



**U.S. Department of Energy  
Advanced Research Projects Agency – Energy  
Announcement of Teaming Partner List  
for an upcoming Funding Opportunity Announcement:  
Digital Transportation**

The Advanced Research Projects Agency Energy (ARPA-E) intends to issue a Funding Opportunity Announcement (FOA), tentatively entitled: *Digital Transportation*. The final FOA is expected to be issued in November 2016. ***When the FOA is issued, ARPA-E anticipates that the deadline for submission of Concept will occur 30 days after issuance.*** The overall goal of the *Digital Transportation* program will be to develop communication technologies that are preferable to physical travel, consistent with ARPA-E's statutory goals including development of energy technologies that improve energy efficiency, reduce energy-related emissions, and reduce energy imports from foreign sources. To achieve the Digital Transportation program goals, technologies are needed that enable the real-time capture and digitization of extremely detailed communicative information, which, after having been transmitted over a digital information network, can then be reconstructed and displayed in a highly natural and immersive way to a remote observer. As described in more detail below, the purpose of this announcement is to facilitate the formation of new project teams to respond to the upcoming FOA. The forthcoming *Digital Transportation* FOA will provide specific program goals, technical metrics, selection criteria, and other terms and requirements. For purposes of this Teaming Partner List, the following summarizes current planning for the FOA:

The technical goals of the anticipated FOA will primarily focus on real-time capture and digitization of extremely detailed communicative information, which can then be reconstructed and displayed in a highly natural and immersive way to a remote observer. All communicative information must be captured, including, but not limited to, shared gaze, facial expressions and microexpressions, all body language, and spatialized audio. This digital reconstruction must be able to be ported across many display modalities, have lighting conditions and viewing angles changed in real time, and enable the comfortable meeting of many individuals at the same time in a split screen or digital environment. The motion capture must be done conveniently, at low cost, and must have the potential to be display-integrated. The digitization and encoding must be done in real time to foster simultaneous live communication, with capture-to-display latencies below 150 ms (including network latencies across the United States). The encoded information is expected to be highly bandwidth efficient, allowing beyond-human-perception levels of resolution and refresh-rate on the display side, both aurally and visually, for less than 1 Mbps of transmitted information per conversation member. The anticipated FOA will also enable the development of complementary technologies that the community justifies as being necessary for the realization of digital transportation. Finally, the anticipated FOA will include a call for studies that aim to definitively and quantitatively establish the set of requirements for digital transportation technologies to be preferable to physical travel, and methods to test and validate progress of these technologies towards travel-reduction. It is envisioned that accomplishing these



objectives will allow users to leverage information networks for their communication-based travel needs instead of physically travelling, saving at least one order of magnitude of energy in the process, and potentially saving the United States several percent of the nation's yearly energy consumption.

ARPA-E anticipates that the FOA will target research in: (1) real-time capture, digitization, and reconstruction of extremely detailed communicative information, of a fidelity commensurate with travel-replacement, with cross-platform display compatibility; (2) complementary technologies proposed as necessary for travel reduction, including but not limited to server-side communication environments, novel display modalities, and stationary capture and digitization tools; and (3) third party testing and validation of digital transportation technologies which will yield clear and quantitative results regarding system performance necessary to replace physical travel and save energy.

In order to realize the goals of the *Digital Transportation* program, ARPA-E aims to bring together diverse engineering and scientific communities including, but not limited to, computer-generated imagery and image processing, modular software architectures, machine perception and motion capture technologies, visual display technologies, human movement physiology, real-time communication server-side management, parallel processing and GPU-based visual rendering, user interface and user experience, telecommunication companies, internet companies, scholarly validation of travel-replacement criteria, and business management and other related researchers that can develop and test the new digital transportation technologies such that they are successful in the marketplace in ultimately replacing travel and saving energy.

As a general matter, ARPA-E strongly encourages outstanding scientists and engineers from different organizations, scientific disciplines, and technology sectors to form project teams. Interdisciplinary and cross-sector collaboration spanning organizational boundaries enables and accelerates the achievement of scientific and technological outcomes that were previously viewed as extremely difficult, if not impossible.

The Teaming Partner List is being compiled to facilitate the formation of new project teams. The Teaming Partner List will be available on ARPA-E eXCHANGE (<http://arpa-e-foa.energy.gov>), ARPA-E's online application portal, starting in November 2016. The Teaming Partner List will be updated periodically, until the close of the Full Application period, to reflect new Teaming Partners who have provided their information.

Any organization that would like to be included on this list should complete all required fields in the following link: <https://arpa-e-foa.energy.gov/Applicantprofile.aspx>. Required information includes: Organization Name, Contact Name, Contact Address, Contact Email, Contact Phone, Organization Type, Area of Technical Expertise, and Brief Description of Capabilities.

By submitting a response to this Notice, you consent to the publication of the above-referenced information. **By facilitating this Teaming Partner List, ARPA-E does not endorse or otherwise evaluate the qualifications of the entities that self-identify themselves for placement on the Teaming Partner List.** ARPA-E will not pay for the provision of any information, nor will it compensate any respondents for the development of such information. Responses submitted to other email addresses or by other means will not be considered.



**This Notice does not constitute a FOA. No FOA exists at this time.** Applicants must refer to the final FOA, expected to be issued in November 2016, for instructions on submitting an application and for the terms and conditions of funding.