GDC | March 21-25, 2022
San Francisco, CA

igda® Climate SIG

USE YOUR GAME DEVELOPER SUPERPOWERS TO FIGHT THE CLIMATE CRISIS

#GDC22

USE YOUR GAME DEVELOPER SUPERPOWERS TO FIGHT THE CLIMATE CRISIS

Atlantic Council

Adrienne Arsht-Rockefeller Foundation Resilience Center

WHAT ARE OUR GOALS?

MAKE PEOPLE MORE RESILIENT TO CLIMATE IMPACTS

- Work with AAA companies to include **climate and resilient messages/lessons**
- Work to **educate developers** on climate impacts and resilience.
- **Grant money** to indie qualifying titles

WHAT ARE OUR GOALS FOR TODAY?

HELP YOU HELP MAKE A DIFFERENCE

- **Help you understand** the climate crisis and related interventions
- Through both theory and practice, **teach you** fundamental design approaches for effective climate design
- **Empower you** with the knowledge, processes, and considerations you need to get started

WHO ARE WE?

Grant Shonkwiler

Commander & Shonk,
Shonkventures
he/him

Arnaud Fayolle

Art Director,
Ubisoft, Positive Play
he/him

Chance Glasco

Creative Director,
Good Dog Studios
he/him

Paula Escuadra

Sr Design Researcher,
Xbox Game Studios
she/her

Trevin York

Lead Game Designer,
Mindblown Labs
he/him

WHO ARE WE?

Felix Knight

Project Assistant,
Adrienne Arsht –
Rockefeller Foundation
Resilience Center
they/them

Nidhi Upadhyaya

Deputy Director,
Strategic Initiatives and
Partnerships
Adrienne Arsht –
Rockefeller Foundation
Resilience Center
she/her

Rosemary Mann

Director,
Strategic Initiatives and
Partnerships,
Adrienne Arsht –
Rockefeller Foundation
Resilience Center
she/her

Kathy Baughman McLeod

Director,
Director and SVP,
Adrienne Arsht-
Rockefeller Foundation
Resilience Center

Join the Climate SIG Discord

tinyurl.com/ClimateSIGGDC

igda®
Climate SIG

INTRODUCING THE DAY

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Shonkventures
he/him

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INTRODUCING THE DAY

MindBlown Labs

TRAKID
Explorer Quest

MilliPore SiGMa

Trevin York

Transformational Games are those games developed with the intention of changing players in a specific way that transfers and persists beyond the game.

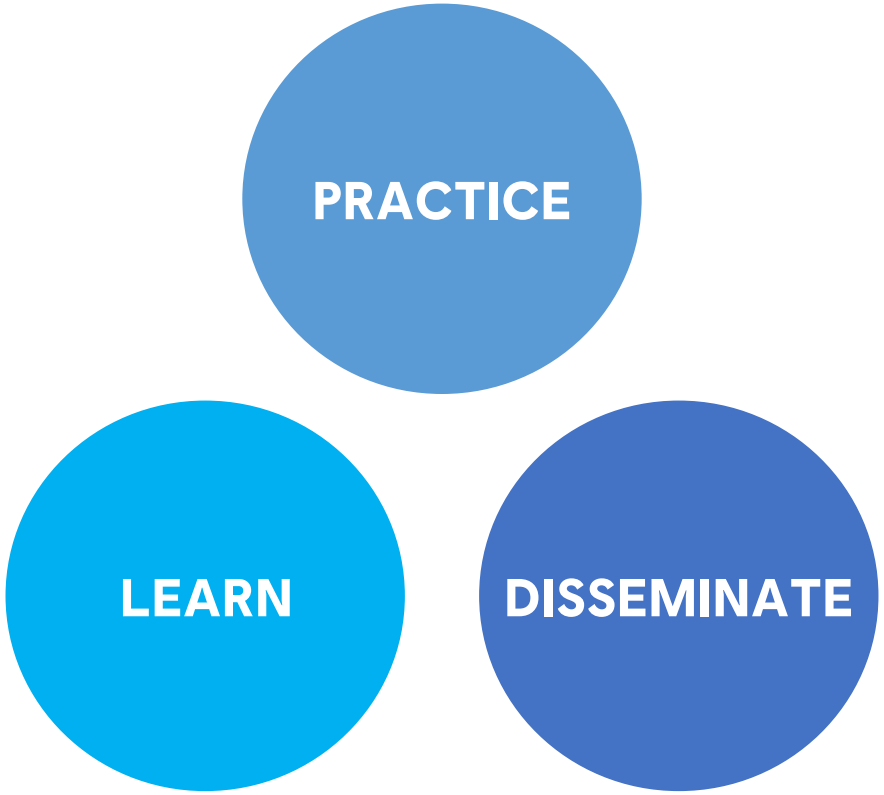
- Sabrina Culyba

DESIGN FOR CHANGE

THE UNIVERSITY *of* EDINBURGH

Edinburgh College of Art

METROPOLIS


PRACTICE
LEARN
DISSEMINATE

TODAY'S TOPICS

Grant Shonkwiler

Arnaud Fayolle

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Trevin York

TODAY'S TOPICS

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Exploring Climate Impacts

Arnaud Fayolle

Climate Game Toolkit For Content Creators

Chance Glasco

Examples of Climate Design

Paula Escuadra

Let's Build A Theory of Action

Trevin York

Designing Games That Transform Players

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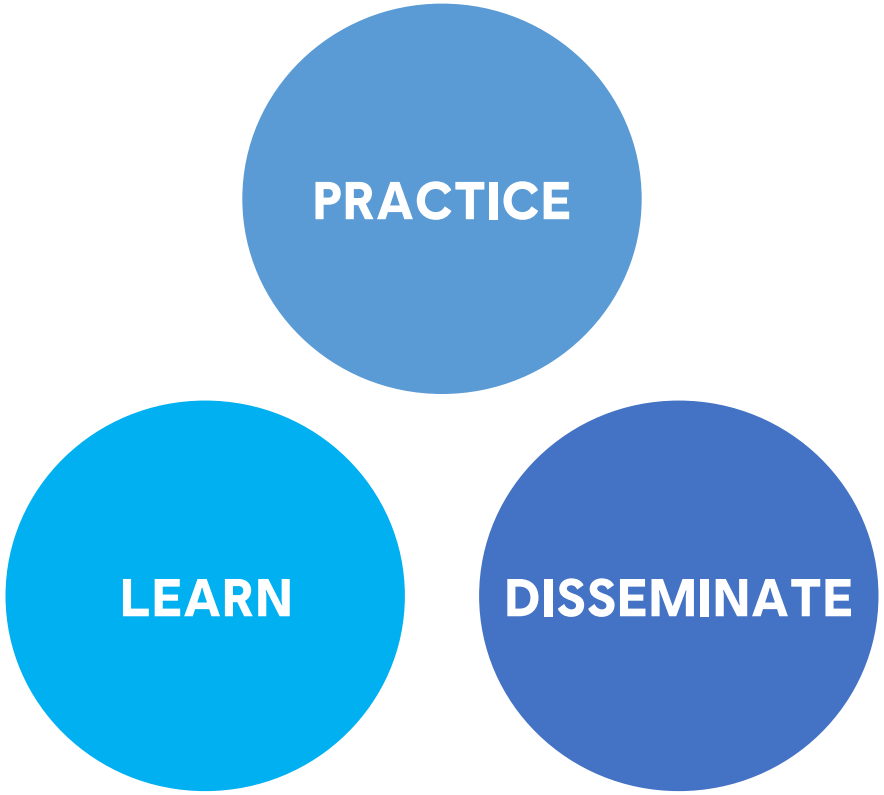
PRACTICE
LEARN
DISSEMINATE

1. IS THIS UNCOMFORTABLE?

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Designing Games That Transform Players

1. IS THIS UNCOMFORTABLE?
2. DOES ANYTHING WE DO MATTER?

The Washington Post
Democracy Dies in Darkness

National

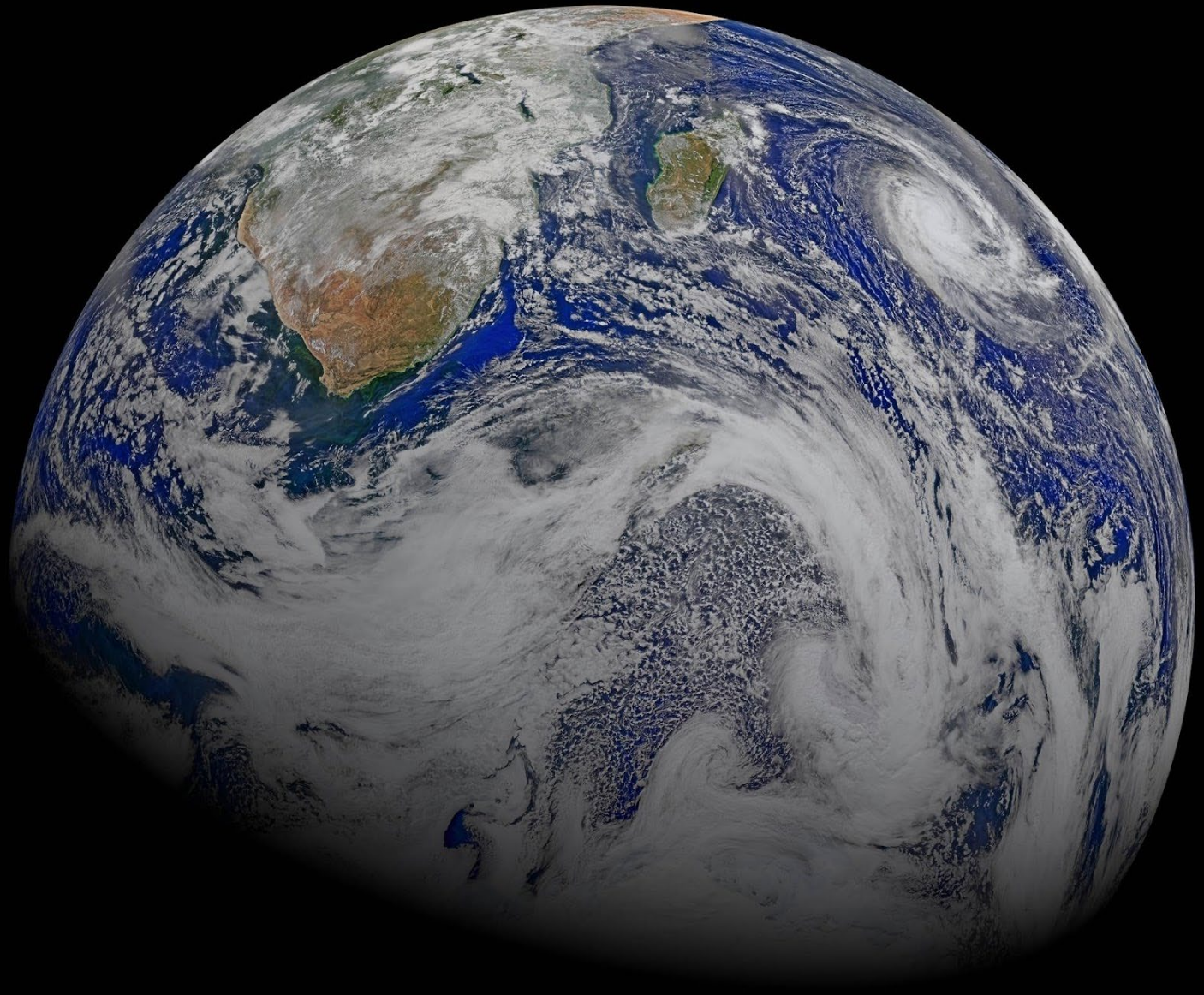
As it enters a third year, California's drought is strangling the farming industry

By Scott Wilson

Today at 6:00 a.m. EDT

Listen to article 14 min

A tractor tills a field between Firebaugh and Mendota, Calif., on Aug. 25, 2021. (John Brecher/For The Washington Post)



THANK YOU!

NEXT PART

1

EXPLORING
CLIMATE IMPACTS

Grant SHONKWILER

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Use Your Game Developer Superpowers to Fight the Climate Crisis

1

EXPLORING

CLIMATE IMPACTS

Grant SHONKWILER

#GDC22

Intro

Grant Shonkwiler

Production/Leadership Consultant @ Shonkventures
Senior Fellow @ AARFRC-Atlantic Council
Former Producer: Epic Games, id Software, Megatouch Games
Former Lead Designer & Programmer
Shipped 65+ games
20 years making games, 13 professionally

Plan/Agenda

Intro

Focus

20 minutes of presentation

20 minutes of group breakouts to brainstorm ideas

Shout it out

What are Climate Impacts?

Any downstream effect of Climate Change

- Heatwaves
- Flooding and Drought Cycles
- Ocean Destruction
- Air Pollution
- Food & Water Security
- Financial
- Migration

Heatwaves

Heatwaves - Forest Fires

- **Interventions: Understanding of how forest fires start, Understanding of how to prevent them, Understanding how to escape them**

Heatwaves - Heat Islands

- **Interventions: Urban Forests, Urban Horticulture**

Heatwaves - Urban Heatwaves

- **Interventions: Heat Action Plan, Educate the Populus, Educate Policy Makers**

©iStock.com/nimade

Heatwaves - Construction Site/Laborers

- **Interventions: Manage Exposure, Educate on Symptoms, Educate on Treatments**

Heatwaves - Poor Construction Practices

- **Interventions: Urban Planning, Identifying heat radiating materials, LEED and Green building practices**

Heatwaves - Urban Disasters

- **Interventions: Trained Emergency Services, Disaster Kits**

Heatwaves - Poor Access to Drinking Water

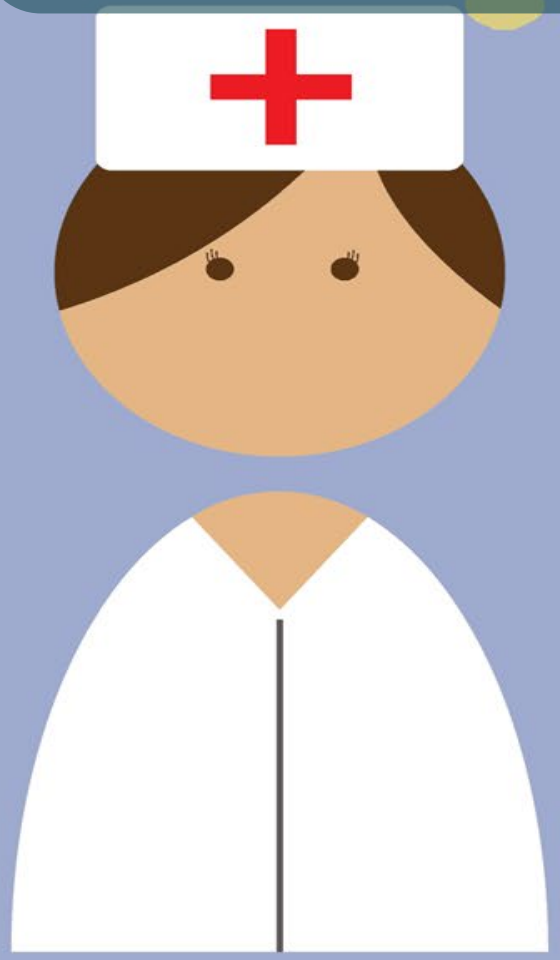
- **Interventions: Access to clean drinking water**

Heatwaves - Human Health Effects

- **Interventions: Access to public healthcare, Information on new illnesses**

Heatwaves - Poor Communication

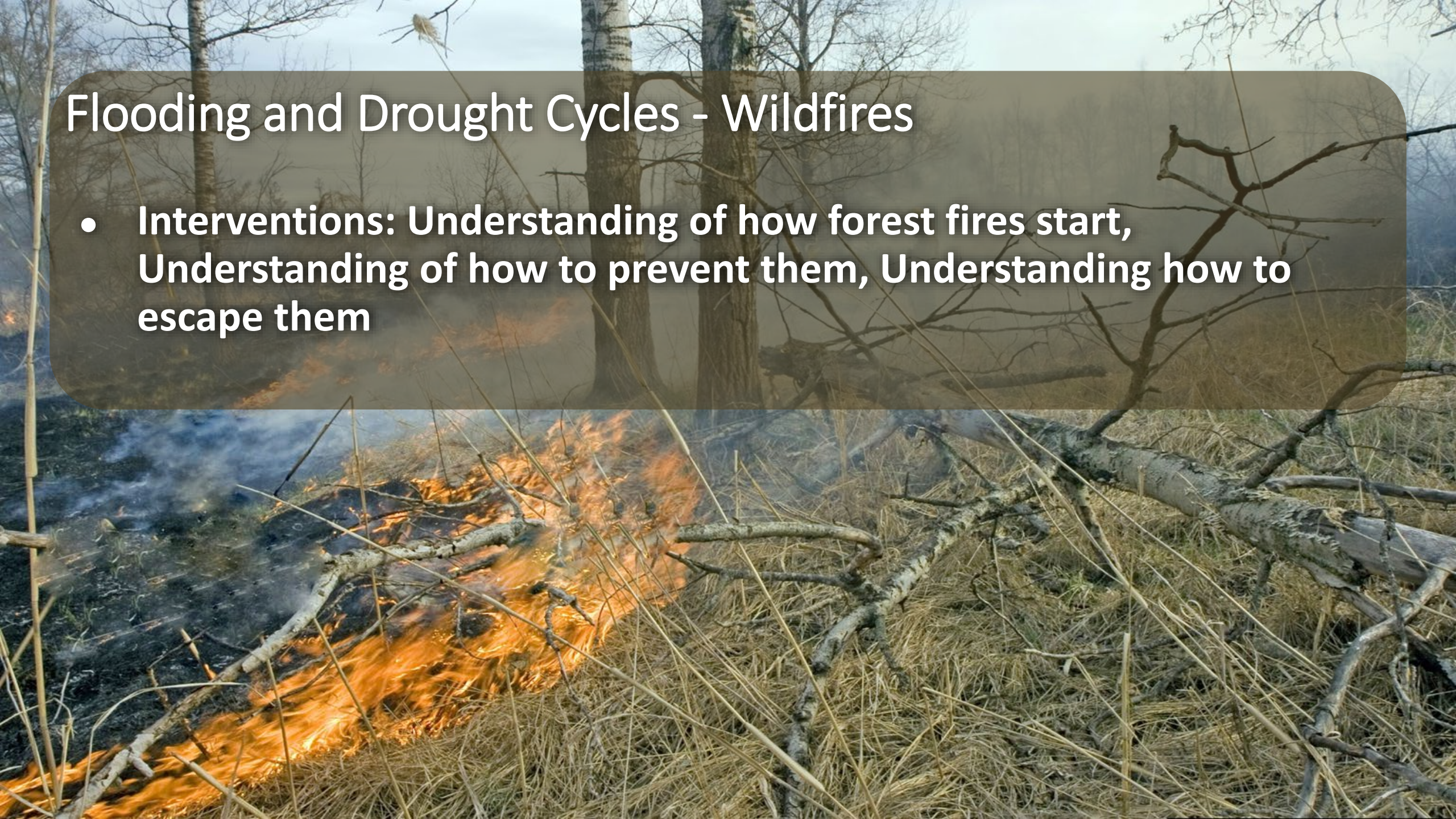
- **Intervention: Communication strategy**



Flooding and Drought Cycles

Flooding and Drought Cycles - Wildfires

- **Interventions: Understanding of how forest fires start, Understanding of how to prevent them, Understanding how to escape them**



Flooding and Drought Cycles - Water Shortage

- **Interventions: Urban Horticulture, Drip irrigation, Plumbing, Water Rationing, Rainwater Collection**

Flooding and Drought Cycles - Urban flooding

- **Interventions: Urban Planning, Drainage Networks**

Oceans

Oceans - Damage to Wetlands & Infrastructure

- Interventions: Planting wetlands, Understanding their benefits

Oceans - Island Nations

- **Interventions: Urban planning, Preparing for floods, tsunamis, rising water levels**

Oceans - Fish/Aquatic Life Conservation/Coral Reefs

- **Interventions: Gaining awareness of the damage, Learning ways to reduce and reverse the damage, Simple things like ocean safe sunscreen**

Oceans - Hurricanes

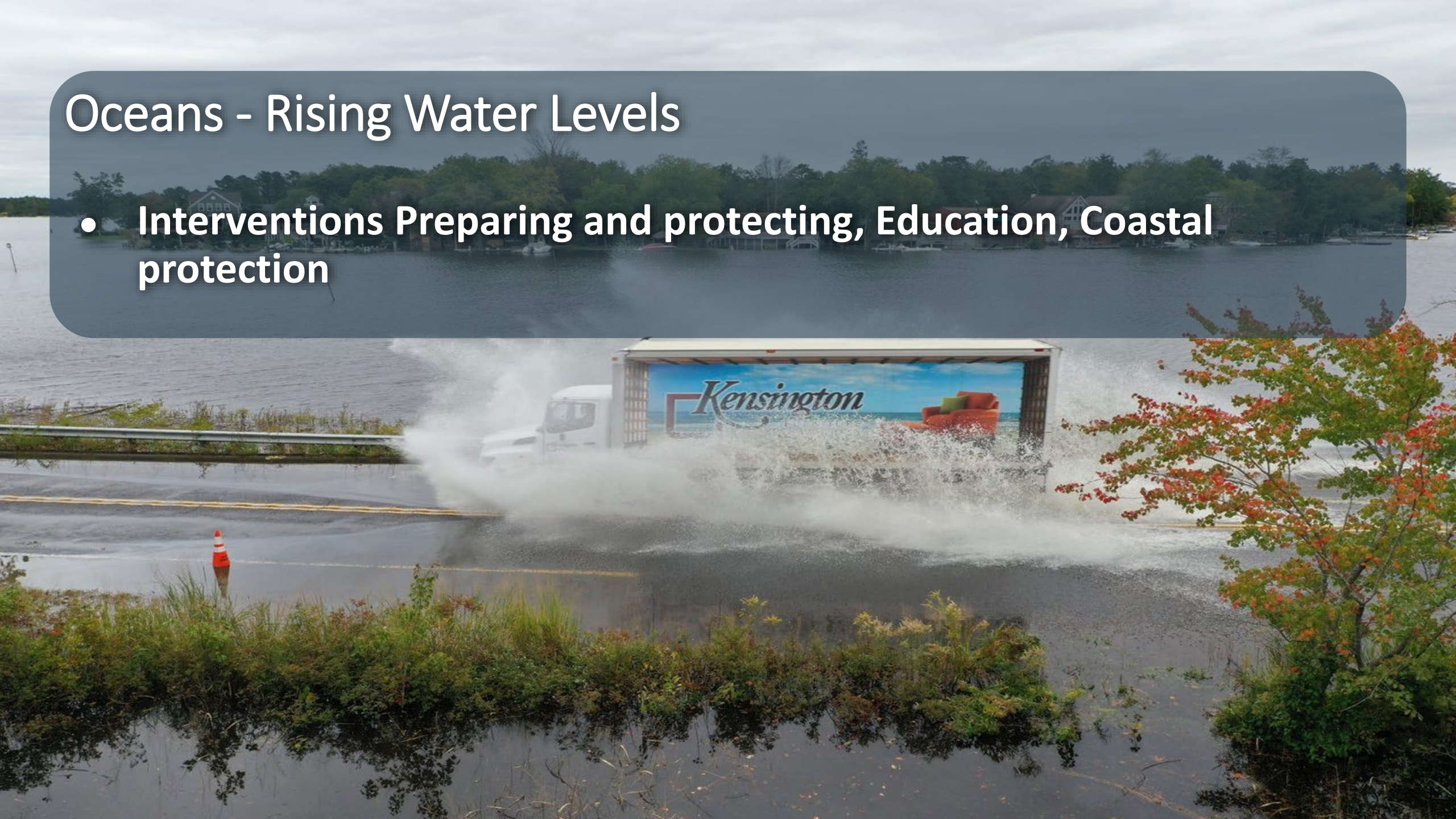
- **Hurricane: Preparing and organizing, Education, Disaster Kits**

Oceans - Water Pollution

- **Interventions: Managing water temperatures, Increased laws around disease-causing agents, Education on water quality**

Oceans - Rising Water Levels

- **Interventions Preparing and protecting, Education, Coastal protection**



Air Pollution

Air Pollution

- **Interventions: Healthcare planning, Learning about precautions to take in a polluted area, Understanding the cause for air pollution and how to prevent it, Urban Gardening, Green Building Designs**

Food & Water Security

Food & Water Security - Land

- **Intervention: Proper Land management, Proper crop rotation, Understanding how a changing climate impacts the soil and nutrients present in it.**

Food & Water Security - Agricultural Yield

- **Intervention: Proper Land management, Proper crop rotation, Understanding how a changing climate impacts the soil and nutrients present in it, Gardening, Indoor Agriculture**

Finance

Finance - Wildfires & RECA Tool

- **Interventions: Understanding the causes of wildfires and how to prevent them, Proper Evacuation Plans, Using RECA to plan for financial impacts**

Migration

Migration - Mass Migration

- **Interventions: Awareness of Mass Migration, Welcoming Countries, Understanding what causes it**

Migration - Vulnerable Communities/Slums

- **Interventions: Education on the areas, Education for the people, Basic Housing and Sanitation**

Migration - Human Trafficking

- **Interventions: Awareness of Human Trafficking, Laws, Training Professionals to help reintegrate trafficked people**

Migration - Hosts for Migrants

- **Interventions: Welcoming Countries, Livelihood Tools, Financial Support**

Migration - Personal Security

- **Interventions: Making MIgration Safe, Teaching Self Defense/Protection**

Migration - Animal Migration

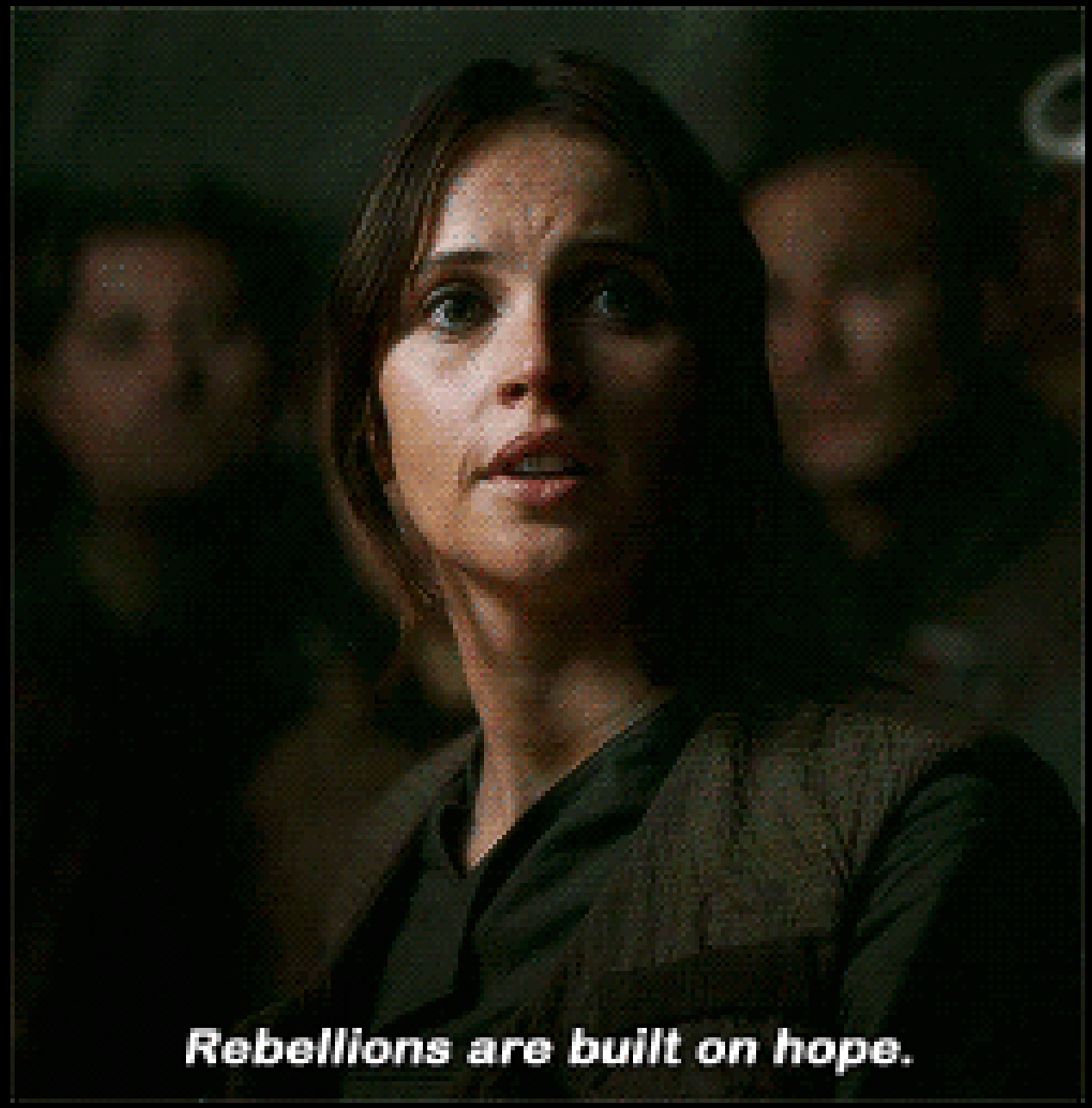
Migration - Water Scarcity

- **Interventions: Learning how to conserve water, Awareness of issues with lack of water.**

Migration - Terrible Working Conditions

- **Intervention: Understanding abuse of migrants in workplaces**

Hope



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1 Breakout

For More Info on Interventions go to
tinyurl.com/GDCClimate

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THANK YOU!

NEXT PART

2

CLIMATE GAME TOOLKIT

FOR CONTENT CREATORS

Arnaud FAYOLLE

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Use Your Game Developer Superpowers to Fight the Climate Crisis

2 CLIMATE GAME TOOLKIT

FOR CONTENT CREATORS

Arnaud FAYOLLE

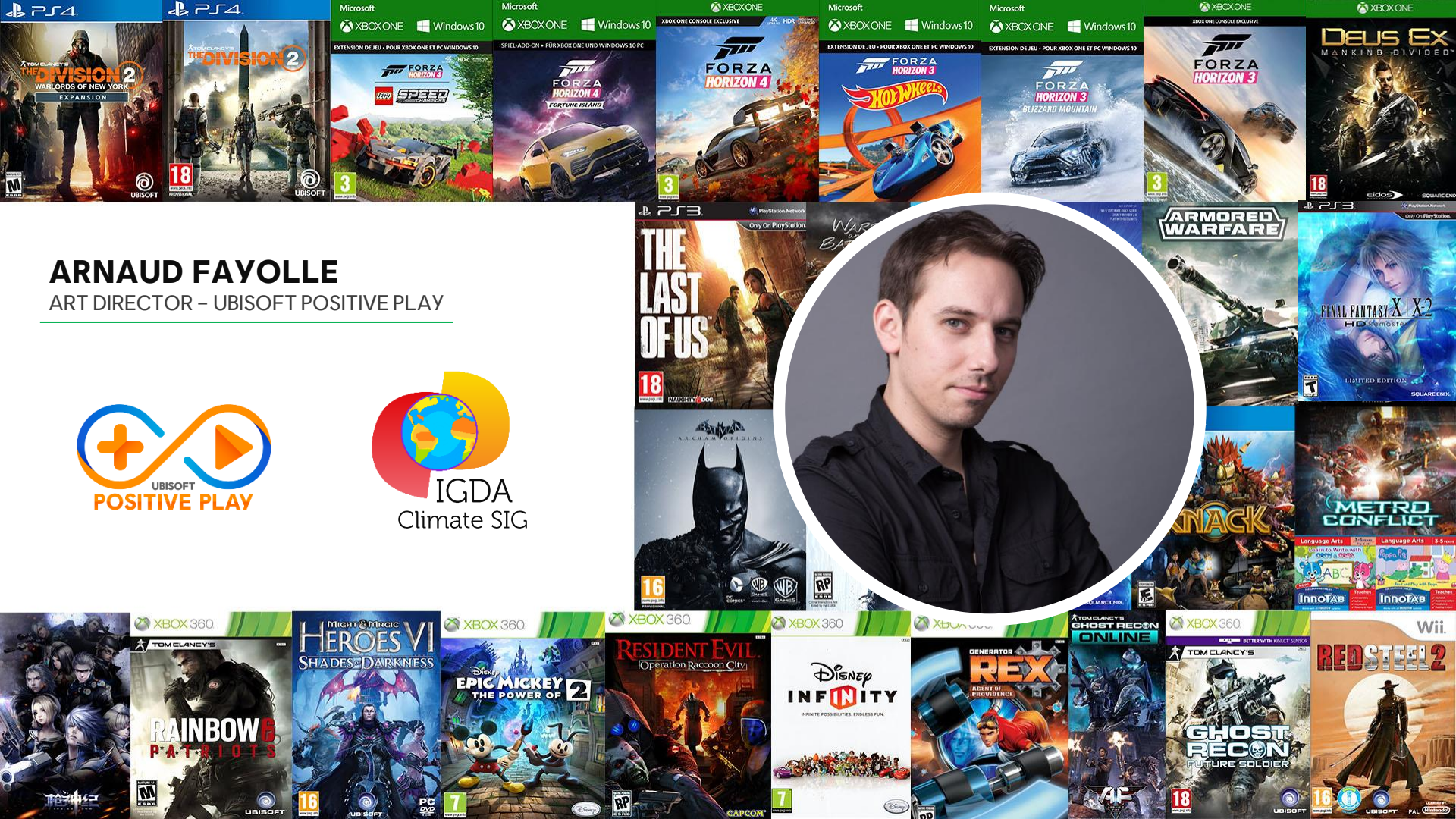
#GDC22

ARNAUD FAYOLLE

ART DIRECTOR – UBISOFT POSITIVE PLAY

UBISOFT POSITIVE PLAY

IGDA Climate SIG



NOW YOU KNOW

WHY WE MUST ADDRESS CLIMATE CHANGE

WE WANT TO HELP!
Progressive
Complex Problem Solvers
Want to keep making games!

WHAT CAN GAMES DO FOR CLIMATE?

WHO CAN MAKE A DIFFERENCE?

HOW CAN GAMES POSITIVELY IMPACT CLIMATE ?

WHAT CAN GAMES DO FOR CLIMATE?

OUR AREAS OF IMPACT

CULTURAL INFLUENCE

Maximize our cultural impact

CARBON INFLUENCE

Minimize our environmental impact

WHO CAN MAKE A DIFFERENCE?

THE GAME INDUSTRY'S KEY PLAYERS

CULTURAL INFLUENCE

Maximize our cultural impact

CARBON INFLUENCE

Minimize our environmental impact

HOW CAN GAMES POSITIVELY IMPACT CLIMATE?

TOOLKIT FOR CONTENT CREATORS

HOW CAN GAMES POSITIVELY IMPACT CLIMATE?

TOOLKIT FOR CONTENT CREATORS

MESSAGE

WHY IT MATTERS

- Every **creative product** convey one or multiple **messages**
- Ignoring it often **default to destructive messages** (colonialism, capitalism, domination…)
- Weaving **relevant themes** in narratives can turn every game into a **force for good**
- The more **engaging** the game is, the more **attention** players pay to the message

Never Alone (Upper One Game / E-line media, 2014)

MESSAGE

HOW TO USE IT?

- Tell stories from **climate front lines**

Never Alone (Upper One Game / E-line media, 2014)

MESSAGE

HOW TO USE IT?

- Tell stories from **climate front lines**
- Raise **awareness** about unfamiliar topics

Save a Rhino (Hello There, 2014)

MESSAGE

HOW TO USE IT?

- Tell stories from **climate front lines**
- Raise **awareness** about unfamiliar topics
- **Educate** in fun, non-judgmental ways

Beyond Blue (E-line media, 2020)

MESSAGE

HOW TO USE IT?

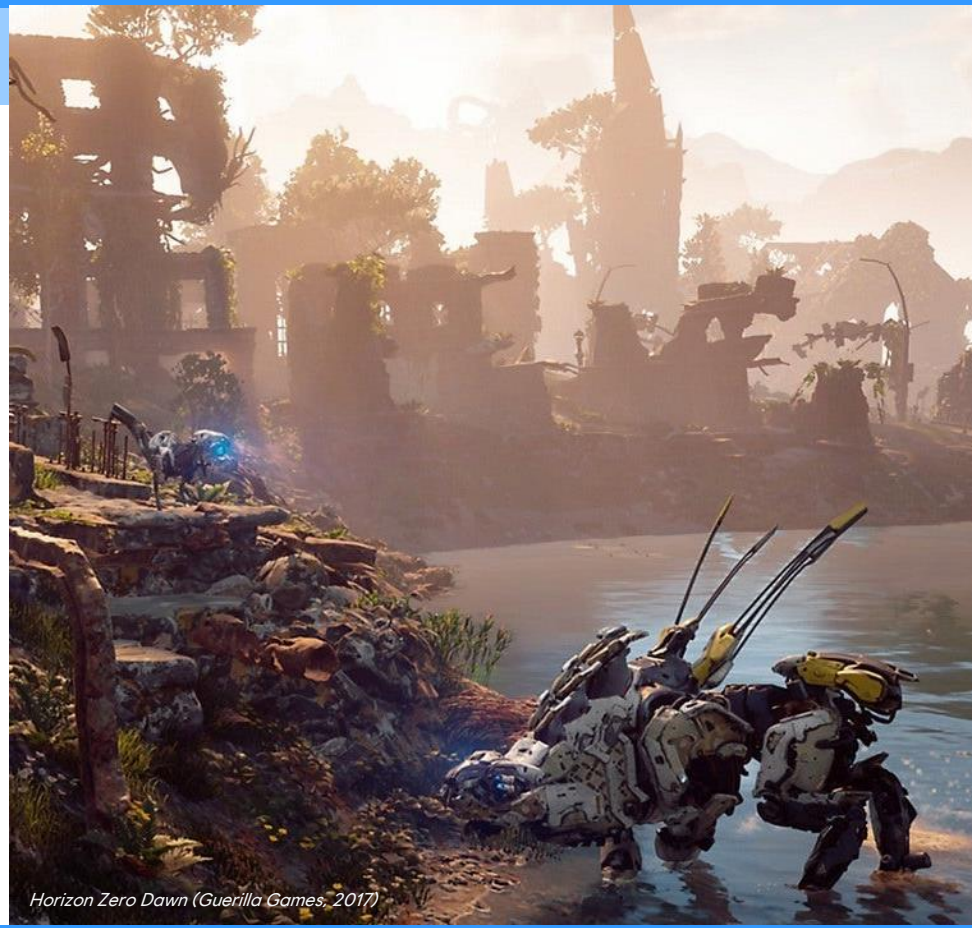
- Tell stories from **climate front lines**
- Raise **awareness** about unfamiliar topics
- **Educate** in fun, non-judgmental ways
- **Restore trust** in others to foster a culture of collaboration

Signs of the Sojourner (Echo Night Games, LLC, Bromio, 2020)

MESSAGE

HOW TO USE IT?

- Tell stories from **climate front lines**
- Raise **awareness** about unfamiliar topics
- **Educate** in fun, non-judgmental ways
- **Restore trust** in others to foster a culture of collaboration
- Describe Climate Change as a **legitimate threat to humanity**



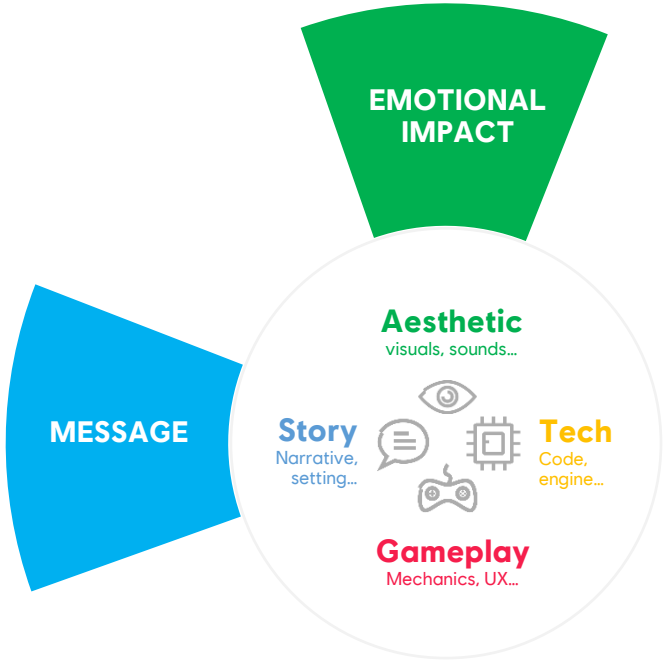
Horizon Zero Dawn (Guerilla Games, 2017)

MESSAGE

HOW TO USE IT?

- Tell stories from **climate front lines**
- Raise **awareness** about unfamiliar topics
- **Educate** in fun, non-judgmental ways
- **Restore trust** in others to foster a culture of collaboration
- Describe Climate Change as a **legitimate threat to humanity**
- Instil **indirect messages** in games labelled as pure escapism

The Outer Worlds (Obsidian Entertainment / Private Division, 2019)


EMOTIONAL IMPACT
MESSAGE
Aesthetic
visuals, sounds...
Story
Narrative, setting...
Tech
Code, engine...
Gameplay
Mechanics, UX...

EMOTIONAL IMPACT

WHY IT MATTERS

- *"The role of the artist is to make revolution irresistible"*
  (Toni Cade Bambara)

- Emotions make **abstract** or **remote events relatable** on a personal level

- Emotions **drive decision-making** more than cognition

Gibbons: Beyond the trees (Broken Rules, 2022)

EMOTIONAL IMPACT

HOW TO USE IT?

- Leverage **aesthetics codes** to increase the message impact

Gibbons: Beyond the trees (Broken Rules, 2022)

EMOTIONAL IMPACT

HOW TO USE IT?

- Leverage **aesthetics codes** to increase the message impact

- Associate **desirable outcomes** with ***feel-good*** aesthetics

Terra Nil (11 bits, 2022)

EMOTIONAL IMPACT

HOW TO USE IT?

- Leverage **aesthetics codes** to increase the message impact
- Associate **desirable outcomes** with ***feel-good*** aesthetics
- Associate **destructive trends** with **unsettling** aesthetics

Final Fantasy VII Remake (Square Enix, 2020)

EMOTIONAL IMPACT

HOW TO USE IT?

- Leverage **aesthetics codes** to increase the message impact
- Associate **desirable outcomes** with ***feel-good*** aesthetics
- Associate **destructive trends** with **unsettling** aesthetics
- Engage players around **hard topics** by making them **visually appealing**

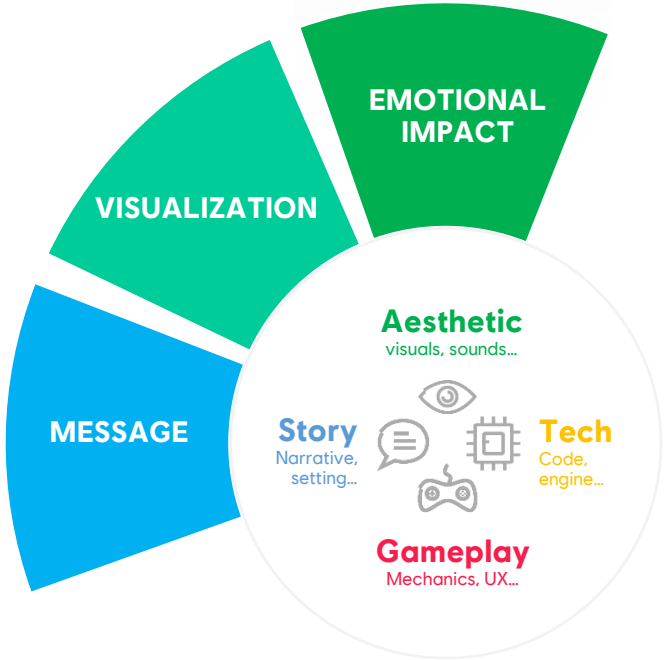
GRIS (Nomad studio, blitzworks, 2018)

EMOTIONAL IMPACT

HOW TO USE IT?

- Leverage **aesthetics codes** to increase the message impact
- Associate **desirable outcomes** with ***feel-good*** aesthetics
- Associate **destructive trends** with **unsettling** aesthetics
- Engage players around **hard topics** by making them **visually appealing**
- Make players **want to care** & reflect on the **meaning of life**

Firewatch (Campo Santo, 2016)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VISUALISATION / REPRESENTATION

WHY IT MATTERS

- It's **hard to imagine** things we've **never seen**
- Our brains don't relate to **long-term** or **geographically distant** problems
- Give players **a vision to embrace** and make their own

Overwatch (Blizzard Entertainment, 2016)

VISUALISATION / REPRESENTATION

HOW TO USE IT?

- Show what a **regenerative future** looks like

Overwatch (Blizzard Entertainment, 2016)

VISUALISATION / REPRESENTATION

HOW TO USE IT?

- Show what a **regenerative future** looks like
- Illustrate **what's at stake** if we don't act

Plasticity (Plasticity Games, 2019)

VISUALISATION / REPRESENTATION

HOW TO USE IT?

- Show what a **regenerative future** looks like
- Illustrate **what's at stake** if we don't act
- Inspire and **normalize** sustainable ways of living

Cities: Skyline - Green Cities (Colossal Order Ltd, 2017)

VISUALISATION / REPRESENTATION

HOW TO USE IT?

- Show what a **regenerative future** looks like
- Illustrate **what's at stake** if we don't act
- Inspire and **normalize** sustainable ways of living
- Represent **happiness** that's **not relying on consumerism**

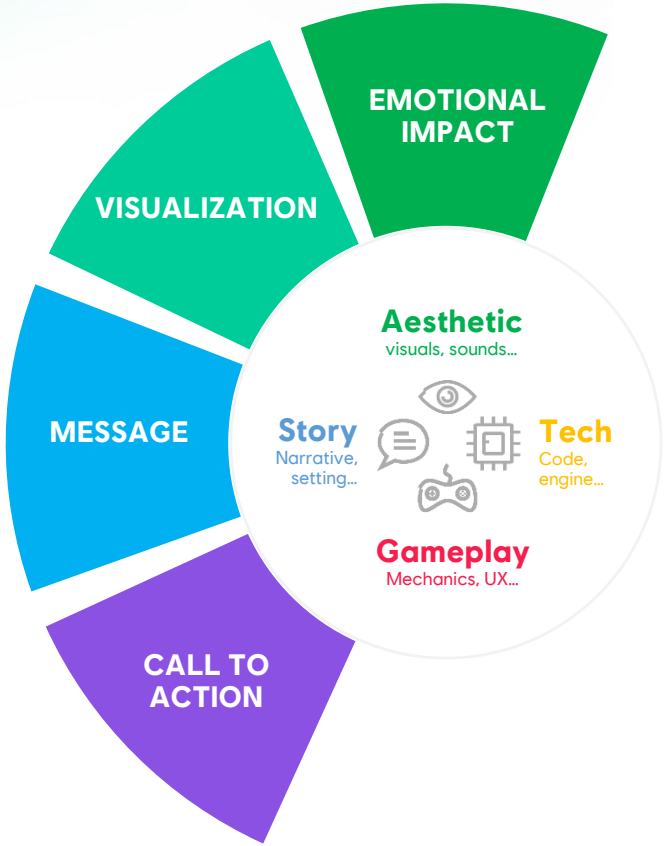
Stardew Valley (Eric Barone, 2016)

VISUALISATION / REPRESENTATION

HOW TO USE IT?

- Show what a **regenerative future** looks like
- Illustrate **what's at stake** if we don't act
- Inspire and **normalize** sustainable ways of living
- Represent **happiness** that's **not relying on consumerism**
- Inspire **reconnecting with Nature** by showing its **beauty**

HOA (Skrollcat Studio, 2021)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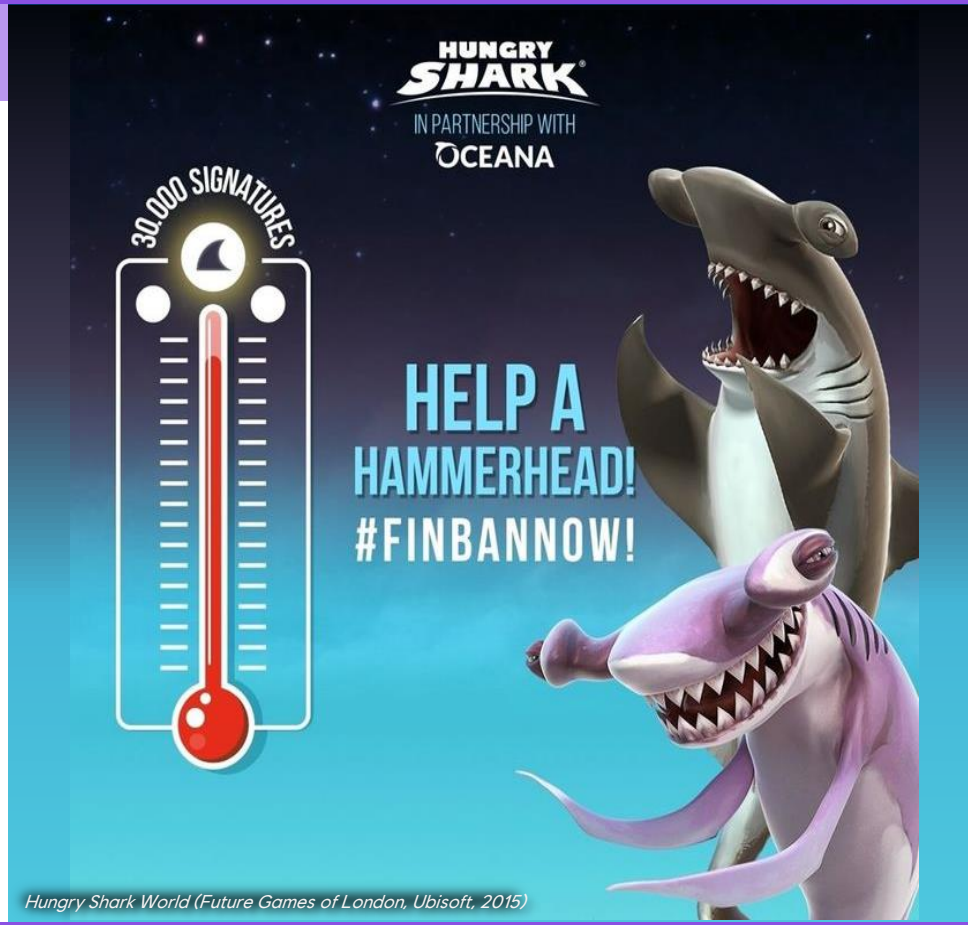
CALL TO ACTION

WHY IT MATTERS

- Players want to act but **don't know how**
- Games can **prime players** to take action in real life
- Repeated **exposure to Calls to Action** prime our brains, making us **more likely to answer the call** later
- Players already primed can be activated by **the right nudge** at **the right time**!



Hungry Shark World (Future Games of London, Ubisoft, 2015)

CALL TO ACTION

HOW TO USE IT?

- **Motivate players** to take action in the real world

Hungry Shark World (Future Games of London, Ubisoft, 2015)

CALL TO ACTION

HOW TO USE IT?

- **Motivate players** to take action in the real world
- **Point to available solutions** at an individual level

The SIMS 4: Eco-Lifestyle (Maxis, 2017)

CALL TO ACTION

HOW TO USE IT?

- **Motivate players** to take action in the real world
- **Point to available solutions** at an individual level
- **Connect with other players** to amplify impact

Pokemon Go (Niantic, Nintendo, 2016)

CALL TO ACTION

HOW TO USE IT?

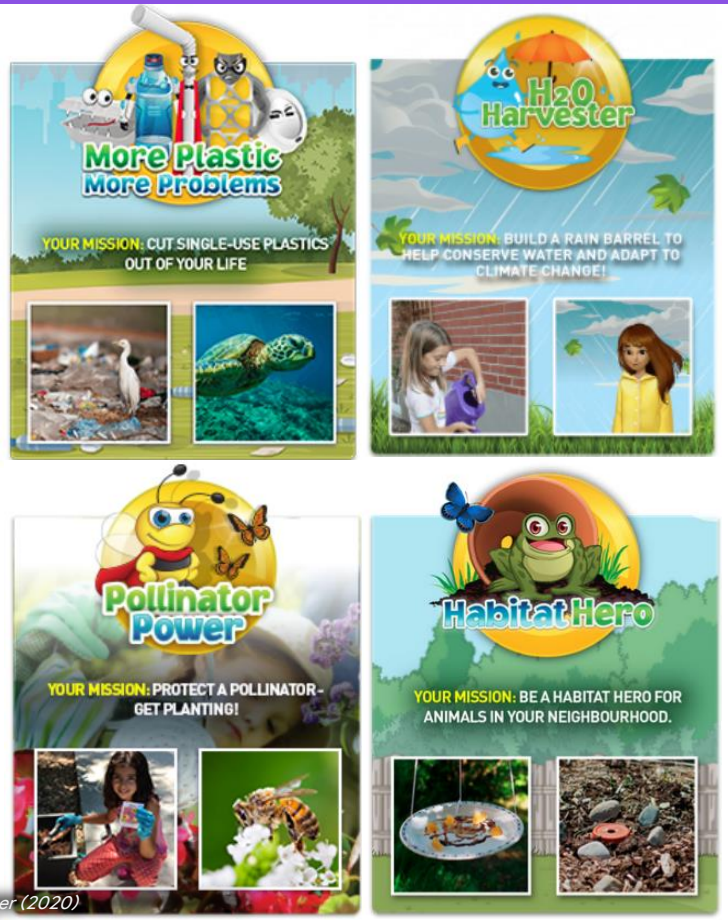
- **Motivate players** to take action in the real world
- **Point to available solutions** at an individual level
- **Connect with other players** to amplify impact
- Encourage **support/contribution to climate orgs**

Monument Valley 2 – The Lost Forest (UsTwo games, 2021)

CALL TO ACTION

HOW TO USE IT?

- **Motivate players** to take action in the real world
- **Point to available solutions** at an individual level
- **Connect with other players** to amplify impact
- Encourage **support/contribution to climate orgs**
- **Reward positive behaviours** in real-life



Earth Ranger (2020)

EMOTIONAL IMPACT
VISUALIZATION
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CALL TO ACTION
BEHAVIORAL TRANSFERENCE
Aesthetic
visuals, sounds...
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Mechanics, UX...

BEHAVIORAL TRANSFERENCE

WHY IT MATTERS

- For our brain, **solving problems** in games or in real-life are **undistinguishable**
- **Repeated actions** in games become **habits**
- Habits acquired in game can **transfer to real life**

Spiritfarer (Thunder Lotus Games, 2020)

BEHAVIORAL TRANSFERENCE

HOW TO USE IT?

- Build **emotional resilience**

Spiritfarer (Thunder Lotus Games, 2020)

BEHAVIORAL TRANSFERENCE

HOW TO USE IT?

- Build **emotional resilience**
- Push players **out of their comfort zone**

Spec Ops: The Line (Yager Development, Darkside Game Studios, 2012)

BEHAVIORAL TRANSFERENCE

HOW TO USE IT?

- Build **emotional resilience**
- Push players **out of their comfort zone**
- Normalize **eco-conscious** behaviours

A short hike (Adamgryu, 2019)

BEHAVIORAL TRANSFERENCE

HOW TO USE IT?

- Build **emotional resilience**
- Push players **out of their comfort zone**
- Normalize **eco-conscious** behaviours
- Let players experience **the joy of doing good deeds**

Alba: A Wildlife Adventure (ustwo games, 2020)

BEHAVIORAL TRANSFERENCE

HOW TO USE IT?

- Build **emotional resilience**
- Push players **out of their comfort zone**
- Normalize **eco-conscious** behaviours
- Let players experience **the joy of doing good deeds**
- Allow **peaceful resolutions** of conflict

Dishonored 2 (Arkane Studio, 2016)

BEHAVIORAL TRANSFERENCE

HOW TO USE IT?

- Build **emotional resilience**
- Push players **out of their comfort zone**
- Normalize **eco-conscious** behaviours
- Let players experience **the joy of doing good deeds**
- Allow **peaceful resolutions** of conflict
- Discourage **negative behaviours** such as **hoarding**

80 days (Inkle, Cape Guy Ltd, Cape Guy Limited, 2014)

EMOTIONAL IMPACT
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SIMULATION

WHY IT MATTERS

- Our brains value **short-term outcomes** over long-term ones
- Games make us experience the **long-term consequences** of our actions on a much **shorter time-frame**!
- Experimentation makes us **understand complex systems**

Plague Inc : the Cure (Ndemic Creation, 2020)

SIMULATION

HOW TO USE IT?

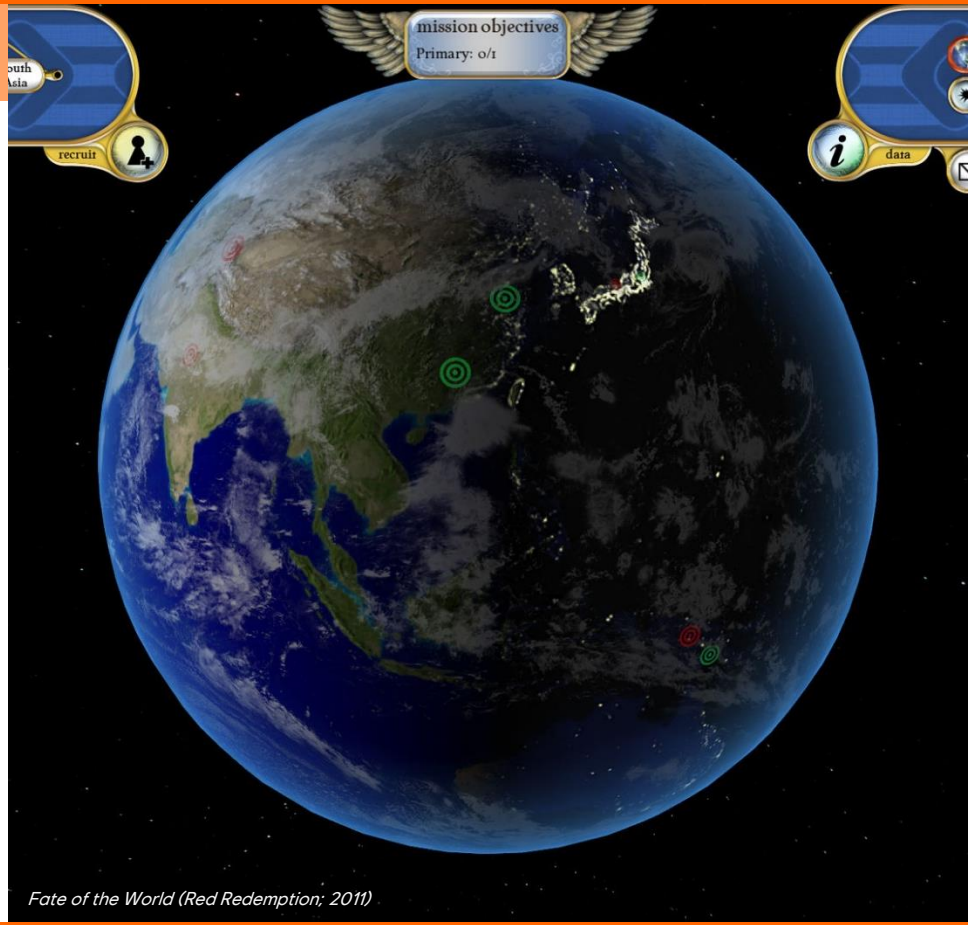
- Ground your game in **real Earth science & data**

Plague Inc : the Cure (Ndemic Creation, 2020)

SIMULATION

HOW TO USE IT?

- Ground your game on **real Earth science & data**
- Give opportunities for **trial & error** in safe environment



Fate of the World (Red Redemption; 2011)

SIMULATION

HOW TO USE IT?

- Ground your game on **real Earth science & data**
- Give opportunities for **trial & error** in safe environment
- Demonstrate **interconnections** between **Humans & Nature**

Anno 1800 : Eden Burning mode (Ubisoft, 2021)

SIMULATION

HOW TO USE IT?

- Ground your game on **real Earth science & data**
- Give opportunities for **trial & error** in safe environment
- Demonstrate **interconnections** between **Humans & Nature**
- Build **systemically** to encourage curiosity and experimentation

ECO (Strange Look Games, 2018)

EMOTIONAL IMPACT
OPTIMIZATION
SIMULATION
BEHAVIORAL TRANSFERENCE
CALL TO ACTION
MESSAGE
VISUALIZATION
Aesthetic
visuals, sounds...
Story
Narrative, setting...
Tech
Code, engine...
Gameplay
Mechanics, UX...

OPTIMIZATION

WHY IT MATTERS

- Before doing good, we should at least **do no harm**
- Ever-increasing horsepower have led us to build bigger, better, but more **power-consuming games**
- High power usage = **high carbon emissions**

Genshin Impact (MiHoYo, 2020)

OPTIMIZATION

HOW TO USE IT

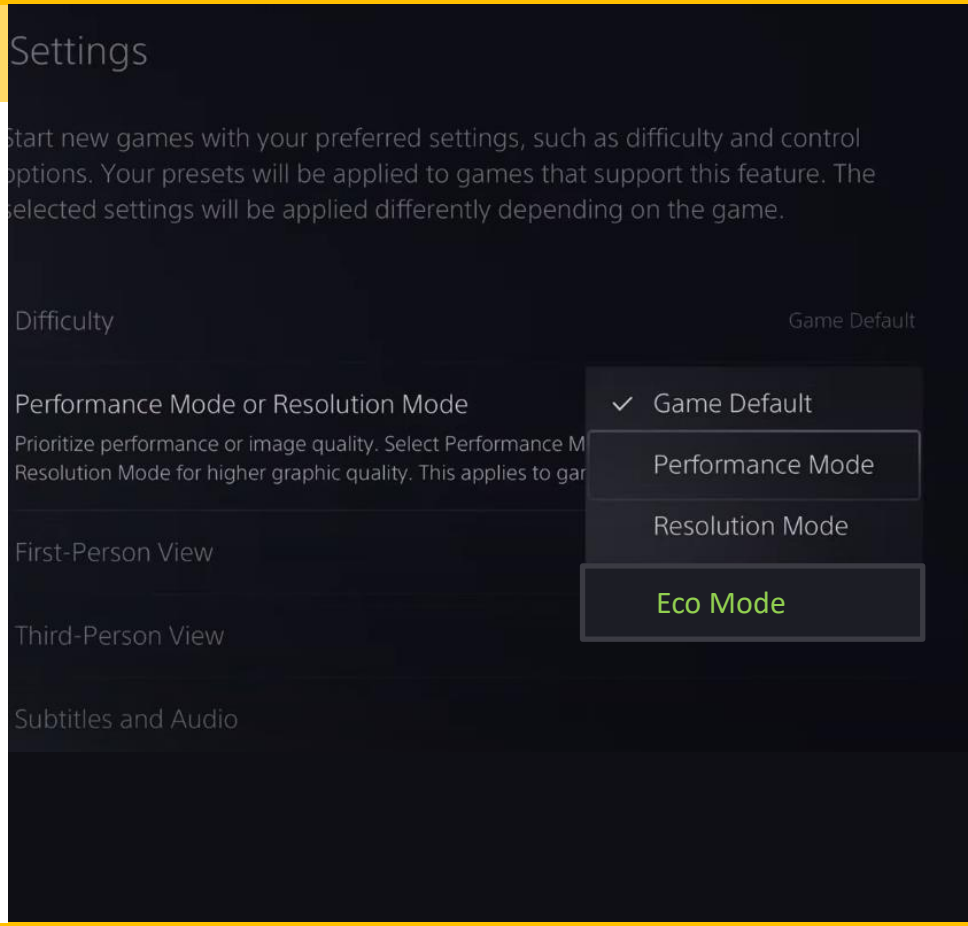
- **Optimize code** to reduce power consumption

Subway Surfers (Sybo Games, 2012)

OPTIMIZATION

HOW TO USE IT

- **Optimize code** to reduce power consumption
- Propose an **opt-in power saving mode**



OPTIMIZATION

HOW TO USE IT

- **Optimize code** to reduce power consumption
- Propose an **opt-in power saving mode**
- Release on **multiple platforms** to increase the reach of your positive impact

Genshin Impact (MiHoYo, 2020)

OPTIMIZATION

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- **Optimize code** to reduce power consumption
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- Bring the extreme optimizations of **ports** back into your **main SKU**

Ori and the Will of the Wisps (Moon Studios, Xbox Game Studio, Ian8bit, 2020)

OPTIMIZATION

HOW TO USE IT

- **Optimize code** to reduce power consumption
- Propose an **opt-in power saving mode**
- Release on **multiple platforms** to increase the reach of your positive impact
- Bring the extreme optimizations of **ports** back into your **main SKU**
- Release on **previous generation devices** to fight **obsolescence**

Persona 4 PS2 (Altus, 2009)

EMOTIONAL IMPACT
GRAPHIC SOBRIETY
OPTIMIZATION
SIMULATION
BEHAVIORAL TRANSFERENCE
CALL TO ACTION
MESSAGE
VISUALIZATION
Aesthetic
visuals, sounds...
Story
Narrative, setting...
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Mechanics, UX...

GRAPHIC SOBRIETY

WHY IT MATTERS

- Culture assumes that **good graphics makes good games**
- We’ve been conditioned to **“always max out”** our graphics
- Graphics are responsible of most of the **power consumption and game size**

The Legend of Zelda: Breath of the Wild (Nintendo, 2017)

GRAPHIC SOBRIETY

HOW TO USE IT

- **Tailor Art Direction** to your target experience

The Legend of Zelda: Breath of the Wild (Nintendo, 2017)

GRAPHIC SOBRIETY

HOW TO USE IT

- **Tailor Art Direction** to your target experience
- Rely on **smart asset and texture** usage to limit GPU usage and memory footprint

Team Fortress 2 (Valve Corporation, 2007)

GRAPHIC SOBRIETY

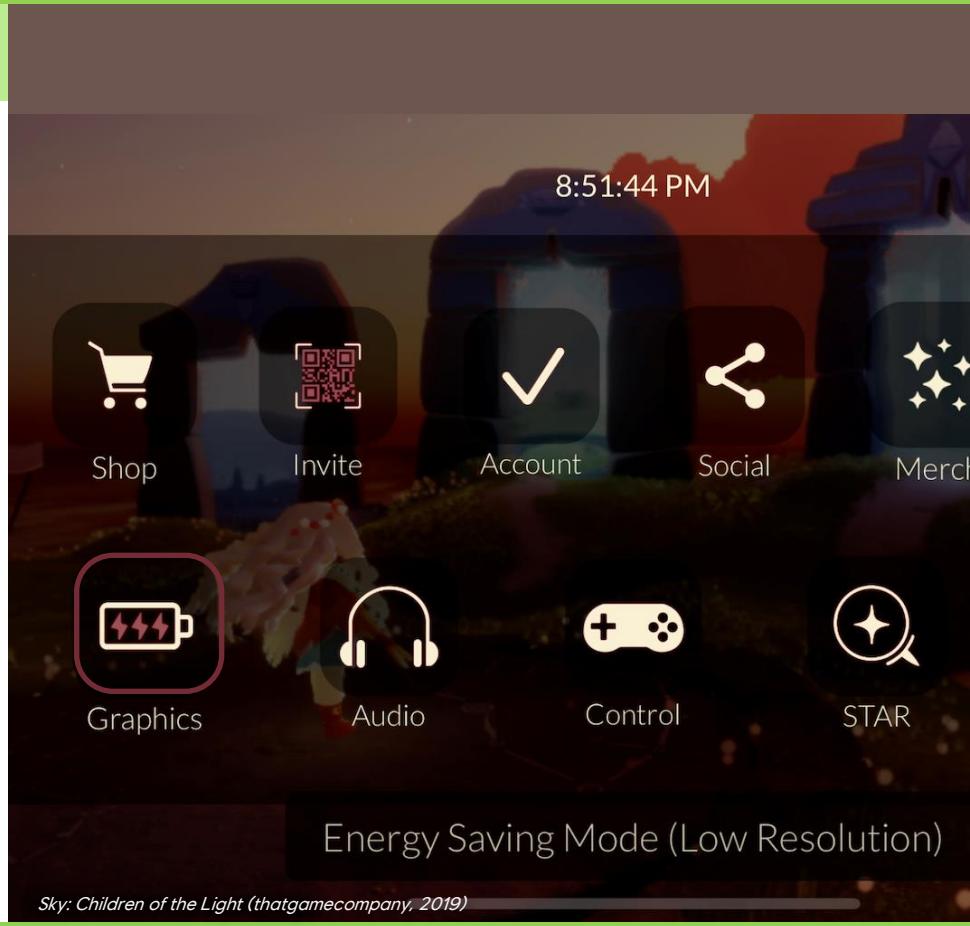
HOW TO USE IT

- **Tailor Art Direction** to your target experience
- Rely on **smart asset and texture** usage to limit GPU usage and memory footprint
- Educate about **power/carbon impact** of each graphic setting

GRAPHIC SOBRIETY

HOW TO USE IT

- **Tailor Art Direction** to your target experience
- Rely on **smart asset and texture** usage to limit GPU usage and memory footprint
- Educate about **power/carbon impact** of each graphic setting
- **Give players agency** to balance their power consumption

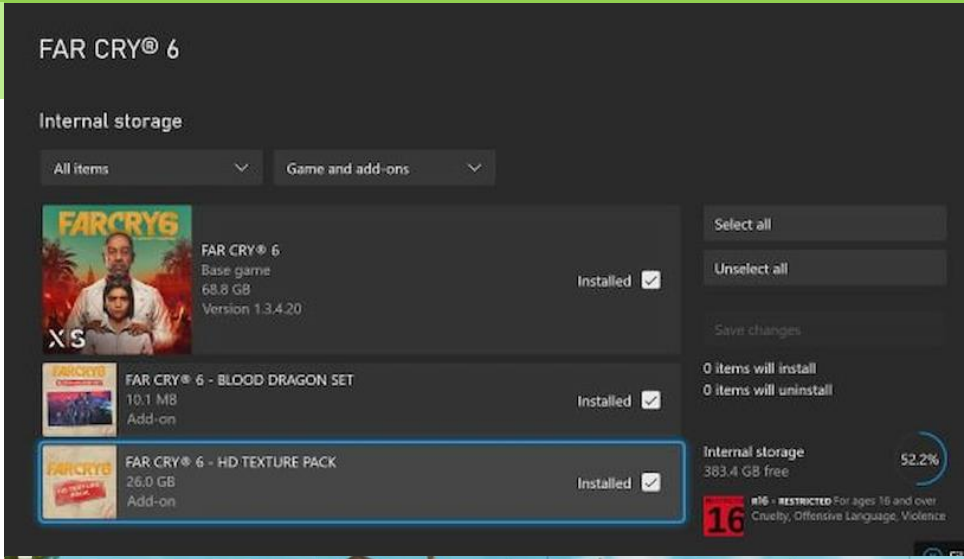


Sky: Children of the Light (thatgamecompany, 2019)

GRAPHIC SOBRIETY

HOW TO USE IT

- **Tailor Art Direction** to your target experience
- Rely on **smart asset and texture** usage to limit GPU usage and memory footprint
- Educate about **power/carbon impact** of each graphic setting
- **Give players agency** to balance their power consumption
- **Reduce game size** to save bandwidth



EMOTIONAL IMPACT
GRAPHIC SOBRIETY
OPTIMIZATION
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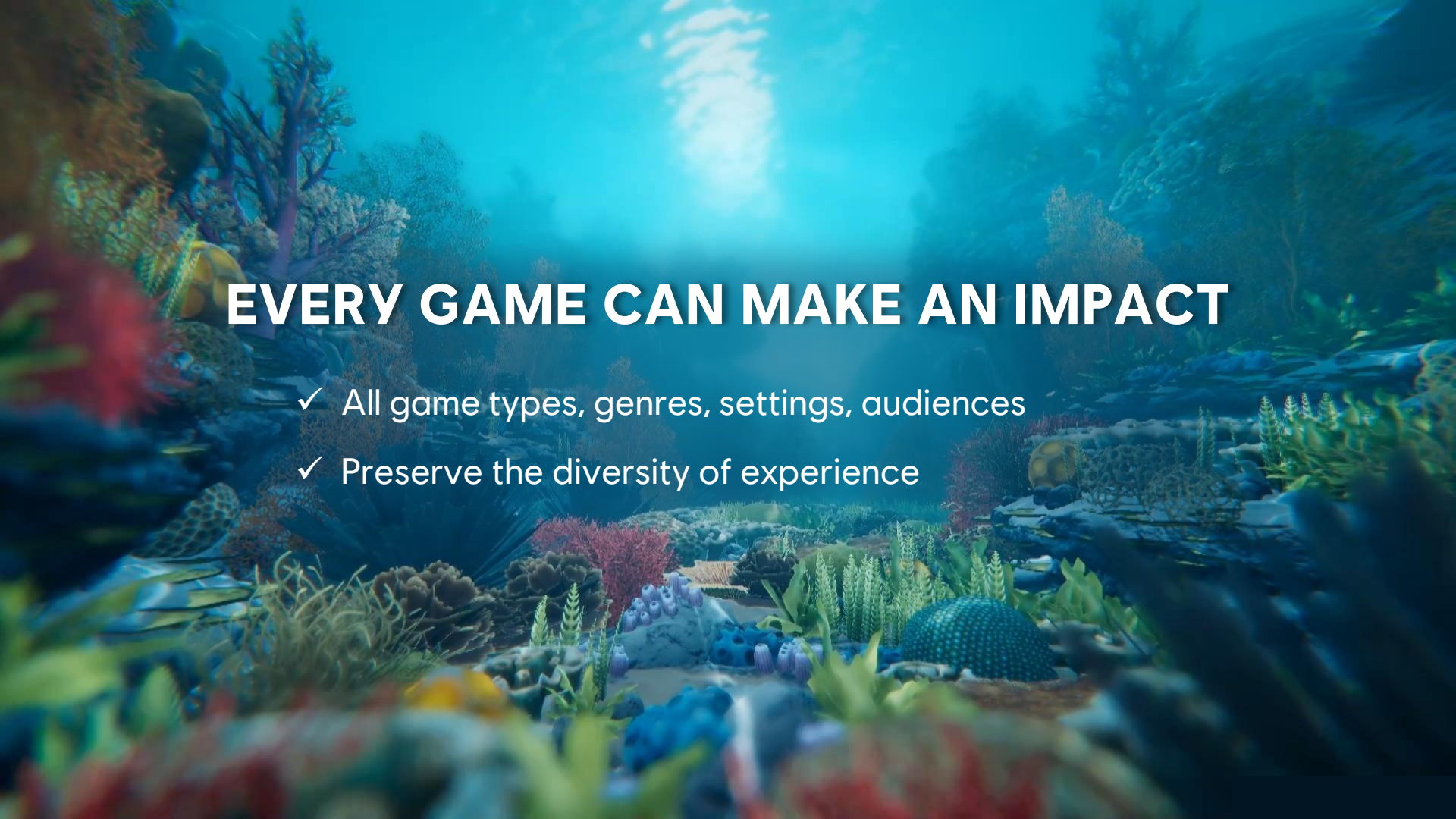
CONCLUSION



EVERY GAME CAN MAKE AN IMPACT

- ✓ All game types, genres, settings, audiences
- ✓ Preserve the diversity of experience

EVERY DISCIPLINE IS IMPORTANT

- ✓ We need everyone
- ✓ We can act individually or collectively

EVERYONE CAN CONTRIBUTE

- ✓ Don’t wait to be asked
- ✓ What can YOU do?

EVERY GAME MUST BE FUN

- ✓ Make **green** games **fun**
- ✓ Make **fun** games **green**

THANK YOU!

NEXT PART

3 EXAMPLES OF CLIMATE DESIGN

Chance Glasco

GDC | March 21-25, 2022
San Francisco, CA

igda® Climate SIG

Use Your Game Developer Superpowers to Fight the Climate Crisis

3 EXAMPLES OF CLIMATE DESIGN

Chance GLASCO

#GDC22

Climate Games Database

ID	Game Title (w/ Link!)	Developer	Year	Metacritic Expert Score	Scope	1-2 Sentence Description (What is the game? Why does it matter to us?)	Environmental Theme, if any	UN SDG Alignment, if any	Salience	Timeline	Disposition	Technology	Messaging	Motivation
1	Abzu	Giant Squid	2016	83	Indie	Players go through individual water biomes to discover/unlock diverse species. There is a metanarrative about how oceans may be disrupted by human influence and technology, with a subtle call to action to allow nature to recover.	Oceans, Biodiversity	Life Below Water; Responsible Consumption and Production	3	Future	Optimistic	High Tech	Implicit	Extrinsic
2	Alba: A Wildlife Adventure	Ustwo	2020	79	Indie	Charming environmental activist simulator about documenting and helping animals, running petitions and saving a wildlife reserve from land development Ustwo games will plant one tree for each copy of the game sold or downloaded, with the goal of planting one million trees. This will be achieved in partnership with Ecologi.	Biodiversity, Animal Conservation	Life on Land	3	Present	Optimistic	Low Tech	Implicit	Intrinsic
3	Aquatic Adventure of the La	YCJY	2016	76	Indie	Explore the ruins of the human race and discover the thriving wildlife that blossomed after our extinction in this underwater action/adventure. Encounter monstrous creatures and let curiosity guide you through an inevitable voyage of extinction. Misanthropic underwater metroidvania that tells the story of how humanity destroyed itself by disregarding ecology.	Biodiversity	Life Below Water	2	Future	Pessimistic	High Tech	Implicit	Intrinsic
4	ArmA 3	Bohemia Interactive	2013	74	AAA	Open world military shooter set in a 2030 world that has transitioned to renewable energy	-	Affordable and Clean Energy	3	Future	Pessimistic	High Tech	Implicit	Intrinsic
5	Balance of the Planet	Chris Crawford	1990	-	Indie	Ancient (1990!) planetary simulation game by physicist / legendary game designer Chris Crawford. Includes global heating simulation.	Climate	Decent Work and Economic Growth; Industry, Innovation, and Infrastructure, Sustainable Cities and Communities; Responsible Consumption and Production	4	Present	Objective	N/A	Explicit	Intrinsic
6	Banished	Shining Rock Software	2014	73	AA	Settler city-building strategy game in which you guide a group of people in a new, untouched area of wilderness. Resources must be managed carefully, occasional natural disasters. Coal mines and quarries available but cannot be completely removed, affects the natural area.	Biodiversity	Life on Land; Responsible Consumption and Production	2	Past	Objective	Low Tech	Implicit	Intrinsic

https://tinyurl.com/dhzzmzhs

igda CLIMATE SIG

Climate Games Database

Environmental Theme, if any	UN SDG Alignment, if any	Salience	Timeline	Disposition	Technology	Messaging	Motivation
Oceans, Biodiversity	Life Below Water; Responsible Consumption and Production	3	Future	Optimistic	High Tech	Implicit	Extrinsic
Biodiversity, Animal Conservation	Life on Land	3	Present	Optimistic	Low Tech	Implicit	Intrinsic
Biodiversity	Life Below Water	2	Future	Pessimistic	High Tech	Implicit	Intrinsic
-	Affordable and Clean Energy	3	Future	Pessimistic	High Tech	Implicit	Intrinsic
Climate	Decent Work and Economic Growth; Industry, Innovation, and Infrastructure, Sustainable Cities and Communities; Responsible Consumption and Production	4	Present	Objective	N/A	Explicit	Intrinsic
Biodiversity	Life on Land; Responsible Consumption and Production	2	Past	Objective	Low Tech	Implicit	Intrinsic

Salience

- How prominent are the climate themes?

Messaging

- Implicit - A game about a virtual world that may look like ours
- Explicit - A game about our real world

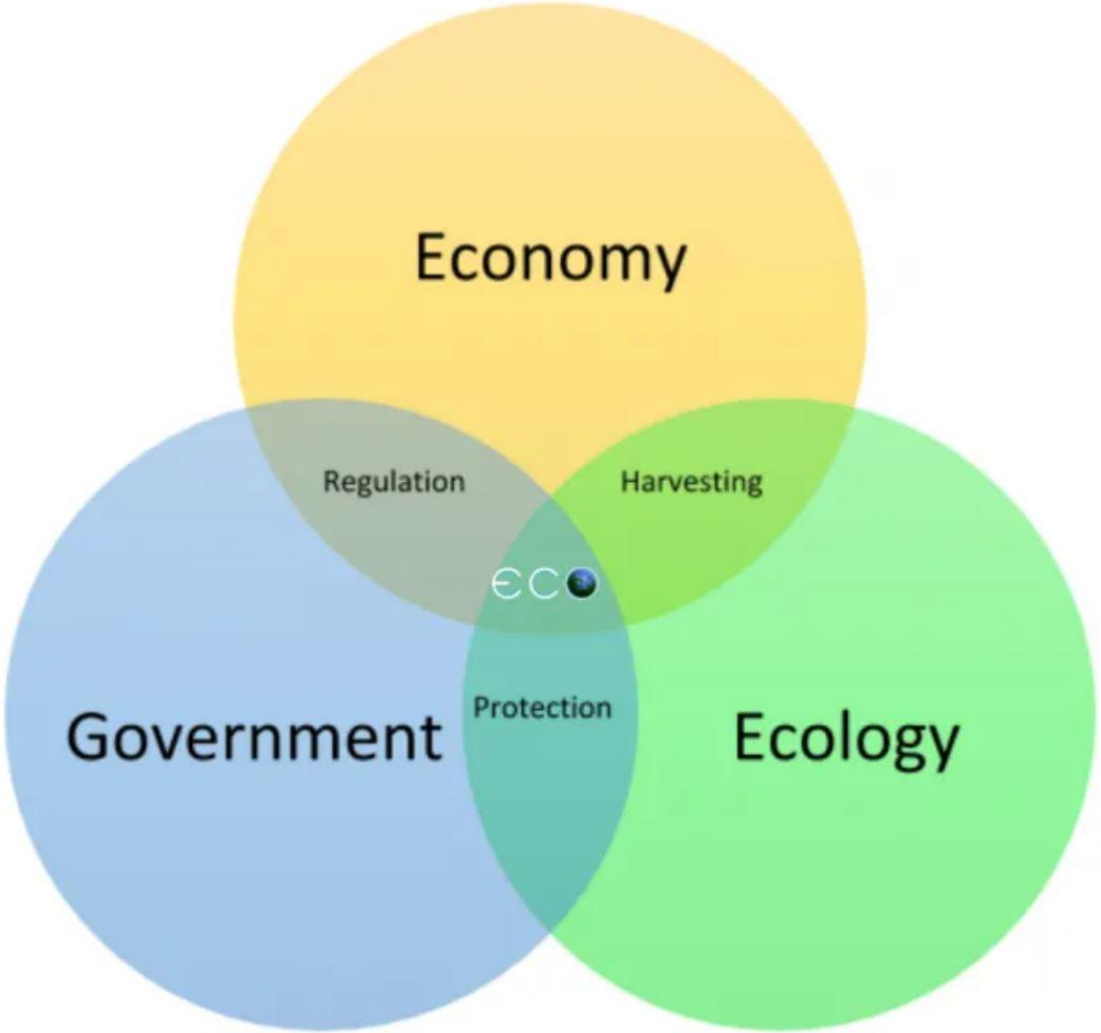
Motivation

- Extrinsic - The game rewards the players for acting positively
- Intrinsic - Players want to act positively on their own initiative

https://tinyurl.com/dhzzmzhs

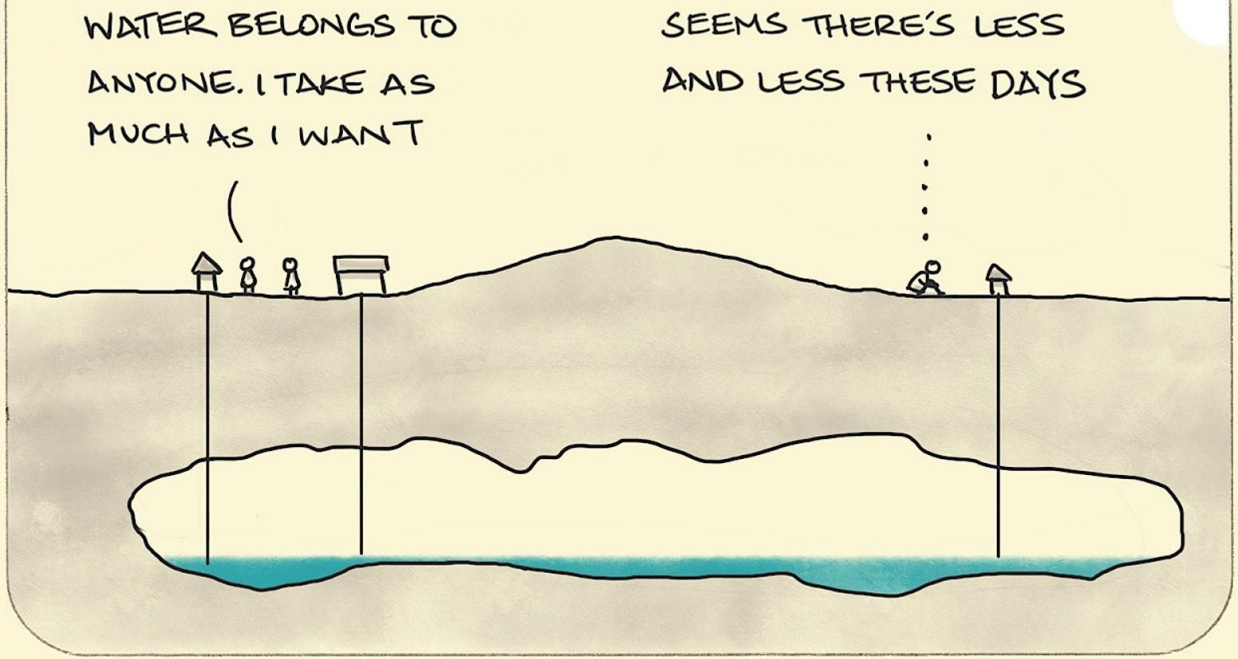
igda CLIMATE SIG

Eco


Economy
Regulation
Harvesting
ECO
Government
Protection
Ecology

THE TRAGEDY OF THE COMMONS

WHEN SHORT-TERM SELF-INTEREST LEADS TO TRAGEDY FOR ALL



sketchplanations

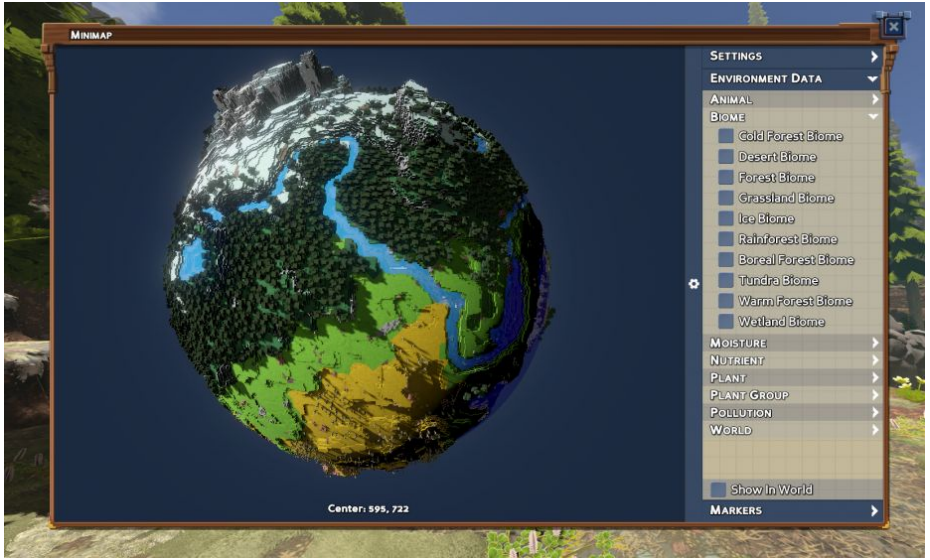
Game Systems: Economy

- Stores
- Contracts
- Minted Currencies
- Bank Accounts
- Treasury

Game Systems: Government

- Constitution
- Elections
- Laws
- Treasury & Taxes

Game Systems: Ecosystem

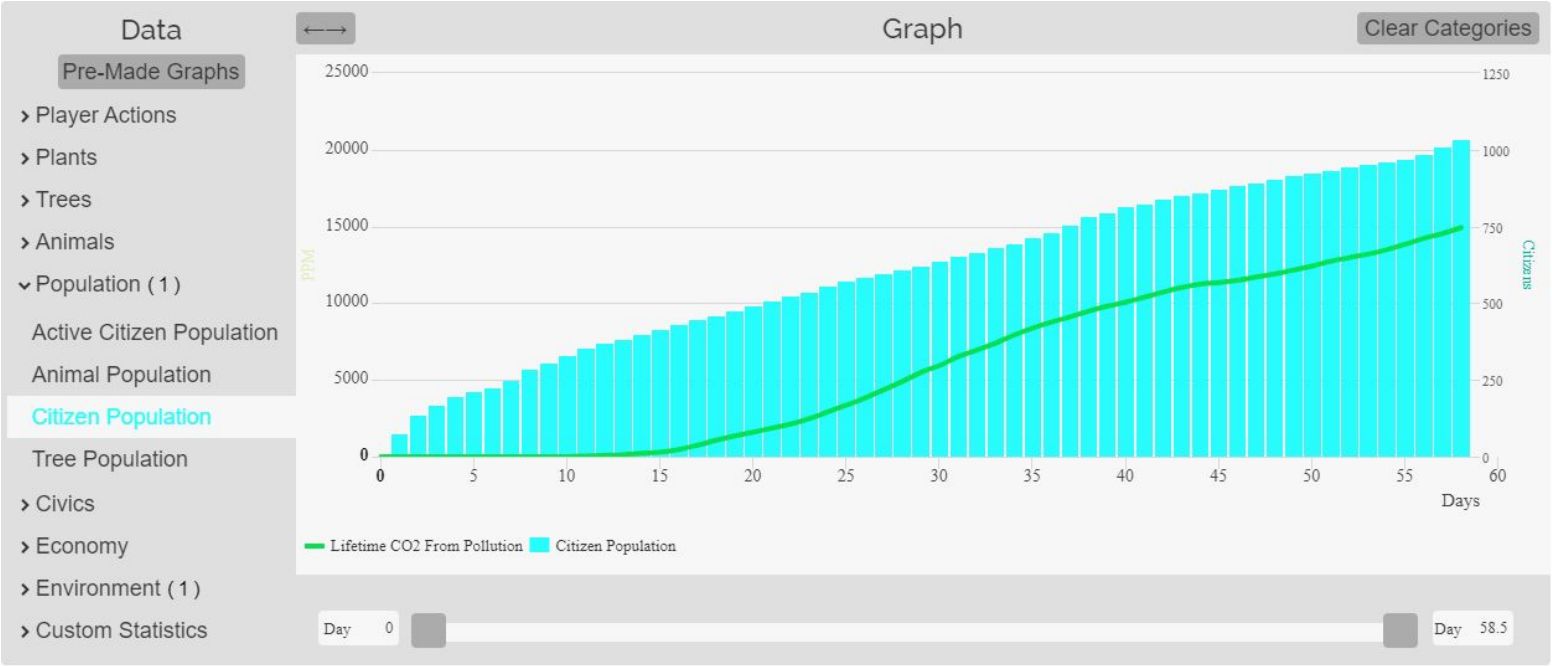


- Temperature
- Moisture
- Salt Ranges
- Soil Conditions
- Nutrients

Game Systems: Housing

- Room Types
- Furniture
- Ownership
- Rent

Using Data to Discuss Laws and Impact



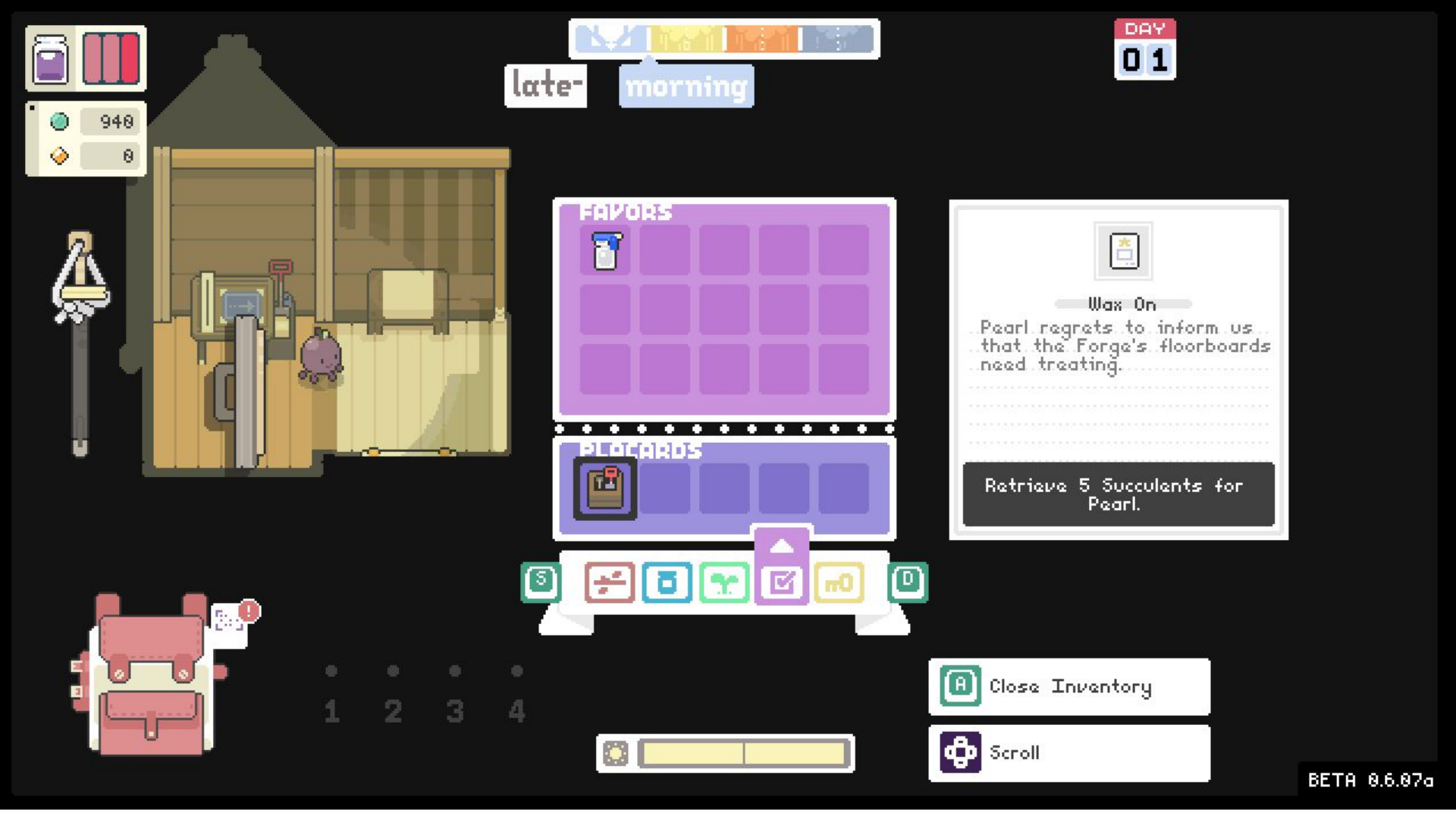
Conflicting Goals that Match Reality

Garden Story

- Unify a broken community as the newly-appointed Guardian of The Grove. Traverse a vibrant island to combat invasive Rot, inspire its inhabitants, and rebuild your home.
- Retro 16-bit Action RPG on PC, Switch, Xbox, PS4
- Recipient of AARFRC Climate Resilience Grant

Garden Story

- Heat Issues
- Water Conservation
- Air Pollution


940
0
late-
morning
DAY
01
FAVORS
PLACARDS
Wax On
Pearl regrets to inform us that the Forge's floorboards need treating.
Retrieve 5 Succulents for Pearl.
S
D
1
2
3
4
A
Close Inventory
Scroll
BETA 0.6.07a

Results

- Total Youtube Views: 445k
- Twitter Impressions: 5.3MM
- Twitch Views: 60k
- Total Impressions: 13.2MM
- Exposed to Climate Resilience: 327k

THANK YOU!

NEXT PART

4

LET'S BUILD A
THEORY OF ACTION

Paula ESCUADRA

GDC | March 21-25, 2022
San Francisco, CA

igda Climate SIG

Use Your Game Developer Superpowers to Fight the Climate Crisis

4

LET'S BUILD A

THEORY OF ACTION

Paula ESCUADRA

#GDC22

Paula Angela Escuadra (She/Her)

Co-Founder & Co-Chair, IGDA Climate Special Interest Group
Sr Design Research Lead, Xbox Game Studios Cloud Publishing

12+ years in the video game industry (AAA, indie, nonprofit education, workforce simulation, and other fun/weird projects)

MBA and MPA from Presidio Graduate School of Sustainable Management, with an emphasis on using community-based participatory design to drive environmental impact and community resiliency building

Very avid dog person (It probably shows)

“All models are wrong, but some are useful.”

George E. P. Box

Appreciation
(Fun, Interest in Continued Play, Advocacy)

Appreciation
(Fun, Interest in Continued Play, Advocacy)

Player Needs Fulfillment
(Emotional Responses, Psychological Needs)

Core Gameplay Elements
(What, Why, How)

Prior Knowledge
(Existing Mental Models,
Genre/Mechanics-Based Heuristics)

Appreciation
(Fun, Interest in Continued Play, Advocacy)

Player Needs Fulfillment
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Core Gameplay Elements
(What, Why, How)

Prior Knowledge
(Existing Mental Models,
Genre/Mechanics-Based Heuristics)

What are players' existing expectations about how a given system works?

Appreciation
(Fun, Interest in Continued Play, Advocacy)

Player Needs Fulfillment
(Emotional Responses, Psychological Needs)

Core Gameplay Elements
(What, Why, How)

Prior Knowledge
(Existing Mental Models,
Genre/Mechanics-Based Heuristics)

*What are players' **existing expectations** about how a given system works?*

*Do players understand **what** to do, **why** they have to do it, and **how** they can do it - all in a way they **connect** with and can **access**?*

Appreciation
(Fun, Interest in Continued Play, Advocacy)

*What do they **experience**?*

Player Needs Fulfillment
(Emotional Responses, Psychological Needs)

Core Gameplay Elements
(What, Why, How)

Prior Knowledge
(Existing Mental Models,
Genre/Mechanics-Based Heuristics)

*Do players understand **what** to do, **why** they have to do it, and **how** they can do it - all in a way they **connect** with and can **access**?*

*What are players' existing **expectations** about how a given system works?*

*Do players feel it is **worthwhile**?*

Appreciation
(Fun, Interest in Continued Play, Advocacy)

*What do they **experience**?*

Player Needs Fulfillment
(Emotional Responses, Psychological Needs)

Core Gameplay Elements
(What, Why, How)

*Do players understand **what** to do, **why** they have to do it, and **how** they can do it - all in a way they **connect** with and can **access**?*

Prior Knowledge
(Existing Mental Models,
Genre/Mechanics-Based Heuristics)

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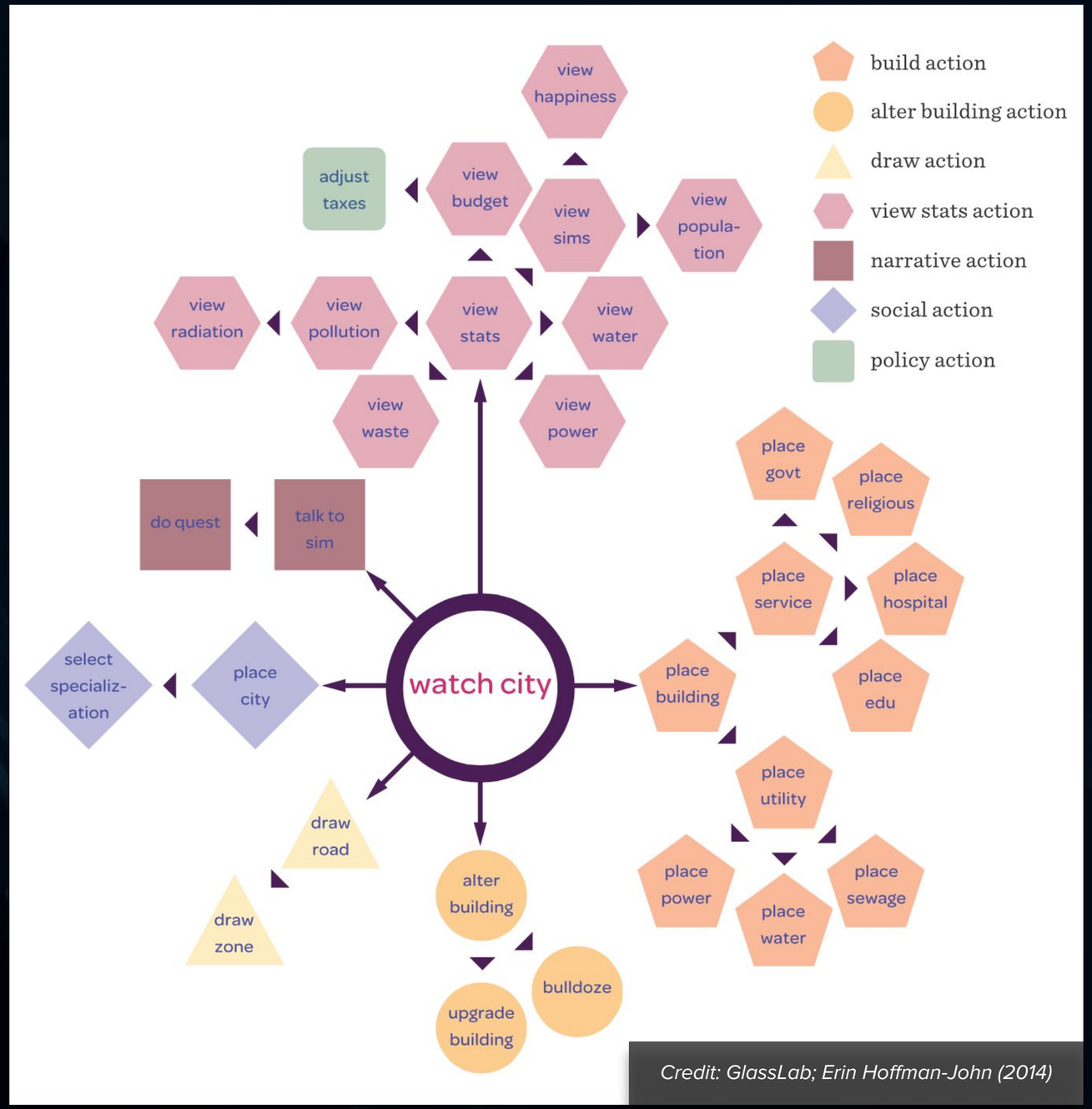


Credit: GlassLab; Erin Hoffman-John (2014)

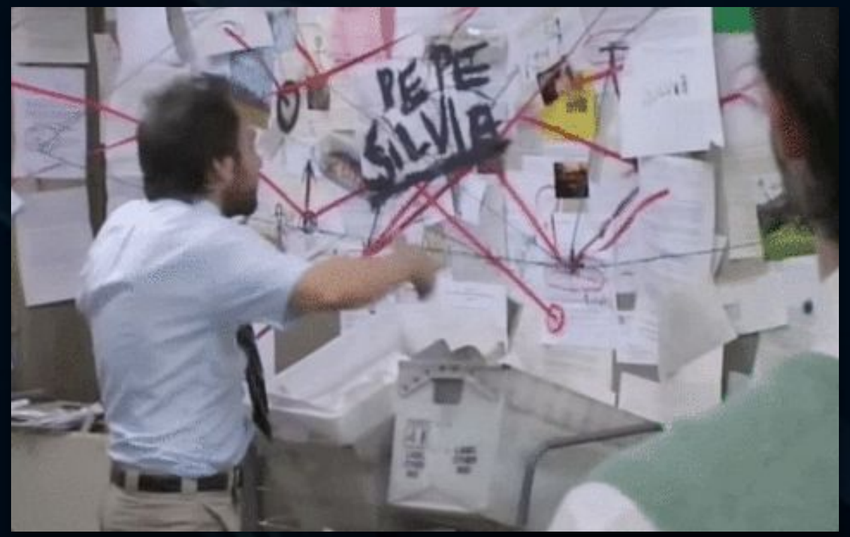
Pinned Tweet

🌲 Jack - blm 🌲
@failuagain

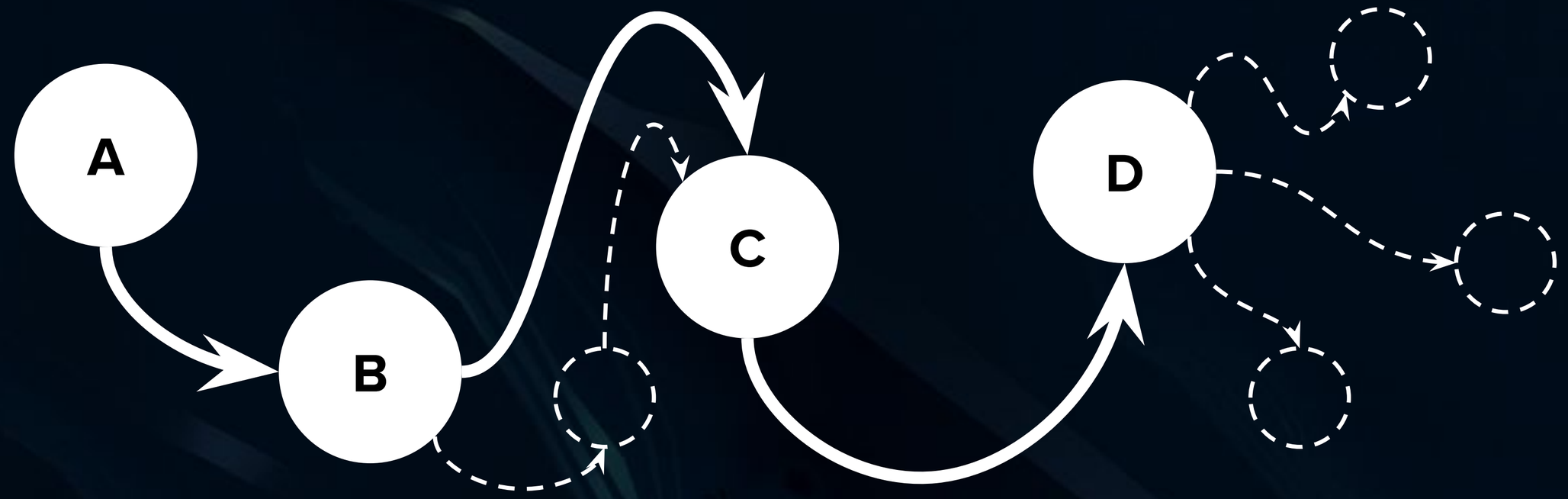
1. Exactly 5 years ago today, I visited my first fire lookout after playing Firewatch by @camposanto. 5 years later, I've visited 239 different towers and am preparing for a career in conservation. I'm going to talk about how this game changed my life.

8:57 PM · Feb 28, 2021 · Twitter for iPhone

2,730 Retweets **436** Quote Tweets **20.9K** Likes



What is the path to *behavioral transference*?

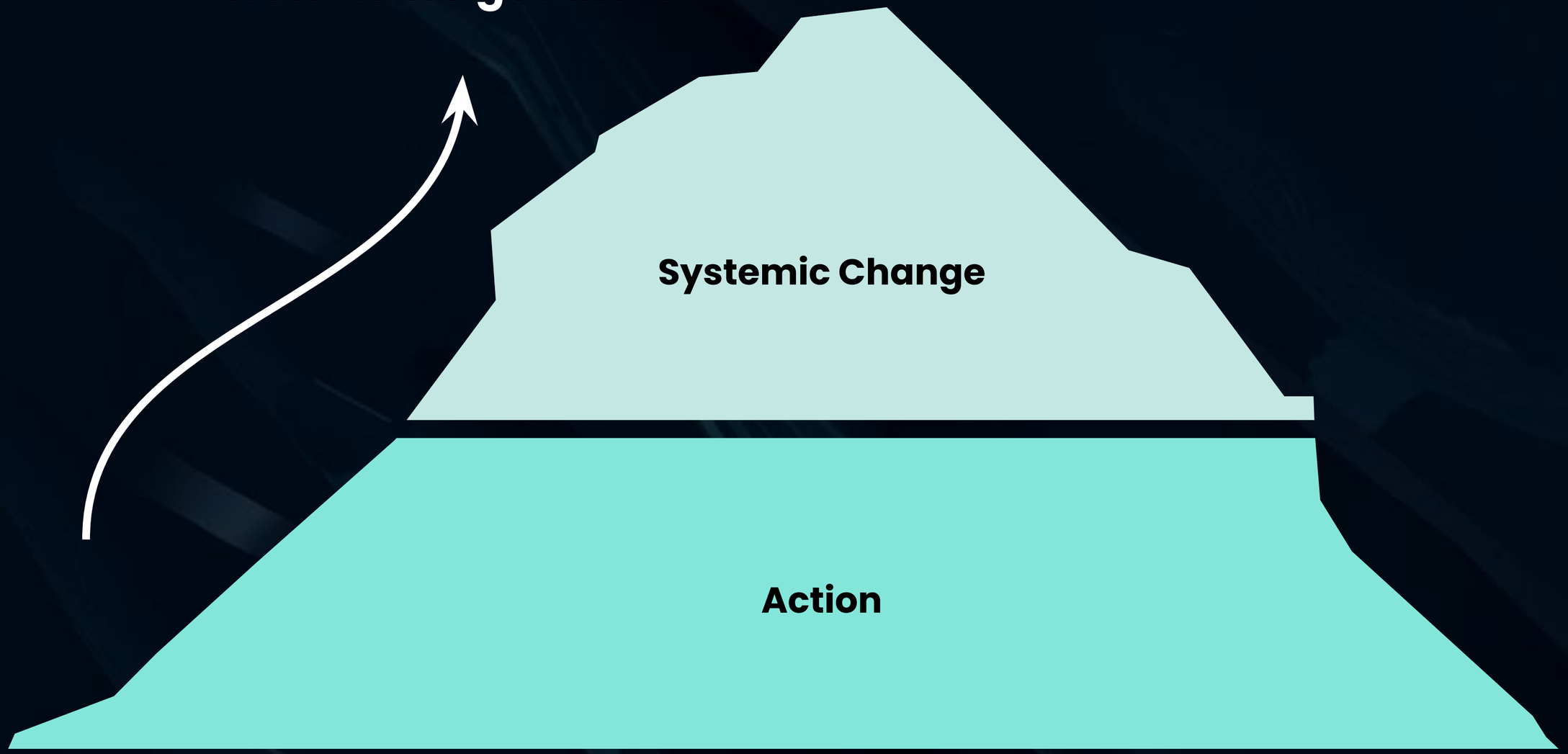


Let's build a *theory of action*.

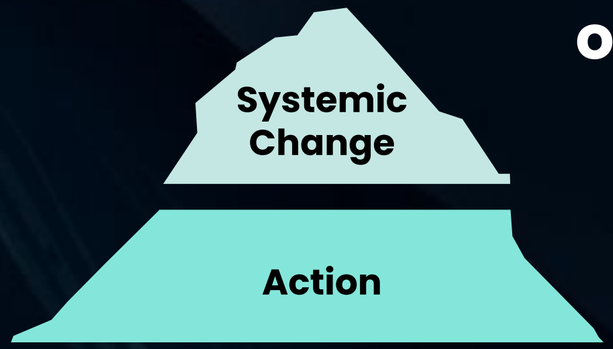
- ➔ A working, living, ever-evolving set of **hypotheses** about which **activities will generate what desired outcomes**, and **why they occur**.

- ➔ A **mental roadmap** that shows the relationships between our **interventions** (gameplay) and **intended results** (real-world outcomes).

Individual and collective action can create systemic change. How do we get there?

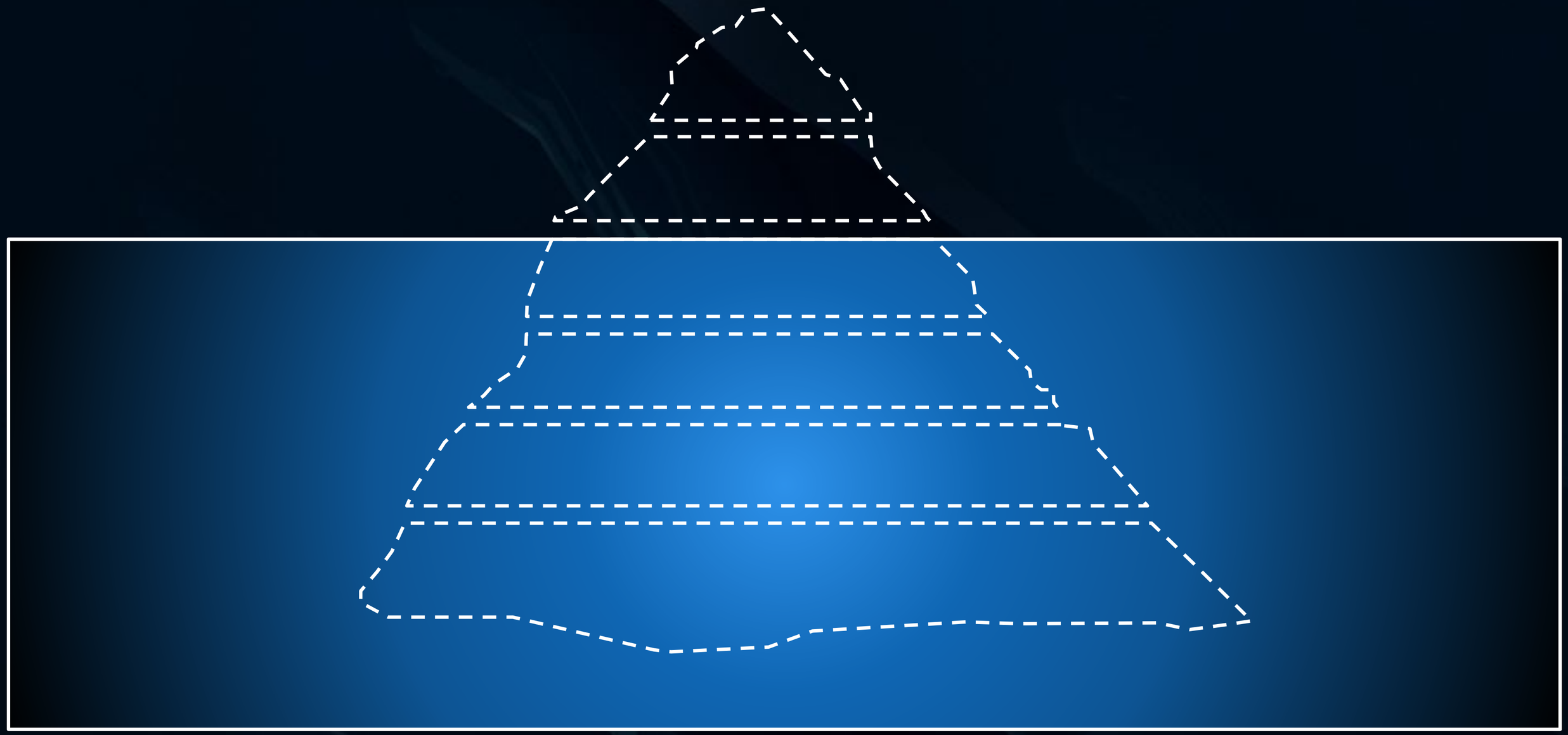


The process of transformative change often feels like a black box.

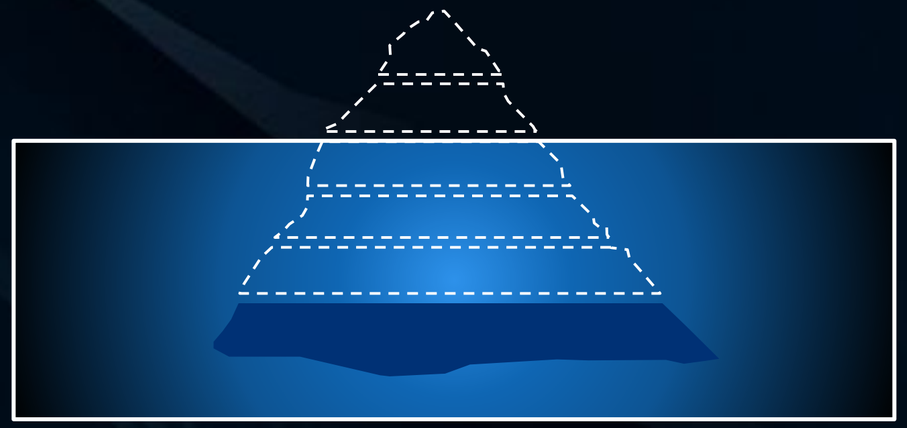


?

What can a theory of action look like?



What is the **context** in which players live and make decisions?

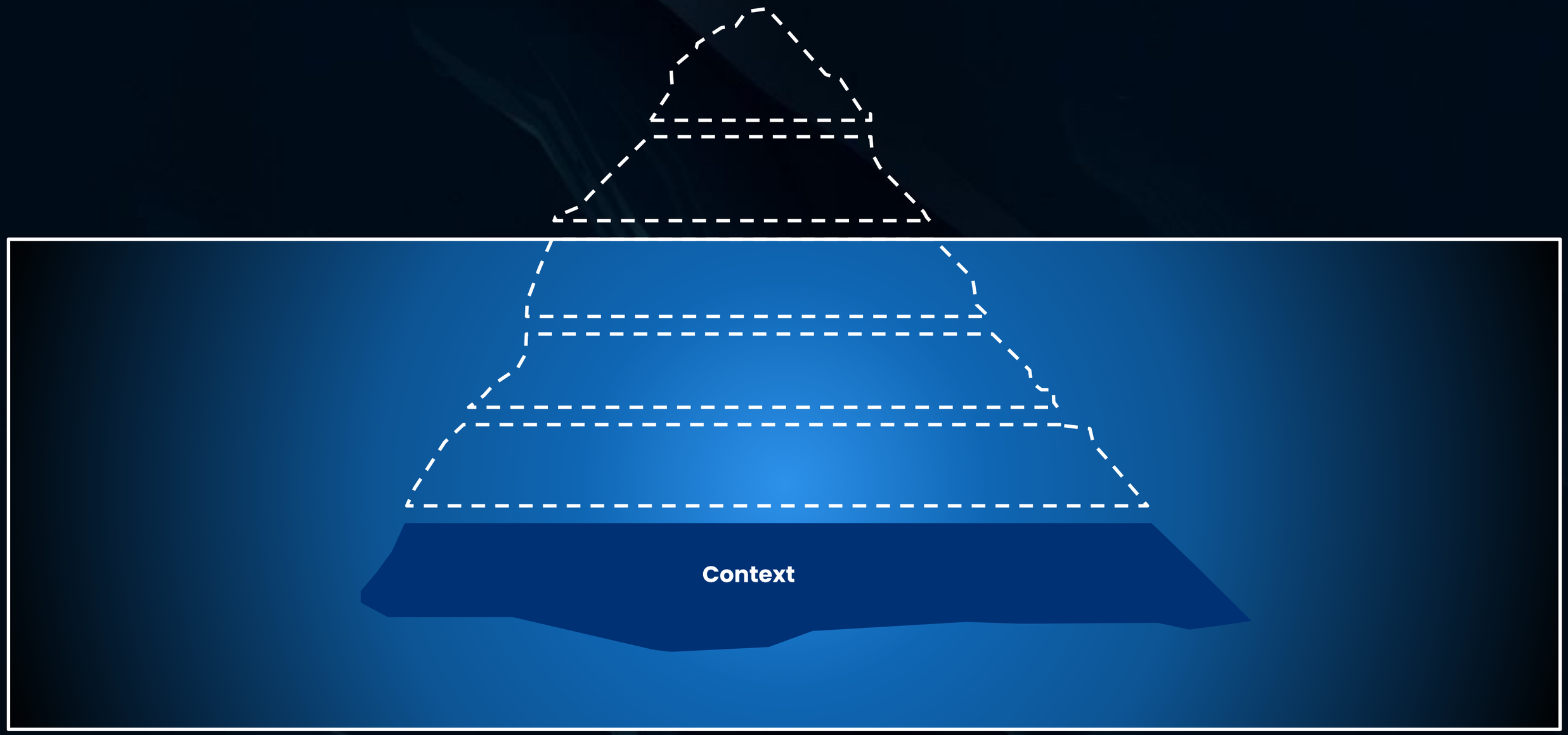


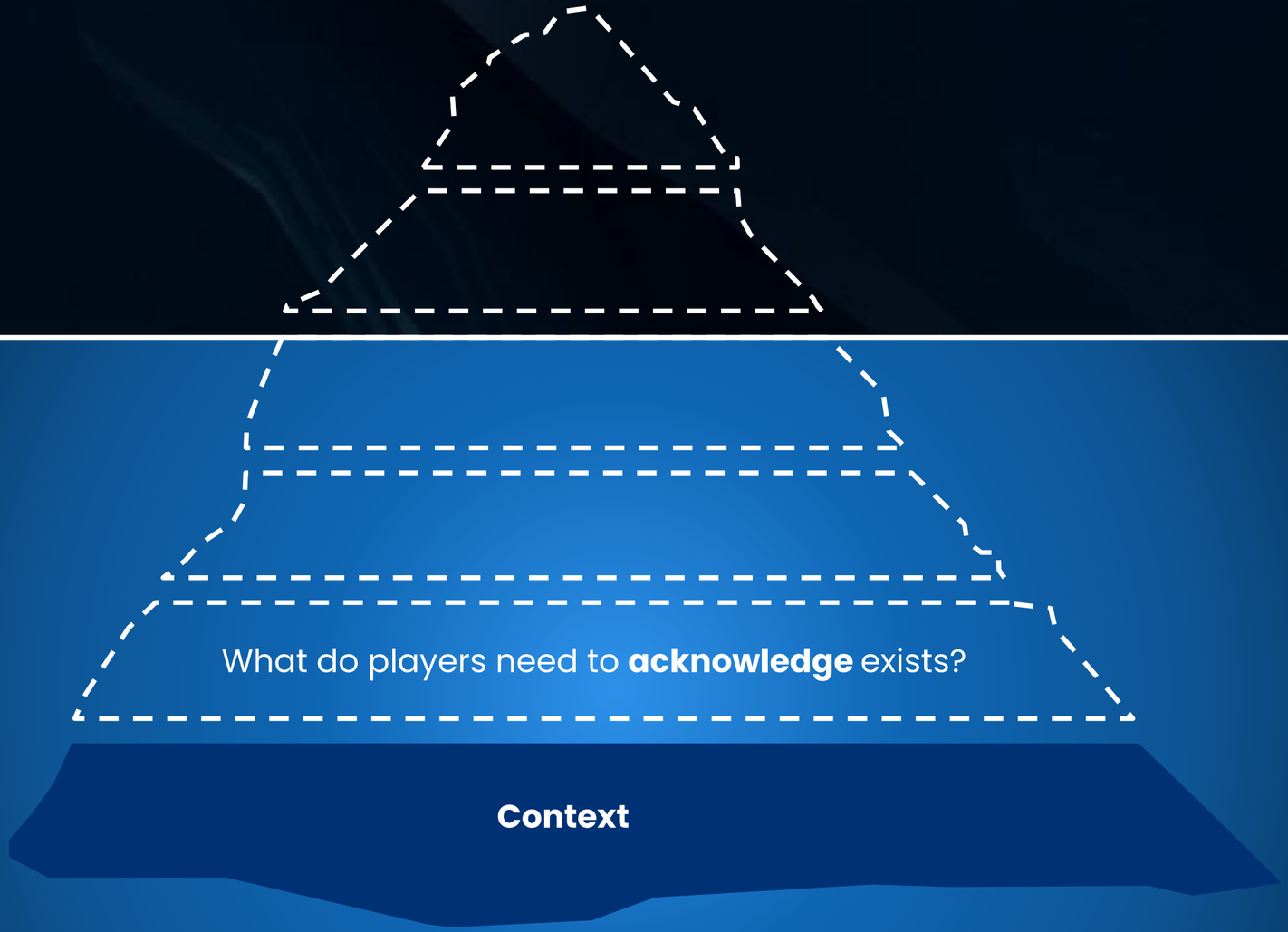
Define your baseline.

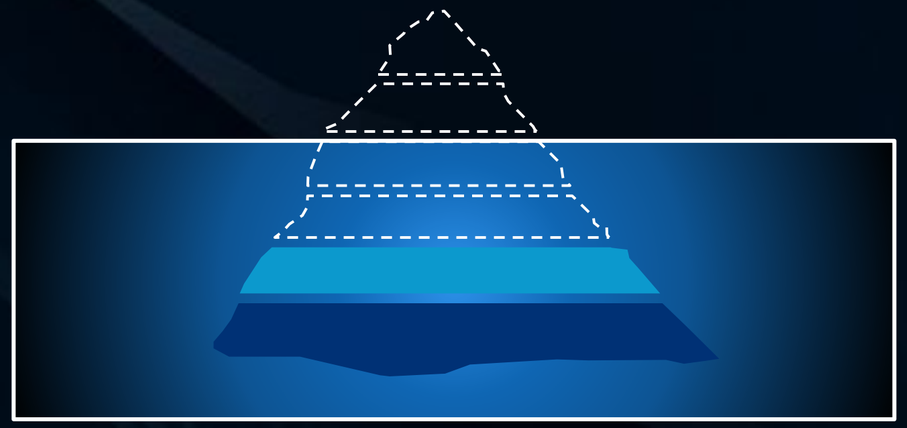
To build a strong foundation upon which climate action can eventually occur...

Understand the **context** in which your players will be experiencing your game.

What may they need for your game's climate action(s) to be physically, cognitively, and psychologically **accessible**?


Context

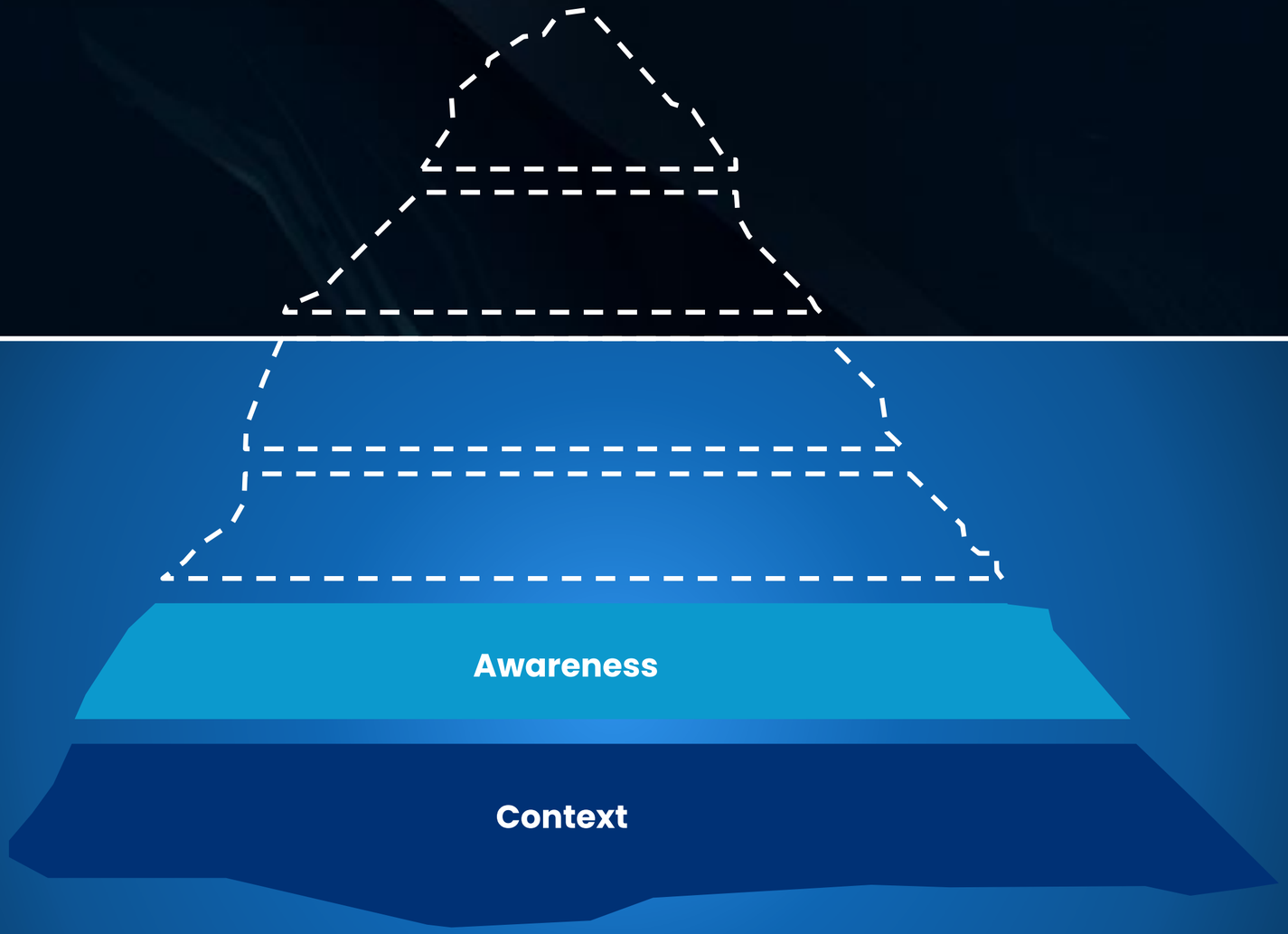

What do players need to **acknowledge** exists?
Context

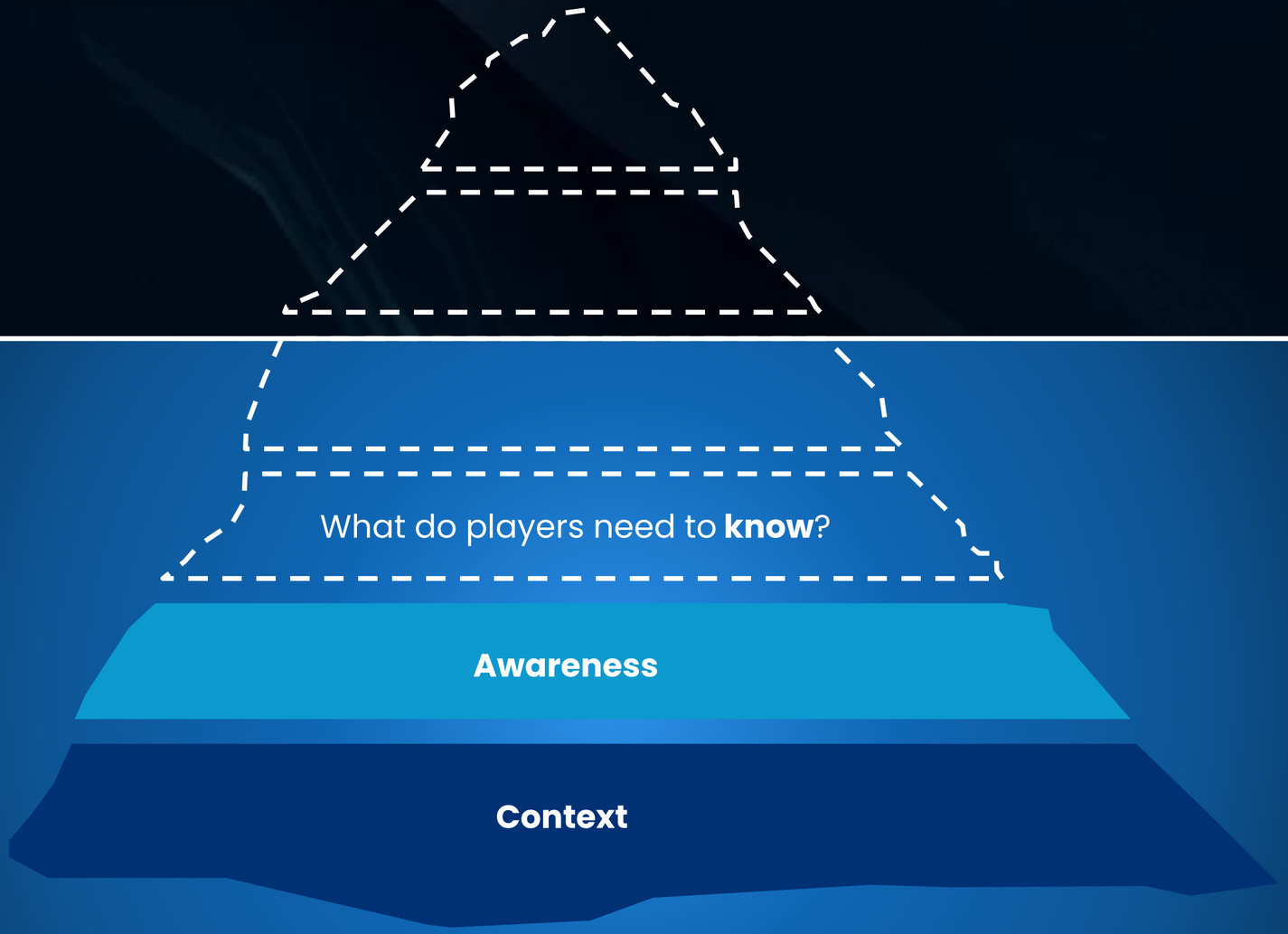


Build awareness.

"I am aware the climate crisis is real."

To solve a problem, we must first be **aware** that the problem exists.

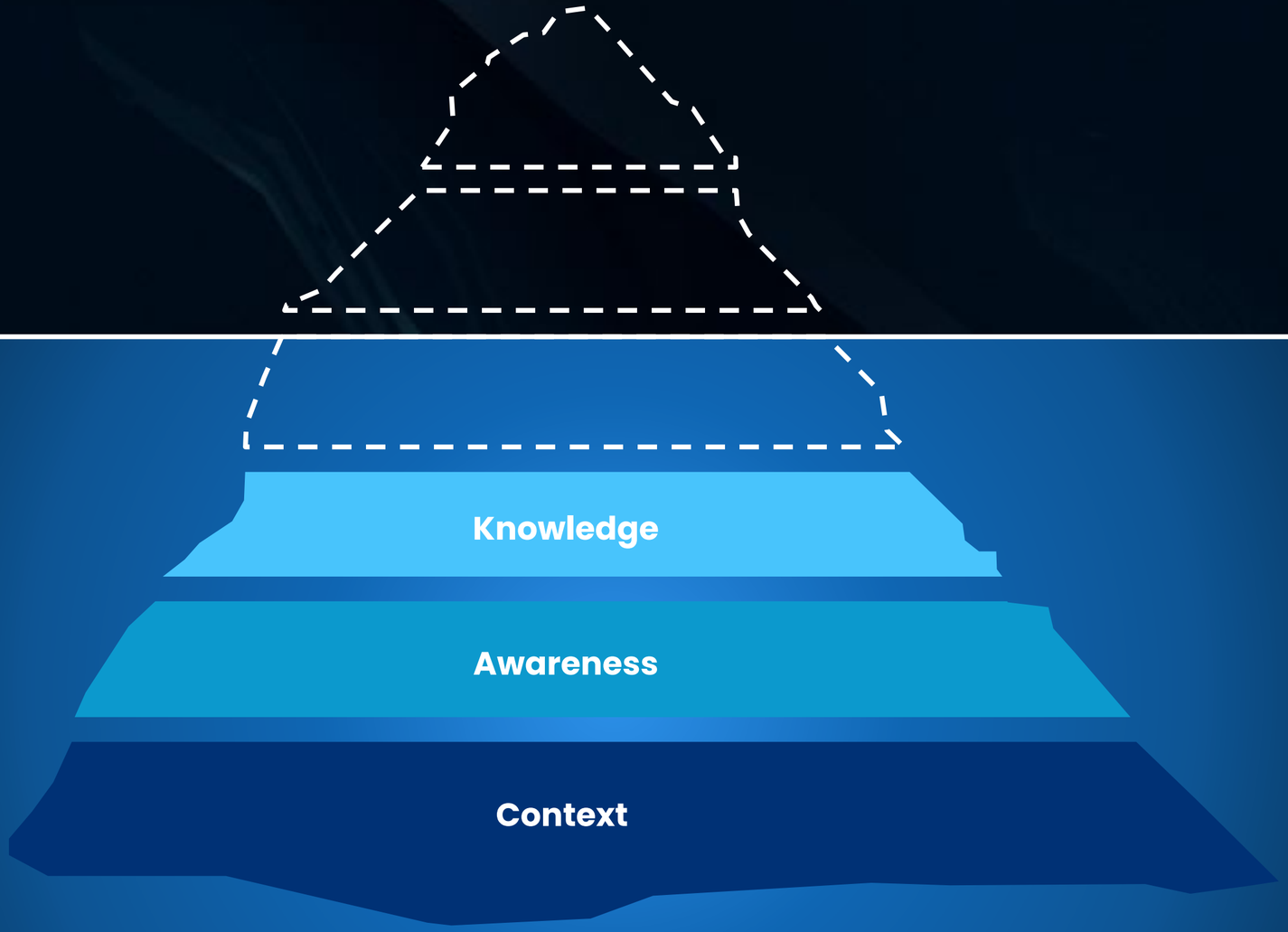

Awareness
Context


What do players need to **know**?
Awareness
Context

Cultivate knowledge.

*"I **understand why** the climate crisis is happening."*

Once aware a problem exists, we can gain **knowledge** to understand how it was created, and what factors contributed to its current condition.


Knowledge
Awareness
Context

What do players need to feel they are **ready to act**?
Knowledge
Awareness
Context

Support self-efficacy.

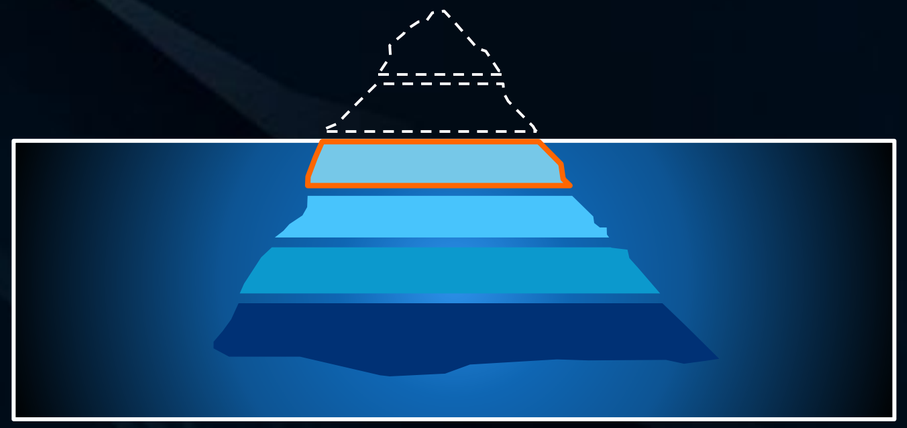
*"I have **confidence** in **knowing what I/we can do** to solve a specific problem."*

With knowledge, we can develop an understanding of how to **effectively act upon** an opportunity that can help solve the problem(s) we see.

“If you want to tackle sustainability, you need more than science and tech because we’ve had those for years.

What we really need to do is *change hearts and minds*.”

Maria Sayans
ustwo games’ CEO

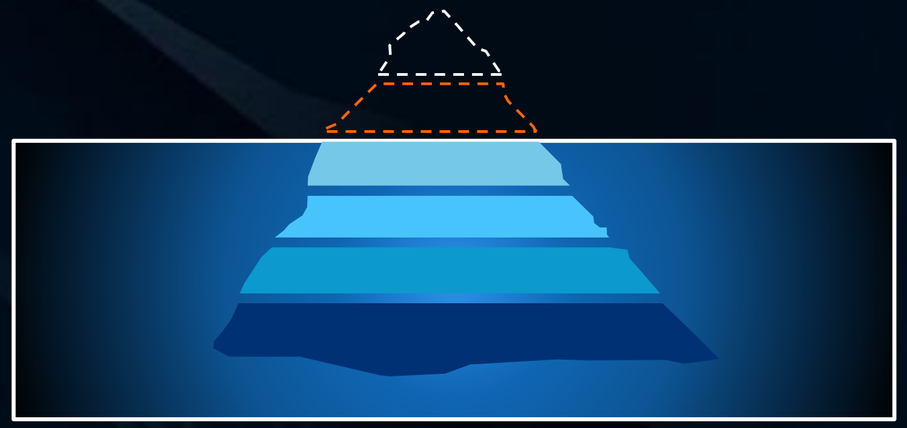


Support self-efficacy.

*"I have **confidence** in **knowing what I/we can do** to solve a specific problem."*

With actionable knowledge, we can develop an understanding of how to **effectively act upon** an opportunity that can help solve the problem(s) we see.

The stories and knowledge we have must be paired with ***pro-environmental attitude(s)***.



Hope **is a critical aspect of the learning experience that can make self-efficacy *actionable*.**

*"I have **confidence** in **knowing what I/we can do** to solve a specific problem."*

Support self-efficacy.

With actionable knowledge, we can develop an understanding of how to **effectively act upon** an opportunity that can help solve the problem(s) we see.

Support self-efficacy.

*"I am confident in **knowing what I/we can do** to solve a specific problem and I am **ready to act**."*

With knowledge, we can develop an understanding of how to **effectively act upon** an opportunity that can help solve the problem(s) we see - and feel **equipped to do so**.

Self-Efficacy
Knowledge
Awareness
Context

How can players **act** - **individually** or **together**?

Spark action.

*"I am now acting as an **individual** or as **part of a community** to **act in service** of people and the environment."*

Players **act upon their intention** and/or the **call(s) to action** that a game or initiative provides. Players may engage their peer groups and/or communities to join and/or start their own climate journeys.

Action
Self-Efficacy
Knowledge
Awareness
Context

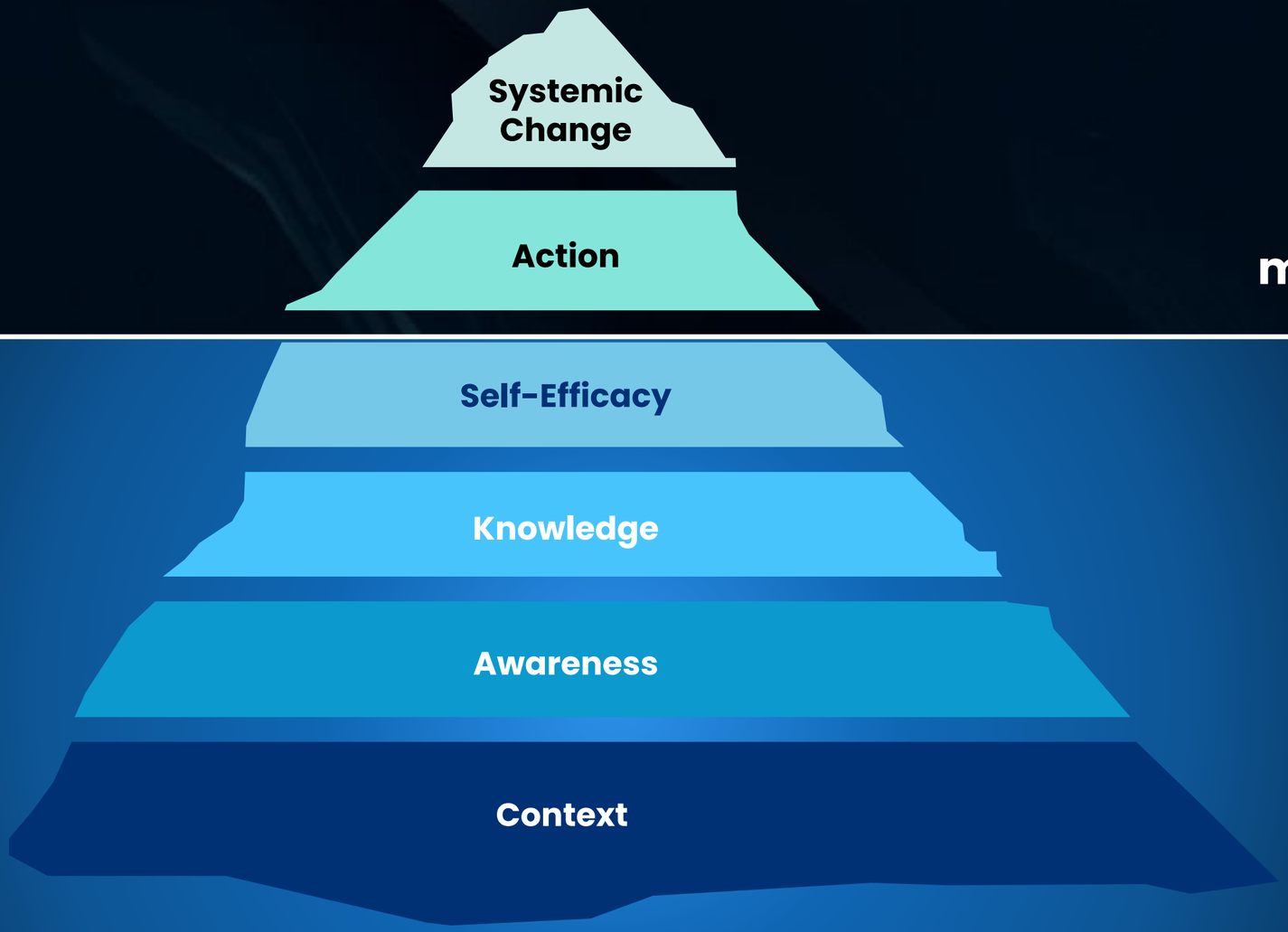
What would it look like
to have a solution be adopted
in such a way that it becomes
normalized and **expected**?

Drive systemic change.

*"The solution is **proven valid, normalized, and implemented-at-scale** in our community, organization, and/or industry."*

Broader communities and industries can drive **systemic adoption** of sustainable practices and pro-environmental behaviors. Over the long-term, these behaviors become **normative** parts of our sociocultural systems.

We have a
theory of action!



How, then, do we
measure progress?

*Do players feel it is **worthwhile**?*

Appreciation
(Fun, Interest in Continued Play, Advocacy)

*What do they **experience**?*

Player Needs Fulfillment
(Emotional Responses, Psychological Needs)

Core Gameplay Elements
(What, Why, How)

*Do players understand **what** to do, **why** they have to do it, and **how** they can do it - all in a way they **connect** with and can **access**?*

Prior Knowledge
(Existing Mental Models,
Genre/Mechanics-Based Heuristics)

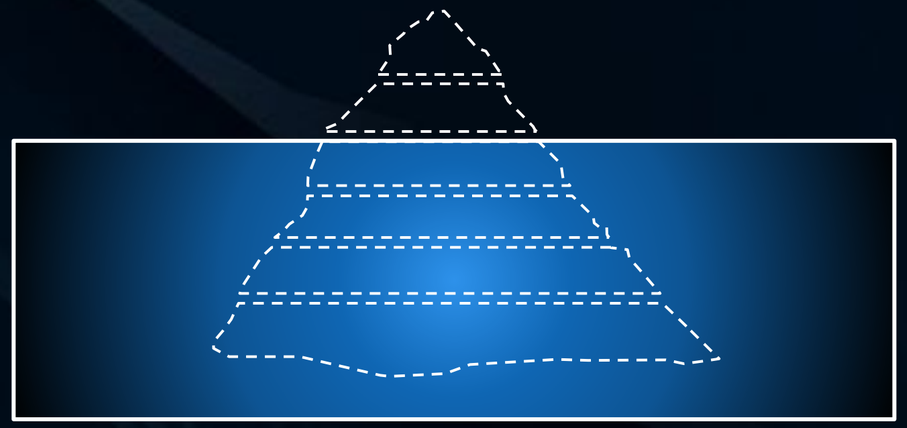
*What are players' existing **expectations** about how a given system works?*

PLEASE NOTE:

Due to time constraints, this will **not** be a deep dive into research methodologies and mixed method best practices.

Please leverage this as a **starting point** for discussion on what questions are on your mind, and what you may eventually want to measure.

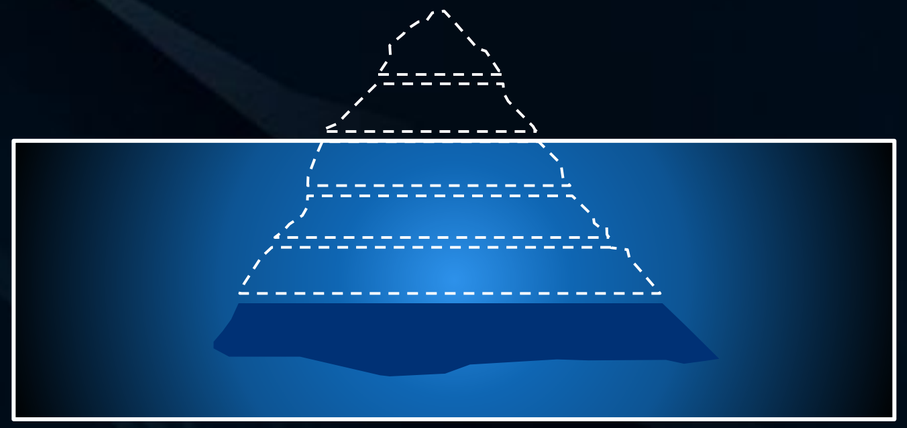
If you're interested in a deeper conversation,
please feel free to chat with us in the breakout or after this session! :)



“Right now, I’m in high school and I am frustrated by the pollution in my town.

I really wish I could do something to help, but I work after school. Where I live isn’t very walkable - and I have to use a bus on a long route to get to and from work. I don’t have time to do more.

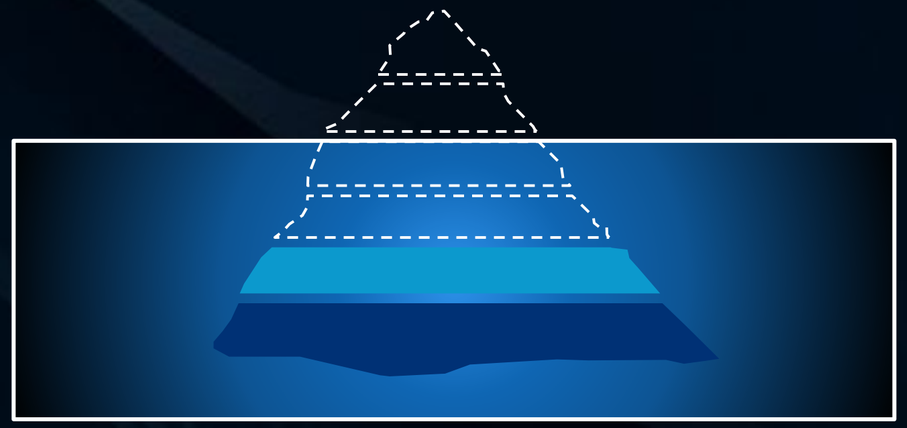
I don’t know how my friends feel about it, but some of them have parents who work in coal companies just outside of town.”



Define your baseline.

Hypothetical Measures

- If you were to explain climate change to a friend, what would you tell them?
- On a scale of 1-5, please rate the level of climate change's impact on your way of life.
  - 1=Not at all (No perceived impact); 5=Very High (Direct impact); N/A=I don't know
  - Open response to understand why
- How important or not important is pollution reduction to your friends and/or community? Why?
- What sustainability practices are present in your day to day, if any?



Build awareness.

Hypothetical Measures

- Pre-/Post-Test: If you were to explain whether fossil fuels do or do not contribute to climate change to a friend, how would you do so?
- Please rate your response to the following statement: “Fossil fuel production and use directly contribute to climate change.”
  - 1=Strongly disagree; 5=Strongly agree; N/A=I don’t know.
- Pre-/Post-Test: Multiple choice questions on high level, critical concepts about the coal industry and climate impacts

Cultivate knowledge.

Hypothetical Measures

- Post-Test: Please describe how pollution does or does not affect how and where you live, in your own words.
- Post-Test: What are the direct and/or indirect environmental effects of fossil fuel production and use?
- Post-Test: What are the potential solutions to pollution?
  - Recommendation: have distinct questions about effects v. solutions!

Support self-efficacy.

Hypothetical Measures

- Are there any aspects of this experience that bring curiosity, hope, or inspiration? Please describe if so.

- Please rate your response to the following statement:
  "I have a clear idea of what action I can take to help solve [problem]."
  - 1=Strongly disagree; 5=Strongly agree; N/A=I don't know.

- On a scale of 1-5, how actionable are the solutions proposed?
  - 1=Not at all actionable (I don't know what to do next); 5=Very actionable (I know what I can do); N/A=I don't know

- Please rate your sense of preparedness to engage in the climate action shown in this game as a result of your experience.
  - 1=Not at all prepared; 5=Very prepared; N/A=I don't know.

Spark action.

Hypothetical Measures

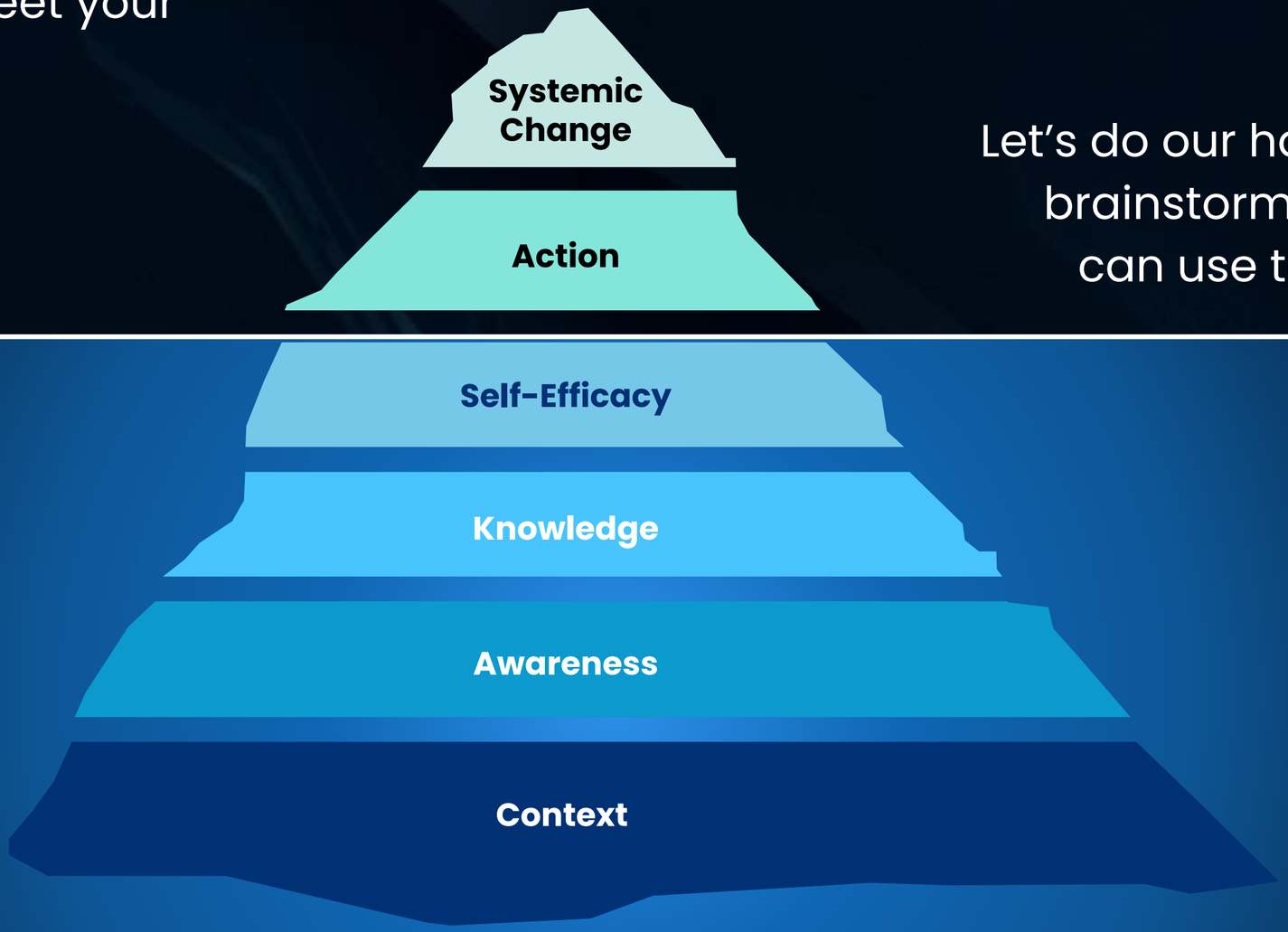
- Commitment to civic engagement (ex. writing/calling legislators)
- Commitment to volunteer (ex. Partnership with a local advocacy org to track registrations and commitments [tracked via conversion or unique URL])
- # Community members who convert to action (w/ metrics from previous slides)
  - # and type of actions community members commit to and complete
- Ideally, longitudinal retention of active community members (segmented by audience type)

Drive systemic change.

Hypothetical Measures

- Published case studies / narratives showcasing impact on local, regional, and global communities
  - Player/community sentiment, relevance, actionability
- Implementation of community, company, and/or governmental policies and standards
  - Player trust and confidence in brands, initiatives, and/or programs that align to their values
- The proliferation of social-environmentally conscious content of all genres and features across gaming platforms

In short, there are many ways to define and modify a theory of action to meet your needs and priorities.



Let's do our hands-on activity to brainstorm the questions you can use to create your own!

THANK YOU!

NEXT PART

INTERLUDE

HOLD THAT COFFEE

GDC | March 21-25, 2022
San Francisco, CA

igda Climate SIG

Use Your Game Developer Superpowers to Fight the Climate Crisis

5 DESIGNING GAMES THAT TRANSFORM PLAYERS

Trevin YORK

#GDC22

5 DESIGNING GAMES THAT TRANSFORM PLAYERS

Trevin YORK

What I've learned while designing games that transform players:

What I’ve learned while designing games that transform players:

- It’s hard!

TODAY'S TOPICS

Grant Shonkwiler

Exploring Climate Impacts

Arnaud Fayolle

Climate Game Toolkit For Content Creators

Chance Glasco

Examples of Climate Design

Paula Escuadra

Let's Build A Theory of Action

Trevin York

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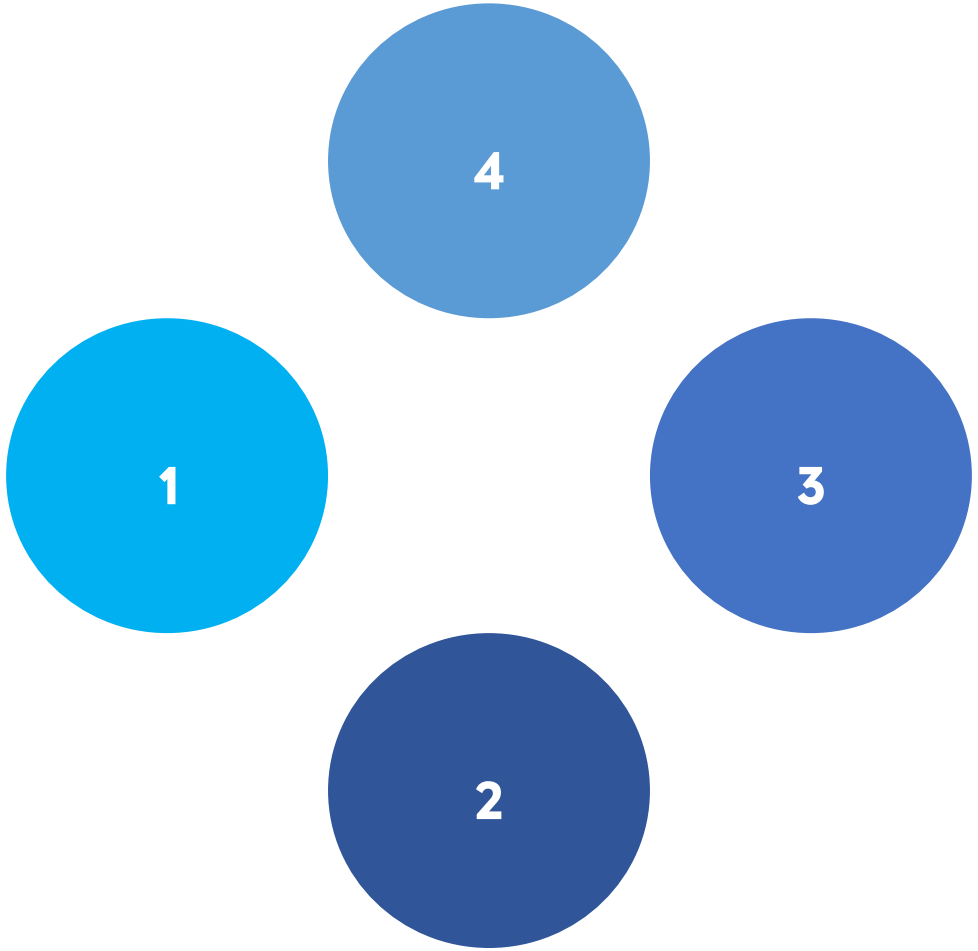
CONSIDERATIONS



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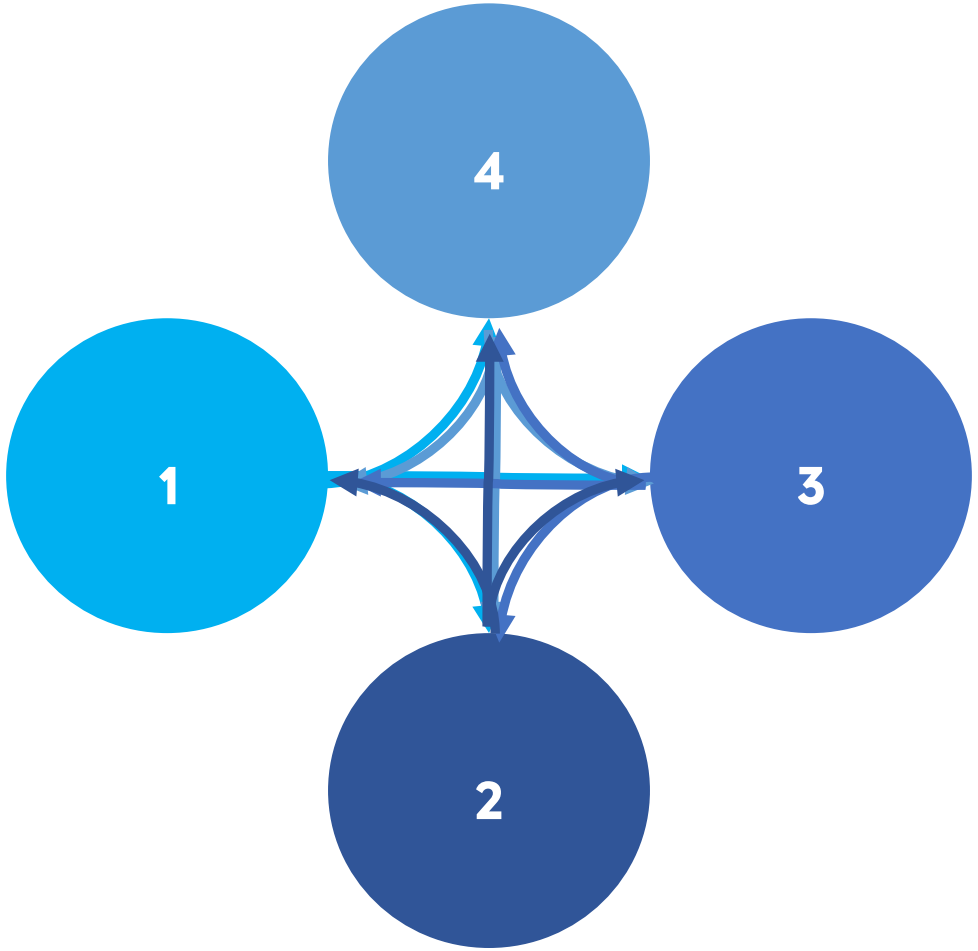

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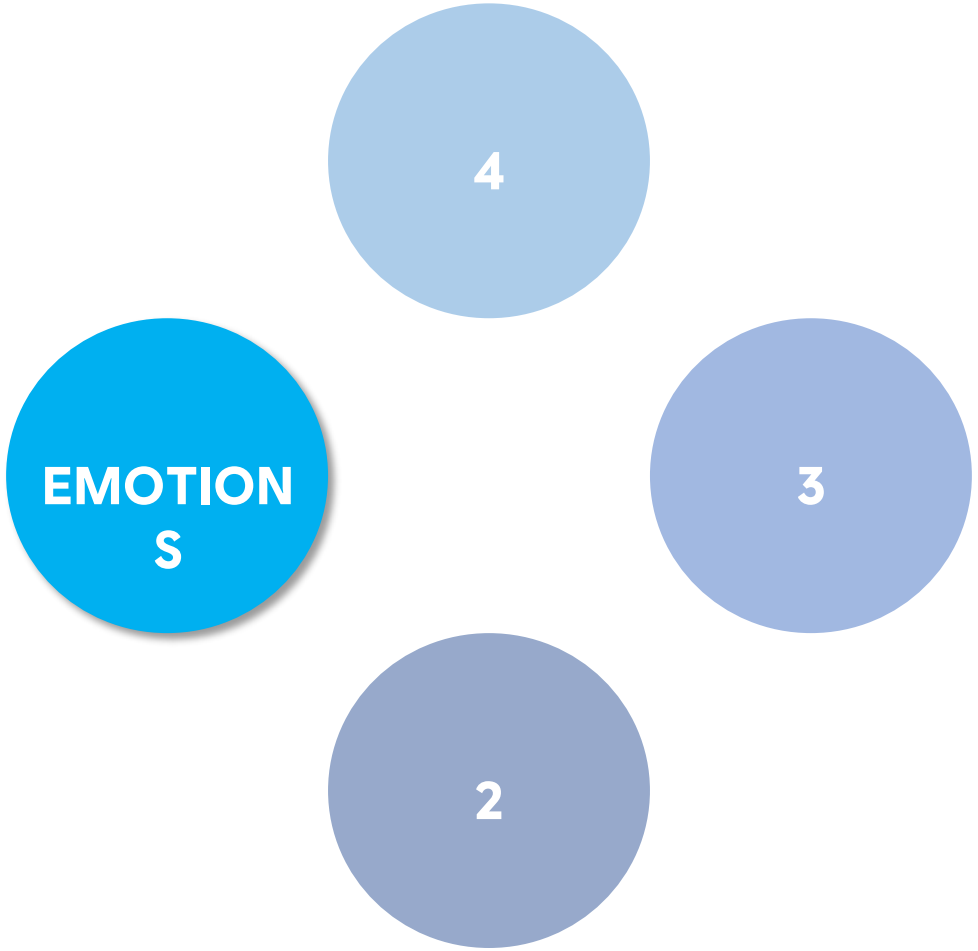
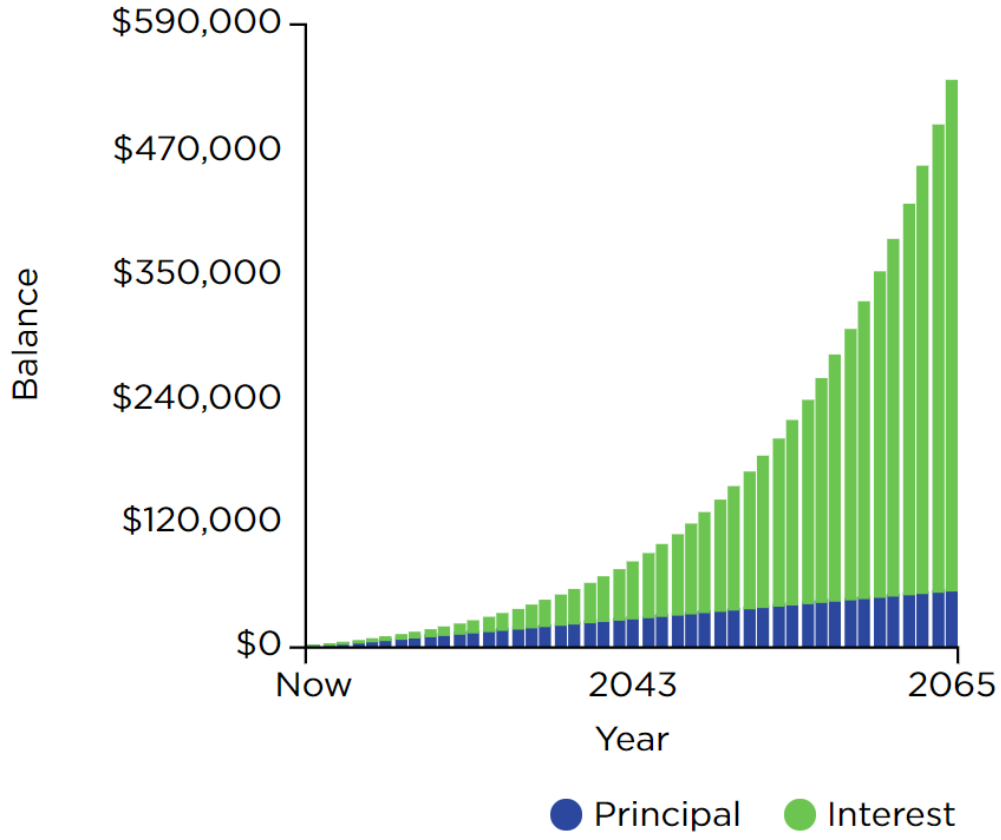


Future Balance

$534,745



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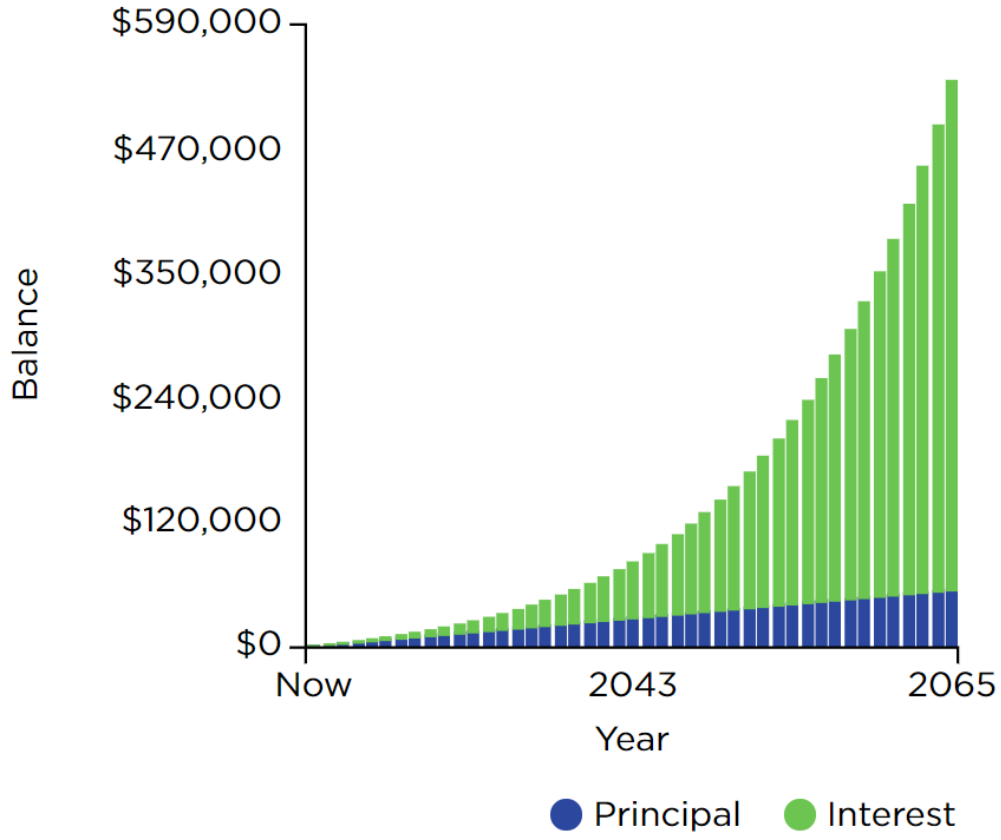
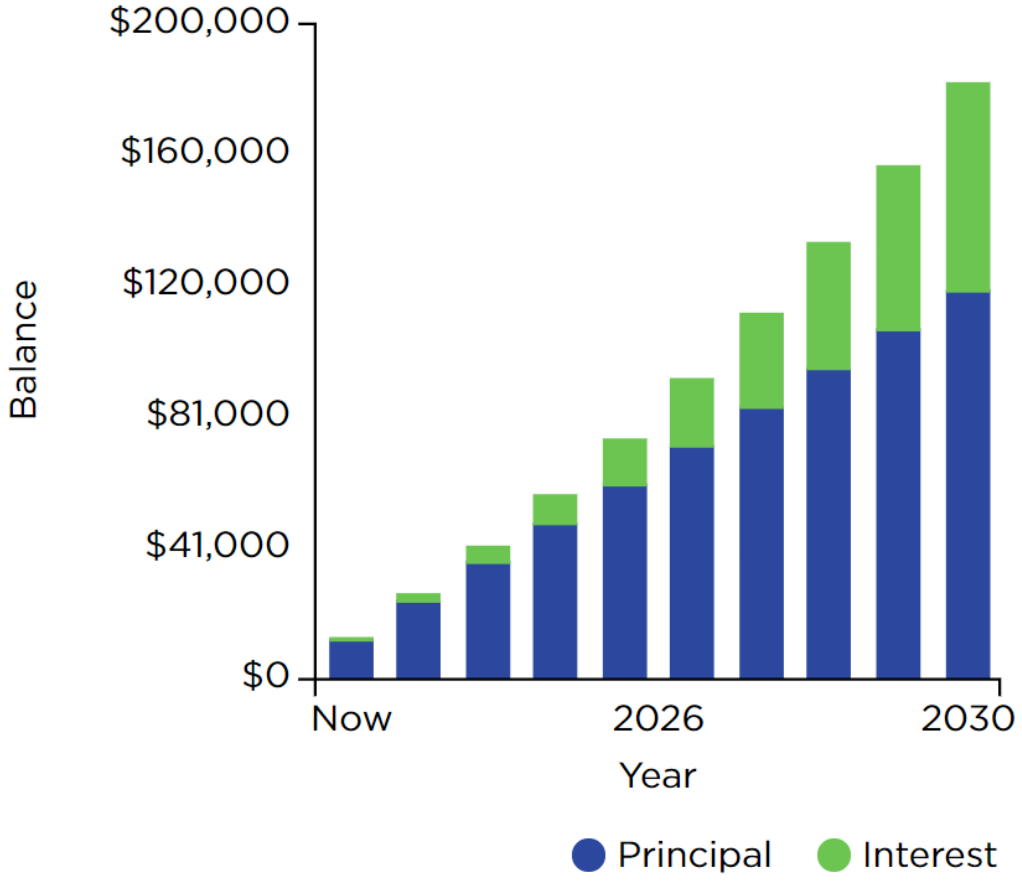
$534,745



Future Balance

$184,397



1500
45
10

“THE IDEA OF RETIREMENT IS EXCITING, BUT IT'S MORE **SCARY** AND **CONFUSING** THAN ANYTHING”

“I'M **OVERWHELMED** BY ALL THE DIFFERENT POSSIBILITIES AND DON'T KNOW WHERE TO TURN FOR A RESOURCE.”

3 Elements to Pro-environmental Behavior

01

Attitude

02

Knowledge

03

Perceived Self-efficacy

3 Elements to Pro-environmental Behavior

01

Attitude

02

Knowledge

03

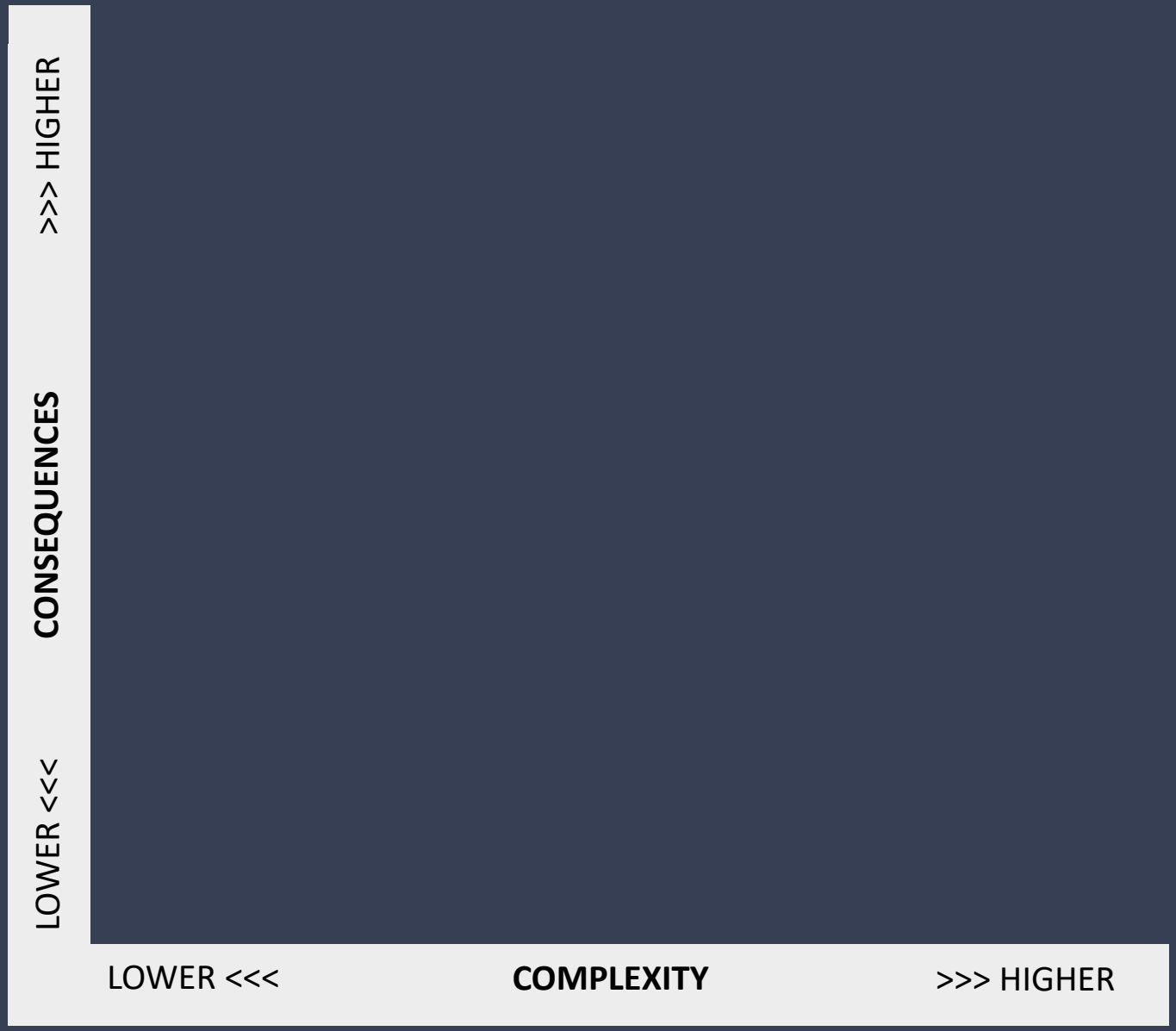
Perceived Self-efficacy

Confusion
Doubt
Fear
Anxiety

Confusion
Doubt
Fear
Anxiety

= RUN!

LOWER <<< **COMPLEXITY** >>> HIGHER


>>> HIGHER
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LOWER <<<
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>>> HIGHER
CONSEQUENCES
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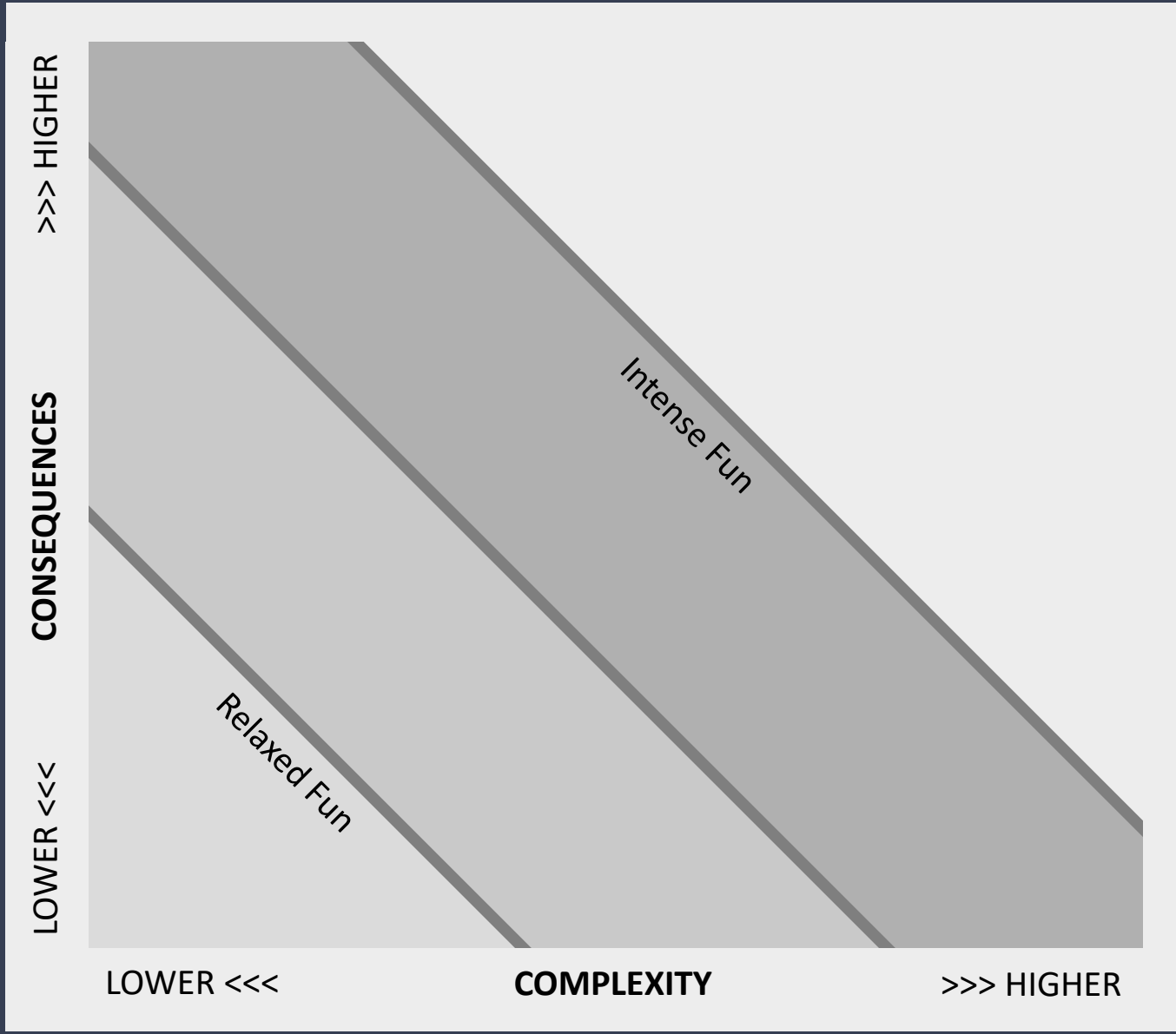
Relaxed Fun
LOWER <<<
COMPLEXITY
>>> HIGHER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COMPLEXITY
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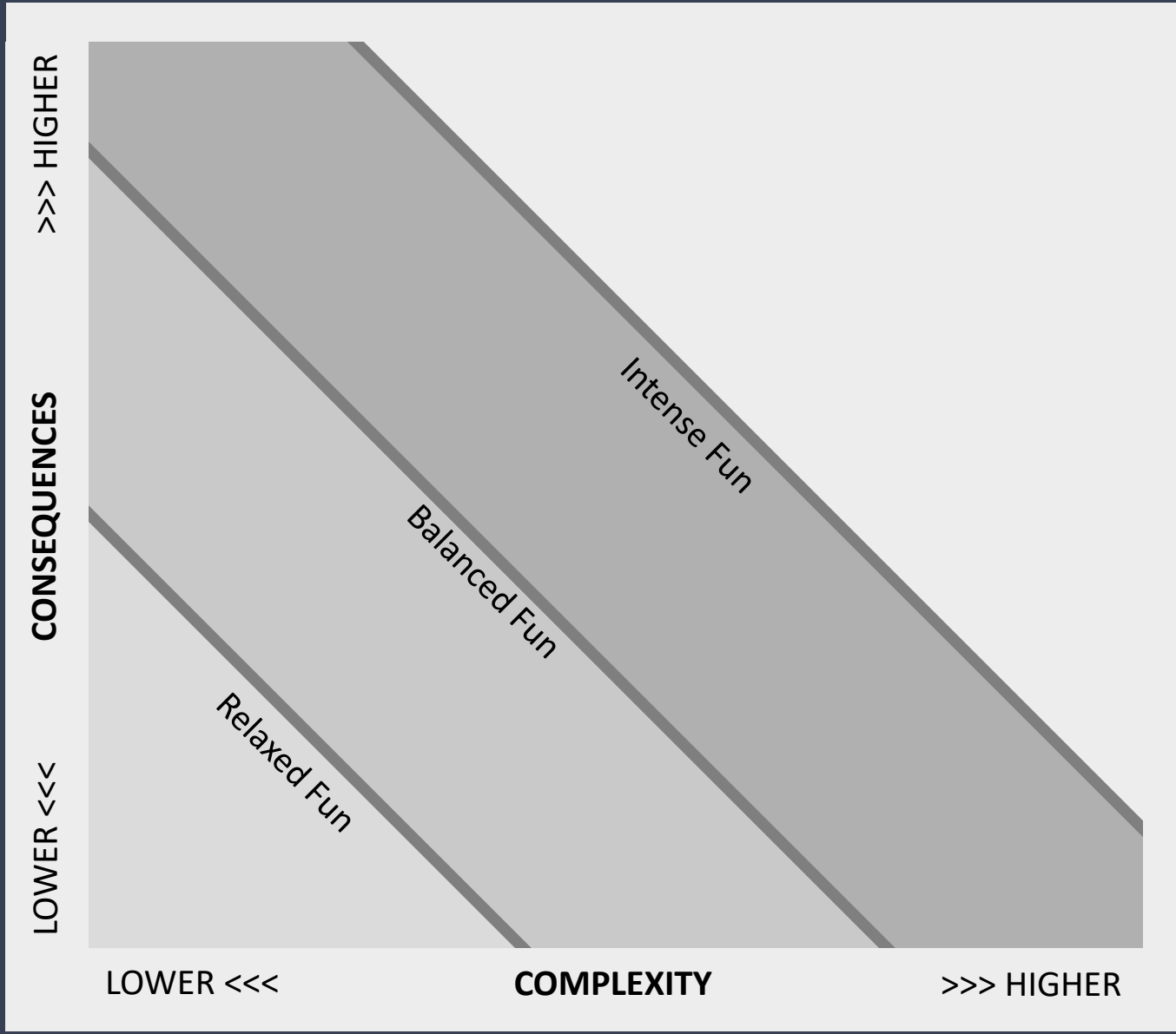
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Balanced Fun
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COMPLEXITY
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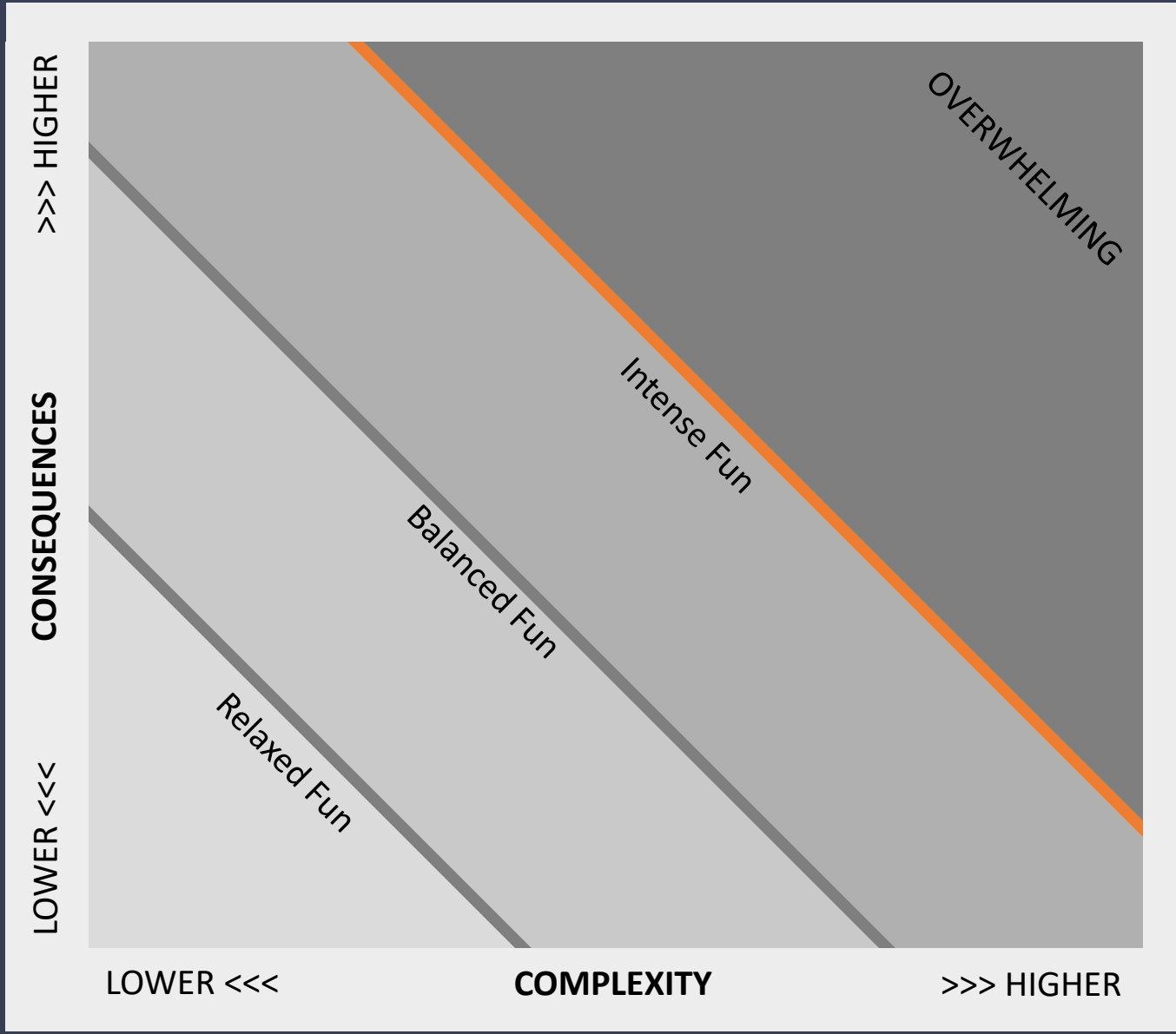
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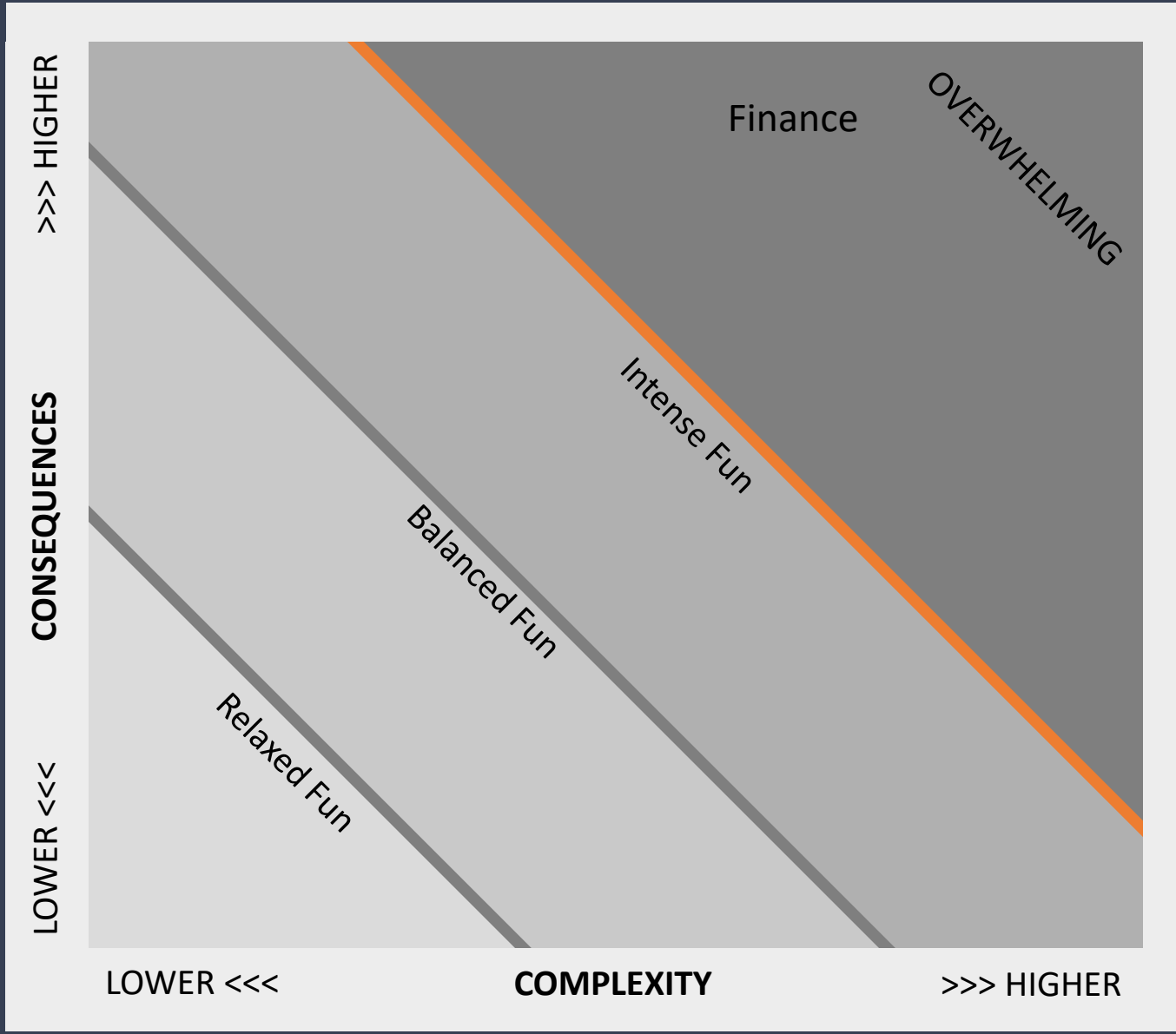
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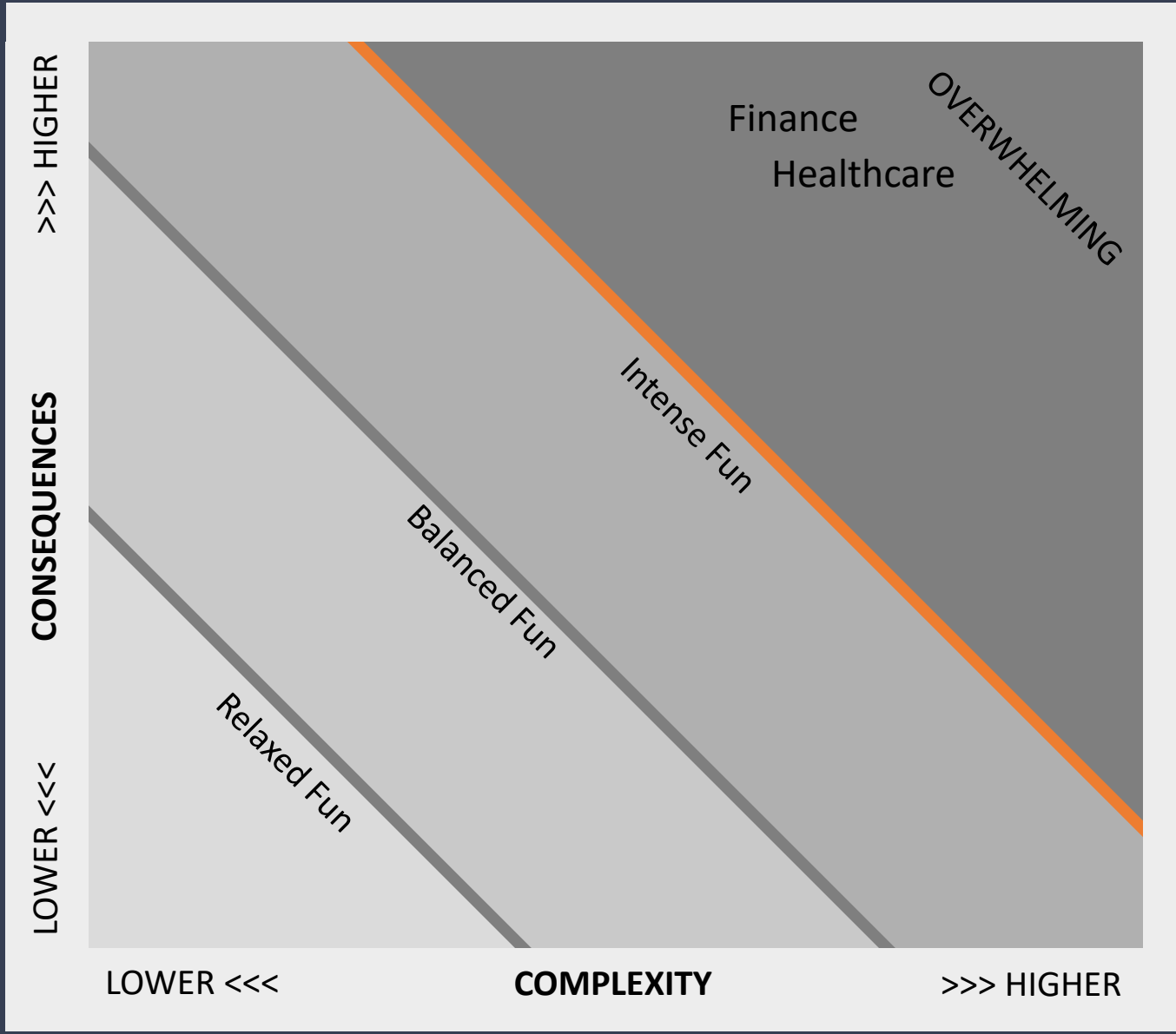
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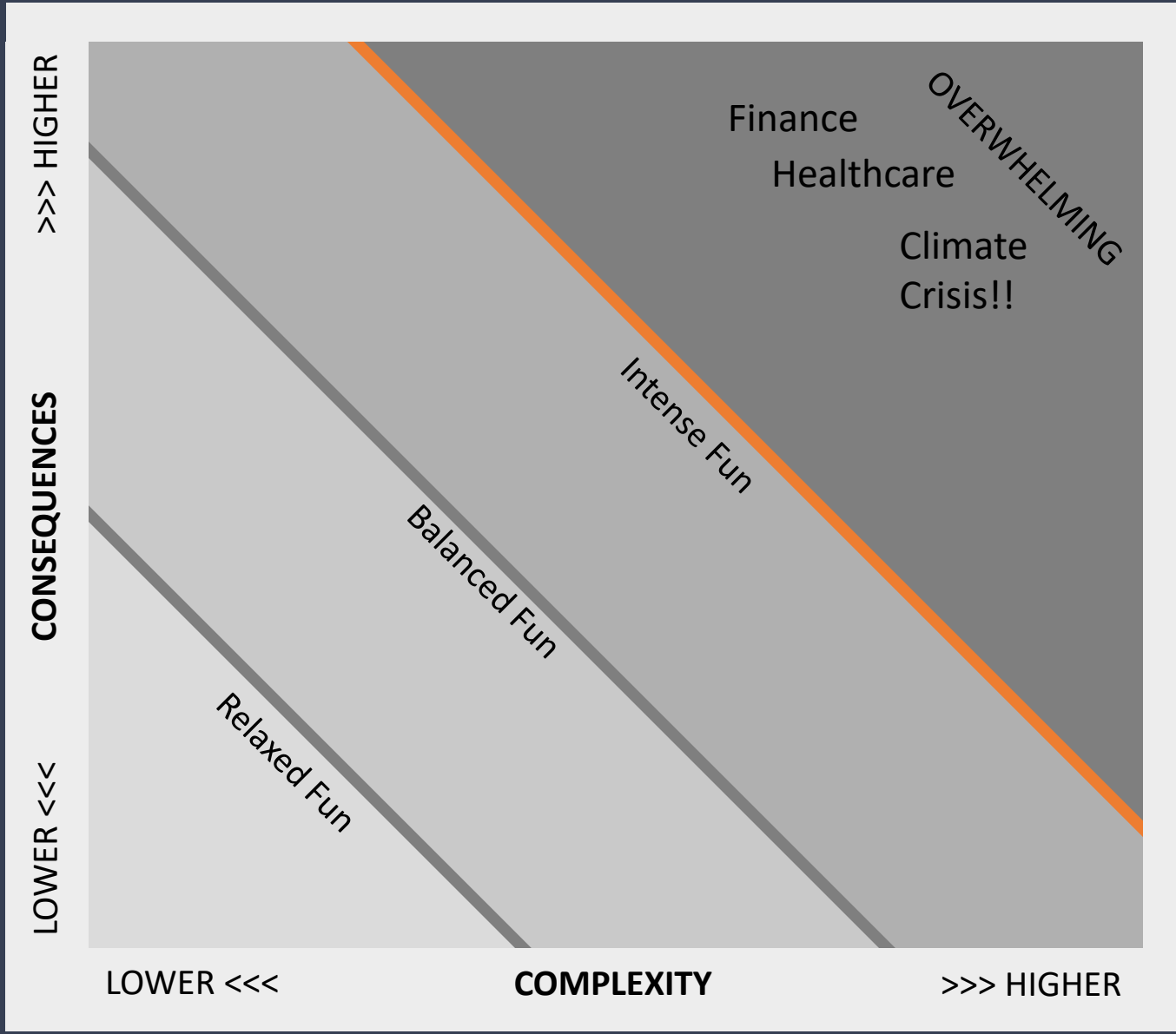
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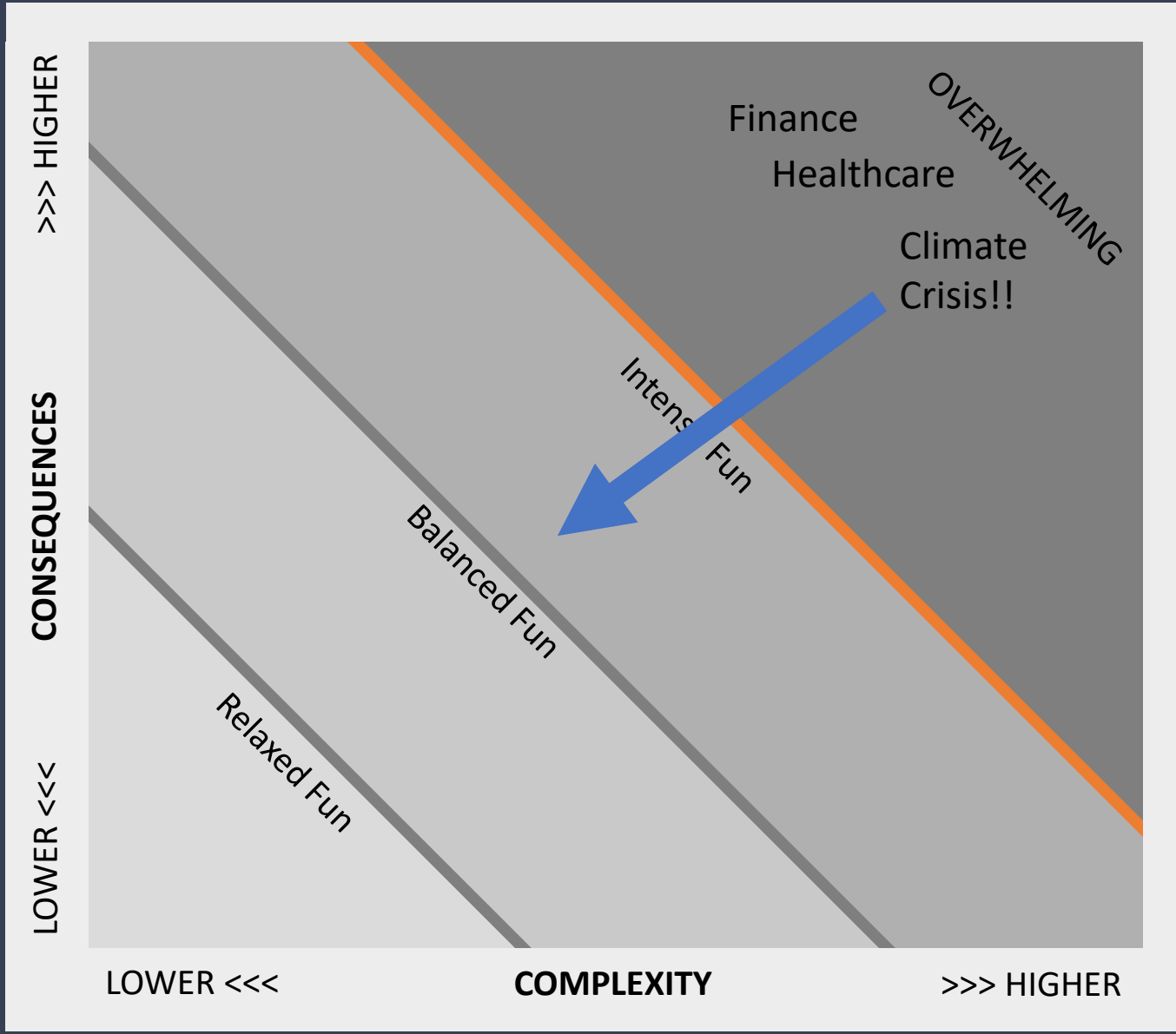
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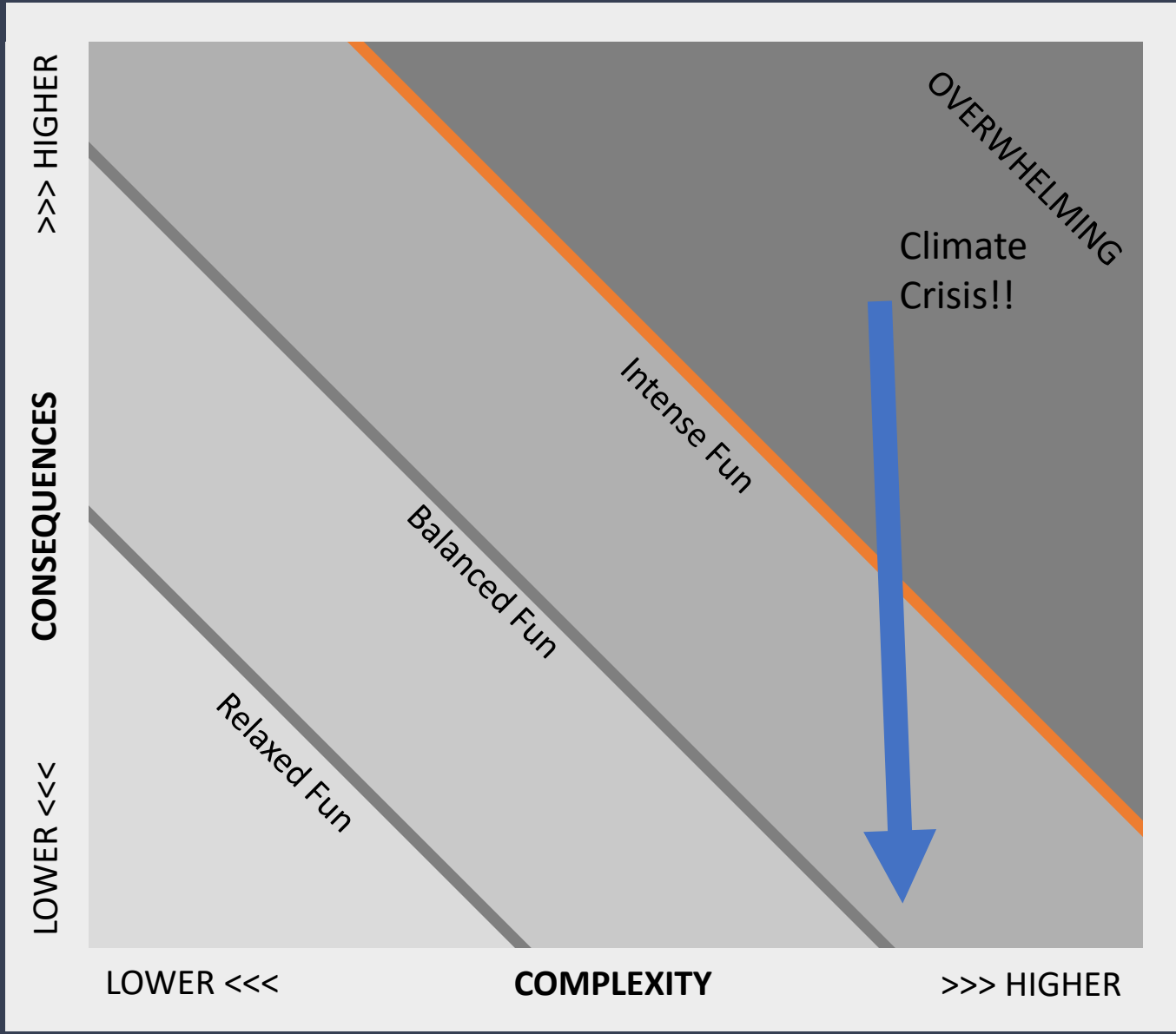
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Intense Fun
Balanced Fun
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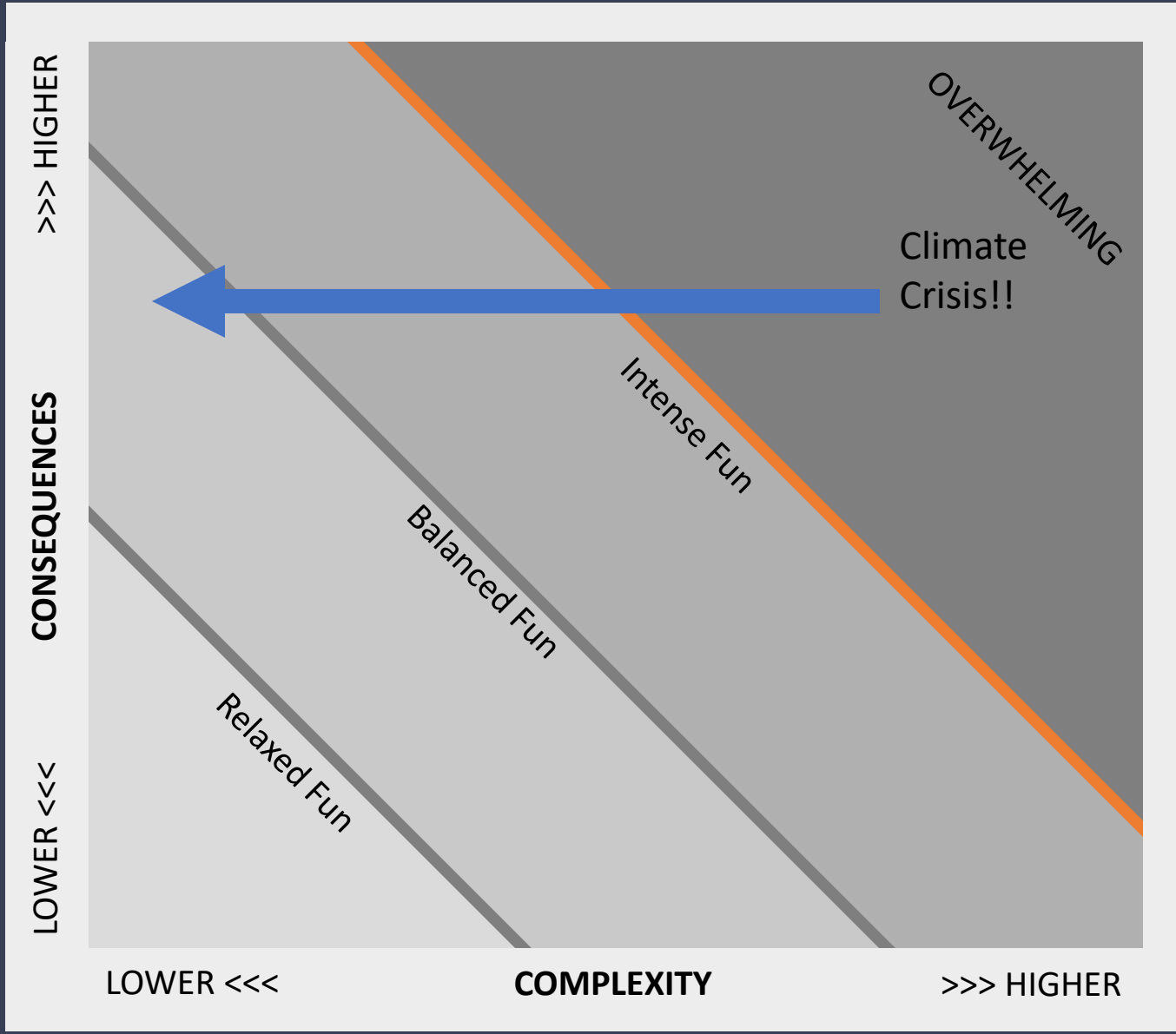
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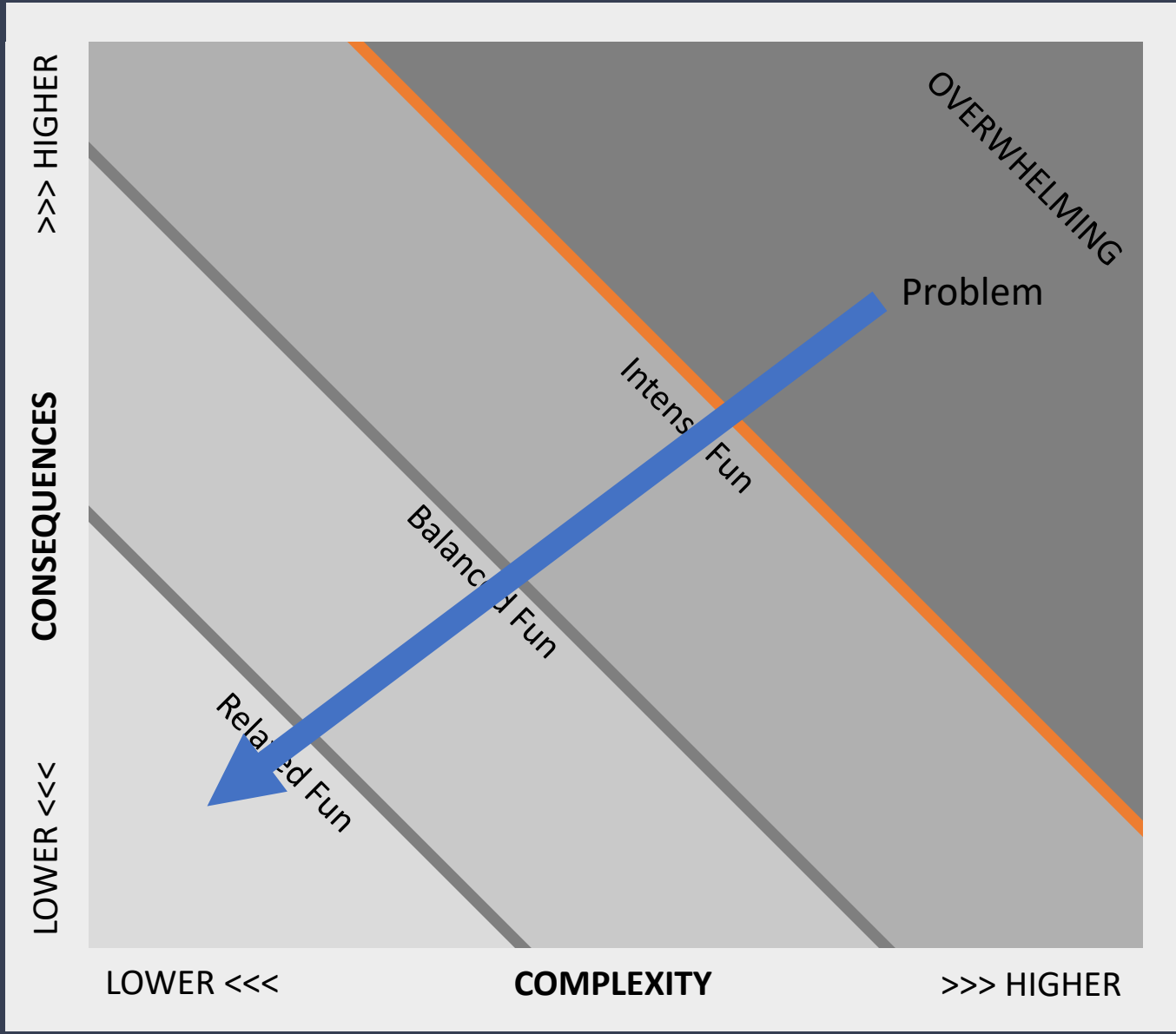
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Intens Fun
Balanc d Fun
Rela ed Fun
LOWER <<<
COMPLEXITY
>>> HIGHER

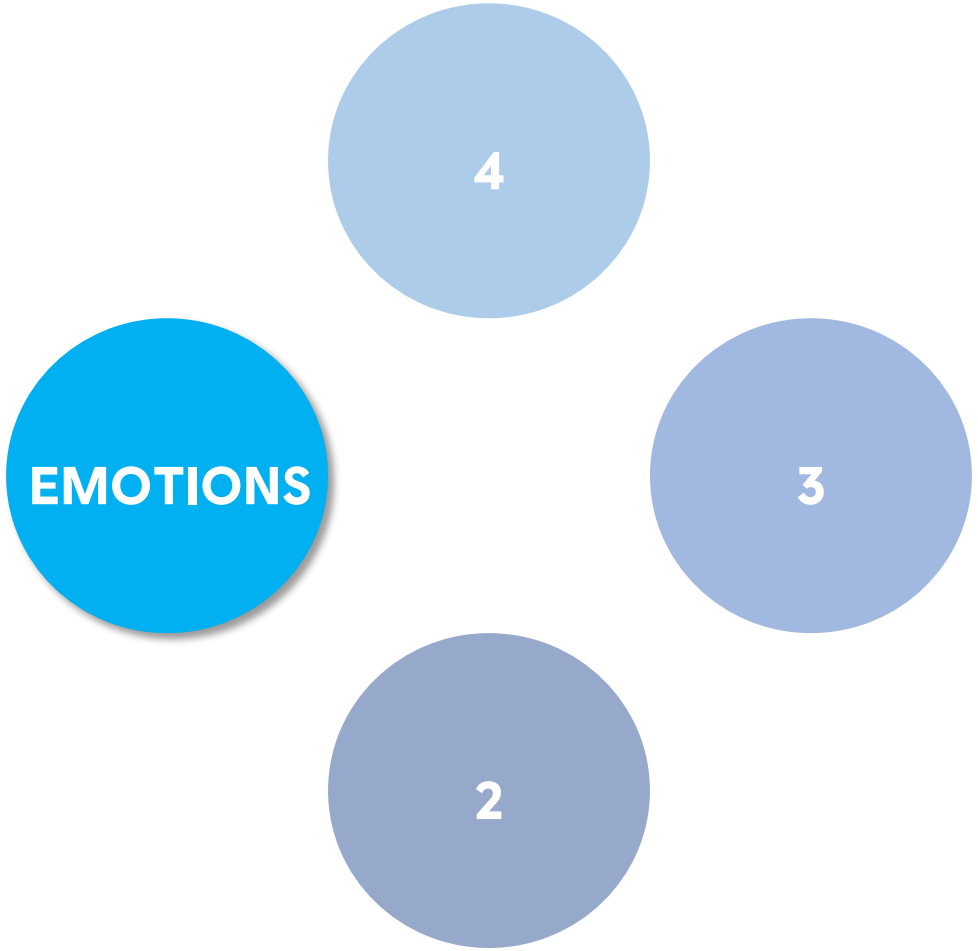
Connect Emotionally: Review

- Avoid overwhelming feelings
- Consider complexity and consequences in your designs
- Foster hope, optimism, confidence

Consider:

- How might you tune the complexity and consequences in your game to keep players feeling empowered rather than overwhelmed, even as you guide them to face large, potentially scary real-world issues?

CONSIDER:



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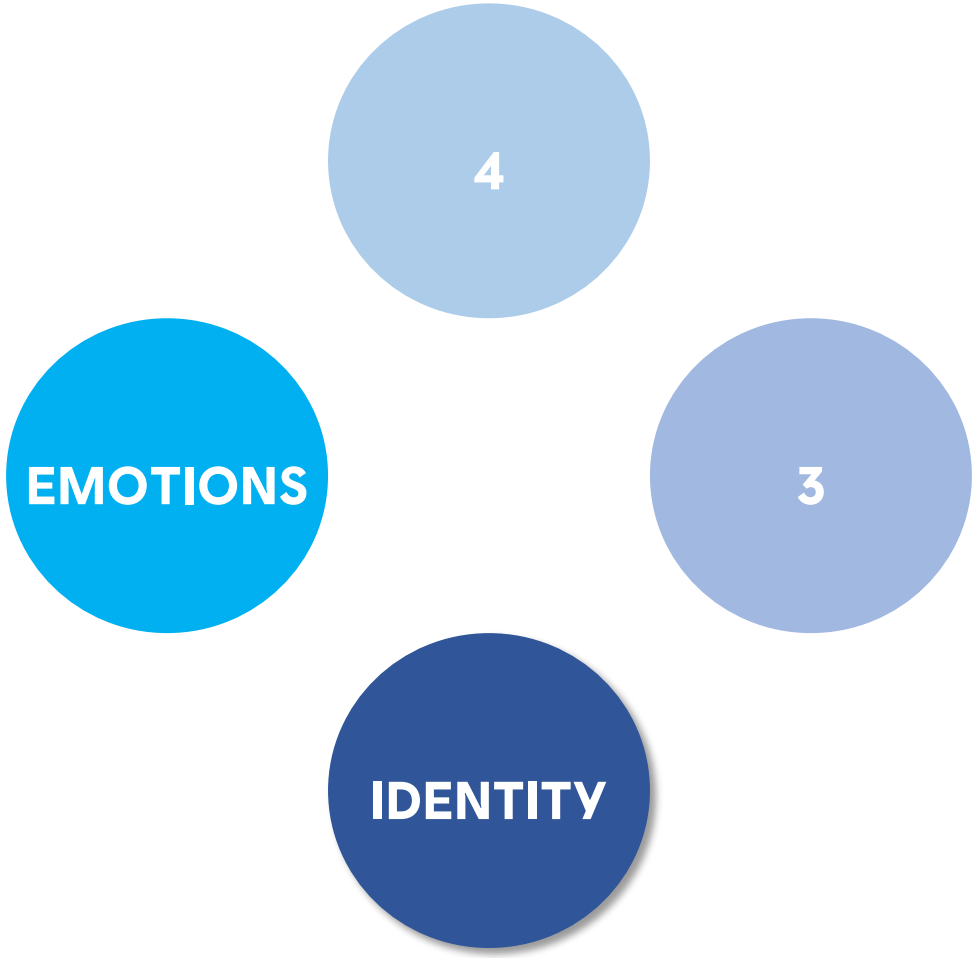


Sustained Behavior Change
= Identity Change

MCU DIRECT
MARVEL STUDIOS
AVENGERS
ENDGAME

Disneyland
Park

Baby Names

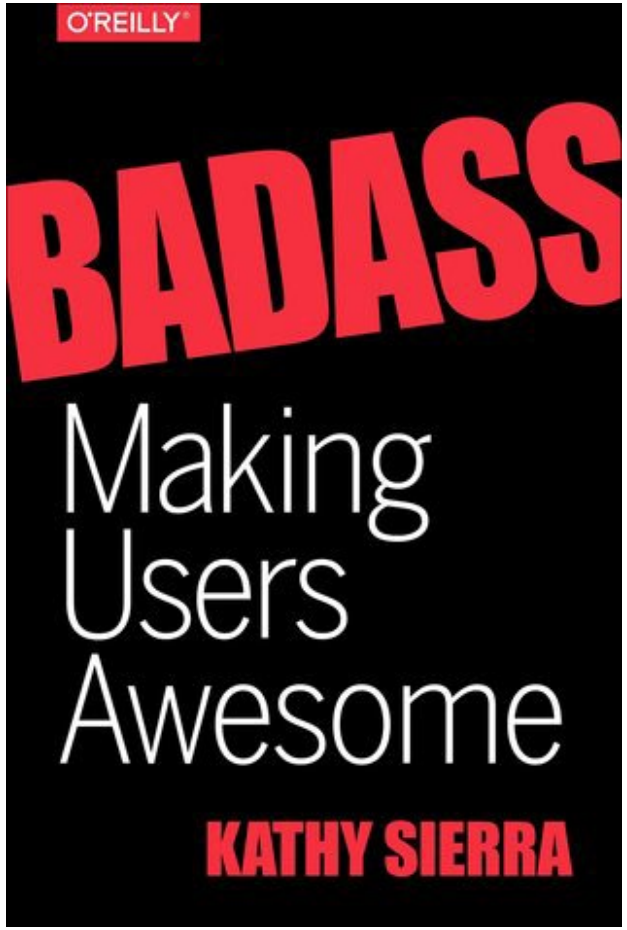
Get the lowdown on thousands of baby names right here – including meanings, origins, namesakes, celebrity babies, and **Disney characters** who share the same name. Not sure where to start? Browse our full collection of **baby girl names** and **baby boy names**, or check out some **Disney-themed baby name articles** to help get you inspired.

Browse By Origin

African
Arabic
Celtic
Chinese
Czech
Danish
Dutch
Egyptian
English
Finnish
French
German
Greek
Hebrew
Hungarian

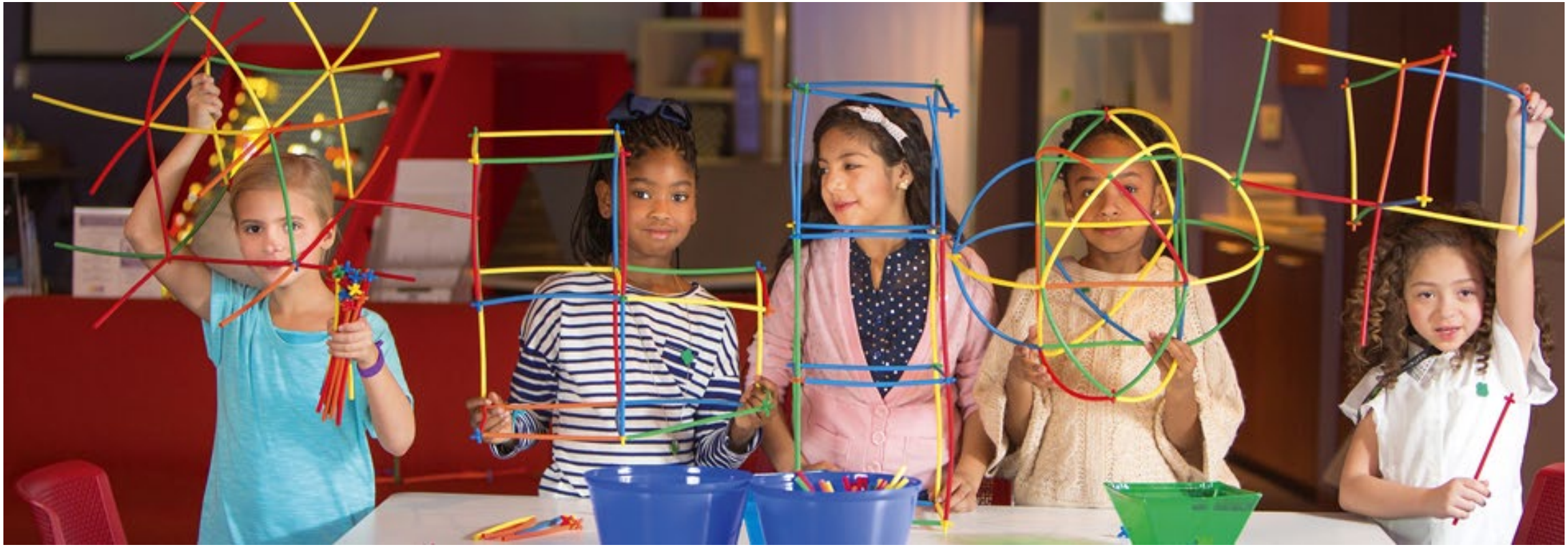
Browse By Theme

Animal
Bird
Color
Contemporary
Flower
Fruit
Green
Literary
Nature
Place


O'REILLY
BADASS
Making
Users
Awesome
KATHY SIERRA

Shape identity in games:

1. Connect in-game identity to a real-world identity
2. Actual gameplay experience ties to real-world identity behaviors
3. Provide the player's in-game identity with a real-world identity



TraKid

BECOME AN EXPLORER

ADVENTURE IS CLOSER THAN YOU THINK

Earn the trust of your favorite animals and learn their secrets! With the TraKid Explorer Band, kids become heroic explorers on this family-friendly expedition through the zoo.

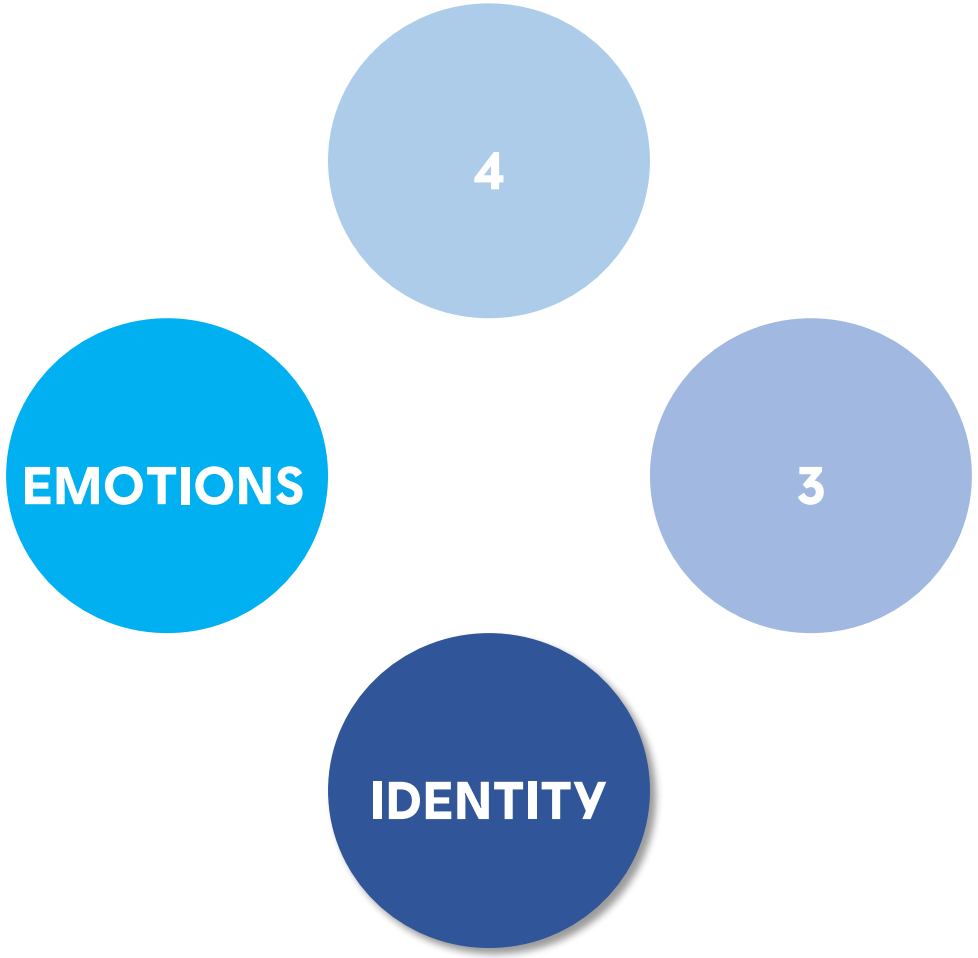
Shape Identity: Review

1. Sustained behavior change probably requires identity change.
2. Games shape identity. Connect player identity to real-world identity with specific, clear examples, and have gameplay model appropriate behavior.

Consider:

1. How might you map the existing ways players behave in your game to identities that persist in the real world?

CONSIDER:



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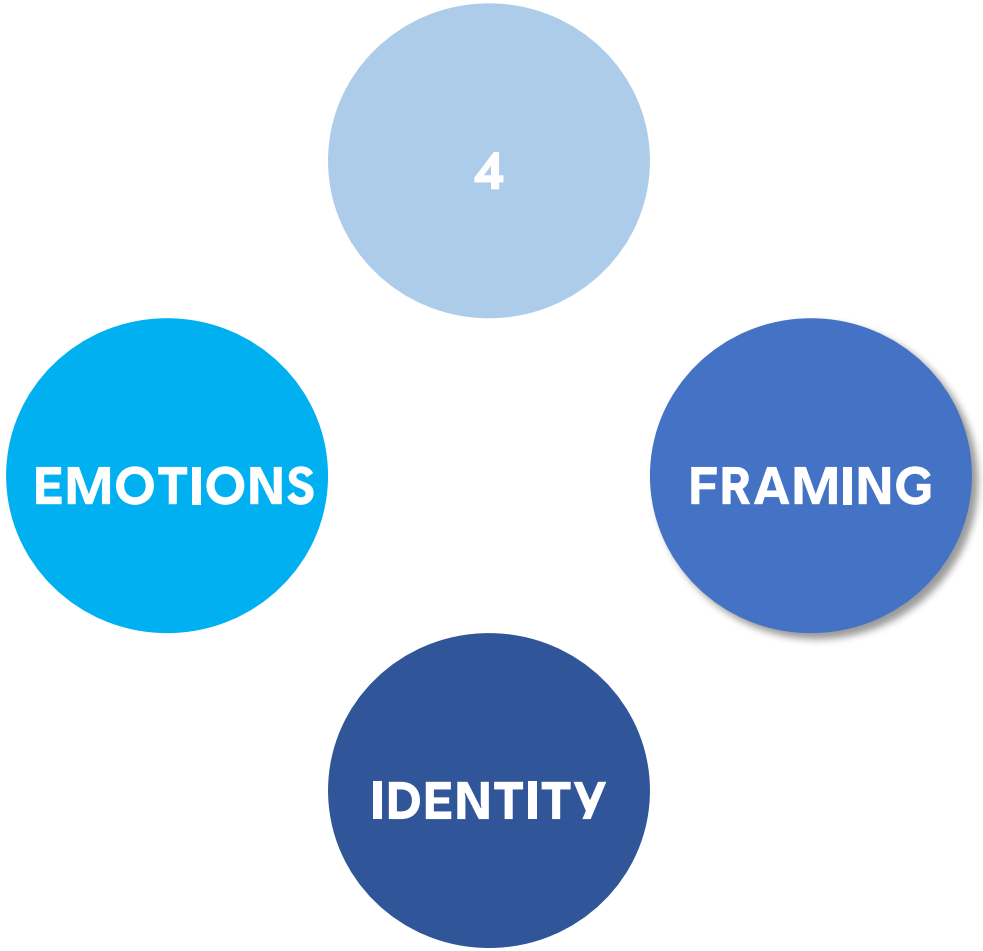


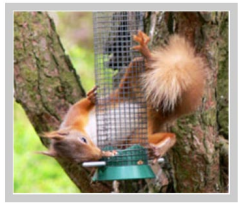
SAVE THE SQUIRRELS!!

Squirrel
Fire
Brigade

Red Squirrels Trust Wales
Ymddiriedolaeth Gwiwerod Coch Cymru

HOME ABOUT NEWS GALLERY EDUCATION MAP SHOP CONTACT US PRIVACY POLICY

Red squirrel conservation



This attractive mammal has a chestnut upper body, with buff to cream underside, noticeable ear tufts and the famous fluffy tail. It is a smaller animal than the introduced grey squirrel.

Red squirrels are naturally found across most of Europe into northern Asia and Siberia. In this part of its range the creature is not threatened. In the UK it is restricted to a few sites, mainly those free from competition by grey squirrels.

The red squirrel was historically widespread on Anglesey and particularly within the broadleaved woodlands bordering the Menai

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The Wildlife Trust for Lancashire Manchester & North Merseyside

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Red squirrels were once found across most of the UK. However, non-native grey squirrels have pushed them out of many areas.

Forestry Commission
231 Corstorphine Road
Edinburgh
EH12 7AT
http://www.forestry.gov.uk

Red Squirrel Conservation

PRACTICE NOTE

ISSUED BY FORESTRY PRACTICE SEPTEMBER 1998

BY HARRY PEPPER & GORDON PATTERSON

INTRODUCTION

Our native red squirrel has disappeared from large parts of its natural range in the UK over the past 50 years. This is mainly as a result of the spread of the introduced grey squirrel which is better able to live in most broadleaved

THE CHALLENGE

Because grey squirrels (greys) are now an established part of our forest wildlife, with a population of 2.5 million, it is not practical to aim to re-establish red squirrels (reds) to their former range. The current distribution of reds is

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RED SQUIRREL SURVIVAL TRUST

MAKE A DONATION

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RED SQUIRRELS ARE HEADING FOR EXTINCTION

scottishsquirrels.org.uk/squirrel-sightings/

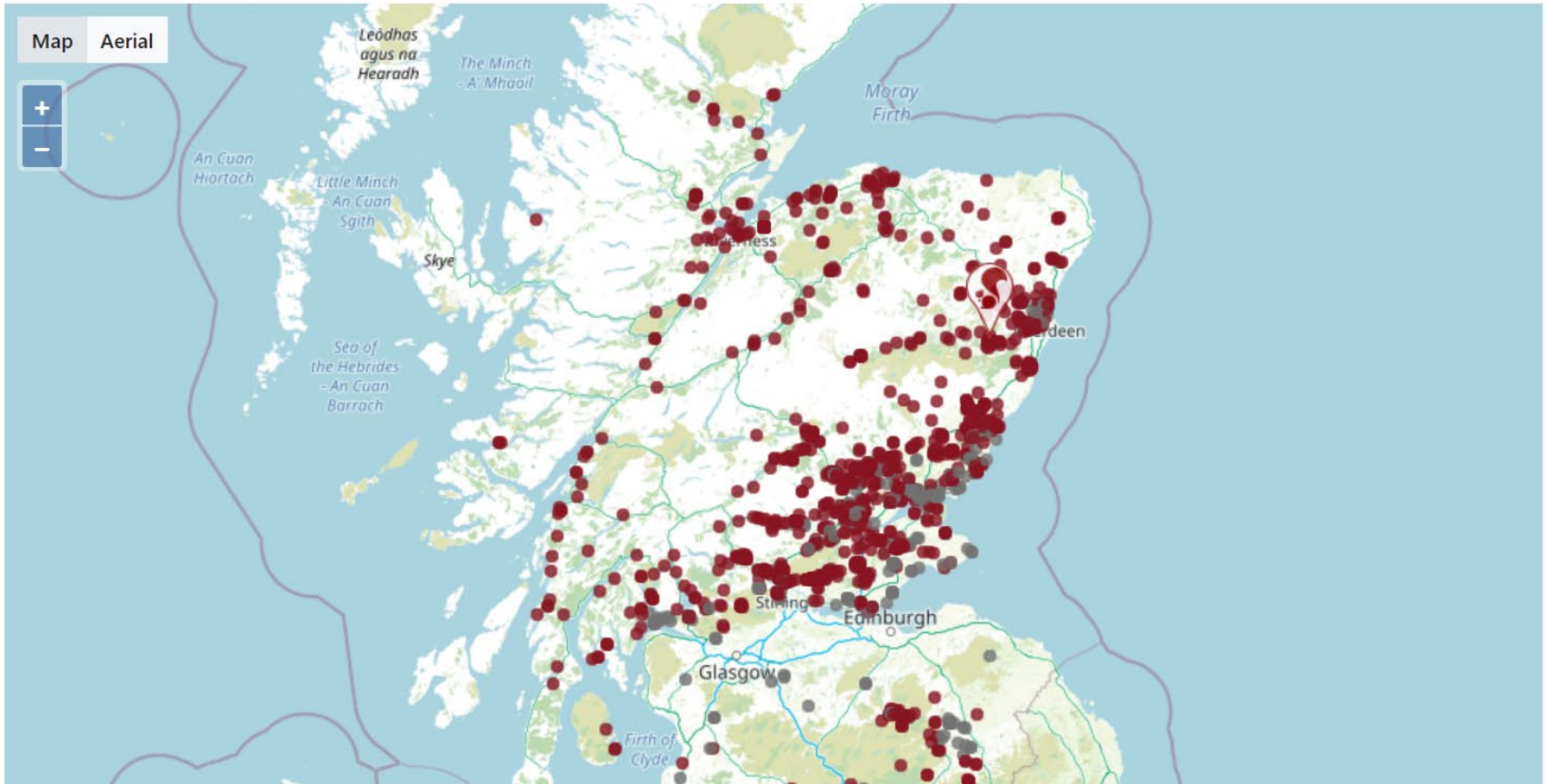
Sightings of Red and Grey Squirrels across Scotland

REPORT A SQUIRREL SIGHTING NOW

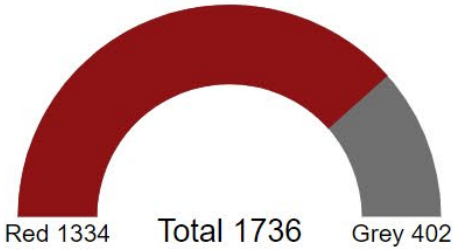
RED SQUIRRELS | GREY SQUIRRELS | ALL SQUIRRELS

Year to display on map:

2022



This Year's Sightings



REPORT A SQUIRREL SIGHTING ▶

The long read

‘Kill them, kill them, kill them’: the volunteer army plotting to wipe out Britain’s grey squirrels

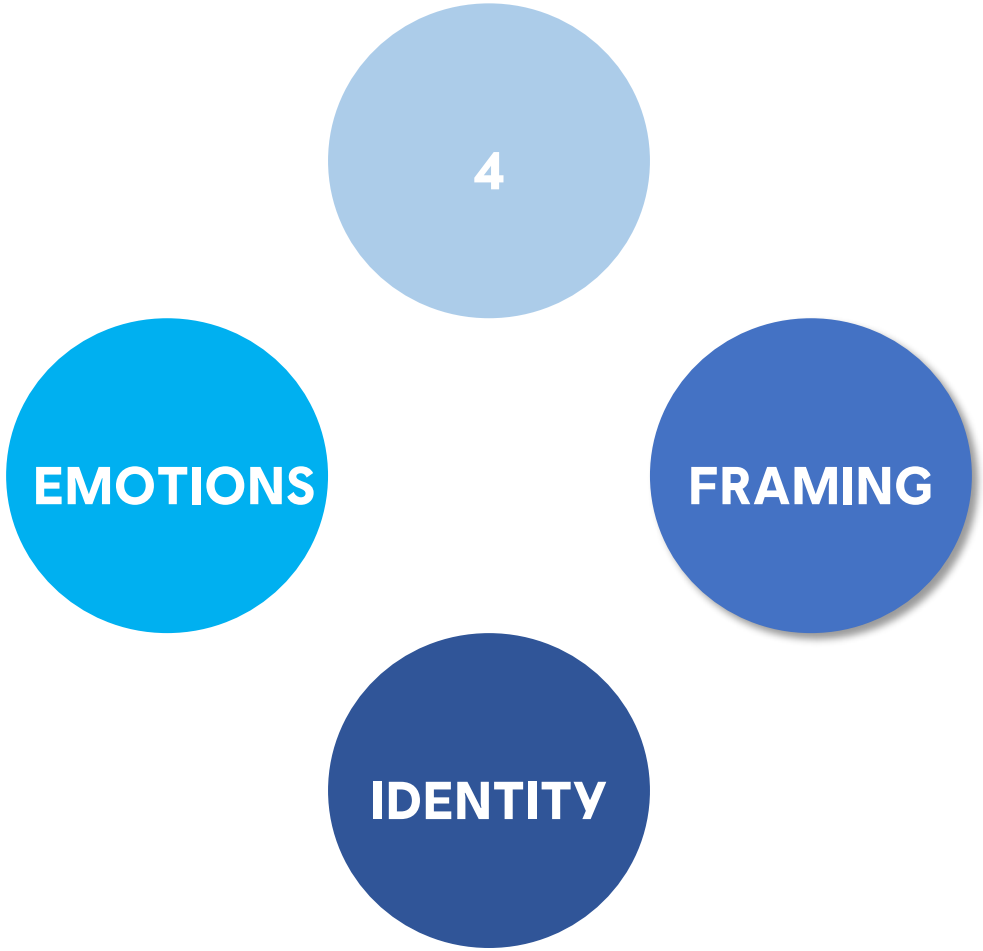
‘It invades gardens, and will take peas from their pods as cleanly as a man. In spring it turns carnivorous and eats eggs and young birds. It damages trees by biting bark and preventing the flow of sap.’

George Jennison, 1927

Consider:

1. Is your gameplay providing entertainment at the expense of your chosen topic and/or other environmental matter, or in participation with your chosen topic?
2. Your framing defines your truth.

CONSIDER:



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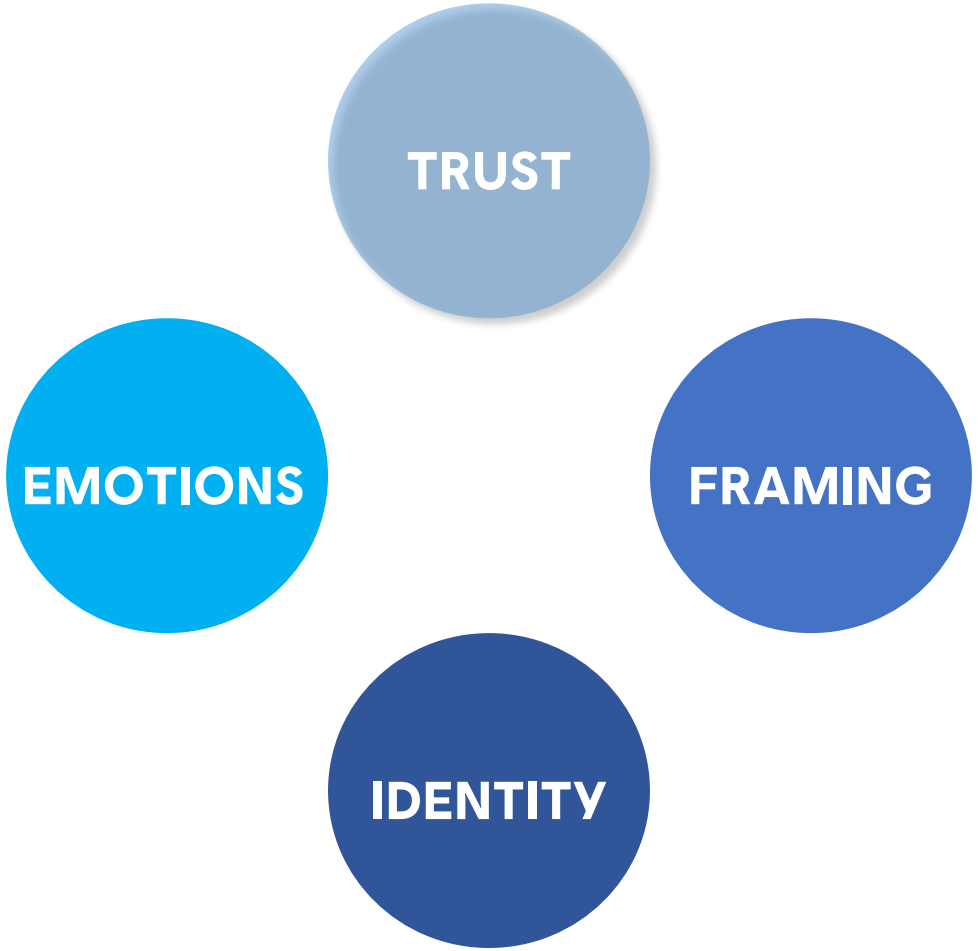
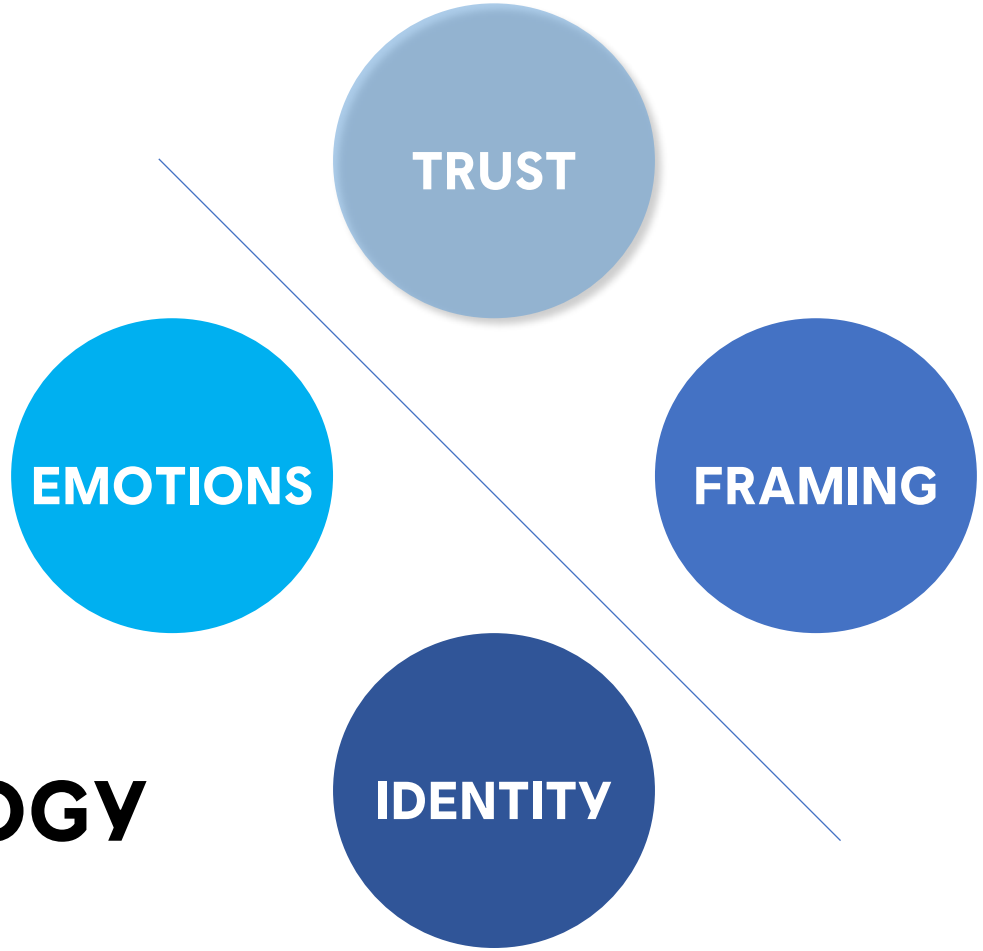


1. TRUTH IS DEPENDANT ON TRUST

ONTOLOGY

WAYS OF BEING

CONSIDER:



ONTOLOGY

ONTOLOGY

WAYS OF BEING

ONTOLOGY

WAYS OF BEING

EPISTEMOLOGY

ONTOLOGY

WAYS OF BEING

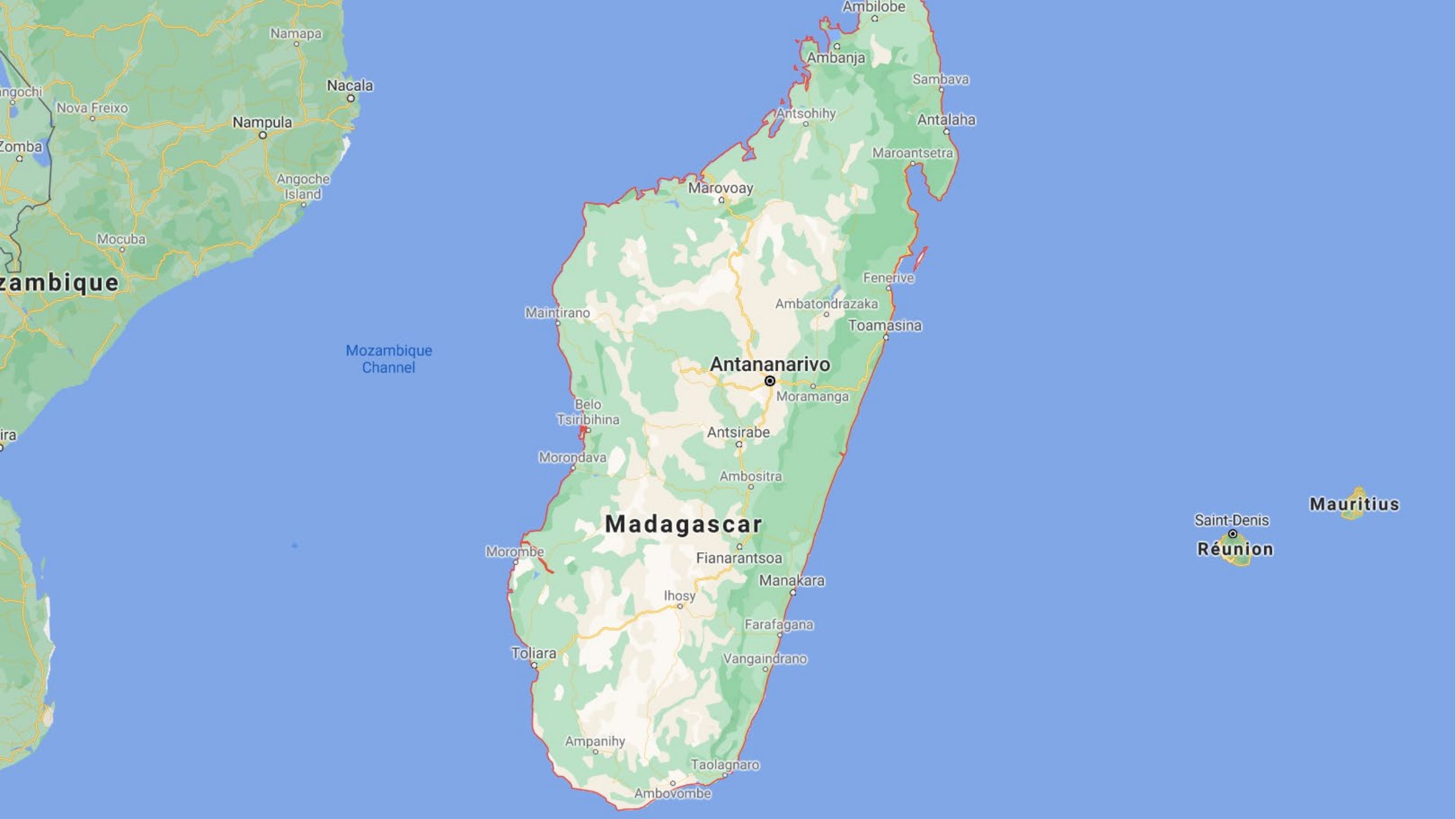
EPISTEMOLOGY

WAYS OF KNOWING

1. TRUTH IS DEPENDANT ON TRUST

Science is a system designed to translate direct observation of the natural world

into a story that earns the collective social trust.


Ambilobe
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Moramanga
Belo
Tsiribihina
Antsirabe
Morondava
Ambositra
Madagascar
Morombe
Fianarantsoa
Manakara
Ihosy
Farafagana
Toliara
Vangaindrano
Ampanihy
Taolagnaro
Ambovombe
Mozambique
Channel
Namapa
Nacala
Nova Freixo
Nampula
Zomba
Angoche
Island
Mocuba
zambique
Saint-Denis
Réunion
Mauritius

Namapa
Nacala
Nova Freixo
Nampula
Zomba
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Saint-Denis
Réunion
Mauritius

FACT: SANTA IS REAL

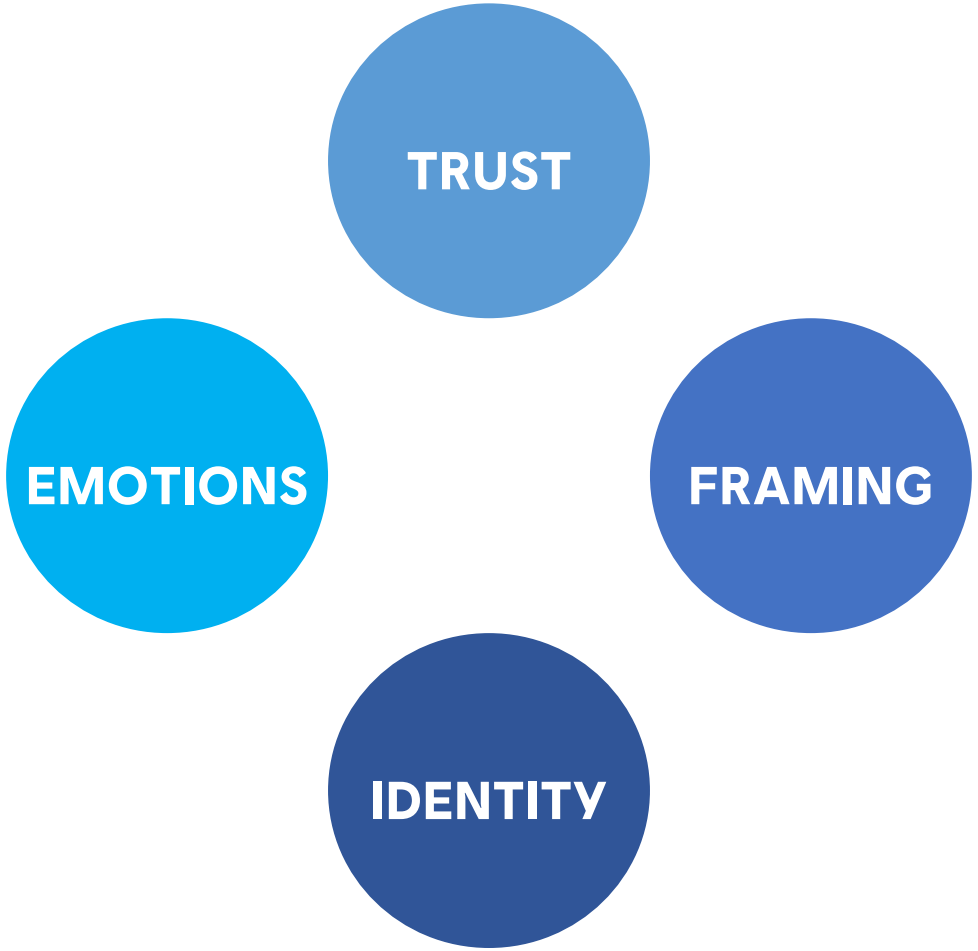
1. TRUTH IS DEPENDANT ON TRUST

1. TRUTH IS DEPENDANT ON TRUST

2. YOUR PLAYERS TRUST YOU

Your games can and will be transformational forces for good.

CONSIDERATIONS



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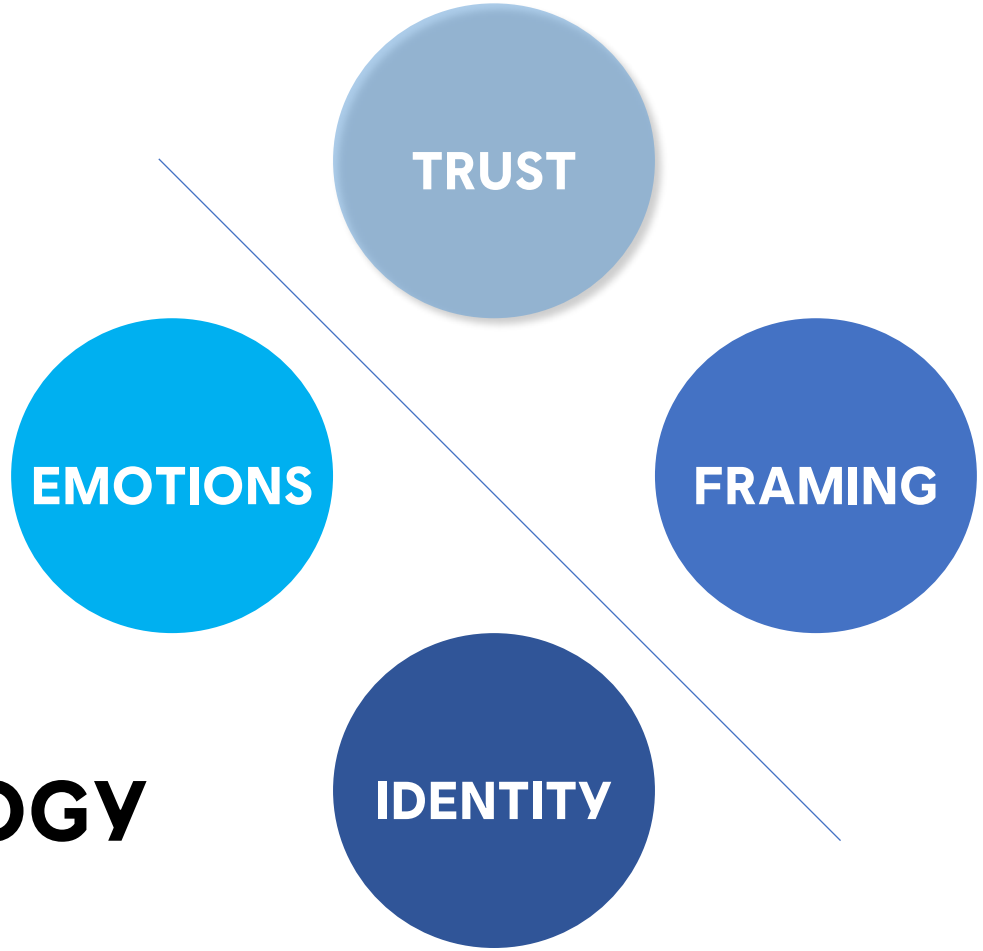

ONTOLOGY

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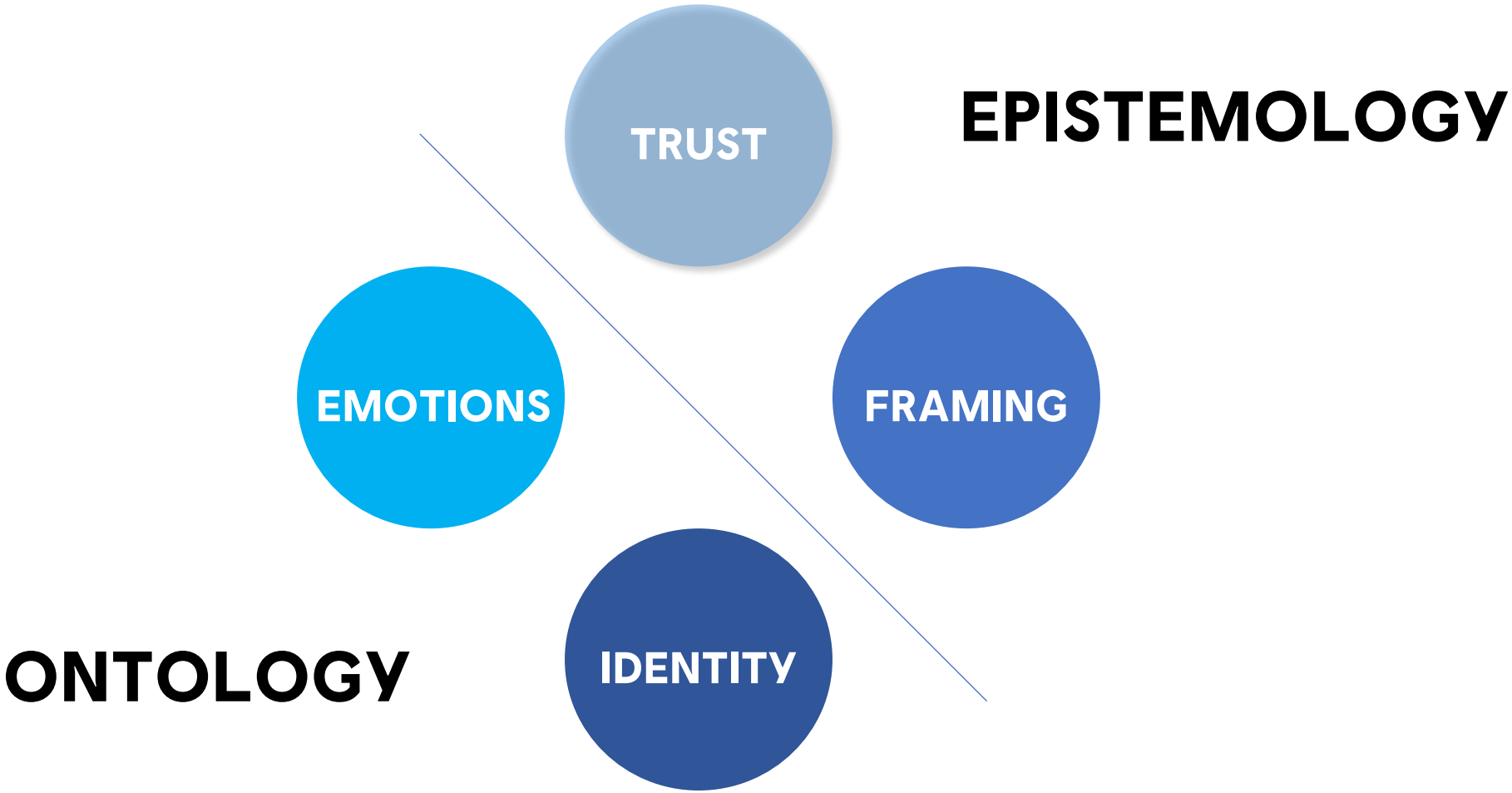


THANK YOU!

NEXT PART

IN PRACTICE

PUTTING IT ALL TOGETHER

Agree on:

- Your specific topic
- Your theory of change
- Your impact statement (How will players be different)
- How your game will bring about that impact.

YOUR PITCH WORKSHEET

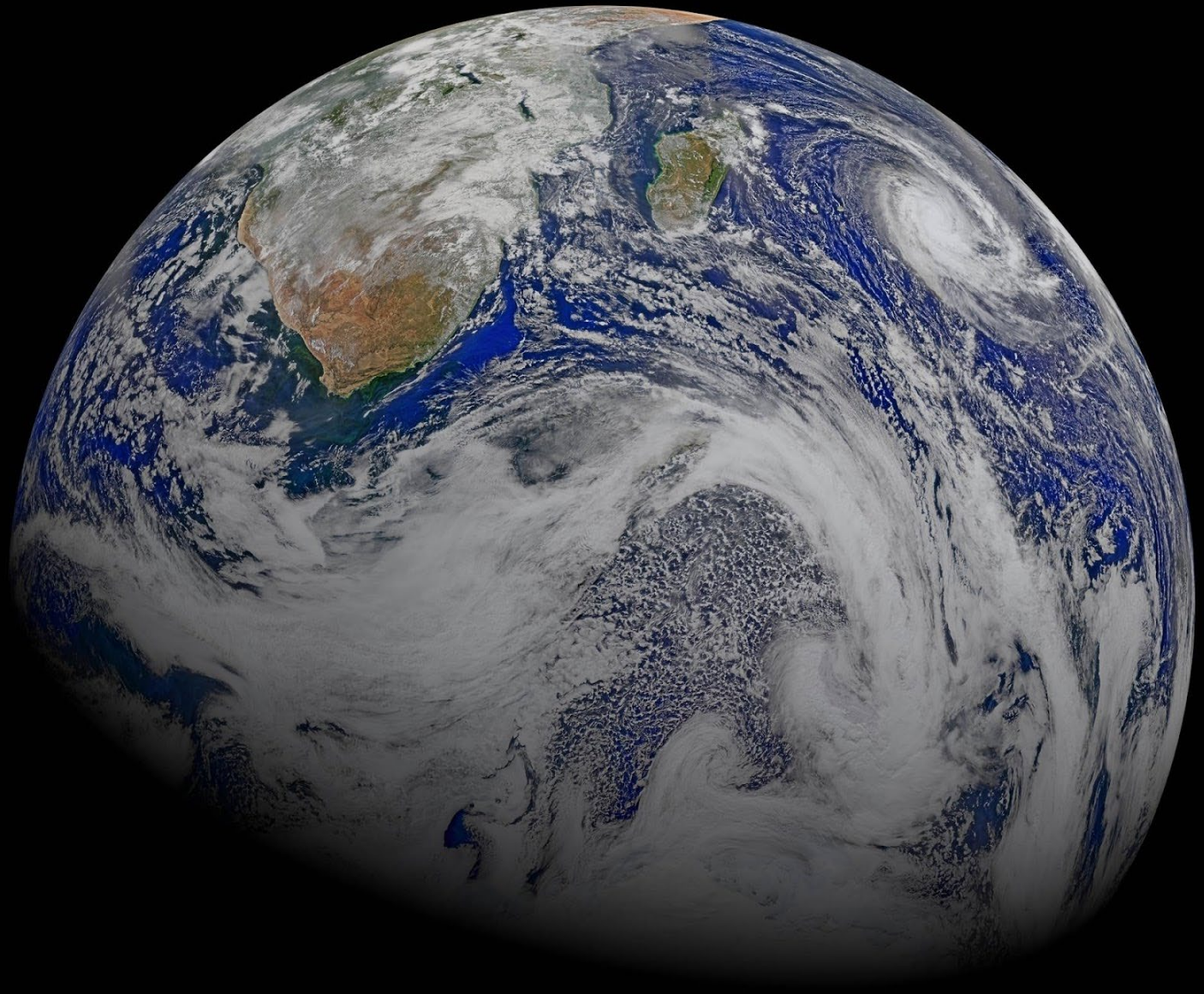
Topic
Genre
Audience
Title
Impact Statement
Related Systems /Features
Player Impact Stories
Summary

Use Your Game Developer Superpowers to Fight the Climate Crisis

INTERLUDE

IN CONCLUSION

YOU DID IT!



MORE THOUGHTS

THANK YOU!

JOIN US!

igda® Climate SIG

Atlantic Council

Adrienne Arsht-Rockefeller Foundation Resilience Center