Design Document – Motivation-based Adaptation Asset

TUGraz – T3.4D – Apache 2.0 – Client side

About this asset

This asset will be implemented as client-side component. It is used for deciding if an intervention influencing the player's motivational state is needed; it supplies the motivational interventions and instance of these interventions. The asset architecture will prevent multiple asset creation; only one asset per game is needed.

Asset mechanics

Rule based mechanics trigger intervention based on the calculated motivation aspect values coming from the Motivation Assessment Asset. At first glance, it seems clear, that only critical low motivation aspect values trigger an intervention. After detailed consideration we realize, that also the detection of high motivation aspect values can be meaningful in combination with low values for another motivation aspect value. For example, there might be two types of intervention for low values of attention. The first type is appropriate in case the player is very confident; the second type targets unconfident players. Based on these considerations, we implemented a rule-based mechanic working with propositional logic in combination with the motivation aspect values.

Asset interfaces

- The asset will deliver a list containing all motivational interventions suitable for a player. Identification strings represent these interventions. A C# representation in the asset interface could be:

  ```
  List<String> getInterventions()
  ```

- An instance of an intervention can be accessed for a specific player. A C# representation in the asset interface could be:

  ```
  String getInstance(String intervention)
  ```

Asset dependencies/requirements

- The Motivation Assessment Asset is used for retrieving the current motivational state of the player and the motivation model, which stores the motivation interventions and instances.
- The Game Storage is used as local storage.

Milestones

Milestone 1

- t1.1: Creating the first version of the design document, defining the API and creating a dummy asset with the API implemented

Milestone 2

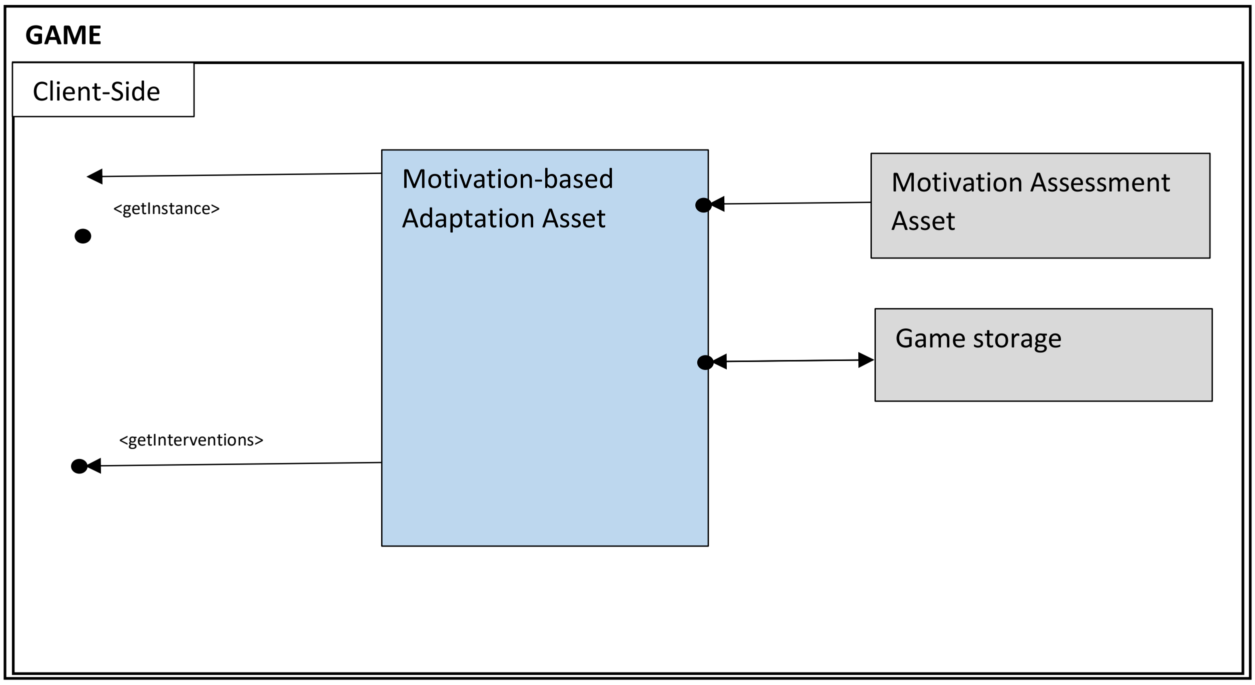
- t2.1: Create Software Asset in line with Asset-Manager infrastructure.
- t2.2: Elaborate Settings-structure within the Asset-Manager infrastructure.
- t2.3: Elaborate example data sets (XML structure).
- t2.4: Integrate tracking functionality.

- t2.5: Integrate Game Storage functionality into the asset-functionality.

Milestone

- t3.1: testing the asset with a game
- t3.2: instructions and scripts for building and deploying

Graphical representation


GAME
Client-Side
Motivation-based Adaptation Asset
Motivation Assessment Asset
Game storage
<getInstance>
<getInterventions>

←	... Flow of information
●	... Communication start
<*>	... Interface's exposed method
🟦	... Asset component

Set up the Asset

This Asset requires the Motivation Assessment Asset as an underlying tool for requesting the current motivational state of the player. Furthermore, it just needs to be created:

```
    MotivationBasedAdaptationAsset mbaa = MotivationBasedAdaptationAsset.Instance;
```

Use the Asset

It is now possible to request suitable interventions for the player via the method:

```
    List<String> interventionTypeIDs = mbaa.getInterventions();
```

Furthermore, an instance of an intervention can be requested:

```
        String interventionInstance = mbaa.getInstance(interventionTypeIDs[0]);
```

Deployment

For the source code the following GitHub-link can be used https://github.com/RAGE-TUGraz/MotivationBasedAssets - it contains the Visual Studio solution of the motivation based asset. Furthermore, the broken links to external asset DLLs need to be fixed for each project and the Bridge code need to be adopted to the new environment, e.g. changing the IDataStorage path.

For integration into Unity, the resulting DLLs need to put into a folder in the Unity working-directory.

Unit test

For executing unit tests, the source code need to be open in visual studio and all links need to be fixed. In the test-explorer all tests can be executed.