

Brooklyn Public Library (BPL) seeks to strengthen its role as a community connector and deepen its cohort-based work readiness services by creating BKLYN Link, a community-driven mesh network and a technology-based fellowship program for young adults, ages 18-24. Mesh networks connect communities using inexpensive devices to transmit wireless internet signals between each device and into the community, allowing anyone within the connectivity range to log on to the network and access the internet for free. The fellowship will serve up to 45 young people annually and will teach technology, leadership and workplace readiness skills. Fellows will install and maintain the mesh network, while engaging community members – residents, community-based organizations and small businesses – in using the free broadband access. An Institute of Museum and Library Services (IMLS) National Leadership Planning Grant of \$50,000 would allow BPL to conduct community asset mapping and needs assessments in order to identify which underserved Brooklyn neighborhood is best positioned to host a network ; plan the technical structure of a mesh network and develop user policies and procedures for the network’s operations, maintenance and users; design a technology-based youth fellowship program that supports the mesh network; pilot a small-scale version of BKLYN Link; and develop a “playbook” sharing strategies and tools for deepening community engagement and launching a mesh network.

About Mesh Networks

Mesh networks use wireless access points (AP), also referred to as nodes, that connect to one another to provide an internet signal within a connectivity range. The range can be expanded by using directional antennas to link APs up to 12 miles apart. These APs utilize a self-healing technology that allows them to automatically re-configure themselves to find other nodes in the event of a node, wired ethernet or switch failure. For BKLYN Link, BPL would have APs connected to an internet connection at BPL library branches and at neighboring community organizations. These types of nodes are referred to as a “gateway” to the internet. These APs would in turn send a signal seeking out other identical APs and connect with them to extend the broadband signal further, creating a mesh. It is not necessary for these other APs to have their own dedicated internet connection as they would use the gateway connection of the other nodes. Nodes without their own internet connection are referred to as “repeaters,” repeating the internet connection it receives and passing it on. For a mesh network to be effective it is necessary to have a suitable mixture of dedicated internet served nodes (gateways) and repeaters that help to extend the network and provide coverage in locations where an internet connection may be a challenge.

The current BPL public wifi network utilizes the Cisco Meraki’s mesh networking solution. BPL’s Information Technology staff are easily able to view, troubleshoot and report on every aspect of the network from anywhere in the world. All of the APs in use possess mesh networking capabilities and Central Library is currently BPL’s largest mesh network location. If any switch that serves an AP goes down, the AP immediately begins seeking out another AP so that it can continue to provide internet service to patrons connected to it. The AP goes into repeater mode until its internet connection is restored. This technology has been proven to provide very minimal downtime, oftentimes invisible to the user. Adding new APs to the network in some cases require only a location and power, as internet access comes from a gateway AP.

Mesh networks have been established in urban and rural areas internationally in order to bridge the digital divide caused by social and economic inequality, and to provide residents pertinent information as it relates to their local community. In Spain volunteers have created guifi.net, an open and neutral network which began in the early 2000s to bring internet connections to rural communities not served through commercial internet service providers. Guifi.net has grown to provide service in much of the coastal Catalonia and Valencia regions of Spain with users including individuals, businesses and municipalities. The network is estimated to have over 30,000 operation nodes. Since 2012, Open Technology Institute (OTI) has partnered with Detroit-based Allied Media Partners (AMP) to implement the Detroit Community Technology Project which trains community members to design and deploy communication infrastructure (Refer to Appendix A for details on how Detroit is working with nonprofits to close the digital divide). Closer to home OTI and AMP have partnered with Red Hook Initiative (RHI), a youth development non-profit serving the Red Hook neighborhood of Brooklyn, to create the Red Hook WIFI mesh network. Through RHI’s Digital Stewards programs young adults from the neighborhood are trained to install, maintain and promote the Red Hook Wifi network. During Hurricane Sandy, Red Hook lost much of its regular

internet signal, but emergency services and residents were able to connect to one another through the mesh network (refer to Appendix B to read more about RHI's Digital Stewards Program).

1. Statement of Need

Public libraries are fundamental democratic institutions open to all, and are well positioned to serve as key community connectors and conveners, forming partnerships with and among government and nonprofit institutions, small businesses, community groups, schools and residents. Through leveraging partnerships, library systems of all sizes can better respond to a wide variety of community needs including digital equity, career development, early literacy, the aging of the population and linguistically isolated immigrants. Libraries also serve to breakdown silos between stakeholders and communities helping to expand innovative and impactful programs across the borough.

Addressing Local Challenges

At a time of profound social and economic change, BPL is continually exploring new ways to enhance its services, expand educational programming and support civic engagement. With 59 branches in every neighborhood across the borough, BPL has taken a number of important steps to tailor programs to specific community needs and populations. In 2013, the Library established the Outreach Services department to work with community organizations and City agencies to provide programming tailored to the needs of immigrants, older adults and transitional populations, including those who are homeless or incarcerated. BPL's Adult Learning department has launched new programs targeting young people in Brownsville and entrepreneurial Haitian Creole-speakers in Flatbush. Greenpoint Library is being redesigned to house an environmental education center to address the local environmental issues caused by decades of manufacturing in the neighborhood. This past April BPL was named one of the five library recipients for the IMLS 2016 National Medal for Museum and Library Service, the nation's highest honor for libraries, in large part due to BPL's efforts to meet the wide-ranging needs of a diverse borough.

Another priority of BPL has been to expand access to and training in new technologies. Over the last three years, the Library has opened a recording studio and technology lab at Central Library and partnered with organizations like BRIC Arts Media to deepen the Library's digital media offerings. Through Today's Teens, Tomorrow's Techies (T4) BPL trains cohorts of teens on computer and leadership skills so they can help patrons use computers and answer technology questions in branches. BPL is also a partner on the NYC Connected Communities Initiative, which helps residents in eight high-needs communities to improve their digital literacy skills. Last year, BPL launched the Library Hotspot Program with New York Public Library and the Queens Library to bring high-speed internet to low-income Brooklynites who lack access. A survey showed that 69% of hotspot users make under \$25,000 annually and 63% would use the mobile internet device to seek employment. BPL is the largest provider of free broadband in Brooklyn and offers an array of technology including access to 1,500 computers, tablet lending programs and multilingual computer classes. BPL is partnering with Time Warner Cable to open a Learning Lab at Bushwick Library. The Learning Lab will feature state-of-the-art computers, software and other technology.

With funding from an IMLS 2015 Sparks! Ignition Grant, in October 2015 BPL launched the BPL Incubator as a way of doing more to discover needs at the neighborhood-level while giving staff members the tools they need to better support patrons. Through the BPL Incubator, Library staff submit their ideas for community-based projects, gain staff and community feedback, and compete for funding to pilot their project. In its first two competition cycles, the BPL Incubator received 51 submissions from 76 staff representing 26 branches. Applications included partnerships with 58 different schools, artists, community-based organizations and other local groups. In cycle one, eight programs were selected to receive funding and include a career exploration series for high school students; a program for girls ages 12-16 to work with a journalist to learn the fundamentals of reporting; a book making program for youth with low literacy levels; and training for caregivers in East New York to become licensed daycare providers while learning strategies for enhancing early childhood literacy.

Nationally library systems of all sizes are shifting their service model to place greater emphasis on addressing highly local community challenges. In 2012, Richmond Public Library partnered with several youth serving organizations to create a sample curriculum that community summer programs could use to mitigate summer learning loss in third

graders. The following year the Free Library Foundation of Philadelphia created a service plan aimed at improving adult literacy and job training programs in Southwest Philadelphia. Both of these IMLS-funded planning projects placed the library in the role of convener and mapped community assets and gaps in service with the end goal of developing comprehensive models for community collaboration.

Relationship to Similar Projects

BKLYN Link builds off of successful mesh networks and youth training initiatives including BPL's T4 and Technology Resource Specialist (TRS) training programs, and AMP and OTI's Digital Stewards Program. Each year 80-100 teens participate in T4 receiving 32 hours of training, conducting 100 hours of volunteer service and completing 20 hours of technology-based electives such as Dreamweaver, Photoshop and 3D printing. The T4 cohort-based model has had significant impact on helping youth complete the program; last year 87% completed requirements. This past summer T4 was expanded to include a summer component for 50 T4 alumni called Summer Ambassador Program. Now in its 12th year, T4 has served as a springboard for 1,500 disadvantaged teens with alumni pursuing higher education at schools including Massachusetts Institute of Technology, New York University and Brooklyn College, and attaining employment at BPL and organizations such as Girls Who Code, Eyebeam, Brooklyn Museum and JP Morgan Chase. The TRS training was developed to address the shifting personnel needs within BPL and trains staff to serve as branch library tech support. Created ten years ago the program has trained 90 TRSs, including nine Tech Training Supervisors who teach digital literacy classes and supervise T4s.

AMP and OTI work with technology, digital media and community development organizations, including Brooklyn's RHI and CLibre in Tunisia, to implement the Digital Stewards model, which trains residents to build a mesh network in their communities. BPL's BKLYN Link initiative will vary from existing Digital Stewards programs in that it will involve the collaboration of many community stakeholders, including business improvement districts, non-profits and small businesses, who will work together to create the mesh network and its microsite. This initiative will be among the first of its kind for libraries. The microsite will share community events, resources and other information pertinent to the needs of local residents. Additionally, ownership of the mesh network will be given to an organization deeply embedded within the community to maintain.

Intended Audience

Planning stages of this initiative will target community-based organizations, residents, local government agencies, business owners, T4 alumni and other stakeholders in the Brooklyn neighborhoods of East New York, Brownsville and Bedford-Stuyvesant. These neighborhoods were chosen based on their high rates of poverty and youth unemployment, and low rates of broadband access, which has a tremendous impact on economic mobility. In Brownsville 29% of youth ages 20-24 are unemployed (20% citywide), 39% of households live in poverty (21% citywide) and 45% of households lack broadband access (25% citywide). Bed-Stuy has a 26% youth unemployment rate, 39% of households lack broadband and 30% live in poverty. Thirty-two percent of East New York residents lack broadband, 29% of youth are unemployed and 29% live in poverty (Office of NYC Comptroller, December 2014 Policy Brief, Internet Inequality: Broadband Access in NYC; U.S. Census Bureau 2013/14). On a broader scale the cohort-based fellowship model and lessons learned from the planning grant will be valuable in creating and enhancing youth programs and community partnerships, helping BPL's 59 neighborhood branches better serve their patrons, and stimulate and support innovative solutions to community challenges.

The intended audience for a full-scale implementation of BKLYN Link are 1) residents, visitors, community groups, local businesses, social service agencies and others within a geographic area surrounding two neighboring BPL branches, both serving large low-income populations lacking internet access; and 2) area young adults, ages 18-24 seeking to gain digital literacy, technology and workplace readiness skills through the BKLYN Link fellowship program. By creating a playbook of best practices, BPL will share guidelines on how other public library systems can create mesh networks with a corresponding fellowship program in their communities, as well as strategies for establishing effective and innovative local partnerships.

2. Impact

In the digital age, the roles of public libraries have changed tremendously from book repositories to active centers of innovation, learning and civic engagement. BKLYN Link addresses current issues that concern the library field and is aligned with the IMLS priorities of strengthening the National Digital Platform and Learning in Libraries. Establishing a community-driven mesh network, installed and maintained by local youth, with a dedicated microsite focused on local affairs will support the IMLS National Digital Platform priority by building the technical and social infrastructure of a Brooklyn neighborhood and expanding BPL's digital capacity. Community groups, non-profits, schools, government agencies, businesses and residents will serve as beneficiaries and contributors by participating in the BKLYN Link fellowship program, hosting mesh network APs, providing content on the network's microsite and utilizing services only available through high speed access to the internet.

BKLYN Link also supports IMLS' Learning in Libraries priority, specifically the recommendation to "develop cross-disciplinary collaborations that advance library services," by bringing together diverse stakeholders to address community needs and strategize ways to coordinate efforts to ensure BKLYN Link is a success and that future library programs are innovative, accessible and impactful. Local teens will benefit from a library-based fellowship program that teaches valuable technology, leadership and work readiness skills, and prepares young people to be successful in the workplace. The cohort model of the fellowship promises to keep youth engaged by creating a network of peers to provide support and encouragement. This project is an opportunity to advance digital equity and broadband access in an under-resourced community, while building social capital and deepening civic engagement. Best practices and lessons learned through the planning stages of BKLYN Link will also identify new and sustainable ways to build partnerships and engage new audiences, specifically those who are underserved.

Community Buy-in & Partnerships

Success of the BKLYN Link mesh network and fellowship program is dependent upon the commitment and collaboration of multiple community stakeholders including residents, community-based organizations, local businesses, schools, advocacy groups and others. The mesh network will be built through various entities and individuals coming together to host APs and share internet service. An optimal mesh network set-up would have indoor internet connection connected to indoor and outdoor APs which would be located on rooftops transmitting a strong wireless internet signal into the community and between nodes. BPL will look to non-profit, social service and education entities to host wireless local area networks, and residents and businesses to host nodes. Additionally BPL will seek one non-profit agency, such as a community development organization, to take ownership of the mesh network. Based on the results of a community needs assessment, the mesh network's microsite will feature information identified as important to community members including links to cultural events, community board meetings, educational workshops, government services, Library programming, etc.

The fellowship program will rely on community partners to play a role by helping to recruit participants, leading workshops, providing space within their institutions to host programs, serving as mentors and/or providing wraparound services to fellows such as childcare, healthcare or education classes. Local businesses and community organizations will be asked to support the program by allowing fellows to work with their leaders, owners or other staff to enhance their technological capabilities, such as adding wireless credit card readers to payment options and promoting services via social media. T4 alumni will be recruited to participate in a pilot phase of the fellowship program and will provide critical feedback on the final curriculum and program structure.

Digital Services (Mesh Network)

A full-scale implementation of BKLYN Link will expand digital services to residents and visitors located within wireless broadband connection range of the mesh network. BKLYN Link will provide free wireless internet access to anyone who logs into the network. When commercial internet service is down, users will still be able to access information located on the microsite. This added layer of connection will be of great value during emergency situations, such as severe weather, and provide up-to-date information that could be critical to community members. Digital content will be expanded through providing a network microsite that highlights information relevant to the needs and interests of community members. The planning phase of BKLYN Link will allow BPL to create a framework and map for the mesh network, while determining the physical reach of the network. It will also pilot a

small-scale version of the mesh network and identify the types of content for the microsite that are of greatest interest to residents.

Performance Indicators

The following indicators will be used to measure progress towards expanding digital services and enhancing digital content during the planning grant:

- Asset maps highlighting existing free public WiFi, social service organizations, government services, cultural institutions, education-related facilities, etc. in three target neighborhoods;
- A small-scale pilot of a mesh network surrounding one BPL branch and a corresponding evaluation; and
- A timeline, work plan, evaluation process and budget for establishing a larger mesh network.

Learning Outcomes (Fellowship Program)

The goals of the proposed planning grant are to identify the community and branches where BPL will launch BKLYN Link, assess the needs of the community, design and pilot the youth fellowship program, and prepare a work plan for launching a full-scale implementation project. The learning outcomes of the 12-month project are:

- 1) Identify branches to serve as hosts for the mesh network and fellowship program;
- 2) Secure partnerships with community-based organizations and buy-in from various stakeholders including residents, community-based organizations, schools and small businesses;
- 3) Design a curriculum and outreach plan for a 6-12 month youth fellowship program;
- 4) Pilot a small-scale version of the fellowship with T4 alumni;
- 5) Create a timeline, work plan, budget and evaluation for a full-scale project;
- 6) Analyze and share findings from the needs assessments with community stakeholders; and
- 7) Establish a model and playbook for conducting community asset mapping, needs assessment and engaging diverse community entities to share with the library community.

Performance Indicators

- Branches are selected to launch the full-scale implementation of BKLYN Link (target: 1-2 branches);
- A list of confirmed and potential partners and their roles is created (target: 3 confirmed partners, ten potential partners identified);
- Fellowship curriculum and recruitment plan are created;
- Components of the fellowship program are piloted and evaluated with T4 alumni (target: 5 participants);
- Community needs assessment of the neighborhood best positioned to host a mesh network and an analysis of the findings (target: one assessment will be completed);
- A timeline, budget and evaluation for full-scale implementation is established;
- Best practices, lessons learned and other findings are used to create a model and playbook that will be shared with public libraries of all sizes.

Measuring and Sharing Success & Deliverables

Success of performance measures related to digital services and learning outcomes will be assessed through regular communication with community partners sharing project updates. Reports highlighting findings from community asset mapping, the community needs assessment, overall project findings and next steps will be shared with project partners and BPL staff. This information will be used to create a playbook which will be shared with BPL staff and other public library systems. The playbook will highlight successful community engagement strategies and tools, and will provide steps that library staff can take to create and strengthen partnerships in the community around a specific need or challenge. It will also share a framework for establishing a community-driven mesh network and the curriculum created for the BKLYN Link youth fellowship program. The playbook will be shared through online communications, conference presentations and other dissemination methods.

Sustainability

It's anticipated that through the planning grant BPL will be well positioned to launch a full-scale implementation of BKLYN Link by creating a young adult fellowship program and establishing a community-driven mesh network.

Through this project BPL aims to become a stronger local partner across the borough in developing broader strategies for access to broadband infrastructure. BPL will use the processes and findings from the planning grant as it evaluates existing services and launches new programs in Bed-Stuy, Brownsville and East New York, as well as the communities served by BPL's other branches. Findings will be shared with branch staff to help them build and strengthen community partnerships, while improving library services for patrons that better meet community needs. Portions of the fellowship curriculum may be used to offer stand-alone or multi-session workshop series.

3. Project Design

The goal of the proposed planning grant is to deepen the Library's role as a community connector and convener, helping to address highly local community issues in partnership with community members including young adults, residents, businesses, non-profits, schools, community groups, government agencies and others. BPL seeks to provide library staff at its 59 branches with tools, strategies and resources that support their engagement with the community and helps to share innovative ideas and projects across the borough.

Objectives:

- 1) Establish an action plan for creating a community-driven mesh network in one low-income and digitally disconnected community;
- 2) Develop a comprehensive cohort-based fellowship program for young adults to support the mesh network;
- 3) Create a framework with recommendations for engaging diverse communities and stakeholders around a shared goal or interest;
- 4) Strengthen the Library's role as a community anchor and hub of innovation; and
- 5) Determine BPL's next steps in launching a full-scale implementation of BKLYN Link.

Activities

To achieve the objectives of the BKLYN Link planning grant, BPL will conduct the following activities.

1) Asset Exploration

Core Partnerships: BKLYN Link is a complex project requiring partnership and buy-in from multiple organizations. As a first step in the project, the project team (described in the following staffing section) will engage with potential core partners in each of the three neighborhoods. Core partners will be community organizations dedicated to improving the vitality of their neighborhoods, such as Center for Court Innovation and the Pitkin Avenue Business Improvement District, and have the ability to oversee and maintain the mesh network. These core partners will become key links to other community organizations and leaders, and play a significant role in a full-scale implementation of BKLYN Link.

Background Research: BPL will conduct in-depth research on other mesh network programs such as RHI's Digital Steward's program, Harlem Free Wifi (a mesh network serving NYC's Harlem neighborhood), AMP's Detroit Community Technology Project, Spain's Guifi.net, and others. BPL will capture lessons learned in mesh network deployment, policies and maintenance, community engagement and cohort-based training.

Community Asset Mapping & Needs Assessment Design: BPL will hire a consulting firm that specializes in community engagement to lead asset mapping and design guidelines for conducting needs assessments. Asset mapping will be conducted in the Brownsville, Bed-Stuy and East New York neighborhoods. In the cases where these neighborhoods have been previously studied and mapped the consultant will collect existing information as well as new data. Assets to be mapped include: existing free public wifi; number and types of community organizations, businesses and schools; and key information providers such as local blogs, community bulletin boards and active community advocates. Results of the asset mapping will help determine which neighborhood and corresponding Library branch will host the BKLYN Link pilot and provide a guide of best practices for library staff to use when conducting their own asset mapping. Findings will be compiled into an easily accessible and user-friendly guide that can be used by BPL staff in the targeted communities, as well as communities throughout Brooklyn. Neighborhood findings will also be shared with community groups and others.

Additionally, the consultant will develop a needs assessment toolkit to assess what topics and types of information are of greatest importance and interest to residents. Tools will be adaptable to various audiences including local residents, young adults, immigrants, small businesses and community-based organizations, and will be included in the community engagement and BKLYN Link playbook (described below). A needs assessment of one community will be conducted by trained fellows (T4 alumni) during the pilot phase of the planning grant.

Location Criteria Development & Selection: BPL will develop criteria for how the Library will determine which neighborhood to launch BKLYN Link in first. Criteria will include community assets, branch capacity, potential community partners, built environment and barriers. Other criteria will be determined during the grant period. Final selection of the branch to pilot BKLYN Link will be based on the criteria.

2) Fellowship Development

A consultant specializing in youth technology training programs will work with BPL to develop a curriculum for the fellowship program that will be relevant to participants of varying skill levels and experience. BPL will evaluate its T4 and TRS training programs to determine successful outreach and retention strategies, curriculum and modalities, participant outcomes and evaluation results. For instance, T4 has an 87% completion rate and in the 2014-15 program year, 21% of T4s came from Bed-Stuy, Brownsville and East New York. BPL will use successful outreach and instructional practices, and adapt existing curriculum that aligns with the goals of the BKLYN Link fellowship program. Fellowship training topics will include building a mesh network, BPL programs and policies, customer service, software packages such as MS Office and Adobe Creative Suite, social media, finance tools, basic web design, hardware maintenance, community outreach and leadership skills. BPL will identify existing technology partners and organizations serving the targeted community and/or specializing in building mesh networks to support instruction.

3) Technology Planning

BPL will work with a technology consultant who specializes in building mesh networks. Together BPL and the consultant will develop policies and procedures as they relate to the mesh network including: infrastructure maintenance and upgrades; roles and responsibilities of project partners; user privacy and security; data collection; and customer service protocols. Once a BPL branch is selected to host the mesh network, BPL and the consultant will work together to determine the ideal set-up and number of nodes needed to create an effective network, location of rooftop antennas and APs, and any other technology that would be required. A map showing optimal positions of gateway and repeater nodes will be created. This consultant will also work with BPL on curriculum design for the fellowship program.

4) BKLYN Link Pilot

Fellowship: BPL will conduct a small-scale pilot of BKLYN Link over a five-month period at the BPL branch selected to host the mesh network. Five T4 alumni will be recruited to participate in an abbreviated version of the fellowship that will include 25-35 hours of training, community outreach and mesh network installation. The training will test the new curriculum and gather real-time feedback from participants on what aspects of the training could be improved including content, activities and learning goals. Feedback will be used to revise modules as needed. Participants will also conduct a community needs assessment with support from the community engagement consultant. Community feedback will be solicited through informational flyers and surveys distributed in the community, posted on BPL's website and shared with core community partners, schools, community-based organizations, and others. This information will be used to outline the content of the mesh network's microsite. Lastly fellowship participants will conduct a small-scale asset development exercise and go into the neighborhood and develop relationships with potential node hosts and users of the mesh network. Participants will each receive a stipend for completing the program.

Mesh Network: Several functioning nodes will be added to the selected Library branch's internet network to test mesh network hardware, policies and procedures, maintenance plans, customer service, etc. This mesh network will extend only into the immediate vicinity of the Library branch and will likely not involve community partners or individuals hosting nodes, nor have a microsite. The mesh network will be monitored for individual usage and

network outages. Fellowship participants will assist in the installation and maintenance of the pilot mesh network and collect feedback from users to evaluate their experience.

Evaluation: An evaluation of the pilot will be conducted by BPL and will ask questions such as:

- 1) What was the experience of participants of the fellowship program?
- 2) What aspects of the fellowship curriculum were most and least useful?
- 3) Who is using the mesh network (e.g. youth, older adults) and how often (e.g. daily, weekly)?
- 4) What is the mesh network user experience in terms of ease of accessibility, technical difficulties, etc.?
- 5) How is the network being used (e.g., employment, social media, news)? When is the network being used (e.g., morning, weekends)?
- 6) What technical challenges occurred (e.g., node failure, internet service interruption)? How often?
- 7) What are the costs of a full-scale implementation?
- 8) What is the impact on Library usage (e.g., attendance at programs, circulation, door count)?

5) Playbook Development

BPL's community engagement consultant will create a playbook sharing successful strategies and tools used in the planning stages of BKLYN Link. The playbook will feature information on engaging new and diverse community partners and audiences, conducting and documenting community asset mapping and needs assessments, curriculum development for cohort-based youth training programs, and other successful practices learned through this project. The playbook will feature details about BKLYN Link but will be applicable to a variety of programs in rural, suburban and rural communities. Project staff will create a communication plan to ensure that the playbook is shared broadly with library systems nationally.

6) Create Next Steps Action Plan

Information gathered and the tools developed will be used to determine BPL's next steps in regards to a full-scale implementation of BKLYN Link and ways that BPL's 59 branches can deepen their engagement with their local community to address pressing issues. Findings will be used to improve BPL's design of BKLYN Link and corresponding proposal to IMLS for a National Leadership Project Grant. During this stage, BPL will solidify the role of the Library in supporting community-driven mesh networks and develop a set of metrics that will be used to evaluate the impact of a full scale program roll out. These metrics will include measures related to the network use and its impact, as well as the fellowship program and its impact on cohort members.

Project Partners

NYC Mayor's Office of Technology & Innovation (MOTI): Created under NYC's current mayoral administration, MOTI is charged with ensuring NYC is innovative, tech-friendly and equitable. The agency works on city-wide initiatives such as Computer Science for All, a program bringing computer science classes to students at each school level: elementary, middle and high school; Tech Talent Pipeline offering workforce development programs to engage New Yorkers in tech jobs; and Neighborhoods.nyc, an online platform that community groups can use as a hub for civic engagement, online organizing and information-sharing. BPL will partner with MOTI to ensure it has long-term support of community-driven mesh networks and a role in the citywide digital equity landscape.

Sky Packets: Founded in 2007, Sky Packets creates wifi mesh networks in an array of settings including municipalities, business improvement districts, retail locations and residential developments. In 2013 they collaborated with NYC government to create a mesh network in Harlem covering 95 blocks and serving 80,000 residents. Sky Packets will serve as an advisor and potential consultant on the technology aspect of the pilot project.

Community Partners: BPL will reach out to community groups, small businesses, residents and other stakeholders to engage them in the process of designing a mesh network and related fellowship program.

4. Diversity Plan

Brooklyn is home to 2.6 million residents living in more than 45 neighborhoods each with distinct social, cultural and economic characteristics. U.S. Census Bureau reports from 2014 show that 35.2% of Brooklyn residents are

black/African-American, 35.8% white, 12.1% Asian and approximately 19.5% Hispanic/Latino; 12.1% of the population is over the age of 65; and 23.4% of the population live below the federal poverty level. Additionally, 46.4% of residents speak a language other than English at home and 37.5% were born outside of the United States. Each of BPL's 59 branches strives to provide services that meet the unique needs of local residents. For instance, in the large Russian immigrant community of Sheepshead Bay, the Sheepshead Bay Library branch offers citizenship legal help, English language conversation groups and computer classes taught in Russian. New Utrecht Library serves a large older adult immigrant population and offers a weekly knitting/crochet club, movement classes and teaching artist led arts programs.

Within each of Brooklyn's neighborhoods are community-based organizations, civics groups, small businesses and others working to maintain or improve the vitality of the neighborhood and its residents. While the planning grant will create a roadmap for implementing BKLYN Link in one of the three targeted communities, it will also establish a framework and process for community asset mapping, needs assessments and fostering collaborative community partnerships that can be applied to all Brooklyn neighborhoods, as well as rural, suburban and urban communities elsewhere. These guidelines will have value in launching projects of all sizes from providing summer activities for youth to improving neighborhood infrastructure. Because much of the planning grant focuses on identifying community assets and needs, the strategies and best practices established will be relevant to communities with diverse populations and needs.

5. Project Resources: Personnel, Time, Budget

Staffing

Story Bellows (Project Director), Chief Innovation and Performance Officer (3% FTE), leads the Strategic Planning team and ensures that BPL is positioned to deliver excellent service in a rapidly changing urban environment. Ms. Bellows will serve as the Project Director for BKLYN Link, ensuring coordination across public service and technology resources, and between internal staff and consultants. Before BPL, Ms. Bellows co-founded and served as Director of the Mayor's Office of New Urban Mechanics in Philadelphia, and was Director of the Mayors' Institute on City Design, based in Washington, DC. An urban designer by training, Ms. Bellows holds degrees from Colgate University and the London School of Economics.

Selvon Smith, Vice President of Technology and Chief Information Officer (1% FTE), administers technology support system-wide and is responsible for the management of computing, networking, databases and software infrastructures, the implementation of new technology initiatives, setting technology standards, providing thought leadership for new enabling technology, etc. He manages BPL's Schools and Library E-rate discount program that provides over \$2 million in discounts every year. Mr. Smith will lead the development and approval of policies and procedures related to the mesh network.

Diana Plunkett, Manager of Strategic Initiatives (5% FTE), will serve as the day-to-day project manager for BKLYN LINK and will be responsible for creating and implementing the project evaluation, conducting background research, serving as the liaison with the community engagement consultant, building partnerships with community groups, etc. Ms. Plunkett has a background in technology and is a key member of BPL's Strategic Planning team. She manages innovative systemic changes including the launch of the BPL Incubator; MyLibraryNYC, a partnership with the NYC Department of Education and NYC's three library systems; patron engagement efforts; and the development of organizational database management and reporting systems.

Rawle Jackman, Manager of Technology Services (6% FTE), manages the design, implementation and support of BPL's Apple solutions, wireless networking and media services provisioning. He has worked at BPL for 16 years and is responsible for the Library's first public wireless network. Mr. Jackman will work directly with the technology consultant and BPL's IT leadership to develop the policies and procedures for the development, deployment, maintenance and operations of the mesh network. He will manage the technical aspects of the pilot program.

Jackson Gomes, T4 Coordinator (1% FTE), has been with BPL for 17 years and has served as a young adult library associate and currently coordinates BPL's T4 program. Under his leadership T4 has grown to include the Summer

Ambassador program. Mr. Gomes will lead the curriculum development efforts on behalf of BPL, leveraging his experience and the resources from the T4 program. Mr. Gomes will be a key member of pilot team, helping to recruit cohort members and ensuring a valuable experience for the pilot cohort.

Consultants

Community Engagement Consultant, will conduct community asset mapping (leveraging existing resources and supplementing where necessary) in three neighborhoods and develop protocols, best practices, tactics and strategies for how libraries may conduct their own asset mapping in the future. They will also design needs assessment practices for the pilot BKLN Link fellowship and advise fellows as they conduct a needs assessment. Lastly the consultant will develop a playbook for how public libraries might most effectively use staff, volunteers and others to catalyze engagement (particularly related to asset mapping and needs assessment) in its communities. This consultant will have extensive experience working with diverse communities and stakeholders to assess local needs.

Curriculum Consultant, will assess existing BPL curriculum modules for applicability; design a curriculum to enable a youth cohort to develop skills necessary for mesh network maintenance and supporting potential mesh network users. The consultant will have a deep knowledge of up-to-date technology practices and creating curriculum for young adults with limited background and experience with technology.

Technology Consultant, will help BPL evaluate different technology options in terms of hardware, and provide advisement in regards to development of policies and procedures for network design, node hosts, installation and testing, maintenance and service. Sky Packets is a potential consultant due to their vast experience working with NYC mesh networks and youth development programs including RHI's Digital Stewards Program.

Timeline

The anticipated timeline for the BKLYN Link planning grant activities are as follows:

- 1) Asset Exploration, November 2016 – February 2017
 - Core Partnership Development, November - December
 - Community Asset Mapping & Needs Assessment Design, January - February
 - Criteria Development & Selection: January – February
- 2) Fellowship Curriculum Development, January – April 2017
- 3) Technology Planning, February – May 2017
- 4) BKLYN Link Pilot, May – September 2017
 - Fellowship, May - September
 - Mesh Network Installation & Testing, August - September
 - Evaluation, May – September
- 5) Playbook Development, September – October 2017
- 6) Final Report for IMLS, January 2018

Budget & Financial Oversight

Ms. Bellows will manage all aspects of the project budget including coordinating payments to consultants and managing the project budget with support from BPL's Controller, Dawn Chung. Ms. Chung has been with BPL since November 2014 and has more than 20 years of experience in non-profit finances. BPL staff time will be paid for through matching funds from BPL's general operating budget.

BPL is currently in sound fiscal health, and in reviewing the financial statements for FY 15, an independent auditor found no material weaknesses in the Library's finances. BPL funding from the City of New York has been based-lined at its FY 14 level, guaranteeing a constant level of funding for the next five years. In FY 16, the Library was approved to receive \$9.2 million of additional funding from the City of New York to increase the service hours and staff of its operations. As a result, starting October 2015, all the Library's 59 neighborhood branches increased their operating hours from five days to six days a week.

DIGITAL STEWARDSHIP SUPPLEMENTARY INFORMATION FORM

Introduction

The Institute of Museum and Library Services (IMLS) is committed to expanding public access to federally funded research, data, software, and other digital products. The assets you create with IMLS funding require careful stewardship to protect and enhance their value, and they should be freely and readily available for use and re-use by libraries, archives, museums, and the public. However, applying these principles to the development and management of digital products is not always straightforward. Because technology is dynamic and because we do not want to inhibit innovation, we do not want to prescribe set standards and best practices that could become quickly outdated. Instead, we ask that you answer a series of questions that address specific aspects of creating and managing digital assets. Your answers will be used by IMLS staff and by expert peer reviewers to evaluate your application, and they will be important in determining whether your project will be funded.

Instructions

If you propose to create any type of digital product as part of your project, complete this form. We define digital products very broadly. If you are developing anything through the use of information technology (e.g., digital collections, web resources, metadata, software, or data), you should complete this form.

Please indicate which of the following digital products you will create or collect during your project
(Check all that apply):

	Every proposal creating a digital product should complete ...	Part I
	If your project will create or collect ...	Then you should complete ...
<input type="checkbox"/>	Digital content	Part II
<input type="checkbox"/>	Software (systems, tools, apps, etc.)	Part III
<input type="checkbox"/>	Dataset	Part IV

PART I.

A. Intellectual Property Rights and Permissions

We expect applicants to make federally funded work products widely available and usable through strategies such as publishing in open-access journals, depositing works in institutional or discipline-based repositories, and using non-restrictive licenses such as a Creative Commons license.

A.1 What will be the intellectual property status of the content, software, or datasets you intend to create? Who will hold the copyright? Will you assign a Creative Commons license (<http://us.creativecommons.org>) to the content? If so, which license will it be? If it is software, what open source license will you use (e.g., BSD, GNU, MIT)? Explain and justify your licensing selections.

A.2 What ownership rights will your organization assert over the new digital content, software, or datasets and what conditions will you impose on access and use? Explain any terms of access and conditions of use, why they are justifiable, and how you will notify potential users about relevant terms or conditions.

A.3 Will you create any content or products which may involve privacy concerns, require obtaining permissions or rights, or raise any cultural sensitivities? If so, please describe the issues and how you plan to address them.

Part II: Projects Creating or Collecting Digital Content

A. Creating New Digital Content

A.1 Describe the digital content you will create and/or collect, the quantities of each type, and format you will use.

A.2 List the equipment, software, and supplies that you will use to create the content or the name of the service provider who will perform the work.

A.3 List all the digital file formats (e.g., XML, TIFF, MPEG) you plan to create, along with the relevant information on the appropriate quality standards (e.g., resolution, sampling rate, or pixel dimensions).

B. Digital Workflow and Asset Maintenance/Preservation

B.1 Describe your quality control plan (i.e., how you will monitor and evaluate your workflow and products).

B.2 Describe your plan for preserving and maintaining digital assets during and after the award period of performance (e.g., storage systems, shared repositories, technical documentation, migration planning, commitment of organizational funding for these purposes). Please note: You may charge the Federal award before closeout for the costs of publication or sharing of research results if the costs are not incurred during the period of performance of the Federal award. (See 2 CFR 200.461).

C. Metadata

C.1 Describe how you will produce metadata (e.g., technical, descriptive, administrative, or preservation). Specify which standards you will use for the metadata structure (e.g., MARC, Dublin Core, Encoded Archival Description, PBCore, or PREMIS) and metadata content (e.g., thesauri).

C.2 Explain your strategy for preserving and maintaining metadata created and/or collected during and after the award period of performance.

C.3 Explain what metadata sharing and/or other strategies you will use to facilitate widespread discovery and use of digital content created during your project (e.g., an API (Application Programming Interface), contributions to the Digital Public Library of America (DPLA) or other digital platform, or other support to allow batch queries and retrieval of metadata).

D. Access and Use

D.1 Describe how you will make the digital content available to the public. Include details such as the delivery strategy (e.g., openly available online, available to specified audiences) and underlying hardware/software platforms and infrastructure (e.g., specific digital repository software or leased services, accessibility via standard web browsers, requirements for special software tools in order to use the content).

D.2 Provide the name and URL(s) (Uniform Resource Locator) for any examples of previous digital collections or content your organization has created.

Part III. Projects Creating Software (systems, tools, apps, etc.)

A. General Information

A.1 Describe the software you intend to create, including a summary of the major functions it will perform and the intended primary audience(s) this software will serve.

A.2 List other existing software that wholly or partially perform the same functions, and explain how the tool or system you will create is different.

B. Technical Information

B.1 List the programming languages, platforms, software, or other applications you will use to create your software (systems, tools, apps, etc.) and explain why you chose them.

B.2 Describe how the intended software will extend or interoperate with other existing software.

B.3 Describe any underlying additional software or system dependencies necessary to run the new software you will create.

B.4 Describe the processes you will use for development documentation and for maintaining and updating technical documentation for users of the software.

B.5 Provide the name and URL(s) for examples of any previous software tools or systems your organization has created.

C. Access and Use

C.1 We expect applicants seeking federal funds for software to develop and release these products under an open-source license to maximize access and promote reuse. What ownership rights will your organization assert over the software created, and what conditions will you impose on the access and use of this product? Identify and explain the license under which you will release source code for the software you develop (e.g., BSD, GNU, or MIT software licenses). Explain any prohibitive terms or conditions of use or access, explain why these terms or conditions are justifiable, and explain how you will notify potential users of the software or system.

C.2 Describe how you will make the software and source code available to the public and/or its intended users.

C.3 Identify where you will be publicly depositing source code for the software developed:

Name of publicly accessible source code repository:

URL:

Part IV. Projects Creating a Dataset

1. Summarize the intended purpose of this data, the type of data to be collected or generated, the method for collection or generation, the approximate dates or frequency when the data will be generated or collected, and the intended use of the data collected.

2. Does the proposed data collection or research activity require approval by any internal review panel or institutional review board (IRB)? If so, has the proposed research activity been approved? If not, what is your plan for securing approval?

3. Will you collect any personally identifiable information (PII), confidential information (e.g., trade secrets), or proprietary information? If so, detail the specific steps you will take to protect such information while you prepare the data files for public release (e.g., data anonymization, data suppression PII, or synthetic data).

4. If you will collect additional documentation such as consent agreements along with the data, describe plans for preserving the documentation and ensuring that its relationship to the collected data is maintained.

5. What will you use to collect or generate the data? Provide details about any technical requirements or dependencies that would be necessary for understanding, retrieving, displaying, or processing the dataset(s).

6. What documentation (e.g., data documentation, codebooks, etc.) will you capture or create along with the dataset(s)? Where will the documentation be stored, and in what format(s)? How will you permanently associate and manage the documentation with the dataset(s) it describes?

7. What is the plan for archiving, managing, and disseminating data after the completion of the award-funded project?

8. Identify where you will be publicly depositing dataset(s):

Name of repository:
URL:

9. When and how frequently will you review this data management plan? How will the implementation be monitored?

BKLYN Link: Brooklyn Public Library (BPL) seeks to strengthen its role as a community connector and deepen its cohort-based work readiness services by creating a community-driven mesh network-and a technology-based fellowship program for disconnected youth. Mesh networks connect communities using inexpensive devices (nodes) to transmit wireless internet signals between each device and into the community, allowing anyone within the connectivity range to log on to the network and access the internet for free. The fellowship will serve up to 45 young people annually and will teach technology and workplace readiness skills. A planning grant of \$50,000 would allow BPL to conduct community asset mapping and needs assessments in order to identify which underserved Brooklyn neighborhood is best positioned to host a network and where the initiative would be of greatest benefit. Funding would also support the development of the fellowship program.

Field-wide Project Need: Public libraries are fundamental and democratic community institutions open to all, and are well positioned to serve as key community connectors and conveners, forming partnerships with and among government and non-profit institutions, small businesses, schools and residents. Through leveraging partnerships, library systems of all sizes can better respond to a wide variety of community needs including digital equity, the aging of the population, linguistically isolated immigrants and career development. Libraries also serve to breakdown silos between stakeholders and communities helping to expand innovative and impactful programs.

BPL is looking for ways to tailor its services more effectively to the specific needs of Brooklyn's 2.6 million residents, allowing its 60 branches to respond entrepreneurially to their local neighborhoods. To that end, developing and deepening partnerships with community groups, small businesses, nonprofits and government agencies is essential. BPL has long hosted free programs run by outside organizations and will continue to look for opportunities to increase and deepen these programs. But it will also do more to form alliances that address neighborhood-specific challenges such as youth unemployment and low rates of broadband access and will work in a more sustained way with partners to address these challenges both inside and outside the Library. BKLYN Link will allow BPL to test out a new neighborhood partnership model that addresses a specific social challenge at the local level and which can be replicated in other parts of Brooklyn and in other communities nationally.

Project Overview & Work Plan: BPL has been successful with several of its technology training initiatives including Today's Teens, Tomorrow's Techies teen volunteer program and the Technology Resource Specialist staff development training. Additionally many urban areas, including Detroit and Red Hook (Brooklyn), have established mesh networks through youth training programs. BPL seeks to build off these successful initiatives to create BKLYN Link, which would use the creation of a mesh network as a tool for 1) engaging disconnected youth in a cohort-based technology and work readiness fellowship program, 2) establishing and expanding partnerships with community stakeholders and 3) increasing access to information for educational, professional and civic engagement purposes. A planning grant would allow BPL to complete the following preliminary steps over a 12-month period:

Community Asset Mapping (Oct-May) BPL will conduct community asset mapping in the low-income and digitally disconnected neighborhoods of Bed-Stuy, Brownsville and East New York to identify which communities have resources available that could best support the mesh network. Resources include existing free broadband coverage, local infrastructure and availability of optimal access point locations to host nodes. In addition, while BPL plans to establish the network, ownership will be given to a community organization with the capacity to provide maintenance and make updates to the network's landing page. Community groups, small businesses and government agencies will help the Library identify the assets available to successfully launch this initiative.

Community Needs Assessments (June-Sept) After BPL selects the library branch that will serve as the primary host for the project, a community needs assessment will be conducted to determine the needs of residents, the types of information they would like to see on the network's landing page, and how different community stakeholders will support the program's rollout. The landing page will be seen by all users who log onto the network and will display resources and links related to library programming, educational opportunities, work readiness programs, local events and information that reflects the results of the needs assessment. The assessment and its findings will be developed and shared with community stakeholders ensuring a shared commitment to project goals, stronger partnerships, a deeper understanding of community needs and shared knowledge of the resources available.

Fellowship Program Design (June-Sept) As a part of BKLYN Link, BPL will develop a comprehensive fellowship program for disconnected youth, ages 18-24, focused on teaching technology, digital literacy and workplace readiness skills. Fellows will create and maintain the mesh network and work with local small businesses to help them tap into the network to improve and grow their businesses. This fellowship will provide high-value work experience and skill development to three cohorts of 12-15 young people each year (36-45 total). During the grant period BPL will outline a curriculum plan for the fellowship program and identify which community partners would play a role by leading workshops, providing space within their institutions to host programs, serving as mentors and providing wraparound services, such as childcare and social services. BPL will also assess the technology needs of local businesses to identify ways that the mesh network and fellows can best be used to enhance services.

Connection to IMLS Priority: Establishing a community-driven mesh network with a dedicated landing page focused on local affairs will support IMLS' National Digital Platform priority by building the technical and social infrastructure of a Brooklyn neighborhood and expanding BPL's digital capacity. Community groups, businesses and residents will serve as beneficiaries and contributors by participating in the fellowship program, hosting mesh network access points, providing content on the network's landing page and logging into the internet through the network. BKLYN Link also supports IMLS' Learning in Libraries priority, specifically the recommendation to "develop cross-disciplinary collaborations that advance library services," by bringing together diverse stakeholders to address community needs and strategize ways to coordinate efforts to ensure BKLYN Link is a success and that future library programs are innovative, accessible and impactful. This project is an opportunity to advance digital equity and broadband access in a community where a large portion of residents lack connectivity, while building social capital and deepening civic engagement.

Potential Impact: A planning grant will allow BPL to determine which library branch(es) and surrounding communities are best positioned to launch full scale implementations of BKLYN Link. The grant would also create a framework and guide for working in new and sustainable ways within a community to build partnerships and engage new audiences, specifically those who are underserved. The next phase of BKLYN Link would establish the mesh network and fellowship program, and provide a model for launching innovative programs based on community input and engagement. This model would benefit neighborhood branches by providing staff tools for connecting with their patrons and designing new programs that address community-specific needs and interests.

Project Director & Partners: This project will be led by Story Bellows, BPL's Chief Innovation and Performance Officer since November. Story leads BPL's Strategic Planning team and ensures that BPL is positioned to deliver excellent service in a rapidly changing urban environment. BPL will partner with Sky Packets, a leading provider of free outdoor public WiFi networks, and the NYC Mayor's Office of Technology and Innovation to develop the network. In addition BPL will engage a variety of diverse partners including residents, community organizations and local businesses. BPL has existing strong partnerships in Brownsville, Bed-Stuy and East New York and will leverage these relationships and create new ones to collaborate on BKLYN Link.

Goals & Outcomes: The goals of the proposed planning grant are to identify the community and branch(es) where BPL will launch BKLYN Link, assess the needs of the community and prepare a work plan to implement a full-scale implementation project. The outcomes of the 12-month project are: 1) 1-3 branches will be identified to serve as hosts for the mesh network and fellowship program, 2) partnerships with community-based organizations and buy-in from various stakeholders including residents will be secured, 3) a budget and timeline for a full-scale project will be created, 4) findings from the needs assessments will be analyzed and shared and 5) a model for conducting community asset mapping, needs assessment and engaging community entities will be established.

Budget: Community engagement consultant to conduct asset mapping: \$15,000. Technology consultant to conduct needs assessments, including outreach and workshops: \$11,000. Fellowship program design: \$20,000 (\$15,000 for curriculum design, \$5,000 for technology, including nodes, to test project roll out). BPL uses an 8% indirect cost rate, equal to its federally negotiated rate: \$4,000. BPL match will cover the costs of personnel which is estimated to be \$21,472. Total budget is \$71,472, of which BPL is seeking a planning grant of \$50,000.