

Examples of Land Administration software customization using InnoLA Framework

This master class invites professionals and government employees who are interested in learning how the software tools used for managing the property registration process can be customized with the help of modern technologies to meet a particular user’s needs. The purpose of the class is to present a real-case scenario of the client’s requirements for implementing a certain business process and illustrate how these requirements can be fulfilled using the software. The most important thing to be illustrated in this master class is that this rather complicated customization task can be performed by an appropriately trained professional without having to spend much time on various software development aspects. During the 90-minutes session, we will customize our web-based registration software called *InnoLA*, which is deployed as *NLIS* in Uganda, “on-the-fly”. *NLIS*, which stands for the *National Land Administration System*, is currently being rolled out in the Ministry of Lands, Housing & Urban Development zonal offices. *InnoLA*, in its turn, is a modern, web-based professional open software framework for registering, managing and distributing real property objects and related data, fully compliant with the LADM ISO standard.

The screenshot displays the InnoLA web application interface. On the left, there is a navigation menu with options like 'All Applications', 'Assigned to Me', 'Submitted Today', 'Submitted Recently', 'Overdue', and 'Rejected'. The main area shows a table of applications with columns for Application ID, Submitted Date/Time, Applicant, Status, Transaction ID, Transaction Type, Task, Task Creation Date, Role, and Assignee. A search bar and a 'REFRESH' button are located at the top right of the table. On the right side of the interface, there is a detailed workflow diagram illustrating the process flow from application submission to document delivery, including steps like 'Submitted in office', 'Collect Documents', 'Review Application', 'Acceptance Request', 'Start Issuing Documents', 'Deliver Documents', and 'Deliver Registered Documents'.

Using the “Grant of Freehold” transaction as an example, we will demonstrate enhancements and changes made to the system, including the modification of the system workflow definition, customization of the data entry form and its associated fields, changing of the existing business rule, etc.

The program of the master class will include the following topics:

- 1) **System Overview** – an introduction and quick demo of the system to explain the concepts of the *system transaction*, associated *workflow definition*, and *user task*. This topic is a prerequisite to further topics. During this time, we will briefly demonstrate the system, explain how registrations are handled via the workflow, what metrics are collected, and what are the advantages and disadvantages of workflow-based systems. Over the course of the last years, there is an increasing role of the workflow-based software, since it provides better control over the document flow in the office and reduces the ability to bypass critical verification steps in those environments, which are more prone to inefficiencies or even bribes or corruption. From a pure technical point of view, any computerized and workflow-enabled system allows users to get immediate answers to the following questions: where are my documents, submitted for the

registrations; who performed a particular task; what are the bottlenecks in a working process; and who and for how long delays the registration.

- 2) **Customization Process** – whenever a new project is started and InnoLA is prepared for a new deployment and rollout, the typical process for InnoLA customization is similar in every country and location. First, we identify a list of all types of transactions, which are accepted for the registration or recoding. Then, for each identified transaction, we conduct detailed business analysis to identify current document/data flows and find potential bottlenecks. Every key actor is identified, and his common actions (and exception flows) are noted. Next, each critical document is analyzed for the content and key attributes are documented and indexed (this includes both standard forms and statistical reports). If the office already has an existing computerized system in place, we analyze the database and identify the feasibility of the legacy data load. After this information is collected, we prepare the Business Process Reengineering and System Specification to start the system customization.
- 3) **Workflow Configuration** – since InnoLA uses an BPMN compatible workflow engine, we will show during the master class how to modify an existing BPMN workflow definition in the Eclipse BPMN designer and how to upload it to the system. Once uploaded, the new workflow definition is available for a new transaction initiation. In reality, workflows are changed quite often – due to either process optimization or changes in the legislation. The master class will also provide some useful information and experience from previous projects.
- 4) **Managing Data Model** – the important aspect of every system deployment is the ability to extend the system with new data and attributes. The necessity to extend the system happens over time not only due to changes in the regulations, but also when the role, benefits and possibilities of the system functionality are fully recognized. At this point, customers start to demand more reports, more services and thus initial data model requires changes.
We will demonstrate how to customize an existing data entry form by adding or hiding a field without having to perform system reinstallation. Advanced techniques include definition of a new object attribute (a database table column) to cover cases when a configured data model lacks some attributes – for example, when it is required to start collecting more attributes about some object.
- 5) **Business Rules Configuration** – properly implemented business rules for the systems deployed in developing countries are important to ensure that the process is strictly followed and that the data are entered properly and in time. During the master class, we will show how to adjust an existing business rule before completing the task and how to prohibit moving transaction to the next stage if not all data area entered. Some real-world examples will demonstrate you the importance of rules and the consequences of bad design or overcomplicated business logic.
This part will also include the demonstration of how one can change existing screen/widget configurations for a defined task – in other words, how to control and configure what screen and in what mode (full access or read-only) are shown to the user when he or she opens their tasks from a queue.
- 6) **Q&A time** – in the time that is left, we will have an open discussion.

To summarize, the ultimate goal of the InnoLA Framework is to provide IT professionals (such as system administrators, developers, and analysts) with methods and tools that help them solve challenges that are common in registration offices. InnoLA Framework addresses the ongoing needs for system maintenance and further extension and provides means for performing these tasks without actual code recompilation and system reinstallation. This becomes crucial when the active development is finished, the main implementation project is completed, and the customer gets full control over the system operation and maintenance.