



Concepts for Product Customization  
*Pros and Cons to Multimedia Implementations*  
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### **I. The Task:**

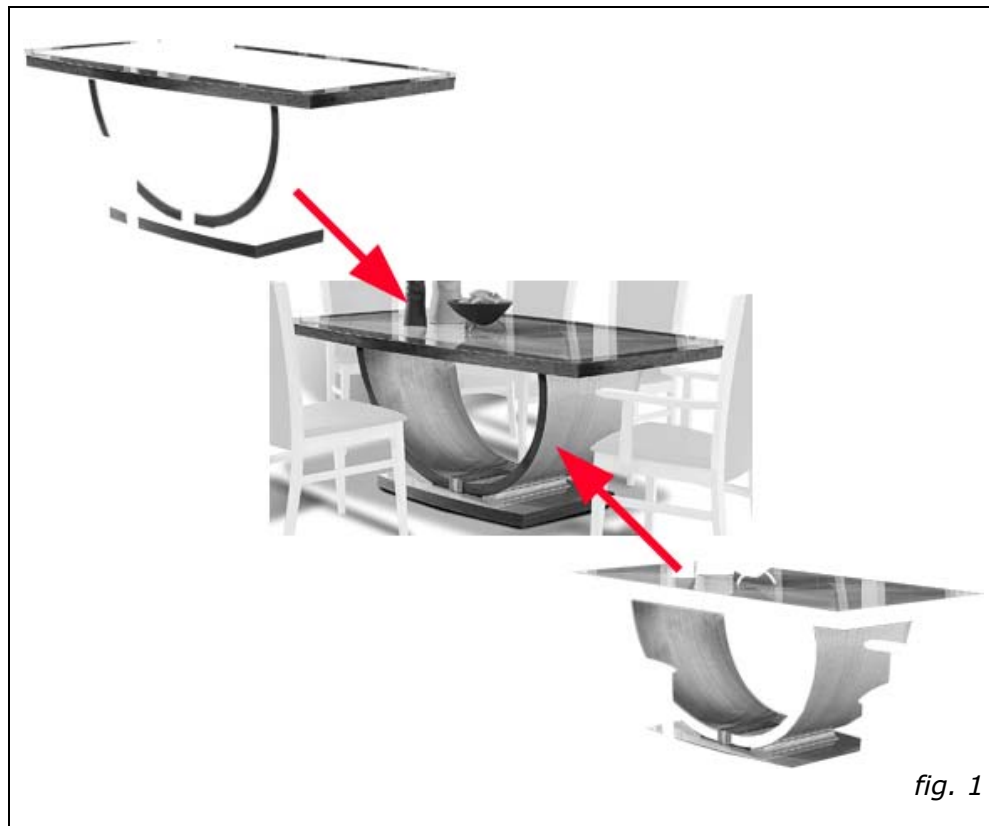
By utilizing new media technologies, create an application that allows the creation of a user-customizable representation of a table, taking into account the mixture of multiple stains and wood grains in the construction process.

### **II. Use of Macromedia Flash MX (Color Transform & Image Combination)**

#### Color Transform (Colorization):

It is possible to render color transformations onto objects in Flash (including imported imagery), resulting in color tinting. The resulting effect is similar to a colorized photograph.

A proof of concept has been developed using a sample photograph of a table. The image was manipulated using Adobe Photoshop, and was cut into three separate images: A static color background, and black and white alpha-transparent versions of both the tabletop, and another for the trim. These images were then exported out in the PNG format, and imported into Flash. The images, as they all originated from the same photo, registered on top of each other, aligning exactly. This alignment is vital to ensure that, when combined, the images line up with one another. See figure 1 for a detail of the alignment required.



Once imported, through a simple interface, the user can apply any combination of colors onto the images, resulting in a colorized, with separate treatment of both the trim and the tabletop. (See figure 2).



By carefully analyzing swatches of stain color and, perhaps, their effect on different wood grains, and carefully selecting colors to use when applying a transformation, the effect of stain on grain could be simulated.

A problem with this system is that, in the end, it is a colorization of a black and white image, and can lead to an inaccurate representation. The use of a color image does not result in any better result.

#### Images:

It is possible to combine within Flash a series of different images, in combinations and permutations, superimposed over one another.

The difficulty with this approach is, primarily, in the taking and manipulation of the photographs. There would have to be photographs taken of every element of the design, with each possible grain of wood, and each of those, in turn, with each stain applied to it. For example, if there are three elements that may be manipulated (center, outside, and trim, for example), and five wood grains (pine, maple, oak, teak, mahogany) that each may be constructed from, and each of those grains may be stained one of 12 ways (color 1, 2, 3, etc.), the resulting photographic needs to accurately display all the permutations and combinations would be 180 ( $3 \times 5 \times 12$ ). These elements, as well, would have to be carefully photographed so as to register on top of one another exactly so that, when superimposed over one another, they would line up.

This process, while potentially yielding in the best results, would be the most labor intensive and time-consuming. Each of the images created (180 in the above estimation) would have to be tracked and manipulated, being cut up in the same manner as the color transition example above to yield versions of each portion, grain, and stain.

#### Summation:

Macromedia Flash is a proven developmental tool that delivers rich media applications both on the internet and the desktop, being able to create not only web-specific applications, but traditional executables. The market saturation of the Flash Plug-In (a browser component necessary to display Flash content) is somewhere in the neighborhood of 545.4 million users,<sup>1</sup> meaning that 97.4% of Web users can

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<sup>1</sup> [http://www.macromedia.com/software/player\\_census/flashplayer/](http://www.macromedia.com/software/player_census/flashplayer/)

experience Macromedia Flash content without having to download and install a player.<sup>2</sup>

### **III. Director MX (Imaging Lingo)**

Another developmental tool made by Macromedia is Director MX which, like Flash, can yield both web and desktop applications. Specifically, a subset of the authoring abilities within Director is Imaging Lingo: the ability to, on the programming code-level, be able to manipulate images. While this aspect of the tool is indeed powerful, I am not certain at this time that it would be the manner in which to proceed in this case.

Through Imaging Lingo the programmer can manipulate internal images on a pixel-by-pixel basis, getting and setting colors. Under closer scrutiny there may be problems with his approach, however. Each portion of the product would still, at the least, have to be photographed with the same level of discipline mentioned in the earlier Flash example to allow for its "disassembly" and superimposition to build the variations of product.

#### **Summation:**

The Shockwave Plug-in (required to view Director's content online) has a lesser market saturation than Flash, at an estimated 284 million,<sup>3</sup> but does offer some powerful tools simply not available in Flash. The user's experience installing the plug-in (when needed) is relatively painless, but longer than that for the equivalent of installs with Flash.

### **IV. 3D Possibilities**

To generate and render an accurate three dimensional representation of the object in question could prove challenging. To convincingly apply texture (grain) and tint (color) to it in order to emulate the product could prove prohibitively difficult.

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<sup>2</sup> <http://www.macromedia.com/software/flash/survey/>

<sup>3</sup> <http://www.macromedia.com/software/shockwaveplayer/>