

ROCHESTER INSTITUTE OF TECHNOLOGY

A Thesis submitted to the Faculty of  
The College of Imaging Arts and Sciences  
in Candidacy for the degree of

MASTER OF FINE ARTS

THE ACURA NSXPERT  
AN INTERACTIVE BROCHURE

BY

CHANCHAI NGAMWITHI

DECEMBER 1995

# APPROVALS

Chief Adviser: Prof. James Ver Hague

Date: 4.28.97 | \_\_\_\_\_

Associate Adviser: Prof. Gordon Goodman

Date: 5/12/97 | \_\_\_\_\_

Associate Adviser: Prof. Nancy Ciolek

Date: 4.28.97 | \_\_\_\_\_

Chair: Prof. Mary Ann Begland

Date: 6.10.97 | \_\_\_\_\_

I, Chanchai Ngamwithi, hereby grant permission to the Wallace Memorial Library of RIT to reproduce my thesis in whole or in part. Any reproduction will not be for commercial use or profit

Date: DEC 20' 95 | \_\_\_\_\_

## TABLE OF CONTENTS

---

•General Introduction	
Statement of the problems.....	1
Limitation.....	2
Research.....	2
Software and Hardware concerns.....	3
•The Project	
The Design Process.....	4
User Interface.....	4
The Design Structure.....	6
•Conclusion	
Evaluation Process.....	9
Concluding the project.....	10
Future Development.....	10
•Appendices	
Project Flowchart.....	12
Visual Portfolio.....	13
Bibliography.....	24

## GENERAL INTRODUCTION

The purpose of this thesis is to explore the possibilities of computer graphics applied to information delivery systems. Devising a car information system, I will produce an interactive application that will provide facts about new automobiles. The project will combine computer generated images, acquired images, sound, video, etc.- all controlled by the user. The main goal is to develop a proper user interface which allows any person to utilize the application and walk away with adequate knowledge about the automobile.

In this thesis project, I attempted to model a computer kiosk which introduces Acura automobiles. It is a promotional tool. The process combined an interactive design technique with the use of Macintosh application software. The user interface design is accomplished by taking advantage of the multimedia capabilities of the computer (i.e. graphics applications, sound and video applications, data storage, playback systems, etc.).

## STATEMENT OF THE PROBLEM

When a person wants to buy a car, they need to be well informed about the purchase. One of the best places to learn about particular cars is in the showroom. However, a potential buyer is usually bombarded by a high-pressure salesperson the minute he or she walks into the showroom. The buyer often feels very uncomfortable with this pressure, and it often gets in the way of the sale. The interactive kiosk solves this problem. With an automated kiosk running in the showroom, the buyer can learn a lot about the car without a salesperson breathing down their neck. In addition, the kiosk can also be located in other strategic areas, such as the local mall, convention centers, clubs,

restaurants, hotels, airports, etc. This way, the buyer can walk into the showroom already knowledgeable about the car they are interested in buying. This also takes some pressure off the salesperson.

## LIMITATIONS

### Why Acura NSX ?

I chose Acura because they only have four models- the NSX, the Legend, the Vigor, and the Integra. From a design standpoint, this simplified the process while allowing the kiosk to look like a complete prototype. Due to time limitations, I had to choose one model out of the four to become fully functional.

There are two reasons why I chose the Acura NSX. First, I'm personally fascinated with this car. I realized I would dedicate most of my time to this thesis project, so I preferred to give myself a topic that is very enjoyable to me.

The second reason is I own an Acura Integra. Moreover, I have a good connection with the local Acura Dealer. Therefore, I can find information for my thesis project easily.

## RESEARCH

Before I decided to pick the Car Information System as my thesis topic, I had already reviewed plenty of car magazines. Last summer, I visited a car show in New York City with the aim of searching for a good exotic car for my thesis. I found the the Acura NSX to be a very attractive car. Moreover, the Acura dealer is located near RIT, so it is very convenient for me to find information on this car.

## SOFTWARE AND HARDWARE CONCERNS

The first step was to choose the hardware that would be best suited to developing the project. The most popular computer systems used today as educational tools are PC's and Apple Macintoshes. These systems are comparable, and they offer similar possibilities. But here the technical prerequisite was to use the system available at RIT, more precisely in the Graduate Computer Graphics Lab. Thus, the systems used were Apple Macintoshes. The hardware involved in this project was the following :

- Macintosh Quadra 800
- Macintosh Quadra 660 AV
- APS external hard drive
- APS sysquest 44 MB drive
- Apple color one scanner
- Mac recorder
- Sony video 8 camcorder
- NEC 4 FGe 15" monitor
- NEC 4 head VCR
- YAMAHA speaker

Concerning the software involved in the creation of the project, a variety of applications had to be used since the project involved graphics, video, sound, and interactivity. Specific programs that had to be tested included Macromedia Director and Hypercard (both are interactive multimedia presentation and authoring software). Hypercard was discarded due to its poor color managing capabilities.

Considering my personal skill with either Macromedia or Hypercard, I selected Macromedia Director 4.0.3. I've handled Lingo (Macromedia Director's programming language) more than Hypertalk (Hypercard's programming language). Other software packages were used as a complement to create more graphic materials. The software used includes the following:

- Macromedia Director 4.0.3 (multimedia and authoring software)

- Adobe Photoshop 2.5 (photo-retouching program)

- Adobe Premiere 3.0 (Video editing program)

- Video Fusion (Video digitizing program)

- Sound edit Pro (sound editing program)

- Painter 2.0 (photo-retouching program)

- Aldus Freehand 4.0 (graphics program)

- Studio Pro (3D program)

## THE DESIGN PROCESS

To develop running a version of the application, I divided the process into three sequential steps:

1. I identified and analyzed the objective, and listed all the considerations involved in its creation.
2. The project was given a shape: information was structured, and the sections of information were stated.
3. Using Macromedia Director, a computer model was built and run for the first time.

### User Interface

The profile of the ideal user was someone without much computer experience. At the same time, the basics on how to handle a mouse or touch-screen will be assumed, as will the intuitive process of moving

through different screens. The application itself will have to be clear enough to allow free navigation with no need for help. Furthermore, the use of technical words or uncommon objects on the screens was to be avoided. Usually, inexperienced users feel hopeless when confronted by computer vocabulary. The navigation system will have to be as natural as possible.

Another user-interface decision was not to overload the screen with information. Excessive amount of buttons, text, graphics, etc., make the user feel uncomfortable. Aesthetically, pleasant graphics provoke better responses in the user. In this project, I decided to use text minimally. Voice is used to explain each section. Touch screen will be used for the final version.

The main issue was to decide the general design of the project. Here, I decided to make the navigational system look simple and easy to understand. Usually, we are so used to working with computer programs that their abstract organization is more than familiar to us. Pop-up menus, dialog boxes, etc., are specifically designed for the computer media, and have little relation to any objects we find in real life. If we had no contact with computers before, we would not really know how to act in front of pop-up menus or similar objects. So the program basically acts like an interactive brochure.

In order to provide the project with overall consistency, I decided to use the same background for the entire project. Initially, I had four different backgrounds. However, the thesis committee (Prof. James Ver Hauge, Prof. Nancy Ciolek and Prof. Gordon Goodman) saw that users could get confused when going through different sections. Moreover, it makes the project inconsistent. Thus, I used a common background for the entire project.

## DESIGN STRUCTURE

I will discuss the structure of the project by describing what the user encounters in sequence when viewing the disc. Technical details will also be discussed in this section.

Please refer to the NSXpert flowchart included in this report. The flowchart provides a sense of the overall structure of the disc, and makes a good reference while using the disc.

The *first screen* shows the Acura logo. When the screen is touched, the user is taken to the main menu. If nothing is touched within 15 seconds, the program automatically jumps into a self-running Acura video advertisement. There are two TV ads, or commercial breaks. Each one is 10 seconds long. Only one will play for each commercial break. At the end of the video, the program returns to the logo screen. Technical note: All Acura print materials were acquired from Acura City of Rochester. Video was acquired from Acura in California and Japan.

The stone texture was taken from a textures CD-ROM called TO-TO, and was manipulated by applying lighting effects in Fractal Painter. Frames for images were constructed in Adobe Photoshop by selectively applying brightness and contrast. Text was also done in Photoshop. The gold foil effect was created with KPT Liquid Gold.

The *main menu screen* presents the user with four choices (the 4 car models mentioned above). Only the NSX is functional in this prototype, so if the user chooses one of the other 3, they get an appropriate message. When the user makes a selection, the image fades except in the area of the car chosen. Then the screen dissolves to the VDO introduction of the chosen car. Technical note: KPT Glass Lens was used to create the 3D ball effect on the initial letters in the main

navigational buttons. The NSX intro includes a short video of this car. When the video is finished, we dissolve to the main NSX menu.

The *NSX menu* provides nine different sections, represented by small pictures with captions for each. The user accesses any of the nine sections by clicking on the corresponding picture. At the top of the screen, the user is provided with buttons to return to the main menu, and to quit (exit). After making a selection from the NSX main menu, a large window displays several pictures in sequence while voice narration introduces the section. At the end of each section, the user has the choice of seeing a video. Once inside the NSX section, the "Main" and "Exit" buttons are still present, and there is an additional button called "Back" which takes the user back to the beginning of the NSX section.

*Concept.* The concept section explains the design approach for the NSX from the engineers' point of view. Basically, it talks about how the car is a serious sports vehicle that remains totally comfortable for the passenger.

*Interior.* This section demonstrates the features of the NSX's interior.

*Engine.* This section talks generally about the powerful engine of the NSX. Then it gets into more detail about the specific VTEC type of engine, and how it is engineered.

*Chassis.* The chassis section explains the engineering of the all aluminum chassis under the NSX's exterior. The movie in this section morphs the car to show the chassis under the exterior.

*Manufacturing.* This section briefly talks about some of the aspects of the manufacturing process.

*Performance.* This section generally explains how the NSX performs on the road.

*Suspension.* This section talks about the all aluminum suspension which is similar in concept to those used in Formula one racing cars.

*Modify/Specifications.* This section has 3 subsections: specifications, modify, and select color. The user can browse through a full set of the car's specifications, and print them out. The select color option presents the user with a screen containing a side view of the NSX with a set of 8 color balls on the bottom that can be clicked on to change the color of the car. Technical note: the color change was achieved with Photoshop 3.0. The color balls were designed with KPT Glass Lens.

*Modify.* The modify screen allows the user to choose from 6 different sets of aftermarket wheels, and also to lower the car's suspension. The changes are shown on-screen where the user starts from a factory specified car.

The *final screen* shows a final video which invites users to visit their local Acura dealer. The project ends with credits to the individuals who assisted in the creation of the project.

## TESTING/EVALUATION PROCESS

Once the project was finished, I ran it myself trying to find errors. I realized that I had made two different kinds of mistakes: navigation errors and text errors. After correcting what I found myself, I let several users test it (a few Mac experts and non experts also). Listed below are example of the errors found when testing:

1. The synchronization between the musical soundtrack and the visual image. The speed of images sequence was different from that of the music soundtrack. It is because the speed of image sequence varies according to the work load as well as the speed of the computer. The more events happening on the screen, the longer the computer takes to bring up the images. Different models of computers also perform at different speeds. Especially in the concept and suspension sections which have big pictures moving from right to left. Scripting techniques from Dave Seah were helpful in solving this problem.

2. The click sound did not work properly in some buttons. I found that the command "puppetsound" to be reset (puppetsound 0) after it is played, at the end of the script.

3. The visual effects were inconsistent, so I changed them to the same one for consistency.

Other design errors, like this ones above, were corrected to provide the project with consistency. Once this process was finished, some other users tested the project again, and small errors still were found. As a simple comment, I realize that the best way of testing the project is during the thesis show. The show brings very different kinds of people that bring up different opinions and recommendations.

## CONCLUDING THE PROJECT.

After the project was tested and corrected, I considered it finished, The last step was to build a projector (a play-only version of a Director movie), making it independent. The process, quite simple, is described below.

To build a projector in Director, I need to use the player utility that comes with the program. This utility, used also as a driver for playing movies from other applications, allows me to run the Acura NSXpert independently from director (which means that you don't have to use Director anymore to run it). Choosing the option "Make a projector", I selected the movie I wanted to join as a projector, in this case the Acura intro movie that is played first, and the project was complete.

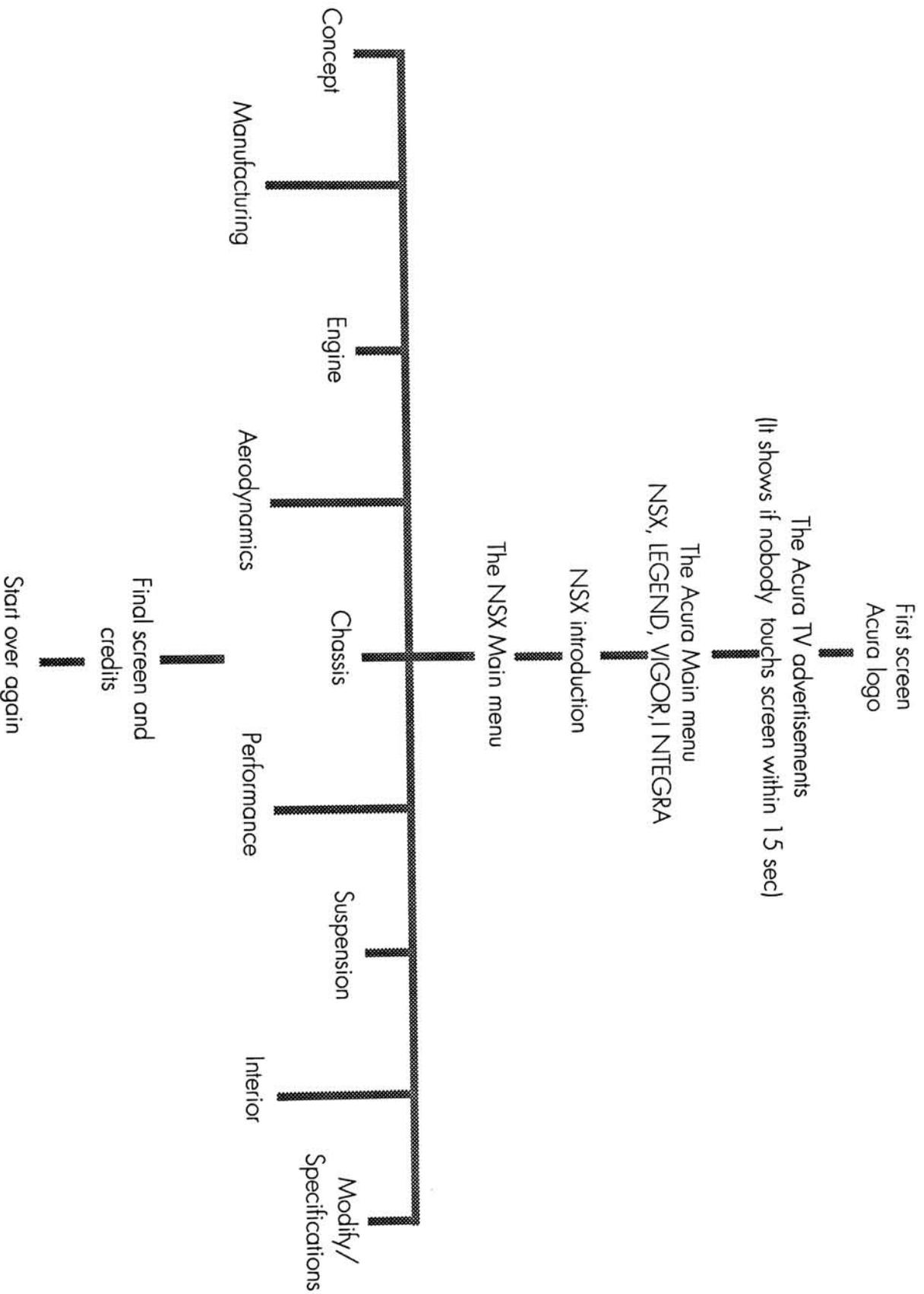
The Acura NSXpert was running alone, and the only step left was to put the font (Futura Light) into the projector by using Font D/A mover 4.1 and using Finder Hinder to hide the menu bar.

## FUTURE DEVELOPMENT

Multimedia offers enormous potential in creating kiosks for providing information to people. It is an excellent promotional tool for almost anything. A future development of this project could add more Acura car lines (NSX, LEGEND, VIGOR, and INTEGRA). I could not finish all of them in this prototype because of the time limitations. I hope in the future there will be something similar to the prototype I have developed.

## Appendices

---



•The structure of the Acura NSXpert. The main menu and final screen can be reached from any point in the project.

THE ACURA **NSX**PERT  

---

INTERACTIVE BROCHURE

BY

CHANCHAI NGAMWITHI

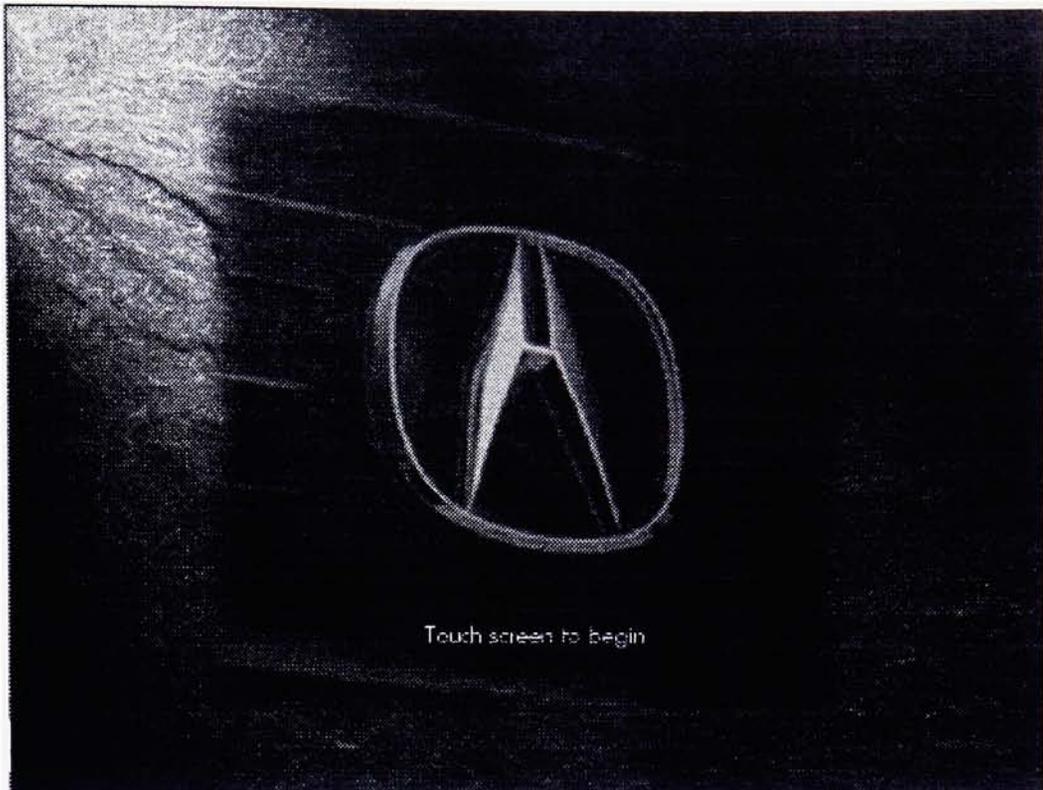


Figure 1: The first screen shows the Acura logo. The user must touch the screen in order to go to the main menu; otherwise, in fifteen seconds it will go to the commercial break.

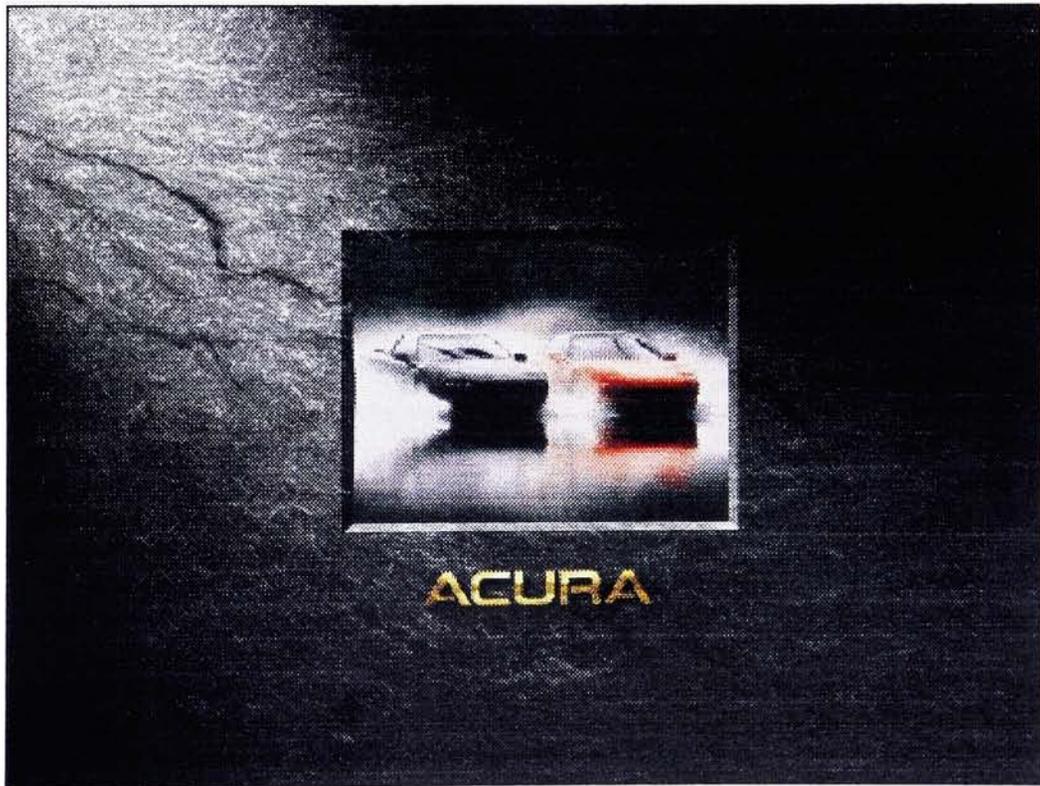


Figure 2: This is one of the two Acura TV advertisements, or commercial breaks. Each one is 10 seconds long. Only one will play for each commercial break. When it is finished it will go back to the first screen and wait again for the user to touch it.

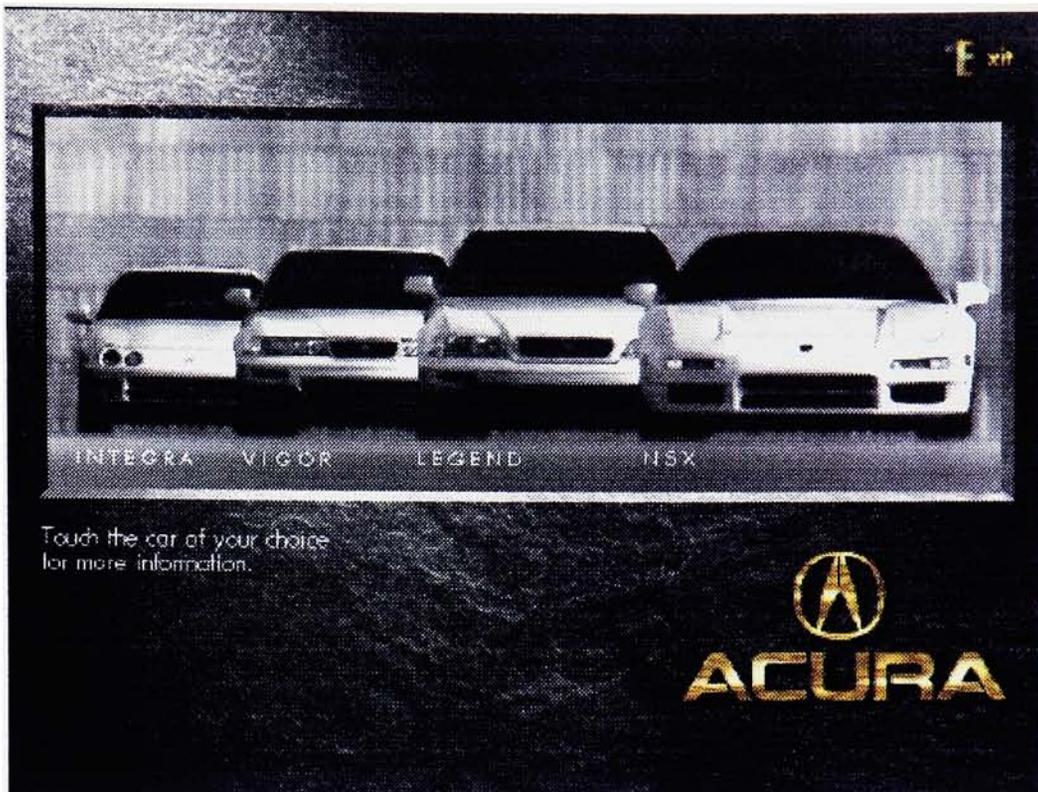


Figure 3: The Acura main menu screen above gives the user four choices, where he must touch the car which he is interested in. Only the NSX is available at this time.

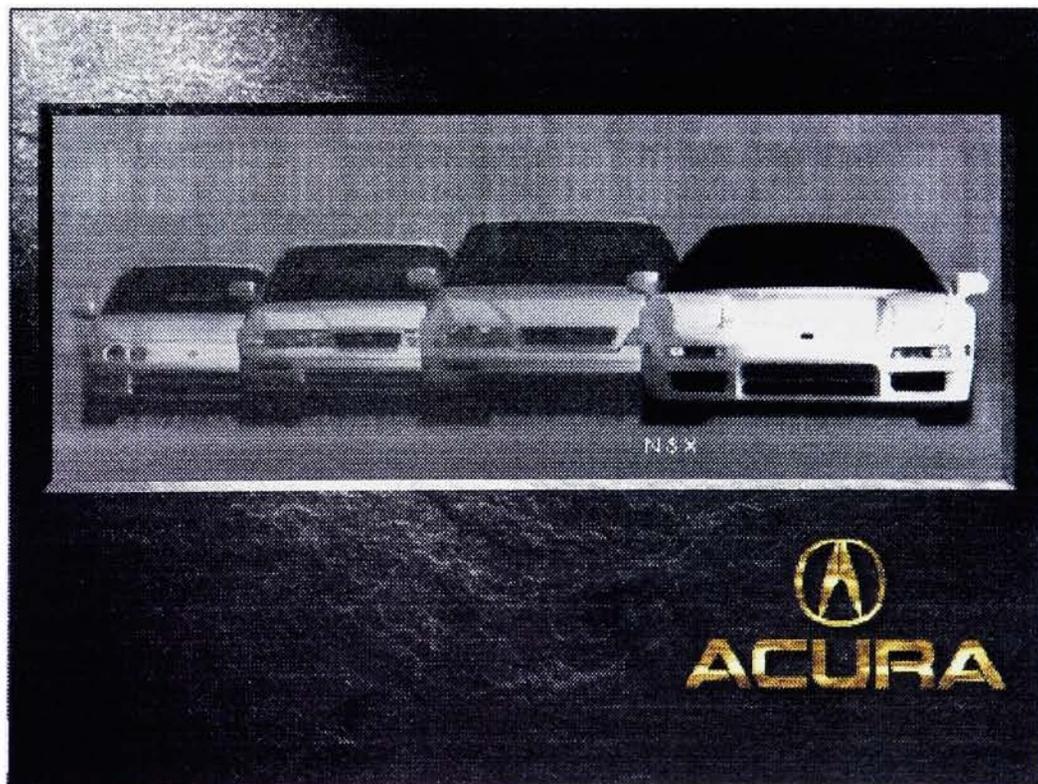


Figure 4: When the user makes a selection, the whole screen dissolves, except for the car chosen. Then it all dissolves into the introduction of the chosen car.

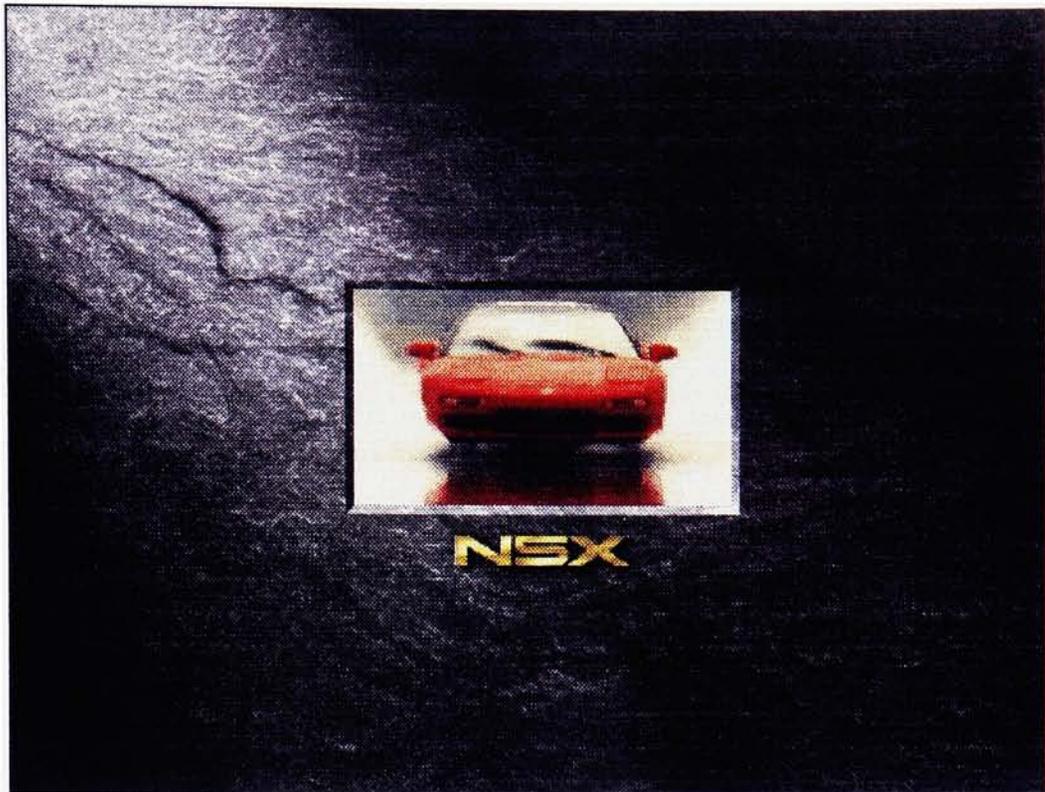


Figure 5: On this screen, there is a short video of the NSX introduction. After the video is finished, it goes to the NSX main menu screen.

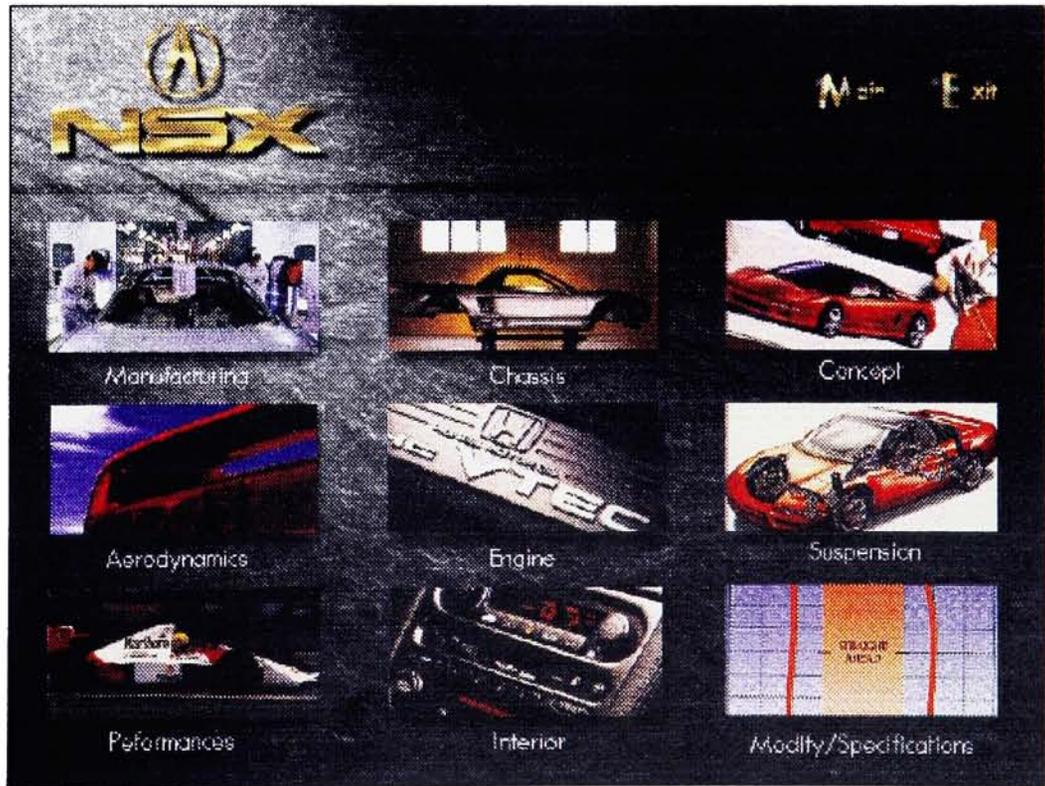


Figure 6: The NSX main menu has nine different sections, which can be accessed by touching the coinciding picture. The "main" button at the top right takes the user back to the Acura main menu screen, and the "Exit" button goes to the final screen (figure 20).

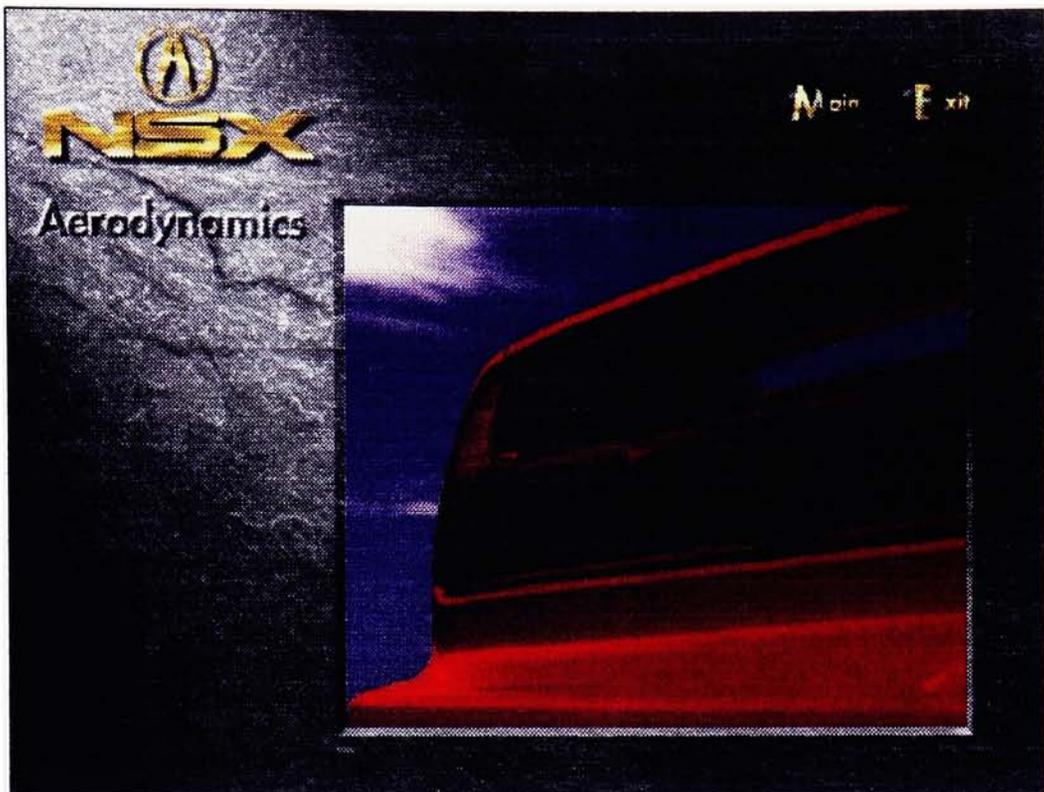


Figure 7: After making a selection from the NSX main menu, the user sees a screen showing several pictures with a voice explaining the selection. At the end of each section the user sees the screen below that gives them a choice on whether or not to see the video.

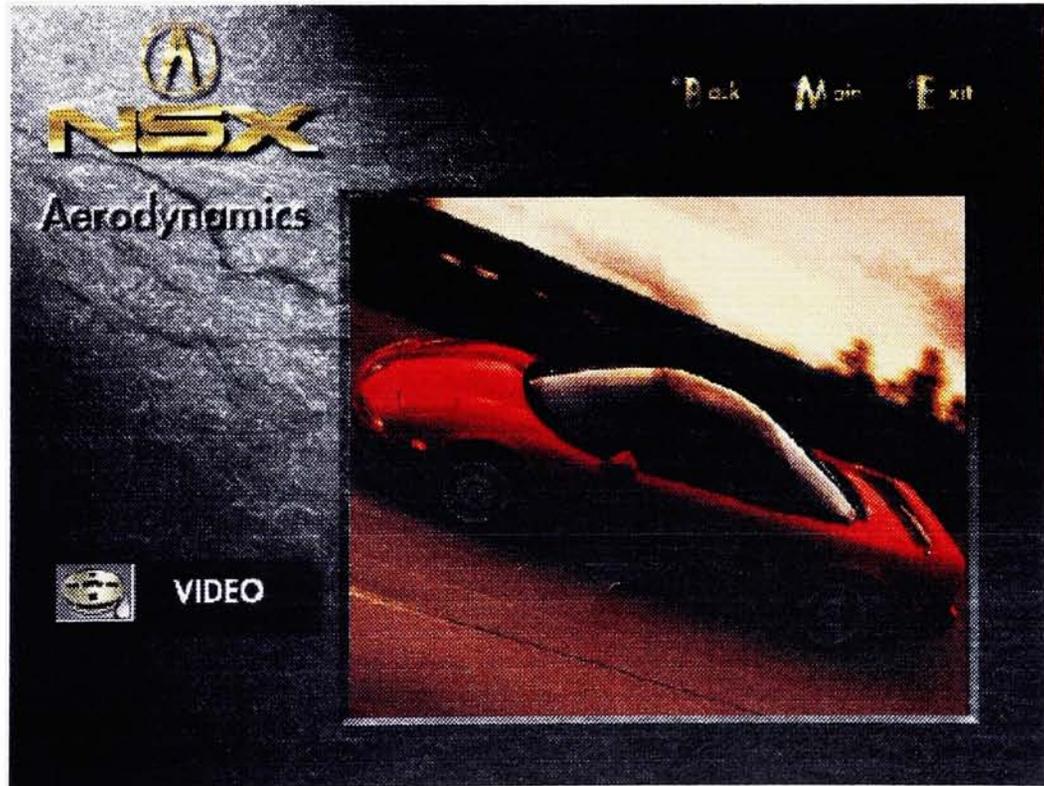


Figure 8: The "main" and "Exit" buttons above are still the same, but the "Back" button will take you back to the NSX main menu.

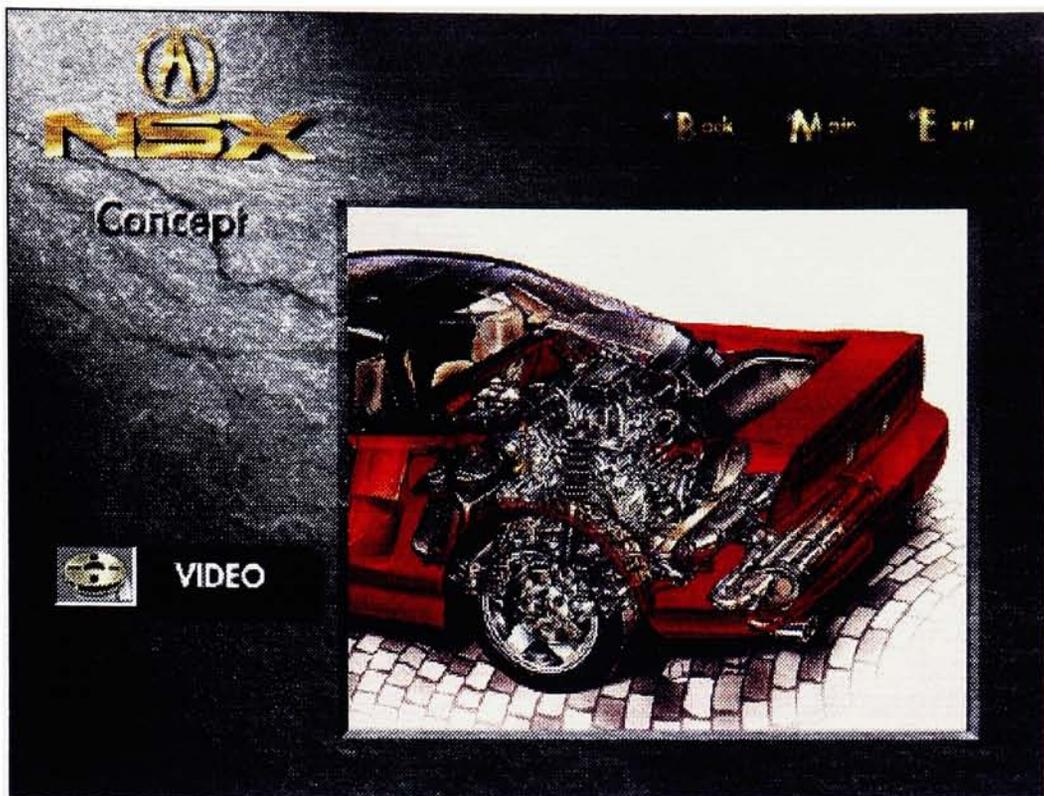


Figure 9: The concept section explains the concept of the NSX and also how the Acura engineers design the NSX.

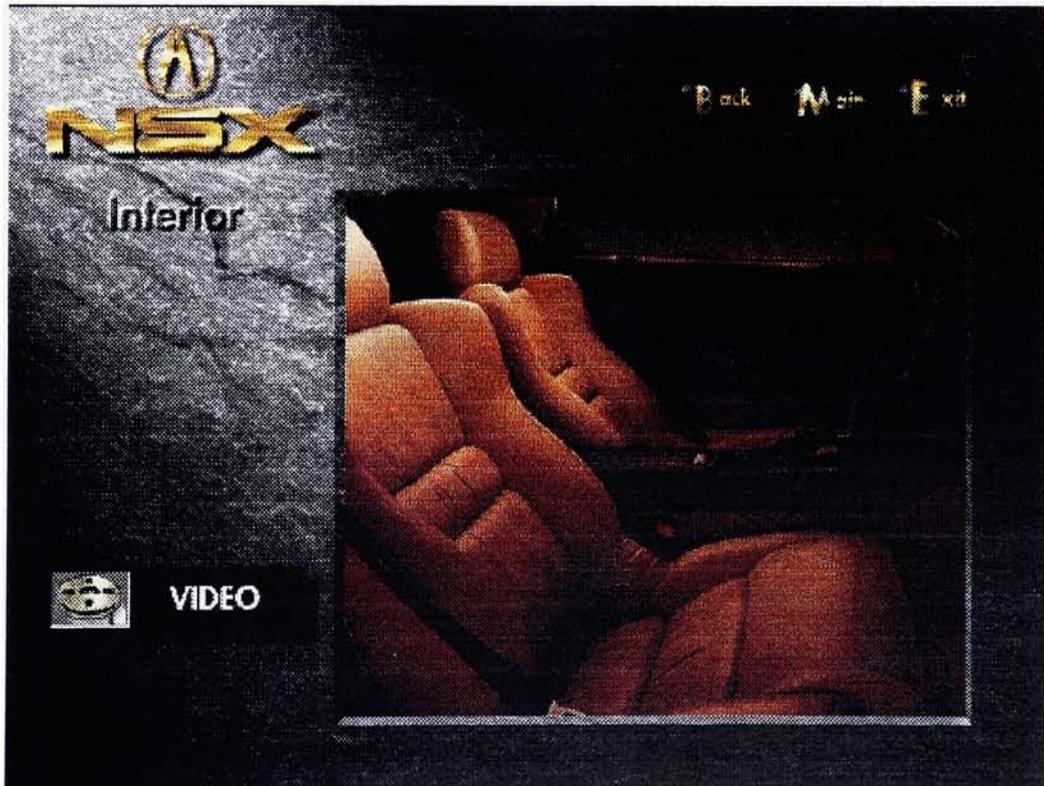


Figure 10: The interior section shows the interior of the NSX.



Figure 11: The engine section tells all about the powerful engine of the NSX; moreover, it explains how VTEC engine works.

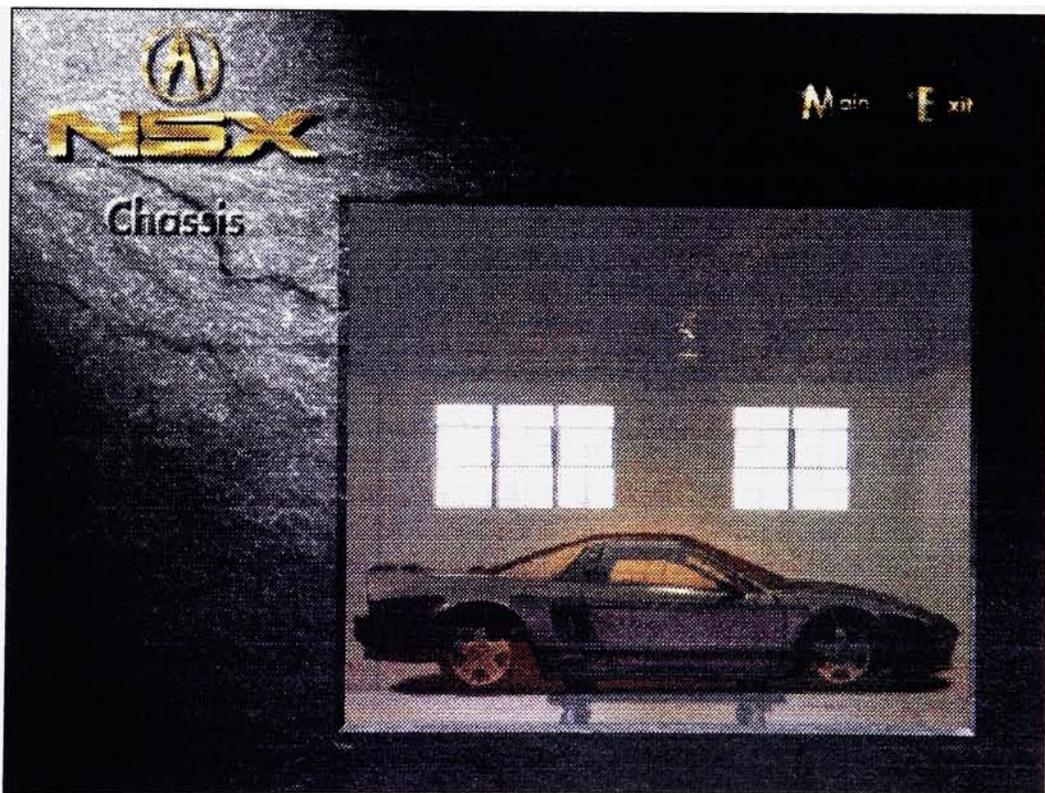


Figure 12: The chassis section explains the engineering of the all aluminum chassis under the NSX. This movie morphs the NSX to show the aluminum chassis.

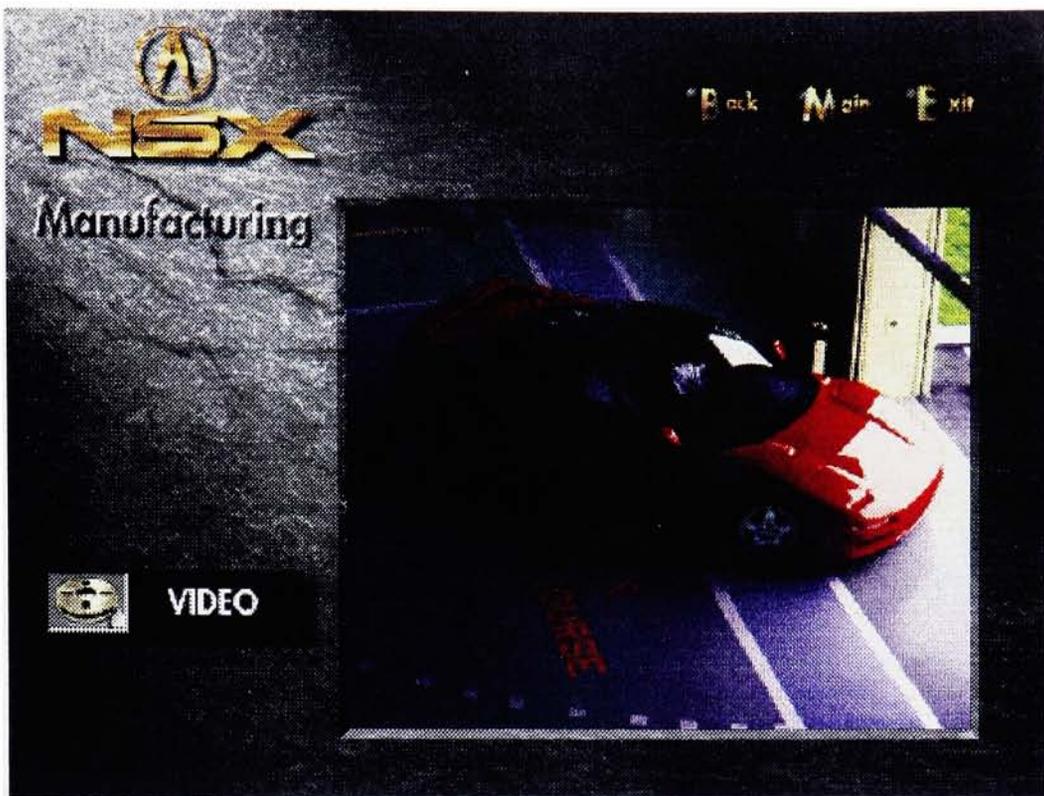


Figure 13: The manufacturing section shows how the NSX has been made.

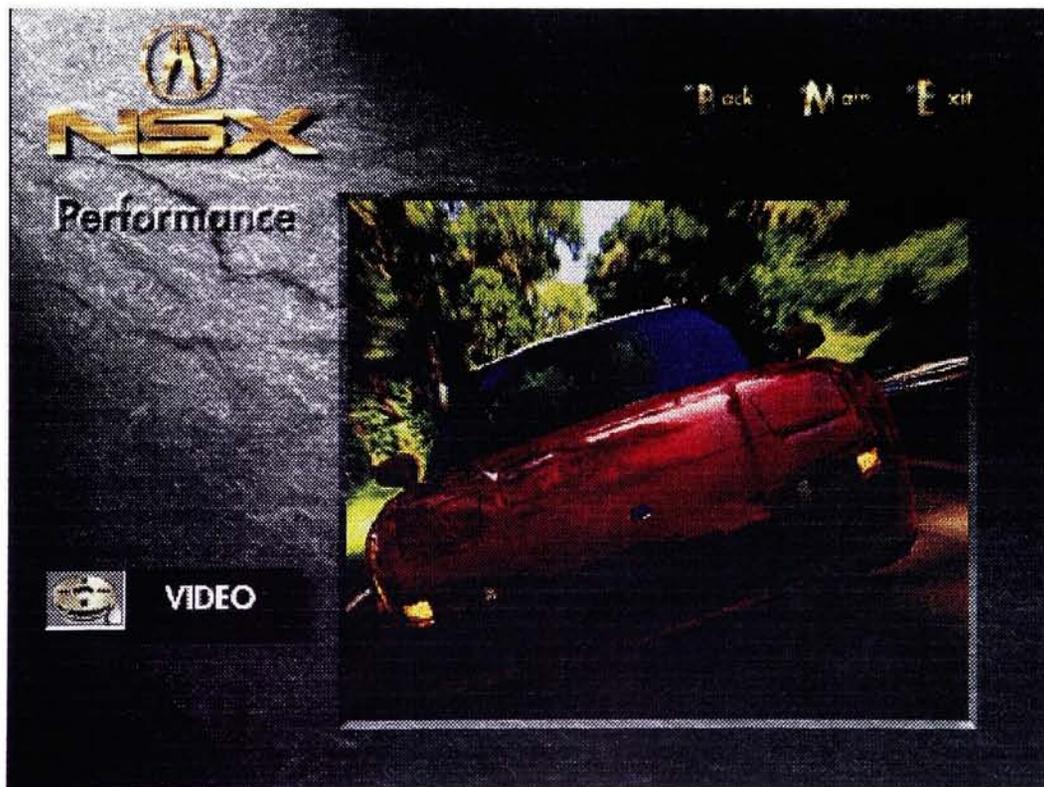


Figure 14: The performance section shows all major performance of the NSX.

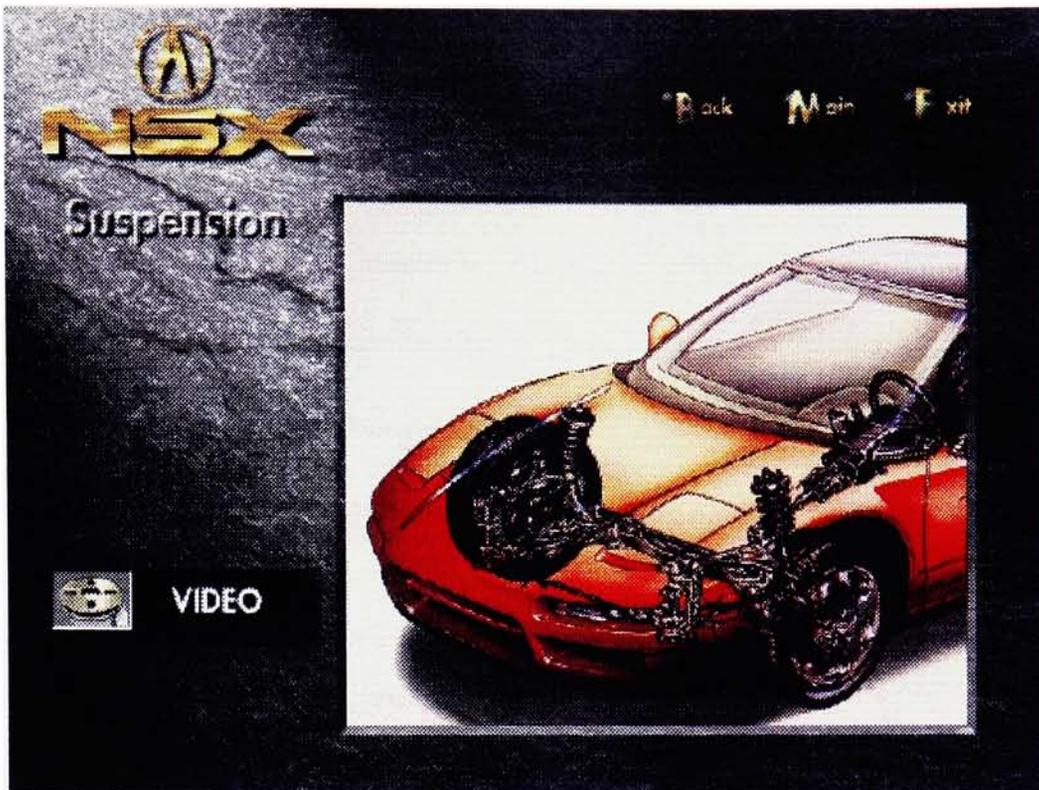


Figure 15: The suspension section explains the all aluminum suspension which is similar in concept to that used in the formula one race cars.

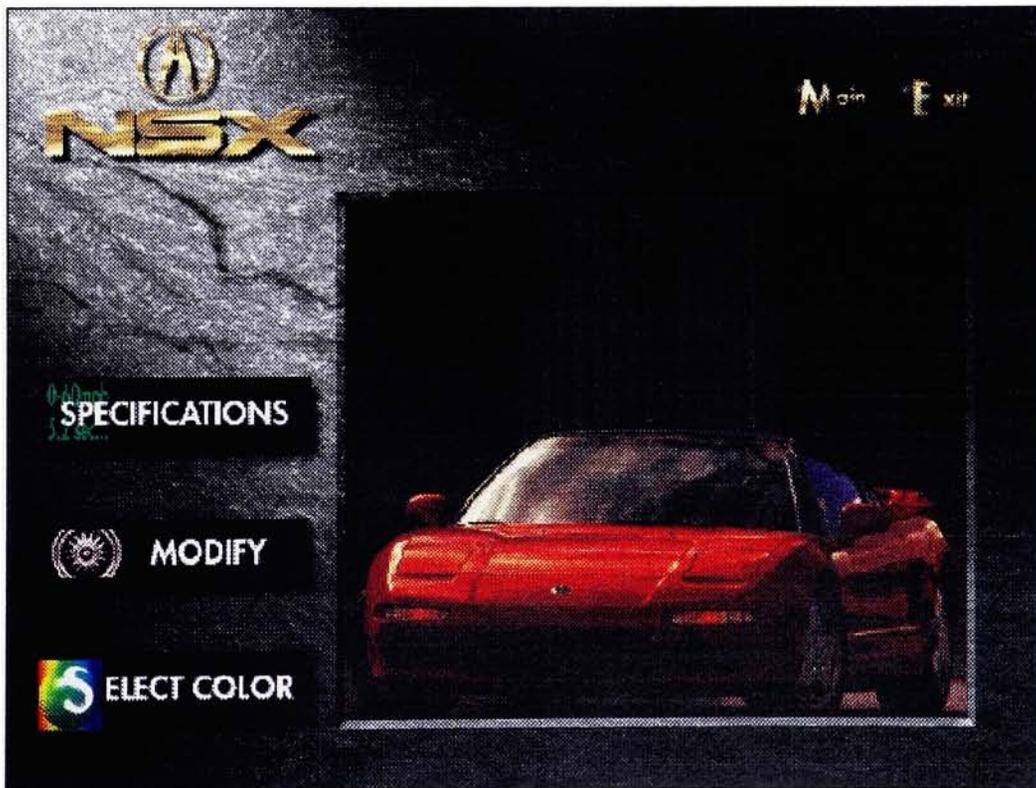


Figure 16: If the user selects the "Modify/Specifications" from the NSX main menu, you are taken to this screen which has three more choices. The "Specification" button takes you to figure 17, the specification screen. The "Modify" and "Select color" button take you to figure 18,19.

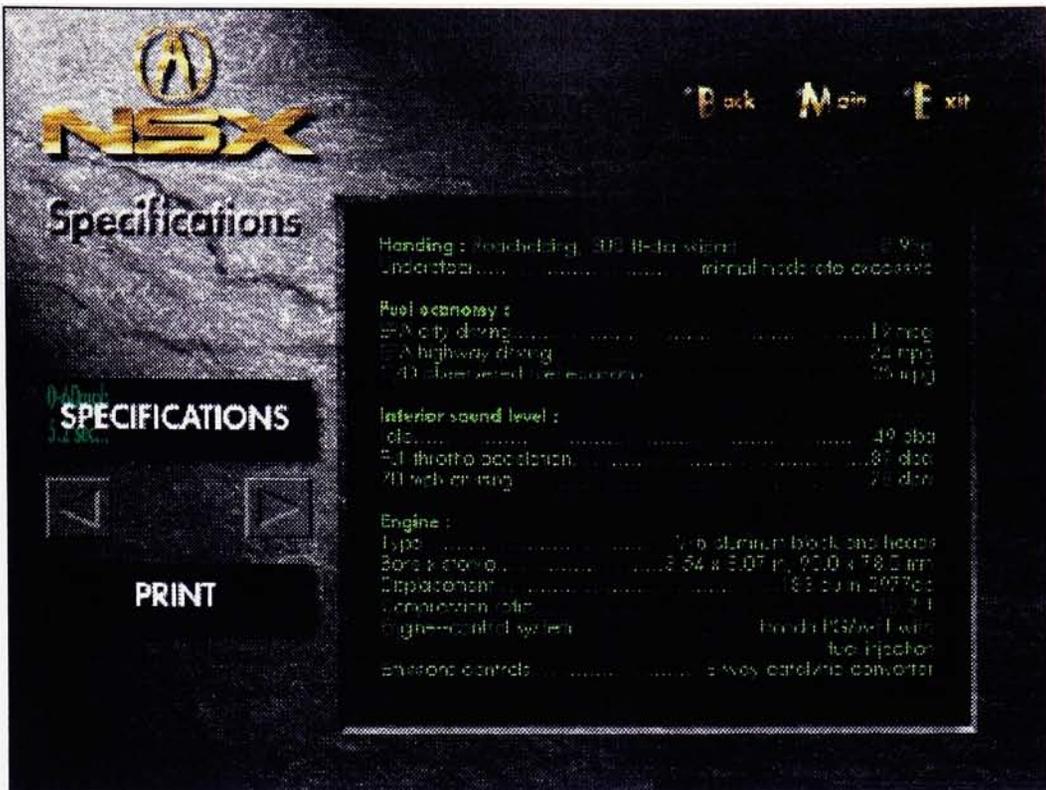


Figure 17: This screen shows the NSX specifications where the user can browse through them and even print a copy of the specifications.

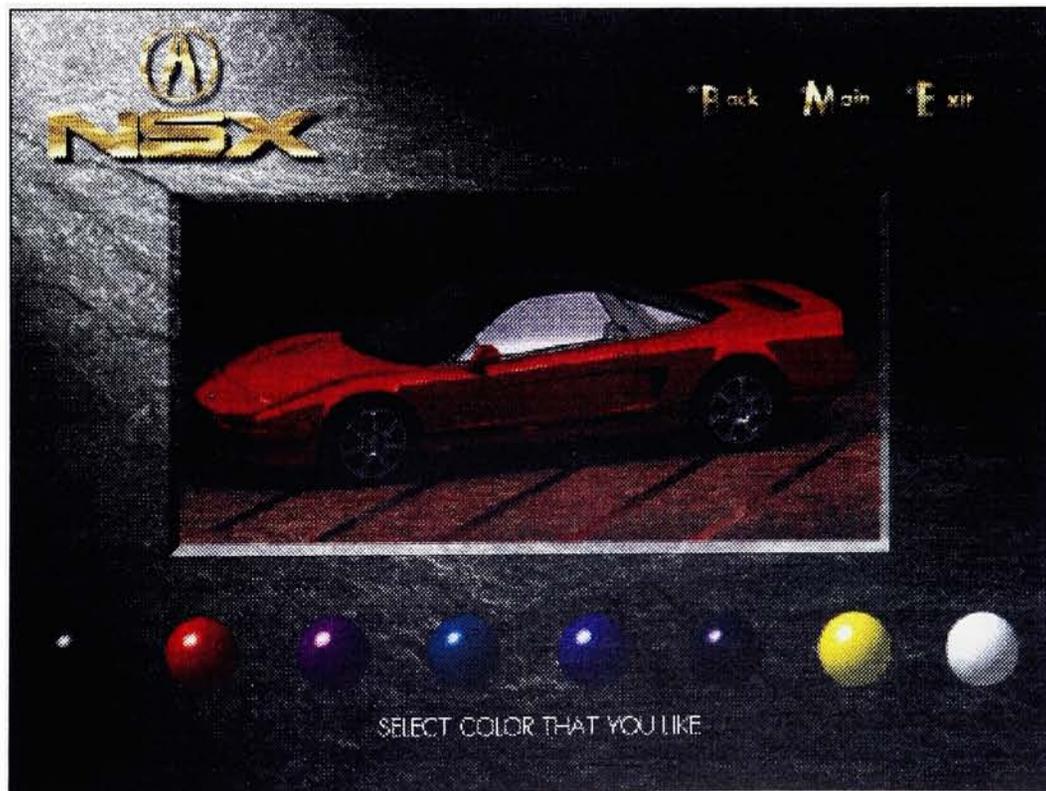


Figure 18: This screen allows the user to choose a color by touching the color button. The car will be changed to the chosen color.



Figure 19: The modify screen allows the user to change the wheel which he/she likes and also to lower or raise the suspension of the NSX.

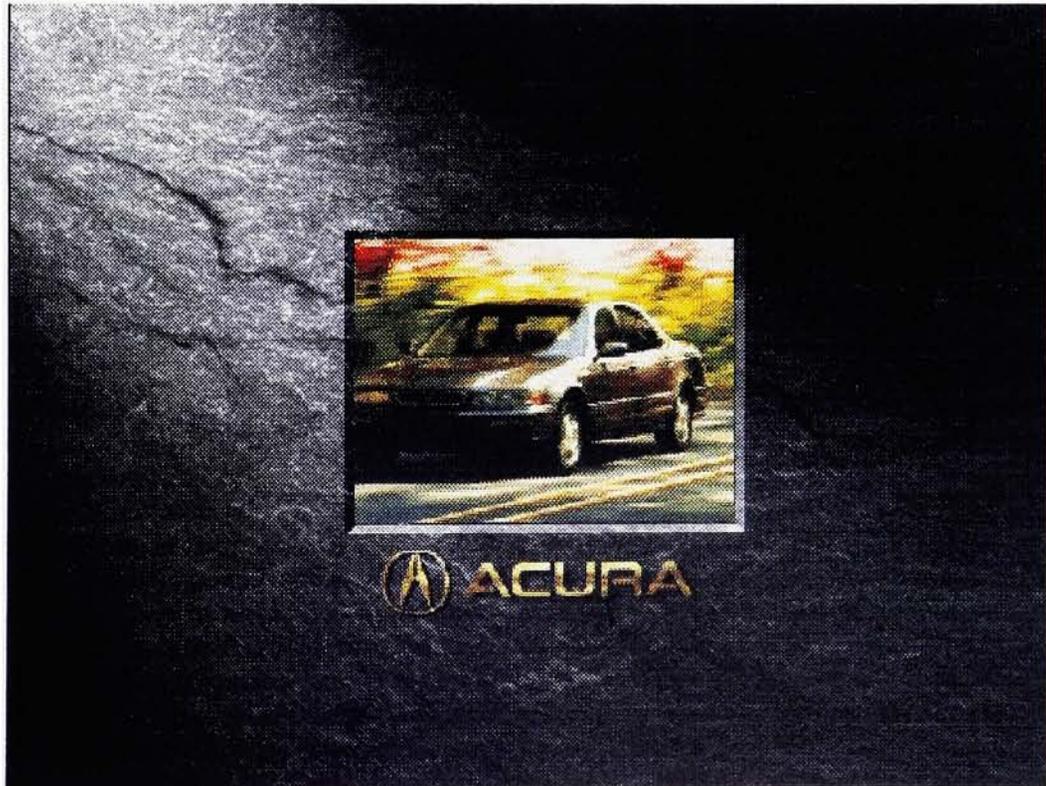


Figure 20: The final screen has a short video about the Acura car dealer and credit to the people who were involved in the production of this project.

## Bibliography

---

Brenda Laurel (editor), The Art of Human Computer Interface Design  
U.S.A. Addison Wesley Publishing Company, 1992.

Bove, Tony, and Rhodes, Cheryl. Que's Macintosh Multimedia Handbook. Que Corporation Carmel, Indiana, 1990.

Stefanac, Suzanne, and Weiman, Liza. "Multimedia, is real?" Mac world, April 1990, pp 116-123.

McPherson, Alan, and Timms, Howard. The Audiovisual Handbook. Penguin Group, 1988.

Lambert, Steve and Ropiequet, Suzanne. CD-ROM, The New Papyrus: "As We may Think", by Bush, Vannevar. microsoft Press, 1987.