

2015-01-16 TDS v1

Architectural & component Level Design:

System Structure

The Image manipulation tool is broken up in two parts: *The Client side application* where the user is able to edit and modify the canvas content and the *server side integration* with the LIMS platform to manage the necessary data.

The Server Side Integration is used too store the necessary data in the database including the Image and the further serialization of the canvas after the user has submitted the changes on the entity (attribute) upon create and update. This process must include the parsing of proper data into different category of the database. The file will be stored in the File Table in the DB. The attribute datatype will use several fields to manage its data where specifically: Numeric_Data for holding the File ID to refer to, String_Data for proper querying based on a tag a sets up and Text_data for the Canvas meta data and the Proper serialization required.

The Client Side Application is collection of JavaScript libraries and plugins to make the required features available to the client for proper canvas manipulation while keeping the original image intact. The original file should not be tempered with unless the user specifically overrides the File. The library or collection of API used be an Open Source project for the community to be used by core, or iginally extended from Fabric.js where plugins will be to extend the functionality of the manipulator.

Component Design

- Attribute on Entity Type (ImageManipulatorImpl)

Human Interface Design:

Overview of User Interface

Toolbar

- **File**
 - Clear Canvas (keeps the original image)
 - Show in new tab
 - Image
 - SVG
 - Serialize
 - Save as
 - Image
 - PDF
 - Serialize
 - Import
- **Edit**
 - History
 - Undo
 - Redo
 - Available tools
 - Same as the toolbox
 - Expands to the controls box
 - Selected object - Arrange
 - Bring Forward and back
 - Align Objects to Grid
 - Align objects to other objects
 - Lock/Unlock
 - Grouping
 - Object Manipulation
 - Cut, Copy, Paste
 - Transform

Toolbox - Available Options

- Visible or not based on View Settings
- **Canvas based tools**
 - Scale canvas
- **Object based tools**
 - Cut
 - If selection tool on:
 - copy selected pixels
 - set to transparent
 - paste selected pixels as separate object from data
 - if no selection tool
 - add object to clipboard
 - remove the object
 - paste the object from clipboard
 - Depending on the type of object, might be easier to duplicate objects and clip/trim as

Controls / ToolBar

- Tools specific Options

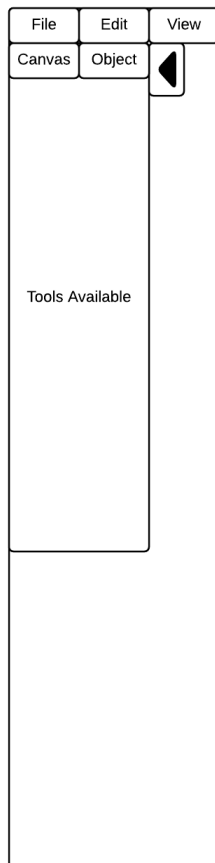
- **View**
 - Meta Data
 - Notes
 - Comments
 - Tag
 - Canvas
 - Grid Snapping
 - Guide/Grid Lines
 - Rulers
 - Show Quick Toolbar or Controls Box
 - Add to Quick toolbar/toolbox
 - Add Undo and Redo
 - Add Cut, Copy, and Paste
 - Transform

needed before pasting them. This should allow saving some size for the data stored in the DB?

- Copy - Same as Cut but no removing of the objects
- Paste - Copy paste objects from clipboard to canvas
- Pointer - Selects the object
- Transform
 - Rotate
 - Scale
 - Flip
- Selection Tool
 - Marquee
 - Line/Pen
 - Free Selection
- Annotation
- Text
- Shapes
- Crop/Clip
- Scale
- Paint bucket

Screens

V1 (design):



SOW And V1 CheckList

- ☒ Image Annotations used for querying. ****Note** : custom attributes can be added for other querying.
- Entity Revision History for Revision Edit event.
- Reporting (Velocity Reports)
- History
 - Undo
 - Redo
- Selection for parts of the object (Image)
 - Cut Canvas
 - Copy
 - Paste
- Crop
- Shapes
 - Rectangle
 - Ellipse
 - Arrow
 - Borders (color, type, size)
- Text
 - Font size
 - Font

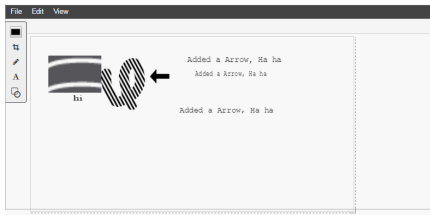
Internal Checklist V1+ (Additional Features and More)

- Expected on 5.1, but merged to 5.0 due to delayed 5.0 release
- Send Back and Forward tool
- Adapt Existing tools to Active Groups
- Images Extra Controls and meta data
- Drag and Drop
- Pen Tool
- Polygon Tool
- Better Cropping functionality
 - On Rotate
 - Canvas (Like canvas Resize)
- Layering Tools
- Color Picker for on canvas click on color tool (<http://www.webdesignerdepot.com/2013/03/how-to-create-a-color-picker-with-html5-canvas/>)
- Image Filters
 - Sepia, Tint, Sharpness, Pixelation, Noise, Blend, Multiply
- Object Events

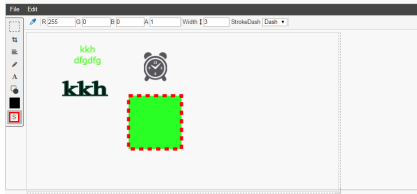
V1 Implementation

- ☒ Font styles
- ☒ Aligning objects to outlier object (Top, Bottom, Left, Right, Center)
- ☒ Images
 - ☒ Image Filters

- ☐ Animation
- ☐ Matrix Transformation
- ☐ Patterns
- ☐ Security Check
- ☐



V1.1 Implementation (After QA testing)



- ☒ Entity/Image Version
- ☒ Querying From Meta Data
- ☒ Transform
 - ☒ Scaling
 - ☒ Rotate
 - ☒ Flip
 - ☒ Brightness
 - ☐ Hue (moved out of scope)

- ☐ Capcha Implementation for security implementation
- ☐ **Touch Events**
- ☐ Keyboard Shortcuts
 - ☐ <http://jsfiddle.net/av01d/FT7a9/>
- ☐ Shape/Object Shadows
- ☐ Show sub toolbar or sub toolbox (floating right)
- ☐ Datatype Configuration

SOW And V2 CheckList (no deadline?)

- ☐ Combining layered objects
- ☐ Image file format
- ☐ Free Selection
- ☐ Snap to Grid

Functionality added after Spec but expected

- ☐ Locking Layers
- ☐ Zooming in and out
- ☐

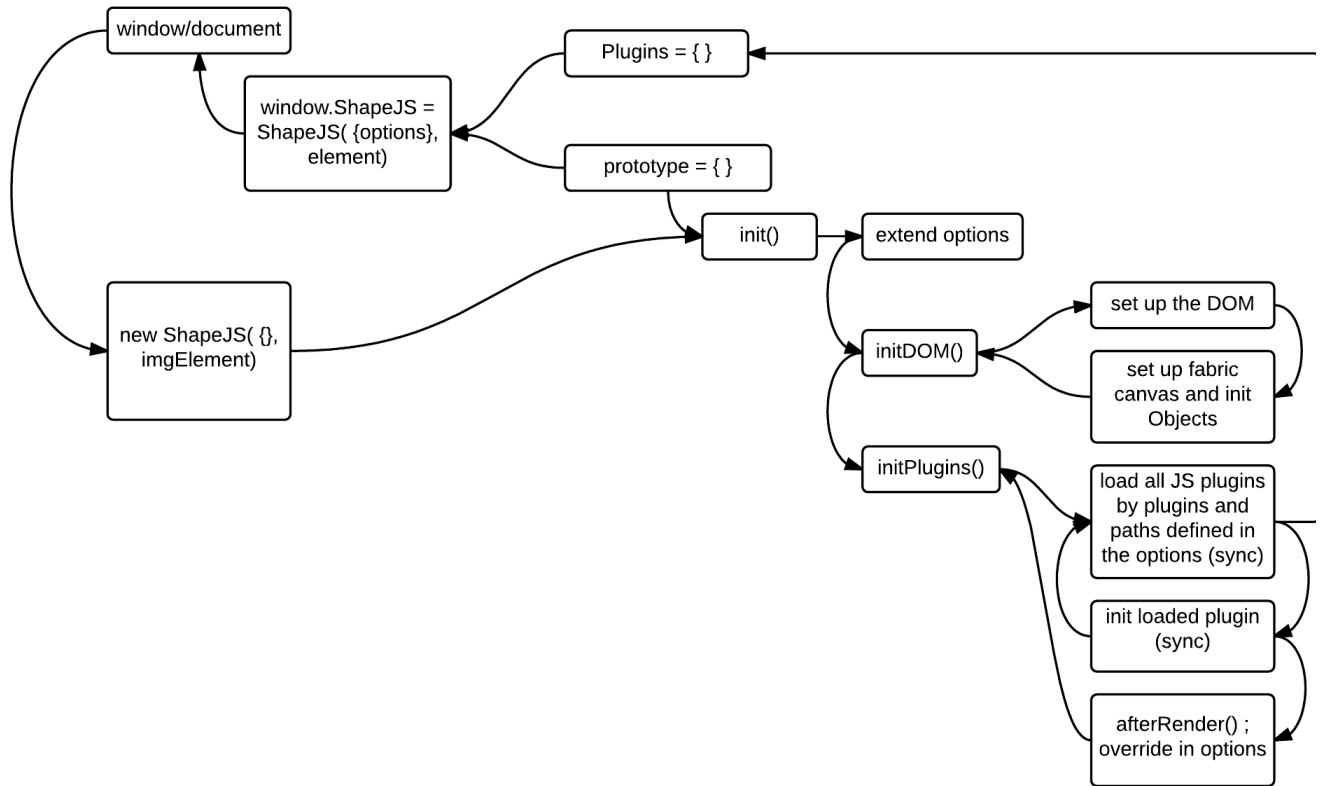
Functionality out of scope but Added (Expected?)

- ☒ Colors
- ☒ Free Drawing Annotation
 - ☒ Different brushes
 - ☐ Brush Width
- ☐ Overlay of Grid
- ☐ UI comparable to other tools (rather than custom UI)
- ☐ Tools Ordering
- ☒ Cut/Copy/Paste based for individual object
- ☒ Canvas Resizing

Usage (Developer)

- Add an Image to the DOM with a src and id.
- Include the path to the JS libraries and css to load the required functionality
 - Fabric.min.js
 - Shape.js
 - Shape.css
- Once loaded, create new ShapeJS object (requires two parameters)

- Object of allowed properties: initObjects, plugins, plugins paths (paths to the plugin), shapejsPath (library path), canvas props (width, height, rescale), afterrender (callback)
 - Custom plugins can be added, but these override what already exists in the library.
 - Paths are used to load the proper required plugins from the JS file
- Image tag query (ex: '#ImageId')



Usage (PFS User)

- V5.0:
- v5.1: