Paper Title: “Integrating High Technology Knowledge Work Environments into Communities through Purposeful Design”

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Abstract:
As many technology firms have experienced significant success and growth in recent times, their directors have expanded facilities to accommodate needed new employees and supporting infrastructure independent of the wider community within which they are located. While these representatives and their design professionals are attempting to create "knowledge" work environments that maximize the time their respective workforce members are together and related opportunities for creative and innovative interactions, the result can be a large single land-use area not integrated with the wider community. This single use approach and lack of wider community integration can result in a number of negative impacts, including increased traffic congestion and a lack of adequate local, affordable housing. And, at many of these insular and single-use work locations, employees’ needs from food service to grocery purchases to dry cleaning services and beyond are being provided on-site by the employer. The fundamental design of these work environments and the approach to providing for the needs of the employees inhibits the integration of these work environments with the wider community within which they are located.

The City of San Bruno on the San Francisco Peninsula is working with representatives of YouTube, a very successful and rapidly growing video streaming and social media firm, to address that firm's expansion needs. The firm has acquired nearly 1 million square feet of existing office space near its leased headquarters building in San Bruno and desires to intensify by more than tripling the square footage in the same land area within a campus environment over the next twenty years. The current employment population is approximately 2,000 and is expected to triple over the same period of time.

The paper researches the issue of the integration of high technology workplaces within other communities and presents lessons learned. The paper also describes San Bruno's efforts and achievements to address YouTube's expansion objectives while integrating this employment center into the community and, at the same time, attempting to address traffic congestion and housing impacts.
The corporate campus has become a desired setting for high technology firms seeking to create “knowledge” work environments to facilitate innovation and higher productivity. Oftentimes, though, these corporate campuses are not well integrated with the communities within which they are located causing a variety of impacts, including impacts to traffic congestion and the availability of local, affordable housing. This paper focuses on examples of this pattern of development in the San Francisco Bay Area, although drawing from other regions as well, and offers observations and lessons learned from the related research to help communities working with this type of development to reduce its impacts and improve its sustainability and overall integration with the community within which it is located.

San Francisco Bay Area

The San Francisco Bay Area is well known as a hub of innovation and the home of Silicon Valley. As high technology firms continue to settle and grow within this region there is much discussion about the pattern of high technology development and its impact on the livability of the region. This discussion has become particularly urgent with the economic expansion in the San Francisco Bay Area since 2010 and the related recovery from the previous period of the Great Recession.
Figure 1. The Nine County San Francisco Bay Area

The San Francisco Bay Area is comprised of nine geographically connected counties (See Figure 1), 101 cities, a land area of approximately 4.4 million acres and a total population of 7,150,739 in 2010, growing to 7,461,400 in 2015, and projected to be 7,786,800 in 2020, according to the Association of Bay Area Government’s (ABAG’s) Projections 2013 report. This same report summarizes job growth in the Bay Area starting at 3,385,300 in 2010, growing to 3,669,990 in 2015, and projected to be 3,987,150 in 2020. This expansion has been largely led by the technology sector. Professional/Management and Health/Educational are two of the leading job growth areas identified in the Projections 2013 report. These categories relate to the technology sector that includes the fields of software development, social media, and biotechnology. A July 2017 report by the Center for the Continuing Study of the California Economy indicated that California at $2.6 trillion GDP is the sixth largest economy in the world, just behind the United Kingdom and just above France. Since 2010, job growth within the Bay Area has far outpaced the construction of new housing, resulting in on-going soaring housing costs and traffic congestion as individuals travel ever further distances from this employment center seeking affordable housing. As an example of this jobs/housing imbalance, it was reported in the Spring 2017, Indicators Report Sustainable San Mateo County, that from 2010 through 2015 in San Mateo County, one of the Bay Area’s nine counties, that 64,531 jobs were created and only
3,844 housing units built. Additionally, this report indicates that during the same period median income increased by only 8%, while average market rents increased by 49%, median home sales prices increased by 52%, and annual household income spent on transportation increased by 17%.

As many technology firms have experienced significant success and growth during this period of expansion in the Bay Area, their directors have expanded facilities to accommodate new employees and supporting infrastructure. Often this expansion has occurred without integration or addressing impacts to the wider communities within which the firms are located. While these representatives and their design professionals are attempting to create “knowledge” work environments that maximize the time their respective workforce members are together and related opportunities for creative and innovated interactions, the result can be a mostly single land-use area campus environment that is not well integrated with the wider community. This single-use approach can result in a number of negative impacts, including increased traffic congestion and the reduced availability of local, affordable housing. And, at many of these high technology work locations, employees’ needs from food service to grocery purchases to dry cleaning services and beyond are provided on-site by the employer. The fundamental design of these work environments and the approach to providing for the needs of the employees can further inhibit integration of these work environments with the wider community within which they are located.

The City of San Bruno, a community in San Mateo County, one of the nine Bay Area counties, is working with representatives of YouTube, a very successful video streaming and social media firm, to address its expansion goals and objectives. San Bruno, a city of about 5.5 square miles in land area and 43,000 residents, is located approximately 12 miles south of San Francisco. YouTube has its corporate headquarters in San Bruno, having leased about 195,000 square feet of space in San Bruno’s Bayhill Office Park about 10 years ago, then expanding into another approximately 200,000 square feet of existing office space on two parcels in this office park over the past couple of years, and, more recently, acquiring another six parcels improved with about 700,000 square feet of additional office space. Representatives of YouTube have contacted City of San Bruno staff and officials about their desire to create a campus comprised of their acquired parcels within the existing Bayhill Office Park to accommodate the firm’s expected workforce growth in this area over the next 20+ years. The firm’s current workforce population in San Bruno is approximately 2,000. Development capacity and workforce population could triple during the proposed 20-year planning period at this location. The City of San Bruno has requested and YouTube representatives have agreed to participate in and fund a comprehensive Specific Plan effort to consider the firm’s proposed campus plan in the context of other property owner interests in the Bayhill Office Park and surrounding area as well as broader community interests.
Why Corporate Campuses?

Corporate campuses are not a new phenomenon. With the rise of the suburbs in the latter half of the 20th century, many firms moved to campuses away from what was viewed at that time to be an undesirable mix of land uses and congestion in the inner city and to be closer to employees who already had relocated to the “more desirable” suburbs. In the September 2016 edition of The Urbanist published by the SPUR organization, the topic of “Rethinking the Corporate Campus” was featured in that publication. It included a reference to Louise Mozingo’s book on the suburban workplace titled, Pastoral Capitalism: A History of Suburban Corporate Landscapes, in which she describes three distinct types of suburban landscapes:

- **The corporate campus**, modeled on university campuses, which helped lure top-notch researchers from academic settings into buildings set in parklike grounds meant to facilitate collaboration and creativity;
- **The corporate estate** which provided a headquarters for the top management of major companies, set in vast landscapes designed to convey power and prestige; and,
- **The office park** which was built by developers to house numerous smaller companies or branch offices, who could lease, buy or build to suite one or more buildings with a desirable suburban character.

The “corporate campus” and the “office park” are the two primary workplace settings that have been developed in the Bay Area. The corporate campus being more compact and occupied, typically, by a single firm, whereas the office park being more dispersed and occupied by multiple firms. The Facebook headquarters in Menlo Park, formerly occupied by Sun Microsystems, is a good example of a corporate campus (See Figure 2).

![Figure 2. Facebook Headquarters, Menlo Park, California](image)

The Apple headquarters in Cupertino, with individual buildings identified by monument signs mixed, generally, with buildings in the vicinity of other firms is an example of the office park environment (See Figure 4).
Figure 3. Present Apple Headquarters

Figure 4. Dispersed Apple buildings in Office Park setting in the vicinity of the Apple Headquarters

There is a tendency for firms to start out in an individual building, perhaps in an office park setting, and as they grow and require more space for their employees and supporting infrastructure they acquire more building space through lease or purchase. This space, i.e., buildings, can be dispersed and become increasingly inconvenient and not efficient for
communication and collaboration which are at the foundation for today’s standard corporate competitive objectives of innovation and creativity.

Apple co-founder, Steve Jobs, made this case as he pitched his proposed new Apple Park campus in Cupertino to that community’s City Council on June 7, 2011. He mentioned the Apple workforce was dispersed among approximately 100 buildings in Cupertino and he envisioned significant growth for the firm as well as a need to consolidate his employees to facilitate their ability to better communicate and collaborate and be more innovative and creative. His vision was the Apple Park campus, a single-use, 2.8 million square foot circular facility with an expansive interior common area, heavily landscaped, that could support a workforce of between 12,000 and 13,000 employees at one location (See Figure 5). The “spaceship”, as he named it, is anticipated to be completed at the end of 2017, with an expected workforce of 12,000 individuals.

![Figure 5. New Apple Park Campus – “Spaceship”](image)

The scale of Apple’s growth has been phenomenal; however, this progression from start-up, to multiple dispersed facilities, to consolidation for the purpose of increasing efficiencies and to improve communication and collaboration to facilitate innovation and creativity is not uncommon. Amazon, Apple, Facebook, Google, and YouTube are but a few examples of this progression. For many of these firms, the concept of creating a “knowledge” work environment is particularly important to their continued success, and a campus environment supports this objective.

**What are Knowledge Work Environments?**

In his book titled, *The New Geography of Jobs*, author Enrico Moretti discusses the concept of “human capital externalities,” stating the following:

“…this concept [human capital externalities] is at the heart of modern economic growth theory, the study of what determines a country’s economic success. Researchers have built sophisticated mathematical models showing that sharing knowledge and skills through formal and informal interaction generates significant knowledge spillovers. These knowledge spillovers are thought to be an important engine of economic growth for cities and nations. In a famous 1988 article,
the Nobel laureate Robert Lucas argued that these spillovers may be large enough to explain long-run differences between rich and poor countries. His explanation was that when people interact, they learn from each other, and this process makes those who interact with better-educated peers ultimately more productive and creative.

It is this concept of increasing the opportunities for knowledge spillovers and the associated benefits of greater productivity and creativity that has become a driver for locating and designing modern technology (i.e., innovation) sector workplace settings. These workplace settings that purposefully encourage knowledge spillovers are referred to as “knowledge” work environments.

Further, Moretti states that “[t]he rise of the innovation sector is associated with an increase in the value of talent…In the twentieth century, competition was about accumulating physical capital. Today is about attracting the best human capital.” In regard to globalization and technological progress, Moretti states, “[r]emarkably, the same two forces that have caused the demise of the blue-collar jobs are now fueling the rise of jobs in the innovation sector.” Additionally, Moretti states that “[i]n most innovative industries, the main production costs are the fixed costs of research and development. The variable costs of production are typically low.” As the entry for users (customers) in many of the technology businesses, e.g., social media, can be significant in terms of number, profits can be substantial because of the relatively low variable production costs, with the fixed main production costs being spread over an ever-increasing number of customers. Nevertheless, maximizing knowledge spillovers can keep research and development costs down and help to maximize profits. And, in addition to setting and design, talent is a key aspect to increasing knowledge spillovers.

Descriptions and Observations of a Range of Technology Sector Workplace Settings/Campuses

A number of corporate workplace settings were visited within the San Francisco Bay Area and beyond this area as part of the research for this paper to observe and better understand workplace setting design options and the implications of those options. Variations on the corporate campus and the office park were observed during the site visits. Many of the corporate entities were purposeful in wanting to select settings and design features to create “knowledge” work environments to facilitate creativity, innovation and higher productivity. Many of these workplace settings were not well integrated with the communities within which they were located, resulting in negative community impacts. The following workplace settings were visited during as part of the research for this paper: Amazon (Seattle, WA); Apple, 1 Infinite Loop (Cupertino, CA); Apple Park (Cupertino, CA); Facebook (Menlo Park, CA); Google (Mountain View, CA); UCSF Mission Bay (San Francisco, CA); and YouTube (San Bruno, CA).
Descriptions and Observations of Surveyed Workplace Settings/Campuses

AMAZON

Figure 6. Amazon’s facilities are integrated into Seattle’s urban fabric

Figure 7. Amazon’s amenities are available for shared public use
Description: Amazon was founded in 1994 by Jeff Bezos, an American technology and retail entrepreneur and investor. Amazon offers an internet sales site, Amazon.com, at which a broad range of products can be bought and sold. In 2005, the company made a conscious decision to invest in downtown Seattle, the South Lake Union neighborhood, to create an urban campus where it would consolidate its regional workforce. The campus was created by redeveloping a declining area of downtown Seattle, while maintaining a standard urban street grid with a streetscape featuring attractive landscaping and green infrastructure, bicycle racks, benches, public plazas and gathering areas, on-street parking, including back-in angle parking for cars; multi-story buildings; and mixed land-uses (See Figure 6). The buildings not only accommodate offices and facilities to support Amazon operations, but other land uses are mixed in as well, including cafes and restaurants. These other uses are not only used by Amazon employees, but members of the general public. There are few signs visible from the public right-of-way that identify Amazon as the primary occupant of this area of Seattle’s downtown. Essentially, the fabric of Amazon’s campus replicates a standard downtown pattern of development. Amazon has invested approximately $4 billion in Seattle’s downtown since 2005. Amazon’s workforce in downtown Seattle is presently about 25,000, and may grow to approximately 55,000 by 2021. There have been many benefits to both its employees and the wider community of Seattle as a result Amazon’s decision to consolidate its regional workforce in downtown Seattle. These benefits include the following:

- a significant contribution to the local job base
- 15% of the workforce lives nearby in the same zip code
- 20% of the workforce walk to work
- employees have convenient access to public transit, housing and a broad range of goods and services
- investment in and redevelopment of a declining area of the downtown
- increased property taxes, sales taxes and other revenues associated with the redevelopment to the City of Seattle
- new buildings that are sustainably designed and energy efficient
- plazas and pockets of open space available for public use (See Figure 7)
- a corporate sponsored street car as part of overall street car network
- corporate sponsored street faires, fireworks and various events for wider community enjoyment
- a partnership with the City of Seattle to provide assistance to homeless families

(Source: Wikipedia)

Observations: Amazon’s downtown urban campus offers direct integration with Seattle’s downtown and nearby areas, with convenient access to transportation, housing and nearby commercial uses and services and urban amenities, including parks, libraries and schools, for employees. Community benefits include shared use of facilities and improvements, tax revenues, and corporate partnerships.
Description: Steve Wozniak and Steve Jobs formed Apple Computer in 1976 and built their first computer in Jobs’ garage that same year in Cupertino, California. Apple Computer went public in 1980 for $1.3 billion. Over the years, the firm has introduced many cutting edge electronic products including the Macintosh computer for desktop publishing, the iPod for downloading and listening to music, the iPad a compact device for social media access and computing, the
iPhone, and various generations of computers. In 1993, the firm had a headquarters and research and development complex constructed in Cupertino (See Figure 8). This complex was comprised of six buildings on a street named Infinite Loop. The buildings are identified as IL1 – IL6. The name is related to the computer programming concept of the infinite loop. The six buildings comprise 850,000 square feet of space, occupied by approximately 3,000 employees. This complex is in an office park workplace setting. Presently, Apple has over 16,000 employees in Cupertino dispersed in over 100 buildings that it primarily leases. The core headquarter complex of six buildings at 1 Infinite Loop includes a retail store that offers the public an opportunity to view, use and purchase many of the firm’s products; otherwise, the facility is secured and public access is restricted. The firm offers bicycles, shuttles, and bus service (motorized transport) to transport employees among various building locations and to assist with their transport to and from work. (Source: Wikipedia)

Observations: Apple’s commitment to Cupertino has had benefits, but its pattern of development has had negative consequences as well. The benefits include a significant contribution to the local job base, revenues to the local community including property and sales taxes, and corporate sponsorships. The negative impacts include a dispersed workforce not well-connected to transit, housing and commercial uses and services and public amenities.

APPLE PARK

Figure 10. Apple’s new headquarters facility at Apple Park, Cupertino, California, will be inward facing with a secured perimeter

Description: On June 7, 2011, Steve Jobs, the co-founder of Apple Computer Corporation, spoke to the Cupertino City Council about his vision for a new campus - “…a verdant landscape where the border between nature and building would be blurred. He indicated that he found most corporate campuses boring and that his campus would have a structure as the centerpiece shaped like a circle that would house approximately 12,000 employees. He stated, “it’s a pretty amazing building; it’s a little bit like a spaceship.” Steve Jobs intended that this campus would
be the home of innovation for generations. Jobs indicated to the Cupertino City Council that Apple had employees dispersed among at least 100 buildings in the Cupertino area and that the 2,600 employees at the Infinite Loop campus would stay there, but others would be consolidated into the proposed new campus.” (Source: *Apple’s New Campus: An Exclusive Look Inside the Mothership*, by Steven Levy, *Wired.com*, 5.15.17). The City Council endorsed his vision for a new campus. At the time, Steve Jobs was quite ill; he passed away four months later in October of 2011. Toward the end of this year, 2017, Steve Jobs’ vision for a “spaceship” campus should be realized and ready for occupancy by its 12,000 employees.

The “spaceship” campus, currently under construction, is commonly referred to as Apple Park. A summary description of Apple Park is as follows:

- 175-acre single-use campus
- 2.8 million square foot primary structure, one mile in circumference, four stories high, with circular design and open at the center
- operated on 100% renewable energy sources (e.g., solar), with grid as back up
- 80% of the campus to be vegetated; includes 9,000 trees
- cafes for employees with seating capacity for 3,000 people at a single seating
- 100,000 square feet of wellness and exercise facilities
- parking for approximately 11,000 vehicles accommodated by a combination of below ground and above-ground parking garages, not to exceed four stories in height
- 1,000 seat auditorium
- 1,000 bicycles
- budget of $5 billion; land cost of $160 million

(Source: Wikipedia)

**Observations:** Apple Park is being designed as a secured, inward facing, single-use campus on 175 acres of land. The facility lacks a direct connection to public transit; in fact, the large number of parking spaces proposed, approximately 11,000, suggests that single-occupancy vehicle transport will be the primary source of access to the campus. There is a conscious effort with this design to facilitate internal connections among staff members with multiple on-site dining options, 100,000 square feet of wellness and exercise facilities, a 1,000-seat auditorium, and a large interior circular quad. However, the external connections to the wider community are limited and, typically, would require auto transport. Provision of housing opportunities and connection to public transit are non-existent or particularly lacking with this design. While on-site facilities are powered with renewable resources, the single-use, insular design of the campus with its lack of integration with the wider community and transit make it extremely auto dependent and not the model of energy efficiency it could be.
Figure 11. The single-use Facebook headquarters facility in Menlo Park, California, offers its employees motorized transport to reduce single-occupancy vehicle trips and greenhouse gas emissions.

Figure 12. The Facebook headquarters facility in Menlo Park, California, features direct connections to the San Francisco Bay Trail, as an amenity and transportation option for its employees.

Description: Facebook formally launched in February of 2004. It was founded by Mark Zuckerberg and his Harvard University roommate Eduardo Saverin. By September of 2006, it was available to everyone 13 years of age or older who had a valid email address. There is no longer the age restriction. (Source: Wikipedia) During the month of March of 2017, Facebook reported 1.94 billion monthly active users.
Facebook moved to Menlo Park in 2011 and completed its 57-acre corporate campus in 2012. The core of this single-use campus facility is comprised of 11 buildings, totaling 1,022,088 square feet of space. The campus buildings have secured and guarded entries and surround an interior commons area. Surface parking surrounds the exterior perimeter of the buildings. On the northern edge of property is a fully enclosed gym and fitness facility, outside basketball courts, a climbing wall, and soccer field for employees. A transit center is located on-site adjacent to the core buildings, offering employees motorized transport (bus service) to access their workplace from various locations within the San Francisco Bay Area to reduce single occupancy vehicle trips and greenhouse gas emissions (See Figure 11). In addition, Facebook offers bicycles and shuttle buses to move its employees to and from its various facilities and locations in the area of its campus. The transit center is on the edge of San Francisco Bay wetlands and the San Francisco Bay Trail, a 500-mile long trail that is planned and mostly completed to encircle the Bay, connecting multiple counties and cities within the region (Figure 12). There are direct connections to the San Francisco Bay Trail from the Facebook campus, which provide a substantial amenity to employees for viewing and enjoyment of the nearby Bay wetlands and associated wildlife, exercise by walking or jogging, and/or bicycle transportation to this workplace location.

Facebook is expanding its headquarters’ campus to be known as the Willow Campus. The goal of the Willow Campus is to create an integrated, mixed-use village that provides needed housing, convenient services, transit solutions, as well as additional office space. The planned expansion includes 125,000 square feet of new retail space, including a grocery store, pharmacy and additional community serving retail uses and services. The proposed expansion also includes 1,500 housing units within the campus area, 15% of these units would be offered at below market rates. Facebook has also partnered with local community groups to form the Catalyst Housing Fund to finance affordable housing within the local area. Facebook’s initial contribution to the Catalyst Housing Fund is reported to be $18.5 million. Additionally, Facebook is contributing millions of dollars to help improve the immediate highway system, U.S. Highway 101. Also, the firm is very involved with partnering opportunities to support and integrate with the surrounding community. Examples of these partnering opportunities include hosting farmers’ markets; offering volunteers to work with local non-profits like Rebuilding Together which helps those in need to rehabilitate their homes; and, summer internship programs. (Sources: Facebook Website; City of Menlo Park Website)

Observations: Facebook is expanding its perspective on the way it plans and implements its corporate campus workplace setting development. Instead of focusing mostly inwardly, as it did initially coming to Menlo Park with its headquarters campus, it is demonstrating through its Willow Campus expansion an understanding of the broader impacts of its campus development on the local community and region and the need, benefits, and responsibility to better integrate with the community and region within which it is located. Mixing land uses to include housing (with approximately 15% affordable housing units) as well as retail services in addition to office space; connecting with the wider community street grid to improve mobility and transit connections; and, meaningful partnerships from internship programs to local volunteer programs to multi-million dollar investments to improve roadway systems and provide for needed, local affordable housing are examples of how Facebook is addressing the need, benefits, and responsibility to better integrate with the community and region within which it is located.
These examples not only benefit the wider community but Facebook employees, as well, in terms of more housing opportunities, more convenient services, better connections to transit, and the sense of a more meaningful and deeper connection to the local community.

**GOOGLE**

![Android Statue at Google Headquarters](image)

*Figure 13. Google's famous Android welcomes employees and visitors alike to its headquarters building in Mountain View, California*
Figure 14. Designers of Google’s main campus facility, “Googleplex” (formerly the Silicon Graphics facility), provide a smooth transition from this campus to the adjacent city-owned Charleston Park

Description: The corporate headquarters campus of Google, Inc. and its parent company Alphabet, Inc., is referred to as Googleplex. This campus is located in an office park workplace setting in Mountain View, California (See Figure 14). Google was founded in 1998 by Larry Page, Sergey Brin, and Eric Schmidt. In addition to the Googleplex site, which has approximately 2,000,000 square feet of office space with supporting workplace infrastructure in multiple buildings, Google has purchased or leased additional buildings, totaling another more than 1,000,000 square feet of space nearby in Mountain View. Additionally, Google is in the process of building a new “futuristic” headquarters building in the area that would add another 595,000 square feet of space. This approved new building will be 110 feet high with a scalloped canopy roof design. Solar panels are proposed to be tiled into the canopy and a walking path is proposed to extend at ground level to and through the building.

The focal point Googleplex corporate campus is located within a larger 26-acre site that contains Charleston Park, a 5-acre City of Mountain View public park, and the Permanente Creek corridor that includes public-use bicycle and pedestrian pathways which extend to the San Francisco Bay Trail. Both Charleston Park and Permanente Creek are important and well-used public amenities. Google acquired and re-purposed this site in 2003-04 from Silicon Graphics (SGI). The SWA Group, Landscape Architects and Land Planners, of San Francisco and Sausalito,
California, had worked with SGI to prepare a development plan for the site that would develop a private corporate headquarters site in a manner that would blend with the adjacent public open space areas. Important design decisions were made to place parking for approximately 2,000 cars underground and to seamlessly connect to the public open space areas with plazas, pathways, cascading fountains, and shallow pools. These design decisions provide well-integrated edges and the opportunity for some measure of shared use of adjoining areas. The SGI project was completed in 1997, and the SWA Group was awarded the American Society of Landscape Architects (ASLA) Centennial Medallion in 1999 for this design and, in particular, for how the firm addressed the blending of public and private open space in a corporate campus setting.

As Google has re-purposed the site, it has created a work environment that is purposeful but playful. There are multi-colored bicycles for employees to move about the dispersed buildings in the wider office park setting. There are numerous enclaves with relaxed and colorful seating for informal gathering and small groups interaction, conversation, and information sharing. Google offers many amenities to its employees including motorized transport (bus service) to bring employees to its various employment locations throughout the Bay Area, fitness centers and swimming pools, multiple cafeterias and free laundry rooms and haircuts. Approximately 30% of its energy needs are served by solar energy. As of June 2013, it was reported that there were approximately 11,332 employees at Googleplex. (Source: Wikipedia)

“As Google has continued to expand beyond the Googleplex, and there have been ever greater concerns about traffic congestion and rising housing costs in Mountain View and surrounding areas, Google has been working with the City of Mountain View on its future expansion plans and proposing to include as many as 10,000 housing units in those plans to help address housing impacts. However, the number of housing units could be reduced to as few as 1,500, as the City of Mountain View seems uncertain how to address the impacts of this ever-growing member of its community.” (Source: The Mercury News, June, 2017)

Observations: Similar to most of its high technology business counterparts, Google expends considerable focus and resources on creating a workplace setting that encourages informal interactions and information sharing among its employees. Dispersed informal seating and gathering areas, multiple food service locations, fitness facilities, and motorized transport are all examples of opportunities for informal sharing. The amenity rich environment not only facilitates information exchange and presumably increased creativity and innovation, but, in addition, offers incentives to attract and retain talent. Use of renewable energy, i.e., solar, is emphasized within the work setting. The Googleplex blends well with a local public park and a creek corridor that become available for active transport, walking and biking, and shared use. Placing vehicle parking below ground provides a much more connected and pedestrian- and bicycle-friendly campus environment. Overall, the campus is friendly and inviting with its colorful bicycles and seating and welcoming Android figure. Google is well-known for corporate sponsorships to assist with and/or hold community events as well as offer technology for local classrooms.

Challenges observed include a lack of direct connection to public transportation and its location being within a generally single-use office park environment. Housing and basic commercial uses
and services are not convenient. Motorized transport and Google bikes are attempts to address this lack of adequately mixed land uses and a direct connection to public transportation.

**UCSF MISSION BAY**

Figure 15. The UCSF Mission Bay Campus/Office Park includes the UCSF Medical Center, the Kaiser Permanente Hospital and multiple medical and biotechnical research facilities
Description: In 2003, UCSF opened Genentech Hall, the first building on its San Francisco Mission Bay campus. Since then, the campus and surrounding area have grown into an expansive and vibrant biotechnology hub that includes numerous biotechnology research institutes and firms as well as the UCSF Medical Center, which opened in 2015, and a Kaiser Permanente Hospital facility (See Figure 15). The UCSF Medical Center is a 289-bed integrated complex with specialty hospitals for children, women, and cancer patients. The campus is integrated into a redeveloping area of San Francisco, with direct access to public transit and nearby existing and developing housing opportunities, commercial uses and services and public amenities (See Figures 16 and 17).
Overall, this Mission Bay area of San Francisco had a broad-range of warehouses in poor repair as well as outdated land uses and structures. Generally, the area was in decline and need of revitalization. Today, it is an area that is gaining recognition for health science research, patient care and job creation. The recognized campus area is approximately 303-acres in size. The rebirth of the area began with one company in 2003, and, as of 2013, more than 100 bioscience companies have come to the area, many of them start-ups in addition to longstanding and well-known scientific research leaders like the J. David Gladstone Institute. There are a broad range of interests and disciplines coming together in this innovative and creative environment, including venture capital firms teaming up with the bioscience start-ups. (Source: Wikipedia)

Observations: The UCSF Mission Bay campus workplace setting integrates well into a redeveloping area of San Francisco. In fact, it is a very important catalytic influence in the redevelopment of this area. Many varied interests seemed to be achieved with this locational decision for the UCSF Mission Bay campus including the technology sector’s desire for bringing together talent and offering an environment for information sharing and knowledge spillovers and the municipality’s interest in redeveloping a declining area, while creating jobs and revenues. These interests and more are being addressed in a development pattern that is compact; relatively dense; efficiently using water, waste water, road, and other needed infrastructure; directly connected to public transit; bicycle- and pedestrian-friendly, and close to housing, commercial uses and services and public amenities.

YOU TUBE

Figure 18. YouTube headquarters at 901 Cherry Avenue in San Bruno, California
Figure 19. YouTube has expanded its presence in San Bruno including additional facilities at 900 and 1000 Cherry Avenue

Figure 20. YouTube offers motorized transport and electric charging stations as options to its employees to reduce single occupancy vehicle trips and greenhouse gas emissions.

Description: YouTube was created in 2005 by three former PayPal employees – Chad Hurley, Steve Chen, and Jawed Karim. YouTube was acquired in November of 2006 by Google for $1.65 billion. YouTube allows users to upload, view, rate, share, add to favorites, report and comment on videos. YouTube’s primary revenue source from this activity is advertising revenue. As of February 2017, approximately 400 hours of content is uploaded to YouTube each minute, and one billion hours of content are watched on YouTube each day. It is estimated that YouTube has approximately 1.5 billion logged-in viewers visiting the site every month. Logged-in viewers spend more than one hour per day watching YouTube. There appears to be substantial growth opportunity for YouTube as people in the United States watch television for up to four hours per day and television is reported to be the fastest growing medium for consumption of YouTube. (Source: Wikipedia)
Following its acquisition by Google, YouTube moved its headquarters to a building formerly occupied by the Gap at 901 Cherry Avenue in the Bayhill Office Park in San Bruno, California (See Figure 18). YouTube continues to lease this building, which is approximately 195,000 square feet in size, from the Gap. Since approximately 2013, YouTube has purchased eight other parcels, totaling about 40 acres of land, within the Bayhill Office Park in San Bruno. These parcels combined are improved with approximately 900,000 square feet of office space (See Figure 19). Overall, the Bayhill Office Park includes a total of about 1.5 million square feet of office space and 73 acres of land area.

In 2016, YouTube representatives formally approached City of San Bruno staff and officials about their interest in creating a campus within the Bayhill Office Park to connect their properties and to further develop and redevelop them with new and refurbished office space and amenities to meet the needs of their growing workforce over the next 20-year period. San Bruno staff responded that a more comprehensive planning effort would be required to consider not only YouTube’s interests and growth needs, but, in addition, the interests and needs of the other property owners within the Bayhill Office Park as well as broader community interests. City staff proposed preparation of an area-wide Specific Plan to accomplish this objective. YouTube agreed to this approach and is funding the preparation of the Specific Plan. The City of San Bruno is administering this work effort which includes the preparation of a Specific Plan, full Environmental Impact Report (EIR); Fiscal/Economic Study; and an aggressive public engagement effort to include property owner forums, public workshops, stakeholder interviews, an online survey, and public meetings and hearings of the City’s Planning Commission and City Council.

Observations: Immediately west of the Bayhill Office Park, on about 10 acres of land, is a 121,000-square foot neighborhood shopping center, named the Bayhill Shopping Center. The overall “Bayhill Area,” including both the Bayhill Office Park and the Bayhill Shopping Center plus several adjoining parcels, is approximately 89 acres in area. The Bayhill Office Park has sloping topography (approximately a 70’ foot change in grade from east to west), mostly surface parking, wide streets, and, typically, large building setbacks to the street. Its character is that of a suburban office park.

Presently, YouTube occupies three buildings within the office park: 901 Cherry Avenue (195,000 s.f./leased); 900 Cherry Avenue (102,252 s.f./owned); and 1000 Cherry Avenue (94,465 s.f./owned). The City of San Bruno has an ordinance in place that restricts building height to 3 stories and/or 50 feet and no above-ground parking garages. There is considerable surface parking within the office park that potentially could be converted to below-ground parking to allow new development and intensification of use within the office park.

YouTube, similar to the many of the other technology firms surveyed, offers considerable amenities to its employees including motorized transport to and from the work location, food service, laundry rooms, electrical vehicle charging stations, etc. At this time, the firm employs approximately 2000 individuals collectively among the three properties previously described. YouTube proposes with its campus plan to use subterranean parking and, perhaps, triple the amount of its current office space over time, if capacity is available, given environmental
constraints and other property owner and community interests, to satisfy its anticipated
workforce space and supporting infrastructure needs over the next 20 years.

Summary of Observations of surveyed Corporate Campuses (Workplace Settings)

A total of seven campuses (i.e., workplace settings) were surveyed in this paper. The workplace
settings ranged from quite separate and insular within a community on one end of the spectrum
to more fully integrated with the local, host community on the other end. There were gradations
of integration within this spectrum. Apple Park, Cupertino, is the most separate and insular of
the surveyed campuses, while Amazon, Seattle, and UCSF Mission Bay, San Francisco, are the
most integrated. Facebook, with its Willow Campus expansion, which includes housing and
commercial space and connects more directly with the host City’s, Menlo Park’s, grid street
system, is moving from its very separate and insular headquarters workplace setting that is
similar to Apple Park in the direction of being more integrated.

All of the surveyed workplace settings (i.e., high technology firms) offered a broad-range of
amenities to the workforce (i.e., talent) for attraction, retention and information sharing
(knowledge spillover) purposes. Free or subsidized food service, fitness, laundry and
transportation services and facilities were common amenities offered by the various high
technology firms at their campuses. Open work space rather than individual office environments
and informal gathering areas for conversation were common. The amenities support the
employee being more available and present in the workplace, with fewer distractions, so as to
engage with co-workers in the spirit of facilitating work-related communication, sharing of
information, and the associated opportunity for creativity, innovation and related added value to
the firm and its success.

All the campuses, as developed employment centers, added jobs and revenues (e.g., property
taxes, sales taxes, business use fees, etc.) to their respective local communities. And many of the
firms, though Community Benefit Agreements or similar instruments and partnerships, provided
benefits back to their host communities. Examples include Facebook agreeing to build
affordable housing, contributing millions of dollars to an affordable housing fund, and providing
millions of dollars more to local highway improvements as well as Oracle agreeing to host and
sponsor a Technology high school.

A key difference between the workplace settings that are highly integrated with their host local
communities and those that are not is those highly integrated workplace settings like Amazon,
Seattle, and UCSF Mission Bay, San Francisco, are directly connected to and supported by
existing transit and that existing transit system can be more economically and efficiently
expanded, if needed. Additionally, there is the opportunity for nearby housing, commercial uses
and services (e.g., daycare centers) and conveniently accessible public uses and amenities like
parks, libraries, and schools to more conveniently and efficiently serve and support the related
workforces. With those firms and workforce settings that are not highly integrated, there is
greater reliance on motorized transport sponsored by the firm (e.g., Google, Facebook, and
Genentech) to move workers to and from the workplace setting and to other related workplace
settings. Additionally, many workers in these separated workplace settings will use single-
occupancy vehicles for their commute. This is anticipated, for example, with Apple Park where
that 2.8 million square foot facility that is expected to support 12,000 employees is being constructed to have up to 11,000 parking spaces with no direct connection to public transit. Not only is this an issue in terms of adding to existing traffic congestion and greenhouse gas emissions, it does not support day-to-day economic integration of the workforce with the broader community. Moreover, the single-use campus settings add jobs and revenues but no housing to offset the need for the primary workforce nor the spin off support employment generated by the primary workforce.

Another significant benefit with the integrated campus examples of Amazon, Seattle, and UCSF Mission Bay, San Francisco, was the area where the respective campus development occurred in both cases was previously in substantial decline. The commitment to develop campuses in the respective areas was a significant catalyst to much broader development, redevelopment and revitalization. The financial and economic benefits for the individual communities in terms of jobs, investment and revenue generation has been substantial. For example, in Seattle it is reported that Amazon has invested $4 billion in redeveloping a portion of its downtown since 2005. (Source: Wikipedia) This investment decision by Amazon to locate in this area of downtown Seattle exponentially reduced the timeframe for redeveloping this declining area and realizing the associated revenues, jobs and related benefits to the community.

Evolving Case Study of YouTube’s proposal for a Corporate Campus in San Bruno’s Bayhill Office Park on the San Francisco Peninsula

Figure 21. The City of San Bruno and YouTube are embarking on the preparation of a comprehensive Specific Plan to guide YouTube’s proposed campus plan within San Bruno’s existing Bayhill Office Park
Figure 22. Representatives of the City of San Bruno and YouTube as well as the consultant team initiate the Bayhill Specific Plan effort

Figure 23. The Bayhill Specific Plan area includes the Bayhill Office Park as well as the Bayhill Shopping Center, and has direct access from two major thoroughfares – El Camino Real and the eucalyptus-lined San Bruno Avenue West
In May of 2017, the San Bruno City Council selected Dyett and Bhatia, the San Francisco Urban Planning firm, to prepare the Bayhill Specific Plan and related Environmental Impact Report (EIR) and Fiscal/Economic Analysis. The purpose of this planning effort is to consider and address the request of YouTube to create a campus connecting the eight parcels of land it owns within Bayhill Office Park of the City of San Bruno. The Bayhill Office Park is about 73-acres in area, and the broader Study Area identified for the Specific Plan is approximately 89 acres (See Figure 21). In addition to YouTube, there are eleven other property owners within the Bayhill Office Park. The Specific Plan will consider YouTube interests and its campus development objectives as well as the interests of the other property owners in the Bayhill Office Park and broader community interests. Following an initial meeting of City staff, the Dyett and Bhatia consultant team and YouTube representatives in June of 2017 to review and coordinate the anticipated work effort (See Figure 22), the first phase of work on the Specific Plan will involve a public outreach effort to include a Property Owner Forum; a City Council/Planning Commission Study Session; a Community Workshop; and Stakeholder Interviews. The information gathered from these sessions will be used to prepare a Visioning and Guiding Principles document to guide preparation of the draft Specific Plan.

A broad-range of interests will be considered in the Specific Planning process. These interests will include, but not be limited to, the following:

- YouTube’s workforce and support structure growth projections over the next 20+ years and the capacity of the site to support that growth;
- Creating the campus workplace setting that YouTube desires for innovation, creativity and success, based on the development type and capacity determined appropriate for the Study Area in view of the other interests that will be considered;
- The needs and concerns of other property owners in the Bayhill Office Park and immediate area;
- Making sure that the proposed type and pattern of development blends and integrates with the wider community and best satisfies the range of interests identified, including
broader community interests, while addressing possible negative impacts including those related to housing need and traffic congestion; and,

- Assuring appropriate community benefits and partnerships as a result of the Specific Planning process.

Lessons learned from surveyed Corporate Campuses and related research

There were many lessons learned from the site visits to the specified corporate campuses and related research. Key lessons learned are as follows:

- There can be substantial benefits to purposefully integrating a campus, i.e., workplace setting, into the existing fabric of a community. These benefits can include use of existing infrastructure; connection to transit and a related reduction in potential traffic congestion and greenhouse gas emissions; as well as proximity for the workforce to housing, commercial uses and services, and public amenities like parks, libraries and schools. Additionally, there can be associated benefits to and incentives offered by the local community in helping to revitalize an area that has been in decline. The Amazon, Seattle, and UCSF Mission Bay, San Francisco, are good examples of campuses directly integrated into the fabric of a community that are realizing these benefits.

- Local communities can actively guide through land use policy documents, code requirements, and proactive community planning efforts the appropriate siting and development of campus workplace settings to integrate them into the community while minimizing negative impacts related to housing, traffic congestion and fiscal/economic impacts. The Willow Campus expansion of Facebook is a good example of this as the City of Menlo Park has worked with Facebook on its expansion to create a more mixed-use workplace setting with housing, including affordable housing, and commercial uses and services connected to the local street grid system.

- It is important to identify key community amenities and work with the proposed campus design to ensure the campus integrates, supports, and utilizes those community amenities. The Googleplex campus in Mountain View was designed in a manner that a substantial amount of vehicle parking was placed underground and a very open, pedestrian- and bicycle-friendly design was created that seamlessly connects the main campus area with a creek corridor and trail system on the one side and a public neighborhood park on another side of the campus. The Facebook campus also connects directly with the 500-mile long San Francisco Bay Trail.

- Partnerships between the firm(s)/entities associated with the campus and the local community are important. Amazon in Seattle is working with the local community to sponsor transit facilities and help address homelessness. Facebook in Menlo Park is contributing millions of dollars to a fund to address area-wide housing affordability issues and highway improvements.

- Community Benefit Agreements can be used to structure the partnerships between the sponsors of the campuses and the local communities to address the needs and impacts of these developments and to make sure that the local community also directly benefits from the campus developments.

- The objective to create successful “knowledge” work environments within campus settings can occur while integrating with a local community while minimizing negative
impacts. Amazon, Seattle, and UCSF Mission Bay, San Francisco, are good examples of this balancing of interests. Facebook, with its Willow Campus expansion, by including a mix of land uses and connecting to the local street grid system is also a good example of using purposeful design to integrate a campus with a local community to realize the efficiency and proximity benefits of the integration while reducing possible negative impacts, including those in the areas of housing and traffic congestion.

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