A. STATEMENT OF NEED

I. LEADING THE WAY IN INFORMATION & COMMUNICATIONS TECHNOLOGY

The San Francisco Bay Area is known worldwide as the birthplace of the internet-age technology industry, and for decades the region has continued to lead the way in information and communications technology (ICT). Global demand for Bay Area technology products is so great, in fact, that California tops the nation in technology exports, 30% of which is produced just in the Bay Area.[1] In recent years, employment in the city and county of San Francisco has grown at a rate triple the national average,[2] and the technology sector is the primary driver of that astounding growth, with 1,500 companies employing more than 30,000 individuals.[3] In 2015, with the addition of 8,000 ICT sector jobs predicted, the size of the Bay Area's technology workforce will surpass even that of the height of the "dot-com era."[4] Now, with the ubiquity of technology in our everyday lives the Bay Area ICT industry is growing with no end in sight.

II. EMPLOYER NEEDS VS. WORKFORCE READINESS

Research has identified a highly problematic gap between the competencies of the current ICT workforce and the skills employers need to keep pace in this rapidly evolving, innovation-driven industry. In a recent survey of almost 800 ICT employers in California, 93% of respondents cited a meaningful disparity between the existing and desired skill levels of ICT workers.[5] In-depth regional research conducted by four Silicon Valley Workforce Investment Boards (WIBs) indicated that almost two-thirds of employers had difficulty in filling openings for occupations such as computer programmer, quality assurance engineers and project manager.[6] In a series of focus groups led by the San Francisco Office of Economic and Workforce Development (OEWD), ICT employers emphasized the challenge of finding job

applicants with relevant experience and the necessary range of skills that can be used to problem-solve in project-based settings. One focus group attendee summarized the technology skills gap succinctly: "Everyone is seeking a *unicorn* even though we know they don't exist." Given these examples, many employers resort to over-utilization of H1-B visas, despite recognizing the strategy as a short-term "band-aid" solution that is ultimately inefficient and cost-prohibitive.

III. 20ᵀᴴ Century Training Hinders the 21ˢᵀ Century ICT Workforce

Innovation, growth, and change are some of the hallmark qualities of the ICT industry—not only in the goods and services produced, but in the very way businesses operate. Employer needs evolve at a rapid pace, such that within a few years an ICT training program can become almost obsolete. A 2015 report from the Brookings Institute asserts that "the skills prerequisites of modern advanced industries have been changing faster than the country's ability to train the needed workers," and cites the critical need for a new approach: "smart, industry led, sector-specific, regional skills initiatives."[7] Bay Area ICT employers have emphatically called for job applicants to apply a broad array of skills in order to both problem-solve and innovate.[8]

Furthermore, ICT employers in the Bay Area are facing particularly urgent pressure to employ a workforce that reflects the diversity of the region, but are challenged to cultivate a workforce substantially more diverse than current pathways to ICT careers produce. A new approach to ICT training is desperately needed—one that expands access to ICT careers by utilizing accelerated, project-based education strategies that allow individuals to "earn and learn" at the same time, producing workers whose broad-based skills and problem-solving capacity will advance not only their careers, but also the long-term success of the Bay Area's ICT industry.

IV. Employer Needs in a Thriving ICT Labor Market

The Bay Area is home to almost **180,000 jobs in ICT occupations that pay an average of**

$108,000/year, with more than 35,000 new jobs expected to be added by 2022 (Table 2).

Table 2. ICT Occupational Outlook in the Bay Area			
Occupation	**Total Employed[9]**	**Mean Annual Salary[10]**	**Projected Growth[11]**
Information Security Analysts	2,290	$112,095	36.5%
Computer Systems Analysts	21,410	$107,140	24.5%
Software Developers, Applications	53,050	$129,990	22.8%
Computer User Support Specialists	14,140	$73,155	20.2%
Web Developers	5,970	$101,090	20.1%
Computer Programmers	12,480	$99,395	8.3%
Graphic Designers	4,920	$75,650	6.7%

OEWD's extensive and intensive collaboration with ICT employers (described in detail in sections C.I. and C.V), paired with statewide employer research, has led to a deep understanding of these in-demand skills and competencies most critical to successful employment in the ICT industry today, and subsequently has led OEWD to currently offer in-demand training through its many public and private non-profit sector partners. As an example, OEWD provides training and advancement in Computer System Analyst occupational pathways with certifications in Linux, Apache, MySQL, PHP, C++, Ruby and Python, Mobile Application certification, and Cloud Computing; in Computer Support Specialists occupational pathways with CompTIA A+ and proprietary database solution certificates; and in various Graphic Design occupational pathways with Adobe and HTML/CSS certifications. Most of the exciting and lucrative jobs being created, however, are not being filled by local residents because of the pervasive ICT skills gap. A review of the employers in the Bay Area sponsoring the highest number of H1-B visas each year clearly shows an overwhelming representation of ICT companies—14 of the top 20 in San Francisco, including Salesforce.com, Twitter and Yelp, and an overwhelming 19 out of 20 in San Jose, including Ebay and Paypal.[12] Additionally, as Table 3 clearly indicates, *across all industries*, *the occupations most reliant on H1-B visas in San Francisco are in the ICT sector.*

Table 3. San Francisco Occupations Most Reliant on H1-B Visa Workers[13]	
1. Computer Systems Analyst	11. Database Administrators
2. Software Developers, Applications	12. Market Research Analysts/ Specialists
3. Computer Programmers	13. Electronics Engineer, Except Computer
4. Computer Occupations, All Other	14. Electrical Engineers
5. Software Developers, Systems Software	15. Operations Research Analysts
6. Management Analysts	16. Physicians and Surgeons, All Other
7. Accountants and Auditors	17. Medical Scientists
8. Financial Analysts	18. Computer & Information Systems Managers
9. Network & Computer Systems Administrators	19. Web Developers
10. Mechanical Engineers	20. Biochemists and Biophysicists

V. DIVERSIFYING THE SAN FRANCISCO BAY AREA ICT WORKFORCE

Bringing diversity to the Bay Area's ICT workforce will require more than developing a handful of new training programs narrowly aligned with ICT trends. Rather, ICT training must be entirely reconfigured in a manner that is not only accessible, but sustainable for individuals from all backgrounds. OEWD has extensive experience in this kind of transformative approach to workforce development. Our wide range of workforce services have been developed using a sector strategy, an approach that allows every aspect of our education and training programs to be tailored to the specific needs of both jobseekers and employers, providing a continuum of jobseeker access to high-wage, high-growth pathways leading to self-sufficiency. TechSF is one such initiative, launched in 2012 and custom-designed to fill a much-needed gap in ICT training and employment. TechSF was designed from the start to serve populations currently underrepresented in ICT—including offering flexible, fast-track training options, recruitment through a network of neighborhood partners, extensive support services, and more. To date, 46% of participants in TechSF have been women, and almost 30% have been African-American or Latino. **Building on this innovative, responsive mindset and established infrastructure, the new TechSF: Applied Learning Accelerator (ALA) has the capacity to revolutionize the**

Bay Area ICT sector and provide more structured and accelerated earn-and-learn opportunities and educational pathways for underrepresented populations.

B. EXPECTED OUTCOMES & OUTPUTS

B.I PROJECT GOALS, OUTPUTS, & OUTCOMES

The design and implementation of TechSF: Applied Learning Accelerator (ALA) will be guided by six project goals along with the key outputs and outcomes, as detailed below.

1. Enhance and diversify the Bay Area ICT workforce through targeted recruitment and engagement of populations currently underrepresented in the technology sector in pre-apprenticeship and apprenticeship programs.

- ✓ 650 individuals will apply to ALA

- ✓ 75% of participants will be from ALA's target populations: women, young people of color, and/or veterans

- ✓ At the conclusion of the funding period, 80% of participating employers will have a more diverse workforce with respect to gender and race/ethnicity

Goal 2: Develop flexible, fast-track pre-apprenticeships and apprenticeships in the ICT sector that align with and continuously respond to the real-world needs of employers in a replicable and scalable manner.

- ✓ 3-5 new apprenticeable occupations will be registered in the state of California

- ✓ 30 new American Apprenticeship programs will be registered

Goal 3: Engage new and incumbent workers in robust, high-quality apprenticeships offering an innovative and accelerated combination of online coursework, classroom education, on-the-job learning, and more that fully equips participants to thrive in the ICT sector.

- ✓ 300 individuals will participate in apprenticeships, including 50% incumbent workers

- ✓ 150 individuals will participate in pre-apprenticeships

- ✓ The average cost per apprenticeship will be $10,000

- ✓ 16 promotional/outreach activities to employers will be conducted

- ✓ 20 employers will benefit from (participate in) ALA

- ✓ A minimum of 10 education and training providers will participate in ALA

Goal 4: Enhance the success of all apprenticeships by employing comprehensive support services that support and empower all participants from first contact to career advancement.

- ✓ 80% of participants will complete the apprenticeship program

- ✓ 90% of participants who complete the apprenticeship program will be promoted and/or have their wages increased

- ✓ The average hourly wage post-apprenticeships will be $30-$40/hr

Goal 5: Create new opportunities for obtaining credentials in ICT fields by connecting cutting-edge online training providers with traditional institutions of higher education in a coordinated endeavor that leverages one another's strengths and prepares job-seekers to effectively respond to emerging labor market needs.

- ✓ 15% of post-apprenticeship participants will enroll in further education/training

- ✓ 10% of participants will earn one or more college credentials

Goal 6: Facilitate the development of a new labor market culture in which ICT employers and educators coordinate and collaborate to prepare the local workforce for high-skill, high-wage jobs and provide the ICT industry the talent pool needed to drive the Bay Area economy.

- ✓ 8 promotional/outreach activities to regions with the potential to replicate ALA will be conducted

✓ Two regions outside San Francisco will replicate or initiate a replication of ALA

✓ 50% of employers will report a ratio reduction in sponsorship of H1-B visas

B. II PROJECT MILESTONES

Please see the attached Performance Chart which identifies the key milestones marking progress toward project outputs/outcomes in each of the five years of the funding period.

B. III COLLECTING, ANALYZING, & REPORTING DATA

ALA will regularly collect and analyze a range of quantitative and qualitative data in order to measure progress toward key milestones and project goals. These data will be reviewed by the Project Director, the ALA Program Officer, the ICT Employer Advisory Board, education and training providers, and other key partners. OEWD has extensive experience in collecting, analyzing, and reporting data for DOL-funded initiatives, including Enhanced Transitional Jobs Demonstration (ETJD) Project and the Workforce Innovation Fund, and will participate in any required national evaluation. OEWD regularly generates reports and extracts data from both DOL-supported management information systems (MIS) as well as Workforce Central, San Francisco's local workforce development MIS. We have supported comprehensive project reporting and evaluation by coordinating evaluation site visits, interviews and focus groups. OEWD also currently works with MDRC, the DOL-funded evaluator on the ETJD Project; WestEd, the evaluator of the Workforce Innovation Fund grant; and technical assistance providers to ensure compliance with all WIA regulatory, statutory, and directive requirements.

ALA will use WorkforceCentral to ensure timely and complete data collection, while minimizing reporting burden. WorkforceCentral is synced with the state WIA tracking system and will be available online to all ALA project partners to track all services delivered and milestones achieved at the participant and project levels.

C. PROJECT DESIGN

C. I EXPANDING APPRENTICESHIPS IN H1-B VISA INDUSTRIES & OCCUPATIONS

In 2012, San Francisco's mayor launched TechSF, an ICT training initiative designed in response to two critical needs: 1) regional ICT employers' need for a qualified, local workforce to staff their rapidly growing, ever-evolving operations, and 2) San Francisco residents' needs, particularly those from underrepresented populations, to access the

incredible opportunities offered by high-growth, high-wage, high-skill ICT occupations. Over the past three years, OEWD has developed an in-depth, comprehensive understanding of ICT landscape through its close partnership with over 200 ICT employers and serving more than 650 jobseekers seeking to build the foundational skills necessary for breaking into the ICT industry.

Building on this initiative's effective practices, successful models, and powerful network of partnerships, TechSF: Applied Learning Accelerator (ALA) will expand ICT training in the Bay Area to meet the next level of need from the industry: for robust yet flexible training built around applied, project-based learning that cultivates a diverse homegrown workforce prepared for the occupations currently being filled by a flood of H1-B visas. ALA will meet this need by introducing the apprenticeship model to the regional ICT industry, using the following strategies:

✓ Leveraging TechSF's proven-successful strategies, systems, structures, and partnerships

✓ Reaching out to TechSF's extensive network of employer partners and engaging them in apprenticeships that assist their cultivation of a diverse local workforce and substantially reduce reliance on H1-B visas to fill critical positions

✓ Disseminating a replicable and scalable model regionally and beyond

C.I.1 Leveraging a Proven-Successful Model. The TechSF initiative is designed to address the skills gap in the local ICT sector and develop new and innovative ways to deliver workforce services for local jobseekers. Modeled after San Francisco's highly successful Sector Academies, such as CityBuild, a pre-apprenticeship job training program for the construction trades, TechSF is built on a powerful network of partners who collaborate to recruit participants currently underrepresented in the technology industry; develop customized training education plans that respond to employer needs and lead to career opportunities; provide wraparound services that support each participant's individual journey to meaningful employment; and engage employers in innovative and new ways to effect lasting change in the sector. The TechSF initiative is funded through multiple U.S. Department of Labor Employment and Training Administration initiatives, and other state and federal grants, including Workforce Investment Act for Youth, Adults, and Dislocated Workers, H-1B Technical Skills Training, H-1B Ready-to-Work, CA Employment Training Panel (ETP), Community Development Block Grant, and Workforce Innovation Fund.

To date, over 650 San Francisco residents have received ICT job training through TechSF, with 74% of participants having completed or still enrolled in training activities. The initiative has successfully engaged a highly diverse group of job-seekers, 46% of are women, and 30% are African American or Latino. Moreover, 83% of participants who completed their TechSF training are now employed in ICT occupations such as computer support specialists, quality control analysts, web developers, graphic designers, and information technologists. More than 200 companies have hired candidates through TechSF at an average starting salary of $25/hour.

The impact of TechSF has been recognized not only throughout the Bay Area, but at the

national level as well. In March 2015, TechSF was selected by the Obama administration's TechHire initiative to be one of only 21 community partners nationwide. Inclusion in TechHire provides a resounding endorsement of TechSF's success in opening the door to high-skill, high-wage, high-growth employment for diverse San Francisco residents. Furthermore, it creates an ideal opportunity to disseminate innovative new programs, such as ICT apprenticeships, to cities around the country already deeply committed to strengthening America's ICT workforce and expanding access to populations currently underrepresented in the industry.

As a project of TechSF, ALA will build on the initiative's strong base of federal, state, and local resources as well as its powerful partnerships with ICT Bay Area employers. Even more importantly, ALA will leverage the core of innovation that drives all TechSF models and activities. From nontraditional employer engagement strategies that nurture increased levels of commitment over time, to the development of responsive training programs for emerging ICT skills and preparing workers who can draw from a broad skill-set and creatively solve a wide range of technical issues, *innovation is fundamental—both to the TechSF initiative as a whole and to its latest component, the Applied Learning Accelerator.*

C. I.2 Introducing an Extensive Employer Network to ICT Apprenticeships. Through TechSF, OEWD has cultivated a far-reaching network of 200 employer partners in the ICT sector. To date, 12 of the most well-known technology companies have already expressed interest in developing apprenticeships that would add highly qualified local employees from diverse backgrounds to their workforce, help retain and advance incumbent workers, and reduce their dependency on H1-B visas to fill essential positions in their companies. ALA will leverage the strength of this existing network, building on the trusted and highly regarded "TechSF brand," to introduce ICT employers to the powerful benefits of the apprenticeship training

model—both the financial advantages that come from building and retaining local talent rather than relying on a revolving door of expensive H1-B visas and the qualitative advantages of employing a workforce that represents the full diversity of the Bay Area.

Partnerships with regional workforce service providers will further amplify ALA's engagement of employers in apprenticeship programs. The NOVA Workforce Investment Board (WIB), situated in the heart of the Silicon Valley, as well as the San Jose WIB have already signed on to partner in ALA and committed to engaging employers in their particular regions in adopting and implementing ICT apprenticeships, and sharing this model with other WIBs.

C. I.3 A Scalable and Replicable Apprenticeship Model. ALA has scalability and replicability built into the very core of the training model. As noted earlier, San Francisco has been selected to participate in the TechHire initiative. As part of the city's participation in this landmark endeavor, OEWD has committed to both investing $250,000 in apprenticeships and launching a fund development program that will seek out further support of apprenticeships directly from ICT employers, and ALA will secure the combined public/private support that is so essential to the sustainability and expansion of these types of initiatives.

In addition, OEWD's involvement in TechHire and other learning communities will provide ample opportunities to share the effective practices and successful apprenticeship frameworks developed through ALA. Through the Workforce Innovation Network—a Bay Area learning community seeded by the Workforce Innovation Fund – OEWD will engage the NOVA WIB, the San Jose WIB, and others involved in regional workforce services to test new ideas for improving workforce systems and effectively meeting the needs of the Bay Area's labor market.

C. II INCREASING THE RETURN ON INVESTMENT IN APPRENTICESHIPS

TechSF: Applied Learning Accelerator will ensure a high return on investment in ICT

apprenticeship programs by employing the following strategies:

- ✓ Limiting initial costs by launching ALA from the established infrastructure of TechSF

- ✓ Drawing from multiple public and private funding streams to create a strong, diversified platform of ongoing support for project activities

- ✓ Continuously expanding engagement of ICT employers by quantifying the significant long-term costs of relying on H1-B visas to staff their enterprises

C.II.1 Funding Major Costs. The most significant costs associated with implementing ALA will be staffing, in particular the full-time ALA Program Officer, and contracts with the numerous education and training providers whose learning experiences will comprise the apprenticeship programs. With those and other costs taken into account, OEWD anticipates an average cost per participant of approximately $10,000.

ALA's approach to funding the major costs necessary to achieve the program's projected outcomes is built on access to multiple funding streams of both public and private dollars. As noted earlier, ALA will leverage the variety of public funds that provide ongoing to support to TechSF. Furthermore, several ALA partners, such as BAVC and Academy X, are ICT training providers approved to receive funds from the California Employment Training Panel (ETP), an entity that reimburses employers for employee training. As ALA works with these employers to develop registered apprenticeships, we will be able to leverage these ETP funds. ALA will further diversify its funding through General Assembly's Opportunity Fund—contributions from employers that help subsidize the cost of training for economically disadvantaged job-seekers.

C. II.2 Building on Existing Infrastructure to Efficiently Invest Time & Money. Because ALA is a project of TechSF, the infrastructure required to launch this endeavor is already firmly in place, enabling ALA to quickly get up and running without the intensive start-up investment

of both time and money that would normally be required. Core activities ranging from recruitment/outreach to participant assessment to employer engagement will operate through TechSF's existing structures and systems.

Cost-effectiveness and efficiency are further integrated into ALA's design in numerous ways (described in detail in Section C.VI). For example, education and training curricula will be developed with the guidance of the Council for Adult and Experiential Learning (CAEL), leveraging the organization's extensive experience to rapidly create ICT apprenticeships models. Additionally, an extensive array of partnerships with online and classroom training providers, employers, community-based organizations, coding bootcamps, and startups are already solidly in place through TechSF. Moreover, ALA will develop apprenticeship frameworks that provide an overarching structure to participants' learning experience, meeting all requirements of Registered Apprenticeships, within which customized training programs will be created, comprising the exact combination of online coursework, accelerated classroom education, and on-the-job learning that will most efficiently and effectively lead to each participant's goals.

C.II.3 Quantifying the Benefits of Apprenticeship Training to Employers. For many ICT employers, such as the 12 already committed to participating in ALA, the benefits of ICT apprenticeships are abundantly clear. To continue expanding our engagement of ICT employers, ALA will offer a cost/benefit analysis of heavy reliance on H1-B visas. Most employers are well aware of the upfront cost of staffing their companies with H1-B visa-holders, estimated at approximately $5,000-$7,000 per worker.[14] However, the extensive long-term costs are often less apparent. Research clearly indicates that H1-B visas provide only a short-term solution for ICT companies—only approximately 3% of visa-holders ever become permanent residents of the U.S.[15] As a result, not only do ICT employers face a high staff turnover rate, but any investment

in that worker's training becomes another employer's asset. In contrast, although apprenticeships require a similar upfront investment of funds, they produce long-term benefits employers will never see with continued over-utilization of H1-B visas. Apprenticeships improve employee retention rates and enable those skills, knowledge, and ideas to be reinvested in the employer.

C. III EXPANDING ACCESS FOR UNDERREPRESENTED POPULATIONS

To help meet the urgent, growing demand from ICT employers for a more diverse workforce, and to open the door to an array of career opportunities for those who have struggled to break into the industry, ALA will focus on recruiting women, young people of color, and veterans into our pre-apprenticeship and apprenticeship programs. Strategies will include:

- ✓ Leverage recruitment practices developed and refined through TechSF that resulted in the successful engagement of a more than 650 diverse participants

- ✓ Maximize the extensive reach of our numerous partners, including community-based organizations, workforce service providers, educational institutions, and others

- ✓ Utilize a wide range of access points to facilitate engagement of both prospective and incumbent ICT workers including America's Job Centers and WIOA-required partners

- ✓ Provide a robust set of supportive services, including pre-apprenticeship programs and wraparound assistance tailored to enhance each participant's capacity for success.

C. III.1 Leveraging Effective Practices and Established Partnerships. ALA will devise a recruitment plan that builds on the proven-successful approaches developed, refined, and implemented by TechSF over the past three years, including both established regional strategies and highly localized, neighborhood-based efforts. More specifically, ALA's recruitment plan will be driven by the following core strategies: 1) Align activities and goals with those of state and national initiatives, such as Vice-President Biden's "Job-Driven" training strategies,

leveraging their resources, infrastructure, and reach; 2) Coordinate with local/regional initiatives and agendas in order to deploy a comprehensive and synchronized, yet nuanced effort; 3) Collaborate with community-based organizations, workforce service providers, and educational institutions to reach deeply into communities with innovative, non-traditional marketing techniques; and 4) Partner with employers to leverage their expertise in promotion and branding as well as reach incumbent workers, with a focus on entry-level employees.

Implementation of these recruitment strategies will maximize outreach to the target populations and will be coordinated with San Francisco's Anti-Poverty and Women's Empowerment agendas, which are currently being implemented by public- and private-sector leaders citywide. Furthermore, our employer partners have already expressed a high level of enthusiasm around helping to market ALA, both to other employers and to their own employees. We will maximize these employers' expertise in marketing and branding to expand awareness of ALA to the greatest extent possible. We will work closely with individual ICT employers to integrate apprenticeships into their learning and development strategies and reach out as appropriate to entry-level employees looking to rapidly upskill and advance their careers.

ALA will also work with a wide range of community-focused partners to implement our recruitment strategies. A minimum of 10 ALA orientation sessions and at least six specialized outreach activities will be conducted each quarter during the funding period, reaching approximately 1,000 prospective participants of which approximately 75% will be from the target populations. Organizations that will host these orientation sessions and partner with OEWD in implementing other recruitment activities are listed below in Table 4.

Table 4. Outreach and Recruitment Partners	
Women Who Code	Girl Develop It
Hack the Hood	Vet Job Club

OEWD Young Adult WorkLink Centers	American Job Centers/Access Points
G:URL	MotherCoders
Year Up Bay Area	San Francisco Public Library
City College of San Francisco	San Francisco Unified School District
Re-Entry Access Point	HackerMoms
Swords to Ploughshares	Upwardly Global

ALA outreach and recruitment will utilize a wide range of tools, such as print and online advertising, social media, email blasts, phone/email solicitations. We will also pursue non-traditional marketing strategies to recruit disconnected populations, such as tailoring outreach to smart phones and social media in order to reach populations without home internet access.

C. III.2 Reaching the Target Populations from Multiple Access Points. OEWD will also collaborate with employers to identify and reach out to incumbent workers in the target populations. Apprenticeships will be "marketed" to incumbent workers through a wide range of forums, including employers' existing learning and development programs and "Nerd Underground" industry-sponsored quarterly networking events for jobseekers and employees hosted by TechSF at large local ICT companies (e.g., LinkedIn and Pinterest). ALA will also work individually with employers who are seeking to enhance corporate responsibility agendas by cultivating a workforce that better reflects the diverse demographics of the Bay Area.

C. III.3 Supporting the Success of all Apprentices. The ALA apprenticeship model is designed not only to provide participants a comprehensive training experience, but also to ensure that they thrive in that experience. To determine whether applicants to ALA are ready for apprenticeships, an Apprenticeship Design Working Group—comprising representatives from OEWD, BAVC, ICT employers, CAEL, and our higher education partners—will identify a set of baseline competency standards. Each prospective ALA participant will undergo a comprehensive assessment (described in detail in section C.VI.3); those not yet ready to enter the ICT workforce

will be enrolled in fast-track pre-apprenticeship "bootcamps" that take advantage of all of the education and training programs available through TechSF. Pre-apprenticeship learning experiences may include online learning, participation in workshops, mastery of battery tests, and participation in other training modes by which they can gain the baseline skills necessary to be hired as an apprentice. The wide range of training and certificate options offered by TechSF include tech support, quality assurance, HTML/CSS, front-end web development, project management, web and graphic design, and many other in-demand options.

ALA will also provide participants access to a wealth of wraparound services designed to help them overcome any obstacles to their continued participation and success in their apprenticeships. Each participant will work individually with a career advisor to identify their interests and goals and develop a plan to meet those goals. Based on their individual needs, participants will be connected to the variety of supportive services already in place through TechSF, including, but not limited to monthly one-on-one meetings with a case manager, child care, transportation resources, job readiness training (one-on-one and group), culture fit assessments, resume/LinkedIn workshops, and networking events.

IV. STRENGTHENING APPRENTICESHIPS THROUGH A POWERFUL NETWORK OF PARTNERS

ALA has already secured a powerful network of cross-sector partners, and intensive engagement with these and other organizations will enable ALA to accomplish the following:

- ✓ Leverage public workforce system strategies, infrastructure, and funding to facilitate the successful implementation, scaling, and replication of ALA

- ✓ Connect apprenticeships to postsecondary education programs, certificates, and degrees providing participants opportunities for ongoing learning and career advancement

✓ Support the long-term sustainability of ALA using diverse funding streams that draw financial and in-kind contributions from the public and private sectors

C.IV.1 Alignment with the Public Workforce System. As described previously in sections C.II.1 and C.II.2, ALA has been specifically designed to not only align with, but maximize the strength of the public workforce system. OEWD also oversees America's Job Centers in San Francisco providing a seamless network of services of which ALA will be integrally linked.

ALA will further align with the public workforce system by leveraging California's Employment Training Panel (ETP), a source of funds that are used to reimburse employers for the costs of training their workers. The California Interagency Taskforce on Apprenticeship Expansion has already committed to making ETP funds available to ALA, and employers currently utilizing ETP-funded training who create registered apprenticeships from those trainings will be able to do so with the assistance of ETP.

C.IV.2 Comprehensive Collaboration with Educational Institutions. San Francisco is home to one California Community College (CCC) and one California State University (CSU)— City College of San Francisco (CCSF) and San Francisco State University (SFSU). These institutions play a pivotal role in the San Francisco community, together serving over 100,000 local residents each year across more than 10 campuses that serve every community in the city. CCSF and SFSU have been long-time partners of OEWD across a wide range of workforce initiatives. These two linchpins of postsecondary education in San Francisco will participate in ALA in the followings ways: Market ALA to their highly diverse student populations; Contribute expertise to the development of apprenticeship frameworks; With guidance from CAEL, develop prior learning assessments that translate students' real-world work experiences into college credits; Articulate apprenticeships to postsecondary certificate/degree programs; and

Join the Registered Apprenticeship College Consortium. The prior learning assessments and articulation pathways developed with CCSF and SFSU will serve as models that can be replicated by apprenticeship providers and postsecondary institutions across California and beyond. Chegg will also make available career counseling and technical assistance through chegg.com for apprentices who wish to transfer their apprenticeship experience credits. San Francisco Unified School District (SFUSD) will also support ALA by contributing to the long-term growth of the ICT jobseeker pipeline.

IV.3 Partnership Commitments

The key activities to which ALA's partners have committed are summarized in Table 5.

Table 5. Partner Contributions to ALA	
Activity	**Partners**
Market ALA to jobseekers, incumbent ICT workers, and/or ICT employers	California Interagency Taskforce on Apprenticeship Expansion (CITAE), NOVA WIB, San Jose WIB (SJWIB)
Identify/recruit prospective participants	BAVC, General Assembly, CITAE, NOVA, SJWIB, SFSU
Design apprenticeship frameworks	General Assembly, CITAE, CAEL, CCSF, SFSU, Mother Coders
Deliver apprenticeship and/or pre-apprenticeship training	General Assembly, NOVA, CCSF, SFSU, MotherCoders, BAVC
Contribute facilities and/or personnel	General Assembly, CCSF, SFSU
Provide support services	BAVC, General Assembly, CCSF, SFSU
Develop prior learning assessments	CAEL, CCSF, SFSU
Articulate apprenticeships to postsecondary credentials	General Assembly, CITAE, CAEL, CCSF, SFSU
Register apprenticeships	CITAE
Help scale/replicate ALA	General Assembly, CAEL, NOVA
Collect real-time labor market information	Mother Coders, General Assembly

C.IV.4 Public Investment in ALA Sustainability. As described earlier, leveraging of ongoing support for TechSF from WIA and numerous other public funding streams such as ETP will be a

key element of not only maintaining, but growing ALA. In addition, TechSF is just one of San Francisco's sector-based workforce development initiatives. For many years, the city has pursued a sector strategy to meet the needs of both employers and job-seekers, and this approach to workforce services will continue to drive the city's investment in programs like ALA. And with ALA's connections to neighboring WIBs, this project is at the forefront of a more cost-efficient and effective workforce regionalism being championed by the State of California.

V. DEPTH AND BREADTH OF EMPLOYER COMMITMENT

As noted earlier, ALA will benefit from the breadth and depth of TechSF's partnerships with ICT employers. The success of TechSF in engaging employers is primarily due to the innovative strategies employed—strategies that have led 12 major ICT employers to already commit to participating in ALA, and that will enable ALA to grow that network of employer partners throughout the funding period. These strategies include: 1) Initiating relationships through "no-risk" approaches, such as enlisting employer participation in networking events, volunteering, or email listservs; 2) Investing substantial staff time in nurturing "Industry Champions" who will disseminate ALA's benefits to their peers across the Bay Area; and 3) As trust is built, incrementally engaging employers in more intensive activities.

Twelve Bay Area ICT employers have already committed to participating in ALA, representing some of the biggest names in the ICT industry. These partners are: 12PFS, AirBnB, Bonfire Labs, Jawbone, LinkedIn, Lyft, Modcloth.com, OneWorld Communications, Pinterest, Salesforce, Webb Design, and Zendesk. Table 6 summarizes their initial commitments to ALA.

Table 6. Employer Contributions to ALA	
Activity	**Partners**
Market ALA to employees and/or other Bay Area ICT employers	AirBnB, Bonfire Labs, Jawbone, LinkedIn, OneWorld, Webb Design, Zendesk

Identify/recruit prospective participants	LinkedIn, Salesforce.com, Zendesk
Help design apprenticeship frameworks and content	12FPS, Jawbone, LinkedIn, Lyft, Modcloth.com, OneWorld
Contribute facilities and/or personnel	LinkedIn, Lyft, Modcloth.com, OneWorld, Webb Design, Zendesk
Hire apprentices	12FPS, Jawbone, LinkedIn, ModCloth, OneWorld
Inform ALA with real-time labor market information	LinkedIn, OneWorld

VI. TRAINING THE 21ST CENTURY ICT WORKFORCE

ICT employers throughout the San Francisco Bay Area and beyond are unified in their demand for a new approach to ICT education and training—one that is not only aligned with the needs of the industry today, but also has the capacity to evolve and advance in step with this rapidly changing field. ALA is designed to fill the gap between the ICT education and training programs currently available and meet the needs of not only employers but also jobseekers by, helping bridge the gap between online learning strategies and two- and four-year colleges; and improving the overall capacity to offer nimble, cost-effective training as part of a structured yet accelerated pathway. ALA will align industry and education through the following innovations:

✓ Developing employer-driven frameworks for apprenticeships in three to five ICT occupations that comprise customizable combinations of learning experiences within an overarching, replicable structure

✓ Blending cutting-edge online learning platforms, accelerated classroom bootcamps, traditional education programs, and project-based OJL experiences to equip each apprentice with a robust set of skills that lead to wage increases and career advancement

✓ "Connecting the dots" between applied learning, online coursework, and traditional and accelerated classroom education in order to articulate to postsecondary certificates, degrees, and other credentials meaningful to the ICT industry

✓ Continually informing program strategies/activities with real-time industry intelligence and implementing agile adjustments to needs of ICT employers and diverse jobseekers

C.VI.1 Creating a Framework for ICT Sector Apprenticeships. While the apprenticeship model has proven to be a powerful tool for recruiting, retaining, and advancing the workforce across a wide range of industries, it has yet to make inroads in the Bay Area ICT sector and thus employers rely heavily on H1-B visas to staff their companies. TechSF: Applied Learning Accelerator will create a bridge and close the gap between the needs of regional ICT employers and the capacity of existing education and training programs.

OEWD's first step in developing an apprenticeship model that advances the needs of the ICT sector will be creating an Apprenticeship Design Working Group. Drawing from our partnerships with employers throughout the Bay Area, the San Francisco WIB, the regional Workforce Innovation Network, and others, the Apprenticeship Design Working Group will comprise representatives from OEWD, Bay Area Video Coalition (BAVC—ALA's private sector Primary Partner) and at least five ICT employers, two institutions of higher education, two online education providers, two CA Eligible Training Providers and the Council for Adult and Experiential Learning (CAEL). Guided by CAEL's extensive experience in innovative, experiential learning, and informed by labor market data and workforce policy, the group will develop the core framework and identify the essential components of apprenticeships in three to five high-skill, high-wage, high-growth ICT occupations. With these key stakeholders guiding and shaping the creation of apprenticeship frameworks, ALA will be able to ensure that participant training is matched to employer needs at all times.
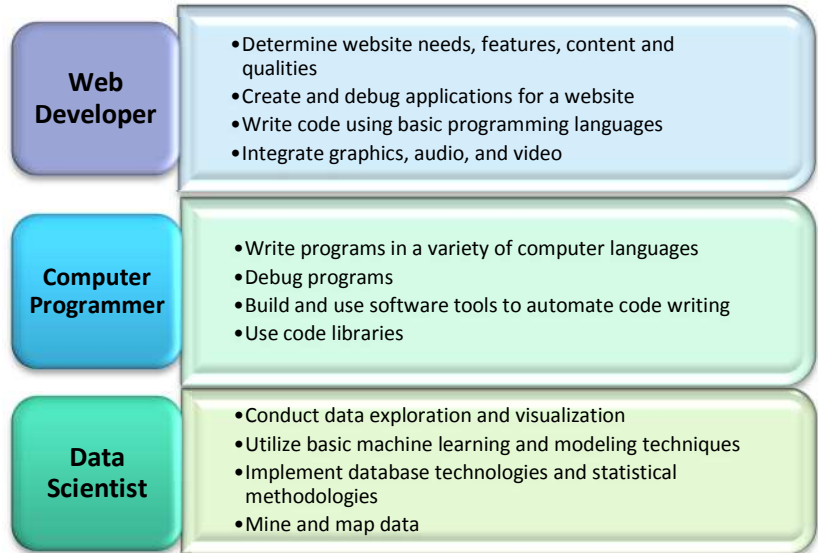
Based on a broad range of labor market data for the San Francisco Bay Area, as well as extensive input directly from employers, OEWD has identified an initial set of ICT occupations

that are 1) in high demand among ICT employers throughout the region; 2) currently being filled primarily by H1-B visas; and 3) presenting tremendous opportunity for meaningful career pathways for both new and incumbent workers. For each of these occupations—web developer, computer programmer, and data scientist—the Working Group will design an apprenticeship program comprising an array of online, classroom, and on-the-job learning (OJL) experiences that can be customized to create the most efficient and effective pathway for each apprentice to develop key occupational competencies, as identified by employers and the Department of Labor's ICT Skills and Competency pyramid.

C.VI.2 Customized Pathways to ICT Employment. Because each apprentice will bring to her/his employer a unique set of existing skills and knowledge, as well as particular life circumstances and learning styles, neither employers nor ALA participants would be best-served by a one-size-fits-all approach to designing apprenticeships. Instead, ALA will create apprenticeship frameworks that include a variety of accelerated "mix and match" options, each of which will meet the requirements of a Registered Apprenticeship, including minimum hours of structured OJL and related instruction required. In addition, a pre-apprenticeship "bootcamp" framework will be utilized, offering participants who are newer to the ICT field a chance to gain a solid foundation through a condensed, efficient educational experience. In this way, ALA will connect each participant—whether incumbent worker or newcomer to ICT— to his/her own structured pathway to wage increases, employment advancement, industry-recognized credentials, and, ultimately, meaningful long-term careers in web development, computer programming, and data science.   The classroom education and online learning components of each apprenticeship framework will be drawn from the wide range of education and training programs offered by OEWD's partners: **City College of San Francisco (CCSF)** has accredited

courses available in its Computer Science and Computer Networking & Information Technology

departments. **Bay Area Video Coalition (BAVC)** delivers fast-track, industry-taught courses

leading to industry-recognized certificates and credentials under WIA and CA Employment

Training Panel (ETP) training.

Academy X, offers industry-led, in-person WIA and ETP trainings in San Francisco, Sacramento, and other locations. **General Assembly**, one of the first education start-ups recognized by the state of California BPPE,

Web Developer	• Determine website needs, features, content and qualities • Create and debug applications for a website • Write code using basic programming languages • Integrate graphics, audio, and video
Computer Programmer	• Write programs in a variety of computer languages • Debug programs • Build and use software tools to automate code writing • Use code libraries
Data Scientist	• Conduct data exploration and visualization • Utilize basic machine learning and modeling techniques • Implement database technologies and statistical methodologies • Mine and map data

delivers industry-taught online and in-person courses. **Treehouse** offers self-paced, online

courses available by subscription. **MothersCoders**, a women-owned start-up focused in

particular on serving female veterans, provides childcare services along with its ETPL approval-

pending courses. **Udacity** offers an extensive array of online courses, all designed by ICT

industry employers.

Finally, OEWD, BAVC and CAEL will work closely with participating employers to design

meaningful OJL learning experiences that incorporate best practices in applied learning and

respond to the real-time needs of each employer to create Registered Apprenticeships. BAVC

will not only recruit employers but also help link OJL to relevant instruction. CAEL will help

develop a systematic approach to ensure industry- approved curriculum is leveraged in the

apprenticeship training, allowing apprentices to gain college credit while completing the required

learning outcomes tied to the registered apprenticeship program (as described previously in

section C.IV.2). Finally, we will work with employers to integrate apprenticeship opportunities into any existing learning and development programs operated by the company.

Ultimately, by creating apprenticeship frameworks that have both a foundational structure and flexible options, ALA will be able to provide the ICT sector the kind of training strategy that it has been calling for—one that is designed with a built-in, nimble responsiveness to the real-time needs of Bay Area employers; is ready to be scaled and replicated throughout the region and beyond; and has the capacity to cultivate a highly skilled local workforce in the occupations most essential to a thriving ICT industry.

C.VI.3 A New Generation of ICT Apprentices. Individuals recruited to participate in ALA through the strategies described earlier will begin their training journey by submitting an online application to TechSF—an employer-driven tool responsive to all personal internet devices including smart phones. Over the course of the funding period, 650 applicants will be contacted to complete career-specific assessments and determine existing knowledge, skills, and abilities. The TechSF Sector Coordinator, a private workforce intermediary organization, will then review 400 individual portfolios detailing an applicant's skills, previous post-secondary education, work and volunteer experience, completed occupational training, battery assessments, and more. To determine whether the applicant requires pre-apprenticeship training or is prepared to immediately enter an apprenticeship program. Whether a pre-apprentice or apprentice, all participants will be assigned a career advisor who will help develop an education/employment plan and facilitate access to support services for the duration of their participation in ALA.

Over the course of the funding period, ALA will train a total of 300 apprentices, comprising 150 new hires and 150 incumbent entry-level ICT workers. Furthermore, as apprentices are promoted within their companies based on their new skillsets, ALA will work with employers to

hire new apprentices into the vacant positions created by this career advancement. In this way, ALA will create opportunities for up to 150 additional apprenticeships.

C.VI.4 Creating a New Field of Registered Apprenticeships. With three to five apprenticeship frameworks developed that target the ICT occupations most in-demand by regional employers, OEWD will proceed to work with individual employers to develop and register specific apprenticeship experiences. Representatives from OEWD, CAEL and the TechSF Sector Coordinator will partner with employers to define individual apprenticeship components based on the new and existing recognized occupational skills training options described previously and help employers customize the OJL framework to create a quality applied learning experience that complements the selected related training/instruction.

OEWD will then assist each employer in formally registering these apprenticeships. This will be undertaken in partnerships with the California Interagency Taskforce on Apprenticeship Expansion and will leverage technical assistance and coordinated state resource from entities including the California Labor and Workforce Development Agency, the California Community College Chancellor's Office, the California Workforce Investment Board, the state Employment Training Panel (ETP), and California's Division of Apprenticeship Standards (DAS).

D. ORGANIZATIONAL, ADMIN., AND FISCAL CAPACITY
D.I STAFFING PLAN

The OEWD Director of Programs, John Halpin, will provide **executive leadership** to ALA and its role in the local and regional workforce system. As Director of Programs, Mr. Halpin currently oversees all programmatic implementation across OEWD's workforce services portfolio and staffs the San Francisco Workforce Investment Board. Mr. Halpin has extensive experience in program development and management, strategic planning, and performance

evaluation, with a focus on sector-based training programs.

Patrick Mitchell, OEWD TechSF Program Manager, will serve as the **Project Director** for ALA. With a master's degree in Public Administration, Mr. Mitchell currently oversees planning, program development. and project management for the city of San Francisco's ICT sector programs, including management of three U.S. Department of Labor grants. Previously Mr. Mitchell has led the development and launch of workforce development initiatives in healthcare, retail, and hospitality, and has experience in construction apprenticeship programs. He brings to ALA extensive experience with WIA funding administration, project monitoring, and program operations.

As Project Director, Mr. Mitchell will serve as DOL's single point-of-contact, provide administrative oversight, and monitor grant activities and deliverables against timelines and budgets. He will lead monthly meetings of ALA partners as well as facilitate the Program Design Working Group, ensuring close coordination and collaboration as the project moves forward. Over the course of the funding period, Mr. Mitchell will provide ongoing guidance on program design and operations and regularly review and analyze progress toward identified outputs, outcomes, and milestones.

The Project Director will supervise a full-time **ALA Program Officer**, who will oversee day-to-day project operations and lead the implementation of all project activities and manage the development and implementation of ALA training programs. This work will include the preparation and execution of scopes of work with training providers, coordination of partnership activities, and implementation of all ALA program policies and procedures.

BAVC, the **TechSF Sector Coordinator**, is a private workforce intermediary and Primary Partner that manages the recruitment, admission, assessment, and support for TechSF

participants, and will similarly oversee ALA's participant flow. Responsibilities will include assessment, career advising, apprenticeship development, placement, and follow-up activities, all of which implemented with the experience and expertise developed through TechSF.

D.II ADMINISTRATIVE CONTROLS & SYSTEMS

OEWD has successfully managed over $70 million in grant funding since 2007, including DOL-funded Enhanced Transitional Jobs Demonstration (ETJD) Project and the Workforce Innovation Fund initiatives. The agency has established procedures for meeting all funder requirements and federal, state, and local regulations and has a strong track-record of fulfilling all of the responsibilities related to grants administration, including the submission of quarterly program and financial reports on time every quarter for ETJD and WIF projects.

OEWD also maintains strict financial oversight of individuals and organizations who receive grants funds. OEWD collects and retains detailed expense data, including supporting documentation, from grantees and contractors through Total Grant Solution (TGS), a mature web-based application. The system allows for transparency of the reimbursement process as well as offering a flexible reporting tool to ensure proper oversight of funds. Segregation of awards and funds as well as review of grantee's implementation of approved cost allocation plans, indirect cost rates, and other important fiscal functions are directly tracked or assisted by this tool. All contractors are required to submit monthly program and fiscal reports, and all expenses for which reimbursement is sought must be thoroughly documented. In addition, OEWD monitors all contractors on an annual basis to ensure that their internal policies and procedures are adequate for grants administration. Furthermore, compliance officers from OEWD provide quality technical assistance to grantees/contractors and monitor programs biannually to ensure services provided satisfy federal rules and regulations.

D.III HIRING PROCESSES AND TIMEFRAME

As described in Section D.I, the ALA Project Director, Patrick Mitchell, is already on staff at OEWD. He will work with OEWD's Director of Programs, John Halpin, to ensure the project can begin immediately, utilizing existing staff to conduct start-up activities. The ALA Program Officer will be hired by OEWD as a new full-time position. The recruitment process will begin immediately at the start of the funding period, as follows:

Program Officer Hiring Process	Timeframe
Approval to post the job announcement from the Director of OEWD and the Department of Human Resources (DHR)	2 weeks
Posting the job opening on the DHR website and distributing the job announcement to OEWD partners	2-4 weeks
Review of job applications and selection of candidates to interview	2 weeks
Candidate interviews	2-3 weks
Candidate selection, including reference and background check	2-4 weeks
Job offer notification and acceptance, leading up to position start date	2-4 weeks

D.IV COMMUNICATIONS PLAN

OEWD will utilize three formal channels for communicating the purposes, goals and outcomes of the project to partners and stakeholders: 1) The ICT Employer Advisory Board, comprising senior leadership from the local ICT and business sectors, will meet on a quarterly basis to provide guidance on the strategic aspects of creating and implementing a sustainable ICT apprenticeship model. 2) The Project Director, supported by CAEL, will convene training providers and employers to embed knowledge about PLAs, registered apprenticeships and applied learning methods, improve project outcomes, and accelerate the scaling of innovations. 3) The Workforce Program Director will also coordinate a learning network, with regional WIBs and their tech industry subcommittees, state and national workforce organizations, and other key stakeholders to disseminate and promote replication of innovative practices.

VI. EXPERIENCE WITH MULTI-PARTNER PROGRAMS & MANAGEMENT PROCESS

OEWD has a proven track record of managing innovative public/private initiatives with multiple partners that improve outcomes for local jobseekers and strengthen the public workforce system. The implementation of an ETJD grant from DOL offers a prime example of OEWD's experience with and success in managing multi-partner programs. This initiative required OEWD to lead a collaborative effort that included two city agencies, San Francisco's Child Support Services department and Human Services Agency, along with a nonprofit workforce service provider/employer (Goodwill Industries) and an evaluator (MDRC). OEWD convened these partners in multiple forums and distributed a weekly progress report to all partners. This collaboration resulted in the engagement of 500 participants in an enhanced transitional jobs program and the placement of just under 300 of those participants in unsubsidized employment.

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[1] Bay Area Council Economic Institute (March 2013). International Trade and the Bay Area Economy: Regional Interests and Global Outlook 2012-2013. http://www.bayareaeconomy.org/media/files/pdf/IntlTradeBAEconomy2012-13Web.pdf
[2] SPUR, "Forecasting San Francisco's Economic Fortunes," by Jennifer Warburg, February 27, 2015. http://www.spur.org/blog/2014-02-27/forecasting-san-francisco-s-economic-fortunes
[3] Carrese, John & James B. Jones. (2013). Environmental Scan: Information and Communications Technology in California, Foundational Competency Employment Demand in California. San Francisco: Center of Excellence and Mid-Pacific ICT Center.
[4] Azevedo, M.A. (January 2, 2015). "Housing affordability crisis drives Bay Area middle-class exodus." *San Francisco Business Times.* Retrieved from http://www.bizjournals.com/sanfrancisco/print-edition/2015/01/02/the-housing-crisis-2015-forecast.html?page=all
[5] Carrese, John & James B. Jones. (2013). Environmental Scan: Information and Communications Technology in California, Foundational Competency Employment Demand in California. San Francisco: Center of Excellence and Mid-Pacific ICT Center.
[6] Silicon Valley Workforce Investment Boards. (2011). Silicon Valley in Transition: Economic and Workforce Implications in the age of iPads, Android Apps, and the Social Web. Sunnyvale: Author.
[7] The Brookings Institute, "America's Advanced Industries: What They Are, Where They Are, and Why They Matter," by Mark Muro, Jonathan Rothwell, Scott Andes, Kenan Fikri, and Siddharth Kulkarni, February 2015.
[8] Silicon Valley Workforce Investment Boards. (2011). Silicon Valley in Transition: Economic and Workforce Implications in the age of iPads, Android Apps, and the Social Web. Sunnyvale: Author.
[9] U.S. Department of Labor, Bureau of Labor Statistics. Combined employment totals for the San Francisco-San Mateo Redwood City and San Jose-Sunnvale-Santa Clara metropolitan areas.
[10] U.S. Department of Labor, Bureau of Labor Statistics, average of the mean annual salary for each occupation in the San Francisco-San Mateo Redwood City and San Jose-Sunnvale-Santa Clara metropolitan areas.
[11] U.S. Department of Labor, Bureau of Labor Statistics. Employment by detailed occupation. Retrieved from http://www.bls.gov/emp/ep_table_102.htm
[12] Myvisajobs.com
[13] Ibid.
[14] Quora.com, "How much does an H1-B sponsorship cost to a company?" Retrieved from http://www.quora.com/How-much-does-an-H1-B-sponsorship-cost-to-a-company
[15] Harkinson, J. (February 22, 2013). "How H-1B Visas Are Screwing Tech Workers," Mother Jones. Retrieved from http://www.motherjones.com/politics/2013/02/silicon-valley-h1b-visas-hurt-tech-workers