SAPIENZA
UNIVERSITÀ DI ROMA

Master of Science in Engineering in Computer Science

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Human and Computer Interation

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1. Abstract

This project is a mobile application called as "My Cinema" used for booking a cinema ticket online, as well as to allow users to interact and share opinions about different movies and cinemas in a social way. The application provides many options for the cinema customer to facilitate the process of online searching and booking a cinema ticket for a movie. Furthermore, it helps the cinema owner to manage his cinema and customise the available movies.

First, The application provides the cinema customer with lists of the latest movies in cinemas, and those movies that are coming soon to theatres, in addition to the top 10 movies based on the users rank. The user can select his favourite movie from these shortcut lists ("Top 10" list, "In Cinemas" list, or "Coming Soon" list). He can also search for a specific movie by using the movie details (such as Name, Category, Duration, Release Date… etc) as filters to his search. Moreover, he can search for a specific cinema and see the available movies in that cinema. Additionally, he can maintain a list of the favourite movies and add them to a watch list, and he can access the complete history of the the movies he has booked so far. One important feature is that the users can exchange their opinions about the movies and available cinemas in a social way, expressing likes and dislikes.

On the other hand, the application has a part dedicated for the cinema owner to enable managing the cinema details, including contact information, available movies, address and location on map…etc. Moreover, the application allows the cinema owner to have a feedback from the customers about the quality of services provided by the cinema, and how they rank it.

This application is developed considering the User centred design approach, focussing on students as the main target users. The application has many business models including advertisements on the system, percentage for each ticket booked by the system, and a subscription fee since it can be provided as a service to the cinemas.

2. Introduction

2.1 Overview :

The project was divided into 2 parts; the first is discussed in chapter 2.2 is about Cinema Customer where we study all the possible applied scenarios and the analysis of the requirments data, and the second is discussed in chapter 2.3 about Cinema owner where we study all the possible applied scenarios and the analysis of the requirments data. Then In chapter 3 we developed our work plan starting from design then implementation of running prototype then applying evaluation to that prototype (repeating that in an iterative way until we have our final product).

In chapter 4 we discuss the Design and analysis for both Cinema Customer and Owner, where we used task modelling tools like HTA and STN. In chapter 5 we discuss the implementation the first prototype from the initial design, and then we applied the expert-based evaluation techniques to come up with the second prototype. In chapter 6 we discuss the implementation of the second prototype after applying the expert-based evaluation techniques, and then we applied the user-based evaluation techniques to come up with the final product.In chapter 7 we discuss the final product and the final features. In chapter 8 we discuss the conclusion of the work ,and the possible future work.

2.2 Cinema Customer

Before starting, We should consider learning about the Product (Networking, Marketing, Competitors). Focusing on competitors, we learned about their Strengths & Weaknesses, Availability, Functionality and unique features, Reputation and Requirements(hardware, software, etc..). Then we consider learning about Users (including User profile, Persona and Scenario).

2.2.1 Applied UserProfile, Persona, Scenario

User Profile :
Age: 18 – 30
Gender: 30 % Male – 70 % Female
Job title: university student “Bachelor , Masters”
Location: Italy, Rome
Income: 1000 €

Persona:
Antonio is a 20 years old He is from Milano, But he stays in Rome during his studies at the University , and in weekend he goes back to Milano. Most of the time he uses 3G mobile Internet for browsing via his phone or to install applications, most of application he uses are related to booking on-line or to purchase product on-line.

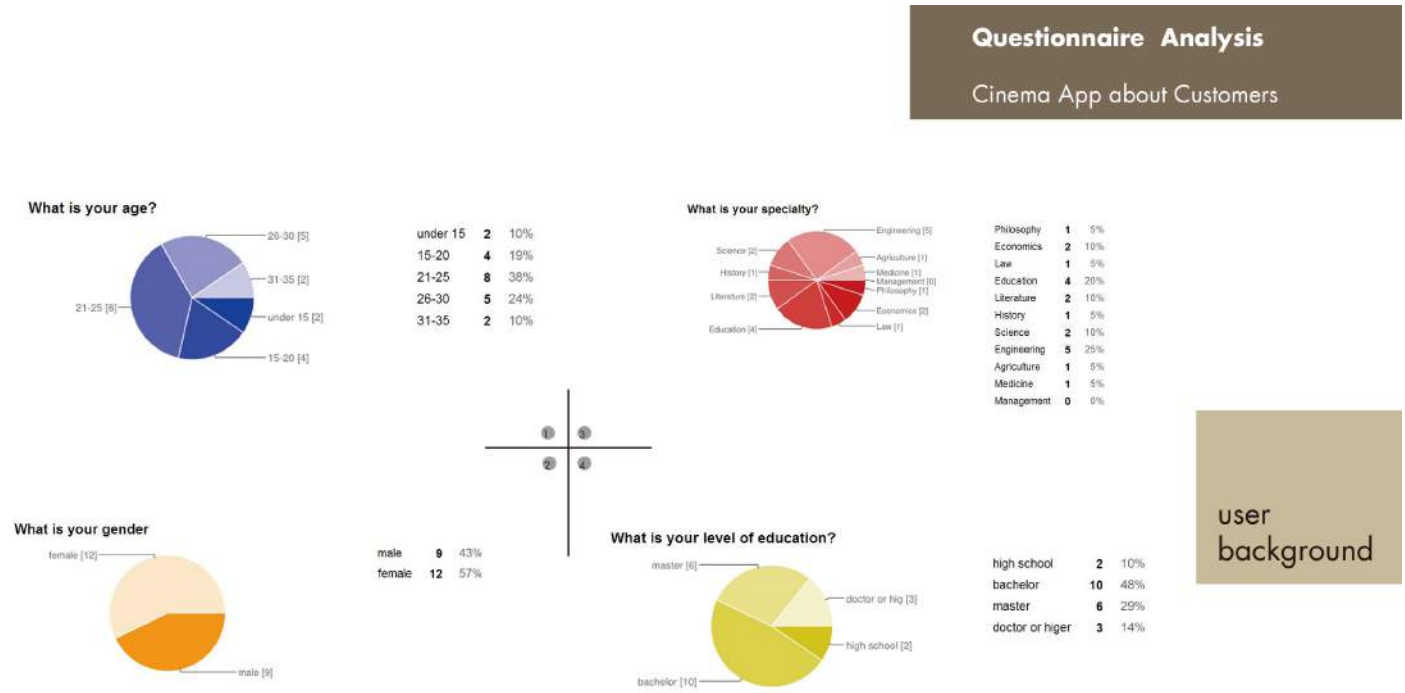
Scenario:
Let's Assume the following Scenario
Antonio has decided this weekend not go back to Milano, and he will spend his weekend with his

2 Introduction

friends in Rome so they can go out together as they have many places to go. But they are not sure where they want to go. They may decide to go out to watch a movie at the Cinema.
After Antonio has decided to go to the cinema with his friends, he starts searching for a movie, and when they all agree for a movie, they go to the Cinema where this movie is available.
He may also search for a movie using category feature as a search filter. For example he wants to search for “Action” movies so category feature works as filter and gives him a list of “Action” movies.
He would also like to check for Top ranked Movies. He can find out what are the best ranked movies by audience in his city by searching through a list showing Top Ranked Movies in Descending order that are available now at the Cinemas.
Also he can get good feedback from other audience and share comments and opinions about the movie, likes and dislikes and also share feedback about the Cinema itself.

2.2.2 Requirment Analysis

Questionnaire:

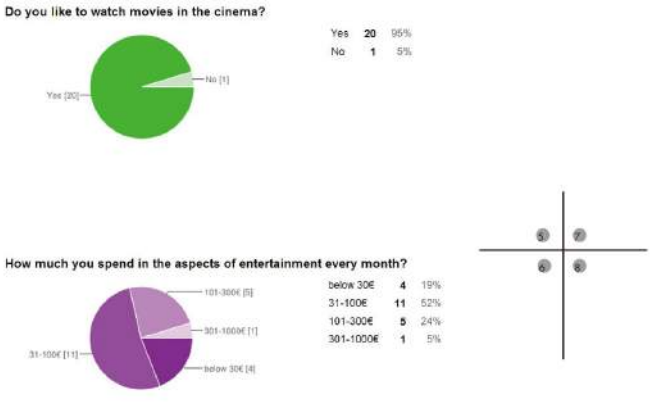


1. As you can see the majority of the students answerd were aged from 21-25.
2. 57% of the participants that answered this questionnaire were females which is over half of the total amount.The rest of the 43% were males.
3. The majority of the students that study engineering answered the questionnaire,and almost all the types of speciality answered the reserach.
4. Most of the students who did the research are from bachelors.

2 Introduction

Questionnaire Analysis

Cinema App about Customers

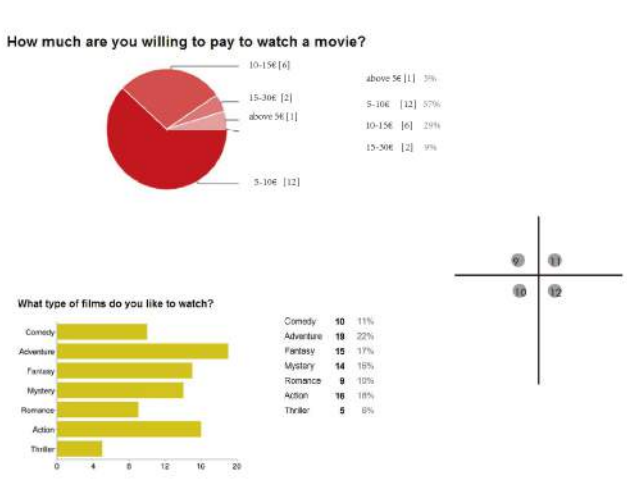


user background

5. All students like to watch movies in the cinema,so there is a huge market.
6. The majority of students spent in the aspects of entertainment every month were about 31-300€.
7. The biggest data shows that most of students went to the cinema from 1-2 times per a month.
8.In general,most of students like to watch movies with their friends and lovers.

Questionnaire Analysis

Cinema App about Customers



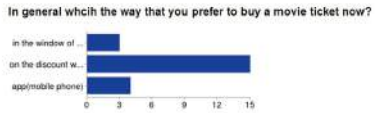
product reserch

9.Students get access to the cinema,the price of ticket is range from 5-30 €.The best price is ranged from 5-15 €.
10.Generally,student group like to watch this type of movies. Adventure,Fantasy,Mystery, Comedy,Romance.
11.Student groups pay attentions on the film prices,other's comments,the position of cinemas,which can affect their choices about cinema.
12.In the market,most of students' phone system is Andriod,Los,Windows.

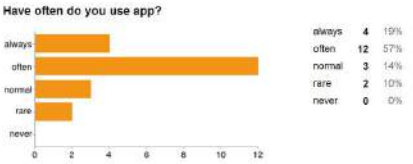
2 Introduction

Questionnaire Analysis

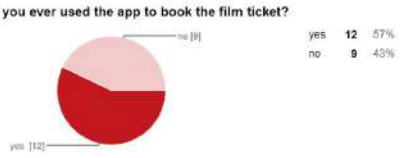
Cinema App about Customers



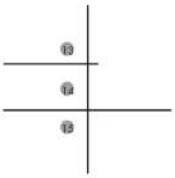
in the window of ticket	3	14%
on the discount website(computer)	15	68%
app(mobile phone)	4	18%



always	4	19%
often	12	57%
normal	3	14%
rare	2	10%
never	0	0%



yes	12	57%
no	9	43%



product reserch

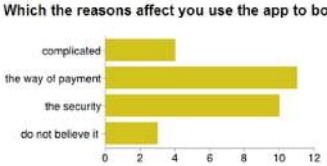
13.Students prefer to buy tickets in advance on the discount website.
14.Generally,student group use app frequently,which make up 76%.
15.Only 57% students have used the app to book movie ticket.

Questionnaire Analysis

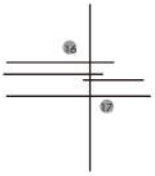
Cinema App about Customers

a detailed description of the coming film	12	13%
have discount informations about tickt price	19	21%
positioning function	16	18%
social sharing net	13	15%
record the informations of favorite film	14	16%
have comments and recommends list	15	17%

close to my home	11	13%
the price	16	19%
cinema facilities	10	12%
film theater showtimes row	11	13%
cinema brand reputation	13	15%
others' comments	16	19%
Incidentally	9	10%



complicated	4	14%
the way of payment	11	39%
the security	10	36%
do not believe it	3	11%



product reserch

16.Firstly,students want to have discount for ticket price,other functions also attract and are needed.
17.Most of students are afraid of the way of payment and the security that affect the usage of App.

2 Introduction

Interview： After that, we focus on the students aged from 18 to 25 years old, they love to watch movies, especially nowadays they love to watch popular movies, the student were interviewed said ,they love to go to the cinema for relax after dinner with friends on the weekend , or go along with your lover, this is a good form of entertainment. They need timely and convenient update data.

Conclusion : after collecting the requirments and analysing the data, we were able to start designing our first prototype for the Cinema Customer.

2.3 Cinema Owner

2.3.1 Applied Scenario

Add a movie to cinema : search by movie search filters (e.g, Movie name, category, duration... etc)
Comment and rank a movie : search by shortcut lists (e.g, Top 10, In cinemas, and Coming Soon)
List all available movies in the cinema, update cinema information

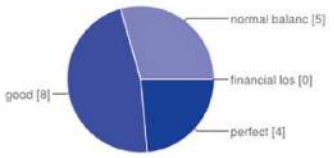
2.3.2 Requirment Analysis

Questionnaire

Questionnair Analysis

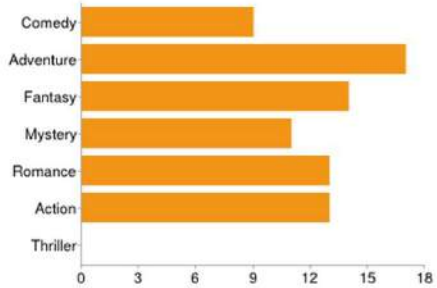
Cinema App about Cinema Owners

How about the benefits of cinemas operating?



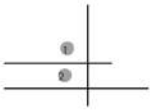
perfect	4	24%
good	8	47%
normal balance	5	29%
financial loss	0	0%

Which type of film were selling well?



Comedy	9	12%
Adventure	17	22%
Fantasy	14	18%
Mystery	11	14%
Romance	13	17%
Action	13	17%
Thriller	0	0%

product reserch

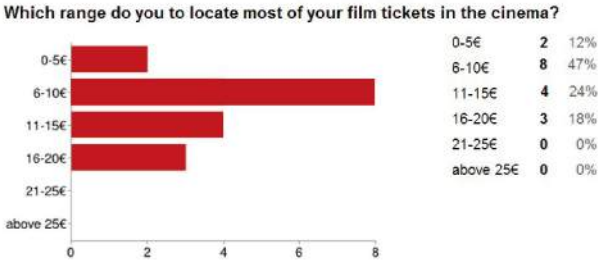


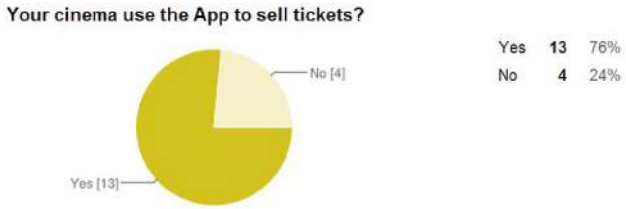
1.Seen from the date,we know the operating of the researched cinemas are all profitable.
2. Almost similar to the former questionnaire about customers , the rank of welcomed films were listed: Adventure,Fantasy,Romance,Action,ect.

2 Introduction

Questionnaire Analysis

Cinema App about Cinema Owners



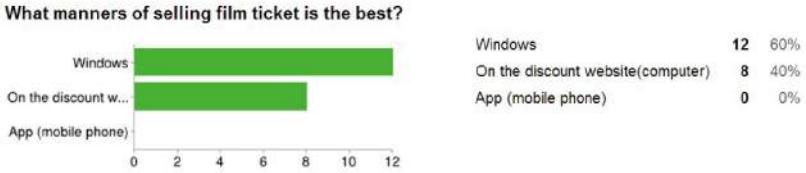


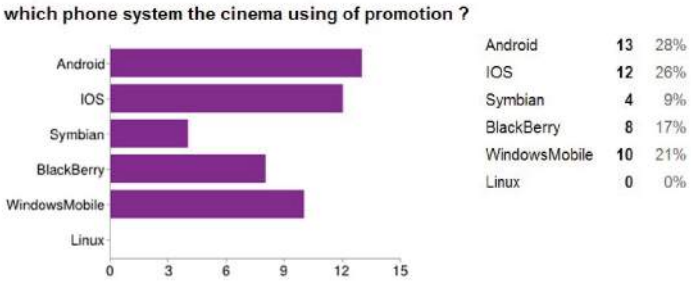
product reserch

3.Most of the cinemas locate their price range is from 6-10.
4.76% the cinemas have applied App to sell tickets.

Questionnaire Analysis

Cinema App about Cinema Owners

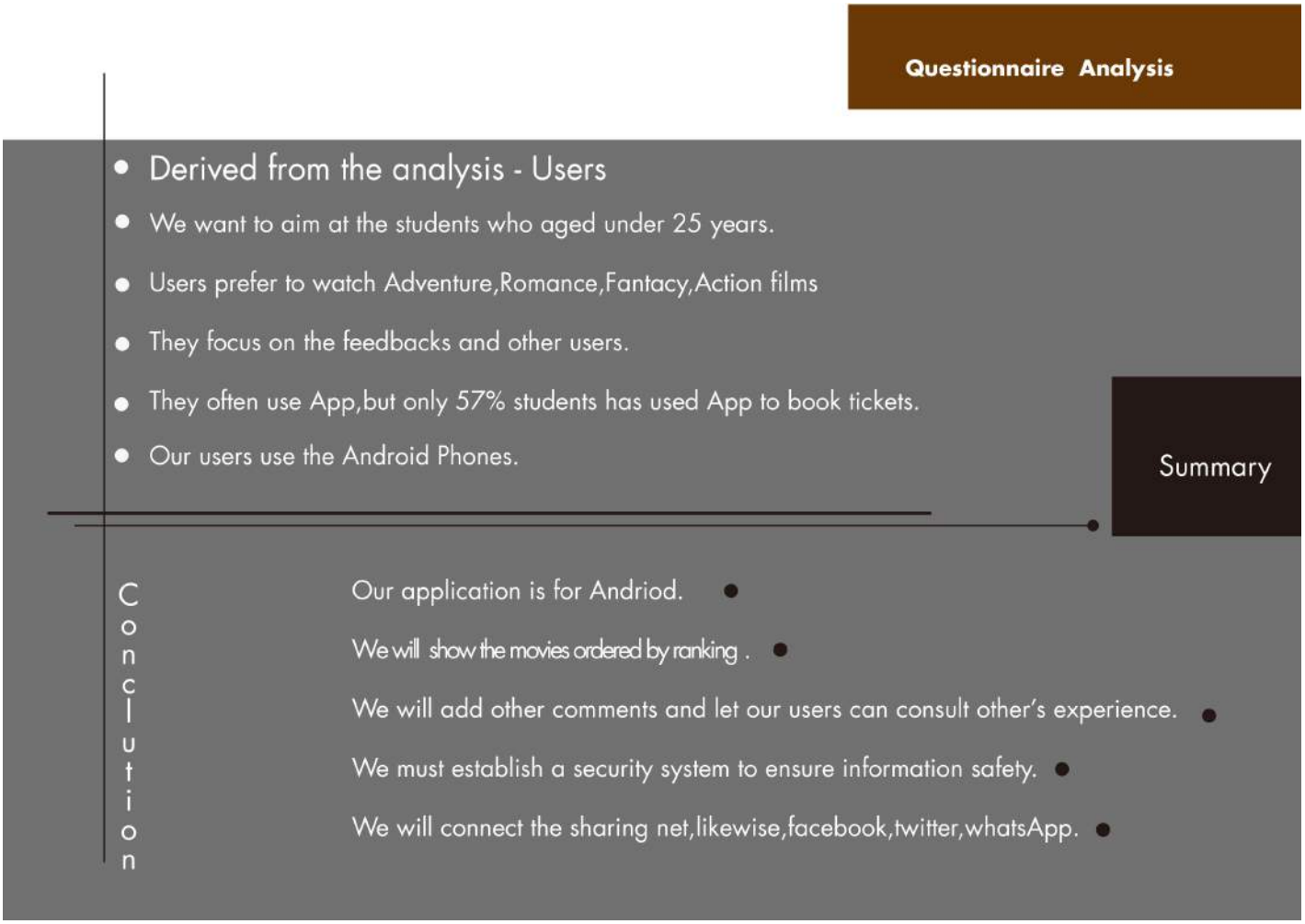




product reserch

5.Most of the cinemas consider that film ticket are sold out.
6. Android and IOS are the most popular cinema booking system.

2 Introduction



Interview:
After that, movie theater owners were interviewed by us, they are willing to put on their own cinema app platform for increasing sales, promote the reputation of movie theater, but they can also keep abreast of market demands, timely discharge sheet according the market rank, which is not only conducive to a climate conducive to customer ,but also for the development of their cinemas.

Conclusion:
after collecting the requirments and analysing the data, we were able to start designing our first prototype for the Cinema Owner.

3 Work Plan

3.Work Plan :

After collecting of the Requirments, and analysing the data, we start with the design of the first prototype by HTA,STN then we implement it, then we apply the expert-based evaluation techniques on that prototype (including CognitiveWalkthrough， Heuristics, and Review-based), and we come up with prototype 2 where we applied the User-based evaluation techniques (including Think aloud, Cooperative evaluation, and) to evaluate that prototype (we repeate that in an iterative way until we get our final product）, and finally we have our final product.

4 Design and Analysis

4.1 Defination

4.1.1 Hierarchical Task Analysis

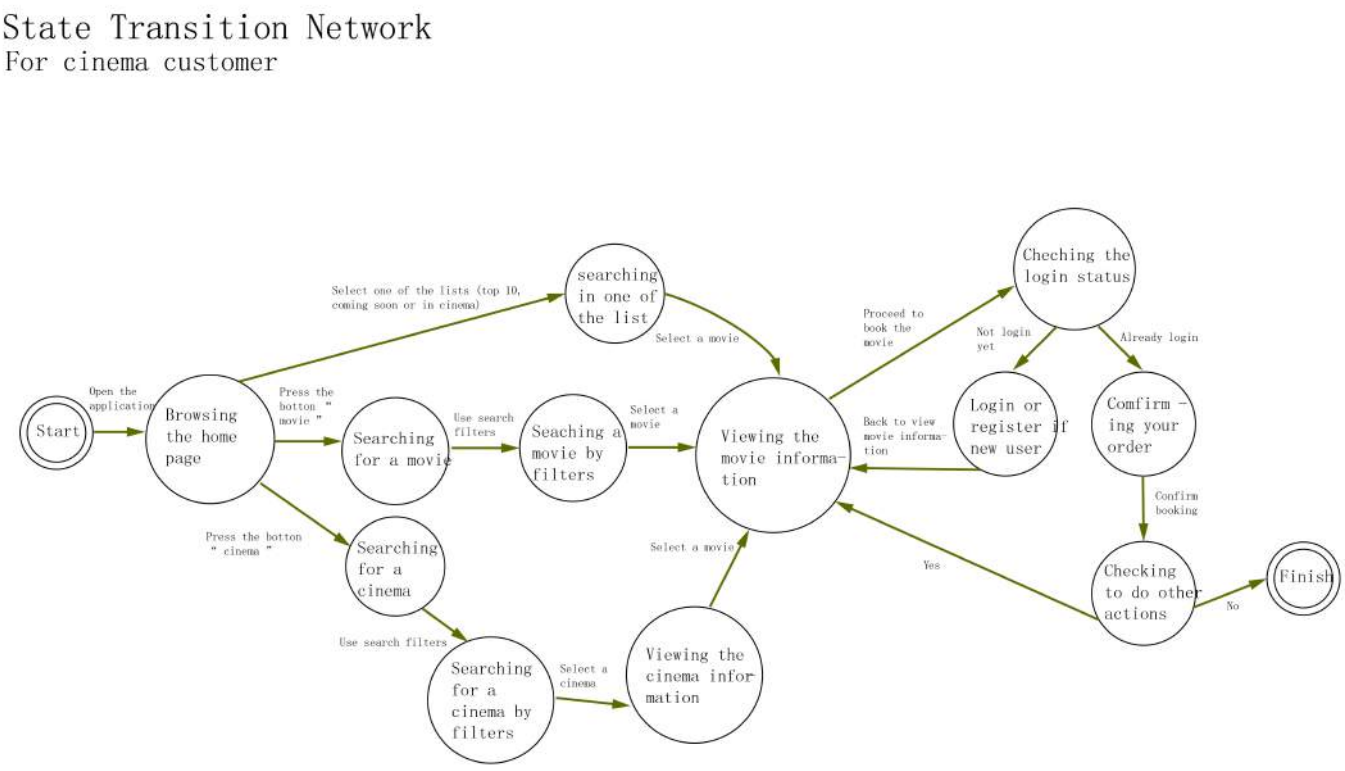
Hierarchical Task Analysis (HTA) is a task description method and a variant of task analysis. Task description is a necessary precursor for other analysis techniques, HTA is used to produce an exhaustive description of tasks in a hierarchical structure of goals, sub-goals, operations and plans.In HTA, tasks are broken down into progressively smaller units.

4.1.2 State Transition Network

A state transition network is a diagram that is developed from a set of data and charts the flow of data from particular data points (called states or nodes) to the next in a probabilistic manner. State transition networks are used in both academic and industrial fields. State transition networks are a general construct, with more specific examples being augmented transition networks, recursive transition networks, and augmented recursive networks, among others.

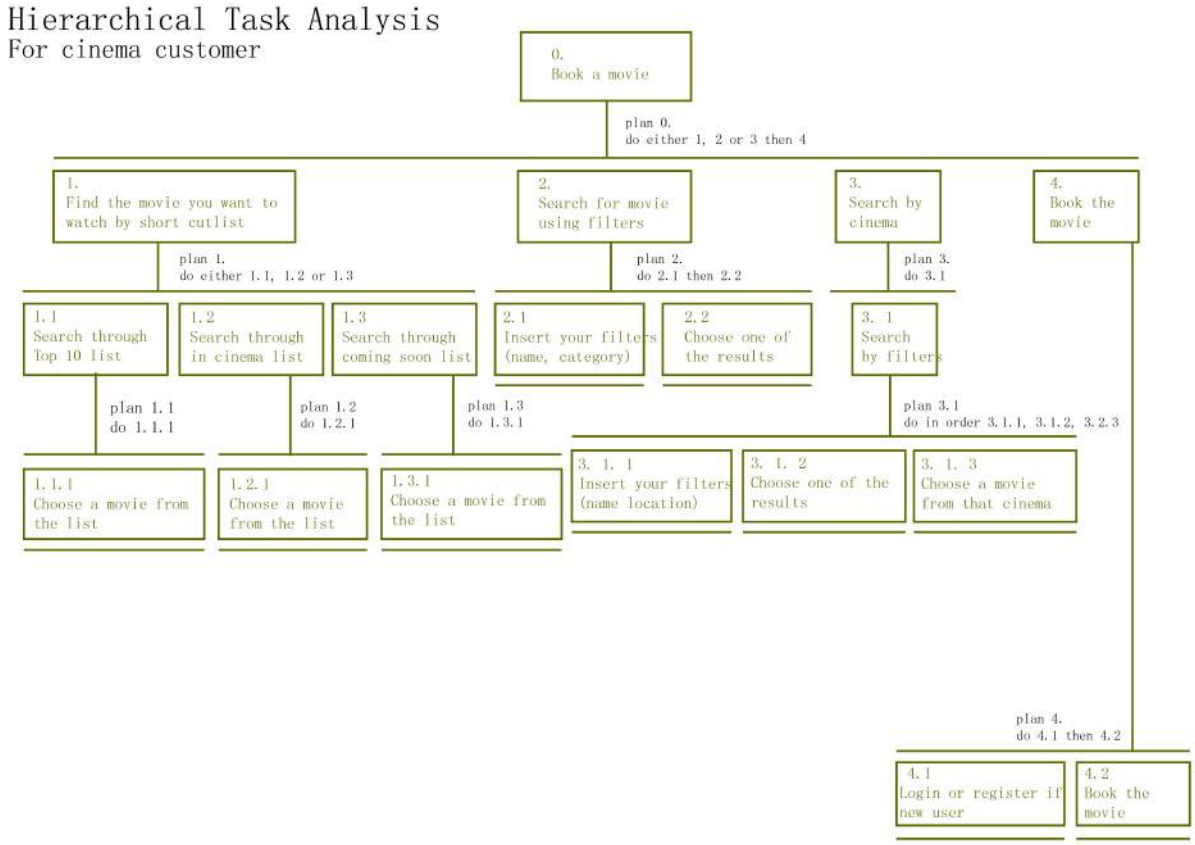
4.2 Cinema Customer(STN,HTA)

STN The task modeling for the “Book a movie” task （dig.4-2-1)
HTA The task modeling for the “Book a movie” task （dig.4-2-2)
STN The task modeling for the “Comment and rank a movie” task （dig.4-2-3)
HTA The task modeling for the “Comment and rank a movie” task （dig.4-2-4)

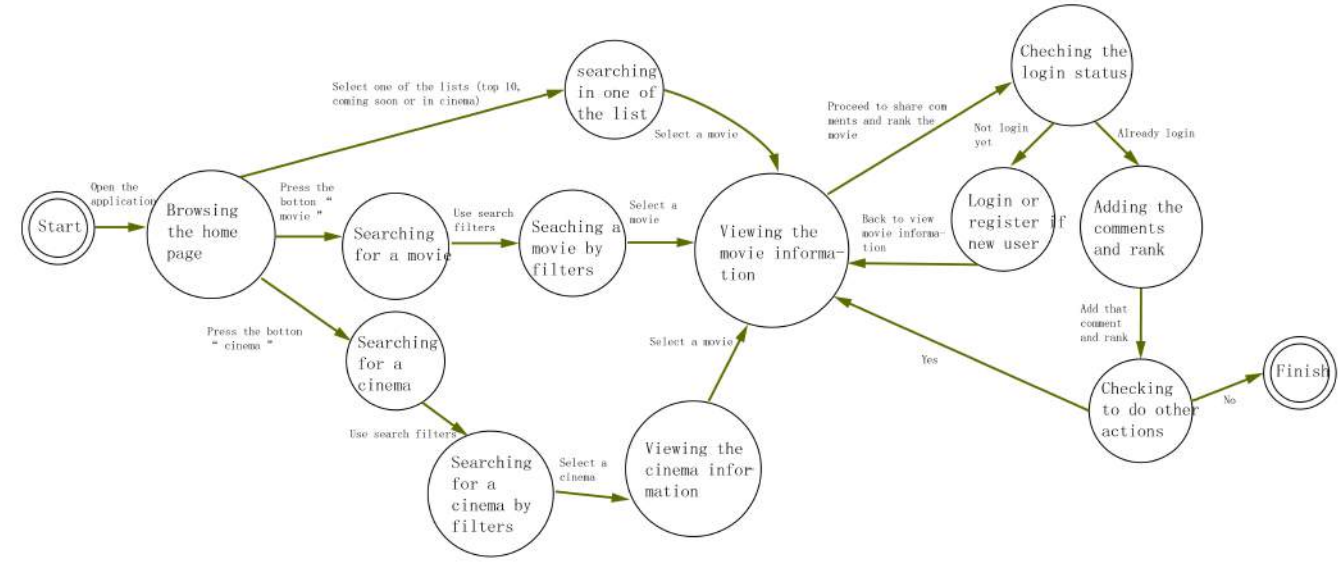


dig.4-2-1

4 Design and Analysis

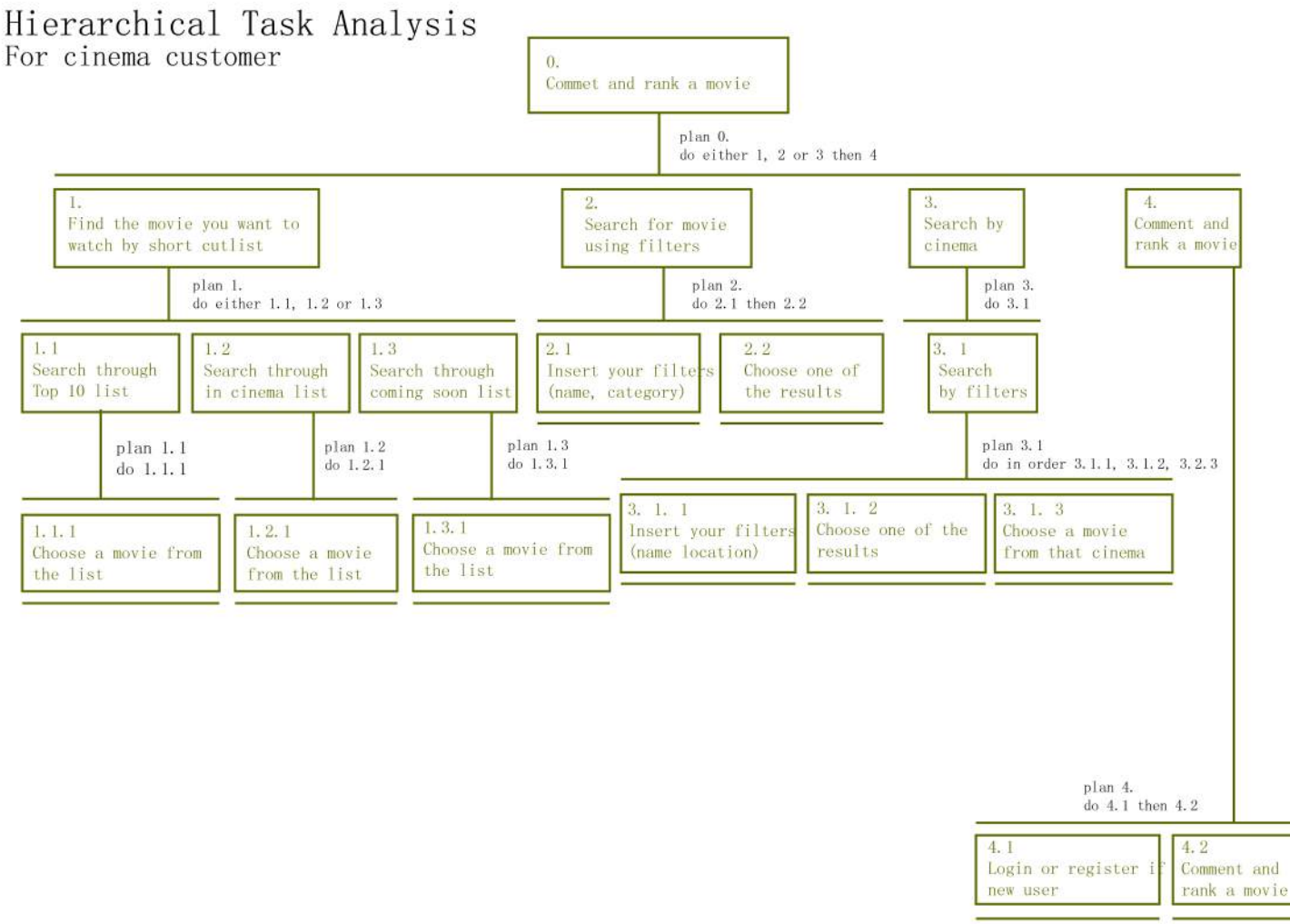


dig.4-2-2



dig.4-2-3

4 Design and Analysis



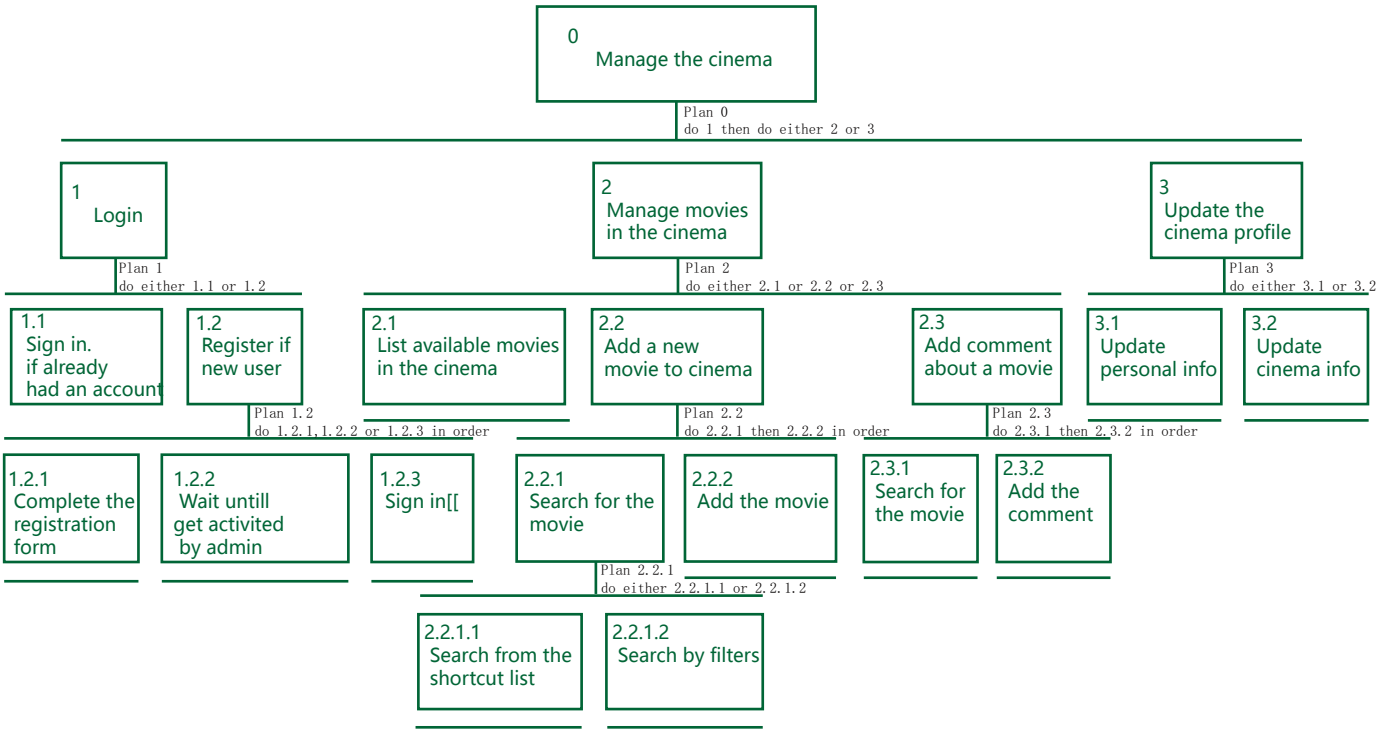
dig.4-2-4

4.3 Cinema Owner (STN,HTA)

STN. The task modeling for the “Add a movie to cinema” task, “Comment and rank a movie” task, “List all available movies” task, and “update cinema information” task.(dig.4-3-1)
HTA .The task modeling for the “Add a movie to cinema” task, “Comment and rank a movie” task, “List all available movies” task, and “update cinema information” task.(dig.4-3-2)

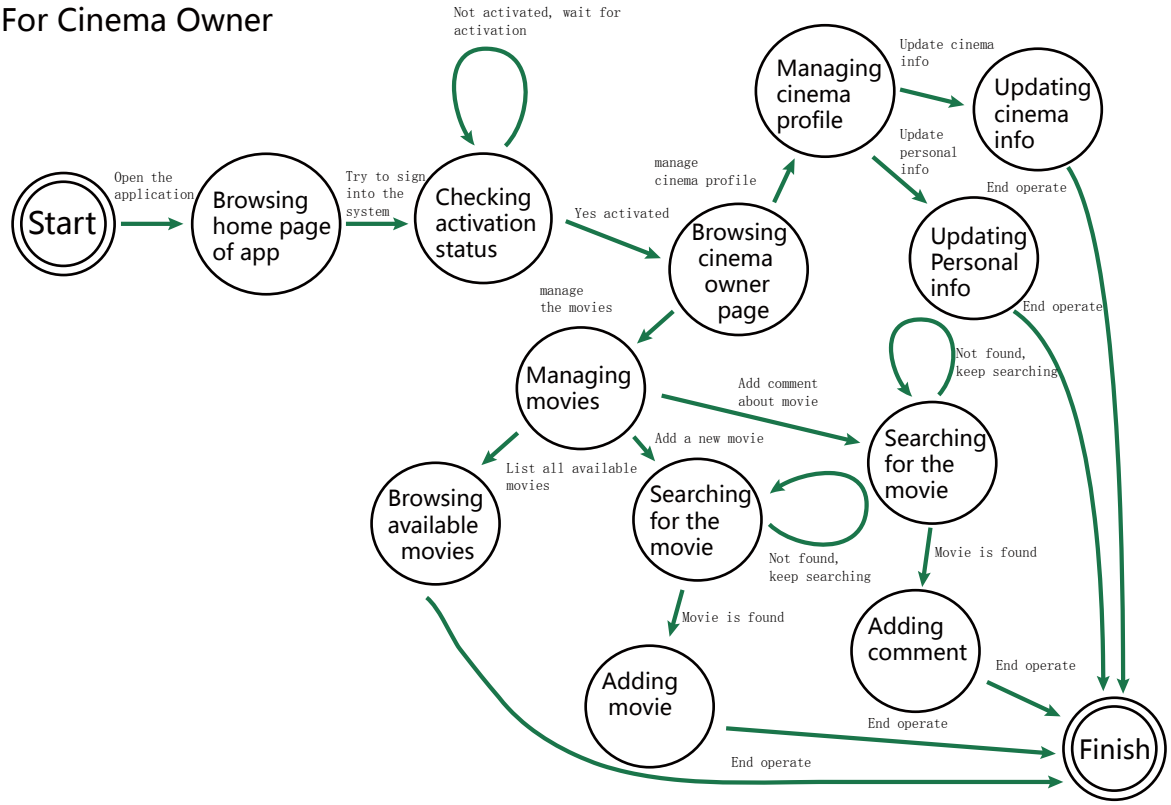
4 Design and Analysis

Hierachical Task Analysis
For Cinema Owner



dig.4-3-1

State Transition Network
For Cinema Owner



dig.4-3-2

5. Prototype 1

5 Prototype 1

After we finish the design part with modelling the possible tasks, we implement our first prototype.

5.1 Prototype Description

After connecting with STN and HTA,to book a movie,you can find the movie you want to watch by short cutlist,seach through top 10 list,search through in cinema list ,or search through coming soon list,seach for movie using filters,searching by cinemas. For using to comment and rank a movie,you can find the movie you want to watch by short cutlist,using filters or by cinemas.

5.2 Expert-based evalution techniques

5.2.1 heuristic evalution

Definition :A heuristic evaluation is a usability inspection method for computer software that helps to identify usability problems in the user interface design. It specifically involves evaluators examining the interface and judging its compliance with recognized usability principles (the "heuristics"). These evaluation methods are now widely taught and practiced in the new media sector, where UIs are often designed in a short space of time on a budget that may restrict the amount of money available to provide for other types of interface testing.
The main goal of heuristic evaluations is to identify any problems associated with the design of user interfaces. Usability consultant Jakob Nielsen developed this method on the basis of several years of experience in teaching and consulting about usability engineering.
The heuristics as published in Nielsen's book Usability Engineering are as follows.

5.2.1.1 Visibility of system status:

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

1. Visibility of system status:
The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

2. Match between system and the real world:
The system should speak the user's language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

3. User control and freedom:
Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

4 Consistency and standards:
Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

5 Prototype 1

5 Error prevention:
Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

6 Recognition rather than recall:
Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7 Flexibility and efficiency of use:
Accelerators—unseen by the novice user—may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

8 Aesthetic and minimalist design:
Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

9 Help users recognize, diagnose, and recover from errors:
Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

10 Help and documentation:
Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

We apply the following Heuristics to our project:

5.2.1.1 Heuristic #1:Visibility of system status
We are waiting for the process of loading, unreachable states.
1-Information message,progress bar loading when loading the movie trailer(introduction of a film)
2- Sms， sending a message (if i already book a movie,adding sms service to give the users feedback that the movie is booked)

5.2.1.2 Heuristic #2:Match between system and the real world
1-We add search the movie from map
2-E-mail sending an e-mail to the customers with tickets of the booked movie.

5.2.1.3 Heuristic #4:Consistency and standards
the sequence of actions needed to search for a movie by filters or by cinemas consistency.

5.2.1.4 Heuristic #5:Error prevention
Seprate each task.(actions sequence)when you choose a cinema,you can not see a movie button so that we can prevent some errors.

5 Prototype 1

5.2.1.5 Heuristic #9:Help users recognize, diagnose, and recover from errors
Go back to the former choice,former state./ before he book a movie, he must confirm.

5.2.1.6 Heuristic #10: Help and documentation
In order to complete the search,the user is guided to search,either by filters or by maps,not from both (at the same time)

5.2.2 cognitive walkthrough

Experts'walks through'the design [i.e. steps through each step of some known/representative task] to identify potential problems.
4 requirements .
1 the specification and prototype of the system
2 description of the task the user is to perform
3 complete a list of actions constituting the task
4 description of the user (including the level of experience and knowledge)

4 questions must be answered:
is the effect of the action the same as the user's goal at that point? [what the action will do/action's effect should be what the user intends/user's goal.]
will users see that the action is available [when they want it] - visibility at that time?
once users have found the correct action [as in the foregoing], will they know/recognize it is the one they need? [effective representation of the action, clear representation.]
after the action is taken, will users understand the feedback they get? [effective confirmation that the action has been taken.]

Identify the task 1 : book a movie
Identify action sequence
Asumption: search for a movie by cinemas. New users (not register in system)

Act. 1: press the "Cinema" button
Resp. 1: display moves to "Search for Cinema " page.
Act. 2: press "Search by map "button
Resp.2:display moves to "Choose Cinema from Map " page, allowing user to choose one of the available cinemas in the system from the map.
Act.3:press on a marker for the chosen cinema.
Resp. 3: display moves to "Cinema Information" page.
Act.4:press the "Available Movies" button
Resp.4:display moves to "Choose movie from results " page, allowing user to choose one of the available movies from results.
Act.5:press on one of the movies in the result list.
Resp. 5: display moves to "Movie Information" page.
Act.6:press the "Book" button.
Resp. 6:display moves to "login" page.

5 Prototype 1

Act.7:press the “Register” button
Resp. 7:display moves to “Registration” page.
Act.8:insert the registration information.
Resp. 8:display shows all the inserted information.
Act.9:press “Register and login” button.
Resp. 9:display moves back to “Movie Information” page.
Act.10:press the “Book” button.
Resp. 10:display moves to “Booking Confirmation” page.
Act.11:press the “confirm” button.
Resp. 11: the movie is booked and sms is sent to user as confirmation. An email is also sent with the movie ticket to be printed.

For each action we recorded the answers to the 4 questions about the usability of the system, and they were all positive.

- identify task 2: add comment about a movie
Identify action sequence
Asumption: search for a movie by cinemas. New users (not register in system)

Sequence of actions:
Act. 1: press the “Movie” button
Resp. 1: display moves to “Search for Movie” page.
Act. 2: insert search filters
Resp.2:display display shows the inserted filters.
Act.3:press “Search” button.
Resp. 11: the comment is added .

For each action we recorded the answers to the 4 questions about the usability of the system, and they were all positive.

5.1.3 Review-based evalution

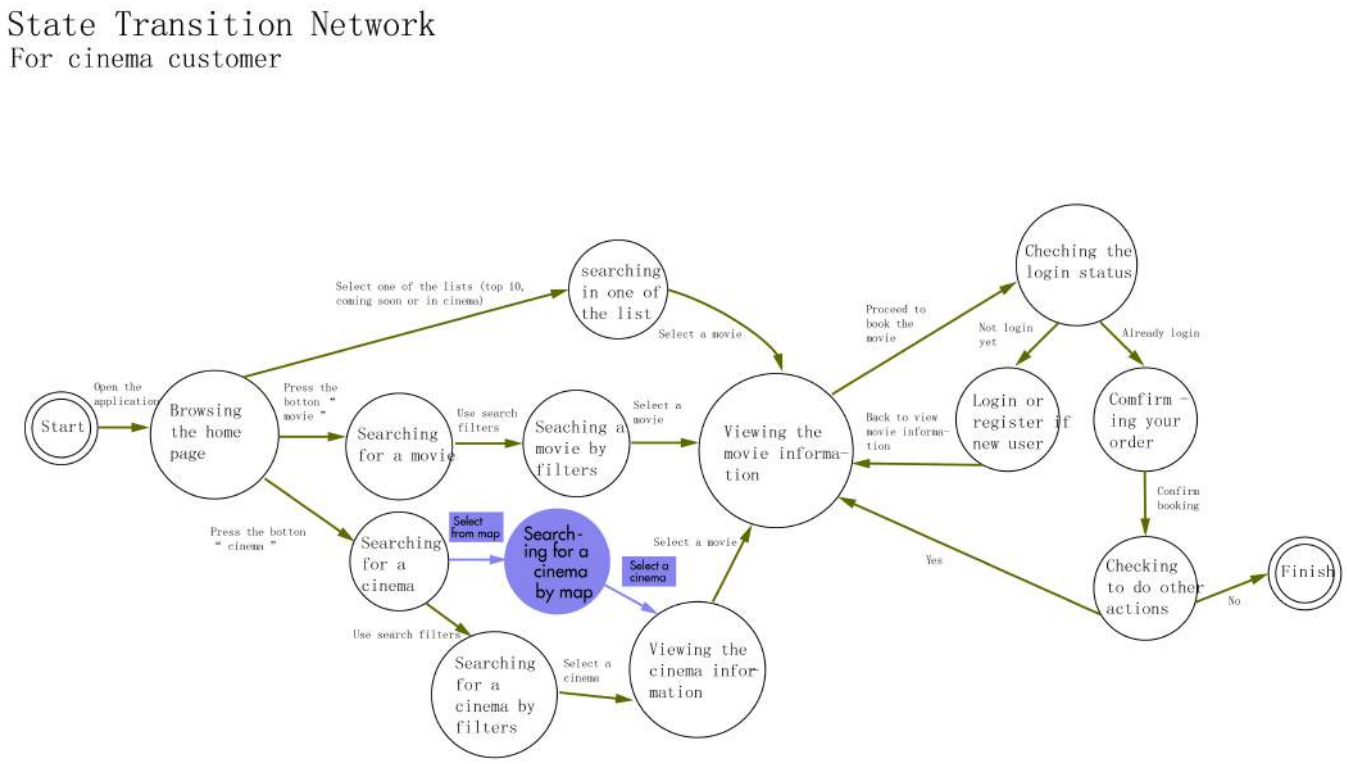
After we implement our first prototype.Nielsen's ten principles of heuristic evalution to adapt our application, moreover make use of cognitive walkthrough, through each steps of representive task to identify potential problems. Through repeating experiments continually and therefore a review of relevant literature can save resources.

6. Prototype 2

6.1 Prototype Description

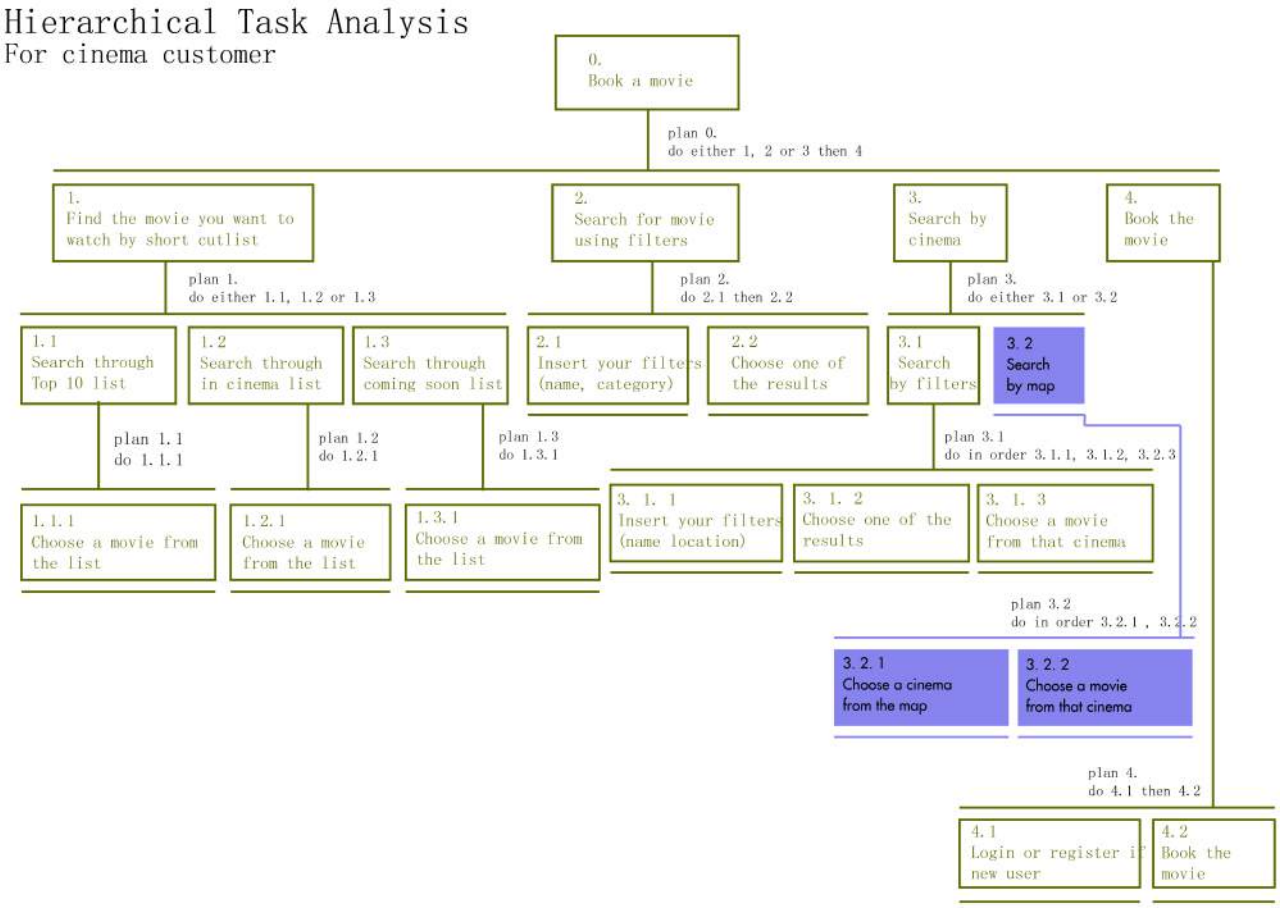
Compared with prototype 1, through the expert-based evalution techniques(heuristic evalution,cognitive walkthrough),then we want to add some other functions to rich in our application for our customers and cinema owners. We want to add confirmation(sms and e-mail),and the map search .

STN The task modeling for the “Book a movie” task（dig.6-1-1)
HTA The task modeling for the “Book a movie” task （dig.6-1-2)
STN The task modeling for the “Comment and rank a movie” task （dig.6-1-3)
HTA The task modeling for the “Comment and rank a movie” task （dig.6-1-4)

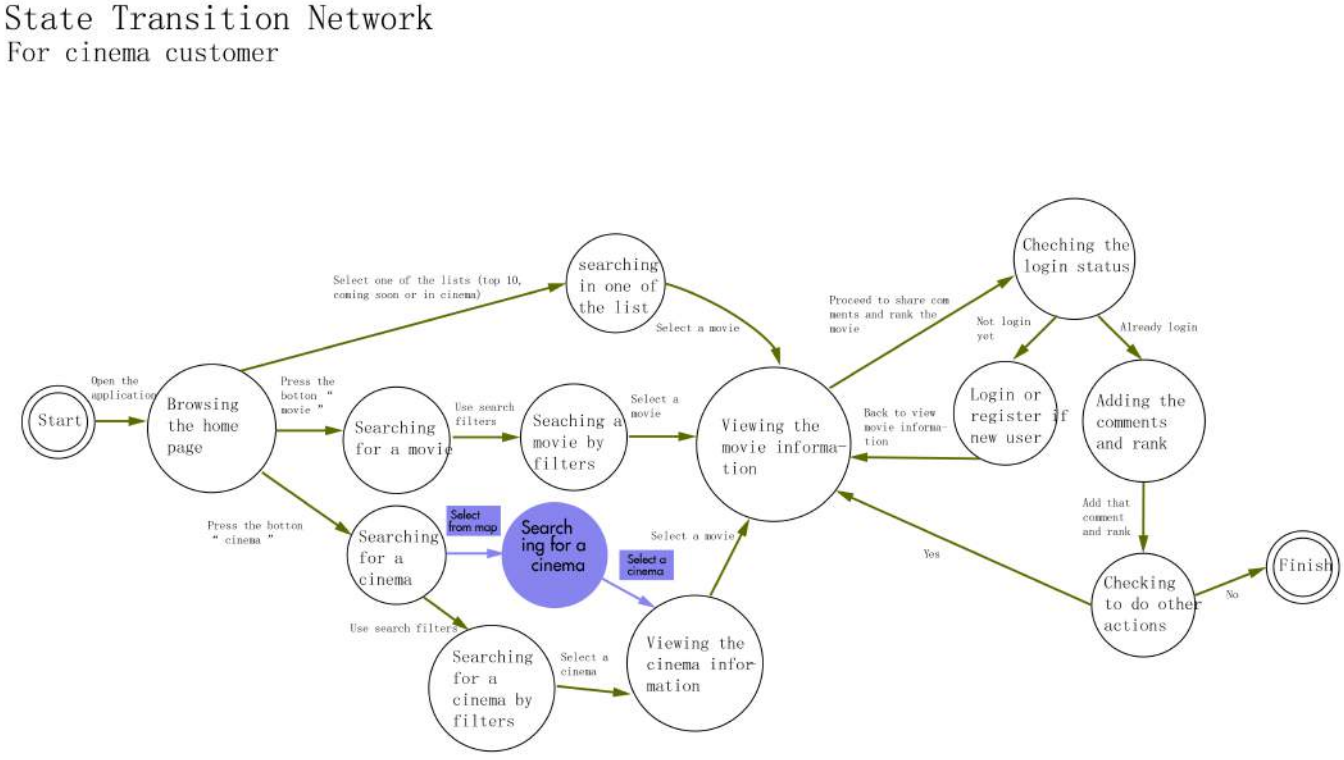


STN The task modeling for the “Book a movie” task(dig.6-1-1)

6 Prototype 2

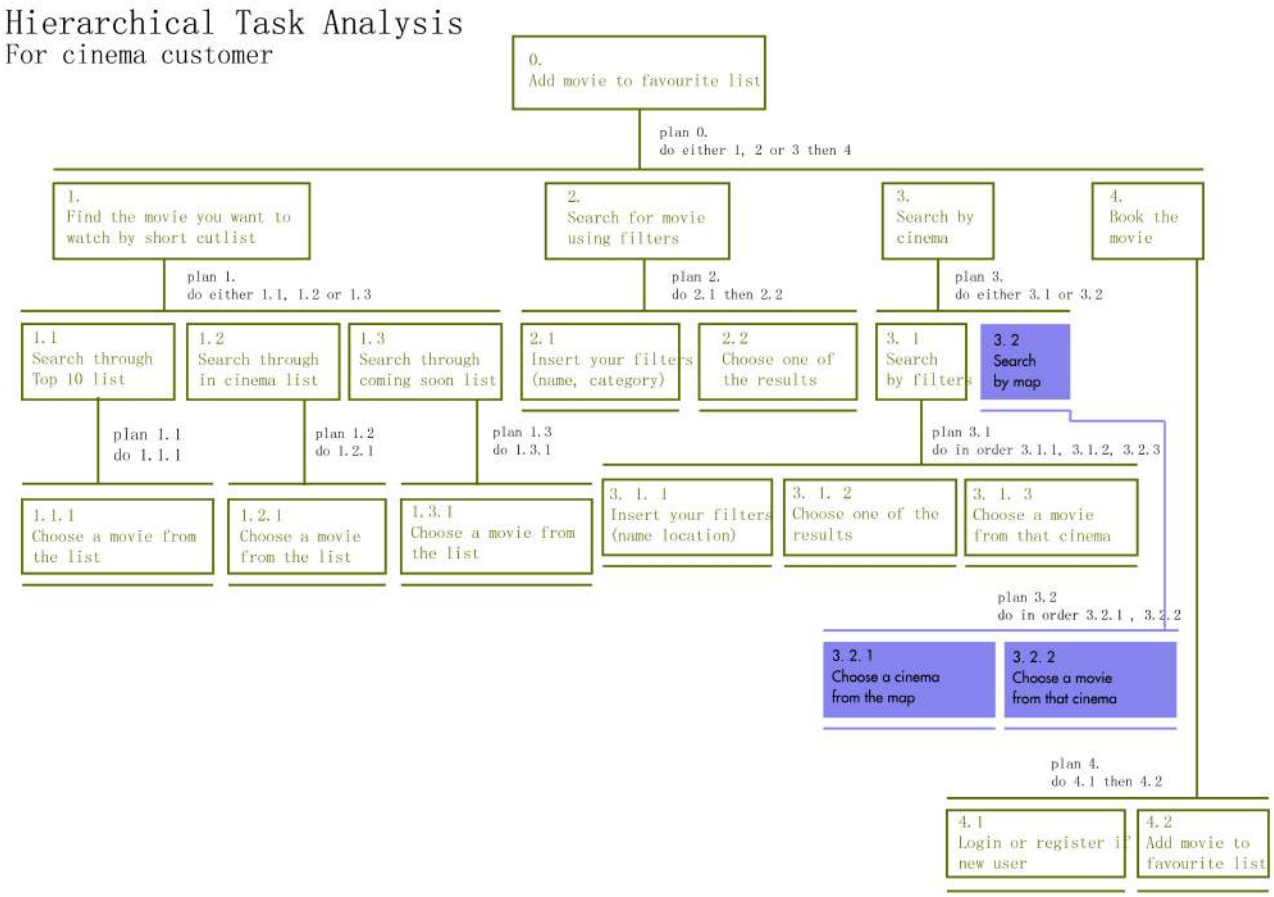


HTA The task modeling for the “Book a movie” task （dig.6-1-2)



STN The task modeling for the “Comment and rank a movie” task （dig.6-1-3)

6 Prototype 2



HTA The task modeling for the “Comment and rank a movie” task （dig.6-1-4)

6.2 User-based evaluation

6.2.1 think aloud

User is asked to describe what s/he is doing and why, what s/he thinks is happening, etc.
After applying this technique to our prototype we add the following features to our project.

6.2.1.1 add top10 search shortcut list.
Top10 ranking conducted according to the most popular videos on the market, so that consumers have a choice of guide

6.2.1.2 we will “add to favourite” button
Add movie to the favorite button,find the movie that you want to watch by short cutlist(cinema list,coming soon list),by filters,by cinema ,then choose the film to your favorite list so that save and remember it.

6.2.1.3 add “show on the map” to enable the user to locate the cinema on the map.
When users use the application, anywhere， he can make use of the map to search his nearest cinema.

6 Prototype 2

6.2.2 cooperative evaluation

Variation on think aloud.User collaborates in evaluation.Both user and evaluator can ask each other questions throughout.
By asking each other questions between evaluator and user interviews, we get, users select a cinema, it is often only temporary, suddenly they decided ,then they need to get their current location positioning, which requires contact with each other and other features such as Google Maps, to accurately locate the user's current location, to determine the the relationship between current location and the location and cinemas.

After applying this technique to our prototype we add the following features to our project:
6.2.2.1 Show on the map button

6.2.3.Controlled Experiments

6.2.3.1 Definition

A controlled experiment is one in which everything is held constant except for one variable. Usually a set of data is taken for a control group, which is commonly the normal or usual state, and one or more other groups are examined, where all conditions are identical to the control group and each other except this one variable. Sometimes it's necessary to change more than one variable, but all of the experimental conditions will be controlled so that only the variables being examined change and the amount or way they change is measured.

Controlled experiments are considered to be the most rigorous of empirical methods capable of providing empirical evidence to support a particular claim or hypothesis

6.2.3.2 Factors that must be considered carefully in experimental design:

participants (chosen)
variables (tested and manipulated)
hypothesis (tested)

Participants:
sample of students following the defined "User Profile"

Variables:
1. Independent variables (manipulated)
Interface Design of "swapping between Search Lists"
“2 Levels”
1- Menu Tabs Pressing
2- Touch Sliding

2. Dependent Variables (measured)
Number of Errors (calculated during swapping)

Hypothesis:

A prediction of the outcome of the experiment.
Stated in terms of IV and DV; that a variation in the IV will cause an effect on the DV.
In the experiment, we would like to prove that the prediction is correct i.e. to confirm the hypothesis.
This is done by disproving/rejecting the null hypothesis (A null hypothesis states that a variation in IV does not make a difference in the DV).
Users perform faster with less number of trials when using the touch screen interface (IV level one) than when using a gesture control interface (IV level two).

6 Prototype 2

Hypothesis (tested)
Null Hypothesis
"Both Designs have the same performance (There is no Relation between Dependent & Independent variables)"
Our Hypothesis
"Menu Tabs Pressing design has better performance"

Applying ANOVA on the collected data in the experiment:

	A	B	C	D	E	F	G	H
1	Touch swapping	Menu tabs Swapping						
2	3	1						
3	1	0						
4	1	1						
5	4	2						
6	4	0						
7	0	0						
8	4	1						
9								
10								
11	Anova: Single Factor							
12								
13	SUMMARY							
14	Groups	Count	Sum	Average	Variance			
15	Column 1	7	17	2.428571	2.952381			
16	Column 2	7	5	0.714286	0.571429			
17								
18								
19	ANOVA							
20	Source of Variation	SS	df	MS	F	P-value	F crit	
21	Between Groups	10.28571429	1	10.28571	5.837838	0.032545	4.747225	
22	Within Groups	21.14285714	12	1.761905				
23								
24	Total	31.42857143	13					

Analysis of data:
Results of Applying ANOVA

If F > F crit, we reject the null hypothesis.
This is the case, 5.838 > 4.747. Therefore, we reject the null hypothesis.
The means of the two populations are not equal.
This means that "Average number of errors is higher when using touch swapping".

Significance and p-value
Did the difference/effect happen by chance or was it caused by IV?
Typically, significance level of 0.05
since P< 0.05 (0.032<0.05)
This is a significant result, it could have been caused by the IV.
Therefore the null hypothesis is rejected / the hypothesis is confirmed

7 Final Product

7.Final Product

Figure (1) In Cinemas

Figure (2) Top Rated Movies

Figure (3) Coming Soon

7 Final Product

Figure (4) Login

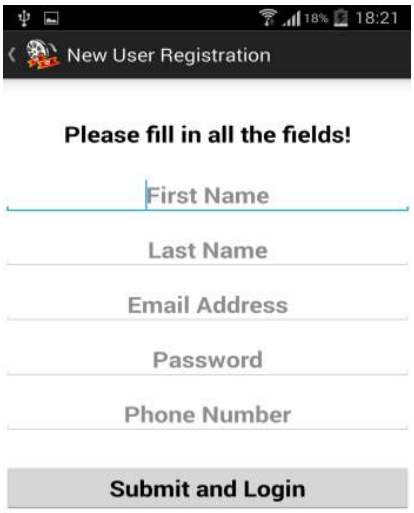


Figure (5) Register page

Figure (6) Top Rated "user logged in"

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Figure (7) User profile

Figure (8) User Movie favorite List

Figure (9) User Booking

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Figure (10) User can choose to search for movie or for Cinema

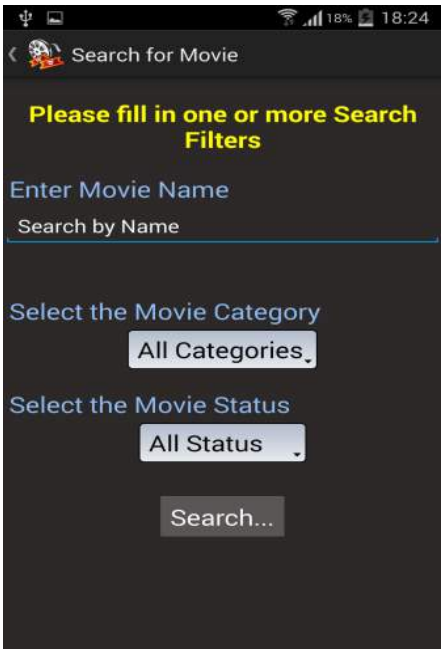

Figure (11) Search for Movie

Figure (12) search result

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Figure (13) Movie details

Figure (14) Movie details 2 and Movie trailer

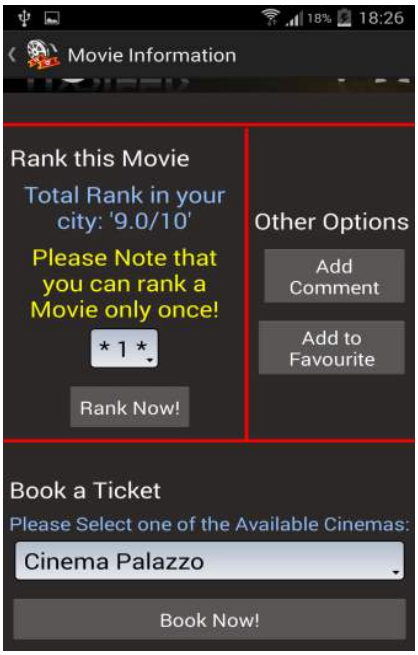

Figure (15) Movie details "add comments, rank Movie"

7 Final Product

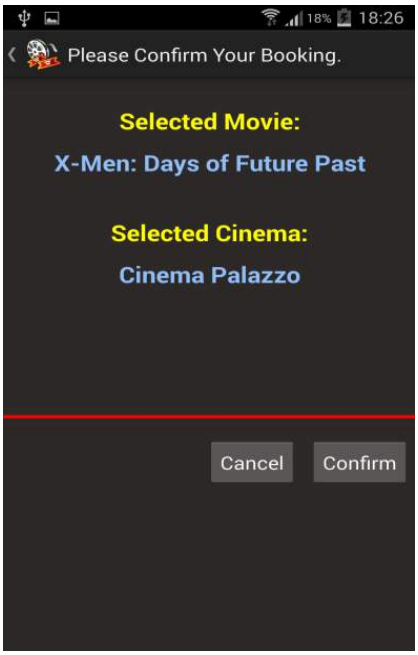

Figure (16) movie booking "Confirm or Cancel"

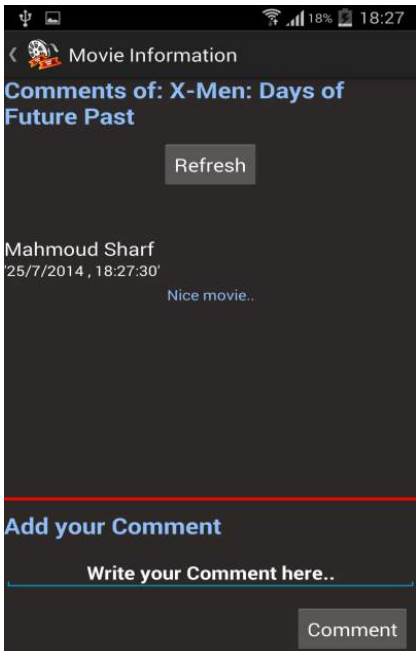

Figure (17) Movie comment

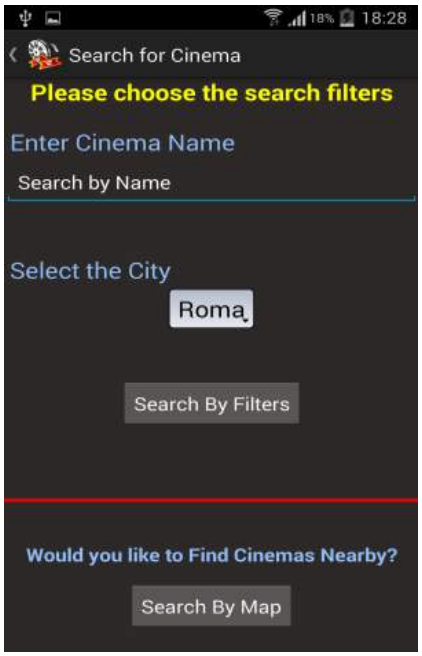

Figure (18) Search filter

7 Final Product

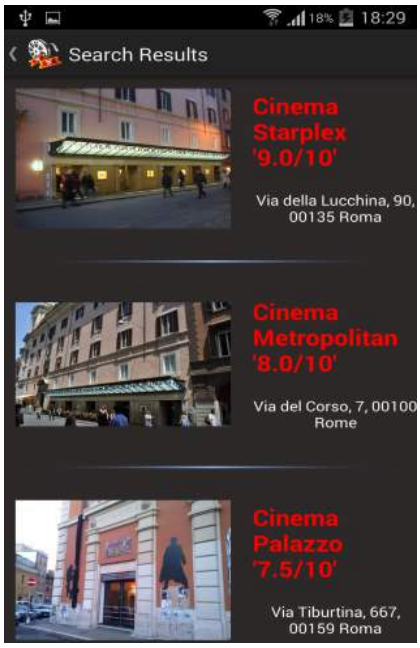

Figure (19) cinema Search result

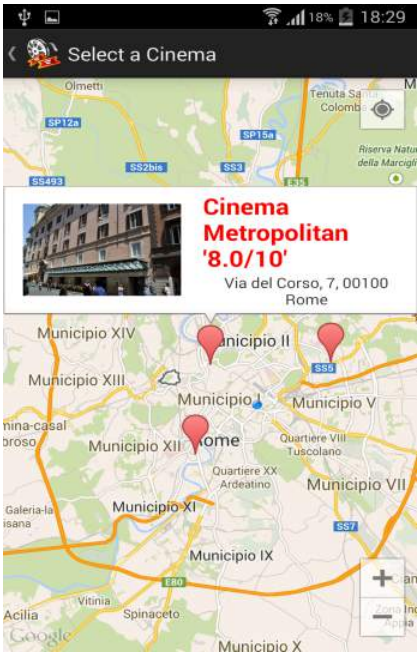

Figure (20) Cinema Location

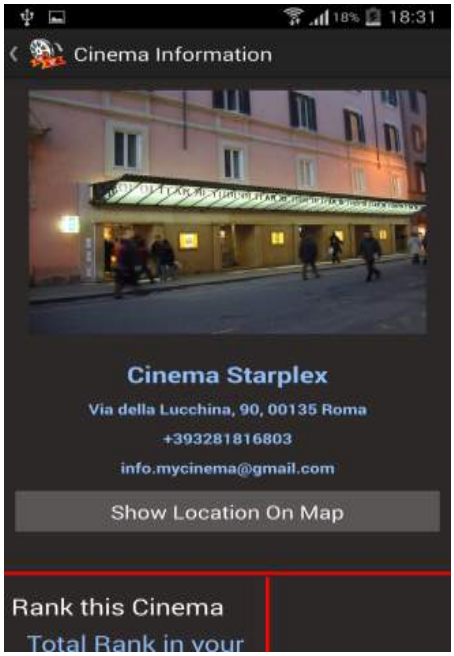

Figure (21) Cinema Details

7 Final Product

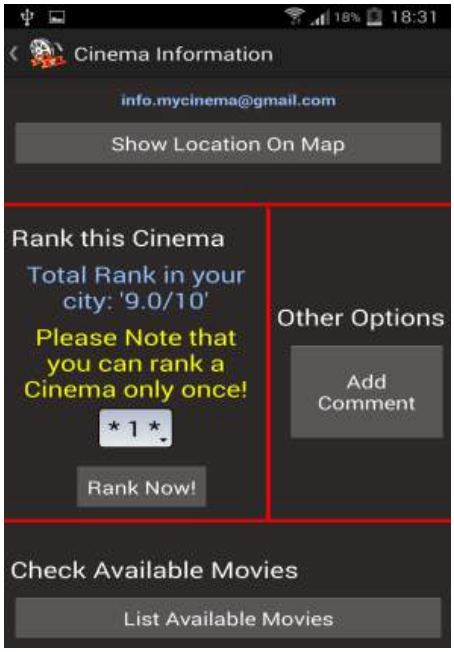

Figure (22) Cinema Details 2 “Add comments, Rank”

Figure (23) List of available Movie in Cinema

8 Conclusion and Future Work

8.Conclusion:

We managed to finish the application ready for using by Cinema customer, following User CenteredDesign.

Future work:

We could implement an application for cinema owner, adding other functions for instance, comments, cinemas rankings.

9 References

9. References

1- Course Material

2- http://www.excel-easy.com/examples/anova.html
For statistical analysis and ANOVA