



Virtual Reality: Game Design at the Frontier

Dr. Kimberly Voll
Radial Games
@zanytomato

No video recording
Turn off cell phones, pagers and
noisemakers
Surveys will come after the talk—
please fill them out

Hi! I'm Kim.

I'm a research scientist and a technical designer

I think about how people
think in games



The **FANTASTIC CONTRAPTION** team



Sarah



Colin



Andy



Lindsay



me



Gord



**A SHELL
IN THE PIT**

FANTASTIC CONTRAPTION



What does
good design
mean in VR?

Today

VR fundamentals
Design in VR



Today

VR fundamentals

Design in VR



VR places you
in the game

VR is non-linear

it is incredibly hard to exercise
linear control over the player

VR is a
**complex
soup**



...and we haven't
written the
cookbook
yet

have to align on the
fundamentals...



presence

| what it is like to
| be where you
| are



flow

a complex psychological
state of total absorption



immersion

| flow
| arousal
| narrative



affordances | the behaviour objects in the
world teach you

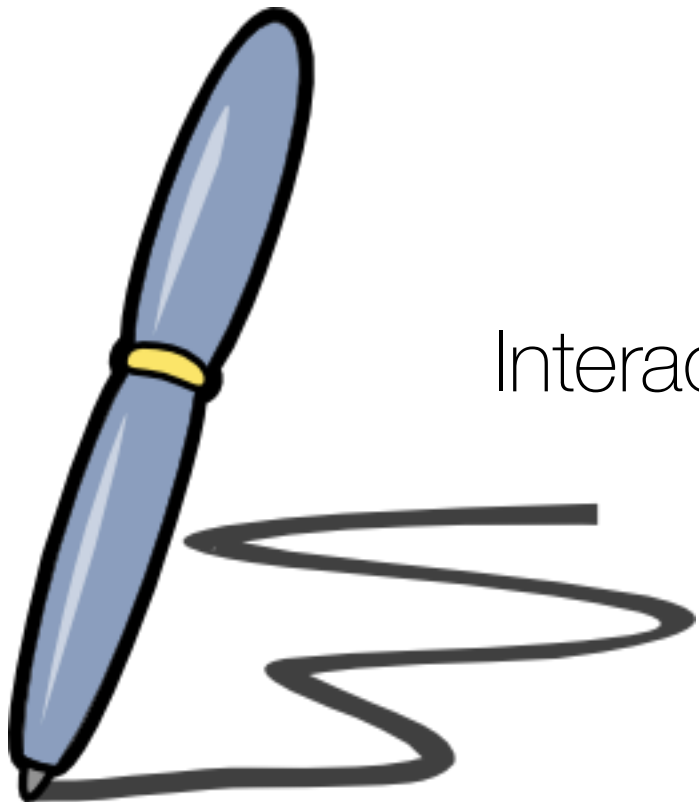
Job Simulator





fidelity contract

expectations of a player
combined with affordances of
the world



What's in the contract?

World and physics rules

Interactive expectations / affordances

Unconscious expectations

Desires

Narrative expectations

agency | players feeling empowered to
act appropriately in a given
situation

fundamental game design principles
still apply

we just have to think about
how a little differently in VR

all of this comes together to
define **player behaviour**



which is fundamentally
unpredictable

things like...

directing player attention

feeding player expectations

interpreting player world views

predicting the intensity of experiences

getting players where you need them

and all the other **surprises**





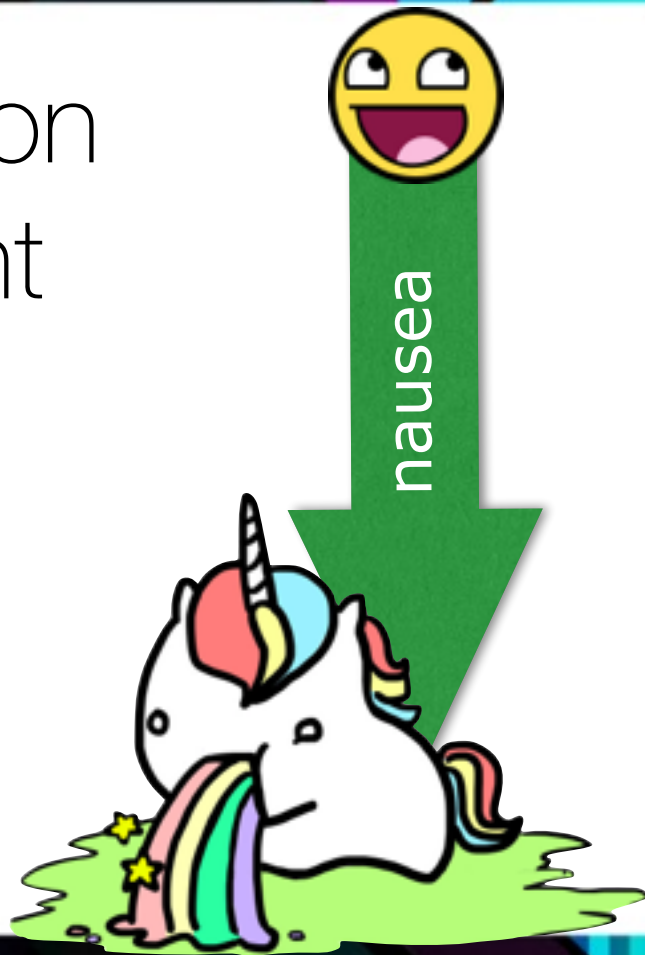
Nausea

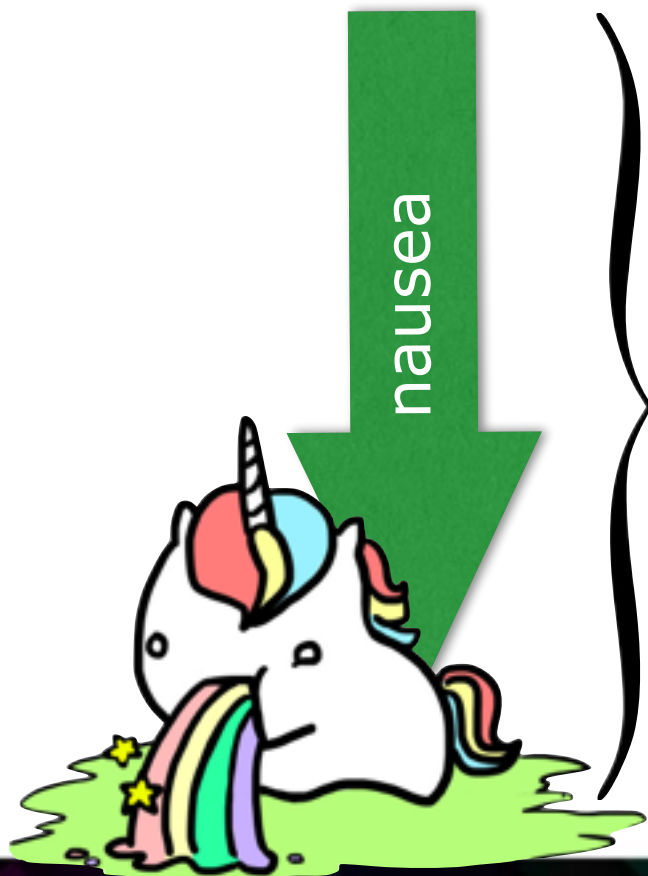
"Spin" by Melissa O'Donohue licensed under CC BY-ND 2.0

player locomotion
linear movement
acceleration
rotation
both



player locomotion
linear movement
acceleration
rotation
both





results
may vary

“I don’t like
VR
it makes me
sick”

“It’s
OK
because it
doesn’t make
me
sick”

Nausea
is a
**design
problem**

Nausea
is a
**design
problem**
(and a marketing problem)

Design Challenge:

what experiences
can we create
that are
fundamentally
unique to VR?

Today

VR fundamentals

Design in VR





Design
process



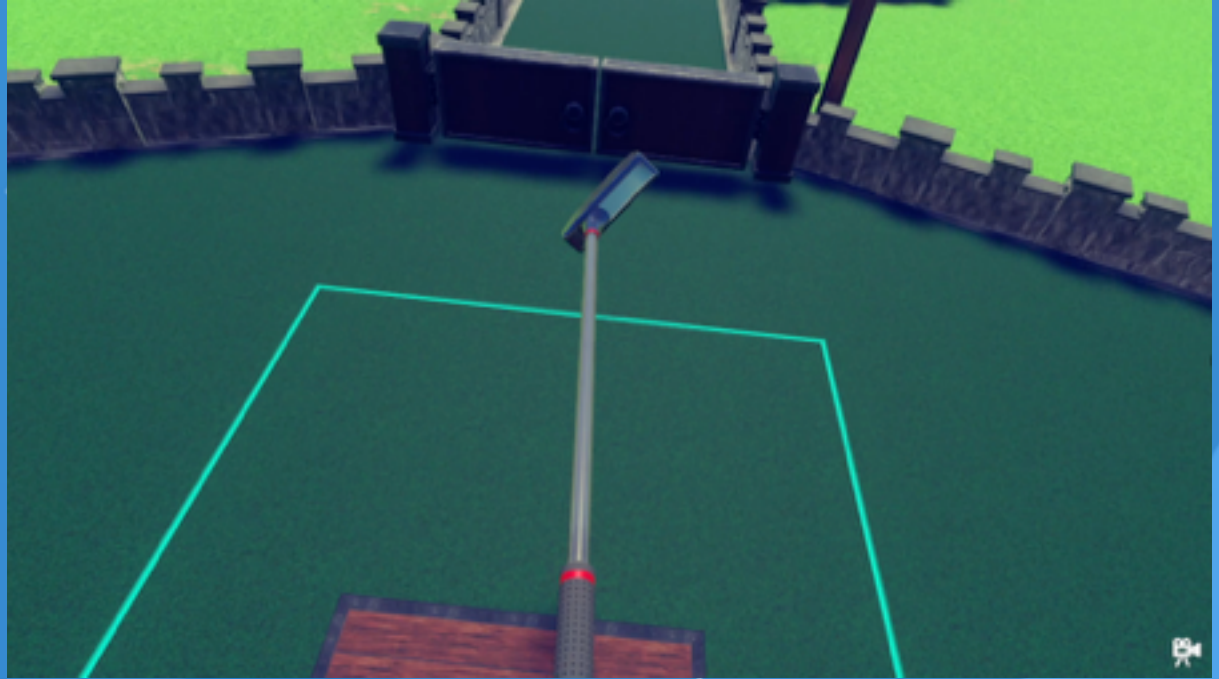
Process

- Create a **space**
- Determine **core experience/pillars**
- Create **consistency** (fidelity contract)
- Think **diegetically**
- **Observe** your player
- Allow players to **grow**



Pillar: Never say “no” to the player

Cloudlands: VR Minigolf



**create
observe
iterate**





ethnographic
study





Things we learned by watching:

People don't look/move around

People need time to discover

People interact with (just about) everything

Moving the whole contraption

People love to throw things in VR

Cat chariot

Things that are challenging

Things that interface with body space

The fidelity well is deeeeeeeep

Phobias/fears

Cheesing it

Grabbing

Movement



playtesting

Start playtesting
immediately

playtesting is hard

Unpredictable humans

Training humans

Wow factor

Developer/player acclimation

Whitecoat effect

Observation

Need to understand
how players are going to
interpret your space

Give players time
don't interfere



Player
education

Set players up
for **discovery**







world **fidelity**









and wheels

Musical rods
and wheels

These are all “**extras**”
but they contribute to the
“**completeness**”
of the world

**Observing (many)
players** is
key to mapping out
expectations/fidelity

Information density
is an important
consideration



nudging



Arizona Sunshine





getting
stuff
for **free**

Arizona Sunshine



Budget Cuts



Work **with the brain**



**obstacles
and
room scale**



“It’s
bigger
on the **inside**”

Room scale
Standing scale
Seated scale



The affordances of your space
will affect the alignment of
perceived room space with
the **workable room space**

Consider the **obstacles** in the
surrounding space

When the
perceived room space
>
workable room space
the fidelity contract is at risk

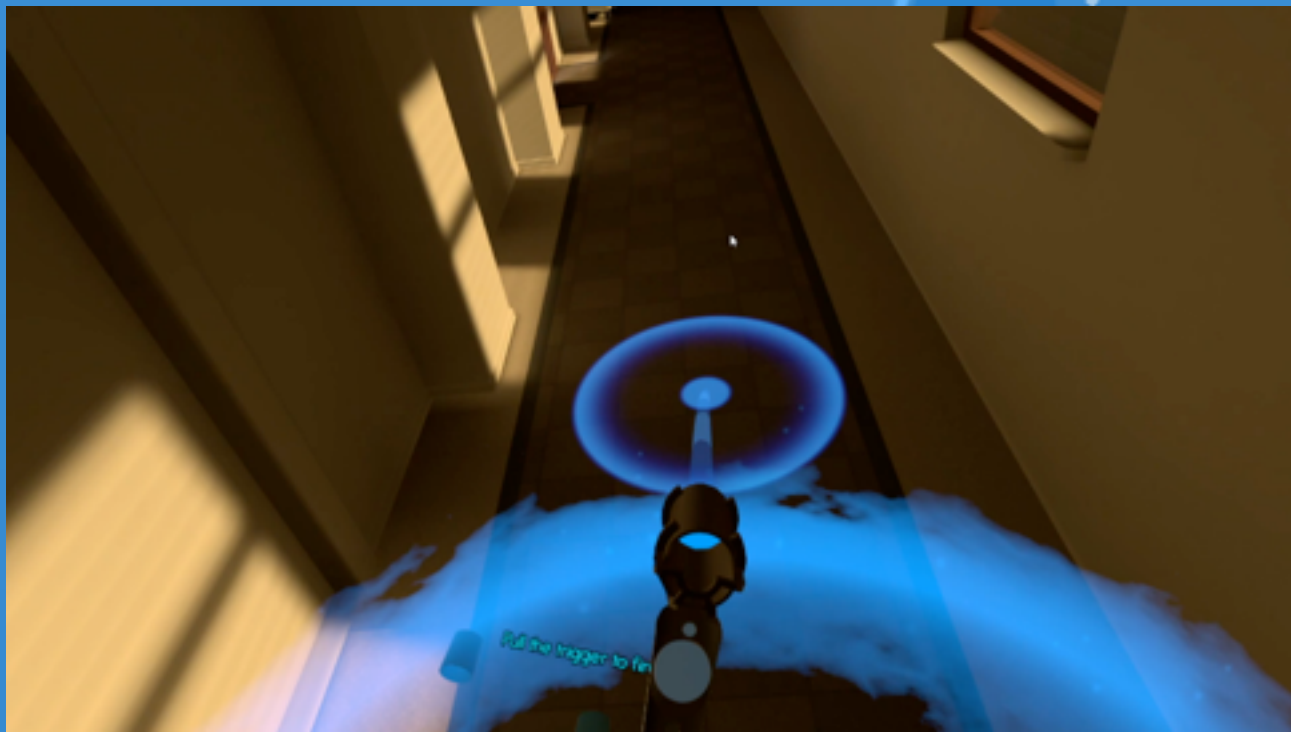
VR scale
is a
**design
problem**

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(and a marketing problem)

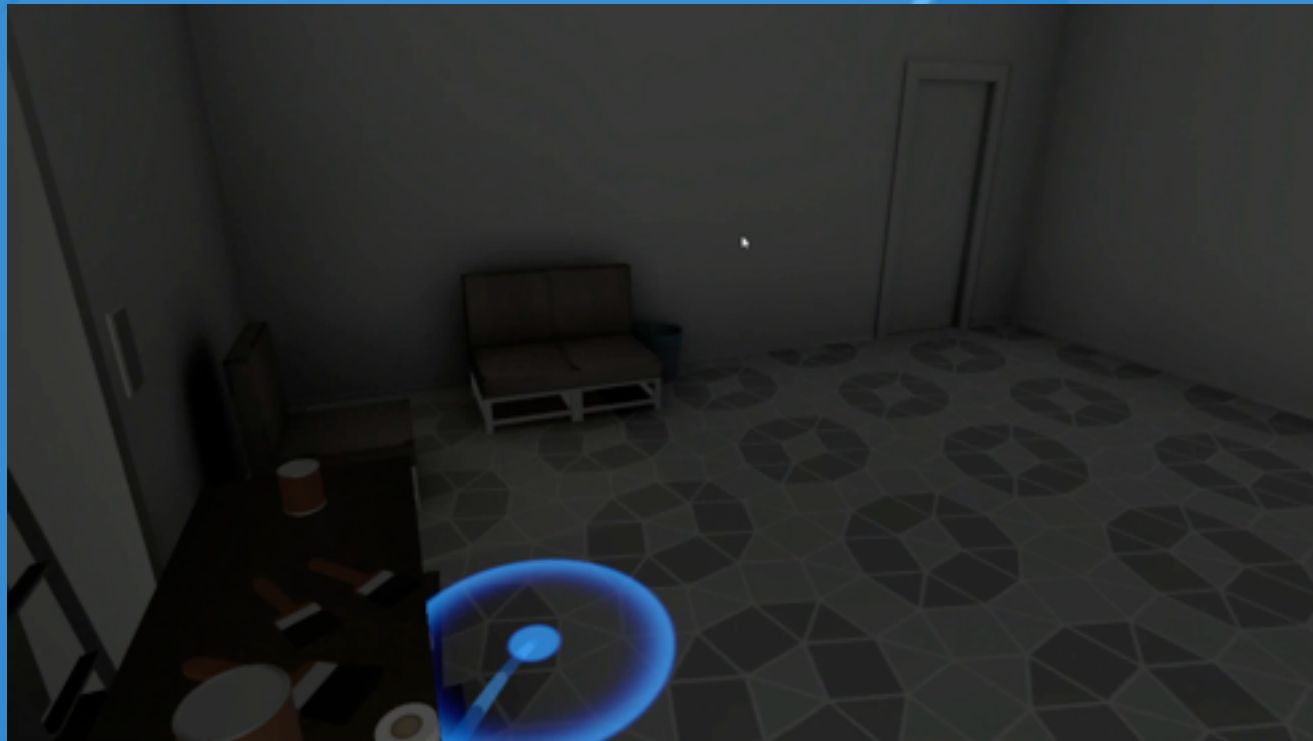
Budget Cuts



Budget Cuts



Budget Cuts



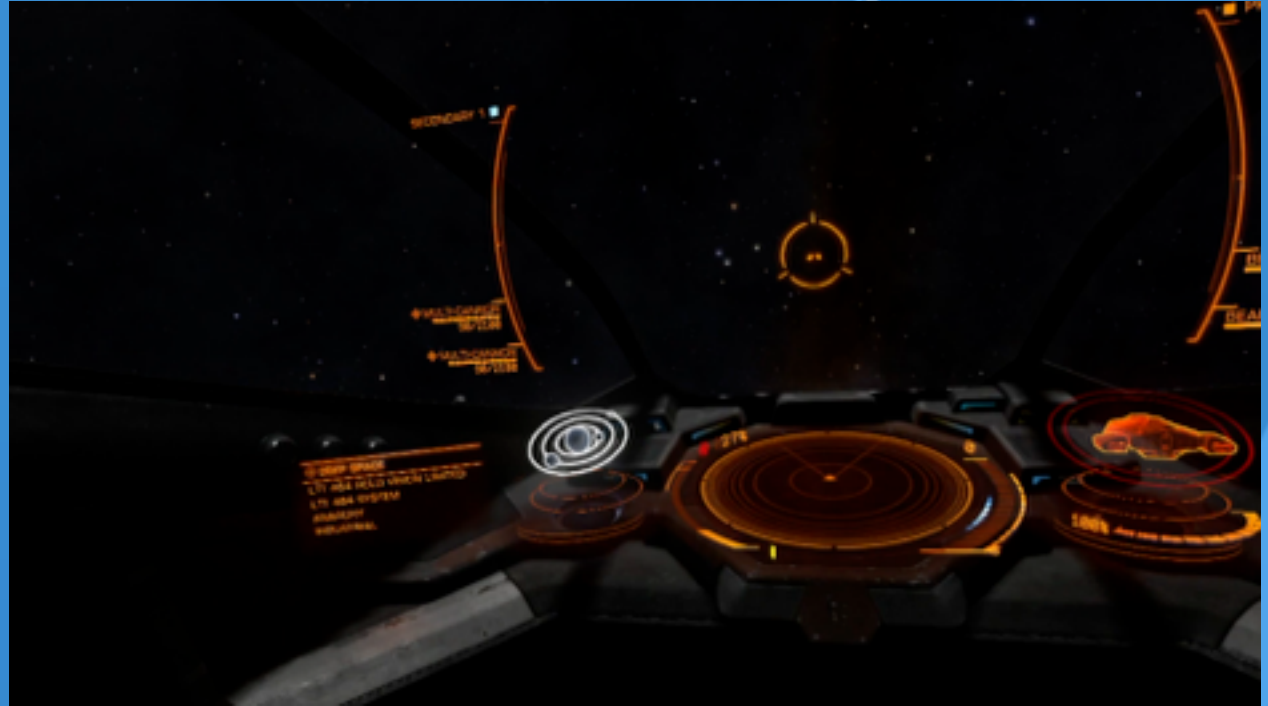




UI and menus

Traditional menus
don't work in VR
unless you're in a world with menus

Elite: Dangerous



Tilt Brush



Job Simulator





Neko



Neko



Neko



Shortcuts



Deleting

Helmet World









Saving

ect

Your Contraptions

Shared contraptions





ect

Your Contraptions

Saved contraption

Level Select





Delete contraptions



Minimap



Next Level

Think **diegetically**



allow player
to **grow**

We never teach players

shortcuts

sticky balls / light trails

advanced machinery

minigames







Allowing the player to grow is as
much a product of
the **skill curve**
as what you
don't teach



mixed **reality**





**trust
and
safe spaces**

The potential for
psychological trauma
is
real



Our players
place their trust in us
when they
place themselves
in the rig

If we do our job well
people will **do stuff**
because of our spaces

they will be **there**
not **here**

We **share**
responsibility in
creating awareness
around our experiences

Key Takeaways

define your **core experience**

playtest immediately

fidelity contract & affordances

think **diegetically**

set players up for **discovery**

allow your player to **grow**

experiment

trust and safe spaces



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welcome
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