Mode and Tick Breakdown for Interactions with the Simulation



Facet 3: Interaction with the simulation

Context :

With a multidisciplinary team, you wan to design a serious game allowing exploration and experimentation. You have already selected relevant parameters of the taught topic, and designed a simulation model that shows how they vary and relate to each other.

Problem:

How to design a toy or a microworld that is a proper interface to the simulation, in order to allow serious players to explore and experiment, while learning and having fun?

Forces:

Usually in serious games multidisciplinary design situations, there is, on the one hand, the domain experts able to describe the simulation. And, on the other hand, there is the game experts trying to design the mechanics of the game. It is often difficult to help both experts to work on the same objects.

In a serious game, when serous players are stuck in a loop of instructional content followed by training and remediation, they usually get bored easily. Furthermore, the serious game has very low replayability value, and probably low ability for knowledge building.

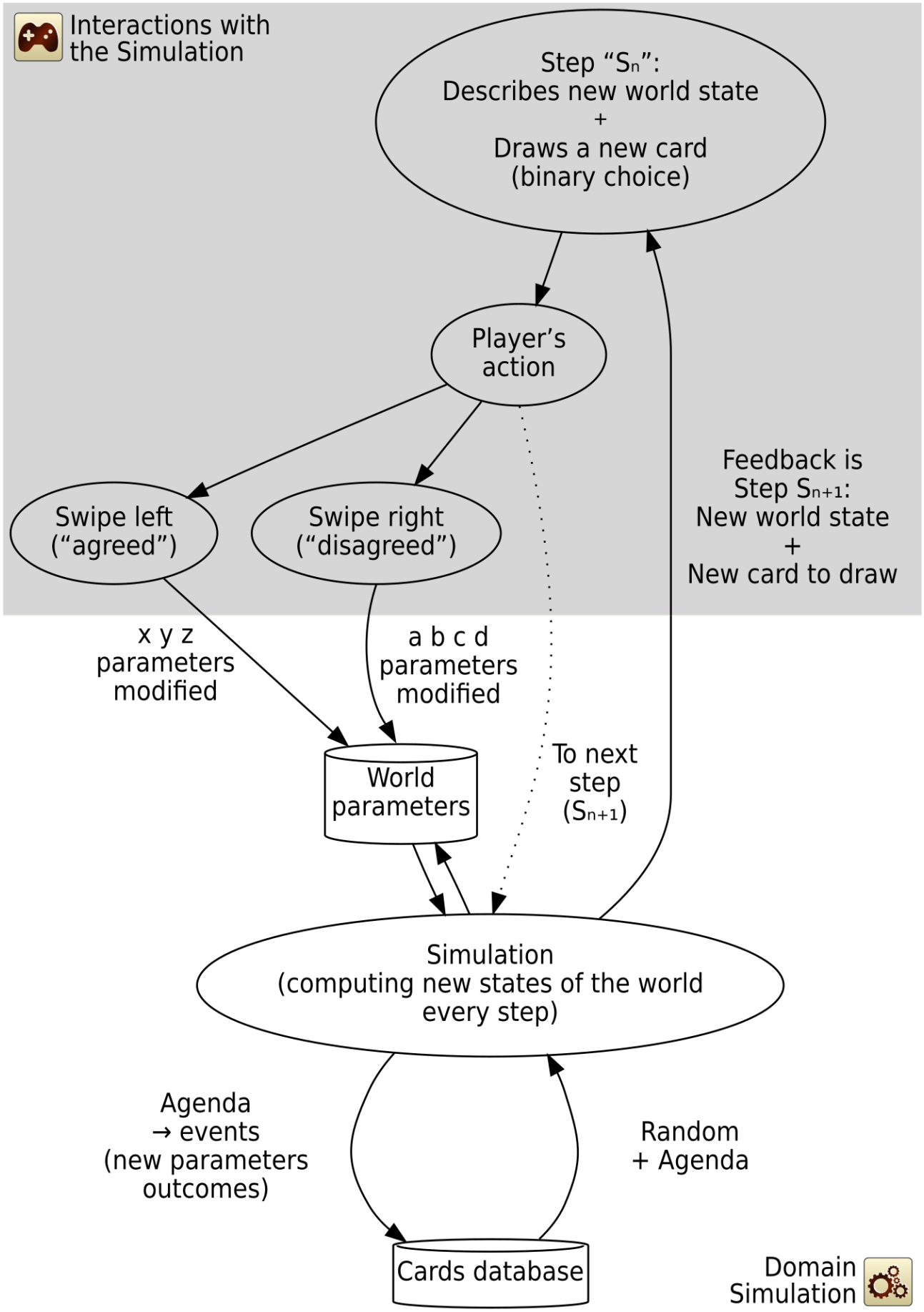
Solution:

Inspired by the *Reigns* video game, you can easily create an interface with the parameters of the simulation that is both simple to design and fun for serious players.

Reigns is a management game, where you assume the role of a king. The game has four gauges driven by a simulation (the church, the people, the military, and wealth).

To modify the game parameters (metric bars), *Reigns* authors choose an interface inspired by online dating app such as *Tinder*: in each round, a new description of the world is given on a card. It comes with a binary question. The player can only agree with a swipe left, or disagree with a swipe right.

The game loop is summed up in the figure below.

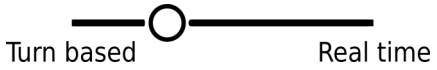


Rounds of the game are called “steps”. At the top, there is the means given to the player to act and thus modify the simulation parameters: simulated world overview, possible actions, feedback. The

bottom shows how the simulation computes the world as a result of the player's action. a, b, c, d, x, y, z are examples of parameters modified by the player's action. At each *step*, the simulation computes the world state: it computes all the parameters, but also the possible future events, depending on the game agenda. At each step, such events can be related to the parameters or either random. The next step is some feedback on the results of the action, a description of the new event and a new question is asked.

You may use this kind of interaction in your serious game. Meaning proposing to the serious player, at each step, a new description/question along with a set of binary actions (agree/disagree). But you can also adjust both main attributes:

- Tick Breakdown: duration of the *step*. Playing *Reigns*, at each step the player can take time to decide whether he/she agree or disagree to the question. Instead, you can provide a different *step* breakdown: instead of a turn-based *step*, you can use a time-based *step*. And then, you can decide the duration of the *step* (tick of the serious game). At one end, there is a turn-based *step* such as *Reigns*. At the other end, the *steps* are run as fast as possible (real time tick) such as *Ancestors: The Humankind Odyssey*. You may place the cursor wherever it suits you.



- Mode: types of actions allowed to serious players. Playing *Reigns*, the player can only agree or disagree with the question. Instead, you can provide many more kinds of actions. For instance, you can allow more kinds of answers. Of course, you can also propose more types of actions than answering questions. During design, it makes sense to gradually increase the number of available types of actions (modes): at one end, you have *Reigns* with the smallest possible modes of action (binary). At the other end, you have a huge variety of possible actions (multimodality) such in *Crusader Kings*. You may place the cursor wherever it suits you.



Examples

There are many examples. Of course every spinoff of *Reigns* (turn-based, binary actions). But there are also many other games such as *Orwell* (turn-based, small set of actions), the *Sim City* series (real time, multimodal actions), the *Crusader Kings* series (real time, multimodal actions), the *Civilization* (real time, multimodal actions), *Ancestors: The Humankind Odyssey* (real time, multimodal actions), etc.

Related Design Patterns

An early simulator

Advanced Indicators

Microworld Interactions

Quick Feedbacks

In situ Interactions