



iPod - 1,000 songs in your pocket

Apple, Inc. Cupertino, California 94024

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Apple, Inc.

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Dear manager:

We thank you for choosing our team to do this research and develop new idea——iPod for our company. We have now completed our comprehensive report, which you will find attached.

Since the return of Jobs and the release of iMac, Apple has already resurrected from the low ebb. But we are the company who is driven by innovation, we should keep innovating and lead the market. After Steve Jobs launched the “Digital Hub” strategy, our company have released many software such as iMovie, iPhoto, and iTunes.

When working with iTunes, our team has found that the digital music players on the market couldn't perform well with our software, they have many disadvantages which can be improved by us. Concerning the software and hardware technologies of Apple, we believe that it's a big chance for Apple to enter the music market.

We have researched some hardware and technologies which may be suitable for making a better digital music player, and we also generated a concept for the new product – we call it the iPod. But in order to give customers a better user experience, we need further developing to make it more beautiful, portable, and simple.

So we create a report for you to assist us in making decision whether to support our idea and group. We eagerly await an opportunity to continue this great product!

Sincerely,

Jingyi Xue, R&D leader

Apple.

Strategic fit, technical details and market research for our new product—iPod

By R&D leader
Jingyi Xue

Prepared May 28, 2000



Executive Summary

Our group is one team in the R&D department of Apple, Inc. We have been working on an idea for new product for the last six months and now need to obtain further support from the organization's management team so that we can continue our research and development. I describe our proposal fits into the product, and technical details, market research.

Technical details include technical review for iPod idea, description and graphics, diagrams. We write the project plan for the next year, showing how the research is planned to continue, what tasks and milestones need to be completed. We produce a plan that shows the activities to the end of the testing and refinement phase.

The most important strategy of our company is the "Digital Hub" strategy (Isaacson, 2011). We want to create a digital life, the first step of this is making software, but we are not just satisfied in software, the next step is obviously the hardware, that's what we are doing – a digital music player. If this new project success, apple could accumulate ample experience on the development of portable products, which are bound to impact the market of electronics in the new century. Since many superior companies desire getting a share in this new area, the successful products should not only pay attention to utility, but also to its fashionable, for such products may mainly attract young people. Successful companies never just sell products, what we want to do is to create a new life style by our perfect products and services.

As for the sales, we can use bundling strategy to popularize both iPod and iMac. We could combine iPod and iTunes, the convenient of iTunes as music library promote the sales of iPod. Our iPod is positioning in fashionable and portable. The fashionable appearance of iPod and its usability also make users use iTunes, and they may buy iMac for that.

- 1. We've researched and organized the needs and made sure what we could do to improve the product.
- 2. We've researched and chose the proper hardware to design the iPod for the best performance, if our choice could be used in the final product, the iPod would be super competitive.
- 3. We've researched and designed a new way for human-device interaction, which makes our products more convenient and comfortable to operate.

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Strategic Fit

From 1996 to 2000, Apple's personal computers have been developed smoothly. The safety, novelty and good public praise make Apple occupy part of the market. But because of many other factors such as contenders and brand influence etc., we are not the quite superior computer company any more. *"The development of digital products were moving at a fast pace for most new digital devices such as organizers, digital cameras and the like, but access to digital music remained tied to older technology based devices."* (Gorman, 2008) It is not a bad choice to try to find a way to enter a new market. With the development of microelectronic technique, portable device has become people's focus. Developing personal computers may not be the only choice for our company.

The most important strategy of our company is the "Digital Hub" strategy (Isaacson, 2011). We want to create a digital life, the first step of this is making software, but we are not just satisfied in software, the next step is obviously the hardware, that's what we are doing – a digital music player. If this new project success, apple could accumulate ample experience on the development of portable products, which are bound to impact the market of electronics in the new century. Since many superior companies desire getting a share in this new area, the successful products should not only pay attention to utility, but also to its fashionable,



Figure 1

for such products may mainly attract young people. Successful companies never just sell products, what we want to do is to create a new life style by our perfect products and services.

As for the sales, we can use bundling strategy to popularize both iPod and iMac. We could combine iPod and iTunes, the convenient of iTunes as music library promote the sales of iPod. Our iPod is positioning in fashionable and portable. The fashionable appearance of iPod and its usability also make users use iTunes, and they may buy iMac for that.

Technical Details

The disadvantages of the digital music player on the market



Rio - 500 (Franco, 2000)

Figure 2

The two most popular digital music players are Rio-500 and Sony MC-P10.

They have some obviously disadvantages:

1. **Poor appearance design** – most people don't like the design of those music players, they are old fashioned. We believe Apple can make it better.
2. **Hard to operate** – customers complain that the buttons are so small, and the operation of making a playlist is so complex.
3. **Small storage** – though they can continue

playing music for 5 hours, but they can only store 20 songs.



Sony MC-P10 (Voon, 2000)

Figure 3

Technical Information

In order to improve these disadvantage and give customers a best user experience, we make a comprehensive analysis about the technology we currently have. We believe that our iPod could be able to hold 1,000 songs with 10 hours of battery life, and it would just be a small gadget that could fit in your pocket.

Before we design the iPod. We has already have the technical foundations of the iPod. The FireWire and the iTunes are two of the most important foundations. To design a portable devices, we also considered the screen, battery and storage components which could be used for the iPod.

FireWire

Our company developed this technology in the early 1990s, *“It was a high-speed serial port that moved digital files such as video from one device to another. It could be part of a system that moved video from cameras onto a computer, where it could be edited and distributed.”* (Isaacson, 2011) The iMac since 1999 has include this port. It can transfer data between devices at 400 Mbit/s full-duplex data rates.

The iTunes

The iTunes is a digital media player application, which is powerful and easy to use. It is used to play, download, and organize digital audio and video on Mac. Based on SoundJam, we *“incorporated many of its signature features into iTunes, including visualizers, plug-ins, online retrieval of album data and drag-and-drop playlist creation.”* (Simon, 2009)



Figure 4

Compare to Real Jukebox, Windows Media Player, and the player of HP, the most advanced feature of iTunes is simple. It's ultra-simple for customers to use iTunes to manage their music. And it's not only a music-management application, but also an entry of contents, we believe we could extend this next year.

Screen and Battery

The screen and battery of the iPod are the first thing that comes to our mind. We use a suitable small LCD screen and rechargeable lithium-polymer battery. Most music players are still using the AA battery to supply power. So the battery life of them were just 5 hours.

We believe the rechargeable lithium-polymer battery will make iPod perform well because of the 10-hours battery life. And you can recharge the battery in one hour to 80% of capacity.

Hard Drive



Figure 5

After solving LCD screen and rechargeable lithium-polymer battery. The tougher challenge was finding a disk drive that was small enough but had ample memory to make a great music player.

“Toshiba had just prototyped a new 1.8-inch hard drive that they don't know how to use” (Kahney, 2014), but we could use in on our iPod.

“It was a tiny, 1.8-inch drive that would hold five gigabytes of storage, which means it can read 1000 songs at 160k high quality bit rate, and also has 20 minutes skip protection.” (Isaacson, 2011) This is still in the lab, but Toshiba said that it would be ready by June, we believe we could use this.

Scroll Wheel and Appearance Design

Due to the expansion of storage capacity. Finding the music by traditional buttons is very difficult, because you cannot seeking one by one among the 1000 songs. So we want to design an iconic scroll wheel instead of

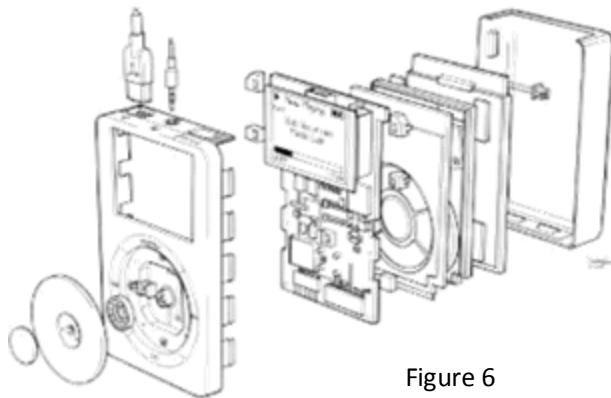


Figure 6

button. When you rapid sliding scroll wheel the list can be switched quickly. This is an “easy-to-use navigation, which was controlled using a mechanical scroll wheel, a centre select button, and 4 auxiliary buttons around the wheel.” (Anon., 2008) That make iPod full of character and different from other MP3.

As the sample drawing can see. Our iPod has an advantage of appearance. We design 2.4 inches width, 4 inches height and weight of 0.65 oz. *“It is a simple box, the size of a pack of cards, clothed in a white polycarbonate front that set into a mirror-finish stainless steel case.”* (Edwards, 2011) The iPod would have no removable battery door, no on/off switch, and no screws. We would seal the iPod's inner technological wizardry away from the prying hands of the user, silently conveying a simple message: it just works.

Project Plan

The following diagram and sheet is our project plan. The number on the left of the diagram refer to the Task ID on the sheet.

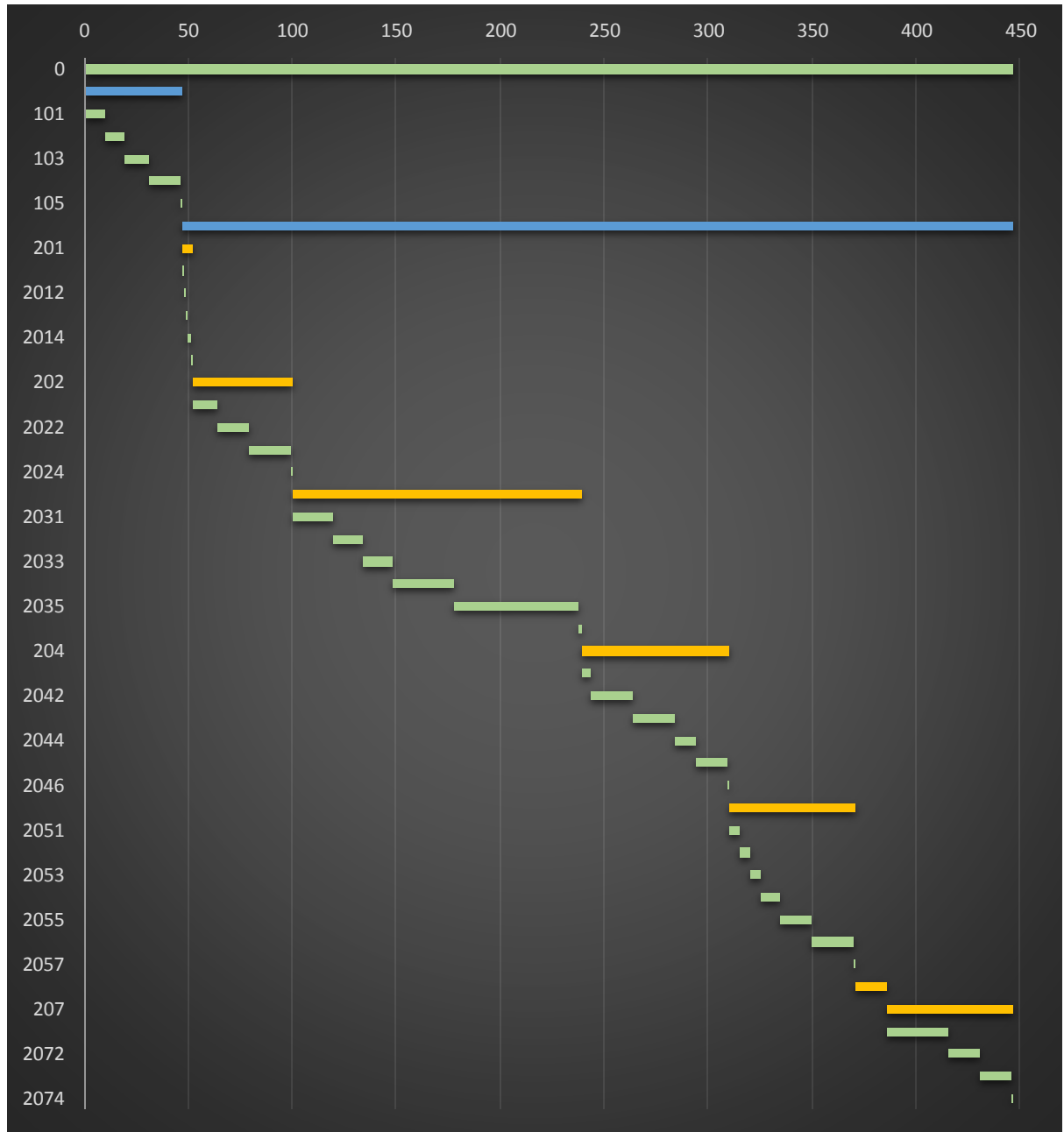


Figure 7

ID	Task Name	Duration	Starting Time	Finishing Time	Person in charge
0	Economic Analysis	446	2000/9/1	2001/11/20	Stan Ng
1	Planning	46	2000/9/1	2000/10/16	Steve Jobs
101	Identify Opportunities	9	2000/9/1	2000/9/9	Steve Jobs
102	Evaluate and Prioritize Projects	9	2000/9/10	2000/9/18	Phil Schiller
103	Allocate Resources and Plan Timing	12	2000/9/19	2000/9/30	Phil Schiller
104	Complete Pre-Project Planning	15	2000/10/1	2000/10/15	Jon Rubinstein
105	Reflect On the Result and The Process	1	2000/10/16	2000/10/16	Steve Jobs
2	Concept Development	400	2000/10/17	2001/11/20	Anthony M. Fadell
201	Identify Customer Needs	5	2000/10/17	2000/10/21	Steve Jobs
2011	Gather Raw Data from Customers	1	2000/10/17	2000/10/17	Steve Jobs
2012	Interpret The Raw Data in Terms of Customer Needs	1	2000/10/18	2000/10/18	Steve Jobs
2013	Organize The Needs into A Hierarchy of Needs	1	2000/10/19	2000/10/19	Steve Jobs
2014	Establish The Relative Importance of the Needs	1	2000/10/20	2000/10/20	Steve Jobs
2015	Reflect On the Result and The Process	1	2000/10/21	2000/10/21	Steve Jobs
202	Establish Target Specifications	48	2000/10/22	2000/12/8	Anthony M. Fadell
2021	Prepare The List of Metrics	12	2000/10/22	2000/11/2	Stan Ng
2022	Collect Competitive Benchmarking Information	15	2000/11/3	2000/11/17	Jon Rubinstein
2023	Set Ideal and Marginally Acceptable Target Values	20	2000/11/18	2000/12/7	Anthony M. Fadell
2024	Reflect On the Result and The Process	1	2000/12/8	2000/12/8	Steve Jobs
203	Generate Product Concepts	139	2000/12/9	2001/4/26	Anthony M. Fadell
2031	Clarify The Problem	20	2000/12/9	2000/12/28	Steve Jobs
2032	External Search	14	2000/12/29	2001/1/11	Jon Rubinstein
2033	Internal Search	14	2001/1/12	2001/1/25	Jon Rubinstein

2034	Creative Problem Solving with The Team	30	2001/1/26	2001/2/24	Steve Jobs
2035	Systematic Exploration of the Various Solution Fragments the Team Generates	60	2001/2/25	2001/4/25	Steve Jobs
2036	Reflect On the Solutions and The Process	1	2001/4/26	2001/4/26	Steve Jobs
204	Screening and Evaluation	71	2001/4/27	2001/7/6	Jon Rubinstein
2041	Initial Screen	5	2001/4/27	2001/5/1	Steve Jobs
2042	Customer Screen	20	2001/5/2	2001/5/21	Phil Schiller
2043	Technical Screen	20	2001/5/22	2001/6/10	Jon Rubinstein
2044	Final Screen	10	2001/6/11	2001/6/20	Steve Jobs
2045	Business Analysis	15	2001/6/21	2001/7/5	Stan Ng
2046	Reflect On the Results and Process	1	2001/7/6	2001/7/6	Steve Jobs
205	Test Product Concept	61	2001/7/7	2001/9/5	Steve Jobs
2051	Define The Purpose of the Concept Test	5	2001/7/7	2001/7/11	Steve Jobs
2052	Choose A Survey Population	5	2001/7/12	2001/7/16	Phil Schiller
2053	Choose A Survey Format	5	2001/7/17	2001/7/21	Phil Schiller
2054	Communicate The Concept	10	2001/7/22	2001/7/31	Stan Ng
2055	Measure Customer Response	15	2001/8/1	2001/8/15	Anthony M. Fadell
2056	Interpret The Results	20	2001/8/16	2001/9/4	Jon Rubinstein
2057	Reflect On the Results And Process	1	2001/9/5	2001/9/5	Steve Jobs
206	Set Final Specifications	15	2001/9/6	2001/9/20	Steve Jobs
207	Plan Downstream Development	61	2001/9/21	2001/11/20	Anthony M. Fadell
2071	Create A Detailed Development Schedule	30	2001/9/21	2001/10/20	Jon Rubinstein
2072	Devise Strategy to Minimize Development Time	15	2001/10/21	2001/11/4	Steve Jobs
2073	Identify The Resources Required to Complete the Project	15	2001/11/5	2001/11/19	Stan Ng
2074	Reflect On the Results and Process	1	2001/11/20	2001/11/20	Steve Jobs

Figure 8

Market Research

Our team believes that *“it’s really hard to design products by focus groups. Most of time, people don’t know what they want until you show it to them.”* (Sager, et al., 1998) Since our new product’s market potential is obviously, *“We don’t need to use any customer surveys, focus groups, or typical things of that nature. That plays no role in the creation of the products”*. (Lowensohn, 2012) But it doesn’t mean we don’t listen to customers, we have collected customer complaints to the product on the market. And the other reason why we decide to ignore the market research is that if we take such a long time to reach the market, we may lose the opportunity to win the leading position of digital media player area. We know that the advantages for a company to bring its newly developed products to market as fast as possible can be crucial. We always believe a sentence *“speed is the pivotal competitive weapon: the ability to accelerate product innovation to get new products to market ahead of the competition and within the window of opportunity is more than ever central to success”* (Shiu, 2005), and speed to market is particularly necessary in an environment where markets and technologies are changing more quickly than ever.

Organize the Needs into a Hierarchy

There are no specific research data to suppose what our customers need but it doesn’t matter, because you never ask people what features you want in a new product. You need to accumulate those things by yourself. We know exactly what product iPod should be. When you are using a product, you know what you want and what you dislike.

Must-haves

Ultra-portability: In order to bring your favourite music with you everywhere, iPod should be a small device which fit in your pocket. Our ideal iPod prototype measures 2.5 inches by 4 inches by 0.8 inches and weighs 10 ounces.

Huge storage: People don’t like a music player that can only contain 10 or 20 songs. With a 5GB hard drive, people can download at least 1000 songs into their iPod.

Appearance: The iPod should be a beautiful object, with sleek and attractive design. What's more, maybe we need more colour for customers to choose. The aesthetics is always the "Cool Factor" of Apple.

Delighters

High resolution: iPod comes with a screen for displaying artist name, song title and album name. The liquid-crystal display should have a resolution of 160 pixels by 128 pixels and offers an LED backlight.

Long battery life: We hope our iPod can provide long duration for music. It should include a 10-hour lithium polymer battery, offers 20 minutes of anti-skip protection.

Main Customers

Our product have magic power that can interest different age's people. First, the iPod is very appealing for the young generations: those from 16 to 28 years old. They are chasing fashion and they love music. Second, this product is also suitable for seniors, and they will like it too, for the reason that iPod can be operated easily, even if nobody tells them how to use. They can use a high-tech electric product to enjoy music, and enrich their retired life. Third, iPod is very practical for middle age people, such as commuters, on their way from home to their workplace and back, during those boring 40-60 minutes in the subway, or in the bus or train, without having anything interesting to do. So this idea will have broad market and appealing.

Lead Users

The people who knows music would have a better sense of music player, so we choose some famous singer as lead users, such as Dr.Dre, Eminem. We also choose some young people and commuters to help us develop the product. We mainly test the portability of iPod product and the rationality of operations when customers listening to music and whether the customer is satisfied, before our iPod being released as a final product.

“This portable music player makes listening to music more free and convenience.”

Before 2000s, CDs are more popular than the other portable media players, which people usually use to listen to music. Most of our lead users are satisfied with our new product. Youth fashion have higher request for music, they also prefer to wear headphones, they think the quality of music is better than they think it might be, and the portability makes them fall in love with our product. At the same time, office workers have economic basis, and have higher request for the product. When they are on the way to their office or doing some exercises, they need something to relax, which makes the iPod best partner of them. The appearance of our product is fashion and new to them, and they said the light spot is Scroll Wheel.

But there exists some problems. It is troublesome when they want to add new music, and it is not compatible with Windows Operating System. We will try to solve these problems later.

Conclusion

Our Findings

- 1. We've researched and organized the needs and made sure what we could do to improve the product.
- 2. We've researched and chose the proper hardware to design the iPod for the best performance, if our choice could be used in the final product, the iPod would be super competitive.
- 3. We've researched and designed a new way for human-device interaction, which makes our products more convenient and comfortable to operate.

Recommendations

- Since the costs of our product would be high, the price of it would be very high as well, to stimulate the customers' desire to purchase our product, we recommend that, we could build an experience store for customers to try our product first and then decide whether to buy or not. This would let the customers see the confident, innovation and energetic of apple. These reasons make customers have a great impression for apple, and increase the selling of products.
- 2. In terms of advertising, we don't need to concentrate on the product itself – such as the appearance or name of the product - but the features of our product, our features would finally be copied by competitors, but if we advertise for these features, when competitors advertise their new product with “our features”, customers will remind our iPod first.
- 3. There still lack a convenient way to get the legitimate music, we believe it's an opportunity for iTunes to become a music store, and the music store would be one of the best services we have.
- 4. *“It should be noted that all Apple competitors' computers were using a Microsoft Windows operative system, which did amount to 90% of the operative systems market share.”* (Vertygo Team, 2014) We should face the problem that Mac OS is defeated by Windows, if we want to sell more products, our software must adapt Windows. We should be in the music player business, not just in the Mac business.

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