GLOBAL INNOVATION

TERM PAPER

On

What's Next for Intel?

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ABSTRACT

Innovation is what drives an organization forward. Innovation is of paramount importance, especially in technological industry. Being a global face in the market makes it even more imperative to bring about engineering innovations. One such technology giant is Intel. Intel is well known for its vast array of products ranging from processors to chipsets to laptops. It believes in diversity in technology initiatives and that is what driven Intel over the years.

This paper shall discuss how Intel has been a pioneer of innovation through its technological advancements, threats that Intel are facing and what has Intel planned for its BOX 3, that is, creating the future.

INTRODUCTION

Founded in 1968, Intel has been involved in the development of advanced integrated digital technology platforms. Started as a semiconductor chip manufacturer, it is currently invested in desktops, drones, solid state devices, IoT, smartphones, tablets, wearables, high-end processors, and the list continues. Intel has pushed itself to expand over the horizon of their core business. The company has a worldwide presence, namely in Asia Pacific, Europe, and Americas.

Currently, Intel is operating in seven major business segments: Internet of Things (IoT), client computing, data center, programmable solutions, intel security, non-volatile memory solutions and others. Having their claws embedded in several technological umbrellas, they have seen a 7.3% rise in company revenue for 2016 (US $59,387 Million) than the previous fiscal year (INTEL Corp., 2017).

After 2000, Intel was facing decline in demand for high-end microprocessors. During that period, its biggest rival Advanced Micro Devices (AMD) managed to accumulate Intel's marketshare. This lowered their market value and brand equity. After that phase, its then-CEO strived to expand its business beyond semiconductors (Wikipedia, 2017). Intel has always challenged themselves to keep up with the technological trends and led to innovative products.

TECHNOLOGICAL ADVANCEMENTS AT INTEL

Intel has a plethora of innovative ideas and this is facilitated in the research centers spread all over the world. Their tie ups with universities and research organizations expose array of opportunities for innovations and technological advances. Intel's on-going research and development products

are in alignment with Gartner's Strategic Trends 2018. It is invested in intelligent things (that is, use of drone swarm for the U.S. Super Bowl show in 2017), cloud to the edge (that is, Internet of Things) and Artificial Intelligence. (Cearley, Burke, Searle, & Walker, 2017)

Intel does seem to follow Yves Doz's rule number 6, that is, "Invest time defining the innovation". The IoT Ignition Lab aims to create faster, scalable, and standardized solutions to its partners, developers, and systems to build latest technological solutions (Intel, 2017). Here are few to the recent technological advancements Intel came up with over the past year:

- **Facial-Recognition Technology**

In the first week of December 2017, Intel offered its first public display of facial recognition technology based on a Multi-access Edge Computing (MEC) 5G. This highly interactive technology is capable of providing residential as well as business access control, virtual shopping experience and pay-with-face identification service using AI and Multi-access Edge Computing. This technology can deliver high-speed authentication for transactions, leading to an exclusive high-end shopping experience (Intel Newsroom, 2017). This aligns with one of MIT Sloan's Breakthrough Innovation for 2017 (Paying with your Face).

- **DeepLens**

With several technology leaders competing in the market today, everyone is trying to explore the powerful and undiscovered potential of AI as it the future of technology. Intel has collaborated with Amazon Web Services (AWS) to launch its first fully programmable, deep learning-enabled wireless video camera. This alliance shall augment Intel's commitment to deliver AI and machine learning products such as Intel Speech Enabling Developer Kit. "We are seeing a new wave of

innovation throughout the smart home, triggered by advancements in artificial intelligence and machine learning," are the words narrated by the GM of Smart Home Group at Intel. (Intel Newsroom, 2017)

- **Intel Stratix 10 MX FPGA**

On 18 December 2017, Intel introduced the availability of Intel Stratix 10 MX FPGA, which is the industry's first field programmable gate array (FPGA)with high bandwidth memory DRAM. This high-level circuit makes high speed acceleration, simultaneous operations of read/write data and job of encryption/decryption in real-time possible. (Intel Newsroom, 2017)

As Intel is a key player in developing quantum computers, this launch of high end operational circuit might contribute towards the future of computers. Exceling in such technologies will make Intel a superior stronger key player in practical quantum computing. (Juskalian, 2017)

INTEL FACING COMPETITION?

As it is evident from Intel's company timeline that it is no longer only a semiconductor manufacturer company, but a technology leader as well. It has been invested in various verticals under its technological umbrella. Among these various vertical segment lies different technologies and many competitive threats for that respective technology.

NVIDIA, Qualcomm, Samsung, Micron, Advanced Micro Devices, Oracle, etc. are some of the major competitors, Intel has been facing for a long time. In semiconductor industry, Samsung is the leading company followed by Intel. This creates pressure on Intel to create more innovative products such as Stratix 10 MX FPGA. In data center group, it faces competition from Oracle,

IBM, and EMC corporation. Whereas, in chipset and processor units, AMD is Intel's most threating rival.

Another major rival is NVIDIA. NVIDIA has been recently shifting towards AI and advanced graphics (GPU) technology. Intel strategized to battle NVIDIA with its own weapon, that is AI. Intel has announced that its first AI chip, the Nervana Neural Network Processor, can defeat the advanced GPU of NVIDIA. These chips are based on machine learning algorithms which speeds up the data interconnection act together like one giant chip. (Fast Company, 2017)

Intel has already been dominating the two largest markets, that is, data centers and personal computers. However, as the technology is being shifting along with time towards AI, it has given market exposure to many companies. Thus, it is producing more intense competition for Intel. This makes Intel more imperative to look for a BOX 3 strategy.

INTEL'S BOX 3

As Intel delineates its opening statement by "INTEL MAKES POSSIBLE THE MOST AMAZING EXPERIENCES OF THE FUTURE", this portrays them as someone with creating BOX 3 for themselves. With emerging competition and everyone eyeing for Artificial Intelligence, Intel also planned its BOX 3, that is, creating the future with AI technology.

Intel has defined its BOX 1 (managing the present) as "Chip in the Laptop/Desktop". Whereas, it is defining its BOX 3 (creating the future) as "Chip in Autonomous Vehicles". This BOX 3 strategy came into play when Intel sealed a $15.3Billion deal with MobilEye in year 2017. MobilEye, an Israeli tech company, is a leader in computer vision for autonomous driving technology.

MobilEye has a variety of products such as front and rear facing camera, sensor fusion mapping, data crowdsourcing for HD mapping as well as driving intelligence. It has expertise in virtual driving, mapping areas, data centers, simulators, high-level computational platforms, etc. By combining this with Intel's car path mapping and real-time decision-making algorithms, it can give rise to a new state-of -the art product to the world.

The company issued the statement, "The combination is expected to accelerate innovation for the automotive industry and position Intel as a leading technology provider in the fast-growing market for highly and fully autonomous vehicles". This shows that Intel is not the one to get trapped because of its present success. But, it is moving forward and planning its roots in all possible industries including augmented reality, IoT, virtual reality, etc. (Lunden, 2017)

CONCLUSION

As soon as they set foot in autonomous driving technology, they have announced to partner with Warner Bros. to provide in-cabin immersive experiences (that is, interact digitally) in the future autonomous cars. With the acquisition of MobilEye and partnership with Warner Bros., the autonomous vehicle (AV) industry has opened a pool of expansion of Intel and its innovations. (Intel Newsroom, 2017)

Every technology leaders in the market such as Tesla, Google Waymo, and Uber, wants to ride the next wave of autonomous driving vehicle. And Intel just grabbed the opportunity to make it a reality for its organization with MobilEye. Intel realized that it cannot keep betting on the PC market and smartphone market. It needs a new market to grow and invest it.

Looking at what Intel is doing, makes us realize how important it is to innovate and not just tweak the existing technology. The out-of-the-box thinking, strategizing, and implementing it leads to the organization's growth and secure future. Innovating on a global scale as per the latest trends will be the BOX 3 for most of the technology leaders.

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