

# SURVEYOR

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CHANGE SERVICE REQUESTED  
The California Surveyor  
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**Mr. Helmer** is a Professional Land Surveyor in California, Colorado, Nevada and Arizona with over twenty-five years of experience in geodetic control, boundary surveying and geospatial information technology. As a Senior Vice President with the firm of RBF Consulting, a Baker Company, he has been an innovator for advanced technologies. He is nationally recognized for his contributions to GNSS surveying and high-precision geodesy. Mr. Helmer is a speaker and author of numerous professional presentations, a Fellow with the American Association of Geodetic Surveying and the Institute for the Advancement of Engineering, and a founding member and the past Chairperson of the California Spatial Reference Center at Scripps Institution of Oceanography.

# On the Nature of Change and Change Management: Disruptive Innovation

Wyatt Earp, who is best known as a hard-living frontier lawman, and certainly for one afternoon in Tombstone, Arizona in 1881 at the O.K. Corral, always thought of himself as a businessman. In addition to owning saloons and brothels, and running cattle and gambling halls, Wyatt Earp invested in land development, and worked for the better part of a year on a General Land Office survey crew in Kansas. His assignment on the team of government surveyors in 1870 was to supply the crew with meat, and to protect them from Indians and outlaws. Wyatt Earp said that he spent roughly an hour each morning hunting and the rest of each day receiving instructions on the methods of modern surveying (Barra, 1998). The Earp family had operated a freight business where as a teenager, Wyatt became an experienced teamster and learned valuable business skills. At the age of 20, the Golden Spike was driven at Promontory Summit, Utah, and with it the completion of the transcontinental railroad and a new paradigm in the movement of people and materials. Apparently gambling had better prospects than attempting to compete with steam engines.

What Wyatt Earp experienced in 1869 has been coined Disruptive Innovation. The phenomenon occurs when new technology brings about entirely new ways of doing business. Harvard Business School Professor Clayton Christensen and others have developed economic models that depict the relationship between normal technical progress and emergence and displacement by disruptive technology. Just as steam ships replaced sailing ships, and email replaced fax machines, so software replaced trig tables, total stations replaced theodolites, and machine guidance is replacing slope stakes. Disruptive innovations are always on the horizon, and in the information age, these changes are occurring ever faster.

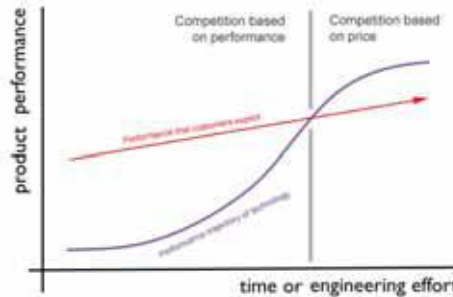
By virtue of governmental license, Professional Land Surveying fulfills dual purposes that must be considered. Professional services organizations cannot simply adopt the newest, most efficient technology solely because of the market advantage it may afford. Protection of third-party interest or the public as a whole is equally important to fulfill the fiduciary responsibility demanded from exclusivity of practice granted to professional licensure. While real property location from a GIS is probably more precise (although not likely accurate) and certainly more efficient, as yet every such geospatial database fails to protect the rights of adjoining and senior title interests. At the point where disruptive innovation overcomes the obstacles to fulfilling the real property value proposition, even this too will be displaced.



The emergence of locomotives and steam ships probably did not improve the lot for sail-makers. It did however, dramatically increase transoceanic shipping and with it increased opportunities for dockworkers and the shipping industry as a whole. This story was repeated a century later as we saw draftsmen replaced by CADD analysts, and plane tables turned into layout space for aerial photography. Modern LiDAR sensors are even now displacing the once disruptive innovation of photogrammetry. Effective leadership strategies are one way that organizations can prepare themselves to join the opportunity side of disruptive innovation.

Clayton M. Christensen (2007) makes a distinction between ordinary and continual advances in technology and disruptive technologies. The progress of technical or process innovation typically follows an "S" curve where time progresses along the X-axis and performance is represented on the Y-axis. The trajectory is positive with suppliers continually improving upon performance in response to customer demands,

which in the early period of innovation is never entirely satisfied. In this stage of ordinary progress, competition between suppliers is nearly always defined by performance. The products and services that provide superior capability, and most closely meet customer demands, are positioned to gain market share. At the point where performance capabilities meet the demand for capabilities, there is a tendency for suppliers to overshoot the needs as competitors try to distinguish themselves with ever greater capabilities. Perhaps it's just me, but I'm thinking of GPS antennas on total stations. After the demand for innovation has been met, competition begins to shift toward favoring the low-cost provider, or simpler more user-friendly technologies. Kyle Davy and Susan Harris (2005) describe the relationship of this disruptive technology writing: "Although disruptive technology initially under performs established technology used in a mainstream market, it has features that are attractive to a few fringe (often new) customers. Nourished within these fringe niches, the disruptive technology climbs its own developmental curve. As its performance improves it can reach a point where the technology becomes competitive within the mainstream markets. At that point, the disruptive technology rapidly overthrows the established order and reshapes the value network" (p. 201).



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Creating value is the ultimate driving force determining survivability of change, as well as that of status quo. Regardless of legislation, price competition, or exclusivity of practice, if we as professionals are not creating value for our clients and the community at large, the unrelenting tide of economics will eventually wash away those products and services in favor of greater value. This value principal and the models of disruptive innovation are equally true for business enterprises, governmental agencies, and professional societies. If the services we provide no longer create value, or that value becomes marginalized by innovation, those services will ultimately disappear. Think about printed newspapers, the record industry, or encyclopedia salesmen if you want to get an idea of disruptive innovation's aftermath. If you believe that Land Surveying is immune because of professional licensure or legal constraints, I'd ask you to consider the Torrens Title Acts in 1897 and 1914, experimented with briefly in California. Legislation is not really very difficult to change. You might also try doing your topographic mapping with a compass and plane table.

Professional service organizations are mandated to seek the greater social good which favors sustained performance and the creation of value rather than quick marginal profits. Therefore leadership strategies to meet the challenges of change management and disruptive innovation are important elements to becoming living organizations. From the research cited herein, several leadership strategies are suggested to organizations wishing to sustain professional excellence and successful performance through a challenging environment marked by accelerating changes. These recommendations are well advised for any modern organization, but include elements uniquely applicable to addressing leadership of change management and disruptive innovation.

## Target Training Toward the Future

Continually attracting and engaging bright minds creates vitality to an organization that is essential to sustained performance and resilience. It is not enough however, to hire new candidates and teach them the skills of the trade. The benefits of training programs are received not so much in the immediate application of skills as in the synergy of building knowledge upon experience, and are paid in the future with a workforce creatively building upon shared expertise. Training for the future imbues leaders with, as Kyle Davy (2009) states: "confidence, defined as a sense of optimism, self-assurance, courage and calm determination, winning teams can -- and do -- rise above difficult circumstances and behave in ways that perpetuate their success" (p. 2).

## Be Deliberate with Communication Plans

Joanna Barsh, Marla M. Capozzi and Jonathan Davidson (2008) describe decentralized leadership networks that promote high-performance innovative organizations. Less structured organization provides the members greater freedom to collaborate, testing ideas, and drawing upon the best resources of specialized expertise. It also increases the need to promote free and open communication. Barch, Capozzi and Davidson's recommendation to seed innovation networks with communicators at key locations includes "Idea generators", "Researchers [to] mine data to find patterns", "Experts value[ing] proficiency", and "Producers [to] orchestrate the activities of the network" (p. 43).

## Invest Creatively in Imagination and Innovation

This recommendation makes the point that a living firm will not emerge by simply continuing to do the things that originally made the organization

successful. Leading to stay ahead of disruptive innovation demands a commitment to unleashing the organization's imagination. Gary Hamel (2006) makes a compelling statement about boldly pushing new ideas. "It's tough to build eye-popping differentiation out of lower-order human capabilities like obedience, diligence, and raw intelligence" (p. 80). In his book, *On Becoming a Leader*, Warren Bennis (2003) gives advice to leading for the future. "Leaders embrace error. Leaders encourage reflective backtalk. Leaders encourage dissent" (p.188). The provocative words of Hamel and Bennis should encourage leaders to make imagination and innovation highly respected and richly rewarded in their organizations.

## Evangelize a Compelling Vision

Warren Bennis (2003) also declares: "The first basic ingredient of leadership is a guiding vision. The leader has a clear idea of what he or she wants to do – professionally and personally – and the strength to persist in the face of setbacks, even failures" (p. 31). That imperative is shared by many, if not most, authors on leadership. Certainly leaders of professional services organizations must place a similar emphasis on a clear and compelling vision, but the uncertainty that comes with change management makes this ingredient even more important leading for disruptive innovation.

## Conclusion

Sustained levels of success in a professional services organization comes only by continually facing the challenges of change with creativity, deep and far reaching insight, and perhaps a bit of luck. These are exciting and daunting challenges for the leaders responsible to chart a successful course, but it is inaccurate to characterize their mission as the work of solitary brilliance. Kyle Davy and Susan Harris (2005) remind us: "One of the more useful insights into change in human systems is the notion that people don't resist change, they resist being changed. Many change-related hurdles have been successfully crossed by involving members of an organization wishing to change in determining both the nature of that change and how it will be implemented" (p. 285). Professional Land Surveying organizations are filled with creative and innovative allies. Capture and channel their imaginations and the organization will be well prepared to find the opportunity side of disruptive innovation. ■

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