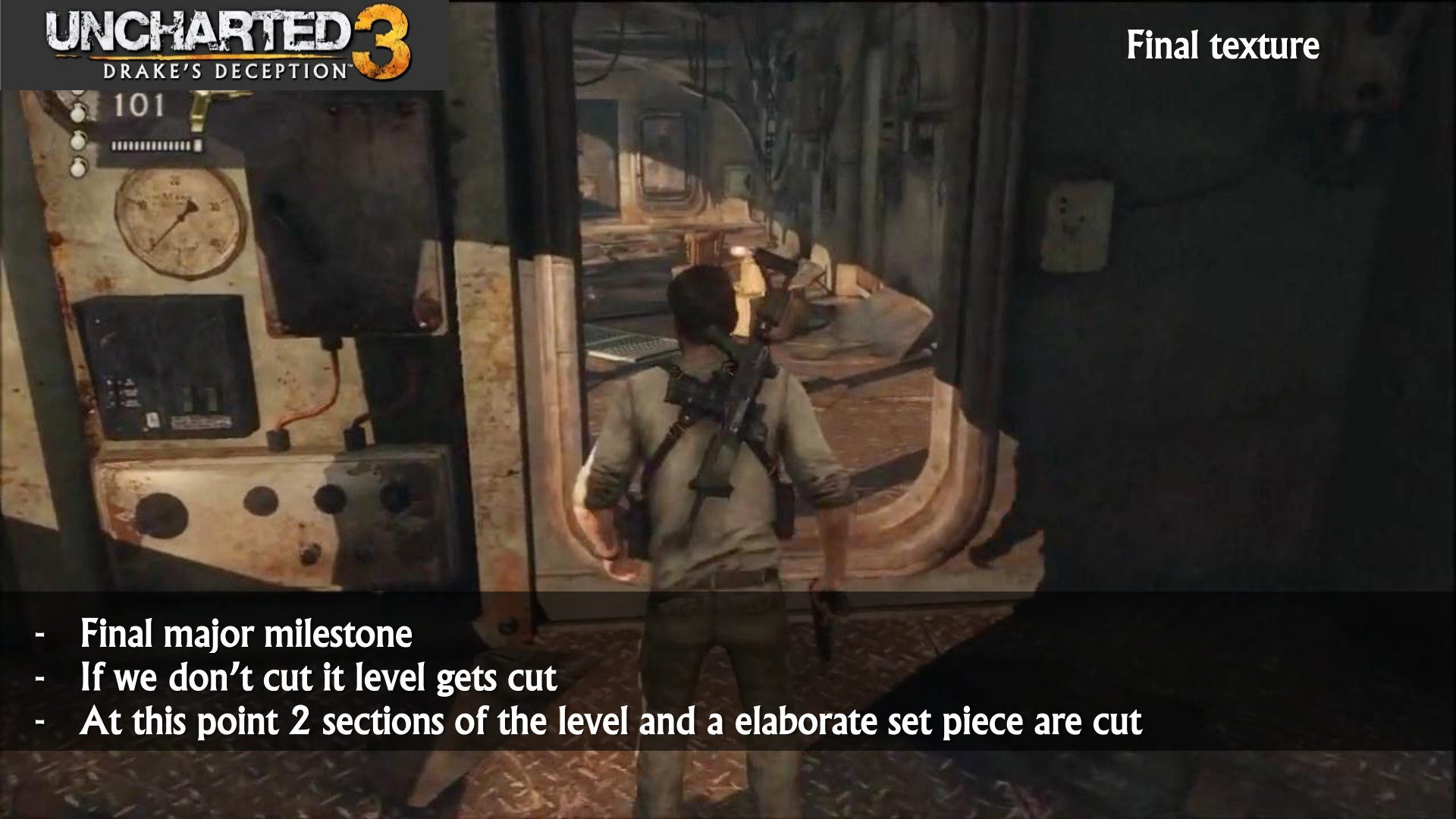
First pass texture





First pass texture

- Has to be done in time for Naughty Dog internal lighting schedule
- At this stage geometry and UV's are about 80% final
- Base color only required

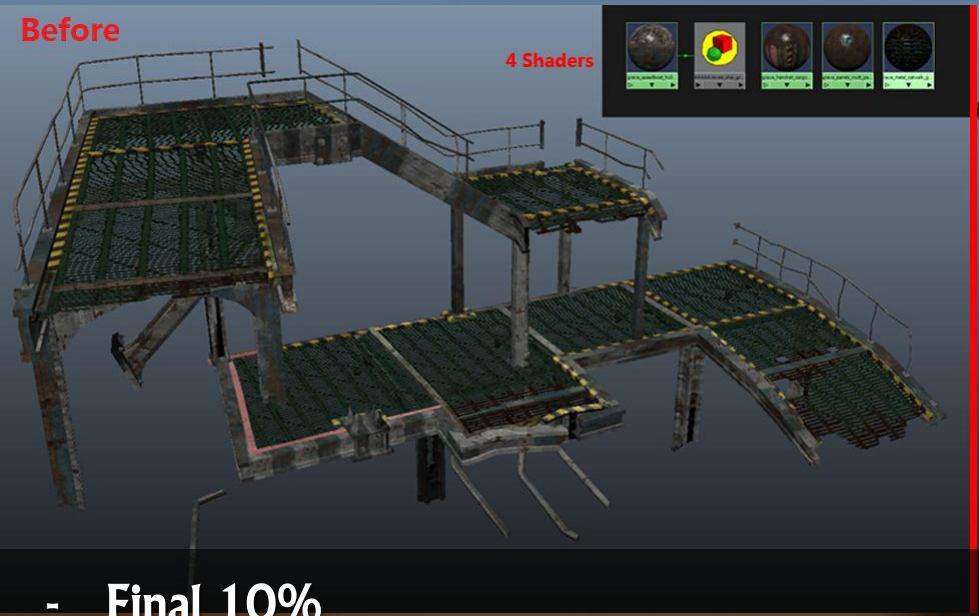


Final texture

- Final major milestone
- If we don't cut it level gets cut
- At this point 2 sections of the level and a elaborate set piece are cut

UNCHARTED 3
DRAKE'S DECEPTION

Tightening and polish



Not only can we optimise the shader we can do a better UV lay out and painting of all the stairs landing. Texture them and UV them similar to this. I checked in the example but you will still need to clean up the UV' s and the mesh as it was an inefficicient file to begin with.

- Final 10%
- Manually checking every area of the environment
- Trying to optimize as much as possible

UNCHARTED 3
DRAKE'S DECEPTION

Tightening and polish

Optimise this shader.
Player never goes here
and we only assign
the shader in such a
small area.

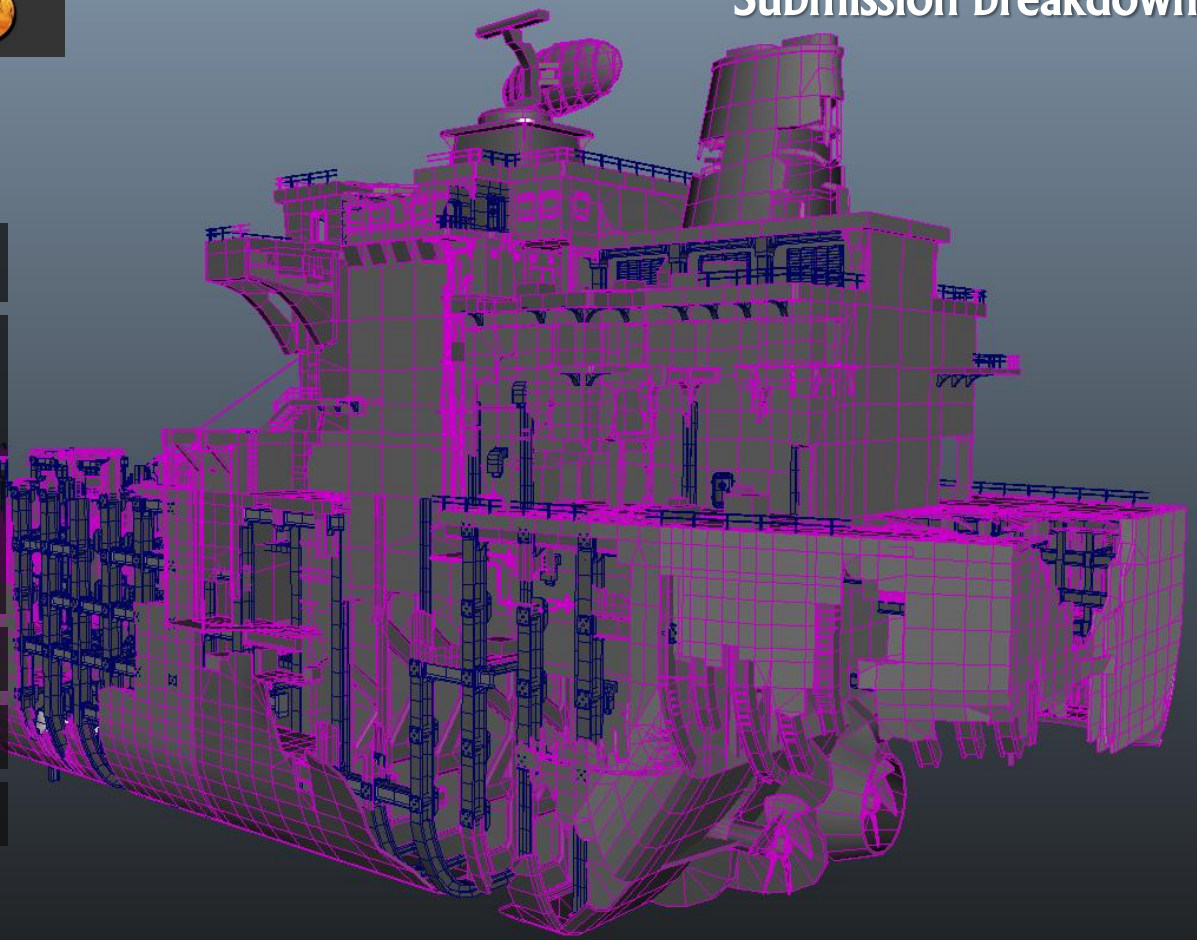
- Trying to keep the same approved look with less

UNCHARTED 3
DRAKE'S DECEPTION

Submission breakdown

MODEL

- Block mesh clean up
- Environment prototype break up
- First pass shape definition
- Final shape def
- First Pass Collision
- MILESTONE



UNCHARTED 3
DRAKE'S DECEPTION

Submission breakdown

TEXTURE

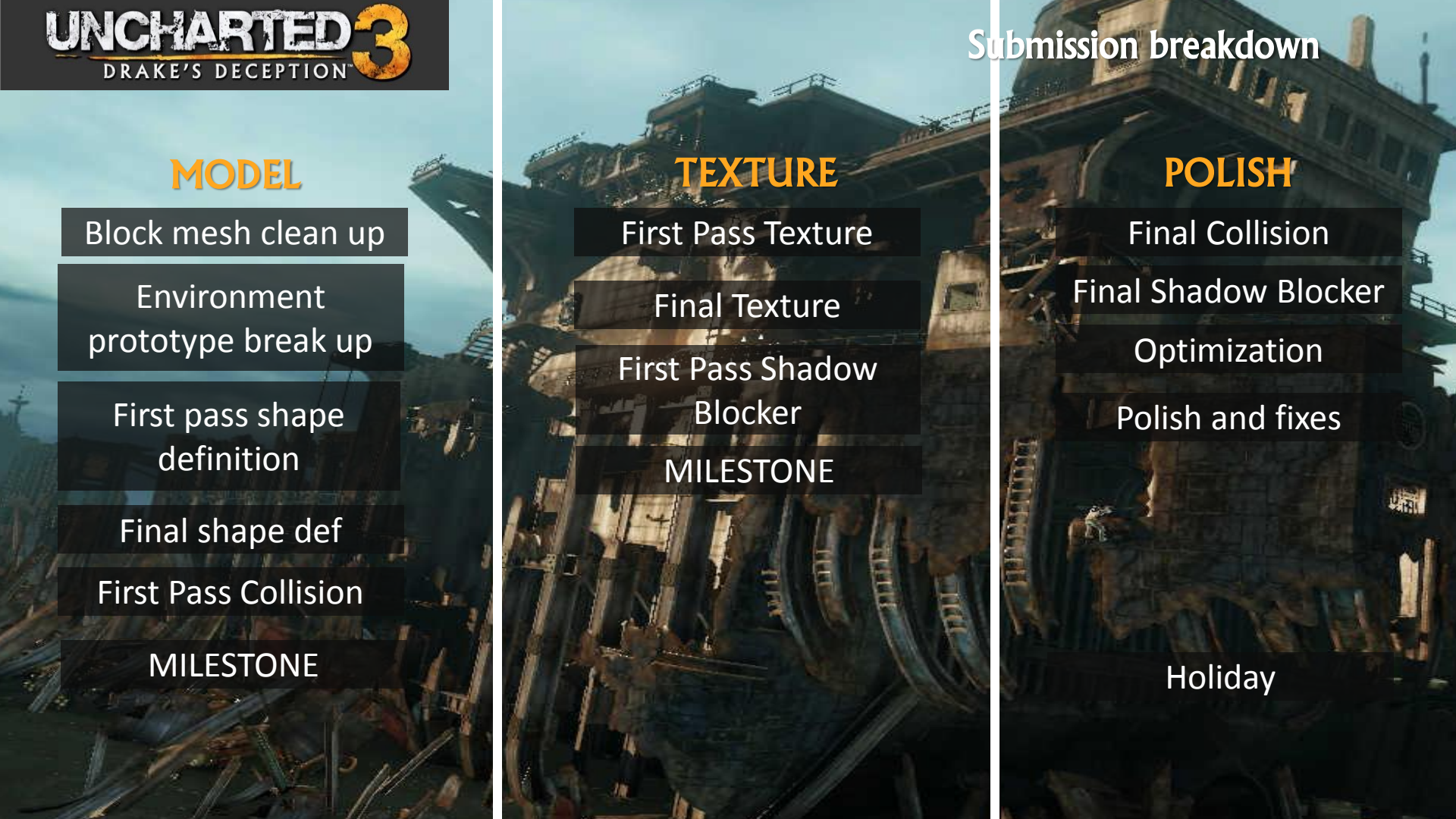
- First Pass Texture
- Final Texture
- First Pass Shadow Blocker
- MILESTONE

UNCHARTED 3
DRAKE'S DECEPTION

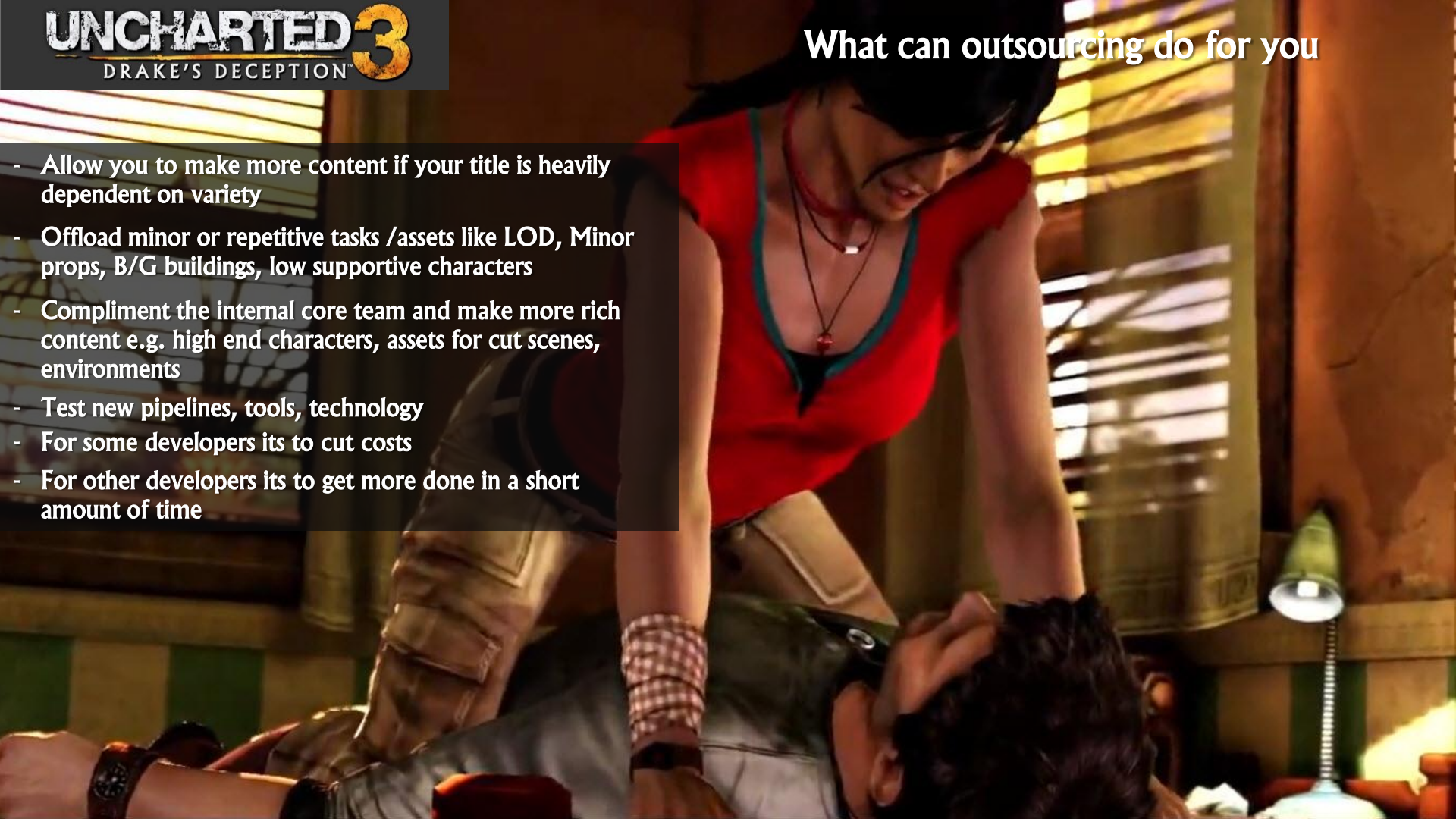
Submission breakdown

POLISH

- Final Collision
- Final Shadow Blocker
- Optimization
- Polish and fixes
- PARTY


UNCHARTED 3
DRAKE'S DECEPTION
Submission breakdown
MODEL
Block mesh clean up
Environment prototype break up
First pass shape definition
Final shape def
First Pass Collision
MILESTONE
TEXTURE
First Pass Texture
Final Texture
First Pass Shadow Blocker
MILESTONE
POLISH
Final Collision
Final Shadow Blocker
Optimization
Polish and fixes
Holiday

UNCHARTED 3
DRAKE'S DECEPTION

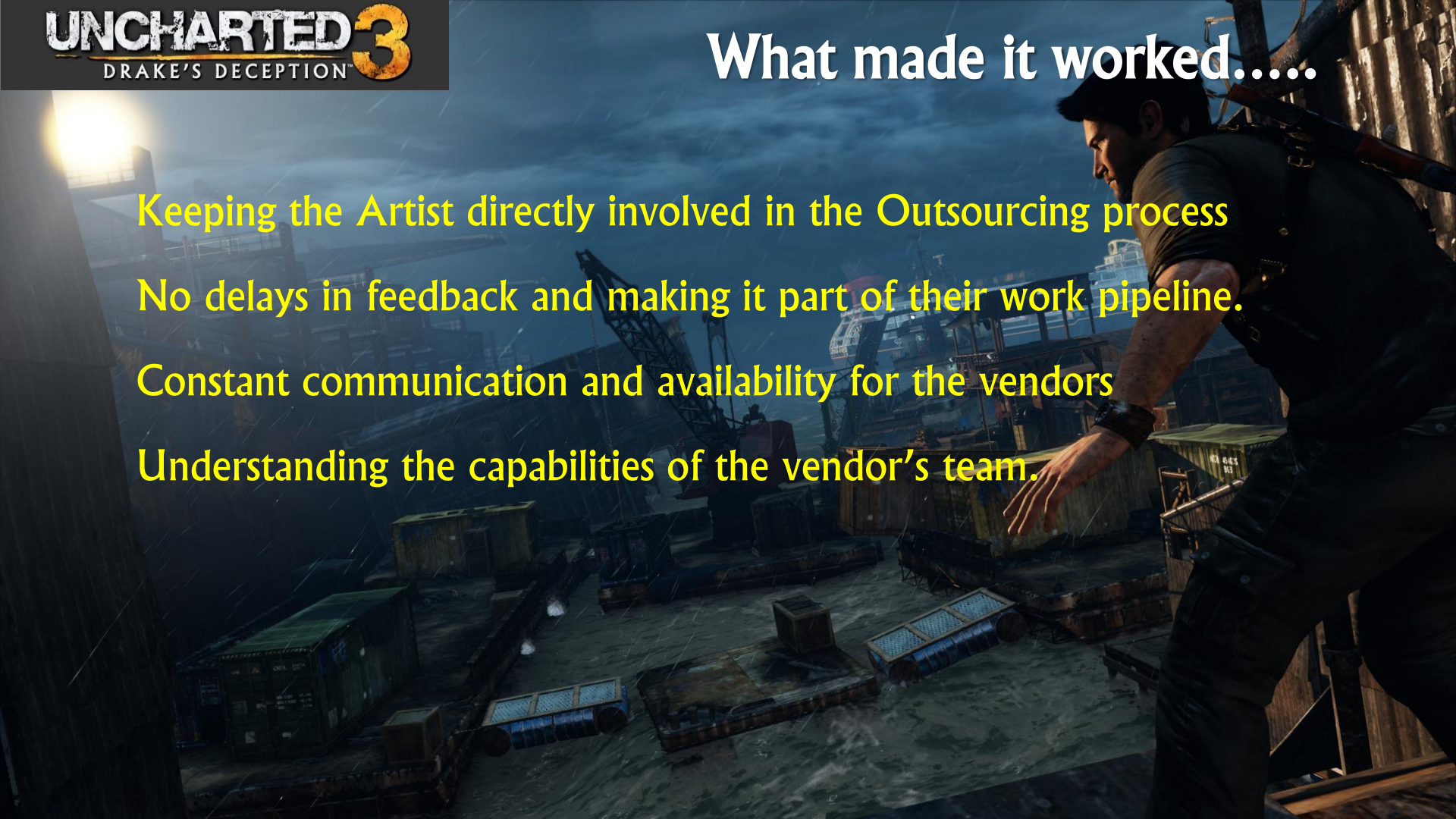


What can outsourcing do for you

- Allow you to make more content if your title is heavily dependent on variety
- Offload minor or repetitive tasks /assets like LOD, Minor props, B/G buildings, low supportive characters
- Compliment the internal core team and make more rich content e.g. high end characters, assets for cut scenes, environments
- Test new pipelines, tools, technology
- For some developers its to cut costs
- For other developers its to get more done in a short amount of time

Looking back….

- Very specific to Naughty Dog and UC series
- Flat hierarchy and willingness for direct communication with key members
- Minimal layers
- Not the best way or only way
- Plenty of room for improvement e.g. upgrade MS Project
- Goal to begin a shared library of contextual outsourcing circumstances



What made it worked…..

Keeping the Artist directly involved in the Outsourcing process

No delays in feedback and making it part of their work pipeline.

Constant communication and availability for the vendors

Understanding the capabilities of the vendor's team.

UNCHARTED 3
DRAKE'S DECEPTION
Moving forward…

Thank You!

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