

## PRESENT AND FUTURE FOR INFORMATION SYSTEM FOR MONITORING TRACEABILITY IN PORK MEAT SUPPLY CHAIN

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### Abstract

*In the current context of increasing requirements regarding food safety and security and of rapid changes from business environment, the role of information systems for monitoring traceability is in a continuously increase of importance. In order to fulfill the national standards and regulation regarding traceability and the business requirements, it is necessary to be used the most recent development from information technology and communication (IT&C). The data and information provided by information systems must be organized in order to allow a quick extraction and processing for fulfilling the organizations objectives.*

**Key words:** *traceability system, information systems, pork meat supply chain, food safety*

### Introduction

The agro-food economy is focusing to provide a responsive fulfillment of end-consumer demands regarding quality, safety and security of food and foodstuff.

In the European Union (EU) food-safety and food-quality represent one of the most important concerns, consequently, a set of rules and regulation were adopted in order to ensure the highest possible level of human life and health, taking into consideration protection of animal health and welfare, plant health and the environment.

In the Regulation (EC) No 178/2002 of the European Parliament and of the Council it is specified that **food** (or **foodstuff**) represents “*any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans*”, including “*drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment*” and that **traceability** represents “*the ability to trace and follow a food, feed, food-producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution*”.

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## Information system for monitoring traceability in pork meat supply chain

The designing, development and deployment of an information system for monitoring the traceability in pork meat supply chain are a very complex process which implies more stages. In the first stage it is necessary to be defined and established the main objectives of the information system, followed by the study of the national and international legislative framework regarding the traceability and the monitoring the traceability in pork meat supply chain. The next stage implies the study of the current information system, focused on the documents workflows and the identification of the possible way for harmonization these workflows with the national standards regarding the monitoring of traceability.

The main objectives of an information system for monitoring the traceability in pork meat supply chain are:

- ❖ Protecting and improving the health of animals through a more careful monitoring of the animals' evolution accordingly with the national and international regulations and standards (for example, accordingly with the standards of World Organization for Animal Health - OIE<sup>2</sup>).
- ❖ Improving the identification of preventive measures which must be adopted in some situations (for example, in the case of identification of animal which has suspect symptoms or symptoms of a disease etc.) in order to maintain under control and, in the same time, for blocking the spreading of the disease.
- ❖ Monitoring the animals which are for human consume (by industrial processing followed by commercialization) and the animals which will be sold "live" both to the national companies or to the foreign companies (by the export process).
- ❖ The modularity and the adaptability in order to develop new features and the compatibility with other systems (national or international) in order to increase the trust and to provide the transparency in national or international business relationships.

One of the most important regulations from EU regarding pork traceability is Council Directive 92/102/EEC regarding the marking the pigs using ear-tags or tattoos. The marking must allows the exact identification of the place of origin and all documents regarding an animal. In the same time, it is recommending to build and develop a national database in which must be stored information regarding the specified marks for each animal. The operation of replacing or removing the mark can be done only with a special approval from competent institutions and if the original mark is

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2 In 1924, the signing, by 28 countries, of an international agreement represents the starting point of creating the Office International des Epizooties (OIE) with headquarters in Paris. In 2003 the Office International des Epizooties was transformed into the World Organization for Animal Health, but the acronym remains OIE. The total number of OIE members is 174.

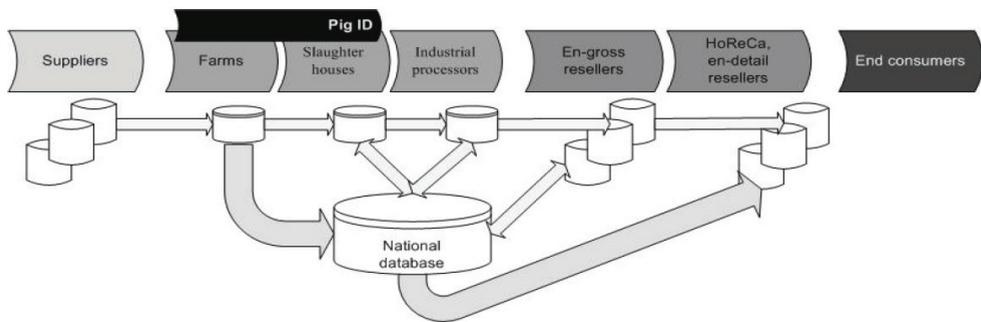
changed it is necessary to be recorded all information in order to be obtained an exact connection between the marks applied to the same animal.

The information systems must allows an explicit and complete records for all livestock movements from a farm<sup>3</sup>, and if the animals are moved to/from market or to/from collecting point, the information system must provide/gather the information from documents that identify all animals that are in that batch of animal.

In the same time, the information system must provide information which can be included in a national system for monitoring in order to be realized a complete trace of each animal from birth till the slaughtering and industrial processing.

For the pigs' livestock movements between EU countries it is necessary that the batch of animals to have a health certificate issued accordingly with EU regulations regarding the health problems which can affect the intra-Community trade with bovine or swine (Council Directive 64/432/EEC). The health certificate must contain a minimal set of information for each animal that belongs to the moved batch of animals<sup>4</sup>.

*Figure 1 - The main actors involved in informational workflow for monitoring the traceability in pork meat supply chain*



In Figure 1 are presented the main actors from the information flow for monitoring the traceability in pork meat supply chain and principles of exchanging data between them:

- ❖ In the databases that belong to the farms are included relevant information from the suppliers' databases (supplier of fodder, medicines etc.).
- ❖ Some relevant data stored in farms' databases are included in a national database.
- ❖ In the databases belonging to the slaughter houses and industrial processors are included relevant information from the farms' databases.
- ❖ Some relevant data stored in databases of slaughter houses and industrial processors are included in a national database.

3 It is necessary to be stored the total number of animals and other specific information for each input or output operation at the farm level.

4 The exact identification of each animal will be based on unique identification number (established using ear-tags or tattoos)

- ❖ In the databases that belong to the en-gross resellers are included relevant information from databases of slaughter houses and industrial processors.
- ❖ Some relevant data stored in databases of en-gross resellers are included in a national database.
- ❖ In the databases that belong to the hotels, restaurant and catering (HoReCa) or en-detail reseller are included relevant information from the en-gross resellers' databases.
- ❖ The databases of HoReCa and en-detail reseller can access the national database in order to include relevant information from the point of view of final-consumer.

## Conclusions

The process of monitoring traceability in pork meat supply chain cannot be implemented in the absence of an integration based on a vertical approach of information. Taking this into consideration, it is necessary to have a rigorously planning for the following characteristics of a traceability system:

- Compatibility.
- Standardized information.

The designing, development and deployment of information system for monitoring traceability in pork meat supply chain will help to ensure better product safety and better product quality.

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