REQUEST # 8299517
Radical Innovation for Painting Power Transmission Towers

RESPONSE DUE DATE: December 7, 2015

Opportunity
Joint development, Joint Venture, Device/Equipment Sales

Timeline
Phase 1: Feasibility Evaluation and Partner Selection (3 to 6 months)
Phase 2: Solution Development (2 to 3 years)

Financials
Necessary budget is studied and allocated through the phase 1

REQUEST FOR PROPOSAL DESCRIPTION
NineSigma, representing Tokyo Electric Power Co., Inc., seeks a development partner to help achieve dramatic labor savings in the paint maintenance of power transmission towers. The maintenance work, which so far has relied on substantial human resources, includes climbing to each tower site, removing rust and peeling off paint (without scattering the removed rust or paint debris), and repainting. Of interest are ideas for solutions, as well as key enabling technologies for developing the solutions.

Anticipated enabling technologies include but are not limited to the following:
- Robot, drone, or work vehicle that climbs, flies, or elevates itself to high steel tower sites
- Compact and lightweight equipment that removes rust, peels off paint, prevents the scattering of the removed rust or paint debris, and repaints
- Sensor, manipulator, or artificial intelligence that enables such operations through complicated spaces between steel tower frames

Anticipated solutions include the following, in addition to combinations of the above enabling technologies.
- Carrying paint manually to high tower sites and slowly pouring the paint onto the steel tower surfaces
- Significantly extending the paint maintenance intervals using a self-healing paint

The target transmission tower type is outlined as follows.
- Shape: Tower constructed by assembling L-shaped, V-shaped, or hollow iron pipes (See the above figure.)
- Height: Average 50–60 m, maximum 80 m or more
- Installation locations: Cities, mountain areas, coastal areas
- The proposer of a promising technology is expected to conduct independent development or collaboration with TEPCO or a third party if necessary, or with other organizations that own enabling technologies.

BACKGROUND
As a power company, the client has the mission to continue paint maintenance for more than 1,000 transmission towers per year, which requires enormous labor and expense. With the progress of a national low birthrate and an aging population, the already-limited number of workers that can operate at such heights is likely to decrease further. The client foresees an imminent need to

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decisively solve the shortage of labor for the paint maintenance of steel towers.

The automation and labor-saving of paint maintenance is already considered for infrastructure applications, such as for ships, buildings, and bridges. In recent years, technology advancement and application development are expected in the areas of robots, drones, ICTs, artificial intelligence, and new materials. Therefore, the client solicits help from all over the world to help solve this issue.

**ANTICIPATED PROJECT PHASES OR PROJECT PLAN**

The proposing organization is required to submit proposals using the attached Response Template.

First, the client will conduct primary screening in writing. Then, they will ask additional questions and engage in direct dialogue to better understand the proposer. At the same time, they will present more specific information related to this project to promote solutions and development plans. A confidentiality agreement (NDA) will then be concluded if necessary, and close discussions will be held concerning the feasibility of the technology, direction of development, and framework of collaboration, etc. Then, a development plan and collaboration system will be discussed with the most promising proposer(s), and necessary agreements will be concluded to launch the collaboration. The collaboration of multiple partners including a third party is also anticipated.

**ITEMS TO BE INCLUDED IN THE PROPOSAL**

Responses will use the Proposal Template which is linked to the “attachments” shown at the bottom of the link <Response Template for RFP8299517> and include the following items:

- Type of proposal (solution/elemental technology)
- Solutions to be applied or realized (maintenance by climbing to high tower sites / covering steel towers / pouring paint from a high steel tower site / using a new material / others)
- Development stage (concept level / verified at the laboratory level / field test completed / already implemented in practical use)
- Overview of the proposed technology (principle, uniqueness, and superiority)
- Actual results of the proposed technology (specific achievements and applications)
- Any requests concerning the collaboration

- Scope of collaboration (solution development / enabling technology development)
- Form of collaboration (Joint development / joint venture / device and equipment sales)
- Others

**SUBMITTING A RESPONSE**

All proposals should be submitted online at NineSights, the NineSigma open innovation community, according to the instructions in the Proposal Template. Supplemental files may be submitted in addition to the proposal document.

For assistance, please contact the Solution Provider Help Desk (PhD2@ninesigma.com).

**REQUEST GUIDELINES**

**Non-Confidential Disclosure**

By submitting a response you represent that the response does not and will not be deemed to contain any confidential information of any kind whatsoever.

**Response Evaluation**

NineSigma’s client will evaluate the response using the following criteria:

- Overall scientific and technical merit of the proposed approach
- Approach to proof of concept or performance
- Potential for proprietary position (i.e., is the technology novel or protectable)
- Economic potential of concept
- Respondent’s capabilities and related experience
- Realism of the proposed plan and cost estimates

**Response Selection**

By submitting a response, you acknowledge that NineSigma’s client reserves the sole and absolute right and discretion to select for award all, some, or none of the responses received for this announcement. NineSigma’s client also may choose to select only specific tasks within a proposal for award. NineSigma’s client has the sole and absolute discretion to determine all award amounts. NineSigma will contact respondents with highly responsive proposals for next steps, or the client may contact respondents directly.