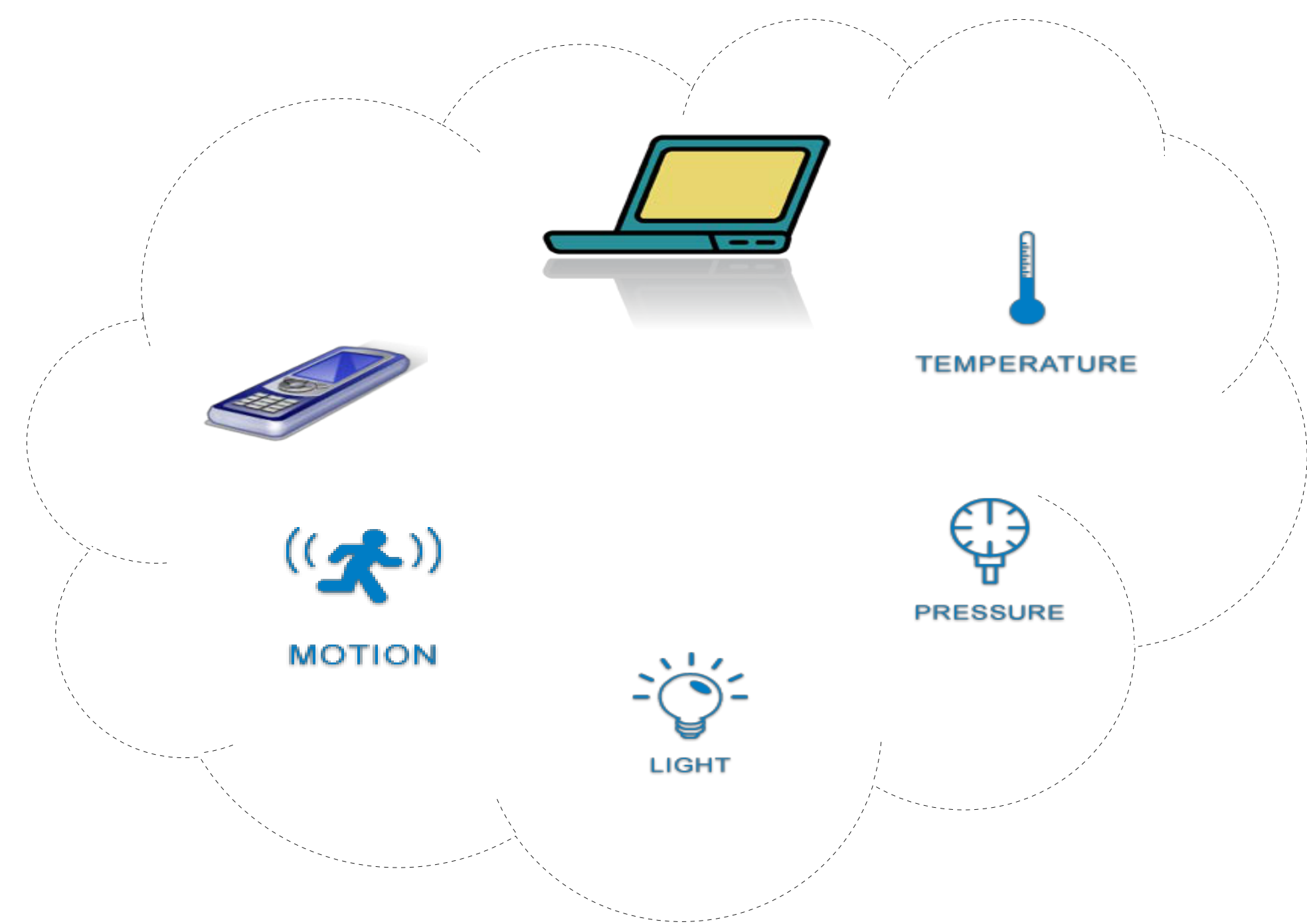


A Modular Programming Approach for IoT-Based Wireless Sensor Networks

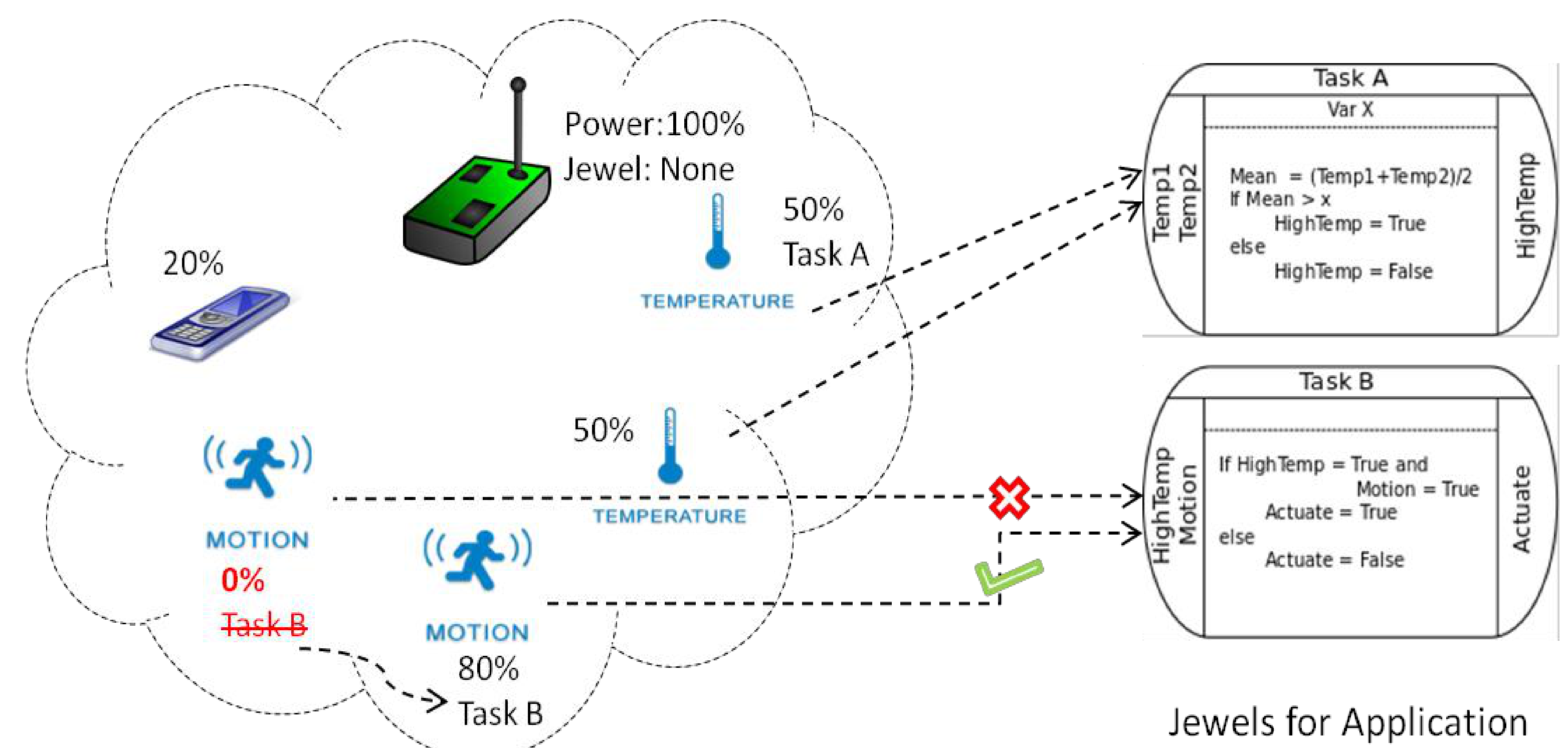
Motivation

- Internet of Things devices are growing rapidly
- Small sensors, embedded devices, and smartphones, all can be used to deliver various WSN applications
- Supporting dynamic changes in resources and leveraging in-network processing



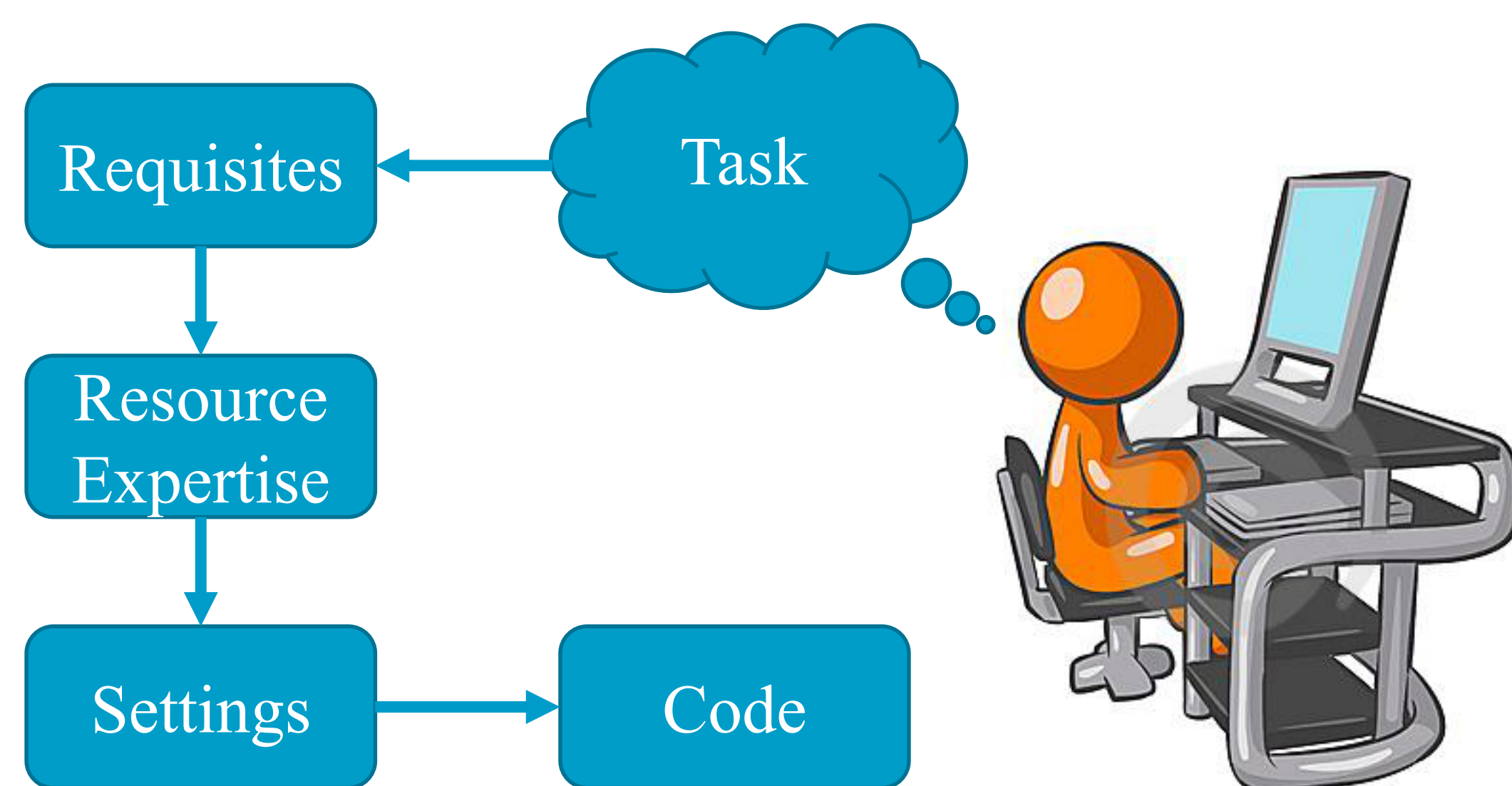
Benefits

- Due to modularity, Jewel(s) can be added or removed
- User can write simple tasks without worrying about resources
- Ability to move code from one resource to another.



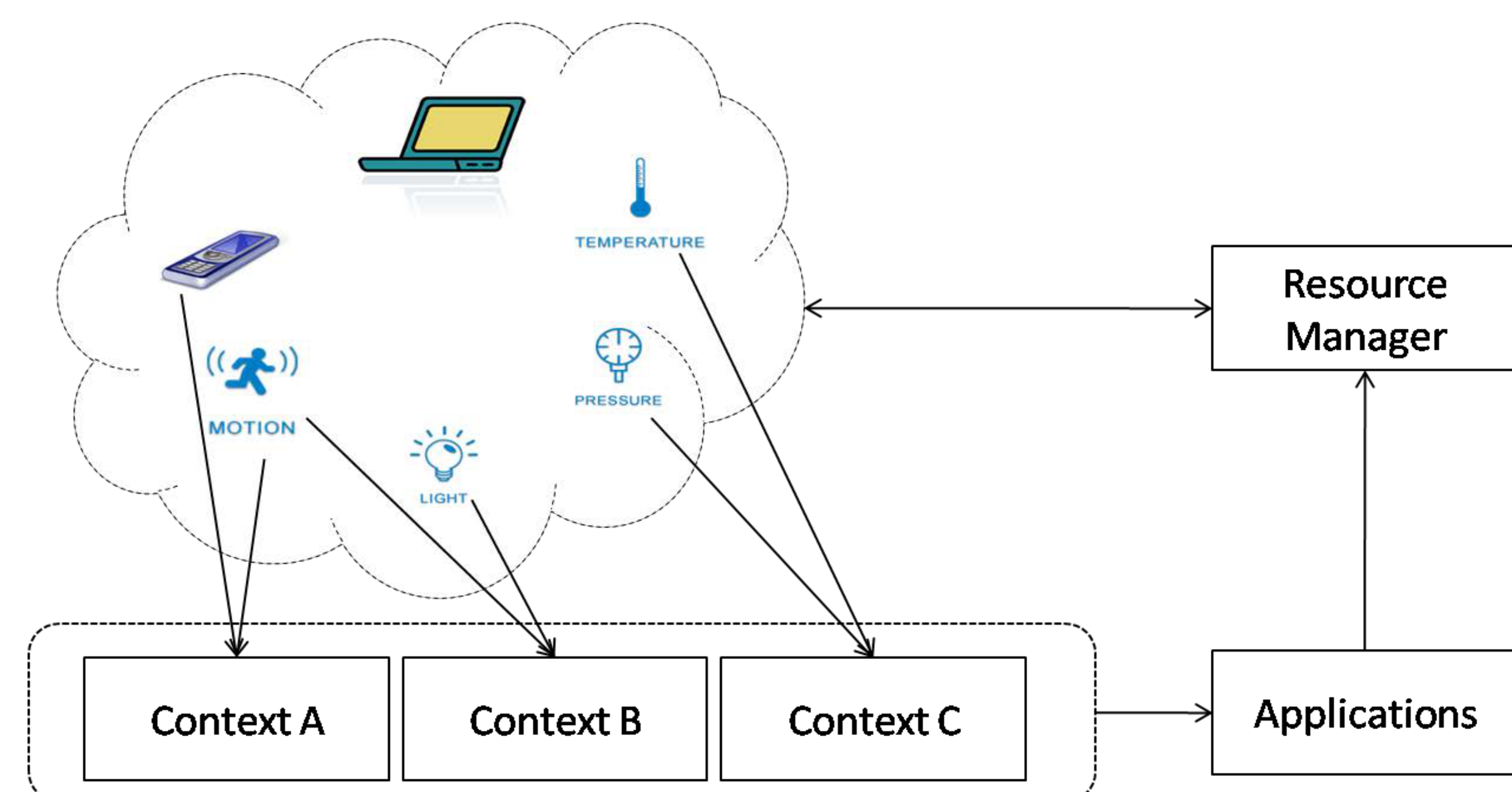
Problem

- Writing simple tasks requires significant knowledge about WSN
- Not simple to extend already running applications
- Requires management of resources



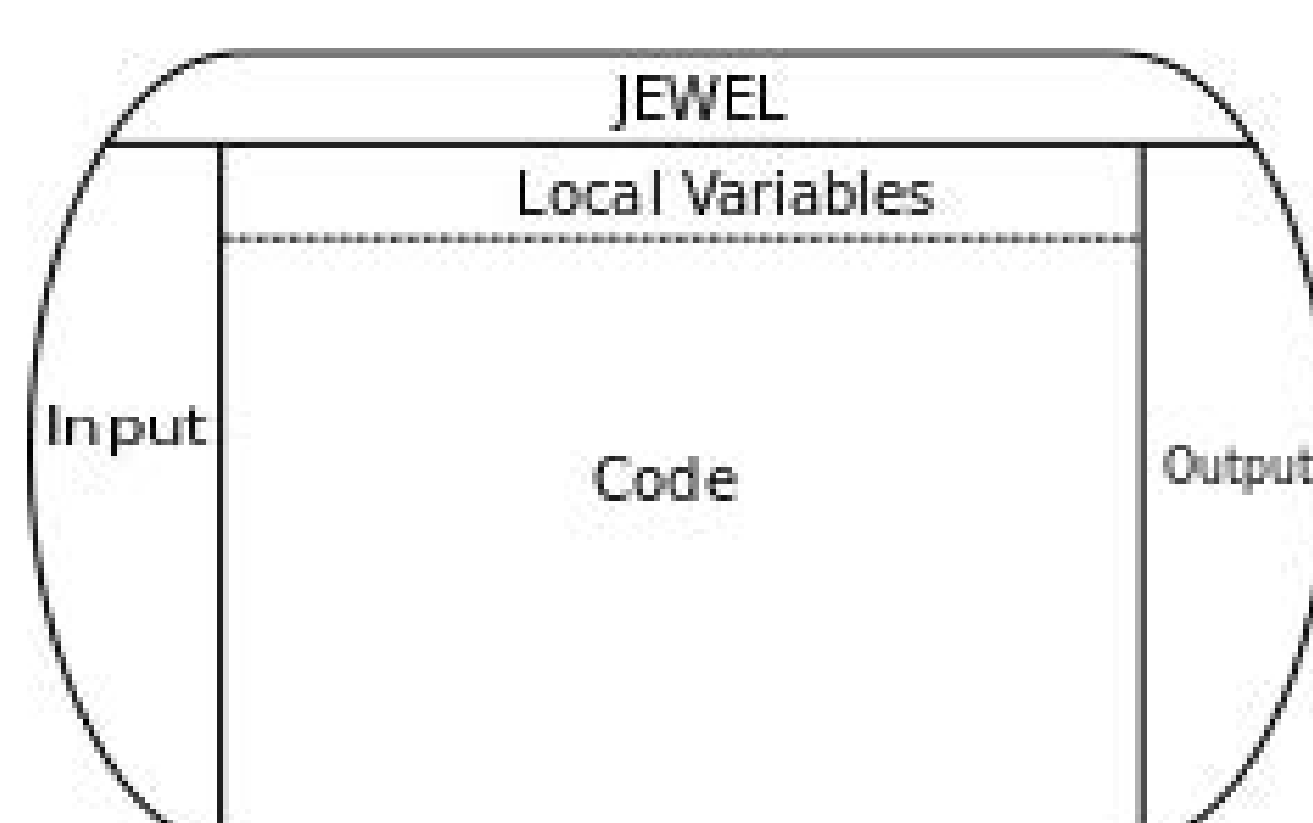
Future Work

- Resource Management Framework
- Context aware programming capabilities



Jewels: Modular Approach

- Block-based declarative programming model
- Application divided into small blocks named Jewels
- One or many jewels can contribute to one or many tasks
- Each Jewel has four features:
 - Input: Computation results from another Jewel or Resource
 - Output: Computation results for another Jewel or Resource
 - Code: Programming code, independent of Input and Output
 - Local Variable: Extra Information from User



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- [3] D. Alessandrelli, M. Petraccay, and P. Pagano, "T-res: Enabling reconfigurable in-network processing in iot-based wsn", in *Distributed Computing in Sensor Systems (DCOSS), 2013 IEEE International Conference on*. IEEE, 2013, pp. 337-344

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