Fruit Salad – 29/06/04

1 Terms of Reference

The following report is for the attention of the Fruit Salad project team. It serves as the guidelines in analysing tasks and requirements for successful completion of the project as a whole and until the next meeting in particular.

Content

2 Task Analysis

Fruit Salad Project has been divided into the following task groups (for detailed description, please see Appendix 1):

- Programming
- Rules Development
- Design
- Game Board
- Documentation

To enable parallel task execution, in each task group subtasks had been identified that can now be executed and so to create presentable results on the next meeting (Friday, July 2nd 2004). Moreover, these subtasks had to have immediate urgency, due to their resolve being essential to the successful progress of the Fruit Salad Project.

2.1 Programming

Programming Team Leader: Wendy Ann Mansilla

Immediate subtasks:

1. Phidget motors – Executed by Ms Mansilla

    Step 1: This test includes evaluation of the code requirements for controlling each

motor separately. Moreover, the precision with which the motors execute the code becomes evident.

Step 2: Creating code for random motor movement within its physical boundaries, while taking into account the pre-defined movement angles.

2. Basket detection – Executed by Mr Nassourou

Step 1: Independent recognition of each RFID tag. Important to note is if the RFID reader will be able to clearly identify each RFID individually. Therefore, the code developed has to match this requirement.

Step 2: Code development of detecting the RFID tags according to their fixed pre-defined values assigned. Moreover, code development for the game logic to compute the values to provide interface to the global game logic at a later stage. I.e. implementing the relevant game rules and ensure code operability.

Immediate overall tasks:

Code documentation – Executed by programming team

This involves a description of the modules programmed, their targeted interface and the part they assume in the overall code.

2.2 Design

Designer Team Leader: Alma Azzoni

Immediate subtasks

1. Fruit basket – Executed by Ms Azzoni

Aim is to develop a basket that resembles a bowl ready to be filled with fruit, while leaving room for housing the RFID reader. The material will be obtained from a D.I.Y store within proximity.

2. Player figures – Executed by Ms Azzoni

Developing various design proposals for player figures that aided the experience of collection fruits to create a fruit salad.

3. Fruits – Executed by Ms Azzoni

Fruit images have to printed on side of the RFID tags as it is essential in the initial set-up to randomly arrange them. This obviously cannot be guaranteed if it is clearly visible, what type each RFID tag is. Therefore, images need to be generated that are optimised for the area the tag are offering.

2.3 Game Board

Engineering Team Leader: Armen Kasamanyan

Immediate subtasks

1. Four discs – Executed by Mr Kasamanyan and Mr Hanoun

Step 1: The focus lies upon finding material suitable to provide both a solid foundation and being light enough to be operated by the phidget motors. The idea of plastic VS cardboard will be discussed. Moreover the design will be finalised in close coordination with Ms Azzoni fostering both motors and fruits respective fruit holders.

Step 2: Integrating the phidget motors to include cable and connectors to the phidget controller. While it is not necessary to have the physical solution, it is, however, imperative to have the requirements listed in written format at least.

3 Rules

3.1 Goal

To fill one's fruit basket with the fruits making up a nice fruit salad. These fruits are pre-defined, fixed, cannot and will not be changed. Thus, they are always the same. Please see below for a list of fruits.

Winning conditions:

1. First player to reach 5 points (1 fruit = 1 point)
2. Has neither player achieved condition number 1 after eight rounds, the player leading wins. If no player leads after eight rounds, there is a draw.

3.2 Approach

1. Each player is picking their player figures respective colour. The youngest one begins.
2. Out of the five fruits that go into the fruit salad each players selects one they would like to start with. This fruit is only named and noted.
3. All RFID tags will be turned over, mixed thoroughly and distributed equally on the tiles.
4. Player one turns over one by one the RFID tags. When the first fruit corresponding to player one's initial choice shows up, player one exchanges it with his player figure and places the RFID tag in the basket.
5. Player one continues to turn over the remaining RFID tags. When the second time the fruit corresponding to player two's initial choice shows up, player two exchanges it with his player figure and places the RFID tag in the basket. The game is now set.
6. Player one swipes the RFID auto-deck over the auto-deck reader. The screen shows the instructions to be carried out. For a list of instructions see below.
7. After finishing the move, it is player two's turn to swipe the RFID auto-deck over the auto-deck reader. The screen shows the instructions.
8. Steps 6 & 7 are repeated until all one of the winning conditions has become true.

Unknown fruit

There are two unknown fruits one being the magic stuff adding lots to the fruit salad, while the other unknown fruit is having the direct opposite effect.

No-go's

Moving on tiles containing no-go's deducts two points.

Stealing ingredients

Moving to the second fruit (e.g. Having collected a strawberry already, and then moving on a field of the second strawberry) lets you steal your opponents fruit. Having more fruits in the fruit salad than your opponent (e.g. Having strawberry twice, while your opponent has none) is nice but changes the balance of the fruit salad severely, causing the audience to be not so happy anymore and deducts half a point.

Countermoves

When the auto-deck displays the indicator for using the shaker phidget, the active player uses the shaker to initiate random movement of the four discs and so to rearrange the playing field. This might have a helpful effect but equally could make life a lot harder.

3.3 Fruits & No-Go's

Fruit list and respective colours

Each of these fruits have the value of 1 point. If taken for the second time within the same round, the value switches to minus 0.5 points.

- Strawberry - red
- Banana - yellow
- Grapes – violet
- Apple - green
- Kiwi – dark green

Unknown fruits

One randomly selected fruit per round carries the value of 2 points, while the other fruit holds minus 2 points.

- Cherry – dark red
- Pineapple – brown yellow

No-Go's and respective colours

Each No-Go holds the value of minus 1 point.

- Citron – bright yellow
- Grapefruit – white yellow
- Salt - white
- Pepper – grey

4 Auto-deck Instructions

The following list is not finalised as the playability of each instruction has not been fully explored yet.

- Move 1 field
- Shake it, baby!
- Move 2 fields
- Switch fruit baskets with your opponents until it is your next go.
- Do nothing!
- Draw again!

5 Object Requirements List

5.1 Phidgets

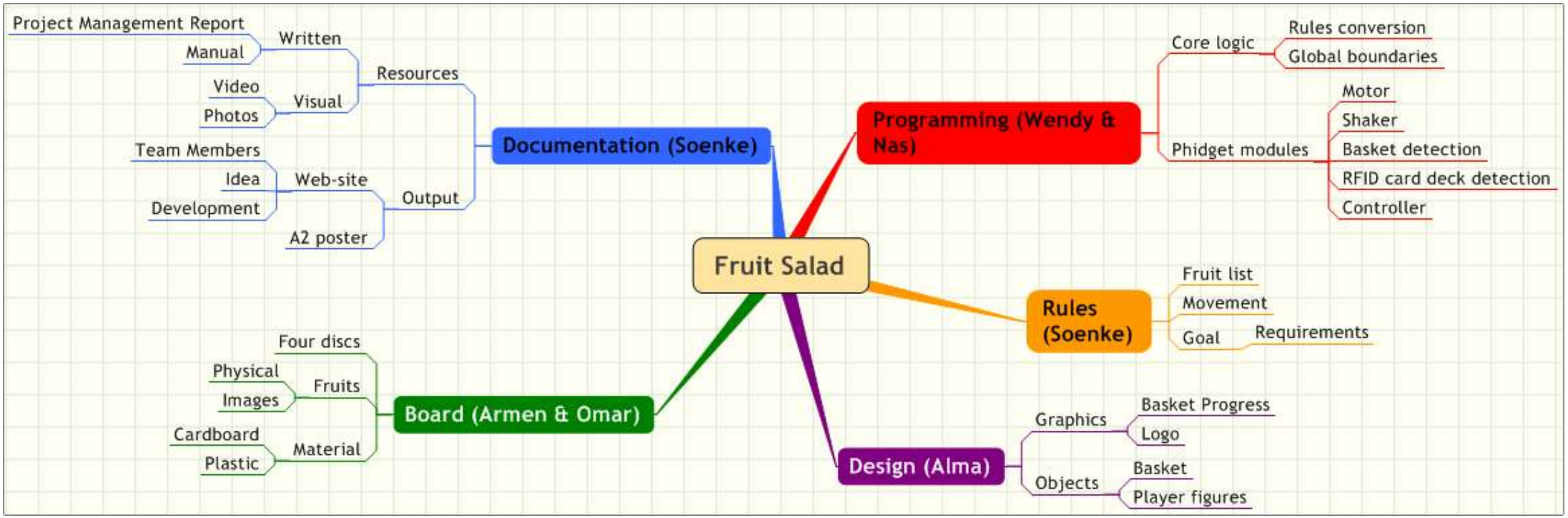
- 4 motors (including servo unit) – Each operating one discs.
- 1 shaker – To manually start the random movement of the four discs.
- 1 RFID tag in credit card format – For forwarding the virtual card desk displayed on screen.
- 3 RFID reader – 2 for the fruit baskets, 1 for the detection of the virtual card deck.
- 16 rounded RFID tags – Identifying the fruits.
- 1 phidget controller – connection between all phidgets.

5.2 Other objects

- Requires further analysis. Will be populated on Friday.

6 Appendix

1. Mind map on task analysis


Fruit Salad
Documentation (Soenke)
Project Management Report
Written
Manual
Resources
Video
Visual
Photos
Team Members
Idea
Web-site
Development
Output
A2 poster
Programming (Wendy & Nas)
Core logic
Rules conversion
Global boundaries
Phidget modules
Motor
Shaker
Basket detection
RFID card deck detection
Controller
Rules (Soenke)
Fruit list
Movement
Goal
Requirements
Board (Armen & Omar)
Four discs
Physical
Fruits
Images
Cardboard
Material
Plastic
Design (Alma)
Graphics
Basket Progress
Logo
Objects
Basket
Player figures