



INFORMATION TECHNOLOGY WORKPLACE FUTURES

A Pilot Study for UCLA IS Associates

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APRIL 2015
cityLAB.ucla.edu

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First published in the United States of America in 2015
by cityLAB-UCLA.

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www.citylab.aud.ucla.edu

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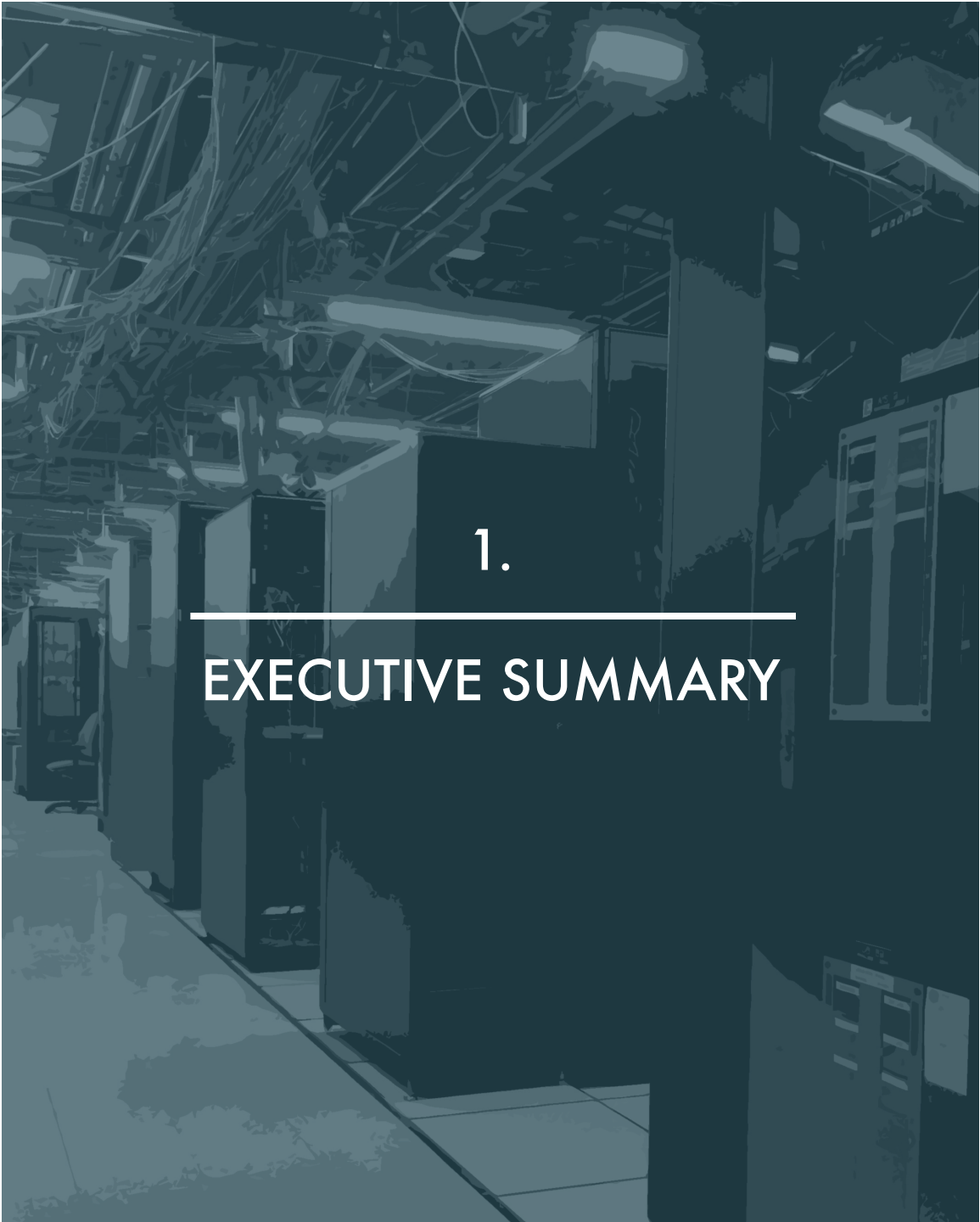
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Funding for this study was provided by
UCLA IS Associates

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1.

EXECUTIVE SUMMARY

FINDINGS

WORKERS AND BEHAVIOR

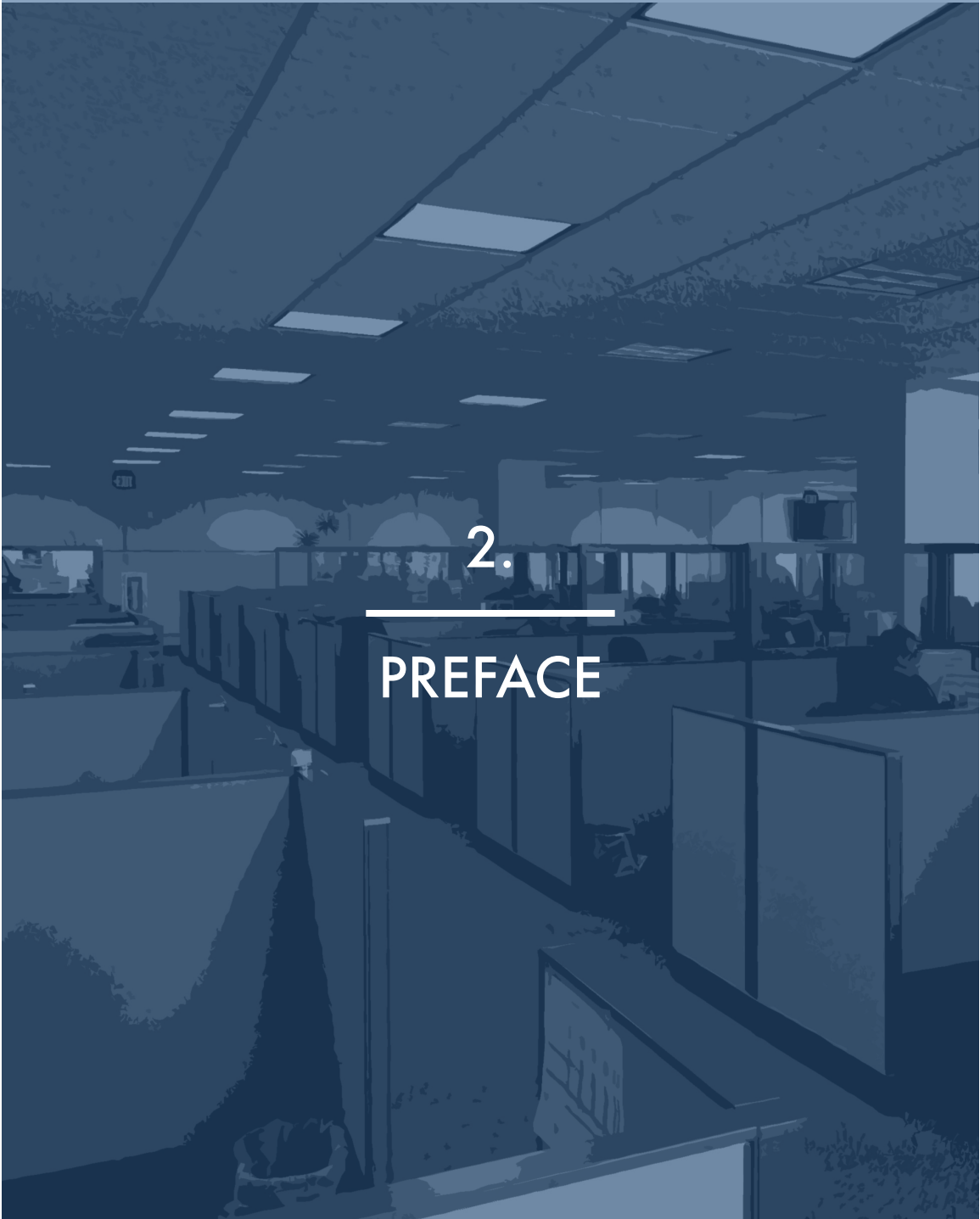
1. Employee and CIO priorities: office design is important, but expectations are low
2. Contemporary IT employees: adaptable, project-oriented
3. Single-focus IT organizations: administration or innovation, not both
4. Play: employees require spontaneous, not staged, outlets for leisure
5. Productivity blends telecommuting with collective space at the office
6. An organization's public recognition is attractive to prospective employees
7. Everyone is an I.T. worker

INTERIOR ENVIRONMENT

1. Workplace design expectations vary between public and private-sector
2. Inefficient use of space is prevalent
3. Inefficient design translates to inefficient communication
4. Organization of office reveals organizational values
5. High-tech flexibility vs. low-tech hackability

BUILDING DESIGN

1. New offices are frequently standard offices
2. Google/Facebook model ≠ the ideal workspace
3. Technology has potential to give buildings agency
4. The office extends beyond its doors



2.

PREFACE

Information technology has changed almost every aspect of the way we work in recent decades, yet strangely enough, the places where we do that work hasn't changed much at all. Closed office doors stretch blankly down long corridors; cold fluorescent lighting washes evenly across dull beige walls and linoleum flooring; behind cubicle partitions, the tops of a few bent heads are visible. Even more peculiar is the fact that the staff most dedicated to information technology within organizations seems to have the least accommodating space. The BBC's serial called "The IT Crowd," is set in a disheveled basement without windows, where old desks are cluttered with computers in varying states of disrepair, shelves are overflowing, and nerdy IT guys are completely isolated from the rest of the organization. No wonder then that the working public is so seduced by images of Google, Facebook, and Apple, with their creative, hip settings. Somewhere in between the office-qua-juice bar and the windowless closet, there exists a wide range of accommodations for IT-oriented organizations or the IT departments therein.

This pilot study opens the conversation about how we might design better spaces for IT work and workers, based on the current conditions within eight member organizations of the IS Associates who sponsored the research. Although IT staff is notoriously adaptable, as the labor market in IT grows tighter in the coming years as predicted, attracting and retaining qualified staff becomes a significant challenge. A decent place to work that is functional, attractive, and conducive to creativity and productivity will be important to any organization that depends upon information technology workers. And that means all organizations.

I want to thank the IS Associates, and in particular the organizations and individuals who participated in this preliminary study. Their insights and observations are the substance of this report.

Dr. Dana Cuff, Director, cityLAB - UCLA
Professor of Architecture and Urban Planning



3.

INTRODUCTION

Workplace design, particularly with regard to the technology sector, has gained considerable attention in recent years, as industry giants such as Facebook and Google have popularized their technologically advanced and unconventional facilities, making the “creative office” the industry’s dominant ideal. The creative office, characterized by open floor layouts, designated collaboration spaces, and leisure amenities, has become the de facto model for “progressive workplaces,” yet it is unclear if these spaces are actually appropriate for all types of workers, or if they are too general and already outdated (See Figures 1 and 2). Questions raised during a CIO Exchange of the IS Associates in July of 2014—a UCLA-sponsored organization dedicated to understanding and sharing effective information technology functions and management strategies—highlighted that information technology (IT) organizations across all work sectors also share these reservations about implementing new models of work, and are uncertain as to whether these new kinds of work spaces actually yield productivity and innovation among technology workers.

Despite this, workplace design has recently emerged as an issue of relevance for IT employers. While the percentage of information sector workers has remained stable throughout the past ten years (estimated at around 6% of the Los Angeles County workforce and almost 2% of that of Orange County’s), growth in this field is expected throughout the United States (US Census). According to a survey by Robert Half Technology, 87% of 2,400 CIOs nationwide expect to grow their staff in 2015 (Florentine, 2014). Because an increase in employment generally leads to an increase in employee salary and benefits, experts such as Emily He, CMO at Saba Software, and Rebecca Jacoby, CIO at Cisco, predict that employers will need to exercise better engagement and retention strategies in order to hold on to the elite talent that already exists within their organizations (Weldon, 2014). For some companies, the strategy is to keep employees engaged in the organization and provide opportunities for more collaboration such as corporate sponsored “hackathons” or team building activities (Florentine, 2014). Others turn toward investing in the physical design of the office in order to achieve increased retention. Moreover, as increasing technological capabilities continue to shape the way people work in offices, organizations seek benefits from more specifically tailoring their facilities to their particular types of technology work in order to improve employee performance, engagement, and overall satisfaction.

Workplace design has recently emerged as an issue of relevance for IT employers.

Figure 1: Google's Mountain View Headquarters

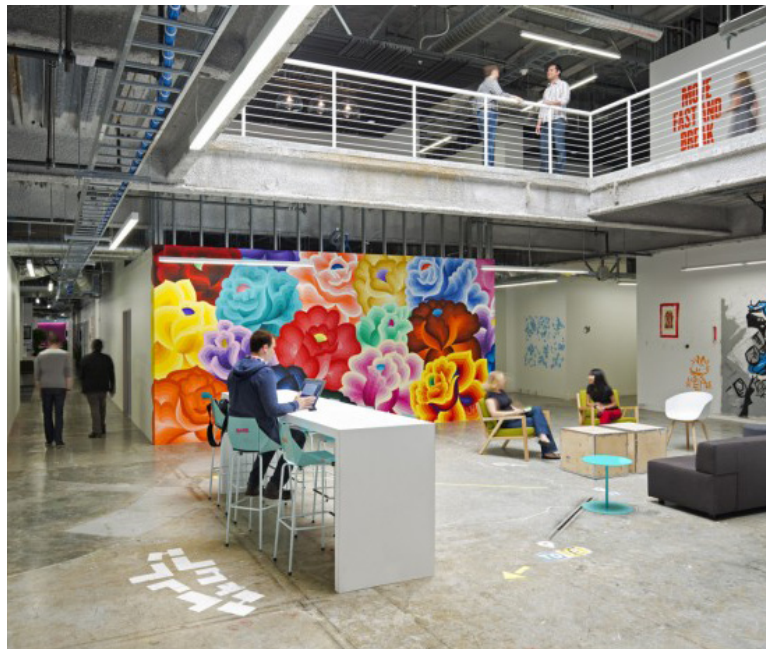
Source: Wired, <http://www.wired.com/2015/02/google-will-soon-use-wind-power-run-hq/>



This report summarizes common workplace design concerns and reveals preliminary implementable strategies particular to technology work, extrapolated from a pilot research study of eight ISA-member information technology organizations throughout Southern California. Specifically, researchers at cityLAB, an architecture and urban research think tank at UCLA, conducted interviews of IT executives and employee personnel at each of the organizations and analyzed the office spaces where IT work takes place. The findings from this study provide (1) a broad overview of the range of current IT office conditions, practices, and strategies, (2) an assessment of critical IT employee demands, and (3) a critical evaluation of today's popular workplace design trends that illuminate the innovative potentials of new models of work.

Figure 2: Facebook's Menlo Park Headquarters

Source: <http://officesnapshots.com/2013/02/04/facebook-menlo-park-office-design/>





4.

CURRENT DISCOURSE IN WORKPLACE DESIGN

1. OPEN SPACE vs. ENCLOSED SPACE: A CRUCIAL BALANCE

Open floor plans have long been described as ideal models for progressive office work, since they best facilitate the reconfiguration and fluctuation of desks and work stations, offer the most fluid means of communication, and are considered the most conducive to worker productivity (Duffy, 1992). However, new research suggests that workers view open spaces negatively, and associate them with counter-productivity and dissatisfaction (Brand and Smith, 2005). Contrary to popular literature, this growing body of research highlights the fact that open spaces increase distraction because of a lack of privacy (Kaarlela-Tuomaala et al., 2009), which results in poorer performance (Brennan, Chugh, & Kline, 2002) and lower degrees of satisfaction among workers (Sundstrom, Herbert, & Brown, 1982). Consequently, new trends in workplace design conceive of open spaces primarily for group meetings and collaboration, while retaining individual spaces as the site for “heads-down” work. The balancing of individual space and group space has become imperative. In recent workplace surveys, designers acknowledge that workplaces now tend to be equally balanced—allocating nearly 50% for open work and 50% for isolated work, which has been found to be essential to both worker satisfaction and productivity (Gensler, 2014).

Nonetheless, a pervasive fixation on designing open spaces and collaboration zones indicates that many older theories of work are continuing to be recycled without empirical evidence, and designers and technologists can only leverage new innovative ideas by looking at how work has been designed and described in the past. The open floor plan, for example, was originally conceived in the 1950s as a reaction to rigid factory modes of work. The most prominent example, Bürolandschaft, or “office landscape,” was intended to open communication channels among workers, to allow for desks to be reconfigurable, and by extension, to allow workers to become more “human” (Martin, 2003). Developed by the German office consultants called the Quickborner Team, Bürolandschaft allocated floor space for plants, leisure furniture, and large circulation spaces as a way to encouraged informal interactions among workers (See Figure 3). Since then, open spaces have become disconnected from their historical meaning and designers have struggled to acknowledge that, much like the factories of the 1900s, workers are connected via technology, and therefore require space and customization

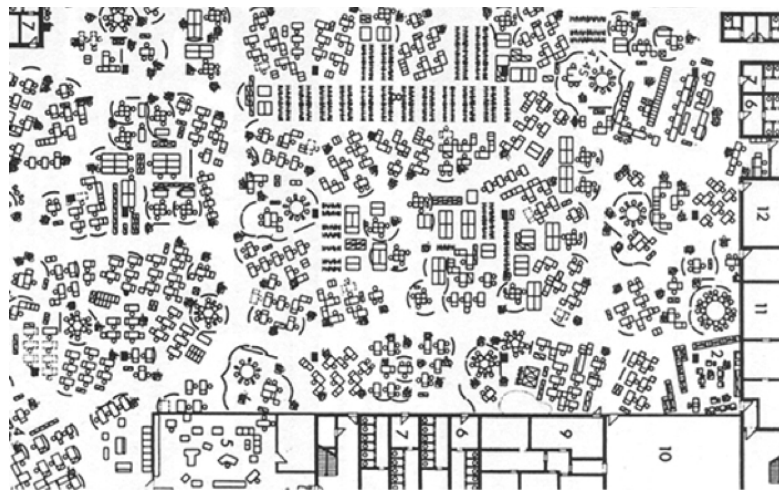
A pervasive fixation on designing open spaces and collaboration zones indicates that many older theories of work are continuously recycled without empirical evidence...

opportunities to become more independently “human” again. Thus, although spaces of individual work are often overlooked by designers, they are the most valuable to most forms of creative work. A recent study by furniture design company Herman Miller expands upon this provocation, suggesting that employer values often contradict those of employees, since employers underrate individual space in favor of group spaces because they find them attractive to new employees as an emblem of collegiality and a familial organization. Contrary to the recommendations from other group-versus-individual studies, the survey projects that nearly 56% of work space will be allocated for group work and 44% for individual work in 2015, as opposed to 60% for individual work and 40% for group work in 2007 (Herman Miller, 2014).

building or physical environment can transmit creativity. However, new scholarship suggests that, in fact, creative spaces (most commonly described by terms such as informality, collaboration, or flexibility) are cyclical concepts that follow fads, and do not necessarily describe actual changes within office design or the organization of work (cityLAB & Gensler, 2014). In the mid-1900s, for example, certain offices were described as performative and as being able to make workers “cheerful,” yet office layouts and aesthetics of the offices were not entirely different from speculative office buildings in subsequent decades (Martin, 2003).

A prominent architect in Los Angeles confirmed that branding within design serves as a means to attract and engage future employees, suggesting that, “the quality of the space, not the quantity, is going to be the important thing [in the future]... So employee engagement, the brand equity that you get from a wonderful workplace, is going to translate into profits and drive more high-performance, efficient work environments” (ULI, 2014). Although a branding strategy may attract and help retain certain workers, there is limited evidence suggesting that these spaces are connected to worker productivity or innovativeness. However, within research literature, employee choices and their ability to reconfigure their own work space has been shown to positively impact performance and creativity (Gensler, 2014). Ironically, the idea of worker flexibility was actually the impetus for the original cubicle, although it has, in recent decades, become the antithesis of flexibility and a symbol of rigidity. Developed by Robert Propst and George Nelson for Herman Miller Research in 1964, the “Action Office” was an attempt to provide office workers with a semi-enclosed, flexible space, which recognized that employees were more creative when they could customize their own work environment. The first version of the Action Office failed to take root, but the second iteration included reconfigurable privacy panels, and has since become a derided convention as noted in a Wired Magazine article entitled “The Cubicle You Call Hell Was Designed to Set You Free” (Saval, 2014; See Figures 4 and 5). New research on office design reveals that the Action Office’s original intention has important contemporary relevance: despite technological advances, workers still desire an ability to physically reconfigure their own desks systems, which is often overlooked by employers and designers.

Figure 3: Floor Plan of a Bürolandschaft Layout, 1950s
 Source: <https://s-media-cache-ak0.pinimg.com/originals/d8/78/cf/d878cf4f1455754fcc657e6bf710a163.jpg>



2. CREATIVE SPACES AS BRANDING STRATEGIES

The term “creative” has been widely applied to contemporary office spaces and has been made popular by technology giants such as Facebook and Google, which most notably fuse spaces for work with spaces for play and living. As a metaphor for flexibility and informality, in the past decade the term “creative office” has become increasingly used as a real estate gambit, and in particular, as a stand-in for specific material and spatial characteristics of offices (cityLAB & Gensler, 2014). At a most fundamental level, the explosion of creative offices suggests that originality can be manufactured, that all workers can be equally creative if provided the appropriate environment, that creativity can be purchased or designed, and most radically, that a

Figure 4: Drawing for Action Office II, 1968

Source: Herman Miller, <http://theamericanceo.com/2014/10/16/monolithic-insanity-notes-office-spaces/>

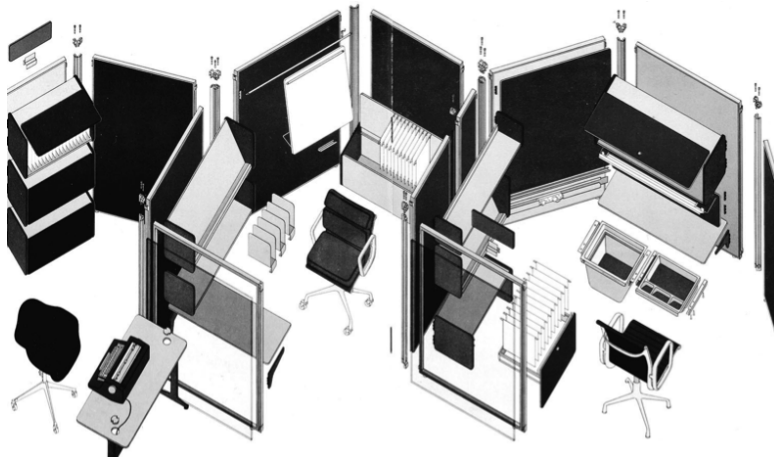
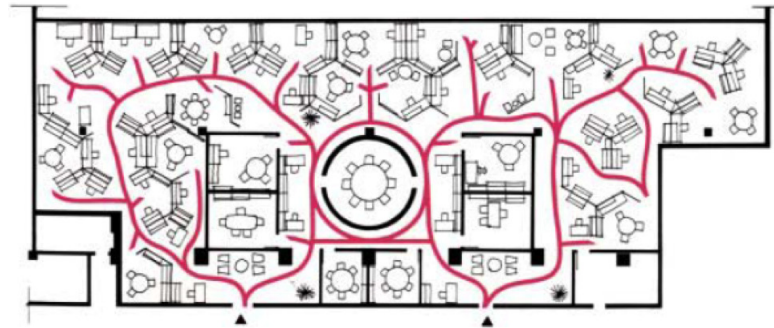


Figure 5: Floor Plan for Action Office II, 1973

Source: Herman Miller, http://www.hermanmiller.com/content/dam/hermanmiller/page_assets/research/research_summaries/rs_forward_thinking_1.png



3. WORKSPACE IS EVERYWHERE: COMPRESSION AND MOBILITY IN THE OFFICE

Technological and global connectivity has restructured the world of work, radically altering the ways in which it can be organized, sited, and scheduled. Just as the office no longer holds a monopoly on information, the office building is no longer the only location where work can physically take place. Once dividing people's lives in terms of private and public, or home and office, systems of standardization and productivity have encroached upon all aspects of workers' lives—invading the airport, the café, the bus stop, the park, the car, and beyond. Since technological mobility has allowed work to occur anywhere, offices have drastically reduced their allocated desk space, acknowledging that workers need not always be physically present. According to Carl Meyer, principal of a prominent design firm in Los Angeles, “the square footage per person has dropped over the last five years.

Nationally, the average square feet per worker went from 225 to 176 between 2010 and 2012,” which he predicts will radically drop to 100 square feet per person by 2017. However, as he explains, “for every two square feet that we [designers] drop, we really have to add a square foot back in terms of amenity spaces” (ULI, 2014). By compressing space, employers have turned to new densification strategies, especially taking advantage of group or shared spaces for temporary workers to compress work zones. There are often significant consequences to increasing density, both in terms of upgrades to building infrastructure and related cost increases (elevator upgrades, parking expansions, etc.), as well as declines in worker satisfaction and productivity (ULI, 2014).

The compression of office space is primarily the result of advancements in technological mobility, which has transformed work's place-based specificity. The office is no longer the necessary site of work activities, since personal computing, mobile telephony, video conferencing among other technologies have “untethered” the worker. To borrow metaphors from the Space Age, workers have the means to leave “home base” since new mobile behaviors result in new types of mobile workers: 1) a core group anchored at Mission Control, 2) a group of space walkers like the cosmonaut Alexey Leonov, tethered to the mother ship while undertaking extra-vehicular activities, and 3) Major Tom, David Bowie's mythical astronaut who slips the bonds of conventional space travel to journey among the stars (cityLAB & Gensler, 2013). In contemporary discourse, mobility re-frames everyday worklife as a continuum—where going to the office might be an unnecessary or rare event, and working on-the-go is perceived as a new norm. As communication technologies continue to merge with transportation technologies, the office building might not become obsolete; rather, it should be re-considered as one place among many where work can happen. Recent efforts by transportation designers acknowledge that collaboration and group spaces remain essential. Innovators have imagined ways that work can follow its workers, such as Ford's voice-activated electric car-offices for corporate and university campuses, or IDEO's mobile Q Workstation, a concept vehicle to be used both on city streets and in office hallways. Nonetheless, mobility has caused designers of workplaces to rethink how workers can plug into the office in more efficient, effective, and productive ways.

Just as the office no longer holds a monopoly on information, the office building is no longer the only location where work can physically take place.



5.

THE STRUCTURE OF THE STUDY

Although workplace design and its impact on employee performance and satisfaction have drawn increasing attention over last ten years, empirical evidence about IT work in particular has been minimal. This study's primary focus was on examining the workplace needs of IS Associates' members. Particularly, the research was guided by the following questions:

1. What is the nature of the current challenges and opportunities related to recruitment, performance, and retention of highly qualified IT staff, with a particular focus on workplace design?
2. How do highly qualified and desirable IT employees value workplace assets?
3. Do "creative office" workplace characteristics meet the needs of today's IT workforce?
4. What are the future trends in IT office workplace design? How are these trends and characteristics meeting the needs of the changing workforce?

The research process was broken down into three stages: (1) an analysis of existing discourse and trends, (2) a study of contemporary IT office and organizational conditions, and (3) a summary of key findings. The first stage of the research process involved a survey of academic and best practices literature, which informed subsequent interview questions. The second stage was comprised of eight field visits and over sixteen interviews in order to characterize existing IT workplace conditions—both in terms of physical office design and organization, as well as worker productivity, innovation, and satisfaction (See Appendix A for a complete list of interview goals and questions). The eight organizations that participated in this study are listed in Figure 6.¹

For each participating organization, interviews were conducted with the CIO (or IT management representative) and covered topics such as the nature of current challenges and assets with regard to hiring, retention, and worker productivity

1. Organizations will be referred to by their abbreviations throughout this report (refer to Figure 6).








RESEARCH PARTICIPANTS	
	UCLA
Sony Pictures Entertainment (SPE)	University of California, Los Angeles (UCLA)
	
Broadcom Corporation (BC)	Avery Dennison (AD)
	
Los Angeles County Public Health Dept. (CPH)	Northgate González Markets (NGM)
	
City of Los Angeles (CLA)	Jet Propulsion Laboratories (JPL)

Figure 6: Research Participants and Corresponding Organization Abbreviations

and satisfaction.² Additionally, CIOs were asked how they have approached solutions to these challenges in the past and to provide a description of the type of worker they hoped to attract in the future. Researchers then conducted a second interview with an employee that the CIO identified as the type of individual the organization is hoping to attract and retain in the future. The employee interviews included a discussion about how each values his or her workplace, and about the ways the workplace either meets or fails to meet daily work needs. Finally, each site visit also included a guided tour of the organization's facilities. Tours varied by organization, but included offices, labs, server rooms, lounges, conference rooms, common outdoor spaces, cafeterias, and so on (See Appendix B for individual case studies corresponding to each of the participating organizations).

The following section of this report presents the study's broad research findings. They are broken down into three main categories, beginning with findings in relation to IT workers, followed by the interior environment, and the overall building design.

2. For the purposes of this report, all IT management representatives are generally referred to as CIOs.



6.

RESEARCH FINDINGS & RECOMMENDATIONS

WORKERS AND BEHAVIOR

1. EMPLOYEE AND CIO PRIORITIES: OFFICE DESIGN IS IMPORTANT, BUT EXPECTATIONS ARE LOW

Workplace design was articulated as a low priority for junior level employees across all organization types. Each employee explained they were initially attracted to their jobs because they were excited about the projects they would be involved in, they felt a strong connection with the company's culture or mission, or in the case of public sector jobs, they were attracted to the security of employment. That said, all agreed that workplace design does impact performance and satisfaction. Given their low workplace design expectations, it would take extreme circumstances for problems with workplace design to cause them to leave a position outright. Similarly, workplace design, while important, does not seem to be a high priority for most CIOs. Instead, many of the CIOs explained that when they have funding and resources, they prioritize purchasing better technology (hardware and software) or staff training. Both employees and managers privilege improved technology over physical work space.

RECOMMENDATION: Good work spaces are a backdrop to advanced technological capability. Hardware and software investments that improve individual performance are valued highly by employees and increase possibilities of attracting top talent. Increased value on workplace design will demonstrate the value an organization places on IT work.

2. CONTEMPORARY IT EMPLOYEES: ADAPTABLE, PROJECT-ORIENTED

IT employees consistently demonstrated qualities of entrepreneurialism, resilience, and adaptability in adjusting to their assigned workplaces, regardless of the condition. This is the "ecology" of the contemporary IT workforce that can thrive in unaccommodating, unpleasant circumstances. For example, in one organization IT employees occupied makeshift offices in hallways or in the main entrance/atrium area. Employees viewed this as "the reality of their situation" and continually adapted to whatever workplace obstacles they confronted. This sheds light

The emerging IT workforce demonstrates qualities of creativity, resilience, and adaptability.

on another interesting characteristic of the IT workforce: there is pride taken in high agility – a pride taken in working in difficult situations to get the job done well and creatively – particularly around projects. Additionally, all of the interviews demonstrated that workers get a strong sense of satisfaction from what they do – that is, from the substantive content of the projects they undertake. This allows them to overlook some of the significant shortcomings of their workplace design.

RECOMMENDATION: IT employee agility and adaptability could be put to better use without the distraction or obstacle of poor office space. Provide appropriate, long-term project-oriented workspaces to enable employees to focus their attention and improve overall performance.

3. SINGLE-FOCUS IT ORGANIZATIONS: ADMINISTRATION OR INNOVATION, NOT BOTH

The values of CIOs were revealed by their emphasis on either productivity or on innovation, which echoed the orientation of their organizations. Such values tended to influence the CIOs' decisions on employee growth and development. For example, at product-driven IT organizations, such as AD and NGM, CIOs viewed the role of IT as supporting the productivity and maintenance of the organization's workers broadly, interpreting workers as part of an operational system where output and timeliness were top priorities. CIOs in these organizations ultimately viewed the role of the IT office itself as a functional ground plane for enabling work that should not impede on or hinder the way employees want to work; therefore a "creative" work environment is viewed as unnecessary.

Service-oriented IT divisions, such as those within CPH, SPE, and UCLA tended to value innovation and the satisfaction of workers as primary, which would in turn raise productivity and efficiency. In correlation with management's values, employees sought flexible, collaborative, and focused spaces. They did not associate the quality of their work with characteristics of their desk or individual workstation, but rather with the degree of flexibility in their spatial choices. These individuals appreciated isolated pockets to think as well as open spaces for group discussions. Workers in service-oriented organizations typically viewed the work environment as an important part of their creativity.

RECOMMENDATION: Allow the organization's priorities to inform decisions made on workplace design. Product-driven IT

organizations typically find "creative office" designs unnecessary and instead require design upgrades at the desk or individual workstation. Service-oriented IT organizations typically require a wide array of workspace options (areas for focused work, collaborative work, etc.)

4. PLAY: EMPLOYEES REQUIRE SPONTANEOUS NOT STAGED OPPORTUNITIES FOR LEISURE

In addition to space dedicated to productive labor, it is commonplace in contemporary organizations to find lounges, game rooms, cafes, and other casual spaces. Leisure is viewed as part of a productive work day, and the presence of such spaces lends a hospitable feel to the office. Although space for leisure activities was not frequently raised as important to work days, researchers found creative outlets and small, informal recreation settings at numerous organizations, including UCLA, CPH, and BC. Spontaneous games between co-workers in hallways, pick-up games of darts, and idea-sharing on writeable walls were cited as well-received characteristics of the workplace.



Figure 7: Examples of Personalized Office Spaces at the LA County Public Health Dept. (left) and UCLA (right)

Source: Authors

Interestingly, there appears to be a fine line between impromptu play space and overly prescribed recreation zones. When leisure activities were definitively programmed or imposed, especially at more updated offices such as AD and NGM, game rooms and lounges went unused. On one hand, designers and executives may be out of touch with the kinds of informal activities employees prefer, but more problematic was the location of leisure space. Situating casual spaces appropriately is difficult. Acoustics matter since employees can feel uncomfortable being loud; visibility

matters in a paradoxical way since a closed room will not draw people in, but an open room can chill casual behavior that might be surveilled. In one case, two designated game rooms—one for ping-pong and another for video games—were designed within a new office, yet the video games were rarely used during office hours due to their centralized (and therefore highly visible) location within the office. In older, more compressed spaces, however, ad-hoc games, personalized desks and offices were incorporated or managed less strictly.

RECOMMENDATION: Allocating space and programs for leisure can be a strategy to encourage casual activities to emerge organically or temporarily, but at the discretion of employees—not management. Create leisure spaces where staff feel invited to relax in an open area without being monitored.

5. PRODUCTIVITY BLENDS TELECOMMUTING WITH COLLECTIVE SPACE AT THE OFFICE

Employees that worked in comfortable, relaxed, and informal environments claimed to be more creative. In most cases, home was where workers felt most thoughtful and able to perform focused work. Therefore, organizations that offer telecommuting or virtual work options have found workers to be more efficient and productive. Most importantly, CIOs from some organizations (AD and JPL) reported that they were able to attract better talent because of the incentive of telecommuting flexibility. At AD, for example, employees were able to reside in distant cities and work from home on occasion because they maintained a high level of productivity. This telecommuting opportunity proved to be the most attractive perk when recruiting employees from larger corporations (that have, by implication, higher salaries).

While telecommuting proved valuable for focused, solitary work, the office setting was viewed as necessary for collaborative work. Organizations that offered a telecommuting option to their employees also stressed the importance of maintaining regular meetings in order to allow workers to maintain relationships with their co-workers. Face-to-face interactions among employees were viewed as a benefit to organizations because they encourage growth and innovation.

RECOMMENDATION: Offer telecommuting incentives in order to attract skilled and loyal employees. Pair telecommuting with spaces and opportunities for collective, face-to-face work at the home base.

6. AN ORGANIZATION'S PUBLIC RECOGNITION IS ATTRACTIVE TO EMPLOYEES

Employees are more easily attracted and retained at organizations that are widely enmeshed in public culture—either because the products produced are ingrained in everyday activities or because the organization has produced widely recognized events, people, or services. Organizations such as SPE and JPL epitomized this public quality, where public tours and event-based work give executives the grounds to claim that prospective and existing employees require fewer incentives to be recruited or retained. Other organizations, such as BC, CPH, and AD have made significant attempts within their offices to expose the breadth and importance of their work to visitors and even to their own workers. These and similar organizations benefit from explaining their work (products or services) in a straightforward manner and by emphasizing their relevance to a broader public audience. In particular, workers are predisposed toward jobs in fields such as entertainment or computer engineering because they carry highly recognizable brands with a direct public connection. Such organizations create a strong connection to the end product or result of their work as a means to heighten work energy, and excitement, and social relevance. Since “brand” and public recognition are employee incentives, the workplace itself could contribute to an organization’s identity. When a workplace is designed and located with public recognition in mind, as are UCLA, SPE, and AD, for example, it builds in capability for employee recruitment and retention.

RECOMMENDATION: Efforts toward improving and expanding public recognition (facility design, publicity, branding, community outreach, etc.) will yield workforce benefits.



Figure 8: Brand Identity at Broadcom and Sony Picture Entertainment Studios

Source: Authors

INTERIOR ENVIRONMENT

1. WORKPLACE DESIGN EXPECTATIONS DIFFER BETWEEN PUBLIC AND PRIVATE-SECTOR

The divide between employee expectations about interior workplace design was often a consequence of the source of an organization's funding, especially differentiating privately held companies from public sector agencies. In publicly funded organizations where all spending is subject to scrutiny, funds for improving office space are limited at best and nonexistent at worst. Instead, available funds tended to be allocated toward improving technological capabilities or training. At public entities such as CPH, CLA, UCLA and JPL, funding was most commonly cited as the primary obstacle to developing new workspaces or improving existing ones. Moreover, employees were often well aware of these financial constraints and described having low expectations about the office appearance, functionality, amenities, and types of facilities available. When asked about design alternatives they might like to see incorporated in their offices, some projected a particularly defeatist attitude, as one employee summarized: "There is no point in thinking about it because it is never going to happen."

Given the prevalence in all organizations of conventional office layouts—either cubicles or closed offices along a hallway—there was little mention by senior or junior staff of alternative design preferences. Even private companies that were building new facilities tended to consider IT spaces as "background" or "back-of-house," rather than as work that might be foregrounded or given some physical, environmental identity. Building interiors for IT work typically comprised some arrangement of private offices, cubicles with low partition walls, open bench desking, circulation, conference rooms, and an occasional modest lounge, all in neutral colors. In this context, notable departures included lobbies with architecturally unique features, large screens for information display, wall murals, brightly colored furnishings or surfaces, graphic signage, glazed conference rooms, and well-furnished, casual open areas (See Figure 9). While these might be considered relatively modest interior enhancements, they were cited as a source of pride among interviewees.

RECOMMENDATION: Although access to funding is a significant challenge for public organizations, modest improvements to workplace design could be cost effective. Fundamental

7. EVERYONE IS AN I.T. WORKER

As the world of technology continues to envelop every domain of daily life—connecting office to home, work to leisure—all contemporary knowledge workers can be considered IT workers to a certain degree. Help-Desk functions, for example, which were once considered an essential component of IT services, are increasingly becoming obsolete as successive generations enter the workforce more familiar with operating systems and troubleshooting skills beyond those of the past. This was evident at organizations such as CLA, BC, and UCLA. In one interview, a junior employee noted that this shift could be traced to a broader trend in which personal mobile-technologies constantly surpass the technological capabilities provided by a workplace. Consequently, organizations found clear stratification between worker generations—between those resisting new technologies versus those embracing technologies fully.

Although some IT work is dedicated to pushing the boundaries of technology through innovation, other IT staff focus on the management and deployment of existing tools and infrastructure. Younger-generation IT employees in particular are interested in incorporating new technological capabilities and are readily adaptable to new infrastructure; members of older-generations that are hesitant to embrace change are quick to attribute their reluctance to the generational divide. The senior staff members that move out of private offices and into common workspace may experience spillover effects with regard to their awareness of new digital platforms and practices. Since all IT work depends upon mastery of up-to-date technologies with ever-greater capability, keeping the staff technologically agile is crucial. Particular effort is necessary to demonstrate the value an organization places on such agility, since IT work tends to be relatively invisible. A workplace can encourage agility when it displays its ability to change, rewards experimentation, continuously trains its staff, and favors inter-generational teams.

RECOMMENDATION: Find means to increase awareness of the value of technological agility, through workplace design, employee training, and inter-generational collaborations. Design facilities that expose new hardware and software whenever possible.

As the world of technology continues to envelop every domain of daily life, all contemporary knowledge workers can be considered IT.

inadequacies in IT workplaces across public and private organizations should be studied to create grounded priorities if available funds are to be directed toward interior improvements.

Figure 9: Northgate Market's Lobby and Main Entrance Area
Source: Authors



project team room (See Figure 10). The flexibility of the IT staff suggests that they would be prime candidates for colonizing non-traditional workspaces.

Figure 10: Avery Dennison Amphitheater
Source: Authors



2. INEFFICIENT USE OF SPACE IS PREVALENT

Although many organizations suggested that they are constantly grappling with a lack of space, researchers frequently found inefficient use of space rather than inadequate amounts of space: behind closed office doors, it seemed equally likely to find an empty room or one packed with IT employees; cubicles and bench desks were never occupied to capacity; conference rooms, though seemingly difficult to reserve, were underutilized; mobility of staff within organizations meant that office furnishings were perpetually “on the move.” Such inefficiencies were prominent in both new and old office buildings. At SPE, CPH, UCLA, and NGM, for example, overly crowded offices on one floor led to periodic rearrangements, and CIOs struggling with a perpetual lack of space. Other IT offices within the same facilities however were often underutilized. The need for flexibility was obstructed by rigid office spaces, furnishings, and complicated management systems. Although relatively new office spaces featured large, open areas for contractors or temporary employees, expansive ballrooms, and in one case, a large interior space with stadium seating, these also suffered from similar problems in effective distribution of space. Spaces that have more than one specific function help overcome inefficiencies, as when stadium seating or a lounge doubles as casual workspace, or a conference room doubles as a short-term

RECOMMENDATION: Re-examine the spatial organization and active usage of all spaces, and consider all spaces as valuable potential space for IT work. Dual usage, multi-functional, and casual spaces should be a high priority.

3. INEFFICIENT DESIGN TRANSLATES TO INEFFICIENT COMMUNICATION

Inappropriate workplace design impacts the relationship between upper management and the IT staff. Most particularly, this research found that inefficient workplace design translates to inefficient communication between CIOs and employees. In several cases, IT offices were so large and distributed that managers were not aware where their staff members were located. Furthermore, offices that were spread across several locations, floors, or even buildings created physical obstacles for important face-to-face interactions. Employees under these circumstances mentioned that they went long periods of time without seeing their colleagues and instead, resorted to virtual lines of communication as their primary source of interaction.

While it was not believed possible or even desirable for all IT employees to be located in a single space, their mobility, flexibility, and project-related orientation could lead to an unsatisfactory outcome: a lost-tribe of IT workers. The counterpoint

to management’s inability to manage the staff was the staff’s lack of contact and identity with their team or department.

RECOMMENDATION: In organizations where CIOs and employees are geographically or spatially disconnected, a range of alternatives should be considered to connect employees. These can include dedicated hubs for IT staff such as lounges or central, shared work spaces, fixed-location communications such as large information screens, or spatial identifiers or signage to locate mobile and remote employees.

4. ORGANIZATION OF OFFICE REVEALS ORGANIZATIONAL VALUES

Researchers found that the physical location of CIO offices in relationship to broader IT workspaces provides organizations with a unique opportunity to communicate larger messages about the role of IT. The CIO at NGM, for example, described that relocating some IT offices to the “business” wing of the building allowed the CIO and IT employees to be more closely integrated with the day-to-day business decisions. The move conveyed the broader message that the company interprets technology as integral to maintaining and expanding business. In another case, SPE’s IT management described that the organization put great importance on dispatching IT teams to project locations in order for their employees to be immediately available to their clients. In both cases, spatial behavior and the physical locale of IT work conveyed organizational priorities.

On the other hand, in cases where IT staff members were constantly being assigned to “left-over” spaces, they felt removed from the inner workings of the organization. In one example, an employee working in a remote building remarked that he invariably felt isolated from the organization’s larger projects and endeavors. He was dismayed when asked by family members about the organization’s latest news, which he was no more knowledgeable about than the general public, despite having worked there for several years. Spatial design and geographic proximity, while not sufficient, can contribute to a sense of belonging, which in turn contributes to a better-informed staff. In other words, the spatial layout of IT work is symbolic as well as functional.

RECOMMENDATION: Recognizing that an organization’s values are conveyed through its spatial layout, office planning whether it be for new space or reorganization of existing space, should

be mindful of the larger message transmitted both within the organization and externally.

5. TWO WORKSTATION STRATEGIES: HIGH-TECH FLEXIBILITY vs. LOW-TECH HACKABILITY

An examination of the individual workstation in the participating organizations yielded two distinctly different means of adapting to the needs of a particular worker or project. First, newer offices (such as AD, BC, and SPE) emphasized newly designed, open collaboration bench-desks, spaces for more fluid work, and “hot-desking.” These systems were intended to have intrinsic flexibility, such that the mobile workforce and the changing nature of IT work were accommodated. Open workstations that appeared to be anonymous or uninhabited, might be less flexible than intended. Second, older offices (such as CLA, CPH, and JPL) adhered to older desks systems, standardized cubicles, and were often located in retrofitted spaces. These furnishings and layouts were brittle, and required “hacking” in order to function in new ways, that is, the unofficial customizing of a workstation to make it easier or more efficient to get things done. Older offices tended to be inflexible and particularly ill-suited to mobile work, as when workers could not change desk configurations or the size of their personal space. But some of the most rudimentary desk systems could be considered hackable cubicles, allowing for more flexible, customizable options, providing workers with a sense of ownership, and affording better use of desks and equipment. This is corroborated by observations at JPL: rather than the rigid assignment of spaces and uses, they find it is better to design 80% of an office and allow 20% room for customization.

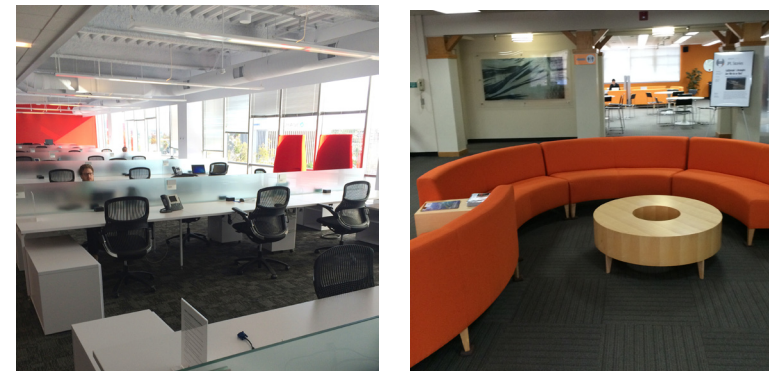


Figure 11: Collaborative and Flexible Work Stations at Avery Dennison (left) and JPL (right)
Source: Authors

RECOMMENDATION: Strategically design desk systems to encourage customizable and reconfigurable solutions for multifunctional spaces and varying worker demands. By including opportunities for hackable workstations, employers provide opportunities for greater efficiencies and sense of ownership.

BUILDING DESIGN

1. NEW OFFICES ARE FREQUENTLY STANDARD OFFICES

Newly designed office buildings for IT work, such as BC and SPE, were composed of common components including: small to mid-sized collaboration zones for team work, private focus rooms, gridded desk space for permanent workers, space for temporary or visiting workers, and large conference rooms. Plans for new office buildings abided by principles of older models of work, indicating that even though the design of new IT office space is clean, bright, and new, it is predominantly organized in conventional ways (see Chapter 4, “Current Discourse in Workplace Design,” for elaboration). There are several potential explanations: (a) the fundamentals of IT work are in fact rather conventional; (b) IT work is so fluid and unconventional that organizations seek “neutral” space, or (c) the design of new office spaces has become the territory of fewer design firms, with standardized schemes. Indeed, researchers found IT organizations tended to hire the same architects or designers. Even though CIOs described their newly designed offices as unique to their organization, the new buildings included some version of a kit-of-parts model. Most offices were customized in minimal ways, if at all.

RECOMMENDATION: Rather than relying general workplace design trends, office designers and organizations should conduct more in-depth programmatic studies of particular worker needs keeping in mind historical precedents, to allow for the most innovative potential and customized design.

2. GOOGLE/FACEBOOK MODEL ≠ THE IDEAL WORKSPACE

In terms of the ideal workspace, interviewees concluded that the Google or Facebook model was too extreme for their work

demands. These models are typified by a campus organization of indoor and outdoor spaces, open floor plans with clustered team spaces, an array of amenities including recreation and dining, and unconventional additions of casual spaces that blur the lines between work and play. Participants in this research described these models as too large, too comprehensive, too informal, and unfit for their organization’s culture. Instead, they thought that a middle ground between open floor plans and traditional partitioned cubicle layouts would be the most beneficial for worker productivity. Organizations like AD, with clear design ambitions and a desire to create new kinds of workspaces, came closest to realizing this middle ground.

RECOMMENDATION: The high visibility design that characterizes giant tech companies is less a *model* for IT organizations than a *direction*. IT employees prefer a balance between open floor plans and standard office layouts, or between informal and traditional spaces, which they believe is more compatible with their work demands.

3. TECHNOLOGY HAS POTENTIAL TO GIVE BUILDINGS AGENCY

Researchers found a prominent disconnect between IT office buildings and technology, whereby buildings were considered infrastructural, to which technology was an “add-on,” or “extra.” This was evident at BC, CLA, AD where well-conceived technological systems were implemented to provide greater efficiency within the office, although they were still defined by the boundaries of wall systems, information display technologies, or desk configurations—especially in new construction. Advanced information technologies, digital media capabilities, creative software platforms, and intelligent systems were part of the culture of participating organizations, but not part of their physical environments. Such innovation was no more visible in those organizations that owned their facilities than in those that leased spaces. The future potential of intelligent workplaces suggests that IT-rich organizations should more fully engage their own work with the physical building within which they work (See Figure 12). For example, walls may be used as digital screens to virtually connect workers in one building or city to another, or to expose work systems or product information. Likewise, sensor data can provide building occupancy information to locate open desks, conference rooms, or work teams, or to create new efficiencies by regulating

Plans for new office buildings abided by principles of older models of work...

the balance of daylighting with artificial lighting, or by distributing the heat produced in the server room to warm other parts of the building.

Emerging technologies, from facility energy-management systems to building skins as display systems, can inscribe buildings with a form of agency, which in turn holds promise for generating new forms of work, for bridging the gap between desk and building innovations, for greater communication efficiencies, and for more connected workplaces.

Figure 12: Real-Time Information Display Systems at the City of Los Angeles

Source: Authors



RECOMMENDATION: Realize the potential that all physical properties of buildings—from surfaces to rooms to building systems—can use IT to increase an organization’s intelligence.

4. THE OFFICE EXTENDS BEYOND ITS DOORS

Mobile technology pervades all aspects of IT workers’ lives, leading organizations to recognize that outdoor areas are viable spaces for productive work. Courtyards, patios, landscaped areas, and outdoor café seating with Wifi were populated by individuals with laptops and groups in meetings. This was especially apparent at SPE, JPL, and UCLA where campus work spaces were coupled with a wide array of outdoor amenities, such as large fields, benches along landscaped paths, picnic tables, yoga zones, and fountains. Large gathering spaces increased the potential for employees from different departments to interact and form employee groups such as cycling clubs and volleyball teams. Outdoor seating and café tables available for group work allowed formal and informal teams to meet and work with greater degrees

of privacy and spatial flexibility (See Figures 13 and 14). In general, employees expressed a sense of satisfaction by connecting to the outdoors. The primary complaint was about being confined to technologically connected areas: the boundaries of Wifi, or the availability of electrical outlets. Provision of cost-efficient, easy-to-implement solutions such as self-sustaining solar-powered umbrellas or battery charging stations, might provide power to remote areas.

RECOMMENDATION: Consider all spaces on an office campus as viable spaces for work (interior as well as exterior; formal as well as casual). At a minimum, provide Wifi and electricity as well as group and individual seating.



Figure 13: Outdoor Seating at Sony Pictures Entertainment Studios

Source: Authors



Figure 14: Outdoor Seating at Jet Propulsion Laboratories

Source: Authors



7.

CONCLUSIONS

This pilot study of IT work in eight diverse organizations was intended to determine what role workplace design plays and whether further research might be warranted. Although this study was limited in scope, it revealed the simple fact that regardless of size, sector type, or physical workplace arrangement, the organizations faced similar IT workplace design opportunities and challenges. Interviews and observations during our visits to the eight sites, with rare exceptions, suggested that IT work has no place to call “home” in the full sense of the term. Perhaps because much IT work is hard to see and has few material markers, particularly with regard to administrative functions, these workers are likewise located in ad hoc or “found” space within an office facility. Five-person project teams might be jammed into a two-person office with no windows; IT staff who serve “clients” within their own organizations might locate in a hallway or colonize a desk for a few days to several months; IT managers located along corridors with other administrators might not know where their own staff is scattered; new IT employees might be hired without any workspace assigned to them. Under these conditions, low expectations about office design should not be surprising. This pilot study suggests that IT staff are remarkably agile in their ability to adapt, but such adaptation comes with a cost. Further study could reveal just how the uneven, but generally inadequate workspace design affects critical concerns of all eight organizations: morale, recruitment, retention, and productivity.

In popular media, tech companies are portrayed with armies of casually dressed young professionals who seem to blur the boundaries between work and play in their hip office settings. To some, this blurring represents new lifestyles among IT workers, while critics point to the exploitation inherent to the 24/7 workplace no matter what it looks like. Although the tech giants are far out in front in terms of workplace design, more common design trends fall under the broad category of the “creative office.” Warehouse-like spaces accommodate open floor plans, rows of bench-desks, domestic settings like kitchens, living rooms, or rec-rooms, collaboration meeting rooms, and managers whose desks are out in the open with the staff. If these kinds of spaces set a media-based model, it was refreshing to see that IT staff and management had not “drunk the Kool-Aid.” IT employees were largely wary of flash-over-function, emphasizing that unorthodox settings did not match their day-to-day needs. Their suspicions are not unfounded. Research into past office design solutions reveal that “modern” alternatives like the cubicle of the 1950s and 60s echo today’s attempts to restructure the physical space of office work. The cyclical nature of office design trends should encourage organizations to resist the temptation of embracing catchall solutions, and instead appreciate the importance of designing a workplace that is customized to their particular needs. New office designs will reflect the priorities of the organization, as well as the value of the IT workforce, while at the same time remaining flexible enough to adapt to evolving technologies and the concomitant changing role of IT in the workplace. Regardless of those changes, it remains a worthy and as yet unattained organizational goal to demonstrate the central importance of information technology functions by giving the IT workforce the workspace it is due.



8.

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APPENDIX A

FIELD VISIT INTERVIEW QUESTIONS

INTERVIEW GOALS:

The project goals include: identifying the nature of the current challenges and opportunities related to recruitment, performance, and retention of highly qualified IT staff; better understanding how highly qualified and desirable IT employees define and value the assets of their office; and understanding the trends in office design to inform a range of possibilities for future office designs and responses to a changing workforce.

INTERVIEW AGENDA:

- Interview with CIO or other appropriate representative – 60 mins.
- Participate in a short, guided tour of relevant office facilities – 15 - 30 mins.
- Interview with selected junior staff member (ideal IT worker the company wishes to attract and retain – 60 mins.

Approximate Total Time of Visit: 2 hrs. 30 mins.

CIO INTERVIEW QUESTIONS:

- I. Introduction. Please provide a general introduction to your organization, the types of Information Technology work that transpires within your organization, and the spaces used by its IT staff. [Background Description]
 - a. Organization Characteristics: Size of organization: number of employees
 - b. Facilities Characteristics: Building Size: approx. office square footage, types of work spaces and amenities provided (eg, individual offices/cubicles/hot desks; collaborative spaces; lounge/break rooms; fitness facilities, outdoor space, etc)
- II. Current challenges related to IT workforce and building facilities
 - a. Describe the nature of the current challenges with regard to the hiring, retention, and performance of your desired IT employees.
 - b. How has the workforce changed since you've started working at this company?
 - c. Describe the type of worker your organization is trying to attract.
 - d. Does the current organization of work spaces and desks contribute to the challenges in attracting these employees? If so, how?
 - e. Is there a misalignment between the ways in which your employees work and the desks, spaces, or time they are given?
 - f. What other factors besides workspace may be influencing your ability to attract and retain the best IT workforce?
- III. Previous and current attempts to respond to challenges
 - a. What attempts have been made in the past to improve workspace design for

- your IT staff?
- b. What were the successes and shortcomings of those previous attempts?
- c. Describe any current workplace projects underway in your organization.
- d. Have you conducted any worker surveys or studies of worker satisfaction? If so, what kind?

IV. Assessment of future needs

- a. How do you imagine your workspace ten years from now? What type of information would your management team need to anticipate future workforce/workspace demands?
- b. What physical design characteristics do you believe would enhance employee productivity, engagement, and satisfaction? Do you consider any particular workplace designs in other companies as inspirational?
- c. Do you see other organizations with IT-related workspace that might serve as a model?

JUNIOR STAFF MEMBER INTERVIEW QUESTIONS:

- I. Introduction. Please tell us briefly about your history here at [this organization]: where did you come from, what's your training, why did you choose to work here, and how long have you been here?
 - a. Educational Background; past work experience; How long have you been employed with this company?
 - b. What spaces do you use most within this organization's facilities?
- II. Evaluation of existing IT workspaces
 - a. Did the physical attributes and facilities of this office effect your decision to accept your position? If so, how much of a factor would you say it played?
 - b. How would you classify your current workspace? Functional? Facilitate productivity? Facilitate collaboration? Adequate? Out of date? etc.
 - c. What do you consider to be the most favorable aspects of the IT workspace design, as it exists now? How do these aspects facilitate the organization's mission?
 - d. What are some of the least favorable aspects of the workspace design, as it exists now? How do these aspects challenge the organization's mission?
 - e. What needs are most prevalent in order to improve workspace design?
- III. Assessment of desired amenities
 - a. Where does physical workspace land among other workplace factors, in terms of impacts on performance? Your decision to leave your job?
 - b. What are the specific needs of the contemporary IT workforce that your organization needs to recruit and retain? What aspects of the workplace affect IT staff performance?
 - c. What characteristics do you look for in terms of workplace design? At the

scale of desk? Building as a whole? Relation to the city?

- d. What factors contribute most to your performance (and productivity)? How would you change your current workspace (s)?
- e. What do you consider to be the most cutting edge workspaces for IT today? Can you describe the physical qualities?



APPENDIX B

CASE STUDIES

SONY PICTURES ENTERTAINMENT CASE STUDY

Organization Name:	Sony Pictures Entertainment
Headquarter Location:	Culver City, CA
Revenue:	\$8.054 billion (FY 2014) ¹
Number of Employees:	140,000 (global) 4,000-4,500 (HQ)
Interview Date:	October 31, 2014
CIO:	Stephen Andujar

Organizational Structure:

Sony Pictures Entertainment (SPE) is the American entertainment subsidiary of Japanese multinational technology and media conglomerate, Sony. Information technology within SPE is centralized with development and maintenance organized under one global Chief Information Officer, Stephen Andujar. SPE also has divisional CIOs in each of its five divisions: the Columbia Tristar Motion Picture Group, Sony Pictures Digital Productions, Sony Pictures Home Entertainment, Sony Pictures Studios, and Sony Pictures Television. The primary function of Information Technology (IT) at SPE is business relations management. Specifically, it is IT's job to strategically engage with each branch of business, understand the individual requirements, and identify new projects. Additionally, under the "Application Development and Support Maintenance" branch, IT is a shared services operation that partners with different clients. It is within this branch that the IT staff contributes to a wide array of services, which includes vulnerability management and quality assurance. Of the 4,000-4,500 employees located in the Culver City headquarters, approximately 350 are IT workers.

Building(s) Description:

While Sony Pictures Entertainment has a large international presence with offices located across the globe, it is headquartered at Sony Pictures Studios in Culver City. The studio lot is comprised of approximately thirty stages, large parking structures, and various entertainment equipment facilities (scenic art, set lighting, etc.) The majority of the administrative offices are split between the Thalberg Building and the large Sony Pictures Plaza building across the street. Employee facilities are primarily located at the center of the studio lot. Here, the "Main Street" guides pedestrians along a picturesque row of two to three story storefronts, complete with decorated window displays and awnings. Eventually the path leads to the manicured central lawns and the newly renovated restaurant adjacent to the commissary.

For the most part, each of the company's branches has their own IT office within Sony Pictures Studios. SPE makes an active effort to make sure that the staff working for each of the divisions is located near the clients that they are supporting (Sony Pictures business people).

1. Source: Consolidated Financial Results for the Fiscal Year Ended March 31, 2014. See http://www.sony.net/SonyInfo/IR/financial/fr/13q4_sony.pdf

As such, a large number of IT employees are located within the studio lot. Production Support Technology Services, however, is located in a building off-lot. Sony is currently constructing a new administrative building meant to replace the Sony Pictures Plaza building.

Ideal Junior-Level Worker:

The ideal junior-level IT worker as identified by the IT upper management was an IT Director with five years of experience as a SPE employee and a Bachelor's degree in Computer and Information Science. The employee described that he was initially attracted to Sony Pictures Entertainment because he had "always known he had wanted to work in the entertainment industry." This, combined with a number of other factors including Sony's reputation for having an energetic workforce and its prime location on Los Angeles's West-side (a rare option in terms of entertainment industry locations), all contributed to his enthusiasm toward working for the Sony.

Positive Workplace Attributes:

Organizational Attributes:

While the traditional model of organizing IT staff tends to be to centralize employees in one office, IT management at SPE firmly believes that its recent dedication toward locating IT staff close to their clients has been a tremendous achievement. IT teams within each of Sony Entertainment's branches are located within that branch's building, which creates a richer team dynamic, increases client integration, and allows IT staff to feel closer to "the business".

Building Attributes:

More broadly, SPE employees readily expressed their favoritism toward much of the campus facilities. Touring the studio lot, one finds rows of quaintly adorned storefronts (each celebrating the Sony brand), green lawns for recreational uses, a state-of-the-art athletic center, and a variety of dining option locations both indoor and outdoor (See Figure 1). According to the interviewed IT employee, these sorts of elements contribute greatly toward encouraging camaraderie among fellow employees.

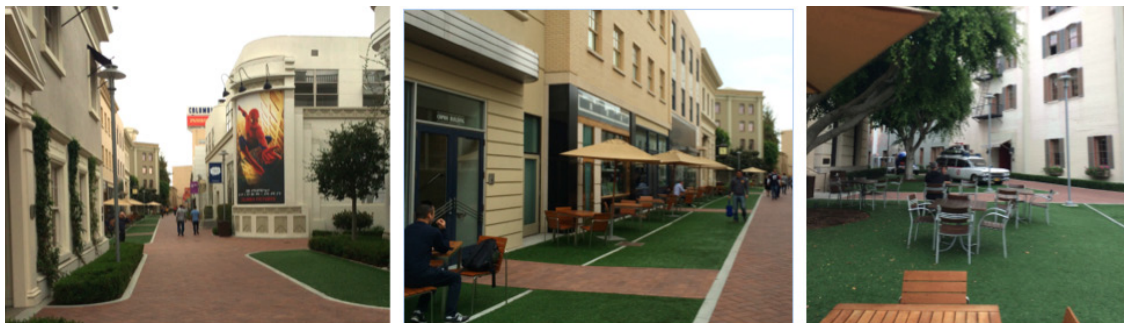


Figure 1: Sony Pictures Studios, Main Street
Source: Authors

Desk Attributes:

The IT employee also described a number of workplace characteristics in Sony's newer Howard Hughes building that contributed greatly toward improved worker productivity and morale. These

included an open floor plan with cubicles that were arranged in clusters, accommodating team activity while at the same time preserving the opportunity for more focused work. Additionally, there were large meeting rooms, a recreation/break room, and was proximal to a shopping center (which proved convenient for lunch outings or group happy hours). Furthermore, seemingly simple workplace features such as framed movie or television artwork tend to establish a sense of "character" within the environment. In other words, these visual markers make it clear that SPE's employees are working for an entertainment company; the offices are all customized to celebrate their collective achievements. Ultimately, these workplace design strategies all contribute toward its most significant success: fostering a commitment toward the Sony brand.

Workplace Design Challenges:

Organizational Problems:

Despite the fact that proximity to the client is undoubtedly practical, it does produce a number of complications in terms of spatial organization. According to IT management, Sony IT is constantly struggling with a lack of space and those in charge of handling facilities have difficulty in accommodating their needs due to the constant fluctuations in the scope of the projects their IT teams handle. Consequently, IT staff has grown accustomed to a lack of "dedicated space." Groups of six can be seen occupying a space that may have been originally designed to accommodate two employees; others might create makeshift work areas in hallways or the large lobby/atrium area that welcomes visitors. As such, IT often tends to utilize a space past the point of effectiveness.

Office Problems:

Additionally, while SPE features a broad range of campus facilities outdoors, indoors the studio's offices appear to follow a fairly standard design plan with limited collaboration or communal space. Typical office buildings feature mid-height cubicles, a number of enclosed offices for upper management, and conference rooms (See Figure 2). Newer buildings on the studio lot did feature some communal break-room kitchens with modern furnishings that did seem to be popular among employees.



Figure 2: Sony Pictures Studios, Standard Office Configurations
Source: Authors

The IT employee described the older, remote office spaces off campus, such as Corporate Point, as being far less functional. Here, offices tend to suffer from the typical sorts of complaints that dated workspaces tend to receive. Workspaces are smaller in size, isolated from other nearby activities, did not have a large meeting room, and lack natural light. Project teams working in these spaces have a lot more difficulty conducting meetings because they lack a space where the entire team can meet and are less effective in communicating.

BROADCOM CORPORATION CASE STUDY

Headquarter Location:	Irvine, CA
Revenue:	\$8.43 Billion (FY 2014) ²
Number of Employees:	Approximately 11,750 (1,800 in Irvine, 78% Engineers)
Interview Date:	November 17, 2014
CIO:	William Miller

Organizational Structure:

Information Technology at Broadcom has an operational support function and is focused on making engineers as productive as possible. Broadcom's IT employees can be broken down into three primary groups. First, a large group is focused on applications (SAP, Finance, HR, Sales and Operations); second, another large group is focused on engineering support and running the computer-engineering grid (the third largest computer grid in the world, processing approximately 1.8 million jobs per day); third, is the group that provides the services that help run the businesses (help desk, infrastructure services, etc.) The largest portion of their IT staff is based in California (between the three Northern and Southern California offices – San Jose, San Diego, and the headquarters in Irvine). Beyond this, Broadcom employees are also located offshore in countries such as India and Singapore. Each of these locations has IT support, as well.

Building(s) Description:

Broadcom currently leases fourteen buildings from UC-Irvine, which are organized as an office park that and is scattered among large parking lots in a remote, suburban setting. There are a number of outdoor amenities, such as lawn chairs and picnic tables that overlook the surrounding canyons and landscapes. This Broadcom campus has two gyms, two cafeterias, and small break room areas where employees can visit for a quick lunch or refreshments. The offices' interiors feature minimalist decorative features including Broadcom logo decals on some walls and furniture utilizing the brand's color scheme in the lobby/waiting room areas (See Figure 1).

2. Source: Broadcom Financial Statements 2014. See <http://investor.broadcom.com/financials-statements.cfm>

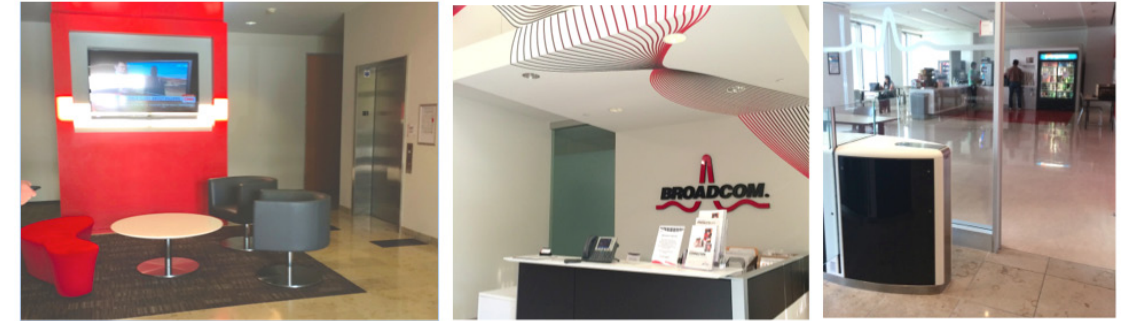


Figure 1: Broadcom Lobby and Employee Common Areas

Source: Authors

Lab space is a prominent feature within these fourteen buildings. When Broadcom originally established the campus twenty years ago, it was designed with 20 percent lab space. Since then, lab space grew six percent annually causing the company to continually lease more space. Currently, of the 925,000 sq. ft. of office space they lease in the existing campus, one third is occupied by lab space. Other workspaces within the buildings are designed to accommodate small teams of six or so people. These groups typically work in small to mid-level sized conference rooms with shared workspaces and display monitors.

Ideal junior-level worker:

The ideal junior-level IT worker was identified by the management staff as a UC Irvine computer science graduate who was recruited to work for Broadcom as an intern in 2011. This employee is representative of the future workforce that Broadcom is interested in attracting and retaining because of his innovative computer skills that were viewed as crucial to the company's growth. Because the lifecycle of most of Broadcom's products (such as cell phone technology) is considerably short, the "time to market" is critical for the company's success, which makes attracting the best work force and ensuring their productivity very important. For Broadcom, this requires that they place a heavy emphasis on providing their employees with the best tools and capabilities and offer them effective collaborative work environments.

Workplace Challenges:

Building Problems:

According to IT management, the structural composition of the office park campus is dated and is extremely car-oriented – parking is located at the center of the space and is surrounded by buildings, which tends to further isolate individual buildings rather than encourage connections and movement between them (See Figure 2). As such, it appears the organization of the campus does not correspond to the ways in which work is done: it does not easily allow for flexibility, a singular work culture based on collaboration to be fostered, or for the company to develop into a format for enterprise.



Figure 2: Broadcom Corporation Headquarters
Source: Authors

Desk Problems:

The junior staff employee suggested that there are too many divisions within the offices and that the offices could benefit from removing a number of the structural divisions to allow for more collaborative workspaces or open-floor plans. In doing this, he believes the company could foster increased collaboration among employees and improve worker morale.

Generational Gap:

The junior staff employee's preference toward open space brings up another workplace challenge: a generational gap within the employees. While he likes the idea of an open-plan workspace, he believes that the majority of employees that are against open concept plans are usually those that are closer to retirement. He went on to describe that companies such as Facebook may use this design characteristic as a way in which to attract young talent, however Broadcom is still a little more traditional in that it maintains a rigid hierarchical model of designating private office space for executives or upper management. For Broadcom, this means any drastic change to the existing workspace design could potentially provoke some pushback from its senior employees.

Positive Workplace Attributes:

Building Attributes:

The junior staff employee described that he greatly enjoys and takes advantage of the on-site facilities and uses the gym and the cafeteria very regularly. He liked the fact that these sorts of accommodations made it very convenient to stay within the campus and allowed him to stay for longer work hours. Adding further testament to his appreciation toward these facilities, the junior staff employee described that while the offices may not have directly impacted his decision to work there, they have become such a regular part of his routine that he does believe it would affect his future decisions to work somewhere else. Furthermore, he is confident that access to employee facilities impacts productivity and worker satisfaction. According to this employee, most tech companies offer a similar salary and benefits, being so, engineers are more interested in finding a workplace they are comfortable in and a culture/team that they work well with and a project that they get excited about.

The employee also praised the fact that Broadcom's upper management has embraced creativity and design of their own workspaces. Specifically, Building 8 seemed to be particularly popular amongst employees. While the first and second floors are similar to the other nearby buildings in that they feature large lab spaces that allow for collaborative work, there are personalized offices upstairs where engineers can do their focused work. Some have gone out of their way to personalize their workspaces.³

Office Attributes:

Other successful attributes at the office-level include the strong presence of the technology culture. The junior level employee made frequent reference his enjoying the fact that the workspace design at Broadcom strongly reflects that it is a tech company and encourages the flourishing of the tech culture. He described this culture as laid-back: a friendly atmosphere where engineers are typically seen wearing casual clothes and playing pick-up games of Ping-Pong or playing group activities in the hallways. Additionally, employees are consistently seen walking around the campus, conversing, brainstorming ideas, and thinking together. Another characteristic that further encourages the establishment of Broadcom's tech culture is its diversity. The junior level employee enjoyed the fact that the organization makes an effort of hiring ethnically diverse employees. Ultimately, the employee described that while he started working for the company because it was convenient, he wanted to stay because he liked the culture

Broadcom's New Great Parks Building:

With its lease with UC Irvine set to expire in 2018, Broadcom is currently focused on relocating its headquarter location in an entirely new campus located in Orange County's Great Parks Neighborhood by 2017 (as of November, it was undergoing the final design stages of this campus.) This new campus is estimated to be around 1.1 million sq. ft. It was designed by Gensler and will include development labs and open office workspaces. Construction is scheduled to begin later this year in 2015. According to IT management at Broadcom, the move was motivated by a number of reasons: first, were the financial reasons – having their own property and campus makes much more economic sense than continuing to lease from the University. Second, Broadcom is very interested in making a more collaborative campus for their engineers and establishing themselves as one of the premiere technology workplaces of the future.

One major component of the new campus' design strategy was a highly detailed, year-long programming study of the current workplace conditions. As a result of this study, Broadcom found that their spatial efficiency was very poor. Rather than working within existing building confines, Broadcom fell into a pattern of consistently building out and leasing more space from the University. In their new campus, they are working with workplace strategy experts in order to build in more efficiency. For example, they quantified around six places for each person to sit within the current campus at any given point in time. In the new campus, Broadcom will attempt to increase efficiency by reducing this to four and a half spaces per person. In addition to this, they will dramatically decrease private workspace and increase collaborative space and

3. Particularly of note is a "Lost"-themed space modeled after the hit-television show, complete with its own "island" and sand and a Western-themed space in which the floor is covered in sawdust.

facilities. Whereas 95% of the workforce qualified for a private office, in the new campus, only two percent will qualify. They are going through a great deal of change management to deal with this transition, especially with regard to generational gaps. Finally, the new campus will maximize the social atmosphere by cross-programming spaces and conceiving of every space as a space for work. As described by Broadcom’s former Director of Workplace Strategy, at the new campus, “the cafetorium is a work café, the open stairwell is a social atmosphere in workplace fitness, the plaza or the park outside brings in elements of fresh air and social collaboration and energy.”

LA COUNTY DEPARTMENT OF PUBLIC HEALTH CASE STUDY

Headquarter Location:	Commerce, CA
Budget:	\$893 million (FY 2012-13) ⁴
Number of Employees:	Approximately 4,000 (250 IT workers)
Interview Date:	December 5, 2014
CIO:	Jim Green

Organizational Structure:

Information Technology at the Department of Public Health is comprised of a central IT organization, Public Health Information Systems (PHIS), and several program-based IT operations. IT employees are located in the central Commerce, CA building and are also dispersed throughout other County buildings, including fourteen health clinics and fifty-three other program offices. Clinic services are often provided on an as-needed, temporary, basis being that they usually do not have permanently allocated space in these locations.

Building(s) Description:

The CIO’s office at the LA County Department of Public Health is located in a three-story administrative building in Commerce, CA, where the central IT offices are housed in addition to other Public Health offices, such as Human Resources, Finance, and Facilities Operations. Now County owned, the building is assumed to have originally been a warehouse or manufacturing building that was later adapted to its current use. With three main entrances, the building’s various offices are connected by a long, narrow hallway with bright white walls and fluorescent lights. The CIO’s offices are located on the main floor, although they are detached from two other main IT office spaces: one on the main level, and another on the third floor. Distributed among the three floors, the typical spaces for IT work consist of large, open areas with 48”-tall, single desk cubicles arranged in a series of long rows. The work spaces have no clear circulation plans, and the largest space on the third floor includes two small conference rooms for group work, while on the main floor closest to the CIO, conference tables are included in personal offices themselves. Due to the building’s original purpose, the adapted floor plan follows existing structure, and a

4. Source: Broadcom Financial Statements 2014. See <http://investor.broadcom.com/financials-statements.cfm>

limited number of windows creates a challenge for accessing natural light and views outward.

Ideal junior-level worker:

The ideal junior-level IT worker as identified by the CIO as an analyst with fifteen years of experience with the County, who quickly moved up through the hierarchy upon his hiring. Now in a supervisory position, he described that he was attracted to Public Health because of the job security associated with public sector work, as well as a possibility to telecommute and work from home on occasion. He described that the work itself was rewarding, since the work itself is crucial to facilitating and maintaining the health and wellbeing of all Los Angeles County residents.

Workplace Challenges:

Building Problems:

The CIO and junior employee both viewed the building itself as a challenge that can occasionally impact their work. They emphasized that the building’s age, its aesthetics, and its restricted access to daylight are obstacles that everyday work practices must frequently try to overcome. Programmatically, there is no cafeteria or formal employee break/lounge room, and there are a limited number of spaces allocated for group work. Most notably, however, the three IT office spaces are disconnected from each other, and are secluded in different parts of the building. The junior employee found that the building is not particularly conducive to creativity, and he found that there are many restrictions to his productivity level. For example, the heating and ventilation system is noisy, and the lack of windows causes employees to take more frequent breaks, especially to find alternative means to look outdoors.

Desk Problems:

The CIO emphasized that there is a perpetual lack of space, and that cubicles are constantly being broken down, reconfigured, and reassigned for maximum efficiency. The junior employee, however, remarked that he would benefit from more creative, brighter, or non-traditional desk spaces to enhance his productivity and creativity, since the functionality of the desks and work spaces prohibited him from getting work done. He described his most productive environment as that of his home, where he can work comfortably at odd hours, and without distraction. Contrary to the CIO, the junior employee found there to be too many desks, too much unused furniture, and excess storage for work that is typically done on a laptop.



Figure 1: LA County Department of Public Health, IT Offices and Corridors
Source: Authors

City Problems:

The CIO described that the location of the office in Commerce, as opposed to being more centrally located in the County, hindered his engagement with other offices and the clinics that IT provides services to, although the location allows for greater and more neutral focus. The junior employee remarked that the surrounding neighborhood of the Commerce office was not a particularly attractive place to work; even when going outside for fresh air, he remains inside the parking lot, where a food truck is located daily, and does not generally venture out further.

Work Problems:

The County-level organizational structure was perceived as the most challenging to IT workers, which illuminates a significant obstacle associated with most IT public-sector work in general. The CIO, for example, argued that radical change is difficult to imagine, since public spending to upgrade or re-imagine the office is subject to incredible public scrutiny. However, aside from the building and desk inefficiencies, County-wide systems are in place that promote efficient reporting, yet restrict new modes of work. Strict payroll classification systems, for example, correspond to the size of employees' office space, workers are expected to work at their desks during business hours, and all employees are expected to report their work with hourly precision — even including supervisors and executives. Ultimately, since the County must be granted public taxpayer approval to allocate funds toward improving working conditions for employees, workspaces are typically updated only when they are in need of major repairs.

Hiring/Retention Problems:

Employees remarked that acquiring new workers was a challenge because of 1) a principally internal hiring system that rarely reaches a public pool of new talent, and 2) a long series of hiring tests and screenings associated with public-sector work that are often too exhausting for prospective workers. Pragmatically speaking, the CIO acknowledged that most IT employees do not generally expect a glamorous work environment and have become accustomed to working in cubicles, but he imagined that rethinking and perhaps making subtle changes to the image of IT work more broadly would be immensely beneficial.

Positive Workplace Attributes:

Once moving beyond the scope of the physical workspace, the junior-level employee remarked that the rewarding nature of the work is what makes the job attractive and worthwhile. Since the work directly corresponds to public services, the visibility of even IT work (eg: the efficiency of health care services, applications development, and the communicating of public health risks, etc.) is widely respected and utilized by doctors and other health care providers.

CITY OF LOS ANGELES
CASE STUDY

Headquarter Location:	Los Angeles, CA
Budget:	\$84.5 Million ⁵
Number of Employees:	1,500 IT Positions Citywide (450 within ITA)
Interview Date:	December 19, 2014
CIO:	Steve Reneker

Organizational Structure:

The City of Los Angeles's Information Technology Agency (ITA) is responsible for managing a wide range of city services, which include: network connectivity for City employees (internet, phone, radio), a public information call center, technical support for the city's local news cable channel, and enterprise applications and networks. A group of employees within the ITA also collaborate with other departments, such as the Mayor's office, on common technology initiatives such as cyber security or open data. The agency has approximately 450 IT employees. Half of the ITA employees are located within their City Hall location in Downtown Los Angeles while the other half is located offsite and does specialty projects (such as updating equipment in fire trucks or police helicopters) in various locations across the city.

Building and Workspace Description:

The Information Technology Agency occupies the fourteenth floor of the James K. Hahn City Hall East building, directly adjacent to the historic City Hall tower (the two buildings are connected by a pedestrian bridge crossing over Main Street.) The ITA office space is wrapped around an elevator core and lobby area and consists of cubicles ordered in a grid formation with conference rooms and private offices situated in the building's periphery. The majority of the agency's functions operate in separate groups located throughout this floor; however, other ITA offices are dispersed throughout other floors in the City Hall East building with staff on floors 10, 12, 13, and 14. Additional staff is also located at Piper Tech.

Ideal Junior-Level Worker:

The CIO identified the ideal junior-level IT worker as a programmer analyst who began working with the City in 2001. He began working as an intern, and his primary task was to set up networks at the data center. By 2009, he worked his way up to a full time position, and began to work in developing intranet applications to track data for the Mayor's Office. This employee was attracted to the job because of his personal interest in politics, and therefore found it easy to become engaged in the projects he was working on.

Workplace Challenges:

Building Problems:

The CIO and junior employee both described several challenges within the current working

5. Source: City of Los Angeles Fiscal Year 2014-15 Budget Summary. See http://cao.lacity.org/budget14-15/2014-15Budget_Summary.pdf

configurations that have posed obstacles to worker productivity and satisfaction. They each suggested that the building's age and a lack of natural light create dreary working conditions that inhibit creativity or morale (See Figure 1). Although the office is comprised of three different size and types of working spaces, from private offices, to cubicles, to several conference rooms, the ITA office has very little financial support or space to support the specific needs of their workers. For example, there are no lab spaces or collaborative work areas other than conference rooms for project teams to work for extended periods of time. Additionally, employees described that office guests are constantly disoriented by the layout of the space. Poor signage throughout the office floor makes it difficult for visitors to find their way around the office, further adding distraction and interruptions to the daily workflow of the office. Finally, both the CIO and the junior employee argued that there was a lack of creative artwork or sense of unique character in the office, which they suggest gives an impression both to the workers and to visitors that there is no room for creativity in their work environment, consequently affecting their overall morale.



Figure 1: Cubicle Configurations and Conference Room (far right) at City of Los Angeles ITA Office
Source: Authors

Desk Problems:

The office cubicles are configured in a manner that do not maximize the available space on the office floor and lack flexibility in usage, placing significant restrictions on the ways in which IT employees conduct their work. The majority of the cubicles featured bulky and outmoded, 1980s office furniture that gave the appearance of clutter, even when they were not in use. According to the CIO, the high-walled cubicles are particularly problematic because they reduce co-worker/management visibility. Without a clear line of sight, the CIO finds it difficult to supervise his staff and for employees to have meaningful exchanges. Since the office environment is so closed off, the CIO expressed concerns that employees might similarly be isolated from one another, which he believes stifles innovation.

Work Problems:

Employees at the ITA emphasized the fact that the organization has very limited funding, which makes the possibilities of making any improvements to the physical office very low. Since there are limited budgets to begin with, the CIO described that he found it to be more worthwhile to invest any available funding in training for his staff and improving technology capabilities for the office. For him, these sorts of investments are far more important than focusing on improving physical space. In the thirty years he's worked for the city, he has seen no improvements to the

physical workspace, aside from the occasional upgrade in office equipment.

Agency employees also seem well aware of the City's financial situation, and it is primarily because of this that they do not expect any changes in their current situation to be made in the future. The junior employee explained that access to basic office equipment is tough, and he often has to purchase his own office supplies.

Hiring/Retention Problems:

The ITA also shared similar frustrations and problems as the Los Angeles County Public Health Department with regard to their hiring process. According to the CIO, the civil service process is extremely timely and makes it difficult to attract and retain the top talent (on average, the hiring process may take one to two years.) The junior employee also described frustrations with the hiring process and said that getting hired in the City is very complicated and convoluted. He noted that the City typically tends to hire from within and does not make much effort to encourage the hiring of new employee prospects working outside the public sector. According to the junior employee, many of the City's workers in IT begin working without much relevant experience.

The City's management teams have noticed the hiring issues and are in the process of creating internal succession plans in order for them to hire more student interns and to implement a contract-to-hire vehicle for temporary workers. This is particularly important for the ITA because of the current state of their aging workforce. According to a recent internal study, the Agency found that 47 percent of their employees will be eligible for retirement within the next three years, and 60 percent will be eligible in five years.

Positive Workplace Attributes:

Though the challenges at the ITA are wide ranging, there were a number of comments from both the CIO and the junior employee that suggest significant successes in recent years. First, the majority of employees' immediate and critical needs are met within the office. At the desk level, all employees go through an ergonomic review of their office equipment to ensure that they are comfortable at their desk. Additionally, both the CIO and the junior employee thought the conference rooms are functional and meet their basic needs.

At the city level, the downtown location has proven to become a new asset for workers. "Our downtown location used to be a detriment," says the CIO. However, with the onslaught of public transportation options and neighborhood development projects that have been active throughout the past fifteen years, the downtown location has been attractive to employees, especially for younger employees that find it appealing to live and work in the city center.

The ITA's 311 Call Center Office was also presented as an example of a functional workspace, which was one of the newer workspaces renovated in 2009. Although the cubicles were in a typical grid formation, half of the divider walls were transparent windowpanes, which, at least visually, opened up the space and connected workers (See Figure 2). Additionally, employees in the call center have the option to use dual screen computers and have adjustable desks, which can also be set to a "standing mode." Employees here also have the ability to adjust the lighting and brightness throughout the different sections of the office floor. These small degrees

of customization are favorable among the staff and go a long way toward improving comfort and satisfaction.

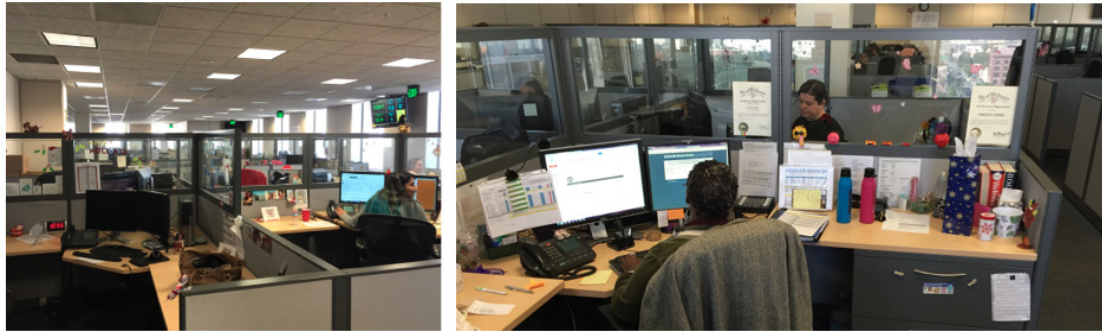


Figure 2: The City of Los Angeles 311 Call Center Office

Source: Authors

Ongoing Projects:

Currently, the ITA is three months into a two-year renovation project for its data center, and the agency expects that that this could be an important attractor for new employees or for even for visitors. As it exists now, the data center is a prime example of a dysfunctional workspace for both the employees stationed there and the equipment it holds: it is extremely out-of-date, has no source of natural light, and is poorly configured with large empty spaces that are slowly being configured into office space. Included in the recent renovation efforts is a new AC system to improve energy efficiency, upgraded flooring, racks for the equipment, bar stools to provide lab space, ground-to-ceiling glass wall panels, and the removal of the existing dropdown ceilings. For IT workers, the data center is a primary resource that affects growth potentials, and is therefore a primary recipient of any funding. Once the City is finished with the renovations in the data center, the agency is hoping to create a museum with some of the more notable equipment they have collected throughout the years and would like to initiate an electronics recycling program as way to receive donations from the public.

UCLA OFFICE OF INFORMATION TECHNOLOGY CASE STUDY

Headquarter Location: Los Angeles, CA

Budget: N/A

Number of Employees: 50 OIT Staff Members

Interview Date: January 9, 2015

CIO: Jim Davis⁶

Organizational Structure:

UCLA's Office of Information Technology (OIT) is responsible for a variety of campus-wide information technology-related services and initiatives including enhancing the university's IT capability and developing solutions for academic and research programs. In recent years, a particular emphasis has been placed on programmatic initiatives that support and advance the research and educational goals of the University, while more general administration and operations are now part of Information Technology Services (ITS). OIT's substantive, program focus marks a dramatic change and is particularly apparent in the Educational Technology and Collaboration Group (ETCG) and the Institute for Digital Research and Education (IDRE). The latter was created to facilitate collaboration between faculty from different departments within UCLA and pair them with experienced technologists to advance computing knowledge and research at UCLA. Through efforts such as these, OIT has a virtual presence in nearly all aspects of education, research, and daily life at the university, though this is not easily recognized. UCLA, with some 1,100 IT-designated staff, 50 of whom are part of OIT, is notably, if not radically, decentralized.

Building(s) Description:

UCLA's OIT offices are likewise decentralized across the UCLA campus, with concentrations in two buildings. First, the administrative office is located in the third story of Murphy Hall. The OIT office there holds approximately five to ten full-time employees and consists of a combination of cubicle and private office spaces. The majority of the remaining OIT offices along with a central data center are located in the Math Sciences Building, a ten-story building with approximately 743 rooms and lecture halls, distributed among sixteen academic departments. There, OIT employees are dispersed across a number of office spaces, which range in size from large rooms subdivided by cubicles and a private office to a series of two-person offices running along a corridor. Although OIT employees do not have a designated break room or other private facilities, they do have access to approximately five conference room spaces that are used to hold general meetings, along with the wide range of amenities that UCLA offers its staff, from gyms to preschools.

6. Davis's full title is Vice Provost of Information Technology and Chief Academic Technology Officer at UCLA. For the purposes of this case study, he will be referred to as the Vice Provost.

Workplace Challenges:

Building Problems:

Decentralization is a significant struggle for UCLA's Office of Information Technology. Without a centralized hub, the physical dispersion of its offices prevents the OIT from establishing a clear presence or identity within the campus. OIT employees find it difficult to build relationships with other employees beyond their immediate vicinity since chance encounters and face-to-face interactions are rare. Despite oftentimes working within the same building, most employees primarily communicate virtually. One of the interviewed staff members noted that decentralization leads to a multitude of redundancies within the campus since individuals could be working on very similar projects without being aware of it.

Apart from having offices widely dispersed throughout the campus, OIT staff also noted the fact that wayfinding is a significant challenge, especially within the Math Sciences Building itself. Built in the late 1950s, the building has poor signage, little access to natural light, and a disorienting degree of monotony. Long corridors of anonymous office doors make it difficult to notice the OIT or IDRE's presence within the building or distinguish them from the surrounding classrooms or department offices.

Office Problems:

At the office level, the OIT experiences challenges in organizing space. First, as is the case in many older buildings, the OIT's office spaces were not originally designed to meet their specific needs. Being so, individual office spaces such as those of the interviewed OIT staff members appear as if they could belong to anyone on campus. The majority of offices are small, cluttered, dated, and dark (See Figure 1). Apart from minor decorations, there are few ways for these employees to feel a sense of ownership toward the office space. Furthermore, the outdated layout of independent rooms with limited equipment does little to encourage the sort of innovation and advanced research that occurs within these spaces.

A second challenge with regard to spatial organization stems from the fact that highly compartmentalized offices don't allow for much freedom or flexibility in terms of their usage and also cause wasted space. IDRE for example, has one to two people in each office. A majority of the time, several of these spaces are empty while simultaneously, other offices are extremely cramped for space. Space becomes a major issue when it comes to doing intense work because focus and concentration can be difficult. There is no personal heads-down space or designated collaborated space.



Figure 1: IDRE Office Spaces at UCLA
Source: Authors

Hiring/Retention Problems:

As was the case with many other public sector institutions, UCLA's OIT also faces several challenges in hiring new staff. According to the Vice Provost, it is extremely difficult to hire externally within the university system. Instead, they make an effort attract students who might like to stay within the work sectors of research and academia.

Positive Workplace Attributes:

Despite that the majority of OIT office spaces revealed a multitude of spatial challenges, according to the Vice Provost and IT staff employees, two of the newly refurbished spaces within the Math Sciences Building are considered to be examples of functional collaboration spaces. First, is the "IDRE Portal," a flexible conference room that holds approximately 50 people and was designed to be adaptable for a variety of uses such as large meetings, teleconferences, lectures, workshops, and dinners (See Figure 2). While it may not particularly stand out in terms of its design, it houses an advanced sound and projection system and is quite flexible in terms of seating arrangement. For the Vice Provost and IT staff, this space is particularly convenient to host events because it is one of the few resources on campus that they "control."



Figure 2: IDRE Portal Room Configurations
Source: oit.ucla.edu

The second space, the “Technology Sandbox” is another example of what the IT staff considers to be a functional workspace and features newer furnishings and accommodates a variety of uses (See Figure 3). This computing facility is available to UCLA students, researchers, faculty, and staff and provides them access to a “meeting and collaboration space,” as well as a variety of applications including advanced computer modeling, GIS, and web programming. Access to the Technology Sandbox is project-based for faculty and students, and according to Sandbox staff, the space is an appropriate size for the University’s needs (fifteen to twenty stations).

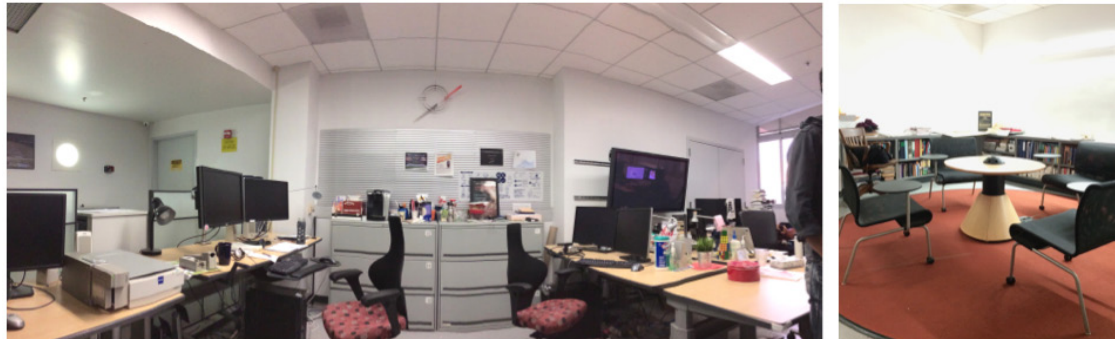


Figure 3: The UCLA Technology Sandbox
Source: Authors

According to the Vice Provost and IT staff, UCLA’s OIT has been successful in overcoming the lack designated space and areas for collaboration by creating events that are meant to spread awareness of their services or bring IT directors together. One example of such events is “Bruin Tech,” held once a month for IT professionals from across the campus to meet face to face and share presentations. With gatherings such as these growing in popularity amongst different campus groups, it seems that events are fast becoming the new “collaboration space” of the university office.

AVERY DENNISON CASE STUDY

Headquarter Location:	Glendale, CA
Revenue:	\$6.036 Billion (FY 2012-13)
Number of Employees:	26,000 Globally; 250 in Glendale HQ
Interview Date:	January 7, 2015
CIO:	Richard Hoffman

Organizational Structure:

Avery Dennison is a multi-faceted organization with locations in over 50 countries, and it designs, manufactures, and distributes products within several businesses: Label and Packaging Materials, Graphics and Reflective Solutions, Retail Branding and Information Solutions, RFID Performance Tapes, and Vancive Medical Solutions. The office of the CIO views its role within the organization as implementing and maintaining proper communication infrastructures as a means to enable efficiency and productivity among all of its businesses and across all regions of the globe. Most recently, the organization has worked to reduce and consolidate its management footprint and data centers as way to better facilitate global and virtual communication, and have done so by implementing a Google-based infrastructure. Since 2008, the organization has been able to reduce its number of corporate headquarters in the United States from five to two and its data centers from twenty-seven to one. Moving into a new office in Glendale, CA in 2014, its headquarters houses nearly 250 employees, where most central IT employees who maintain infrastructure, communications, global systems and finance, and systems architecture are located. More broadly, the organization’s manufacturing, application development, engineering, and distribution offices are regional and are located in many parts of the world.

Building Description:

Avery Dennison’s California headquarters—which includes the CIO office—moved from an owned office building in Pasadena, CA to leased one in Glendale, CA in January 2014 as a way to consolidate employee locations and update its work space. The former Pasadena headquarters was a 1980s building of 100,000 sq. ft. that housed 100 employees, and the floor plate was divided into individual offices on the periphery, with cubicles on the interior. Transitioning to Glendale, Avery Dennison consolidated two company offices—one in Brea (100 employees) in addition to its Pasadena headquarters (150 employees)—into one. The new consolidated office is housed in a building designed by AECOM, where Avery Dennison now leases two-floors (54,000 square feet). Thus, the company transitioned from having multiple locations in larger spaces, each with a smaller number of employees, to a smaller space with more employees and less square footage per employee than before.

The CIO viewed the move to Glendale as a symbolic a transition away from a 1980s mode of work to a more globally efficient, technologically driven one. The interior of the offices were customized by HOK, and demonstrate a multitude of working options. With no enclosed offices, all employees (including executives) work at desks with open visibility and with access to “huddle”

rooms, conferences rooms, a large stadium, and board rooms that all vary in size and in degree of privacy. Although most employees are assigned personal desks, a large area of office benches and long tables on the second floor is designated for 50 or so temporary employees, or visiting workers who primarily work remotely. The office has several kitchen and eating areas, as well as two gaming areas for employees—one for Ping-Pong and one for video games. Objects, photographs, and archival remnants of the organization’s history are displayed on walls, and the company identity is recognizable due to a bright red color scheme (which matches the company logo) and product-inspired details throughout (See Figure 1).

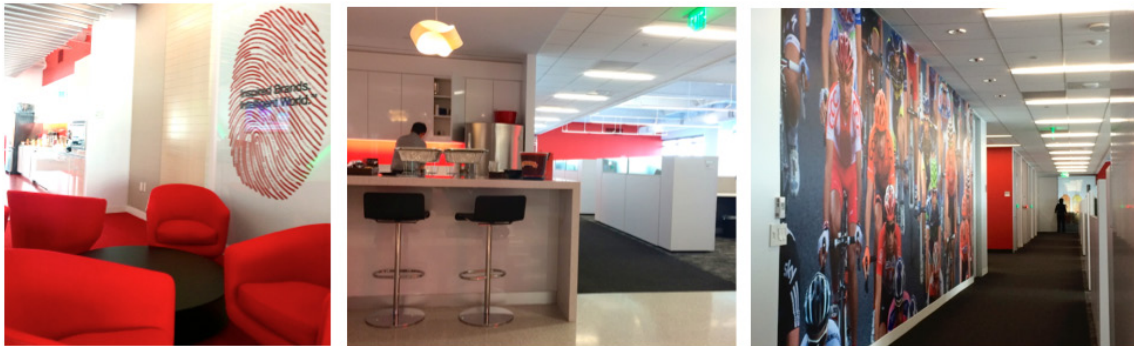


Figure 1: Avery Dennison Employee Lounge Areas, Kitchens, and Wall Decals
Source: Authors

Ideal junior-level worker:

The ideal junior-level IT worker was identified by the CIO as a content management specialist who began working with the organization in 2010. Self-identified as a “non-traditional IT worker,” the employee has an educational background in marketing, brand management, and business administration. Her main role is to ensure that employees understand and know how to most efficiently use and embrace new technologies. The emphasis on management and efficiency is therefore one that mirrors the CIO’s background and goals as well.

Workplace Challenges:

Desk Problems:

Although many employees (especially those of older generations) have willfully adapted to the new open floor and absence of private offices, several contradictions have emerged. Employees dealing with sensitive information and data (such as Human Resources or Finance) find that their computer screens are often too public; some employees actually need to work from home on occasion to have proper privacy. In addition, rows of most desks are organized such that one desk begins nearest to the window, the next further inward, and finally the third even further inward. Employees on the most interior row of desks argue that their desk areas are often very dark and uninspiring, and wish that there was more natural light. Even the CIO and executive desks are pulled into the interior, and have no direct view or access to a window. Finally, many furniture selections by the design team did not fully reflect the needs of Avery Dennison employees, or what kind of furniture would best facilitate their work. For example, glass desks were described as “cool” and tables were informally low, yet computer mouses did not work on

glass tabletops, wires and cables were exposed on desks, and the tables were impractically and uncomfortably low for productive work. Thus, Avery Dennison has had to change the furniture continuously since the office opened.

Building Problems:

Programmatically, large areas of the office, such as a stadium for company presentations, appear to be only minimally used, or used only during occasional events. In addition, there are kitchens with dining areas instead of formal cafeterias, yet employees described that they frequently end up working from their desk or not eating at all.

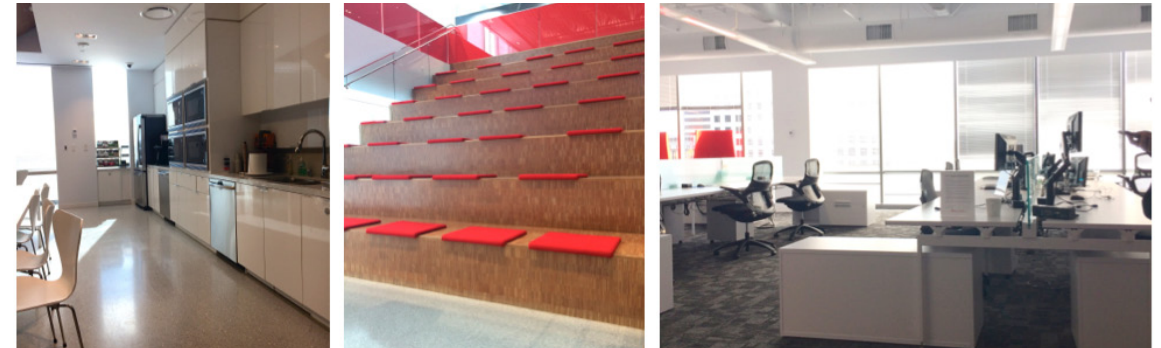


Figure 2: Examples of Underutilized Space at Avery Dennison
Source: Authors

City Problems:

Newly located in Glendale, both the CIO and junior employee described that the location of the office has no negative impact on attracting new employees. Since the company is so virtually enabling and supportive, workers commute from near and afar, and the commute time is not an issue. However, since the office directly fronts a freeway, the rush-hour traffic is often a problem to workers. In addition, the building is located in an area with few nearby eateries or cafes within walking distance, which results in workers typically remaining in the office for the entire day. The CIO and junior employee remarked that this is not ideal, but is fine because of virtual work.

Work Problems:

The junior employee suggested that the office has taken on an entirely new use; she argued that the primary function of the office appears to be meeting space, remarking that employees are typically in meetings from 8am to 5pm, and then their “actual work” begins thereafter. Moreover, designated spaces for leisure (A Ping-Pong table and video game area) do not work as intended, since many appear to be overtly scripted, too public, or not reflective of the kind of leisure time workers most desire. The video gaming area, for example, is in an open public area adjacent to Human Resources, so employees find that they cannot use the space because they may be too disruptive.

Positive Workplace Attributes:

Since the building is so new, the CIO and junior employee found few major problems with

workplace design. Although employees remarked that they missed the old charm of the Pasadena office, they have largely embraced the new building and its new spatial organization. Ultimately, employees value the tools, technology, and type of mobile and virtual culture more than the building or the physical office. According to the CIO, the new technology systems have appeared to create efficient work flows, more flexible work options, and a generally high morale among workers. New conference room screens allow for efficient uses and smooth scheduling of collaboration spaces, and the open nature of work has encouraged more informal meetings that have consequently reduced the amount of time scheduling and dedicating time to more rigid, formal meetings.

Furthermore, Avery Dennison’s support of remote work and its virtual capabilities were identified as the most positive attractors of creative and innovative new employees. Workers are generally bought into the company to work in the headquarter office, where they gain knowledge about the company values and culture, before they are allowed to work more remotely. The CIO found that the flexibility and telecommuting options has allowed him to attract better workers that could not find work in other, more rigid and non-virtual organizations.

NORTHGATE GONZALEZ MARKETS CASE STUDY

Headquarter Location:	Anaheim, CA
Revenue:	~\$1 Billion
Number of Employees:	5,000 (45 IT workers at HQ)
Interview Date:	January 14, 2015
CIO:	Harrison Lewis

Founded in 1980 by Mexican immigrant, Miguel Gonzalez Sr. and his family, Northgate González Markets (Northgate) is a chain of retail grocery stores that has distinguished itself by providing specialty foods that cater to a Hispanic demographic and other minority communities predominantly in Southern California. Since the time of its establishment, Northgate has expanded to approximately 40 grocery store locations in the Los Angeles, San Diego, and Orange Counties and has not only become a staple in many minority communities, but has also gained a considerable amount of recognition for its efforts in bringing healthy food options to underserved neighborhoods. Its services do not end in specialty foods and produce, however. Beginning in 2007, Northgate also began to provide financial services to its customers (check cashing, bill payment, currency exchange, etc.), which has also been a tremendous success.

Organizational Structure:

Northgate’s Information Technology group is responsible for a variety of services that range from maintaining a help desk to project management and technology applications integration. Northgate has approximately 45 full-time IT employees located within its corporate headquarters

and according to the CIO, IT’s organizational structure is split between two primary functions: one group is focused on ensuring that the business is running smoothly, handling day to day operations, and the other group is focused on finding and implementing innovative ways to grow the business and expand its portfolio. Apart from the staff working within corporate headquarters, another IT group is the store maintenance team, which is a mobile unit that travels to each of the supermarket locations to perform installations and on-site support.

Building Description:

The majority of all Northgate’s IT work is operated out of its Anaheim corporate office/distribution center, which was constructed in 2009. This large, 384,000 square foot, two-story facility was built on a 22-acre site near the 91 and 5 freeways and includes approximately thirty truck docks. The building features a large lobby area at its main entrance, 30,000 square feet of various types of office spaces to accommodate its different departments, a large break room/cafeteria, and an assortment of conference room spaces ranging in capacity size from five to fifty occupants (See Figure 1). The offices were designed to be separate and correspond to different company functions: one wing of the building features HR/IT and the other wing is the business office. Also located at the facility is one of their two data centers. Adjacent to the parking lot, there is a large soccer field and two baseball fields, which are owned by the company and are used to host company events and little league softball games, sponsored by the chain.

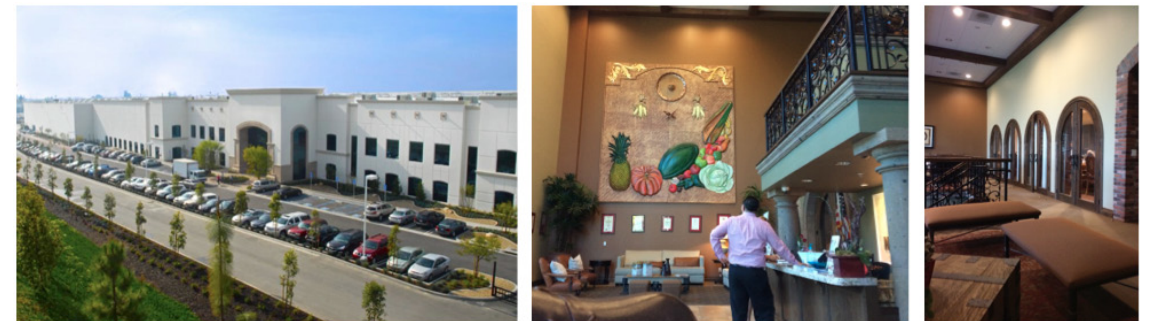


Figure 1: Northgate González Markets Corporate Office/Distribution Center
Source: Fullmerco.com (left) and Authors

Ideal Junior-Level Worker:

The ideal junior-level IT employee was identified by the CIO as an IT Desktop Analyst with nearly five years of experience at Northgate Markets. He started working with the company after moving to the United States from Mexico, where he received his Bachelor degree in Engineering and Information Systems. He began working at Northgate as a help desk technician, where he learned about the organization, before moving up to desktop support, and now to a systems administrator. The employee described that he was initially attracted to Northgate Markets because he favored the close-knit atmosphere of the family-owned business and that the bilingual atmosphere provided him a smooth transition from his previous work experience in Zacatecas, Mexico.

Workplace Challenges:

Desk Problems:

While Northgate's corporate headquarters are located within a considerably new building that was custom-designed to meet the company's needs, the IT group has already outgrown its small, designated office space. The IT office at Northgate is traditional in design, featuring large cubicles with low-rise dividers, one small private office for the office manager, and a small enclosed space toward the back corner of the office that is utilized as a "lab space" to test out equipment (See Figure 2). However, the IT employee mentioned that the bulky office furniture (cabinets, drawers, etc.) takes up a lot of space regardless of the fact that most IT employees work off of a laptop. Being that the office is located in the building's interior, employees do not have access to windows or natural light, which also contributes to the appearance of confined working quarters.

Office Problems:

The CIO also described that the IT office's workspace design lacked a sense of flexibility. Within the IT office, all employees are expected to work out of an assigned desk; there is no room for collaborative workspaces within the office. Instead, the only shared space is a refreshments table toward the entrance. All group work is conducted out of conference rooms, which are located just outside the IT office and must be reserved in advance. As such, the design of the office is so rigid there is little room for creative use of space or for employees to develop a sense of ownership toward the office.

Finally, the IT employee also mentioned that noise was a significant challenge when working in such enclosed spaces in close proximity to fellow co-workers. He appreciated the fact that his cubicle was positioned in the far corner furthest away from the help desk employees because he felt this allowed him to concentrate on his work better than some of his co-workers.



Figure 2: Northgate IT office and small "lab" space (far right)

Source: Authors

Building Problems:

In addition to the challenges described at the desk level, the distribution of office space within the entire building presents a series of challenges, as well. Most notably are the large underutilized spaces. While areas such as the IT office seem overcrowded and confined, other areas within the Northgate building were needlessly large and appeared empty. This was especially the case in

the entrance lobby and the large ballroom/event space on the second floor.

Hiring/Retention Problems:

The CIO explained that it is difficult for Northgate to find eligible higher-level IT candidates for employment because they do not have the name and brand recognition that people associate with high technology. Consequently, Northgate has to put forth a great effort to leverage recruiters.

Positive Workplace Attributes:

Despite the challenges associated with the physical workplace, both the CIO and the junior employee described a number of positive characteristics that have enriched their experience in working for the company. First, the CIO explained that proximity to the business offices has been a tremendous asset. Several years ago, the company moved the division of IT staff that is focused on "growing the business" from the IT office over to the business office side of the building and he believes this has been successful in that it allows these employees to be more closely integrated with the day-to-day business decisions. Additionally, the CIO believes this relocation conveys a larger message to the rest of the company: that the company is interested in utilizing technology beyond the more traditional IT functions as a means to expand the business and help it grow. Similarly, the IT employee described that the corporate office's co-location with the distribution center is beneficial because it allows for a lot of interaction between the suppliers and the buyers.

The location within Anaheim was not considered to be a deterrent for employees. According to both the CIO and the employee, the office's location is an advantage due to its proximity to the freeway system. They have employees that commute from a wide range of areas (Sherman Oaks, Glendale, Mission Viejo, etc.) and all have grown accustomed to the long commute. Instead, one of the primary attractors to working at Northgate seems to be Northgate's close familial atmosphere, its cultural vibrancy, and an alignment with the overall mission. Upon entering the office, there is no doubt that this is a bilingual/bicultural atmosphere that takes pride in its Mexican roots and celebrates its growth as the quintessence of the American dream. Family portraits and murals hang on the walls, cementing the establishment as a family-owned corporation. In turn, employees seem to identify with the company's ideals and background and in cases such as that of the IT employee, feel comfortable and welcome working here. Others such as the CIO also mentioned that potential employees usually grow very interested in working for the company once they learn of the company's mission statement and its opportunities toward growth.

JET PROPULSION LABORATORIES CASE STUDY

Headquarter Location:	Pasadena, CA
IT Budget:	~\$150 Million
Number of Employees:	5,000 Full-Time (300-350 IT)
Interview Date:	January 20, 2015
CIO:	James Rinaldi

Organizational Structure:

NASA's Jet Propulsion Laboratory (JPL) is a federally funded research and development center that designs, builds, and operates robotic planetary spacecraft. Information Technology at JPL is responsible for providing enterprise services for all IT systems and infrastructure. This includes everything from network management to application development and integration of new technologies. In this sense, a major component of IT at JPL is service oriented. IT employees work on developing capabilities such as file sharing, file security, and internal communication.

While IT at JPL was once centralized in an offsite facility located nearly a mile away from the main campus, the majority of the IT workers are now decentralized and split between these two locations and off-site employees are shuttled to and from the main campus for meetings or other occasional visits. There are approximately 300-350 IT workers at JPL and an additional 200-300 contractors working on any given day.

Building(s) Description:

The JPL campus is located on 177 acres nestled between the mountains in La Cañada Flintridge, just outside the city limits of Pasadena. The spatial distribution of the campus resembles that of a college campus; several of the main administrative buildings run along a main pathway (referred to as "the Mall"), and others are scattered across the grounds and vary in size and style. Most of the buildings are very old and have inconsistent layouts. As a result, the facilities team has to make do with whatever space is available, often leaving IT offices in left-over spaces in a variety of buildings. There are pockets of open space and small plazas located throughout the campus and the aforementioned "Mall" is a popular gathering space for employees. The rest of the campus is less pedestrian-oriented. Instead, there are wide, hilly streets running across the campus that are heavily trafficked by large trucks and shuttle vans. With regard to access to building programs, JPL does have a main cafeteria (with restricted hours) and there is wireless internet throughout the entire campus.

Ideal Junior-Level Worker:

The ideal junior-level IT workers, as identified by the CIO, were a data scientist/software engineer and an operations engineer who began with six to seven years of experience working for JPL. Both employees had the opportunity to work for other companies for higher pay but were attracted to Jet Propulsion Laboratories because of the projects and the potential work they would be contributing to. They were attracted to the people and the culture of a high-energy research

lab and found the close-knit, like-minded community very welcoming.

Workplace Challenges:

Building Problems:

One of the primary challenges of Jet Propulsion Laboratory's large campus is that it can be extremely confusing to navigate. In fact, the campus has even gained a bit of notoriety for its haphazard composition of space amongst its staff. While most large institutions tend to name their buildings, JPL buildings are referred to by numbers, which correspond to the order in which that building was funded. The result, as one employee once put it, is "chaos." For instance, building 167 is positioned between building 180 and 264. Further complicating this challenge is the fact that the campus is constantly expanding and buildings or small trailers are frequently being constructed or re-allocated to accommodate for the laboratory's growth. According to the CIO, this is part of a steady trend in which JPL purchases or builds new spaces and struggles to consolidate. As he described, "Once you have space, you don't want to give it up."

The decentralized nature of the JPL campus also brings about other more serious issues of concern with regard to worker satisfaction and overall involvement with the organization. Despite the fact that the CIO said that the distance between offsite and onsite IT workers did not affect day-to-day work, he understood that it was evident that the decentralized nature of IT work leads to disconnect between the workers. This was particularly evident in workers in the off-site building. One staff employee mentioned that this disconnect is so strong, that sometimes when his family comes to visit and ask about his work and JPL's current missions, he cannot answer them. He is so focused on his own work that he loses insight into the institutions larger projects and works. For IT staff working closely with engineering teams on missions within the main campus, they experience the problem of struggling to re-assimilate to the IT office group after a long mission.

Desk Problems:

JPL's CIO observed that IT consistently struggles with the challenge of having limited office space. The CIO mentioned that his department has worked with Facilities in the past to create functional workspaces. Spaces like "The Google Room," which allows for open collaboration or a library space called "The Hub" break the conventional cubicle/desk platform. However as the organization gets strapped for funding and space, yet continues to expand, Facilities has effectively removed these collaboration spaces and has slowly begun to convert them back into cubicles. This was the case in the Google Room at the off-site facility.

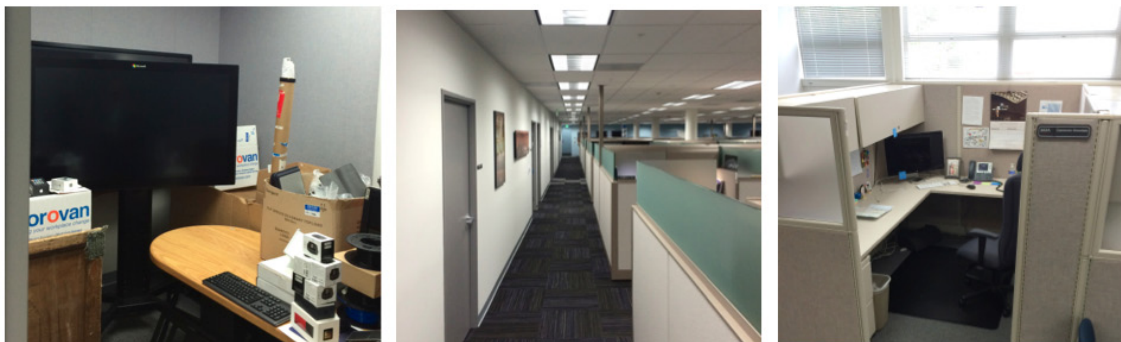


Figure 1: Various IT Office Workspaces at Jet Propulsion Laboratories

Source: Authors

Additionally, the IT employees mentioned issues of concern that are typical of most cubicles. They described that there is a tremendous lack of natural light that, dated furniture, tight spaces with a considerable amount of clutter, and issues with noise and concentration (See Figure 1). One employee explained that he prefers not to work in his designated office space because of the poor lighting, the fact that it is isolated from other IT offices, and that there is a badge reading door nearby that causes a lot of difficulty in concentration. Instead, he prefers to drift from work area to work area (the Mall, the cafeteria, etc.) and prefers to take advantage of the good weather and work outdoors whenever possible.

Work Problems:

In addition to some of the physical workplace challenges at Jet Propulsion Laboratory, the organization also suffers from the challenges involved with clear generational gaps in the workforce. The CIO explained that he has noticed that the older age brackets prefer to keep their personal offices (a typical symbol of seniority), while newer employees are in favor of collaborative workplaces and open floor plans. He believes that this might be due to the fact that younger employees may never have had the experience of working in a private office but in any case, with the advent of open software technology and easy access cloud data, the desk and the office might no longer be sustainable.

Positive Workplace Attributes:

Although Jet Propulsion Laboratory does face significant challenges with regard to IT workplace design, the CIO and the IT employees did described a number of positive workplace attributes that improve the quality of the work experience, overall. First, JPL does not have any problems in attracting or retaining top talent because it is a highly recognized research organization. Employees here are able to overlook any shortcomings of office design when they are excited about the projects they are working on and the teams they are working with. Second, many employees were fond of the openness of the JPL campus and the easy access to the surrounding nature and open space. Employees enjoy the time they can spend outside in the ideal Southern California weather.



Figure 2: Presence of Tech Culture at Jet Propulsion Laboratories

Source: Authors

Apart from this, one of the primary attractors of top talent at JPL is undoubtedly the tech culture that exists within the organization, which the CIO described as being both “creative and academic.” To further establish worker networks, JPL has several clubs on campus including an environmental club and an employee recreation club that organizes regular team events for a variety of sports including golf, softball, and cycling. Occasionally, the organization hosts talent competitions for its employees.

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