

# **IBM TRIRIGA**

*Project report submitted in partial fulfillment of the  
requirement for the degree of*

## **BACHELOR OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING**

**BY**

**RITUL SINGH (151011)**

**UNDER THE GUIDANCE OF**

**MR. DEEPAK SHARMA**



**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**

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## **CERTIFICATE**

This is to certify that the work titled “**IBM TRIRIGA**” submitted by **RITUL SINGH** in partial fulfillment for the award of degree of Bachelor of Technology of **JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY** has been carried out under my supervision. This work has not been submitted partially or wholly to any other University or Institute for the award of this or any other degree or diploma.

**MR. DEEPAK SHARMA**

**PRINCIPAL CONSULTANT**

## **DECLARATION**

I, the undersigned, solemnly declare that the report of the project work entitled “**IBM TRIRIGA**” submitted at **JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT, INDIA**, is based on our work carried out during the internship of three months in **WIPRO LIMITED** under the supervision of **MR. DEEPAK SHARMA**.

I further declare that to the best of my knowledge and belief the project report does not contain part of any work that has been submitted for the award of any other degree or diploma or certificate in this University or any other University.

Ritul Singh (151011)

Department of Electronics and Communication Engineering

Jaypee University of Information Technology, Wagnaghat, India

Date-

## ACKNOWLEDGEMENT

I am grateful to a number of individuals who have contributed in progress of this project. I would like to extend my sincere appreciation to all of them.

I would like to express gratitude to my supervisor **Mr. Deepak Sharma** for his dedication and availability to coordinate and help me throughout this work. I appreciate and value his guidance and consistent efforts. It is my radiant sentiment to place on record my best regards, deepest sense of gratitude to my project supervisor for his continuous guidance and collaborative work which was precious and valuable for the project work.

I consider this opportunity as a milestone in my career development. We will continuously strive to implement the acquired skills and knowledge in the best possible way, and we will continue to work on further improvements to achieve desired career objectives.

## **ABSTRACT**

IBM Tririga is an integrated workplace management solution which provides us various functionalities in real estate management, capital project management and operations and maintenance. The Car Rental Tracking System is one such application built on IBM Tririga which has all the functionalities in it. This application has an inventory of all the cars available for use. We have an entire list of locations for the movement of car. We have data of the persons associated with the approval process such as the supervisor and vice president. We have current locations of the car and we have the location of the requester. This application compares the two locations and find the number of cars available at the current location to meet the requirement.

People can rent cars at one location and return them to a different location. This can result in an imbalance in the number of cars present at one location and the requirement of cars at different locations in different cities. We try to eradicate this imbalance in the number of cars and track the accurate demand of cars and then transfer cars as per the need.

We have developed a flexible application which can deal with the requirement shoot up and maintain a balance in the availability of cars at different locations.



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## **REVIEW OF LITERATURE**

Airbus obtains greater visibility for facility management with IBM Tririga software. They managed more or less seven hundred buildings. They managed the space chargeback. They monitored energy consumptions and utilizations through IBM Tririga. They managed internal and external people as they have lots of contractors through IBM Tririga. To manage globally located assets, they compared cost of the asset with the cost of maintenance and support to decide when to stop the maintenance and buy a new asset. The Airbus Facility Management incorporated IBM Tririga to have a unique and better position in the global market.

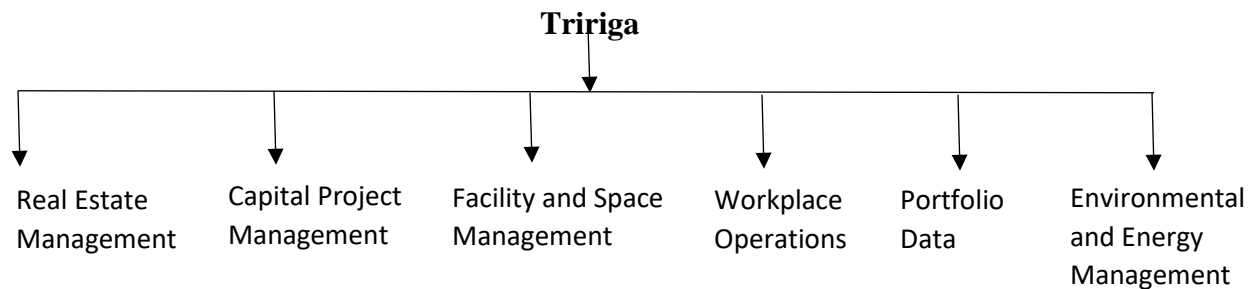
# CHAPTER 1

## IBM TRIRIGA

### 1.1 Introduction

An integrated workplace management system (IWMS) that can increase the operational, financial and environmental performance of our facilities and real estate. Through business analytics, critical alerts and automated process capabilities, TRIRIGA can increase visibility, control and automation of your real estate management, capital projects, space management, facility maintenance and energy management needs. Finance and real estate executives can make more informed decisions—bringing increased value to their organizations through identification of high-return real estate transactions, increased facilities utilization and reduced energy expenses.

### 1.2 Six Modules of Tririga



#### 1.2.1 Real Estate Management

- Lease Administration
- Lease Accounting
- AR Tenant Tracking
- Payment Processing
- Client Request

The information can be provided to real estate management solutions, finance and real estate executives with the help of IBM Tririga through which they can make decisions based on real estate transactions, consistent pre-built lease accounting controls, and automated lease payment reconciliation.

## **1.2.2 Capital Project Management**

- Fund Management
- Scope Management
- Cost Management
- Schedule Management
- Resource Management
- Vendor Management
- Quality Management
- Procurement

IBM TRIRIGA delivers capital project solutions to manage capital, facility, and environmental projects. IBM TRIRIGA identifies funding priorities within capital programs, analyzes project risks and financial benefits, and automates project management controls and alerts that are essential to deliver ad-hoc projects and programs.

## **1.2.3 Facility and Space Management**

- Space Chargeback
- Space Request
- Strategic Planning
- Move Management
- Reservation Management
- Personnel Provisioning
- CAD Management

A globally distributed workforce is managed by IBM Tririga's critical facility management processes and functionality. It enhances the utilization of physical facilities, and efficiently maintain and manage an organization's workplace.

## **1.2.4 Workplace Operations**

- Service Management
- Warranty Management
- Contact Center
- Preventive Maintenance
- Facility assessment



- SecurityKey Management
- Inventory Management
- Capital Planning
- Resource Planning

Automation of demand and preventive maintenance of services, and improving service provider management to minimize the cost of maintenance operations can be done through IBM Tririga. We can track and analyze buildings and asset requirements through the features of facility assessment. Environmental conditions can be tracked and improved with such features. Facility assessment features can improve and extend the life cycle of real estate and facility assets.

### **1.2.6 Portfolio Data**

- Organizations
- People
- Locations
- Assets

Portfolio data is the core information which contains the master data that we use to manage workplaces. Portfolio comprises of information about the organizations, locations, people, and assets that are linked and associated with the space we manage.

IBM TRIRIGA Portfolio Data Manager use portfolio data records, to track the details that are essential for us to finish tasks in other domains of the IBM TRIRIGA. For example, if we are planning to move globally distributed workforce to new locations we need to do space allocation for which we need comprehensive information about the spaces and people involved in the process. We can associate Portfolio data records with other records as the Portfolio data records are maintained systematically in a hierarchical structure [1]. We track all the life cycles that are associated with a particular record to have a broad and complete view of history and audit trail.

### **1.2.6 Environmental and Energy Management**

- CO<sub>2</sub> Emission Tracking
- Utility Tracking
- Waste Disposal
- Water Consumption
- Green Opportunities Tracking

- Environmental Certification

IBM TRIRIGA delivers energy and environmental tracking and management capabilities through the use of a single, comprehensive repository of an organization's environmental data. This provides the means to measure and track energy and environmental performance, evaluate cost reduction and ROI for opportunities to reduce energy, investigate strategic performance improvements, and manage project implementation.

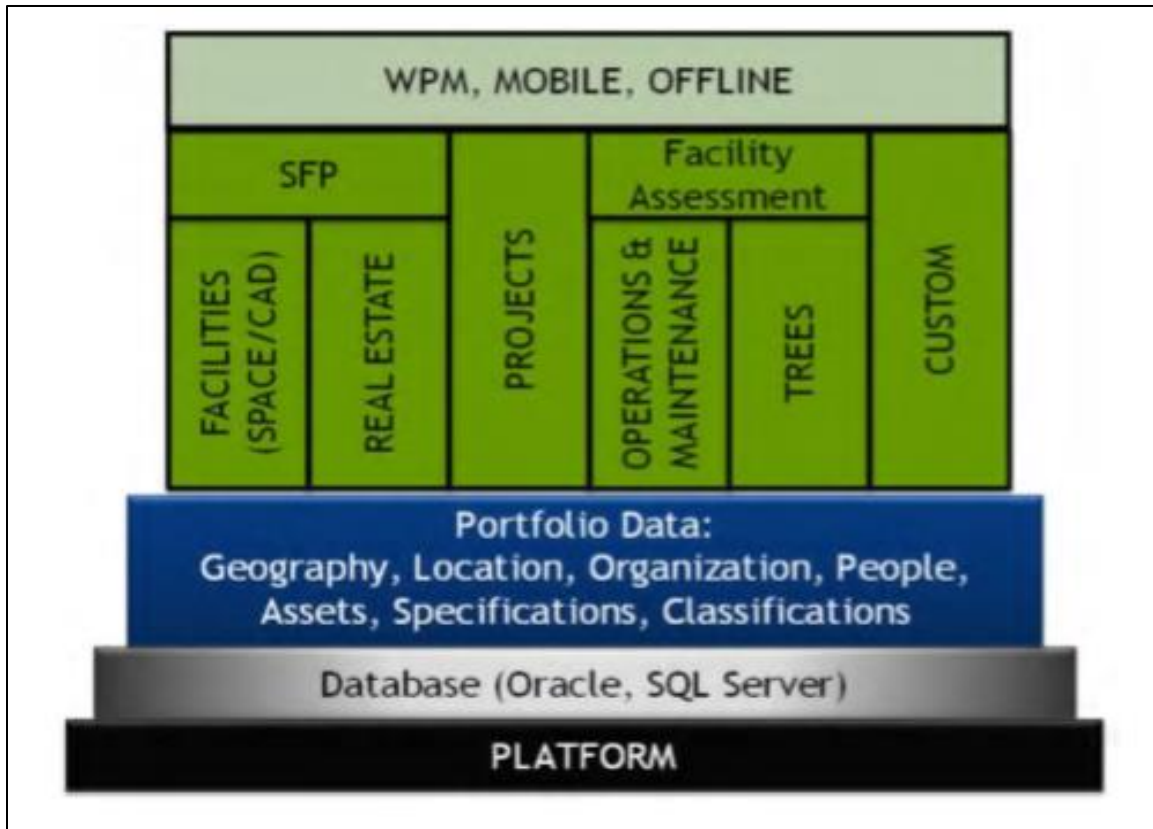


Fig.1.1 Architecture of IBM Tririga

# CHAPTER 2

## BUILDING BLOCKS OF TRIRIGA

### 2.1 Introduction

The IBM TRIRIGA Application Platform is a self-reliant environment for developing and processing business applications and requirements. Built into the platform is much of the common logic used for business applications. To develop and process a business application that runs in the IBM TRIRIGA Application Platform Environment, we need to analyze and perform these steps:

- A description of organization of data used by the application.
- The appearance and description of the user interface for the application.
- Detailed view of the reports and queries that the application will support.
- Custom logic required for the business scenarios which the application will support.

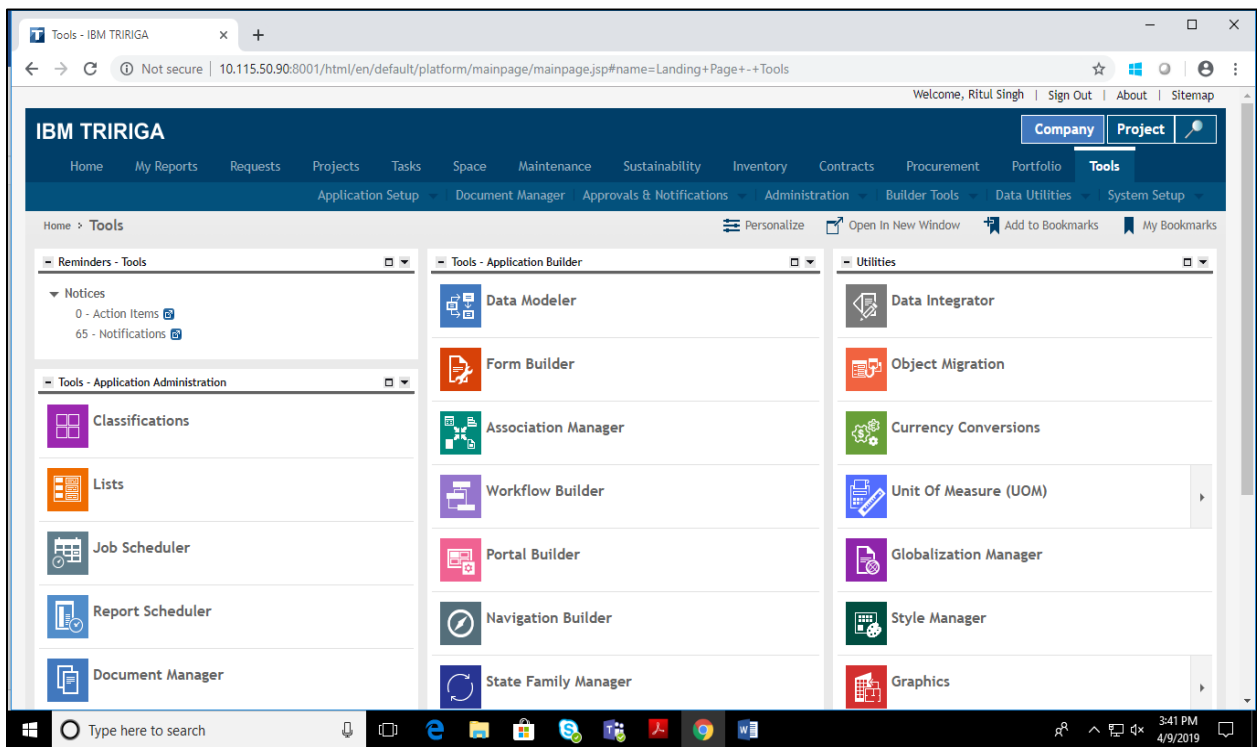


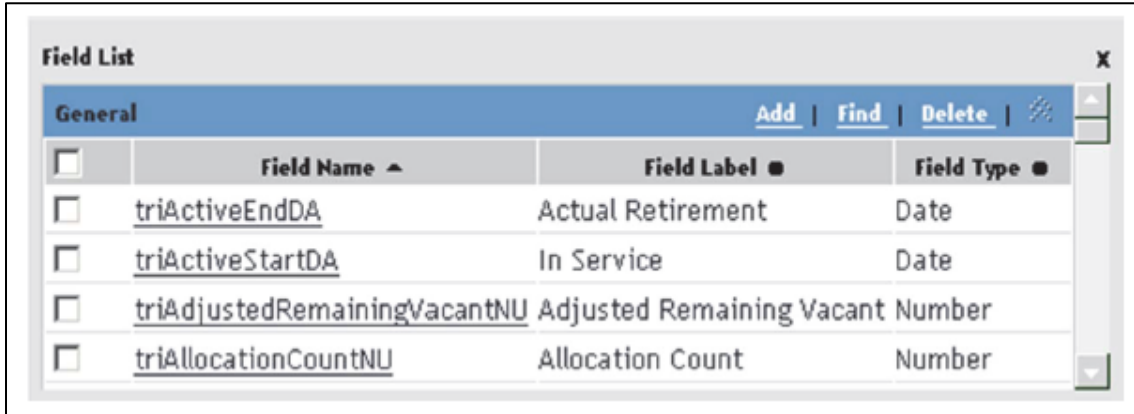
Fig.2.1 IBM Tririga Home Page

## 2.2 Data model

A data model is a description of the data that an application uses.

It consist of five main parts:

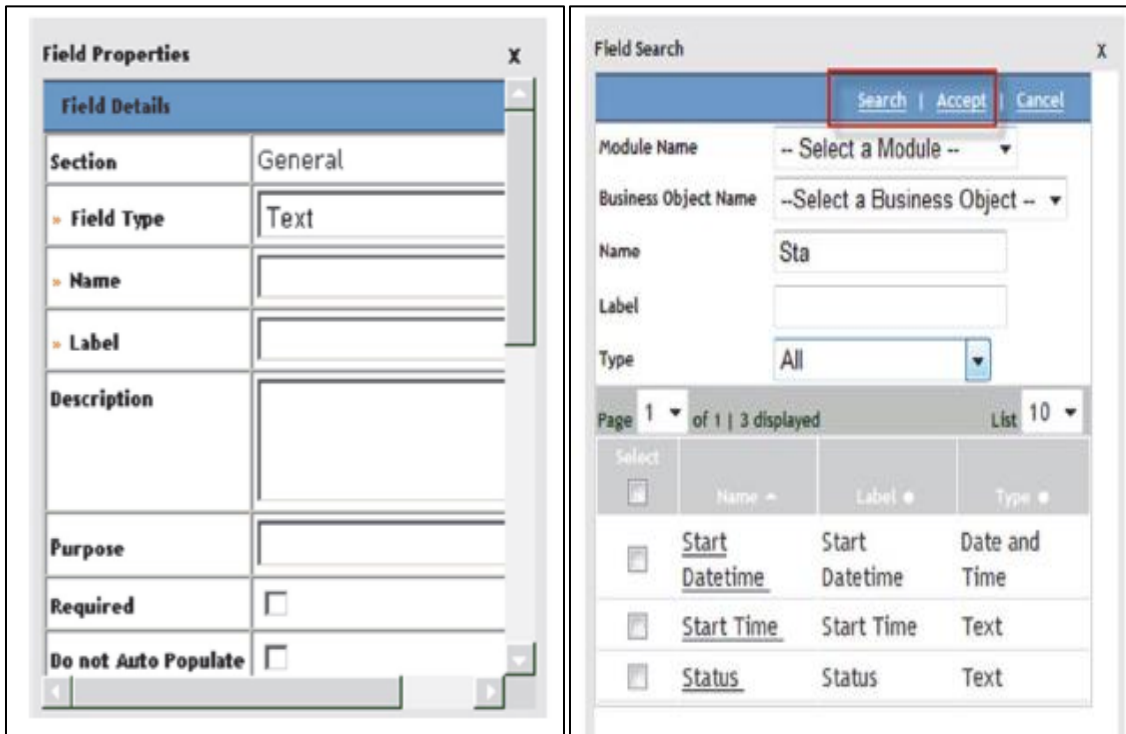
- **Field:** Container for a piece of information



The screenshot shows a dialog box titled "Field List" with a close button (X) in the top right corner. Below the title bar is a "General" tab with buttons for "Add", "Find", "Delete", and a refresh icon. The main area contains a table with four columns: "Field Name", "Field Label", and "Field Type". Each row has a checkbox in the first column.

<input type="checkbox"/>	Field Name ▲	Field Label ●	Field Type ●
<input type="checkbox"/>	triActiveEndDA	Actual Retirement	Date
<input type="checkbox"/>	triActiveStartDA	In Service	Date
<input type="checkbox"/>	triAdjustedRemainingVacantNU	Adjusted Remaining Vacant Number	
<input type="checkbox"/>	triAllocationCountNU	Allocation Count	Number

Fig.2.2 Field list



The screenshot shows two dialog boxes side-by-side. The left one is "Field Properties" and the right one is "Field Search".

**Field Properties:** This dialog has a "Field Details" tab. It shows a "Section" of "General". The "Field Type" is set to "Text". There are fields for "Name", "Label", "Description", "Purpose", "Required" (checkbox), and "Do not Auto Populate" (checkbox).

**Field Search:** This dialog has a "Search" button highlighted with a red box. It contains dropdown menus for "Module Name" ( "-- Select a Module -- ") and "Business Object Name" ( "--Select a Business Object -- "). There are text input fields for "Name" (containing "Sta") and "Label". A "Type" dropdown is set to "All". Below the search fields is a list of results with columns "Name", "Label", and "Type".

Select	Name ▲	Label ●	Type ●
<input type="checkbox"/>	Start Datetime	Start Datetime	Date and Time
<input type="checkbox"/>	Start Time	Start Time	Text
<input type="checkbox"/>	Status	Status	Text

Fig.2.3 Field Properties

- **Business object:** A collection of fields and business logic. A business object is a collection of fields and business logic that represents something that exists in the real world. Business objects are used to create records that are instances of data.

The screenshot shows a window titled "Business Object Properties" for a "Business Object - cstCar (Published)". The properties are as follows:

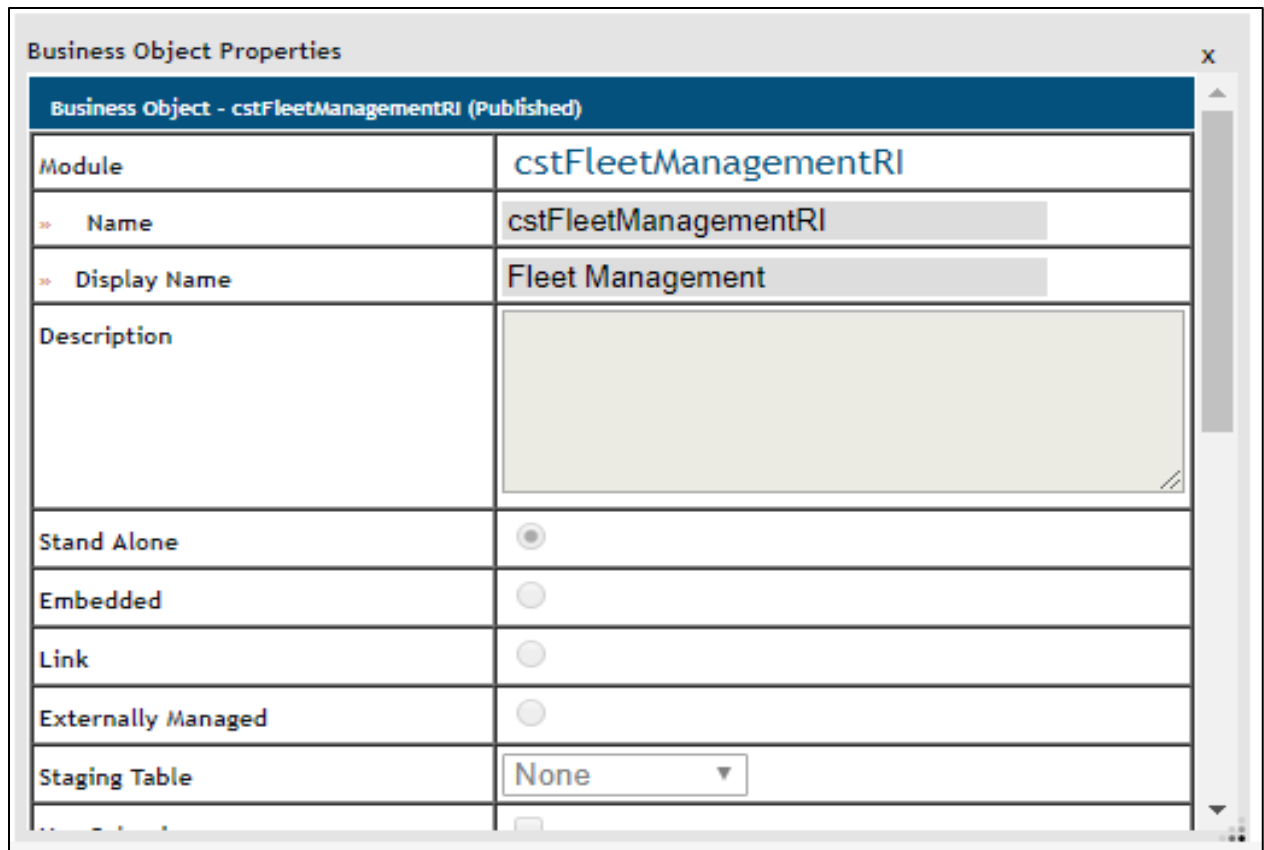
Module	cstFleetManagementRI
Name	cstCar
Display Name	Car
Description	
Stand Alone	<input checked="" type="radio"/>
Embedded	<input type="radio"/>
Link	<input type="radio"/>
Externally Managed	<input type="radio"/>
Staging Table	None

Fig.2.4 Car BO

The screenshot shows a window titled "Business Object Properties" for a "Business Object - cstCarMoveRequestRI (Published)". The properties are as follows:

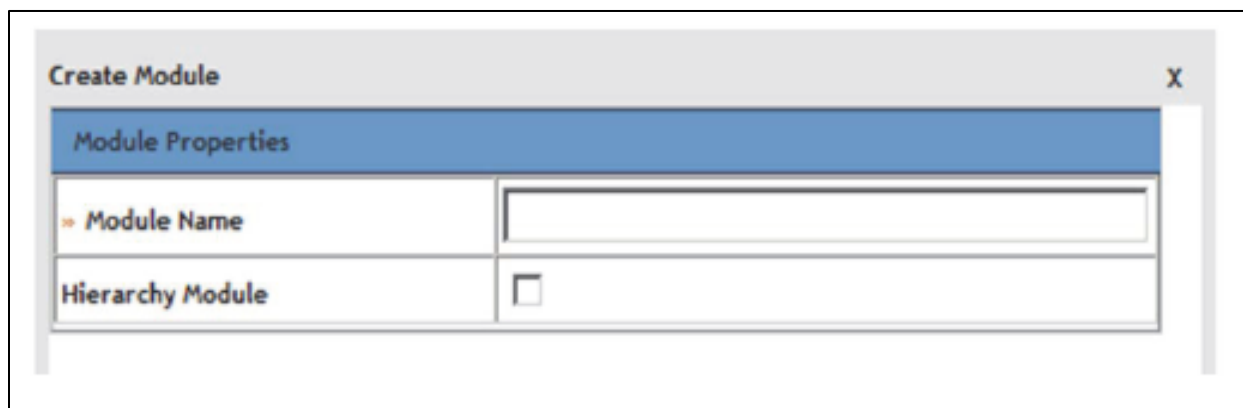
Module	cstFleetManagementRI
Name	cstCarMoveRequestRI
Display Name	Car Move Request
Description	
Stand Alone	<input checked="" type="radio"/>
Embedded	<input type="radio"/>
Link	<input type="radio"/>
Externally Managed	<input type="radio"/>
Staging Table	None

Fig.2.5 Car Move Request BO

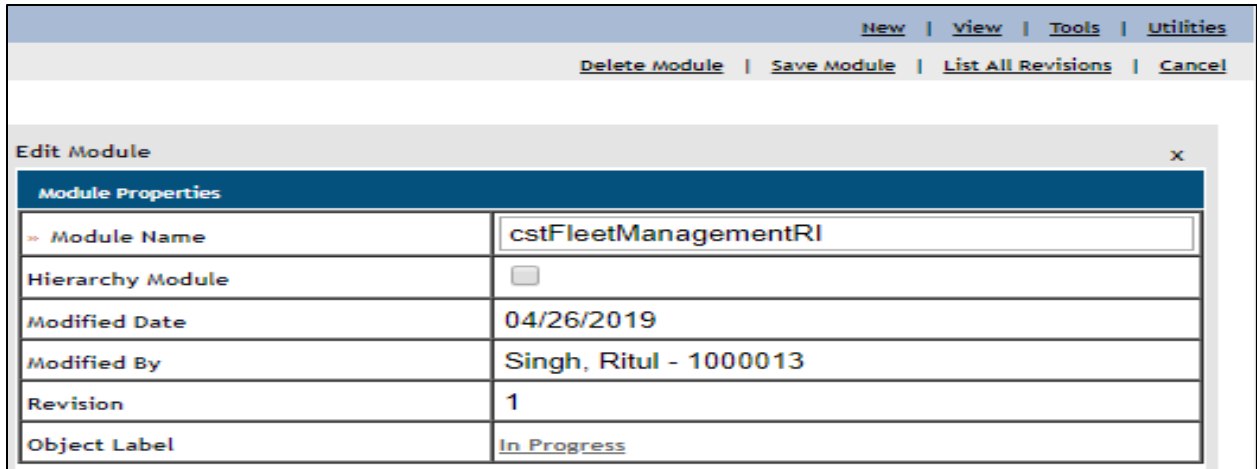


**Fig.2.6 Fleet Management BO**

- **Module:** A module is a collection of business objects. Every module has a name. Business objects with a similar structure or purpose are usually in the same module.

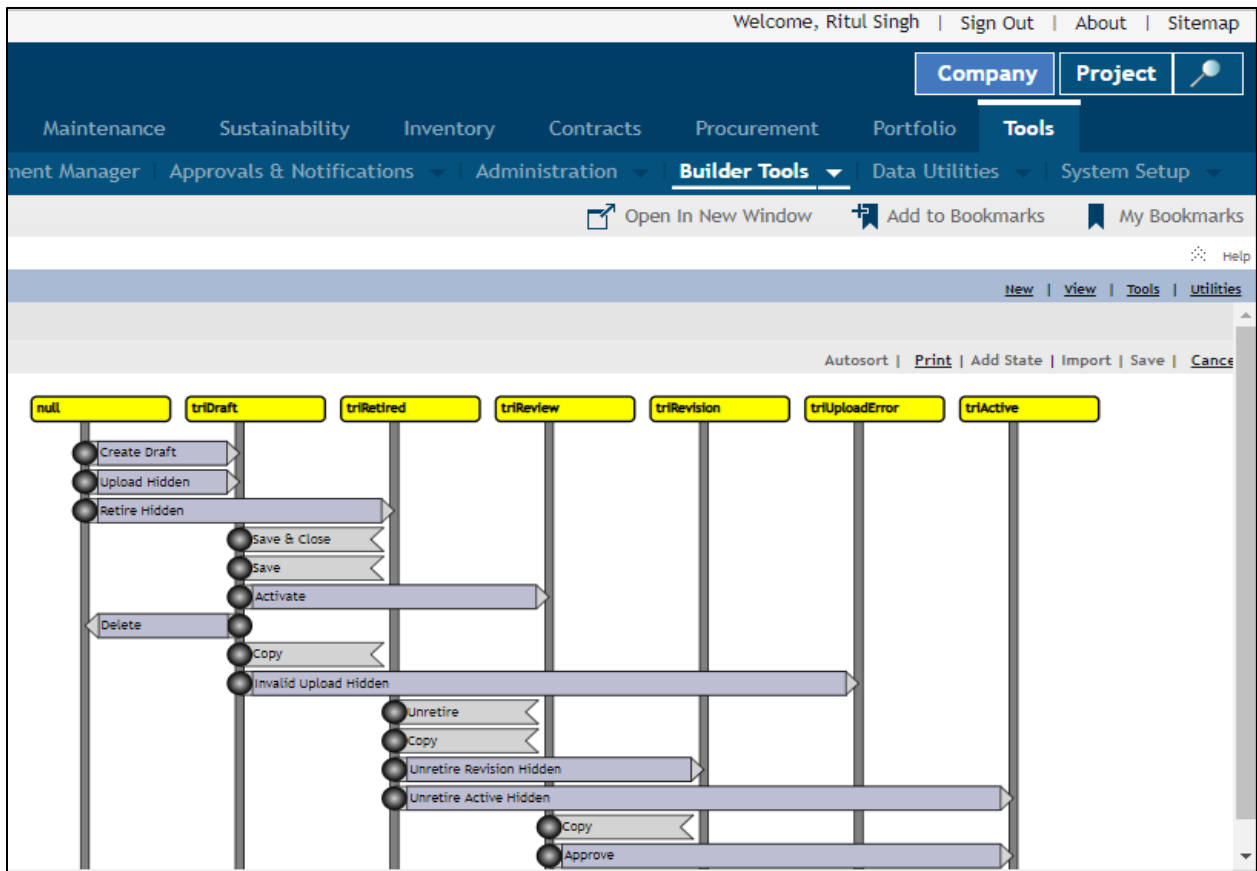


**Fig.2.7 Module Creation**



**Fig.2.8 Module Property Window**

- State Family:** Lifecycle of records that are created from a BO. States are shown in the diagram as a vertical bar with the name in a yellow box on top. Transitions, also called transition actions, or just actions, are shown as arrows between states. The origin of a transition is shown as a circle.



**Fig.2.9 State Transition Diagram**

The screenshot shows the IBM TRIRIGA Data Modeler interface. At the top, there is a navigation bar with options like Home, My Reports, Requests, Projects, Tasks, Space, Maintenance, Sustainability, Inventory, Application Setup, Document Manager, Approvals & Notifications, and Admin. Below this, the breadcrumb path is Home > Tools > Builder Tools > Data Modeler. The main area is titled 'Data Modeler' and 'State Transitions'. A sub-action configuration window is open on the left, showing 'Sub Action Label Details' with 'Create Draft' as the label. Below this, there are sections for 'Workflow Select', 'Audit Action', and 'Inclusion Exclusion'. The 'Inclusion Exclusion' table is as follows:

Action Label	Inclusion	Exclusion
Create Draft	<input type="radio"/>	<input type="radio"/>
Upload Hidden	<input type="radio"/>	<input type="radio"/>

On the right, a sequence diagram shows interactions between lifelines: null, triDraft, triRetired, and triReview. The diagram includes messages such as 'Create Draft', 'Upload Hidden', 'Retire Hidden', 'Save & Close', 'Save', 'Activate', 'Delete', 'Copy', 'Invalid Upload Hidden', 'Unretire', 'Copy', 'Unretire Revision Hidden', and 'Unretire Active Hidden'.

**Fig.2.10 State Properties**

- **Association:** A relationship between records. The string that defines the association from the primary business object to the associated business object [2].

The screenshot shows the 'Association Properties' window. At the top, there are buttons for 'New', 'View', 'Tools', and 'Utilities'. Below these are buttons for 'Delete Association', 'Save Association', and 'Cancel'. The window title is 'Association Properties' with a close button 'X'. The main area is titled 'Associate Business Object' and contains the following fields:

Module	cstFleetManagementRI
Business Object	cstCar
» Association	Has Current Location
Associate Module	Location
Associate Business Object	triProperty
» Reverse Association	Location For
Dependent Flag	<input type="checkbox"/>

**Fig.2.11 Association window**



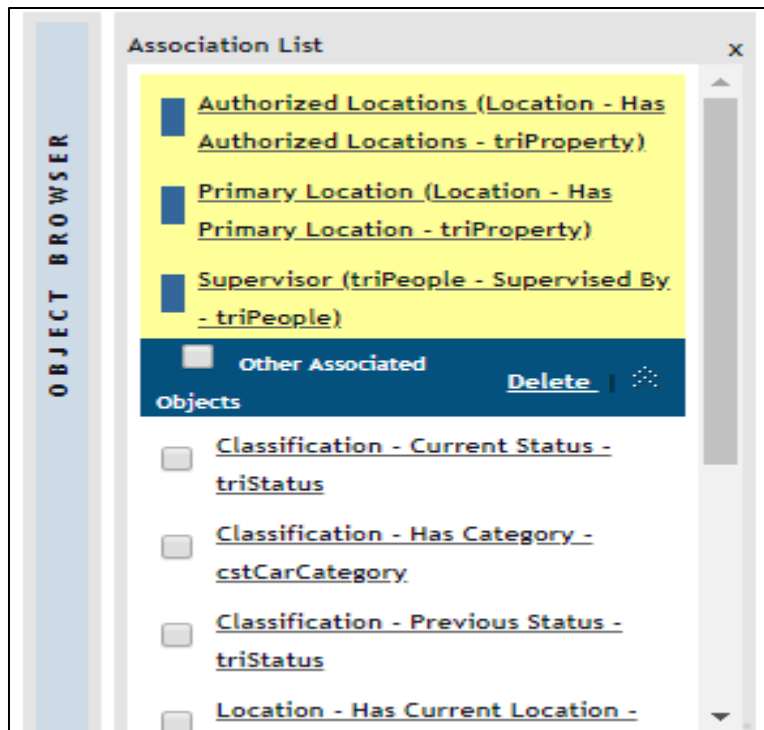


Fig.2.12 Association List

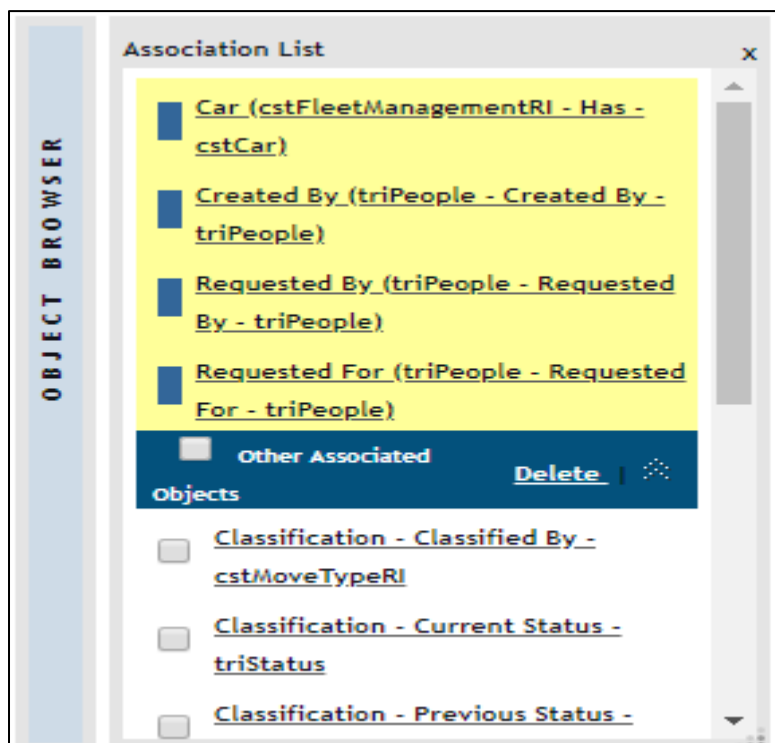
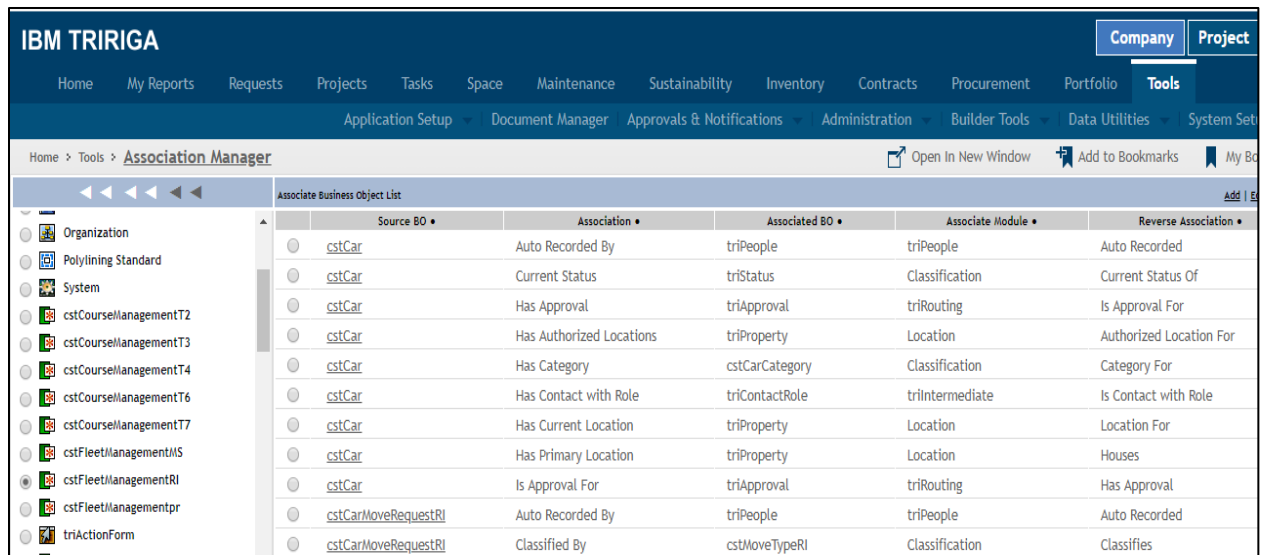


Fig.2.13 Smart Section Associations



**Fig.2.14 Association Manager Window**

The two types of associations in IBM TRIRIGA are associations at the business object level and associations at the record level. Associations at the business object level are metadata associations. They are the rules that define the types of records that can become associated. Business object-level associations are also called association definitions.

Record-level associations are data associations. They are the actual connections between records. Generally, associations between records require a business object-level association definition.

Association definitions include an association name that is connected with each end of the association definition. Association names are often referred to as the forward association and reverse association strings.

### 2.3 Form builder

The IBM TRIRIGA Application Platform provides a tool named the Form Builder for the purpose of defining and managing forms to create, view and edit the contents of records. Every form has an association with a business object. We can have a number of forms associated with the same business object. We can have different views of the data in the same kinds of records through different forms. The fields in a form can contain values for a record created using the business object with which the form is associated. A form can show values from the fields which are in other records. Label fields that are not associated and connected with any record at all can be displayed by a form. The interaction and information flow between the user and the form can be

controlled and managed using workflows. A workflow is a sequence of tasks we can mention to be performed automatically and in organized steps.

The image displays a 'Form Wizard Interface' with a window title 'Layout'. It features several sections:

- Attention!**: A yellow banner at the top.
- General**: A section with input fields for \* Make, \* Year, Car Category, \* Model, \* ID, VIN #, Name, and Status.
- Details**: A section with a large Description text area, an Image field, and three numeric input fields: Current Mileage (0), KBB Value (5.00), and % KBB (0).
- Supervisor**: A section with input fields for Name, Title, Work Phone, eMail, and Address, along with 'Find' and 'Clear' buttons.
- Current Location**: A section with tabs for 'Current Location', 'Primary Location', and 'Authorized Locations'. It includes a 'Current Location' input field, 'City', and 'State/Province' labels, and an 'onChange' event indicator.
- Primary Location**: A section with the same tabs as above. It includes a 'Name' input field, 'City', and 'State/Province' labels, and 'Find' and 'Clear' buttons.

**Fig.2.15 Form Wizard Interface**

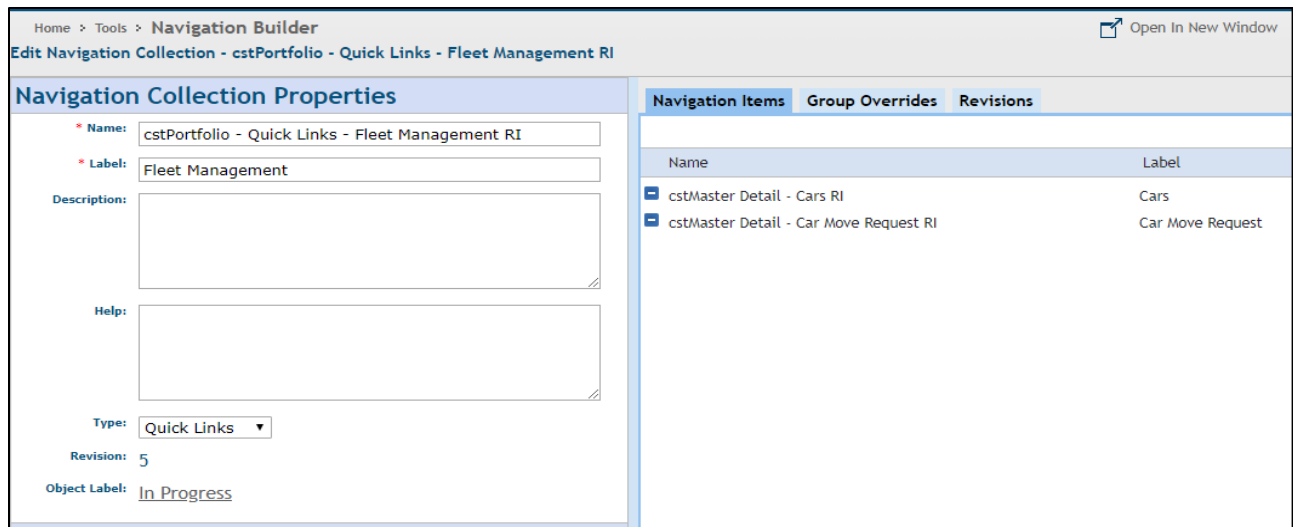
## 2.4 Navigation items

We can create, view, and edit related types of records, among other things through navigation items. We can display a collection of forms, results of a query, and hierarchical data by configuring navigation items. Navigation items can be configured to display a default master/detail query, known as a manager query that provides a standard way for the records of a form to be displayed. We have users working in various roles who require different views of records or different ways to manipulate and modify the same records, their requirements can be fulfilled by creating navigation items that use a customized query to manage same kinds of records but in different ways.

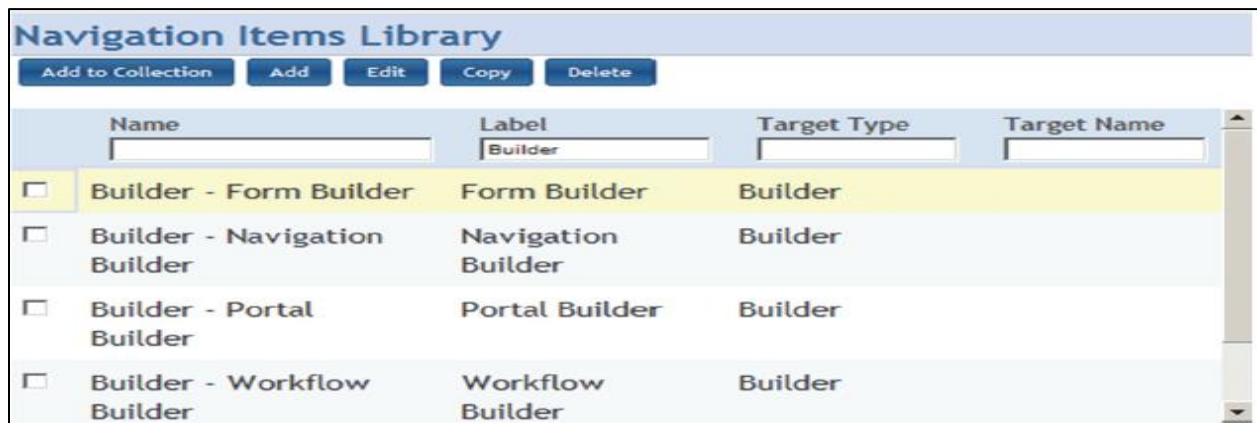
IBM Tririga has a tool called navigation builder which creates, maintains, and organize navigation items in menus or portals. Different types and kinds of records can be displayed by creating navigation items. Navigation items are also flexible and generic enough to represent menus, or portal quick link sections, display hierarchical data, run reports, and link to other builder tools



Fig.2.16 Navigation Builder Window



**Fig.2.17 Navigation Collection**



**Fig.2.18 Navigation Item Library**

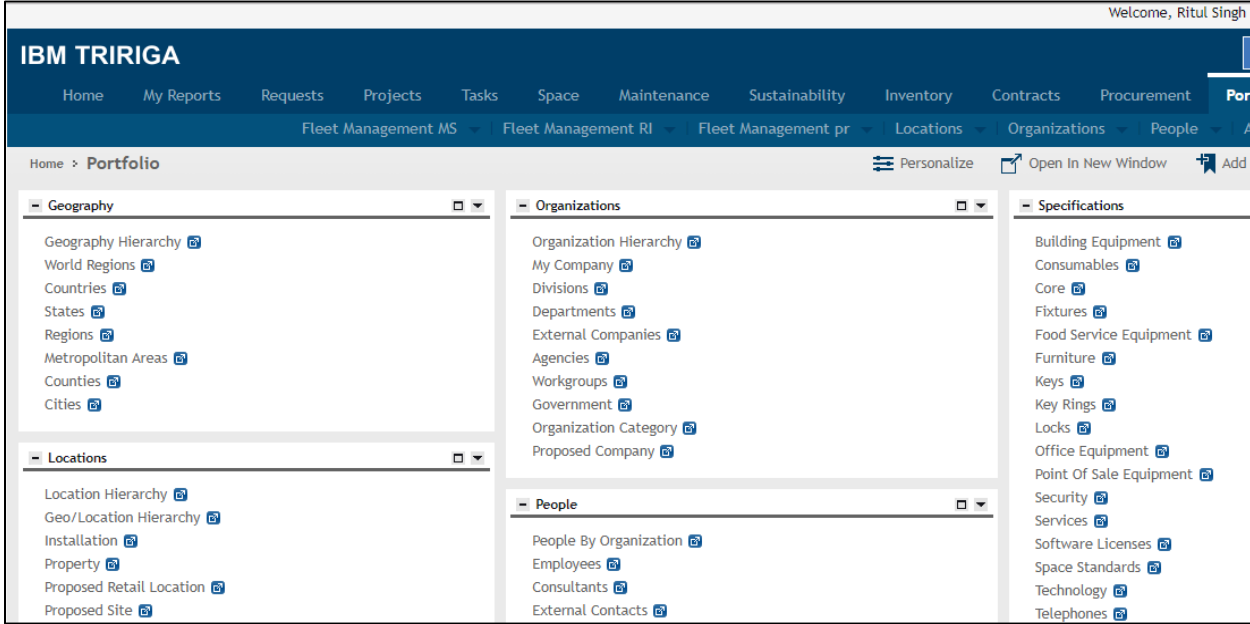
## 2.5 Portals

The IBM TRIRIGA portal is the central organizing element of the application user interface. You can access all functions in the product through this interface. A portal is the home page for an application. A portal that is the target of a menu item (other than Home) is also called a portfolio landing page.

A portal is the home page for an application. When someone signs in to the IBM TRIRIGA Application Platform, the first thing they see is their portal. At the top of the portal is the header region containing a logo, Sign Out link, and related information and immediately below is the menu region, which displays menu options. The rest of the portal, the content area, consists of more complex graphical components.

A tool named the Portal Builder is used to create and manage named portals and to control the arrangement and creation of portal sections within each named portal.

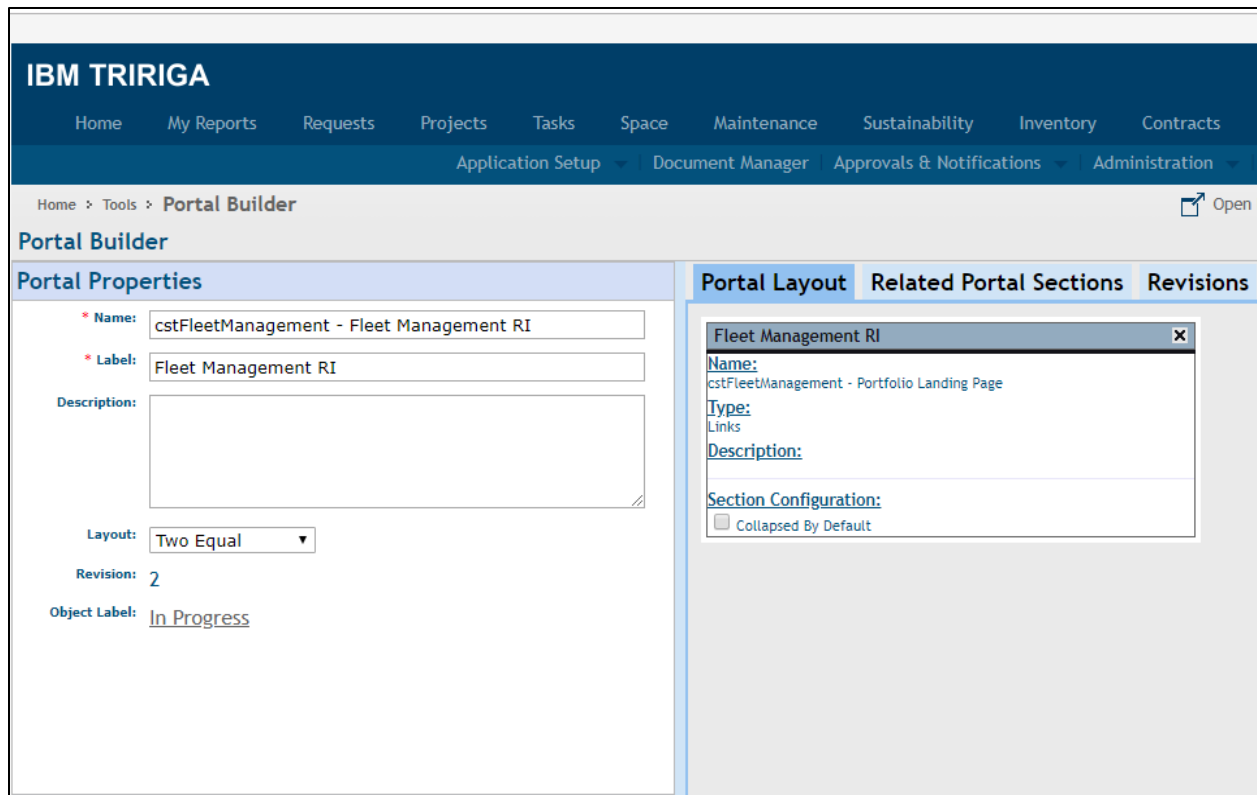
Portal sections are the building blocks from which portals are constructed. Portal sections are displayed as encapsulated areas within a portal. IBM TRIRIGA ships with hundreds of portal sections. These standard portal sections include system components that provide data and navigation help, and also action items, notifications, queries, adding a record, and viewing a record. The slide shows a portal that contains four quick links portal sections. You create portals and portal sections by using the Portal Builder.



**Fig.2.19: Portal Sections**



**Fig.2.20 Portal Layout Panel**



**Fig.2.21 Portal Properties**

## 2.6 Queries and Reports

The IBM TRIRIGA reporting solution is called the Report Manager. You use the Report Manager to create simple tabular reports, queries, and graphs that combine data from multiple records into a single presentation. These presentations of data can be displayed as reports, as portal components, or in navigation items. They are also used in multiple places throughout the TRIRIGA applications, including query sections, workflows, filters for other queries, and extended formulas. IBM TRIRIGA reports include filter, search, and sort capabilities and also the ability to link to other reports.

There are three particularly interesting features of reports generated by the Report Manager:

- Reports generated by the Report Manager can be included in forms that are part of a user interface. Reports that are generated primarily for use within a user interface are usually called queries. The inclusion of queries in a user interface is under the control of the Form Builder tool.

- Reports generated by the Report Manager allow users to drill down into underlying records. When you click a piece of data in a report, an appropriate form pops up to allow you to view or edit the contents of records that the report data came from.
- If a report or query is configured to allow it, you can edit the values you see in a report directly in the report. This feature allows you to edit the values in any number of records all at the same time.

The screenshot shows the 'My Reports' section of the Watson Analytics Connector. It features a navigation bar with tabs for Home, My Reports, Requests, Projects, Tasks, Space, Maintenance, Sustainability, Inventory, Contracts, and Procurement. Below the navigation bar, there are tabs for My Reports, Community, System Reports, and Administration. A search bar indicates '9 total found' with options to 'Apply Filters' and 'Clear Filters'. A 'New' button is located in the top right corner. The main content is a table listing various reports.

<input type="checkbox"/>	C	Title	Name	Tag	Module	Business Object	Form
<input type="checkbox"/>	<input type="checkbox"/>	<a href="#">Contains</a>	<a href="#">Contains</a>	<a href="#">Contains</a>	<a href="#">cstFleetManagementRI</a>	<a href="#">Contains</a>	<a href="#">Contains</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Active Cars</a>	<a href="#">cstCar - Active Cars</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car</a>	<a href="#">Car</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Car Move Request for today</a>	<a href="#">cstCarMoveRequestRI - Car Move Request for today</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car Move Request</a>	<a href="#">Car Move Request</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Car Move Requests</a>	<a href="#">cstCarMoveRequestRI - Master Detail Query</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car Move Request</a>	<a href="#">Car Move Request</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Car Move Requests - Draft</a>	<a href="#">cstCarMoveRequestRI - Editable</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car Move Request</a>	<a href="#">Car Move Request</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Car Move Requests - Retired</a>	<a href="#">cstCarMoveRequestRI - Retired</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car Move Request</a>	<a href="#">Car Move Request</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Cars</a>	<a href="#">cstCar - Master Detail Query</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car</a>	<a href="#">Car</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Cars - Draft</a>	<a href="#">cstCar - triDraft - Editable</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car</a>	<a href="#">Car</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Cars - Retired</a>	<a href="#">cstCar - triRetired - Editable</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car</a>	<a href="#">Car</a>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">customized query</a>	<a href="#">cstCarMoveRequestRI - customized query</a>		<a href="#">cstFleetManagementRI</a>	<a href="#">Car</a>	<a href="#">Car</a>

**Fig.2.22 Report Manager Window**

The screenshot shows the 'Report Builder' window for the report 'cstCar - Master Detail Query'. The window title is 'IBM TRIRIGA - Google Chrome'. The address bar shows the URL: '10.115.50.90:8001/html/en/default/reportTemplate/reportTemplateFrameSet.jsp?reportTempId=161835&isSystem=true'. The report name is 'cstCar - Master Detail Query'. The 'General' tab is selected, showing the following details:

- Name:** cstCar - Master Detail Query
- ID:** CUSTOM
- Header (Title):** Cars
- Tag:**
- Description:**
- Type:** Query
- Data Scope:** All Projects
- Track History:**
- Created By:** Singh, Ritul - 1000013
- Modified By:** Singh, Ritul - 1000013
- Modified Date:** 04/26/2019
- Revision:** 21
- Object Label:** In Progress
- Show As Community Report:**

At the bottom, there are tabs for 'Business Objects', 'Options', 'Related Reports', and 'Security'. The 'Business Objects' tab is active, showing a table with the following columns: Module, Business Object, Form, and Association Type.

Module	Business Object	Form	Association Type
-cstFleetManagementRI	Car	Car	-

**Fig.2.23 Report Builder**



## 2.7 Workflows

A workflow is a specified sequence of tasks that can be performed manually or automatically. You use a workflow to specify the tasks that you need an application to perform. You can add business logic to your applications by creating a workflow. You can also create workflows to define any business process that is associated with the system or the business objects in the system. Many predefined workflows are delivered with the IBM TRIRIGA applications.

You can use workflows for many tasks, including the following ones:

- Set the values in the fields of a new record. Formulas are a simpler way to initialize the values of fields. However, formulas are not adequate for all computations. Some computations require a workflow. There is no certainty to the order in which formulas are computed. If you need initial values for fields that are computed in a certain order, you must use a workflow.
- Change the appearance of a record in a form that is based on the contents of underlying records or a user's actions. For example, you can hide sections, make sections visible, or change font size and color.
- Validate the contents of a record before it is saved.
- Perform computations to set the values of fields in a record.
- Create or manipulate records without any interaction with a person.
- You can use workflows to route work to people by having workflows put action items in a person's portal.

Select	Name	Revision	Object	Action	Status
<input checked="" type="radio"/>	<a href="#">cstCar - Synchronous - Activate validation</a>	0	cstCar		Published
<input type="radio"/>	<a href="#">cstCar - Synchronous - Add Approval People</a>	1	cstCar		Published
<input type="radio"/>	<a href="#">cstCar - Synchronous - Add Contact Role People</a>	0	cstCar		Published
<input type="radio"/>	<a href="#">cstCar - Synchronous - Update Description on mileage change</a>	2	cstCar		Published
<input type="radio"/>	<a href="#">cstCar - Synchronous - Update Intermediate Locators</a>	1	cstCar		Published
<input type="radio"/>	<a href="#">cstCar - triActive - Submit for Approval and Dependand Record Update</a>	0	cstCar	triActivate	Published
<input type="radio"/>	<a href="#">cstCar - Synchronous - OnChange of Current Location</a>	0	cstCar		Published
<input type="radio"/>	<a href="#">cstCarMoveRequestRI - Associate Car</a>	8	cstCarMoveRequestRI		Published
<input type="radio"/>	<a href="#">cstCarMoveRequestRI - Synchronous - Add Approval People</a>	21	cstCarMoveRequestRI		Published
<input type="radio"/>	<a href="#">cstCarMoveRequestRI - Synchronous - Add Contact Role People</a>	1	cstCarMoveRequestRI		Published
<input type="radio"/>	<a href="#">cstCarMoveRequestRI - Synchronous - Calculate total cost</a>	0	cstCarMoveRequestRI		Published
<input type="radio"/>	<a href="#">cstCarMoveRequestRI - Synchronous - car supervisor</a>	0	cstCarMoveRequestRI		Published

Fig.2.24 Workflow Builder

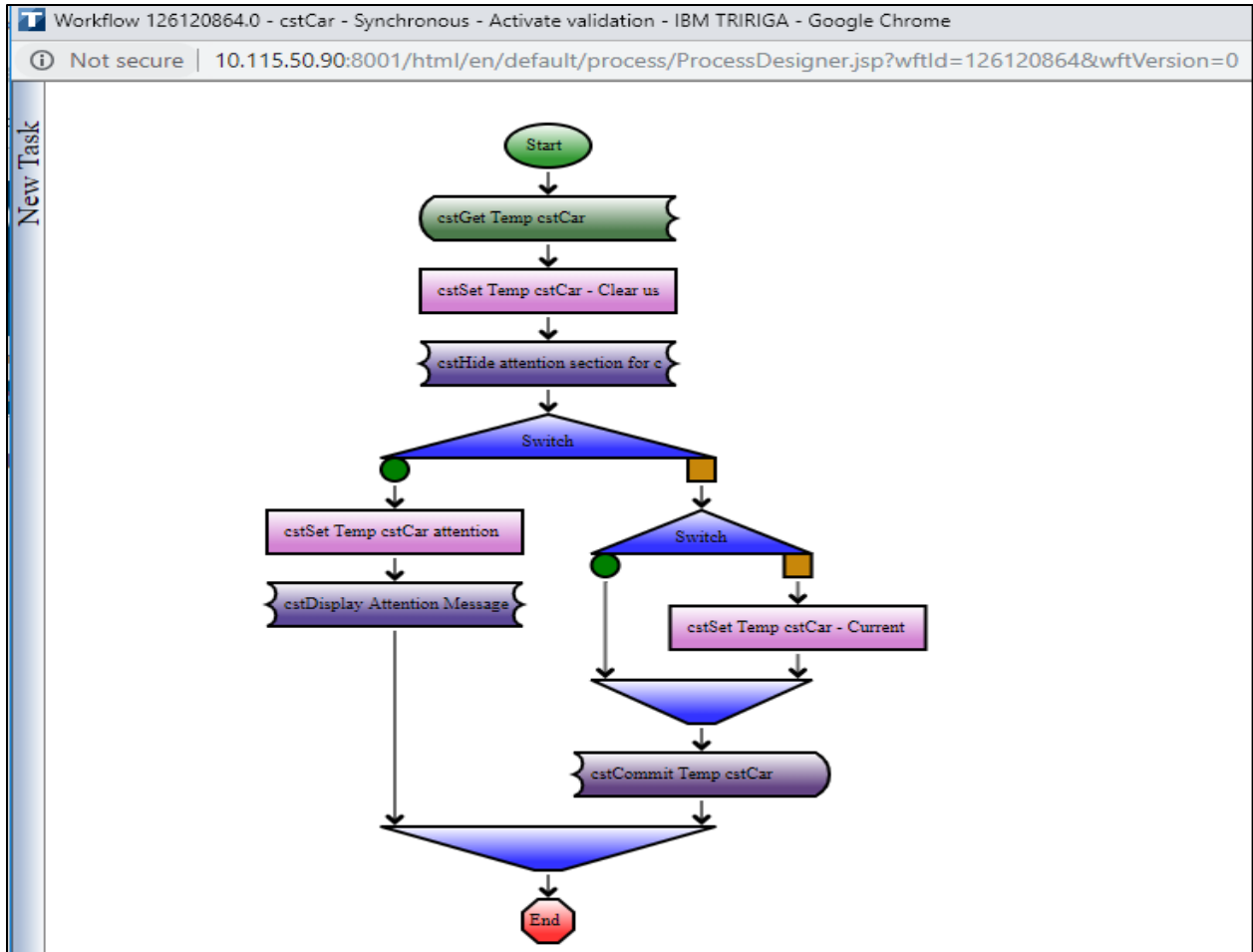


Figure 2.25 Workflow Window

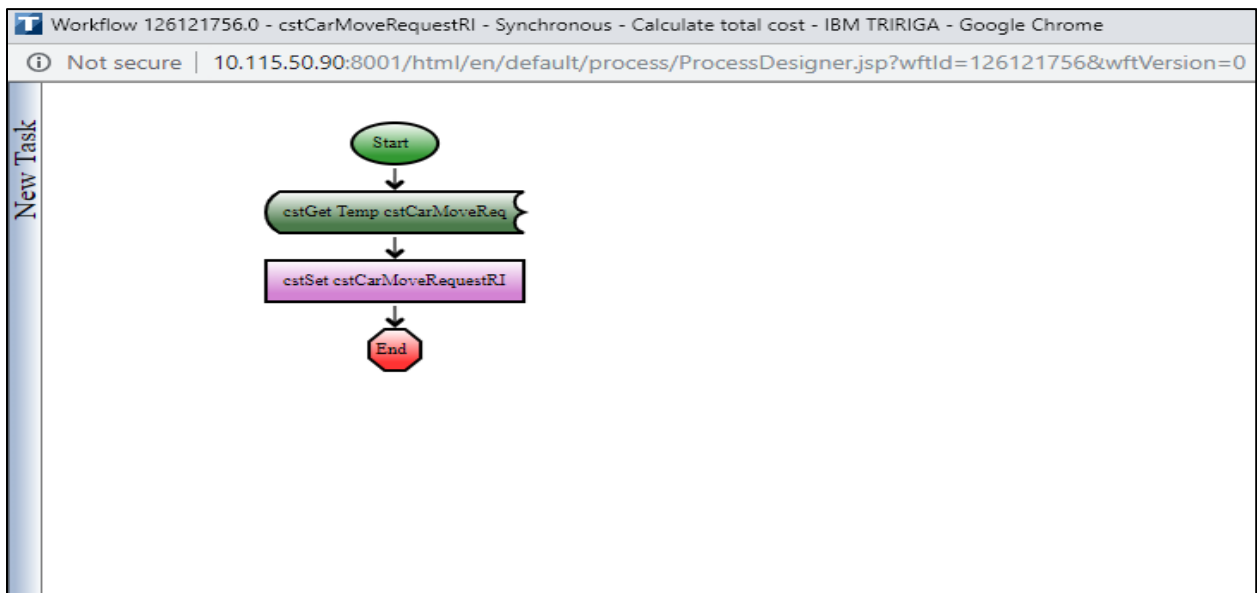


Figure 2.26 Workflow Creation

## 2.8 Smart Sections

The fields of a record are organized into sections. Fields that are directly contained by a record are always organized in a section named General. Every record and business object contains exactly one section named General.

In addition to containing a General section, records can also contain smart sections. Each smart section is based on an association between the record that contains the smart section and the record that is referenced by the smart section. Each section has a name and can reference fields in one or more other records, depending on the smart section properties.

A smart section contains fields for each record that it references. The fields in a smart section contain either a reference or a copy of the value in the corresponding field of the referenced record.

We have a Supervisor and RequestedBy smart section shown here [3].

The screenshot shows a dialog box titled "Section Properties" with a "Section Details" tab. The properties are as follows:

Section Details	
Section Name	cstSupervisor
Section Label	Supervisor
Associated Business Object	triPeople - Supervised By - triPeople
Temporary Association	---Select a Temporary Association---
Associate One Record	<input checked="" type="radio"/>
Associate Multiple Record	<input type="radio"/>
Vertical Section	<input type="checkbox"/>
Dependent	<input type="checkbox"/>
Reference Only	<input checked="" type="radio"/>

Fig.2.27 Supervisor smart section

The screenshot shows a dialog box titled "Section Properties" with a "Section Details" tab. The properties are as follows:

Section Details	
Section Name	cstRequestedBy
Section Label	Requested By
Associated Business Object	triPeople - Requested By - triPeople
Temporary Association	---Select a Temporary Association---
Associate One Record	<input checked="" type="radio"/>
Associate Multiple Record	<input type="radio"/>
Vertical Section	<input type="checkbox"/>
Dependent	<input type="checkbox"/>
Reference Only	<input checked="" type="radio"/>

Fig.2.28 Requested By smart section

## 2.9 Advance Queries

Advance queries are used for filtering records based on certain conditions which we need to define. These queries help us to extract relevant records based on the application's requirement and conditions.

Step 1 of 8 (Required):

**General**

Name:  ID:

Header (Title):  Tag:

Description:

Type:  Data Scope:

Track History:

Created By: Singh, Ritul - 1000013 Modified By: Singh, Ritul - 1000013

Modified Date: 04/25/2019

Object Label: [In Progress](#)

Revision: 12

Show As Community Report

Business Objects | Options | Related Reports | Security

Business Object:				<a href="#">Add Business Object</a>   <a href="#">Edit</a>   <a href="#">Remove</a>
Module	Business Object	Form	Association Type	
<input checked="" type="radio"/> -cstFleetManagementRI	Car	Car	=	
<input type="radio"/> -Location	Property	-All-	Has Current Location	

**Fig.2.29 Customized Query**

Columns: [Copy](#) | [Move up](#) | [Move down](#) | [Move to top](#) | [Move to bottom](#) | [Remove](#)

Join Operator	Field	Report Label	Filter Operator	Value
There are no columns selected				

Filter Columns: [Copy](#) | [Move up](#) | [Move down](#) | [Move to top](#) | [Move to bottom](#)

Join Operator	Field	Report Label	Filter Operator	Conditional	Value
<input type="text"/>	<input type="text" value="Name"/> (triNameTX)	<input type="text" value="Name"/>	<input type="text" value="Equals"/>	<input type="text" value="No"/>	<input type="text" value="\$\$\$PARENT::cstGeneral::c"/>

**Fig.2.30 Filter Tab**

# CHAPTER 3

## APPLICATION- CAR FLEET MANAGEMENT

### 3.1 Business Scenario

We have to create a custom application to track the cars in the inventory for a company that rents cars at various locations using IBM TRIRIGA.

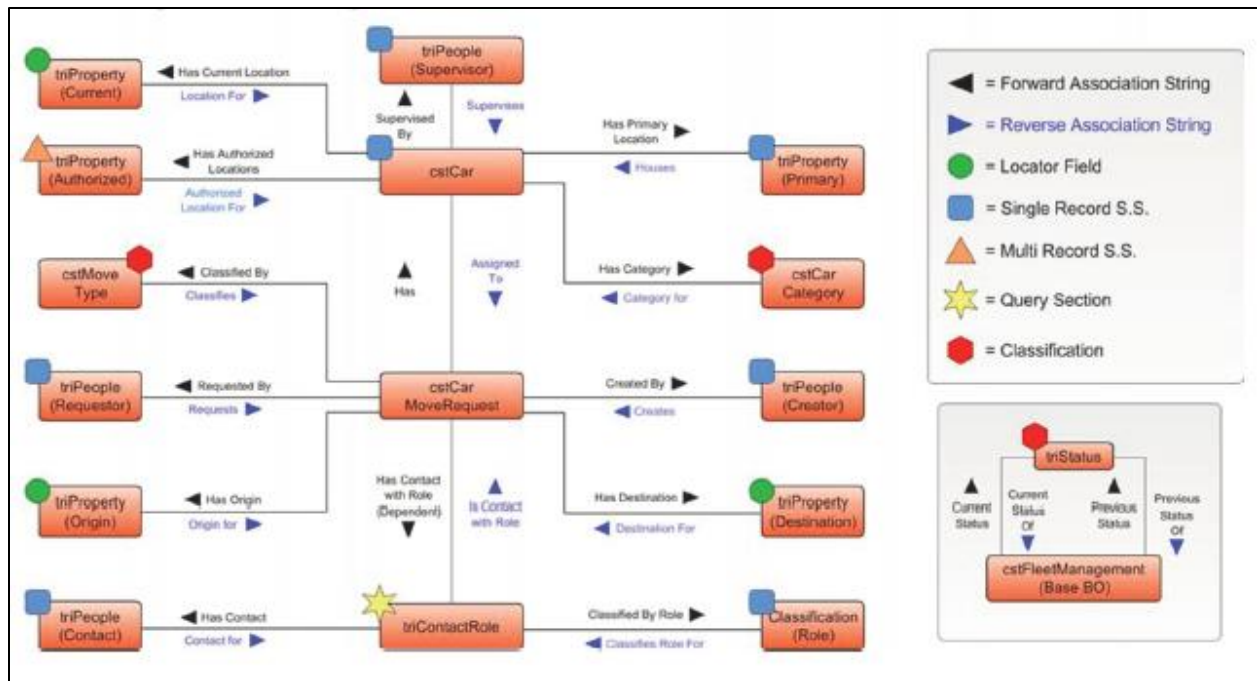
The following items need to be tracked:

- Year, make, model, and identification number of the car.
- Locations, including current location, primary location, and authorized locations.
- Supervisor of the car.

People can rent cars at one location and return them to a different location. This company policy can result in an imbalance of cars at one location and a need to transfer cars between different locations. The application must provide a mechanism for transferring cars between locations, and it must be able to track the associated costs.

With this application, we must be able to create and manage the following types of records:

- **Car:** Details about a car. This type of record does not exist in the platform.
- **Property:** Places where a car is or can be. These records are created with the Property business object in the Location module.
- **Supervisor:** Person who is responsible for a car. These records are created with the People business object in the People module.
- **Requester:** Person who requests the movement of a car. These records are created with the People business object in the People module.
- **Move Request:** Details about the movement of a car. These records do not exist in the platform.



**Fig.3.1 Fleet Management Data Diagram**

Applications in IBM TRIRIGA have associations between the various records that it uses, as shown in the above diagram. These associations are implemented as part of the application.

There are two classifications for this application:

- **Move Type:** Define the type of move request for the car
- **Car Category:** Define the category of the car

We have to create a **Rental Car Tracking System** fulfilling the above business requirements and providing every bit of information required by the company.

### 3.2 Admin Login Page

The administrator can see all the portals on the home page which includes –

- Reminders – It consist of Action Items which has approval requests and notifications displaying the task which are pending and have been completed successfully.
- Last Visited – It consist of the items which the user has visited previously.
- Car Move Request for today – It is a portal section which displays the car move request for the current day and coming days. This portal section is built by using an advance car move request query and then attaching it in the portal.

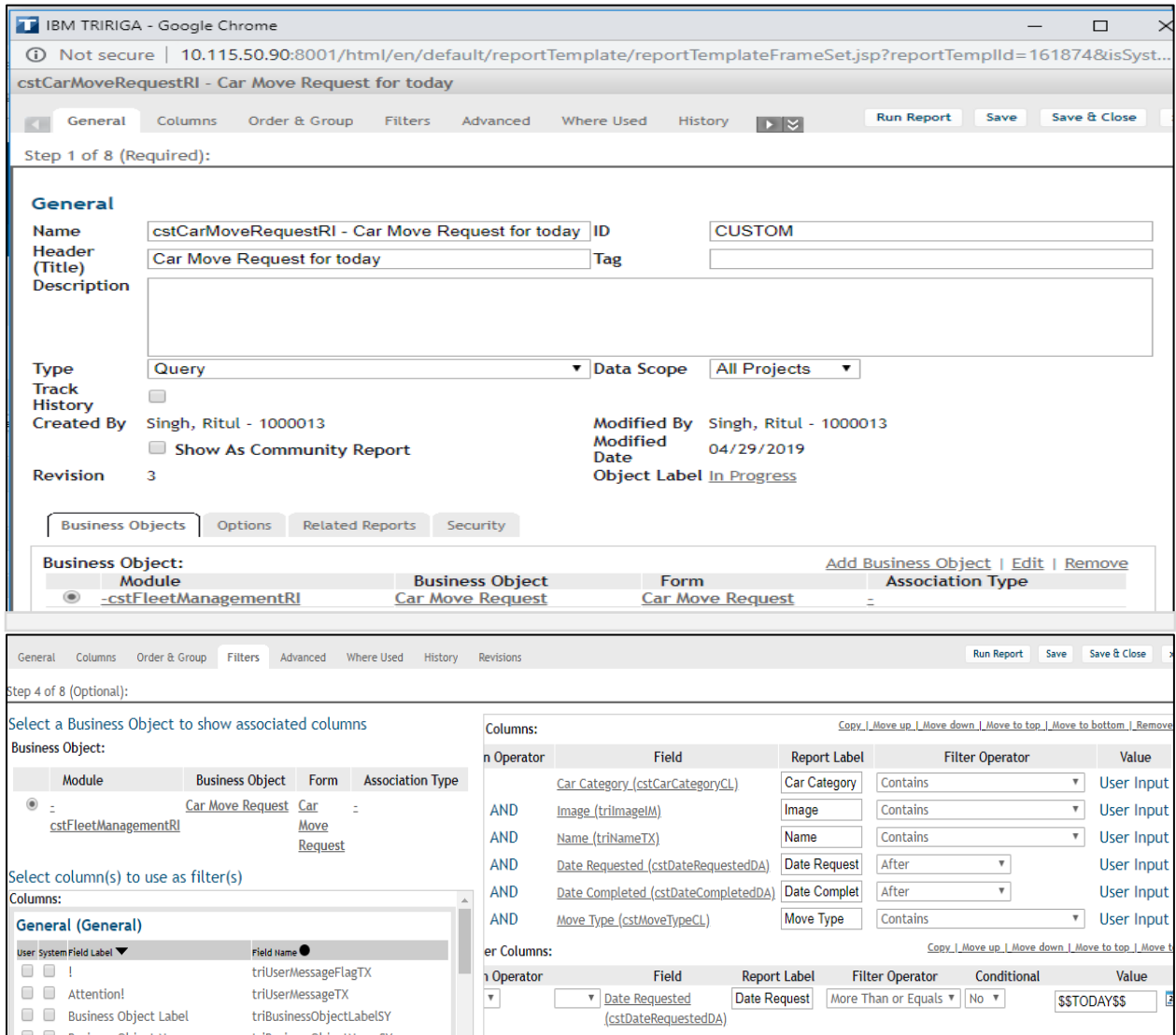


Fig.3.2 Move Request Query

- Active cars- It is a portal section which displays the cars in active status. The car goes to active status after the Vice President gives the approval. This portal section is built by using an advance car query and then attaching it in the portal.

The screenshot displays the IBM TRIRIGA configuration interface for a report titled "cstCar - Active Cars". The interface is divided into several sections:

- General Section:**
  - Name: cstCar - Active Cars
  - ID: CUSTOM
  - Header (Title): Active Cars
  - Tag: [Empty]
  - Description: [Empty]
  - Type: Query
  - Data Scope: All Projects
  - Track History:
  - Created By: Singh, Ritul - 1000013
  - Modified By: Singh, Ritul - 1000013
  - Modified Date: 04/29/2019
  - Object Label: In Progress
  - Revision: 4
  - Show As Community Report:
- Business Objects Section:**
  - Module: -cstFleetManagementRI
  - Business Object: Car
  - Form: Car
  - Association Type: -
- Columns Section (Step 4 of 8):**
  - Business Object: -cstFleetManagementRI Car
  - Select column(s) to use as filter(s):
    - General (General)
      - % KBB
      - Attention!
      - Business Object Label
      - Business Object Name
      - Car Category
      - City
      - Control Number
      - CreatedBy
      - Created Date/Time
      - CreatedTime
      - Current Location

Fig.3.3 Active Cars Query



- Available cars – It is a portal section which displays the availability of the car in the form of a pie chart. This portal section is built by using an advance car query and then attaching it in the portal.

The screenshot shows the IBM TRIRIGA report configuration interface. The top part shows 'Step 1 of 8 (Required): General' with fields for Name, Header (Title), Description, Type, Track History, Created By, Modified By, Revision, and Object Label. The bottom part shows 'Step 4 of 8 (Optional): Select a Business Object to show associated columns' with a table of Business Objects and a list of columns to be used as filters.

**Step 1 of 8 (Required): General**

Name:  ID:   
Header (Title):  Tag:   
Description:   
Type:  Data Scope:   
Track History:   
Created By: Singh, Ritul - 1000013 Modified By: Singh, Ritul - 1000013  
Show As Community Report:  Modified Date: 04/29/2019  
Revision: 9 Object Label: [In Progress](#)

**Business Object:**

Module	Business Object	Form	Association Type
<input checked="" type="radio"/> -cstFleetManagementRI	Car	Car	-

**Step 4 of 8 (Optional): Select a Business Object to show associated columns**

Business Object:  -cstFleetManagementRI Car

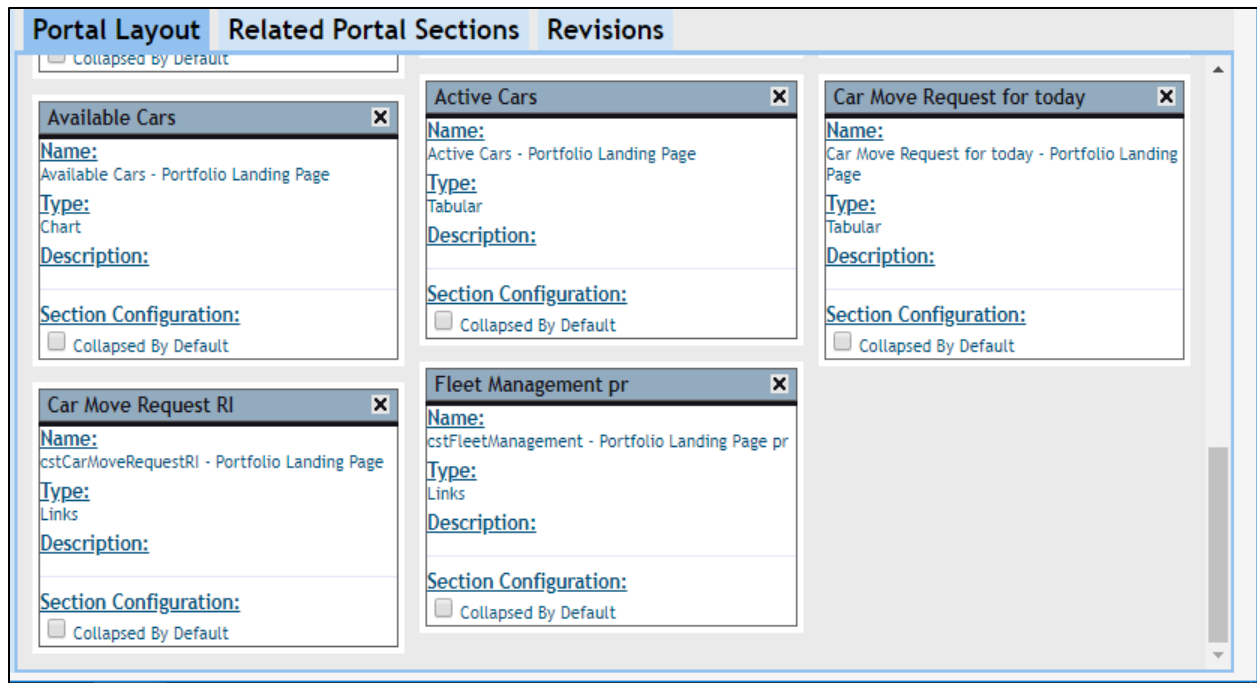
Select column(s) to use as filter(s)

Columns:

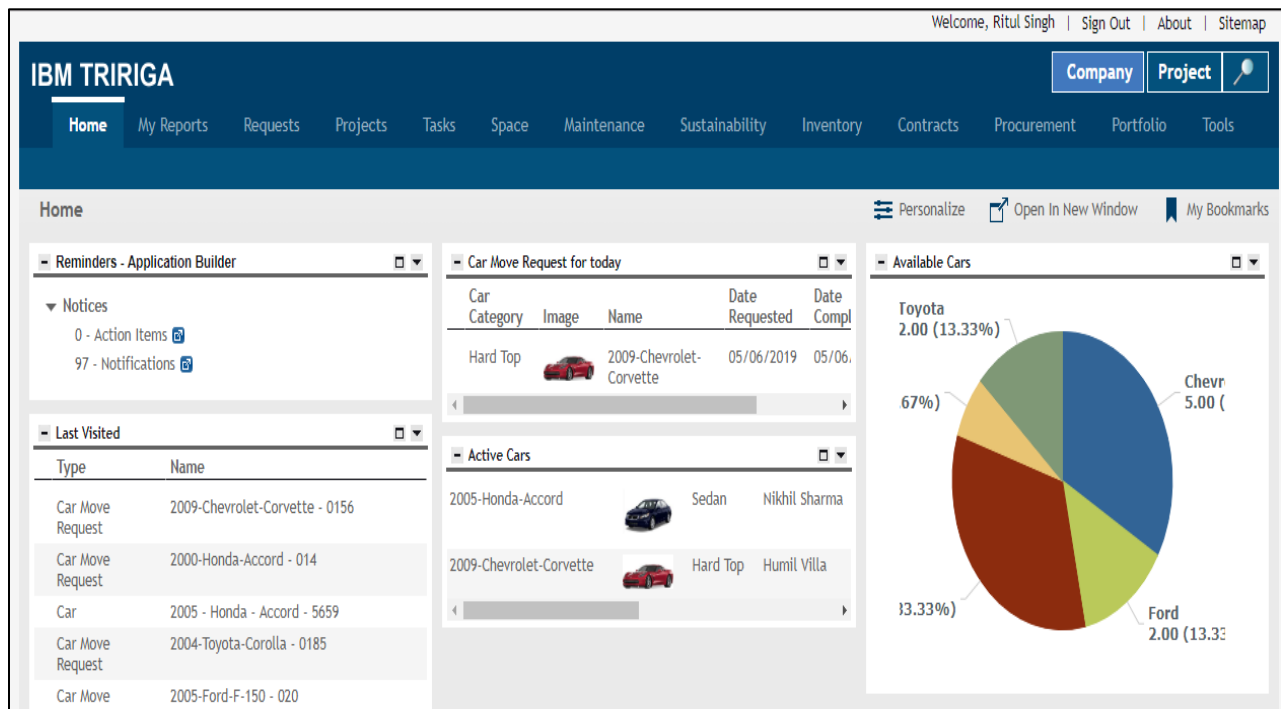
Field	Report Label	Filter Operator	Value
Name (triNameTX)	Name	Contains	User Input
Make (cstMakeLI)	Make	Contains	User Input
Image (triImageLI)	Image	Contains	User Input
Car Category (cstCarCategoryCL)	Car Category	Contains	User Input
Current Location (cstCurrentLocNameTX)	Current Locat	Contains	User Input
City (cstCurrentLocCityTX)	City	Contains	User Input
KBB Value (cstKbbRetailPriceNU)	KBB Value	More Than or Equals	User Input
% KBB (cstPercentKbbNU)	% KBB	Equals	User Input
VIN # (cstVinTX)	VIN #	Contains	User Input
Status (triStatusCL)	Status	Contains	User Input

Conditional:

**Fig.3.4 Available Cars Query**



**Fig.3.5 Portal Layout Panel**



**Fig.3.6 Admin Login Page**

### 3.2.1 Property Setup

The steps to create a property are as follows-

- Go to Portfolio tab

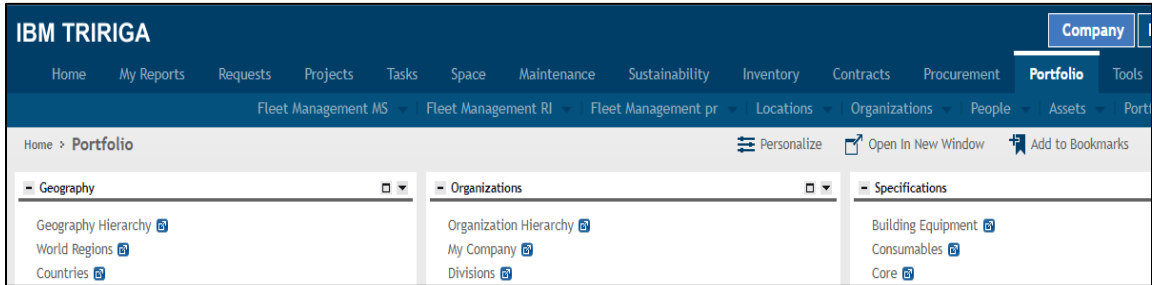


Fig.3.7 Portfolio

- Go to the Location menu

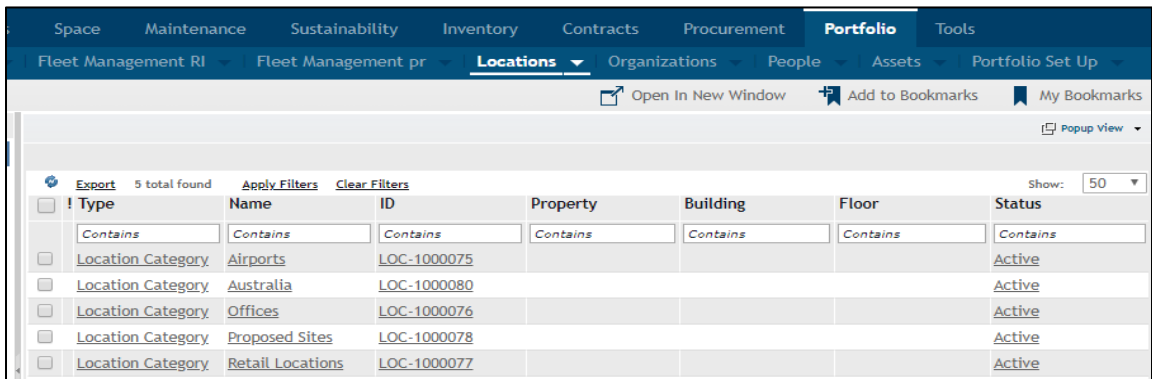


Fig.3.8 Locations Menu

- Create a Location hierarchy

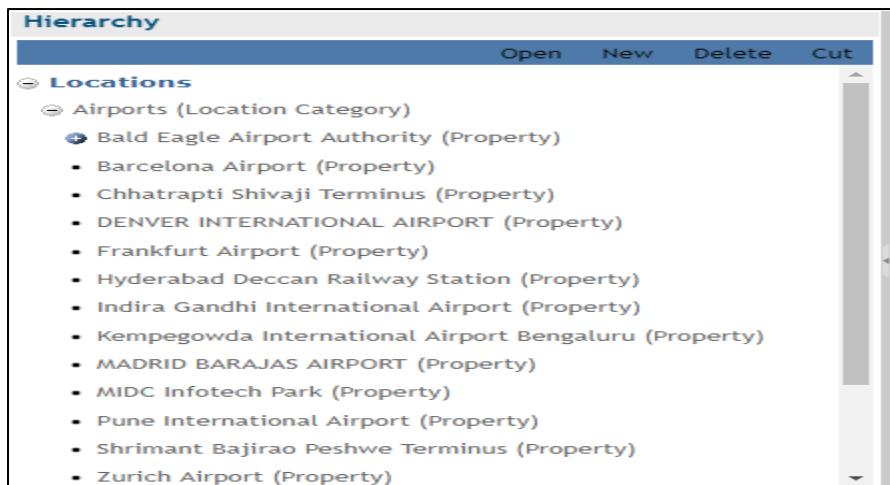


Fig.3.9 Locations Hierarchy

- Add locations in the Property form

The screenshot shows a web browser window titled 'Property: Chhatrapati Shivaji Terminus - Google Chrome'. The address bar shows '10.115.50.90:8001/WebProcess.srv?objectId=750000&actionId=750011&proper...'. The page title is 'Property: Chhatrapati Shivaji Terminus'. The browser's address bar shows '10.115.50.90:8001/WebProcess.srv?objectId=750000&actionId=750011&proper...'. The page has a 'Print' button and a 'Help' icon. The main content area has a tabbed interface with 'General' selected. Below the tabs, there are buttons for 'Activate', 'Save', 'Save & Close', 'More', and 'x'. The text '(Required): General Information for this Property.' is displayed. The 'General' section is expanded, showing a table with the following data:

ID	Status	Revision	In Progress	Image
1000002				

Below the table, there is a form with the following fields:

- Name:** Chhatrapati Shivaji Terminus
- Description:** (Empty text area)
- Hierarchy Path:** \Locations\Airports\Chhatrapati Shivaji Terminus

**Fig.3.10 General Section**

- Fill the Primary Address along with the geography

The screenshot shows the 'Primary Address' section of the property form. The section title is 'Primary Address' and there is a 'Geocode Address' button. The form contains the following fields:

- Address:** Chhatrapati Shivaji Terminus Area, Fort, Mumbai
- Zip/Postal Code:** 400001
- Geography:** \Geography\Asia Pacific\India
- City:** Mumbai
- State/Province:** Maharashtra
- Country:** India
- GIS Latitude:** 0
- GIS Longitude:** 0
- Country Code:** +91

**Fig.3.11 Primary Address Section**

### 3.2.2 Supervisor Creation

Every car must have a unique supervisor. There should be a one to one mapping.

The role of supervisor –

- Responsible for the car
- Approve the car move request.

The steps to create a Supervisor are as follows –

- Login in the Tririga environment with the admin user id and password.
- Go to portfolio.

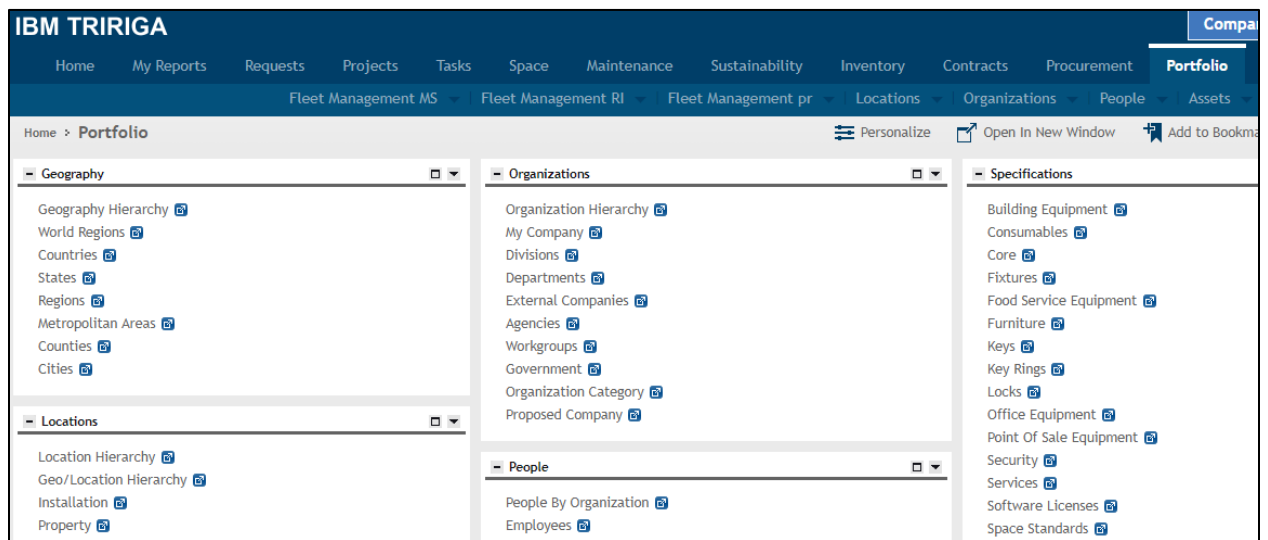


Fig.3.12 Portfolio

- Go to the portal section People



Fig.3.13 People Portal Section

- Go to the navigation item Employees

IBM TRIRIGA

Company Project

Home My Reports Requests Projects Tasks Space Maintenance Sustainability Inventory Contracts Procurement Portfolio Tools

Fleet Management MS Fleet Management RI Fleet Management pr Locations Organizations People Assets Portfolio Set Up

Home > Portfolio > People > Employees

Open In New Window Add to Bookmarks My Bookmarks

Related Reports -Select- Employees

Export 42 total found Apply Filters Clear Filters Show: 50

Name	ID	Organization	Building	Floor	Space	Work Phone	eMail	Status
Akriti Gupta	1000055					8225849997	akriti@ak.com	Active
Amanda Sayfrieds	1000051					5763576898	ammu.01@gmail.com	Active
Anish Kumar	1000049					9225848886	anish@an.com	Active
Annie Sharma	1000058					9125848447	annie@an.com	Active User
Ayushi Awasthi	1000053					8225848886	ayushi@ay.com	Active User
CHIMI JINSHU	14502019					456464643	U212@wwwd.in	Active User
Courtney Cox	1000059					7926538765	monika.7@gmail.com	Active User
DAVID MARTINEZ	1000040							Active User
ELA Sharma	1000042							Active User
FRANKI KOLA	14502011					76555768765	IQ@woo.in	Active
Humil Villa	14502009					1231231231	dav@wwwd.in	Active
JACKSON MUNIR	14502010					3443232334	trdtjr@gm.in	Active

Fig.3.14 Employees Records

- Click on Add button to create a new Employee

Welcome, System System | Sign Out | About | Sitemap

Company Project

Inventory Contracts Procurement Portfolio Tools

Organizations People Assets Portfolio Set Up

Open In New Window Add to Bookmarks My Bookmarks

Add | Delete | Form

Show: 50

Work Phone	eMail	Status
8225849997	akriti@ak.com	Active
5763576898	ammu.01@gmail.com	Active
9225848886	anish@an.com	Active
9125848447	annie@an.com	Active User
8225848886	ayushi@ay.com	Active User
456464643	U212@wwwd.in	Active User
7926538765	monika.7@gmail.com	Active User

Fig.3.15 System Actions on Form

- Fill the details in the Employee form

Employee: Awasthi, Ayushi-1000053 - Google Chrome

Not secure | 10.115.50.90:8001/WebProcess.srv?objectId=750000&actionId=750011&propertyId=208133...

Employee: Awasthi, Ayushi-1000053

General Contact Details Locations & Assets Move Locations Credentials Profile History

(Required): Manage general information about the employee.

**General**

ID	1000053	Status	Review In Progress	Image
* Last Name	Awasthi	* First Name	Ayushi	
Full Name	Ayushi Awasthi			
Prefix	Ms.	Nick Name		

**Detail**

Date of Hire	Date of Exit
Title	
Functional Role	Supervisor
Assignment Type	Assigned
Maintenance Priority	Medium
Last Reported Problem Location	

**Contact Information**

Work Phone	8225848886	Work Fax	
Mobile	8225848886	Home Phone	6663331114
Email	ayushi@ay.com	Pager	

**Primary Address**

Address	Raj Nagar Extension		
Zip/Postal Code	201003	Mail Stop	
Geography Lookup	\Geography\Asia Pacific\India		
City	Ghaziabad		
State/Province	Uttar Pradesh	Country	India

Revise More x

Fig.3.16 Employee Record Details

- Click on the Profile tab to make the Supervisor an Tririga Active User and provide the Supervisor with the Group Details and License Details

Employee: Awasthi, Ayushi-1000053

(Optional): Assign a user name to the employee. Once assigned and the Create User action is submitted, a workflow will automatically create a My Profile and Timesheet for this employee with a default password of 1Password\*. They can change their password once they login to the application. You need to add this person to a User Group and grant them a User License for them to be able to login.

**TRIRIGA Account**

User Name	aawasthi	Active TRIRIGA User?	<input checked="" type="checkbox"/>	Initial Pwd Reset	<input type="checkbox"/>
-----------	----------	----------------------	-------------------------------------	-------------------	--------------------------

**Default Portal**

Home Page	Menu
Project Home Page	Project Menu
Sitemap?	<input checked="" type="checkbox"/>
Disable Company Level?	<input type="checkbox"/>

**Preferences**

* User Language	US English	Currency	US Dollars
Time Zone			
Delegate To			
Enable Bidi Support	<input type="checkbox"/>	Bypass Work Task Approval Process for Mobile	<input type="checkbox"/>
Direction of user-generated text	Default		

Approval Amount: \$5.00 US Dollars

**Group Details**

\* User Group

- Admin Group

**License Details**

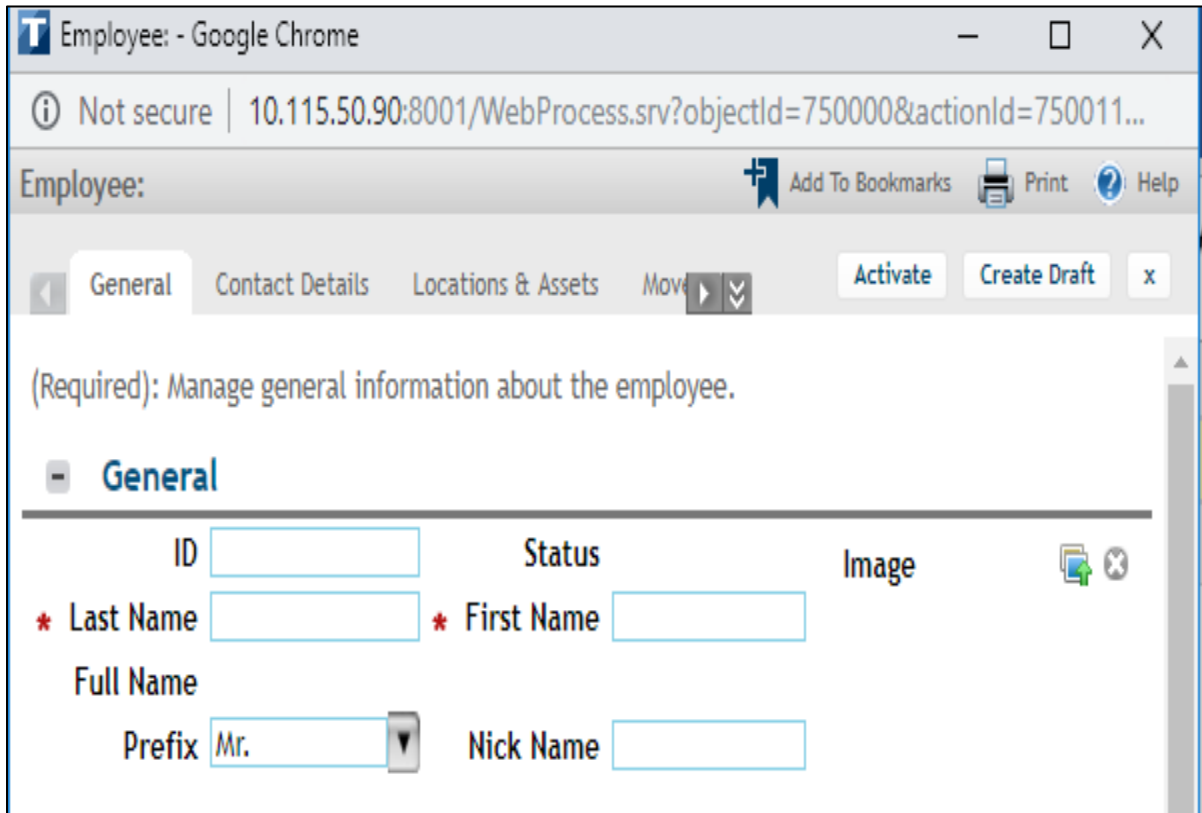
\* User License

- IBM TRIRIGA Anywhere Workplace Operations
- IBM TRIRIGA Application Builder
- IBM TRIRIGA Application Platform
- IBM TRIRIGA CAD Integrator/Publisher
- IBM TRIRIGA Capital Projects Manager
- IBM TRIRIGA Connector for Business Applications
- IBM TRIRIGA Connector for Offline Forms
- IBM TRIRIGA Connector for Watson Analytics
- IBM TRIRIGA Facilities Manager
- IBM TRIRIGA Facility Assessment
- IBM TRIRIGA Integrated Workplace Manager
- IBM TRIRIGA Mobile
- IBM TRIRIGA Portfolio Data Manager
- IBM TRIRIGA Real Estate Environmental Sustainability Impact Manager
- IBM TRIRIGA Real Estate Environmental Sustainability Manager
- IBM TRIRIGA Real Estate Manager
- IBM TRIRIGA Request Central
- IBM TRIRIGA Strategic Facility Planning

**Fig.3.17 Profile Details**



- After creating the profile click on the Activate button.



**Fig.3.18 Activate Action**

- The created Supervisor should have the status as Active User

<input type="checkbox"/>	<a href="#">Ayushi Awasthi</a>	<a href="#">1000053</a>	<a href="#">8225848886</a>	<a href="#">ayushi@ay.com</a>	<a href="#">Active User</a>
--------------------------	--------------------------------	-------------------------	----------------------------	-------------------------------	-----------------------------

**Fig.3.19 Supervisor Status**

### 3.2.3 Supervisor Login Page

Welcome, Ayushi Awasthi | Sign Out | About |

IBM TRIRIGA Company Project

Home People Builder Tools

Home Personalize Open In New Window My

**Action Items** Accept

Action	Record Name	Type	Due	Status	From
Required Review	1040922 - Car-2003 - Chevrolet - Tahoe - 1222-1040922	Approval	04/30/2019 14:07:21	ACCEPTED	Singh, Ritul - 1000013
Required Review	1040858 - Car Move Request-2005-Honda-Odyssey-1040858	Approval	04/26/2019 18:41:00	ACCEPTED	Smith, Victoria - 1000047
Required Review	1040858 - Car Move Request-2005-Honda-Odyssey-1040858	Approval	04/26/2019 18:18:33	COMPLETED	Sachdeva, Mohit - 1000012
Required Review	1040886 - -2004-Chevrolet-Suburban - 015-1040886	Approval	04/26/2019 17:54:21	ACCEPTED	Singh, Ritul - 1000013

**Last Visited**

Type	Name
No data to display.	

**Notifications** Delete

Date	Subject
04/30/2019 14:07:25	The action item of Required Review was assigned to you
04/26/2019 19:13:36	The action item of Required Review was assigned to you
04/26/2019 18:41:06	The action item of Required Review was assigned to you

**Fig.3.20 Supervisor Login Page**

The Supervisor Login Page comprises of -

- Action items - It consist of the approval request which requires review by the supervisor.
- Notifications - Once the Supervisor approves the Car, a notification comes in the notification portal

### 3.2.4 Vice President Creation

The Vice President is the person who provides the approval of the car.

#### General Tab

Here we provide the details of the Vice President

Employee: Sharma, Nikhil-1000045 - Google Chrome

Not secure | 10.115.50.90:8001/WebProcess.srv?objectId=750000&actionId=750011&propertyId=208133&...

Employee: Sharma, Nikhil-1000045

General | Contact Details | Locations & Assets | Move Locations | Credentials | Profile

(Required): Manage general information about the employee.

**General**

ID	1000045	Status	Active User	Image
* Last Name	Sharma	* First Name	Nikhil	
Full Name	Nikhil Sharma			
Prefix	Mr.	Nick Name		

**Detail**

Date of Hire	Date of Exit
Title	
Functional Role	Vice President
Assignment Type	Assigned
Maintenance Priority	Medium
Last Reported Problem Location	

**Reports To** | **Primary Organization**

Reports To	Organization Path
------------	-------------------

**Contact Information**

Work Phone	9125848665	Work Fax	
Mobile	9125848665	Home Phone	6663335554
Email	nikhil@nk.com	Pager	

General | Contact Details | Locations & Assets | Move Locations | Credentials | Profile

(Optional): Assign a user name to the employee. Once assigned and the Create User action is submitted, a workflow will automatically create a My Profile and Timesheet for this employee with a default password of 1Password\*. They can change their password once they login to the application. You need to add this person to a User Group and grant them a User License for them to be able to login.

**TRIRIGA Account**

User Name	nsharma	Active TRIRIGA User?	<input checked="" type="checkbox"/>	Initial Pwd Reset	<input type="checkbox"/>
-----------	---------	----------------------	-------------------------------------	-------------------	--------------------------

**Default Portal**

Home Page	Menu		
Project Home Page	Project Menu		
Sitemap?	<input checked="" type="checkbox"/>		
Disable Company Level?	<input type="checkbox"/>		

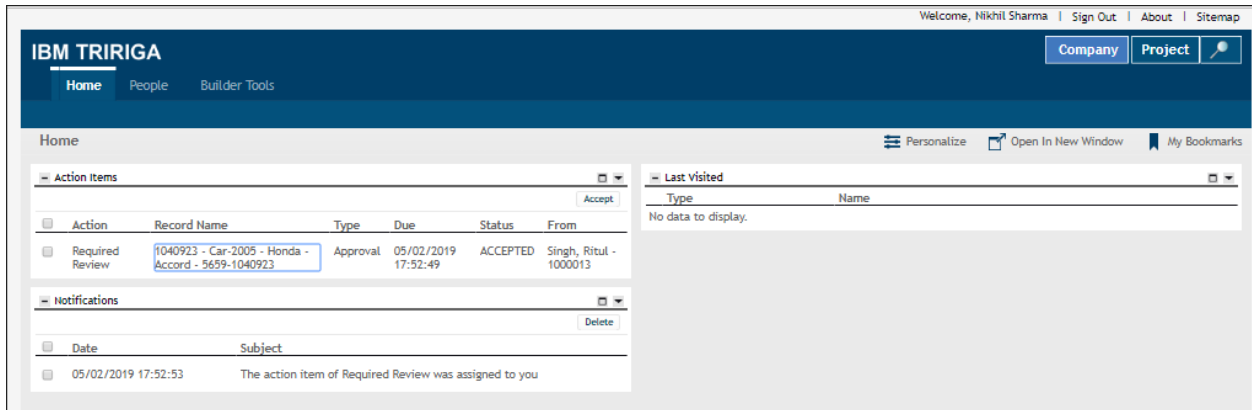
Fig.3.21 Vice President Details

The Vice President should be an active Tririga User.

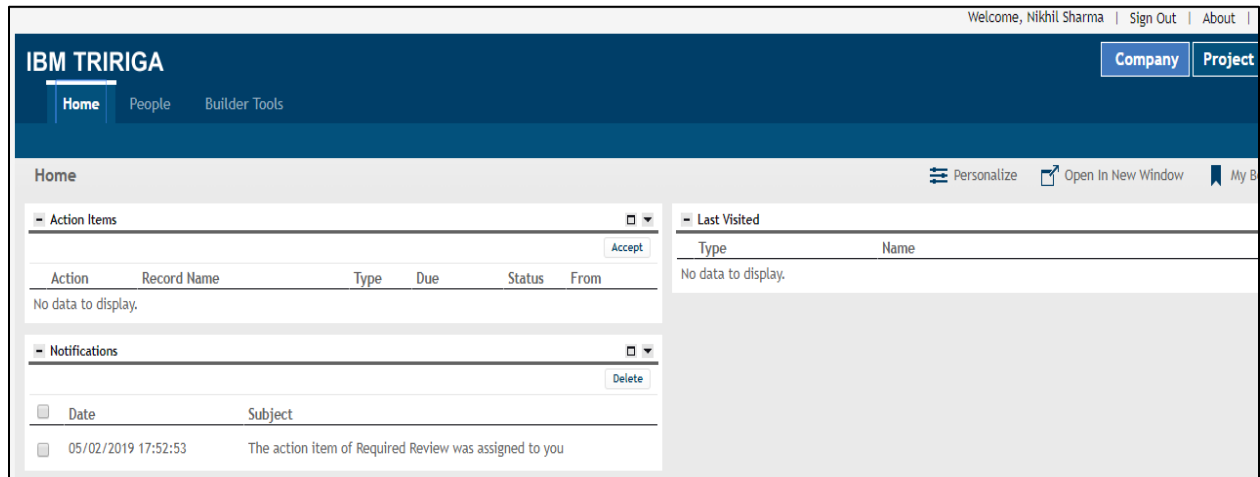
### 3.2.5 Vice President Login Page

The Vice President Login page comprises of -

- Action items - It consist of the approval request which requires review by the Vice President.
- Notifications - Once the Vice President approves the Car Move Request, a notification comes in the notification portal
- Last Visited Portal Section



**Fig.3.22 Vice President Login Page**



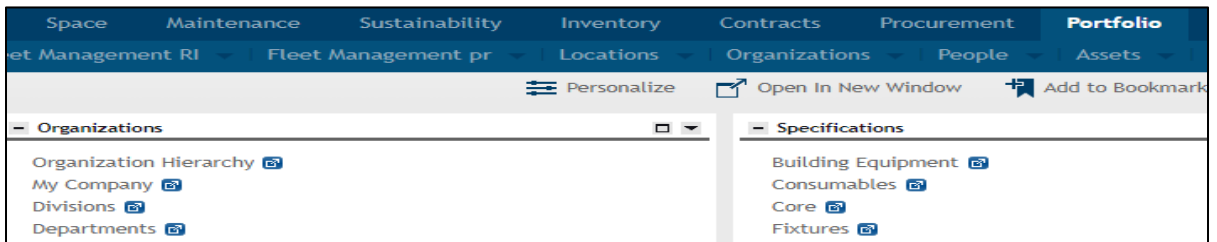
**Fig.3.23 Notifications Portal**

### 3.2.6 Car Creation

We made a Business Object named cstCar and added all its field and field properties. We made a Business Object State Transition by inheriting the state transitions from the state family and modified the state properties by adding sub actions. We created Business Object level associations and record level associations. We built smart sections so as to relate them with the records. We built a form named cstCar with multiple tabs and sections including query sections, smart sections and locator fields. We defined manager queries to attach them in the form. We put some validations on the form with the help of workflows. We made a navigation item named cars to create and demonstrate car records.

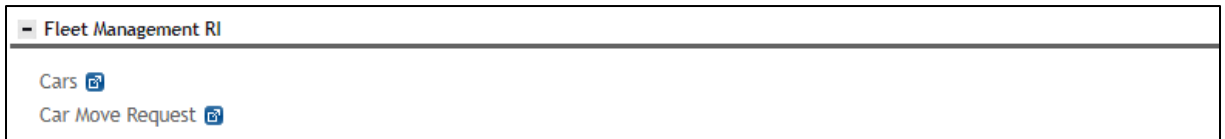
The steps to create a car record are as follows –

- Go to Portfolio



**Fig.3.24 Portfolio Page**

- Go to Fleet Management Portal Sections



**Fig.3.25 Fleet Management Portal Section**

- Go to Navigation Item Cars

The screenshot shows the 'Cars' page with a table of car records. The table has columns for Name, Image, Car Category, Supervisor Name, Current Location, City, KBB Value, % KBB, and VIN #. There are two rows of data: a 2000-Honda-Accord and a 2003-Chevrolet-Tahoe.

Name	Image	Car Category	Supervisor Name	Current Location	City	KBB Value	% KBB	VIN #
2000-Honda-Accord		Sedan	Akriti Gupta	MIDC Infotech Park	Pune	\$1,500.00	5.4	DEF921765
2003-Chevrolet-Tahoe		SUV	Ayushi Awasthi	Hyderabad Deccan Railway Station	Hyderabad	\$55.00	0.2	aaa

**Fig.3.26 Car Records**

The query attached here is a master detail query to view all the records.

IBM TRIRIGA - Google Chrome  
 Not secure | 10.115.50.90:8001/html/en/default/reportTemplate/reportTemplateFrameSet.jsp?reportTempId=161835&isSystem=true

cstCar - Master Detail Query

General Columns Order & Group Filters Advanced Where Used History Revisions Run Report Save Save & Close x

Step 1 of 8 (Required):

**General**

Name: cstCar - Master Detail Query ID: CUSTOM

Header (Title): Cars Tag:

Description:

Type: Query Data Scope: All Projects

Track History:

Created By: Singh, Ritul - 1000013 Modified By: Singh, Ritul - 1000013

Show As Community Report:  Modified Date: 04/26/2019

Revision: 21 Object Label: In Progress

Business Objects Options Related Reports Security

Business Object:

Module	Business Object	Form	Association Type
-cstFleetManagementRI	Car	Car	-

**Fig.3.27 Car Master Detail Query**

- Click on Add button to create a Car Record

Home My Reports Requests Projects Tasks Space Maintenance Sustainability Inventory Contracts Procurement **Portfolio**

Fleet Management MS Fleet Management RI Fleet Management pr Locations Organizations People Assets Portf

Home > Portfolio > Cars Open In New Window Add to Bookmarks

Cars Add

Related Reports: -Select- Cars

Export 15 total found Apply Filters Clear Filters

Name	Image	Car Category	Supervisor Name	Current Location	City	KBB Value	% KBB	VIN #
Contains	Contains	Contains	Contains	Contains	Contains	More Than or Equal	Equals	Contains
<input type="checkbox"/> 2000-Honda-Accord		Sedan	Akriti Gupta	MIDC Infotech Park	Pune	\$1,500.00		5.4 DEF921765
<input type="checkbox"/> 2003-Chevrolet-Tahoe		SUV	Ayushi Awasthi	Hyderabad Deccan Railway Station	Hyderabad	\$55.00		0.2 aaa

**Fig.3.28 System Action on Car form**

- Fill the details in the Car form

Car: 2005 - Honda - Accord - 5659 Add To Bookmarks Print Help

General System Contact Notifications Workflow Instance Reports Associations Revise More x

---


**- General**

* Make	Honda	* Model	Accord
* Year	2005	* ID	5659
Car Category	Sedan	VIN #	88
Name	2005-Honda-Accord	Status	Active

---

**- Details**

Description 56

Image 

Current Mileage 56

KBB Value \$123.00

% KBB 0.4

---

**- Supervisor**

<u>Name</u>	Nikhil Sharma	<u>Title</u>	
<u>Work Phone</u>	9125848665	<u>eMail</u>	nikhil@nk.com
<u>Address</u>	Waknaghat,Solan		

Current Location
Primary Location
Authorized Locations

---

**- Current Location**

Current Location Chhatrapati Shivaji Terminus

City Mumbai State/Province Maharashtra

Current Location
Primary Location
Authorized Locations

---

**- Primary Location**

Name Shrimant Bajirao Peshwe Terminus

City Pune State/Province Maharashtra

Current Location
Primary Location
Authorized Locations

---

**- Authorized Locations**

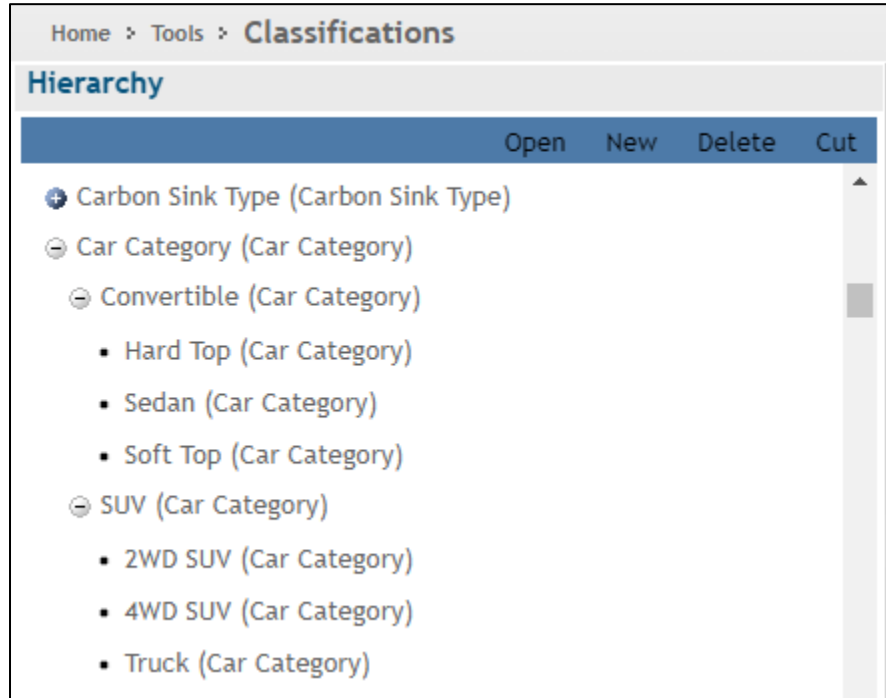
* Name	City	State/Province
Hyderabad Deccan Railway Station	Hyderabad	Telangana
Indira Gandhi International Airport	New Delhi	New Delhi
Kempegowda International Airport Bengaluru	Bengaluru	Karnataka
MIDC Infotech Park	Pune	Maharashtra
Pune International Airport	Pune	Maharashtra

Final Approval Hidden
Return Revision Hidden
Return Draft Hidden
More x

**Fig.3.29 General Tab**

General Section includes-

- Make, Model and Year of launch of the Car.
- Car Category is a hierarchical classification



**Fig.3.30 Car Category Hierarchy**

Car has two categories –

- Convertible - hard top, sedan and soft top
- SUV – 2WD,4WD and Truck

So one of the Car Category should be selected.

- In the Details Section, we have the image, current mileage of the car along with KBB value and Percent KBB value.
- We have a Supervisor smart section in which the details of the supervisor gets auto populated from Employee records.
- We have three Multi-tab sections – Current location, Primary location and Authorized location.

Current location is the present location of the car.

Primary Location is the actual location from where the car belongs to.

Authorized locations are the locations where the car is permitted to go.



These locations comes from the property set up hierarchy where we created different locations for the car.

### Contact Tab

The contact here has the role of Vice President who will approve the car and make the available cars active for use.

Role	Person	Work Phone	Fax	Email	Primary Organization
Vice President	Nikhil Sharma	9125848665		nikhil@nk.com	

**Fig.3.31 Contact Tab**

### Notification Tab

In this tab we have two sections – Approvers and Approval Review.

Approver is the person having the role as Vice President who will submit the review.

Approval Review contains the review status, review comment and resolved review type given by the Vice President.

(Optional): Approval Process

**Approvers**

# Person	Role	Use Roles From	Review Type
0			

**Approval Review**

Approval Status	# Person	Review Status	Sent	Completed	Comment	Resolved Review Type
Approved	1 Nikhil Sharma	Approved	05/02/2019 17:52:49	05/02/2019 17:53:57	request approved	Approval Rule

**Fig.3.32 Notifications Tab**

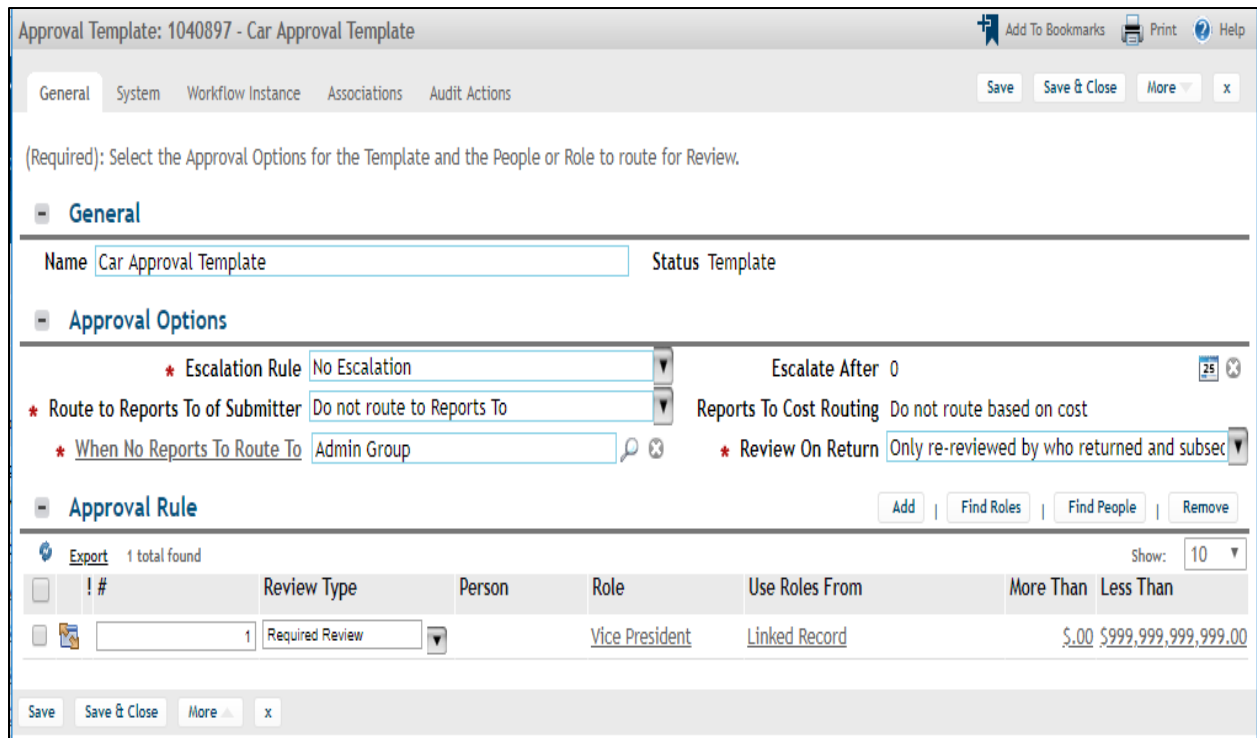
## Approval Template

We require approval to make the cars active for use.

The flow of data through the approval process is as follows:

- We create the approval template.
- We create the approval requirement.
- The user issues, submits, or activates a record to trigger the approval process.
- The system resolves system-wide requirements and manual rules and routes approval action items to reviewers.
- Reviewers select an option: Approve, Return, Request Clarification, Re-assign, or Escalate.

In the Approval Templates we can see the name, time before escalation, and escalation rule for each approval template. From this list, we can create a template, modify a template, or delete a template.



Approval Template: 1040897 - Car Approval Template

General System Workflow Instance Associations Audit Actions Save Save & Close More x

(Required): Select the Approval Options for the Template and the People or Role to route for Review.

**General**

Name  Status Template

**Approval Options**

\* Escalation Rule  Escalate After

\* Route to Reports To of Submitter  Reports To Cost Routing

\* When No Reports To Route To   \* Review On Return

**Approval Rule**

1 total found Show:

	! #	Review Type	Person	Role	Use Roles From	More Than	Less Than
<input type="checkbox"/>	1	<input type="text" value="Required Review"/>		Vice President	Linked Record	\$.00	\$999,999,999,999.00

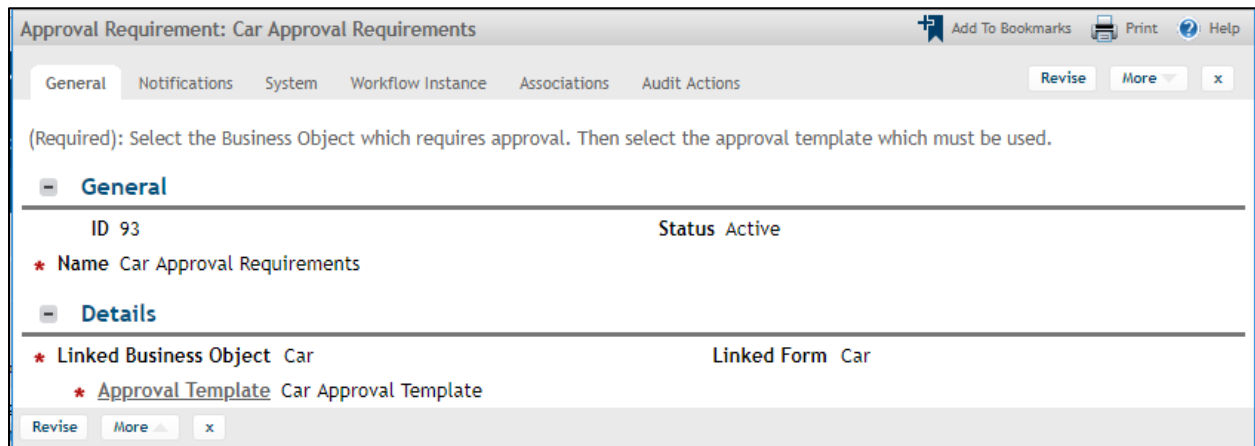
Save Save & Close More x

**Fig.3.33 Car Approval Template**

## Approval Requirement

The Approval Requirement record connects the approval template to a business object. On the Approval Requirements screen, you see the results of a query with the following columns:

- **Linked Business Object:** The label of the business object.
- **Approval Template:** The name of the approval template.
- **Status:** The status of the approval requirement. The status must be Active to use the approval process.



The screenshot shows a web-based interface for an approval requirement record. The title bar reads "Approval Requirement: Car Approval Requirements". The interface includes a navigation menu with tabs for "General", "Notifications", "System", "Workflow Instance", "Associations", and "Audit Actions". On the right side of the menu, there are buttons for "Revise", "More" (with a dropdown arrow), and "x". Below the menu, a instruction reads: "(Required): Select the Business Object which requires approval. Then select the approval template which must be used." The record is displayed in two sections: "General" and "Details". The "General" section shows "ID 93" and "Status Active". The "Name" field is "Car Approval Requirements". The "Details" section shows "Linked Business Object" as "Car" and "Linked Form" as "Car". The "Approval Template" field is "Car Approval Template". At the bottom of the record, there are buttons for "Revise", "More" (with a dropdown arrow), and "x".

General	
ID 93	Status Active
* Name	Car Approval Requirements

Details	
* Linked Business Object	Car
Linked Form	Car
* Approval Template	Car Approval Template

**Fig.3.34 Car Approval Requirement**

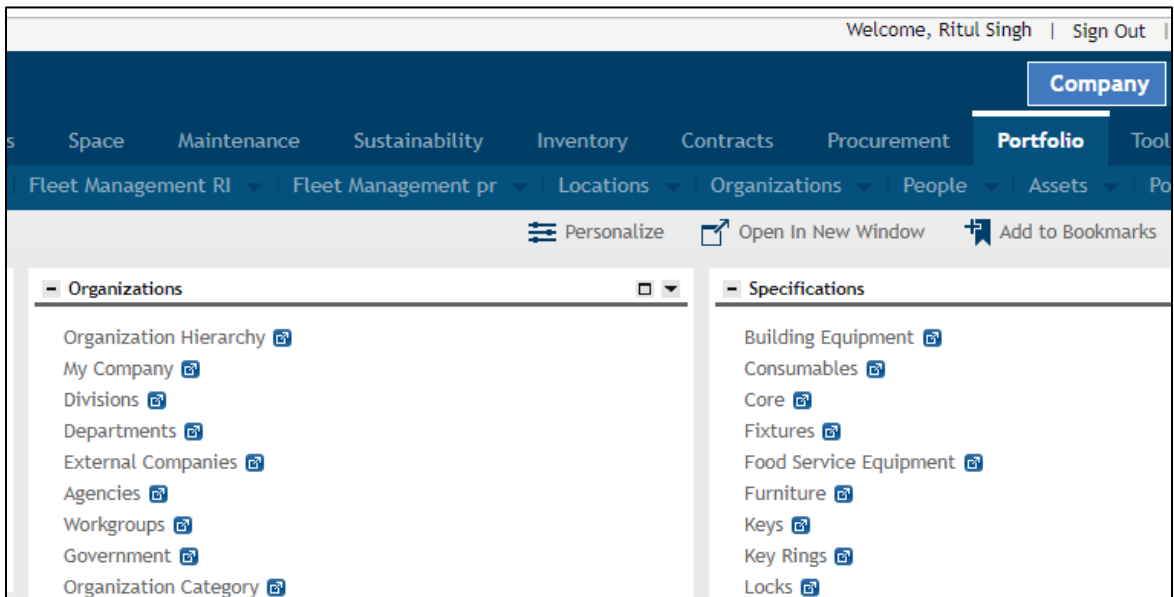
The car is created using the above methodology and functionality. There is a unique supervisor associated to the car. The car has current, primary and authorized locations. There is a Vice President for the approval of car.

### 3.2.7 Car Move Request Creation

We made a Business Object named `cstCarMoveRequest` and added all its field and field properties. We made a Business Object State Transition by inheriting the state transitions from the state family and modified the state properties by adding sub actions. We created Business Object level associations and record level associations. We built smart sections so as to relate them with the records. We built a form named `cstCarMoveRequest` with multiple tabs and sections including query sections, smart sections and locator fields. We defined manager queries to attach them in the form. We put some validations on the form with the help of workflows. We made a navigation item named Car Move Request to create and demonstrate Car Move Request records.

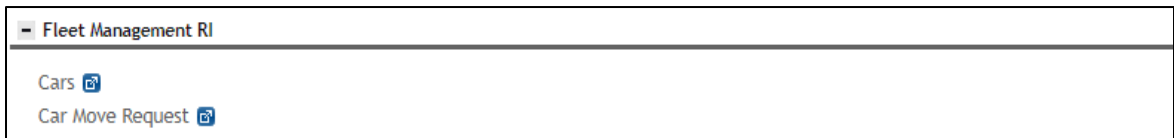
The steps to create a Car Move Request record are as follows –

- Go to Portfolio



**Fig.3.35 Portfolio**

- Go to Fleet Management Portal Sections



**Fig.3.36 Fleet Management Portal**



- Go to navigation item Car Move Request

Home > Portfolio > Car Move Request Open In New

Car Move Request

Related Reports:  Car Move Requests

[Export](#) 24 total found [Apply Filters](#) [Clear Filters](#)

Car Category	Image	Name	Date Requested	Date Completed
<input type="checkbox"/> Contains	<input type="text" value="Contains"/>	<input type="text" value="Contains"/>	<input type="text" value="After"/>	<input type="text" value="After"/>
<input type="checkbox"/> Sedan		<a href="#">2000-Honda-Accord</a>	<a href="#">04/26/2019</a>	<a href="#">04/26/2019</a>
<input type="checkbox"/> SUV		<a href="#">2003-Chevrolet-Tahoe</a>	<a href="#">04/27/2019</a>	<a href="#">04/28/2019</a>

**Fig.3.37 Car Move Request Page**

The query attached here is –

cstCarMoveRequestRI - Master Detail Query

General Columns Order & Group Filters Adv Run Report Save Save & Close x

Step 1 of 8 (Required):

**General**

Name:  ID:

Header (Title):  Tag:

Description:

Type:  Data Scope:

Track History:

Created By: Singh, Ritul - 1000013 Modified By: Singh, Ritul - 1000013

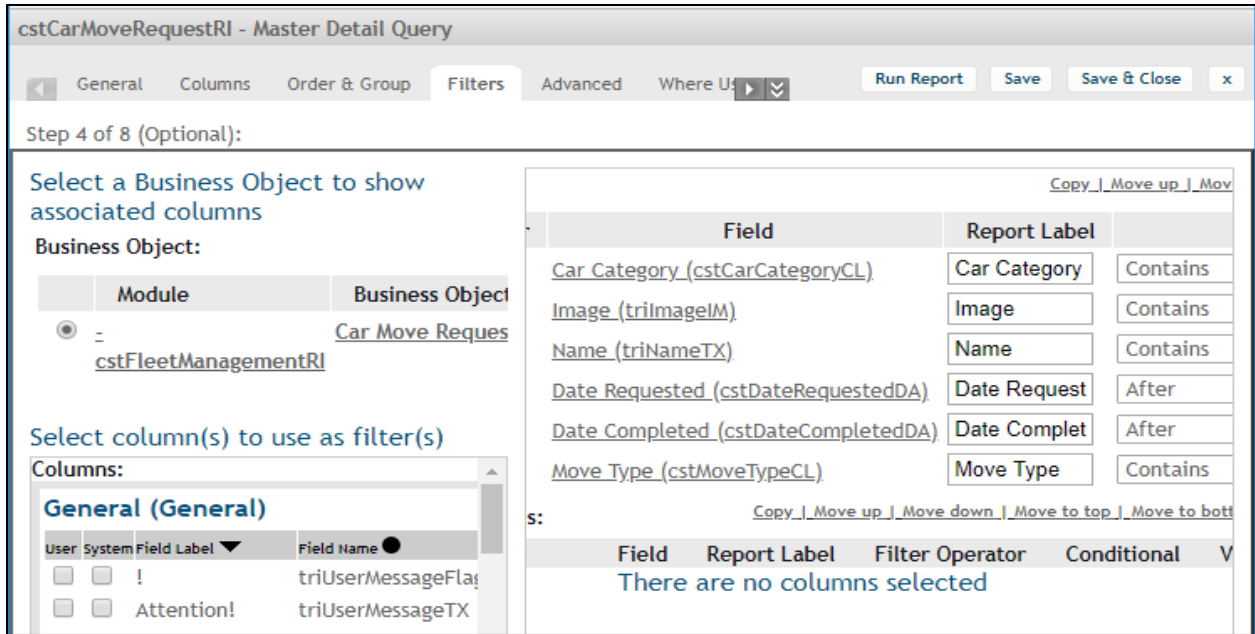
Show As Community Report Modified Date: 04/11/2019

Revision: 7 Object Label: [In Progress](#)

Business Object: [Add Business Object](#) | [Edit](#) | [Remove](#)

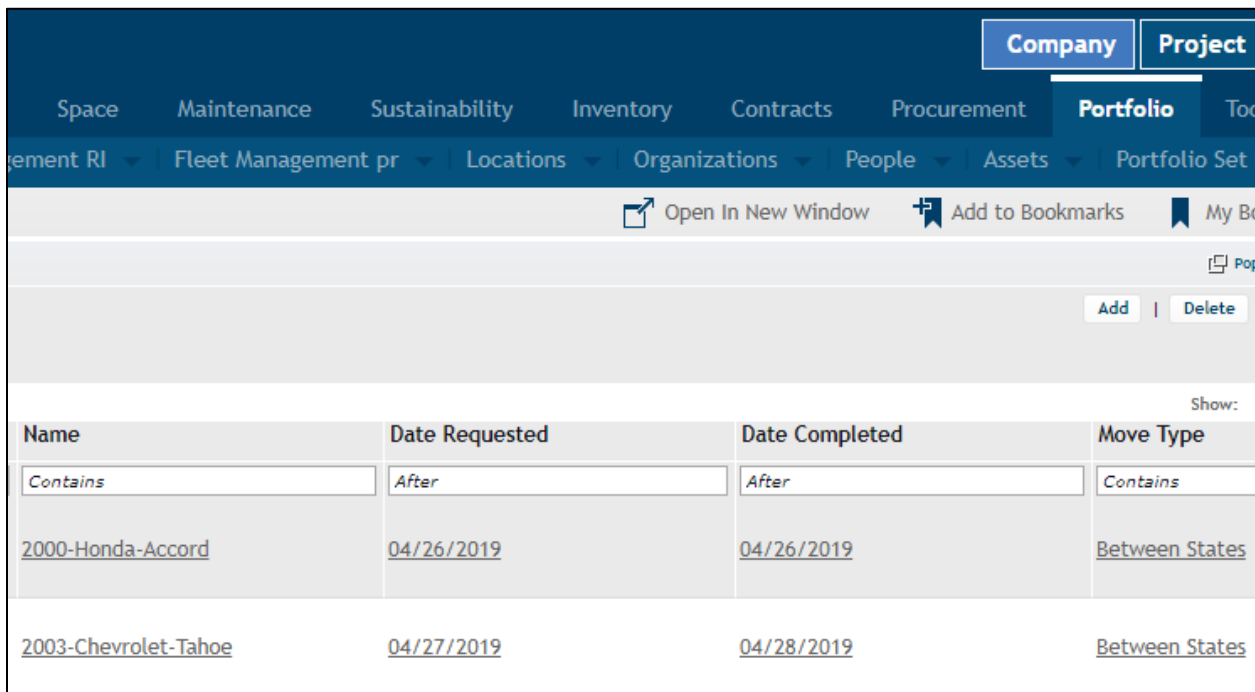
Module	Business Object	Form	Association Type
<input checked="" type="radio"/> -cstFleetManagementRI	Car Move Request	Car Move Request	-

**Fig.3.38 Master Detail Query**



**Fig.3.39 Filters Tab**

- Click on Add button to create a Car Move Request Record



**Fig.3.40 Move Request Records**

- Fill the details in the Car Move Request Form to create a record.

Car Move Request: 2003-Chevrolet-Tahoe - 898

Add To Bookmarks Print Help

General System Notifications Final Approval Hidden Return Revision Hidden Return Draft Hidden More x

**- General**

\* ID 898 Move Duration 21 Hours 47 Minutes 56 Seconds

Date Requested 04/27/2019 Date Completed 04/28/2019

Description Ayushi Awasthi

From Location Hyderabad Deccan Railway Station

From City Hyderabad From State Telangana

To Location Indira Gandhi International Airport

To City New Delhi To State New Delhi

Move Type Between States Status Review In Progress

**- Requested For**

Name NIRMAL ANUBHAV

Address 89889,ROHINI,NEW DELHI State/Province NEW DELHI

City ROHINI Work Phone 4364645646

**- Requested By**


Name Ayushi Awasthi

Title State/Province Uttar Pradesh

City Ghaziabad Work Phone 8225848886

**- Car**

Name 2003-Chevrolet-Tahoe

Image  Car Category SUV

VIN # aaa

Current Mileage 12

Final Approval Hidden Return Revision Hidden Return Draft Hidden More x

**Fig.3.41 General Tab Details**

The general section includes -

- From Location - The location from which the car move request is made.
- To Location - The location up to which the car will go.

There are three smart sections -

- Requested By - This section consist of information of the person who has made a request for the car
- Requested For - This section consist of information of the person for whom the request has been made.

- Car - This section has the details of the car which auto populates after comparing the location in two fields which are From Location in Car Move Request Record and Current Location in Car Record.

For this purpose we have made an advance query.

Step 1 of 8 (Required):

**General**

Name:  ID:

Header (Title):  Tag:

Description:

Type:  Data Scope:

Track History:

Created By: Singh, Ritul - 1000013 Modified By: Singh, Ritul - 1000013

Modified Date: 04/25/2019

Revision: 12 Object Label: [In Progress](#)

Show As Community Report

Business Objects | Options | Related Reports | Security

Business Object:				<a href="#">Add Business Object</a>   <a href="#">Edit</a>   <a href="#">Remove</a>
Module	Business Object	Form	Association Type	
<input checked="" type="radio"/> -cstFleetManagementRI	Car	Car	-	
<input type="radio"/> -Location	Property	-All-	Has Current Location	

Columns: [Copy](#) | [Move up](#) | [Move down](#) | [Move to top](#) | [Move to bottom](#) | [Remove](#)

Join Operator	Field	Report Label	Filter Operator	Value
There are no columns selected				

Filter Columns: [Copy](#) | [Move up](#) | [Move down](#) | [Move to top](#) | [Move to bottom](#)

Join Operator	Field	Report Label	Filter Operator	Conditional	Value
<input type="text"/>	<input type="text" value="Name"/> (triNameTX)	Name	Equals	No	\$\$PARENT::cstGeneral::c

**Fig.3.42 Customized Query**

This advance query takes the name of current location from the Car record and compares it with the location given in the Car Move Request record and provide us with the different cars present at that current location. Out of the list of cars, we select one car.



## Contact Tab

Here we select the supervisor of the car. Every car has a distinct supervisor.

Role	Person	Work Phone	Fax	Email	Primary Organization
Supervisor	Ayushi Awasthi	8225848886		ayushi@ay.com	

Fig.3.43 Contact Tab

## Notification Tab

As soon as we select the concerned supervisor, an Out of Box approval process starts. The approval request goes to the supervisor to validate the Car Move Request.

In this tab we have two sections – Approvers and Approval Review.

Approver is the person having the role as Supervisor who will submit the review.

Approval Review contains the review status, review comment and resolved review type given by the Supervisor.

#	Person	Role	Use Roles From	Review Type
0				

Approval Status	#	Person	Review Status	Sent	Completed	Comment	Resolved Review Type
Review In Progress	1	Ayushi Awasthi	Approved	04/26/2019 19:13:34	04/26/2019 19:17:28	request approved	Approval Rule

Fig.3.44 Notifications Tab

## **FUTURE SCOPE**

We can develop a Mobile Application which a rider can use and we can give the rider an access to supervisor's contact details so that in case of any glitch the supervisor can be directly contacted and the problem can be resolved quickly.

We can develop a rider safety mechanism by having an escalate button in the mobile application. As soon as the rider faces any security issue the rider can escalate the issue immediately to the concerned authorities so that immediate help can be provided. Also, we can develop a functionality of sharing the ride details with the family members and nearest located family member so that in case of any urgency the rider can be provided with immediate help.

We can develop a route modification mechanism to deal with heavy traffic so that the delays in completing a ride can be minimized.

We can have a price modification mechanism as per the current requirements. As the requirement shoots up we can increase the price and as the requirement drops down the price can be decreased.

## REFERENCES

1. Jiawei Han, Hong Cheng, Dong Xin, Xifeng Yan, "Frequent Pattern Mining: Current Status and Future Directions [J]", *Data Mining and Knowledge Discovery*, no. 15, pp. 55-86, 2007.
2. J HAN, J PEI, Y YIN, "Mining Frequent Patterns without Candidate Generation[C]", *Proc of the 2000 ACM SIGMOD Internal Conference on Management of Data*, pp. 1-12, 2000.
3. Wu Xindong, Zhang Chengqi, Zhang Shichao, "Mining both Positive and Negative Association Rules[C]", *Proceedings of the 19th International Conference on Machine Learning (ICML) San Francisco: Morgan Kaufmann Publishers*, pp. 658-665, 2002.