Project Motivation:
The Internet of Things (IoT) is emerging as the third wave in the evolution of the Internet. It is estimated that, by 2020, more than 30 billion devices, ranging from bracelets to cars, will be connected to the Internet.

A common platform (operating system) is needed to enable device management and communication between heterogeneous devices.

The ability for device-to-device communications can be leveraged in a variety of applications to benefit industry and society.

Proposed Solution:
Build a device-agnostic, intelligent and cognitive middleware to enable device-to-device communication.

We demonstrate it using a pressure-sensing mat that can communicate with a light bulb – Stepping on the mat will turn on the light.

How Does It Work:
We used Spark's WiFi-enabled microcontrollers to make the force sensor and the light bulb Internet enabled. Communication between these two devices happens via REST calls facilitated by the middleware we built. The middleware decides whether to switch on the bulb or not depending on the time of the day.

Try It:
Step on the mat, see the light bulb coming on.

Lessons Learned:
Since this method depends on wireless (Internet) connection, a network outage will make the system non-functional.

Future Plans:
Our future plan is to extend the middleware and make it as human-like as possible.