Lesson Title: RFID Reference Model

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Rationale
Why is this lesson important? Why does the student need this lesson? How does this lesson fit in the larger module?

An RFID reference model is presented to divide an RFID system into functional layers. The student needs this lesson to understand the organization of the rest of the course. This model provides the framework to discuss RFID.

Objective(s)
What will the student know, be able to do, and value at the end of this lesson? This is smaller amounts of information than the module objectives.

The student will be able to list and describe each of the layers of the RFID Reference Model. In addition, the student will be able to categorize examples into the layers of the RFID Reference Model.

Exploration
Explicit concepts related to the Module goal are explored. It is at this point that the student will be provided basic information about the topic and the chance to explore some basic concepts about the topic. This is where the instructor imparts information.

- Application layer
- Middleware layer
- Network layer
- Reader layer
- Media interface layer
- Tag layer

Reflection
Several questions are posed to the student to answer and then often discuss as a class. This is an attempt to determine whether the student "gets" the basic concepts delivered above. If they do get it, move on to engagement. If they do not get it, go back to exploration above. It could be as simple as asking a few probing questions or as complex as asking the student to write a paper.

- Why is the middleware layer needed?
- What is the network layer?
- What is the difference between the network layer and the media interface layer?
- What media is the most common in the media interface layer?
- Which layer is the most complex and why?

Engagement
Concepts learned in the Exploration are further developed by conducting experiments, designing and building solutions, and solving problems. This is an attempt to cause the student to apply the new
knowledge. By applying the new knowledge, the student is much more likely to retain this information. This engagement could be accomplished through a debate, an experiment, a problem solving activity, or anything else that would cause the student to demonstrate understanding and competence.

- Discuss solutions for the following:
  - If the media interface layer was wireless, how would you coordinate communication between the reader and multiple tags?

**Expansion**

Provide opportunities for students to expand the concepts to more general or global situations including connection to the Module goal. Expand back to the big ideas of the module and prepare for the next lesson.

- How would you power the tag’s circuits?

**Lesson Assessment**

Assess student understanding of the lesson content. This does not have to be a full-blown examination. It could be a graded homework assignment, a quiz, a performance examination, a graded problem solving activity, or something similar.

- Exam problem

**Equipment**

- None

**Software**

- None

**References**

- None
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