ELICITING OPPONENT BEHAVIOUR IN A CROWDSOURCED GAME

Rudy Boonekamp, Vladimir Hazeleger, Lucia Tealdi, Bob van der Vecht, Helma van den Berg

TNO innovation for life

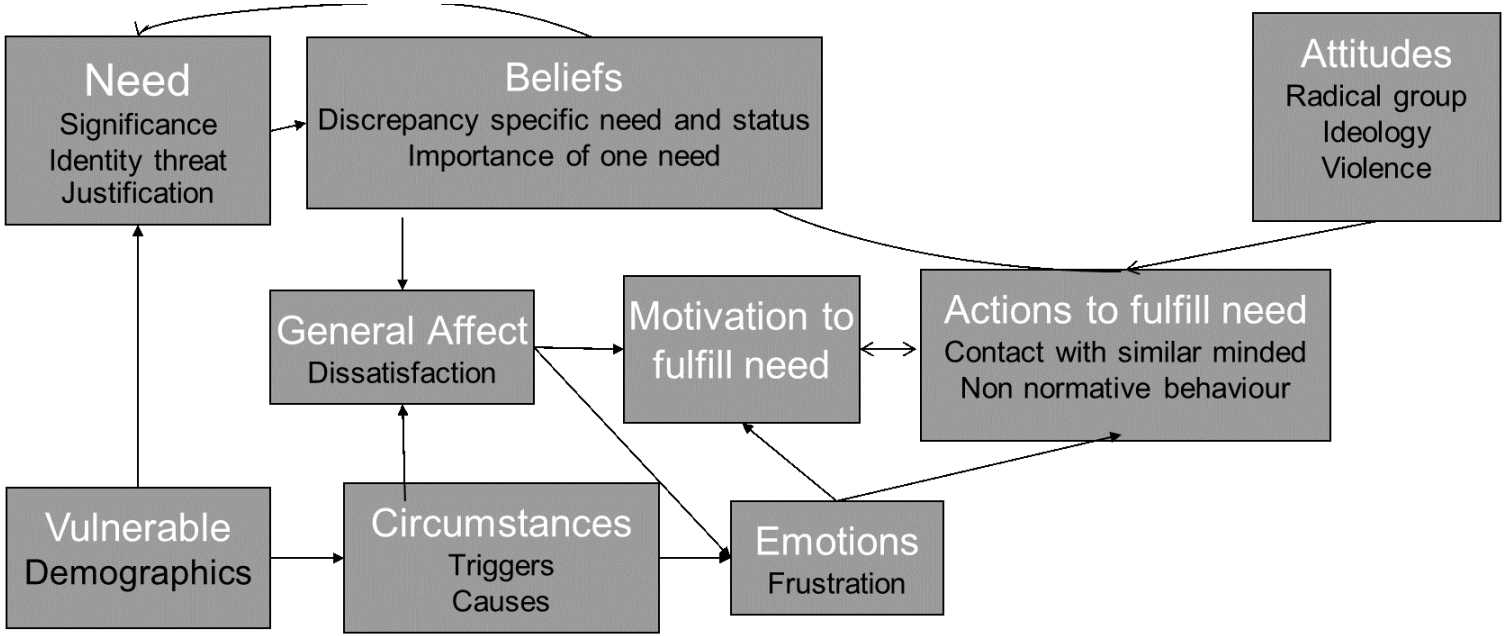
THE FUTURE OF CONFLICTS

- New modus of operandi
- New opponents

MODELLING OPPONENTS

- TNO Research program: Opponent Modelling
- What are the triggers for their:
  - Radicalisation
  - Joining insurgent groups
  - Possible violent behaviour
- Be it in home country of in conflict area abroad

GENERAL NEEDS AND AFFECT MODEL (GNA)



CHALLENGES

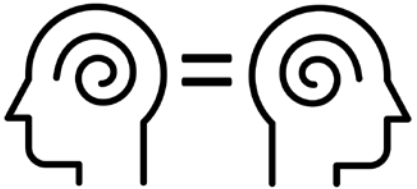
- Lack of quantitative, validated data
- The population we want to study isn’t willing to cooperate..
- Fast-changing behaviour patterns

Can we solve this with?

- Classical operations research
- Classical experimentation

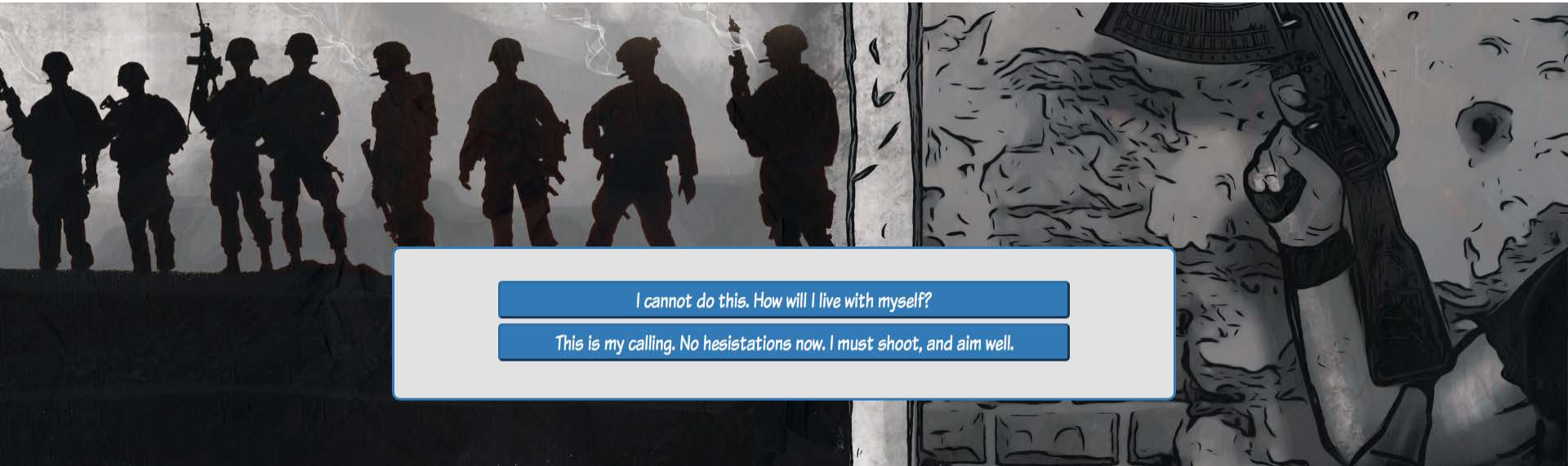
SOLUTION 1: STUDY THE HUMAN PSYCHE

Premise: Psychological mechanisms at play in opponent behaviour are the same as in any human behaviour



SOLUTION 2: GAME IMMERSION

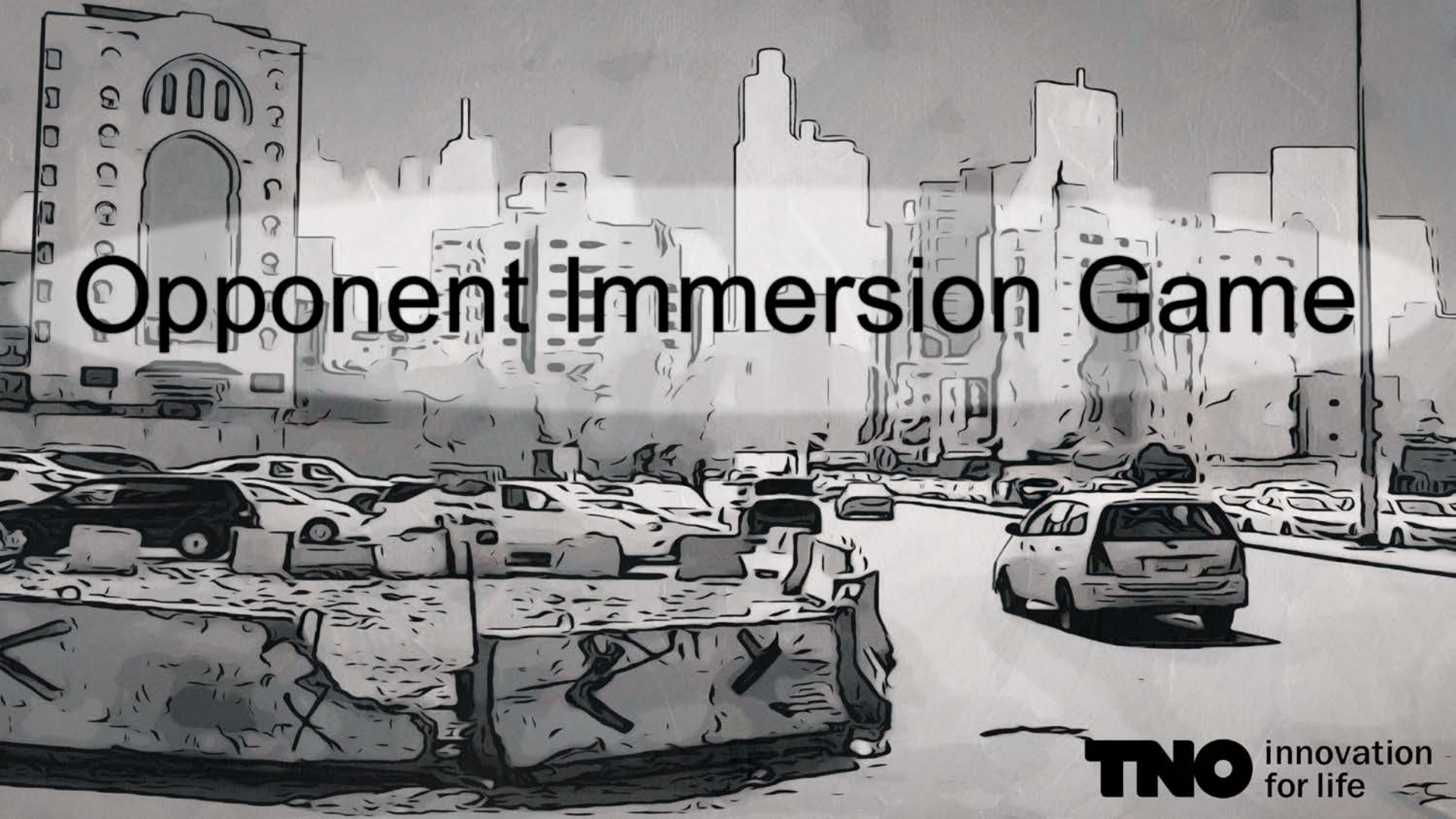
- How to test these participants under adverse circumstances?
- Game immersion



SOLUTION 3: CROWDSOURCED RESEARCH

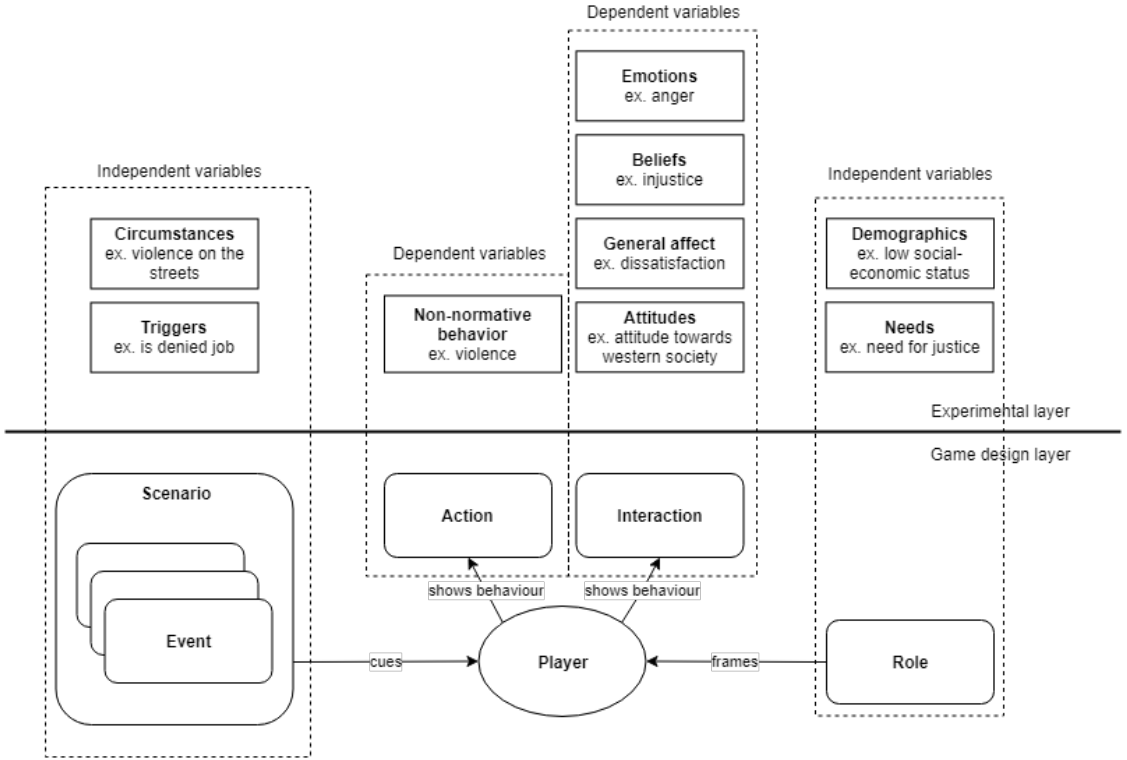
- How do we gather large volumes of data, quickly?
- Crowdsourced research

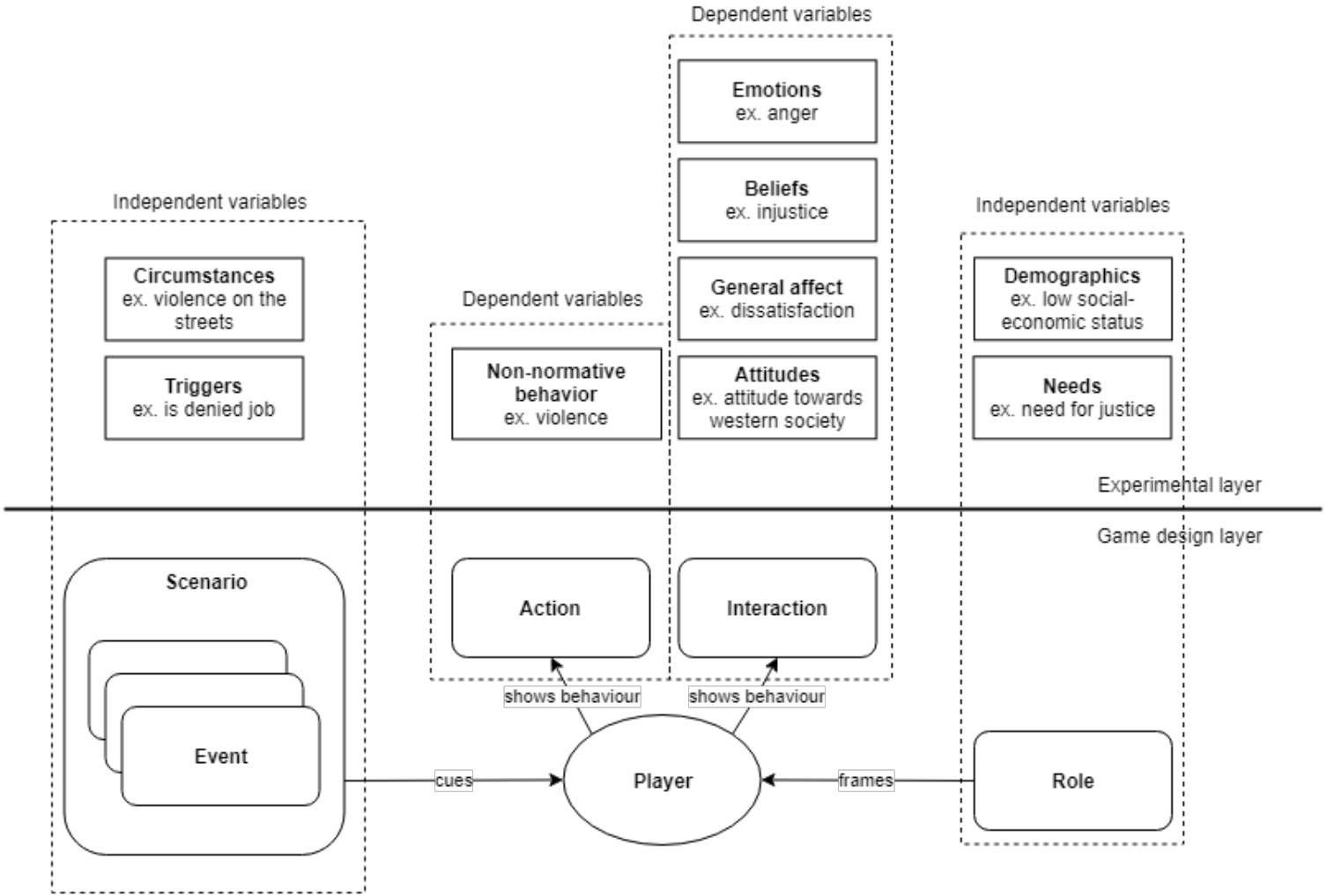
Opponent Immersion Game

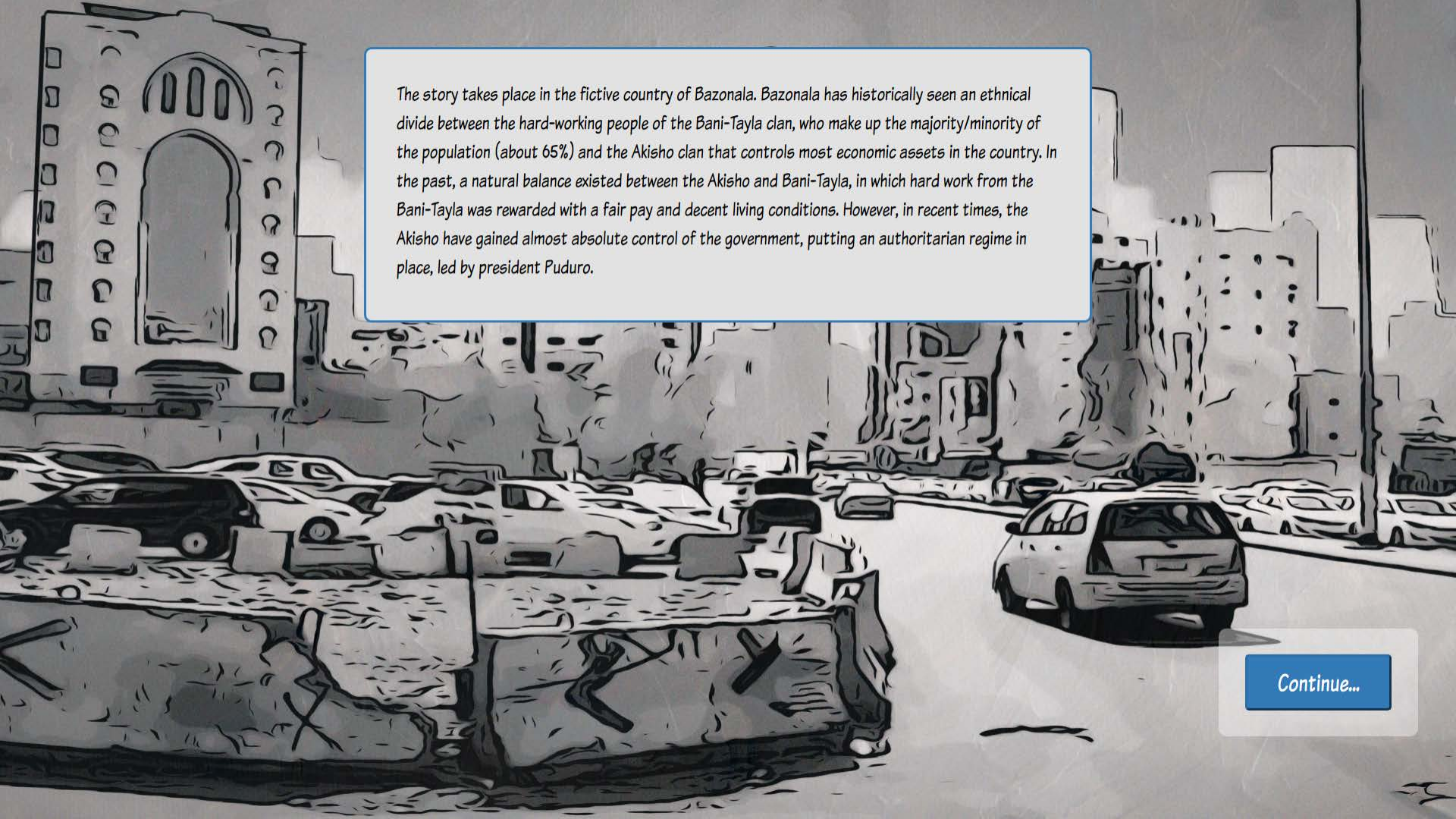


TNO innovation for life

THE OPPONENT IMMERSION GAME: CONCEPT

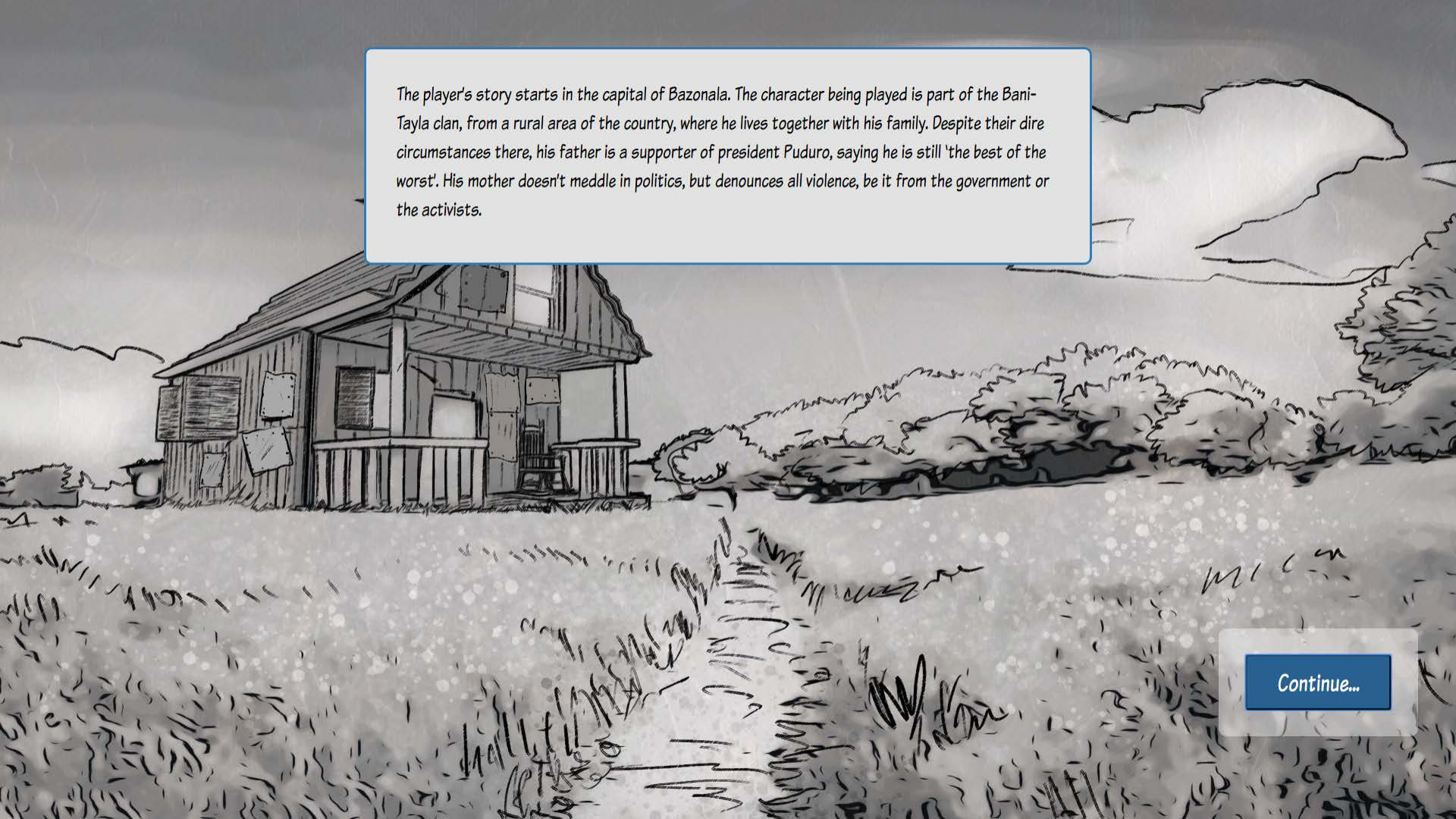



Dependent variables
Emotions
ex. anger
Beliefs
ex. injustice
General affect
ex. dissatisfaction
Attitudes
ex. attitude towards western society
Independent variables
Circumstances
ex. violence on the streets
Triggers
ex. is denied job
Dependent variables
Non-normative behavior
ex. violence
Independent variables
Demographics
ex. low social-economic status
Needs
ex. need for justice
Experimental layer
Game design layer
Scenario
Event
Action
Interaction
shows behaviour
shows behaviour
cues
Player
frames
Role



The story takes place in the fictive country of Bazonala. Bazonala has historically seen an ethnical divide between the hard-working people of the Bani-Tayla clan, who make up the majority/minority of the population (about 65%) and the Akisho clan that controls most economic assets in the country. In the past, a natural balance existed between the Akisho and Bani-Tayla, in which hard work from the Bani-Tayla was rewarded with a fair pay and decent living conditions. However, in recent times, the Akisho have gained almost absolute control of the government, putting an authoritarian regime in place, led by president Puduro.

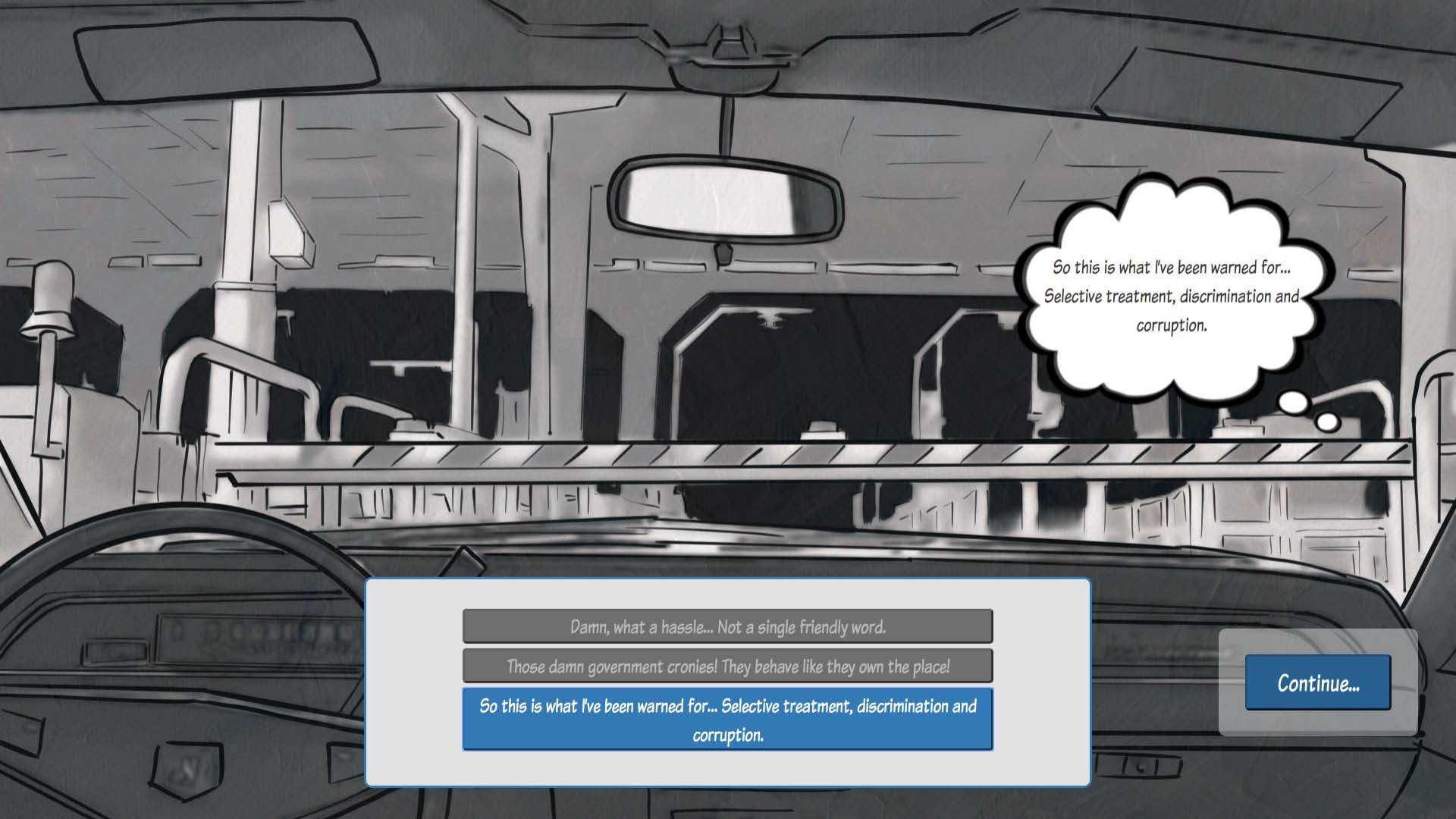
Continue...


The player's story starts in the capital of Bazonala. The character being played is part of the Bani-Tayla clan, from a rural area of the country, where he lives together with his family. Despite their dire circumstances there, his father is a supporter of president Puduro, saying he is still 'the best of the worst'. His mother doesn't meddle in politics, but denounces all violence, be it from the government or the activists.
Continue...

DILEMMA 1: ROLEPLAY VS NATURAL BEHAVIOUR

- Guideline: Choose the framing of the player character
  - No framing
  - Fictional character
  - Avatar as representation of self
  - No fictional character, frame only (past) events

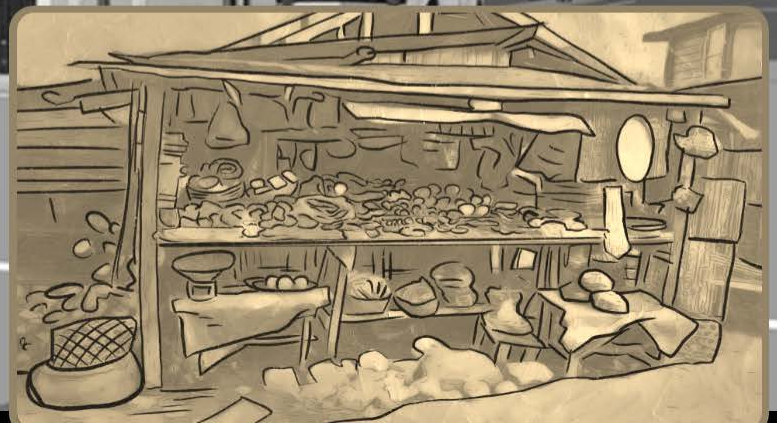
Where are you from, sir/madam? What's your business here?
I'm from Narla, a rural district. We can't make ends meet by farming, so I am moving here to find a job. Is that a problem?
Ah, another one coming here to steal jobs. Just a minute.
I'm from Narla, a rural district. We can't make ends meet by farming, so I am moving here to find a job. Is that a problem?
Continue...


So this is what I've been warned for... Selective treatment, discrimination and corruption.
Damn, what a hassle... Not a single friendly word.
Those damn government cronies! They behave like they own the place!
So this is what I've been warned for... Selective treatment, discrimination and corruption.
Continue...

Sir/madam, your vehicle has been selected for a random search. Please get out of your vehicle.
I'll just get out. I can't get into a squabble with the police now.
I'll just get out. I can't get into a squabble with the police now.
Excuse me, can you tell me why you're performing a search on my vehicle?
This isn't some random check... You just want to shake me down for money, don't you?
Continue...

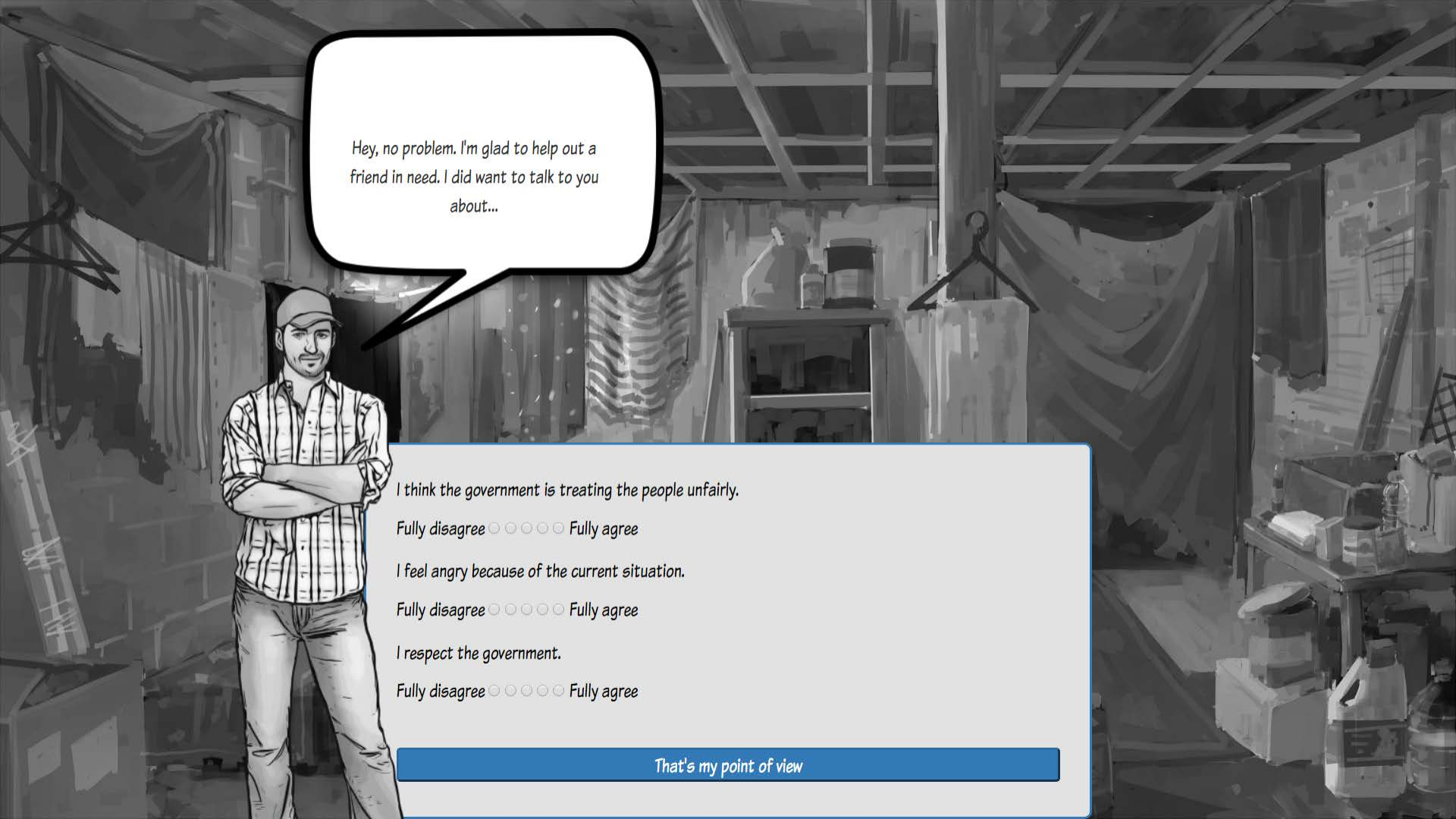
Grocery shopping

Navigation - Scene 2 - Step 1



DILEMMA 2:
PLAYER ENGAGEMENT VS EXPERIMENTAL CONTROL

- Guideline: Provide a sense of agency


Hey, no problem. I'm glad to help out a friend in need. I did want to talk to you about...
I think the government is treating the people unfairly.
Fully disagree
Fully agree
I feel angry because of the current situation.
Fully disagree
Fully agree
I respect the government.
Fully disagree
Fully agree
That's my point of view

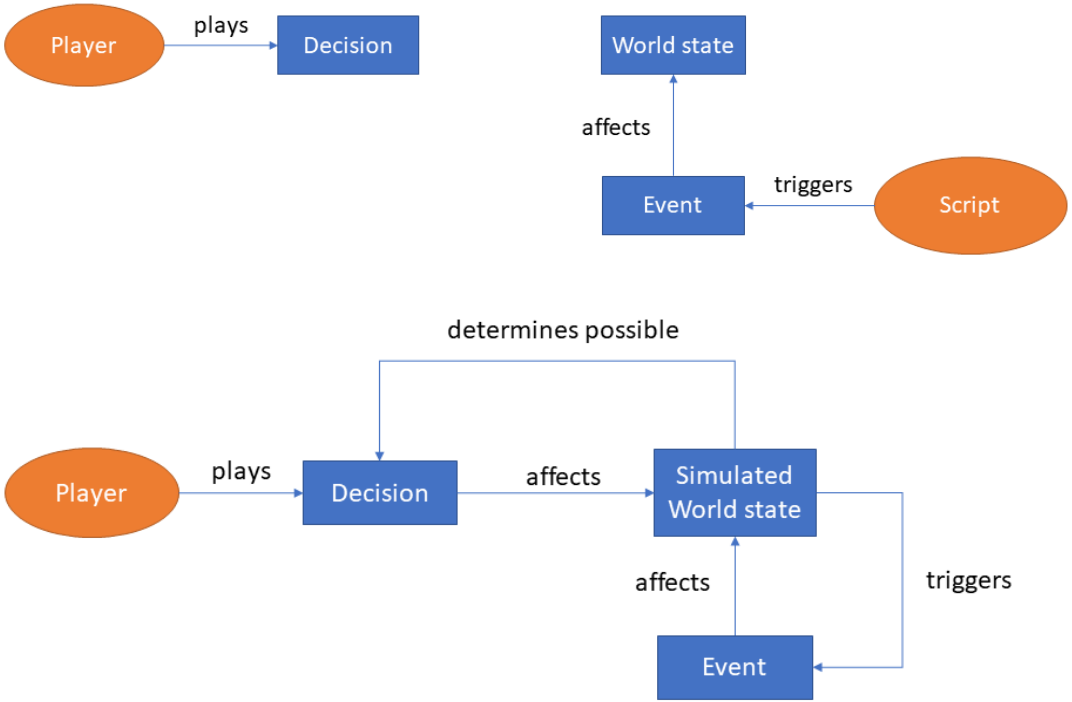
State share

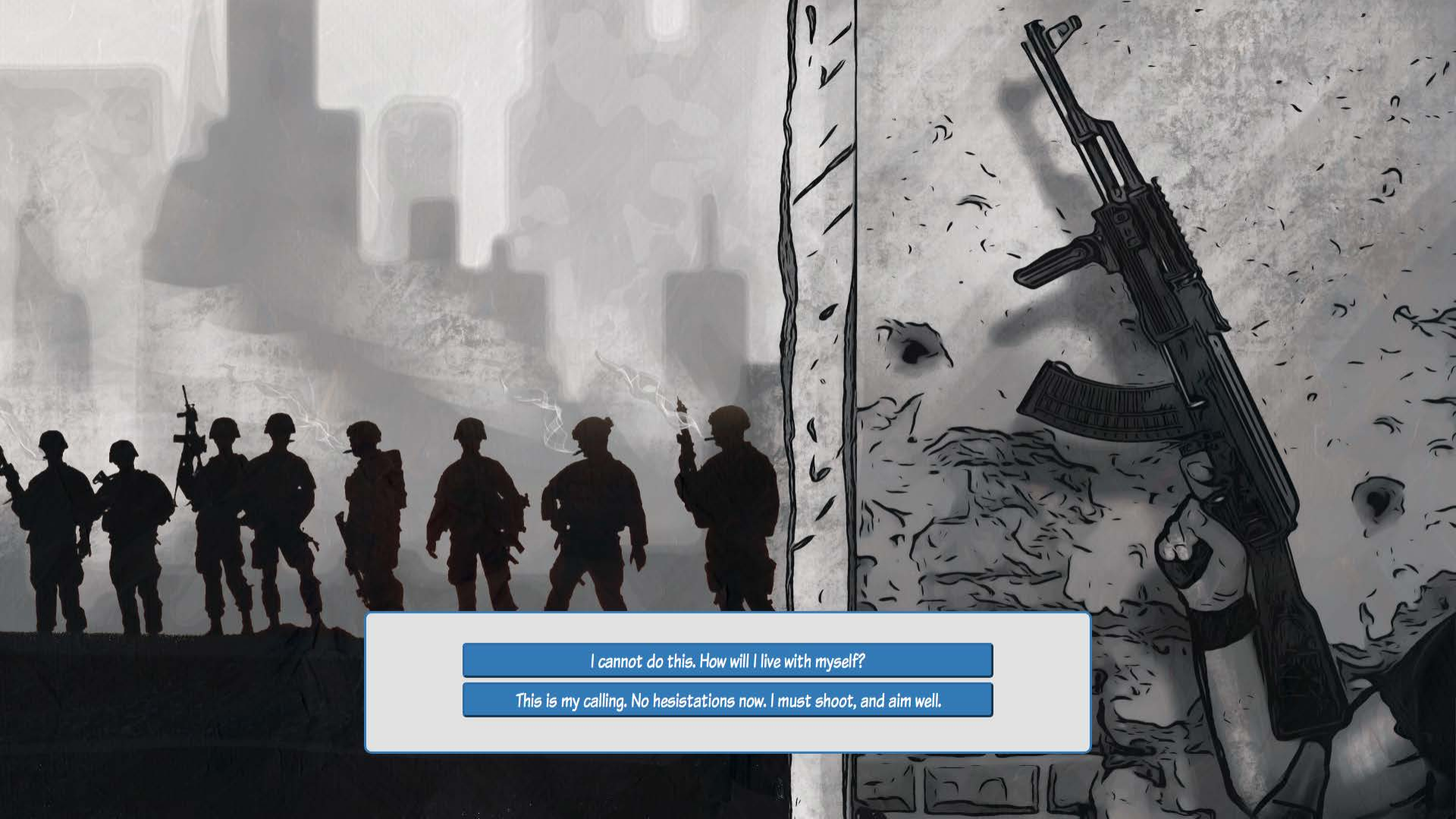
Jane	Sometimes violence is the only way... The end justifies the means.	
Charles	The Akisho clan have been mistreating us for ages. Nobody can approve that!	
John	We should seek to reconcile our differences, not start a war.	
Mary	Anger never leads us to the right path	
Police officer	We should be hard on anyone causing trouble	
Barbara	We have been done injustice!	
James	A man should provide for his family, and in these times, using whatever means.	
Roger	We should stop being sheep and act like wolves	

Share

POLICE
POLICE
POLICE
POLICE
I can't intervene.. it's too dangerous.
I can't let them do that! I need to stop them.

GUIDELINE: CHOOSE THE FEEDBACK MECHANISM OF YOUR GAME




I cannot do this. How will I live with myself?
This is my calling. No hesistations now. I must shoot, and aim well.

HOW DOES THIS HELP ANALYSTS?

Opponent Immersion Game:

- Thousands of runs possible in a short timeframe with crowd-sourced participants
- Result: A large data pool of the interrelationship of GNA variables
- Model the path to violence of potential opponents
- Predict opponent behaviour, gain insight in interventions

In general:

- The concept of game-based, crowdsourced research on a general population

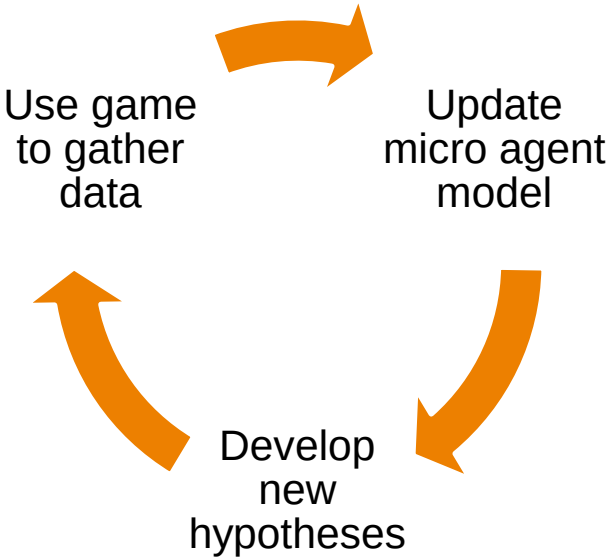
NEXT STEP: DATA COLLECTION

- This year: Pilot experiment online
- Next year: Multiple large scale experiments online

COMPUTATIONAL FRAMEWORK

- Micro agent model
- Meso system dynamic model

- Fast experimental iteration



FUTURE WORK

- Phase 2: Data-driven research paradigm

Research questions to verify:

- Does game-based behavioural research yield more valid results than classical survey research?
- Does game-based crowdsourced research indeed allow quick iterations of behaviour modelling?

› THANK YOU FOR YOUR ATTENTION
For more inspiration:
TIME.TNO.NL
TNO innovation for life