GUIDANCE NOTE SERIES
«ACCELERATING TO ENERGY-EFFICIENT PRODUCTS BY PRODUCT REGISTRATION SYSTEMS»

GUIDANCE NOTE 4

IMPLEMENTING A PRODUCT REGISTRATION SYSTEM

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Introduction

THIS GUIDANCE NOTE IS PART OF A NUMBER OF TOOLS OF UNITED FOR EFFICIENCY ON PRODUCT REGISTRATION SYSTEMS.

GUIDANCE NOTES

OTHER TOOLS IN THIS SERIES INCLUDE:

PROTOTYPE

This guidance note is the fourth of a series of guidance notes prepared by United for Efficiency (U4E) and covers the process of implementing a product registration system from initial planning, through to designing, building and finally launching and operating the system.

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1. Planning a Product Registration System Build

1.1 Assemble a team

A product registration system will require the application of expertise from a range of participants. Initially, a project manager should be assigned, who will need to be supported by a project team. The various roles should include:

- A **project manager** i.e. a person appointed to co-ordinate the project and manage the various team members. The project manager is typically responsible for preparing project budgets, work plans and managing timelines. The project manager will convene project team meetings and has the final call when it comes to decision making.

- A **business rules analyst** i.e. someone who understands the operation of the body responsible for administering the standards and labelling program. This person should also know how the body interacts and works with the various stakeholders within the regulation scheme. The business rules analyst is responsible for defining the structure and functionality of the product registration system in a form suitable for use by the IT developers.

- A **subject matter specialist** i.e. someone who understands the technical aspects of product registration systems and in particular the governing standards and regulations. A subject matter specialist should have an intimate knowledge of the energy efficiency standards and programme rules. The subject matter specialists needs to formulate the data input and validation requirements of the product registration system for the IT developers. As the role is similar to the business rules analyst, in reality these two roles are often carried out by the same person.

- A **legal counsel** who is familiar with the relevant enabling legislation. The legal counsel needs to ensure that the requirements associated with a product registration system (particularly data supply and data publication requirements) are enabled by the legislation. In some cases it may be necessary for the legal counsel to recommend amendments to the enabling legislation to avoid legal challenges to the requirements of the product registration system.

- **IT developers** (also sometimes known as a software engineer) to build and maintain the product registration system.

- **Translators,** where a system is to operate across multiple languages (particularly relevant for regional systems) then translation services will be required.

The above-mentioned people are not necessarily required throughout the entire duration of the project. For example, a legal counsel may be required during the planning stages only and IT developers do not need to be appointed until the specifications of the system are virtually complete. Also, it may be the case that some or all of these disciplines may be delivered by existing staff within the standards and labelling regulators office. In some cases a single staff member or contractor may be able to fulfil multiple roles.

1.2 Develop a work-plan

In consultation with their team, the project manager needs to formulate a work-plan as a first step. The work-plan should set out the full range of tasks needed to be undertaken with a timeline for completion of each task. Key milestones should include:

- Completion of work-plan and project initiation meeting with the project team
- Initial consultations with the various stakeholders
- Completion of the business rules analysis
- Completion of specifications for the product registration system
- Appointment of an IT Developer
- Development of a Beta version of the product registration system by the IT developer which can then be used for testing
- User acceptance testing of the Beta version

- Training of various stakeholder groups in the use of the product registration system
- Launch of the product registration system *
- Maintenance, training and evaluation of the product registration system as part of an ongoing process after the launch

* Launching of the product registration system may be a staged process. Initially, only a few key product types may be covered by the system (with further products to be added in subsequent stages). Initial launches may only include the registration system itself, further features such as a public interface, a mobile application or facilities for the recording of monitoring and compliance activities may be constructed in a subsequent phase of the works.

1.3 Engage with stakeholders

It is important that the various stakeholder groups concerned with the standards and labelling scheme are engaged early in the process of developing a product registration system. Each group's particular perspective and needs in relation to a product registration system should be ascertained in advance in order to inform the design of the product registration system. Naturally, different stakeholders may have conflicting requirements so it will be up to the management team to evaluate the needs of each group and determine which needs are paramount.

Stakeholder needs are best ascertained by reference to representative bodies within each stakeholder group (e.g. industry groups) using surveys, interviews or forums. Typical stakeholders groups to be consulted would include:

- Government (Regulators, compliance staff, policy makers)
- Product manufacturers and importers
- Retailers
- Customs officials
- Consumers
- Standards associations and test laboratories

1.4 Establish a Financial Support System

A product registration system cannot be built or maintained without first establishing sources of funding for both the initial build as well as the ongoing development and maintenance costs. Therefore, one of the first tasks for the project team is to determine a budget for the initial build with an annual budget for recurrent spending on system maintenance after the system is launched. On the basis of this budget, potential funding sources (including self-funding via registration fees) should then be examined.

Aspects relating to funding are discussed in more detail in Guidance Note 2 of this series.

2. Designing and Building a Product Registration System

Step 1: Research

Research is a critical first step in designing a product registration system. The project team must fully understand the requirement, expectations, constraints and limitations associated with their standards and labelling programme before contemplating the design of a product registration system to service that program. Key areas for research include:

- Enabling legislation requirements and limitations
- Regulatory requirements and limitations
- Standard operating procedures of the regulatory authority
- Test standards
- Regulatory standards
- Any pre-existing product registries or databases (legacy systems)
- Stakeholders needs/views

- Available Financial resources
- Available IT resources
- A suitable host for the product registration system

Whilst much of this research will be desktop research of existing materials, some research such as stakeholder surveys, as described above, will need to be conducted specifically for the product registration system development programme.

Step 2: Specifying your needs

Once the research phase is complete and all necessary data has been collected the project team can now proceed to prepare detailed specifications for the construction of the product registration system web facility. Such a specification is ideally carried out by a person skilled in formulating specifications for IT contractors. Such specifications need to cover off on a wide range of aspects including (these aspects are explained in more detail in guidance note 3):

- System architecture (hardware and software requirements)
- Database requirements (including related databases)
- Portal requirements by type of portal/user
- User types and their access privileges
- Input Forms
- Lists of data points and attributes
- Process flow diagrams
- Record statuses and status management systems
- Field specifications including field validation requirements
- System functions including abilities to:
  - Search
  - Print
  - Upload
  - Automated emailing
  - Record management and copying
  - Account management
- System reporting requirements
- Certificate generation

Step 3: Identifying an IT Provider

If the website build process is not going to be carried out by in-house IT staff, then an external IT provider will need to be identified and engaged. The project manager will need to issue a request for proposal (RFP) for a software developer. There are benefits to working with an IT provider that has operations locally based as they often better understand the national context and stakeholders. If the requisite skills are not available in the local region then suppliers from further afield will need to be used.

If the project team choses an external IT provider, then tenderers will need to be supplied with the specification and any other relevant documents (e.g. standard terms and conditions of contract). Naturally, during the tendering period, the project team will need to make themselves available to answer any questions that may arise and provide clarifications.

Following receipt of tenders each tender should be carefully reviewed and evaluated in relation to:

- Relevant past experience
- Understanding of and response to the brief
- Capacity of the contractor
- Proposed solution

- Cost, timelines and work-plan
- Proposed project management tools
- Proposed regime of internal testing and checking
- References provided

Step 4: Managing the Build

An appointed representative of the project team (e.g. the subject matter specialist) needs to engage closely with the software developer during the course of the build. The representative will need to be available to advise the developer on all necessary aspects that may arise during the build in order to ensure that the web facility and functions are constructed as intended.

During the build, the project team should expect to review the design concepts proposed by the developer and provide feedback, undertake options analysis and review preliminary outlines ("wire frames") of the database architecture/page structure.

Step 5: Conduct User Acceptance Testing (UAT)

Before the product registration system can be launched for general use it must be thoroughly tested to ensure that it meets the specification requirements and functions correctly and efficiently. The IT developer should undertake an extensive programme of testing and internal checks before making the system available for testing by others.

Following internal checks, a draft version of the product registration system (sometimes called a "Beta" version) should be made available by the IT developers for external testing purposes. Testing is then carried out in two steps as follows:
- Firstly, testing by one or more representatives of the project team
- Secondly, testing by selected stakeholders (regulator, product supplier, customs official)

In the first round of testing the nominated tester/s will initially test the process of setting up and approving for use a user account. Once this is completed they will then enter the account and populate it with indicative product registration data, covering the likely/targeted range of application types (cooling only air-conditioner, reverse cycle air-conditioner, refrigerator, freezer, refrigerator freezer, etc.). During this process the tester should confirm that:
- All fields are correctly displayed according to the type of application being undertaken.
- Navigation between the various sections of the application form is simple and effective.
- All validation checks work correctly and that warning and error messages are correctly displayed.
- The application can be lodged for approval.
- Where multiple languages are to be used, check that this operates correctly and that the translations are accurate.

Once the system is successfully populated with completed applications the tester can then check that the product registration system operates as intended for all other database user types i.e. check that the regulator user can effectively process applications, that the customs official user can access the necessary data required to effectively undertake compliance actions at the border and so on.

Once this initial testing is completed the results need to be conveyed to the IT developers in the form of a list of required corrections and amendments as well as any additional requirements that may have become apparent during the testing process. These then need to be addressed by the IT developer. Once corrections are completed the site should be re-checked by the project team to ensure that all amendments and additions have been successfully executed.

The second stage of testing involves engaging with selected stakeholders (usually drawn from the stakeholders group established in the planning phase - see earlier section) and encouraging them to

undertake testing of the site. Following testing, the stakeholders need to provide feedback on their experience of using the site, particularly any errors they may have noticed or difficulties they may have encountered (particularly in relation to navigation of the site). This feedback then needs to be reviewed by the project team and any required corrective action conveyed to the IT developer for action.

Step 6: Develop User Guidance Materials

During the design and build phase of the project a set of operating instruction or user guides should be prepared for each of the user types (applicant, regulator, customs officers, system administrator). The system administrators user guide will generally need to be prepared by the IT developer and the preparation of such a guide should form part of their contractual requirements. The other guides can also be prepared by the IT developer, or alternatively, by the project team. If the project team choses to prepare these guides then typically they would do so during the first stage of user acceptance testing (see previous section), in order to make sure that the guides can then be made available to those stakeholders who participate in the second stage of user acceptance testing.

The operating instructions should ideally include screenshots of the various system pages and features with explanatory text detailing how to undertake the various functions and processes available to the particular user type. Where necessary, also a translation of the user guides should be considered if there is a range of languages used in the region to be serviced by the system.

The user guides should cover topics such as, how to:
- Set up a new applicant account
- start, save, and submit a product registration application
- pay registration application fees (as applicable)
- search for and view records
- print/copy records and approval certificates
- review and approve or reject applications (regulator function only)
- use the database to support compliance activities such as recording results of market surveillance activities (regulator and custom officers only)
- manage/add users, maintain the system and amend or extend the system (admin. user only)

Figure 1: Product Registration System – Sample User Guide Extract (Vietnam)

3. Launching and Operating a Product Registration System

3.1 User Training

Before launching a product registration system it is important that potential users of the system are given the opportunity to undertake training in the use of the system. Each stakeholder group will require tailored training sessions, however, it can be beneficial for regulatory staff to attend the industry training sessions in order to build/strengthen a working relationship between the two. Training materials should include the completed user guides (see previous section), power-point presentations and worked examples/demonstrations of the system.

For industry stakeholders, such training can form part of a broader program of information sessions centred on the introduction of regulations governing a standards and labelling program, detailing the responsibilities of product suppliers and how to meet those responsibilities.

Training sessions are ideally delivered via face to face forums where participants are encouraged to bring along a computer so they can explore the beta database, navigating the existing product registrations and introducing new product registrations to get a hands-on experience (often it works best where two participants work together on the one application/computer). Industry stakeholders should be encouraged to bring along real application documentation (including test reports) to use during the trial. In circumstances where face to face forums are not possible, then webinars or teleconferences may be used to deliver training.

During and after these training sessions the project team should gather feedback and user experience on the beta database, in order to finalize the form of the product registration system on the basis of these inputs. Such feedback can be gathered both informally (e.g. by talking to and observing forum participants) and formally e.g. via a questionnaire. The feedback should aim for a final list of any:
- errors requiring rectification,
- required amendments and
- required enhancements or additions.

The list should be then provided to the IT developers for action.

3.2 Launching a System

Prior to launching a product registration system, the system will need to be transferred from the software developers test site to the designated host's online platform (this task is typically also undertaken by the IT developers). Before this step, a number of final checks should be undertaken as follows:
- A final quality assurance check of the completed system
- Finalisation and loading onto the site of the various user guides (in all required languages)
- A check that automated email systems are working and delivering to the correct address
- A check that any online payment systems are activated and working correctly
- Cross-browser testing to ensure that the system works across a range of browsers (typically Chrome, Internet Explorer, and Firefox)
- A check that data back-up systems are operating correctly

Once the system is launched, stakeholders should be informed that the system is ready for use and strategically placed links should be established between the regulators web based information pages regarding the standards and labelling program and the product registration site.

In the case of mandatory product efficiency programmes a clear communication of the regulator to the industry is important. The communication should point out that they will be committing an offence if they continue to sell their products into the market after the date that the regulations come into force in case, they have not registered their products in the product registration system.

3.3 Managing a transition from a legacy system (if required)

In circumstances where a new online product registration system is replacing a pre-existing product registration system (this is known as a "legacy" system and could be a paper based system, an offline system e.g. an MS-Excel spreadsheet or an older form on-line system) the process of transition from one system to the other must be managed.

Firstly, users of the old system need to be advised to switch to using the new system on or after a published date (the "transition" date).

Secondly, all of the data in the legacy system must be either:
- Transferred onto the new system; or
- Archived but readily available for reference if and when required.

Ideally, all of the records on the legacy system should be transferred to the new system. However, there can be issues associated with achieving this goal.

Firstly, the legacy system may not contain a full data set needed to populate the new system. Usually it is impractical to try and recover from the applicants to the legacy system all of the missing data needed to complete their records in the new system. This is not necessarily a barrier however, provided the new system can accommodate partial (legacy) records. Partial legacy records could potentially be bulk uploaded to the new product registration systems provided a facility for such uploads is built into the system.

Secondly, the process of loading all of the legacy records into the new system can be onerous and time consuming making the second option of simply archiving the legacy system for future reference if and when required an attractive option. Product registrations typically have a limited lifetime (3 – 5 years) this means that within the medium term all of the records on the legacy system will expire in any case after which the new system will contain a complete record of all currently registered products.

3.4 User support services and maintenance

It is critical after the launch of a product registration system that support services are provided. Support services should cover two different groups:

Applicant users: This group needs support in the use of the system (particularly new users who may have missed formal training sessions). Additionally, this group may also report errors in the system that need to be rectified. Typically, the support services are delivered by staff within the regulators office (via phone or via web chat facilities in the product registration system) who can assist applicants in real time to overcome any difficulties they may be encountering. Where the regulator support service is unable to solve a particular problem then the problem needs to be referred to the regulator users support team (see below).

The applicant user support team should keep detailed records of problems encountered by applicant users. Commonly asked questions should be codified into FAQ's that are accessible via the web facility. Where a problem is found to be common to a wide range of users then consideration should be given to making an amendment to the site in order to effectively address the problem. This may be as simple as including a prominent note on the problem web page advising the user how to navigate the particular issue.

Regulator users: This group needs support from their IT developer team to maintain the system, address any errors or deficiencies that may become apparent following the launch and also to augment the system with new product types and or new features. It is therefore important that as part of the service level agreement with the IT developers that provision for ongoing maintenance and support services is included.

3.5 Evaluation

Between one and two years after the launch of the system it is worthwhile undertaking an evaluation of how effectively the system is operating. Ideally, this should be undertaken by an independent body who should canvass the views of all system users and report their findings back to the program manager for action. Following the initial evaluation process, further evaluations should be undertaken typically at five to ten years intervals.