



# RESEARCH FOUNDATION

RESEARCH FOR THE NFPA MISSION

## REQUEST FOR PROPOSALS FOR PROJECT CONTRACTOR

### Application of immersive learning for firefighter training

10 December 2021

**Background:** Training is a critical part of the fire service. As new technological innovation applications emerge and are proven in other arenas, fire service training academies must investigate (e.g., virtual reality, augmented reality, artificial intelligence, machine learning, robotics, etc.) these to see their impact on the skills, safety, and wellness of firefighter trainees. This project seeks to leverage the immersive learning technologies that have proven to be beneficial in other high-risk occupations, such as military, law enforcement, health care, and identify the value of application of immersive learning for firefighter training.

**Research Goal:** The overall goal of this project is to identify, assess, and summarize the available and emerging technological tools, techniques, and innovations, to support the application of immersive learning environments in fire service training and address its impact on firefighter skills, health, and safety during training. The project objectives are:

- Describe the value of immersive learning on firefighter skills, and competency-based testing and evaluation
- Establish baseline knowledge of Immersive Learning Environment that could be adapted to fire service training
- Identify, prioritize the future needs and barriers of fire training academies to implement immersive learning
- Communicate the needs of fire academies recognized and understood by others, especially technology innovators
- Create a firefighter immersive learning environment roadmap to provide guidance to fire training academies and others in support of implementing immersive learning

**Project Team:** This project involves the following partners: Fire Protection Research Foundation (FPRF), North American Fire Training Directors (NAFTD) and the FPRF Project Contractor, collectively called as the “Project Team”. This Request for Proposal (RFP) specifically addresses the role and related details of the FPRF Project Contractor for developing the baseline content and materials, with review and refinement with project advisory panel.

**FPRF Project Contractor Tasks:** This project consists of the following tasks:

**Task 1. Baseline Content & Material Development.** Project Contractor shall conduct a comprehensive review of available information from literature, ongoing research studies, current fire service practices that has implemented immersive learning techniques and generate applicable background supporting information as a written report. This includes:

- a) **Current Landscape:** Review and summarize the characteristics and features of immersive learning environment technologies that could be adapted to fire service training. Summarize the current use of immersive learning techniques and tools in fire service training and education.

- i. Parallel Professions: Review applicable literature to clarify the immersive learning technology applications that have proven to be beneficial in training activity of other high-risk occupations, such as military, aviation, law enforcement, health care etc. Evaluate and clarify the relevancy and applicability of these different occupations to the requirements of firefighter training.
- b) Barriers: Identify the barriers in implementing immersive learning in fire service training, examining the role, technological, regulatory, financial, cultural, organizational, and other factors play. Deploy a generic questionnaire survey to capture the feedback of fire training instructors, firefighters, and others about the implementation of immersive learning in fire service training. No personal identifiable information shall be collected or reported. An IRB exemption request (if applicable) must be planned in coordination with Fire Protection Research Foundation.
- c) Future Needs: Identify and summarize the needs of fire service training academies and others, including a clear focus on the anticipated concepts, approaches, methods, and activities required to support the firefighter immersive learning environment.
- d) Gap Analysis: Generate a prioritized summary of the gaps between the current firefighter immersive learning environment against anticipated future needs and identified barriers, for increased adaptation of immersive learning in fire service training.
- e) Immersive learning knowledgebase: Identify relevant content to establish an online immersive learning knowledgebase, for use by fire service community and innovators. Identify the known providers of technological tools, techniques and software for immersive learning environment that can be applied to fire service training and fire academies, including those who are actively addressing similar technology applications in parallel professions. This identified content shall form the basis of creating an online knowledgebase by NAFTD.
- f) Final Report: Develop a final report summarizing the overall effort of baseline information collected from the above tasks and review it with the project advisory panel to clarify and confirm final enhancements. The final report will be published from the FPRF website. This will also be presented at the stakeholder Summit (Task 4) to stimulate further discussion.

**Task 2. Participate in Project Advisory Panel and Project Team Meetings.** A project advisory Panel will be appointed and administratively handled by FPRF. This Panel will provide oversight and guidance over the course of the project in accordance with the Policies of the FPRF. Participation and discussion are required by the FPRF Project Contractor in at least three conference calls with the advisory Panel to review progress at critical stages of the project as follows: (1) at project initiation to review the work plan, project scope and other project details; (2) project interim update to review the interim update on the progress of tasks; and (3) near the end of the project to review draft report and final project deliverables. Three conference call meetings are expected with advisory panel, though additional conference call meetings may occur if special project issues require resolution. Panel conference call documentation will be handled by FPRF. In addition to these conference calls with the advisory panel, the FPRF Project Contractor will participate in regularly scheduled status meetings with the Project Team. The purpose of these meetings will be to review progress of overall research goals and collaborate amongst the project team partners. It is anticipated that these meetings will be scheduled bi-weekly or monthly and adjusted based on the needs of the project.

**Task 3. Participate in Targeted Focus Group Meetings.** Participation and discussion by Project Contractor are required in three geographically diverse targeted focus group meetings with key types of NAFTD representative fire academies (e.g., large, small, community college based, etc.) to gain insight about the distinct training delivery systems of fire training academies and to gather participant's thoughts and

experiences in support of generating content on the current and future needs of immersive learning in fire service training. The administrative handling of these meetings will be done by NAFTD and FPRF.

**Task 4. Present and Participate in Stakeholder Summit.** One-day stakeholder Summit will be conducted to present, review, and evaluate the overall state of immersive learning technology in fire service training. This is intended to be an in-person gathering of a minimum of 30 fire service training stakeholders, technology providers, and interested parties, tentatively scheduled in later 2022 or early 2023. The Project Contractor is required to present the findings from Task 1 at the Stakeholder Summit and participate in the summit discussions.

**Implementation:** This research project is led by the Fire Protection Research Foundation and will be conducted in accordance with the "[Research Foundation Policies for the Conduct of Research Projects](#)". The project will be guided by a Project Technical Panel who will provide input to the project, recommend contractor selection, review periodic reports of progress and research results, and review the final project report. At a minimum, three Panel meetings will be held: project kick-off, review of interim update, and review of draft final report. The Foundation will provide documentation of all Panel meetings. Project contractor must comply with the [Department of Homeland Security \(DHS\) specific acknowledgements and assurances](#).

**Deliverables:** The Project Contractor is responsible for the following deliverables:

- (1) First interim update presentation to the project technical panel upon completing the tasks 1(a) and 1(b).
- (2) Second interim update presentation to the project technical panel upon completing tasks 1(c) and 1(d).
- (3) Third interim update presentation to the project technical panel upon completion and submission of draft final report.
- (4) Final report documenting the project tasks and summary observations (task 1(f)).
- (5) Immersive learning knowledge base information collected as part of task 1(e).
- (6) Presentation at the stakeholder summit.
- (7) The results from the study should be disseminated through at least two presentations such as through an online webinar, conference presentations (specific venues to be determined).

**Intellectual Property:** The Research Foundation will retain rights to all project deliverables including, the project report, which will be published on the Foundation website. The project deliverables may also include data collected over the course of the project.

**Schedule and Costs:** This is a fixed price project in the amount of **\$34,286**. All indirect costs incurred are intended to be included within this fixed price. The Foundation does not have a limit on indirect costs, but the total proposal cannot exceed this fixed price. Proposals for this project shall include a breakdown of costs by task. Travel cost for one project contractor representative to attend and present at the Stakeholder Summit, and three Targeted Focus group meetings (if travel is required) will be reimbursed by the FPRF. Any additional project contractor travel is intended to be included within the fixed price.

The total project cost is **\$36,000**. Since this funding is provided through an DHS FEMA AFG Grant, the effort requires a contribution of approximately **five percent cost share** that will be the responsibility of the FPRF Project Contractor (i.e., **\$1,714**). Documentation will be required (i.e., invoice) that clearly indicates the full magnitude of the work provided, including the five percent cost share that will be

contributed by the FPRF Contractor. Thus, the total funding that is available for the FPRF Project Contractor is **\$34,286**.

The proposed project schedule is provided in the table below. Suggested modifications to the proposed schedule can be provided with substantiation.

Tasks	Deliverable Timeline	Estimated Dates
Proposals due		21 January 2022
Selection of Contractor		11 February 2022
1 <sup>st</sup> interim update: Progress update on Task 1	12 weeks from project initiation	6 May 2022
2 <sup>nd</sup> interim update: Progress update on Task 1	24 weeks from project initiation	29 July 2022
3 <sup>rd</sup> interim update: Upon completion of Task 1 and submitting draft final report	30 weeks from project initiation	9 September 2022
Final Report	36 weeks from project initiation	21 October 2022
Dissemination Presentations	To be decided	To be decided

**How to Respond:** Letter proposals shall be submitted electronically to Sreenivasan Ranganathan, Research Director of the Foundation, at [sranganathan@nfpa.org](mailto:sranganathan@nfpa.org) no later than 5:00 PM Eastern time January 21<sup>st</sup>, 2022. For additional details see the “[Research Foundation Policies for the Conduct of Research Projects](#)”, the [Foundation Operating Principles](#), and “[Research Project Guidelines for Contractors](#)” on the Foundation website at: <https://www.nfpa.org/foundation>.

Each proposal shall include a description of the following weighted evaluation criteria: problem understanding (30 %), technical merit (include scope and approach) (30 %), prior relevant experience and personnel expertise (30%). An additional criterion, current level of active foundation engagement, will be considered as the remaining 10 % weighted evaluation criteria.

Please note, the body of the research proposal submittals shall not exceed **six** pages in length, including a short bio of the proposed personnel and not including the cover page. Any additional relevant information (e.g., Project participants’ CVs or resumes, letters of support, detailed description of past relevant experience, detailed description of RFP-Respondent’s organizational facilities, competencies, other capabilities, and references) not covered in the body of the proposal should be appended to the proposal, with a maximum combined page limit of **12** pages, including the body of the proposal and appendices.

Additionally, all bidders must submit a completed [disclosure statement](#) with the proposal (this does not count towards the page limit). This form can be downloaded [here](#).

**Note:** This project will proceed only on the basis of receipt of a proposal deemed acceptable to the Foundation and the project sponsor(s). Information on the Foundation’s policies for the conduct of research can be found on our [website](#). Services received are subject to our [standard contractual terms](#).

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