**What will the future hold for portable Gaming?**

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**Abstract:** The games industry has always had a big effect on the advance of computer technology and this research goes into how portable gaming has affected portable computing and vice versa and also how the push for portable gaming may have shot itself in the foot and destroyed dedicated portable gaming devices. There are also details on some of the amazing sales figures of games on portable devices and how big that makes the entire games industry.

**Keywords**: portable gaming, smartphones, games consoles, hardware, handheld

# Introduction

For almost as long as computers have been around, humans have always tried to make them smaller and more portable. The gaming industry has had a huge effect on computing as a whole and especially in portable computing. In fact the first portable gaming console was released years before the first laptop. The increased demand for games with higher realism and visual fidelity pushed innovation in the hardware industry to make more powerful devices to run these games. It’s hard to guess what will happen to these devices but the future does not seem so bright for them.

# The Early Days of Portable Gaming

## The First Portable Consoles and the 1980's

The Mattel Auto Race was the very first electronic portable games console released in 1977 (Geek, 2011). On release, it was not a popular device and sold less than 100,000 devices (Tombola, 2013). Due to poor sales the Mattel Football was released. It reached as many as 500,000 sales as stated by Handheld Museum. Both devices contained almost identical hardware, both using the same modified calculator processor (Handheld Museum) and ½ KB of RAM (Geek, 2011). Both these devices released years before the first laptop in 1981 (Daily Mail, 2012). This difference in release dates shows how much affect the games industry can have in the push for portable technology. In 1980, Nintendo released their first portable games console, the Nintendo Game & Watch. It benefited from 2 screens and more powerful hardware than the Mattel consoles. Like the Mattel consoles, they were still limited to one game per device, but were sold at a reasonable $20 each (Cnet, 2010). A good price point and a well-known games company helped the Game & Watch to sell over 43 million devices (Tombola, 2013). It was also the first portable console to feature a microprocessor and an LCD screen. In 1983, mobile phones meanwhile did not feature a screen and the latest phone from Motorola was £3000. The gaming industry was innovating much quicker than other technology industries.

## Late 1980's and the 1990's, Nintendo's Dominance

In 1989 there were two major handheld releases. Nintendo released the Game Boy, successor to the Game & Watch and Atari released their first portable console, the Lynx. Released months apart, these devices would prove critical to the future of the industry. Despite a colour screen and 64KB memory, compared to the monochrome screen and just 8KB memory on the Game Boy (Tombola, 2013), the Atari Lynx sold poorly with Nintendo selling nearly 60 times as many devices and a disappointing 2 million sales (Tombola, 2013). These releases set a trend for the next 15 years where the dedicated portable games hardware industry was dominated by Nintendo.

While Nintendo dominated the industry, mobile phones were advancing quickly and in 1997 the Nokia 6110 was released. This was the first phone to feature the very popular Snake game (Microsoft, 2010). It didn’t damage the sales of Nintendo's Game Boy Colour which released at a similar time, the second bestselling handheld console of all time at almost 119 million units (Giant Bomb, 2014), but was a sign of things to come.

## 2000's, Sony's entry into the market and Smartphones

The year 2004 in many ways was similar to 1989 for the portable industry. Nintendo released their new DS and Sony released the PSP. Both had their benefits, the Nintendo had a lot of popular franchises such as Mario and Donkey Kong whereas the PSP had more powerful hardware. The franchises helped the DS to become the most popular portable console to date reaching more than 154 million sales (Nintendo Co.).

Despite selling barely half of the DS at 80 million, Sony never gave up. They refreshed the PSP multiple times with similar hardware and improved ergonomics (eBay, 2014). Nintendo followed this pattern, releasing refreshed models with the same hardware and often improved battery life and price (eBay, 2013).

Both these consoles sold well but there was a new competitor. The smartphone era had begun with the release of the iPhone in 2007 (The New York Times, 2007) and the first Android OS phone a year later (Engadget, 2008). When first released, the iPhone was not capable of playing games. Apple later released a software update that included the App Store. This allowed almost anyone to release a game to it on low budget. This led to the release of popular indie titles such as Angry Birds. Android also released the Android Market, which is very similar to the App Store.

# The Current Situation

## A continuously growing smartphone industry

Today we have a declining market for dedicated portable gaming hardware, with the biggest player Nintendo expecting poor sales for the DS (Asymco, 2011). Smartphone gaming however is a booming market and in 2011 Apple claimed 5 million games were downloaded per day (Cnet, 2011). In 2013, Google also boasted a total of 50 billion downloads (PhoneArena, 2013) from the Play Store (previously Android Market); this number includes all apps but demonstrates huge growth.

These impressive numbers posted by Google and Apple are not all that they seem though. Cnet (2011) stated that 88% of the game downloads on iOS were free games. This often makes the games less profitable. These dedicated consoles can still therefore be much more profitable and have many popular franchises to help them.

# What Does the Future Hold?

## An imminent death to all dedicated gaming devices?

**While projected sales of both Nintendo’s and Sony’s portable consoles are expected to fall, it would be unwise to suggest that the handheld gaming will cease to exist in just a few years’ time. While smartphones have improving hardware and developers are starting to pay more attention to them, it will be a long while before smartphones become a better platform for high quality games. There are new solutions also arising in the handheld industry. Some indie projects are being developed such as the Arduboy (2014) with the idea of offering a unique form factor; it is the size of a credit card and can play games without draining your phones battery. Other solutions include cloud based gaming on the Nvidia Shield (2014) where a game is run in the cloud and streamed to your device, meaning low hardware requirements. However cloud gaming requires very good internet due to input lag and is currently not ready to be implemented as a complete solution.**

# **Conclusion**

It’s always difficult to predict anything in the very fast moving computing industry. However, trends show that the handheld console industry is dying at the hands of smartphones, a trend which can’t be ignored and many such as TechRadar (2014) and SlashGear (2012) believe that the PS Vita will be Sony’s final handheld console.

Portable gaming will never be the same but it’s not dying, both Google and Apple posted huge growth year on year for games on their devices (AppAnnie, 2014). Other projects also show promise with Nvidia’s cloud devices and the Arduboy. These projects excite me and I think they show great signs of innovation for the future.

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Marking Grid

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| --- | --- | --- | --- |
| **Presentation** | **Mark** | **Context** - knowledge and communication | **Content** - knowledge, application, evaluation, criticality |
| **20%** | **Weighting towards overall mark for report** | **20%** | **60%** |
| **95%** | **Your Own Mark for each section should be entered for each column in this row (out of 100)** | **80%** | **70%** |
| Perfect adherence to the three page LNCS template is worth **100%** and the article will require no editing by the editor.  Your mark will be reduced for each type of error from the following list by the specified amount in order to **reflect the additional effort required by the editor to get your article ready for publication**. The maximum deduction will be 100% in this category  Errors on each line of the Title and Affiliation section – 5% each (maximum 30% deduction)  Formatting errors with the Heading styles - 5% each **broken style level** (maximum 15% deduction)  Proofreading errors (spelling, punctuation and grammar errors) - 20%  Failure to use a consistent Harvard standard for **citations** – 20%  Failure to use a consistent Harvard formatting of the **References** – 20%  Failure to use the **body-text** style - 15%  Failing to meet the specified **three page** length requirement - 50%  Failure to use the **template** - 100% deduction | **95%** | The context demonstrates an **outstanding foundation** of knowledge and understanding which shows an **exceptionally wide range** of sources and perspectives. The context clearly shows the topic is **exciting** to the general reader and the article examines the topic from a **new perspective**. | The article **compares and evaluates** a wide range of perspectives and concepts in order to **demonstrate very clearly how and why** the impact of the technology changes affect the reader and will have the potential to **change society** in the 21st century. |
| **85%** | The context demonstrates an **excellent foundation** of knowledge and understanding which shows a **very wide range** of sources and perspectives. The context clearly shows the topic is **exciting** to the general reader and the article examines the topic from a **new perspective**. | The article **compares and evaluates** a wide range of perspectives and concepts in order to **demonstrate very clearly how and why** the impact of the technology changes affect the reader and are important in the 21st century. |
| **75%** | The context demonstrates an **excellent foundation** of knowledge and understanding which shows a **very wide range** of sources and perspectives. The context clearly shows the topic is **exciting** to the general reader and everyone should read the article. | The article **compares and evaluates** many perspectives and concepts in order to **demonstrate very clearly how and why** the impact of the technology changes affect the reader and are important in the 21st century. |
| **65%** | The context demonstrates a **good foundation** of knowledge and understanding which shows a **wide range** of sources. The context **clearly** shows the topic is **interesting** to the general reader. | The article **compares and evaluates** several perspectives and concepts in order to **demonstrate** **how and why** the impact of the technology changes affect the reader and are important in the 21st century. |
| **55%** | The context demonstrates a reasonable **foundation** of knowledge and understanding which shows a **range** of sources. The article can be **understood** by the reader. | The article **compares and evaluates** a few perspectives and concepts in order to **demonstrate** how the technology changes affect the reader in the 21st century. |
| **45%** | The context demonstrates a satisfactory **foundation** of knowledge and understanding which shows a limited **range** of sources. The article can be **understood** by the reader. | The article **describes** the topic and presents a **simple history** of the technological changes in the topic area. |
| **37%** | The context demonstrates a very basic **foundation** of knowledge and understanding which shows a very limited **range** of sources. It is difficult to **understand** what the article is about. | The article **describes** the topic but shows little understanding of the history. |
| **20%** | The context demonstrates **no** understanding of the topic and has **no** evidence of sources. It is very difficult to **understand** what the article is about. | The article fails to describe the topic. |