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To-Do Map- Location Focused Task Management Framework



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Abstract

Everyone has, at a moment in time, used a piece of paper to write down a to-do list with the various tasks that one needed to complete in the next hour(s)/day(s). Such to-do lists are extremely useful in organizing, reminding and executing tasks in an efficient way by effective time management. A digital to-do map/list will be the focus of this project. The emphasis will be on the location of each task in the list. The purpose of this project is to implement an information visualization application that will mark where various tasks have to be completed. This project will be a step forward in task management applications. This aspectual implementation will formalize our motive and spike the remembrance of particular events. This in itself constitutes a hint to our task, and for some simple/intuitive tasks, means that users do not need to add any textual information. The approach is different in the way that contrary to common to-do lists or even calendars, it focuses on the spatial representation and optimization of the tasks, and not the temporal one (or at least not mainly). Through position-based tasks visualization, we hope to implicitly give information about the task more so than by simply stating the hour when it should take place. Graphical representations have been established to be intuitive, and to provide additional information in a very easily and quickly assimilated form.

Keywords: scheduling, task management, spatial representation, visual orientation, position-based representation.

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Table of Contents

1 INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 MOTIVATION AND AIM OF THE WORK.....	2
1.3 GOALS.....	3
1.4 SCOPE AND LIMITATIONS	4
1.5 THESIS STRUCTURE	5
2 BACKGROUND.....	6
2.1 A SNAPSHOT STUDY OF TO-DO'S	6
2.2 TASK MANAGEMENT STRATEGIES	7
2.3 CALENDAR AND SCHEDULING.....	7
2.4 EVOLVING TO-DO DESIGN	8
2.5 TO-DO SET OR GROUPING	9
2.6 CAPTURING, SHARING, AND USING LOCAL PLACE INFORMATION	10
3 TO-DO MAP - TOOL.....	13
3.1 AIM OF THE SYSTEM.....	13
3.2 TO-DO MAP ARCHITECTURE.....	13
3.2.1 N-LAYER BASED	13
3.2.2 TO-DO MAP DATABASE SCHEMA	14
3.2.3 SERVICE-BASED COMMUNICATION	17
3.2.3.1 WINDOWS COMMUNICATION FOUNDATION.....	18
3.2.4 TO-DO MAP LOOK AND FEEL.....	19
3.3 TO-DO MAP FEATURES.....	19
3.3.1 WEB-BASED APPLICATION.....	20
3.3.2 ROLE -BASED SECURITY.....	20
3.3.3 TO-DO MAP – OUTDOOR REPRESENTATIONS	21
3.3.4 TO-DO MAP – INDOOR REPRESENTATIONS	23
3.3.5 PUSHPIN REPRESENTATION.....	25
3.3.6 PUSHPIN INTERACTIVITY.....	25
3.3.7 CONTEXT MENU.....	25
3.3.8 ZOOM IN/OUT.....	26
3.4 USE CASE SCENARIO	27
4 CONCLUSION AND FUTURE WORK	29
4.1 CONCLUSION	29
4.2 FUTURE WORK	29
REFERENCES.....	31

Table of Figures

FIGURE 1.1. DROP OFF PACKAGE AT THE POST OFFICE AT 17:00 (CONCEPT IMAGE COURTESY OF DANIEL CERNEA)	3
FIGURE 1.2. WATCH A SOCCER GAME TONIGHT WITH JOHN AND ROBERT (CONCEPT IMAGE COURTESY OF DANIEL CERNEA)	4
FIGURE 2.1. TO-DO LIST WRITTEN ON A PAPER (IMAGE TAKEN FROM [3])	6
FIGURE 2.2. TASK MANAGEMENT REVIEW (IMAGE TAKEN FROM [11])	7
FIGURE 2.3. EMBEDDING THE EVENT INFORMATION IN AN EMAIL PRINT-OUT WITHIN A CALENDAR REPRESENTATION (IMAGE TAKEN FROM [11])	8
FIGURE 2.4. TOWEL TO-DO LIST (IMAGE TAKEN FROM [12])	9
FIGURE 2.5. A SMALL (ARTIFICIAL) SOCIAL NETWORK WITH PRIMARY “FRIEND RELATIONS” REPRESENTED AS SIMPLE LINKS AND OVERLAID WITH INTERSECTING SET REGIONS (REPRESENTING, FOR EXAMPLE, AFFILIATIONS) RENDERED USING THE COMEDTECHNIQUE (IMAGE TAKEN FROM [13])	10
FIGURE 2.6. DATAMAPS, A CONFIGURATION OR ARRANGEMENT OF COORDINATE VIEW (IMAGE TAKEN FROM [14])	11
FIGURE 2.7. THE SHARESCAPE INTERFACE. GOOGLE MAPS IMAGE © GOOGLE INC. AND IS USED WITH PERMISSION (IMAGE TAKEN FROM [10])	11
FIGURE 3.1. BLOCK DIAGRAM OF N-LAYER/TIER ARCHITECTURE.....	14
FIGURE 3.2. TO-DO DATABASE SCHEMA.....	15
FIGURE 3.3. DATA SNAPSHOT OF TBLUSERS	15
FIGURE 3.4. DATA SNAPSHOT OF TBLMAPS	16
FIGURE 3.5. DATA SNAPSHOT OF TBLINDOORS.....	16
FIGURE 3.6. DATA SNAPSHOT OF TBLTASKS.....	16
FIGURE 3.7. DATA SNAPSHOT OF TBLTASKSHARE	17
FIGURE 3.8. WEB SERVICE COMMUNICATION ARCHITECTURE	17
FIGURE 3.9. TO-DO MAP: COMMUNICATION SERVICE LAYOUT.....	19
FIGURE 3.10. ROLE-BASED SECURITY	20
FIGURE 3.11. ADMIN-ROLE BASED SECURITY LAYOUT.....	21
FIGURE 3.12. USER-ROLE BASE SECURITY LAYOUT	21
FIGURE 3.13. TO-DO MAP: CRUD OPERATION.....	22
FIGURE 3.14. TO-DO MAP: ADD MAP OPERATION	22
FIGURE 3.15. TO-DO MAP: UPLOAD MAP.....	23
FIGURE 3.16. TO-DO MAP: INDOOR MAP LIST	23
FIGURE 3.17. TO-DO MAP: INDOOR CRUD OPERATION.....	24
FIGURE 3.18 TO-DO MAP: INDOOR MAP	24
FIGURE 3.19. TO-DO MAP: PUSHPIN VISUALIZATION.....	25
FIGURE 3.20. TO-DO MAP: CONTEXT MENU.....	26
FIGURE 3.21. TO-DO MAP: ZOOM IN	26
FIGURE 3.22. TO-DO MAP: ZOOM OUT	27
FIGURE 3.23. TO-DO MAP: USE CASE SCENARIO, UNIVERSITY MAP AND INDOOR LOCATION	28
FIGURE 3.24. TO-DO MAP: USE CASE SCENARIO, EVENT SHORT BUBBLE MESSAGE.....	28

Terms and Abbreviations

SBM: Short Bubble Message

CLI: Common Language Integration

1 Introduction

The Introduction contains the overview of the application, which deals with the description of our aim of research, objective of our research, boundaries of our scope and the result of our project.

1.1 Background

Almost every person has at a moment in time used a piece of paper to write down a to-do list with the range of responsibilities that one needed to accomplish in the next few couple of time, hour(s)/day(s) [2]. Such solutions have also been implemented on different computing devices like Personal Computers, portable devices, tablet computers etc. Though these lists are digitally supported, they are still mostly text-based [4]. Further interrelated work has focused on designs and prototypes of tools for supporting the human memory. Users were aware of the impression of themselves that they were projecting through their diaries, and would sometimes label an event with a higher priority than it actually merited in case, the people they were scheduled to meet looked at their diaries [3]. Furthermore, the main classification of the tasks is based on time and date (calendar), type of activity, etc, while in general neglecting spatial positioning (e.g. a person that needs to remember to take a letter from his desk and bring it to the postal office the next day would generally imagine this entire process) [2]. Users need attention, to be able to relate data sets to the realms, in which decisions are being made. Recent research has provided evidences of challenges experienced by individuals managing their time and work-tasks [3]. Studies have shown that many office workers have tried to use various approaches and tools to plan, organize and maintain focuses on their daily workloads to cope with the challenges of intense schedules. This list of things to be done typically spans multiple media types, such as electronic to-do lists, sticky notes, calendar entries, and the like [5]. Such powerful to-do list implementations have been available for years now. It is a commonly understood fact that much of the human sense-making and memory is visually oriented (shapes, colors, etc.). The center of attention of this study is on the use of diaries by individuals, as personal technologies to carry their work [7]. Several studies of diaries and task management systems have considered how individuals use diaries with a view to proposing requirements for computerized time management tools. Others have focused on requirement for successful scheduling systems [5]. Information workers are frequently governed by various tasks and activities that they must keep in mind, often in parallel or in rapid succession. To-do lists give us a unified environment for organizing personal tasks, delegating tasks to the software personal assistant, and collaborate with other users. We may think to provide you a compatible base for the design of a personal to-do list management [1]. Sometimes, qualitative data was held up in to-do due to accidental excess. The to-do list can be arranged up or sorted based on different attributes that can lead up for different task management. Theme of structured to-do list which grant us all task in which a user is involved. To-do lists provide us with an overview of the hierarchically ordered tasks as well as focuses on the important attributes [14]. The attributes can be arranged in different formats, i.e., text or tabular. Task modeling approaches ease the design of intellectual model systems by bridging the gap from accepting human objective to information objective [12]. Every task is specified by its time interval. A task can also be cyclic. Such to-do lists are exceptionally valuable in organizing [2] remembering, and executing tasks, as well as in time

management [3]. Numerous studies of diaries and task management systems have measured how individuals use diaries with a vision to proposing necessities for automated time management tools [5]. Others have paid attention on obligation for thriving scheduling systems. Information workers are commonly governed by various tasks and tricks that they must keep in mind, often in corresponding or in rapid succession.

A digital "To-Do Map" will be the focus of this project. The prominence will be on the position of each task in the list. The purpose of this project is to realize an information visualization application that will mark where a variety of tasks have to be accomplished. This project will be a step frontward in applications for task management. This aspectual realization will formalize our intention and spike the remembrance of particular events. This, in itself constitutes a hint to our task, and for some straightforward/perceptive tasks, means that you do not necessitate to add any textual information.

With the initiation of new technology, people can share their places where they are ready to set off and where they will be set out in next period. We are strongly engaged within the location-based prompt, which are helpful to maintain the initial motive of the task with respect to the location [10]. Graphical representations have been conventional to be discerning, and to make available many essentials in a very softly and swiftly assimilated form than a conventional approach. In other words, in most cases marking the bank on the map instantly takes you back to the idea that you have to exchange some money, while having only have an hour marked does rarely highlight to the individual the purpose of the task.

1.2 Motivation and Aim of the Work

There are numerous applications available for the visualization of time dependent events. A digital "To-Do Map" will be the spotlight of this project. The focus will be on the location of each task in the list. The purpose of this project is to employ a graphical application that will mark where a variety of tasks have to be done. This venture will be a step ahead in applications for task management. This aspectual achievement will formalize our cause and spike the remembrance of particular event. This in itself constitutes a hint to our task, and for some simple tasks means that you do not need to add any textual information. The approach is different in the way that contrary to common to-do lists or even calendars it focuses on spatial representation and optimization of the tasks, and not temporal (or at least not mainly temporal). Features that suggest the temporal attributes of a task can be encoded at a secondary level. Through position-based tasks representation we hope to implicitly give information about the task - more so than by simply stating the hour when it should take place. Graphical representations have been established to be intuitive, and to provide many facts in an easily and quickly assimilated form. Why is this useful? Imagine you are on the run and need to add a task to your list. You do not have time, so you just want to make a quick selection and not really enter text. With a regular to-do list you can maybe select the date and time directly, but you usually still need to at least shortly mention what it is you have to do, e.g., "buy aspirin". On the To-Do Map, you can do the same, but here you would add a marker to the position of the pharmacy on the map. This in itself constitutes a hint to your task, and for some intuitive tasks, means that you do not need to add any textual information.

In the chapter 3, we describe a tool for task management that has also commonality to share the independent task with the other member of the group. To-Do Map can also be

grouped according to the role of the user. The representation of the map is divided into “Map” and “Indoor”. Map describes the outlier of the location where activity will have to be performed. Indoor describe the indoor activity against the specific outlier, those are graphically presented in Figure 1.1 and Figure 1.2 respectively. To-Do Map facilitates us a new way of organizing and managing task with utilization of minimum effort.

1.3 Goals

A graphical application has been developed by using Microsoft Silverlight [15], which will support the entire representation of the tasks and make it available for access through the Internet. The implementation involves intuitive interaction and graphical representations as presented in the images below. The images are a conceptual approach towards the objective; the final design is presented in the later sections.

Figure 1.1. Describes the outlier of the location where activity will have to be performed. Captions on that activity describe more about the action on this outlier. Figure 1.2. Describes the indoor activity against the specific outlier. An outlier may contain many indoor activities. The user can add many indoor activities for each indoor representation and exterior map.



Figure 1.1. Drop off package at the post office at 17:00 (concept image courtesy of Daniel Cernea)

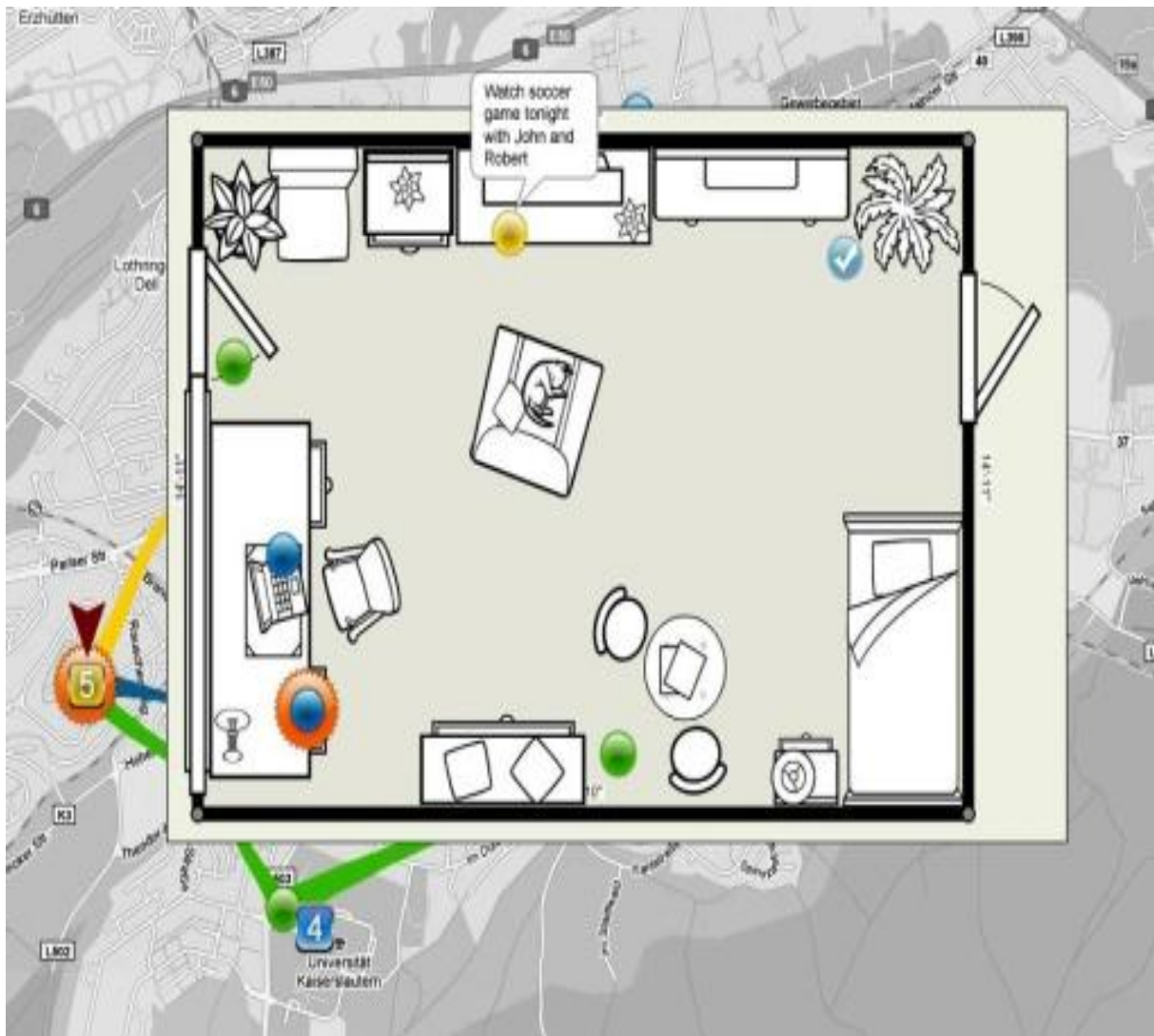


Figure 1.2. Watch a soccer game tonight with John and Robert (concept image courtesy of Daniel Cernea)

1.4 Scope and Limitations

Microsoft Silverlight offers us a capability for creating and executing interactive internet dependent web application, with features and purposes alike to those of Adobe Flash. The run-time environment for the Microsoft Silverlight is accessible as a plug-in for the majority web browsers running under Microsoft Windows. In the beginning, Microsoft Silverlight put efforts on streaming media; existing versions keep up multimedia, graphics and animation, and give up hold to developers to make CLI (Common Language Integration) languages and development tools. Both maps and indoor spaces can be added to the application by the user, by committing/uploading image files. There are multiple tools that help the users to generate a sketch of an indoor environment; therefore, the generation of the maps and sketches is not part of this project and can be considered as provided by the user.

1.5 Thesis Structure

The thesis at hand consists of four major sections namely Introduction, Background, To-Do Maps tool and Conclusion and Future Work. The Introduction contains the overview of the application, which describes the aim of our research, goals, scope and limitations and the outcome of our project. Background is based on the overall groundwork done before and it contains the early stage of to-do task managers, their existence and relation with our daily routine. To-Do Maps is our proposed tool which provides flexibility and easiness to understand the location based task. It provides us with two levels of task management hierarchies to express the task efficiently and accurately. Conclusion and Future Work describe the summarization of our solution, enhancement and future consideration.

2 Background

Background is based on the overall groundwork done before and it focused on the early stage of to-do task managers, their existence and relation with our daily routine.

Several studies of diaries and task management systems have considered how individuals use diaries with a view to proposing requirements for computerized time management tools [5]. Everybody has at a instant in time used a piece of paper to write down a to-do list with the a variety of tasks that one needed to complete the next few moments, hour(s)/day(s). The to-do list can be arranged up or sorted based on different attribute that can lead up for different task management. Theme of structured to-do list which grant us all task in which a user is involved [1].

A to-do list is a written reminder of the task(s) that you will have to perform with in specific time period. It may be arranged with respect to prioritizations and deadlines.

2.1 A Snapshot study of TO-DO'S

To-do lists provide us with an overview of the hierarchically ordered tasks, as well as focuses on the important attributes [4]. The sequence of attributes can be arranged in a different ways. It can be either table order or text order.

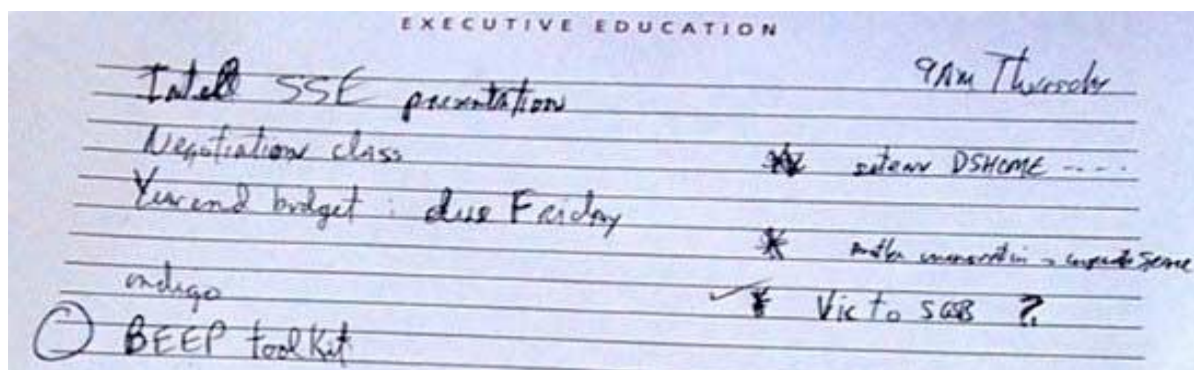


Figure 2.1. To-do list written on a paper (image taken from [3]).

Task modeling approaches ease the design of intellectual model systems by bridging the gap from accepting human objective to information objective [5]. Every task is specified by its time interval. A task can also be cyclic [1]. Such to-do lists are extremely useful in organizing and remembering tasks [2], as well as in time management [3]. Others have focused on requirement for successful scheduling systems. Information workers are frequently governed on regular basis, usually in parallel or in rapid succession, by the multiple tasks and activities that they are supposed to remember while executing these tasks. In general this task list can be done by using spans multiple media types that may include sticky notes, electronic to do lists, calendar entries etc. [4]. Such powerful to-do list implementation has been available for years now. These solutions have been running on different computing devices like Personal Computers, portable devices, tablet computers etc. Though these lists are digitally supported, they are still mostly text-based [1]. Further interrelated work has focused on designs and prototypes of tools for support with remember [4].

2.2 Task Management Strategies

Users were responsive of the notion of them that they were extrapolative through their diaries, and would from time to time tag an occasion with a higher priority than it in fact merited in case the people they were scheduled to meet looked at their diaries. It is commonly understood fact that much of the human sense-making and memory is visually oriented (shapes, colors, etc.). The axis of concentration of this study is on the use of diaries by individuals, as private technologies to carry their effort [5]. To-dos provide us a best practice way of supervision in order that helps us in our everyday lives [11].

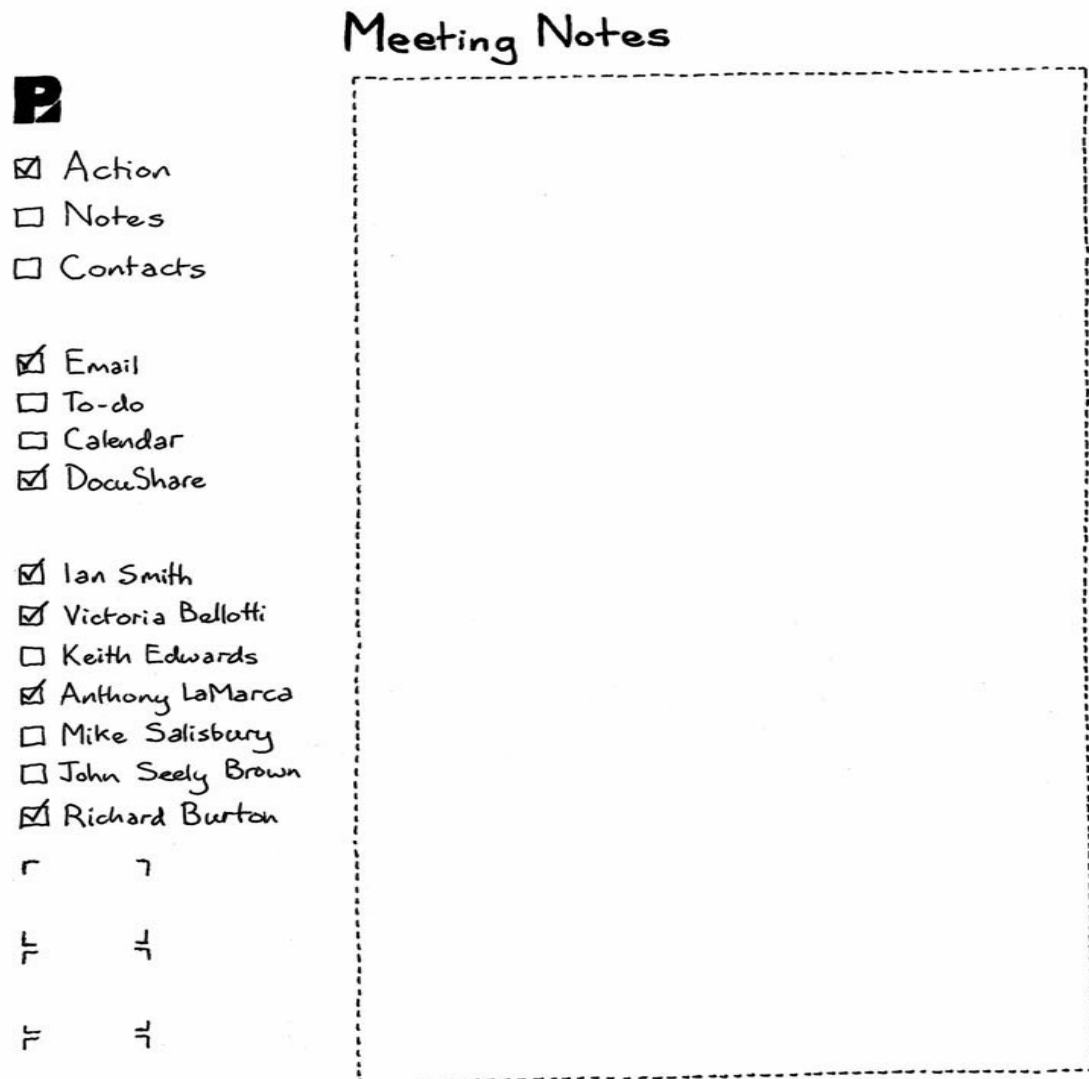


Figure 2.2. Task Management Review (image taken from [11]).

2.3 Calendar and Scheduling

The main arrangement of the tasks is based on time and date (calendar), type of goings-on, etc [3], while in broad-spectrum neglecting spatial positioning (e.g., a person that desires to keep in mind to acquire a letter from his desk and drop it off at the postal office the next day would usually make up this complete procedure). Modern research has provided evidences of challenges practiced by individuals managing their tasks and time in their work

[7]. Studies have shown that numerous office workers have tried to use diverse approaches and tools to sketch, sort out and sustain focuses on their daily workloads to survive with challenges of extreme schedules [7].



Figure 2.3. Embedding the event information in an email print-out within a calendar representation (image taken from [11]).

2.4 Evolving To-Do Design

Design has gradually become a supportive venture that requires efficient coordination in the face of highly complex inter-dependencies exposed by distribution of task over participants, time and perspectives. Distinct dexterity support technologies have emerged for each of these kinds of allocation of task, but all face vital boundaries [6]. A to-do list application like TaskVista [11] was tempting, as the to-do lists could be found in the peripheral part of the user's display and grant status information on our subordination. We easily envisioned dispatching tasks to our assistant by simply submitting an item to a to-do list. But to-do lists in general do not have any support for communication.

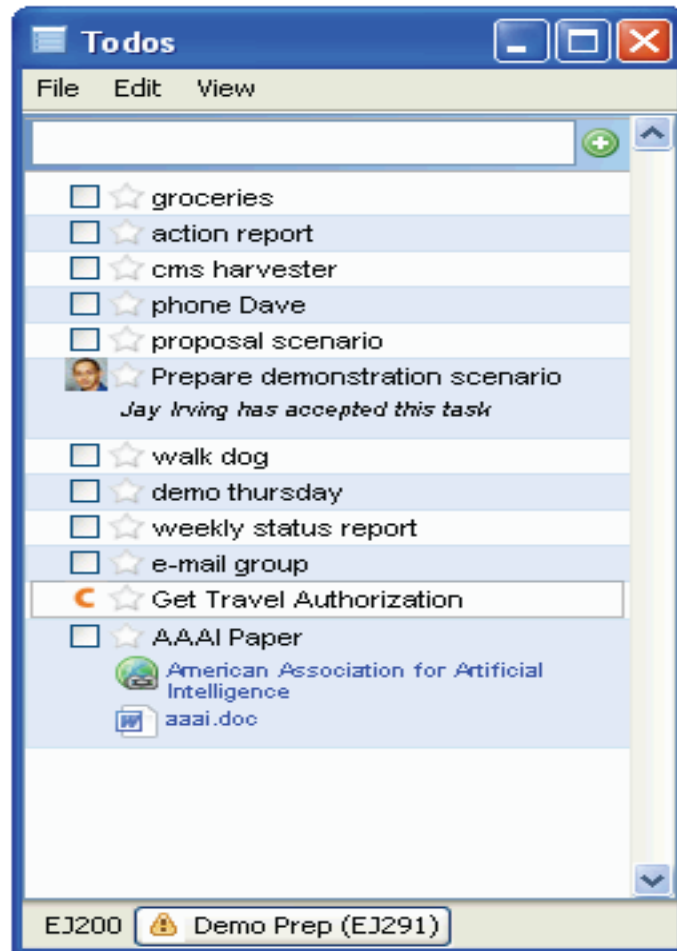


Figure 2.4. Towel To-Do List (image taken from [12]).

We have easily architected to-do's and tasks to facilitate to the end-user to easily delegate their work to a software for their personal assistance [12].

2.5 To-Do Set or Grouping

In many ordinary data management scenarios the data elements are logically grouped into sets. For example, “when analyzing documents, linguists often group words into semantic categories and topics. Similarly, when analyzing social networks, sociologists group people into communities and study their relationships” [13].

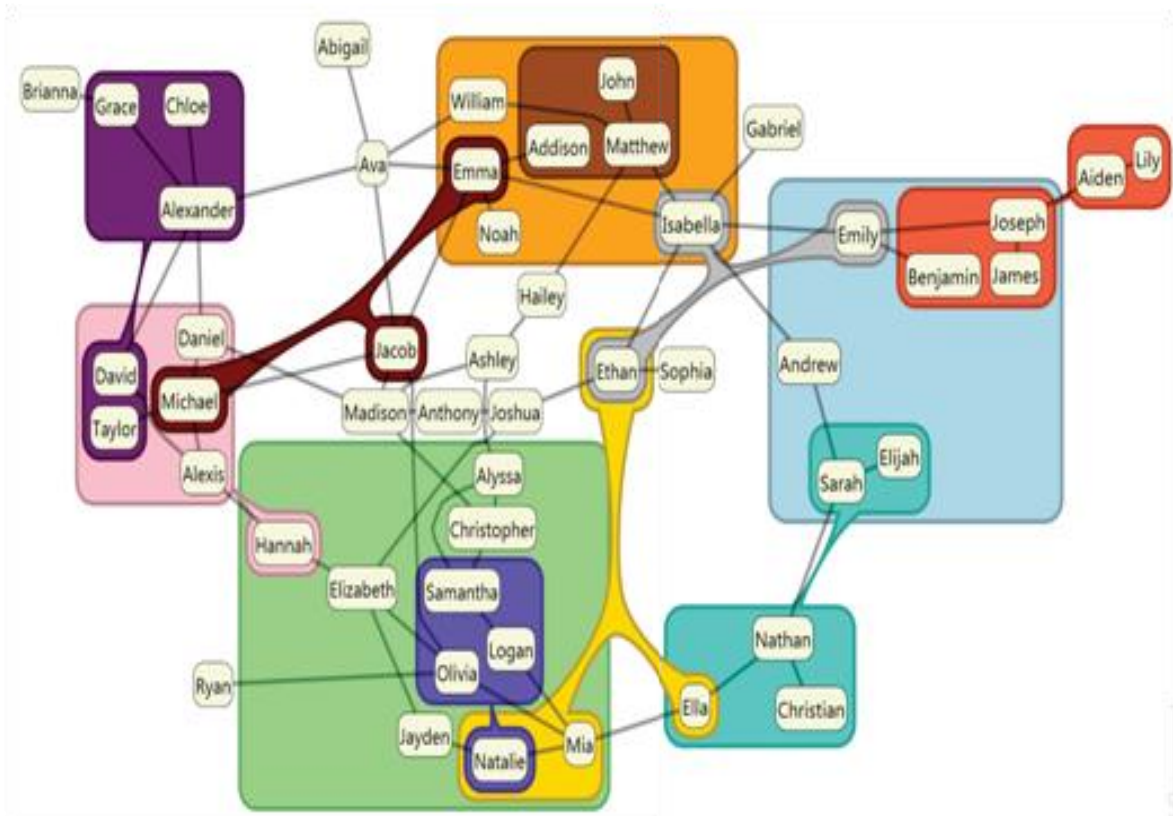


Figure 2.5. A small (artificial) social network with primary “friend relations” represented as simple links and overlaid with intersecting set regions (representing, for example, affiliations) rendered using the ComED technique (image taken from [13]).

Users need attention to be able to relate data sets to the realms in which decisions are being made [6]. Recent research has provided evidences of challenges experienced by individuals managing their tasks and time in their work [7]. Studies have shown that many office workers have tried to use various approaches and tools to plan, organize and maintain focuses on their daily workloads to cope with challenges of intense schedules [7]. To-do lists give us a unified environment for organizing personal tasks, delegating tasks to the software personal assistant, and collaborate with other users [9].

2.6 Capturing, Sharing, and Using Local Place Information

To-do lists give us a unified environment for organizing personal tasks, delegating tasks to the software personal assistant, and collaborate with other users [9]. We may think to provide you a compatible base for the design of a personal to-do list management [3]. Sometimes, qualitative data is held up in to-do lists due to accidental excess [3]. Task modeling approaches make possible the design of interactive systems by bridging the gap from understanding human tasks to designing interfaces to support these tasks. At times, tasks will be tiny in duration, such as finding hotels for a user, where the subordinate solicits parameters instantly and swiftly returns outcome to the user [12]. Numerous digital communication metaphors, including e-mail, which tackle long-standing communication well but make rapid communication cumbersome. The learnability of interactive, coordinated-view visualizations is an important issue in several scenarios [14].

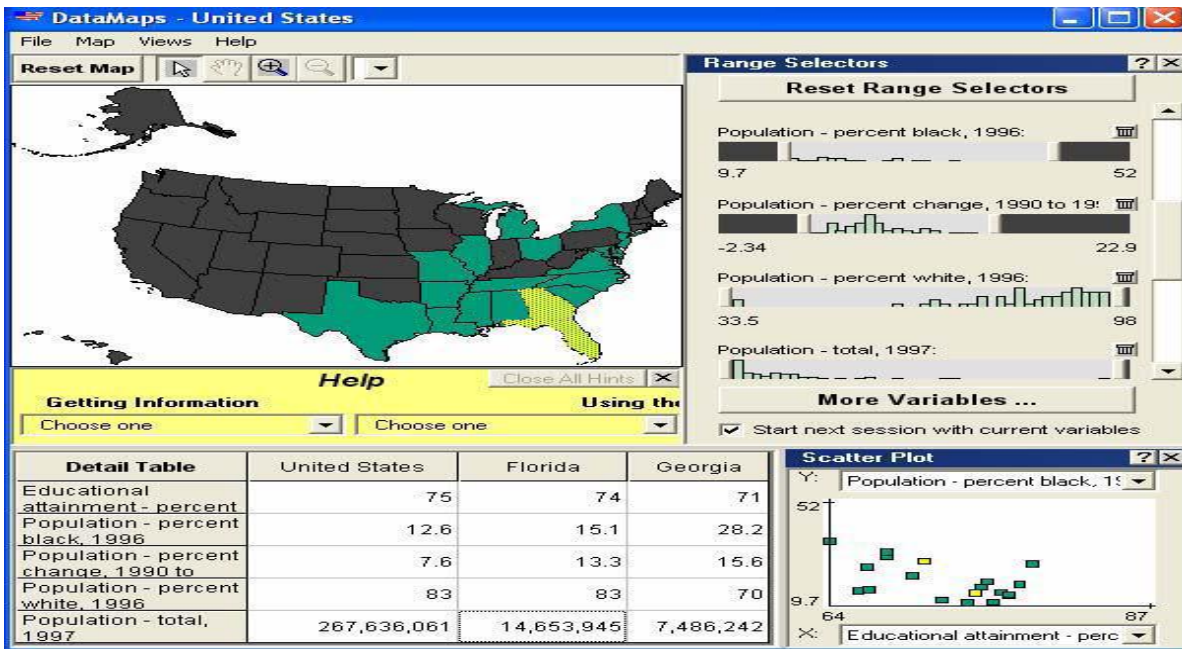
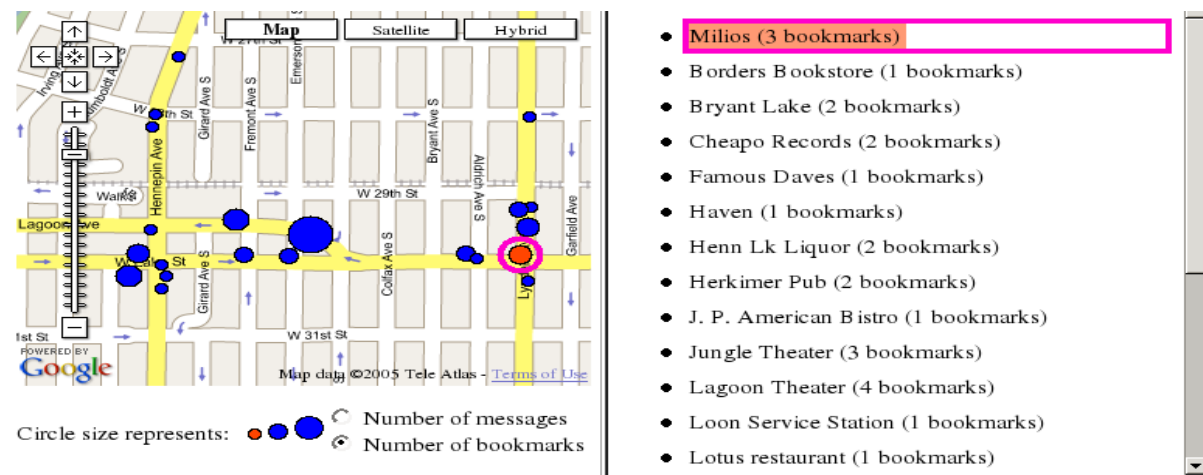


Figure 2.6. DataMaps, a configuration or arrangement of coordinate view (image taken from [14]).

With the advent of new technology, people can share information about everyday places where they go; the resulting data helps others locate and assess places. Today's technology, however, facilitate us few methods for capturing local knowledge and making it available to those who seek it [10]. Due to increase use of technology people discover places and mark their request online to make their time useful and easy [11]. The local place information using location-based reminder (LBR) system called PlaceMail. When people use LBRs, they produce local place data, including the lists of places where they go for everyday tasks (or place bookmarks), and prompt messages associate to the bookmarked locations [10]. The application displays icons on the map to signify each place fulfilling the query.



You are bookmarking Milios .

Can Local Search show that another person has bookmarked Milios ? Yes No

Figure 2.7. The Sharescape interface. Google Maps image © Google Inc. and is used with permission (image taken from [10]).

The overall background makes us aware about the previous work related to our proposed solution. To-Do Map provides us primary role to make our choice easier in task remembering and management. To-Do Map is totally different way of representing things with remembrance technique.

3 To-Do Map - Tool

The result of all the research and work done is the tool named To-Do Map. The following sections depict the basic ideas and concepts at the back of this tool as well as the particular features in more detail. Particularly Section 3.3 deals with details on the pushpin on “Maps” and “Indoors” as well as the interactivity and representation of the pushpin inside the application.

3.1 Aim of the System

In order to prevail over the difficulties shown in Section 2.4, new approaches have to be considered. To-Do Map provides us a facility of location based marking rather than the textual information. This application also reviles us from the text based information. To-Do Map introduces a new way of sorting and managing tasks that is simple and proficient, and requires minimum effort. We illustrate a dominant tool for the task management that has also cohesion to distribute the independent task with the other member of the group. The clear aim is it to build a scalable tool that is capable of displaying several different tasks (maps and Indoors representations), values at the same time without occlusions, still offering the possibility for good interaction and a responding interface.

3.2 To-Do Map Architecture

To-Do Map is basically based on N-layer architecture. N-layer application architecture gave us a model for software developers to construct a flexible and reusable application. By breaking up an application into layers, software developers only have to amend or add a particular layer, rather than have to revise the entire application over. To-Do Map contains presentation tier, a business or data access tier, and a data tier. The presentation layer is just like the user interface, business layer is renounced as a logic layer which specifies the way of the communication between the presentation layer and data tier. Some custom utility is also implemented in the logic layer. Role-based security is also implemented, as well as different user interfaces for the administrators and the regular users. The administrators have more rights on the application than the regular users.

3.2.1 N-Layer based

The theme of layer and tier are commonly used for communication. Yet, one comparatively ordinary point of view is that there is in fact a distinction, and that a layer is a logical structuring method for the essentials that compose up the software solution, while a tier is a backbone of physical structuring mechanism for the system infrastructure. The three-tier architecture is projected to permit any of the three tiers to be upgraded or replaced independently as necessities or technology change. The general pictorial view of the N-Tier architecture is below,

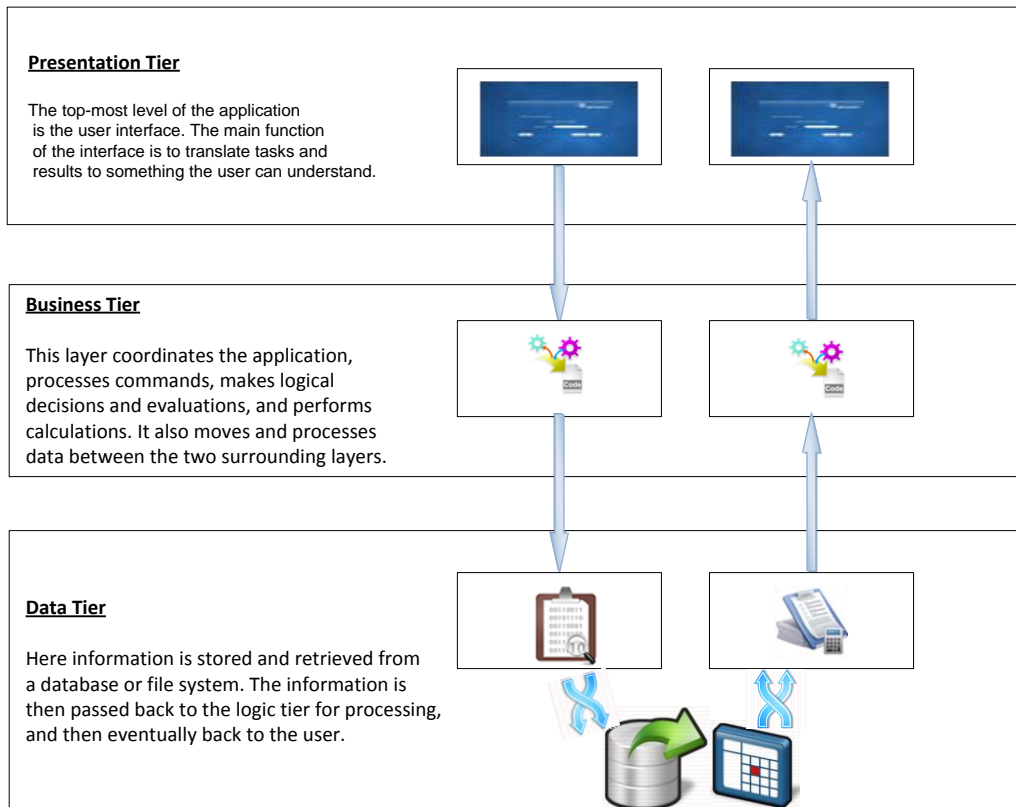


Figure 3.1. Block diagram of N-Layer/Tier Architecture

3.2.2 To-Do Map Database Schema

A database schema of a database system is its structure depicted in a formal language accumulated by the database management system (DBMS) and directed to the association of data to form a draft of how a database will be constructed (divided into database tables). All boundaries are expressible in the same language. The states of a twisted conceptual schema are distorted into a precise mapping, the database schema. This describes how real world entities are reproduced in the database. A database schema indicates, based on the database administrator's knowledge of possible applications, the essentials that can enter the database, or those of interest to the possible end-users. In a Relational Database Management System (RDBMS), the schema defines the tables, fields, relationships, views, indexes and other elements. The basic structure of the To-Do Map is below.

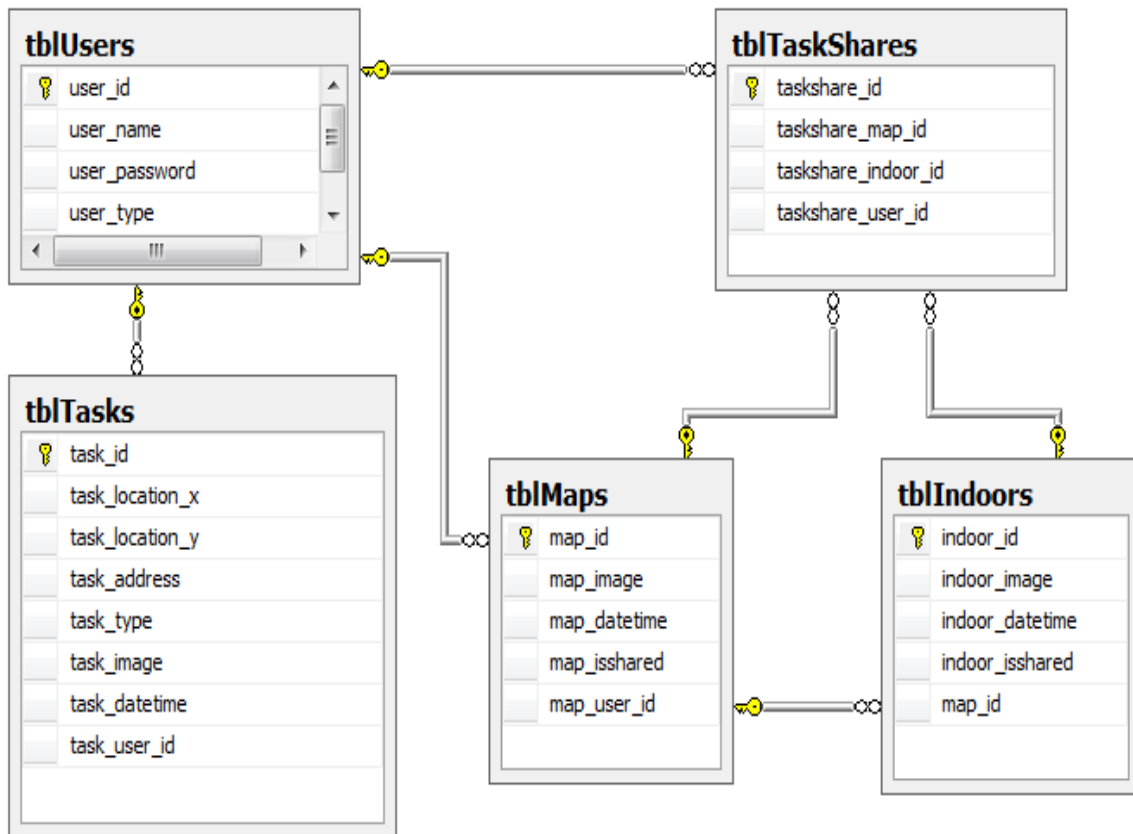


Figure 3.2. To-Do Database Schema

In this database schema, there are five tables that contain the different names and fields with respect to real world entities. The precise description of each table is below.

tblUsers is used to contain the information of the users. A snapshot of the “tblUsers” is given in the figure below.

MUDDSAIR-PC\SQL...s - dbo.tblUsers				
	user_id	user_name	user_password	user_type
	1	admin	123	1
	2	Daniel	123	2
	3	Muddsair	Sharif	1
▶*	NULL	NULL	NULL	NULL

Figure 3.3. Data Snapshot of tblUsers

In the above table, the **user_id** field contain the identification of the user, **user_name** field contain the name of the user, **user_password** field contain the password of the particular user and **user_type** contain the numeric value 1 or 2 which depict the right of the user: either administrative or normal user.

tblMaps contains the information about the particular map or indoor representation. The map contains the exterior information about the particular event. A snapshot of the this particular table is below,

MUDDSAIR-PC\SQL...ps - dbo.tblMaps					
	map_id	map_image	map_datetime	map_issshared	map_user_id
▶	2	Map/DESC1011.JPEG	2010-10-12 00:00:00.000	0	1
	3	Map/DESC1011.JPEG	2010-10-12 00:00:00.000	0	1
*	NULL	NULL	NULL	NULL	NULL

Figure 3.4. Data Snapshot of tblMaps

In the above table, the **map_id** field contains the particular identifier of the map, **map_image** field contained the string to the image, **map_datetime** field contains the date and time of the map, **map_issshared** describes that the map is shared or not and **map_user_id** describe that which user added this particular map.

tblIndoors contains the particular map for the indoor representation. Indoors contain the concrete information about the particular map. More than one indoor task can be displayed inside a map. A snapshot story of the indoor's data table is below.

MUDDSAIR-PC\SQL...- dbo.tblIndoors					
	indoor_id	indoor_image	indoor_datetime	indoor_issshared	map_id
▶	3	Indoors/DESC1011.JPEG	2010-10-12 00:00:00.000	0	2
*	NULL	NULL	NULL	NULL	NULL

Figure 3.5. Data snapshot of tblIndoors

tblTasks contains the information about the activity marker/pushpins. Whenever the marker is dropped on the map or indoor, the particular event is captured in the *tblTasks* table, inside the physical schema of the database. Each task contains the specific information about particular event. A snapshot view of the tasks table is below.

MUDDSAIR-PC\SQL...s - dbo.tblTasks								
	task_id	task_location_x	task_location_y	task_address	task_type	task_image	task_datetime	task_user_id
	1	235	560	address	1	Image	2011-08-02 00:...	1
▶*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Figure 3.6. Data snapshot of tblTasks

In Figure 3.6, the **task_id** field contains the identification number of the specific task, **task_location_x** field contain the x-axis location, **task_location_y** field contain the y-axis location, **task_address** contain the address of the task, **task_image** contain the particular marker/pushpin on that task and **task_user_id** field contain the information about the particular user who created that task.

tblTaskShares contains the information about those tasks that are shared between the users. The snapshot about particular table is below.

MUDDSAIR-PC\SQL...bo.tblTaskShares				
	taskshare_id	taskshare_map_id	taskshare_indoor_id	taskshare_user_id
	9	3	3	1
▶*	NULL	NULL	NULL	NULL

Figure 3.7. Data snapshot of tblTaskShare

In the above table, **taskshare_id** contains the identification number of the shared task, **taskshare_map_id** field contains the ID of the map which is shared, **taskshare_indoor_id** field contains the ID of the indoor task if it is shared and **taskshare_user_id** identifies the particular user who shared that task.

3.2.3 Service-based Communication

A web service is a way of communication involving two electronic devices via a network. Web service overcome on three major problems, these are interoperability, complexity and firewall traversing. The World Wide Web consumption (W3C) developed a “web service” as a software system design to maintain machine to machine (interoperable) over the network. It has specific an interface described in a machine processable format also renounced as WSDL (Web Service Descriptive Language). System can interact with it using the manner prescribe by its description using SOAP (Simple Object Access Protocol) message.



Figure 3.8. Web Service communication architecture

The messages are typically transfer using the HTTP (Hyper Text Transfer Protocol) with an XML (eXtensible Markup Language) serialization via other web related standards.

3.2.3.1 Windows Communication Foundation

The Windows Communication Foundation (or WCF) is an application programming interface (API) in the .NET Framework for finalizing coupled, service-oriented applications. Principally, communication service is divided into Architecture, Endpoints and the Interoperability.

Architecture: WCF is meant for scheming and deploying distributed applications under service-oriented architecture (SOA) accomplishment. Consumers can consume numerous services; services can be devoted by multiple clients. Services are loosely coupled to each other.

Endpoints: A WCF client attached to a WCF service via an Endpoint. Each service exposes its contract via one or more endpoints. An endpoint has an address (which is a URL specifying where the endpoint can be accessed) and requisite properties that state how the facts will be forwarded.

Interoperability: WCF wires interoperability with WCF applications in succession on the same Windows machine or WCF successively working on a different Windows machines or standard Web services built on platforms such as Java running on Windows or other operating systems. WCF does not only hold up SOAP messages, it can also be configured to support standard XML data that is not wrapped in SOAP, or can even be used to sustain formats such as RSS, or JSON that makes WCF stretchy for present chuck and future changes.

To-Do Map also have communication layer and each communication service is partially divided with respect to its table construction. All the To-Do Maps services are packed in the ToDoMaps package. Each package contains the consumer method with respect to the communication requirements. The project services are highlighted in Figure 3.9.

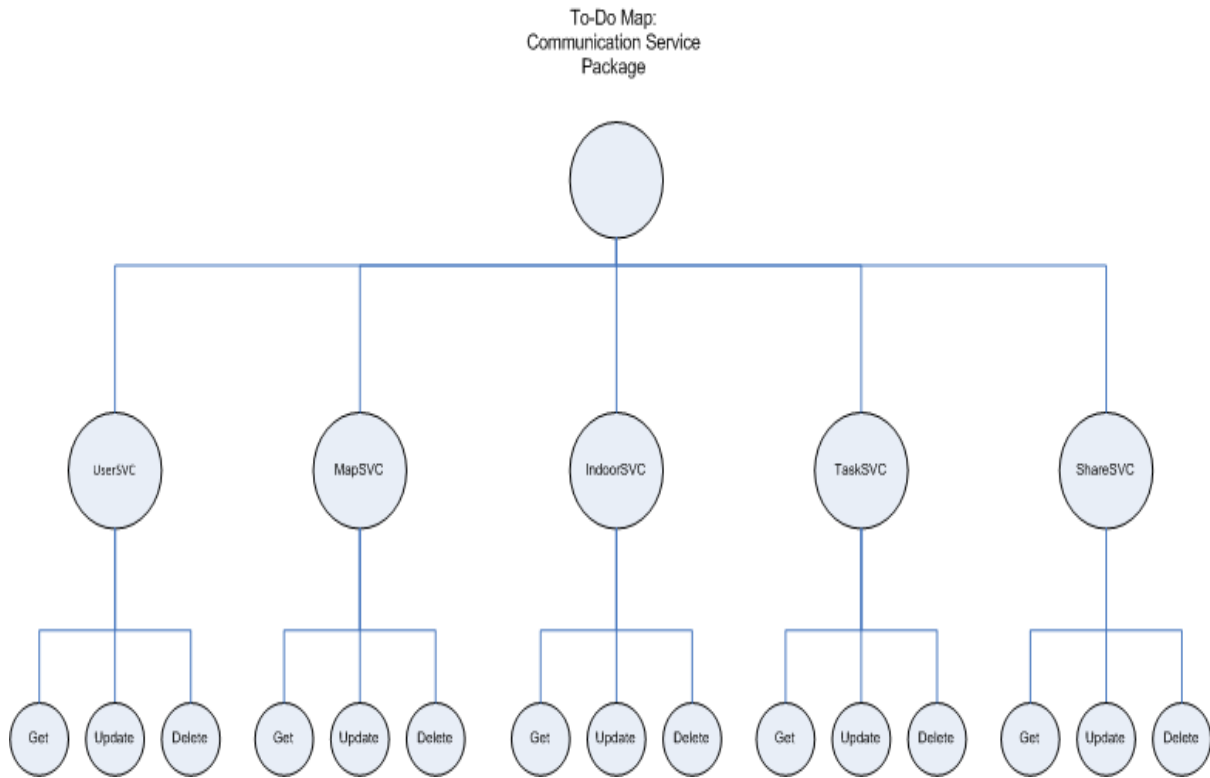


Figure 3.9. To-Do Map: Communication Service Layout

3.2.4 To-Do Map Look and Feel

The presentation layer or (look and feel) is a critically important part of an application; an improperly architected presentation layer can lead to too much convolution, a lack of stiffness and an inept and annoying user experience. Thin client applications have well identified payback over conventional rich client applications in terms of deployment and manageability and this has led to their attractiveness in recent years. The presentation layer of the majority applications is very often significant to the application's success. After all, the presentation layer shows off the interface between the user and the rest of the application. It is infrequently about just presenting information to user; it's often more about giving the user an interactive contact to the application. Perhaps a more apposite name for this layer is the user interaction layer.

To-Do Map has been present in a simple way. The representation is very simple for the end-user to interact with the application. Different types of representations have been created for the regular user and the administrator. Administrator has higher priority than the simple user. The features of the To-Do Map will be described in Section 3.3.

3.3 To-Do Map Features

To-Do Map provides us numerous features in a single sketch to lockup the perception of the user. To-Do Map key features are listed below.

3.3.1 Web-based Application

To-Do Map provides a realistic web-based interface. Users can access the application from anywhere in the world using the Internet. Users must be registered to access the features of the application.

3.3.2 Role -based Security

To-Do Map provides us a role-based security. The user can access the appropriate interface depending on his authorization level. There are two kinds of roles, which have been implemented in the To-Do Map tool. The layout of the entrance for both users is just differentiated by the selection of **user type** on the login page (Figure 3.10).

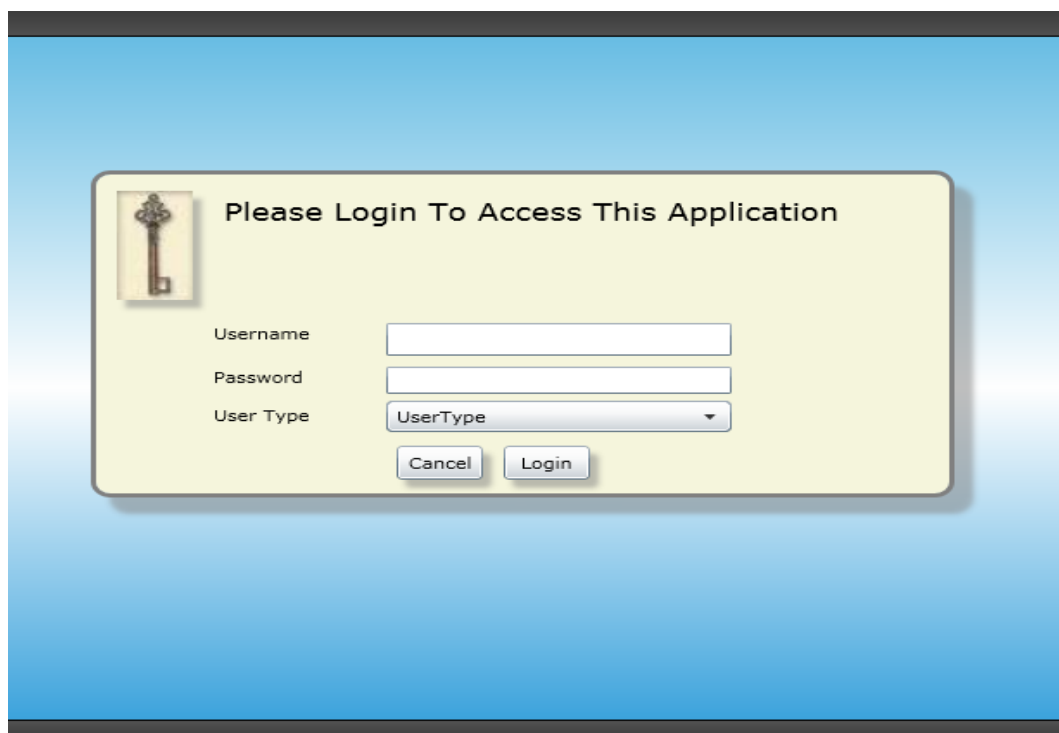


Figure 3.10. Role-based Security

Admin- users have full rights to access each feature of the application:

- Admin-users can create accounts for regular users.
- Admin-users can manage tasks
- Admin-users can share the tasks between registered users



Figure 3.11. Admin-role based security layout

Users are allowed to access their own environment of the application. They can perform the following task:

- Review the list of tasks
- Create and manage their own tasks

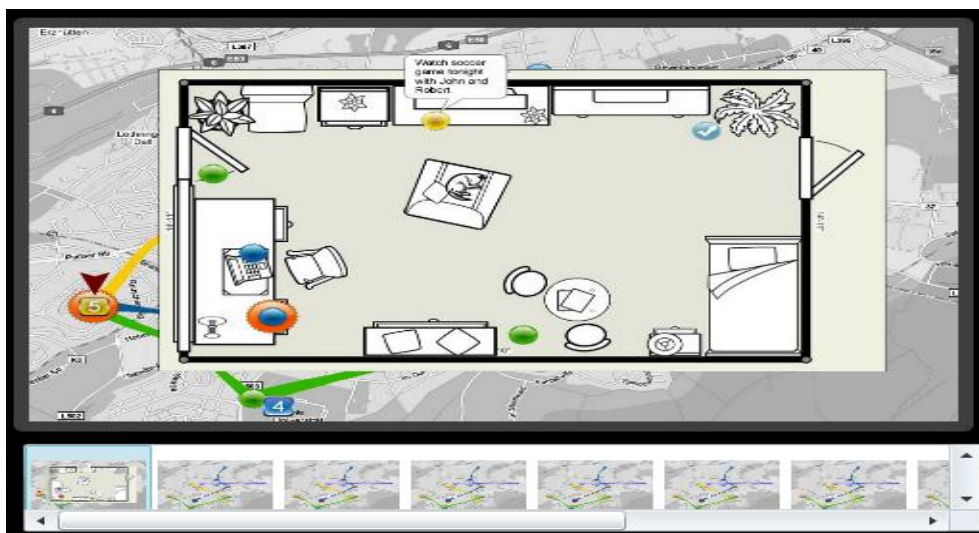


Figure 3.12. User-role base security layout

3.3.3 To-Do Map – Outdoor Representations

To-Do Map provides a facility to upload the maps in two different ways. Administrators can use both ways to upload the task but a standard-user can access only the tool interface approach. Both ways are described below.

Firstly, users can simple click on the “Map” button and a new window will appear that contains a list of maps that user has added before. The user has the facility to perform CRUD (Create, Read, Update, Delete) operations using the application’s GUI.

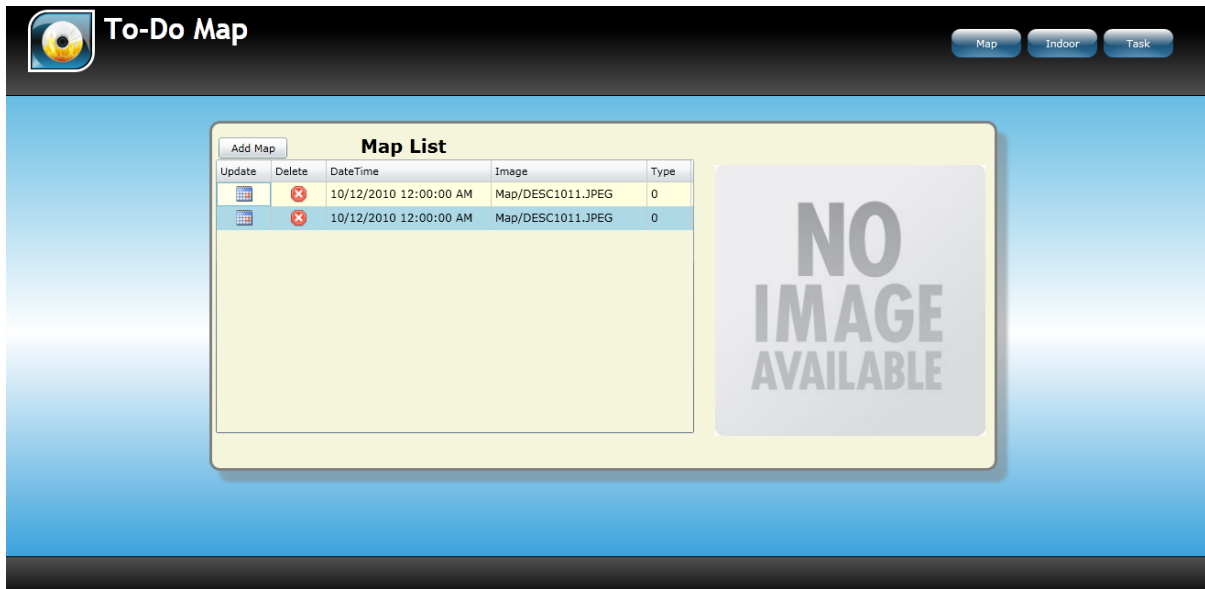


Figure 3.13. To-Do Map: CRUD Operation

Users can add a map by clicking on the “Add Map” button and provides necessary information in the popup window (Figure 3.14).

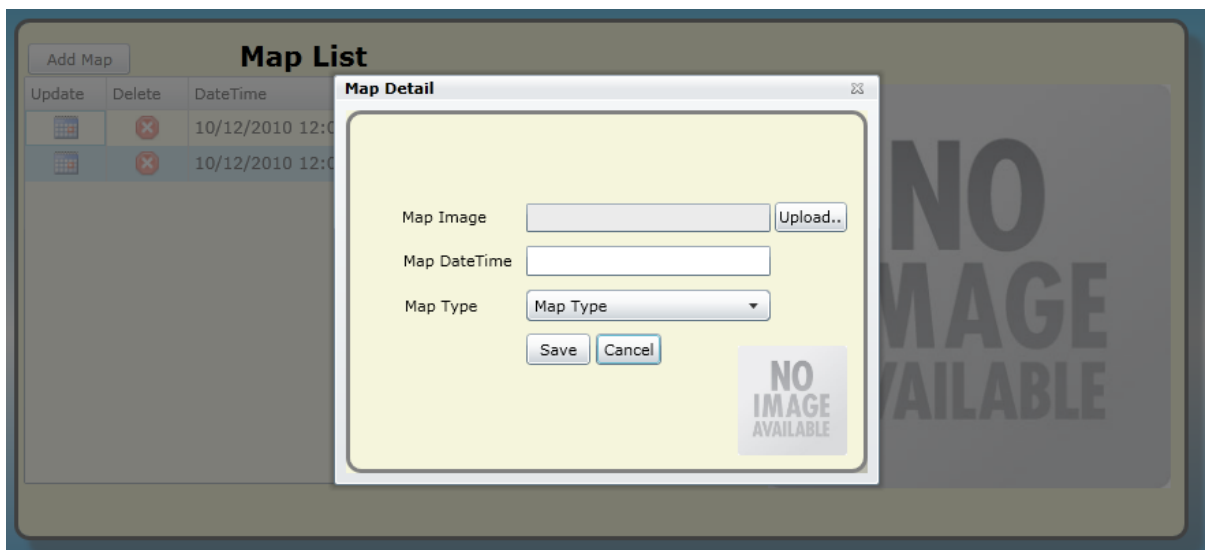


Figure 3.14. To-Do Map: Add map Operation

Secondly, users can click on the “Task” button, which is available on the home screen of the application, as well as click on the browse button to upload an image.

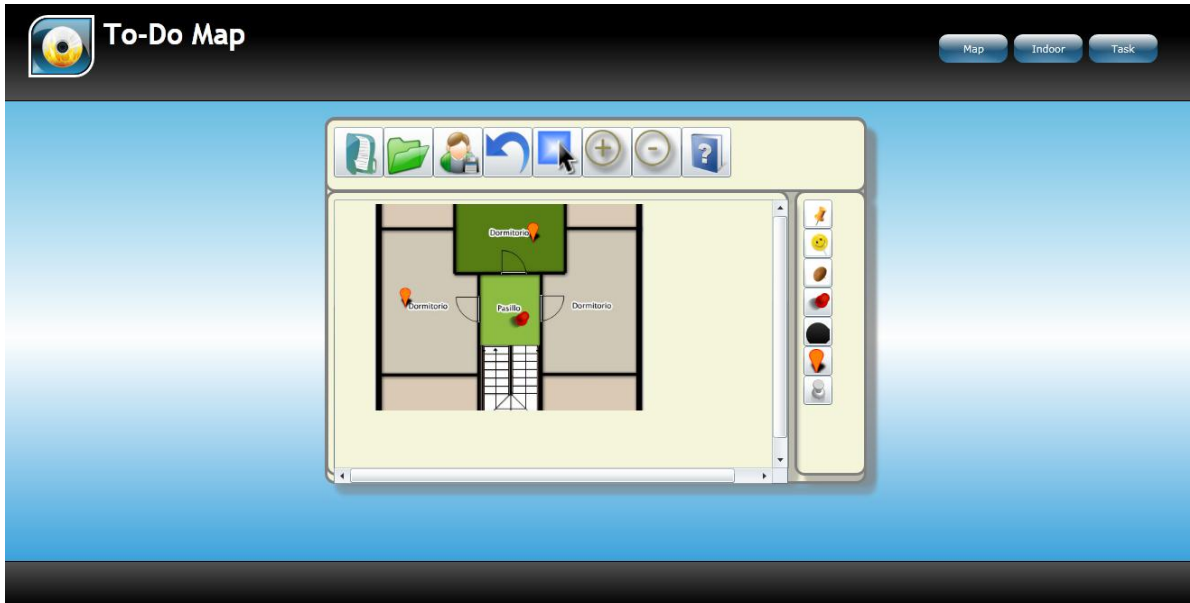


Figure 3.15. To-Do Map: Upload Map

3.3.4 To-Do Map – Indoor Representations

To-Do Map provides the users with a facility to upload the Indoor maps in two different ways, and same kind of strategy has been constructed in this phase as well. Administrators can use both ways to upload the task, but a standard-user can access only the interface for uploading. Both ways are described below:

Firstly, users can click on the “Indoor” button and a new window will appear that contains a list of the Indoors representations that the user has added before.



Figure 3.16. To-Do Map: Indoor Map List

The user has the facility to perform CRUD (Create, Read, Update, Delete) operations using the application’s window.

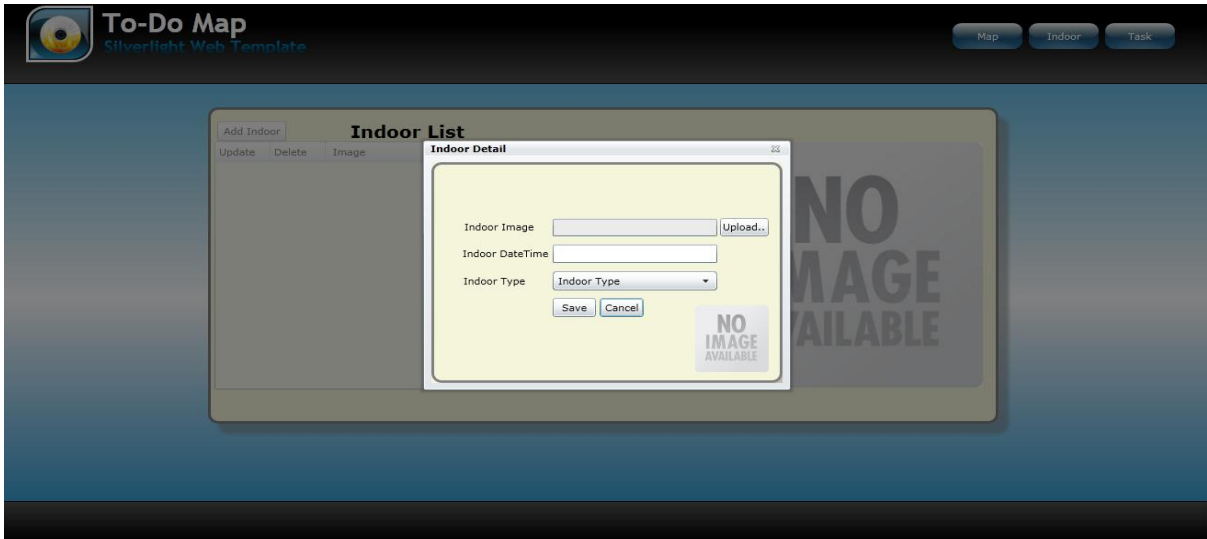


Figure 3.17. To-Do Map: Indoor CRUD operation

Secondly, users can click on the “Task” button, which is available on the home screen of the application, as well as click on the Browse button to upload the image.



Figure 3.18 To-Do Map: Indoor Map

To-Do Map facilitates a user the sharing of their task with other users with-in their domain.

3.3.5 Pushpin Representation

To-Do Map allows the users to upload custom pins or markers, and use them on the map for better understanding of the task. Normally, a push pin may work to sling up a small, trivial task. Users can personalize maps by adding pushpins to mark the locations of their home or office, favorite restaurants, or any other place on the map. Users can add text to a pushpin. Imagine you are on the run and need to add a task to your list. You do not have time, so you just want to make a quick selection and not really enter text.

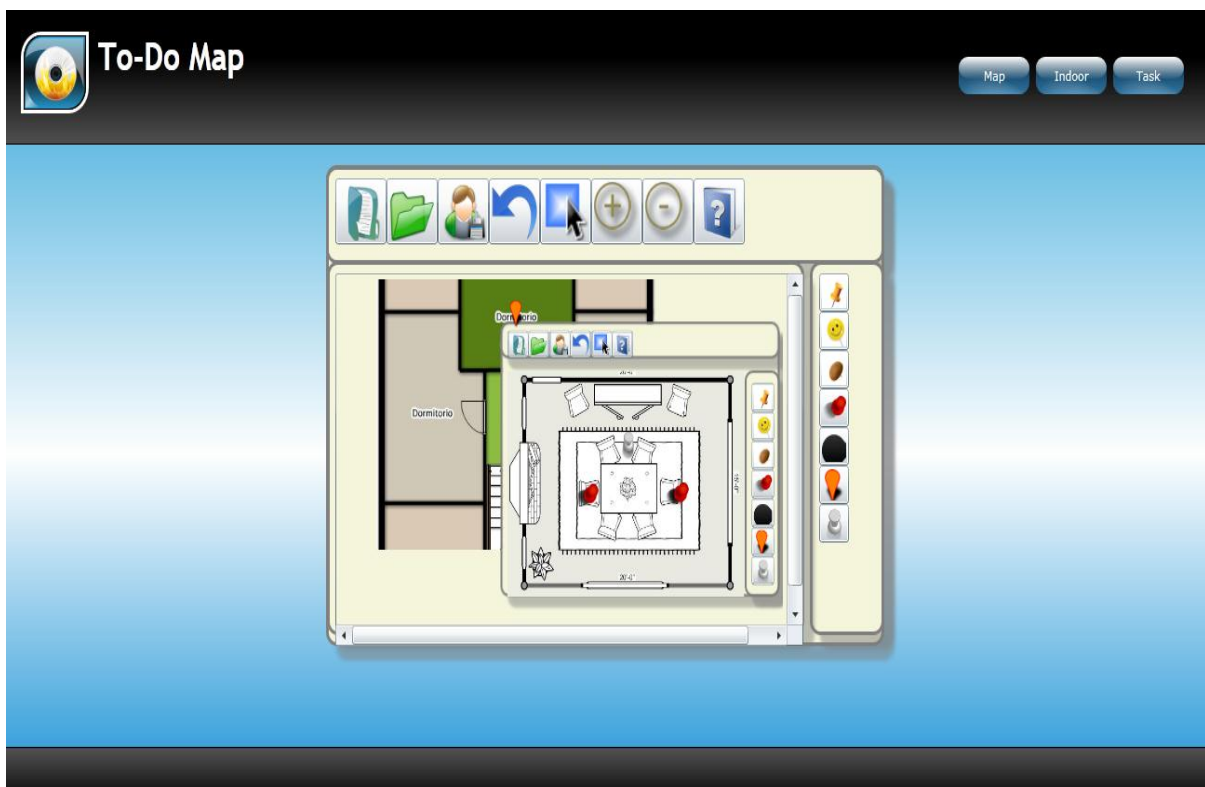


Figure 3.19. To-Do Map: Pushpin Visualization

3.3.6 Pushpin Interactivity

To-Do Map also provides a facility to the user to easily interact with the pushpin. Users can move the marker/pushpin by selecting it directly or interacting with the toolbar. Each marker is available within its boundary or contents. Moreover, a marker on the map level cannot be dropped on the indoor level.

3.3.7 Context Menu

To-Do Map also facilitates a user with a context menu. There are certain options available in the menu and users can perform certain actions according to the selection of the appropriate option:

- Users can add/delete the maps
- Users can add/delete the indoor representations
- Short Bubble Message (SBM) on indoor map

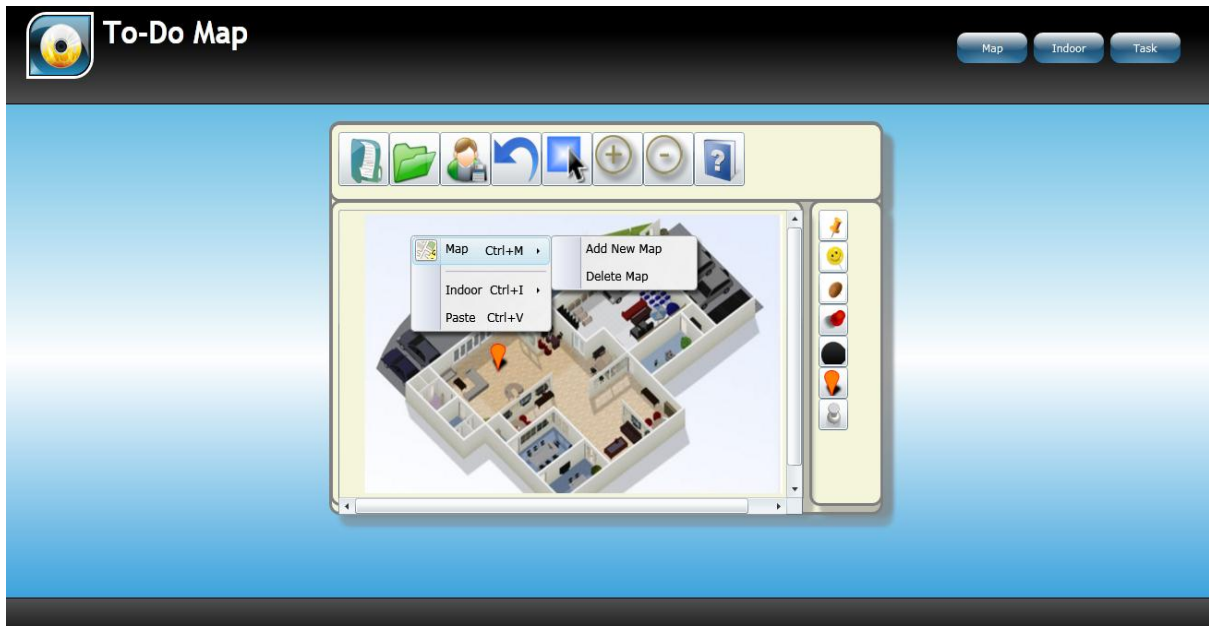


Figure 3.20. To-Do Map: Context Menu

To delete a marker, users must select the marker and then press the right button on the mouse and select the appropriate option for the deletion.

3.3.8 Zoom In/Out

To-Do Map also provides us a facility to zoom in/out the image of the map. Zoom In function enables you to increase the exaggeration level of an active image. Administrators and regular users can use this feature by clicking on the zoom-in button which is available on the top toolbar of the To-Do Map. Both ways are described below.

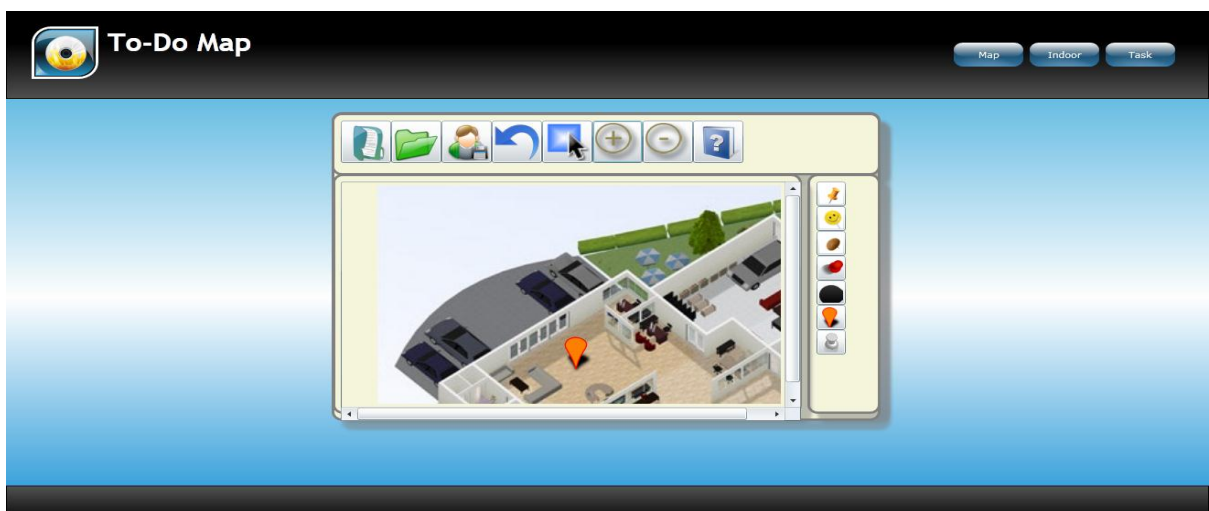


Figure 3.21. To-Do Map: Zoom In

The Zoom Out function enables you to decrease the exaggeration level of an active image.

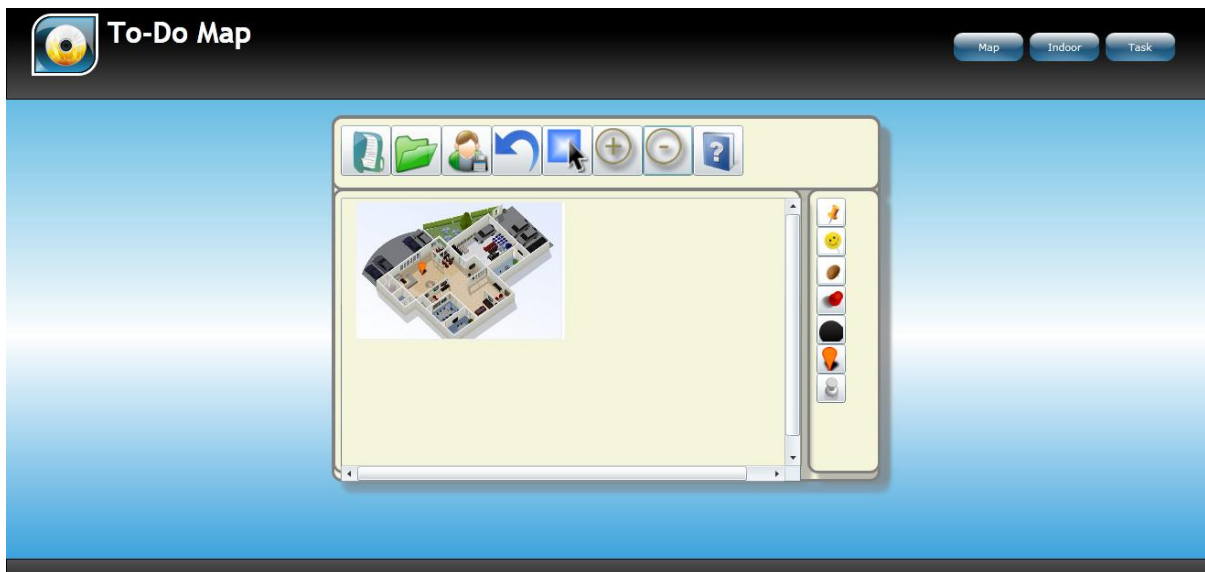


Figure 3. 22. To-Do Map: Zoom Out

3.4 Use Case Scenario

The use case scenario is aimed to elaborate interaction with the application and accomplish the specific dataset. The task is achieved by the use of the To-Do Map. Muhammad Mubashir is interested to meet with Professor Muhammad Azam and some other member of the department of computer science, Linnaeus University. Mubashir is on the run. He needs to get to Azam in 30 minutes. On the way to him, he passes next to a couple of stores (Willis, Netto and IKEA). In each case, he remembers that he needs to do a task tomorrow. When he passes the pharmacy, he remembers he needs to buy some Aspirin for his cold... (And so on). Because he is hurrying and does not what to stop, but he also does not want to forget to do these things tomorrow, he uses his smart phone to access the To-Do Map, where he pins down the places that are relevant to his tasks. He has no time to write down a description for what he intends to do, but he hopes he will remember merely based on the location. Muhammad Mubashir has taken maps of department and the university using third-party software, application that provides facility to capture the map of different locations. How To-Do Map helpful for Muhammad Mubashir to easily maintain his requirements? Figure 3.10 shows the entering panel of the application. Users must provide a username and password to get access to the application framework. Two kinds of users can access the application either administrator or the regular.

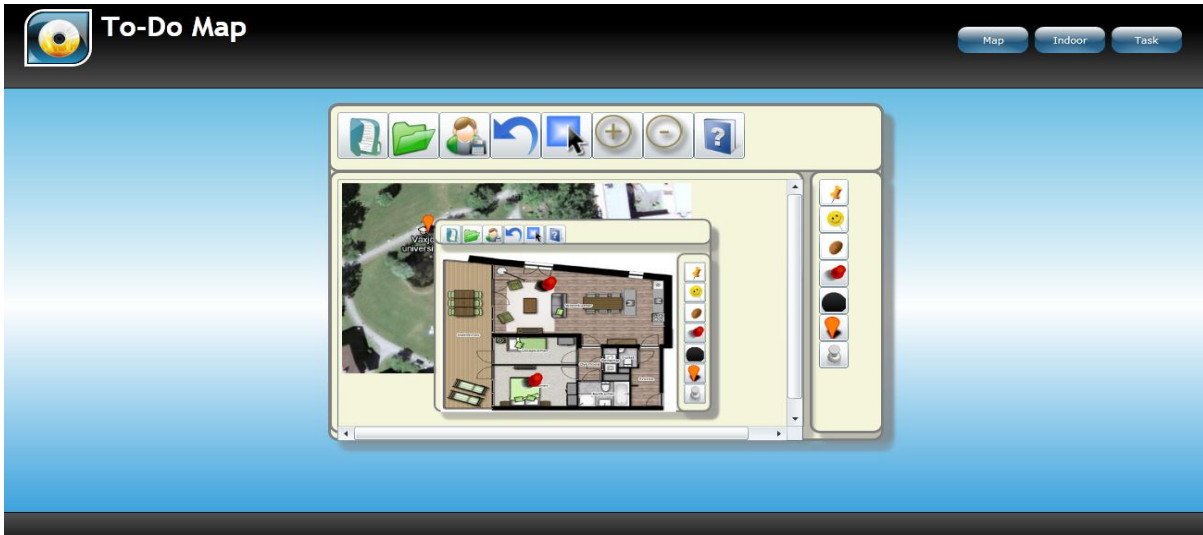


Figure 3. 23. To-Do Map: use case scenario, university map and indoor location

Figure 3.11 shows the simple structure of the map and locations that are currently marked to perform some specific tasks. Figure 3.23 shows the map structure of the university and the indoor location. Indoor location is also indicated with pushpin/marker, which describes the different locations of the professors. Figure 3.24 shows us a short bubble message about the quick view of the task.

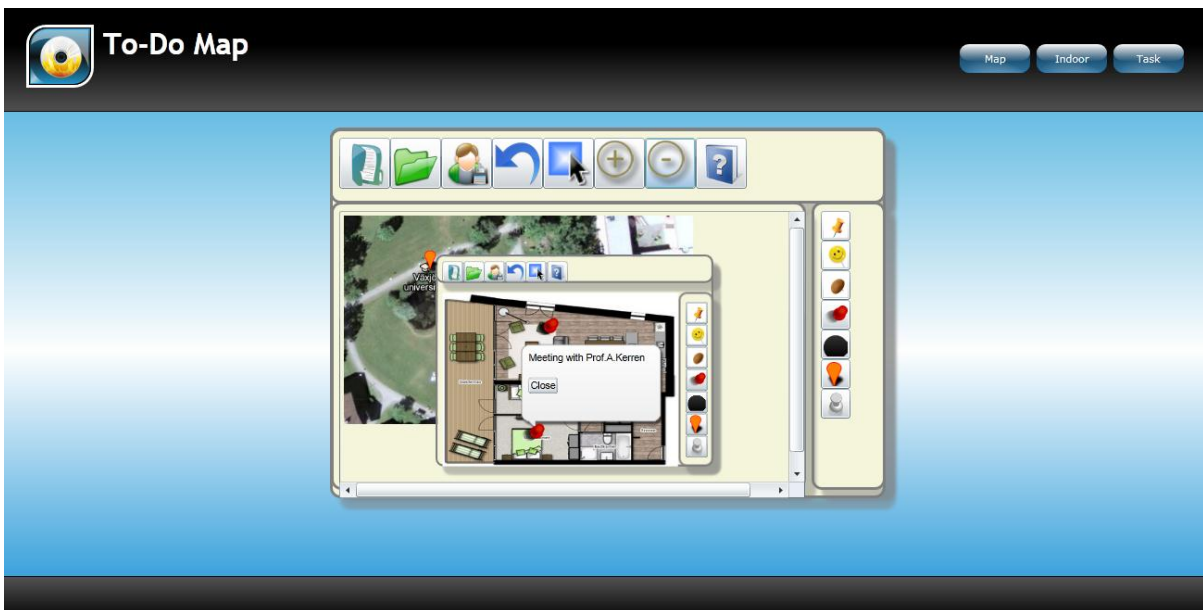


Figure 3. 24. To-Do Map: use case scenario, event short bubble message

On the next day, Mubashir open the To-Do Map again and start thinking about the tasks he has to complete. He sees the pin on the university and immediately remembers that... (And so on).

4 Conclusion and Future Work

This section contains the summarization of the work presented in this thesis and what will be the future point that will be helpful to make this project realistic with respect to the end-users concern. In the following, we have enumerated points in the future work that we have analyzed during the implementation of the thesis. According to our consideration, these points will surely improve the strength and usability of the application.

4.1 Conclusion

In summary, incorporating tools that facilitate users to address concern To-Do Map confirms capable results in helping them to enhance focus on information pertinent to their tasks. This exposition provides a future into the evolve-ability of concern To-Do Map representations and effectiveness of different evolution mechanisms. The aim for this thesis was to explore and develop a to-do representation technique that will be easy (i.e. section 3.4) to manage in short intervals of time. To-Do Map provides an easy, well-structured and graphical way to manage everyday tasks.

To-Do Map has been tested by a number of groups and individual people from university. They found it very effective and comprehensible to remember and activation of task. They were majorly astounded with the graphics depiction of task and level of task.

4.2 Future Work

We have managed to determine a number of issues that possibly will progress our work. Some of those issues are out of the scope of this thesis, others are our ideas that we got during the research but we did not have time to implement and research further.

Bar Charts, A bar graph is an illustration exhibit used to evaluate the amounts or regularity of occasion of unusual distinctiveness of facts. Bar charts are used for scheming distinct or irregular data which has isolated values and is not unremitting. This kind of demonstration facilitates us to:

- evaluate groups of data
- Compose generalizations about the data quickly

Bar charts can be used in To-Do Map to represent the number of task in different scenarios, like how many tasks have been shared between users in a specific interval against specific user. This is a scenario that will majorly involve in such kind of application.

Location-based maps, the map based search or location based maps engine can be used to search information about the specific address or location. Map based search is extensively involved in the location based application. The facilitation of this feature will enhance the strength and value of the To-Do Map. This feature provides easiness to the user to mark their location, accurately with affiliate interaction.

Shared map bundling, It is very difficult to visualize, understand and maintain thousands of shared tasks between hundreds of users. So shared map bundling or link bundling

techniques have been suggested to overcome such kind of problems during the visualization of shared maps in To-Do Map. Simply visualizing the adjacency relations as straight lines leads to a messy visualization. The recommended practice, tries to bundle edges whose end points have tree paths that contribute to a common part. It is comparable to the bundling performed by electricians for wiring in complex settings, where wires having approximately close sources and targets are packaged together to reduce the muddle.

These are some suggestions for future work on the To-Do Maps. The suggestions will be helpful to make this application more efficient in future.

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