

# Tree Identification with RFID Technology

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## Introduction

Smart Nails are designed and constructed to mark both living wood (trees) and round timber and for all kinds of wooden products and semi-products. Marking means that each wooden object gets a unique code and, if necessary, additional markings or properties which are entered into the Smart Nail. Outside surface of Smart Nails are mainly made of a material similar to wood. The Smart Nail include a available desing structure to penetrate the wood along the fibres with minimal force. They contain a unique identification code and have available free memory dedicated to entering random data. They also use radio waves to communicate their identification codes and other data stored in the memory. Each tree has its own typically history, its aspect and its character. If you want that the tree shares all this with you, then you are on the right website. By labelling a tree with a smart nail and entering basic data of the tree to the database, you can share it with internet users. You can also just view the data and widen your view to the green side. Application which enables this is simple to use and is available for all internet browsers. This study contribute to the various aspects such as scientific and production and tracebility of timbers.

## Material

### What is RFID Technology?

Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information. Unlike a barcode, the tag need not be within the line of sight of the reader, so it may be embedded in the tracked object. RFID is one method for Automatic Identification and Data Capture Also, they don't even need a battery to store information and exchange data with readers.



### RFID Tags

RFID tags are available in many types (RFID Nail, RFID Label (plastic or metal), etc.). All of them have same properties. It holds a unique number that can be read by an RFID reader.



RFID Label (Metal or Plastic)



RFID Label (Cellulose)



RFID Nail

### Geographic Information System and Tree Database

Each tree has its own history, its aspect and its character. If you want that the tree shares all this with you, then you are on the right website. By labelling a tree with a smart nail and entering basic data of the tree to the database, you can share it with internet users. You can also just view the data and widen your view to the green side. Application which enables this is simple to use and is available for all internet browsers.

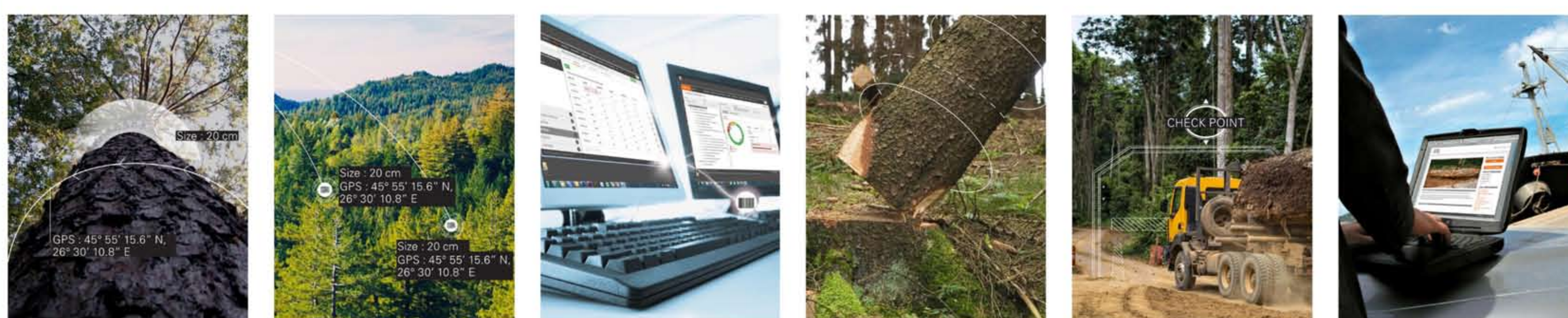


Figure 1: Traceability System(Marking, Planning, Edit Database, Harvest, Transport, Export)

## Methods

This method consists three step. Marking, Creating Database and Planning, Traceability

**Marking:** Tree or timber is marked RFID tag. In this way, physical object convert to digital object and they gain a identification.



Figure 2: Marking systems (Label Metal or Plastic, Cellulose, Nail)

**Creating Database and Planning:** A database is created and necessary information is recorded (ID, GPS Coordinates, Type of Tree, Height, Diameter, Volume, Age, etc. ) with RFID Reader. In this way, we can create a tree tracking system.

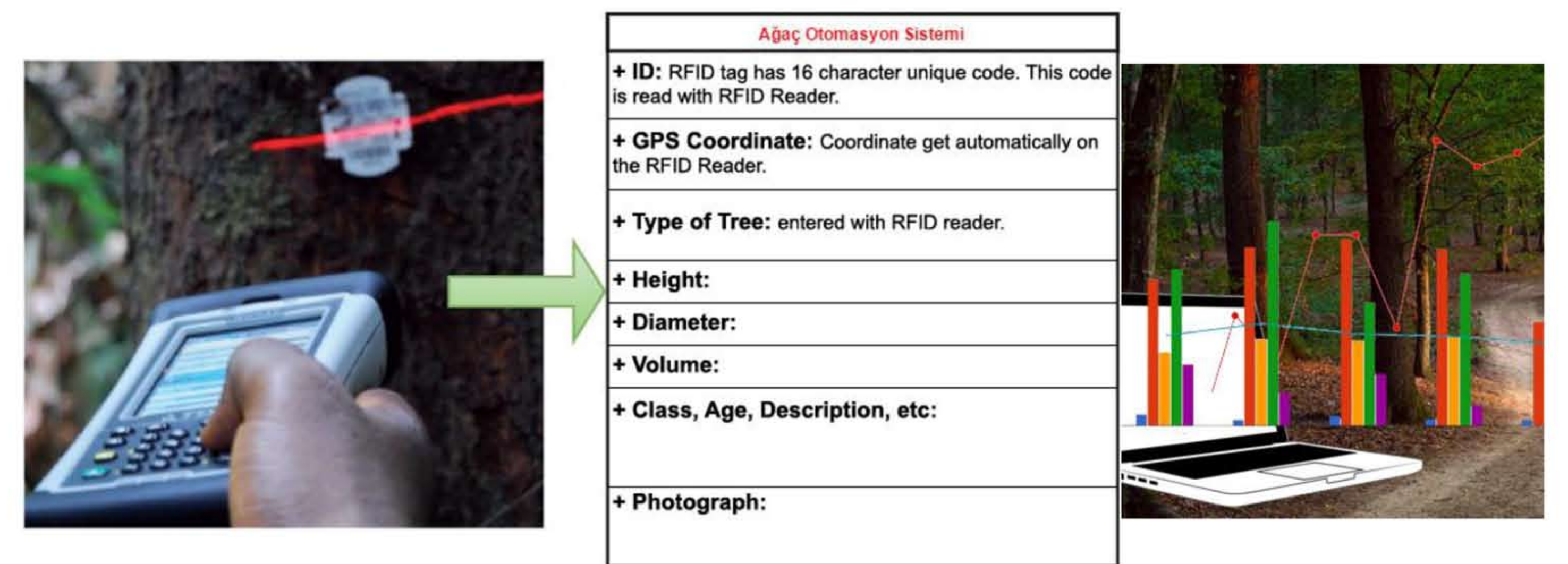


Figure 3: Editing Database and Geographic Information System

**Traceability:** Each step is monitored with traceability system. At each step, operators (logging operators, processing companies, sellers/ exporters...) shall declare trees inventoried and felled, cross-cut logs, imported logs, transport waybills, processing, and sales (local or export).

## Results

Discover the story of your forest product. Learn about the forest product you purchase, and connect with the people who added value all the way back to the forest of origin.

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Product is harvested by  
Istanbul Regional Directorate

**Forest of Origin**

Istanbul Regional Directorate

[www.ogm.gov.tr](http://www.ogm.gov.tr) Fatih Ormanı Kampüsü 34398 Maslak - Şişli / İSTANBUL

**Species**

Douglas-fir

Firs are a genus of 49–55 species of evergreen conifers in the family Pinaceae. They are found through much of North America, Europe, Asia, and North Africa, occurring in mountains over most of the range.

**Processor**

Belgrad Enterprises Ltd.

[www.belgradenterprises.com](http://www.belgradenterprises.com) 34554 Sarıyer / İSTANBUL - 212 444 44 44

**Processor**

Poyraz Log and Timber Homes

[www.poyraz.com](http://www.poyraz.com) 34344 Levent / İSTANBUL - 212 444 84 53

Figure 4: Monitoring system on the web site (Example of Istanbul Regional Directorate)

All stages (marking, planning, harvest, transport, Export) are stored in database. After than, it is given an identification unique code (unique code is provided with RFID Tag) to the end user. User can monitor all steps with unique code on the web site.

### REFERENCES

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