



User Manual

DigiBunai™ Ver-0.9.6 Beta



Open Source CAD Tool for Weaving

Digital India Corporation
Ministry of Electronics & Information Technology, Govt. of India

Contents

- 1 Introduction..... 12
- 1.1 Overview..... 12
- 1.2 Usage and Warning 12
- 1.3 About software..... 12
- 1.4 Application Requirements 12
- 1.4.1 Hardware Requirement..... 12
- 1.4.2 Software Requirement..... 13
- 1.5 Program Installation 13
- 1.5.1 User Registration..... 13
- 1.6 Installation of DigiBunai™ 18
- 1.6.1 Create New User - Sign Up..... 25
- 1.6.2 Login the Existing Users – Sign In..... 25
- 1.6.3 Forget Password..... 25
- 1.7 Running the Application..... 26
- 1.8 Dashboard..... 26
- 1.8.1 Fabric and Artwork Size..... 27
- 1.8.2 Warp thread..... 27
- 1.8.3 Weft thread..... 27
- 1.8.4 Miscellaneous..... 27
- 1.8.5 User Settings..... 28

1.8.6 User Preferences.....	29
1.8.7 User Profile.....	29
1.8.8 Information flow in the Application.....	30
1.8.9 Creating a Digital Fabric.....	33
1.8.9.1 Dobby Weave.....	33
1.8.9.2 Artwork Designer.....	34
1.8.9.3 Fabric Creator.....	35
1.8.9.4 Garment Viewer.....	36
2 Fabric Creator Module	37
2.1 New fabric creation (Selection of Weave for base fabric)	37
2.2 Creation of Jacquard Fabrics & Editing (Edit)	37
2.2.1 Jacquard Conversion.....	38
2.2.1.1 Assigning Weaves in base and Artwork (design).....	39
2.2.1.2 Assigning Extra Weft for Design.....	40
2.2.1.3 Assigning Extra Warp for Design.....	40
2.2.1.3 Assigning less extra wefts than colours of Artwork.....	40
2.2.1.4 Removing the weave.....	40
2.2.1.5 Fabric Type.....	40
2.2.1.6 Weave of Original Size of Artwork.....	40
2.2.1.7 Don't touch border of Motif.....	40
2.2.2 Transform Operation.....	40
2.2.3 Graph Correction.....	41
2.2.3.1 Float finding & Binding.....	42

2.2.4 Yarn Properties.....	42
2.2.5 Density.....	43
2.2.6 Thread Sequence.....	43
2.2.7 Switching Colours.....	44
2.2.8 Repeat Orientation.....	44
2.3 Visualization of Jacquard Designs on Fabric (View).....	45
2.3.1 Front/Rear Side View.....	45
2.3.2 Grid & Graph View.....	46
2.3.3 Front & Rear Visualization.....	47
2.3.4 Front & Rear Cut.....	48
2.3.5 Simulation.....	48
2.4 Save Fabric Creations & Outputs (File)	49
2.4.1 Save Fabric.....	49
2.4.1.1 Public.....	49
2.4.1.2 Protected.....	49
2.4.1.3 Private.....	49
2.4.2 Save As.....	49
2.4.3 Printing.....	49
2.4.3.1 Print Grid.....	50
2.4.3.2 Print Graph.....	50
2.4.3.3 Print Fabric Visualization.....	50
2.4.3.4 Print Front & Back View of Fabric.....	51
2.4.3.5 Print Front & Rear Cut of Fabric.....	51

2.4.4 Exports.....	51
2.4.4.1 Export as Grid.....	51
2.4.4.2 Export as Graph.....	51
2.4.4.3 Export as Texture.....	52
2.4.4.4 Export as HTML.....	52
2.4.4.5 Export as Text.....	53
2.5 Design Punching & Calculations	53
2.5.1 Manual or Piano Card Punching.....	53
2.5.2 Automatic Card Punching (Utility)	53
2.5.2.1 Select Punch Type.....	54
2.5.2.2 Select Punching Machine.....	57
2.5.2.3 Service Password.....	57
2.5.3 Consumption Calculation.....	57
2.5.4 Price Calculator.....	57
2.6 Library of Fabrics (File)	57
2.6.1 Search.....	58
2.6.2 Sort.....	58
3 Garment Layout	58
3.1 Fabric Assignment.....	59
3.2 Edit Fabric.....	59
3.2.1 Jacquard Conversion.....	60
3.2.2 Yarn Properties.....	61
3.2.3 Thread Sequence.....	61

3.2.4 Density.....	61
3.2.5 Repeat Orientation.....	61
3.2.6 Clear.....	61
3.3 Garment Layouts Creation (Edit).....	61
3.3.1 Saree.....	61
3.3.1.1 Pre-Defined Layout.....	61
3.3.1.2 Custom layout.....	64
3.3.1.3 Repeat & Symmetry Setting.....	64
3.4 Secure Garment Layout & Outputs (File).....	65
3.4.1 Print.....	66
3.4.2 Export.....	66
3.4.3 Save.....	66
3.4.4 Open.....	66
4 Dobby Weave	66
4.1 Create Weave	66
4.1.1 Design to Drafting.....	67
4.1.2 Drafting to Design.....	67
4.2 Edit	67
4.2.1 Insert Warp.....	68
4.2.2 Delete Warp.....	68
4.2.3 Insert Weft.....	68
4.2.4 Delete Weft.....	68
4.2.5 Select.....	69

4.2.6 Copy.....	69
4.2.7 Paste.....	69
4.2.8 Mirroring.....	69
4.2.9 Clear.....	69
4.2.10 Move.....	69
4.2.11 Tilt.....	70
4.2.12 Rotation.....	70
4.2.13 Inversion.....	70
4.2.14 Double Layer Fabric.....	70
4.2.15 Multi & Complex Weave.....	73
4.2.16 Extra Warp (Dobby Patterns)	75
4.3 View	76
4.3.1 Zoom-In.....	76
4.3.2 Zoom-Out.....	76
4.3.3 Normal.....	77
4.3.4 Tiled View.....	77
4.3.5 Front & Rear side View.....	77
4.3.6 Front & Rear Visualization.....	77
4.3.7 Simulation View.....	78
4.3.8 Colour ways.....	79
4.3.9 Pattern Rendering.....	79
4.3.9 Secure the Weave creations & Weave Library (File)	81
4.4.1 Save/Save AS.....	81

4.4.2 Open & Load Recent.....	82
4.5 Import & Export.....	82
4.6 Print (File).....	83
4.7 Entering into Fabric creator	83
5 Artwork Designer.....	83
5.1 Create size.....	84
5.2 Sketch/Design Import.....	84
5.3 Design Secure & Library	84
5.3.1 Save/Save AS.....	84
5.3.2 Open.....	85
5.3.3 Load Recent.....	85
5.4 Paint Application.....	85
5.5 Import Refresh	85
5.6 Edit	85
5.6.1 Resize.....	86
5.6.2 Reduce Colours.....	87
5.6.3 Convert to Grey Scale/ Black & White.....	87
5.6.4 Undo & Redo.....	88
5.6.5 Colour Fill.....	88
5.6.6 Artwork sketch.....	88
5.6.7 Repeat orientation & Modes.....	88
5.6.7.1 Horizontal Modes.....	89
5.6.7.2 Vertical Mode.....	90

5.6.8 Design Mirroring with Repeats.....	90
5.6.9 Jacquard Conversion.....	92
5.6.10 Graph correction.....	92
5.7 Jacquard Design Visualization (View).....	93
5.7.1 Front Side.....	94
5.7.2 Front Visualization.....	94
5.7.3 Front Cut.....	95
5.7.4 Zoom Levels.....	95
5.7.5 Grid & Graph View.....	95
5.7.6 Tilled View.....	96
5.7.7 IKAT Effect.....	96
5.8 Export & Print.....	98
6 Configuration (Utility)	99
6.1 Fabric/Artwork.....	99
6.2 Warp Thread	100
6.2.1 Thread Name.....	101
6.2.2 Thread Colour.....	101
6.2.3 Thread Count.....	101
6.2.4 Thread Count Unit.....	101
6.2.5 Thread Diameter Factor.....	101
6.2.6 Thread Twist.....	101
6.2.7 Twist Sense.....	101
6.2.8 Thread Hairiness.....	101

6.2.9 Thread Ply.....	101
6.2.10 Thread Price (Per gram).....	101
6.2.11 Crimp.....	101
6.3 Weft Thread	102
6.3.1 Thread Name.....	102
6.3.2 Thread Colour.....	102
6.3.3 Thread Count.....	102
6.3.4 Thread Count Unit.....	102
6.3.5 Thread Diameter Factor.....	103
6.3.6 Thread Twist.....	103
6.3.7 Twist Sense.....	103
6.3.8 Thread Hairiness.....	103
6.3.9 Thread Ply.....	103
6.3.10 Thread Price (Per gram)	103
6.3.11 Crimp.....	103
6.4 Miscellaneous Other Settings	103
7 Support Modes.....	104
7.1 Conversion.....	104
7.1.1 Yarn Count.....	104
7.1.2 Linear Measure.....	104
7.1.3 Weight.....	104
7.1.4 GSM Conversion.....	104
7.2 Application Integration.....	105

7.2.1 Application Name.....	105
7.2.2 Application Type.....	105
7.2.3 Application path.....	105
7.3 Simulator.....	106
7.4 Import/Export.....	106
7.4.1 Data Export.....	106
7.4.1.1 Fabric Data.....	107
7.4.1.2 Artwork Data.....	107
7.4.1.3 Weave Data.....	107
7.4.1.4 Export.....	107
7.4.1.5 Export & Delete.....	107
7.4.2 Data Import	107
7.5 Library	108
7.5.1 Sorting.....	109
7.5.2 Searching.....	109
7.5.3 Update.....	109
7.5.4 Change Permission.....	109
7.5.5 Export.....	109
7.5.6 Delete.....	109
7.5.7 Export & Delete.....	109
7.6 Translator.....	109
7.6.1 Create.....	110
7.6.2 Open.....	110

7.6.3 Save.....	110
7.6.4 Save As.....	110
7.7 Help	110
7.7.1 Help Guide.....	110
7.7.2 Video Guide.....	111
7.7.3 Support.....	111
7.7.3.1 Technical Information.....	111
7.7.3.2 About Software.....	111
7.7.3.3 Contact Us.....	111
7.7.3.4 Product Support.....	112
7.7.3.5 Sign Out.....	112

1 Introduction

1.1 Overview

This operational manual provides a general instruction of how to use a Software. The manual assumes that the user have a working knowledge of weaving, computer and its operating conventions, including how to use a mouse and standard menus and commands.

1.2 Usage and Warning

Digital India Corporation (formerly Media Lab Asia) is trying to enhance its product so that you can get the quality product. Therefore, it may happen that the user manual and program you are using are inconsistent. It means you will find some new features in the different version. We are trying to enhance the application and trying to make it as simple as we can. An online help is also being provided through bunai.medialabasia.in. We would like to get comments, feedbacks, and suggestions from our users along with the report on malfunctioning. We will try to incorporate all of you feedback /suggestions but sometimes we will not be able to implement all your suggestions.

1.3 About software

This tool is used to make all over figured as well as weave based pattern fabrics such as Saree, brocades, dress material, stole, scarf, suiting & shirting etc. The fabrics are woven on a loom having Jacquard (s) attachment to control individual warps. Jacquard Design Fabrics are costly because of the time and skill involved in making the Jacquard cards, preparing the loom to produce a new pattern, and the slowness of the weaving operation. The Jacquard designs consist two or more basic weaves & different weaves used for the background. The software helps the user in design making & editing, assigning different weaves in the design and creating graph of the design. User can either take the printout of design or give the command to computerized jacquard card punching machine.

1.4 Application Requirements

1.4.1 Hardware Requirement

The software will work with the following configuration smoothly:

- Processor: Core i3 or above
- RAM: Minimum 4 GB or above

- Graphics- 2GB

1.4.2 Software Requirement

The minimum Software requirement for running Open Source CAD Tool is:

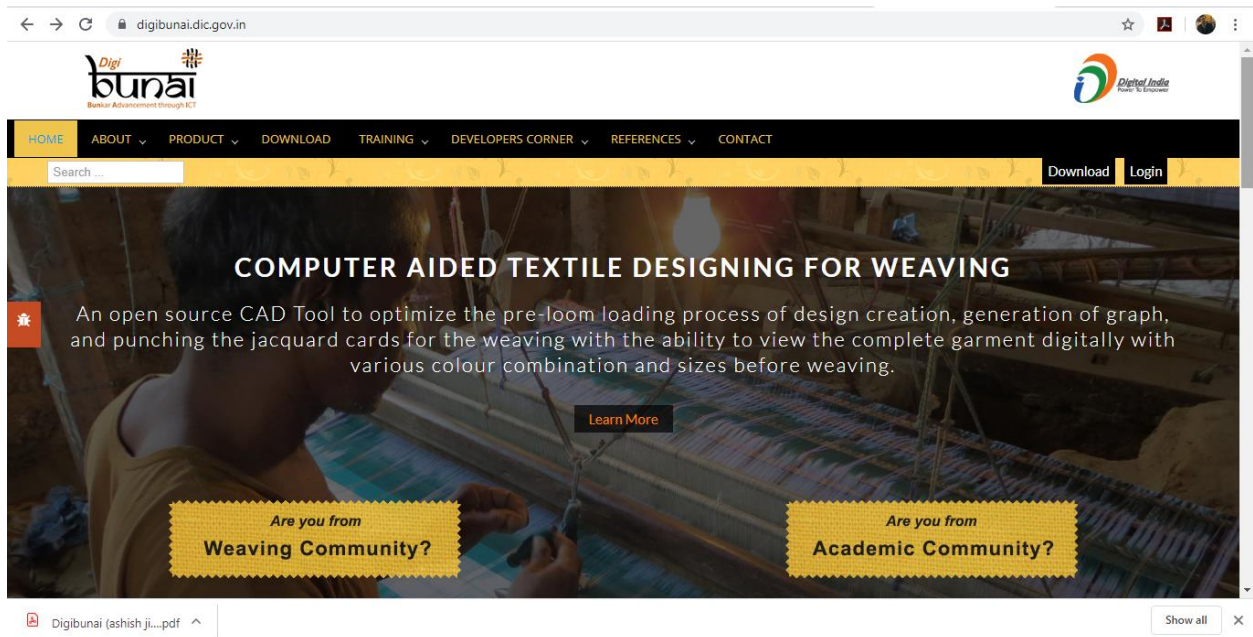
- Operating System: Windows 7, Windows 8, Windows 10.
- Java Runtime Environment: 1.7
- MySQL: 5.6 or above

1.5 Program Installation

1.5.1 User Registration

The DigiBunai™ needs user registration before installation. User can register on DigiBunai website (<https://digibunai.dic.gov.in/>) & follow the steps to download the DigiBunai CATD installer.

Open the Website & click on 'Login'.



User can fill their registration details. The account activation link will be automatically sent to user Email id after clicking on submit.

Fill the Login Details & click on **LOGIN**

digibunai.dic.gov.in/index.php/login-user

HOME ABOUT PRODUCT DOWNLOAD TRAINING DEVELOPERS CORNER REFERENCES CONTACT

Search ... Download Login

LOGIN DETAILS

Username* user

Password* *****

Sign In

Forgot the Password?
Forgot your Username?

REGISTRATION DETAILS

Name*: UserName*:

Password*: Confirm Password*:

E-mail*:

I have read the Disclaimer

Sign Up

Digibunai (ashish ji...pdf)

Click on the **Downloads**

digibunai.dic.gov.in/index.php?option=com_demographic&view=siteuser&layout=designerjob

HOME ABOUT PRODUCT DOWNLOAD TRAINING DEVELOPERS CORNER REFERENCES CONTACT

Search ... Welcome: user Dashboard Logout

Designer Jobs

Job Status: --Please Select-- search

Job	Progress Status	Action
TEST SAMPLE 9		

Requested

Manage Profile +

View Designers

View vendors

Punch Request +

My Punching Jobs

Punching Machine +

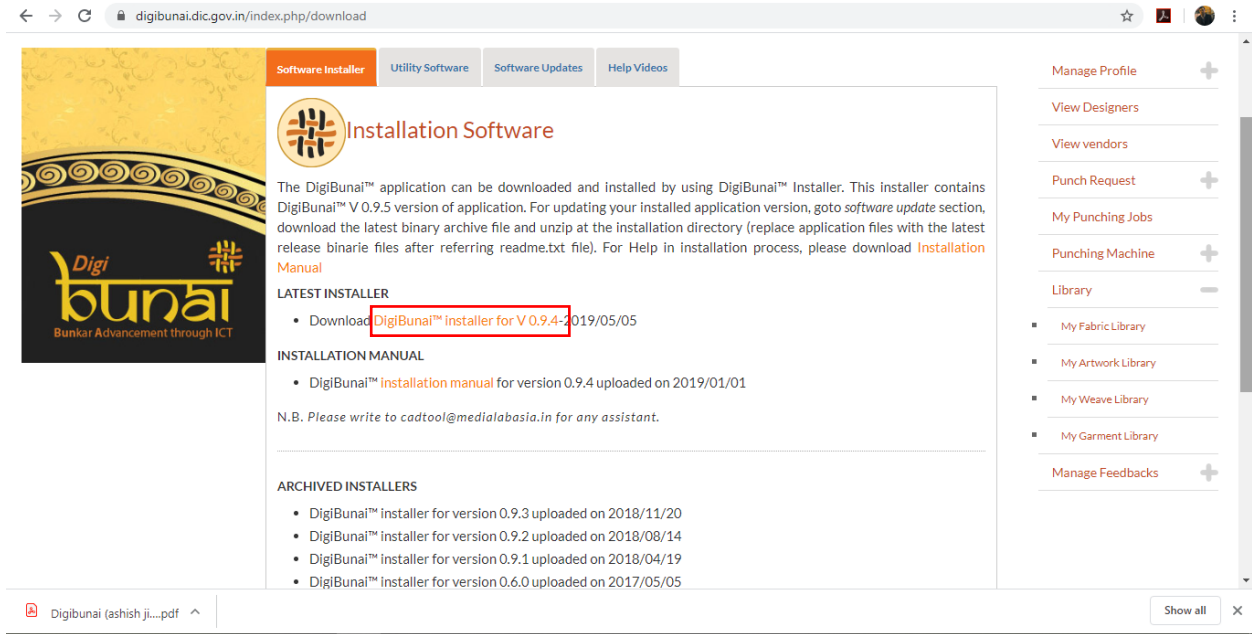
Library +

Manage Feedbacks +

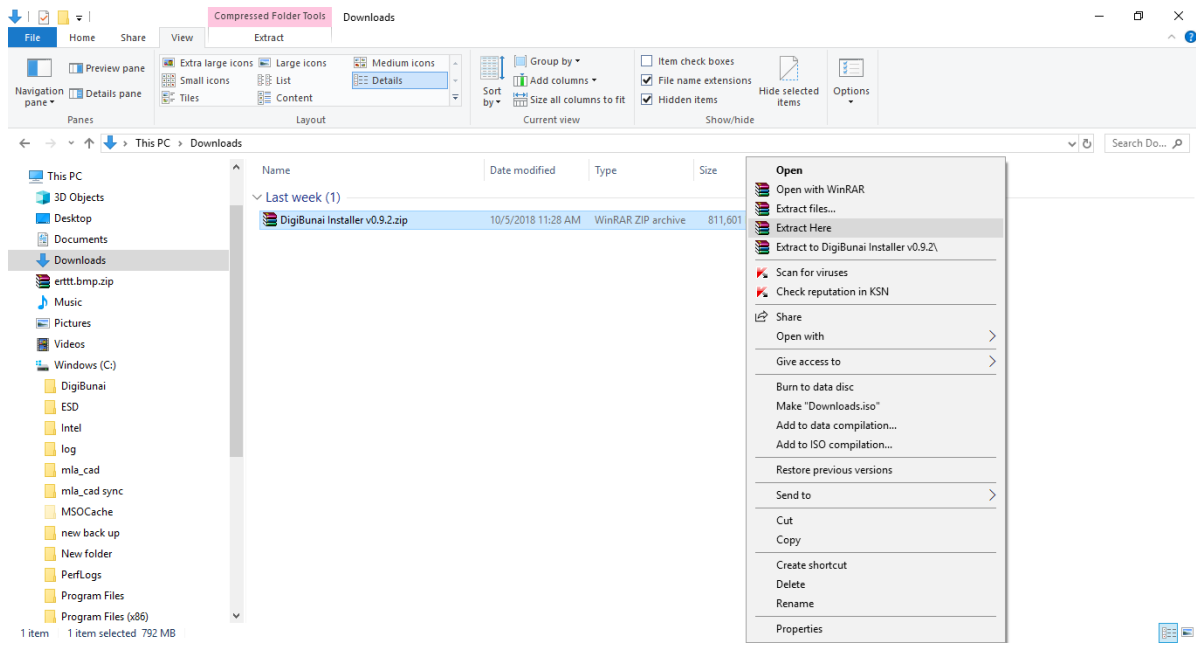
You are here: <https://digibunai.dic.gov.in/index.php/download>

Digibunai (ashish ji...pdf)

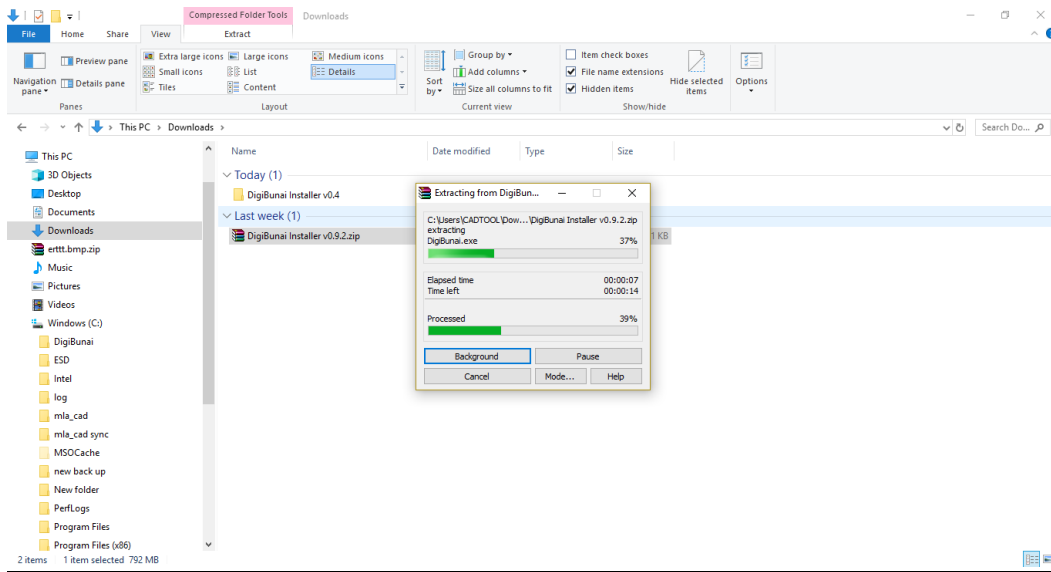
Click on Installer to download the software



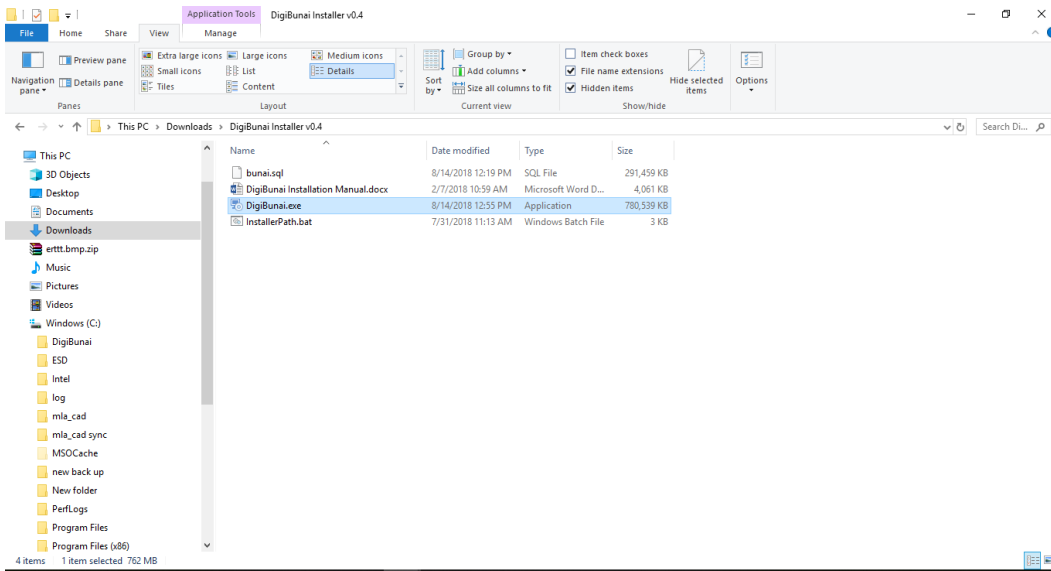
Extract the installer from the zip file



Extracted file created a 'DigiBunai Installer' folder & click on the folder after completing extraction process



Click on 'DigiBunai.exe' to start installation process



1.6 Installation of DigiBunai™

Panel 1: File explorer shows 'DigiBunai' file. **DigiBunai Setup** window: Prerequisites table shows 'Java SE Runtime Environment 7u79 x86' and 'MySQL Installer - Community 5.6.39 x86'. **click on 'Next'**

Name	Required	Found	Action
<input checked="" type="checkbox"/> Java SE Runtime Environment 7u79 x86	1.7 or higher		Install
<input checked="" type="checkbox"/> MySQL Installer - Community 5.6.39 x86	1.4.23.0 or ...		Install

Panel 2: **DigiBunai Setup** window: Welcome to the Prerequisites Setup Wizard. **Click on 'Next'**

Panel 3: **Installing prerequisites for DigiBunai** window. **Java SE Development Kit 7 Update 75 - Progress** window. **Java Setup - Destination Folder** window: Install to: C:\Program Files (x86)\Java\jre7. **Initializing Java installation**

Panel 4: **Java Setup - Welcome** window: Welcome to Java. **Click on 'Next' for further**



PC > HP V236W (G) > DigiBunai Installer Files

Name Date modified Type Size

DigiBunai 02-02-2018 15:11 Application 9,73,811 KB

DigiBunai Setup

Installing prerequisites for DigiBunai

Please wait while the Setup Wizard installs prerequisites for DigiBunai. This may take several minutes.

Status: Installing Java SE Runtime Environment 7u79 x86

Java SE Development Kit 7 Update 79 - Complete

Successfully Installed Java SE Development Kit 7 Update 79

Click Next Steps to access tutorials, API documentation, developer guides, release notes and more to help you get started with the JDK.

Next Steps

Close

Display of Java Installation completion, Click on 'Close'

HP V236W (G) > DigiBunai Installer Files

Name Date modified Type Size

DigiBunai 02-02-2018 15:11 Application 9,73,811 KB

DigiBunai Setup

Welcome to the DigiBunai Setup Wizard

MySQL Installer

Adding Community

License Agreement

To proceed you must accept the Oracle Software License Terms.

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software: to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for the paper).

Accept the license terms

Next >

Cancel

'Accept the License Terms' & click 'Next'

HP V236W (G) > DigiBunai Installer Files

Name Date modified Type Size

DigiBunai 02-02-2018 15:11 Application 9,73,811 KB

DigiBunai Setup

Welcome to the DigiBunai Setup Wizard

MySQL Installer

Adding Community

Installation

Press Execute to upgrade the following products.

Product	Status	Progress	Notes
MySQL Server 5.6.39	Ready to install		

Click [Execute] to install or update the following packages

Back Execute Cancel

Click on 'Execute' for further processing

HP V236W (G) > DigiBunai Installer Files

Name Date modified Type Size

DigiBunai 02-02-2018 15:11 Application 9,73,811 KB

DigiBunai Setup

Welcome to the DigiBunai Setup Wizard

MySQL Installer

Adding Community

Choosing a Setup Type

Please select the Setup Type that suits your use case.

Developer Default

Install all products needed for MySQL development purposes.

Choosing a Setup Type

Server only

Install only the MySQL Server product.

Client only

Install only the MySQL Client products, without a server.

Full

Install all included MySQL products and features.

Custom

Manually select the products that should be installed on the system.

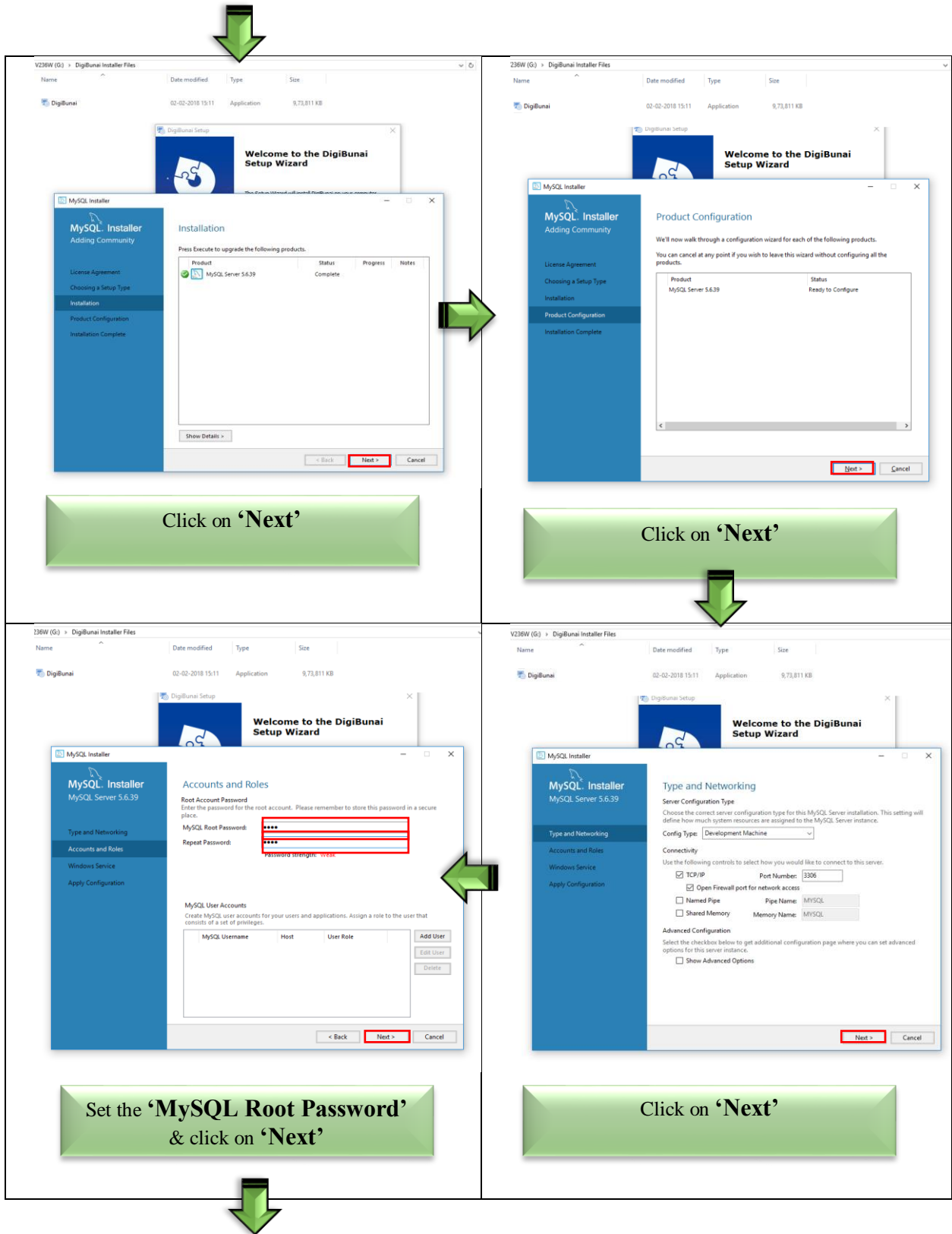
Setup Type Description

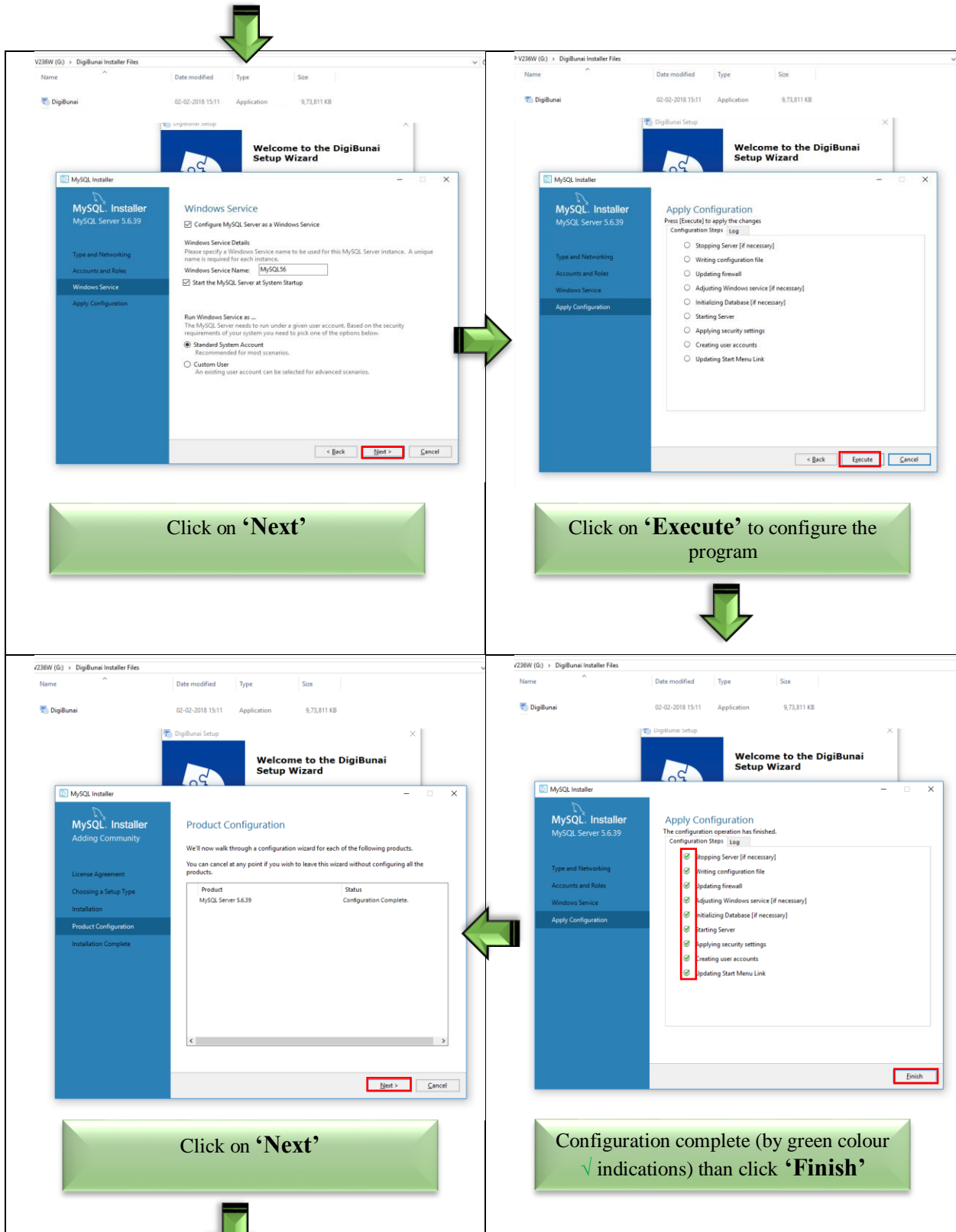
Install only the MySQL Server. This type should be used where you want to deploy a MySQL Server, but will not be developing MySQL applications.

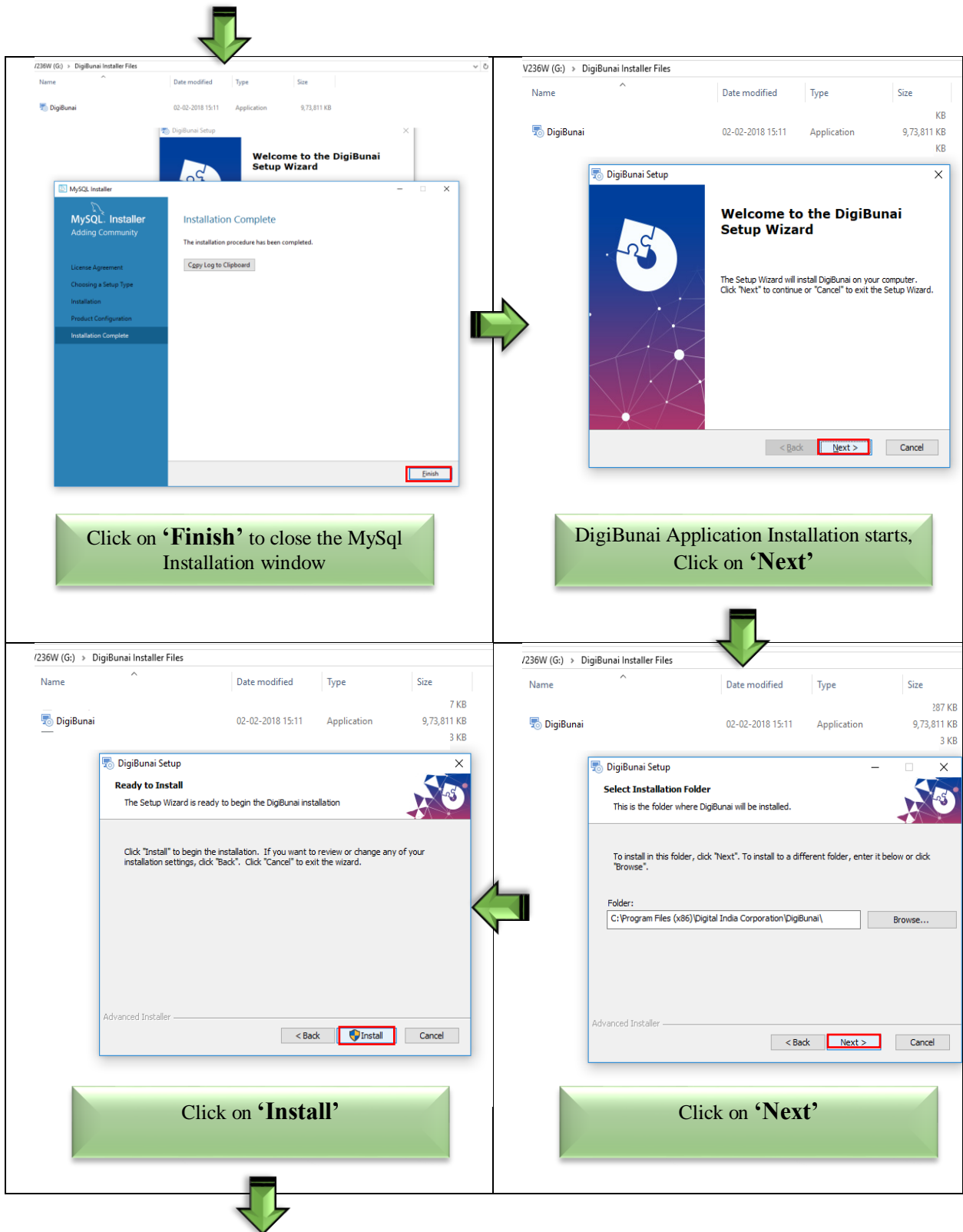
Back Next > Cancel

Choose the setup 'Server Only' & click on 'Next'











236W (G:) > DigiBunai Installer Files

Name	Date modified	Type	Size
DigiBunai	02-02-2018 15:11	Application	9,73,811 KB

Completing the DigiBunai Setup Wizard

Click the "Finish" button to exit the Setup Wizard.

< Back **Finish** Cancel

Click on **'Finish'**

Click on **'DigiBunai'** Icon



DigiBunai™ 1.0.0 : Dashboard © Digital India Corporation's Open Source CAD Tool for W...

<- Back Next ->

Processes

- System Configuration:
- Database Configuration:
- User & Subscription:
- Complete Installation:

DB Host Address: 127.0.0.1
DB Port: 3306
DB Name: DigiBunai
Username: root
Password: root
DB SSL: Secure My Connection

Test Connection

Put the password same as MySQL password then
Click on **'Test Connection'**

DigiBunai™ 1.0.0 : Dashboard © Digital India Corporation's Open Source CAD Tool for W...

<- Back **Next ->**

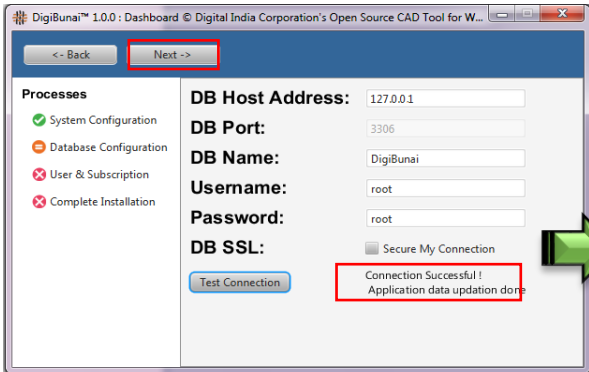
Processes

- System Configuration:
- Database Configuration:
- User & Subscription:
- Complete Installation:

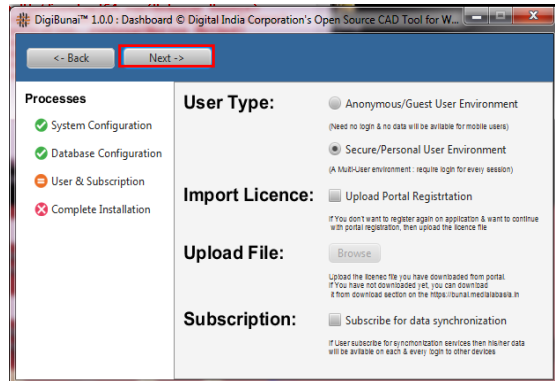
Operating System: Windows 7
OS Version: 6.1
Java Version: 1.7.0_79
MAC Address:
IP Address: 127.0.0.1
Network Connection: Unknown

Click on **'Next'**

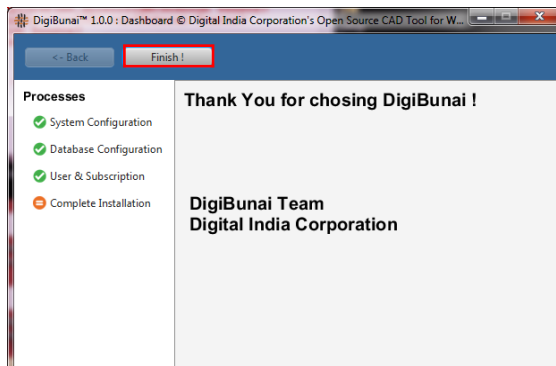




See the message 'Connection Successful' then
Click on 'Next'



Click on 'Next'



Click on 'Finish'

1.6.1 Create New User - Sign Up

User need to fill the details and accept the Terms & Condition and click on the submit Button.

DigiBunai™
Version 0.9.2 Alpha

Name:

Password:

Service Password:

Email-ID:

Address:

State:

Pincode:

Username:

Confirm Password:

Confirm Password:

Contact Number:

Country:

City/District:

I have read the Disclaimer !

Fill the details for Registration & click on
'Submit'

1.6.2 Login the Existing Users – Sign In

User need to enter the user name and password and click on Sign In Button.

1.6.3 Forget Password

- In case user forgot the password, he/she needs to click on the Forgot Password Button and the below screen will appear.
- User needs to enter username and email and a new password will be sent to the registered email ID.

DigiBunai™
Version 0.9.2 Alpha

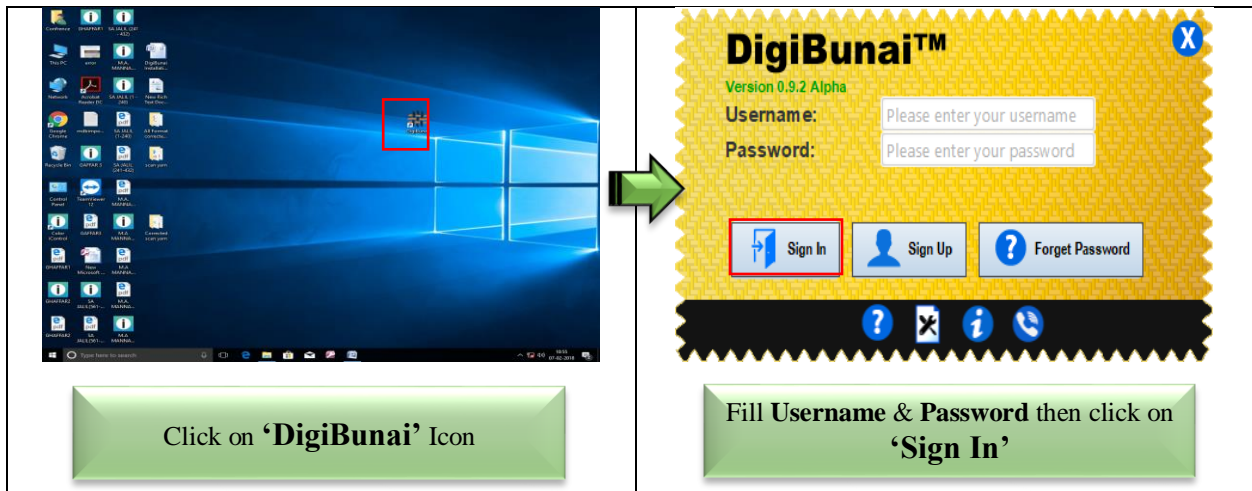
Username:

Email-ID:

Forget Password

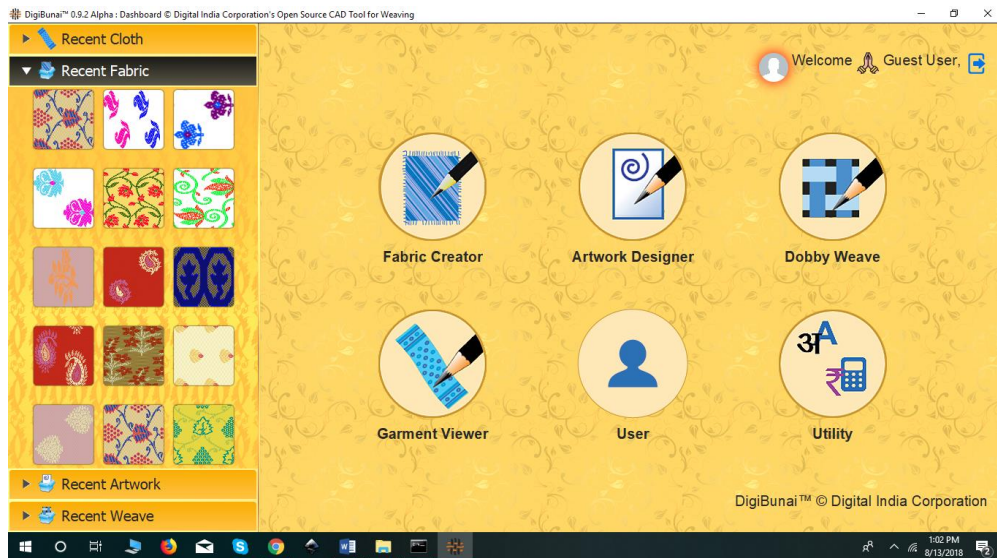
1.7 Running the Application

Click on the DigiBunai Shortcut Icon



1.8 Dashboard

After the Login, a dashboard screen will appear as below:



DigiBunai™ Dashboard

The dashboard shows the recent work done by the user in the form of recent artwork, weaves and fabrics. There will be the name of the user on the screen i.e. Welcome 'User Name'.

1.8.1 Fabric and Artwork Size

User need to enter the size of the different component of Saree viz. Border, Cross Border, Pallu (Anchal), Body (Pot), Konia and Skirt. Different parameters for fabric weaving required to fill in this section like Reed Count (Stockport), Thread per dent, Ends per inch, Picks per inch, Fabric length & Fabric Width.

The screenshot shows the 'Fabric Configuration' window in the Digibunal™ CAD Tool. The window has three tabs: 'Fabric/Artwork', 'Miscellaneous', and 'Warp Thread/Yarn'. The 'Fabric/Artwork' tab is selected, showing the following fields:

Field	Value
Cloth Type	Body
Fabric Type	Plain
Fabric raw length (inch)	256.0
Fabric width (inch)	47.0
Artwork length (inch)	3.973
Artwork width (inch)	4.288
Graph Size	12x16

The 'Warp Thread/Yarn' tab shows the following fields:

Field	Value
Hooks	240
Ends	240
Picks	298
Reed Count	112
Dents per Inch	56
Thread Per Dents	1
Picks Per Inch	75
Hooks Per Inch	56
Ends Per Inch	56

At the bottom of the window, there are 'Apply' and 'Cancel' buttons. The window title bar reads 'Digibunal™ 0.9.2 Alpha : Utility - Configuration © Digital India Corporation's Open Source CAD Tool for Weaving'. The bottom status bar says 'Welcome TO Digibunal™ CAD Tool'.

1.8.2 Warp thread

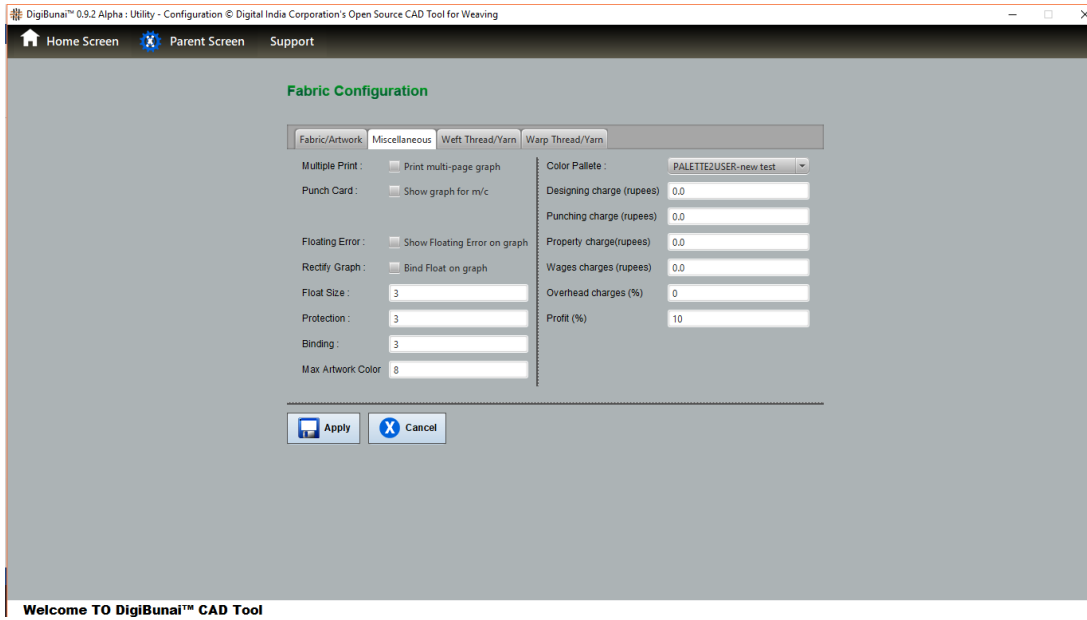
User need to enter the yarn properties viz. type, color, count, twist etc.

1.8.3 Weft thread

User need to enter the yarn properties viz. type, color, count, twist etc.

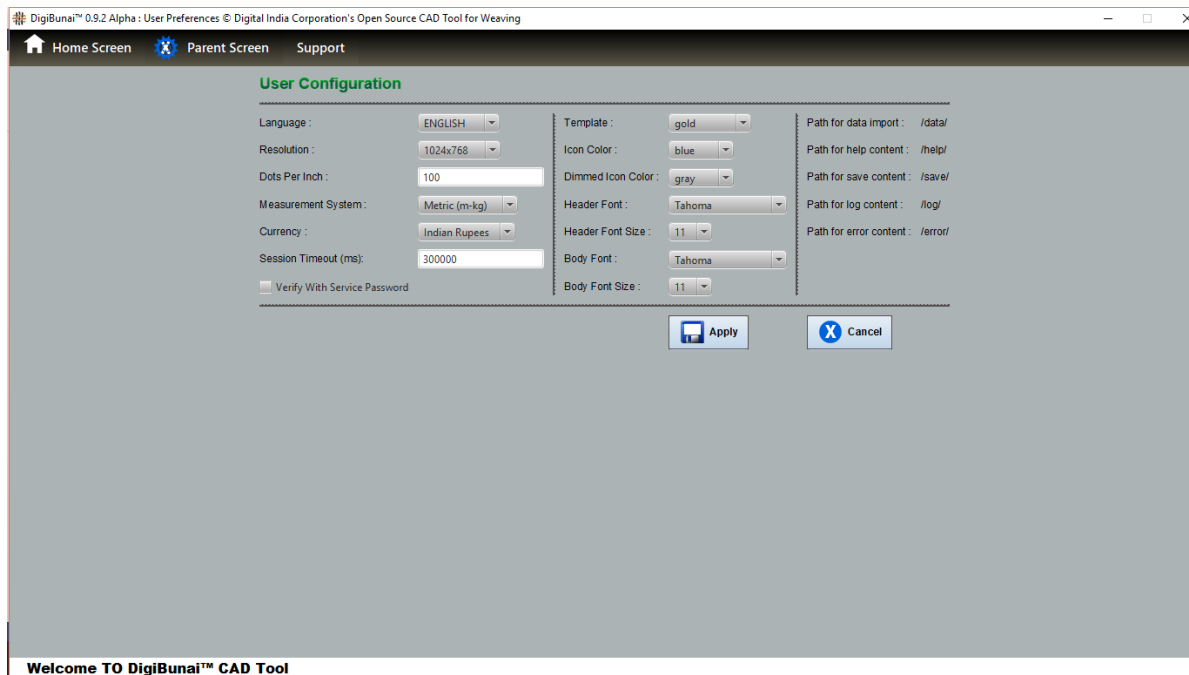
1.8.4 Miscellaneous

User need to specify the, repeat, maximum float, binding, protection, color palette, & Maximum Artwork Color.



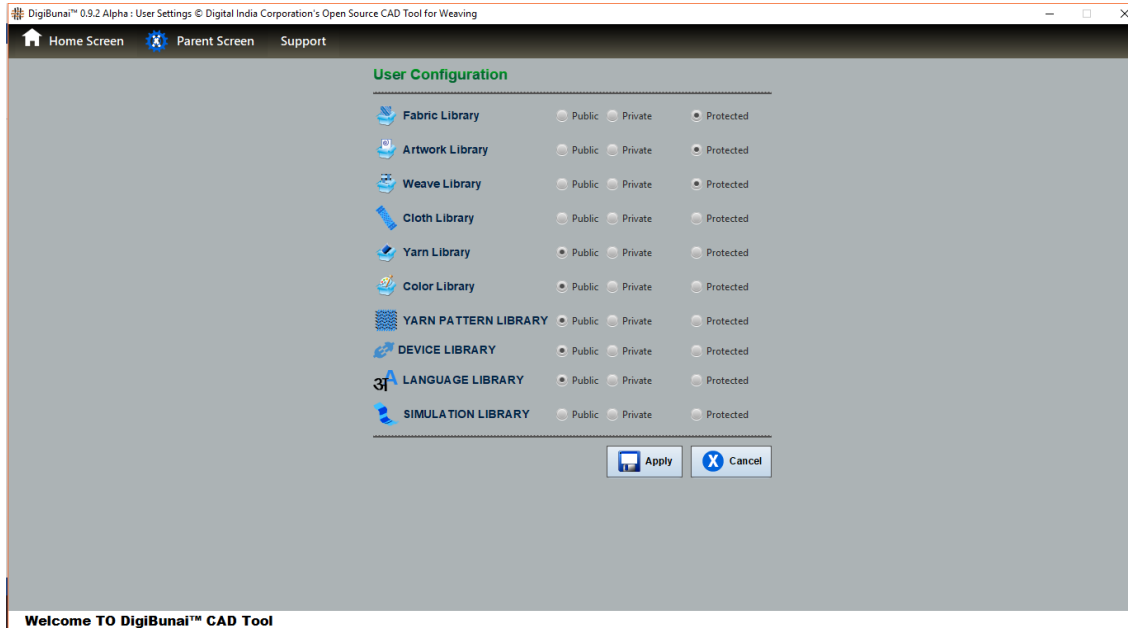
1.8.5 User Settings

User need to set the language, resolution, Dots Per Inch, measurement system, currency, theme, font of the header and path for saving the different files viz. export, import, log etc.



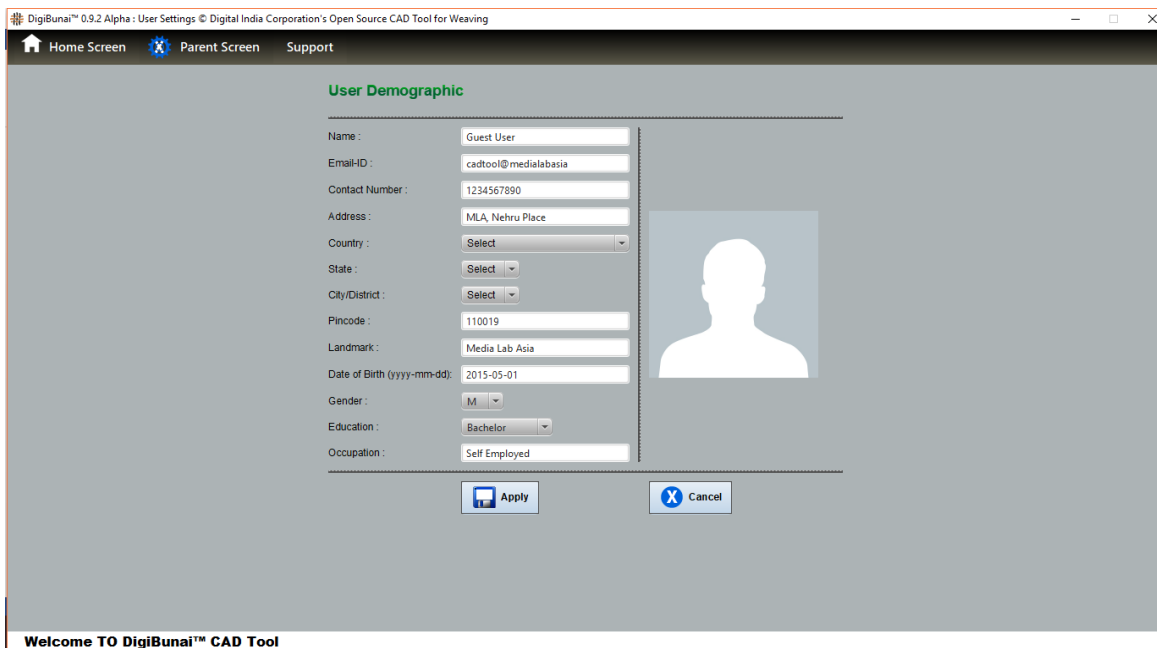
1.8.6 User Preferences

User need to specify the preferences to authenticate the data (work done) i.e. public, protected or private. Based on the authentication, data will be shared to other users.

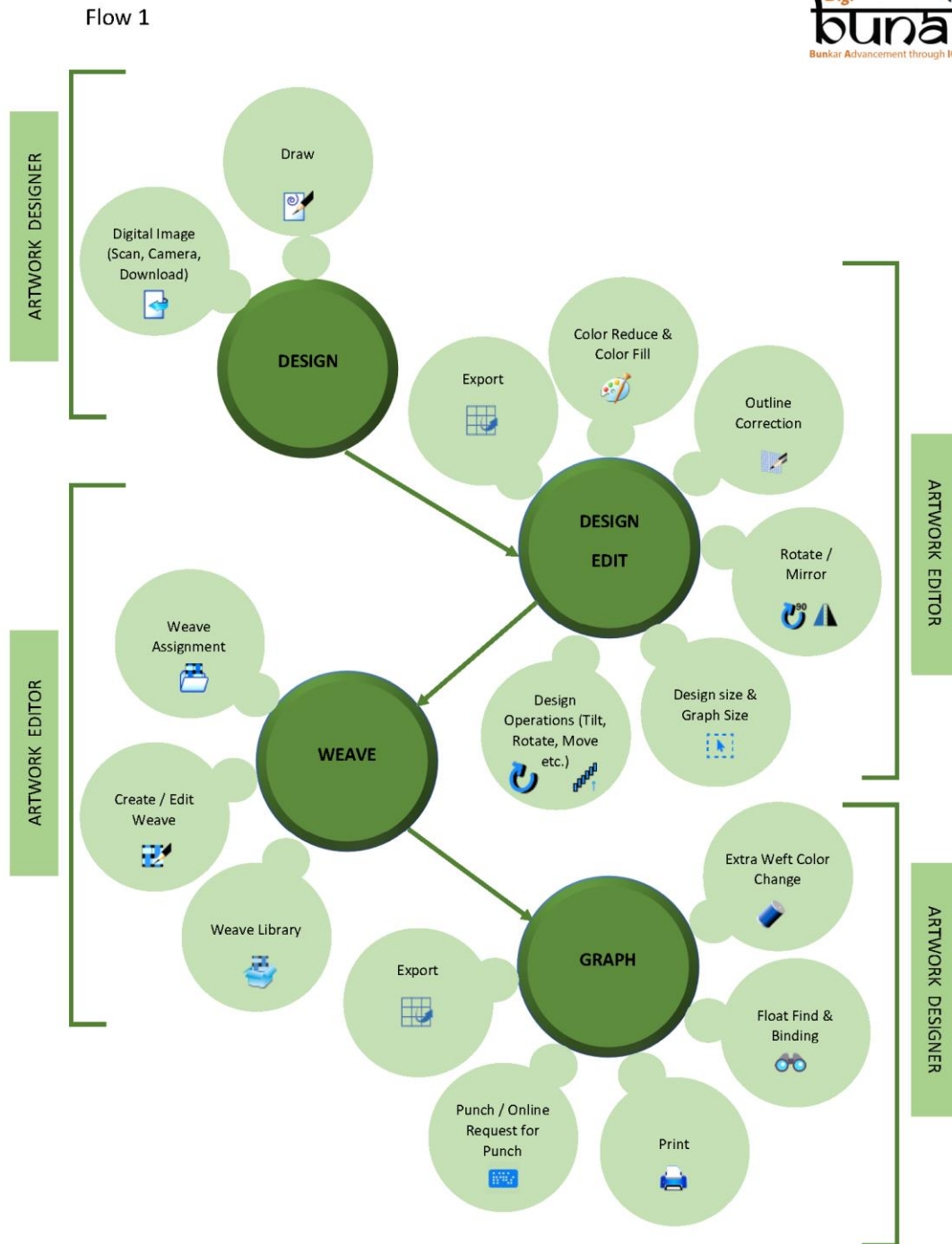


1.8.7 User Profile

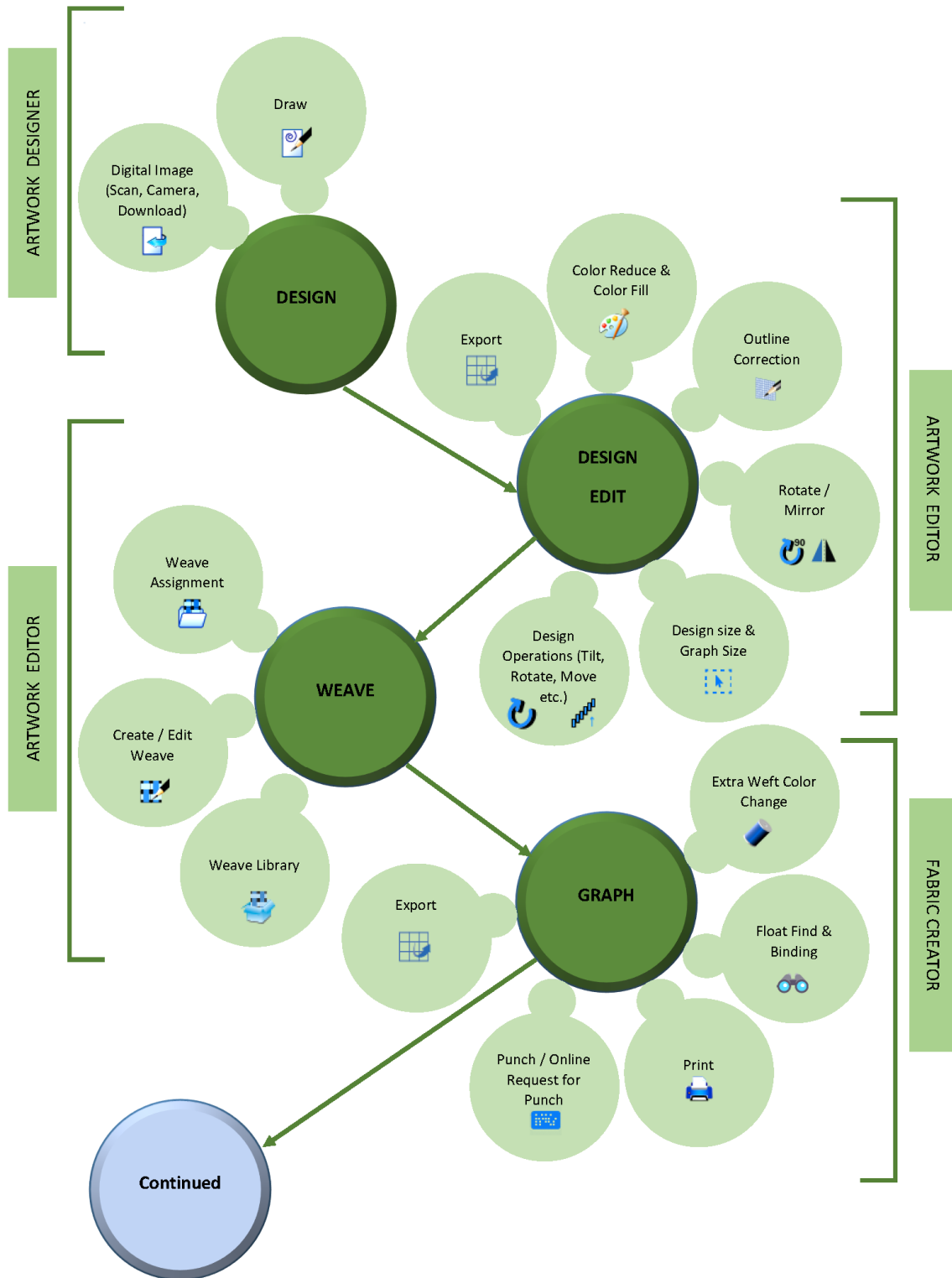
User can edit his/her profile by User Profile menu.

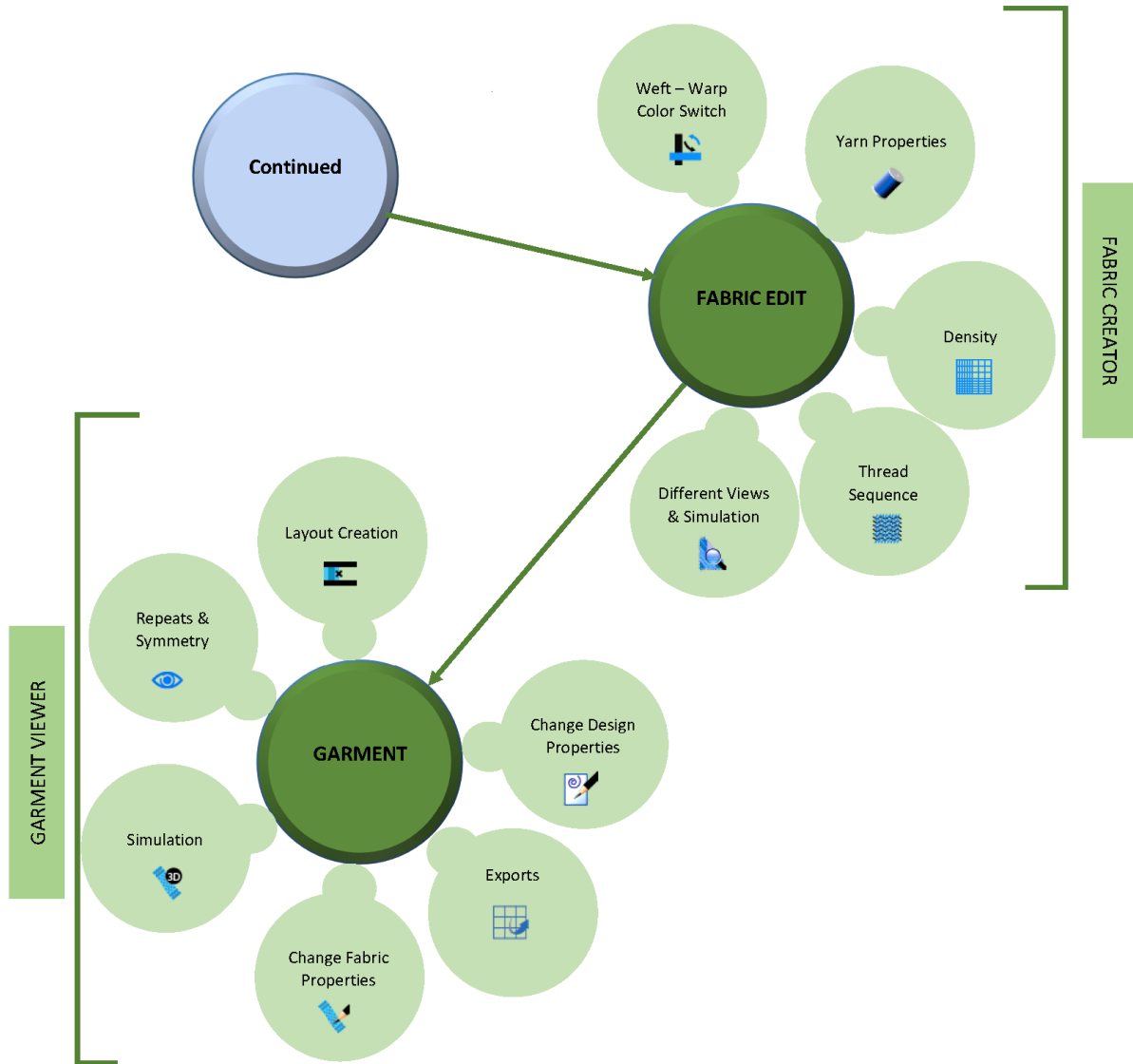


1.8.8 Information flow in the Application



Flow 2

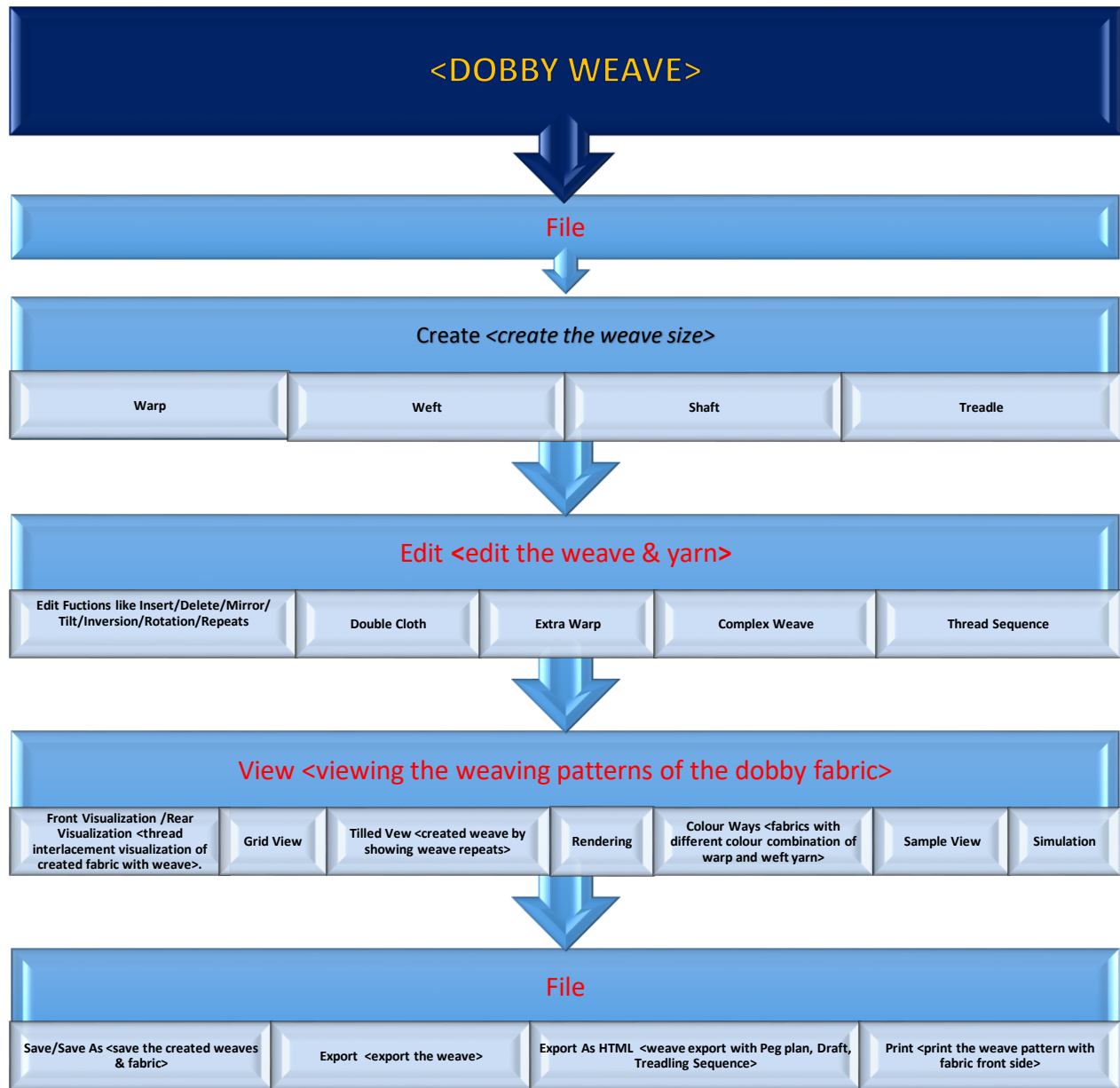




1.8.9 Creating a Digital Fabric

1.8.9.1 Dobby Weave

Dobby module of DigiBunai™ is the initiation of Weave designing. Before making any design in DigiBunai™ CAD software, different types of weave prepare in this module. In this module, first of all, size of the weave design is determined by going into the 'File' menu, after that weave is filled with different colors of threads. The complete view of fabric is ready to visualize, we can see different views of the fabric by click on 'View' menu.

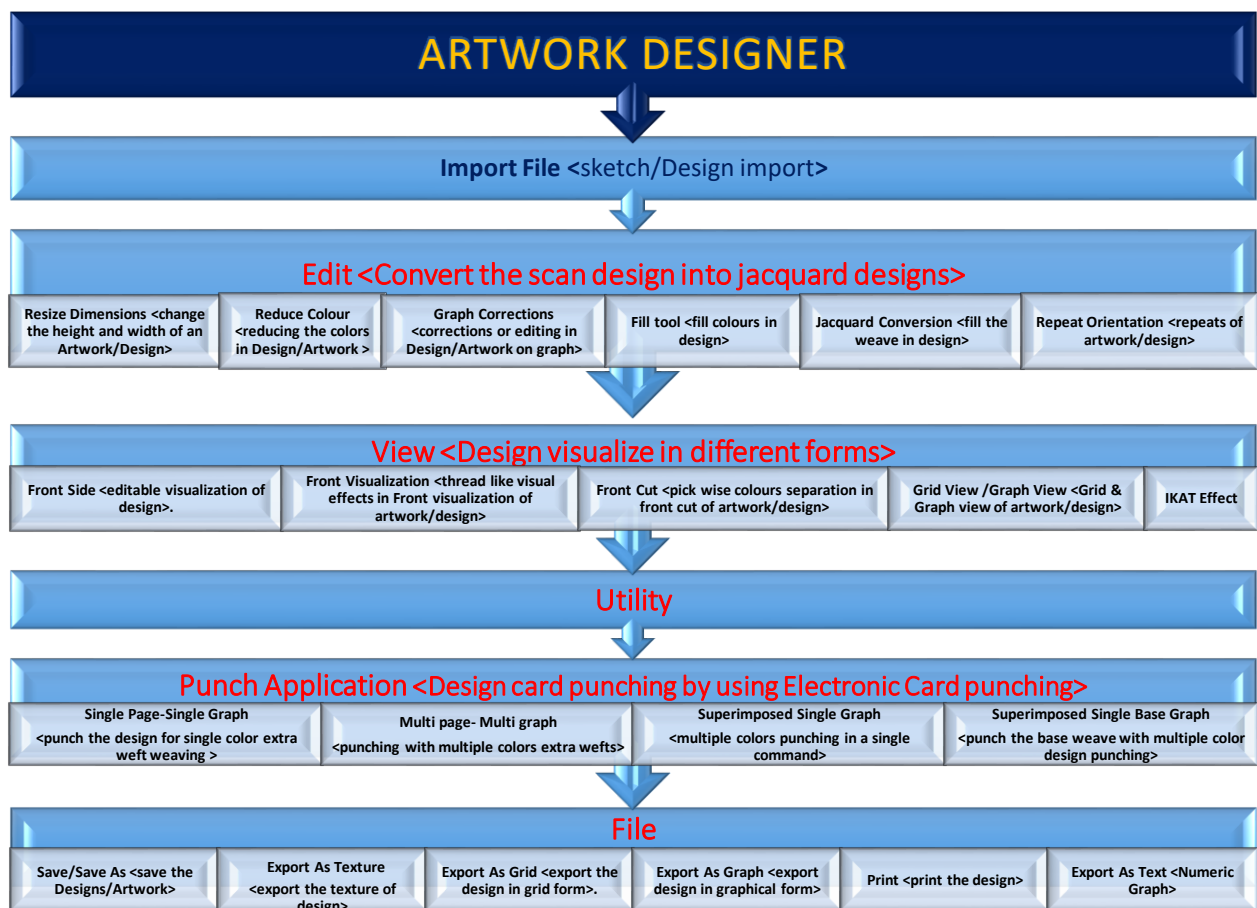


The Creation of Jacquard Designs:

DigiBunai™ has two modules to prepare jacquard designs. These are Artwork Designer & Fabric Creator. Both of the modules has functionality to create graph & punching support for manual as well as automatic punching mode. It also produces the yarn split image for weaving by using Electronic Jacquard. User can visualize the fabric (which generate from the created design) from different angles (Front/Rear/Flip) in Fabric Creator.

1.8.9.2 Artwork Designer

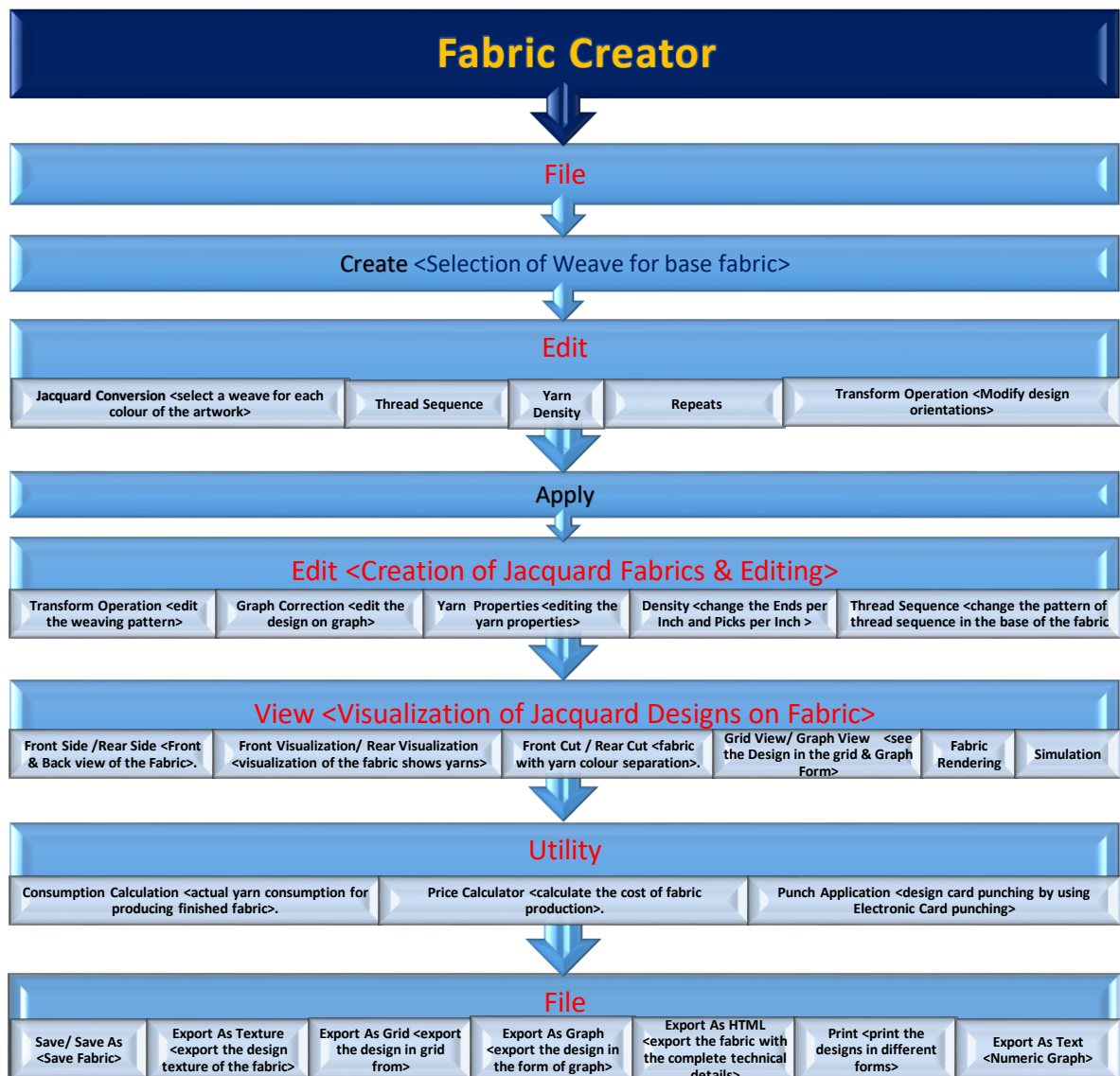
AD works on *Sketch to Graph* mode. It use to convert the sketches in to workable artworks or designs. For this purpose first Import' the sketch (scanned image) by going into the File menu and click on 'Edit', to perform different functions like Resize the dimensions, Reduce colors, Design Editing, Weave Filling & Graph Corrections etc. Now we can see different views of designs after clicking on 'View Menu'.



1.8.9.3 Fabric Creator

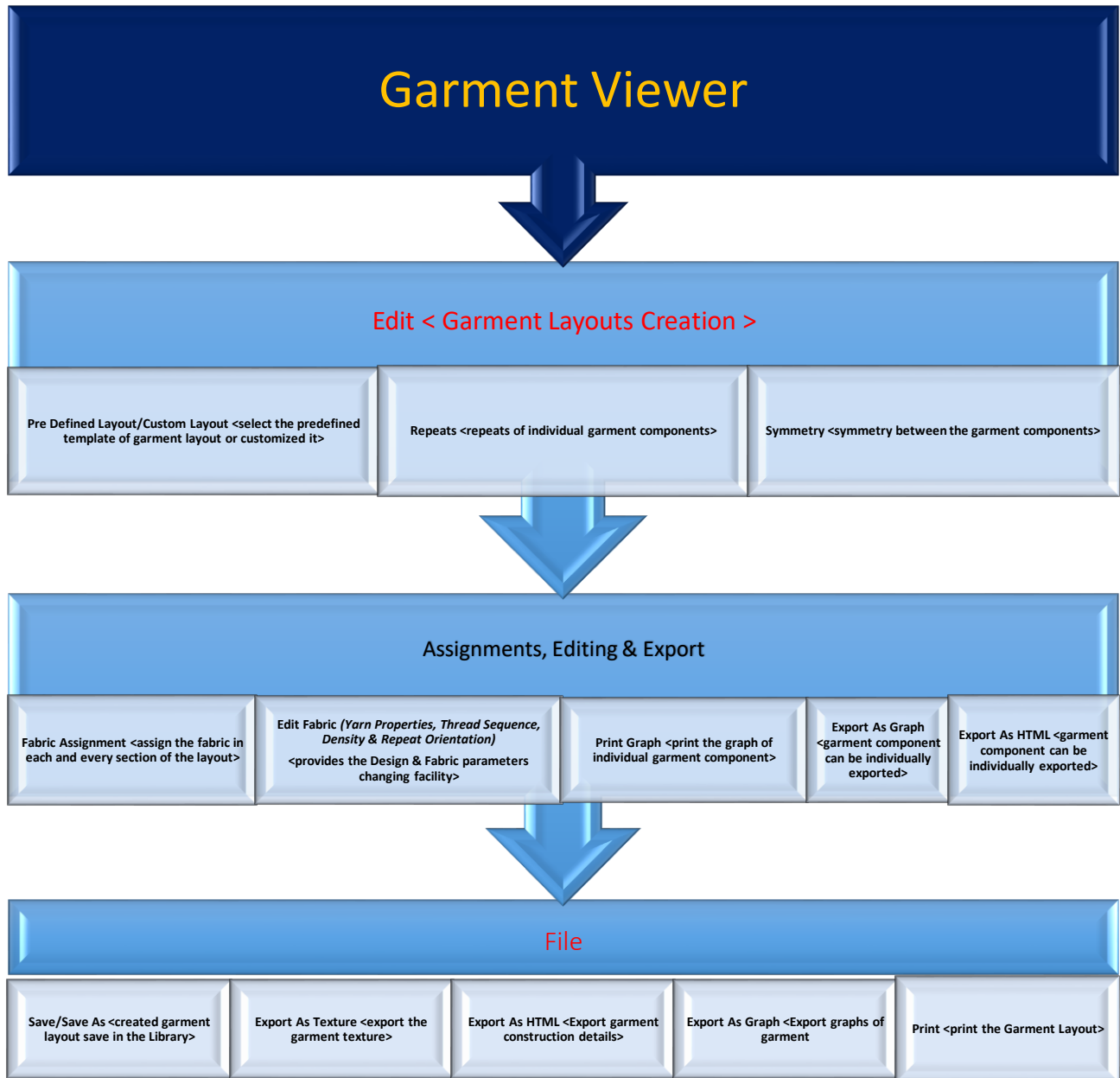
FC works on *Artwork to Fabric* mode. Different types of weaves fills in Artwork on color bases and distortion of design boundaries during weave filling are secured by click on ‘Don’t touched border of motif’.

In this module, we can do various types of improvements and selections such as Weaving patterns, Graph corrections, Yarns color change, Yarn colors sequencing, etc. This module facilitates different views of created fabrics. By going into the 'utility' of this module, we can calculate the consumption of yarns as well as cost of production.



1.8.9.4 Garment Viewer

This module is used to see different garment layouts & also facilitates different orientations of design on fabric. We can save & export of these layouts according to the requirement.



2 Fabric Creator Module

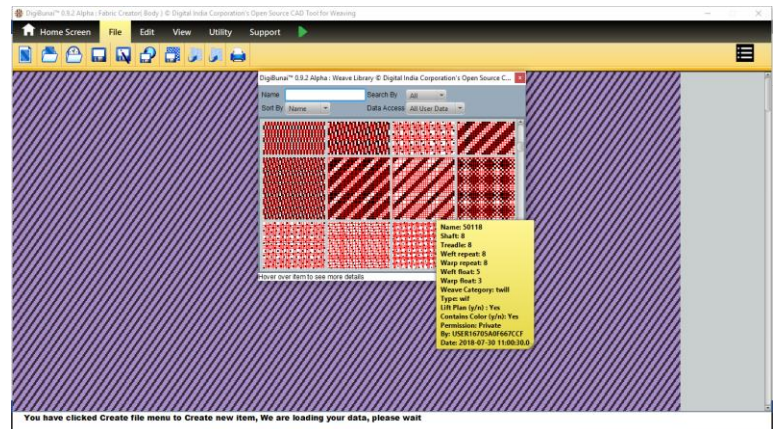
2.1 New fabric creation (Selection of Weave for base fabric)

You can create new fabric by clicking on **Create** icon in the **File** Menu. To create a fabric user need to select base weave first from the library. On clicking on Create icon in the File Menu, an image browser Window will pop showing the weave library for the base of the fabric

User need to select at least one weave and this will reflect on the fabric as base weave. If required weave is not available in the library, user need to take the help of weave

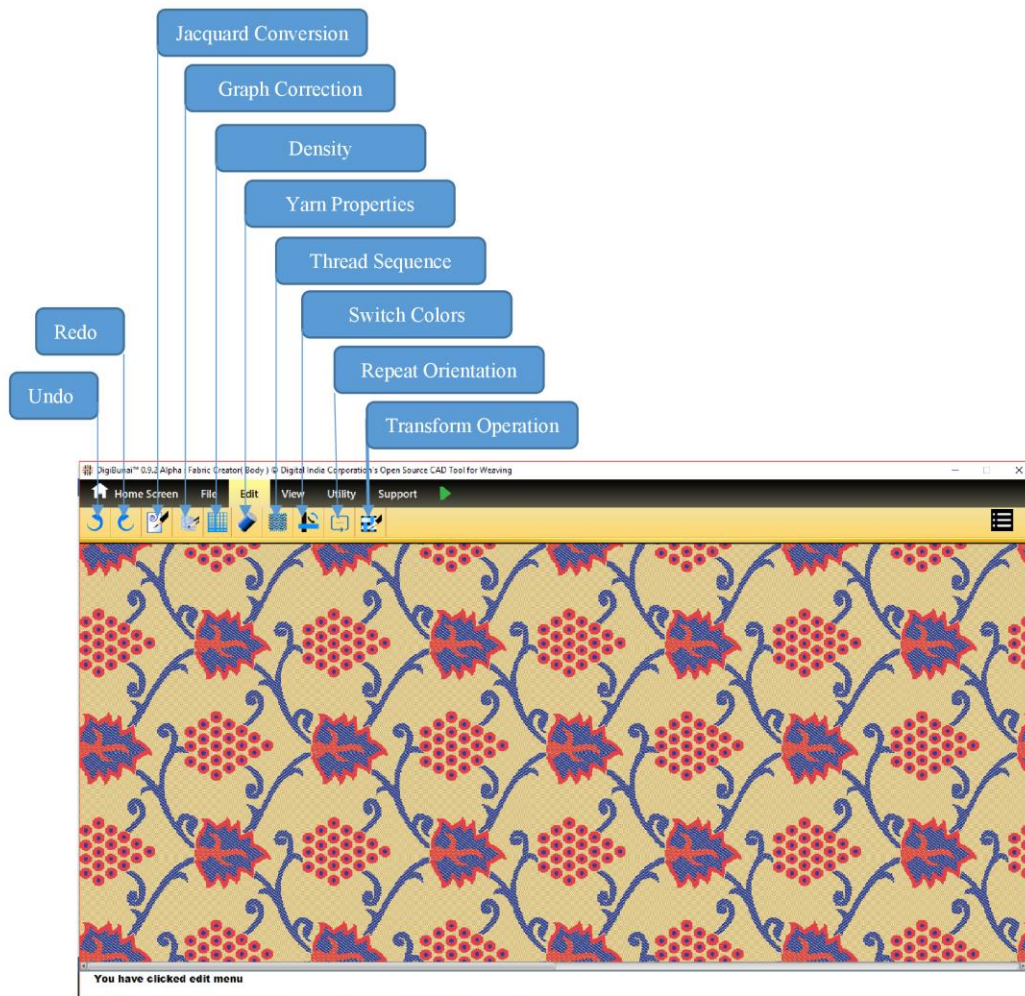
editor module to create the weave & also user can create weave during assignment in artwork. This weave can be changed or modified during the weave assignment to the artwork.

After selecting the base weave, a base fabric will be reflected on the window.



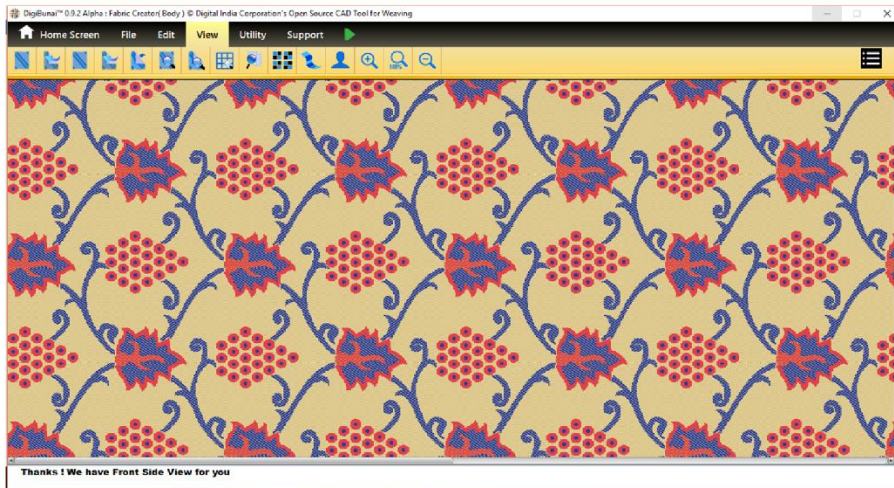
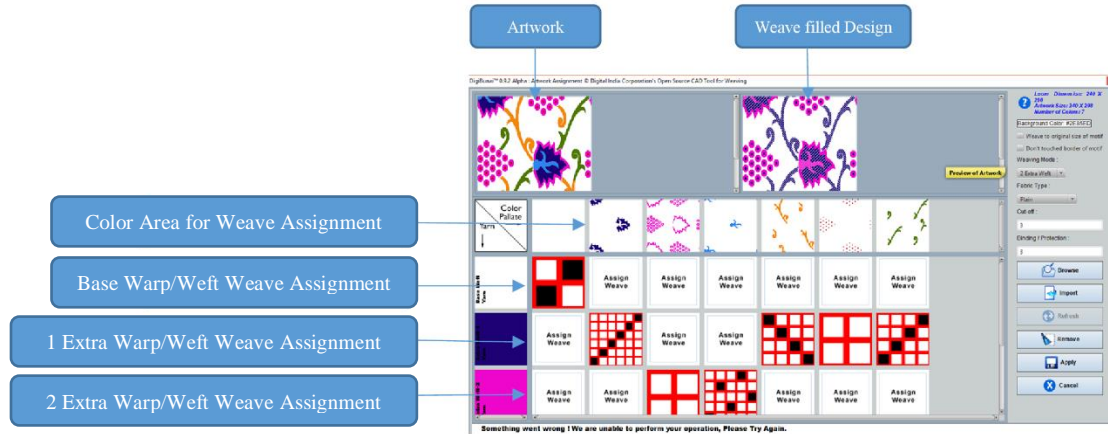
2.2 Creation of Jacquard Fabrics & Editing (Edit)

To prepare the Jacquard designs for weaving, user can go to edit & perform different functions to develop Jacquard based digital fabric. The fabric & Design can be from different aspects like weave, pattern, yarn, density, thread sequencing, etc.



2.2.1 Jacquard Conversion

To assign an artwork in the base fabric, user can either select Artwork Assignment icon in the Edit Menu or user need to right click on the fabric and Jacquard conversion option may be selected. User can Import the Artwork from external source or open from the CAD library by **Import Browse**. In the artwork assignment section, the artwork will be displayed in the different colours. Each colour of the artwork reflects a weaving pattern. User need to select a weave for each and every colour of the artwork.



2.2.1.1 Assigning Weaves in base and Artwork (design)

When user will select the artwork, two rows of boxes will appear if the 0 Extra wefts are selected in the Weaving Mode. Number of boxes in the row will depend on the number of colors in the artwork. In the first row, all the boxes will be filled with the colors of the artwork. The second row (base weft yarn) of boxes is for the base weave of the fabric. By default base weave of the fabric will be assigned to the first box. User can assign the weaves in the other boxes by clicking on the box. This way is also use to assign weaves with extra wefts in design.

2.2.1.2 Assigning Extra Weft for Design

In case of extra weft user needs to select no. of extra weft in the weaving mode. If user select 1 extra weft, 1 row will be added, in case of 2 extra wefts, 2 rows will be added.

2.2.1.3 Assigning Extra Warp for Design

If user wants to create the design on fabric by using Extra Warp so it needs to be select **Extra Warp** in Jacquard Conversion window. Here weave assignment procedure is same as use for extra weft designing.

2.2.1.3 Assigning less extra wefts than colours of Artwork

If user wants lesser extra wefts than artwork colors then user can select the lower value of extra weft in weaving mode for example there are 4 colors in the artwork and user wants to use only 1 extra weft in that case use needs to assign the base wave in the second row, weaves for extra weft in the third row of the boxes.

2.2.1.4 Removing the weave In case user needs to <remove the weave> from the box, alt+ click on the box.

2.2.1.5 Fabric Type

In the fabric type, user can select type of the fabric in the form of kadhua, fekuwa-with float, fekuwa-with cutwork, tanchoi, float binding-regular, float binding-irregular. Based on the selection, backside view of the fabric will be changed.

2.2.1.6 Weave of Original Size of Artwork

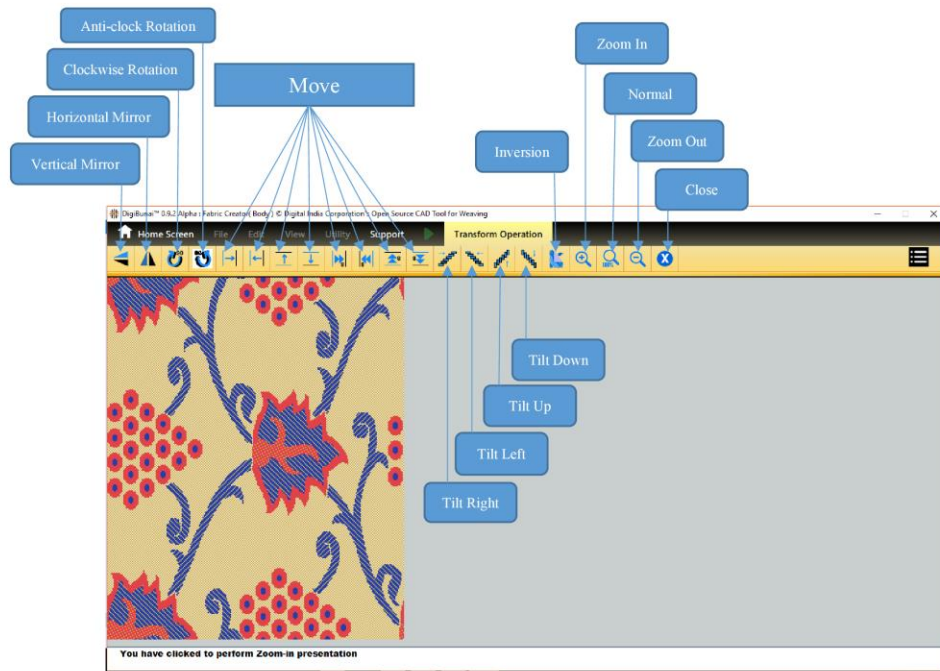
The user has to option to fix the design size on fabric. First based on the fabric preferences, the size of the motif will be calculated; second based on the original size of the motif. User need to select option to keep the original size of the artwork.

2.2.1.7 Don't touch border of Motif

This option is to keep the outline of the artwork smooth. User need to select the option of don't touch the border of Motif.

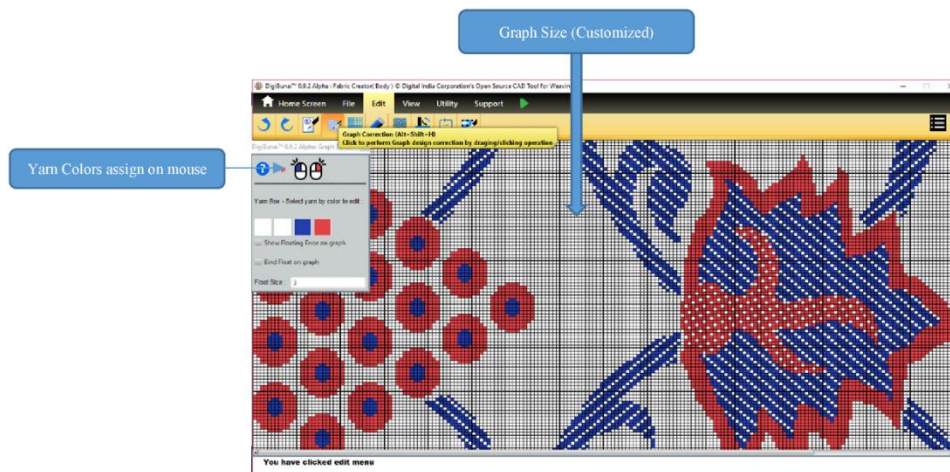
2.2.2 Transform Operation

User can edit the weaving pattern as and when needed, all the changes in the weaving pattern will be reflected in the graph as well as Fabric.



2.2.3 Graph Correction

User can edit the design on graph manually to give the finishing touch for the artwork. There will be the boxes for warp, weft and extra wefts which user need to select the box (color selection) wherever changes are required.

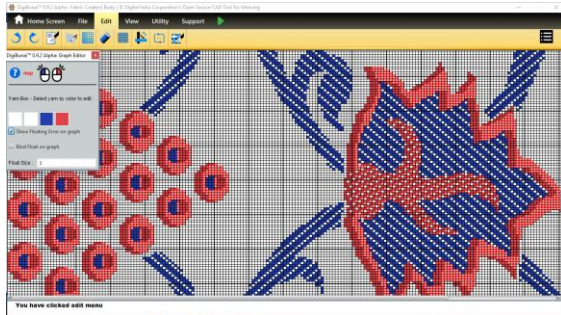


Graph Corrections

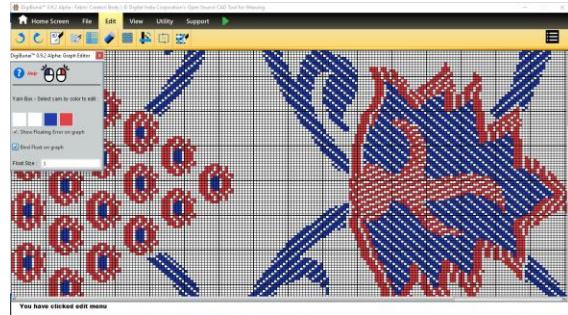
2.2.3.1 Float finding & Binding

If user wants to find the maximum float size in the fabric then user need to enter the maximum float value in the text box and select the box Show Floating Error on Graph.

User has two options for float binding, one is manually where user can edit the floats manually and second one is automatically where user needs to select the box of Bind Float on Graph by assigning the maximum float value.



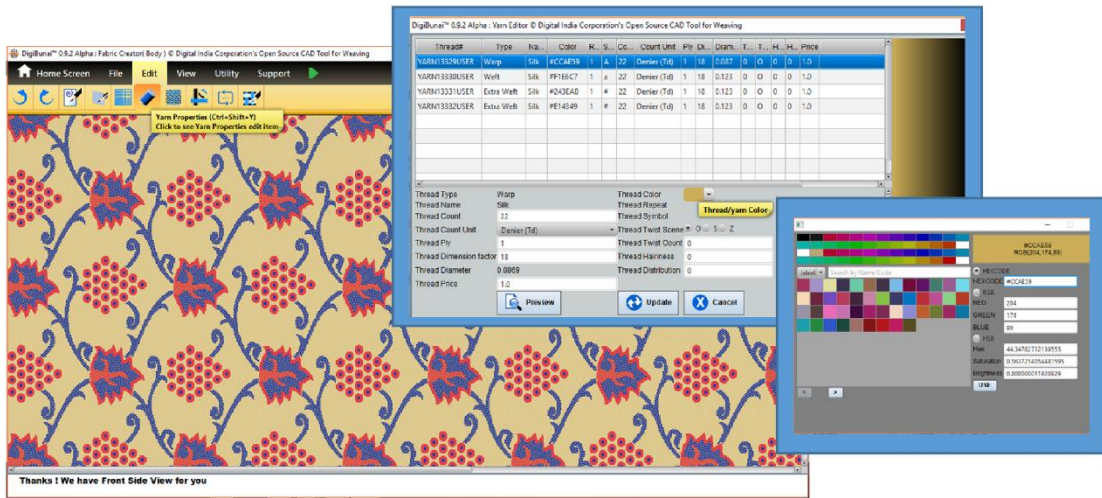
Float Finding



Float Binding

2.2.4 Yarn Properties

For editing the yarn properties, user need to select the option of Yarn Properties. User can change the colour of Warp, Weft or Extra weft yarns. The effect of other parameters like, thread count, ply, diameter factor, twist (count & sense), and hairiness will reflect in Fabric Simulation (Further releases).



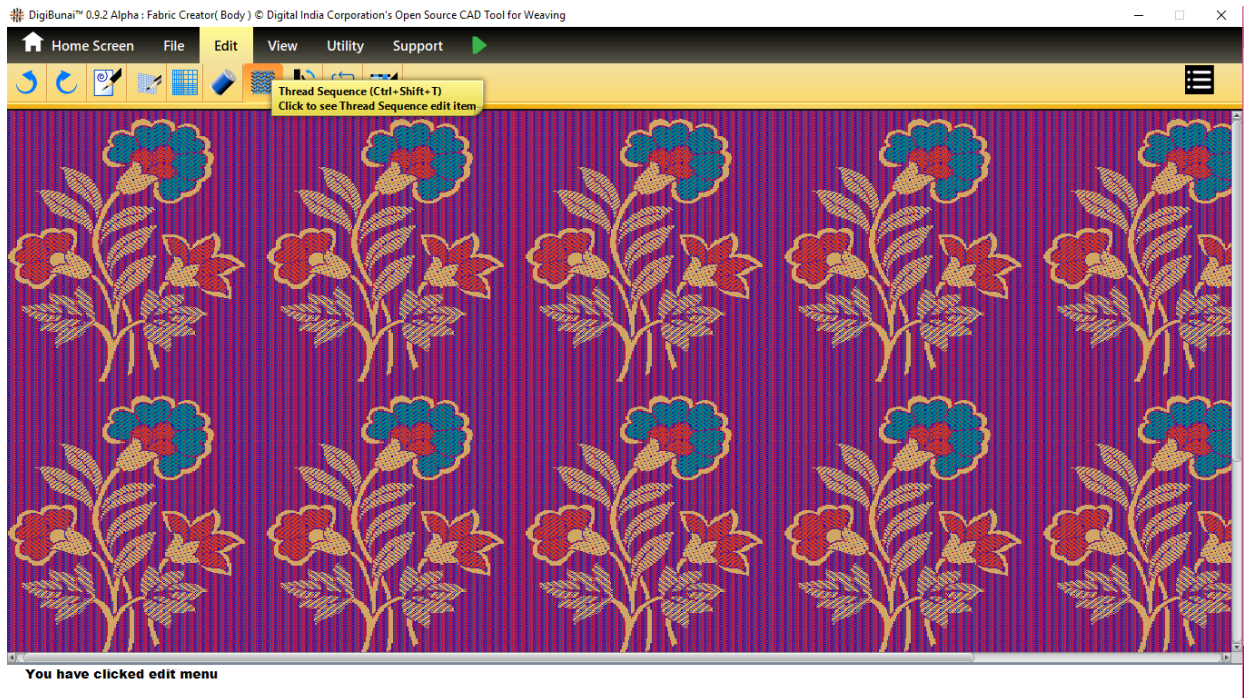
2.2.5 Density

In the density user can change the Ends per Inch and Picks per Inch of the fabric.



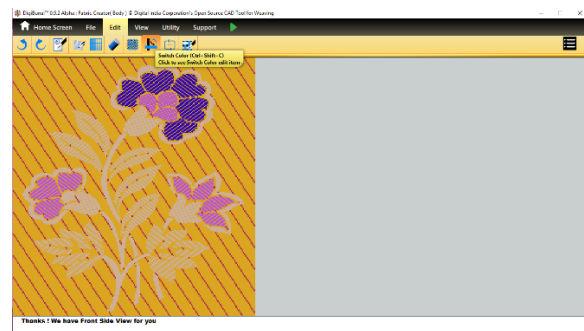
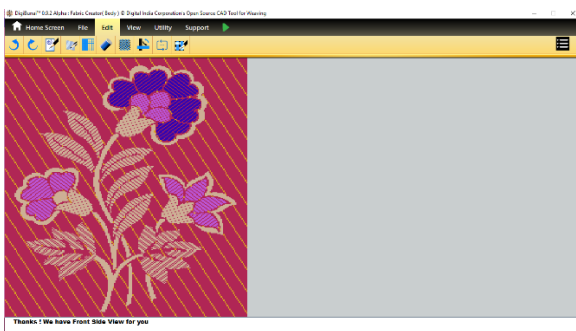
2.2.6 Thread Sequence

Use can change the pattern of thread sequence in the base of the fabric. The new thread sequence can be saved and used further as and when required.



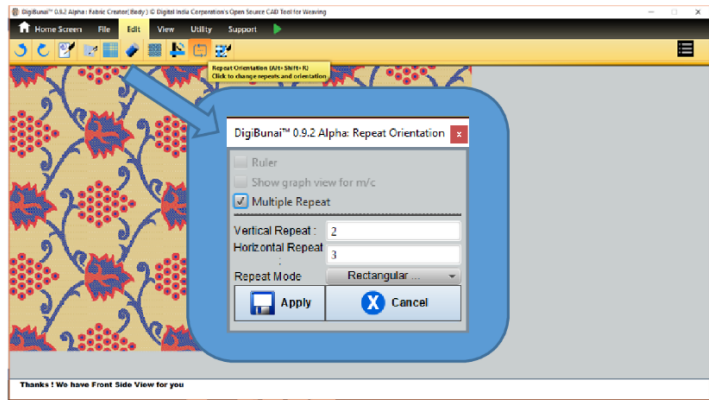
2.2.7 Switching Colours

Switch color option interchange the color of warp and weft yarns. Use need to click on Edit -> Switch Color Option.



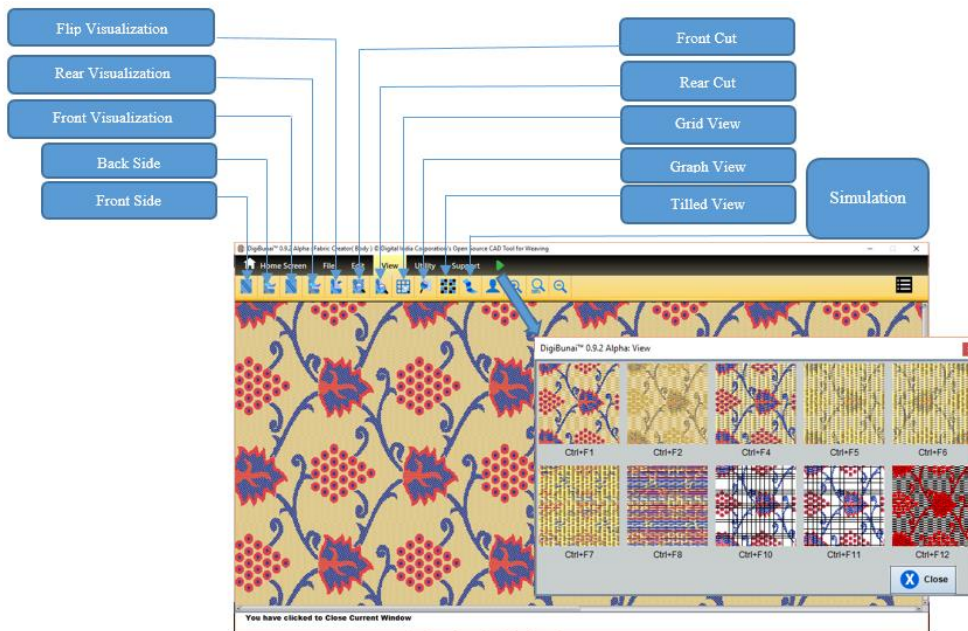
2.2.8 Repeat Orientation

To visualize the Design repeats, click on Repeat Orientation & define the repeats (Vertical & Horizontal) of the design to visualize after check the Multiple Repeat.



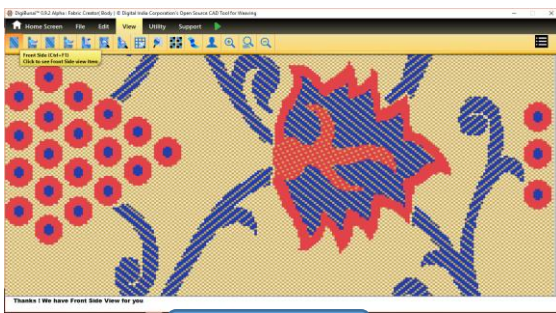
2.3 Visualization of Jacquard Designs on Fabric (View)

It offers to visualize the fabric from various aspects like Front side look for fabric aesthetics, manner of yarn interlacements for fabric texture & strength, Back side for Yarn float visualization for durability aspects, Front cut for the order of arrangement of different yarn colors in fabric, Graph view for design dimension & aesthetic aspects, etc.

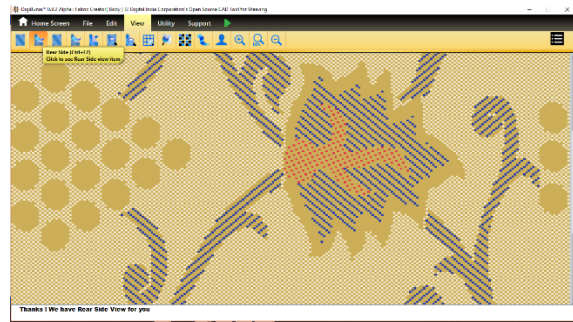


2.3.1 Front/Rear Side View

This view shows the threads of warp, weft and extra weft in single pixel. The base and artwork (on the base) are represented as solid. It provides the Front & Back view of the Fabric.



Front Side

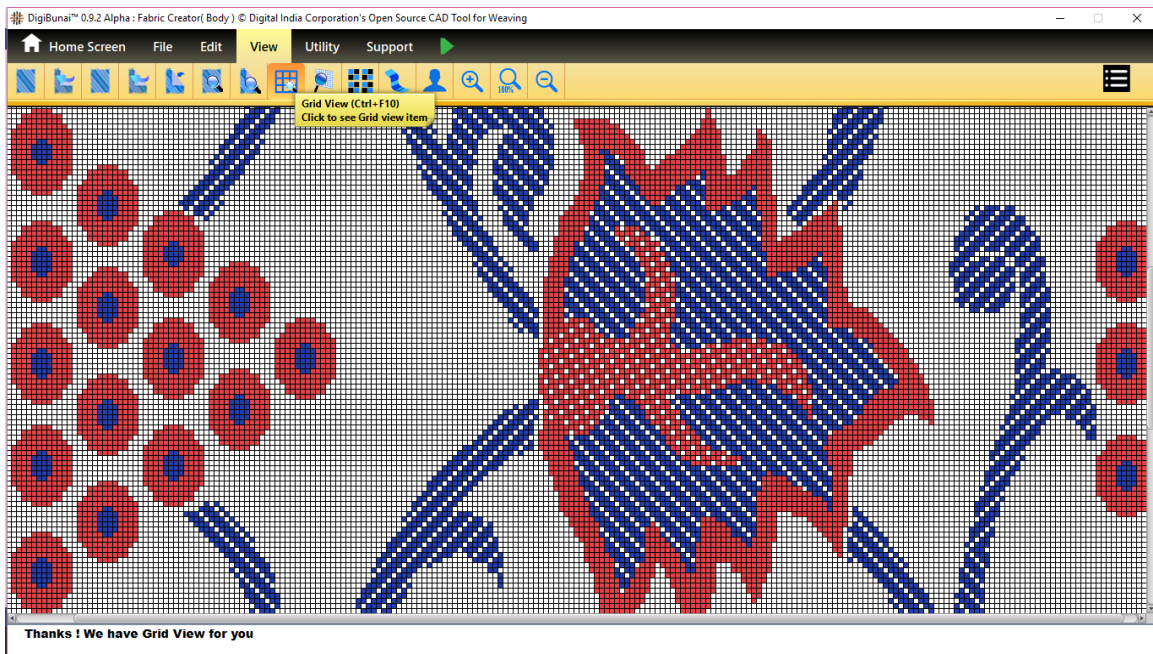


Rear Side

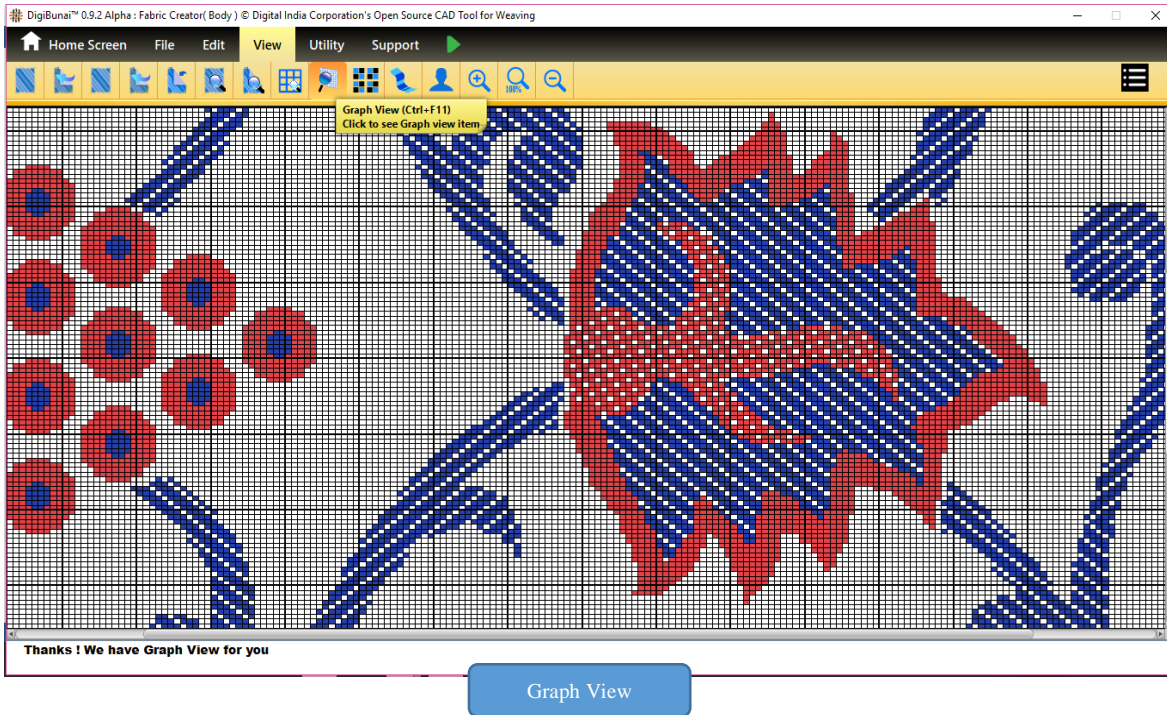
2.3.2 Grid & Graph View

This view is to see the Design in the grid & Graph Form. Grid does not influence by the loom parameters i.e. Reed, Density, Chauk size, etc.

The graph view of the artwork depict all the weaves used in artwork along with the size of graph. The size of the graph is represented in the form of chauks. Suppose a design is created in 200 hook, it means 50 chauks. In Varanasi, the graph is calculated based on EPI and PPI.



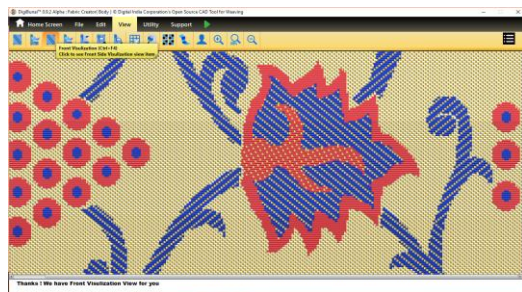
Grid View



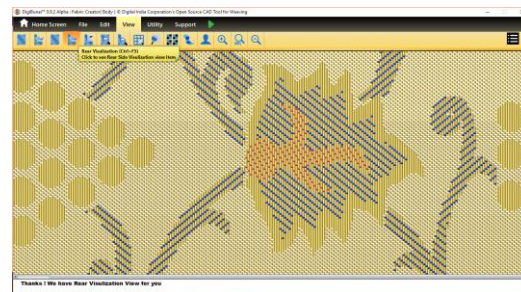
2.3.3 Front & Rear Visualization

The front visualization of the fabric shows yarns in 3 pixels with the shading effect. This view gives a fabric look to the design. User can see all the yarns separately.

Flip view shows the backside view of the fabric. This view shows the interlacement of the threads in the back side of the fabric.



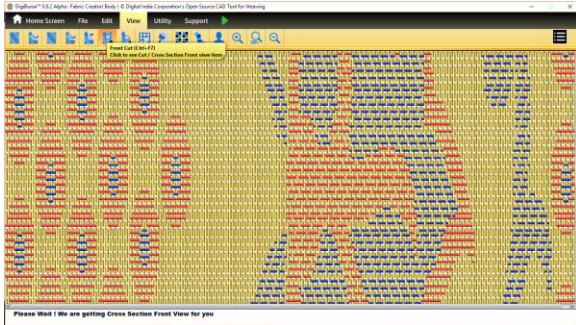
Front Visualization



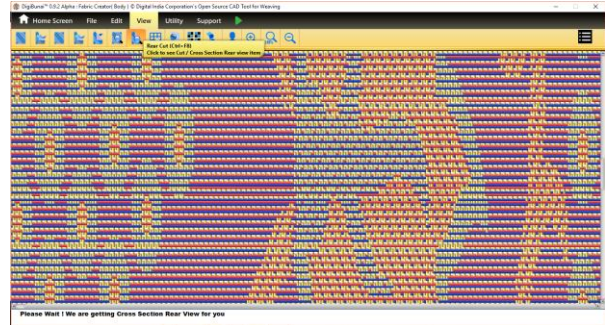
Rear Visualization

2.3.4 Front & Rear Cut

Front cut is use to see front side of the <fabric with yarn colour separation>. Rear cut is use to see back side of the fabric with yarn splitting. This view is also the representation of floating length of weft yarns.



Front Cut



Rear Cut

2.3.5 Simulation

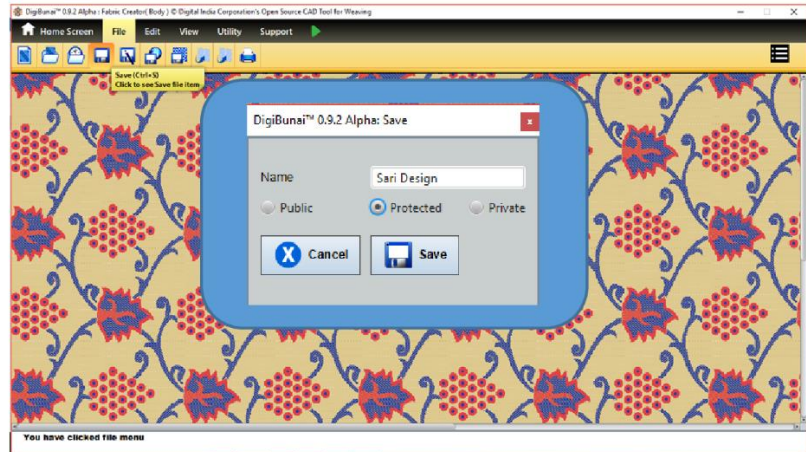
The application has one, very basic model of simulation where artworks are superimposed on the scanned images of the base fabric. The images of the base fabric with the different parameters are saved in to library. User can chose the type of base fabric and set the other parameters of simulation i.e. brightness, contrast, hue, saturation, etc.



2.4 Save Fabric Creations & Outputs (File)

2.4.1 Save Fabric

After creating, editing the fabric there is the provision of saving the fabric into database.



2.4.1.1 Public

Public option to save the fabric which will be synchronized with central server and available for use to other users.

2.4.1.2 Protected

In the protected option to save, the fabric which will be synchronized with central server but other user will not be able see.

2.4.1.3 Private

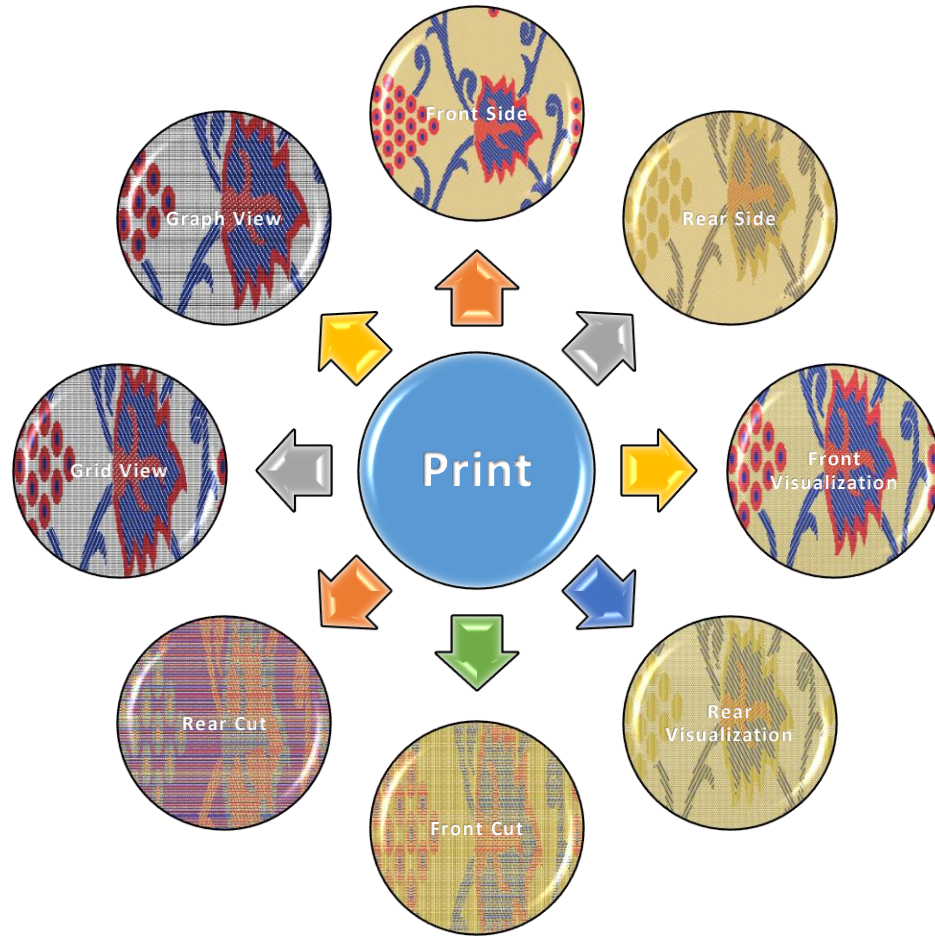
In the private option to save, the fabric which will not be synchronized with central server. The work done by the user will be kept at local machine only

2.4.2 Save As

There is Save As option where user can provide different name of the fabric and authentication as per need.

2.4.3 Printing

The print module offers to print the designs in different forms with customized printing facility.



2.4.3.1 Print Grid

Print grid option prints the design in the form of grid.

2.4.3.2 Print Graph

Print graph option is use to print the design in the form of graph after assigning weaves. This will be a one page graph.

2.4.3.3 Print Fabric Visualization

In case user wants to share the digital copy of the fabric. This option helps to take the print of texture (Fabric views & visualizations) of the fabric in the form of one repeat.

2.4.3.4 Print Front & Back View of Fabric

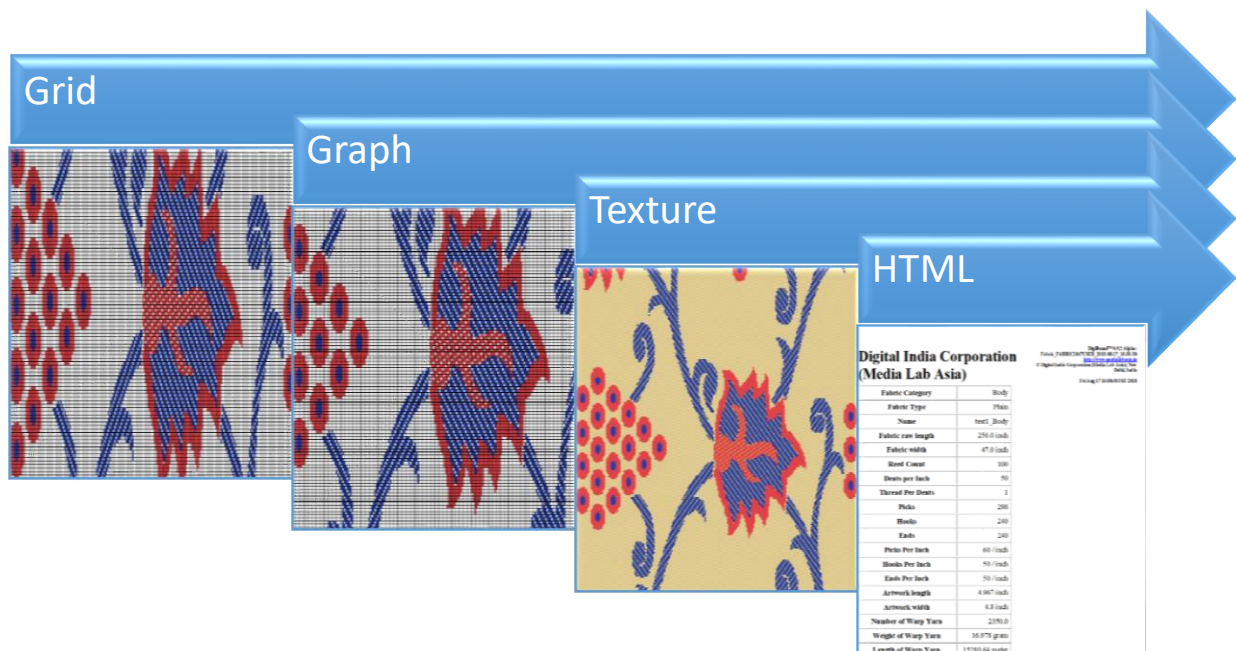
It provides facility to print a unit repeat of created design with background fabric.

2.4.3.5 Print Front & Rear Cut of Fabric

It Provides facility to print a unit repeat of created design with background fabric in actual ordering view of different colors of yarns.

2.4.4 Exports

User can export various forms of Creation with construction parameters.



2.4.4.1 Export as Grid

It offers to export the design in grid from without background weave.

2.4.4.2 Export as Graph

User can export the design in the form of graph after assigning weaves. This will be image file .bmp on one single page.

2.4.4.3 Export as Texture

Using this option, user can export the design texture of the fabric (Front side view image file .png) in one repeat.

2.4.4.4 Export as HTML

User can export the fabric with the complete technical details including size, EPI/PPI, warp, weft and extra weft details as follows:

Digital India Corporation (Media Lab Asia)

DigiBunal™ 0.9.2 Alpha: Fabric_FABRIC1847USER_2018-08-17_10-50-50
<http://www.medialabasia.in>
 © Digital India Corporation (Media Lab Asia); New Delhi, India
 Fri Aug 17 10:50:50 IST 2018

Fabric Category	Body
Fabric Type	Plain
Name	test1_Body
Fabric raw length	256.0 inch
Fabric width	47.0 inch
Reed Count	100
Dents per Inch	50
Thread Per Dents	1
Picks	298
Hooks	240
Ends	240
Picks Per Inch	60 / inch
Hooks Per Inch	50 / inch
Ends Per Inch	50 / inch
Artwork length	4.967 inch
Artwork width	4.8 inch
Number of Warp Yarn	2350.0
Weight of Warp Yarn	16.978 gram
Length of Warp Yarn	15280.64 meter
Number of Figured/Weft Yarn	15360.0
Weight of Figured/Weft Yarn	20.374 gram
Length of Figured/Weft Yarn	18336.768 meter

Warp Thread Pattern 1A

Warp	Name	Thread Type	Thread Repeat	Thread Count	Thread Count Unit	Thread Ply	Thread Dimension factor	Thread Diameter(mm)	Thread Weight(kg)	Thread Price(kg)	Thread Twist Count/inch	Thread Twist Scene	Thread Hairiness	Thread Distribution	Thread Color
A	Silk	Warp	1	22	Denier (Td)	1	18	0.087	-	1.0	0	0	0	0	#CCA659

Weft Thread Pattern 1a

Weft	Name	Thread Type	Thread Repeat	Thread Count	Thread Count Unit	Thread Ply	Thread Dimension factor	Thread Diameter(mm)	Thread Weight(kg)	Thread Price(kg)	Thread Twist Count/inch	Thread Twist Scene	Thread Hairiness	Thread Distribution	Thread Color
a	Silk	Weft	1	22	Denier (Td)	1	18	0.123	-	1.0	0	0	0	0	#F1E6C7

Extra Weft

Extra Weft	Name	Thread Type	Thread Repeat	Thread Count	Thread Count Unit	Thread Ply	Thread Dimension factor	Thread Diameter(mm)	Thread Weight(kg)	Thread Price(kg)	Thread Twist Count/inch	Thread Twist Scene	Thread Hairiness	Thread Distribution	Thread Color
#	Silk	Extra Weft	1	22	Denier (Td)	1	18	0.123	-	1.0	0	0	0	0	#243EAB
#	Silk	Extra Weft	1	22	Denier (Td)	1	18	0.123	-	1.0	0	0	0	0	#E14349

2.4.4.5 Export as Text

DigiBunai™ application has provision to export graph of the design in text format known as numeric graph. This representation uses numbers to denote points on graph for punch application. Further, there are two modes viz. ‘Numeric Graph Color’ and ‘Numeric Graph Background’ available

2.5 Design Punching & Calculations

After completing the design part, user need to punch the cards to start the weaving. There are three options for punching the punch cards

2.5.1 Manual or Piano Card Punching

In the manual punching process, user needs a printed graph, punch and punching plate. The punching plate decide the size of the card which match the punch plate of the cylinder mounted on jacquard. User manually reads the graph and punch the hole on the card. This process is very time consuming.

Piano is the mechanical machine to punch the cards. In the piano punching also user needs a printed graph. User manually reads the graph and punch the hole on the card. This process is little bit faster than manual punching.

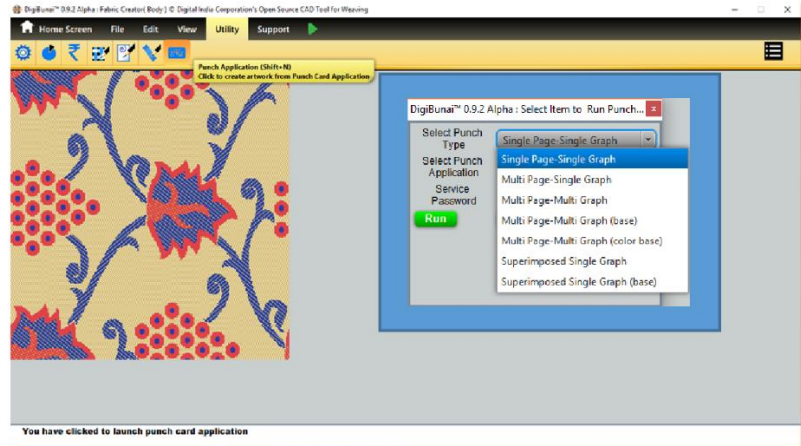
In the both way of punching can be done by application generated printed graphs (File).

2.5.2 Automatic Card Punching (Utility)

The design card punching by using Electronic Card punching machine is much lesser time consume for punching. It also produce efficient outputs than manual methods (due to human errors). Users do not need to carry the printed graph, a soft copy of the design is required to give the command to punching machine. This application supports any punching machine. To give the punching command user need to go to Fabric Creator/Artwork Creator Module -> Utility Menu -> Punch Application and then select the following options as per requirement.

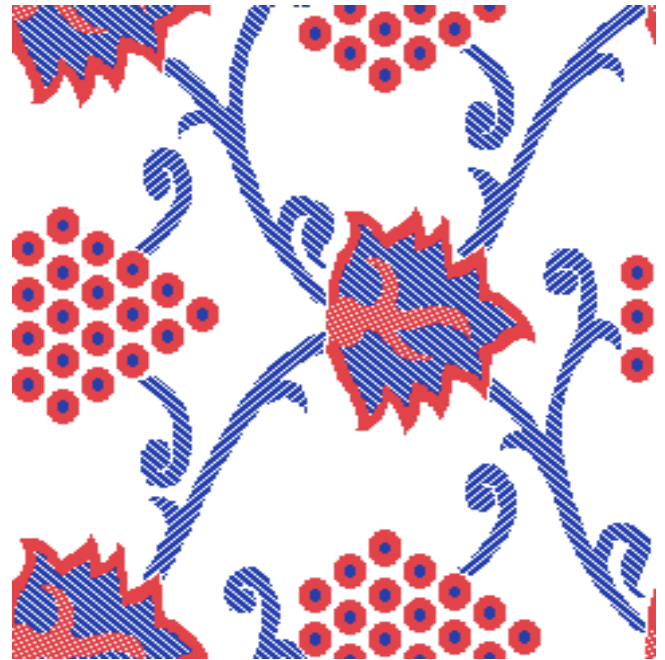
2.5.2.1 Select Punch Type

Usually punching machine takes the input of the design in two colors only. So we need to convert the multi colored design on two colors only and these two colors are counted as black and white.



- **Single Page-Single Graph**

If user wants the complete (with all the colors) in one page then he/she needs to select this option. This option use to punch the design for single color extra weft weaving.

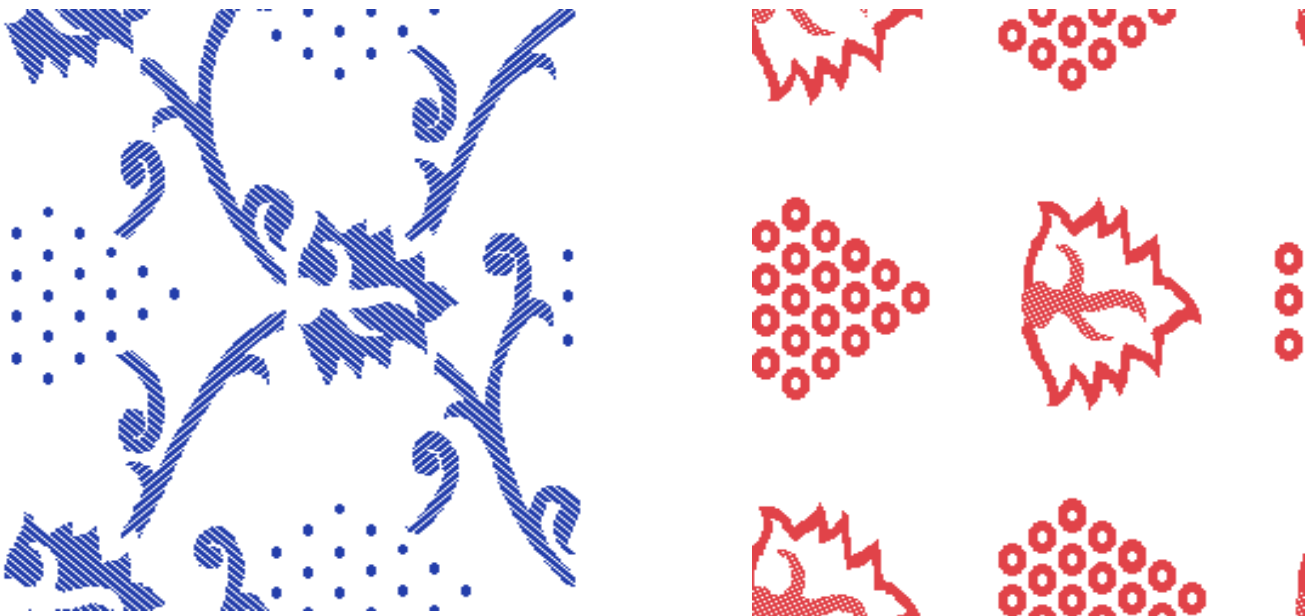


- **Multi Page-Single Graph**



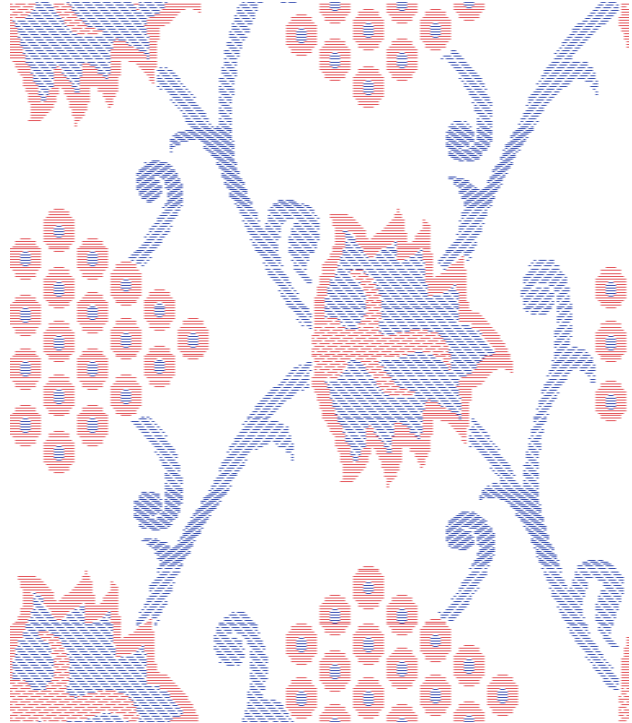
- **Multi Page-Multi Graph**

The punching image generated from this option use for punching with multiple colors extra wefts (as colors in design). All the colors in design will be separately punch & different punch cards sequentially arrange after punching.



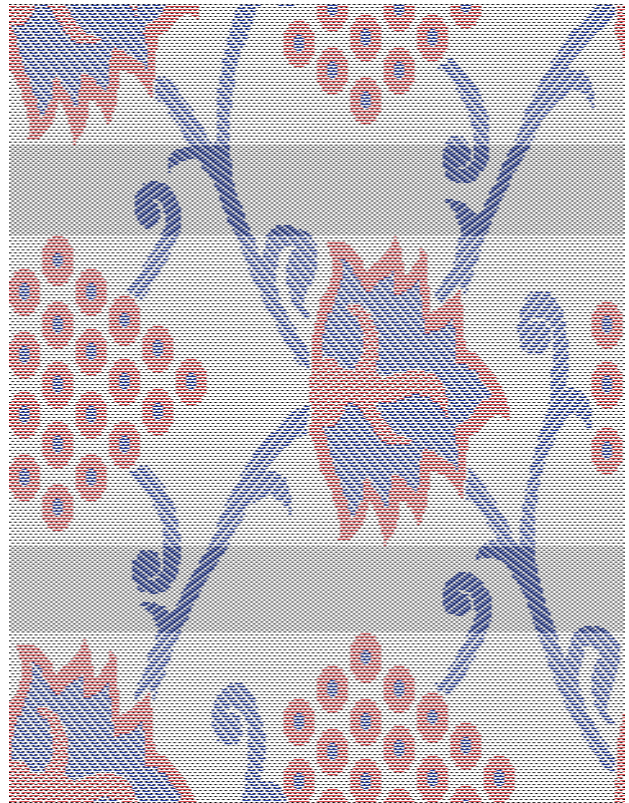
- **Superimposed-Single Graph**

If the design has more than two colors and user wants to give the punching in single command then super imposed single graph is the option where both the colors of the design merged together. There is no need to give color wise punching of the cards separately. This mode provides multiple colors punching in a single command.



- **Superimposed-Single base Graph**

If the design has more than two colors and user wants to give the punching in single command then super imposed single graph is the option where both the colors of the design merged together. It also provides facility to punch the base weave with multiple color design punching.



2.5.2.2 Select Punching Machine

User need to select the Punching machine application i.e. driver of the punching machine connected with the computer. This option can directly transfer the design from application to punching machine.

2.5.2.3 Service Password

User need to enter the service password to give the command of punching from the security and authentication aspect.

2.5.3 Consumption Calculation

User can calculate the actual yarn consumption for producing finished fabric.

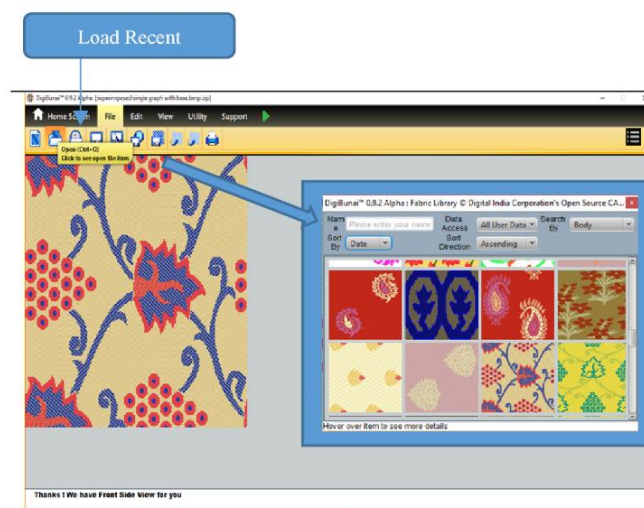
2.5.4 Price Calculator

It provides facility to calculate the cost of fabric production.

2.6 Library of Fabrics (File)

User can open an existing fabric from the library through File -> Open

When user will click on the Open, an image browser window will pop up which shows the fabrics in library. It also provides searching and sorting options based on the following parameters viz. Name, Date, Type. User can open the saved fabric by selecting fabric from library.



Load Recent option provides to open the recent created saved file on window after closing & reopen the module.

2.6.1 Search

User can search the fabric by name. User need to enter the starting character of name of the fabric, the list of fabrics will automatically be displayed.

2.6.2 Sort

- **Sort by Date**

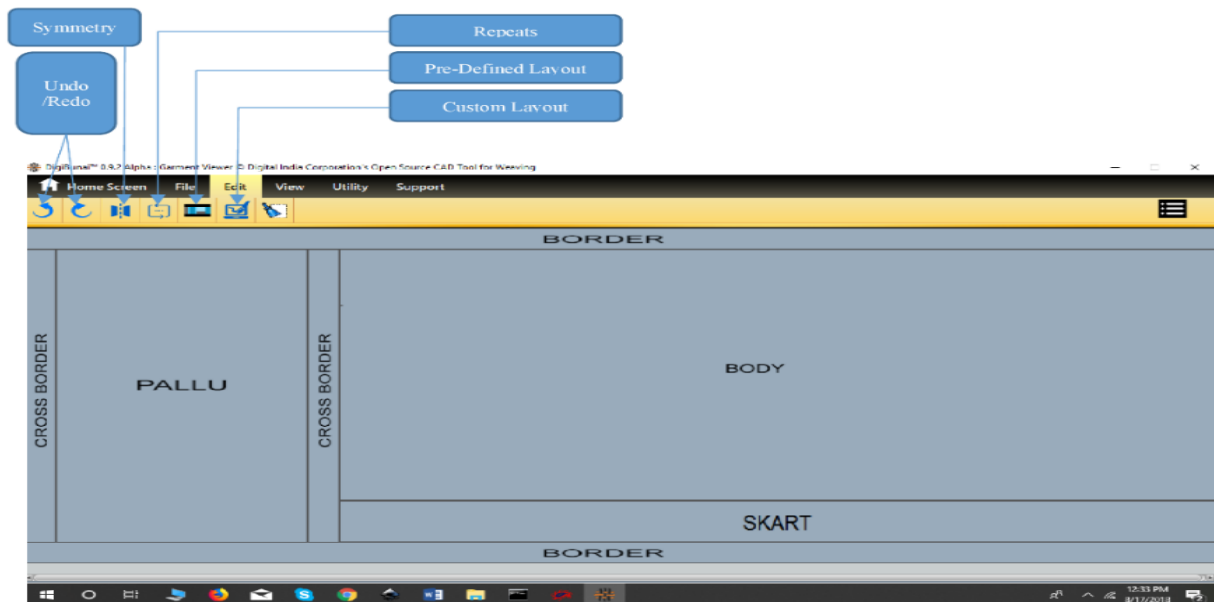
User has the option to sort the fabric by date (ascending order)

- **Sort by Name**

User can sort the fabric by Name (ascending order alphabetically)

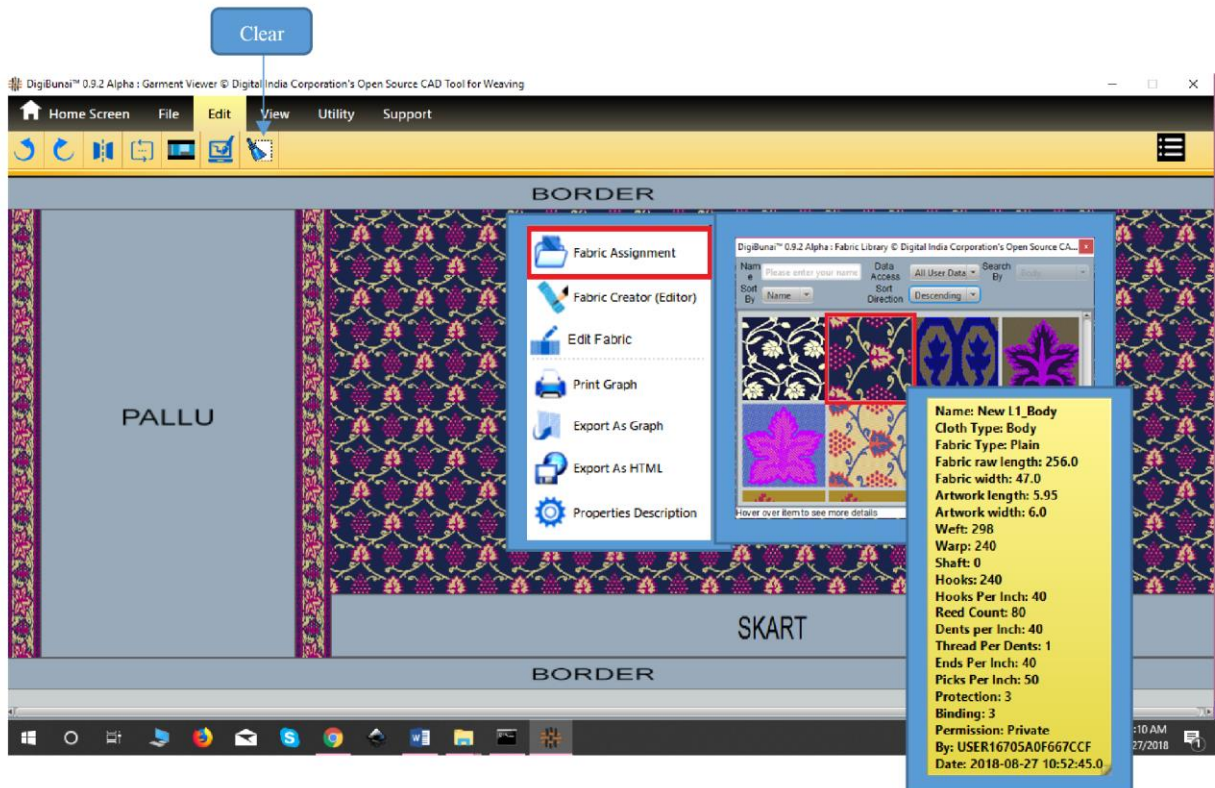
3 Garment Layout

Garment Viewer module is the play area for designer where they can see the design in the form of complete garment layout. User can try different combinations of designs, colors & design editing functions. In **Edit** menu user can select the predefined template of garment layout or customized it as per requirements.



3.1 Fabric Assignment

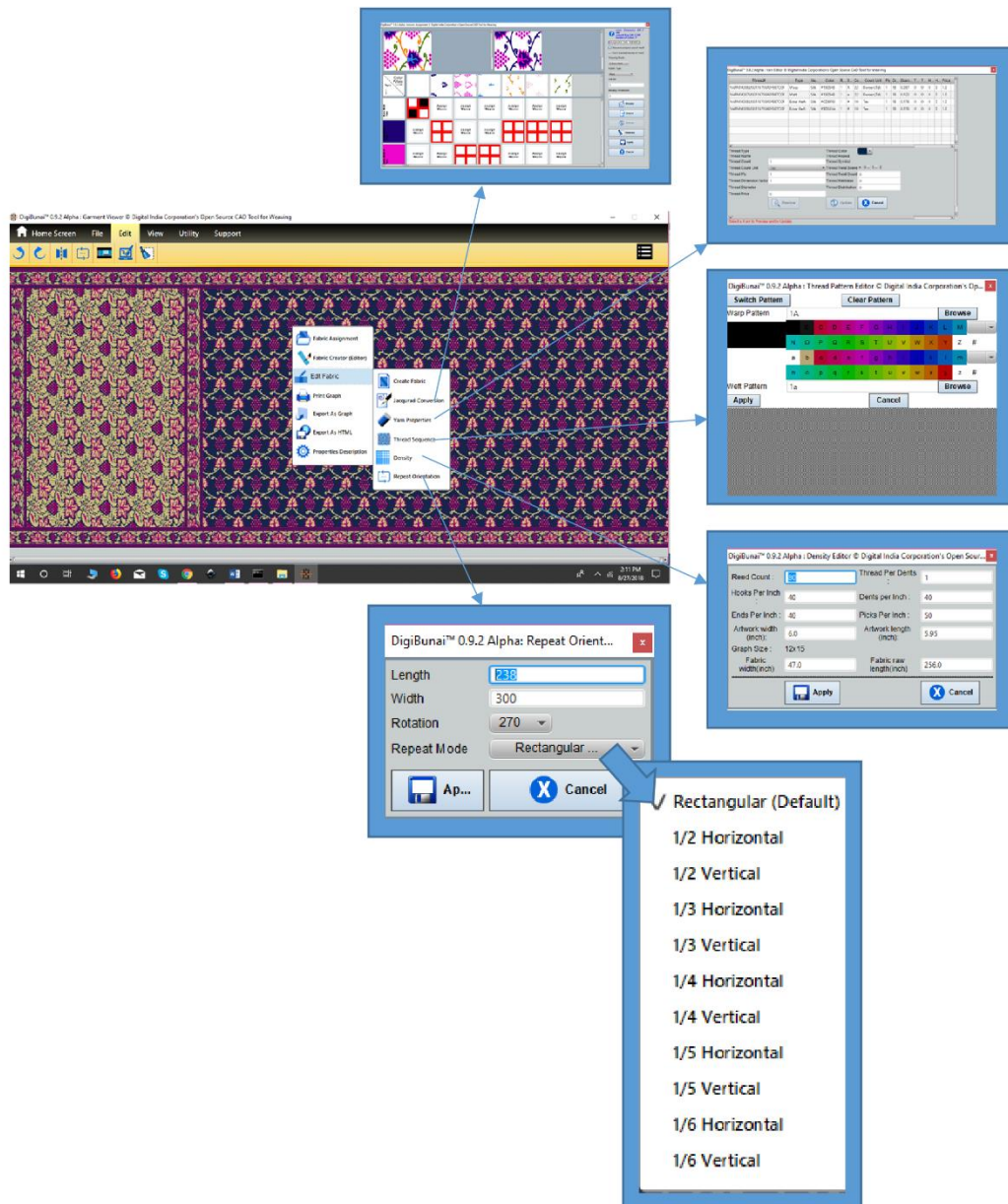
In this section user need to assign the fabric in each and every section of the layout. By right click of the specific section, user can select the fabric from the library. If user clicked on the body, an image browser will be opened with the library of designs where user can chose the design for garment section.



Fabric Assignments

3.2 Edit Fabric

This mode is provide to do changes or edit in assigned Fabric in Layout. The editing option provides the various design & Fabric parameters changing facility to visualize the garment in different ways.



3.2.1 Jacquard Conversion

This function is useful to modify the weaves & extra wefts in design. After modification user can save it & changes will be reflect on Garment Layout.

3.2.2 Yarn Properties

This feature gives the flexibility to the user for changing the warp, weft and extra weft yarn properties (currently colour of the yarn) on layout. Later on count of the yarn, ply, twisting, hairiness factor will be editable.

3.2.3 Thread Sequence

This function provides the flexibility to users for various yarn color pattern generation on base fabric & visualize that effect on garment layout.

3.2.4 Density

Density parameters reflect the yarn density effect on layout with corresponding dimensions of the design.

3.2.5 Repeat Orientation

With this feature, user can change the repeat pattern of the design on layout i.e. ½ drop, 1/3 drop etc. User can rotate the artwork on layout by selecting the angle.

3.2.6 Clear

Clear function is to clear the fabric from the layout.

3.3 Garment Layouts Creation (Edit)

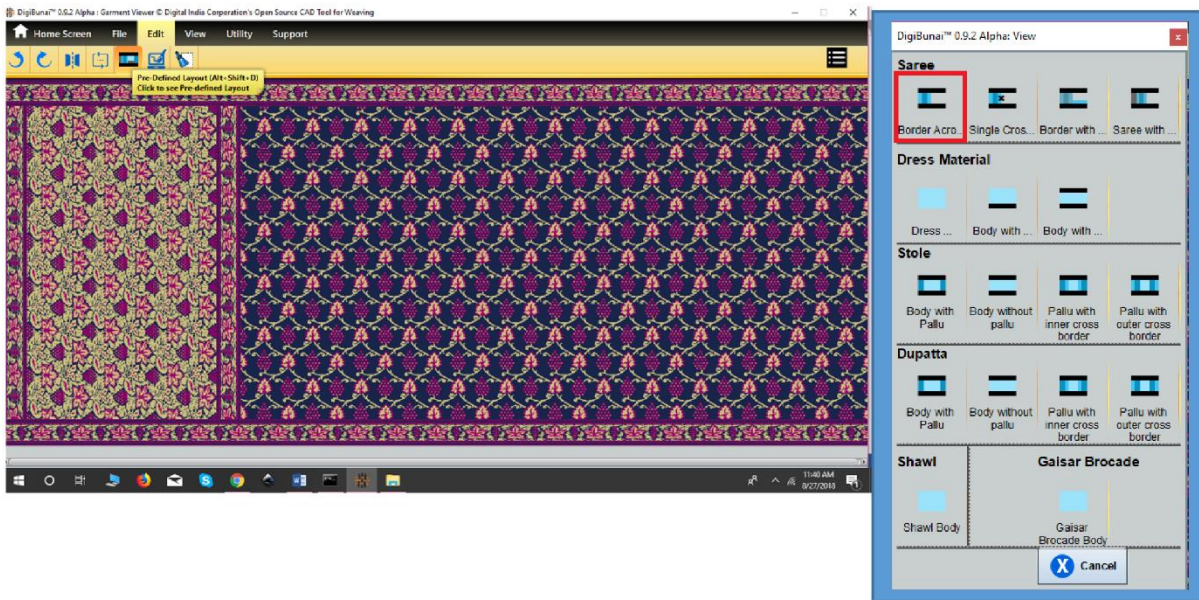
3.3.1 Saree

In Varanasi, Saree has the different layouts in the form of various components of the Saree i.e. border, cross border, pallu, body.

3.3.1.1 Pre-Defined Layout

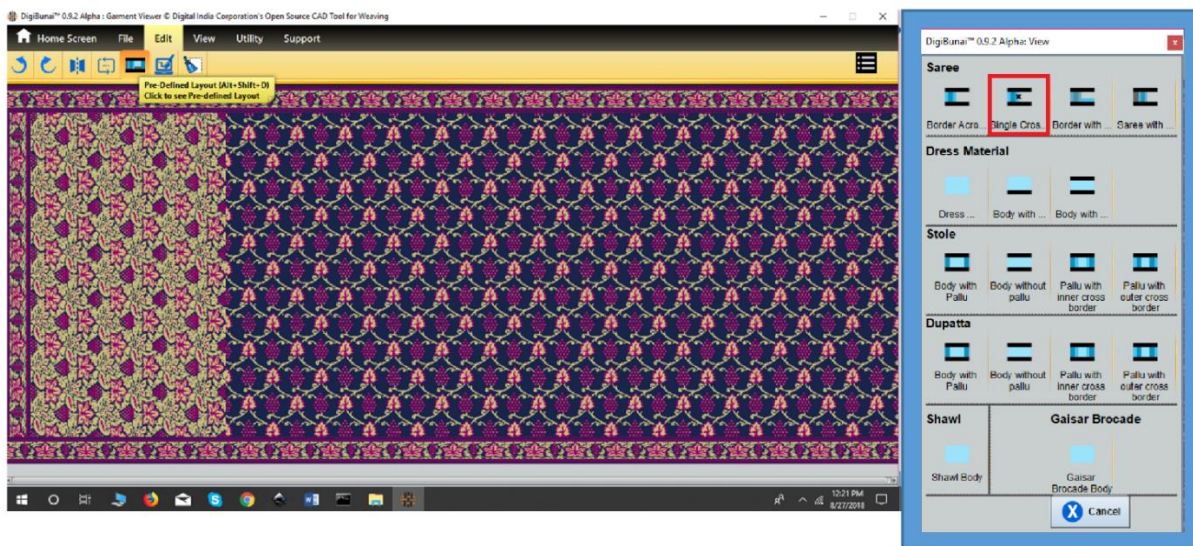
- **Border across Body and Pallu**

In this layout, border goes across the cross border. The cross border limits up to the border only.

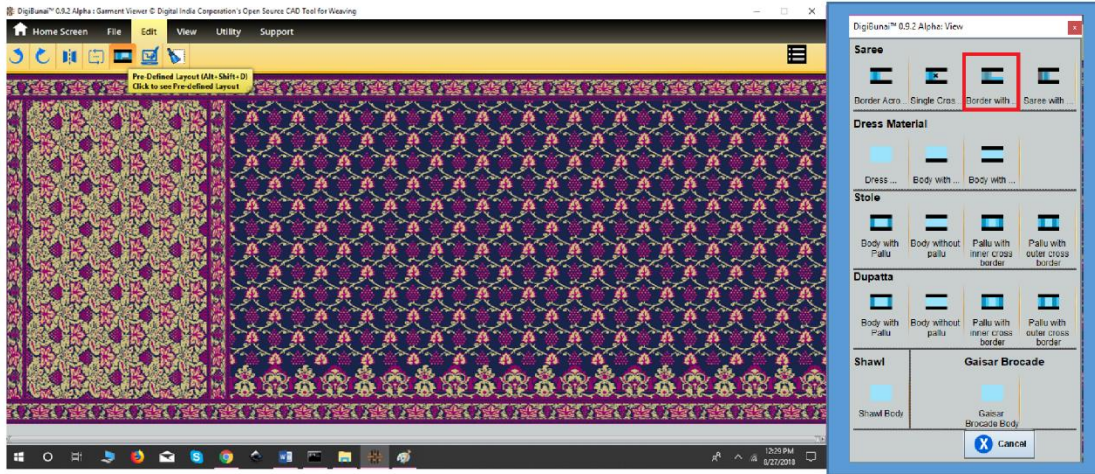


- **Single Cross Border**

Some of the Sarees have only one side cross border, body part start just after pallu.



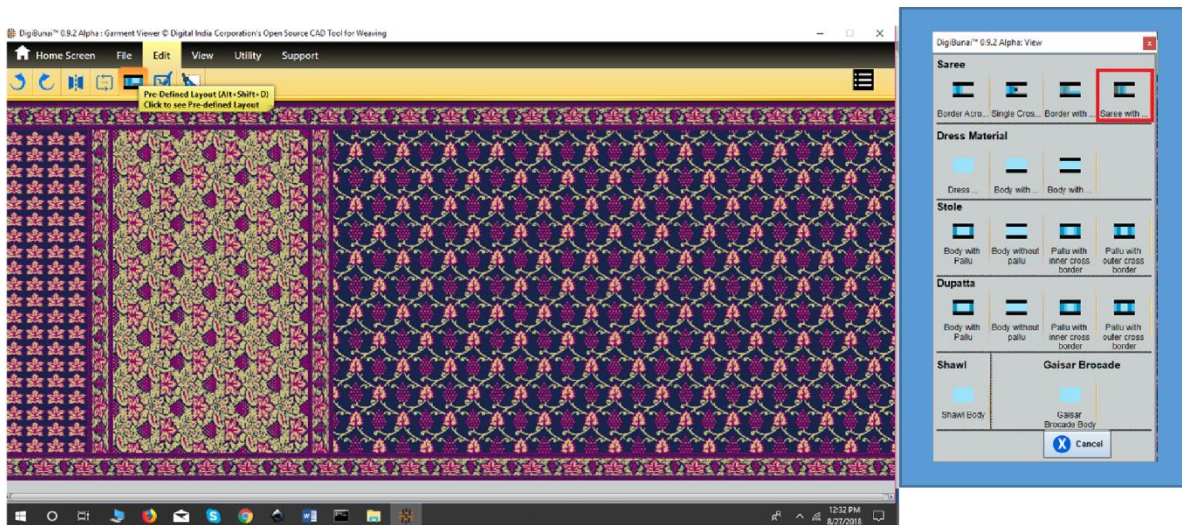
- **Border with Skirt border**



In this layout, a skirt is extra component along with border, cross border, pallu and body part of Saree.

- **Saree with Blouse**

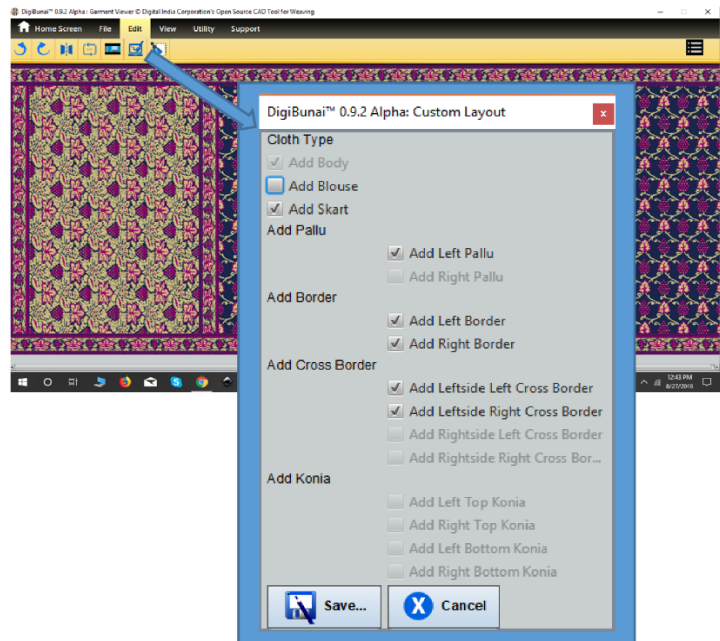
This layout of the Saree is with Border Cross Border, Pally, Body and blouse piece.



User can also prepare the layout of different garments like Dress Material, Dupatta, Stole, Shawl, etc.

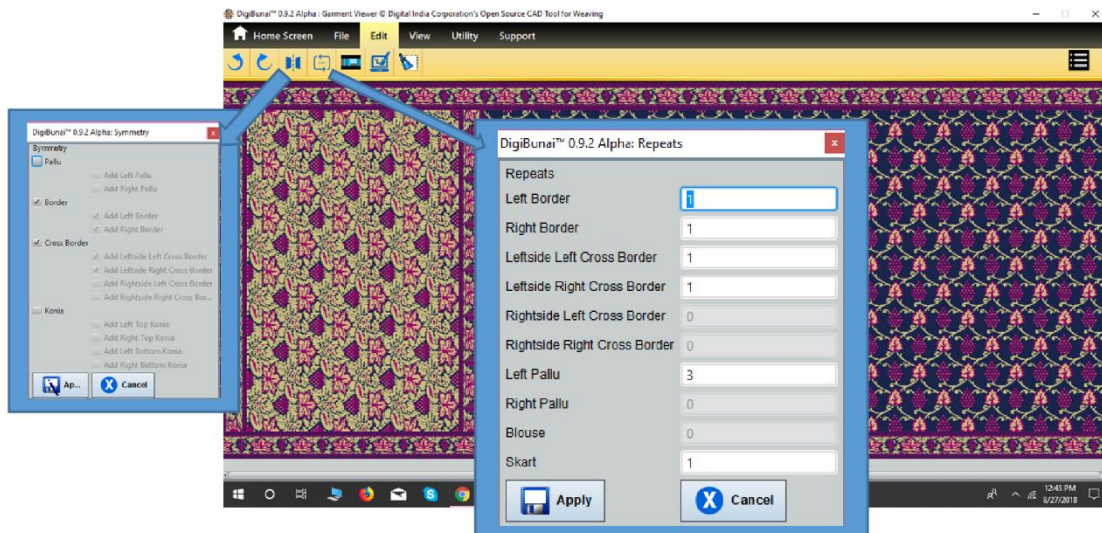
3.3.1.2 Custom layout

User can customize the components of garments by Custom Layout.



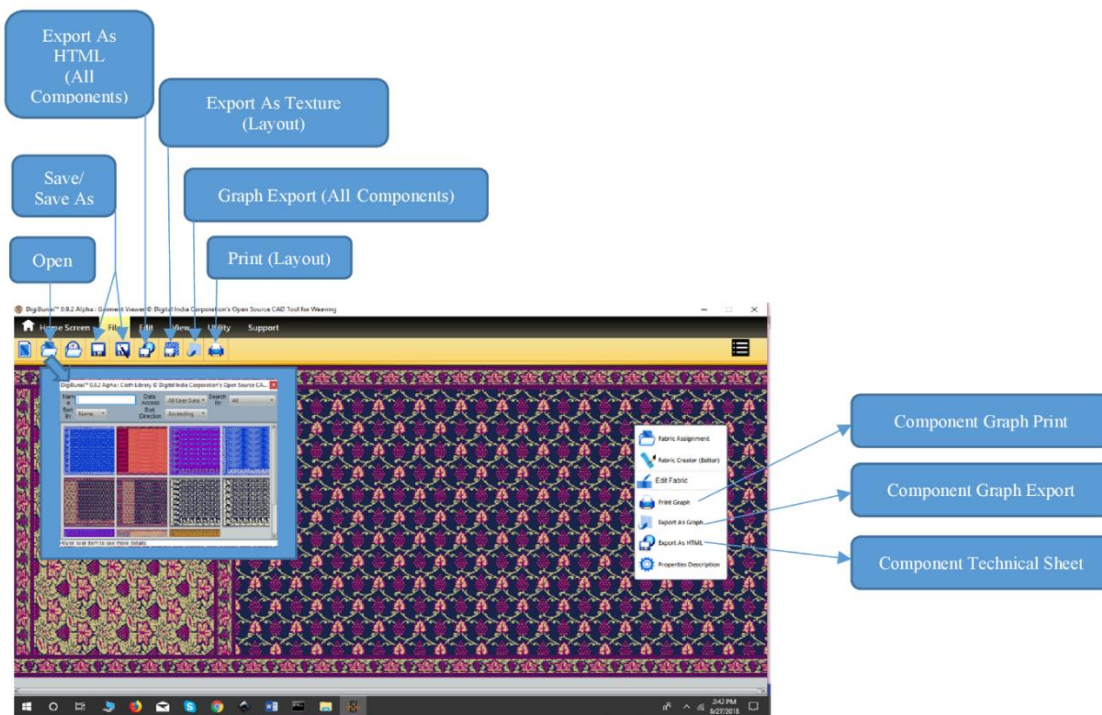
3.3.1.3 Repeat & Symmetry Setting

User can select the repeats of individual garment components by Repeats option. The symmetry between the garment components can be set by symmetry.



3.4 Secure Garment Layout & Outputs (File)

This can provide the functionality to secure the created Layout in Library of Garment Viewer module. User can Export or Print the layout with supporting construction files.



3.4.1 Print

User can print the Garment Layout by clicking on Print. It also provides the facility to print the graph of individual garment component. For this purpose take the mouse pointer on design & right click. The option displayed on the screen 'Print Graph'.

3.4.2 Export

User can export the garment texture by **Export As texture**, Export garment construction details by clicking on **Export As HTML** & Export graphs of garment by **Export As Graph** on the top menu bar of Garment Viewer. The garment component can be individually exported by right clicking on individual sections of Layout.

3.4.3 Save

The created garment layout save in the Library of Garment viewer by Save/Save As.

3.4.4 Open

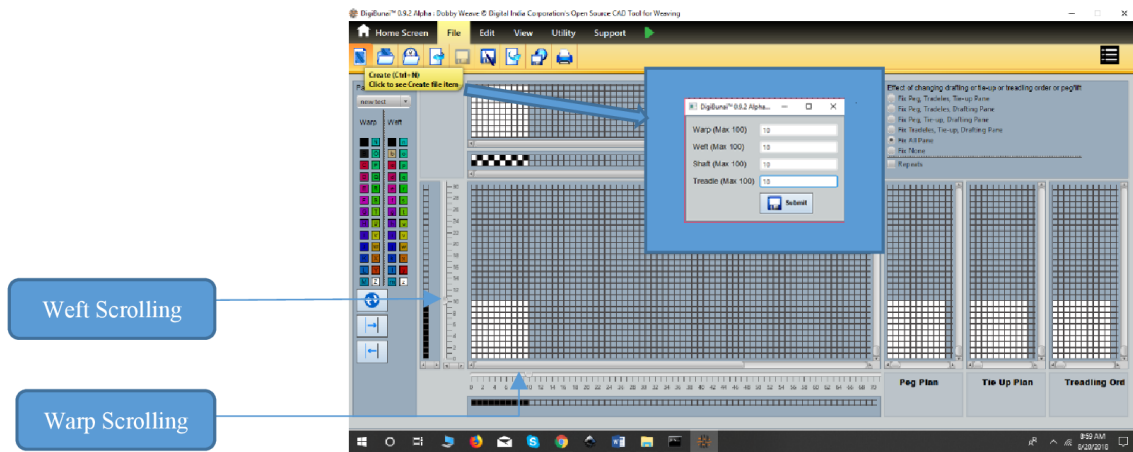
The saved Garments Layouts can be seen in Library by clicking on 'Open'.

4 Dobby Weave

Dobby Weave help users to create different weaves which will be used during the weave assignment to the artwork.

4.1 Create Weave

To create one repeat of the weave, user need to enter number of warp, weft, shaft and treadles. After assigning the above parameters, 4 grid will be appeared to the user i.e. design grid, drafting grid, ti-up grid and peg plan grid. There are two options to create the weave size (other is by scrolling) and select warp colour and weft colour form colour palette.



4.1.1 Design to Drafting

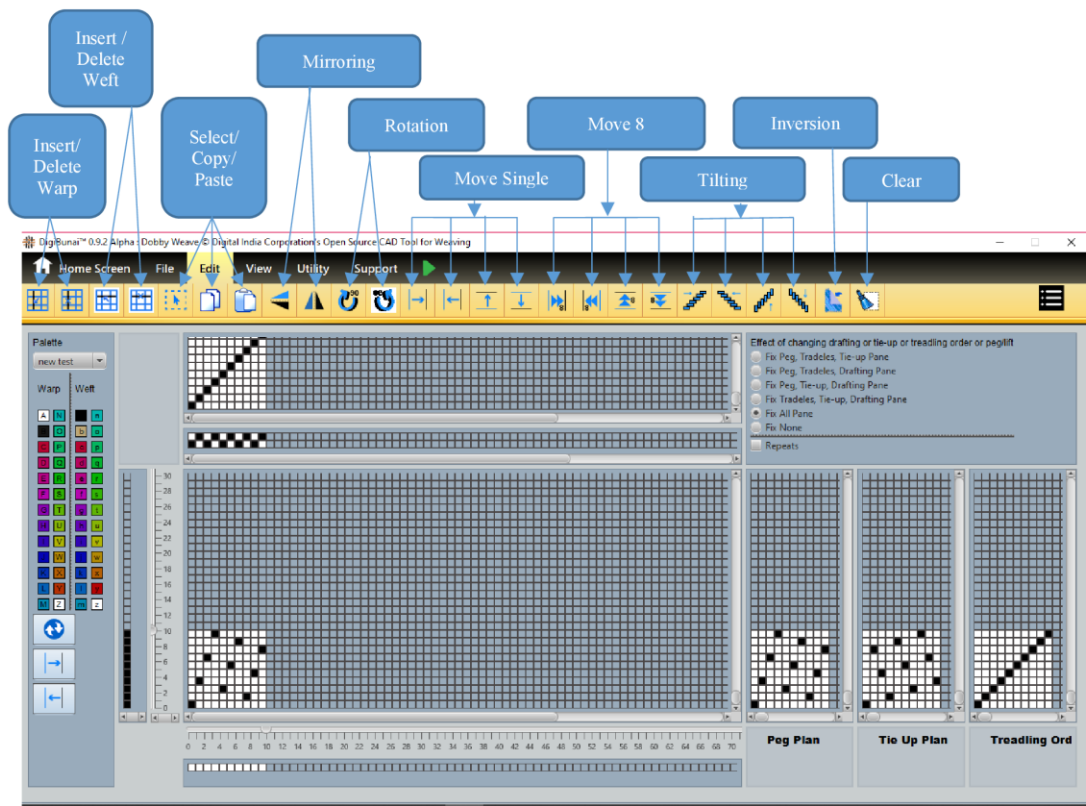
User need to create the weave by filling the design grid. Rest of the three grids will be calculated automatically.

4.1.2 Drafting to Design

If user knows the drafting the design then he/she needs to fill the drafting, ti-up and peg plan grid, design will automatically reflect in the design grid.

4.2 Edit

To edit the weave pattern, user can do the following operations.



4.2.1 Insert Warp

There is provision to insert warp in the existing weaving pattern. The new warp will be inserted at the right side of the selected warp.

4.2.2 Delete Warp

To delete a warp, user need to select the warp first and then click on the delete warp option.

4.2.3 Insert Weft

There is the provision to insert a weft in the existing weaving pattern. The new weft will be inserted below the selected weft.

4.2.4 Delete Weft

To delete a weft, user need to select the weft first and then click on the delete weft option.

4.2.5 Select

To select the area in the weave design, user need to click on the select option and drag to select the portion. The selected area will be represented in red colour.

4.2.6 Copy

User can copy selected area of the weave which can be used on any place in the weave area.

4.2.7 Paste

User can paste the copied area of weave on anywhere in the weave. The paste will start from the selected point.

4.2.8 Mirroring

User can Mirror the weave pattern (either vertically or horizontally).

- **Horizontal Mirror**

For mirroring the specific weave portion horizontally user will have to click on the Mirror Horizontal icon in the Edit menu bar.

- **Vertical Mirror**

For mirroring the mirroring the specific weave portion vertically user will have to click on the Mirror Vertical icon in the Edit menu bar.

4.2.9 Clear

User can clear the weave window by clicking on the clear option. After clicking on the clear, all the windows i.e. drafting, peg plan, ti-up and design window will be blank (except one point in design window).

4.2.10 Move

User can move weave pattern one unit or 8 unit in Left, Right, Up and down.

- **One Move by 1**

User click move one unit Move left, move Right, Move Up, Move Down. Weave pattern move by one unit in desire direction.

- **Move by 8**

User click move eight unit Move left, move Right, Move Up, and Move Down. Weave pattern move by 8 unit in desire direction.

4.2.11 Tilt

The tilt tool shifts every next line (or column) of the weave for one thread to the desired direction. The most common use is for fast creation of satin weaves. This function is use to tilt the weave in different directions.

- **Right**

Tilt right the weave (transforms vertical line to right diagonal).

- **Left**

Tilt left the weave (transforms vertical line to left diagonal).

- **Up**

Tilt up the weave (transforms vertical line to up diagonal).

- **Down**

Tilt down the weave (transforms vertical line to down diagonal).

4.2.12 Rotation

- **Clock Wise Rotation**

User can rotate whole weave pattern in clock wise direction.

- **Anti-Clockwise Rotation**

User can rotate whole weave pattern in anti-clock wise direction.

4.2.13 Inversion

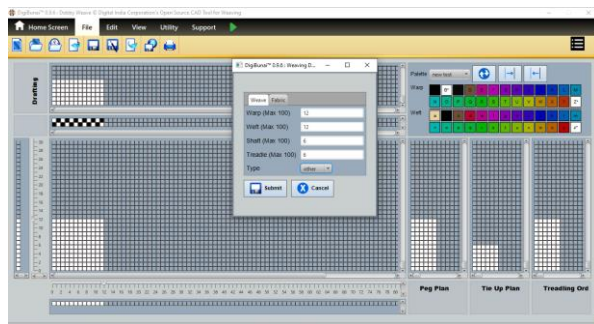
For inverting the weave pattern user will have to click on the inversion icon in the Operation menu. It can reverse the yarn interlacements in weave.

4.2.14 Double Layer Fabric

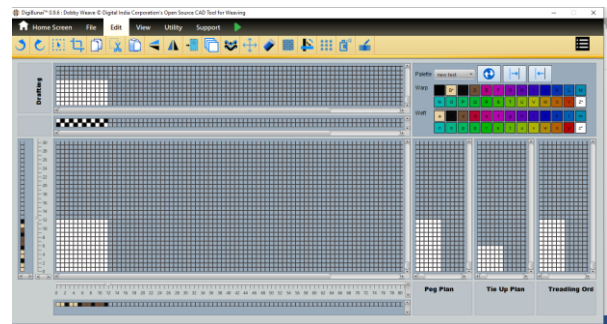
Double layer Fabric has two sets of warps and two sets of wefts are interconnected to make a two-layered fabric structure. Actually, this kind of structures contains two layers of yarns those are woven one above the other and stitched together. Double cloths have at least two series of warp yarns, and two series of weft yarns, namely face and back.

The upper layer is formed by interlacing the face warp yarns with the face weft yarns, and the lower layer is formed by interlacing the back warp yarns with the back weft yarns. The two layers may be only loosely connected together in which case, each may be readily identified as a different entity or they may be so intricately stitched or tied together that they appear to form a complex single structure.

To create the two layer fabric structure user needs to initialize the parameters of composite weave (Warp, Weft, Healds, etc.). After defining the parameters user need to assign the thread color sequences for warp and weft yarns.

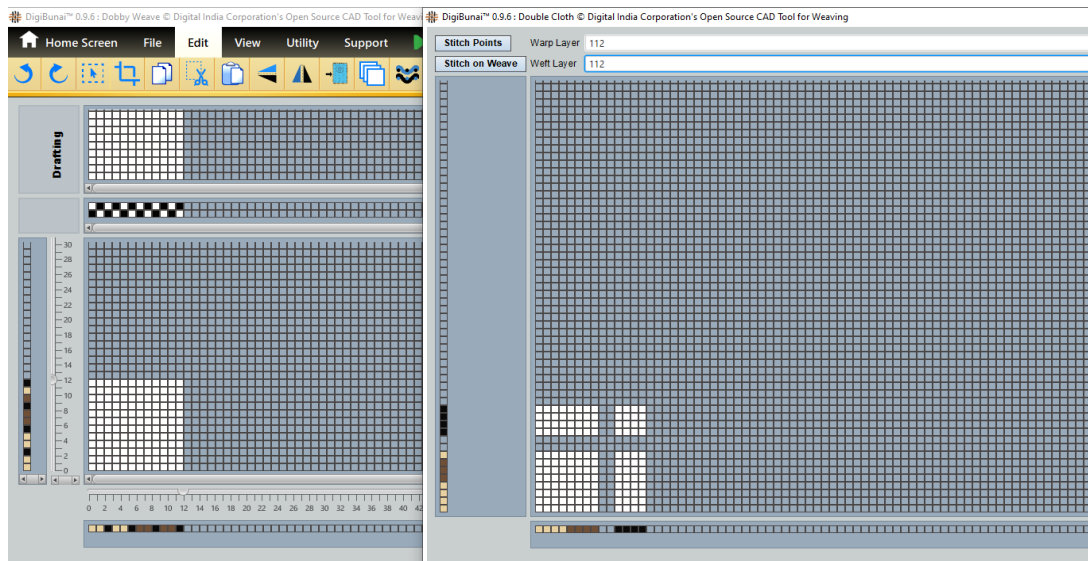


Define Weave Parameters

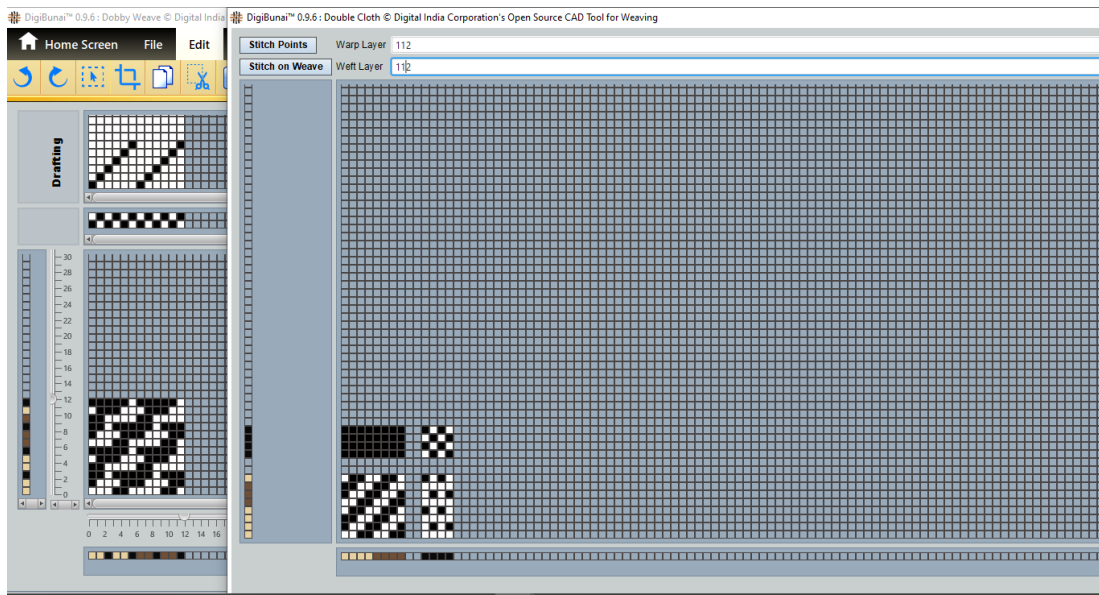


Assign Yarn Color Sequence

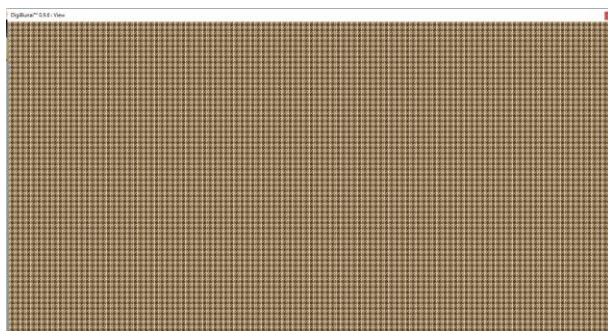
Define two separate fabric layers for the combined weave structure



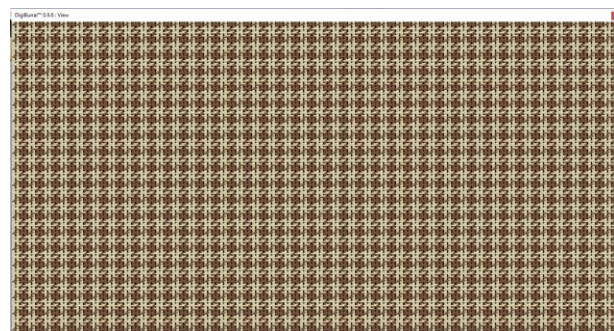
Create Weaves for two separate fabric layers & mark the mutual points between Warp Face thread & Back Weft Threads. Combined weave structure will automatically reflects on the main window. Mark the stitching points between Back Warp & Face Weft.



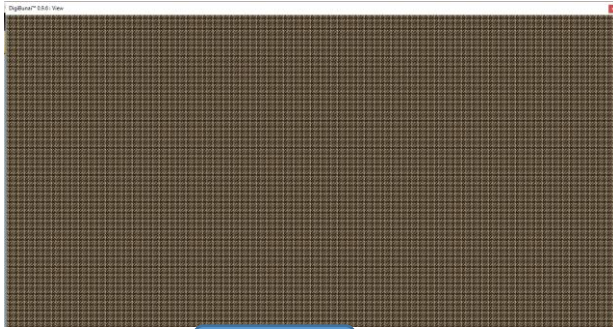
The final fabric generated which is based on the input information on main weave window.



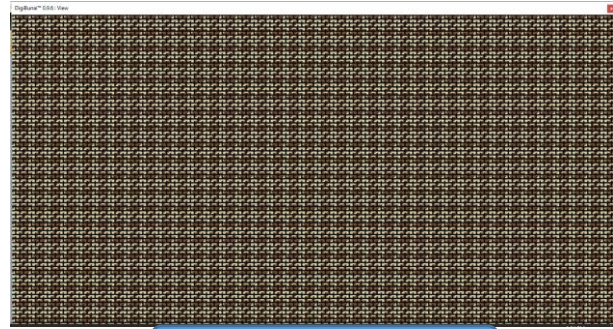
Fabric Front



Fabric Front Thread Visualization



Fabric Back

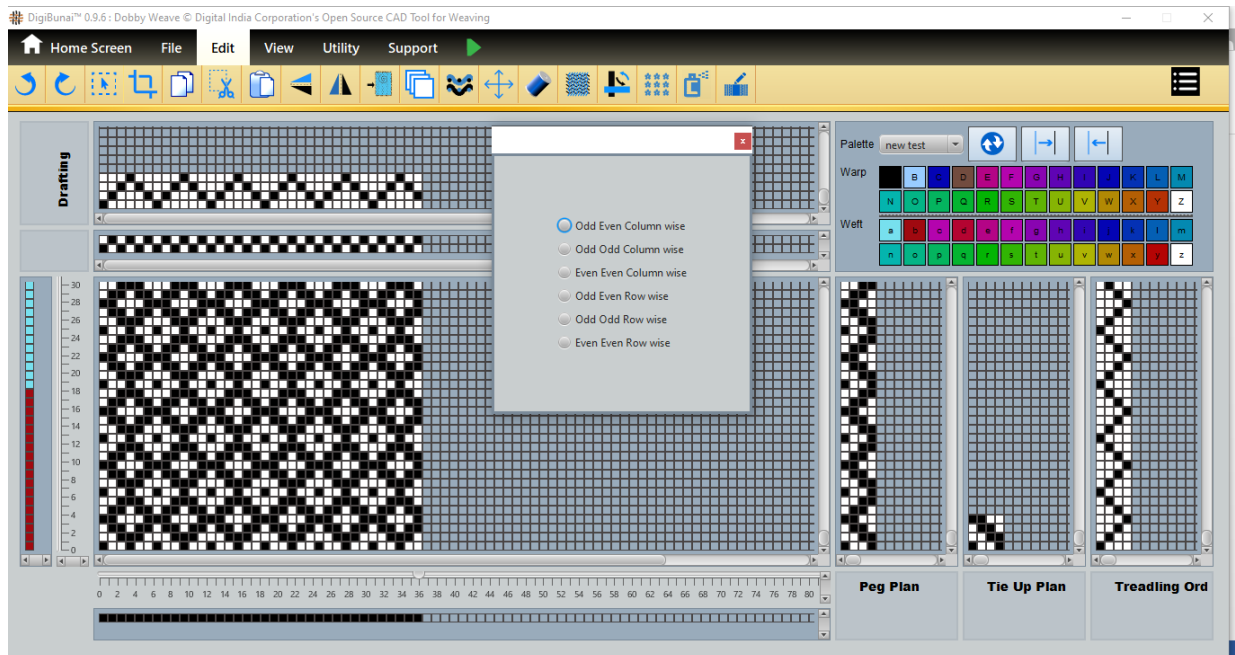


Fabric Back Thread Visualization

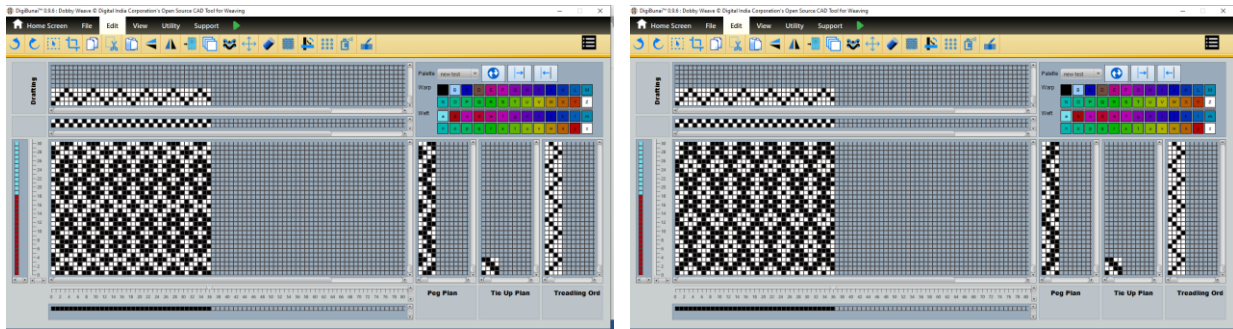
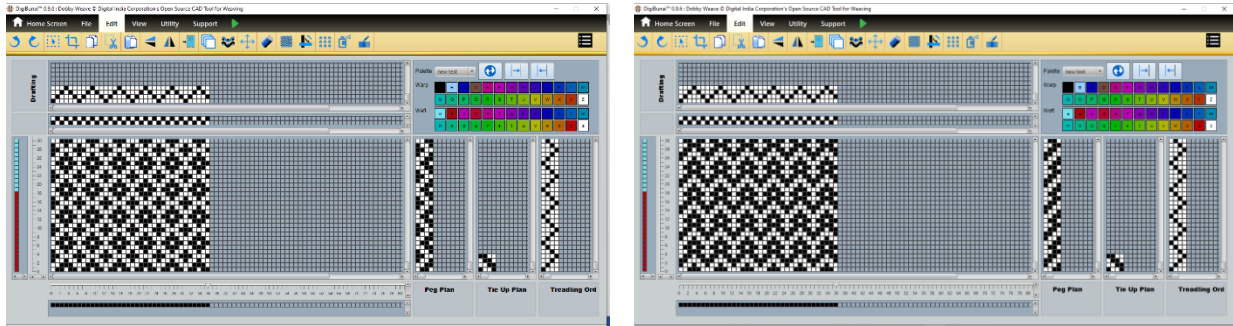
4.2.15 Multi & Complex Weave

Weave is the interlacement order of the warp & weft threads in fabric structure. It provides functional as well as aesthetics appeal in fabric. User create several weave patterns with multiple yarn color combinations to produce various fabrics. According to frequently change in market trend, user/buyer's demands new or innovative weave patterns on fabrics. To suffice the market needs in order to frequent demand changes, designers thinking about to create new or innovative weave patterns. Based on the designers work with market demand, DigiBunai™ CATD will provide facility to generate multiple weave patterns from single one & merging the various weave pattern in single one.

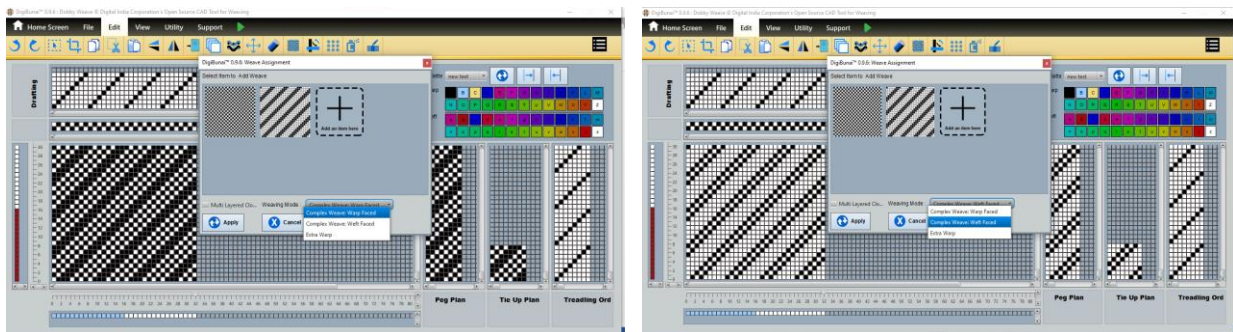
To generate various patterns from a single weave structure, user first create a weave on the creation window & right click on the **Peg Plan**.



After clicking on Peg Plan user choose any one option to generate the newer weave pattern based on shuffling the Peg Plan.

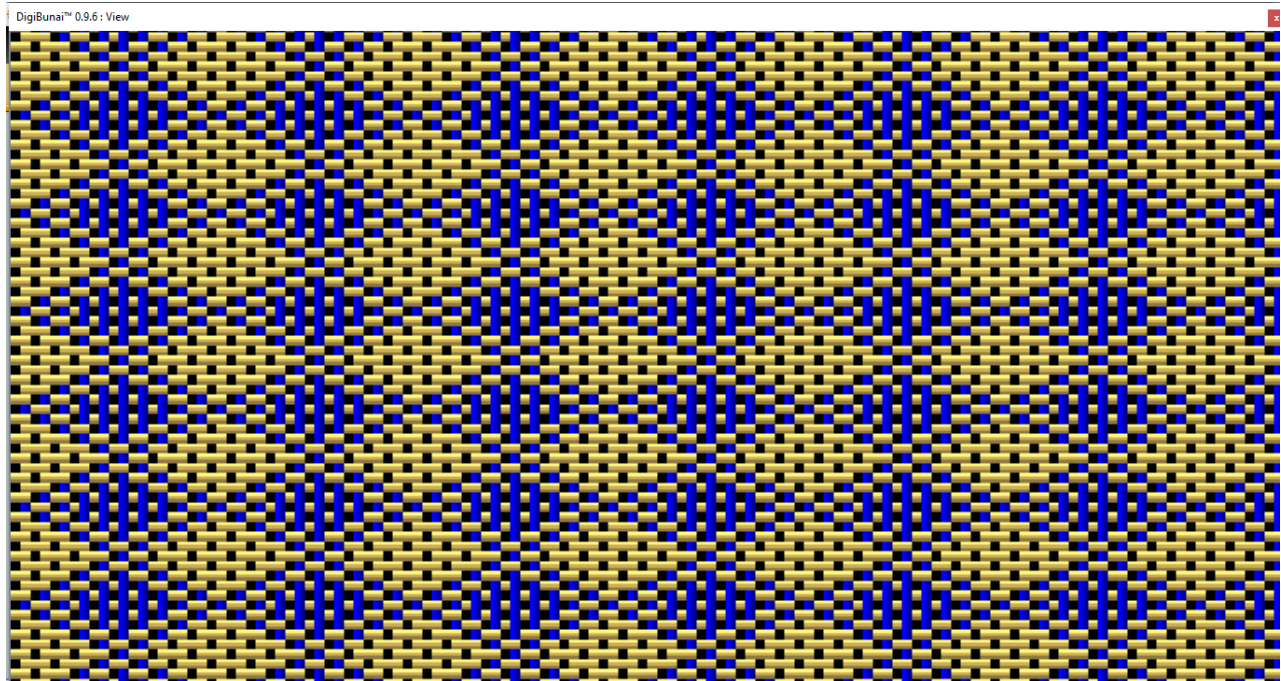
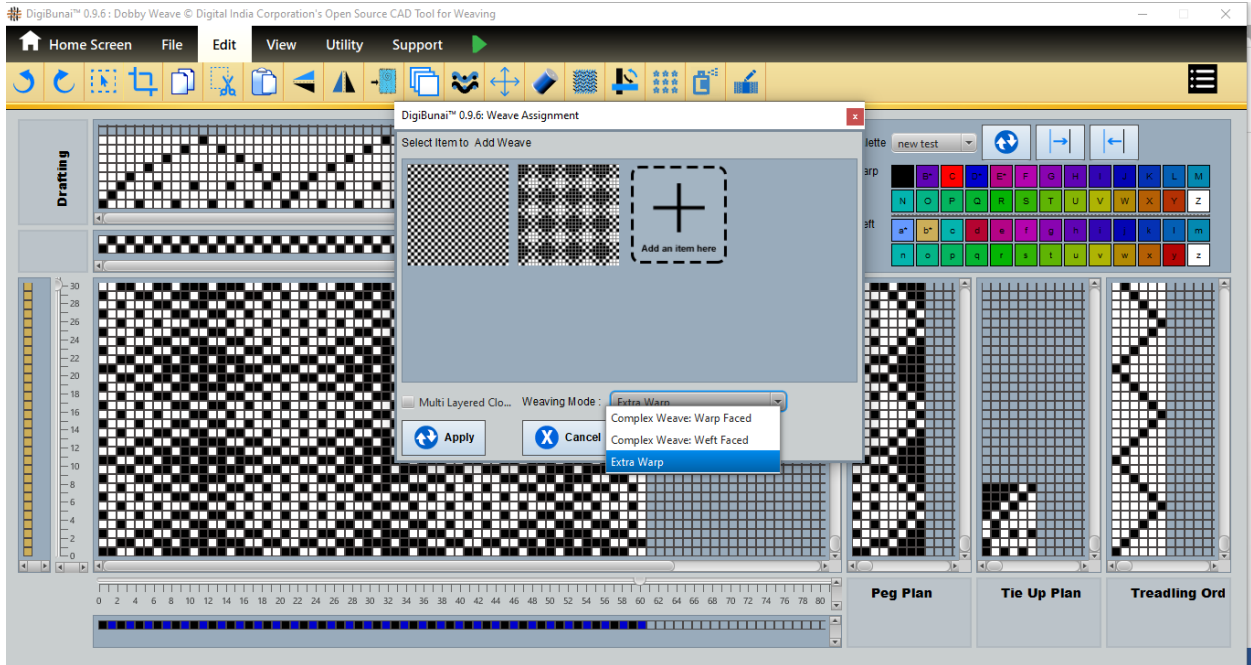


The application also provide a facility to generate the complex weave structures by combining the various weaves. User needs first to click on **Complex Weave** & define the **Weaving Mode (Warp Faced/Weft Faced)**. After selecting the weaving mode user needs to add various weaves to generate a complex weave structure.



4.2.16 Extra Warp (Dobby Patterns)

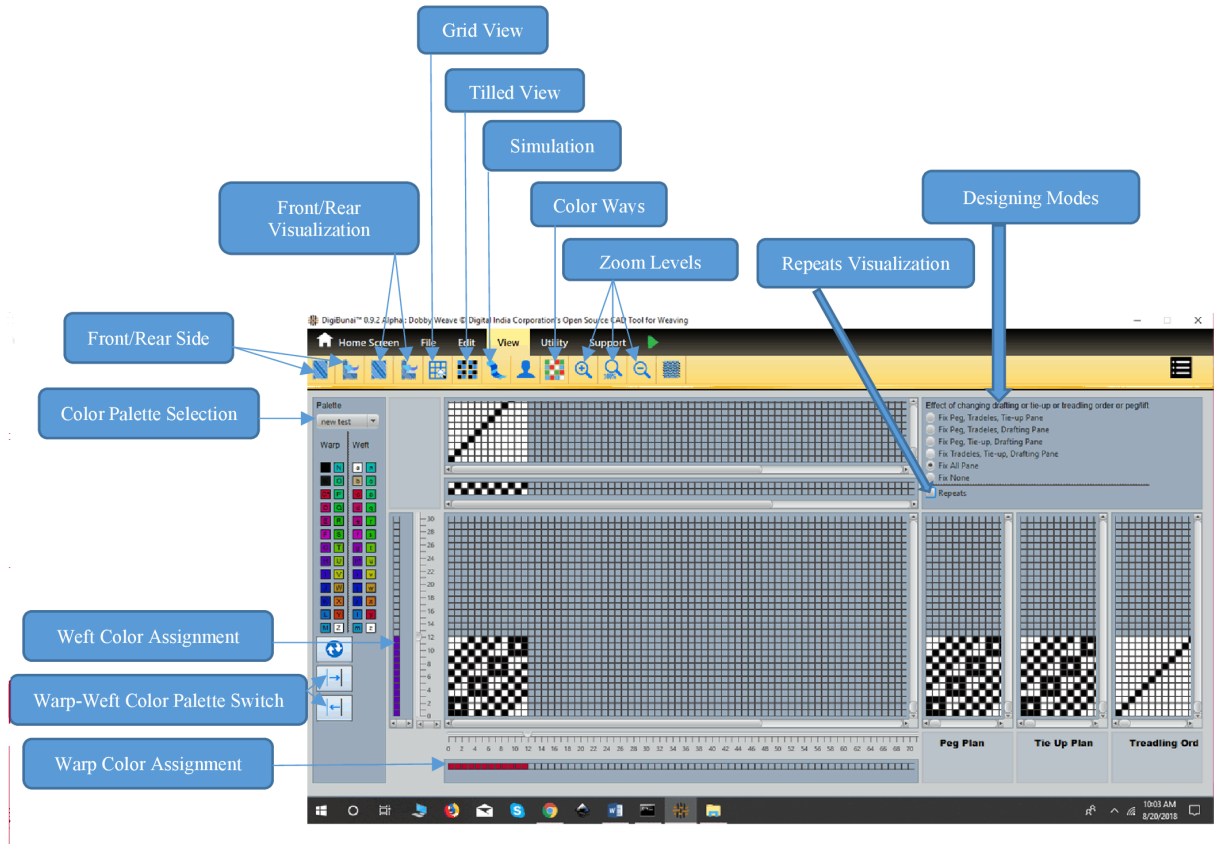
The Extra Warp weaving starts with a layer of Extra Warp inserted with ground warp threads. To produce the Extra warp designing in Dobby module, user initially click on Complex Weave & select weaving mode “**Extra Warp**”.



Extra Warp Fabric

4.3 View

The View Menu option of the Dobby Weave Window will provide certain operations for viewing the weaving patterns of the doobby fabric at different view mode.



4.3.1 Zoom-In

Zoom-In can be obtained by clicking on the icon under the View menu. Weave Zoom In increases the size of pixel which represents the thread on the screen this allows the user to see the weave with more precision and accuracy.

4.3.2 Zoom-Out

Zoom out Mode can be obtained by clicking on the icon under the View menu. .

Weave Zoom Out decrease the size of pixel which represents the thread on the screen this allow user to inspect the detail of the large weave.

4.3.3 Normal

Normal Mode can be obtained by clicking on the icon under the View menu. This facilitates the user to retain the weave zoom at normal level at its default setting.

4.3.4 Tiled View

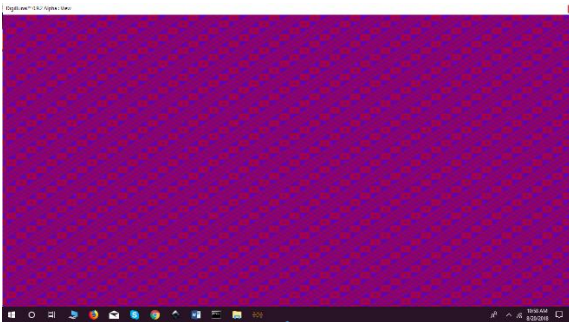
User can see fabric view of weave in tiled view under View menu. User can assure about the created weave by showing weave repeats in Tilled View.



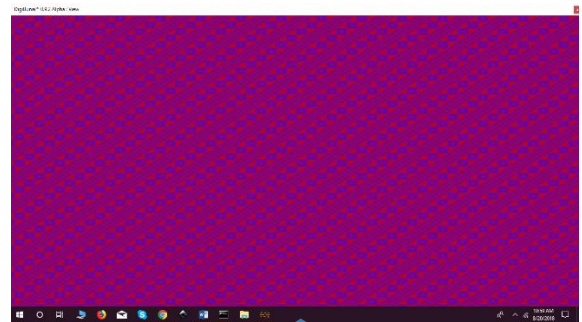
Tilled View

4.3.5 Front & Rear side View

User can see Front & Rear side view of fabric with weave in view under View Menu.



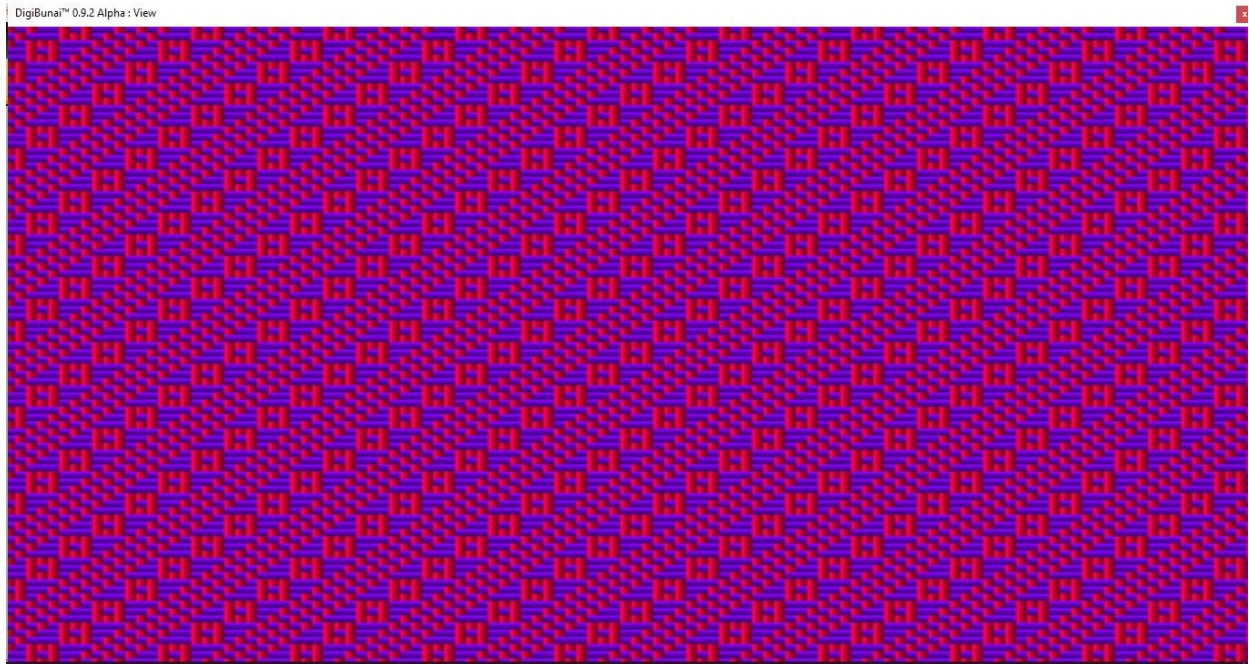
Front View



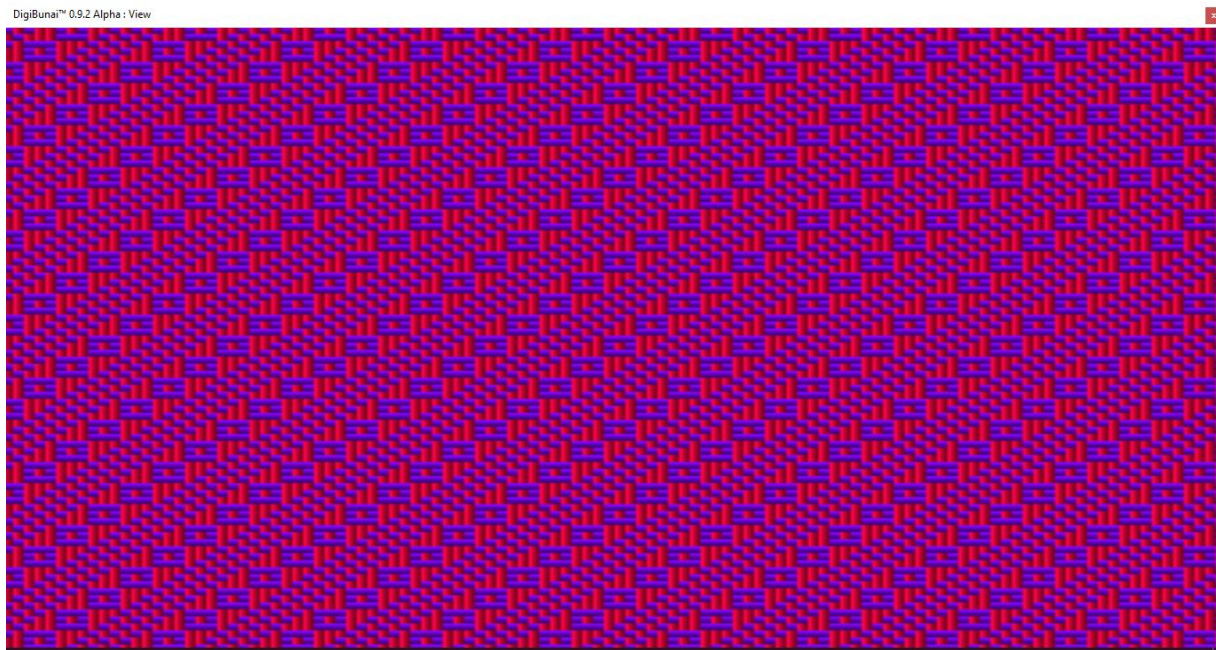
Rear View

4.3.6 Front & Rear Visualization

User can see the thread interlacement visualization of created fabric with weave.



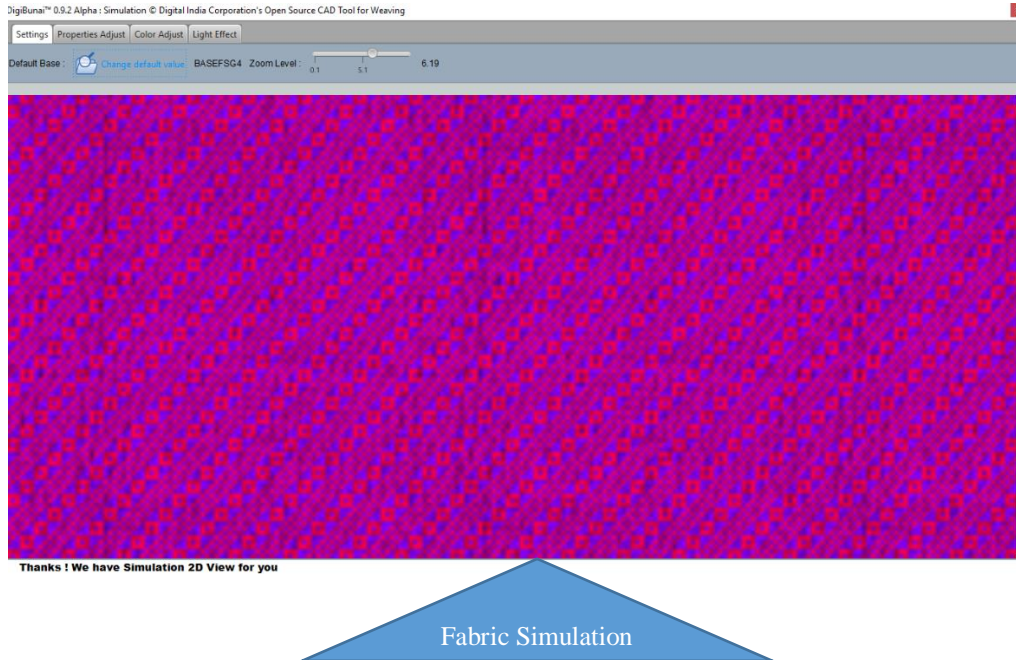
Front Visualization



Rear Visualization

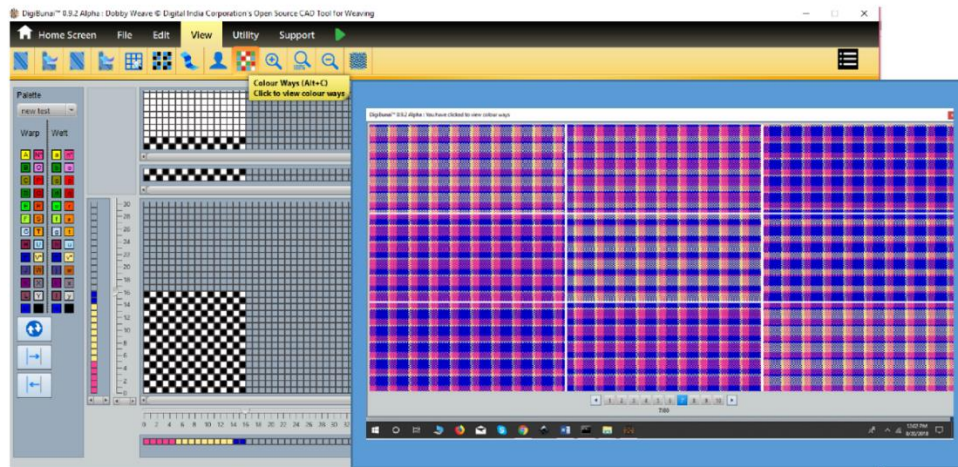
4.3.7 Simulation View

User can see simulation view of fabric in View Menu.



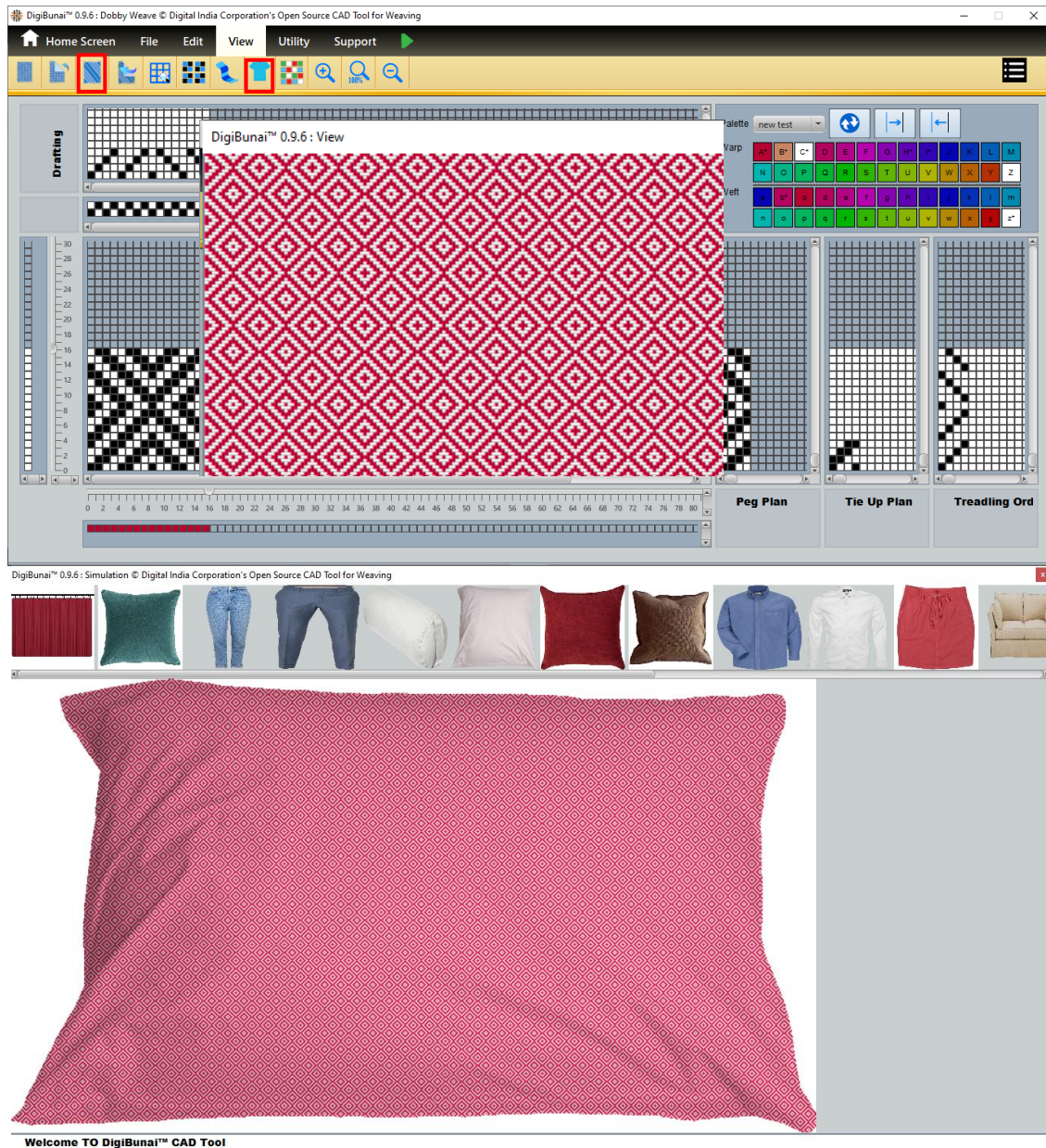
4.3.8 Colour ways

User can see fabrics with different colour combination of warp and weft yarn under view menu in dobby weave.



4.3.9 Pattern Rendering

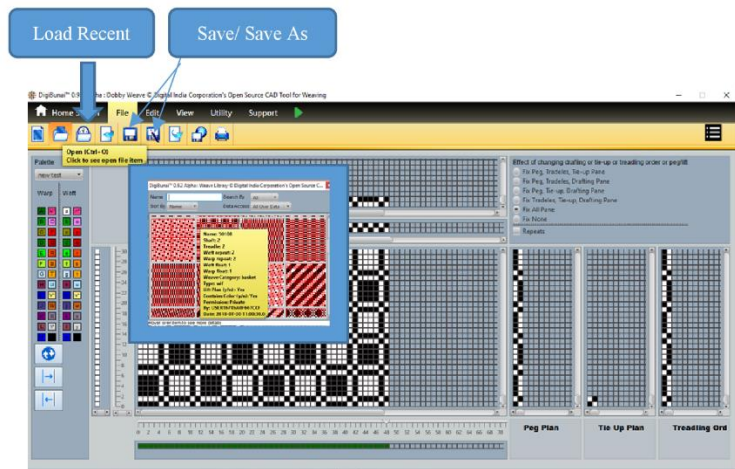
User always wants to visualize their digital creations (weave based patterns in Dobby) on the end products. The application provides facility to see these creations on predefined 2D objects. Area on which pattern needs to be rendered is identified on the 2D object model by segregating background from rest of object area. Once this area is identified, next is to generate fabric (with repeats) which can be accommodated to this area. Finally, the fabric is superimposed on the region.





4.3.9 Secure the Weave creations & Weave Library (File)

The function provides the facility to save the created weaves & fabric in Dobby Weave Library.



4.4.1 Save/Save AS

For saving the existing weave with new name into the library user has to click on **Save As** icon in the File menu, this will save the weave with new name inside the library.

For saving an existing weave into database library with modification user will have to click on save icon under the File Menu.

4.4.2 Open & Load Recent

User can open an existing created saved weave from the library by clicking on **Open** icon in the File Menu. After clicking on Open icon a Window will pop up which shows the weave to the user.

Open Weave window that provides different searching and sorting options for user to search the weave & Sorting allows to sort the weave file on the basis of factors such as :-

- **Name** –This helps a user to sort the weaves by name bases.
- **Date** – This option helps user to Sort the weaves by Date updated or last saved.

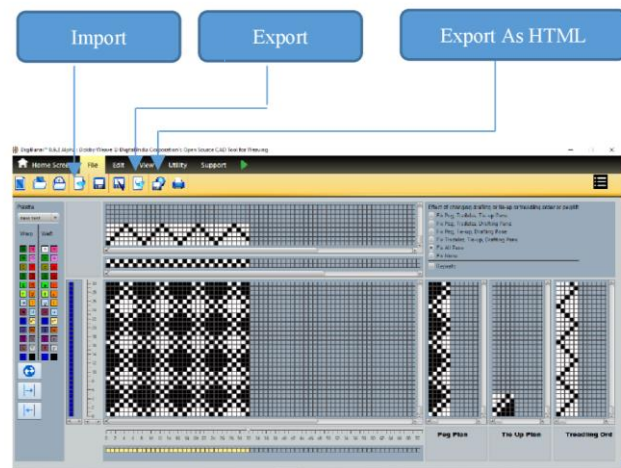
For e.g., if user last saved the weave file yesterday then with this option he can directly open the file without searching for particular one in library.

User can see previous saved weave in load recent menu bar.

4.5 Import & Export

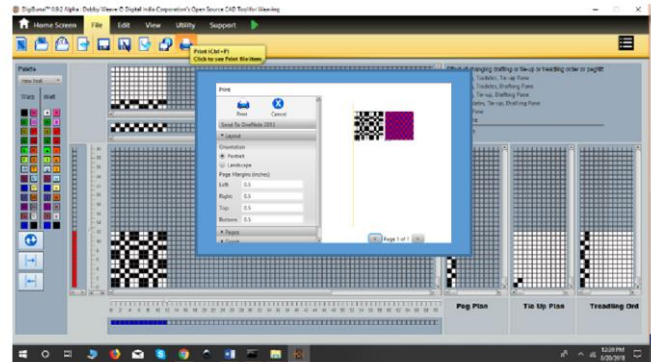
Dobby Weave provides the facility to the user to Import the weave ‘wif’ file that contains all the weaving related information. By clicking on Import icon under the File Menu. After clicking on Import icon, a file open dialogue box will appear for selecting a specific **WIF** file.

Dobby Weave provides the facility to the user to export the weave in ‘wif’ format. The constructed weave export with Peg plan, Draft, Treadling Sequence by clicking on ‘Export As HTML’. User can export the weaving information by clicking on Export icon in the File menu.



4.6 Print (File)

User can print the weave pattern with fabric front side, by clicking on 'Print'.

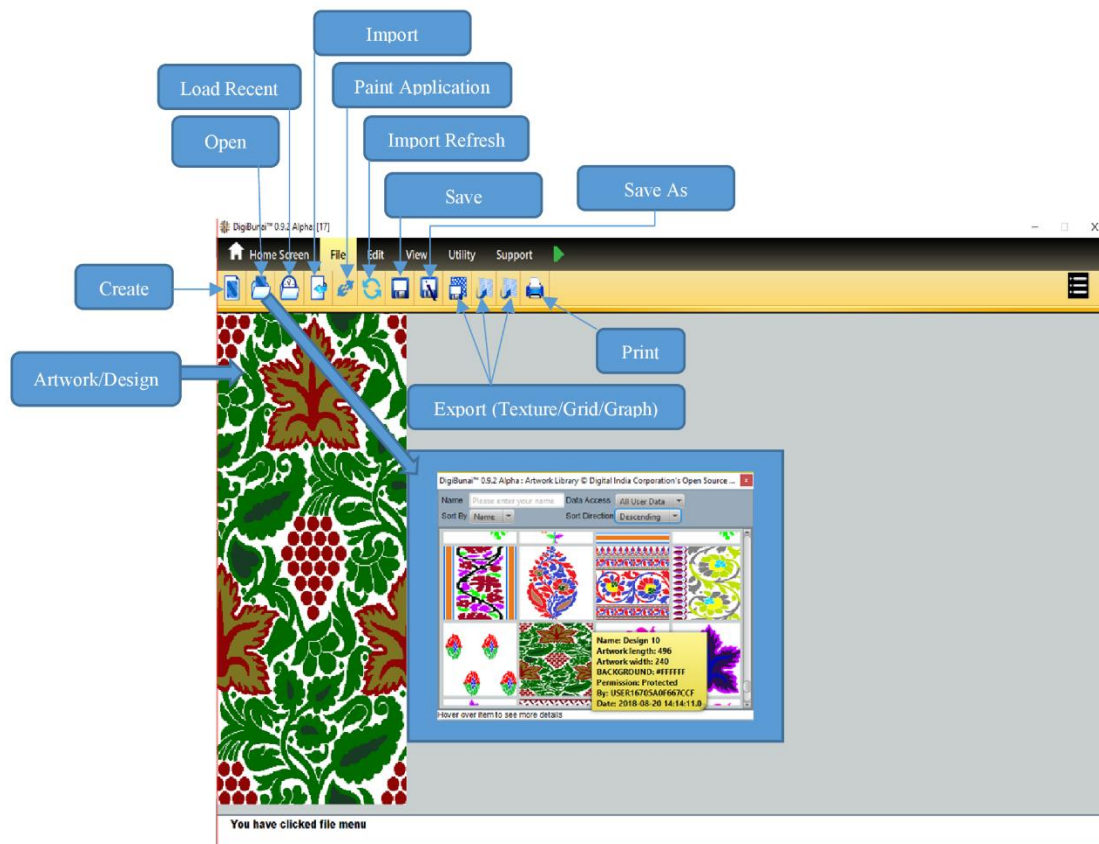


4.7 Entering into Fabric creator

In case user move dobby weave to fabric Creator the selected weave will be assigned to the base of the fabric.

5 Artwork Designer

The artwork editor helps users to create and edit the artwork. The basic functionality has been given in the artwork, for the advanced CAD features user need switch to the design editor. The basic feature are as follows:



5.1 Create size

If user wants to create a new artwork, a design editor window will be opened by right clicking on 'Create'. A workable area will display on screen for design creation.

5.2 Sketch/Design Import

If user have a hard copy of sketch/Design than sketch/Design import in application after scanning. Artwork Designer provides the facility to the user to import the png and jpg file that contains all the image related information. By clicking on Import icon under the File Menu. After clicking on Import icon, a file open dialogue box will appear for selecting a specific png and jpg file format. Now this design can be ready to convert into workable design for weaving.

5.3 Design Secure & Library

5.3.1 Save/Save AS

User can save the Designs/Artwork in to library through save & Save As option.

5.3.2 Open

After clicking on Open icon in the File Menu a Window will pop up, which shows the saved designs in Artwork Designer module. Open design/artwork window provides different searching and sorting options for user to search the artwork Filtering on file name displays the artwork which matches the search filter. Sorting that allows to sort the artwork file on the basis of factors such as

-

- **Name** –this helps a user to sort artwork on the name basis.
- **Date** – This option helps user to sort artwork on the basis of Date updated or last saved.

For e.g., if user last saved the artwork file yesterday then with this option he can directly open the file without searching for particular one in library.

5.3.3 Load Recent

User can open the recent saved artwork/design in load recent in File menu.

5.4 Paint Application

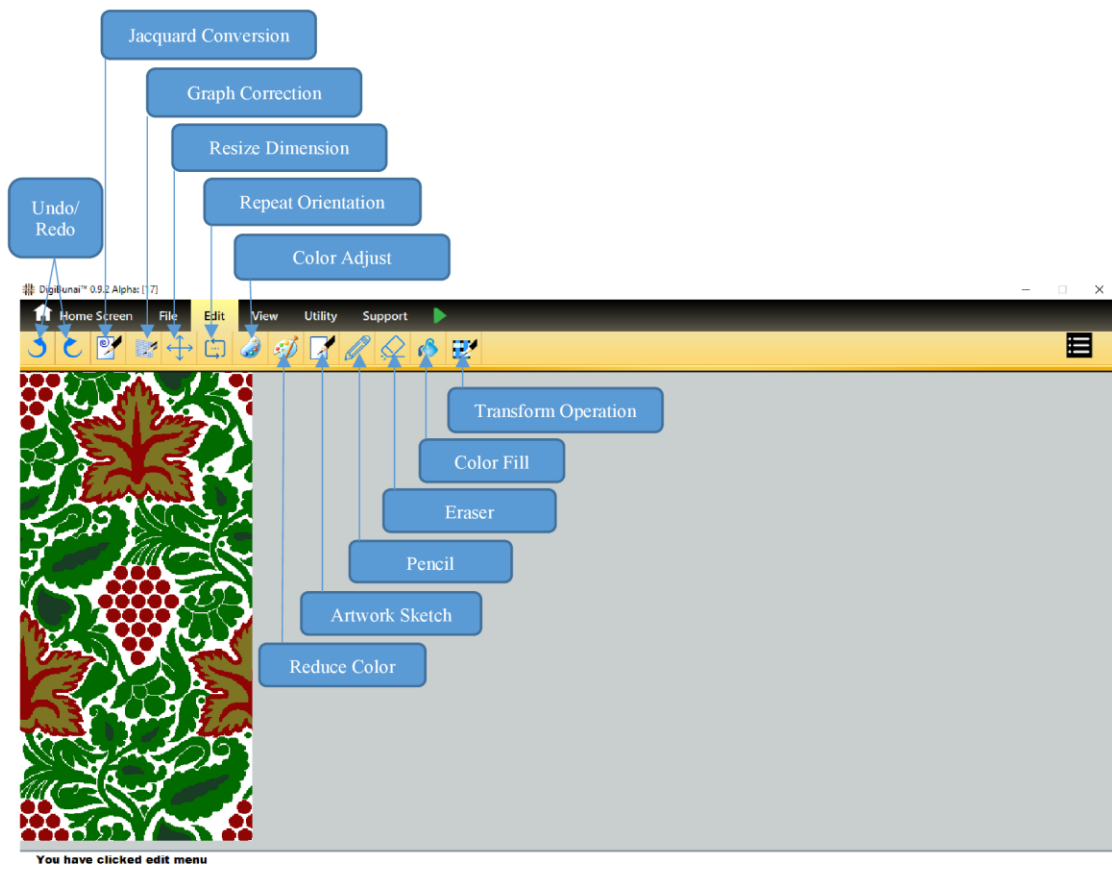
Artwork Designer provides the facility to the user to edit design/artwork in paint software's (integrated).

5.5 Import Refresh

User can edit design/artwork by Arahne paint or MS paint save and click import refresh icon on Artwork Designer. It is open edited design/artwork. After clicking Import Refresh, artwork open with all paint editing work in DigiBunai™.

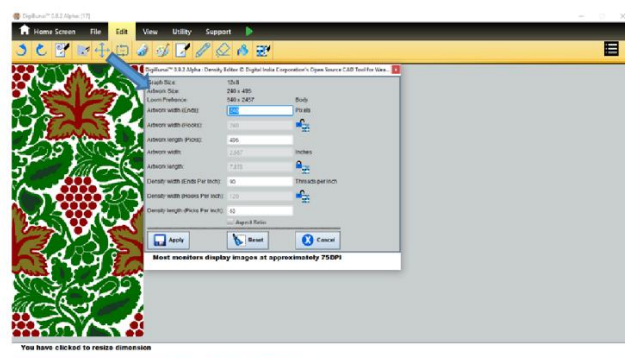
5.6 Edit

The Edit menu provides the different function to convert the scan design into jacquard designs.



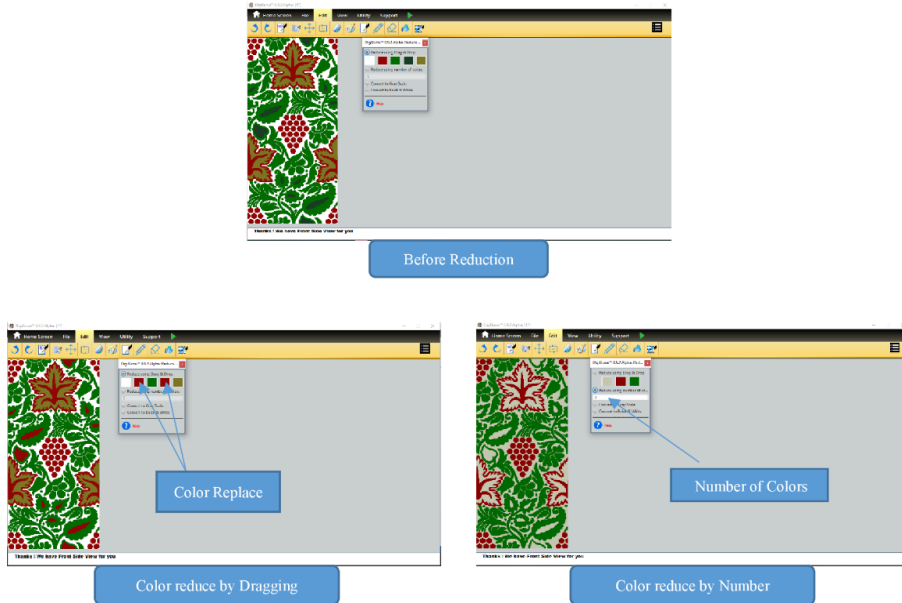
5.6.1 Resize

User has the option to change the height and width of an Artwork/Design by entering the number in height and width text field according to his choice. For Applying changes to an image user will have to click and apply button. User can also change the EPI (ends per inch) & PPI (picks per inch) of the Artwork/Design after locking the size.



5.6.2 Reduce Colours

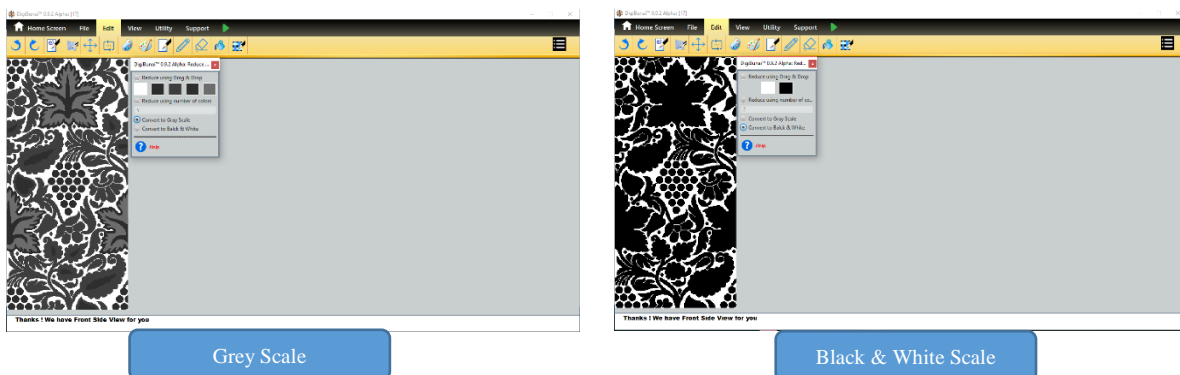
After importing an image, total number of colors in the image are identified and for reducing the colors in Design/Artwork user can enter the reduction number or drag one color over number of colors from which it wants to replace the design colors with that particular color. For Applying changes to an image user will have to click Apply Button.



5.6.3 Convert to Grey Scale/ Black & White

User can convert the Artwork/Design into grey scale format by check on Grey scale icon/ button. For Applying changes after check convert to grey scale icon.

User can convert the Artwork/Design into black and white format by check on Convert to Black & White button. For Applying changes after check convert to grey scale icon.



5.6.4 Undo & Redo

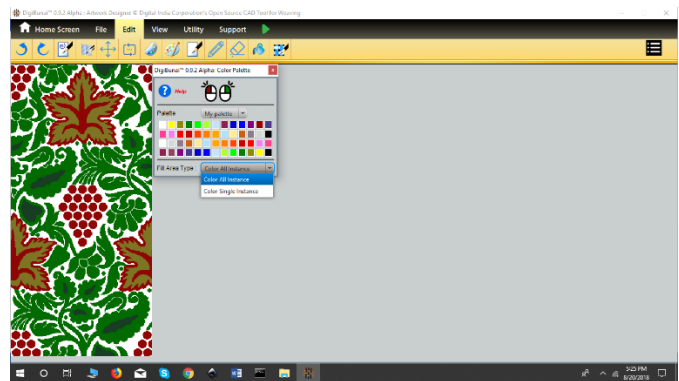
User can undo the edit operation performed by user on the artwork designer to reach its previous stage.

User can Redo the removed operation performed by user on the artwork editor to reach its previous stage.

5.6.5 Colour Fill

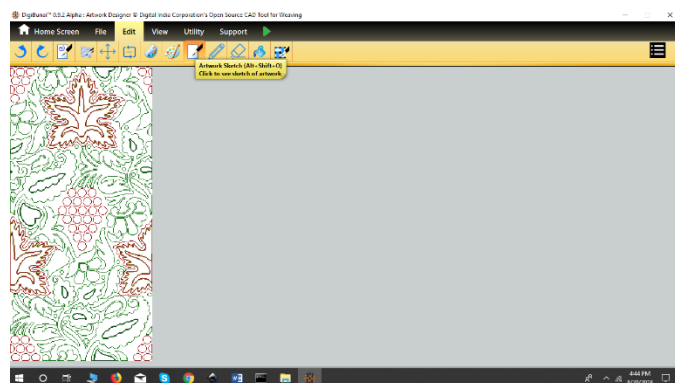
User can fill colours in design on close area or existing design color bases.

For this purpose use by 'Single Instance' for close area base color filling in Artwork/Design or 'Color All Instances' is use for existing Artwork/Design color replacements.



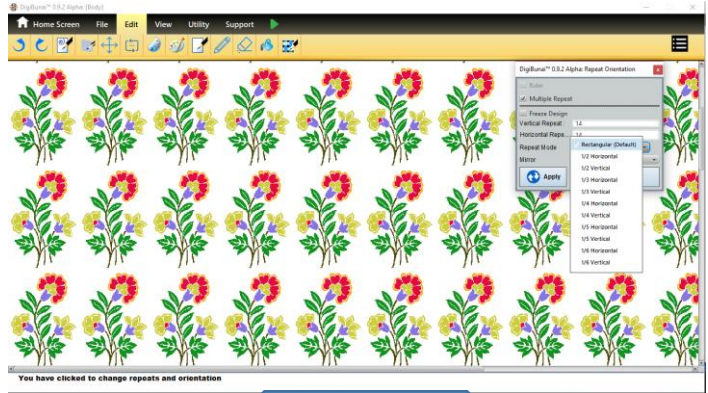
5.6.6 Artwork sketch

User can convert artwork or color filled design in to boundary sketch by clicking on Artwork Sketch.



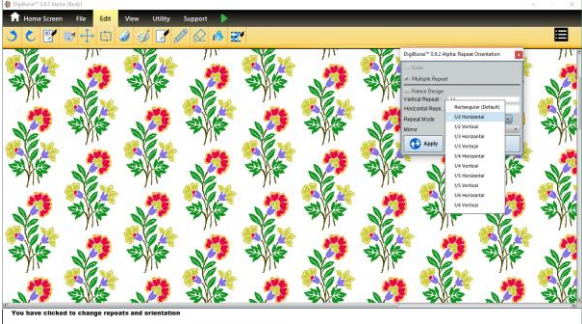
5.6.7 Repeat orientation & Modes

User can see the repeats of artwork/design by using of Repeat Orientation (number of vertical and horizontal). Here use can see the design with different repeat modes.

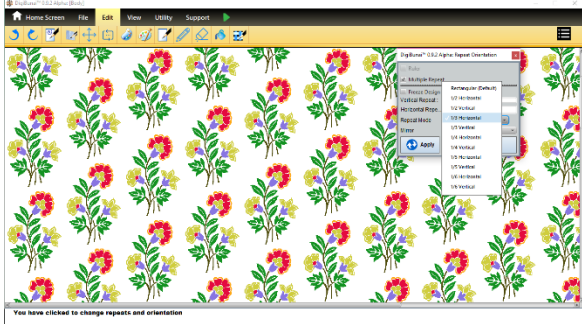


Rectangular Repeat

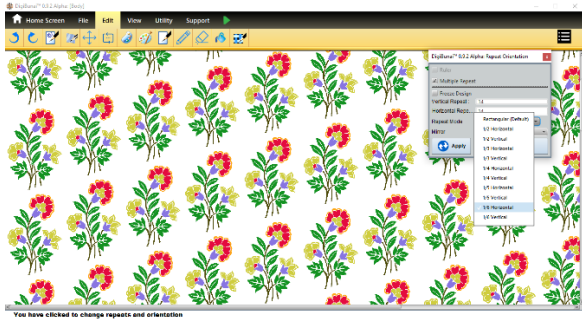
5.6.7.1 Horizontal Modes



1/2 Horizontal Repeat

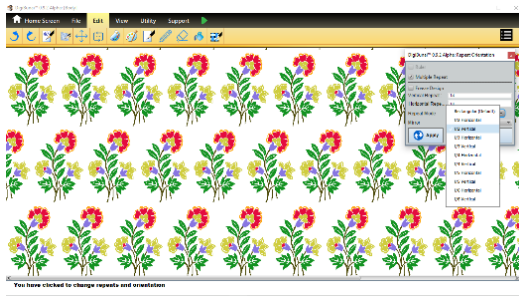


1/3 Horizontal Repeat

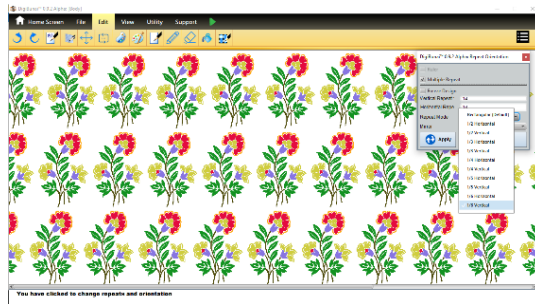


1/6 Horizontal Repeat

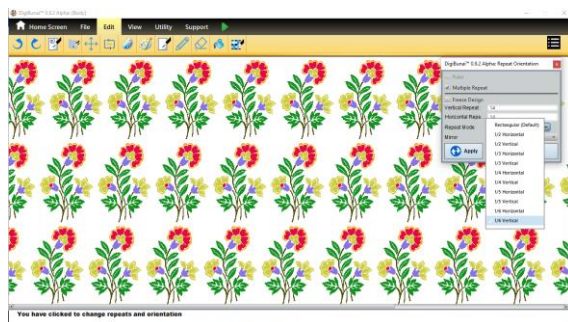
5.6.7.2 Vertical Mode



1/2 Vertical Repeat



1/3 Vertical Repeat



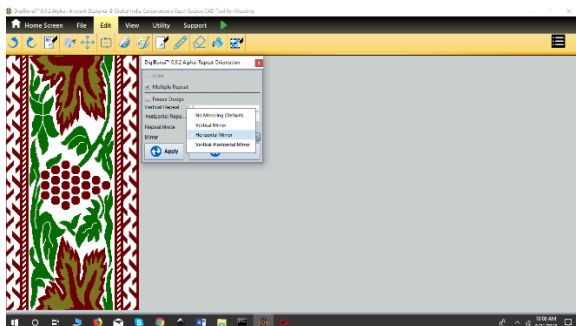
1/6 Vertical Repeat

5.6.8 Design Mirroring with Repeats

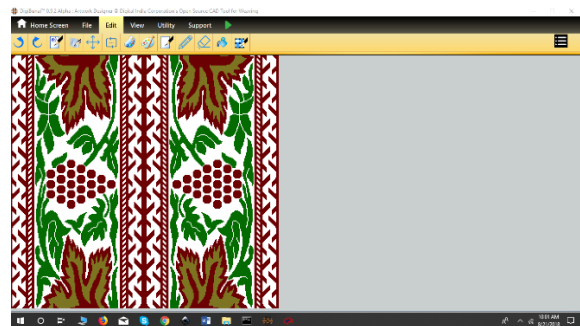
User can Mirror the Artwork/Design either vertically or horizontally.

- **Horizontal Mirroring with Design Repeats**

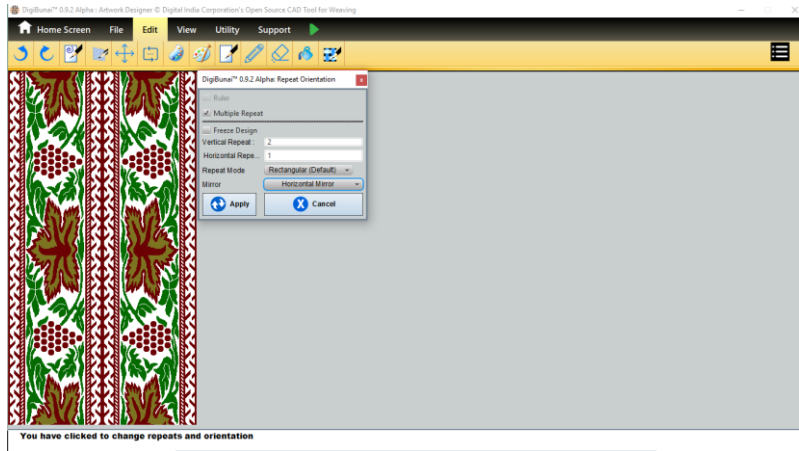
For mirroring the specific artwork horizontally user will have to click on the Mirror Horizontal icon in the Edit menu bar.



Design Mirroring



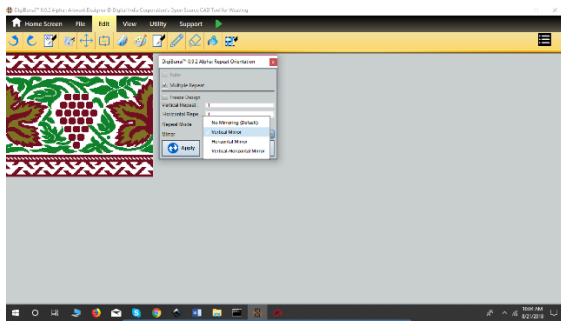
Design Horizontal Mirroring



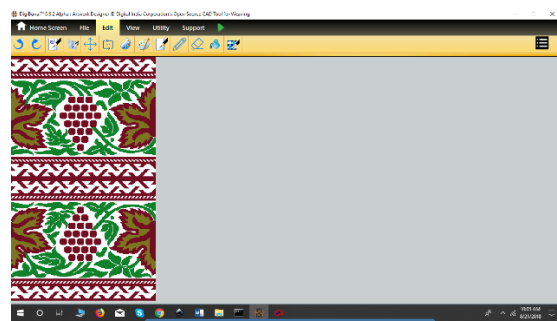
Design Horizontal Mirroring with Vertical Repeats

- **Vertical Mirroring with Design Repeats**

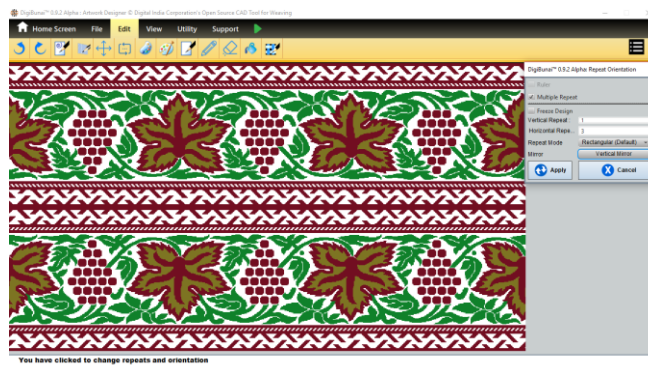
For mirroring the specific artwork vertically user will have to click on the Mirror Vertical icon in the Edit menu bar.



Design Mirroring



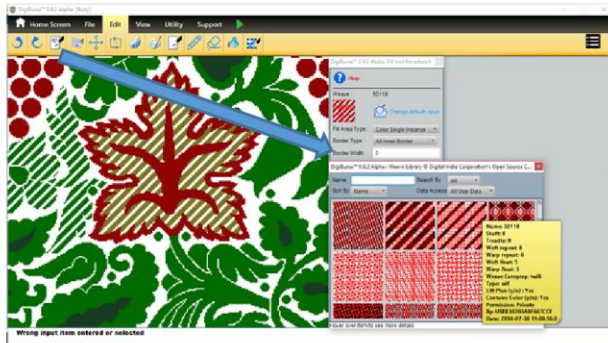
Design Vertical Mirroring



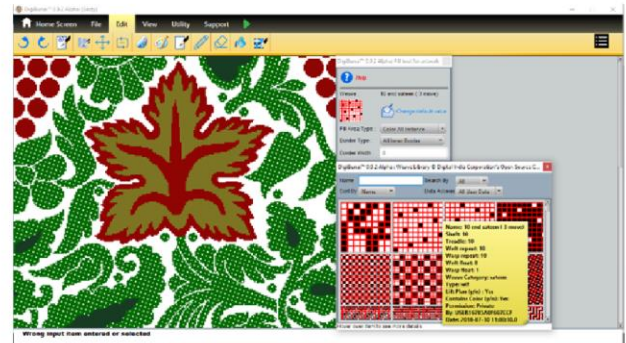
Design Vertical Mirroring with Horizontal Repeats

5.6.9 Jacquard Conversion

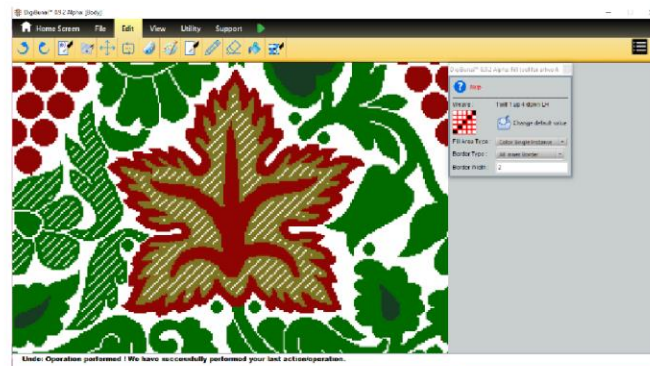
It use to fill different weave patterns in the solid colour filled design. User can fill the weave in design on existing colour or close area bases. Here ‘Colour All Instance’ is use for weave pattern fill on colour bases & ‘Colour Single Instance’ use for close area base weave filling in design. The protection of the design boundaries during weave filling can be done by width protection.



Close Area Weave Filling



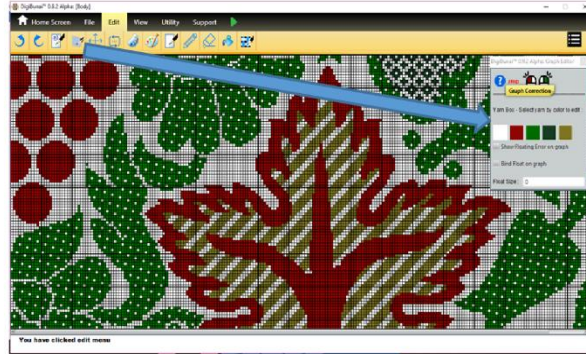
Color wise Weave Filling



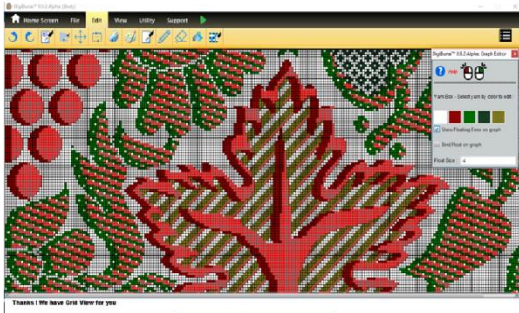
Border Protection

5.6.10 Graph correction

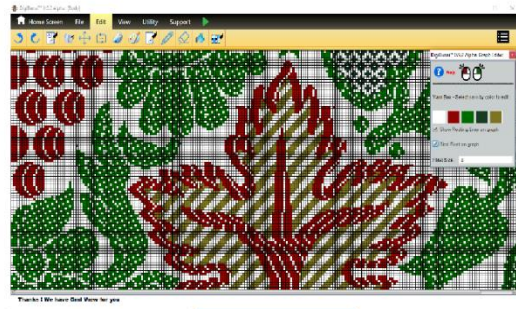
The corrections or editing in Design/Artwork on graph can be done in Graph Corrections. User can edit the design by existing colours in design. User can see floats after defining the ‘Float Size’ and bind floats automatically on graph.



Graph Corrections



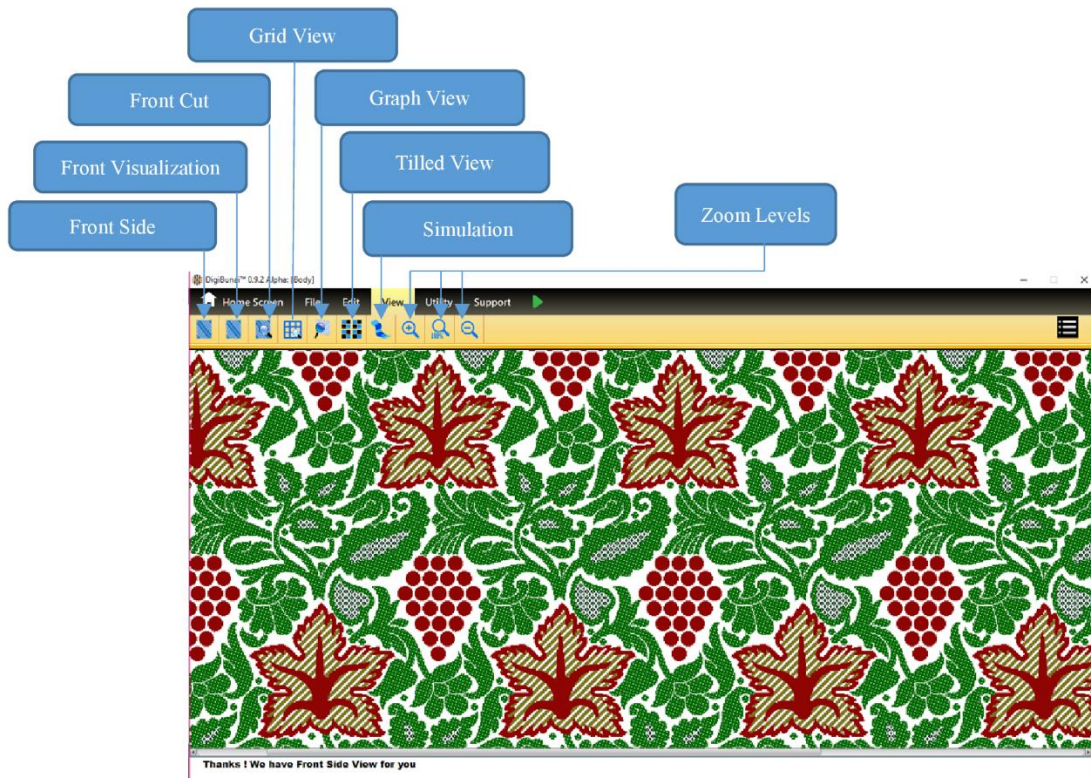
Float Findings



Float Bindings

5.7 Jacquard Design Visualization (View)

The created jacquard design visualize in different forms in ‘View’ mode. These forms are helpful to finalize the design for weaving

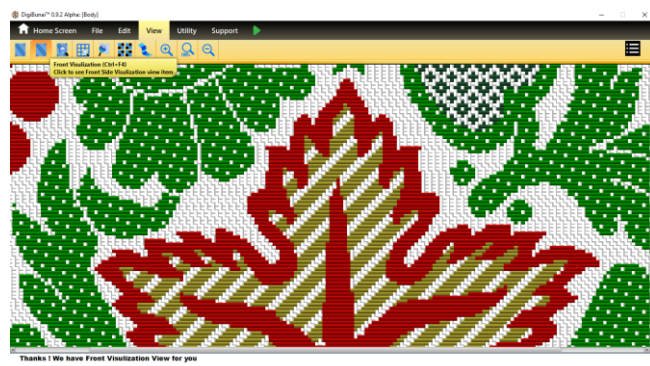


5.7.1 Front Side

It shows the editable visualization of design. User can see & edit the design in Front side through Edit.

5.7.2 Front Visualization

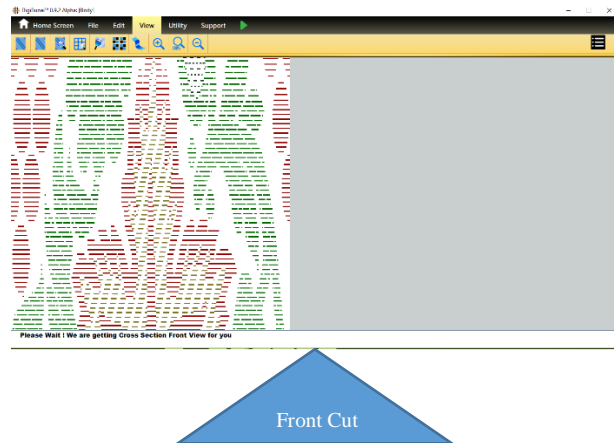
User can see thread like visual effects in Front visualization of artwork/design in view Menu.



Front Visualization

5.7.3 Front Cut

User can see pick wise colours separation in front cut of artwork/design in view Menu.



5.7.4 Zoom Levels

- **Zoom-In**

Zoom-In of artwork/design can be obtained by clicking on the icon under the View menu. Zoom In increases the size of pixel which represents the thread on the screen this allows the user to see the design/artwork with more precision and accuracy.

- **Zoom-Out**

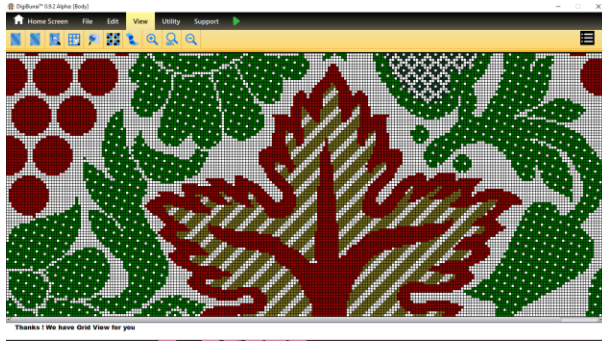
Zoom out of artwork/design can be obtained by clicking on the icon under the View menu. Zoom Out decrease the size of pixel which represents the thread on the screen this allow user to inspect the detail of the large design/artwork.

- **Normal**

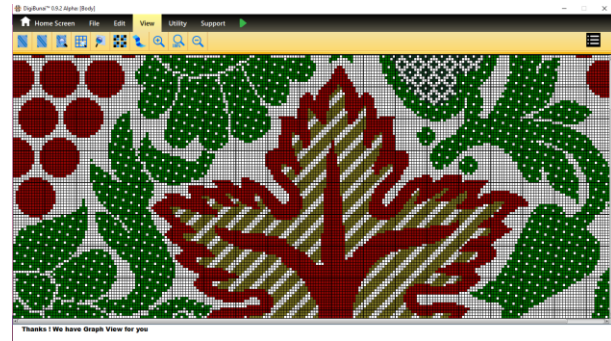
Normal View of design/Artwork can be obtained by clicking on the icon under the View menu. This facilitates the user to retain back the zooming level at its default setting.

5.7.5 Grid & Graph View

User can see Grid & Graph view of artwork/design in view menu.

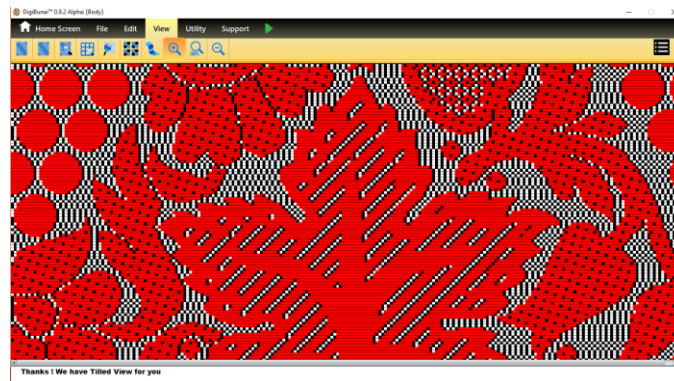


Grid View



Graph View

5.7.6 Tilled View



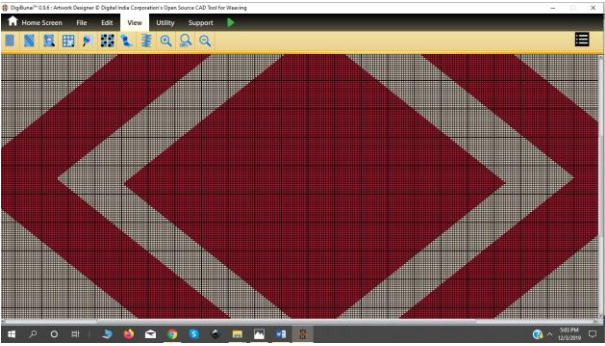
Tilled View

5.7.7 IKAT Effect

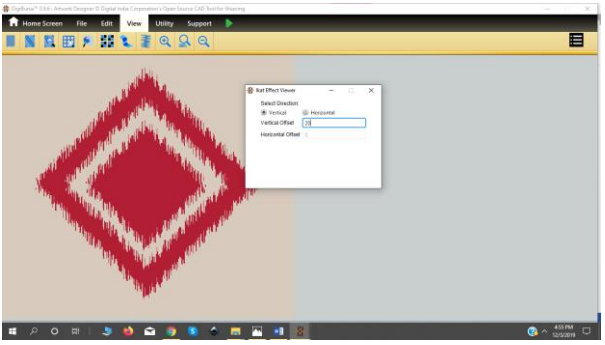
The term 'Ikat' is derived from the Malay-Indonesian word '**mangikat**' that means to **bind or knot**. It is a yarn resist technique wherein the yarns are tie-dyed, and on weaving a pattern is created on the surface of the fabric. An Ikat textile can be identified from the typical hazy patterning on fabric due to the resist dyeing of the yarns prior to weaving.

The application facilitates IKAT visuals by defining offsets values in Horizontal (Weft wise) & Vertical (Warp Wise) directions. The offsets values defines by the user to reflect the penetration of dye on the binding regions of yarns.

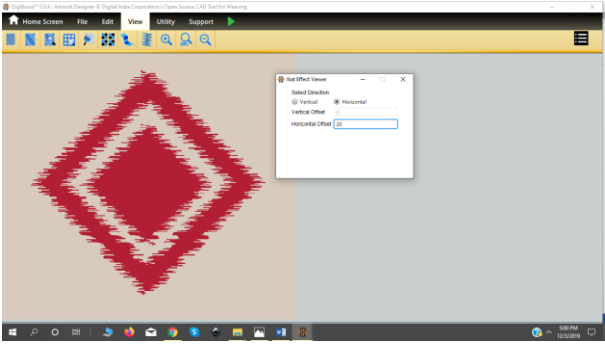
Initially user creates the design on Graph level.



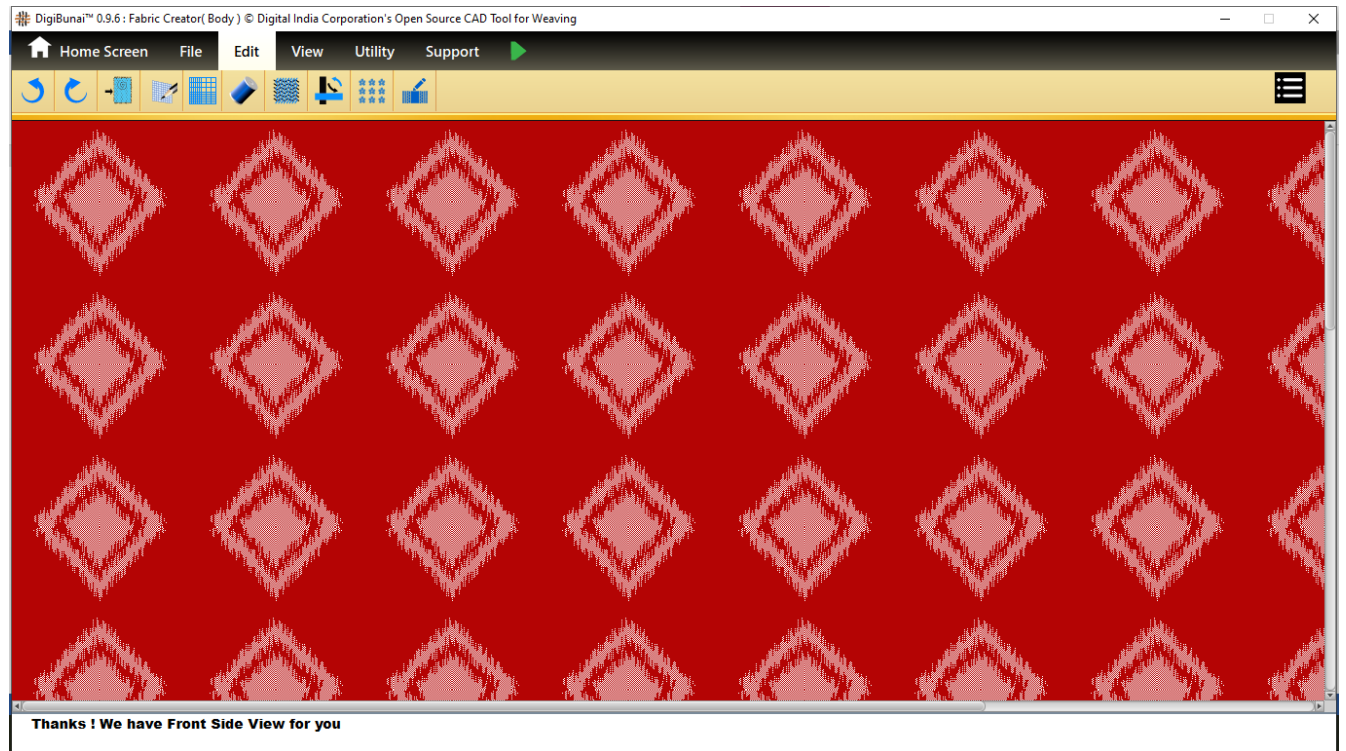
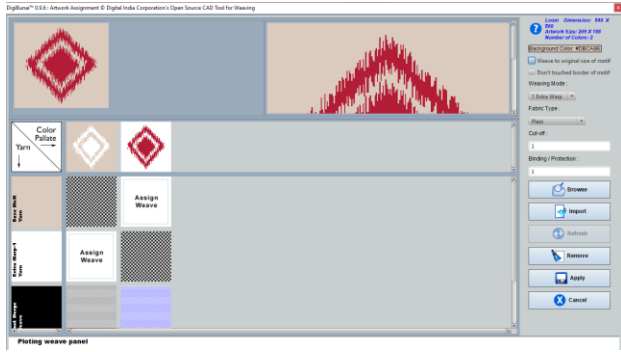
If user doing the warp IKAT, then define the value of the offset in vertical direction.



If user doing the Weft IKAT then it needs to define value of the offset in horizontal direction.



Assign the weave pattern to generate fabric in Fabric Creator & see the fabric after apply the settings.

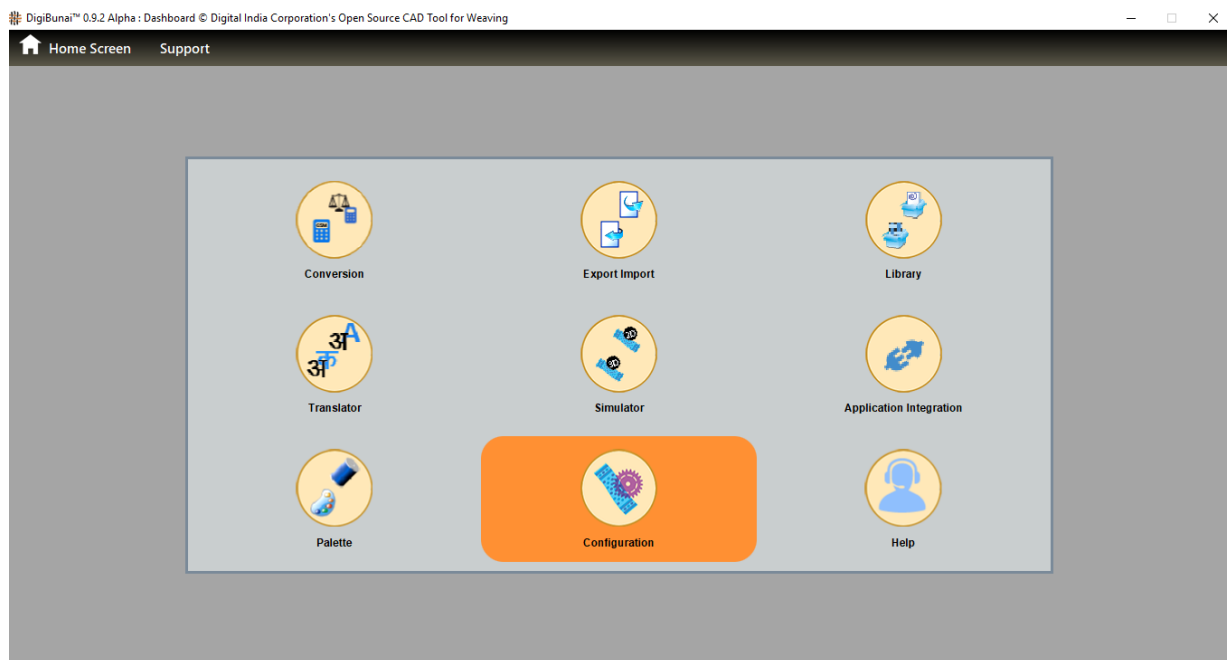


5.8 Export & Print

Artwork Designer provides the facility to export the texture of design, export design in graphical form & also export the design in grid form. User can also print the design forms after open it on the screen. Here different customization options are available for the user.

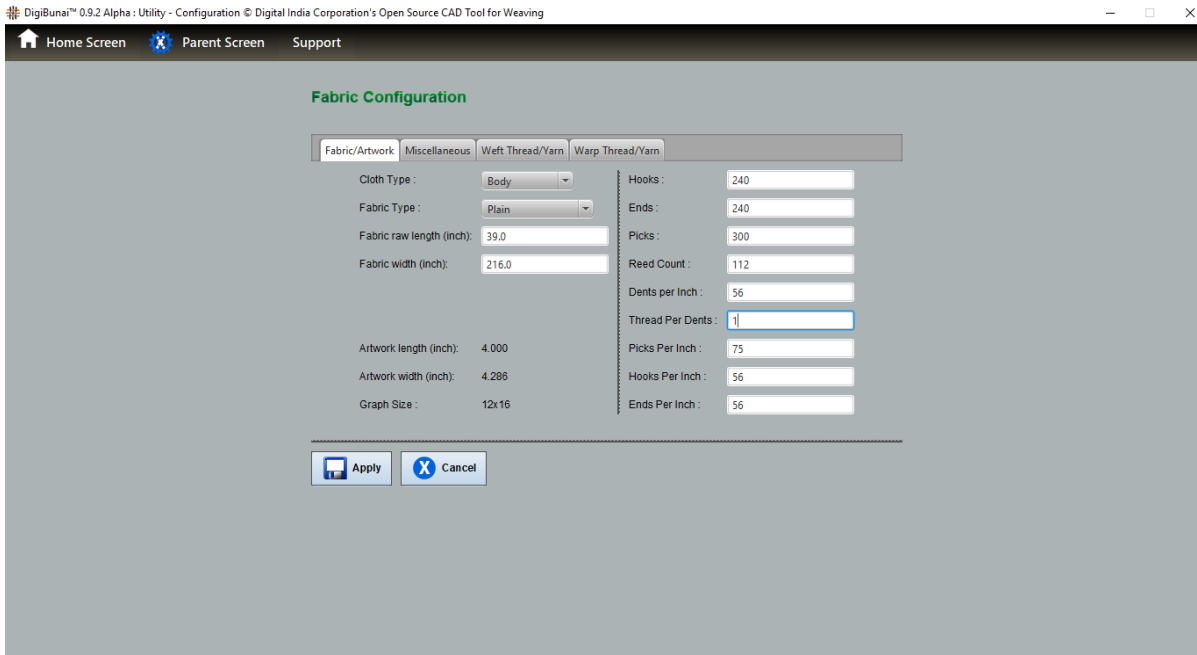
6 Configuration (Utility)

User can set fabric construction parameters before creating fabric. User can set thread name, thread color, thread count, thread count unit, thread diameter factor, thread twist, twist scene, hairiness, thread ply, crimp, thread pattern and loom waste in warp thread.



6.1 Fabric/Artwork

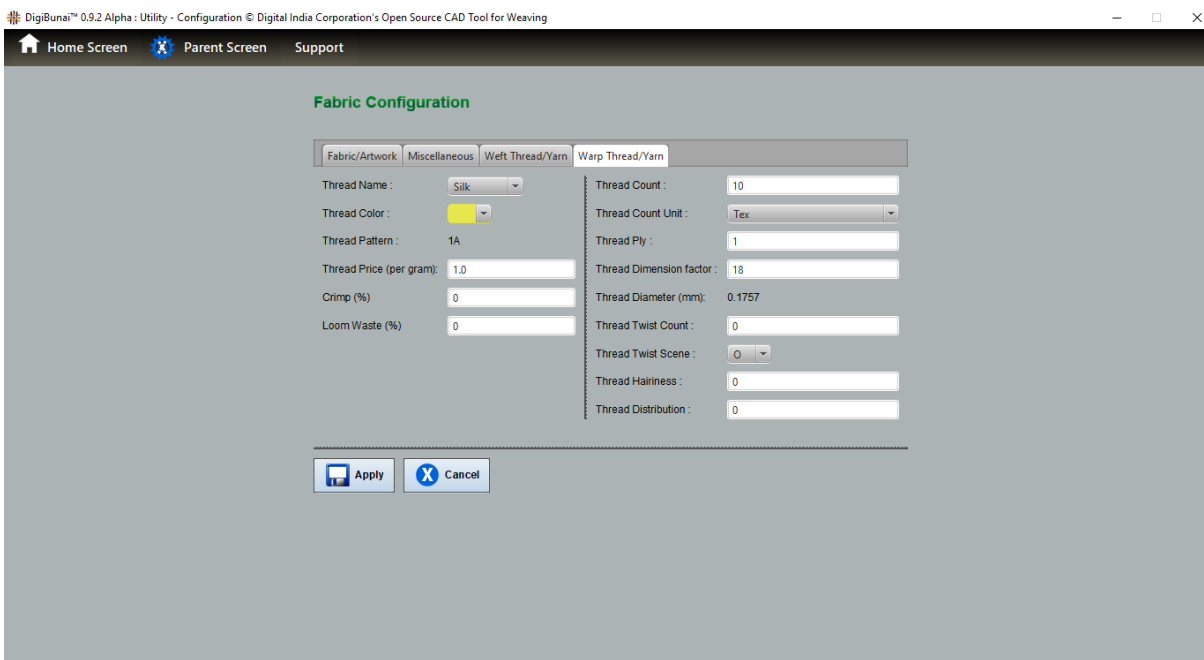
The user need to specify the Jacquard Design Dimensions, Fabric Dimensions, Construction Parameters (Yarn Count, Denting Order, Yarn Density), loom details in this mode.



Welcome TO DigiBunai™ CAD Tool

6.2 Warp Thread

This mode is use to set the parameters of warp yarn in software. These information take part to generate the fabric simulation, warp yarn consumption calculation & cost estimation of the final product.



Welcome TO DigiBunai™ CAD Tool

6.2.1 Thread Name

The name of the thread need to be specified by the user i.e. Silk, Cotton etc.

6.2.2 Thread Colour

User need to specify the colour of the yarn initially.

6.2.3 Thread Count

The yarn count depends on the width of the yarn. The count of yarn expresses the weight per units in unit length or vice-versa.

6.2.4 Thread Count Unit

The unit thread count i.e. denier, Tex etc.

6.2.5 Thread Diameter Factor

Diameter factor depends on the types of yarn.

6.2.6 Thread Twist

Shows the twists per meter

6.2.7 Twist Sense

This define the twist sense i.e. S, Z, or 0(no twist).

6.2.8 Thread Hairiness

Shows the hairiness property of the yarn.

6.2.9 Thread Ply

Define the yarn ply in a thread.

6.2.10 Thread Price (Per gram)

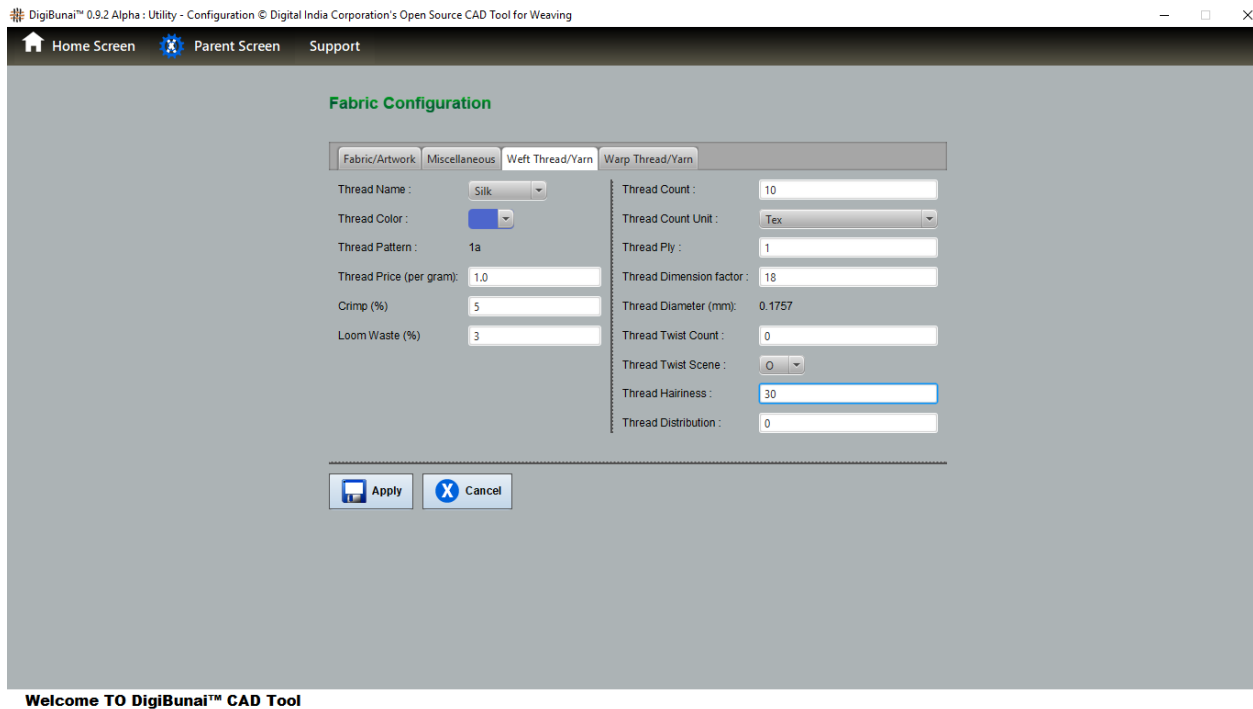
The user need to enter the price of the yarn

6.2.11 Crimp

The crimp varies upon the type of yarn.

6.3 Weft Thread

This mode is use to <set the parameters of weft yarn> in software. These information take part to generate the fabric simulation, weft yarn consumption calculation & cost estimation of the final product.



6.3.1 Thread Name

The name of the thread need to be specified by the user i.e. Silk, Cotton etc.

6.3.2 Thread Colour

User need to specify the colour of the yarn initially.

6.3.3 Thread Count

The yarn count depends on the width of the yarn. The count of yarn expresses the number of weight per units in unit length or vice-versa.

6.3.4 Thread Count Unit

The unit thread count i.e. denier, Tex etc.

6.3.5 Thread Diameter Factor

Diameter factor depends on the types of yarn.

6.3.6 Thread Twist

Shows the twists per meter.

6.3.7 Twist Sense

This define the twist sense i.e. S, Z, or 0(no twist).

6.3.8 Thread Hairiness

Shows the hairiness property of the yarn.

6.3.9 Thread Ply

Define the no. ply in a thread

6.3.10 Thread Price (Per gram)

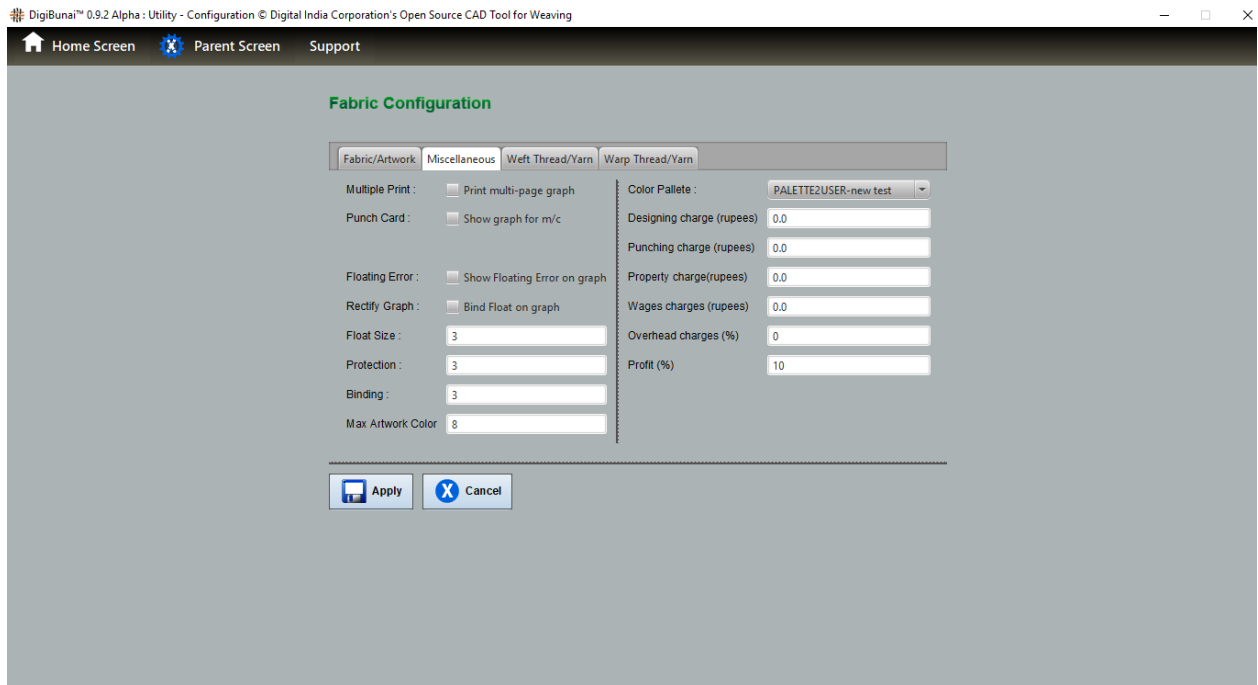
The user need to enter the price of the yarn.

6.3.11 Crimp

The crimp varies upon the type of yarn.

6.4 Miscellaneous Other Settings

User can set multiple print, multiple repeat and punch card for machine. User can also set protection, binding, float size, floating error, vertical repeat and horizontal repeat, colour palette (pantone colour and web colour), designing charges, punching charges, properties charges, wages charges, overhead charges, percentage change profit and max colour use in artwork.



Welcome TO DigiBunai™ CAD Tool

7 Support Modes

User can convert yarn count, linear measure, weight in different unit.

7.1 Conversion

7.1.1 Yarn Count

User can convert yarn count one unit to other unit.

7.1.2 Linear Measure

User can convert length one unit to other unit in linear conversion.

7.1.3 Weight

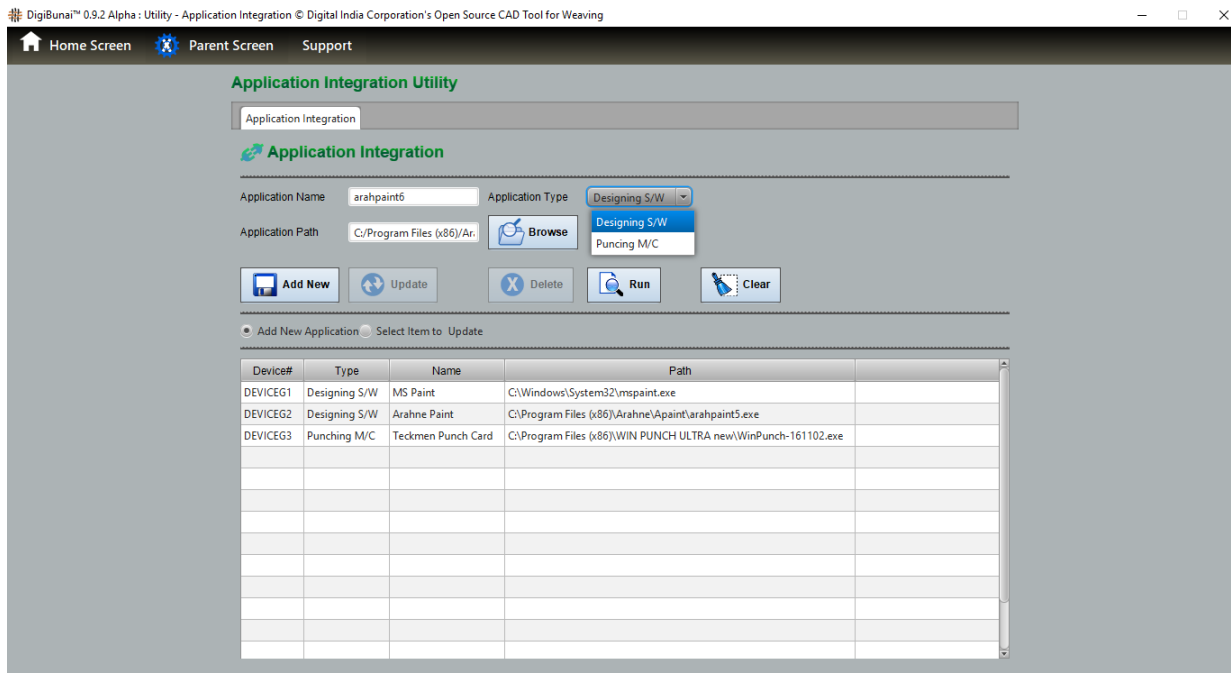
User can convert weight one unit to other unit in weight conversion.

7.1.4 GSM Conversion

User can calculate the GSM of fabric.

7.2 Application Integration

User can add other application in DigiBunai™ by setting name, application type and application path in utility.



You have clicked about us menu

7.2.1 Application Name

User need to give a name to the application which will be added.

7.2.2 Application Type

The type of application need to be defined.

7.2.3 Application path

The storage path of the integrated application is shown on the window.

7.3 Simulator

Every user wants to visualize the created digital design on actual fabric. For this purpose DigiBunai™ facilitates to add multiple fabric textures to simulate the digital design on fabrics.

Simulator Utility

Simulator

Simulator

Simulator Name: Banarasi Kaghua Sari Simulator Fabric Type: Plain

Picks Per Inch: 75 Ends Per Inch: 100

Resolution: 1280x960 Dots Per Inch: 100

Default Yarn: YARNG1 Path:

Change default value Browse

Add New Update Delete Preview Clear

Add New Simulator Select Item to Update

Simulator#	Name	Type	EPI	PPI	DPI	Yarn
BASEFSG1	Banarsi Kadhua Sari	Plain	120	70	75	YARNG1
BASEFSG2	Cutwork Dress Material	Fekuwa-CutWork	60	60	150	YARNG1
BASEFSG6	Jari Jangla	Kadhua	80	50	150	YARNG1
BASEFSUSER2	PPL1	Binding-Irregular	60	63	75	YARNG1
BASEFSG3	Satin Brocad	Plain	100	48	150	YARNG1
BASEFSG4	Satin Brocad Dress Material	Plain	60	48	150	YARNG1
BASEFSG5	Satin Tanchoi Dress MAterial	Tanchoi	78	48	150	YARNG1
BASEFSG10	User Base Cotton	Plain	100	100	75	YARNG1
DEVICUSER12	Yo Yo PPL	Tanchoi	60	63	75	YARNG1

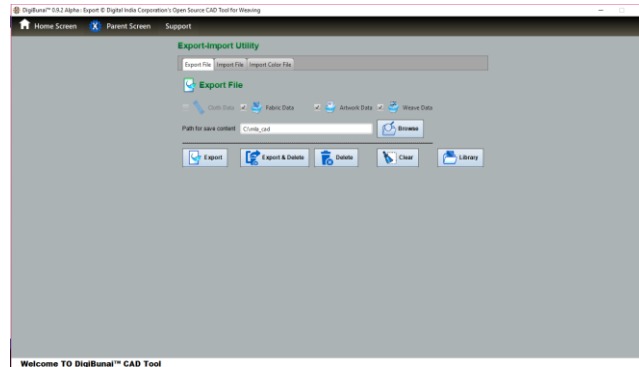
You have clicked contact us menu

7.4 Import/Export

The path of the exported file need to be specified by the user & import file need to be place at the specific location. User can export all the data (Weaves, Fabrics, and Garments) from the application. These files can be used in application on other computer system by Import.

7.4.1 Data Export

This feature provides the facility to the user for exporting the fabric including the supported files of artwork and weaves. From the Security and confidentiality aspect, user also has the flexibility to wipe his complete data from the system after exporting to the external drive. For export, user need to select Utility Module –Export/Import - Export and user need to choose the following options



7.4.1.1 Fabric Data

This option provides facility to export all the fabrics of the user to its external drive.

7.4.1.2 Artwork Data

This option is use to export all the artworks of user.

7.4.1.3 Weave Data

This option is use to export all the weaves of user.

7.4.1.4 Export

Export option will export the data to external drive and keep a copy into the database as well.

7.4.1.5 Export & Delete

This option will export the data to external drive and delete user's data from the database. This feature is for those users who want to take out their complete data from the system.

7.4.2 Data Import

This feature is for importing the data which was exported by the user. User can carry his/her data on the external drive and import as and when required.

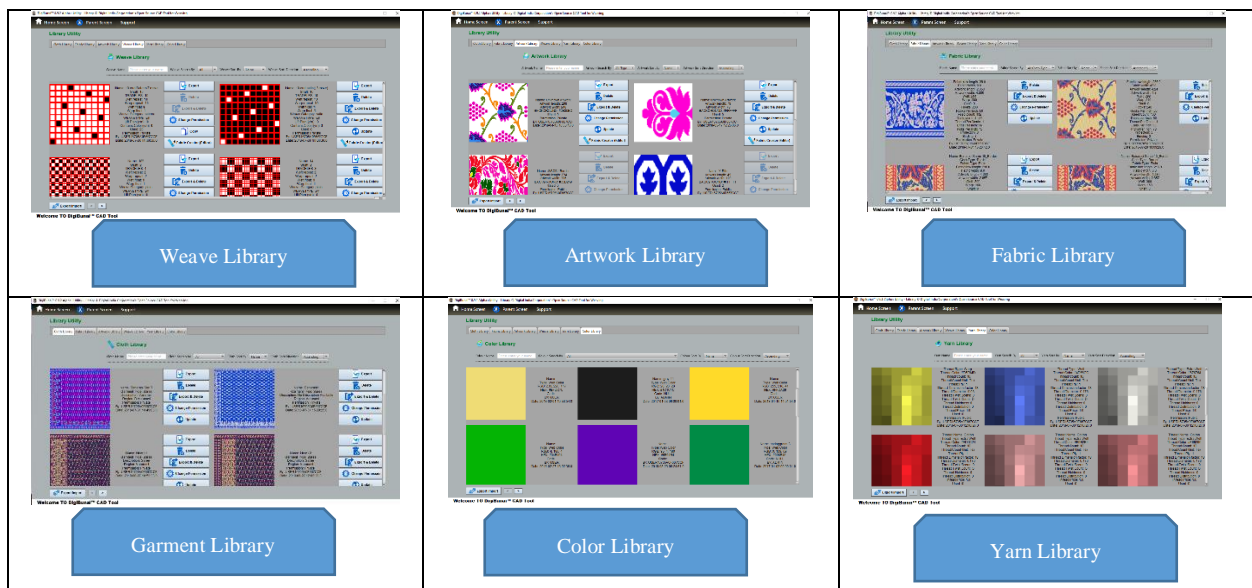


From the Security and confidentiality reason, some of the user do not want to leave their data on the system. They can export the complete data and import as per requirement.

For import, user need to select Utility Module -> Export/Import-> Import -> browse the back of the exported data.

7.5 Library

User can see library of creations artwork, weave, fabric, color and cloth. User can export, delete, update and change permission artwork, weave, fabric, color and cloth.



7.5.1 Sorting

User can sorting name or date wise in library.

7.5.2 Searching

User can search by name or product type in library. The user can search the weaves, designs and fabrics.

7.5.3 Update

User can update artwork, weave, color and fabric in library.

7.5.4 Change Permission

User can changes permission public, private and protected of artwork, weave, fabric and color in library.

7.5.5 Export

User can export library of weaves, design and fabric.

7.5.6 Delete

User can delete artwork, weave, fabric and cloth from library.

7.5.7 Export & Delete

User can export and delete artwork library, weave library, fabric and cloth library.

7.6 Translator

User can translate software functions names from English to Hindi.



You have clicked open file menu to open library items, We are loading your data, please wait

7.6.1 Create

The user can create his own localized Language library.

7.6.2 Open

The user can open Language library.

7.6.3 Save

The user can save his/her own language Library.

7.6.4 Save As

The user can open the existing language library, edit it & Save As in his/her name.

7.7 Help

This section define the software introduction, concern trainings, required system configurations & manufacturer.

7.7.1 Help Guide

It shows user manual/guide of application to know about functionality of the software.

7.7.2 Video Guide

It shows the training videos of the software.

7.7.3 Support

7.7.3.1 Technical Information

Technical specification for this software follows:

Operating System: Windows & Linux

RAM: 4GB

Processor: Core i5

Graphics Card: 4 GB dedicated

Java: Java 7

Flash Player: Flash Player

Database Engine: MySQL 5.x

7.7.3.2 About Software

DigiBunai™ aid's the weavers to create digital artwork and translate the saree design to be loaded to the looms. DigiBunai™ is a first of its kind Open Source software for Jacquard and dobby weaving. DigiBunai™ is customized for Banarasi Saree having the unique feature of Garment Viewer which works as a play area for designers/weavers. The software is customizable (local language and library of local designs) and also has the ability to integrate digital design tool of the user's choice.

7.7.3.3 Contact Us

Digital India Corporation (Formerly Media Lab Asia)
(Section 25 Company under the Ministry of Electronics and IT (MeitY), GoI)

Mumbai (Corporate)

Address: Samruddhi Venture Park, Central MIDC Road #2, 4th Floor, Andheri (East), Mumbai, Maharashtra, 400093

Phone: +91-22-2831-2930/ 31

Fax: +91-22-2837-9158

Website: <https://dic.gov.in/>

New Delhi Office

Address: 6 CGO Complex, Lodhi Road, New Delhi -110003 (India)

Phone: +91-11-24360199 / 2431756

7.7.3.4 Product Support

Phone: +91-11-26443266 (CAD support team)

Email: satyavir@digitalindia.gov.in / ashish@digitalindia.gov.in

Web Portal: <https://digibunai.dic.gov.in/>

7.7.3.5 Sign Out

You need to click on Sign Out Button to close the application