

CHALLENGE OF THE ELECTRONIC INFORMATION SYSTEM OF THE MEAT INDUSTRY

1. BACKGROUND

On 7 December 2000, through Resolution No. 1423/000 of the Executive Branch, the National Meat Institute (“INAC”) was entrusted with the development of a project for the mandatory installation of unalterable electronic systems for the control of meat slaughtering, deboning and marketing throughout the entire national territory.

Subsequently, through Decree No. 364/003 dated 29 August 2003, slaughterhouses subject to the specific controlled activities carried out by the Ministry of Livestock, Agriculture and Fisheries were required to acquire the necessary equipment and systems to allow the implementation of the Electronic Control System for the slaughter of cattle referred to in the aforementioned Resolution of the Executive Branch which entrusted INAC with the commissioning, operation, financing and implementation of the system, and INAC implemented the Electronic Information System of the Meat Industry (SEIIC) to such effects.

Finally, through Decree No. 339/020 dated 9 December 2020, INAC was given the power to modify and update the original design of the Electronic Control System for the Slaughter of cattle implemented by INAC through the Electronic Information System of the Meat Industry (SEIIC) to achieve more efficiently and effectively the aims of the electronic control of meat slaughtering, deboning and marketing throughout the entire national territory. To such effects, INAC will consider the economic materiality of slaughtering and the volume of meat marketed by the establishments with respect to national totals.

2. AIM OF THE CHALLENGE

To generate a new disruptive model of intervention of the SEIIC to achieve more effectively and efficiently the aims of electronic control of slaughtering, deboning and marketing of meat throughout the country.

We are looking for a technological change based on open and evolutionary technological models that, with low maintenance costs, monitor the processes of Slaughtering and Deboning at Establishments, minimizing the intervention in facilities, equipment and internal systems. The prototype to be developed must have the minimum functionalities required to be installed in a slaughterhouse designated by INAC.

3. GENERAL REQUIREMENTS OF THE SOLUTION SOUGHT (SCOPE OF THE PROJECT)

3.1. Architecture

The system to be developed shall:

- have a modular and parameterizable architecture that allows installation by type of plant,
- have security mechanisms to control users, being able to establish roles and permits that guarantee data confidentiality,
- ensure data availability for INAC and stakeholders,
- allow the remote monitoring and audit of all plants by INAC when requested,
- have mechanisms in place to ensure the integrity of the information,
- provide mechanisms to establish connections with other information systems linked to the process, and
- provide for an independent mode of operation that avoids the need for plants to shut down their activities.

3.2. Facts

The system must capture and deliver data that will allow compliance with the objective of electronic control of slaughtering, deboning and marketing of meat.

This data is linked to the individual identification of the animals throughout the process, capture of weights and identification to ensure compliance with the planned control and the entry of classification variables (sex, age and typification).

3.3. Process

Several solutions may be presented for the different processes, provided that they can be integrated with each other. Solutions should be applicable in all plants regardless of their type and size. Different simultaneous and compatible versions can be evaluated to suit different types of establishments.

4. GUIDELINES FOR A CHANGE IN THE SEIC INTERVENTION MODEL

The challenge aims at a change in the intervention model and the technology applied to carry out the process controls stipulated by the SEIC regulatory basis at the Slaughter and Deboning Establishments.

It is understood that the current intervention model based only on hardware and software installed and maintained by INAC at the Establishments offers limited optimization opportunities. Therefore, any improvement based on the current logic of the system does not result in significant improvements in data quality, control methods, or the magnitude of resources invested. The Annex describes the current intervention model, which must be overcome by a different proposal.

Thus, with the enactment of Decree No. 339/020 mentioned above, the SEIC's objectives are to be improved and deepened, aiming at a new design and implementation of a robust system that overcomes future technological obsolescence and requires a substantially lower intervention investment than the current one.

The following are the guidelines to be considered in the proposals submitted within the framework of the challenge, ordered according to the SEIC's objectives.

Objectives:

- Control animal slaughtering.
- Control carcass deboning.
- Control the marketing of meat.

4.1. Control animal slaughtering

The system should guarantee the registration of the entry of animals into the slaughter process in plants, to ensure commercial transparency in the meat sector between formal agents and informal circuits.

Key events:

- Capture of live animal weight to calculate yield versus post dressing carcass weight.
- Identification of the tag earring of the dead animal for deregistration at the National Livestock Information System (SNIG).
- Control dressing operations of carcasses.
- Capture the weight of carcasses after dressing for payment to farmers.
- Integrate classification data for each carcass.

Subsidiary extra-plant systems that could be used:

- National Livestock Information System (SNIG), which identifies individual animals by means of a pair of tag earrings (RFID and visual), electronically recording movements between farms and to slaughter plants.
- Automated Classification System (SAT), which takes a visual record of the carcasses after dressing and classifies the carcasses.

4.2. Control carcass deboning

The system must verify the consistency between the entry of animals into the plant, carcass deboning activities and the exit of merchandise from the plant.

Key events:

- Consistency control of deboning lots that are subject to quotas to be certified by INAC or MGAP.

Subsidiary extra-plant systems that could be used:

- None.

4.3. Control the marketing of meat

The system must register the products marketed by the plant, verifying consistency with the entry of animals into the plant.

Key events:

- Integrate the SEIC output with the management and control systems for exports and marketing of meat and meat products in the domestic market.

Subsidiary extra-plant systems that could be used:

- Export Registration and Management System (SRGE), which integrates all formal and legal processes for exporting meat and meat products.
- Supply Registration and Management System (SRGA), which integrates all formal and legal processes for marketing meat in the domestic market.

ANNEX - DESCRIPTION OF THE CURRENT SYSTEM

In order to provide elements of what is intended to be changed, the following is a broad description of how the SEIC has been set up to now.

A) Broad description of the system

The SEIC consists of 7 information capture stations (with automatic weight registration in several of them) from the time the animals enter the slaughter plant, their transformation into meat until the dispatch of the meat for the domestic market or for export. This information is recorded and transmitted to INAC's central server.

The system has the following three components that are integrated to obtain the information through seven positions:

- Hardware: Scales, Terminals, Printers, Scanners.
- Software: Apps, Databases, Electronic information, System Integration.
- System components: Human, Entry of operational data.

B) Purposes

As per the regulations that created the Electronic Control System for Slaughter of cattle, together with the successive projects, the following purposes have been determined and are currently being met:

- Implement unalterable electronic systems for the control of slaughter, deboning and commercialization of meat throughout the national territory, guaranteeing data inviolability and real time verification powers by the competent authorities.
- Choose the system that best suits the needs of the environment, seeking the most beneficial conditions in terms of supply and maintenance during its useful life.
- Publish by slaughtering establishments the number of animals slaughtered per category, average weight per category, average weight in the DCP3 stall, average weight in the DCP4 stall and Dressing percentage.
- Send to each producer sending cattle the Preliminary Sales Agreement together with the data indicated in Decree No. 300/013.
- Ensure animal identification from entry into the slaughter plant to the final product at the level of each cut (have the mechanism in place).
- Enable the implementation of objective carcass classification systems.

- Ensure that all information reaches the members of the production chain.
- Complying with current regulations on transparency and clarity for data access.
- Availability of quality pricing information.

C) Process

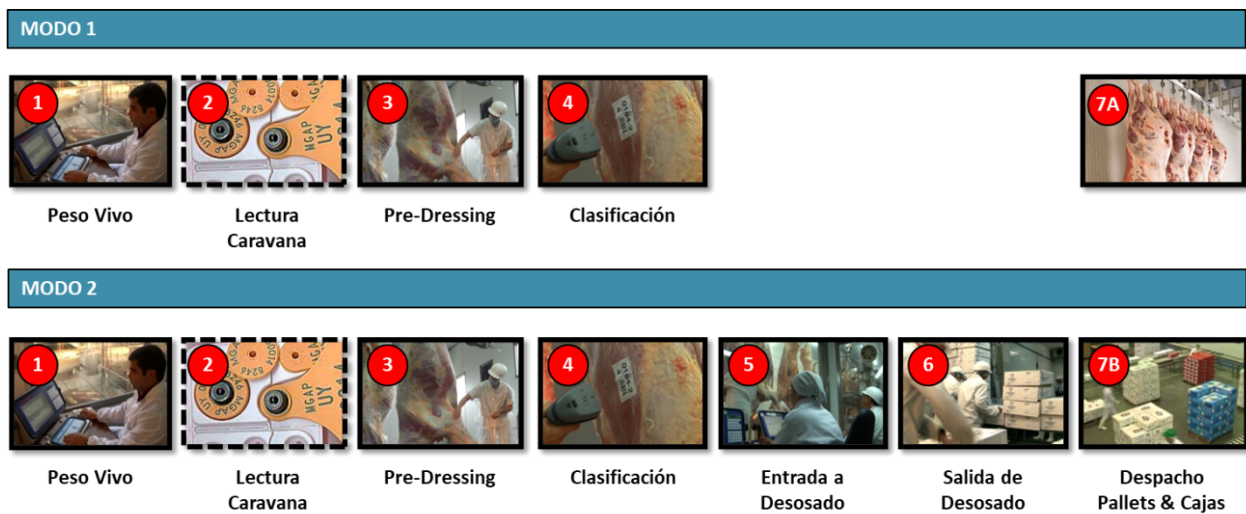
The current process is divided in two stages (see Chart):

- Slaughter, stages 1 to 4.
- Deboning and dispatch, stages 5 to 7.

These stages work in two modes:

- Mode 1: Comprises stalls 1 to 4 and 7A for slaughtering but not deboning plants.
- Mode 2: Comprises stalls 1 to 4 and 7A for slaughtering and deboning plants.

Chart - Images of the different stalls and modes of the SEIC process



D) Current main operation problems are:

- HW ownership model.
- High cost of maintenance and operation of the system (2/3 of the total investment).
- Obsolescence and complexity.
- Dependence on a reduced number of suppliers.