



Sensors

## Interactive Inventory Monitoring

[Inventory monitoring program using an RFID-based system](#)

Keeping track of inventory whether in the form of products, books, documents, electronic copies, or materials of sensitive matter, is a continuous and monumental task. Determining where an inventory item is presently located, or mislocated, is a time consuming process as inventory grows and items are repaired, maintained, replaced, or moved and re-characterized. When multiple copies of an inventory item are present and are kept in different locations, the job of keeping track of items becomes increasingly more difficult to control and maintain. This innovative approach uses a radio frequency identity detector (RFID) based system to assist the user in locating an item visually in response to specification of them item electronically. This system is ideal for warehouse management and product logistics.

### BENEFITS

- Instant reporting of item location and details
- Helps locate misplaced items
- Paperless system
- Provides security for inventory items

technology solution

# NASA Technology Transfer Program

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## THE TECHNOLOGY

The invention is a radio frequency identity detector (RFID) based system that helps users locate an item visually, in response to specification of the item electronically. The item(s) being sought may be a book on a library shelf, an item from a store inventory, legal or financial document, medical record, weapon system, or weapon component (presumably) located in an armory or similar location. Each such item is tagged by a RFID, which does not require a battery but is powered using an electromagnetic coil that is embedded in or associated with the item. The shelving or other containment vessel or receptacle for the item(s) provides an alternating electromagnetic field to power the embedded coils and can identify the item location if the item is on or adjacent to the shelving/ vessel, even if the item is not at its assigned location. Each coil includes a low power, programmable chip containing relevant information on the item (id. no., class to which item belongs, present status of the item, relevant item characteristics, recent activity affecting the item, etc.). This system can also provide security for an inventory of weapon systems. In this instance, the inventory receptacle is powered continuously, and each protected item emits a unique encrypted code associated with the item when the item is on or in or adjacent to the receptacle at its assigned location. When the protected item is not on or adjacent to the receptacle at its assigned location, or is located elsewhere on or adjacent to the receptacle, an alarm or notification signal is issued by the system, indicating when the item was last sensed at its assigned location. Use of an encrypted code of appropriate complexity can minimize or eliminate the possibility of spoofing to cover absence of the protected item.



Interactive Inventory Monitoring

## APPLICATIONS

The technology has several potential applications:

- Product Logistics and Warehouse Management
- Library Catalogs
- Sensitive Materials
- Weapons systems or components
- Medical and Financial Records

## PUBLICATIONS

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National Aeronautics and Space Administration

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