Quick and dirty translation of the CanardPC article about Intel.

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An unavoidable decline

Why Intel may collapse

During entrevues held for writing this paper, we have met many discouraged employees. Some have been just fired, other were still in the place, but with obvious fears for their future or their company's. Though there are varying cause for the malaise among divisions, all our sources point systematicall to the culpirt: Brian Kraznich. After many months sorting informations, we can now paint an accurate portrait of the current CEO… and analyse the consequences of his decisions to Intel's future.

Following his errors about mobility, Paul Otellini was ejected from the CEO chair and from the board of directors in 2013. He was reproched the failure of Intel to penetrate the smartphone and tablet market, and, above all, his lack of foresighting about major strategic decisions. Under his presidency, Intel has missed several opportunities which would have helped get some weight in mobile devices. Otellini, for example, made the terrible error of dismissing Apple which wanted to develop a « revolutionary » project with an Intel chip. The iPhone eventually shipped with an ARM SoC made by Samsung. In the same trend, Paul Otellini waited too long and missed the opportunity of buying two companies which were at reach : Broadcom and Qualcomm. Both will get several years later a dominant place in coveted mobile Internet SoC and IoT. The former CEO instead spent nearly 8 billions dollars in 2011 to buy the antivirus editor McAffee, which Intel re-sold 5 years later without earning anything from it but depts. For management, Otellini also made many mishaps in haste : discarding the brilliant Patrick Gelsinger (technical director, accused of the Larrabee debacle) and Anand Chandrasekher (responsible for the ultra-mobile division), missing crucial resources for the future. Paul Ottellini leave is acted in 2012. They had to find someone else.

The Krzanich era. After some pruning, the Intel board of directors can only find two candidates : the current COO, Brian Krzanich, which has a « financial » background and the architecture leader, David Perlmutter, an Israeli far more focussed on technology.
Even though Perlmutter had serious qualifications for the job, his candidature was dismissed for a simple reason : He is not American. On 2013/5/2, Krzanich is appointed 6th Intel CEO, starting two weeks later. Only one week later, one of his first symbolic decisions is to fire Perlmutter. No place for dissidents !

For all those we have interviewed, there is nothing surprising. Kzanich is universally described as a quick-tempered man which can easily get enraged and whose is not wise to get in the way, whatever your arguments are valid or not. Many of those who have risked criticizing his decisions – or simply expressing some doubts – have received the same fate, whatever their rank : fired. And the list is very long.

Among the victims, one can cite Renee James (software director), Joel Emer (CPU architect now at nVidia), Belli Kuttana (eventually came back after some time at Qualcomm), Rani Borkar (director of development) and recently Kirk Skaugen (PC division), Keshavan Tiruvallur (chief of validation) or Doug Davis (IoT). Here is only a small sampling of the thousands of employees which have

leaved Intel since the arrival of Brian Krzanich. Of course, he did not fire them all himself, but many Fellows, with highly sought technical knowledge, have left the ship under his pressure since these last two years.
Many confirm that this brain drain is causing huge problems for the development of future product generations. Difficult indeed to teach new ingineers in these specialized competencies to replace those who have leared the skill during tens of years. But Brian don't care about these details and goes on chopping all the heads above the crowd : obsessed with cost reduction and growth, he only has short term vision, mid-term at best. Many accuse him of managing Intel ingineers as supermarket cashiers, without bothering about the time needed to teach them the work.

Tightrope. Besides his inability to listen and accept internal debate, Krzanich is also reproached his lack of coherence in his choices and his lack of perseverance. Since he got the job, unnumerable projects have been started, then cancelled, restarted, altered then finally abandoned. By dismissing all the former sectors chiefs (as Justin Rattner), the new CEO has given himself full power in all sectors. Someone in that position needs at least a strong strategy to deploy. And, in that domain, the failure is obvious. Let's first examine Mobility. The desktop PC market is declining since a long time and one needs to find new opportunities. After Otellini's failure, Kzranich renews his wish to focus on ultra low power chips for mobiles. Alas, patience is not among Brian's qualities. Quickly enraged by not seeing thing moving as expected, and because a new CPU architecture can't be completed in two weeks, the new CEO never stops sending contradictory orders to the teams. The final nail came mid-2015 when he…

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… decides to cancel the Broxton architecture for smartphones, three months before the first prototypes, canning all future investments. Here is the end of Intel's tries in mobility. One needs to find something else.

Not investing massive amounts of money into R&D for CPU architectures, Intel can only see rise the market share of nVidia in the very lucrative HPC and Deep Learning segments. Xeon Phy, built on the ashes of the Larabee project, is still alive. It is one of the few project than Brian Krzanich did not touch. One variant dedicated to deep learning (Knight Mill) is planned for 2017. Very late to compete efficiently against nVidia, already widely engaged. This lack of long term visibility is provoking similar issues in many domains. The good old desktop CPUs for example. Refusing to accept that the 10nm node will be delayed, Krzanich was caught empty handed with a long period without real innovations. The only solution : set up some quick hacks to keep the illusion (the Kaby Lake and Coffee Lake chips), hoping that AMD will continue not presenting serious competition. Even Cannon Lake, the first CPU expected in 10mn, won't benefit from significant architectural improvements. Waiting for the the next interation, Intel will need to cut prices if the AMD Zen chips keep their promises.

Fab Hell. Another major problem : The disaster of the last processes. From everyone's opinion, the 14nm was the worst ever in all Intel history Unnumerable problems have caused many delays and modest performances on the first lots. And abysmal yields.
Even then, most responsibles expected the 10nm transition to be much simpler. In 2012, Otellini promised to investors that 10mn with EUV lithography will be ready in late 2016. We are still very far from it. Not only EUV is still a distant dream, but 10ms poses almost as many problems as the 14nm. If some samples may be available late 2017, mass production of 10nm chops (particularly larger ones) won't be possible until 2018. The considerable lead that Intel had since the dawn of times – more than one year lead over its competitors – is now something from the past. To the contrary, everything shows that Intel will be 6 years late for 10nm over TSMC. A never seen before

situation very worring for the future.

The end of x86 ? Beyond all these problems, another threat, far worse than all the others is setting : the end of x86 era. This time it is more than some improbable vague hypothesis. The game is already lost with the omnipresence of ARM in smartphones, tablets and, more generally, ultra mobiles. For servers, nVidia shows that supercomputers can deliver outstanding performances by using GPGPU. The next ARM generation (ARM v8-A) will also compete for high performance servers. But the worst for Intel comes from desktops. Only 5 years ago, nobody would have envisioned a quick end for the x86. Nowadays, blockers are disappearing. For such a transition to occur (x86 to ARM), it must first be transparent for users. Apple, which have already switched from PowerPC to x86 in 2005, cound be the first to switch its Macs to ARM. MacOS Sierra already have some hints of ongoing experimentations. At Intel, they are panicking. Everything will be decided with the Ice Lake generation in 2018. If Apple is not satisfied, a global transition to ARM becomes probable.

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And in the PC realm ? Impossible ? Not that much.
Even as Microsoft have had an ARM version of Windows 10 for a long time, the lack of retrocompatibility of applications have always presented a huge problem for the transition. But a solution is envisioned : Microsoft is actively developping internally an x86 emulator able to run applications on ARM. The feature, planned for end 2017/ beginning 2018, could completely transform the market and begin the start of the end of the x86.

A not of hope. Is everything as gloomy in Intel's future ? For Brian Krzanich, probably. Many employeesc cannot imagine him able to remain the CEO with such a terrible outcome. Himself seems to slowly comprehend the dimensions of the problem. He poached late 2015 Qualcomm's vice president for a huge amount, 25 millions dollars. After the announcement of massive layoffs (>10000), this amount is causing some resentment.

Murthy Renduchintala is coming at Intel trying to repair the failures caused by the boss. Starting to re-create some hierarcy and giving stable objectives. Murthy is described as someone as irascible as Krzanich : some are pretending that they heard him yell from another building. But, unlike the CEO, he has solid technical background and can listen to critiques without sacking the contradictor. His decisions are positively judged by employees which could not bear Krzanich anymore. Since a few months, Murthy is re-starting the machine, but results won't be seen until several years. Research investments which were stopped by Krzanich have been re-established, but an important gap remains until around 2019. Among the ongoing atypical projects, there is a stunning hybrid CPU able to execute both x86 and ARM code. The R&D is also studying a MCM package with an Intel CPU and an AMD GPU. To entice Apple to keep the x86 ? Maybe. Anyway, most of our contacts hope that Murthy will be the next CEO ASAP.

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Krzanich & Trump

Few american managers expected Donald Trump's victory in june 2016. Brian Krzanich was among them, he even organised some money collecting for the billionaire. After the surprise provoked by that revelation by the New York Times, the operation was cancelled, but it was too late. Is Krzanich a supporter of Trump whose declarations about minorities and women don't match the exemplary Intel policies ? Maybe, maybe not. Because there is another explanation far more prosaic. Intel is producing most of its chips in the USA whereas all its competitors (Samsung, Apple, AMD, etc) are importing from Asia. Donald Trump has stated that he wants to put very high taxes on imported goods, to preserve American jobs. If such a tax would be acted, it would give a huge advantage to Intel for the US internal market. Startegy…

Notes :
- This is a very rough translation. I'm not an native English speaker. I welcome any remark.
- I don't think that x86 will disappear overnight, before 2020. A server CPU is not just the core and the instruction set, there are many optimisations different from phones CPUs, just like x86 prevalcence in servers is of no use in phones, ARM's dominance in mobile computing has little weight for servers.
- It is very difficult to compare process nodes between Intel and TSMC. The « 10nm » metric is just one parameter among many others. Intel has probably lost a lot of its lead ni manufacturing, but there is no reason to believe that TSMC, GloFo and Samsung will be able to solve the crazily complex 10mn generation (whatever that actually means) faster than Intel.

TL-DR :

Intel current lack of innovations is due to the last two CEOs which are/were terrible. They have allowed competitors to catch up : ARM for mobile, maybe AMD with Zen. Tough times for Intel, at least up to 2019, maybe it will be too late to keep x86 prevalence.

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