

Abstract: *SecondNets: Libraries Building Network Disaster Kits through TV Whitespace and Community Anchor Institution Collaborations*

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## ABSTRACT

“2017 was the most costly U.S. disaster year on record,” reports the Washington Post. Climate change predicts extreme weather related disaster events will only increase both in severity and frequency. During disasters libraries have stepped up to maintain emergency information and communication lines as so-called second responders. It is then only natural that libraries and other anchor institutions seek to provide robust backup communication networks, we’re calling “SecondNets.” Equipping libraries (and other local anchor institutions) with inexpensive and reliable wide area wireless communication systems will strengthen community resilience in disaster response and further reinforce the library’s emerging role as community tech and innovation hub.

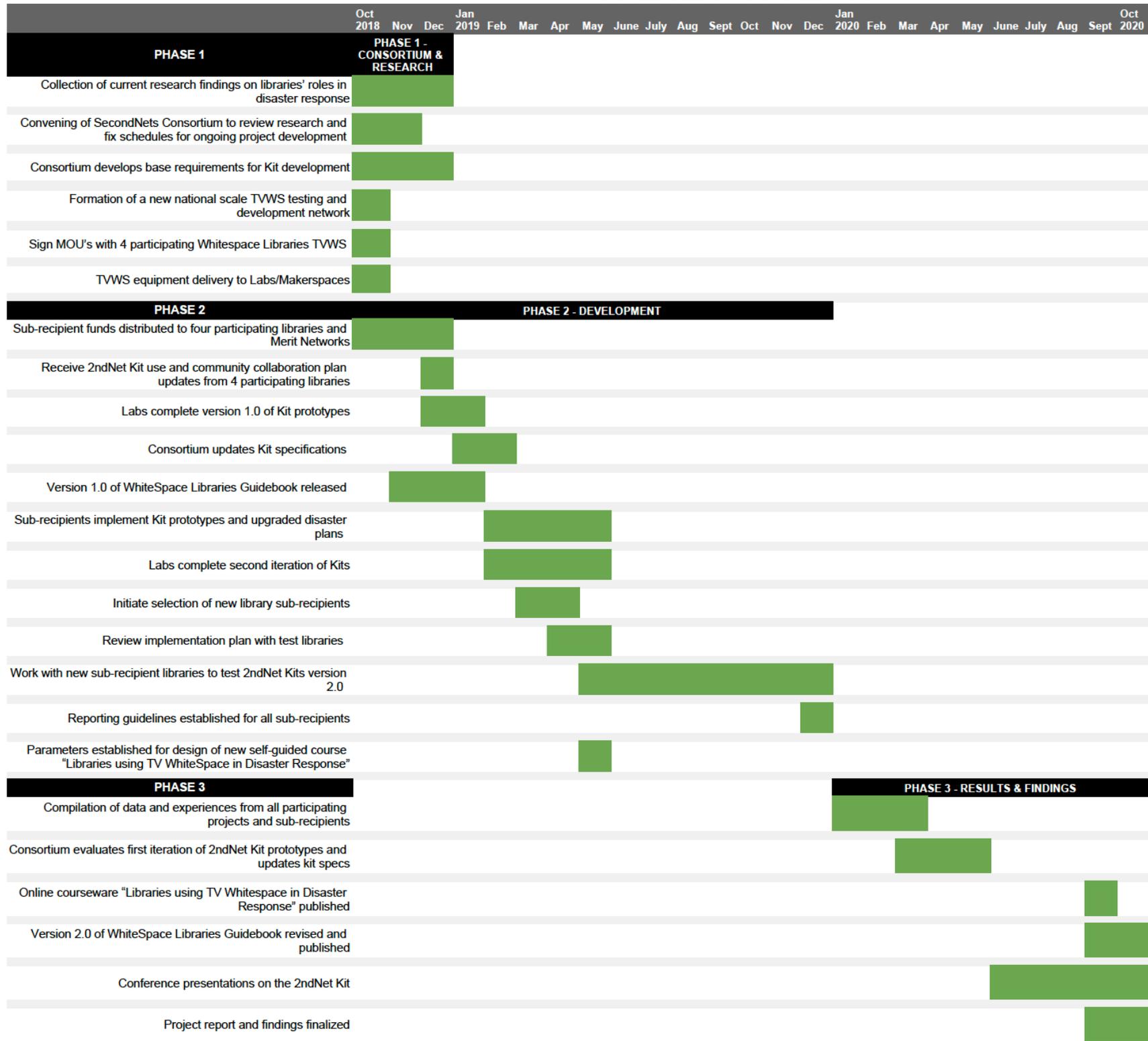
Califa Group, in collaboration with Gigabit Libraries Network, proposes a Project Grant under Community Anchors category, *SecondNets: Libraries Building Network Disaster Kits through TV Whitespace and Community Anchor Institution Collaborations*, to bolster libraries’ vital role in community disaster planning through the deployment of TV Whitespace (TVWS)/WiFi networks. TVWS refers to extremely valuable license-exempt radio spectrum with a range measured in miles that can pass through or around obstructions, such as trees and buildings. Early efforts show TVWS to be a viable solution in disaster response, especially in useful in rural areas, and has already been successfully deployed by innovative libraries in a dozen states.

The primary goal of the project is to streamline, simplify, and standardize the implementation of TVWS systems for libraries through development of “2ndNet Kits.” These kits will function essentially as an all inclusive “network in a box” to facilitate the implementation for libraries with limited IT resources. To reduce costs, the kits will integrate off-the-shelf technologies, including backup power sources for remote kiosk WiFi access points with charging capabilities, and embedded interfaces such as tablets and optimized for portability. Libraries will also use the introduction of this technology as a basis for new local partnerships like with schools as “homework hotspots.” Portability can allow kit use in supporting community events like a fair or a weekly farmer’s market. This two-year project will be implemented through three phases. **Phase 1 – Research & Creation of Consortium:** Project partners will compile existing research on library disaster roles to inform the 2ndNet Kit design process and to support the development of the new related self-guided course. **Phase 2 – Development:** Four libraries in ME, GA, PA & NE already using TVWS in addition to two new college-hosted TVWS makerspaces in MI will serve as a new national, distributed test bed for prototyping the Kits. **Phase 3 – Findings and Courseware:** A national SecondNets Consortium/Advisory Board will establish kit requirements. Results will be published in an implementation Guidebook. The findings will inform kit upgrades and support an online self-guided crisis response unit that builds on “TVWS 101” course created under a prior IMLS grant.

The *SecondNets* project seeks \$248,300 to: 1) Prototype and standardize 2ndNet Kits, 2) Establish community networks with TVWS through direct links between libraries and other anchors as second responders, 3) Provide guidance and support for libraries as well as increase the visibility of TVWS as a disaster response solution through online course and guidebook, and 4) Form a new Consortium/Advisory Board of national organizations to advise on kit requirements and support communications outreach. The “SecondNets Consortium,” the new, diverse consortium of national organizations led by Gigabit Libraries Network(GLN) and Califa, will include Chief Officers of State Libraries Association (COSLA), Schools, Health & Libraries Broadband Coalition (SHLB), the Quilt (association of research and education networks), Information Technology Disaster Resource Center (ITDRC), Merit Networks, and the Library of Michigan. The Consortium will review the current role of libraries in disaster response to design the standardized Kits, will develop the supporting guidance and materials, and raise awareness of TVWS’ potential in disaster response.

*SecondNets: Libraries Building Network Disaster Kits through TV Whitespace and Community Anchor Institution Collaborations* envisions a scalable and field-tested 2ndNets Kit that libraries can deploy to extend a multitude of services out across their communities in new ways and in new spaces. In doing so, this project will enhance the library’s role as community leader, SecondNet crisis responder, and digital inclusion vanguard.

# SCHEDULE OF COMPLETION



## DIGITAL PRODUCT FORM

### Introduction

The Institute of Museum and Library Services (IMLS) is committed to expanding public access to federally funded digital products (i.e., digital content, resources, assets, software, and datasets). The products 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 can be challenging. Because technology is dynamic and because we do not want to inhibit innovation, we do not want to prescribe set standards and practices that could become quickly outdated. Instead, we ask that you answer questions that address specific aspects of creating and managing digital products. Like all components of your IMLS application, 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

- Please check here if you have reviewed Parts I, II, III, and IV below and you have determined that your proposal does NOT involve the creation of digital products (i.e., digital content, resources, assets, software, or datasets). You must still submit this Digital Product Form with your proposal even if you check this box, because this Digital Product Form is a Required Document.

If you ARE creating digital products, you must provide answers to the questions in Part I. In addition, you must also complete at least one of the subsequent sections. If you intend to create or collect digital content, resources, or assets, complete Part II. If you intend to develop software, complete Part III. If you intend to create a dataset, complete Part IV.

## Part I: Intellectual Property Rights and Permissions

**A.1** What will be the intellectual property status of the digital products (content, resources, assets, software, or datasets) you intend to create? Who will hold the copyright(s)? How will you explain property rights and permissions to potential users (for example, by assigning a non-restrictive license such as BSD, GNU, MIT, or Creative Commons to the product)? Explain and justify your licensing selections.

Phase 1 of the project will compile current research on libraries response in disaster to inform Project development. Phase 3 of Project will result in the creation of an online, open course relating to TVWS technology and its use in disaster response. Phases 3 will also create narrative reports, photos of systems, case studies, 2ndNet Kit functional requirements as well as a setup Guidebook. We intend to make all project materials freely available and attribute all work to our project staff. Attribution will be given to IMLS for their support. We support open access and intend to share datasets created via the project though we have not identified a repository or a license for these materials.

**A.2** What ownership rights will your organization assert over the new digital products and what conditions will you impose on access and use? Explain and justify any terms of access and conditions of use and detail how you will notify potential users about relevant terms or conditions.

Project co-PI, Califa and Project co-director, GLN/DVA do not assert copyright if investigators intend to make digital content open access. We don't anticipate any barriers to the provision of our open course materials and other content listed in section A.1 as a freely available resource.

**A.3** If you will create any products that may involve privacy concerns, require obtaining permissions or rights, or raise any cultural sensitivities, describe the issues and how you plan to address them.

The project will not create any products that will involve privacy concerns or require obtaining permissions or rights or raise any cultural sensitivities.

## **Part II: Projects Creating or Collecting Digital Content, Resources, or Assets**

### **A. Creating or Collecting New Digital Content, Resources, or Assets**

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

Phase 3 of the project will result in the creation of an online, open course relating to TVWS technology in disaster scenarios. Digital content will be produced in the form of instructional videos, webcasts, and course content in audio and text/print formats. Guidebook will be published as PDF. A copy of the resulting 2ndNet Kit specifications will be published at the Libraries Whitespace Project page at [giglibraries.net](http://giglibraries.net) as html and in the final IMLS report as a PDF.

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

Our project will select a web-base content management platform for our online open course during the later months of year 2. Our plan is to use WordPress to create a course site that links participants to learning materials in multiple modalities. Among those materials will be live webinars in Blackboard Collaborate. Recordings of these webinars will be converted (via Collaborate Publish!) to MP4 and optimized for mobile use (640 x 480). We chose this (relatively low) resolution in anticipation that viewers will access recorded materials on many different types of devices (desktops, phones, tablets, etc.). We also intend to convert (via Collaborate Publish!) webinar recordings to audio only MP3 files (64 kpbs). Course content in text formats may appear in Microsoft Word and Adobe Acrobat files.

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

Course content and learning resources will appear in video, audio, and print formats. Live recordings will be available for access via Blackboard Collaborate. Recordings of course webinars will be available in MP4 (640 x 480) and MP3 (64 kpbs) formats. Guidebook will be published as PDF.

### **B. Workflow and Asset Maintenance/Preservation**

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

We will follow the workflow as outlined in our Schedule of Completion for the creation of our online open course. Our timeline for meeting planned milestones and deliverables will help us monitor and evaluate our progress.

**B.2** Describe your plan for preserving and maintaining digital assets during and after the award period of performance. Your plan may address storage systems, shared repositories, technical documentation, migration planning, and 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 C.F.R. § 200.461).

We support open access and intend to share digital assets created via the project though we have not identified a repository or a license for these materials. We intend to maintain open access to the course in WordPress during and after the award period as well as for Guidebook.

### **C. Metadata**

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

N/A

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

N/A

**C.3** Explain what metadata sharing and/or other strategies you will use to facilitate widespread discovery and use of the digital content, resources, or assets created during your project (e.g., an API [Application Programming Interface], contributions to a digital platform, or other ways you might enable batch queries and retrieval of metadata).

N/A

#### **D. Access and Use**

**D.1** Describe how you will make the digital content, resources, or assets 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).

N/A

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

N/A

### **Part III. Projects Developing Software**

#### **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) it will serve.

N/A

**A.2** List other existing software that wholly or partially performs the same functions, and explain how the software you intend to create is different, and justify why those differences are significant and necessary.

N/A

#### **B. Technical Information**

**B.1** List the programming languages, platforms, software, or other applications you will use to create your software and explain why you chose them.

N/A

**B.2** Describe how the software you intend to create will extend or interoperate with relevant existing software.

N/A

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

N/A

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

N/A

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

N/A

### **C. Access and Use**

**C.1** We expect applicants seeking federal funds for software to develop and release these products under open-source licenses to maximize access and promote reuse. What ownership rights will your organization assert over the software you intend to create, and what conditions will you impose on its access and use? 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 and justify any prohibitive terms or conditions of use or access and detail how you will notify potential users about relevant terms and conditions.

N/A

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

N/A

**C.3** Identify where you will deposit the source code for the software you intend to develop:

Name of publicly accessible source code repository:

URL:

N/A

## **Part IV: Projects Creating Datasets**

**A.1** Identify the type of data you plan to collect or generate, and the purpose or intended use to which you expect it to be put. Describe the method(s) you will use and the approximate dates or intervals at which you will collect or generate it.

N/A

**A.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?

N/A

**A.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).

N/A

**A.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.

N/A

**A.5** What methods 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).

N/A

**A.6** What documentation (e.g., data documentation, codebooks) 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?

N/A

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

N/A

**A.8** Identify where you will deposit the dataset(s):

Name of repository:

URL:

N/A

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

N/A