

IMLS Planning Grant

The Carpentries 2.0: Scaling Data and Software Skills Training across the US

The proposed two-year planning grant is a collaboration between the California Digital Library (CDL) at the University of California Office of the President (UCOP) and The Carpentries, a 501(c)(3) non-profit organization whose vision is *to be the leading inclusive community teaching data and coding skills*. The scope proposed addresses the critical need to train individuals in academic and research library roles in data and software skills. The project will assess the Carpentries' existing scalability model and inform recommendations for improvement to meet growing demands for digital skills training and skill development across libraries and other research institutions. Additionally, the project aims to develop a model to strategically engage libraries and research computing centers as Carpentries hubs offering data-skills training for its stakeholders, in alignment with The Carpentries strategic plan for 2020-2025.¹ This project will set the stage for future collaborations that empower The Carpentries to support diverse research institutions and libraries, ensuring they meet evolving training needs.

The efforts of this grant project directly align with the National Leadership Grants for Libraries Program objectives 2.1, 5.1, and 5.2 by leveraging libraries to enhance community well-being through data skills training, fostering collaborative initiatives that maximize knowledge resource access, and strengthening engagement across diverse communities. The Carpentries, with their expertise in data and coding skills training, are instrumental in meeting these objectives by equipping libraries with the training needed to serve their communities effectively. Libraries' foundational role in education and skill development is pivotal in supporting The Carpentries' mission. Together, this project and the involved libraries are strategically positioned to ensure that The Carpentries' programs are continually refined and expanded to meet the dynamic educational needs of libraries and research institutions.

Project Justification

Libraries are essential partners in tackling the digital skills gap and meeting the changing training needs of researchers across the United States.² Within this landscape, libraries assume pivotal roles as community epicenters for lifelong learning and skill enhancement. Recognized for their potential to bridge the digital divide, these institutions provide invaluable access to technology and learning opportunities, empowering individuals with the tools needed to thrive in an increasingly digital world.³ Furthermore, there is a noticeable lack of digital skills in the workforce, with many people needing more expertise for modern job roles, like data analysis, software use, and other digital abilities. This gap highlights the need for better training programs to strengthen these vital skills.

Within academia, libraries' adoption of research data services is growing, necessitating librarians to adapt and augment their skill sets to meet escalating demands. A recent study aimed at gauging the proficiency levels of academic librarians in data services and discerning their preferences for continuing education

¹ <https://carpentries.org/strategic-plan/>

² Mersand, S., Gasco-Hernandez, M., Udoh, E., & Gil-Garcia, J. R. (2019). Public libraries as anchor institutions in smart communities: Current practices and future development.

³ Holcomb, S., Dunford, A., & Idowu, F. (2019). Public Libraries: A Community's Connection for Career Services. *John J. Heldrich Center for Workforce Development*.

methods highlighted a significant correlation between the frequency of engagement in data services and having advanced technical skills.⁴ These findings underscore the growing need for recruiting specialized data librarians within academic environments offering data services and comprehensive training programs tailored to all librarians engaged in data-related tasks.

The Carpentries workshops play an essential role in equipping libraries to address the growing data needs of researchers. By providing foundational coding and data science skills, these workshops are key tools in the digital transformation of library services. The training and curriculum of The Carpentries enable librarians to cater to the growing data needs of their communities effectively. This integration of The Carpentries' training into library services underpins their strategic response to the burgeoning demand for digital literacy and data competency.⁵

Libraries frequently collaborate with stakeholders, including local organizations, educational institutions, and governmental agencies, to design and implement these training programs. Moreover, diverse funding sources, including grants, can support the expansion of digital skills training initiatives within libraries. Recent surveys and studies have consistently revealed the expressed desire of library users for access to technology resources and training programs to enhance their digital skills for both personal enrichment and employment prospects. The Carpentries, through its hands-on workshops on foundational coding and data science skills, significantly enhance the educational services libraries can offer, empowering librarians to bridge the gap in digital literacy and research capabilities within their communities.⁶

Additionally, institutions such as Historically Black Colleges and Universities (HBCUs) face specific challenges in developing data skills training pathways due to discontinued pipeline programs for librarianship, necessitating innovative approaches to meet evolving demands.⁷ The research landscape's evolving demands highlight a significant skills gap, particularly at HBCUs, where professionals often lack comprehensive data training, creating barriers to adopting open science principles.⁸

In response to the escalating demand for digital skills training, librarians across the United States are at the forefront of an educational movement. The findings of a study assessing the current level of data services skills among academic librarians advocate for recruiting data specialists within academic library settings offering data services. Simultaneously, there is a critical need to provide comprehensive training initiatives for all librarians engaged in any capacity of data-related tasks, ensuring that libraries remain pivotal hubs for digital skill development and knowledge dissemination.⁹

Over the past decade, The Carpentries has become a pivotal part of an educational framework that delivers workshops and training at libraries and other institutions through a centrally managed curriculum. Since 2012, The Carpentries has directly supported over 4,000 centrally managed workshops in 65

⁴ Fuhr, J. (2022). Developing data services skills in academic libraries.

⁵ The Moore-Sloan Data Science Environments: New York University, UC Berkeley, and the University of Washington. (2017). Creating Institutional Change in Data Science. Zenodo. <https://doi.org/10.6069/v5s4-8n41>

⁶ Kim, S., & Syn, S. Y. (2021). Practical considerations for a library's research data management services: The case of the National Institutes of Health Library. *Journal of the Medical Library Association : JMLA*, 109(3), 450-458. <https://doi.org/10.5195/jmla.2021.995>

⁷ Ndumu, A. V., & Rollins, T. (2020). Envisioning reciprocal and sustainable HBCU-LIS pipeline partnerships: What HBCU librarians have to say. *Information and Learning Sciences*, 121(3/4), 155-174.

⁸ Acree, E. K., Epps, S. K., Gilmore, Y., & Henriques, C. (2001). Using professional development as a retention tool for underrepresented academic librarians. *Journal of library administration*, 33(1-2), 45-61.

⁹ Fuhr, J. (2022). Developing data services skills in academic libraries.

countries to more than 70,000 learners worldwide. Beyond this, thousands of self-organized workshops have extended this model even further through grassroots, do-it-yourself expansion of The Carpentries values and pedagogy¹⁰. The group that leads these lessons, Instructors, are the catalysts that help The Carpentries extend their reach. Currently, 4,300 volunteer Instructors deliver 35 collaboratively developed lessons. Of those, 1,170 self-identify as librarians (27%).

Despite achieving success, The Carpentries encountered challenges in scalability and adaptability attributed to structural constraints, such as heavy reliance on volunteer contributions and a stagnation in Membership growth. The current membership framework, which relies on fees for services like Instructor Training and workshop coordination, is losing relevance as institutional training needs evolve. Over the past year, active Carpentries Member organizations have dwindled from 100 to 89. Moreover, insights from the 2023 community survey¹¹ indicate that member organizations seek additional benefits beyond centrally managed workshops and Instructor training sessions¹².

These challenges, along with limited staff and volunteer capacity, have strained operations and led to the emergence of external groups with similar initiatives, reflecting The Carpentries' reach and impact while also diverting attention and resources. Despite an increase in parallel training initiatives, there is a lack of effort to connect them and capitalize on each initiative's strengths. Current strategies prioritize speed and cost-effectiveness ("go fast, go alone"), inadvertently leading to the formation of isolated content silos. This risks veering away from shared objectives aimed at widely adopting data skills training.

Project Partners: The Carpentries

The Carpentries were formed to teach foundational computation and data science skills through short, impactful workshops. The scaling model is to "train the trainer"; volunteer Instructors are certified to teach Carpentries content in their local communities. All course materials are open-source, public domain, and free to use and contribute to. This way, the organization scales and builds regional self-sustaining learning and supports communities that teach foundational computation and data science skills.

The Carpentries encompasses Software Carpentry, Data Carpentry, and Library Carpentry, united by its mission to teach foundational computational and data science skills. Following a shared Code of Conduct, The Carpentries has grown through mergers and expansions, including Library Carpentry as an official Lesson Program. Governed by a Board of Directors and managed by the Executive Director, Dr. Kari L. Jordan, The Carpentries is funded through various sources, including Membership fees, grants, donations, and workshop fees, detailed in The Carpentries Annual Financial Reports.¹³

Project Partners: California Digital Library

CDL is a well-positioned partner in the effort to reimagine and reevaluate The Carpentries' membership models and partnerships with external training groups. CDL's mission of providing transformative digital library services is deeply embedded in partnerships within the University of California system. It extends through its collaborative engagements, amplifying the impact of libraries, scholarship, and resources. This

¹⁰ Due to the decentralized nature of The Carpentries model, it is not possible to state a specific number of workshops that are self-organized. However, we estimate that it far exceeds the number of centrally managed workshops.

¹¹ Crall, A., Barnes, K., & Word, K. (2024). 2023 Carpentries Community Survey Evaluation Report. Zenodo. <https://doi.org/10.5281/zenodo.10498453>

¹² <https://carpentries.org/membership/>

¹³ <https://carpentries.org/reports/>

ethos of collaboration and commitment to equity and inclusion aligns seamlessly with The Carpentries' objectives.

CDL's engagement with The Carpentries is built on a solid foundation of mutual goals and shared successes, particularly in enhancing digital skills within the researcher and library communities. A notable milestone in this partnership was in 2017 when CDL secured a grant from IMLS (RE-85-17-0121-17¹⁴) that played a pivotal role in integrating Library Carpentry into The Carpentries ecosystem. This strategic integration significantly enhanced the skill training offerings within the library community, fostering a more profound connection between libraries and researchers and encouraging the broader adoption of The Carpentries' teaching methodologies and workshop management practices.

This IMLS-funded initiative demonstrated CDL's dedication to advancing digital literacy and research capabilities, strengthening the collaborative bond between CDL and The Carpentries. It led to increased cooperative efforts, with CDL personnel actively participating in The Carpentries' community roles and serving on its governing board¹⁵. This level of involvement underscores CDL's alignment with The Carpentries' mission and CDL's capability to contribute valuable insights, resources, and leadership to foster the project's objectives. This expansion fostered greater collaboration between libraries and researchers, promoting The Carpentries' teaching methodologies and workshop management. It also strengthened the collaboration between the California Digital Library and The Carpentries.

Project Design

This planning grant focuses on two key work areas: exploring scalable membership models tailored to the needs of libraries and research institutions and convening working groups comprising leaders from organizations inspired or influenced by The Carpentries. This section delineates the structured steps and methodologies the project will employ to actualize these objectives, emphasizing collaborative efforts, iterative development, and community engagement.

Scalable Membership Models Exploration

1. **Assessment Phase:** Initiate a comprehensive assessment of The Carpentries' membership model, identifying limitations and opportunities specifically from the perspective of academic and research libraries. This phase will involve gathering quantitative data and qualitative insights through surveys, interviews, and focus groups with library professionals and current Carpentries member organizations.
2. **Model Development Exploration:** Organize collaborative discussions with stakeholders from libraries, HBCUs, and research institutions to explore alternative membership models. These discussions will employ design thinking methodologies to ensure the models are community-centered, feasible, and scalable.
3. **Pilot Membership Model Design:** Based on the outcomes of the discussions, this membership model will be piloted with up to three libraries. The pilot will include defining outcomes based on The Carpentries Theory of Change, implementation timeline, and feedback mechanisms to gauge the effectiveness and scalability of the models.

¹⁴ <https://www.ims.gov/grants/awarded/re-85-17-0121-17>

¹⁵ <https://carpentries.org/governance/>

Strategic Alliances with Organizations Inspired by The Carpentries

1. Identification and Outreach: Systematically identify organizations that have adopted or been inspired by The Carpentries' model for data and software skills training. Conduct outreach to these organizations, inviting them to participate in a collaborative working group.
2. Working Group Sessions: Facilitate up to four sessions, either virtual or in-person, to share best practices, challenges, and innovations in data skills training within the library and research sectors. Utilize structured facilitation techniques to ensure productive discussions and actionable outcomes.
3. Strategic Alliance Roadmap: Develop a roadmap for strategic alliances among participating organizations, focusing on curriculum sharing, joint grant applications, and co-hosting training events. This roadmap will outline steps for formalizing partnerships, shared goals, and mechanisms for ongoing collaboration.

Cross-Cutting Support Activities

Cross-cutting support activities will include:

- Communication Plan: Implementing a comprehensive communication plan to keep all stakeholders informed and engaged throughout the project. This will include regular updates, feedback solicitations, and sharing of interim results to ensure transparency and collective ownership of the project's direction.
- Evaluation and Feedback Loops: Embedding continuous evaluation and feedback loops within both strands of the work plan. This will involve setting up regular review meetings, utilizing online collaboration tools for asynchronous feedback, and adjusting strategies based on stakeholder input.
- Documentation and Knowledge Sharing: Ensuring thorough documentation of processes, outcomes, and lessons learned. Developing a knowledge-sharing platform where documents, templates, and best practices can be accessed by current and future stakeholders interested in replicating or learning from this project.

This work plan aims to foster a dynamic and collaborative environment where stakeholders actively shape The Carpentries' future direction. By focusing on actionable steps and structured methodologies such as the It Takes A Village framework (described below), this project will explore scalable Membership models and strengthen the community of organizations dedicated to advancing data and software skills training in academic and research library contexts.

Project Methodology: It Takes a Village Framework

The ITAV (It Takes A Village)¹⁶ framework emphasizes the power of community for success – a principle perfectly aligned with open science skills training initiatives like The Carpentries. Originating as an IMLS-funded project in 2017 (LG-73-17-0005-17¹⁷) and funding for additional work in 2020 (LG-246253-OLS-20¹⁸), ITAV has a proven track record in supporting sustainable practices for open-source software (OSS) programs. Sharing core values with OSS projects, The Carpentries relies on a global volunteer network that shapes its lessons, training, and governance. Both ITAV and The Carpentries promote collaboration and make resources freely available. A strong community support model is central to both organizations.

¹⁶ "It Takes A Village Home." LYRASIS. Accessed 14 March 2024.

¹⁷ <https://www.lyrasis.org/technology/Pages/IMLS-OSS.aspx>

¹⁷ <https://www.ims.gov/grants/awarded/lq-73-17-0005-17>

¹⁸ <https://www.ims.gov/grants/awarded/lq-246253-ols-20>

As part of this grant project, we plan to leverage the ITAV framework in assessing The Carpentries' current operational strengths and areas for growth, specifically utilizing the four key facets outlined in ITAV: Governance, Technology, Resources, and Community Engagement. For example, by utilizing ITAV's sustainability assessment tools, we aim to identify effective strategies for expanding our reach within libraries and research institutions, ensuring that the programs remain responsive and relevant to the evolving digital skills landscape. A specific application of the ITAV framework will be re-evaluating The Carpentries' Membership model. Through the lens of ITAV's governance facet, we will explore innovative approaches to engage a broader spectrum of institutions, including Historically Black Colleges and Universities (HBCUs), by offering tailored benefits that meet their unique needs. This strategic initiative will enhance The Carpentries' inclusivity and strengthen their capacity to support diverse learning environments. Furthermore, the ITAV framework's emphasis on community engagement resonates with the project's goal to cultivate a more interconnected ecosystem of Carpentries-like organizations. By fostering strategic alliances and harmonizing efforts, the project envisions creating a unified front to advance data skills training, amplifying the collective impact on global research and education communities.



Figure 1: It Takes a Village is a framework designed to assist open-source software programs in planning for long-term sustainability.

Each section below details specific strategies and examples of how the ITAV framework will be utilized:

Governance

Under the ITAV framework, governance encompasses establishing clear leadership, decision-making processes, and policies. For The Carpentries, this will involve a comprehensive review and potential reconfiguration of its governance model to ensure it meets the evolving needs of its diverse community. Specifically, we will:

- Evaluate and Adapt Governance Structures: Assess current governance practices to identify areas for improvement and ensure they align with the strategic goals of inclusivity and adaptability.
- Enhance Representation: Broaden the representation within governance bodies to include a more diverse range of institutions, particularly focusing on including HBCUs, to reflect the community.

Technology

The Technology facet focuses on technical infrastructure development, maintenance, and sustainability. For The Carpentries, applying the ITAV framework will entail:

- Assessing Technological Needs and Gaps: Conduct a thorough review of the current technological tools and platforms used by The Carpentries to identify areas for enhancement or innovation.

- **Fostering Technological Collaboration:** Exploring partnerships with other organizations to co-develop or share technological resources, reducing redundancy and fostering innovation.

Resources

Resources in the ITAV framework refer to human and financial capital necessary for the program's sustainability. The Carpentries will:

- **Diversify Funding Sources:** To ensure financial sustainability, identify and pursue diverse funding opportunities, including partnerships and updated Membership models.
- **Invest in People:** Develop new strategies to attract, train, and retain a diverse group of volunteers, recognizing their vital role in delivering The Carpentries' programs.

Community Engagement

This facet emphasizes building and maintaining a strong, active community. The Carpentries plans to:

- **Strengthen Community Ties:** Implement initiatives to increase engagement and participation among current community members and the external organizations inspired by The Carpentries, encouraging and retaining a communal sense of ownership and commitment to The Carpentries' mission.
- **Expand Outreach:** Develop targeted outreach programs to engage new communities, including libraries and research institutions not currently served by The Carpentries, using inclusive and accessible approaches.

In short, ITAV offers a robust model to achieve this project's goals. ITAV empowers groups to deliver open science training sustainably, supporting efforts to ensure The Carpentries remains a leading force in research and education. By employing the ITAV framework, the project team will provide robust strategies and tools for enhancing community engagement, ensuring sustainability, adapting to changing needs, and fostering collaboration. These efforts will collectively strengthen The Carpentries' capacity to support diverse research institutions and libraries, significantly contributing to the open science and digital literacy fields.

Work Plan

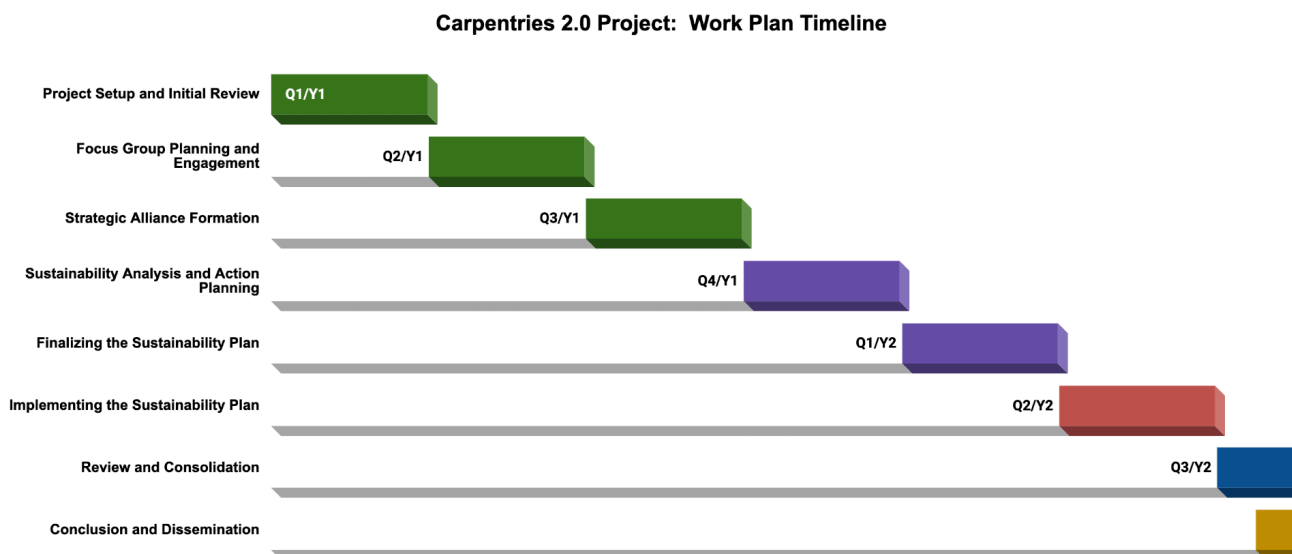
The project, from August 2024 to August 2026, will assess and evolve The Carpentries' Membership model, focusing on amplifying its impact within the library community. By implementing focus group strategies, forming strategic alliances, and rigorously evaluating sustainability measures, the project will pave the way for a more inclusive and effective Carpentries ecosystem.

August 2024 - November 2024: Q1 - Project Setup and Initial Review

In this initial phase, the project team will lay the groundwork for the upcoming activities. This will involve assembling a diverse project team, clearly defining roles, and crafting a detailed plan to steer the project's objectives, timelines, and key outcomes. An initial review of The Carpentries Membership Model will focus on gathering historical data and understanding the current framework. This review will specifically identify how the model serves the library community and where enhancements can be made. A consultant with expertise in non-profit membership models will be brought on board to provide specialized insights and assist in tailoring the project to meet the unique needs of library professionals.

December 2024 - March 2025: Q2 - Focus Group Planning and Engagement

With the project's foundation, attention will turn to organizing and engaging Membership Focus Groups in virtual sessions. These groups will consist of individuals from the library community, reflecting a wide range of institutions. Protocols will be established to guide discussions on refining The Carpentries' Membership model, particularly optimizing Instructor recruitment and course development to serve library professionals better. By the quarter's end, the first set of focus groups will be ready to provide valuable insights into libraries' specific needs and challenges.



April 2025 - July 2025: Q3 - Strategic Alliance Formation

This quarter will see the initiation of strategic alliance planning. Collaborative ties will be set up with leading organizations and entities that have a stake in data science education and that have been inspired or influenced by The Carpentries, such as NASA's Transform to Open Science (TOPS), CODATA-RDA Schools of Research Data Science (SoRDS), Turning Way, OpenScapes, and UCLA's Data Science Center. In-person sessions will be conducted in San Diego. These discussions will share best practices and challenges in maintaining up-to-date, well-funded training programs. Emphasis will be placed on harnessing the ITAV framework to identify crucial areas where The Carpentries can invest to enhance support for the library community.

August 2025 - November 2025: Q4 - Sustainability Analysis and Action Planning

The project will focus on a thorough sustainability analysis, examining governance, resources, and community engagement, focusing on the library sector's specific needs. Insights from previous focus groups and strategic alliances will be instrumental in crafting a sustainable action plan that addresses the identified gaps and opportunities. In-person sessions will be conducted with HBCUs in Atlanta. Special attention will be given to ensuring that the plan resonates with libraries' diverse and often unique requirements and their personnel, fostering long-term engagement and support.

December 2025 - March 2026: Q5 - Finalizing the Sustainability Plan

Efforts in this quarter will concentrate on finalizing the sustainability action plan. The plan will be refined to address the feedback received, focusing on actionable strategies that benefit the library community within The Carpentries' ecosystem. Ongoing team meetings and communications will ensure the plan remains flexible and responsive to the evolving landscape of library and information science.

April 2026 - July 2026: Q6 - Implementing the Sustainability Plan

As the sustainability action plan rolls out, the team will monitor its execution closely, evaluating its effectiveness in meeting the set objectives, especially those related to the library community. Adjustments will be made as needed based on feedback and observed outcomes. An interim report will detail the progress made and the impact of the implemented strategies on enhancing The Carpentries' engagement with library professionals.

August 2026 - November 2026: Q7 - Review and Consolidation

In the penultimate quarter, the team will review and consolidate the outcomes of implementing the sustainability plan, specifically focusing on its impact on the library sector. This period will involve comprehensive evaluations and reflections on the journey thus far, ensuring that the project's objectives have been met and identifying lessons learned to inform future initiatives.

December 2026 - March 2027: Q8 - Conclusion and Dissemination

The project will culminate in this final quarter with a review of all activities, outcomes, and specific impacts on the library community. The project team will convene to discuss the project's overarching achievements and challenges, with a special session dedicated to reflecting on the journey's implications for library professionals. The project will conclude with the widespread dissemination of findings, insights, and strategies, aiming to empower The Carpentries and its community to foster a more inclusive, supportive, and enriched environment for library personnel. This will include an in-person session at CNI in Washington, DC.

Diversity Plan

This project demonstrates a profound commitment to diversity by embedding EDI (Equity, Diversity, and Inclusion) principles at the heart of its operations, going far beyond simple compliance with funder diversity plans. A landmark partnership with Historically Black Colleges and Universities (HBCUs) ensures these Minority Serving Institutions (MSIs) are central to the development of The Carpentries curriculum and Membership Model, recognizing the unique challenges HBCUs face in building data skills pathways. The project will inclusively reform its governance to ensure diverse institutional representation, including HBCUs, and critically analyze its tools for potential gaps or innovation opportunities. Strategic partnerships with other organizations will co-develop and share technology resources, minimizing overlap and fostering inclusivity. This holistic approach positions the project as a model for truly integrating EDI, ensuring that every part of its work reflects those values and creates an equitable learning environment for all.

Project Results

This grant project is an opportunity for strategic reflection and action to secure a scalable and adaptable future for the Carpentries. The following specific deliverables are anticipated to emerge from the grant. These deliverables are designed to enhance The Carpentries' impact on the library community and ensure a more scalable, adaptable future for data and software skills training in academic and research library sectors:

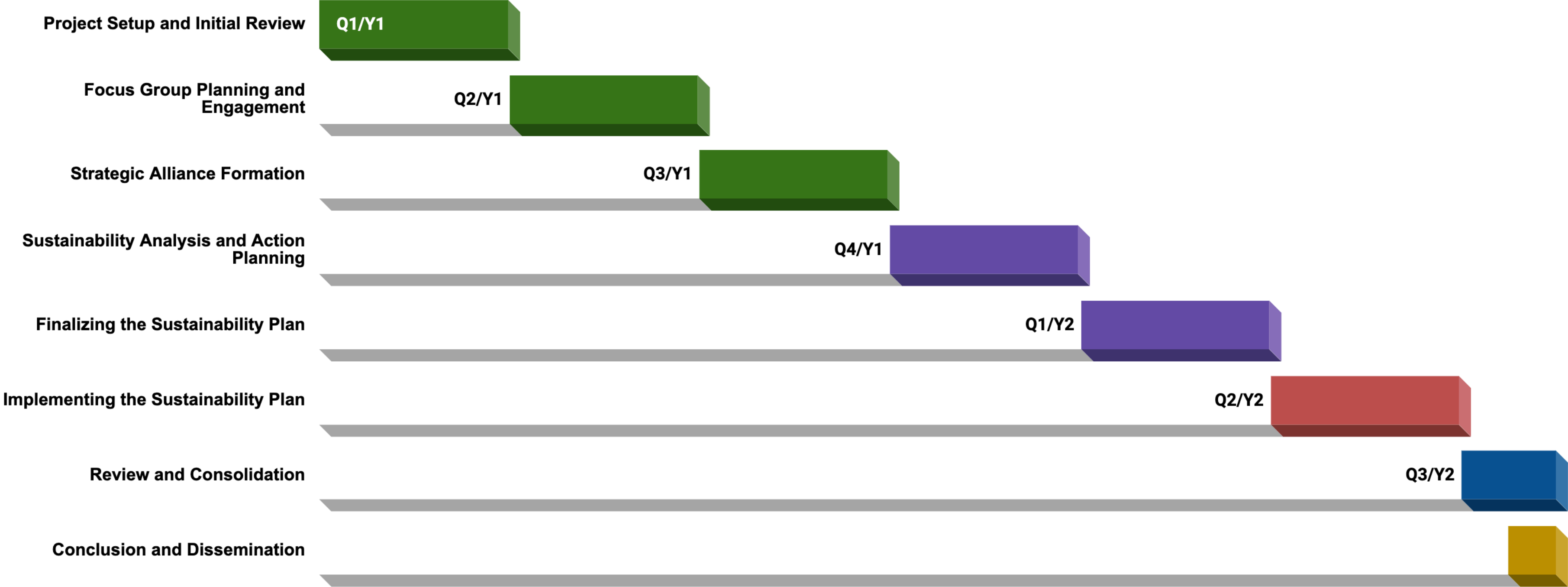
1. Comprehensive Review Report: A detailed report documenting the initial review of The Carpentries Membership model, highlighting how it currently serves the library community and identifying potential areas for improvement.
2. Membership Model Proposal: Based on insights from focus groups and consultations, a revised Membership model proposal will be developed, particularly tailored to meet the evolving needs of

libraries, including HBCUs. This proposal will outline new Membership benefits, structures, and pricing models conducive to library and research institution engagement.

3. Focus Group Findings Summary: A compilation of key findings and insights from focus group discussions with library community representatives. This summary will pinpoint areas where The Carpentries can enhance its membership model, instructor recruitment, and course development to serve library professionals more effectively.
4. Strategic Alliance Framework: This framework will establish strategic alliances with entities that are aligned with or influential to The Carpentries' mission in data science education. It will include actionable steps for collaboration, ways to facilitate knowledge exchange and support mechanisms to strengthen The Carpentries' impact in the library community.
5. Sustainability Action Plan: Leveraging the ITAV framework, this plan will address identified gaps and opportunities in governance, resources, and community engagement specific to the library community's needs. The action plan will provide a roadmap for sustainable growth and increased engagement with libraries and research institutions.
6. Implementation and Monitoring Reports: Regular reports documenting the implementation of the sustainability action plan, including adjustments based on feedback, observed outcomes, and interim findings highlighting the plan's impact on enhancing The Carpentries' engagement with library professionals.
7. Final Project Report: A report reviewing all project activities, outcomes, and specific impacts on the library community. This comprehensive document will detail the project's achievements, challenges, and lessons learned to inform future strategies for The Carpentries and the broader library and research institution community.
8. Dissemination Materials: A suite of materials designed to share the project's findings, insights, and strategies with The Carpentries community, library professionals, and other stakeholders. These materials are anticipated to include white papers, webinars, conference presentations, and online resources, ensuring wide accessibility and impact.

These deliverables will collectively contribute to a robust understanding of current challenges and opportunities within The Carpentries ecosystem, particularly concerning the library community. They will provide a solid foundation for strategic planning and action, ensuring The Carpentries continues to evolve in alignment with the training needs of libraries and research institutions, reinforcing its critical role in bridging the digital skills gap within the academic sector.

Carpentries 2.0 Project: Work Plan Timeline



Digital Products Plan

Project Overview

This project addresses a critical gap in library services: the growing data and software skills needs of researchers and the lack of sustainable training structures within academic and research libraries. We will develop resources and tools to directly enhance The Carpentries' capacity to serve these institutions with a focus on membership models, strategic alliances, and long-term sustainability.

There won't be traditional digital products such as code and data files because the project's focus is on creating resources and tools that support the implementation and sustainability of data and software skills training in academic and research library sectors.

- The project's deliverables are focused on providing guidance, frameworks, and models to enhance The Carpentries' membership structure, strategic alliances, and sustainability.
- These deliverables aim to address the specific needs of libraries and research institutions, including the recruitment of instructors and the development of courses that effectively meet the training requirements of library professionals.
- The project does not directly involve the creation or distribution of code and data files as traditional digital products.

Digital Products Produced

- **Meeting Reports:** Detailed reports summarizing key discussions and outcomes from stakeholder meetings. These reports will inform the development of other digital products and guide decision-making.
- **1-2 Candidate Membership Models:** Thoroughly researched and vetted models for how libraries and research institutions could effectively join The Carpentries through a membership structure. These will include cost analysis, benefits, and implementation considerations.
- **Template MOUs for External Organizations:** Customizable Memorandum of Understanding templates to streamline The Carpentries' partnerships with libraries, research institutions, and other training providers.
- **Whitepaper(s):** A comprehensive document consolidating project findings, recommendations, and the developed resources. This will serve as a key reference and dissemination resource for the broader library community.

Digital Product Access

- **Open Access Repository:** All digital products will be deposited in a suitable open-access repository (e.g. Zenodo) to ensure maximum visibility and accessibility for the library and research communities.
- **Project Website:** A dedicated project website may also be created, serving as a central hub to house project details, updates, and links to all digital products.
- **Licensing:** All products will adopt a Creative Commons Attribution License (CC BY), enabling sharing, reuse, and adaptation while ensuring proper credit to creators.

Digital Product Sustainability

- **Community Engagement:** We will actively involve stakeholders throughout the project to strengthen a sense of ownership and encourage ongoing support and utilization of the products beyond the grant period.
- **Ongoing Maintenance Plan:** A plan will be included in the final white paper outlining the maintenance needed (e.g., periodic updates to templates based on community feedback). This plan will identify potential low-cost or volunteer-based maintenance strategies.

Digital Product Availability

- **Timeline:** A clear timeline will be established in the full proposal, indicating when specific digital products will become available.
- **Promotion:** Products will be announced through relevant library and research channels (e.g., listservs, conferences, social media)

This Digital Products Plan aligns with the priorities of the Institute of Museum and Library Services (IMLS). It focuses on capacity building by providing libraries with tools and training in data and software skills, empowering them to offer enhanced services. The plan fosters collaboration between libraries, The Carpentries, and other organizations, promoting knowledge exchange and innovation. Crucially, it emphasizes maximizing impact through the open dissemination of project outcomes.

This commitment to transparency and knowledge sharing will drive the adoption of best practices across the library and information science field, ultimately strengthening libraries' alignment with IMLS's mission.

Data Management Plan

Despite the project not generating data outputs, all project outputs, whenever feasible, will be openly accessible to allow for transparency and encourage collaboration.

- Project outputs, such as reports, presentations, and tools, will be made available on the project website and through other open-access platforms.
- The project team will use open-source software and tools whenever possible to ensure that project outputs are accessible to the widest possible audience.
- The project team will actively engage with the community to solicit feedback and input on project outputs.