U.S. Army Corps of Engineers
Fiscal Year 2021
Handshake Program Application

Please review instructions before completing application!

Corps Lake/River Project Name: **Carters Lake Project**
District / Division: **Mobile District / South Atlantic Division**
Handshake Proposal Title: **Modernizing interpretation through immersive, interactive, and useful technology.**
Corps POC Name: **Park Ranger George Mcbroom**
Telephone: (**706**) **334 - 2040** ext.
E-Mail: **george.i.mcbroom@usace.army.mil**

A. Checklist:

1. Will the Handshake funds be spent on Corps facilities and resources that are being fully maintained by the Corps? (not in outgranted parks) ☒ **Yes** ☐ **No**
2. Will the Challenge Partnership agreement be with a non-federal public or private entity(ies)? ☒ **Yes** ☐ **No**
3. Is the proposed activity within current authorities and contained in the annual or 5-year work plan in the approved lake project OMP? ☒ **Yes** ☐ **No**
4. Have all of the NEPA requirements been considered for this project? ☒ **Yes** ☐ **No**
5. I am aware the Challenge Partnership Agreement must be reviewed and Approved by District Office of Counsel before sending to HQUSACE. ☒ **Yes** ☐ **No**
6. If the full funding amount requested is not available, could a portion of this Handshake Project be completed with partial funding? ☒ **Yes** ☐ **No**
7. I am aware that all government funds must be spent in accordance with FAR, DFAR and AFAR contracting laws and regulations, and that Handshake funds cannot be provided to the partner(s). ☒ **Yes** ☐ **No**
8. Did you participate in a Handshake Webinar in 2019 or review a 2019 Handshake Webinar on the Gateway? ☒ **Yes** ☐ **No**

B. Handshake Funding Request (maximum $25,000): $25,000

C. Incentive Points Category: Check the appropriate box if your application qualifies to receive bonus points on the evaluation score.

☐ This project will be completed with a national MOU partner with which the Lake or Project hasn't previously partnered. (100 points).

☐ This project reduces O&M cost to the Corps over the lifecycle of the proposed project or improves existing infrastructure. (100 points).

D. <u>Describe your partnership and the proposed Handshake Partnership Project</u>:
Project applications will be evaluated on the categories below. Please complete each section as appropriate.

Summary Statement:

Carters Lake is working with Kennesaw State University (KSU) to provide immersive technology in the form of virtual reality (VR), as well as interactive and engaging displays in the form of touch panel and holographic displays. They will provide for us custom VR experiences and 3D animations centered on various educational facets within the realm of natural and cultural resources. This technology will update and bring our interpretive program into the 21st century allowing the project to speak the learning language of today's generations. As technology grows in importance and abundance, the means by which younger and older generations learn is expanding. People not only learn by reading, but by experiencing and doing. This expansion into modern and engaging technologies will allow us to bridge knowledge and technology gaps between younger and older generations for the purposes of understanding our natural world and cultural history.

Handshake Funding Cost Break Down:

- Virtual Reality/Holographic displays:
  - (2) Oculus Quest-2 VR headsets - $800.00
  - Materials for kiosk -$400
  - (2) Dreamoc HD3 Holographic displays - $4,800.00
  - (2) Ipads - $600.00
  - Interpretive panels for Dreamoc and VR Displays - $600.00
- Astronomy/Computerized Telescope:
  - Orion SkyQuest xx12g GoTo Truss Tube Dobsonian Telescope - $2,099.00
  - SkyQuest Light Shroud and Sorage Cases - $439.98
  - Power Pack, Eyepiece Set, and Flip Mirror, and step stool - $608.98
  - Mallincam Astronomy Video Camera Outreach Kit - $2,369.00
  - Astronomy Interp panels - $1,200.00
  - Powered telescope pads on astronomy field - $1,200.00
- Professional Touchscreen Interpetive Kiosks
  - (2) Touchscreen panels with software for inhouse modification - $5,000.00
- Digital Microscope Display
  - Celestron Tetraview LCD Digital Microscope - $339.95
  - Celestron Inifiniview LCD Digital Microscope - $179.95
  - (2) 32" Flat Panel TVs to display microscope output - $360.00
  - Materials for miscroscope kiosk - $500.00
  - Celestron 25 piece prepared slide set - $21.95
- Indoor Interp Behives
  - (2) BEEcosystem Hives, replacement bars, and red viewing screen - $1,099.00
  - Box of starter bees - $160.00
  - 32" flat panel TV for viewing bees - $180.00
  - Video camera and mounting hardware to view bees - $150.00
- Upgrade to current Augmented Reality Sand Table
  - New projector - $600.00
  - Signange - $600.00

Total: $24,752.00

Longevity / O&M description:

The maintenance of equipment for this modernization will be the responsibility of Carters Lake. The VR headsets are relatively inexpensive and can be replaced within budgetary means. We anticapte replacement of the units every 5 years, but life expectancy may exceed this based on use. The kiosk housing these VR headsets will be designed so as to allow the visitor to use them, but remove the possibility of drop damage. Holographic and interactive displays will be maintained by Carters Lake as well, and are expected to perform for approximately 10 years. All equipment will be covered by a 2 year warranty period. It is intended that this partnership will extend

well beyond the 2 years provided to spend the partnership funds. The equipment can be uploaded and updated with new content as our partner is able to create it.

Partnership Value:

Kennesaw State is central to this project. As Carters Lake is only capable of providing the hardware, the partner is capable of providing the Corps with an open use VR experience. The agreement is such that the use of the VR programs will be allowed at any project within the country. This leads to not only a benefit at the local project level, but allows the project to become a development hub for VR experiences and custom 3D content that will fit many projects nation wide. Kennesaw State is providing in-kind services, allowing the development to be completed by students on university equipment. The nature of the various interpretive technology is such that it will provide the ability to seek new content any time it is needed and provide for a rotation of subjects that could be loaded at any given time. The value of the services provided by the partnership are huge. A custom VR experience like those planned with KSU would cost $125,000 per application, as quoted by a commercial development studio. Further, the 3D video graphics for the holographic displays would easily cost in the neighborhood of $7,000 - $10,000 from a commercial developer. The expected value of the personnel and equipment use from KSU over the life of the multiyear partnership is approximately $57,762 and $40,000, respectively. This means a total investiture by KSU of approximately $97,762 for the development of multiple digital programs and 3D videos. All of this for less than a single commercially developed VR experience. Indeed the value of this partnership has already born fruit as we have been opearting with KSU informally towards these goals for over a year already and have seen the completion of one project and the beginning of a second.

Recreational Benefit:

The project will benefit recreation for various subsets of users, though it may not be what is traditionally viewed as recretion. There are many who will enjoy the "video game" like learning experience of the VR, especially children. We are planning a Junior Ranger Program that will require the participants to come and participate in our new and engaging learning experiences to earn their Junior Ranger Badge. In our future developments we will incoroporate a VR experience that allows users to explore the universe and our solar system. We will reenforce this experience with hands-on astronomy activities utilizing a computerized telescope to allow us to provide engaging and exciting views of the universe, thereby encouraging families to pull away from the TV or computer and enjoy their local parks. This is a non-traditional recreational activity, but is recreation all the same. All of these technological additions, the courses, the Junior Ranger program, and astronomy nights will spark an interest in our visitors to take their families outdoors to experience the joy and splendor of our parks. Recreation should be about engaing the public and getting them out with their families to learn and experience as well as have fun.

Environmental Stewardship Value:

Environmental stewardship is about learning and understanding the environment around us, how we affect it and how we can support it. Further, it can involve protecting and understanding the cultural resources located within that environment. The KSU partnership will create several planned VR applications to include a Native American historical, a Honey Bee, and a Food Web experience. Each of these experiences will allow the visitor to engage in some aspect of cultural or environmental resource impacting the Corps mission. Carters Lake has already installed an Augmented Reality (AR) Sandtable in its Visitor Center demonstrating water sheds and geology. This is an interactive table that reads the change in the sand shape then uses a projector to place and overlay on the sand displaying the topography and associated colors. You can even make it rain and watch the water flow to low points. Placing visitors in the environment or in history through virtual reality and allowing them to see and experieince the concepts as if they were there will allow them to have a connection that they would not otherwise have. They will walk away with a larger appreciation and understanding of the concepts that dictate environmental and cultural stewardship.

Communication & Education Value:

This project is built around the very idea of increased education and interpretation. The public will be able to engage with and immerse themselves in the subject matter. They will have the chance to travel in time, be a honey bee, take part in the food chain, and so much more. Further, they will be able to learn about the technology that is making it happen which will further the target area of STEM education. All facets of this project will be used to direct the visitor to the uniqueness and importance of the environment presented by Carters Lake. The

Corps missions of environmental and cutlural resource stewardship, recreation, and power generation will each be highlighted by one of the planned technologies. Not only will they be highlighted by the technologies, but these interactions will inspire further interest and appreciation for the Corps never ending mission to steward the federal lands for future enjoyment. Even astronomy will be used to highlight the benefits of reducing light pollution and providing a dark space for both animals and people. For the future of the Corps and our lands it is absolutely impreative that visitors understand our missions and gain an appreciation for the land, history, and environment.

Innovativeness:

This project is about so much more than touch panels. The Corps of Engineers, often times, is caught between a rock and a hard place regarding technology. It can be expensive to provide interpretive opportunites. However, most museums and educational locations are embrassing technology. While touch panels have been used at Corps projects in the past, they have often been poorly produced or improper technology. We will provide the first opportunity for Corps of Engineers visitors to experience an immersive concept through the power of VR. They will be amazed as they watch a 3D holographic scene that they chose from an iPad play throug the holographic display. Not only is this a technology expansion at Carters Lake, but it will open up the opportunity for other projects around the country to do the same. If they provide the hardware, we will be able to send them the programs or files to load onto the hardware. Further, since this partnership is part of a university program, they will always need projects for their students to gain experience and use their skills.

Conclusion:

As can be seen, this project is about helping the Corps grab the interest of its visitors in the visitor center and making the visitor center a destination. Further it will provide the Corps as a whole with the ability to expand the use of technology across the country. This project should be funded so that we can re-introduce our visitors to concepts they have always known about, but that have always seemed distant when read on a panel.

Double click on spreadsheet to access data entry fields and to enter Partner names.

You MUST enter partner names into the spreadsheet:

	Local Corps Office	Handshake Funds	Partner 1	Partner 2	Partner 3	Partner 4
Salaries	$15,552	N/A	$57,762	$0	$0	$0
Travel	$0	N/A	$0	$0	$0	$0
Materials and Supplies	$414	$25,000	$0	$0	$0	$0
Equipment Use	$0	$0	$40,000	$0	$0	$0
Funds Contributed	N/A	N/A	$0	$0	$0	$0
Personal Property	N/A	N/A	$0	$0	$0	$0
Volunteer	N/A	N/A	$0	$0	$0	$0
In-Kind Services	N/A	N/A	$0	$0	$0	$0
Other (explain below)	$0	$0	$0	$0	$0	$0
Total	**$15,966**	**$25,000**	**$97,762**	**$0**	**$0**	**$0**
Share of Total Cost	11.5%	18.0%	70.5%	0.0%	0.0%	0.0%
	29.5%					

	Partner 5	Partner 6	Partner 7	Partner 8	Partner 9	Partner 10
Salaries	$0	$0	$0	$0	$0	$0
Travel	$0	$0	$0	$0	$0	$0
Materials and Supplies	$0	$0	$0	$0	$0	$0
Equipment Use	$0	$0	$0	$0	$0	$0
Funds Contributed	$0	$0	$0	$0	$0	$0
Personal Property	$0	$0	$0	$0	$0	$0
Volunteer	$0	$0	$0	$0	$0	$0
In-Kind Services	$0	$0	$0	$0	$0	$0
Other (explain below)	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Share of Total Cost	0.0%	0.0%	0.0%	0.0%	0.0%	0

	Partner 11	Partner 12	Partner 13	Partner 14	Partner 15	Total
Salaries	$0	$0	$0	$0	$0	$73,314
Travel	$0	$0	$0	$0	$0	$0
Materials and Supplies	$0	$0	$0	$0	$0	$25,414
Equipment Use	$0	$0	$0	$0	$0	$40,000
Funds Contributed	$0	$0	$0	$0	$0	$0
Personal Property	$0	$0	$0	$0	$0	$0
Volunteer	$0	$0	$0	$0	$0	$0
In-Kind Services	$0	$0	$0	$0	$0	$0
Other (explain below)	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	$138,728
Share of Total Cost	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Explanations: The partnership is intended to be a multi-year relationship with several applications developed over that time. The cost estimates reflect the project and partner costs of salary and equipment use over the period of several applications. The handshake funds for this partnership, if received, will be utilized to purchase the necessary equipment for the desired current application and applications yet to be developed.