Proposal: Microgrid Data Agent Part 1

Deadline: April 15th, 2018

Summary: The proposal details a Java project to be completed by April 15th. The project should contain a JADE agent that receives live data from other Microgrid agents and displays it on a map.

Completion Criteria:

* An acceptable set of base java classes to model the data for the project will be created.
  + Classes should accurately represent the structure of a simplified power grid including generators, batteries, and links between them.
* Two JADE sender agents in two separate PCs will be included. This agent will not connect to live data. However, it will demonstrate to other developers how to use a JADE agent to send data to the main JADE receiver agent.
* The main JADE receiver agent will accept incoming grid topology data as well as measurements such as voltage from each node.
* The main JADE receiver agent will display incoming data on a map in near-real-time fashion. The map will make the grid topology obvious.
  + Map rendering may use web technologies instead of Java.
* Code will be well-documented such that other developers can maintain/reverse-engineer it easily.
* Code may use external technologies to make development faster.

Clarifications of Scope of Work:

* This project covers the handling of data in sender and receiver agents to display them on a map.
  + Display screen design and communication specification should be confirmed as early as possible.
  + Dummy data should continuously vary over time (e.g., sinusoidal or triangular wave).
  + This project includes JADE agents that send/receive measurement/grid topology data. However, it does not cover code to make measurements or mapping to describe grid topology.
* This project does not include any hardware work.
* The main receiver agent should be able to handle asynchronous incoming data from two independent sender agents.
* This project does not include the development of hardware-software interface code.
* This project does not include database integration or storage of data of any kind.

Compensation:

* $1,000 USD
* Credit in derived published work - Credit must be given in similar font to the rest of any paper under a “Credits,” “Acknowledgments,” or similar section in the first publication that uses the outcome of this project.

Code Release Policy:

* Source code may not be released until monetary compensation is complete.
* Source code may be released before monetary compensation is complete. However, if it does so it remains under the copyright and intellectual property ownership of Jake Billings until monetary compensation is complete.

Proposal: Microgrid Data Agent Part 2

Deadline: May 4th, 2018

Summary: The proposal details a Java project to be completed by May 4th. This project covers the addition of database logging and graph display to the project detailed in Microgrid Data Agent Part 1.

Completion Criteria:

* Measurement data sent via the communication protocol developed in Part 1 will be stored in an SQL database as it is received by the data receiver JADE agent.
* Users viewing the map will be able to select and display line graphs of measurements at given nodes. For instance, one could view the voltage at node a for the past five minutes.
  + The timeframe of the graph should be user-selectable.
  + Resolution of the graph depends on the resolution of the data received by the sender agent. This in contingent on throughput of the system. The throughput is unknown at the time of writing this proposal, so data logging may be low-resolution. Data logging may also end up being too much to store on a local hard drive, and down sampling may be used.
  + Display screen design and user interface should be confirmed as early as possible.
* Code may use external technologies to make development faster.

Clarifications of Scope of Work:

* This project covers the handling of data from the time it is received by the receiving JADE agent to when it is displayed to a user. This project does not include JADE agents that will send data to the handler agent.
* This project does not include any hardware work.
* Examples of Sender agents and a some send code may be included for ease of integration. However, this project does not formally require the completion of any agent other than the one that receives and displays data.
* This project does not include the development of hardware-software interface code.
* This project does not include data analysis; it only covers logging data.

Compensation:

* $750 USD
* Credit in derived published work - Credit must be given in similar font to the rest of any paper under a “Credits,” “Acknowledgments,” or similar section in the first publication that uses the outcome of this project.

Code Release Policy:

* Source code may not be released until monetary compensation is complete.
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