Brainstorming Software Scoping

1. Introduction

1.1 Purpose of the system

There are many kinds of mind mapping software currently on the market, from big company development to open source software. However, most of them are still only using the traditional computer input interface – keyboard and mouse, more importantly is that all the devices can only support one user at a time, which create a barrier for group brainstorming and thus limits the mind mapping productivity.

With the Microsoft PixelSense table coming to the market, a new model of mind mapping software is possible – with natural user interface, concurrent users support and 3D modelling and viewing. This document is to investigate and compare the current mind mapping software, and to propose a new brain storming software model with natural user interface, concurrent users support and 3D modelling built on Microsoft PixelSense Table.

1.2 Scope of the system

The role of brainstorming software in Education and open learning environment is:

- To develop the collaborative learning skills;
- To encourage creative problem solving;
- To optimize learning across disciplines;
- To facilitate the development of independent thinking skills;

1.3 Objectives of the project

Brainstorming software features may include the following:

- Concurrent users support in one brainstorming session;
- Brainstorming result can be seamlessly transferred to other device including PC, mobile phones and tablets;
- Brainstorming result can be imported into other mind mapping software for further detail work;
- Brainstorming results can be modelled in 3D views

1.4 Definitions, acronyms, and abbreviations

- **Brainstorm:** Brainstorming is a group creativity technique designed to generate a large number of ideas for the solution of a problem

- **Mind map:** A Mind Map is a structured diagram to represent key terms, ideas, notes and various other linked items in a hierarchical format. The linked items are centred on a core topic or idea that is drawn in the middle of the page with nodes dispersing from this central idea to other nodes radiating outwards.

- **Brainstorming comparison with mind mapping:** brainstorming is a group creativity technique designed to generate a large number of ideas for the solution of a problem. In a typical brainstorming session, ideas are inserted into the map radially around the centre node, without the implicit prioritization that comes from hierarchy or sequential arrangements, and wherein grouping and organizing is reserved for later stages. This is where mind mapping come into place. Mind mapping is used to work out the relationship between these ideas.

- **Mind mapping uses:**
  - ➤ Problem solving, thinking through complex problems.
  - ➤ Brainstorming - individually, and as a group.
  - ➤ Summarizing information, outline/framework design and note taking.
  - ➤ Consolidating information from different research sources, anonymous collaboration.
  - ➤ Individual expression of creativity.
  - ➤ Presenting information in a format that shows the overall structure of your subject.
  - ➤ Team building or synergy creating activity.
  - ➤ Studying and memorizing information.

- **Microsoft PixelSense:** http://www.microsoft.com/en-us/pixelsense/default.aspx

2. Current Mind mapping and brainstorming software

2.1 Key functions of mind mapping:

A key summary of the findings of the functionality are:

- Ability to add notes to specific nodes
- Ability to add diagrams, links, documents and images;
- Various Export formats :

- Types of inbuilt images and symbols

- Outline method of inputting text

- The ability to quick link ideas

- Formatting options (text, lines, shapes, font)

- Different Views of mind maps

- Undo/ redo actions

- Templates

- Define levels of hierarchy

- Help

- Examples of Mind Maps

2.2 MM File Format

Using a standard file format allows interchange of files between different mind mapping programs. Many of the mind mapping programs supports the mm format. The mm format is an XML text format consisting of tagged objects.

An example:

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<map version="0.9.0">
<attribute_registry SHOW_ATTRIBUTES="hide"/>
<node TEXT="eBook Apps" ID="Freemind_Link_1" CREATED="1343227256389"
MODIFIED="1343227256389"
  COLOR="#000000" BACKGROUND_COLOR="#b2b2fe" STYLE="bubble">

<edge COLOR="#b2b2fe"/>
<hook NAME="MapStyle" zoom="0.97739804" max_node_width="600"/>
  <node TEXT="Main Data" POSITION="right" ID="Freemind_Link_12"
CREATED="1343227256390"
      MODIFIED="1343227256390" COLOR="#000000" STYLE="fork">

    <edge COLOR="#0088ce"/>
    <node TEXT="Item1" ID="Freemind_Link_23" CREATED="1343227256390"
MODIFIED="1343227428428"
        COLOR="#000000" STYLE="fork">

    <edge COLOR="#0088ce"/>
    </node>
    <node TEXT="Item2" ID="Freemind_Link_17" CREATED="1343227256391"
MODIFIED="1343227428429"
```

```
      COLOR="#000000" STYLE="fork">

   <edge COLOR="#0088ce"/>
   </node>
  </node>
</node>
</map>
```

2.3 Software List

In the attached excel file, it listed the main mind mapping software currently on the market.

2.4 Summary

There are two classification of the current mind mapping software. The first type develops from the desktop mind mapping software, and because of the collaboration needs and mobile access demand, they developed into a combination of desktop software, mobile app and online community. These include the big brand mind mapping software for instance mindjet, imindmap, and mindmeister etc.

Specifications of this type of mind mapping software include:

a) they all have desktop software, cloud storage and community, mobile apps integrated;
b) Lots of templates and toolboxes to choose from;
c) Different views to present, which include mind mapping view, tree view, org-chat…
d) Various file format export: mm format to support the major mind mapping software, pdf , word, html, image….
e) Full and sophisticated Mind mapping functions;

The second type has its root in internet. These systems can create the diagram online and shared with selected users. Some have mobile apps but most are not. Because most of these systems are developed using web technology, their compatibility with different devices are relatively good.

Specifications of this type of mind mapping software include:

a) Online collaboration is possible;
b) Free version provides limited functions, normally a monthly subscription fee is charged ;
c) Comparing with traditional mind mapping software, simple functions and easy to use by different level users

Some Weak points of both types of mind mapping software:

1) These software are more focused on the mind mapping process for personal use, but not very well designed for group brainstorming functions;

2) As lack of intuitive natural input interface, brainstorming function are provided in a quite limited way: ideas cannot be easily move around and group together, users cannot input ideas simultaneous;

3) For a brainstorming sessions, users need to use different devices to contribute ideas and group ideas, which is not the natural way to gather people together and use big screens to sparkle ideas;

4) Brainstorming results export format should also support MM format, this will enable user to do further mind mapping work based on the brainstorming results;

5) 3D view is very occasionally and basic in mind mapping software, this could be one direction for further work;

6) Brainstorming software on the surface table may be good to develop with Surface SDK in order to user the surface features; as to transfer brainstorming results to other devices including mobile phone and tablets, a wider compatible file format with various devices is important.

Table 1 Major Mind mapping software List

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Software	Mindjet MindManager 2012	iMindMap 6	FreeMind	MindMeister	Xmind
Copy Right	Proprietary	free and paid version	GPL	Proprietary	EPL and GPL; paid version
Platform	Microsoft Windows, Mac OS X	Microsoft Windows, Mac OS X, GNU/Linux	crossplatform	online, browser based	Microsoft Windows, Mac OS X, GNU/Linux
Main Features					
Views	mind maps, tree, org-charts	iMindMap Ultimate version: 3D view, presentation view, flowcharts, Grantt charts	mind maps		Mind maps, spreadsheets, fishbone diagrams, tree charts, org-charts;
Import Format	Microsoft word; Microsoft Project	n/a	mm format	mm format; plain text	freemind; mindmanager
Export Format	mm format, pdf, word, powerpoint, project, swf, web pages and image	pdf, image, 3D image, presentation, spreedshet	mm format, web page, image	mind maps; word; pdf, image, slide show	mm format, pdf, word, powerpoint, html, plain text and image
Template/Theme	built-in templates; mind toolbox; business toolbox	built-in educational, personal, business and 3D enhanced templates	n/a	template library	built-in templates; mind toolbox; business toolbox
Brainstorming	brainstorming functions: create challenge -generate ideas - categorize & refine	n/a	n/a	brainstorming template	yes

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Online Collaboration Service					
Product	Mindjet Connect	iMindMap Freedom	n/a		n/a
fee	Subscription	Subscription only	n/a		n/a
Main Functions	centralized storage; instant meeting/communications	cloud storage; contacts & sharing; mobile apps and web browser support	n/a		n/a
Mobile Application					
Product	Mindjet Tasks; Mindjet Maps	iMindMap	n/a	MindMeister	n/a
Platform	android pad and phone, iphone, ipad,	android pad and phone, iphone, ipad,	n/a	iPhone, iPad and Android	n/a
Main Functions	mind mapping; track tasks; integration with Mindject Connect and Dropbox	mind mapping; presentation view; export ; connect with ThinkBuzan Cloud	n/a	mind mapping; collaboration; file export	n/a
web application					
Product	N/A	iMindMap for Web	n/a	mind meister	n/a
fee	n/a	free for basic version, subscribed to iMindMap Freedom with more features unlocked	n/a	free and by subscription	n/a

Table 2 Web based mind mapping software

Software	website	Features	Fee model
Mindomo	http://www.mindomo.com/	online mind mapping software, desktop version is based on Adobe Air runtime, which lets users work on mind mapps offline	Offer basic service for free while charging for advanced features;
spiderscribe.net	http://www.spiderscribe.net/	online mind mapping software, on the mind map it support formats including text node, files, google maps, images and calendar; mind maps are easily managed with online file storage	Offer basic service for free while charging for advanced features;
groupzap	http://www.groupzap.com/	online brainstorming software; provides similar functions of an digital interactive whiteboard; good for brainstorming particular;	Offer basic service for free while charging for advanced features;
lucidchart	https://www.lucidchart.com/	online flowchart software, provides lots of shape sets, functions support including mind mapping as well	monthly subscription fee , Offer free service for education