

## The IMPAX Interface

USING COLOR AND STYLE TO OPTIMIZE THE RADIOLOGIST'S EXPERIENCE BY MINIMIZING USER DISTRACTION AND IMPROVING THE FOCUS ON THE IMAGES

"Cool is not a good design reason. If you have a good design rationale, then presenting it in a cool way - I'm all for it - but there are all sorts of cool things which are cool the first time but the 10th time you use them, you hate them. So what you have to do is to say, "Who is going to use it?", "Is this going to be used by somebody once?" You can do cool stuff in a kiosk that someone is going to walk up to and use just that once. That's OK. If someone is going to sit down in front of it and use it 10 times per day for the next 3 years then you have got to get that "cool stuff" out of there because it's just going to get in the way."

*Alan Cooper*

The environment in which a radiologist works requires special consideration of how a diagnostic interface should look and behave. In particular, the design should reflect the reality that users will be in front of the interface for extended periods of time, which can lead to side effects such as eye fatigue, headaches and mood swings. Agfa has studied this physical drain, and through the careful use of color and style we are delivering a way to further improve productivity while bringing much-needed relief to the radiologist.

- IMPAX 6 uses cool, dark colors to maintain the focus on the images - bright colors can distract the eye and take the focus away from the images.
- The IMPAX 6 color selection minimizes the visual transition between monitors, enabling focus to be maintained on the images.
- The text font has been specifically designed for display on computer screens.
- The grid layout ensures easy interaction in an organized, well-balanced fashion, keeping focus on the images.
- Visual clues add to the intuitiveness of the functionality (grade bars, tabs, etc.).

<http://www.uidesign.net/2000/interviews/cooper1.html>

### The Benefits of Color

Persona-based design looks at how users work, and their environment, to optimize the application for each user. For IMPAX 6, we looked at radiologists' work and the environment in which they report exams. Typically, radiologists sit for long periods of time in dark rooms, looking at computer screens, reading text information and examining images. Disturbances from opening doors, bright screens, light boxes and various other environmental factors impact on the radiologist's ability to review images and report studies. Adjusting to the varying degree and the frequency of light changes can cause eye fatigue, headaches and mood swings. These factors were taken into consideration for the user interface design and implementation of IMPAX 6.

A careful balance between form and function is required, as IMPAX is used on a daily basis for extended periods of time. The decisions made regarding the application of color strongly reflect this rationale.

Bright colors (which many of our competitors use) tend to contribute large amounts of visual “weight” due to their temperature, saturation and brightness. On a grayscale monitor these colors can easily overpower other colors and images, distracting the eye and increasing fatigue. Bright, warm, saturated colors tend to appear closer while cool, dark, unsaturated colors tend to recede. This again contributes to visual perception difficulties.

The colors used (four shades of green) for IMPAX appear identical on a grayscale monitor. The information integrity and hierarchy established by color are maintained on either a color or a grayscale monitor, making it easier to transition between the two, and reducing the glare from the List/Text area. In conjunction with the contrast benefits, the chosen colors are optimal for color-blind people. Anecdotally, a radiologist at RSNA 2005 admitted to us that the color choices were optimized for his viewing, making it much easier for him to review images.

### Typeface and Style Play a Part

In order to ensure that the IMPAX 6 interface communicates quickly and clearly, it is important to keep the text type simple and consistent. IMPAX utilizes only one typeface: Tahoma. Microsoft designed Tahoma especially for display on computer monitors. It is legible at small sizes and is a conservative, real-estate-sensitive, letter spacing font.

The visual design framework was designed for resolutions of 1280x768 (color monitor resolution) and 1280x1024 (medical grade grayscale monitor). The use of a strong grid layout presents content in an organized, well-balanced fashion, while effectively supporting the related interactions. The grid establishes a hierarchy of information and interaction opportunities. The result is an interface that appears easy to use while allowing the images to remain dominant.

Several visual clues are employed to indicate possible interaction points in the application. Icons are visually subordinate to the images, maintaining the viewer’s focus on the images and not distracting the eye. Each icon has a consistent size, color, orientation and layout. By going green, the IMPAX 6 application is maximized for each user circumstance, while minimizing eyestrain and user fatigue – which translates into higher productivity and an improved user experience.

#### TIP:

Texture can be used to make the behavior of an unfamiliar widget more intuitive.

#### EXAMPLE:

A horizontal texture provides a visual cue that hints at the vertical sliding behavior of the Drawer widget. The texture applied to the tabs adds to their clickable appearance.

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