



Case Study

SUBJECT:

TRANS-CULTURAL INTEGRATION

EVENT:

DISPLAY TECHNOLOGIES, INC (1989)

SUMMARY:

In 1989, Toshiba and IBM invested equally in a joint venture to invent and manufacture Liquid Crystal Display devices. Both organizations brought complimentary technology and skills to the partnership, both organizations invested capital and engineering resources to the task. The great venture nearly failed due to differences in company cultures. The management at the newly formed Display Technologies, Inc joint venture had to respond quickly and effectively to mobilize the resources with common goals and a unified culture.

Trans-cultural Integration at DTI

In 1989, Display Technologies, Inc formed as a joint venture between Toshiba and IBM to design and manufacture full-color liquid crystal display devices. This was a desired technology at the time and not yet been invented. Toshiba had expertise in semiconductor production and IBM had expertise in logic designs that would control the displays. The complimentary technologies were required to develop the new LCD Technology and the partnership would reduce the investment of both companies to develop and bring this technology to market.

To accomplish this goal, Toshiba and IBM both invested 250 million dollars to the joint venture. Toshiba and IBM also assigned equal numbers of engineers to the task. Engineers from both organizations had many years of experience with the Research and Development practices and protocols for their respective organizations. Both sides expected the engineers from the other company to adopt their methods. Both groups maintained strict adherence to their own distinctly different methods and would not adapt to the other. As a result, the two groups of highly skilled engineers worked independently of each other. There was no progress at integrating the complimentary technologies.

One day the plant manager, Toru Shima, placed a large jar on a table and enforced a penalty of ten yen placed each time that someone mentioned the name of either IBM or Toshiba. The purpose was to encourage the engineers to refer to Display Technologies, Inc as a new unified entity and to discourage any further references to the corporate cultures that had divided the two groups. Engineers were required to work in small group activities with mixed members and to present their ideas from a DTI team effort. As a result, engineers began looking at each other's ideas.

A vacuum one-fifth the size of a human hair in between two thin sheets of glass, injected with conductive liquid crystal material. A microscopic grid engraved on the top sheet of glass embedded with thousands of electrodes, each with a tiny wire to connect it to a central logic chip. The logic chip directs current to the diodes at each intersection of the grid to create an image and changes when current direction is changed. Tiny dots of Red, Green and Blue phosphor imprinted on the back of the surface sheet and electrical charges to the diode control combinations of light, dark and the three colors. Due to the small size of LCD devices, precision is required for the engraving and wiring process.

By 1993, DTI produced 304,000 displays and IBM opened a new line in Yasu, Japan. Liquid Crystal Display Devices used in alarm clocks, microwave ovens, automobile dashboards, coffee makers, DVD players, cell phones, and other devices are a part of everyday life today.

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At 5AM on January 17, 1995, the Great Hanshin Earthquake struck 40 kilometers away from the DTI plant. In a matter of hours, 6,400 were dead as tall buildings and elevated roadways collapsed, and the region was ablaze with spreading fires. In the DTI plant, the ceiling had caved-in and destroyed all four clean rooms. Fortunately, at the DTI plant, there were no deaths or serious injuries. nobody was killed or seriously injured.

By 7:30AM Toru Shima dispatched some volunteers to check transportation clearances near the metropolitan epicenter in Kobe. He dispatched other volunteers to check on component and material supply partners. He assembled all of the remaining workers and permitted them to leave to check on family, volunteer to help rescue efforts, or to remain and help clean up the damage at the plant. The workers broke into small delegations for these different efforts, cooperating with focus for the humanitarian and clean-up efforts. There were no IBM or Toshiba isolated groups, only combined efforts of DTI employees. All but the fourth floor of the plant was running the following day.

After eleven years of the joint venture, DTI produced 21.3 million LCD's. Toshiba maintained the plant in Kimeji, IBM maintained production at the plant in Yasu, and both organizations continue to manufacture LCD's. Toshiba subsequently developed a partnership with Matsushita in October 2001 for a next generation LCD, and IBM developed a partnership with Chi Mei Optoelectronics in Taiwan. Both organizations profited from the joint venture and took their experience to the next joint venture.



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