

Mail & Print

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Print Services Business Requirements Document (BRD)

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1. Introduction

1.1. Document Purpose

The purpose of this document is to describe business requirements of our new Print Services website www.mailprint.online. **THIS IS NOT A DROP-SHIP MODULE.**

1.2. Intended Audience

The main intended audience for this document are the designers, developers and business analysts that will be working on the website development.

1.3. Benefits/Rationale

N/A.

1.4. Stakeholders

Mail & Print Management, employees, and customers.

1.5. Dependencies on existing systems

Although this is going to be an independent website, it should be designed with the same theme and colors as our main website – www.mailprint19608.com.

1.6. Assumptions

The primary designers will use currently standard technology to achieve the full functionality desired. As is always the case, change is constant. The design should be able to accommodate product additions and changes. The screenshots provided are simply a guide for the designers. This is something many online providers offer. Some examples of online print providers are:

<https://www.office.fedex.com/default/>

<https://www.staples.com/services/printing/>

<https://www.officedepot.com/l/print-and-copy/print-services>

<https://www.upsstoreprintshop.com/DSF/SmartStore.aspx#/Storefront>

2. Requirements Scope

2.1. In Scope

Full print product functionality for specified products for the website www.mailprint.online for Phase 1:

- Print related functionality including appropriate previews
- Notifications workflow
 - When an order is placed
 - When an order is ready for pick-up
 - When an order is shipped
 - When an order is cancelled
- Quote request workflow
- Updated file request workflow
- Temporary Storage of uploaded files
- Cart presentation with necessary information
- Payment acceptance
- Collection of appropriate taxes as per shipping or pick-up state.
- Ability to cancel placed orders
- Ability to add, remove or modify existing products, their sizes, and their prices.
- Ability to temporarily stop offering some products as well as the ability to reoffer the product.

2.2. Out of Scope

Any changes to our main website www.mailprint19608.com.

Here are the next phases for this project:

Phase 2: Addition of Specialty Items

Phase 3: Addition of High-Volume items

Phase II of this project will focus on merging the two websites into one. Phase III of this project will be to create an Apple/Android App with same functionality. Designers should be mindful of the next projects and plan for that eventuality when designing this functionality.

3. Functional Requirements

Since this is a Print Service website, it needs to have appropriate previews for the items that are being ordered. Additional details to be provided within each product category for the preview screen. Secondly, cost is based on price per print for the most part, as such the website should be able to provide appropriate parameters to accomplish this. Cost details will be at individual product.

The most crucial thing to keep in mind is that we need to extract metadata from the uploaded file both the print size and the number of pixels. This is going to drive a lot of automation, as such the designers should make sure they are able to obtain this data. Additionally, the designers should familiarize themselves with these print concepts as well.

3.1. Bordered Prints

Bordered prints are standard for Laser Printers and are used for most document printing. Typical documents will have a border between 0.3"-1.25". For these documents, our requirement is 0.3" on all sides. Notice how the sample below has a light outline on the edges to indicate that the edges will not print. This can be solid white to make it clear to the customer that it will not print.



3.2. Borderless Prints

Borderless prints are common on Ink Jet Printers and are used for most pictures, flyers, banners, etc. These documents will print to the edges of a paper hence making them borderless. Notice how the sample below differs from the bordered sample above.

Document: 8.5 x 11.0in

8.5 x 11 Inches



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Page 1 of 1

3.3. Print Orientation / Orientation

When the document is in vertical form (where the width of the document is shorter than the length of the document. **It is essential that the system determine the orientation when the file is uploaded.**

3.3.1. Portrait

When the document is in vertical form (where the width of the document is shorter than the length of the document).

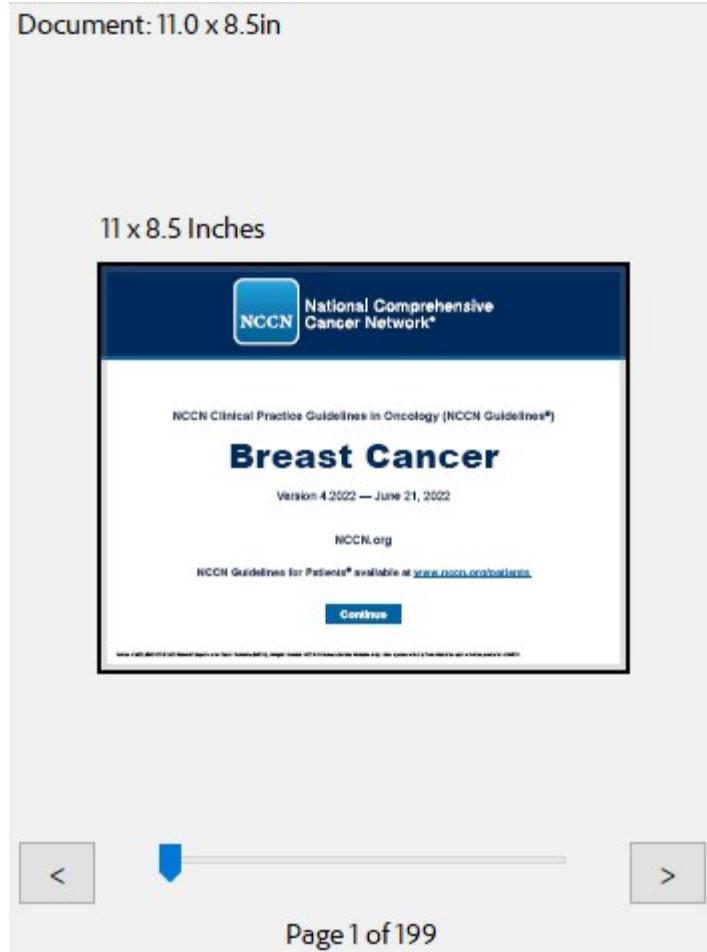
Document: 8.5 x 11.0in

8.5 x 11 Inches



3.3.2. Landscape

If a document is not in Portrait orientation, then by default it is of Landscape orientation.



3.4. Print Layout / Layout

Print Layout is determined by the users for some products and by the system for other products. Samples below show the different options. Notice the difference in the samples provided below.

3.4.1 Actual

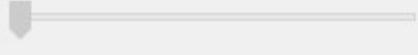
This is when the user wants their document/image printed in exact size without any alteration.

Document: 8.5 x 11.0in

8.5 x 11 Inches



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Page 1 of 1

3.4.2 Fit

This is when the user wants their document/image reformatted to fit the printable size of a sheet. Notice how the image below has been automatically scaled to fit the paper.



3.5. Duplex Printing / Double Sided Printing

This is a common functionality for printers, as such, if there is any confusion on how this works, please consult the document author. The graphic below should be self-explanatory.

4. Product Specific Functional Requirements

The user experience begins from the landing page and navigates through the upload screen. Notice that the products are presented in 3 categories. Appropriate icons will be provided for different products later. But this is how we envision the landing page/main page to be:

Landing Page:

Standard functionality for all products would be to navigate to the product description page and upload their file for most products.

Mail & Print

484.709.2674
4712 Penn Ave
Sinking Spring, PA 19608
Today: 8:00 AM - 6:00 PM

Order Online File Upload

Standard Items - Same Day Service (In-Store Pickup)

			
Documents	Blueprints	Flyers	Photos
			
Cards	Other Cards	Label Sheets	Calendars
			
Posters	Indoor Banners	Outdoor Banners	Adhesive Banners

Specialty Items 7-10 Days (Free Shipping or In-Store Pickup)

			
Car Magnets	Yard Signs	Wall Graphics	Window
			
Posters & Banners	Big Banners	Mounted	Displays

High Volume Items 7-10 Days (Free Shipping or In-Store Pickup)

			
Business	Flyers/Brochu	Menus	Cards/Invites

4.1. Standard Items

It is essential that the designers/developers understand basic print functionality options. All examples shown in here can be recreated in **Adobe Acrobat Reader**.

4.1.1. Documents

When the user clicks on this option, they should be presented with an upload page:

The screenshot shows a web application for document printing. At the top, there's a header bar with the title "Mail & Print". On the right side of the header are social media icons for Facebook and Twitter, along with contact information: phone number 484.709.2674, address 4712 Penn Ave, Sinking Spring, PA 19608, and operating hours Today: 8:00 AM - 6:00 PM. To the right of the address is the "PACKAGEHUB BUSINESS CENTERS" logo, which features a stylized cube with colored dots (blue, green, yellow, red) representing a molecular or crystal structure.

The main menu below the header includes links for Home, Copy & Print, Home & Business, Pack & Ship, Contact Us, Tracking, About Us, File Upload, Coupons, and Order Online. The "Copy & Print" link is currently selected.

The main content area is titled "Document Printing". It contains descriptive text about the service, mentioning paper sizes (Letter, Legal, Ledger, ARCH B), print types (Color or Black & White), and paper types (Plain White, Colored, Cardstock). A note specifies a 0.3" margin requirement for standard documents and directs users to the "Flyers" option for borderless printing.

A central feature is a "Browse Your Files" section with a "X" button in the top right. It displays four cloud storage integration icons: My Computer, Dropbox, Google Drive, and OneDrive. Below these icons, it lists supported file formats: PDF, DOC, PPT, PUB, JPG, and PNG.

At the bottom of the page, a red "Copyright Notice" is displayed, stating: "Copyright Notice: It is illegal to reproduce works subject to copyright without the permission of the copyright holder. By proceeding with this print request, you are acknowledging that this document is not subject to copyright or that you have obtained permission from the copyright holder".

If the user clicks on the [Flyers](#) hyperlink, they should be directed to the flyers upload page.

Once the user clicks on the page, they should be able to upload multiple files. NOTE: Each uploaded file should be treated as an individual cart item. The system should also validate that all files being uploaded are of the acceptable file format. Any files that are not in the format should be removed from the list and the user should be given appropriate notice.

Once all valid files are uploaded, the user should be presented with the print screen. The print screen should be dynamic and adjust as the user makes changes. E.g. If a user changes the orientation, then the orientation should reflect in the preview. If they change the Print type to color, it should show the preview in color.

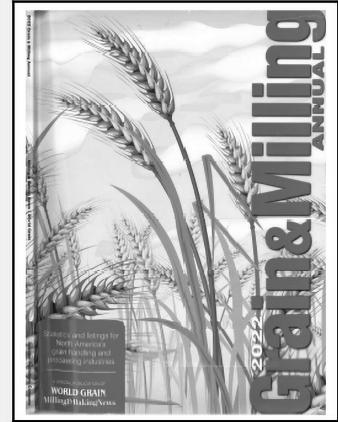
Sample screenshots of Document Printing Screen (Notice the 0.3" margin on all sides (more apparent in the second sample)

Refer to the pricing section for how price is computed:

$$\text{PPI} = ((\text{NoP} * (\text{BPP} + \text{PaP} + \text{PrT} - \text{DSD})) + \text{Fsh}) * \text{NoC}$$

$$\$33.00 = ((220 * (\$0.15 + \$0.00 + \$0.00 - \$0.00)) + \$0.00) * 1$$

Document Printing (Annual Catalog.pdf) Cost for this file: \$33.00

Paper Sizing & Handling <p>Paper Size: Letter (8.5" x 11")</p> <p>Paper Type: Plain (20lb/75gsm)</p> <p>Print Type: <input checked="" type="radio"/> Black & White <input type="radio"/> Color</p> <p>Copies: <input type="text" value="1"/></p> <p>Orientation: <input checked="" type="radio"/> Portrait <input type="radio"/> Landscape</p> <p>Layout: <input checked="" type="radio"/> Actual Size <input type="radio"/> Fit <input type="radio"/> Custom <input type="text" value="100"/> %</p> <p><input type="checkbox"/> Print on both sides of paper</p> <p>Finishing: None</p> <p><input type="checkbox"/> Apply same setting to all files</p>	Document: 8.5 x 11.0in 8.5 x 11 Inches  Page 1 of 220	
Discard File	Add to Cart	Cancel Order

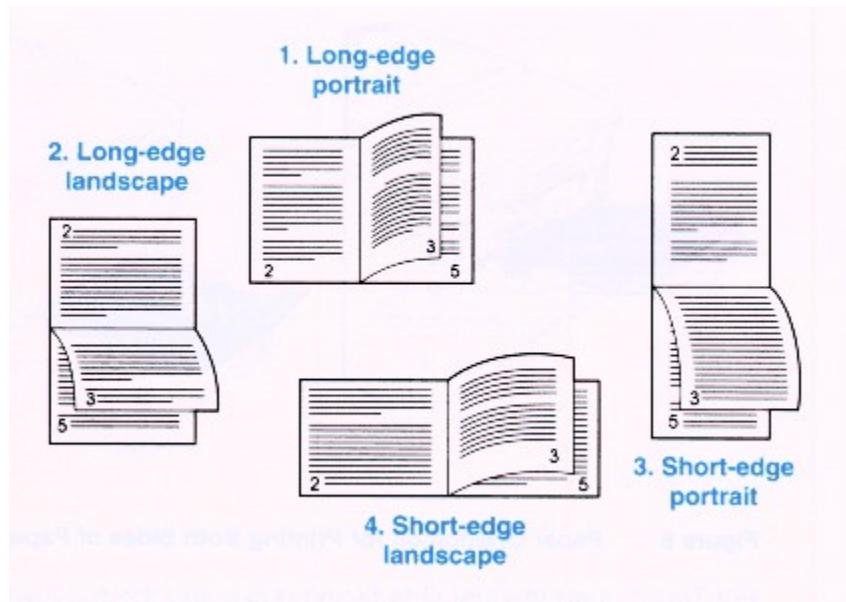
Refer to the pricing section for how price is computed:

$$\text{PPI} = (\text{NoP} * (\text{BPP} + \text{PaP} + \text{PrT} - \text{DSD})) * \text{NoC}$$

$$\$33.00 = ((220 * (\$1.50 + \$0.10 + \$0.20 - \$0.05)) + \$5.00) * 3$$

Document Printing (2023_Calendar.pdf) Cost for this file: \$73.50

Paper Sizing & Handling Paper Size: Ledger (11" x 17") <input type="button" value="▼"/> Paper Type: Cardstock (110lb Index/200gsm) <input type="button" value="▼"/> Print Type: <input type="radio"/> Black & White <input checked="" type="radio"/> Color	Document: 12.0 x 18.0in 17 x 11 Inches  Page 3 of 14	
Copies: <input type="text" value="3"/> <input type="button" value="▲"/> <input type="button" value="▼"/> Orientation: <input type="radio"/> Portrait <input checked="" type="radio"/> Landscape		
Layout: <input type="radio"/> Actual Size <input type="radio"/> Fit <input checked="" type="radio"/> Custom <input type="text" value="50"/> %		
<input checked="" type="checkbox"/> Print on both sides of paper <input type="radio"/> Flip of long edge <input checked="" type="radio"/> Flip on short edge		
Finishing: Comb Binding <input type="button" value="▼"/> 		
<input type="checkbox"/> Apply same setting to all files		
<input type="button" value="Discard File"/>	<input style="background-color: blue; color: white; font-weight: bold;" type="button" value="Add to Cart"/>	<input type="button" value="Cancel Order"/>



Defaults and Navigation:

- Print mode: Bordered Prints
- Filename must appear on the top bar.
- Computed cost must also appear on the top bar.
- Paper Size: Letter
- Paper Type: Plain
- Print Type: Black & White
- Layout: Fit

- Copies: 1
 - Actual Size (If the customer chooses a different option, the preview should show appropriate change)
 - Orientation should be auto determined from the file metadata.
 - When Print on both sides is selected
 - if the orientation is Portrait, the default should be “Flip on Long Edge”
 - if the orientation is Landscape, the default should be “Flip on Short Edge”
 - An icon should be displayed based on the combination of orientation and the Flip.

Paper Types:

- **Letter (8.5" x 11")**
 - Plain (20lbs/75gsm)
 - Plain + (28 lbs/105gsm)
 - Plain ++ (32lbs/120gsm)
 - Cardstock (110lb Index/200gsm)
 - Cardstock - Glossy (80lb Cover/216gsm)
 - Colored: Pink (20lbs/75gsm)
 - Colored: Green(20lbs/75gsm)
 - Colored: Gold (20lbs/75gsm)
 - Colored: Blue (20lbs/75gsm)
 - Colored: Canary (20lbs/75gsm)
 - Colored: Yellow (20lbs/75gsm)
 - **Legal (8.5" x 14")**
 - Plain (20lbs/75gsm)
 - Cardstock (110lb Index/200gsm)
 - **Ledger (11" x 17")**
 - Plain (20lbs/75gsm)
 - Gloss (30lbs/105lbs)
 - Cardstock (110lb Index/200gsm)
 - Cardstock - Glossy (80lb Cover/216gsm)
 - **Arch B (12" x 18")**
 - Plain (20lbs/75gsm)
 - Gloss (32lb/120gsm)
 - Cardstock (110lb Index/200gsm)
 - Cardstock - Glossy (80lb Cover/216gsm)

Pricing:

Price per Item (Ppi) is computed as follows:

((Number of Pages (NoP) multiplied by

1

**Base Price for Paper Size (BPP) plus
Paper Type (PaP) plus
Print Type (PrT) minus
Double Sided Printout (DSC)**

1

)
) plus Finishing (Fsh)

) multiplied by the Number of Copies (NoC)

$$PnI = ((NcP * (BPP + PaP + PrT - DSD)) + Fsh) * NcC$$

1. Base Price per print:

Letter (8.5" x 11")	-	\$0.15
Legal (8.5" x 12")	-	\$0.25
Ledger (11" x 17")	-	\$1.80
ARCH B (12" x 18")	-	\$2.30

2. Color Print - Add \$0.20/print

3. Paper Types:

Plain (20lbs)	- Add \$0.00/print
Plain (28lbs)	- Add \$0.06/print
Plain (32lbs)	- Add \$0.10/print
Colored paper (20lbs)	- Add \$0.06/print
Gloss (30lbs/105lbs)	- Add \$0.14/print
Cardstock (110lbs)	- Add \$0.14/print
Cardstock - Glossy (80lb Cover/216gsm)	- Add \$0.20/print

4. Double Sided Discount:

DSD should be \$0.00 if Double sided is not selected

Plain (20lbs)	- Minus \$0.00/print
Plain (28lbs)	- Minus \$0.03/print
Plain (32lbs)	- Minus \$0.05/print
Colored paper (20lbs)	- Minus \$0.03/print
Gloss (30lbs/105lbs)	- Minus \$0.07/print
Cardstock (110lbs)	- Minus \$0.07/print
Cardstock - Glossy (80lb Cover/216gsm)	- Minus \$0.10/print

5. Finishing:

Stapling – Left Corner	- Add \$0.10
Stapling - Right Corner	- Add \$0.10
3- Hole Punch	- Add \$1.00
2-Hole Punch	- Add \$1.00
Comb Binding	- Add \$5.00

- Note: Stapling option should be disabled if the number of single sided pages is more than 50 pages or double-sided pages is more than 100 pages**

Add to Cart

If the user selects “Apply same setting to all files”, then all files should be placed in the cart as individual line items with price computed for each file. The user should then be automatically moved to the checkout screen.

If the user does not select “Apply same setting to all files”, then that file should be moved to the cart and the user should be presented with the next file. Once the last file has been added to the cart, then the user should be moved to the checkout screen.

Discard file

If the user clicks on this button, then the file should be discarded and the next file should be presented. If the file being cancelled is the last file and the cart is not empty then the user should

be moved to the checkout screen. If the cart is empty, then the user should be moved to the landing page.

Cancel Order

If the user clicks this button, all uploaded files should be discarded, and removed from the cart. Then the user should be moved to the landing page.

4.1.2. Blueprints:

When the user clicks on this option, they should be presented with an upload page:

The screenshot shows a web browser displaying the 'Mail & Print' website. The header includes a logo for 'PACKAGEHUB BUSINESS CENTERS' with a stylized molecular or cube-like icon. The top navigation bar has links for Home, Copy & Print, Home & Business, Pack & Ship, Contact Us, Tracking, About Us, File Upload (which is highlighted in blue), Coupons, and Order Online. Below the navigation is a sub-header 'Blueprint Printing'. The main content area contains text about print services for architectural and engineering drawings, listing paper sizes like ARCH C, D, E, E1, and ANSI C, D, E, and print types like Color and Plain Bond. It also notes a note about standard document margins and a 'Document Printing' section. At the bottom is a 'Browse Your Files' section with icons for My Computer, Dropbox, Google Drive, and OneDrive, and a note about supported PDF formats.

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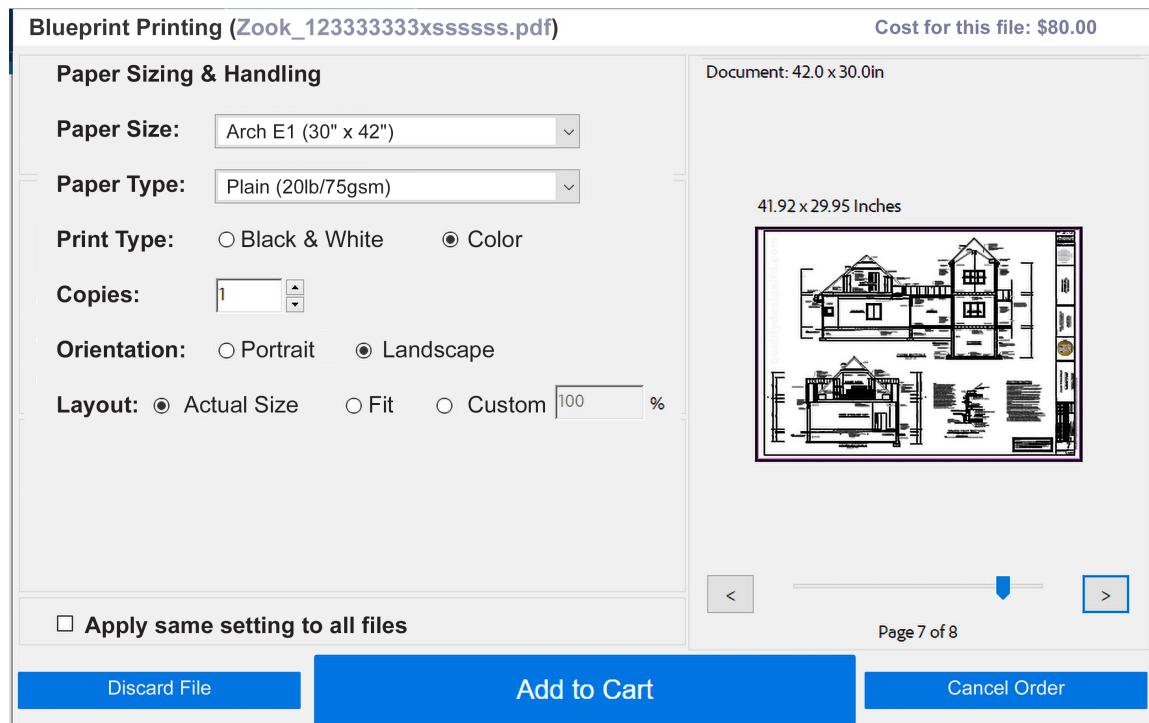
If the user clicks on the Document Printing hyperlink, they should be directed to the flyers upload page.

Once the user clicks on the page, they should be able to upload multiple files. NOTE: Each uploaded file should be treated as an individual cart item. The system should also validate that all

files being uploaded are of the acceptable file format. Any files that are not in the format should be removed from the list and the user should be given appropriate notice.

Once all valid files are uploaded, the user should be presented with the print screen. The print screen should be dynamic and adjust as the user makes changes. E.g. If a user changes the orientation, then the orientation should reflect in the preview. If they change the Print type to color, it should show the preview in color.

Sample screenshot of Blueprint Printing Screen:



Defaults and Navigation:

- Print mode: Bordered Prints
- Filename must appear on the top bar.
- Computed cost must also appear on the top bar
- Paper Size: Determined by file's metadata, Otherwise Arch D
- Paper Type: Plain
- Print Type: Color.
- Copies: 1
- Actual (If the customer chooses a different option, the preview should show appropriate change)
- Orientation should be auto determined from the file metadata.

Paper Types:

- Plain (20lbs/75gsm)

Pricing:

Price per Item (PPI) is computed as follows:

(Number of Pages (NoP) multiplied by
 Base Price for Paper Size (BPP)) multiplied by
 Number of copies (NoC)

$$PPI = (NoP * BPP) * NoC$$

1. Base Price per print:

Architectural Drawings:

Arch C (18" x 24")	- \$4.50
Arch D (24" x 36")	- \$5.75
Arch E (36" x 48")	- \$10.50
Arch E1 (30" x 42")	- \$10.00
1/2 E1 (15" x 22")	- \$4.50

Engineering Drawings:

ANSI C (17" x 22")	- \$4.50
ANSI D (22" x 34")	- \$5.75
ANSI E (34" x 44")	- \$10.50

Add to Cart

Same as Document Printing

Discard file

Same as Document Printing

Cancel Order

Same as Document Printing

4.1.3. Photo Printing:

When the user clicks on this option, they should be presented with an upload page:

The screenshot shows the Mail & Print website. At the top, there's a header with social media icons (Facebook, Twitter, LinkedIn) and contact information: phone number 484.709.2674, address 4712 Penn Ave, Sinking Spring, PA 19608, and operating hours Today: 8:00 AM - 6:00 PM. Below the header is a navigation bar with links: Home, Copy & Print, Home & Business, Pack & Ship, Contact Us, Tracking, About Us, File Upload, Coupons, and Order Online. The main content area is titled "Photo Printing". It contains text about the service, supported photo sizes (4" x 6", 5" x 7", 6" x 8", 8" x 10", 13" x 19"), print types (Color or Black & White), and paper types (Photo Gloss or Photo Luster). A note says: "Note: For larger size photo prints, please use the [Posters](#) option." Below this is a "Browse Your Files" section with icons for My Computer, Dropbox, Google Drive, and OneDrive, and a note about supported file formats: PDF, JPG, PNG. At the bottom of the page is a copyright notice in red text: "Copyright Notice: It is illegal to reproduce photographs taken by a professional photographer or other works subject to copyright without the permission of the copyright holder. By proceeding with this print request, you are acknowledging that this document is not subject to copyright or that you have obtained permission from the photographer/copyright holder".

If the user clicks on the Posters hyperlink, they should be directed to the Posters upload page.

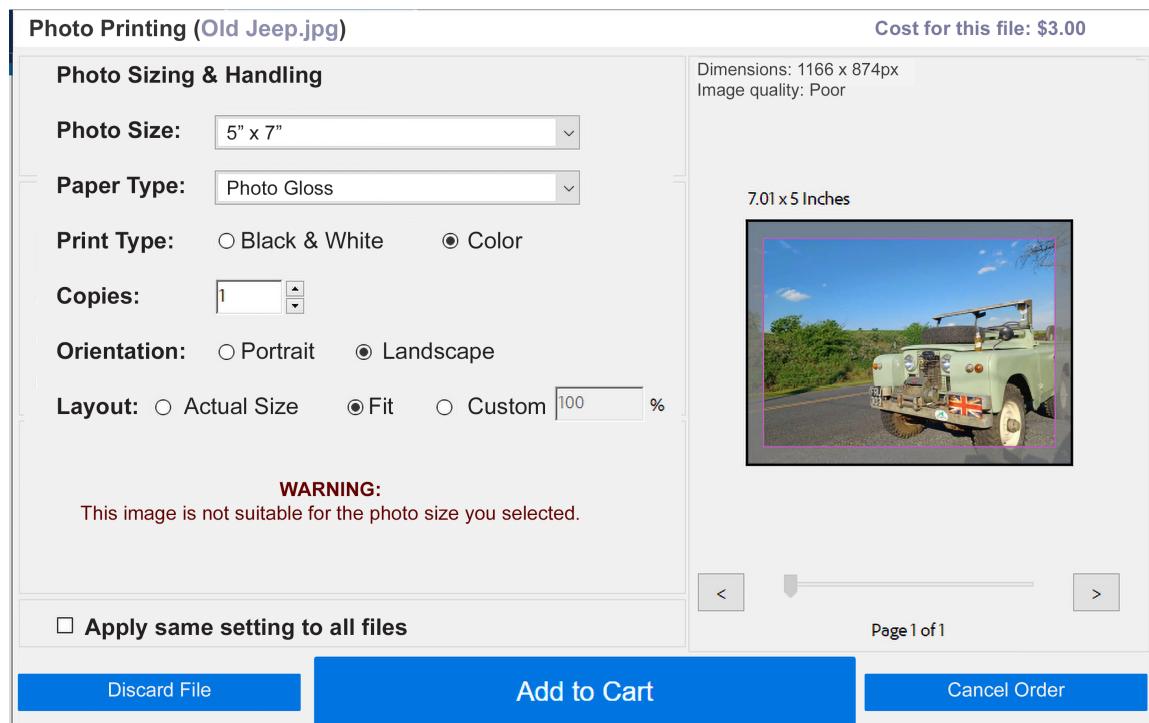
Once the user clicks on the page, they should be able to upload multiple files. NOTE: Each uploaded file should be treated as an individual cart item. The system should also validate that all files being uploaded are of the acceptable file format. Any files that are not in the format should be removed from the list and the user should be given appropriate notice.

Once all valid files are uploaded, the user should be presented with the print screen. The print screen should be dynamic and adjust as the user makes changes. E.g. If a user changes the orientation, then the orientation should reflect in the preview. If they change the Print type to color, it should show the preview in color.

IMPORTANT:

1. The designer must familiarize themselves with borderless printing functionality. Most Ink Jet printers have this functionality. Photo printing uses borderless printing. Accordingly, the preview should reflect that by showing sides that will not print based on the paper size.
2. Notice that the photo dimensions is in pixel form.
3. Each file should be validated to ensure it is suitable for printing. If it is not, the user should get a message on screen, and that message must be accompanied in the cart.

Sample screenshot of Photo Printing Screen:



Defaults and Navigation:

- Print mode: Borderless Prints
- Filename must appear on the top bar.
- Computed cost must also appear on the top bar
- Photo Size: 4"x6"
- Paper Type: Photo Gloss
- Print Type: Color.
- Copies: 1
- Actual (If the customer chooses a different option, the preview should show appropriate change)
- Orientation should be auto determined from the file metadata.

Image Quality Validation

- There are multiple ways to compute print resolution or DPI (Dots Per Inch).
 - If the image size has less than 200 DPI, it is of **poor** quality.
 - If the image size has more than 200DPI but less than 290DP, it is of **average** quality.
 - If the image size has more than 290DPI, it is of **good** quality.
- This is one way to compute for DPI:
 - If $(\text{Paper Dimension} * 200^2 < \text{Image Pixel Dimension})$
Quality is poor
 - Elseif $(\text{Paper Dimension} * 290^2 < \text{Image Pixel Dimension})$
Quality is average
 - Else
Quality is good.

e.g. In the sample above

Paper Dimension (5*7)*(200*200)	= 1,400,000px
Image Pixel Dimension (1166*874)	= 1,019,084px
Therefore, Poor Quality	

Paper Types:

- Photo Gloss
- Photo Luster

Pricing:

Price per Item (Ppl) is computed as follows:

$$(\text{Number of Pages (NoP) multiplied by} \\ (\text{Base Price for Paper Size (BPP) plus} \\ \text{Paper Type (PaP) plus} \\))$$

) multiplied by the Number of Copies (NoC)

$$\text{Ppl} = (\text{NoP} * (\text{BPP} + \text{PaP}) * \text{NoC})$$

1. Base Price per print:

4" x 6"	-	\$1.00
5" x 7"	-	\$2.50
6" x 8"	-	\$2.80
8" x 10"	-	\$3.00
13" x 19"	-	\$18.00
16" x 20"	-	\$25.00

2. Paper Types:

Photo Gloss	- Add \$0.00/print
Photo Luster	- Add \$0.50/print

- Paper Type for 13x19 and 16x20 should be Photo Luster only.
- Paper Type for 6x8 should be Photo Gloss only.

Add to Cart

Same as Document Printing

Discard file

Same as Document Printing

Cancel Order

Same as Document Printing

Add to Cart

Same as Document Printing

Discard file

Same as Document Printing

Cancel Order

Same as Document Printing

4.1.4. Outdoor Banner Printing:

When the user clicks on this option, they should be presented with an upload page:

The screenshot shows a web browser displaying the 'Mail & Print' website. The header includes social media links (Facebook), phone number (484.709.2674), address (4712 Penn Ave, Sinking Spring, PA 19608), and operating hours (Today: 8:00 AM - 6:00 PM). The 'PACKAGEHUB BUSINESS CENTERS' logo is also present. A navigation bar at the top has links for Home, Copy & Print, Home & Business, Pack & Ship, Contact Us, Tracking, About Us, File Upload, Coupons, and Order Online. Below the navigation bar, the page title is 'Banner Printing'. It contains descriptive text about banner printing services, including sizes (upto 96" long), types (Color or Black & White), and paper types (Indoor Banner, Outdoor Banner, Photo Luster, Canvas, Adhesive, Plain Paper). A note states: 'Note: For larger sizes, please use the [Big Banner](#) option.' Below this is a 'Browse Your Files' section with icons for My Computer, Dropbox, Google Drive, and OneDrive, and supported file formats (PDF, JPG, PNG). A copyright notice at the bottom states: 'Copyright Notice: It is illegal to reproduce photographs taken by a professional photographer or other works subject to copyright without the permission of the copyright holder. By proceeding with this print request, you are acknowledging that this document is not subject to copyright or that you have obtained permission from the photographer/copyright holder.'

If the user clicks on the Big Banners hyperlink, they should be directed to the Big Banners upload page.

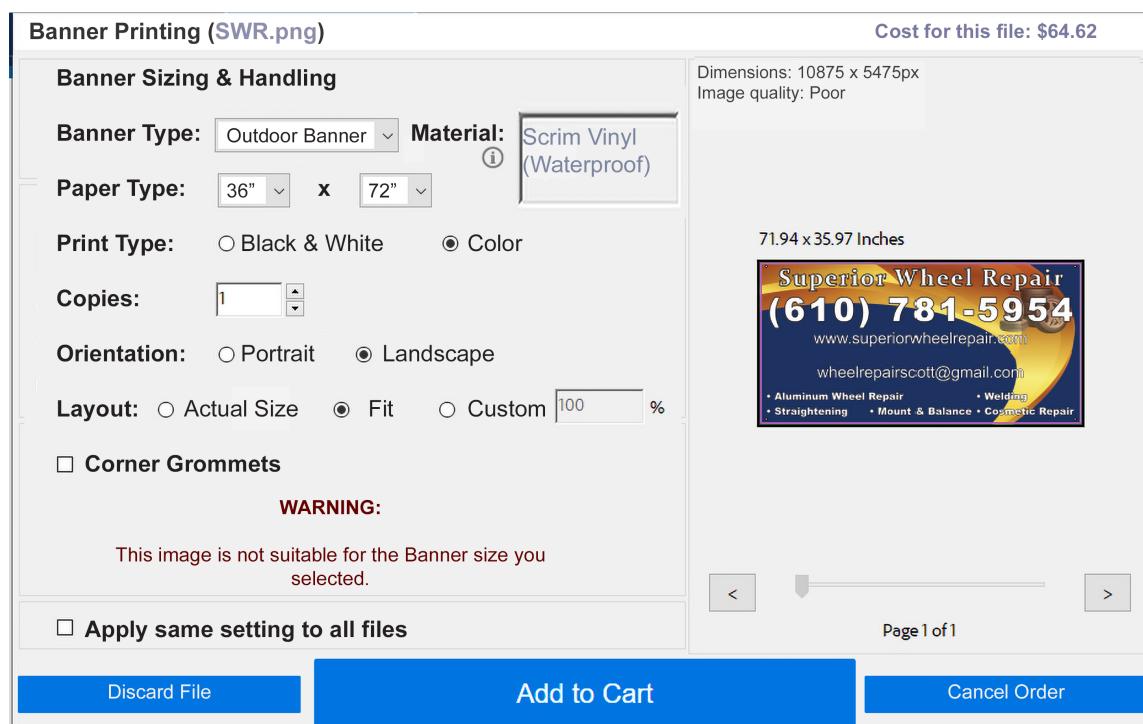
Once the user clicks on the page, they should be able to upload multiple files. NOTE: Each uploaded file should be treated as an individual cart item. The system should also validate that all files being uploaded are of the acceptable file format. Any files that are not in the format should be removed from the list and the user should be given appropriate notice.

Once all valid files are uploaded, the user should be presented with the print screen. The print screen should be dynamic and adjust as the user makes changes. E.g. If a user changes the orientation, then the orientation should reflect in the preview. If they change the Print type to color, it should show the preview in color.

IMPORTANT:

4. The designer must familiarize themselves with borderless printing functionality. Most Ink Jet printers have this functionality. Photo printing uses borderless printing. Accordingly, the preview should reflect that by showing sides that will not print based on the paper size.
5. Notice that the photo dimensions is in pixel form.
6. Each file should be validated to ensure it is suitable for printing. If it is not, the user should get a message on screen, and that message must be accompanied in the cart.

Sample screenshot of Banner Printing Screen:



Defaults and Navigation:

- Filename must appear on the top bar.
- Computed cost must also appear on the top bar
- Banner Size: 24"x72"
- Paper Type: Outdoor Banner

- Print Type: Color
- Copies: 1
- Fit (If the customer chooses a different option, the preview should show appropriate change)
- Orientation should be auto determined from the file metadata.

Image Quality Validation

- There are multiple ways to compute print resolution or DPI (Dots Per Inch).
 - If the image size has less than 200 DPI, it is of **poor** quality.
 - If the image size has more than 200DPI but less than 290DP, it is of **average** quality.
 - If the image size has more than 290DPI, it is of **good** quality.
- This is one way to compute for DPI:
 - If (Paper Dimension * 200² < Image Pixel Dimension)
Quality is poor
 - Elseif (Paper Dimension * 290² < Image Pixel Dimension)
Quality is average
 - Else
Quality is good.

e.g. In the sample above

$$\begin{aligned} \text{Paper Dimension } (18*24) * (290*290) &= 36,331,200\text{px} \\ \text{Image Pixel Dimension } (5400*7200) &= 38,880,000\text{px} \\ \text{Therefore, Good Quality} \end{aligned}$$

Paper Types:

- Listed below along with Base Price (BPT) and Cost per Square Inch (CSI) for each paper type.

Pricing:

Price per Item (Ppl) is computed as follows:

(Number of Pages (NoP) multiplied by
 (Base Price for Paper Type (BPT) plus
 (Total Inches (TI) multiplied by
 Cost per Square Inch (CSI)
)
)
)

) multiplied by the Number of Copies (NoC)

$$Ppl = (NoP * (BPT + (TI*CSI)) * NoC)$$

3. Paper Type based Price per print:

PT	BPT	CSI
Outdoor Banner – Scrim Vinyl	5.00	\$0.038

4. Paper Roll Sizes:

PT	Width	Length
Outdoor Banner – Scrim Vinyl	24, 36	6-96

5. Cost per Square Inch Calculation:

Size	Total Inches (TI)
18" x 24"	432
20" x 24"	480
24" x 30"	720
DO NOT HARDCODE THE TOTAL INCHES. Use the size to compute the TI. Eg. 18*24 = 432	

Note: This are Large Format Prints. Accordingly, the sizing is restricted to the roll width. Not all roll width will be available for all products. As to the length, the minimum is 6" and the maximum is 96"

We should be able to select different roll sized for different paper types available. Roll width are 18", 22", 24", 34", 36", 42" and 44". As listed above not all sizes are available for any of particular roll of paper.

If the image orientation is Landscape, the drop box for the width should only contain the width available for the paper type selected. The length field should allow them to select any value from 6"-96".

If the image orientation is Portrait, the drop box for the length should only contain the width available for the paper type selected. The width field should allow them to select any value from 6"-96".

If the user changes the orientation, these fields should swap automatically.

Add to Cart

Same as Document Printing

Discard file

Same as Document Printing

Cancel Order

Same as Document Printing

4.1.5. Indoor Banner Printing:

Same functionality as Outdoor Banner. Only difference will be the Paper Type.

1. Paper Type based Price per print:

PT	BPT	CSI
Indoor Banner – Polypropylene Vinyl	5.00	\$0.038

2. Paper Roll Sizes:

PT	Width	Length

Indoor Banner – Polypropylene Vinyl	24, 36	6-96
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4.1.6. Adhesive Banner Printing:

Same functionality as Outdoor Banner. Only difference will be the Paper Type.

1. Paper Type based Price per print:

PT	BPT	CSI
Repositionable Fabric	5.00	\$0.038
Permanent Vinyl		

2. Paper Roll Sizes:

PT	Width	Length
Repositionable Fabric	24	6-96
Permanent Vinyl	24	6-96

4.1.7. Poster Printing:

When the user clicks on this option, they should be presented with an upload page:

The screenshot shows the 'Poster Printing' service page on the Mail & Print website. At the top, there's a header with the Mail & Print logo, social media links (Facebook), and contact information (484.709.2674, 4712 Penn Ave, Sinking Spring, PA 19608, Today: 8:00 AM - 6:00 PM). Below the header is a navigation bar with links: Home, Copy & Print, Home & Business, Pack & Ship, Contact Us, Tracking, About Us, File Upload, Coupons, and Order Online. A 'File Upload' button is also present in the top right corner of the main content area. The main content area contains text about poster printing services, supported paper types, and a note for custom sizes. Below this is a 'Browse Your Files' section with icons for My Computer, Dropbox, Google Drive, and OneDrive, and a note about supported file formats (PDF, JPG, PNG). A red 'Copyright Notice' is displayed at the bottom of the page.

This service is for standard poster prints.
Photo sizes: 18" x 24", 20" X 24", 24" X 30", 24" x 36", 36" x 48"
Print Type: Color or Black & White
Paper Types: Photo Luster

Note: For custom sizes and/or other paper options, please use the [Banner](#) option.

Browse Your Files X

Supported formats: [PDF](#) [JPG](#) [PNG](#)

Copyright Notice: It is illegal to reproduce photographs taken by a professional photographer or other works subject to copyright without the permission of the copyright holder. By proceeding with this print request, you are acknowledging that this document is not subject to copyright or that you have obtained permission from the photographer/copyright holder

If the user clicks on the Posters hyperlink, they should be directed to the Posters upload page.

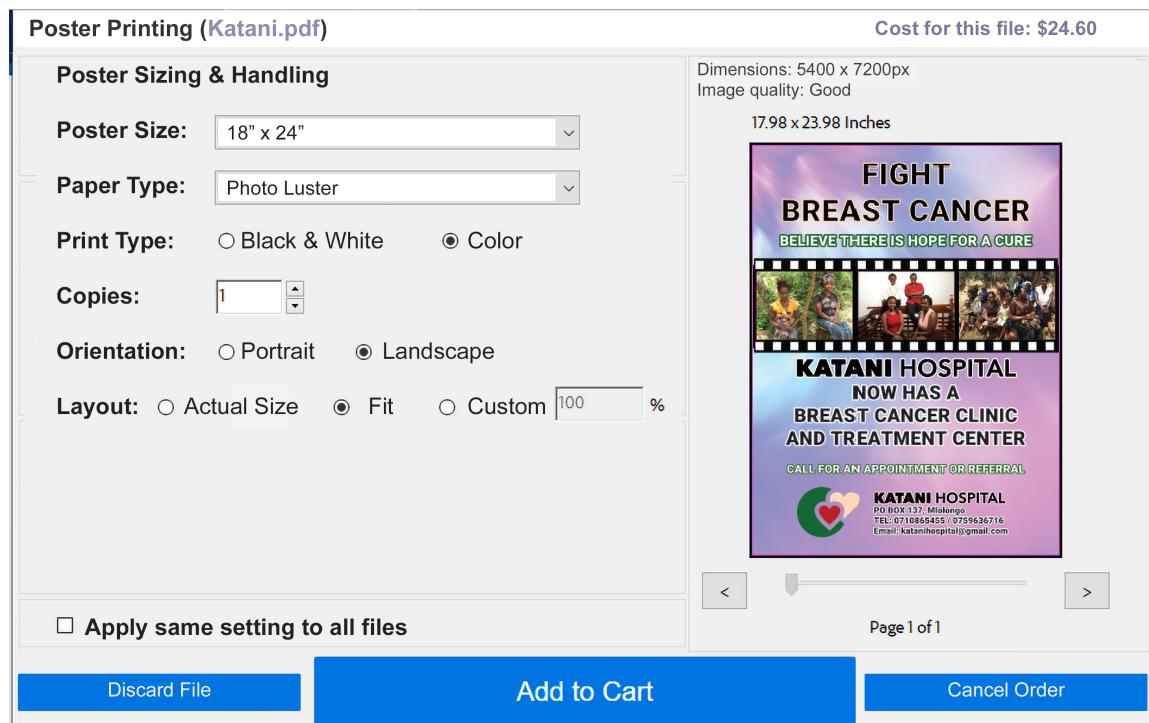
Once the user clicks on the page, they should be able to upload multiple files. NOTE: Each uploaded file should be treated as an individual cart item. The system should also validate that all files being uploaded are of the acceptable file format. Any files that are not in the format should be removed from the list and the user should be given appropriate notice.

Once all valid files are uploaded, the user should be presented with the print screen. The print screen should be dynamic and adjust as the user makes changes. E.g. If a user changes the orientation, then the orientation should reflect in the preview. If they change the Print type to color, it should show the preview in color.

IMPORTANT:

7. The designer must familiarize themselves with borderless printing functionality. Most Ink Jet printers have this functionality. Photo printing uses borderless printing. Accordingly, the preview should reflect that by showing sides that will not print based on the paper size.
8. Notice that the photo dimensions is in pixel form.
9. Each file should be validated to ensure it is suitable for printing. If it is not, the user should get a message on screen, and that message must be accompanied in the cart.

Sample screenshot of Photo Printing Screen:



Defaults and Navigation:

- Filename must appear on the top bar.
- Computed cost must also appear on the top bar
- Photo Size: 18"x24"
- Paper Type: Photo Luster
- Print Type: Color
- Copies: 1
- Fit (If the customer chooses a different option, the preview should show appropriate change)
- Orientation should be auto determined from the file metadata.

Image Quality Validation

- There are multiple ways to compute print resolution or DPI (Dots Per Inch).
 - If the image size has less than 200 DPI, it is of **poor** quality.
 - If the image size has more than 200DPI but less than 290DP, it is of **average** quality.
 - If the image size has more than 290DPI, it is of **good** quality.
- This is one way to compute for DPI:
 - If (Paper Dimension * 200² < Image Pixel Dimension)
Quality is poor
 - Elseif (Paper Dimension * 290² < Image Pixel Dimension)
Quality is average
 - Else
Quality is good.

e.g. In the sample above

Paper Dimension (18*24) * (290*290) = 36,331,200px

Image Pixel Dimension (5400*7200) = 38,880,000px

Therefore, Good Quality

Pricing:

Price per Item (Ppl) is computed as follows:

(Number of Pages (NoP) multiplied by

(

Base Price for Paper Type (BPT) plus

(Total Inches (TI) multiplied by
Cost per Square Inch (CSI)

)

)

) multiplied by the Number of Copies (NoC)

$$\text{Ppl} = (\text{NoP} * (\text{BPT} + (\text{TI} * \text{CSI}))) * \text{NoC}$$

6. Paper Type based Price per print:

PT	BPT	CSI
Photo Luster	\$3.00	\$0.05
Indoor Banner – Polypropylene Vinyl		
Outdoor Banner		
Adhesive Fabric		
Adhesive Vinyl		
Plain Paper		

7. Paper Sizes:

Size	Total Inches (TI)
18" x 24"	432
20" x 24"	480
24" x 30"	720
DO NOT HARDCODE THE TOTAL INCHES. Use the size to compute the TI. Eg. 18*24 = 432	

4.1.8. T-Shirt Transfer Sheets:

Same functionality as Photo Printing with following differences.

Print Mode: Bordered

Paper Types: For Light/White Fabric
For Dark/Black Fabric

Paper Size: 8.5" x 11"

Price per Unit: \$5.00

4.1.9. Magnet Sheets:

Same functionality as Photo Printing with following differences.

Print Mode: Borderless

Paper Type: 13.5mil Magnetic Sheet

Paper Size: 8.5" x 11"

Price per Unit: \$5.00

4.2. Specialty Items

It is essential that the designers/developers understand basic print functionality options. All examples shown in here can be recreated in **Adobe Acrobat Reader**.

4.2.1 Documents

When the user clicks on this option, they should be presented

4.3. High Volume Items

It is essential that the designers/developers understand basic print functionality options. All examples shown in here can be recreated in **Adobe Acrobat Reader**.

4.3.1. Documents

4.4. Personalized Items

This will be items such as Graduation Signs, Realtor Signs, etc which will be similar to drop ship module items.

4.4.1. Graduation Items

5. Estimated Completion

This is an essential function for both orders that are being submitted for pick-up (local orders) as well as those that are shipping. Estimating completion time for local orders is going to be more complex over orders that are shipping. **Special note: This must be dynamic and is dependant on the time the order is placed, not when the order is placed in the cart. As well as orders waiting to be printed.**

5.1. Local Orders

Local orders are processed on different machines and must be computed at page level by product. Documents are printed on Konica Minolta Bizhub 250i at 20 pages per minute. An additional 30 mins should be added to any order for prepping. Additionally, the system should also factor in items in the queue to determine estimated completion.

E.g., a 100-page document would be expected to be complete in 30+5 minutes if there are no other orders in the queue. However, if the queue already has a 40 min order waiting to be printed, then the estimate would be 40 + 35 mins.

6. Product Specific Milestones & Deliverables

Project timeline and project progress are important. Unfortunately, a lot of IT Projects do not come to fruition. It is important all people involved understand what the expectations are. Therefore, the following milestones and associated deliverables have been established for individual products as it relates to this project. While development of front end and back end can happen concurrently, the following order has been established to get each product to completion:

6.1. Upload Screen

The upload screen images provided in the product specific functional requirements section is self-explanatory.

6.2. Order Screen

The Order screen images provided in the product specific functional requirements section is self-explanatory.

6.3. Cart/Checkout Screen

This should be standard following a typical checkout cart.

6.4. Upload Functionality

When a user uploads a file, there should be a validation check to make sure that the file is in acceptable format. Furthermore, since the user can upload multiple files and some of these files may be large, the upload process should display the upload sequence number of the file (e.g. 1 of 3), the name of the file and display upload progress in percentage so the user knows the upload is happening.

It is also important that the following metadata information from the file be captured so it can be used on the order screen. Relevant metadata for any upload will be as follows where it's available:

- Total number of pages
- Document/image length (in inches)
- Document/image width (in inches)
- Document/image resolution (in pixels)
 - Length
 - Width
 - Dots per inch

Additionally, the uploaded file needs to be stored in its original form somewhere for us to be able to access.

6.5. Order Functionality (per uploaded file)

Order screen functionality is dependant on the number of files uploaded. Each file will be an individual cart item and will reflect the options the user has selected. Pricing is computed at file level and must be displayed to the user at file level.

For documents, the relevant information per file will be:

- Paper size
- Paper Type
- Print Type
- Number of copies
- Orientation
- Layout
- Print Style - Single Sided, Double Sided (flip on long edge), Double sided (flip on short edge)

Once submitted, the item will be placed in the cart with all relevant information. Also note the discard and batch submission functionality described in the requirements section.

6.6. Cart Functionality

The cart would list each uploaded file along with the relevant information for each file, as well as Sales Tax and total amount to be charged. Additionally, the cart should also show estimated completion time (or pick up time) for the whole order.

