

# The IPOD Innovation

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## Introduction:

8 out of 10 people in the world are fond of music. These days when you say music the first thing that comes to your mind is Apple Inc's 'IPOD'. Apples iPod is the most popular mp3 music player in the market. iPod stores media on an internal hard drive, while all other models, aside from the Microdrive-based mini, use flash memory to enable their smaller size. As with many other digital music players, iPods can also serve as external data storage devices.

Apple's iTunes software is a jukebox application, which stores a music library on the user's computer and can play, burn, and rip music from a CD and facilitates transfer of music, video, images and other data to and from the iPod. The iPod has a unique user interface which is easy to use. As of September 2007, the iPod had sold over 110 million units worldwide (stated in "The Beat Goes On" conference) making it the best-selling digital audio player series in history.



*Fig 1: The first iPod*

This paper focuses on the process Apple Inc used to decide to build an iPod and how they built it in record time, protected it and extended it to build more innovative products like the iPhone based of it which put Apple from a path of recovery to path of prosperity.

The innovation process used by Apple is quite different to the traditional innovation model and has set the tone 21<sup>st</sup> century innovation model. Studying this innovation model will help understand how to innovate on demand in this lighting fast 21<sup>st</sup> century!

## Evolution:

Music has been around for centuries. The way people listen to the music has evolved with time. In the ancient times musicians used to perform live for kings and powerful and wealthy men, gradually as technology progressed we found a way to record music and listen to it at our own leisure. This started with large gramophone discs which evolved into small compact magnetic audio tapes which led to Compact disc audios. The interesting jump came from magnetic audio tapes to Compact discs. CDs improved the sound quality by great extent and allowed user to seamlessly shift across songs with accurate precision and no delay. However the number of songs that could be held in a CD or an audio tape was almost the same. With the advent of computer aided encoding techniques audio experts were able to remove certain frequencies from the audio tracks there by reducing the memory required to store songs and still maintain the audio quality of the sound track. This new encoding audio format was called MP3. It was to store approximately 300 songs on a CD. Now we had a mechanism to store more music on a CD. However the players remained the same. In case of audio tapes you had the portable battery operated cassette player and for CD's you had the portable CD player which evolved into MP3 CD player. However any of these devices still needed discs to carry their music. Also with the advent of MP3 format people had found it easy to download songs of Napster and build their own music libraries and these libraries consumed memory space which was in GBs and not MBs which could not be placed in one standard compact disc. Also burning songs on to a CD on an average required at 15-20 minutes plus if you were using a re-writable it consumed even more time. Finally, there were growing concerns over music piracy too.

Apple Inc was on a comeback path at that time around year 2000 and they were wondering how to boost up sales for the Mac.

Music lovers were trading tunes like crazy on Napster. They were attaching speakers to their computers and ripping CDs. The rush to digital was especially marked in dorm rooms – a big source of iMac sales – but Apple had no jukebox software for managing digital music.

To catch up with this revolution, Apple licensed the SoundJam MP music player from a small company and hired its hotshot programmer, Jeff Robbin. Under the direction of Jobs, Robbin spent several months retooling SoundJam into iTunes (mostly making it simpler). Jobs introduced it at the Macworld Expo in January 2001.

While Robbin was working on iTunes, Jobs and Co. started looking for gadget opportunities.

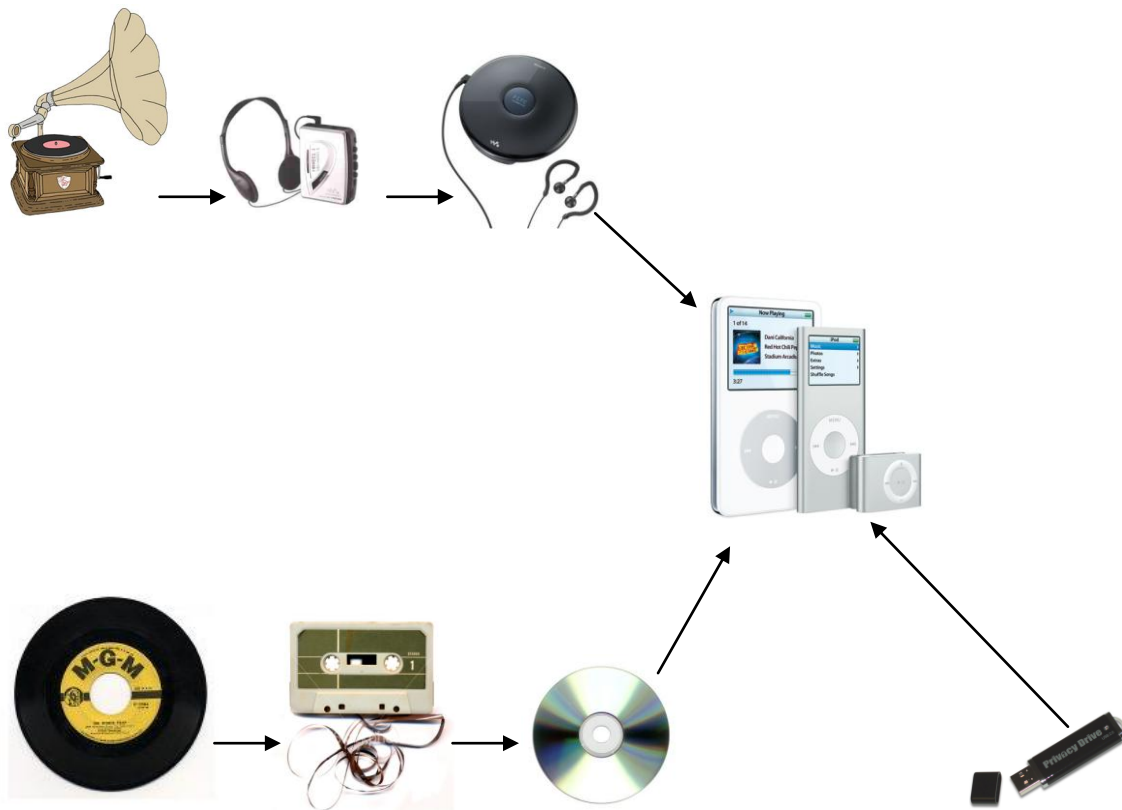
Thus Apple saw a huge value in this opportunity and decided to build a Mp3 music player which would overcome all these flaws. And hence the birth of IPOD

Apple's team knew it could solve most of the problems plagued by the Nomad.

1. Its FireWire connector could quickly transfer songs from the computer to player – an entire CD in a few seconds; a huge library of MP3s in minutes.
2. Thanks to the rapidly growing cell phone industry, batteries with longer life and power friendly displays were constantly coming to market.

In February 2001, during the Macworld show in Tokyo, Rubinstein made a visit to Toshiba, Apple's supplier of hard drives, where executives showed him a tiny drive the company had just developed. The drive was 1.8 inches in diameter – considerably smaller than the 2.5-inch Fujitsu drive used in competing players – but Toshiba didn't have any idea what it might be used for.

Apples Rubinstein quickly jumped on the idea of using it for development of IPOD as quoted by him: "They said they didn't know what to do with it. Maybe put it in a small notebook," Rubinstein recalled. "I went back to Steve (jobs) and I said, 'I know how to do this. I've got all the parts.' He said, 'Go for it.'"



*Fig 2: The evolution ... how it came together*

## Analysis of the innovation process

### Need for Innovation:

Apple Inc recognized the fact that although there had been innovations in recording of music, playing of music and instruments to play the music these innovations to a certain extent were independent. There was little effort to integrate all of these. Thus as mentioned in the evolution process

There were three main sources of pain

1. Need for doing away with discs or cassettes
2. Need for more memory to carry entire music library
3. Limitations to making the Memory reusable
4. Prevention of Music privacy

### The Process:

#### *The Pain:*

After identifying the sources of pain Apple decided they were looking for an integrated product. Now the interesting point to notice here is that Apple did not go to building the entire thing from scratch. They decided to tap its technology network consisting of suppliers and distributors and other industry contacts to find out if anyone had accomplished anything similar or something which might set the tone for what Apple was looking for.

Through this network they found out the most popular compact mp3 music player was the Nomad Jukebox from Singapore-based company called Creative. This was about the size of a portable CD player but twice as heavy, the Nomad Jukebox showed the promise of storing thousands of songs on a (smallish) device. This device was a 2.5 inch Hard drive built by Fijitsu. This player was not perfect and had some flaws:

1. It used Universal Serial Bus to transfer songs from the computer, which was painfully slow.
2. The interface was not user friendly
3. Battery life was just 45 minutes.

However this discovery as mentioned before set the tone for what Apple was looking for: A portable memory hard drive with huge capacity which could be loaded and unloaded quickly with mp3 songs.

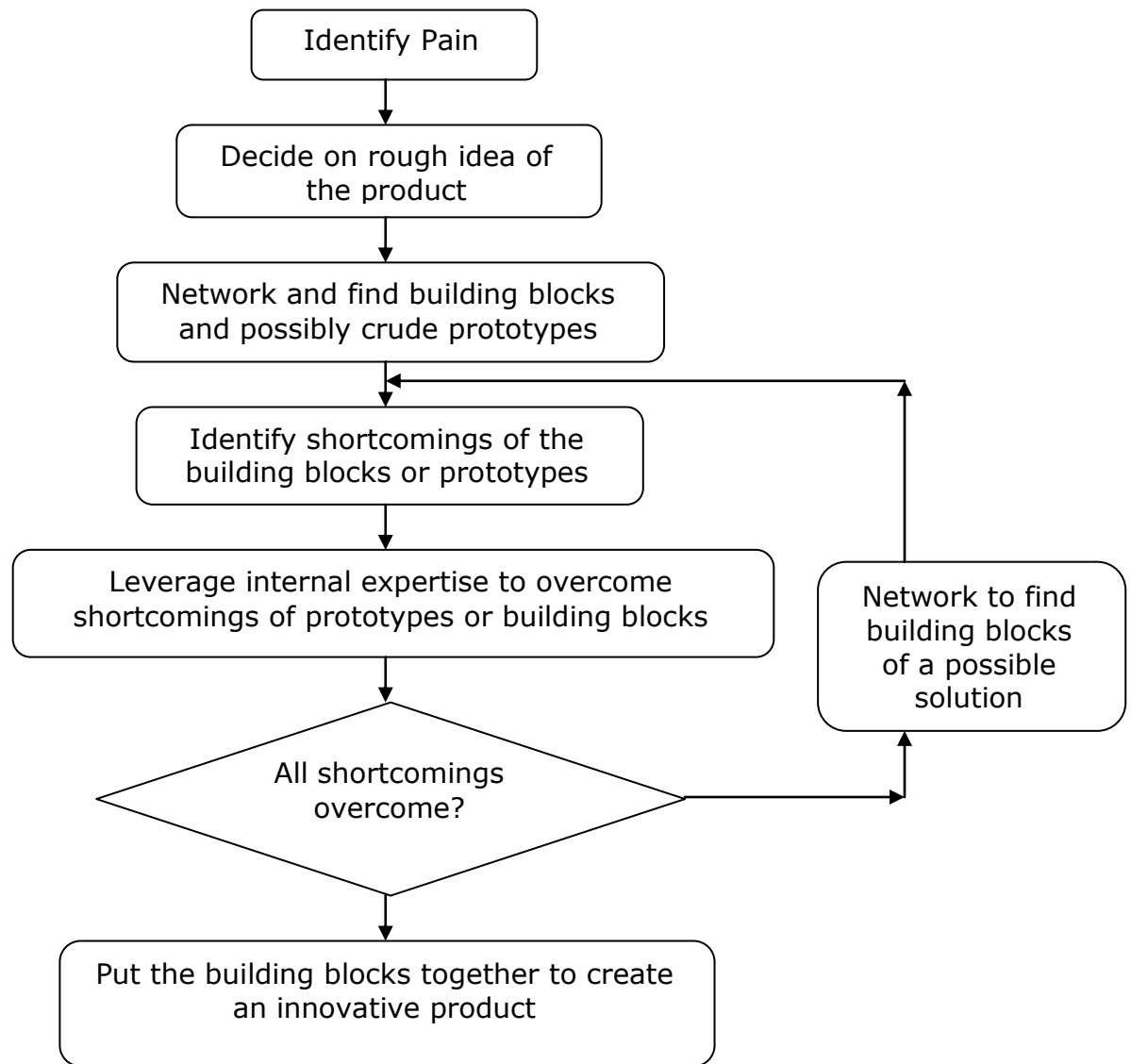
#### *Step by Step....collecting and putting together the building blocks:*

Once the basic goal was realized Apple looked at its resources to convert this creative idea into innovation.

1. As mentioned in the evolution process at a Macworld event in Tokyo Toshiba showed Apple the innovative 2.5 inch Hard drive which potentially could be the heart of the product apple sought. Apple quickly jumped on this opportunity.

2. Another area apple wanted to innovate was loading and unloading music from the music player. After finding out that USB was not the best way to go Apple looked at possible technologies that could improve this performance. Apple selected its fire-wire connector technology which overcame the problem posed by USB connectors.
3. With regards to the battery Apple decided to choose a supplier and buy the batteries directly rather than try to build its own. This was a wise move since batteries were evolving as the cell phone market had a boom. Additionally Apple had some of its best hardware and software technicians working on building a power friendly hardware and software system.
4. Finally with regards to the UI Apple was known for its user friendly operating systems right from the birth of Mac it just incorporated this habit in building the hardware and software for the iPod.
5. Finally Apple noticed that people (mostly younger generations) were using Napster to share and download music. Apple countered this by providing iTunes which again bundled copying, playing, sharing and (legitimately) downloading music at one place.
6. Finally came the sleek packaging which was possible thanks to the 2.5 inch hard drive procured from its supplier Toshiba. Apple used its brilliant marketing strategy and since the product was innovative and difficult to emulate it was able to dictate a higher price and make high profit margins for number of years.

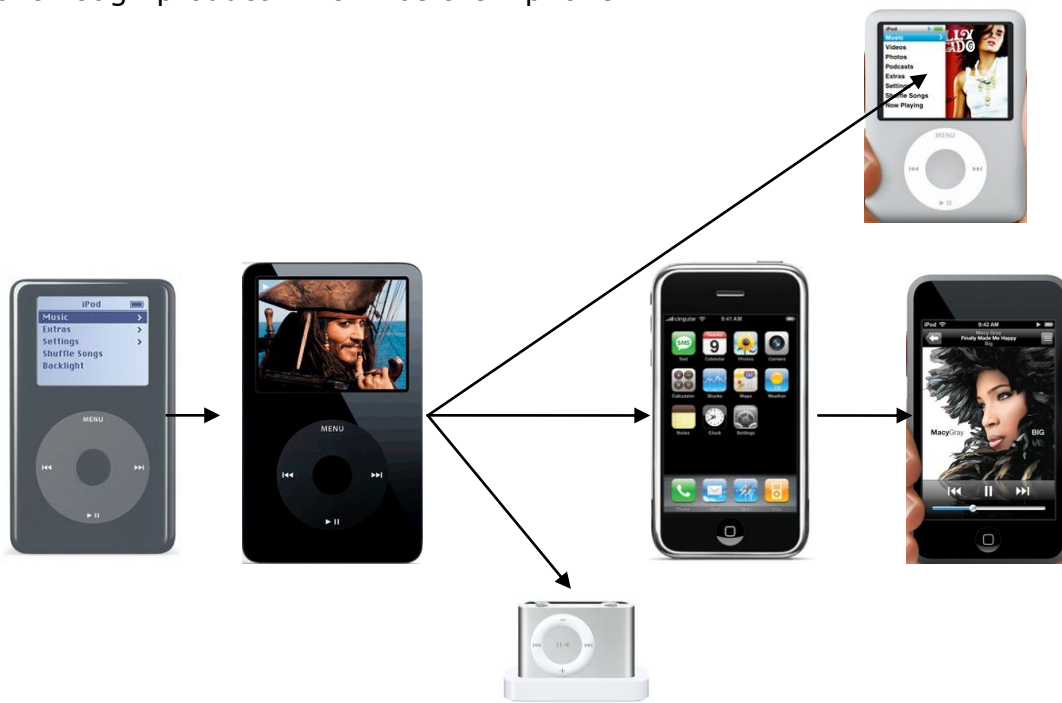
To summarize Apple systematically determined what it was looking for by looking at deficiencies in the products available in the market used their huge technology network consisting of suppliers, distributors and to a certain extent competitors too to find out if there was anything they could build on which accelerated the development process. Finally they used their internal expertise in technology, marketing, distribution and sales to convert the creative idea they saw outside into an innovative product called iPod.



*Fig 3: A rough flow chart describing the innovation model possibly used by Apple Inc*

## Future Innovative Extensions:

After the success of IPOD apple introduced a lot of variant products like Video iPod with 30 GB memory which helped apple keep its self ahead in the competition from Microsoft's Zune and other products. Apple realized that they could not stay ahead of the competition by simply coming up with variants of their existing innovation forever and hence had conjure up another breakthrough product which was the I-phone.



*Fig 4: Apple's 'iPath' to iPhone and iPod series*

Here the interesting thing was that Apple used its strategy again but it had more innovative things to combine. The phone industry was suffering the same fate as the music industry there were efforts to incorporate music into phones. Apple saw that it had the best Music player in the market at that time and building a phone was never going to be difficult for Apple's Hardware pundits and hence Apple basically had made an iPod with a phone and a camera in it which became the I-phone and was sold as a camera phone with an iPod. They did add innovative features like touch screen controls without a stylus, google maps ect. Apple also did not hesitate to take this innovative touch screen technology to iPod and coming out with iPod touch

Going ahead I believe we will see more variants of I-phone coming in the market with possibly a higher resolution camera, more diverse applications like possibly shopping cart which will allow you to buy things online from the phone itself. After the variants we have to wait and see which product apple targets to incorporate into the I-Phone!

## Conclusion

Apple's iPod is a classic example of innovation in the modern age. Innovations in 19<sup>th</sup> century were confined within the walls of the company and each product and its aspect was built from scratch within the company itself. This model of innovation although gave fantastic products it was slow as research itself used to take a lot of time. Time is a luxury one cannot afford in the 21<sup>st</sup> century and time to market from idea creation to innovation has to be quick and on demand.

Apple was on a recovery path when they thought of iPod. They needed something that would propel them out of recovery and into prosper zone. This had to come quick and on demand.

Apple's innovation model kept the key concept within its walls but took the research outside. It looked for the building blocks outside apple using an extensive technology network which helped them gain access to these building blocks. Only Apple knew what it wanted to do with a 2.5 inch hard drive, a musical juke box called I-tunes. They then leveraged their internal expertise to put it all together to bring us an innovative product.

This innovation model shows with characteristics like collaborate and develop (which gave the 2.5 inch compact hard drive to the iPod), an open but protected network (which helped in development of I-tunes) has shown that innovation can be accomplished on demand and is not restricted to lucky sparks in a few distinct creative minds!.

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