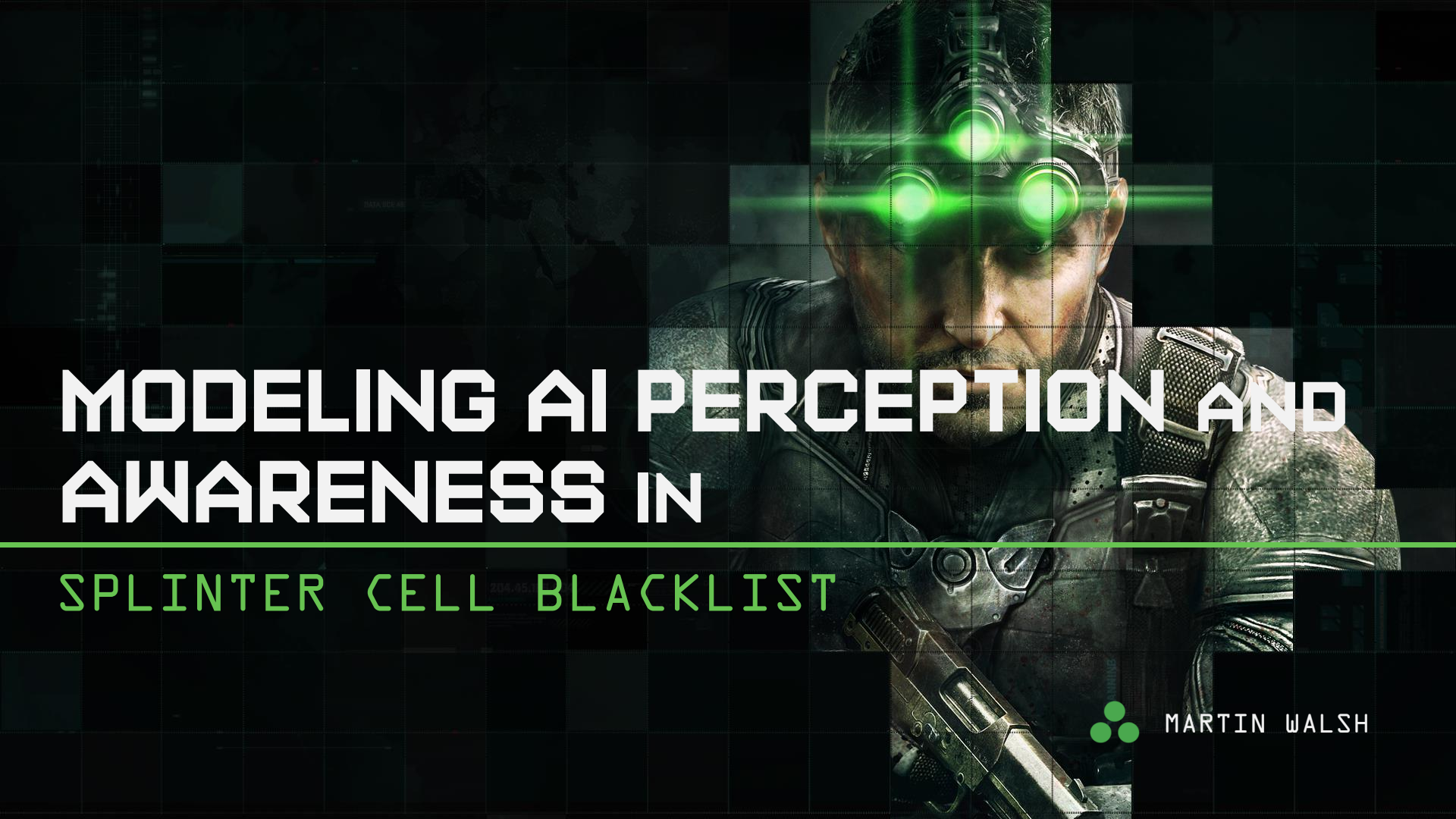


MODELING AI PERCEPTION AND AWARENESS IN

SPLINTER CELL BLACKLIST

MARTIN WALSH

Why PERCEPTION and AWARENESS?

TOM CLANCY'S SPLINTER CELL BLACKLIST

Three CHARACTERISTICS of PERCEPTION Models

TOM CLANCY'S SPLINTER CELL BLACKLIST

FEEL FAIR

TOM CLANCY'S SPLINTER CELL BLACKLIST

CONSISTENT FEEDBACK

- Reaction Animations
- Barks
- HUD Elements

INTELLIGENCE

- Plausibili

Four Perception and Awareness models

four PERCEPTION models

- Visual

TOM CLANCY'S SPLINTER CELL BLACKLIST

four PERCEPTION models

- Visual
- Environmental

four PERCEPTION models

- Visual
- Environmental
- Auditory

TOM CLANCY'S SPLINTER CELL BLACKLIST

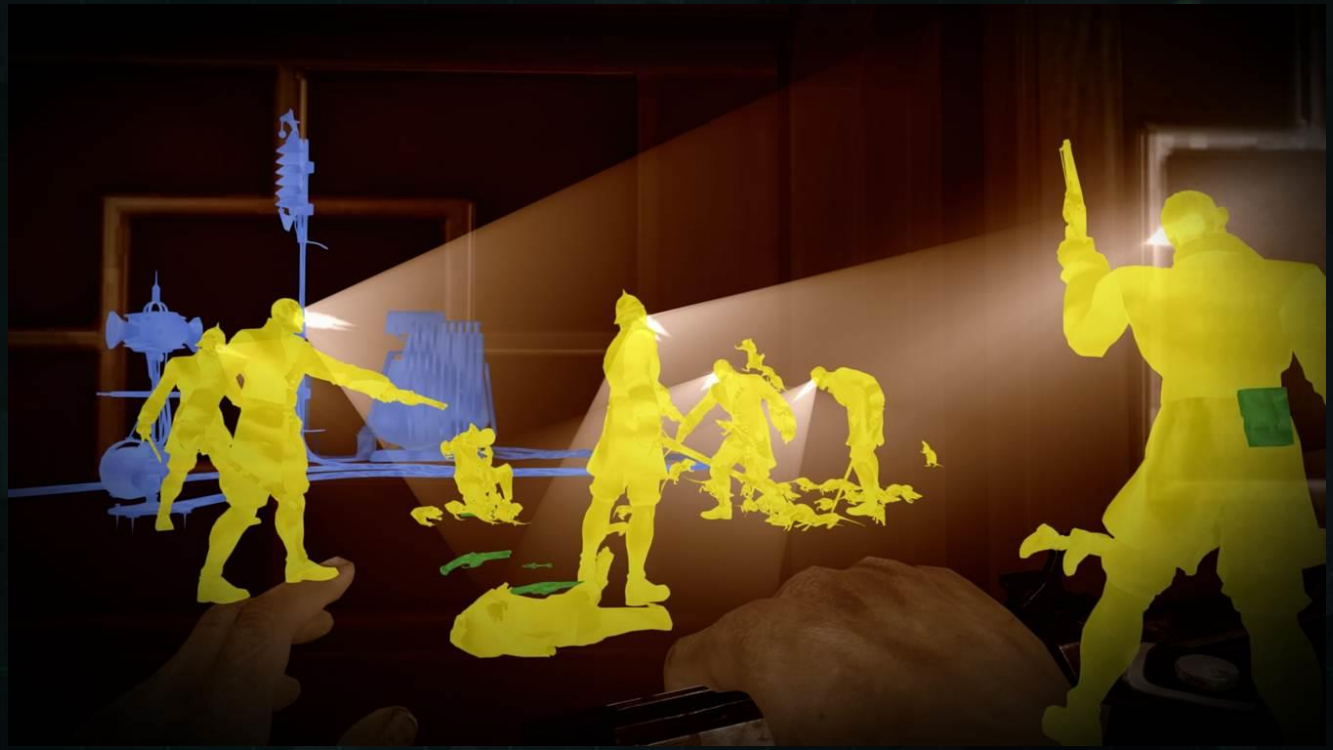
four PERCEPTION models

- Visual
- Environmental
- Auditory
- Social and Contextual

TOM CLANCY'S SPLINTER CELL BLACKLIST

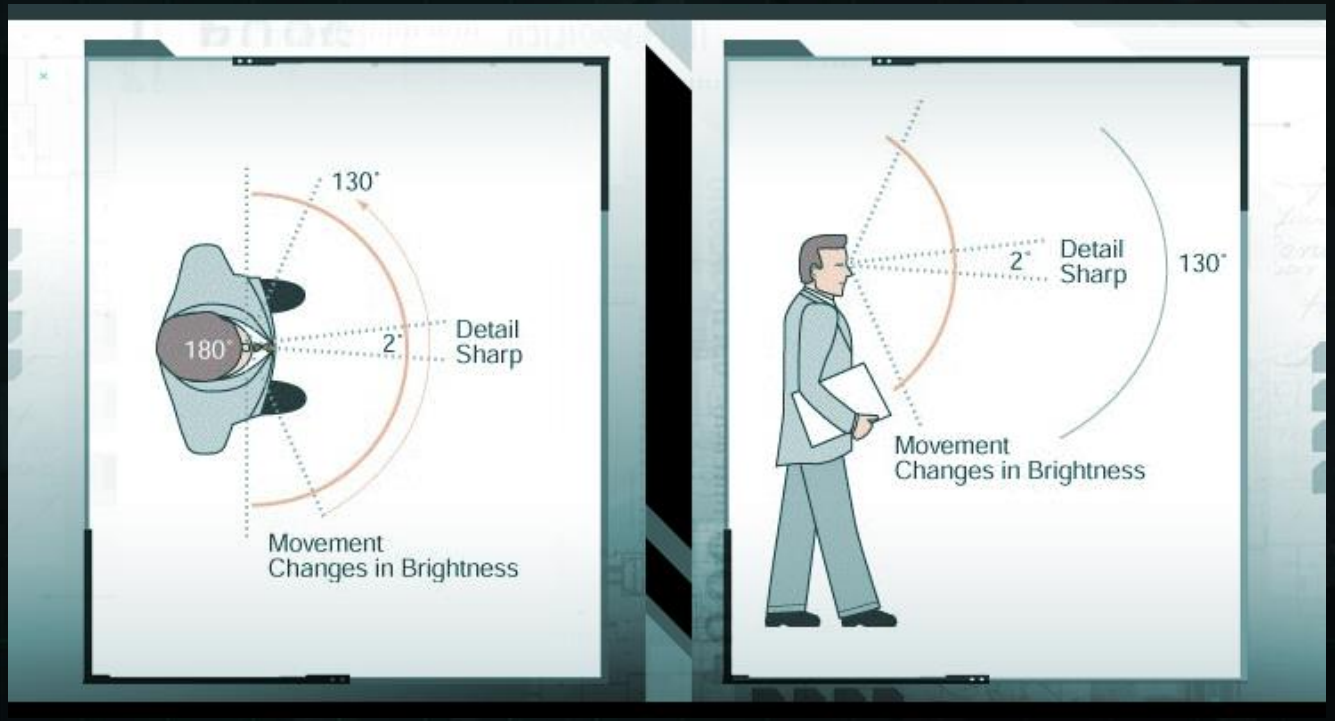
VISUAL PERCEPTION

VISION IN GAMES

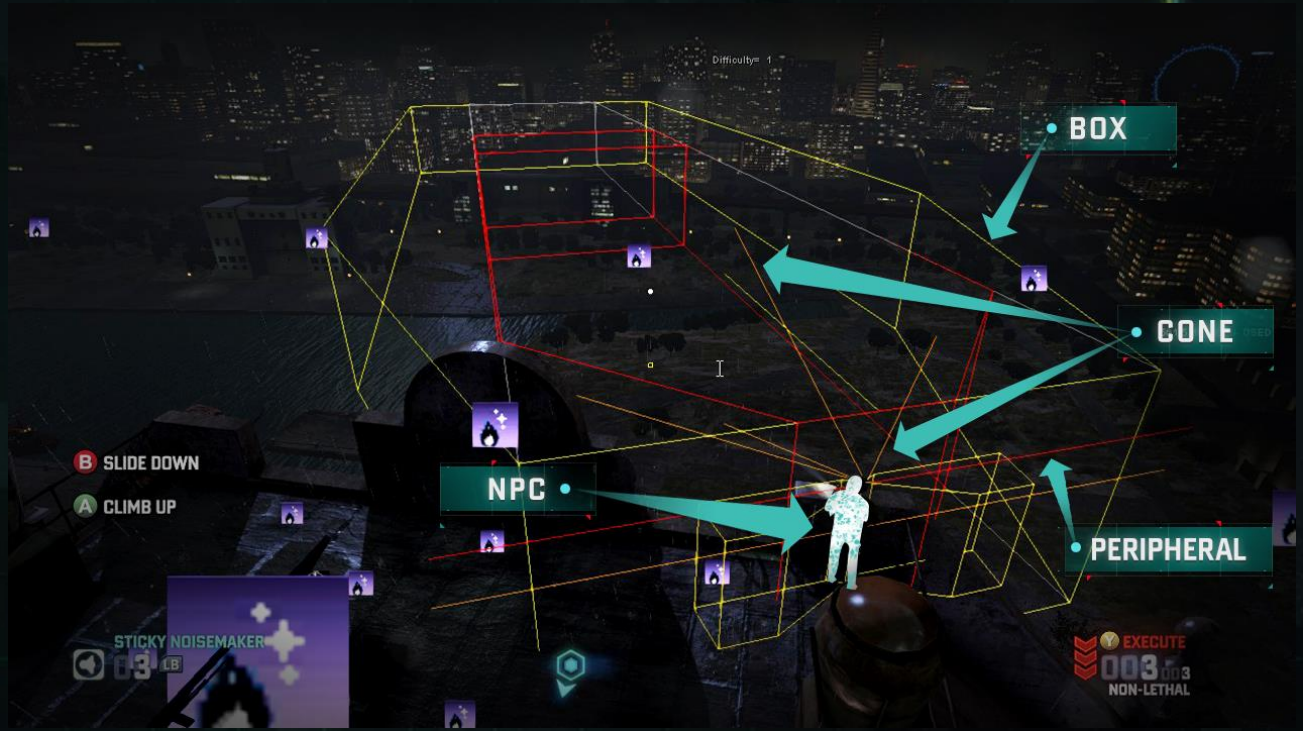


TOM CLANCY'S SPLINTER CELL BLACKLIST

VISION IN LIFE



VISION IN BLACKLIST



TOM CLANCY'S SPLINTER CELL BLACKLIST

DETECTION

TOM CLANCY'S SPLINTER CELL BLACKLIST

DETECTION FEEDBACK: HUD

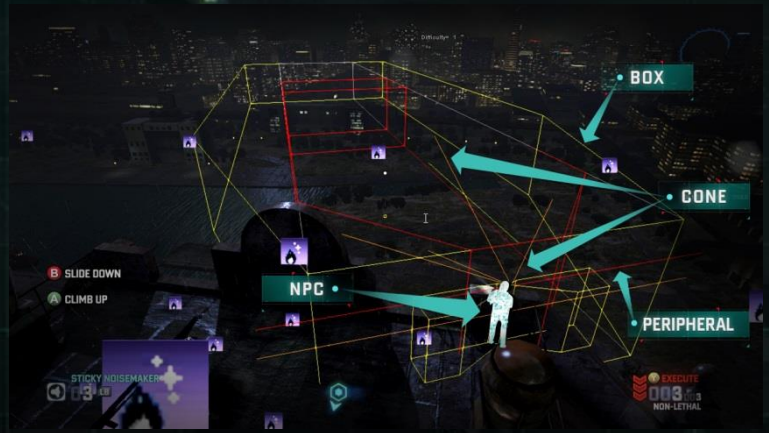
TUNING was a NIGHTMARE

- Tweaked by Design
- Inconsistent playtest feedback

TOM CLANCY'S SPLINTER CELL BLACKLIST

ISSUES WITH VISION TUNING

- Special case cover code
  Solution: More special case code ☹
- Detected too easily at a distance
  Solution: Switched to Coffin-shaped boxes
- Too easy overall
  Solution: Keep tweaking



TOM CLANCY'S SPLINTER CELL BLACKLIST

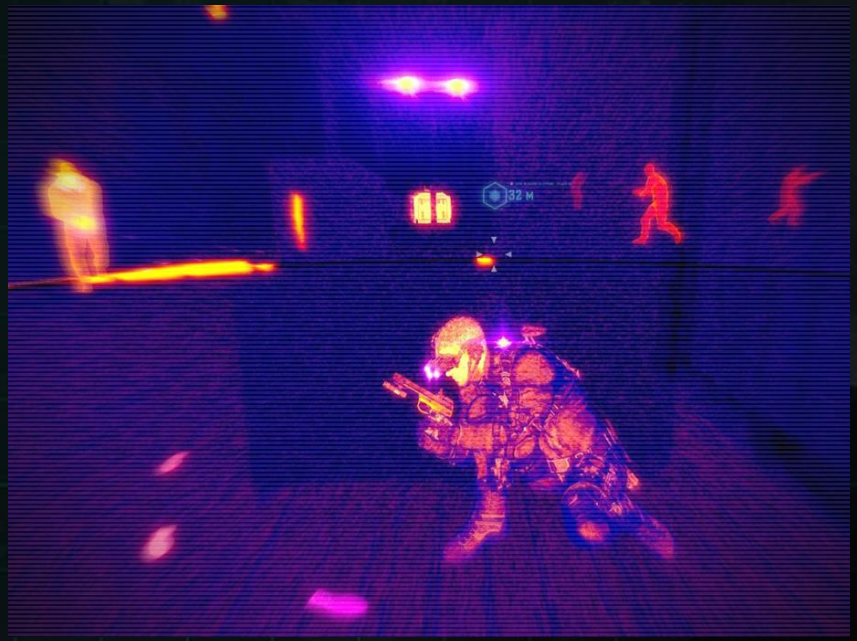
ENVIRONMENTAL AWARENESS

- Layout
- Environmental Objects

TOM CLANCY'S SPLINTER CELL BLACKLIST

ENVIRONMENTAL AWARENESS

- Layout
- Environmental Objects

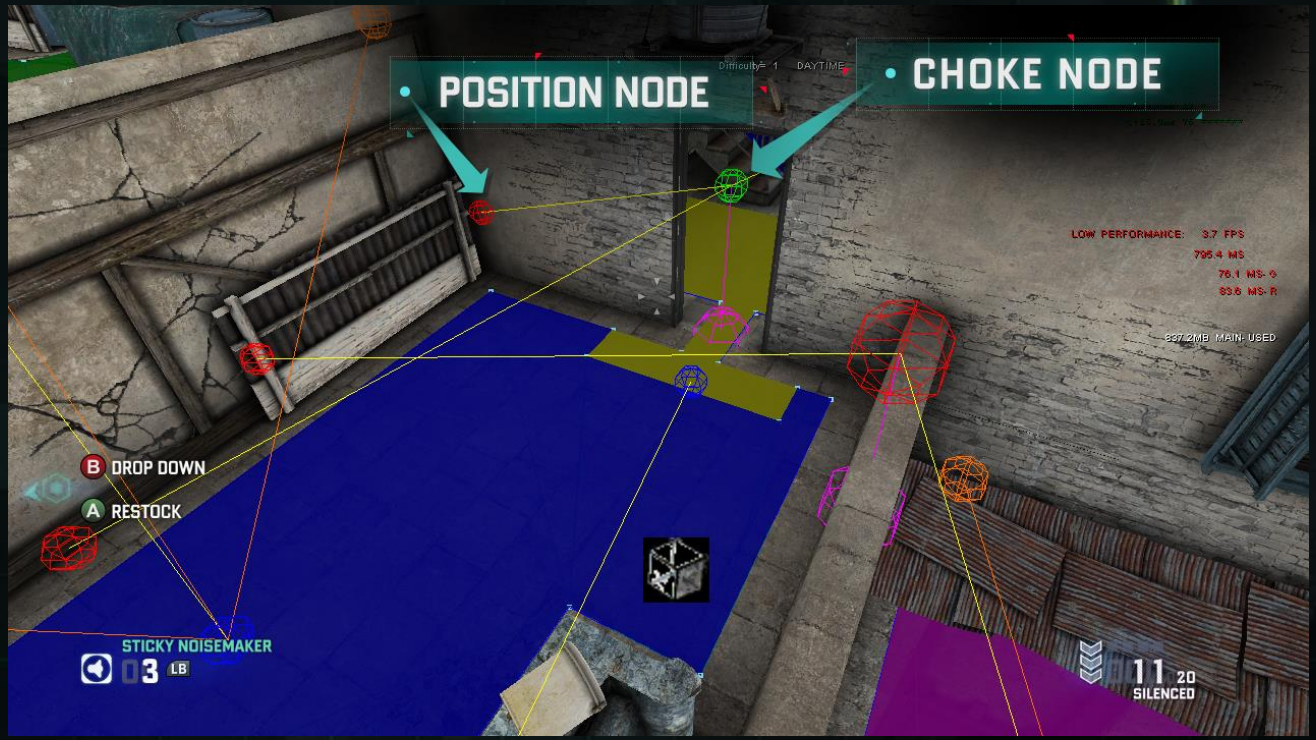


TOM CLANCY'S SPLINTER CELL BLACKLIST

WHY IS AWARENESS OF LAYOUT IMPORTANT?

- Our encounters can start anywhere
- NPCs are already spawned
- What about NPCs that can't engage the player?

LAYOUT AND CONNECTIVITY: TEAS



TOM CLANCY'S SPLINTER CELL BLACKLIST

ENVIRONMENTAL OBJECTS

- "Did I leave that door open?"

TOM CLANCY'S SPLINTER CELL BLACKLIST

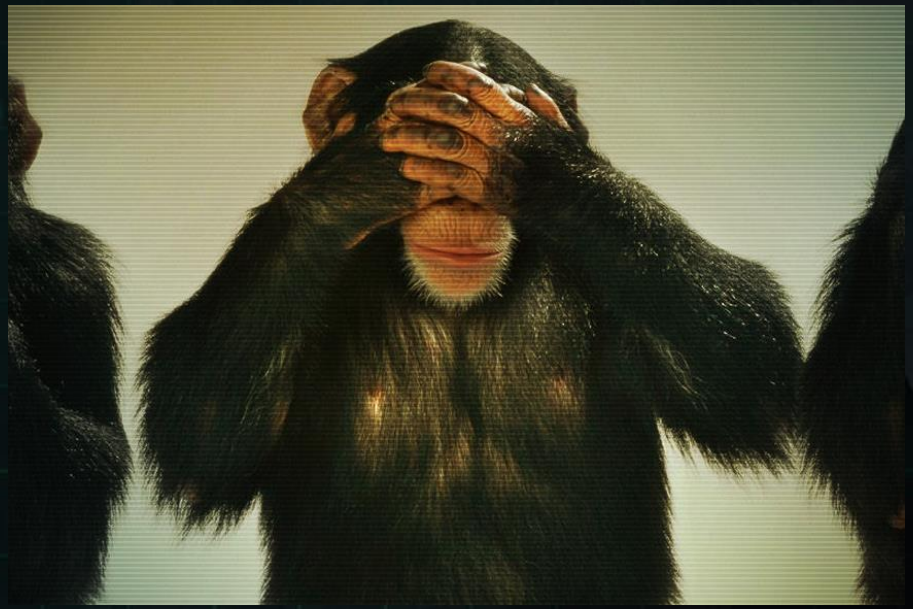
AUDITORY PERCEPTION

- Every auditory event has a distance and priority
- If an NPC is in range he hears it
- Used the TEAS to calculate distance

TOM CLANCY'S SPLINTER CELL BLACKLIST

AUDITORY PERCEPTION ISSUES

- You can't see who hears you
- You don't directly control the sounds you make

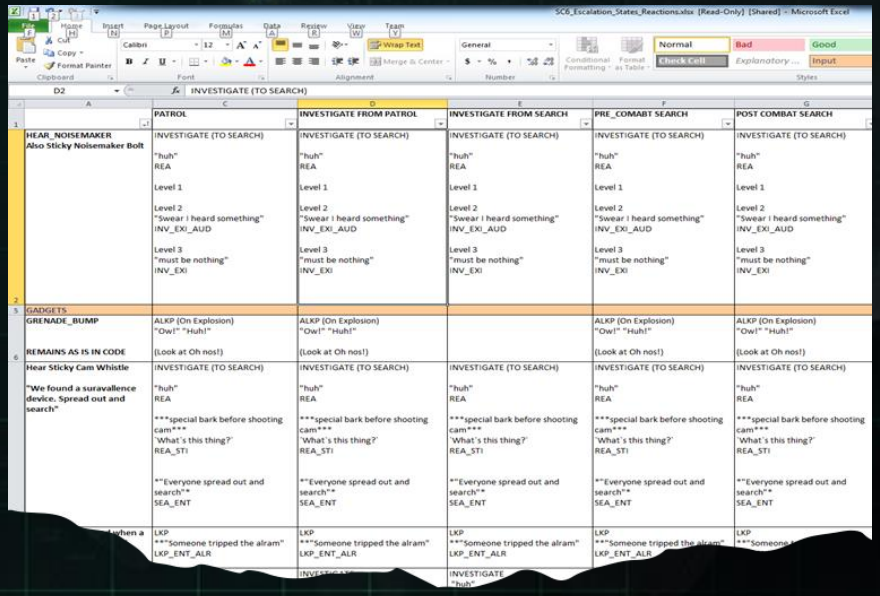


AUDITORY PERCEPTION SOLUTION

- NPCs off screen don't hear as well
- CD stopped complaining!

BETTER FEEDBACK: BARKS

- “I think I heard footsteps”
- “I think I heard someone over there”
- “I think someone’s over there”



SC6_Escalation_States_Reactions.xlsx [Read-Only] [Shared] - Microsoft Excel

D2 INVESTIGATE (TO SEARCH)

	PATROL	INVESTIGATE FROM PATROL	INVESTIGATE FROM SEARCH	PRE_COMABT SEARCH	POST COMBAT SEARCH
HEAR_NOISEMAKER Also Sticky Noisemaker Bolt	INVESTIGATE (TO SEARCH) "huh" REA Level 1 Level 2 "Swear I heard something" INV_EXI_AUD Level 3 "must be nothing" INV_EXI	INVESTIGATE (TO SEARCH) "huh" REA Level 1 Level 2 "Swear I heard something" INV_EXI_AUD Level 3 "must be nothing" INV_EXI	INVESTIGATE (TO SEARCH) "huh" REA Level 1 Level 2 "Swear I heard something" INV_EXI_AUD Level 3 "must be nothing" INV_EXI	INVESTIGATE (TO SEARCH) "huh" REA Level 1 Level 2 "Swear I heard something" INV_EXI_AUD Level 3 "must be nothing" INV_EXI	INVESTIGATE (TO SEARCH) "huh" REA Level 1 Level 2 "Swear I heard something" INV_EXI_AUD Level 3 "must be nothing" INV_EXI
GADGETS					
GRENADE_BUMP REMAINS AS IS IN CODE	ALKP (On Explosion) "Ow!" "Huh!" (Look at Oh nos!)	ALKP (On Explosion) "Ow!" "Huh!" (Look at Oh nos!)		ALKP (On Explosion) "Ow!" "Huh!" (Look at Oh nos!)	ALKP (On Explosion) "Ow!" "Huh!" (Look at Oh nos!)
Hear Sticky Cam Whistle "We found a suravallence device. Spread out and search"	INVESTIGATE (TO SEARCH) "huh" REA ***special bark before shooting cam*** `What`s this thing?` REA_STI *"Everyone spread out and search"* SEA_ENT	INVESTIGATE (TO SEARCH) "huh" REA ***special bark before shooting cam*** `What`s this thing?` REA_STI *"Everyone spread out and search"* SEA_ENT	INVESTIGATE (TO SEARCH) "huh" REA ***special bark before shooting cam*** `What`s this thing?` REA_STI *"Everyone spread out and search"* SEA_ENT	INVESTIGATE (TO SEARCH) "huh" REA ***special bark before shooting cam*** `What`s this thing?` REA_STI *"Everyone spread out and search"* SEA_ENT	INVESTIGATE (TO SEARCH) "huh" REA ***special bark before shooting cam*** `What`s this thing?` REA_STI *"Everyone spread out and search"* SEA_ENT
when a	LKP **"someone tripped the alram" LKP_ENT_ALR	LKP **"someone tripped the alram" LKP_ENT_ALR	LKP **"someone tripped the alram" LKP_ENT_ALR	LKP **"someone tripped the alram" LKP_ENT_ALR	LKP **"Someone
			INVESTIGATE "huh"		

TOM CLANCY'S SPLINTER CELL BLACKLIST

SOCIAL AND CONTEXTUAL AWARENESS

- Who am I talking to?
- What's happening around me?

TOM CLANCY'S SPLINTER CELL BLACKLIST

CONTEXTUAL AWARENESS: CONVERSATION

TOM CLANCY'S SPLINTER CELL BLACKLIST

CONTEXTUAL AWARENESS: UNREACHABLE

TOM CLANCY'S SPLINTER CELL BLACKLIST

QUESTIONS?

TOM CLANCY'S SPLINTER CELL BLACKLIST

To be continued…

COME & MEET ME

at the

UBISOFT 2014

[GDC] LOUNGE

Today

from	3:30PM
to	4:30PM

TOM CLANCY'S SPLINTER CELL BLACKLIST

QUESTIONS?

COMMON SOCIAL AND CONTEXTUAL ISSUES

- Disappearing NPC problem
- The dead body problem

TOM CLANCY'S SPLINTER CELL BLACKLIST

CONTEXTUAL AWARENESS: UNREACHABLE

TOM CLANCY'S SPLINTER CELL BLACKLIST

SOCIAL AWARENESS: CONVERSATIONS

TOM CLANCY'S SPLINTER CELL BLACKLIST