Ceramics Performance Interface Specification
16 March 2018

FUNCTIONAL REQUIREMENTS ONLY – NOT GUI DESIGN REQUIREMENTS

I. DYNAMIC ANIMATION OF GRAPHIC OBJECTS
We aim to use BOTH types of dynamics we discussed.
- A Spring-graph-node GUI library for feedback when the graph node is selected
- Swarm agents' simulation for dynamically generating continuous control data.

These two types of dynamic movement will be applied to DIFFERENT sets of graphic objects.
- MF Theme selection nodes will have spring-graph feedback vfx
  - This is ONLY for visual feedback effect. We WILL NOT extract data from these dynamics to control sound. This should be achievable with a GUI library, no mapping to user's actions other than node selection.
- Swarm agents we will be located in a separate interface area and used exactly as we do for the previous swarm pieces - we will extract data from swarm dynamics and use it to control sound.

By adopting this approach, we can use the EXISTING SWARM application performance interface to develop interactive sound for the Ceramic performance, without waiting for the new interface to be created.

PRIORITY
- Swarm visualisation and data extraction are REQUIRED
- Spring-Graph Node dynamics is a FEATURE – not absolutely required

II. GUI CONCEPT ILLUSTRATION
The attached Ceramic_Interface_Layout_Concept shows GUI layouts that illustrate functional relationships related to MF controllers. Below we describe interface functions related to the layout. This will help us to identify workflow and use case related MF controller requirements.

NOTE: Limits of the illustrations in "Ceramic_Interface_Layout_Concept"
- The functional layout in these illustrations is reasonably representative. Layout is all that matters for the functional requirements discussed below.
- The visual design elements in the concept document (colour, line style, shapes, etc.) are only rudimentary and are NOT the look and style we will use.
- However, the quality level of graphic style IS what we aim for, for example brush-stroke type graphics trailing from the performer's touch and movement. Obviously, this cannot be done with web page graphics. So, this will require an interface app.

Layout Page 1: Five Element regions (Fire, Earth, Metal, Water, Wood) contain graph nodes for MF Theme selection. (The centre region is used for continuous control.)
- The nodes in Element regions will have spring-graph dynamic behaviour.
- Small sets of Nodes in each Element region are subsets of a much larger graph.
  - The graph is only visualised by local neighbourhoods of a few nodes at a time.

- o   Edges may or may not be visualised. TBD.
- Nodes in Five separate regions mean the GUI accesses Five DIFFERENT sets of nodes from a larger graph.
- Nodes are arranged in iconic shape-groups that make it easier to recognise functions of individual nodes.
    - o   Shape-groups are pre-determined according to Themes and are generated by the GUI when the themes' nodes are displayed.

Layout Page 2: To perform continuous control the user expands centre region.
- Swarm Agents' simulation is displayed in the centre.
- Data for continuous control is generated by analysing Swarm behaviours.
- The Agents' movements are contained in the centre region.
- The Agents may only be displayed when the centre region expands. TBD.
- Selection of Theme nodes is still enabled while performing continuous control

Layout Pages 3 – 8: Visual design concepts that support the functionality

III. TAKEAWAYS FOR MF STRUCTURE AND FUNCTION

ORGANISING THE FULL SEMANTIC GRAPH
- At WORLD level we will need a specification of the full THEME GRAPH (it's not really a scene graph). The Ceramic composition will organise the structure (edges) of all the themes in the larger graph, and how these WORLD THEMES (??) map to scene themes.
    - o   There will be a lot of scenes and themes – the scale will be similar to GDC.
- Somewhere we will need a SCORE (?) a specification of how the performer will move through the graph,
    - o   The Score may present the arrangements of nodes that are displayed in each of the Five Element regions.

ORGANISING THE NODE DISPLAY IN THE GUI
- Somewhere (in a separate config file for the GUI?) we will need to encode the node shape-groups and rules for the different node sets in each of the Five Element regions. To simplify config. files this should be in the Score but it's very specific to the bespoke GUI.
- Nodes in the GUI are designated in Two types: Regular nodes and Key nodes. (These not illustrated in the concept doc, but they will be visually different in the GUI).
    - o   Selecting a "Regular" nodes will select its Theme without changing the node arrangement in the shape-group.
    - o   Selecting a "Key" node will change the shape-group – this means that the user has navigated to a different set of nodes in the larger graph.
- Presently to determine node display we are considering a simple nearest-neighbour rule, using Key nodes.
    - o   All nodes select Themes, but only Key nodes determine the nearest neighbour group for Element regions.

NAVIGATING THE FULL SEMANTIC GRAPH
- Navigation in the graph would be by Key nodes only. The other nodes in the neighbourhood are displayed for theme selection but not used to move to a new location in the graph
- The Score will organise Key nodes as a meta-graph. Effectively the user will navigate by the meta-graph and the other nodes are displayed as adjacent to a Key node.
    - Regular nodes are only enabled for selecting a theme.

RE-USABILITY
- The same interface function will be used for near future projects, specifically an interactive Children's book project
- Embedded with serious games for accelerating Children's language acquisition
- This is in early discussion with Magnetic North – also this is CONFIDENTIAL
- This is why Responsive user interface functionality is essentially a requirement in the future.
- Thus the investment in the GUI and its effect on MF is building capacity for future projects.