RFID - Call for Mobilizing Ideas

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Acronym (up to 20 characters)	WSCOPPI Information and Communication Technologies in support of Wood Supply Chain Optimization for Pulp and Paper Industry.				
Abstract (max. 10 lines)	The idea is to use RFIDs tags to improve the efficiency of the wood supply chain for the pulp and paper industry. So far projects have been addressing the use of tags in the in sawmill industry. For the pulp and paper industry specific development must be made namely, as for example: biodegradable tags and sampling methodology to select tagged wood logs. The WSCOPPI idea comes from a 7FP project proposal.				

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Classify the idea, either as a Business or Technological idea, according to the classification below:	AC

Application/Business Idea

If the idea is focused on a business application, use the code ("AA" …"HC") according to the RFID-reference model defined in www.rfid-in-action.eu/rfid-referencemodel (excel Overview)use "OAF" for Other application fields

Technological Idea
If the idea is essentially of a technical nature, use one of the following codes:
T1 – Tag sensors and cost reduction (polymer and new materials)
T2 – Energy supply (new energy supply/harvesting, storage and saving)
T3 – Ubiquitous sensors and readers
T4 – RFID Information architectures
T5 – Smart tags
T6 – Middleware
T7 – Large scale networks and information systems
T8 – Other
Please add to this form a short description (maximum 3 pages of text plus – Arial 12, one space - and page of schema that represents graphically the idea. Word (.doc) or a compatible format should be used)

RFID for Wood traceability across the entire wood supply chain
Link Consulting, 2 October 2007

The increase in competitiveness of European pulp and paper companies of forest plantations by taking advantage of the new IC Technologies is a consensual path. Focus has been given to technologies for planning and controlling logistic functions, integrated on a global wood supply chain (WSC), integrating forest production, pulp production, transportation and distribution and sales. Among these technologies, RFID is considered the most promising technology for achieving the goal of wood traceability across the entire WSC.

The EC already financed some projects along these lines, notably the INDISPUTABLE KEY Project (www.indisputablekey.com) that intents to develop novel wood tracing technology based on UHF RFID technology and optically readable painted codes focused on the sawmill production chain. We propose to use and extend the use of RFID technology along the supply chain for the pulp and paper wood chain, which has significantly different characteristics from to sawmill supply chain due to the huge difference between the values of wood logs used in each industry.

Such approach would allow establishing a common RFID infrastructure for all forest industry, spanning from different wood species geographical realities in Europe. Additionally, we also propose to extent the wood traceability from forest beyond the pulp plant to the final product, i.e. paper to relate the quality of the final the product and the raw material, allowing appropriate segmentation of wood for a certain product or paper type.

The fundamental stages of the WSC were RFID is usable are:

1. Tagging wood logs during the harvest operations. This should be done without increasing the need for man-power or the duration of harvest activities. It is required to use one sampling methodology to select the logs to be tagged, which depends on the species economic value and utilization, compared with the tags price.

2. The wood logs are placed in wood pills on the forest sites, from which they will be transported to the sawmills or pulp plants.

3. Wood log inventory control, to detect eventual wood loses along the WSC.

4. Inside the sawmill or pulp plant, the wood yard stock movements and positioning should be based on the reading of the RFID tags. There should not be any additional activity for removing the tags. On the sawmills these are on the bark and can be removed during sawing. In pulp plants, there should be used a tag biodegradable during wood processing.

5. The quantitative and qualitative information should be preserved all through the processing process and related with the pulp or paper quality and quantity produced.

To implement the above requirements, and given the specificities of southern Europe pulp and paper industry, further development is need on different areas:

- **Need to develop a new resistant and bio-degradable transporter:**
  The logs will be tagged on the harvest operations and the tag will have to persist throughout the wood processing processes, from wood storage on the forest to wood transportation and wood processing for pulp production. The current tags have plastic subtracts, which are not possible to isolate under the pulp production process without new and expensive activities. Therefore, efforts have to be done to develop a pulping process friendly transponder using synthetic wood as substrate material adequate for hardwood species, as well as resistant to the weather conditions on the forest.

- **Need for a proper sampling methodology:**
  In INDISPUTABLE KEY all the logs were tagged, using an automatic equipment implemented on the harvester. Under the pulp industry using hardwood, the shorter diameters do not justify to tag all logs. Therefore, efforts have to be done to develop one sampling methodology for tagging the logs on the forest sites, assuring the quantitative and qualitative control of the wood harvested.

- **Need for proper equipments for tags positioning and reading:**
  Unlike INDISPUTABLE KEY, on southern Europe reality, the tagging cannot be automatically done by the harvester because in most cases, the company who owns the wood subcontract several workers for the harvest job, each of them with different harvest equipment. Therefore, efforts have to be done

on developing a portable tag printer and reader what can be used by the forest company worker, who is following the subcontracted work. This device should allow easy reading for stock control on the forest site as well as automatic data synchronization with the forest company operational backoffices for wood reception control, assuring quantitative wood traceability.

- **Need for efficient tags production process:**

  The tags proposed on the project required specific molds and because there was an experimental basis, would be hand made, and very expensive for commercial usage. This is in fact the main restriction to the use of RFID technology in WSC for the pulp and paper industry.

Addressing the above issues in a global and coherent manner are necessary steps to introduce the RFID technology in the pulp and paper industry in particular, and in the forest industry in general.
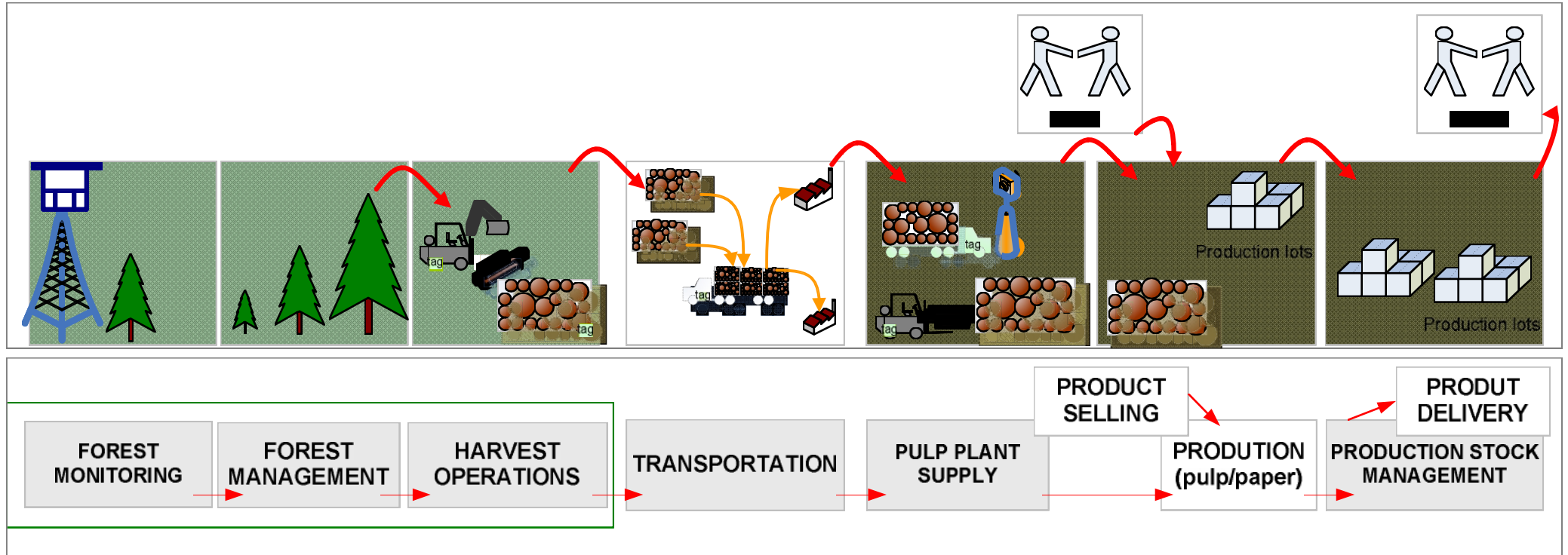
Wood Supply Chain for Pulp and Paper Industry