

The fire that changed an industry: a case study on thriving in a networked world

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The Fire That Changed an Industry: A Case Study on Thriving in a Networked World By: Amit S. Mukherjee About 8 p. m. on March 17th 2000, a lightning bolt struck a high-voltage electricity line in New Mexico. As power fluctuated across the state, a fire broke out in a fabrication line of the Royal Philips Electronics radio frequency chip manufacturing plant in Albuquerque. Plant personnel reacted quickly and extinguished the fire within ten minutes. At first blush, it was clear that eight trays of silicon wafers on that line were destroyed. When fully processed, these would have produced chips for several thousand cell phones. A setback, no doubt, but definitely not a calamity. At a chip factory, production takes place in "clean-room" conditions. The cleanest of such facilities have no more than one speck of dust per cubic foot. Stated differently, these facilities are ten thousand times cleaner than hospital operating rooms. And therein lay the problem. Fire produces smoke and triggers sprinklers. Fire and smoke take lives, and sprinklers save them, but all-fire, smoke, and water-wreak havoc on property. As they dug deeper, plant personnel found that smoke and water had contaminated millions of chips that had been stored for shipment. Damage this extensive was definitely a calamity. Four thousand miles away, at a Nokia plant outside Helsinki, a production planner who was following a well articulated process for managing chip inflows from Philips failed to get a routine input he needed from Philips. The failure could well have been an anomaly. Even so-called Six Sigma facilities (of which, despite the hype about the term, there are very few anywhere) produce 3. 4 defects per million. Nevertheless, he informed the plant's purchasing manager, and again following an established process, they passed on word of a possible

problem to Tapio Markki, the top component purchasing manager. In Albuquerque, Philips engineers and managers grappled with the aftermath of the fire. They realized that cleanup would take at least a week, which meant that customers would be affected, at least temporarily. Nokia and its archrival, Ericsson, accounted for 40% of the plant's shipments. Philips management decided that their orders would be filled first when the plant returned to normal. On March 20, Philips called its customers, including Mr. Markki. He recalls that Philips said that the disruption would last about a week. The Wall Street Journal article (cited earlier and published months later) implied that Philips had underestimated the extent of the problem. Mr. Markki had, early in his career, worked for five years at a small semiconductor company that supplied Nokia. He told me, "I knew the cleanup would take more than one week (but) for me it wasn't special." Nevertheless, in a culture that encouraged discussing possible problems openly, he informed his bosses, including Pertti Korhonen, then Senior Vice President of Operations, Logistics, and Sourcing for Nokia Mobile Phones. Nokia's production planner began checking the status of the five parts made in New Mexico once a day instead of the customary once a week. Nokia had developed this enhanced monitoring process over the prior five years. Several components—almost all from normally functioning plants—received the same treatment each year if Nokia became concerned with their maker's performance for any reason. A few hundred miles away, executives at Ericsson also got a call from Philips. Until this call, Ericsson's planners and managers had not sensed any discrepancy in Philips' performance. As such, its management had no reason to disbelief Philips' explanations. They

certainly did not perceive a need for concern or stepped-up action. Nokia's intensified tracking and communications with Philips did not raise Nokia's confidence that its partner had the problem under control. Its executives began regularly urging their counterparts at Philips to take stronger action. They also moved toward adopting the response routines they had developed for such eventualities. On March 31, exactly two weeks after the fire, Philips admitted it would need more time to fix the problem; ultimately, the plant remained out of action for six weeks. Recognizing that Philips' problem could affect the production of several million mobile phones, Nokia took three key steps: One team of executives and engineers focused on Philips, seeking a major role in developing alternative plans. Guided by Mr. Korhonen and assisted by CEO Jorma Ollila, it pressed Nokia's case with Philips executives, including its CEO, Cor Boonstra. Philips responded by rearranging its plans in factories as far away as Eindhoven and Shanghai. A second cross-continental team redesigned some chips so that they could be produced in other Philips and non-Philips plants. Where appropriate, it consulted with Philips to assess the possible impact of its actions. A third group worked to find alternative manufacturers to reduce pressure on Philips. Two current suppliers responded within five days. The magnitude of the cooperation between Nokia and Philips cannot be fully appreciated without a few words on Philips. Once considered a leading-edge technology company, by the mid-1990s Philips was being criticized by many an analyst. Mr. Boonstra ignored their calls to dismember the company and instead spent three years reshaping it and rebuilding its reputation. In 2000, Philips' Semiconductor Division was functioning very well.³ It had acquired several plants from IBM and boosted

its production capacity 40% over 1999 levels. Its seventeen plants were churning out eighty million chips a day; these chips were used in 80% of the mobile phones sold worldwide. That year, chip volume grew 33% and revenues 55%. Despite the fire—which did not merit a single sentence in Philips' 2000 annual report—divisional operating income rose 119%.⁴ This superb performance meant that Philips simply had no surplus capacity. Helping Nokia required managerial and technical effort equivalent to pulling a rabbit out of a hat. Philips' predicament was not unique. In 2000, the mobile phone market was growing at over 40% per annum, but so were the markets for laptops and other electronics. Component makers, ranging from chip to liquid crystal display producers, were working at capacity.⁵ Some consumer electronics companies were ready to pay virtually any price for key components. By midyear, Sony, Micron Technology, Dell, Sun, and even Philips itself had announced that component shortages would rein in their (very strong) financial performances. Shortages were expected to continue unabated till year-end. At the end of March, in this market environment, Ericsson finally came to appreciate the gravity of its problem. However, for reasons about which one can only speculate, it still did not act speedily. Jan Warby, the executive who headed the mobile phone division, did not get involved till early April. By then Ericsson had very few options left. Nokia's initial sensing of the problem and its rapid and effective response carried the day. In the third quarter of 2000, its profits rose 42% as it expanded its share of the global market to 30%. Its quarterly statements and annual report for 2000 did not even mention the fire. On July 20, 2000, Ericsson reported that the fire and component shortages had caused a second-quarter operating

loss of \$200 million in its mobile phone division. As such, annual earnings would be lower by between \$333 million and \$445 million. Six months later, it reported divisional annual losses of \$1.68 billion, a 3% loss of market share, and corporate operating losses of \$167 million. It also announced the outsourcing of cell phone manufacturing to Flextronics and the elimination of several thousand jobs; Flextronics took over Ericsson's plants in Brazil, Malaysia, Sweden, the U. K., and the U. S. In April 2001, it signed a Memorandum of Understanding to create Sony Ericsson; the informal negotiations that led to this step had started at the height of the crisis in July 2000, though Ericsson had denied it in public. The deal was finalized in October 2001. Ericsson's woes spread beyond mobile phones and continued into subsequent years. It finally returned to health in 2004, but as a much smaller company. Compared to 2000, its revenues had fallen 52%, total assets about 30%, and number of employees 52%; net income and operating income were almost, but not quite, the same. The face of the mobile phone industry had changed forever, all because of a fire that had been contained in ten minutes.

Case Questions:

- What were the causes and subcauses of the main problem? Set it in the right sequence, you can also use Ishikawa Diagram or other useful tool.
- How Nokia managed with the problem?
- How Ericsson managed with the problem?
- What were the final consequences of that problem for these two companies?
- What would you do if you were a manager in Ericsson company?