



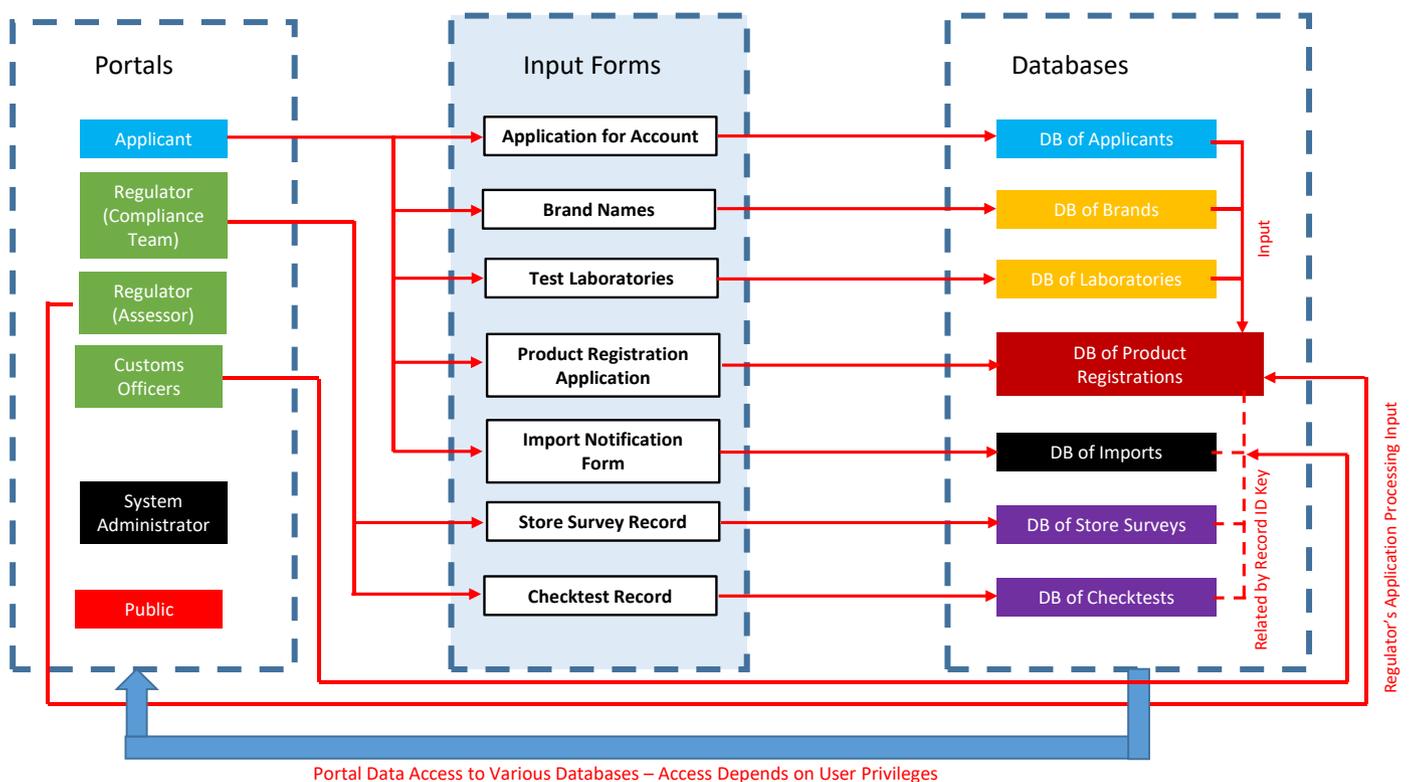
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Economic Community of West African States Product Registration System Specification



ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)
PRODUCT REGISTRATION SYSTEM SPECIFICATION

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CLASP

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Abbreviations

AC	Air Conditioner
API	Application Program Interface
CEC	Comparative Energy Consumption (energy on a label)
CFL	Compact Fluorescent Lamps
CLASP	Collaborative Labelling and Appliance Standards Programme
COA	Certificate of Approval
CSV	Comma separate value file
DSM	Demand Side Management
ECOWAS	Economic Community of West African States
ECOWAS PRS	Economic Community of West African States Product Registration system
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EE	Energy Efficiency
EES	Energy Efficient Strategies P/L
GEF	Global Environment Facility
HE	High Efficiency
IEC	International Electro-Technical Commission
IT	Information Technology
kWh	Kilowatt hour
LOA	Letter of Authority (Equivalent to a COA)
MEPS	Minimum Energy Performance Standards
MEPSL	Minimum Energy Performance Standards and Labelling
MRA	Mutual Recognition Agreement
MVE	Monitoring, Verification and Enforcement
PAEC	Projected Annual Energy Consumption – see also CEC
PDF	Portable Document Format
S&L	Standards and Labelling
SMART	Specific, Measurable, Achievable, Relevant and Time Bound
UNDP	United Nations Development Program
W	Watt

Glossary

Applicant	Person or company (legal entity) applying to register a product that is compliant with S&L regulations.
Family of models	A range of models of the one brand grouped for the purpose of registration, to which a single set of test reports is applicable and where each of the models has the same relevant physical and performance characteristic. Differences between models within a family are generally confined to cosmetic differences.
Jurisdiction	For the purposes of this project a jurisdiction is synonymous with an individual country within the ECOWAS region
Mutual recognition	An arrangement in which a valid registration in one jurisdiction is recognised as a valid registration in other jurisdictions that recognise the agreement.
Registrant	Person or company holding an energy efficiency registration.
Registration dataset	A key component within a registration system where sets of data (individually called “data fields”) required to be collected as part of the registration process are stored.
Registration record	The combined set of data fields that constitute a single registration application.
Registration system	A set of related administrative components such as application forms, datasets, operating procedures, reporting functions and user interfaces that work together to facilitate the registration of a product that is compliant with S&L regulations.
Regulated product	An appliance, lamp or electrical product of a type that is subject to S&L regulation.
Regulator	Agency (or nominated official) responsible for administration and enforcement of S&L legislation.
Retailer	Person or company offering for sale a product of a type subject to S&L regulations.

1 Introduction and Scope Overview

1.1 Project Background

This project is funded by the Kigali Cooling Efficiency Program (K-CEP). K-CEP is a philanthropic initiative to support the Kigali Amendment of the Montreal Protocol. K-CEP focuses on the energy efficiency of cooling products (primarily air-conditioners and refrigerators) to increase and accelerate the climate and development benefits of the Kigali Amendment to phase down hydrofluorocarbons.

This particular project is designed to service the needs of the Economic Community of West African States (ECOWAS). Most ECOWAS member states don't currently have policies, standards, and programs (PSPs) for cooling efficiency, but harmonized standards, labels and testing are under development.

The product registration system (PRS) and database that is the subject of this specification (ECOWAS PRS) will serve as a key component of the region's compliance framework. Investing early in robust compliance frameworks can enable these member states to start protecting and guaranteeing the anticipated energy and CO₂ savings from the outset. This project builds on ongoing efforts—for example, the ECOWAS Energy Efficiency Policy which aims to implement measures that will save up to 2GW of power generation capacity by 2020 and the general ECOWAS mandate to promote the establishment of a common market.

An ECOWAS product registration system and database is intended to serve as the go-to regional product registration and compliance resource for cooling products for all Member States. The database will serve as a single portal for product information, supporting multiple steps of the compliance process:

- it will provide a central product registration portal through which suppliers will register products for sale on the West African market;
- customs officers will verify whether products are authorized for market entry;
- national market surveillance efforts can refer to the database during market monitoring activities; and
- results of verification check testing results will be shared between all participating member states.

Those Members who may have fewer resources to engage in market surveillance efforts can respond to cases of noncompliance, based on other Members' reports. Hosted centrally and implemented nationally, it can give every participating country the flexibility they need for their programs while keeping everyone connected.

In summary, the Economic Community of West African States (ECOWAS) Product Registration System (PRS) is required to provide the following key functions:

- A platform for suppliers to demonstrate compliance with regulatory requirements
- A public record of registered products (market intelligence)
- Reporting functions of system activity and program outcomes including product efficiency trends and reductions in CO_{2-e} emissions
- A stakeholder contact database
- Data to support monitoring verification and enforcement (MVE) activities
- A system to support customs activities
- Evaluation – benchmarking, trend analysis, policy setting

-
- Support for public information programmes (consumer engagement)
 - Support for other programmes (e.g. incentive programs)
 - Enable regional cooperation

The above programme functions are only possible if a reliable and robust data set is readily available to the various stakeholders engaged in the programme. To collect such data retroactively would not only be difficult but also time consuming and expensive. A proactive approach, where the required data is collected through a mandatory process of product registration and reporting, is the only practical option that is both cost-effective and reliable.

1.2 Scope of the Work – Overview

The scope of work covers the following items:

- Construct the web facility as detailed in this specification
- Load a beta version of the facility onto a test site ready for user acceptance testing (UAT)
- Make amendments following a first round of UAT undertaken by the client group
- Make amendments following a second round of UAT undertaken by a broad group of stakeholders
- Assistance in the preparation of user guides (particularly in relation to the system administrators portal)
- Support for stakeholder training sessions (set up of dummy accounts and attendance at 3 to 5 training webinar sessions.)
- Loading of the facility onto a designated server (to go “live”)

1.3 Structure of this specification

This specification consists of this document and a companion Excel spreadsheet with detailed field specifications. These documents should be read alongside the other tender documents that set out other important details such as delivery timelines and contractual conditions.

The level of detail in this document and the Excel spreadsheet should inform contractors and avoid extensive research into the particular needs of the client group.

This document is comprised of 7 sections and appendices as follows:

1 Introduction and Scope Overview

2 Product Registration System Context

Provides context for the ECOWAS Product Registration System. Aspects covered include:

- who the key stakeholders are;
- basics of the product registration approvals process;
- details relating to the regional nature of the system;
- scope of the program (and likely areas for future expansion);
- details of the agencies responsible for implementation of the programme;
- governing acts, regulations, and standards; and

-
- likely activity levels.

3 Workflow Overview

Sets out the workflows, business rules, and functionality requirements of the product registration system. Covers the key user groupings, and details the main workflows and mutual recognition agreement requirements between the various jurisdictions (countries) planning to use the system.

4 System Architecture and Design

Sets out the key system components including the database types and structure, portal types and design, form types and designs, field structural principles, and details of how the record status system is to operate.

5 System Functionality - Details

Sets out the key functional requirements specific to each user type.

6 Appendices

Include important information referenced from the main body of the text.

2 Product Registration System Context

2.1 Introduction

This section has been included so as to assist developers better understand the context in which the product registration system is to operate. The specification requirements within this document take into consideration these contextual aspects. This section is important background reading for IT developers and will provide useful reference material during the course of the project.

2.2 Key Stakeholders

There are four main stakeholders that will use the product registration system and database. These are described in the following table that sets out each stakeholder as well as the primary ways in which they will use the PRS:

Table 1: Key Stakeholders (Users) and uses they have for the PRS

User	Uses
Government (Regulators)	<ul style="list-style-type: none"> • Control (regulate) the sale of energy efficient products • Monitor compliance and identify products at risk of non-compliance • Facilitate enforcement actions (provides evidence base) • Capture data on compliance actions undertaken • Track trends in product efficiency over time (program evaluation) • Collect fees (as applicable)
Customs officials	<ul style="list-style-type: none"> • Control entry of products at the border • Facilitate alerts to other customs authorities on potential imports of non-compliant products
Industry Manufacturers Importers Distributors Retailers	<ul style="list-style-type: none"> • Register products (registration forms) • Import products (import notification forms) • Promote their most energy efficient products (public portal) • Access energy label data • Track competitors' claims of performance and report instances of non-compliance
Consumers (i.e. the public)	<ul style="list-style-type: none"> • Inform purchasing decisions (compare and contrast models) on a variety of topics • Calculate energy consumption and running costs • Register complaints of suspected non-compliant products

In terms of the registration system, the two main stakeholders are:

-
- Industry, who will submit product application and importation requests to the database, and
 - Regulators, who will manage the approval process and enter data regarding market surveillance and enforcement activities.

2.3 The Basics of the PRS Process (Overview)

An applicant (manufacturer, importer, or distributor) starts the process by applying online for an account in the product registration system. After the account has been approved by the system manager, the applicant can then select and complete an application (online) for approval of their product under the energy efficiency and labelling regulations. During the application process, the ECOWAS PRS undertakes internal validation checks on the applicant's submitted data to ensure that it is valid, consistent, and that the product does meet the various minimum performance requirements in the regulations. The applicant then submits their application to the regulator for approval. If any required data is omitted, or the product does not meet the requirements, the PRS will display a notification and the applicant will be unable to submit the application.

Following application submission, a state regulatory authority will review the submitted application and accompanying documentation for compliance with the requirements of the standards and labelling scheme. If the product is found to have a valid test and is compliant with the governing energy efficiency and labelling regulations, then the regulator will approve the application, allowing the product to be legally imported and sold on the market.

Once approved, key details of the approved products will be automatically published on a public portal of the PRS website for reference by the public/consumers via a search engine of all registered products.

In addition to requiring products to have been approved through the registration application process before being legally placed on the market, a secondary requirement is the "import notification form". This is a requirement for each consignment of a regulated product that will be imported, and must include details including the product registration approval number, the number of units being imported, and what specific port of entry (whether by sea, air, or ground) they will enter the market.

Customs officials will also have access to the database via a "Customs portal", which will enable them to check incoming products against the import notification forms lodged on the PRS site and either permit or deny entry.

An importer of a product does not have to be the same entity that obtained registration approval (i.e. there may be several importers importing the same product under the same brand and model number).

Each product model only needs to be registered once, but each importer must complete separate import notification forms for each particular shipment(s). This means that all applicant users must have access to the full list of registered products (summary details only) so that they can determine prior to their first import whether the product is already registered or not. If the product model has not already been

registered, the importer must then submit a product registration application first before proceeding to the import notification form.

Further details regarding the PRS process are in Section 3.

2.4 A Regional System

This Product Registration System is to service the needs of the 15 countries (jurisdictions) that comprise ECOWAS (see section 2.5.2 for the list of countries). Initially only a few countries will adopt the PRS but as each jurisdiction gets its governing legislation passed it will then join the system.

Applicants will be able to choose whether to register in one country or several countries, depending on which markets they wish to place their products onto. Applicants will need to specify the jurisdiction(s) that the application is to be sent to. If they plan to select multiple jurisdictions, they can use a “copy” facility (see Section 5.3.2). Thereafter, each application for registration will be tagged with the relevant jurisdiction(s) selected by the applicant.

While each jurisdiction will have almost identical application requirements, some minor differences between jurisdictions may exist, particularly in the short term until complete harmonisation and implementation are achieved.

As a regional system, the ECOWAS PRS will need to support multiple portals for regulators (one for each jurisdiction), as each jurisdiction will only have the right to process applications submitted to their own jurisdiction (see Figure 1 for a schematic of the regional structure).

Applications for registration that are made and approved in one jurisdiction may be recognised (tagged) as also effectively approved in a number of other jurisdictions where a mutual recognition agreement (MRA) exists between the jurisdictions¹. Where MRAs do not exist, applicants will need to make separate applications for approval of the same product into each Jurisdiction into which they wish to import and sell that product. Where MRAs are in place, applicants will only need to register in a single jurisdiction that is party to the MRA, and that registration will be effectively recognised as approved by all jurisdictions that are party to the MRA (see Section 3.2 for further details of how mutual recognition agreements are to be handled by the PRS).

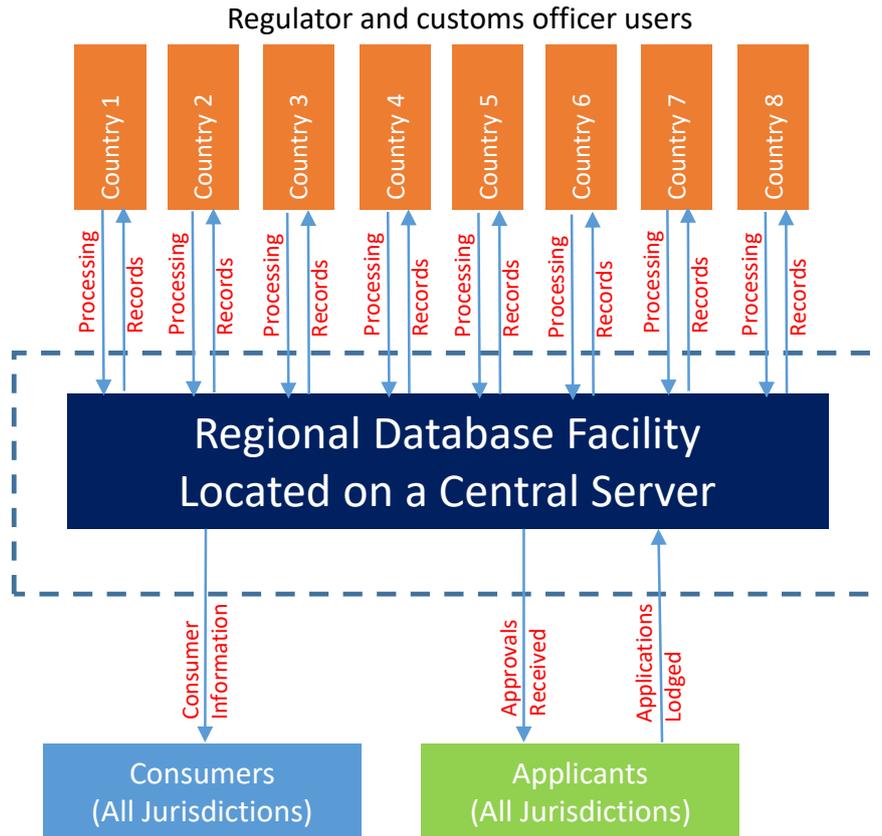
Product registration approval certificates generated by the PRS (see Section 5.4.3 for further details) will need to be tailored according to each jurisdictional authority that grants the approval. The content of approval certificates will generally be the same for all jurisdictions, but details such as country crests and approving officers' names will vary.

Similar to the registration process, individuals who use the public portal will need to specify the register of approved products belonging to the Member State(s) they wish to view (see Section 4.4.8 for further details).

¹ At present no MRA's exist between any of the 15 ECOWAS Member States. However, over time it is expected that a number of MRAs will be created and eventually all 15 ECOWAS Member States will enter into a MRA that will enable a registration in any one jurisdiction to be recognised by all other jurisdictions. Until such time however the system needs to be able to accommodate limited (or no) MRA's.

Figure 1: Schematic of the Overall Structure of a Regional PRS

(Note: While the diagram below only shows 8 countries, the actual PRS will allow for a total of 15 countries and potentially others in the region, with future expansion options)



Finally, because the system will cover a range of countries with a total of three co-official languages, the PRS must be able to deliver content in any of these languages as nominated by the user. See Section 5.2.2 for further details.

2.5 Scope of the Program

2.5.1 Products

The ECOWAS regional system is to initially cover just two product types as detailed in Table 2 below.

Table 2: Products currently within the scope of the program

No.	Product Type	Summary of Scope*
1	Air Conditioners	Portable; unitary; split, and centralized systems. Up to 20kW
2	Refrigerators / Freezers	All household types (vapour compression)

		Refrigerators Freezers Refrigerator/Freezer Combinations Up to 1500 litres capacity
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Whilst only these two product types are to be included in the initial build of the system, a range of other product types are currently under consideration for inclusion in the programme at a later date. The PRS will need to allow for future expansion to the scope of products covered. At maturity, the programme could include 30 or more product types.

2.5.2 Jurisdictions

As noted, the PRS is a regional system and as such needs to include for all jurisdictions (countries) operating in the region. In the long term, it is possible that surrounding countries may also elect to join the system. Consequently, while the following 15 countries must be included in the initial build, potential future expansion of the jurisdictions covered must be permitted within the PRS. The current jurisdictions are:

1. Benin
2. Burkina Faso
3. Cabo Verde
4. Gambia
5. Ghana
6. Guinea
7. Guinea Bissau
8. Ivory Coast (Cote d'Ivoire)
9. Liberia
10. Mali
11. Niger
12. Nigeria
13. Senegal
14. Sierra Leone
15. Togo

2.6 Implementing Agencies

Each participating jurisdiction in the region has its own separate agency to implement the energy efficiency and labelling program. These agencies are responsible for processing and approving the submitted applications.

Each agency is likely to have their own related website where registration information specific to that jurisdiction is published (e.g. how much the registration fees are and where to pay them). The PRS should include hyperlinks to each of these jurisdictional websites via the log-in pages (see Section 5.2.3).

In addition, each jurisdiction will have their own email address where system-generated emails should be sent – see Section 5.2.7.

The agencies are as listed in Table 3 below:

Table 3: Implementing Agencies by Jurisdiction

Jurisdiction	Implementing Agency
Benin	To be advised
Burkina Faso	Burkina Agency for Standardization, Metrology and Quality (ABNORM)
Cabo Verde	General Directore of Energy
Gambia	The Gambia Standards Bureau
Ghana	Energy Commission
Guinea	IGNM/CEN-Gn (Ministère de l'Industrie et des PME) DNE (Ministère de l'Energie)
Guinea Bissau	To be advised
Ivory Coast (Cote d'Ivoire)	To be advised
Liberia	Ministry of Mines/Energy , Liberia Electricity Corporation , Rural Renewable Energy Agency
Mali	To be advised
Niger	Ministry of Energy
Nigeria	Energy Commission of Nigeria develops policies, Standards Organization of Nigeria (SON)
Senegal	To be advised
Sierra Leone	To be advised
Togo	To be advised

2.7 Relevant Acts and Regulations

In jurisdictions that have appliance energy efficiency programmes and policies currently in place, these are enabled via various Acts of parliament and subordinate regulations. Currently enacted legislation and regulation is detailed in Table 4

Table 4: Enabling Legislation and Regulations by Jurisdiction

Jurisdiction	Relevant Acts and Regulations
Benin	To be advised
Burkina Faso	Law N°014-2017/AN determining general rules for energy sector; Decree setting standards and energy efficiency requirements for appliances and equipment and their implementation modalities
Cabo Verde	The Energy Policy of Cape Verde (2008); Consumer Protection Act – Law No. 88/V/98 of December 31, 1998.
Gambia	The Electricity Act; National Energy Policy, Strategies and Action Plan, 2015
Ghana	To be advised
Guinea	To be advised
Guinea Bissau	To be advised
Ivory Coast (Cote d'Ivoire)	To be advised
Liberia	Loi 2016-05 du 17/5/2016 portant code de l'Electricité; décret N°2016-673/PRN/ME du 9/12/2016 portant modalités d'application du Titre5 de la Loi 2016-05 sur la maitrise de l'Énergie et des Énergies renouvelables
Mali	To be advised
Niger	To be advised

Nigeria	To be advised
Senegal	To be advised
Sierra Leone	National Electricity Act; National Energy Policy and strategic Plan (NEPSP), 2009
Togo	To be advised

2.8 Governing Standards

Regulations that govern appliance energy efficiency programmes typically reference two types of published standards:

- Regulatory Standards
- Test Standards

Regulatory Standards specify requirements related to:

- The scope of products that are covered under the regulations
- The requirements that must be met in terms of minimum performance standards and energy labelling requirements (where applicable)
- The prescribed test methods that must be used (and any variations or clarifications in relation to those methods that need to be applied e.g. specified supply voltages)
- Product marking and labelling requirements, including detailed label design specifications

Test Standards specify the test methods to be applied and include requirements related to:

- Scope (the scope under the test standard may be broader than that defined in the regulatory standard)
- Test conditions, materials, equipment, and instrumentation
- Preparation for testing
- Test procedures
- Assessment of performance
- Reporting requirements

The PRS needs to capture key data as specified in these standards, in particular:

- The applicable regulatory standard
- The applicable test standard
- Test laboratory details and test report numbers
- The key test results and performance claims
- The key details to appear on the rating label

The applicable standards (at time of this report) are detailed in Tables 5 and 6 below. Note that for most jurisdictions no regulatory or test standards are in place, and there is a regional effort to adopt the harmonized ECOWAS Regional Standards.

Table 5: Regulatory and Test Standards by Jurisdiction - Refrigerators

Jurisdiction	Regulatory Standard	Test Standard
Model Regulations - ECOWAS Regional Standards	ECOSTAND 071 -1 : 2017	NIS IEC 62552
Benin		

Jurisdiction	Regulatory Standard	Test Standard
Burkina Faso		
Cabo Verde		
Gambia		
Ghana	Energy Efficiency Standards and Labelling (Household Refrigerating Appliances) Regulations, 2009	Ghana Standard GS IEC 62552: 2007
Guinea	ECOSTAND 071 -1 : 2017 (Voluntary)	
Guinea Bissau		
Ivory Coast (Cote d'Ivoire)		
Liberia		
Mali		
Niger		
Nigeria	ECOSTAND 071 -1 : 2017	NIS IEC 62552
Senegal		
Sierra Leone		
Togo		

Table 6: Regulatory and Test Standards by Jurisdiction – Air-conditioners

Jurisdiction	Regulatory Standard	Test Standard
Model Regulations - ECOWAS Regional Standards	ECOSTAND 071 -2 : 2017	
Benin	NB 17.02 001	
Burkina Faso		
Cabo Verde		
Gambia		
Ghana	Energy Efficiency Standards and Labelling (Non-Ducted Air Conditioners and Self-Ballasted Fluorescent Lamps) Regulations 2005	GS 362:2001
Guinea	ECOSTAND 071 -2 : 2017 (Voluntary)	
Guinea Bissau		
Ivory Coast (Cote d'Ivoire)		
Liberia		
Mali		
Niger		
Nigeria	Minimum Energy Performance Standards (MEPS) and labels for Air Conditioners	
Senegal		
Sierra Leone		
Togo		

2.9 Likely Activity Levels

Based on experience overseas, a mature program operating in a single jurisdiction is likely to generate 5,000 to 10,000 registration applications per annum. This number assumes that approximately 25 products will be regulated, whereas in this system initially only two products are to be regulated (refrigerators and air conditioners).

In the short term (next 5 years) activity levels are unlikely to exceed 10,000 per annum (30 per day) and in the long term, assuming some degree of mutual recognition between jurisdictions activity levels are unlikely to exceed 50,000 applications per year (150 per day).

2.10 Pre-existing facilities (legacy systems)

Ghana is the only jurisdiction known to currently have a pre-existing product registration system housed on an MS-Excel Spreadsheet. This system is understood to be used to deliver data to a smartphone application that lists currently approved products for consumer education.

In relation to the development of the regional ECOWAS product registration system there may be two requirements in relation to this legacy system:

1. Create an application programming interface (API) from the ECOWAS PRS that can drive Ghana's pre-existing web based consumer information site.
2. Load registration data from the legacy system onto the ECOWAS PRS.

At this stage it is unclear if either of these activities will be required to be undertaken. It is simply noted that these tasks may be required to be undertaken and if so a separate fee shall be negotiated for this work.

3 Workflow Overview

3.1.1 Key User Groups and portals

In terms of participants in the ECOWAS PRS, a total of 5 different groups are involved, each requiring a tailored portal. The 5 types are as follows:

1. Applicant user (Primary user and sub-account holder)
2. Regulator user (Primary regulator user and sub-account holder (known as assessors))
3. Customs officer user (Primary user and sub-account holder)
4. Public user (information only)
5. System Administrator (IT manager)

Further details in relation to the features of the various portal types can be found in section 4.4.

3.1.2 Key Workflow

The key workflow of the ECOWAS PRS is the application for and approval (or denial) of product registrations. Second to that is the submission of import notification forms each time a importer/seller wants to place a shipment of approved products on one or more of the participating markets.

Applicants (or their agents) initially apply for approval to register products online via a password protected user account. This process involves the provision of applicant details and the uploading of documents (as required by the regulatory authority).

Following submission of an account application, the site administrator reviews the application and, if satisfied, activates the account. Following activation, applicants can create product registration applications online and submit them (along with attached uploaded documentation) for approval by the regulator.

Before beginning a product registration application, applicants must first obtain a test report from an accredited laboratory confirming that the product is compliant with the regulations (typically this is in pdf format). The applicant then initiates a registration application by specifying the jurisdiction in which they wish to register, the type of product they wish to register and the regulatory standard to which they are registering.² In the application form, the applicant completes details relating to themselves, their product, and its performance.

Certain details such as the applicant's details, the brand name details, and the test laboratory's details are held in separate related databases that the applicant can access and manage. When making a product registration application, the applicant's details are automatically imported into each new application. The applicant can also

² Normally there is only a single regulatory standard in force at any one time. However, during periods of transition from an older regulatory standard to a new replacement regulatory standard applicants will be able to select either the old or new standard – refer section 4.5.8 for further details.

select brand names and laboratories from lists of brands and laboratories commonly available to all applicants. On selection, key details in relation to the brand or the laboratory are then imported into the particular product registration application. Alternatively, if either the brand or the laboratory is not already listed then the applicant can create a new entry for that brand/laboratory.

Prior to submitting a product registration application, the applicant may be required to make a registration fee payment. Initially this will be a separate process occurring outside of the PRS. In the future, it is intended that online payment facilities be available as part of the product registration system (not in the scope of this project). The applicant may be required to include the payment receipt number and a scanned copy of the receipt as part of their registration application.

Once a product registration application is lodged for approval, an assessment officer within the regulators office of the relevant jurisdiction logs into the regulator's portal (that permits access to all records and uploaded documents for that jurisdiction) and undertakes a review of the application.

The review process involves a two-step approach. First the application is assessed by an "assessor" in the regulator's office. Following assessment, if the assessor determines that the application should be approved, then it is tagged (status altered from "submitted" to "checked" – see section 5.4.5) as ready for subsequent approval by the manager of energy efficiency in the regulator's office (primary account holder). The manager is the only officer with the necessary access privileges to allow them to approve the application. Alternatively, either the assessor or the manager can choose to refuse the application or return the application for amendment and possible re-submission by the applicant.

Once a registration application is approved, a Certificate of Approval (COA) is automatically issued by the system. A pdf of the COA is available to all system users following the approval of the application by the regulator.

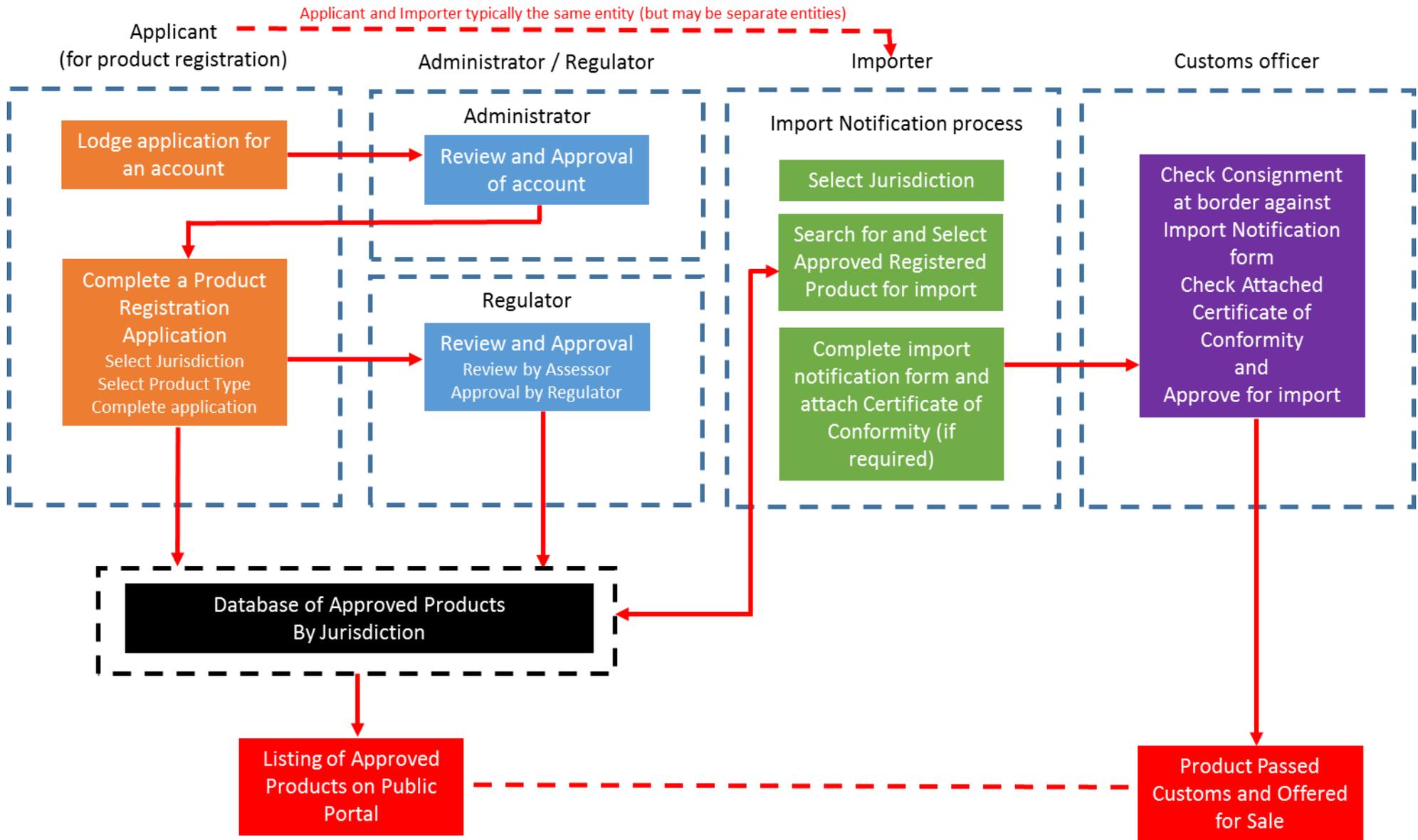
Each time a company wishes to import a consignment of a regulated product they must complete an "Import Notification" form. The import notification form is linked to the record ID of the product registration and contains details of the product, its registration approval number and details of the importation (importers details, number of units, jurisdiction and port of landing and date of landing). Customs officers can log into the ECOWAS PRS and check a landed consignment of regulated product against the Import Notification form and confirm the shipment is compliant.

After a product has an approved registration, the import notification form can be completed. However, the entity completing the import notification form does not need to be the same as the entity that lodged and received the product registration approval (although often they are the same entity). The complete list of approved product registrations must be searchable and selectable by all applicants with an approved account in the PRS. This list should include only limited data that is permitted to be within the public domain.

A schematic of the above process is provided in Figure 2 below.

Finally, compliance officers within the regulator's office should have the capacity to create records relating to compliance activities that they undertake both in stores and in the form of laboratory check tests (verification testing). These records are related to the relevant product registration records in the main database via the record ID number of the particular product registration (primary key).

Figure 2: Key Workflow – Product Registration Process and Import Notification Process



3.2 Mutual Recognition Arrangements

When an applicant initiates a registration application they must select a jurisdiction into which they want to submit product registration application(s).

Some jurisdictions choose to formally recognise an approval made by another jurisdiction as also approved in their own jurisdiction, this is known as a mutual recognition agreement (MRA).

For example, if an importer submits a refrigerator registration application to Ghana, and if it is the case that Nigeria recognises such registrations (i.e. has a MRA with Ghana), then once the registration is approved by Ghana, it is also approved by Nigeria. Consequently, at the time that the importer selects Ghana in the application, the system must inform the applicant which other jurisdiction(s) that registration will be recognised by (assuming it passes the approval process in Ghana).

In the long term it is expected that all 15 Member States in ECOWAS will recognise each other and a registration in one will be recognised by all. Initially however, each Member will only recognise applications made in their own jurisdiction.

The administrator's portal is required to include a mutual recognition management matrix similar to that shown in Table 7. By changing the status from N (Not Recognised) to R (Recognised), the system will then allow for mutual recognition between the selected countries.

Where mutual recognition exists, then the approved status granted in the jurisdiction in which the application was lodged shall also apply to all other jurisdictions that are marked as recognising jurisdictions in the mutual recognition management matrix.

When a regulator in a particular jurisdiction does a search on approved registrations they can choose to view approved applications lodged in their own jurisdiction or approved registrations lodged in both their own jurisdiction and any other jurisdiction that they recognise. The approval process therefore must include a record of both:

1. The jurisdiction in which the registration approval was granted
2. The jurisdiction(s) in which the registration approval is recognised (noting that this second list will also include the jurisdiction in which the registration approval was granted).

Table 7: Mutual recognition management matrix

Country where application is lodged	Benin	Burkina Faso	Cabo Verde	Gambia	Ghana	Guinea	Guinea Bissau	Cote d'Ivoire	Liberia	Mali	Niger	Nigeria	Senegal	Sierra Leone	Togo
Benin	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Burkina Faso	N	R	N	N	N	N	N	N	N	N	N	N	N	N	N
Cabo Verde	N	N	R	N	N	N	N	N	N	N	N	N	N	N	N
Gambia	N	N	N	R	N	N	N	N	N	N	N	N	N	N	N
Ghana	N	N	N	N	R	N	N	N	N	N	N	N	N	N	N
Guinea	N	N	N	N	N	R	N	N	N	N	N	N	N	N	N
Guinea Bissau	N	N	N	N	N	N	R	N	N	N	N	N	N	N	N
Cote d'Ivoire	N	N	N	N	N	N	N	R	N	N	N	N	N	N	N
Liberia	N	N	N	N	N	N	N	N	R	N	N	N	N	N	N
Mali	N	N	N	N	N	N	N	N	N	R	N	N	N	N	N
Niger	N	N	N	N	N	N	N	N	N	N	R	N	N	N	N
Nigeria	N	N	N	N	N	N	N	N	N	N	N	R	N	N	N
Senegal	N	N	N	N	N	N	N	N	N	N	N	N	R	N	N
Sierra Leone	N	N	N	N	N	N	N	N	N	N	N	N	N	R	N
Togo	N	N	N	N	N	N	N	N	N	N	N	N	N	N	R

R = Recognized
 N = Not Recognized

4 System Architecture and Design

4.1 Overview of Key System Components and Features

4.1.1 Key System Components

The required registration/database web facility (see schematic in Figure 3) is intended to provide an online portal by which companies (manufacturers/importers/sellers/distributors/etc.) that want to import and sell regulated energy-using appliances and equipment (“products”) into any country within the ECOWAS market, must submit applications (and thus become “applicants”) to register those products for approval per the requirements of the Regional Minimum Energy Performance Standards (MEPS).

The applications will cover a range of different product types, but will cover only air conditioners and refrigerators at the beginning (see scope in section 2.5.1). Each product type will have a unique input form, each with common sub-forms for brand name and test laboratory details. While each product type will have a custom application form, all forms are to be based on a common template. The common template will have a number of sections that are the same across all product types (e.g. applicant details, uploads, declarations). Only select sections (such as product typology, test details, and performance claims) will vary between forms (see section 4.5 for further details on the various form types).

Once a registration application has been approved by the regulator, a number of other forms and databases come into play. Primarily this includes facilities for:

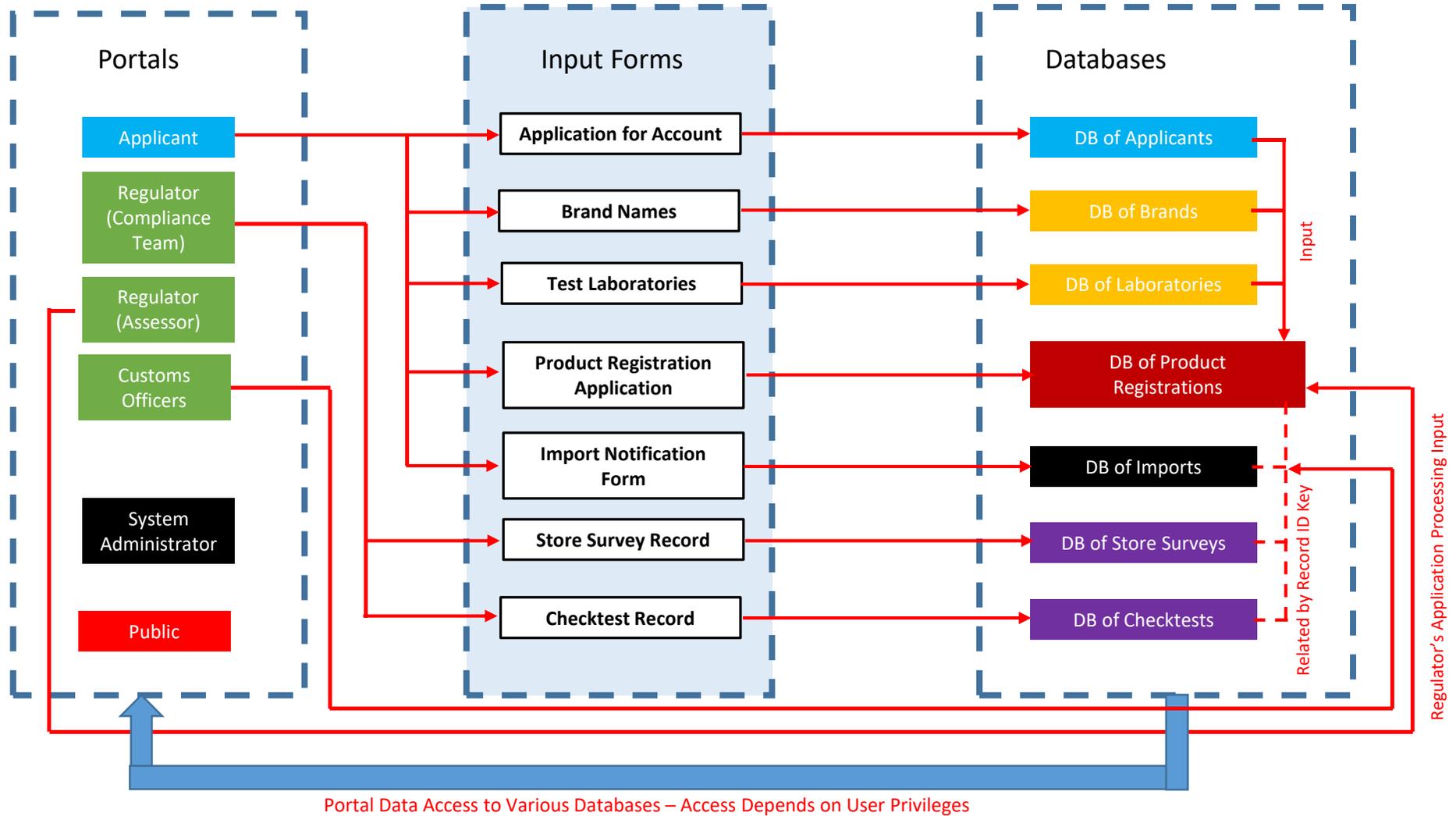
- Importers to submit notices relating to each consignment of products they are intending to import. These import forms will be consulted by customs officials at the points of entry to the market.
- The compliance team in the regulators office to record details of regulatory offences at the point of sale of regulated products (e.g. missing energy labels, unregistered products on shelf, etc.).
- The compliance team to also record details of non-compliance and false or misleading performance claims, which will be determined through verification testing.

Each of the above forms and databases are connected to the main product registration database via a primary key known as the product registration record ID. The record ID is unique to each new product registration, and created when an application is initiated.

Apart from the facilities for applicants, regulators, and customs officials, there will also be a portal for public use. This portal will provide a search engine for public searches within the register of approved products. A select range of data will be publicly available, including the capacity to download copies of the Certificates of Approval associated with the each approved record (further details relating to the public portal can be found in section 4.4.8).

In addition to the database related components, the system will offer a platform for information sharing between regulators, particularly in relation to compliance activities. Cases of noncompliance found in one country must be shared with the regulators and customs officials in the other participating countries in real-time.

Figure 3 System Structure – Main Components



4.1.2 Key System Features Summary

The web facility must also provide users with a wide range of features to provide or assist with:

- Searching for and retrieving records
- Printing key documents
- Email notification systems (to automatically notify key stakeholders of latest developments, such as approval, in respect to a particular registration application)
- Upload and retrieval of required documents
- Copying of applications
- Managing user accounts
- Administrative functions (e.g. automated setting of registration expiry dates and product registration numbers)
- Production of electronic Certificates of Approval
- Data set downloading
- Systems for managing access privileges for various user groups (including setting of record status)
- Tracking changes to applications
- Production of statistical reports in relation to the programme
- Security and back-up facilities
- Multiple languages
- Management of mutual recognition arrangements (see Section 3.2)
- Systems for managing access privileges for various user groups
- Utilization of a range of field structures (picklists, calculated fields, etc.) designed to improve accuracy of input, reduce errors, and generally improve the user experience
- Validation controls on key fields (including warning and error messages to the applicant) to ensure the validity of the input
- A means for managing changes in programme requirements (e.g. new more stringent MEPS levels) i.e. version control.
- Application Programming Interfaces to facilitate delivery of data onto related platforms.
- Public access to a CSV download facility containing selected fields from the registration database. This is particularly useful to researchers and to other government agencies that operate programs relating to appliance energy efficiency (e.g. incentive programs).

These features are covered in detail in Section 5.

4.2 Software, Hosting and Backup Requirements

Software

The contractor shall be responsible for selecting the appropriate software packages for the various required applications. Such selections shall be subject to approval by CLASP/EES before commencing, the contractor should submit details of the proposed system architecture including:

- Programming
- Operating system
- Technologies
- Database methodologies
- Details of any Content Management Systems that may be used and how these will be customised to accommodate the more complex requirements of the proposed system

An example specification for software used for a similar system included:

- Development Language = PHP

-
- Database = MYSQL
 - Content Management System = Drupal (latest version)

Any selected framework should be able to support simultaneous multi-platform applications

Security

Security requirements are yet to be finalised but the following minimum requirements can be considered a guide:

- All system users to be subject to a time out after 1 hour if no activity
- Servers must run software firewalls to allow only required traffic (e.g. HTTP, FTP, RDC, MS SQL*)
- Registration system to maintain audit logs for logins
- Database external traffic is only to be allowed to specific IP addresses for management
- Captcha facilities are to be included to guard against web bots

Backup

The web facility should include a fully automated backup facility. The following is recommended:

- A nightly full data backup on site to a separate drive
- A monthly full data backup offsite plus nightly differential backup offsite

Hosting and Support

Following completion of the PRS, the contractor will transfer administration to ECREEE, and if all parties are in agreement, the contractor will provide maintenance services, including for the web server. The initial period for maintenance is expected to be 12 months, with the potential for extension, subject to future negotiations between the contractor and ECREEE.

4.3 Databases

4.3.1 Overview

The facility shall include a number of related databases (see also Figure 3 for details). Each record within each database shall have a unique record ID number within that database (Key).

The primary database will be the set of product registration records each uniquely identified by a record ID number. Each product type (air-conditioners and refrigerators only initially) shall have a separate database of records (approximately 50 - 150 fields in each).

In addition to the primary registration record databases there are a series of smaller related databases (DB) as follows:

- DB of applicant/user details (legal entity responsible for applications)
- DB of brand names
- DB of test laboratories
- DB of import notifications
- DB of store survey records
- DB of checktest records

These related databases are relatively simple databases typically containing 5 – 50 basic fields.

The content of each database is summarised below:

Applicants/user Details Database

Contact and company details for each applicant/user. This database is created when an applicant lodges an application form for an account on the system. The data held within this database is also used to autofill the “Applicant Details” section of a product registration application form.

Product Registrations Database

Product suppliers populate this database via a “product registration” application form. For each product type the database comprises:

- Applicant details (imported from the DB of applicants)
- Product identification and typology (brand names, model numbers, type, capacity)
- Test details (laboratory details and test results)
- Performance claims (e.g. efficiency rating on the energy label)
- File uploads
- Declaration and fee details
- Administrative details

Brand Names Database

Brand names and associated URLs that link to the brand’s website are stored in a separate database populated and managed by applicants who can add new entries to the list as required. Brand names are stored separately as a means for improving consistency between product registrations. That is, rather than simply typing in a brand name into each new application, the user simply selects the brand from the available list (all applicants can view, select from, and add to the entire list). This avoids differing spellings of brand names (e.g. Fisher and Paykel or Fisher & Paykel, General Electric or GE), which leads to issues when conducting searches by brand name.

Test Laboratory Database

This database is similar in concept to the brand names database insofar as it is intended to maintain consistency between different product registration applications. The database simply records name, address, accreditation, and general contact details for each test laboratory. All applicants can view, select from, and add to the entire list.

Import Notification Database

This database is related to the product registration database. Importers populate this database via an “Import Notification” form. This database comprises:

- Details of the importer
- Details of the product to be imported (data imported from the product registration database plus additional data input by the applicant in relation to number of units and average retail price)
- Details of the importation process (date, location etc.)
- Administrative process

Store Survey Record Database

This database is related to the product registration database and records:

- Details of the site of inspection (held in a related database)
- Details of the product inspected (referenced to the product registration database where the product is in fact a registered product³)
- Details of any offences relating to the offering for sale of that product

Checktest Records Database

This database is related to the product registration database and records:

- Details of the test laboratory used to undertake the testing

³ Some products inspected in store or found offered for sale online may be unregistered product. In these circumstances rather than relating the record to the particular record in the registration database, the identifying markings on the product (product type, brand and model) simply need to be recorded into the database.

-
- Details of the product tested (referenced to the product registration database where the product is in fact a registered product)
 - Details of any compliance issues in relation to the tested product
 - Details of any enforcement actions undertaken by the regulator

Database/Input form content is to be described in more detail in the companion MS-Excel field specification document.

Each of the above noted databases are to be searchable using search engines and also downloadable into CSV format (mainly by the regulator). Search and download rights depend on access privileges.

4.4 Portal Designs

4.4.1 Overview

The registration system is to include five main forms of user portal as follows:

- Applicant portal
- Regulator portal
- Customs portal
- Administrator portal
- Public portal

With the exception of the public portal, which is quite different, each of the other portals share a number of common elements and facilities, each has a number of specialised functional provisions and varying access privileges in relation to data access and data input.

An outline of the key elements to be included in each of these portals is detailed in the following subsections. More detailed information about specific functions to be included within these portals can be found in section 5.

4.4.2 General Page structure (excluding public portal)

Each page of the website shall be based on a template that includes the following:

The header of each page shall include (see example - Figure 4):

- A banner with relevant logos and titles (to be supplied)
- A log out button (top right hand corner)
- A language selection button (top right hand corner)
- The users ID number (top right hand corner)
- Breadcrumbs
- Tabs to navigate to other sections as described later in this section

The footer of each section shall include (see example - Figure 5):

- An email link for comments to the administrator (email address to be supplied)
- Contact phone number for the administrator
- Link to copyright and disclaimer statement (as required)
- The version number of the form on view
- A server side compilation timer

As an example, see the following screenshots from the UNEP sample registration site at: <https://united4efficiency.org/resources/prototype-lighting-product-registration-system/>

Note that at the time of writing this specification this site was temporarily off-line. It is expected to become available again shortly.

Figure 4 : Example of a header



Figure 5 : Example of a footer



4.4.3 Information sharing platform – home pages

Each home page is to include an information sharing platform as a sidebar. The content will vary by user type with access privileges dependant on user type.

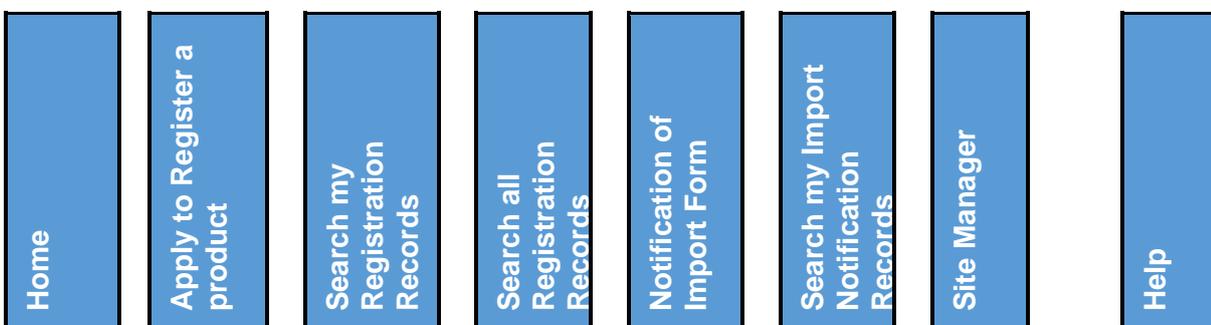
Content that might be shared includes:

- Notices to applicant users
- Tips and FAQs for applicant users
- Newsletters – applicants
- Newsletters – regulators
- Compliance alerts (regulators and customs)
- Updates to existing regulations or the addition of new product regulations – regulators
- Relevant upcoming events, workshops, consultations, or training opportunities
- Library of related documents, including user guides
- Message board for direct communication between regulators and with the administrator

4.4.4 Applicant’s portal

The applicant portal is to be accessed via a “log in” page. The log in page includes a sign up facility whereby potential applicants can apply for access to an account (see section 5.2.3 for details of the log in page). Once access to an account is granted by the administrator then the applicant can log-in using their assigned username and password.

The applicant portal shall have several tabs as follows:



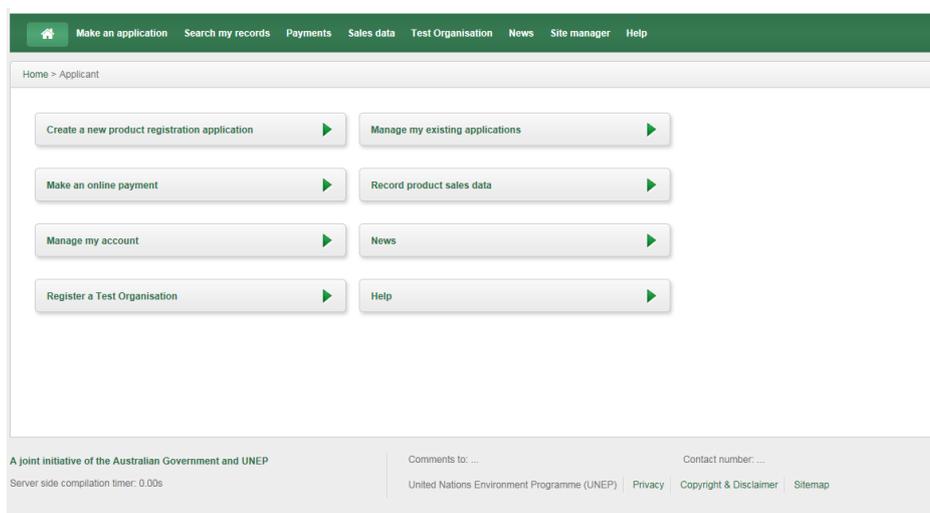
- **Home page:** This page simply provides links to key pages within the portal plus the information sharing platform (see section 4.4.3). There are to be approximately 5 simple hyperlink buttons. This is the default opening page. The links are to:
 - Apply to register a product
 - Search my records (includes an option to view the entire record)

- Search all records (summary details only can be viewed)
- Notification of Import
- Site manager
- Help

See an example of the page layout below in Figure 6. (Note: This example does not include the information sharing platform section as a sidebar).

- **Apply to register a product:** This page allows the applicant to initiate a product registration application by nominating the jurisdiction, the product type to be registered and the applicable registration standard.
- **Search my registration records:** A facility to search for registration application records submitted by the user. The facility shall allow various search parameters to be selected or specified and the returned records to be sorted. Searched records can then be viewed (along with any uploaded files), edited (when permitted), downloaded, printed or copied as required (see section 5.2.5).
- **Search all registration records:** A facility similar to the “Search my registration records” facility for searching approved registrations of all applicants (i.e. the entire database of approved applications). This facility allows the user to view only the summary information from each record plus a capacity to view any Certificates of Approval issued against such records. The user must specify a country in which to search.
- **Notification of Import Form** This page provides a search engine as per the “Search all Registration Records” whereby a user can search the entire database of approved products, select one of the products listed and then initiate an Import Notification form. – see section 4.5.5
- **Search my import notification records** A facility to search for Notification of Import records submitted by the user. The facility shall allow various search parameters to be selected or specified and the returned records to be sorted. Searched records can then be viewed (along with any uploaded files), edited (when permitted), downloaded, printed or copied as required (see section 5.2.6).
- **Site manager:** This page provides access to a number of the input forms for selected related databases including:
 - My account
 - My brands
 - My test laboratories
 See section 5.2.9 for details
- **Help:** This page provides a link to a user manual (in PDF format) as well as providing key contact details for the various regulatory authorities.

Figure 6 Example of an Applicants’ Home Page (Source UNEP)



4.4.5 Regulator's portals

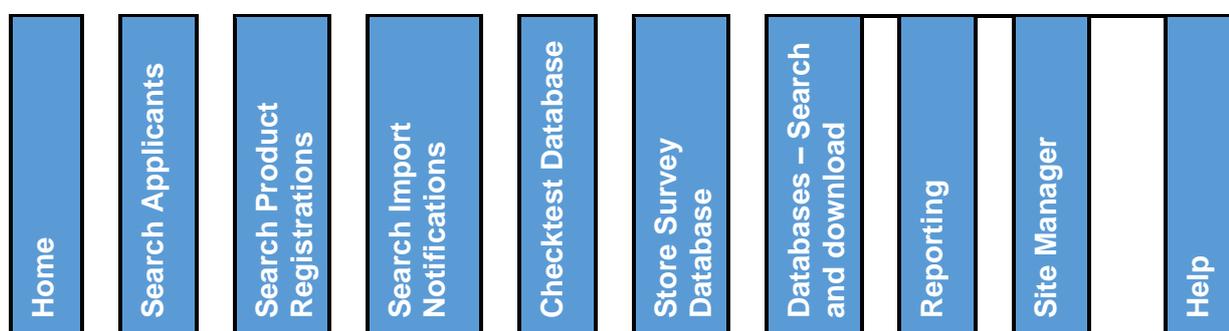
There are 2 variants of the regulator's portal as follows:

- Officers (used by application assessors and compliance officers)
- Manager (used by the regulator – one per jurisdiction – Primary account)

Both portals are effectively the same, but only the manager has right to approve registration applications. The manager also has the capacity to manage accounts of the assessor users (set up, enable, disable)

Each regulator account is to be assigned to a separate government officer who would have their own username and password with account enablement managed via the manager's account.

The regulators portal shall have nine tabs in addition to the "home" tab as follows:



- **Home page:** This page simply provides links to key pages within the portal (approximately 8 links in the form of hyperlink buttons). This is the default opening page. The links are to:
 - Search applicants
 - Search product registrations
 - Search import Notifications
 - Checktest Database
 - Storey survey Database
 - Databases search/downloads
 - Site manager
 - Help
- **Search applicants:** This page allows the regulator to search the list of applicants including those who have applied for an account - see section 5.4.2
- **Search product registrations:** This page provides a search facility similar to that noted in section 5.2.5. Searched records for the user's jurisdiction can then be viewed (along with any uploaded files), downloaded or printed as required but not edited or copied (see section 5.7.4).

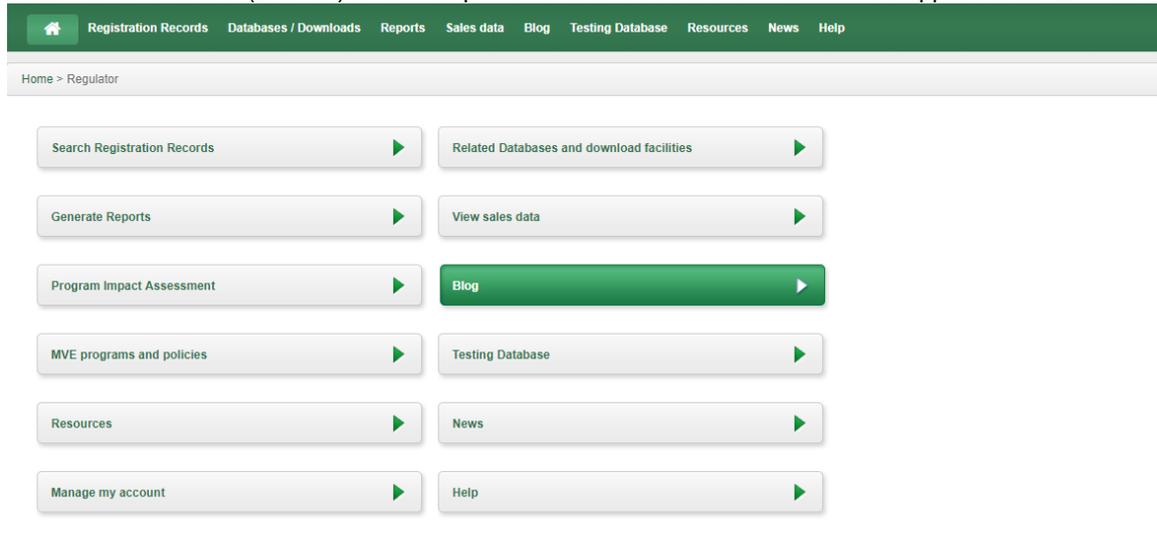
Upon viewing a record, depending upon the status of the record (see section 4.6 for details of "statuses") the regulator can, from a menu in a side bar, choose to either "checked", "approve", "return", "refuse", revoke, expire or supersede a record i.e. reset its status (see section 5.4.5 for details of this facility).

Search Import Notifications: This page provides a search engine whereby a user can search the entire database of Import Notifications. Searched records can then be viewed (along with any uploaded files), downloaded or printed as required – see Section 5.2.6
- **Checktest Database:** This page provides a search engine whereby a user can search the entire database of Checktests or initiate a new checktest record – see Section 5.4.8
- **Store Survey Database:** This page provides a search engine whereby a user can search the entire database of Store Surveys or initiate a new Store Survey record – see Section 5.4.9.

- **Database search/download facilities:** This page provides options to search and download the various data sets from the database in CSV format – see section 5.4.4 for further details.
- **Reporting:** Includes a range of system generated reports – see section 5.4.10
- **Site manager:** This page facilitates:
 - Account management (username and password)
 - A facility to activate/deactivate assessment officers' accounts (manager user only)
 See section 5.2.9 for details
- **Help:** This page provides a link to a regulator's user manual (PDF).

Figure 7 Example of a Regulator's Home Page (Source UNEP)

Note: Not all the features (Buttons) in the sample site below are identical to those to be applied in the ECOWAS site



4.4.6 Customs Officer's Portal

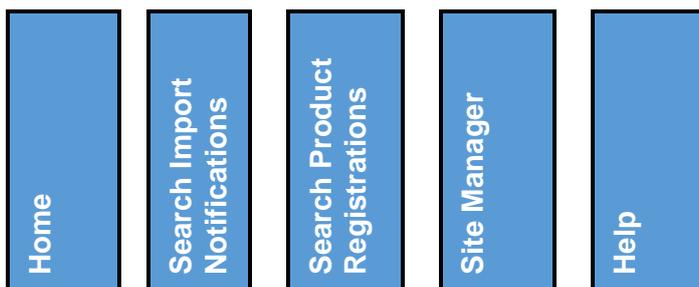
There are 2 variants of the Customs officer's portal as follows:

- Customs officer
- Customs Manager (one per jurisdiction – Primary Account)

Both portals are effectively the same, but only the customs manager has right to manage accounts of the customs officer users (set up, enable, disable)

Each customs officer account is to be assigned to a separate government officer who would have their own username and password with account enablement managed via the manager's account.

The customs officer's portal shall have five tabs as follows:



- **Home page:** This page simply provides links to key pages within the portal (approximately 4 links in the form of hyperlink buttons). This is the default opening page. The links are to:
 - Search import Notifications
 - Search product registrations
 - Site manager
 - Help
- **Search Import Notifications:** This page provides a search engine whereby a user can search the entire database of Import Notifications. Searched records can then be viewed (along with any uploaded files), downloaded or printed as required. Customs officers can also tag records as having cleared customs and provide comments in a comments section – see Section 5.2.6 and Section 5.5
- **Search product registrations:** This page provides a search facility similar to that noted in section 5.2.5. Searched records can then be viewed (along with any uploaded files), downloaded or printed as required but not edited or copied (see section 5.7.4). Unlike regulator users, customs users cannot alter the status of product registration records.
- **Site manager:** This page facilitates:
 - Account management (username and password)
 - A facility to activate/deactivate customs officers' accounts (customs manager user only)
 See section 5.2.9 for details
- **Help:** This page provides a link to a customs officer's user manual (PDF).

4.4.7 System Administrator portal

The administrator portal is effectively the same as the regulator's portal except that there are expanded editing privileges as per Table 8 (see following section)

The administrator portal shall also be provided with administrative control features (access privileges setting facilities, mutual recognition management facility and the like). The form of these facilities shall be a matter for the IT developer to determine in the context of the system architecture, but they must be sufficient for the IT developer to be able to provide effective maintenance services post launch of the facility.

At the bottom of the Administrators home page shall be a search facility to allow the Administrator to search newly submitted applications by applicant users for an on-line account. This facility is identical to the "Search Applicants" facility noted in the regulators and administrators site (see Section 5.6.1), except that only newly submitted applications yet to be activated are to be listed. From this facility the administrator can view the application and, if satisfied, activate that application or alternatively delete the application. See example in Figure 8.

Figure 8 Example of a New Applicants Search Section (Source PAD)

Note: Not all the features (Buttons) in the sample site below are identical to those to be applied in the ECOWAS site

The screenshot shows a web application interface. At the top, there are two buttons: "Manage my account" and "Help". Below them is a section titled "Register of New Applicants" which contains a table with the following data:

No.	Record ID	Name	Address	Company Name	Status	View/Edit
1	56	Viet Anh	Hoang Quoc Viet - Hanoi - Hanoi	BH Tech	Deactive	View/Edit
2	55	Pham Duy Tung	Hoang Hoa Tham - Ha Noi - 84	Gosei	Deactive	View/Edit
3	51	Nguyen Anh Tuan	Hanoi - Hanoi - Hanoi	Cong ty TNHH XYZ	Deactive	View/Edit
4	49	Nguyen Hoang Anh	25 Ngo Quyen - Ha Noi - Hoan Kiem	Cong ty TNHH Hoang Anh	Deactive	View/Edit
5	48	Tuan Tuan	Hanoi - Hanoi - Hanoi	Cong ty ABC	Deactive	View/Edit
6	47	PHAM CÔNG CƯỜNG PHAM CÔNG CƯỜNG	766A/4 LAC LONG QUẬN, PHƯỜNG 9, QUẬN TÂN BÌNH. - HỒ CHÍ MINH - HỒ CHÍ MINH	CÔNG TY TNHH THƯƠNG MẠI DỊCH VỤ SẢN XUẤT GIA CƯỜNG	Deactive	View/Edit
7	45	Quan Truong Vuong	121-123-125 Ham Nghi - Quan 1 - Tp.HCM	DIEN QUANG LAMP JSC	Deactive	View/Edit
8	44	Nguyễn Trung Hiếu	Lô A13.10 đường Trưng Trâm, KCN Thành Thành Công, Trảng Bàng, Tây Ninh - Tây Ninh - Trảng Bàng	Cong Ty TNHH Điện Máy KTZ Việt Nam	Deactive	View/Edit

4.4.8 Public Portal

The public portal is to be a publicly available web facility that allows members of the public to search the database of approved registration records and have lists of registered products returned displaying a restricted set of data fields. This facility shall be based on data exported nightly from the database.

The facility will ask the user which jurisdiction they wish to search. It will then only return records that have either been approved in that jurisdiction or have been approved in other jurisdictions but are recognised in the target jurisdiction (see Section 3.2 for further details on Mutual Recognition Agreements)

The data displayed on the public facility is a limited subset of the data included within the databases (primarily the main registration databases) and display is controlled by the status of the record and data relating to the product's availability in the selected jurisdiction

Where a registration record includes more than one model, the public listing shall deliver a separate entry (line entry in the returned listing) for each model covered in the registration record, each having identical specifications except for the unique model details. The exception to this rule is where the applicant in their application nominates that they only wish to have a single (family name) listing in the public website. In this case a single listing only is provided using the family name only.

An example of the type of facility to be provided can be found at: http://reg.energyrating.gov.au/comparator/product_types/64/search/. See also sample image in Figure 9 below.

Figure 9: Public Product Listing: Sample image from Australian Facility

The screenshot shows a web interface for searching air conditioners. At the top, it says 'Air Conditioners - AS/NZS 3823.2'. Below this are search filters for Brand Name, Cycle Type, Installation Type, and Output Range. A 'Cost Calculator' section on the right allows users to set electricity cost, hours per year for cooling and heating, and show energy guide for a certain number of years. Below the filters are navigation buttons: 'Help on headings', 'Search for a different product type', and 'Download CSV'. The main area displays 'Search Results' in a table with columns for Calculator Results, Brand, Model, Installation Type, Inverter, Phase, Availability, Country of Manufacture, Star Rating, Cooling Output (kW), Heating Output (kW), Power Input (kW), and Variable Output Compressor. The table lists several models from brands like LG, Toshiba, and Mitsubishi Electric.

Note: The search page includes 4 main elements as follows:

1. Search specification facility
2. Cost calculator setting facility
3. Navigation buttons (also includes the CSV download facility)
4. Search results

The facility shall include the following features:

- **An automatic facility to export daily from the main database** an export data file of selected fields for use in the public product listing site
- **A main page** that allows a user to select the jurisdiction they want to search and the product type they wish to search and the language – see below for details
- **A search page** (one for each product type, but all based on the same set up) that includes the following elements:
 - A search specification facility (see item 1 in Figure 9 above) that allows a user to specify searches on brand name, model number and 2 or 3 other key attributes for the particular product type (relating to product sub-type and product capacity e.g. a refrigerator/freezer of 400 – 500 litres capacity)
 - A cost calculator function (see item 2 in Figure 9 above) that allows a user to set parameters such as energy cost, usage and the payback period (years). Once a user changes the settings in the calculator they can refresh the calculated values in the returned list by pressing the “re-calculate costs” button.
 - A range of navigation and function buttons (see item 3 in Figure 9 above) that include:
 - “Help on headings” button that opens a simple text page providing information on the headings used in the returned list
 - “Search for a different product type” button that allows the user to navigate to the other product search pages, this button simply returns the user to the “main page” noted in dot point 2 above
 - “Download CSV” button that opens a file download dialogue box that allows the user to download the search result via a CSV file
- **A returned list** (see item 4 in Figure 9 above) that includes selected fields which would typically include:
 - Brand (brand is also a hyperlink to the supplier’s website for that brand)
 - Model
 - Product subtype
 - Relevant capacity/s
 - Country of manufacture
 - Availability of the product
 - Energy consumption
 - Energy rating (1 star, 2 star, 3 star etc.)
 - Other key performance claims or product features (to be specified)
- The returned list is updated whenever the “search” button is pressed in the search specification facility or the “re-calculate costs” button is pressed in the cost calculator function

4.5 Form Design

4.5.1 Overview

The web facility utilizes a number of input forms for the inputting of data into the various databases. Outline specifications for the fields within these forms can be found in Appendix 2 – Content of Forms.

The required forms types are:

- Application for an account
- Brand names
- Test laboratories
- Product registration application (one for each product type i.e. 2 initially)

- Import notification form (one for each product type i.e. 2 initially)
- Store survey (Approximately 20 fields - to be specified)
- Checktest (Approximately 25 fields - to be specified)

Each form shall have two modes of display, a “view” mode (no editing) and an “edit” mode (editing or partial editing permitted). Whilst view mode is always available to a user, edit mode is subject to access privileges being available for its use. The access privileges to be assigned by default are detailed in Table 3.

Table 8: Access privileges according to the type of user and the type of form

Form Type	Access privileges		
	Applicant	Regulator	Administrator
Application for an account	C, V, LE ¹	V	C, V, E
Brand name	C, V, LE ²	V	C, V, E
Test laboratory	C, V, LE ³	V	C, V, E
Registration application form	C, V	V	V, E
Import Notification	C, V, E	V	V, E
Store survey	N/A	C, V, E	C, V, E
Checktest	N/A	C, V, E	C, V, E

Legend

C = Create a form

V = View a form

E = Edit a form

LE = Limited editing permitted post creation and submission (in the case of registration application forms see Table 4)

N/A = Not applicable

Notes

Note 1: Post submission the applicant can then only edit the company address and contact details (i.e. the company name cannot be amended except by the administrator on request).

Note 2: Post submission the applicant can then only edit the website URL for the brand (i.e. the brand name cannot be amended except by the administrator on request).

Note 3: Post submission the applicant can then only edit the laboratory address (excluding country) and contact details (i.e. the laboratory name cannot be amended except by the administrator on request).

4.5.2 Application for an Account (Sign Up) form

The sign up form shall include:

- A notice at the top of the form indicating the requirements in relation to completing the sign up form
- Fields relating to the applicant’s details
- A file upload facility

Specifications for the fields within these forms can be found in the companion MS-Excel Spreadsheet.

4.5.3 Product Registration application forms (multipart forms)

The “product registration” dataset refers to that data required to establish that a product meets the legislated energy efficiency requirements and can therefore be legally imported and sold. This can be considered the “primary” dataset and is to include the following sets of information (pages):

-
1. Initiation page (jurisdiction selection, product type selection, applicable standard – sets form version)
 2. Applicant details (imported from stored details when the account was created)
 3. Product details (brand name, model numbers, type capacity output etc.)
 4. Test details (laboratory details and test results)
 5. Performance claims (e.g. energy consumption, rating claim, compliance with MEPS)
 6. File uploads
 7. Declaration and fees
 8. Administrative (i.e. effectively completed by the regulator or auto filled-in, not completed by the applicant)

An applicant is required to complete a separate registration for each brand and model or family of models. That is, products with differing specifications in terms of the application input data cannot be included in the one application. A schematic showing the structure of an application form is shown in Figure 11.

Each registration record created must have a unique record identification number, in addition when approved it also gains an official Registration Approval number – see section 5.4.5 Record ID number is used for tracing applications

IMPORTANT NOTE: Another important requirement is that navigation through the various sections of the form must be as follows:

Forward navigation: There is to be no capacity for an applicant to skip over following sections (e.g. skip from section 2 to 5 of a form) even if those sections have been previously completed in an earlier session. Upon re-entering the form (or skipping backwards to a previous section) the applicant must pass through each section again in order i.e. they must re-check all previously saved input data (which must be retained by the system i.e. not removed after re-entry or backward navigation) and the system must undertake validation checks at the end of each section when the “save and continue” button is pressed again. This is important because validation checks in one section (e.g. section 4) can be dependent upon inputs into a preceding section (e.g. section 3), if a user were able to skip a section (e.g. from 3 to 5) then those validation checks (in section 4) may be missed.

Backward navigation: There is to be no restriction on skipping back one or more sections noting that the user will then have to work through all intervening sections again to get back to where they started from.

The top of each page in each form shall include the record ID number and the bottom of each form shall include the following buttons:

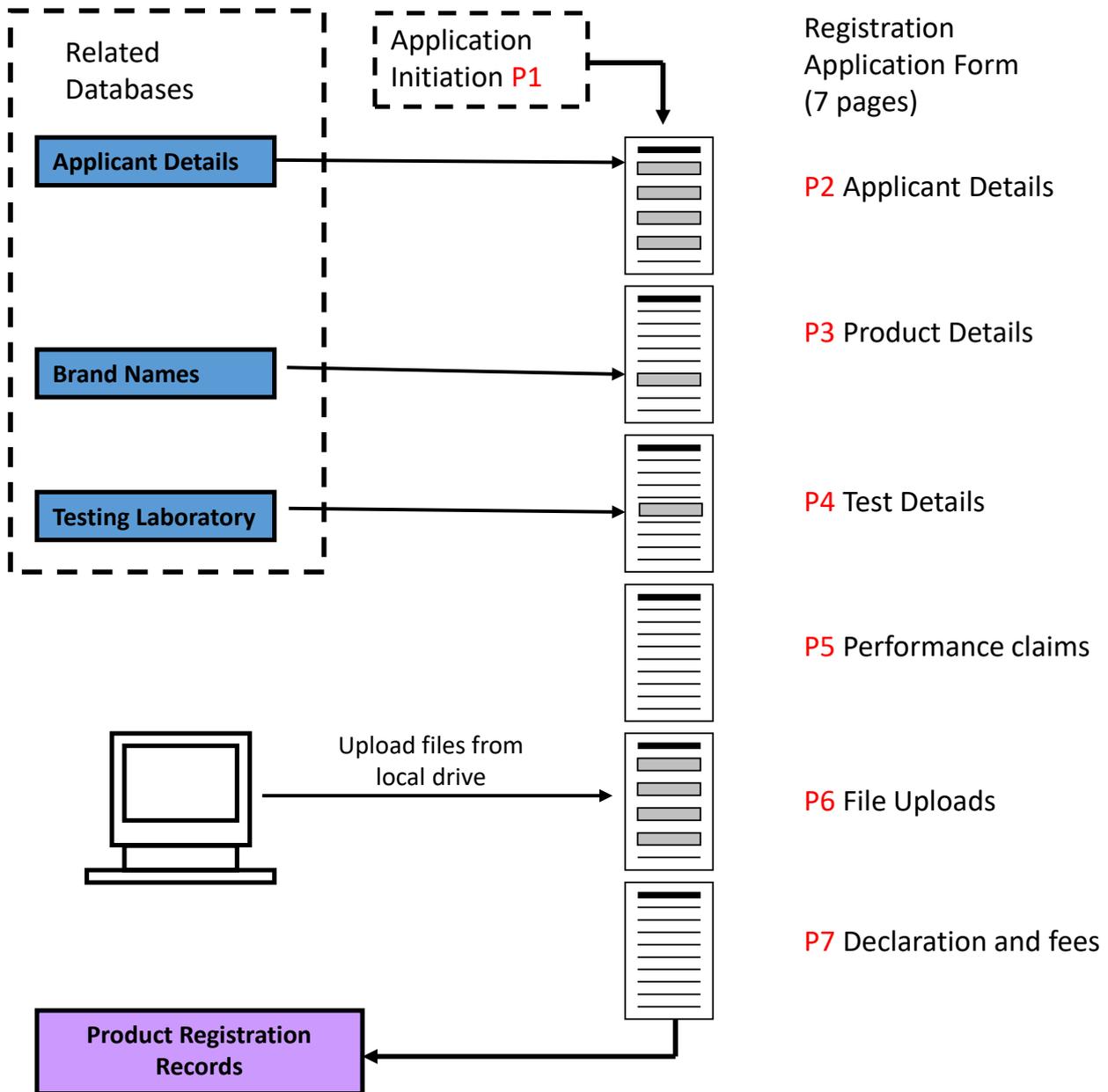
- “Continue to next section” or if warnings “continue to next section (ignore warnings)”
- “Save and exit” button or if warnings “save and exit (ignore warnings)”
- “Previous section” button

Note 1: If on selecting “continue to next section” or “save and exit” warnings are generated, then the page shall refresh and each warning shall be displayed against the relevant field and the “continue to next section” button shall be replaced with a “continue to next section (ignore warnings)” button. And the “save and exit” button shall be replaced with a “save and exit (ignore warnings)” button. However, the “continue to next section (ignore warnings)” button and the “save and exit (ignore warnings)” buttons should be replaced with the “continue to next section” button and the “save and exit” buttons whenever the applicant amends data in any of the fields on that particular page.

Note 2: If on selecting “continue to next section” or “save and exit” any errors are generated, then each error shall be displayed against the relevant field and the “continue to

next section” button shall not facilitate movement to the next section i.e. if errors exists (rather than warnings) then the system should not allow continuation to the next section until the errors are rectified. The user should still however be able to save and exit the page.

Figure 10 : Schematic of Registration Application Form Structure and Supporting Related Databases



Outline specifications for the fields within these forms can be found in the companion MS-Excel field specification spreadsheet.

An example of a registration application facility can be seen in the following screenshot (Figure 12) from the UNEP demonstration registration system.

Figure 11: Example of a Registration application form (UNEP Demonstration Registration System)

The screenshot displays a web-based registration form for a refrigerator/freezer. The breadcrumb trail is 'Home > Registrations > Register a product'. The record number is '#000124 Refrigerator/Freezers' and the form version is 'TCVN 7828:2013 V2.0'. A sidebar on the left contains navigation links: 'Registration type', 'Administrative details', 'Product details', 'Test results' (highlighted), 'Labelling & Performance', 'File uploads', and 'Declaration & Submit'. The main content area is titled 'Test Results' and is divided into three sections:

- TEST REPORT DETAILS:** Contains input fields for 'Test Report Number' (123456), 'Serial number/s of tested units' (123456), 'Testing Officer' (R Foster), 'Test Date' (2015/12/08), and 'Test Certificate Number' (123456).
- TEST CONDITIONS:** Contains input fields for 'Test Voltage' (232.00 V), 'Test Frequency' (51.00 Hz), and 'Tested Input power' (150.00 W). Below these is a text area for 'Note any special conditions associated with this test:'.
- TEST RESULTS:** Contains input fields for 'Adjusted Volume (litres)' (336.000) and 'Annual Energy Consumption (kWh/year)' (500.00).

At the bottom of the form is a 'Remarks:' text area and three buttons: '<< Previous section', 'Save & continue >>', and 'Save & Exit'.

4.5.4 Brand Name Form/Manager

When completing the product details of a product registration form the applicant must nominate a brand name for the product that is the subject of the application. The applicant can either select a brand name from a picklist of previously created brand names (the list includes all brand names

created by all users) or they can open a form to create a new brand name via a “add a new brand name to my dropdown list” button (see example below in Figure 13).

The new brand name form contains only four fields as follows:

1. Brand ID (internally generated)
2. Created by: (internally generated = applicant ID number)
3. Brand name
4. Brand website

Brand Name Field

Do not allow a user to create more than one record of a particular brand name.

If the user creates a new brand name check that it does not match an existing brand name in the master list, if so, do not duplicate in the master list of brand names.

Note: Once a new brand name is created and has been approved in any one registration application, the user cannot edit that name again (only the administrator can edit or delete brand names after they have successfully been used in a registration application form).

Brand URL (optional input)

Undertake basic check to ensure the input URL is in a correct format i.e. must include an @ symbol and a “.” symbol

Note: the applicant who created the brand name can edit the URL field at any time.

Figure 12: Example of a Brand Name Input Form (UNEP Demonstration Registration System)

The screenshot displays the 'Product details' form in the UNEP Demonstration Registration System. The form is titled 'Product details' and includes a navigation menu on the left with options like 'Registration type', 'Administrative details', 'Product details', 'Test results', 'Labelling & Performance', 'File uploads', and 'Declaration & Submit'. The main form area contains the following sections:

- PRODUCT TYPE, BRAND AND MODEL/S**: A section with a note: 'Only models with common specifications (excluding minor cosmetic variations) may be included in the list below'. It features a 'Brand' dropdown menu with a button 'Add a new brand to my dropdown list' and a 'Models' dropdown menu with a 'Remove' button. Below these are two rows of input fields for brand and model names.
- Family name for the above listed models (if any):** A text input field containing 'Foster Family'.
- For any public listing of this product indicate if you want each individual model listed or just the family name noted above:** A dropdown menu set to 'Each individual model'.
- Product Type:** A dropdown menu set to 'Combined Refrigerator and Freezer'.
- Indicate the number of separate fresh food compartments:** A dropdown menu set to '1'.

A callout box on the right side of the form provides instructions: 'Using the checkbox below search for the brand name you wish to use. If you cannot find your brand name in the list, uncheck the box and type in your brand name.' It includes a checkbox labeled 'View existing registered brand names' and a 'Save changes' button.

4.5.5 Import Notification form

An import notification form can only be created as a related record to a pre-existing product registration record that has a status of “Approved”. All import permit notification forms must be linked to the relevant product registration record via its key (registration number). An approved product registration record can have multiple import notification records associated with it and

these import notification records can be lodged by any applicant user (not just the applicant that holds the product registration approval).

Once an import notification form is initiated the appropriate import notification form shall then open.

The operation and appearance of this form is similar to that of a product registration form (see section 4.5.3)

The import notification application form includes sections on:

- Details of the applicant (importer)
- Details of the product to be imported (include numbers and recommended retail price)
- Particulars of the import process
- A declaration

Full field specifications can be found in the companion MS-Excel field specification spreadsheet.

Because the product registration forms and the import notification forms are the key forms in the database and they are related, the workflow between the forms is important to understand.

An applicant might first register a product then move on to completing an import notification form for the first shipment of that product. Alternatively an applicant might go straight to the import permit application form. Where the import is for a product already registered then the applicant simply needs to cite the product registration number (after doing a search for the relevant registration record then selecting it) in order that they can proceed to complete the import notification form.

Alternatively the applicant may be attempting to complete an import notification form for an un-registered product. In these circumstances the applicant will not find the product they want to import under the list of approved registrations and they will need to be directed to the product registration form, complete that form then at a later date return to the import notification application form that can then be completed once the product registration has been approved by the regulator.

4.5.6 Test Laboratory Form/Manager

When completing the test details of a product registration form the applicant must nominate a test laboratory responsible for producing the conformance report. The applicant can either select a test laboratory from a picklist of previously created test laboratories (the list includes all test laboratory names and addresses created by all users) or they can open a form to create a new test laboratory name via a “add a new test laboratory to my dropdown list” button (similar to the “create a new brand” button shown in Figure 13).

The new test laboratory form contains fields as follows:

- Test laboratory ID (internally generated)
- Created by: (internally generated = applicant ID number)
- Name of test laboratory
- Accreditation type (IAF, ILAC, IEC Conformity Assessment Scheme, Other)
- Accreditation number
- Phone
- Email address
- Street address
- Town or city
- State or province
- Country
- Postal code (if applicable)

Full field specifications can be found in the companion MS-Excel field specification spreadsheet.

4.5.7 Form Version control

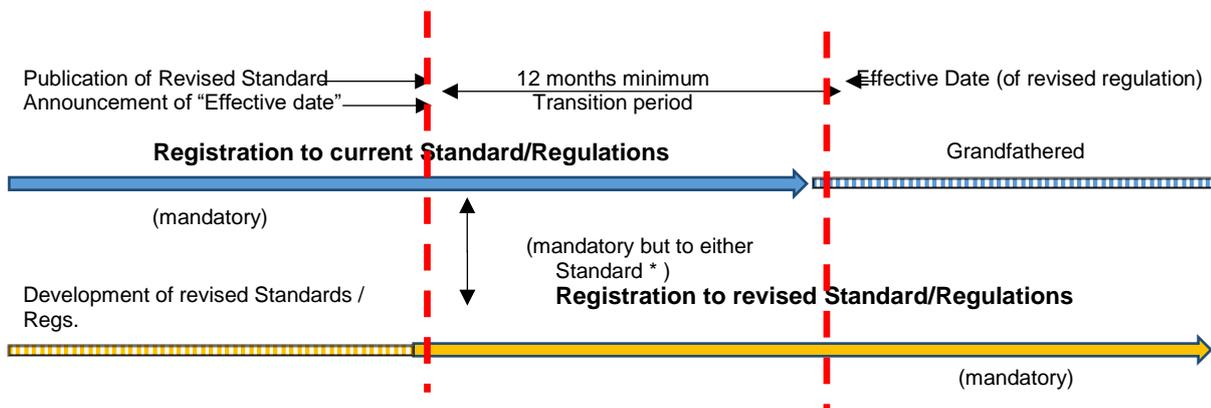
Each time the structure of a form is amended by a programmer in a material way, it is to be assigned a new version number that shall appear on the form. Typically this occurs in relation to product registration application forms only, when new requirements are included in the registration form. Each different version of each form shall be stored in the system with the version type recorded in each record associated with the particular form, such that the appropriate version of the form is delivered for each record viewed or edited. At the time of launching this site a single version only of each form shall exist.

Primarily, new versions of product registration forms are created when new regulations/regulatory standards are introduced. Application forms record the standard to which the product is tested and the version of the regulations to which compliance has been established. In this way, changes in programme requirements (e.g. new more stringent MEPS levels) can be managed by the system.

Following the publication of a new regulatory standard, there is usually a transition period between use of the old standard and use of the new standard. During the transition process an applicant may choose to register their product to either the old or the new standard (if registering to the old standard then the expiry date may be bought forward). Depending upon which standard they select during the product registration initiation process a different form will be displayed for the applicant to complete (noting that often the differences between an older and a newer version are quite minimal, e.g. the minimum performance standard may be upgraded from a “2 star” rating to an “3 star” rating).

A diagram showing a typical transition process from one standard to a revised standard is shown in Figure 13.

Figure 13: Example of a Transition Process from One Standard to a Newer Standard



To the extent possible newer versions of forms should be compatible with older versions. Primarily this means that the database structure should maintain data from older fields that may no longer be included in more recent versions of the form, i.e. field sets that make up a record are never reduced only augmented as required.

4.6 Product Registration Record Status

Each product registration record will have an assigned “status” which is stored as a field in the record. The range of possible statuses is:

- **draft** (i.e. in the process of being completed ready for submission). This is the default setting.
- **submitted** (i.e. following submission to a regulator for approval)

- **checked** (i.e. following checking by the assessor but prior to approval)
- **approved** (i.e. following approval by a regulator)
- **returned** (i.e. following submission, the application is returned by a regulator for amendment)
- **refused** (i.e. following submission, the application is refused by a regulator)
- **revoked** (i.e. following approval, a registration is revoked by a regulator i.e. the registration is cancelled)
- **expired** (i.e. status automatically achieved after a set period of time following registration, typically 5 years)
- **superseded** (i.e. when a registration ends prior to the usual expiry date due to the introduction of revised standards requirements).
- **suspended** (i.e. an approved registration suspended by a regulator. A suspended record can be switched back to approved at any time by the regulator)
- **deleted** (i.e. a draft status application may be set to deleted status by an applicant. The record is effectively archived and cannot be viewed by any user except the system administrator who can choose to re-instate the record to draft status upon request)

The different status are initiated by the actions of specific users (or in some cases automatically). The status automatically changes from “draft” to “submitted” when the applicant submits a record for approval. The remaining statuses are set by the regulator, except for “expired” status which is normally auto set after a certain date is reached. Depending on the particular status of an application record, different access privileges in terms of the user’s capacity to either view, edit or change a record shall apply as per Table 9.

***Note:** regulators can only view records lodged in jurisdictions other than their own, the right to check, approve, return, refuse, revoke, expire, supersede or suspend a record is only to be available for records lodged in their own particular jurisdiction.

Table 9: Access privileges according to the type of user and the record status

Status	Initiated by	Access privileges		
		Applicant	Regulator*	Administrator
draft	Applicant	View & edit	View only	View & edit
submitted	Applicant	View only	View & process ²	View/edit/process
checked	Regulator	View	View & process ²	View/edit/process
approved	Regulator	View	View & process ³	View/edit/process
returned	Regulator	View & edit	View only	View/edit/process
refused	Regulator	View only	View only	View/edit/process
revoked	Regulator	View only	View only	View/edit/process
expired	Regulator ¹	View only	View & process ⁴	View/edit/process
superseded	Regulator	View only	View & process ⁴	View/edit/process
suspended	Regulator	View only	View & process ⁵	View/edit/process
deleted	Applicant	Nil	Nil	View/re-set status

Note 1: In addition to a regulator manually setting a record to “expired” status, the database will also auto set the record to expired status at a date 5 years after the date of registration. This process will occur only after an email notification has been sent to the applicant, 6 months prior to expiry.

Note 2: Available processes are: checked, return, and refuse. Approve option is only available to the manager regulator.

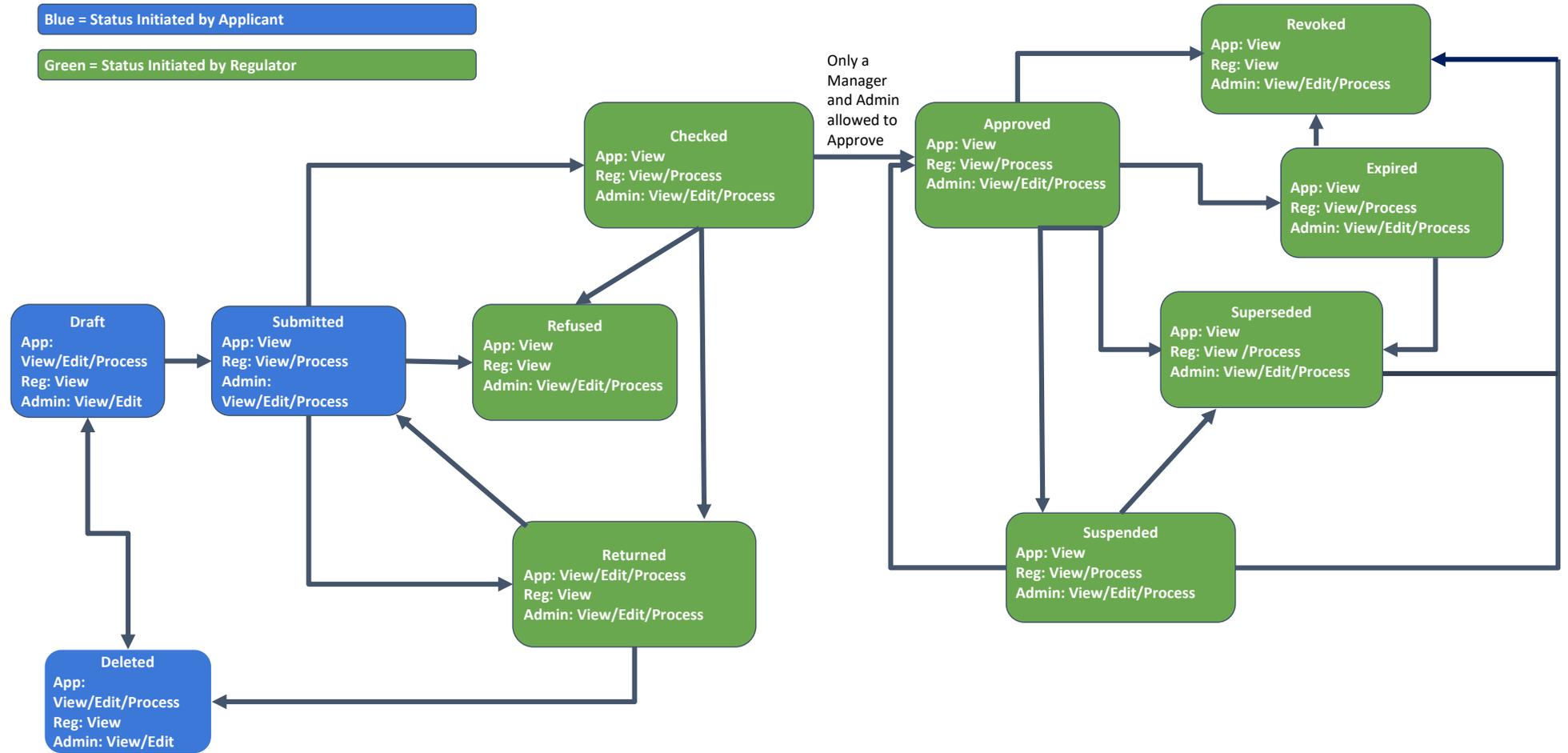
Note 3: Available processes are: revoke, supersede or reset expiry date.

Note 4: Available processes are revoke.

Note 5: Available processes are: revoke, supersede or reset to approved.

A Flow chart describing the workflow in relation to product registration statuses can be found in Figure 14 below.

Figure 14: Product Registration Status Flow Chart



4.7 Field structural principles

Depending on the particular form type, a range of field types shall be employed as appropriate, these include:

- Free input (e.g. text, integer, numeric etc.)
- Calculated field (using an algorithm and based on values of other fields and or lookup tables)
- Imported data field (imports data from another section or a related database)
- Picklists
- Conditional picklists (i.e. list is tailored based on inputs to other related preceding fields)
- Checkbox (true/false)
- Multipart - some fields may need to be “expandable” fields. For example, the model number field in a product registration should display by default as a single field. For applicants with more than one model to include on a particular application a provision is made to “add another” (i.e. add another field).
- Tabular input format

As a general rule field types should be selected based on the following order of precedence:

1. Imported (i.e. no user input required)
2. Calculated (i.e. no user input required)
3. Checkboxes (Boolean fields only)
4. Conditional picklists
5. Picklists
6. Free input (only where none of the above are possible)

That is, if it is possible to import the required data then that type of field should be used, if not then the field should be calculated, if that is not possible, then the field should present as a simple checkbox and so on.

Wherever possible the following forms of control are required to be applied to form fields:

- Conditional display of a field or a whole section of fields (i.e. display of field is contingent on inputs to earlier related fields, e.g. for an air-conditioner, fields relating to its heating mode performance will only display if the unit is nominated as a reverse cycle or heating only type unit, if the unit is nominated as a cooling only unit then the fields relating to heating performance must not be displayed).
- Required or not required input (all required input fields to be marked with a red asterisk to the right of the field i.e. “*”)
- Input masks – e.g. a yyyy/mm/dd mask for dates
- Default values to be assigned wherever appropriate
- Data validity checks - simple (e.g. is a numerical input within a certain expected range?)
- Data validity checks - complex (calculations often based on inputs into other fields and on occasion data derived from lookup tables)
- Warning messages (warnings only delivered when moving to the next section of a multi-section form or when exiting a form, i.e. page refreshes with warnings displayed)
- Error messages (delivered only when attempting to move to the next section or when exiting a form, i.e. page refreshes with errors displayed). These must be rectified to allow progress to the next section of a multi section form.

Wherever possible validations must be applied to fields, particularly numeric fields and particularly in relation to the key performance claims within a product registration application. Checks need to be undertaken to determine that the input value is within the expected range (warning if not) and checks need to be undertaken to determine if the input value is compliant with the minimum performance specifications as set out in the relevant standards (e.g. MEPS cut off level) – error if not.

Typical field structure

Typically each field should consist of:

- Caption (above or beside the input field)
- Input cell suitably sized for the expected input
- Units (as applicable to numeric inputs e.g. “kW”)
- Auto rounding (5 significant figures unless otherwise specified in the applicable standard)
- Help facility (selected fields shall have an associated “help” facility in the form of a “?” icon immediately after the field. Hovering a cursor over this icon will display the help text. All fields shall have the capacity to include help text, but only selected fields will initially need to be provided with help text. Help text should be included where the input requirement is unlikely to be obvious to a significant portion of users.)

Field naming conventions

As far as possible, field names used should indicate both the input form that the data is collected within and the content of the field itself. For example, a field in the registration form for refrigerators for the input of the refrigerators total volume might be called:

RF_TotVol
↑ ↑
Shorthand for the field caption (i.e. Total Volume)
↑
Form type (i.e. Refrigerator registration form)

Full field specifications can be found in the companion MS-Excel field specification spreadsheet. An example of a field specification provided within the MS-Excel field specification spreadsheet can be seen in Figure 15 below.

Figure 15: Example of a field specification

Form	Refrigerator/Freezers
Section (Page Heading)	5. Test Results
Sub-section (Sub heading)	Test Results
Field Name	RF_22_PAECS
Order of appearance	22
Field Caption	PAEC (kWh/y) (multiple entries)
Units	kWh/year
Help Text	
No. of entries	3
Conditions for Field Display	Only If {IA_3_ProductCategory} = C
Required Input ?	Conditional
Conditions for required input	Required if conditions for display are met
Field Format	Decimal
Source field/Picklist or calculation	For Cat C - user input
Default Value (if any)	Blank
Rounding places	3 places
Notes / Special Requirements	
Validation 1	IF {IA_3_ProductCategory} = A OR B AND {RF_22_PAECS} < 0 THEN
Val 1 Message	Warning 1 - This imported value is outside the expected range
Validation 2	IF {IA_3_ProductCategory} = C AND {RF_22_PAECS} < 0 THEN
Val 2 Message	Error 2: This value is invalid
Validation 3	IF {IA_3_ProductCategory} = A OR B AND {RF_22_PAECS} > 1200 THEN
Val 3 Message	Warning 1 - This imported value is outside the expected range
Validation 4	IF {IA_3_ProductCategory} = C AND {RF_22_PAECS} > 1200 THEN
Val 4 Message	Warning 2: This value is outside the expected range - please check (including the units)
Validation 5	
Val 5 Message	

5 System Functionality - Details

5.1 Overview

The following sub-sections detail key functionality requirements to be included in the system.

- Section 5.2 deals with functionality requirements that are generally common across all user group portals.
- Section 5.3 details key functionality requirements in relation to applicant users only.
- Section 5.4 details key functionality requirements in relation to regulator users only.
- Section 5.5 details key functionality requirements in relation to custom officer users only.
- Section 5.6 details key functionality requirements in relation to Administrator users only

5.2 Functionality – General Requirements

5.2.1 Multi-level account types

Apart from the public portal which is an open access portal and the administrators portal which is a single user only there are 3 main types of user account. These are:

- Applicant
- Regulator
- Customs

Each of these account types are to include for a “main” account for the primary user and any number of sub-accounts under that main account for “secondary” users. It is often the case that a product supplier or a regulator or a customs agency for that matter is part of a larger organisation that may have multiple officers responsible for making/processing applications. In these circumstances it can be advantageous for a primary account holder to be able to set up “sub-accounts” (each with their own username and password) within their main account. All records in such an account are tagged with the same account number but a range of different users can enter and use the account.

In this set-up the system administrator is responsible for the approving of applicant’s main accounts and for the setting up regulators and customs officer’s main accounts. Once the main accounts are set-up the primary user is to then have the capacity to manage the various sub-accounts including being able to set up new accounts for new sub-users and also to delete accounts.

It should be noted that the system must be able to support multiple main accounts for applicants, regulators and customs officers. In the case of regulators and customs officers there will be a minimum need for separate main accounts in each of the 15 jurisdictions. In the case of applicants there are likely to be hundreds if not several thousand accounts initiated by applicants and activated by the administrator.

Generally, main and sub-accounts are to enjoy the same access privileges, however, in the case of regulator accounts the capacity to set a checked application to approved status may need to be restricted to the main user only (to be determined prior to the system build).

5.2.2 Facility to deliver in multiple language

The site is to be set-up such that it can operate in any of 3 languages as follows:

- English
- French
- Portuguese

Generally, this will mean:

- For drop down fields where the applicant selects an option from a list (e.g. Yes or No) the option selected should be stored as a number (i.e. yes = 1 and no = 2, blank might = 0) and that there be a table that relates the stored number for a particular field with the name of the selection in each of the 3 languages (which would be returned in view mode or in csv downloads depending on the language specified). Validations would be structured around the stored number rather than a particular name in English or French or Portuguese.
- For user direct input (i.e. where the user simply types in text) the field will simply accept whatever is typed in, in whatever language is selected for use (these fields are not such an issue as they are not validated except sometimes to check that an input has been made).

All specifications for the site (e.g. field captions, picklists etc.) will be supplied initially in English (see companion MS-Excel field specification document), however translations shall be provided by CLASP for the other two languages.

5.2.3 Secure Log-In Facility

The log in page shall include:

- A noticeboard at the top of the form where important notices can be posted by the administrator (e.g. details of system outages).
- Username input field (typically this will be the user's email address)
- Password field
- "Log in" button
- A link to a sign up page for new applicants
- Forgotten my password function (this function automatically emails the password to the user).
- Links to jurisdiction website facilities (see example below in Figure 16 where links to jurisdictional websites take the form of flags at the bottom of the page)

Figure 16 Sample Log-in page – Pacific Appliance Database

The screenshot shows the Pacific Appliance Database website. At the top, there is a header with the logo and the text 'Pacific Appliance Database'. Below the header, there is a 'Welcome to Pacific Appliance Database' section with a 'Check Database' button. The main content area is divided into two sections: 'User login' and 'Check List of Approved Products'. The 'User login' section has fields for 'Username' and 'Password', and a 'Log in' button. The 'Check List of Approved Products' section has a 'Check Database' button. At the bottom, there is an 'Additional Information' section with links to various Pacific Island countries, each represented by a flag.

5.2.4 View Record Facility

Apart from being able to edit product registration forms under certain circumstances, users (applicants, regulators customs officers and administrators) shall have the facility to simply view the record. Applicant users can only ever view the contents of their own records and not any other applicants⁴. The view facility shall be similar to the edit facility in terms of its format (i.e. a series of pages with headings, captions and fields) except that in view mode none of the fields shall be editable. In view mode it should also be possible to read any warning or error messages.

When viewing a record the following functions (buttons) shall be made available:

- **Edit the record:** i.e. re-enter the record in edit mode, re-entry is always to the first page of the form. Note that the option to edit a record is subject to certain conditions (privileges) - see Table 3 and only available in respect of applicants own records
- **Create a copy:** i.e. generate a new record by importing the values in the current record into a new record and open that new record ready for editing. This facility is only available to applicant users for their own records.
- **Export to pdf:** i.e. generate a pdf of the record so that the user can then either save or print the pdf
- **Certificate of Approval:** i.e. generate a pdf of the certificate of approval where available (see section 5.4.3 for details)

An example of how this feature might be set up can be seen in the following screenshot from the UNEP demonstration registration system – see Figure 17.

Figure 17: Example of View Facility (UNEP Demonstration Registration System)

The screenshot shows a web application interface for viewing a record. The top navigation bar includes links like 'Make an application', 'Search my records', 'Payments', 'Sales data', 'Test Organisation', 'News', 'Site manager', and 'Help'. The main content area is titled 'Home > Registrations > View facility / Test results' and shows 'Record No: #000123 Refrigerator/Freezers'. The 'Test Results' tab is active, displaying a list of items: 'Test Report Details', 'Test Conditions', 'Test Results', and 'Remarks'. Below this, there are two main sections: 'TEST REPORT DETAILS' and 'TEST CONDITIONS'. The 'TEST REPORT DETAILS' section includes fields for 'Test Report Number' (123456), 'Serial number/s of tested unit/s' (123456), 'Testing Officer' (R Foster), 'Test Date' (2015/12/08), and 'Test Certificate Number' (123456). The 'TEST CONDITIONS' section includes fields for 'Test Voltage' (232.00 V), 'Test Frequency' (51.00 Hz), 'Tested Input power' (150.00 W), and a text area for 'Note any special conditions associated with this test:'. On the right side, there is a sidebar with three sections: 'Status' (Approved), 'Info' (ID: 000123, Last updated: 2016/01/08, Status: Approved), and 'Action' (Add new lots, Create Copy, Export to PDF, Approval Certificate).

⁴ When generating an Import Notification Form an applicant can search for and view a list of all registered products (similar to the public portal). They can also view the Certificate of Approval for those records of other applicants but they cannot view the content of the record itself (just the summary data returned in the search process). The only records they can view the contents of are their own. This rule does not apply to regulator or administrator users.

5.2.5 Search Records Facility - Registration Records

This is a facility to search for registration application records. This comes in a range of formats depending on the user type but all are based on the same principles and have similar structures. The various types required for each user type are described in Section 4.4.

The facility shall allow various search parameters to be selected or specified and the returned records to be sorted. In the case of an applicant user's own registration records, searched records can then be viewed (along with any uploaded files), edited (where permitted), downloaded, printed or copied as required.

In the search facility, the following parameters can be set or selected:

- Country (default = All)
- Picklist including: Applicant ID, Record ID and Registration Number with an associated input field where the user can input their requirements (blank is default, blank = All)
- Status picklist (as per Section 4.6 plus "All", default = All)
- Appliance type (default = All)
- Brand (all characters, blank is default, blank = All)
- Model (all characters, blank is default, blank = All).
- Responsible officers name (regulator and administrator account types only)

Clicking on the search button initiates the search and returns selected fields from records compliant with the search specifications. Each returned record shall include the following summary information (fields) in the form of columns of data (columns left to right):

- Record ID
- Countries (may include multiple jurisdictions if mutual recognition agreements exist)
- Registration number
- Status (e.g. approved)
- Product type (e.g. refrigerator)
- Brand (e.g. Haier)
- Model (e.g. BWC 270)
- Registration date (e.g. 2013/04/22)
- Officer Assigned to (regulators and administrators site only)*

*Note: In each country, the name of the regulators primary account holder plus the names of the regulator sub-account holders are to populate the picklist of officers responsible for processing a particular application (see far right hand column in Figure 18).

To the far left of each listed record there shall be an "action" column that provides a drop down list of available actions as follows:

- View the record
- Edit the record
- Copy the record
- Print the record (to pdf)
- View/Print Certificate of Approval

Availability of the "edit" and the "copy" actions to the user will depend on the privileges assigned to that type of user – see Table 9.

Each column of information in the returned table shall have a heading (as per the list above) as well as sort ascending and sort descending functions. By default, records shall be sorted from highest record ID number to lowest record ID number. An example of a similar facility from the UNEP demonstration system is shown in Figure 18. In this figure there are two forms of search

option shown, a simple search option or a more sophisticated search builder option. The user can toggle between these two search modes.

Where the number of returned records exceeds 25 the returned list shall be broken into separate pages with associated navigation controls at the bottom of each page.

At the bottom right hand corner of the returned list shall be a button called “Download to CSV”. Left mouse clicking this button opens a file manager that allows the user to specify a location on their local or network drive where the CSV file is to be downloaded. The downloaded CSV file shall include all fields (columns) associated with each record (rows) included in the search specifications.

Figure 18: Example of Registration Record Search Facility (UNEP Demonstration System)

Action	Record	Country	Registration	Status	Product Type	Brand	Model	Manufacturer	Registration Date	Responsible Officer
<Please Selec	000133	Brunei		Draft	Distribution transformers			Manufacturer 2		Select
<Please Selec	000132	Brunei		Draft	Distribution transformers			Manufacturer 2		Select
<Please Selec	000131	Vietnam		Draft	Distribution transformers					Select
<Please Selec	000130	Myanmar (Burma)		Draft	Distribution transformers			Manufacturer 2		Select
<Please Selec	000129	Cambodia		Draft	Distribution transformers					Select
<Please Selec	000128			Draft	Refrigerator/Freezers	Foster	Model 1, Model 2	Manufacturer 2		Select
<Please Selec	000127	Thailand		Draft	Electric fans					Select
<Please Selec	000126	Brunei		Draft	Distribution transformers					Select
<Please Selec	000125			Draft	Refrigerator/Freezers	Foster	Model 1, Model 2	Manufacturer 2		Select
<Please Selec	000124	Brunei		Draft	Refrigerator/Freezers	Foster	Model 1, Model 2	Manufacturer 2		Select

Special Rules – Applicant searches of the entire registration database

Whilst the applicant user search of the entire database (“all records”) is almost identical to their search facility of their own records there are some important differences as follows:

1. The facility will only return records that have an approved status
2. The user must specify a particular country in which they wish to search (i.e. they cannot select “All” countries)
3. The returned records shall be those that have been approved in the nominated country and those that are approved in other countries but recognised in the nominated country (see section 3.2 for details of mutual recognition agreement provisions).
4. The user can only view the returned summary list of records, they cannot view the entire record, print it, copy it or download it.
5. The user can however view, download or print the Certificate of Approval for any returned record

5.2.6 Search records facility – Import Notifications

This facility is almost identical to the Registration records search facility (see section 5.2.5) except that:

1. An applicant user can only search their own records and not the entire database of all users import notification records.
2. In the search facility, the following parameters can be set or selected:
 - Country (“All” cannot be selected – must be a specific country)
 - Picklist including: Applicant ID or Import Notification Record ID with an associated input field where the user can input their requirements (blank is default, blank = All)
 - Appliance type (default = All)
 - Brand (all characters, blank is default, blank = All)
 - Model (all characters, blank is default, blank = All).
 - Status (includes either: “Draft”, “Submitted”, “Cleared Customs”, “Deleted”)
3. Clicking on the search button initiates the search and returns selected fields from records compliant with the search specifications. Each returned record shall include the following summary information (fields) in the form of columns of data (columns left to right):
 - Import Notification Record ID
 - Country of importation
 - Product Registration Number
 - Product type (e.g. refrigerator)
 - Brand (e.g. Haier)
 - Model (e.g. BWC 270)
 - Number of units to be imported
 - Number of units to be re-exported
 - Status (e.g. “Cleared Customs”)

5.2.7 Automated Emailing Facility

At various stages in the processing of data within the web system, automated email notifications are to be sent to either the regulator or the relevant applicant. The basic requirements are set out in Table 10. See also Appendix 1 - Email Notifications.

Table 10 : Email notifications - Summary

Subject	When sent	Sent to who	Basic contents
Sign-up	When an applicant applies for a user's account	Regulator	Name of applicant, Application number, Date
Account Activation	When regulator activates an account for a user	Applicant	Username and password, link to sign in page
Submission	When an applicant submits an application	Regulator	Details of submitted application: Record ID and date
Checked	When a regulator (assessor) completes a check of an application and forwards to the manager for approval	Regulator (manager)	Details of submitted application: Record ID and date
Approval	When a regulator (manager) approves an application	Applicant cc Regulator	Details of approval and an attached certificate of approval (COA)
Returned	When a regulator returns an application	Applicant cc Regulator	Notice of a returned application

Subject	When sent	Sent to who	Basic contents
Refused	When a regulator refuses an application	Applicant cc Regulator	Notice of a refused application
Record Suspended	When a regulator suspends an application	Applicant cc Regulator	Notice of suspension
Record Expiring	1 months before expiry date	Applicant cc Regulator	Notice of impending expiry, Record ID, Expiry Date
Record Expired	On expiry date	Applicant cc Regulator	Notice of expiry, Record ID, Expiry Date
Record Superseded	On superseded date	Applicant cc Regulator	Notice of superseding, Record ID, superseding date
Record revoked	On revoked date	Applicant cc Regulator	Notice of Revocation of a registration, Record ID, Cancellation Date

5.2.8 Printing to PDF

All forms within the site shall have a facility that allows the user to print a pdf copy of the particular form. The format must be printer friendly and where required the form shall be split to allow printing on multiple A4 sized pages.

5.2.9 Site Manager Facility

The site manager facility provides different facilities depending on the type of user:

Applicant Users - Primary:

- Change password facility
- Edit account holder details facility (limited editing only)
- Edit my brands (limited editing only)
- Edit my test laboratories (limited editing only)
- Primary user can also manage subordinate users accounts

Applicant Users - Secondary:

- Change password facility
- Edit account holder details facility (limited editing only)
- Edit my brands (limited editing only)
- Edit my test laboratories (limited editing only)

Regulator User - Primary:

- Change password facility
- Create/manage secondary accounts facility (see section 5.4.1)

Regulator User - Secondary:

- Change password facility

Customs Officer User - Primary:

- Change password facility
- Create/manage secondary accounts facility (as per primary regulator's facility)

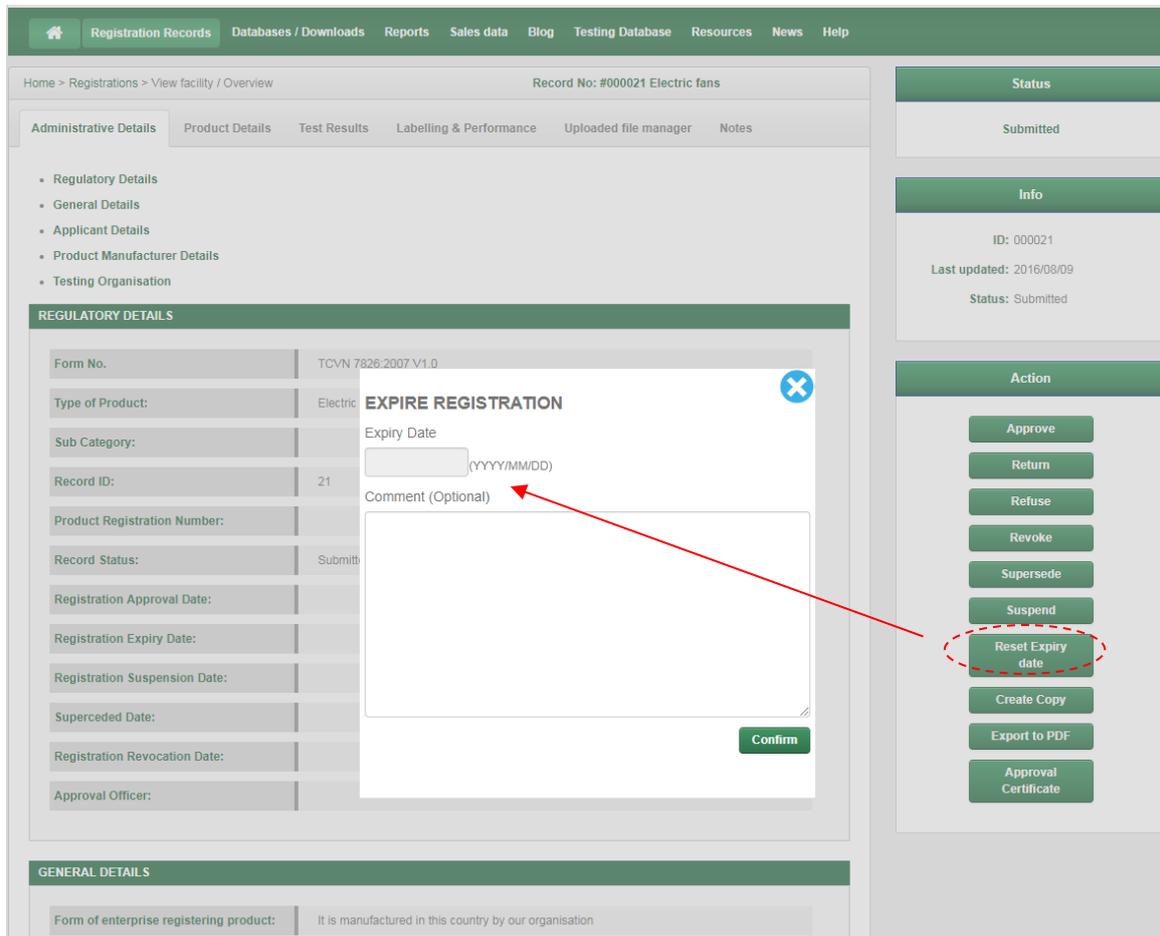
Customs Officer User (manager):

- Change password facility

5.2.10 Automated Expiry Date Facility

The expiry date field in the registration application records shall be automatically input by the facility on the date of registration approval and shall be set to five years in advance of the date of approval (this will be the initial default value but the administrator must have facility to easily vary this default value if required). If required, the regulator can override the expiry date using a “reset expiry date” facility – see example in Figure 19.

Figure 19: Example of an Expiry Date Override Facility (UNEP Demonstration site)



5.2.11 Quick Response (QR) code

The scheme managers have indicated a desire to, at some point in the future, include QR codes on energy rating labels affixed to appliances. To this end, the product registration system needs to be set-up such that in the future it will be possible to internally generate a hyperlink QR code for each approved registration such that the applicant can then apply that QR code to the energy rating labels they produce and affix to their products.

5.3 Functionality – Applicant Specific

Whilst many of the general facilities of relevance to applicant users are detailed in section 5.2 a number of facilities specific to the needs of applicant users are detailed in the following sub-sections:

5.3.1 Uploading facilities

Upload facilities are required as follows:

User account application form

- In some jurisdictions there may be a need for an applicant to upload a copy registered company certificate. Typically the applicant would scan a copy of this certificate and then upload.

Product registration form

- A photo of the product or its packaging (optional upload)
- Test report/s (required)
- Energy label image (required for labelled products only)
- Declarations from the manufacturer to confirm that the product that is the subject of the uploaded test report is identical to the product that is the subject of the registration application may be required to be uploaded
- Copy of receipt of payment may be required to be uploaded
- Other uploads (optional) e.g. instructions for use, image of product markings, statement of quality assurance

Note: There are no upload requirements in relation to the Import Notification form

Whilst editing a record or viewing such a record (in view mode) the user shall have a facility that allows the user to upload files (edit mode) or view the various uploaded files (view mode). This facility is called the “uploaded file manager” and shall display:

- The caption associated with the upload request field in the relevant form (each caption shall form a heading to a discrete section in the upload file manager)
- The name of each of the uploaded file/s associated with that field (left mouse clicking on the file name shall download that file to the local drive)
- The size of each of the uploaded file/s associated with that field
- A field to include any notes in relation to the uploaded file
- An option to delete the uploaded file (edit mode only)
- An option to add additional files to the upload

An example of such a facility is shown in Figure 20 below.

Figure 20: Example of an Uploaded File Manager (UNEP Demonstration site)

Home > Registrations > Register a product Record No: #000124 Refrigerator/Freezers Form version: TCVN 7828:2013 V2.0

File uploads

Applicants must upload copies of documents as noted below. Simply left mouse click on the "Browser" button adjacent each item, then using the file browser, locate and upload the applicable document's. Ideally documents should be in pdf format and wherever possible less than 2MB in size

TEST REPORTS

Test Report from the nominated Testing organisation (must have been issued within the previous 6 months)

File Name	File Size	Note	
Test Report.docx	11.18 KB		View Delete

Browser

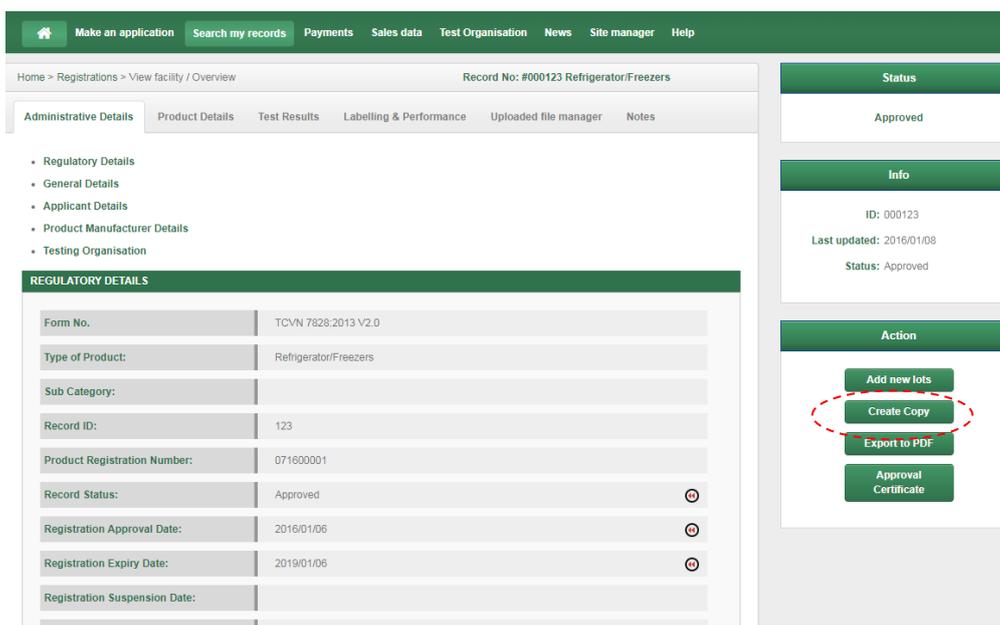
The administrator shall have the capacity to upload or delete files to each section in the uploaded file manager.

5.3.2 Copying of Product Registration Records

This facility for applicant users allows the user to generate a new product registration record by importing the values in an existing record into a new record and then opening that new record ready for editing. Note: an applicant can only copy a record that is owned by themselves and not a record owned by any other user.

This facility shall be made available from both the application record search facility (see section 5.2.5) and the view facility (see section 5.2.4 and Figure 21). The newly created record shall be assigned a new record ID number (i.e. not the same as the original record), and uploaded files to the original application should, if possible, be uploaded to the newly created application.

Figure 21: Example of a Copy Facility (UNEP Demonstration site)



5.3.3 Registration Payment Facility

For the initial build of the site, no facility is to be provided for the on-line payment of fees. In the future the system may be connected to a payment system, but for the time being payments are to be made separately and receipt number/uploads of receipts are to be lodged manually into the system by the applicant.

5.4 Functionality – Regulator Specific

Whilst many of the general facilities of relevance to regulatory users are detailed in Section 5.2 a number of facilities specific to the needs of regulatory users are detailed in the following sub-sections:

5.4.1 Create Manage Regulator sub-account facility (Primary Regulator users only)

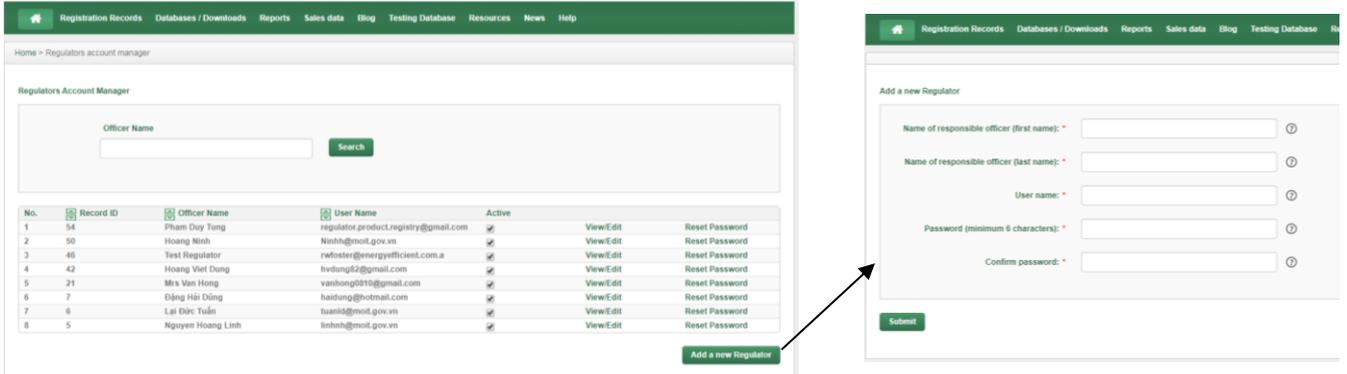
The Create/manage sub-account facility allows the primary regulator to:

- Create new accounts for his/her assessment officers (includes officer's name, username and password details)
- Search for account holders
- Activate or deactivate an account holder's account

- View and edit an account holders details

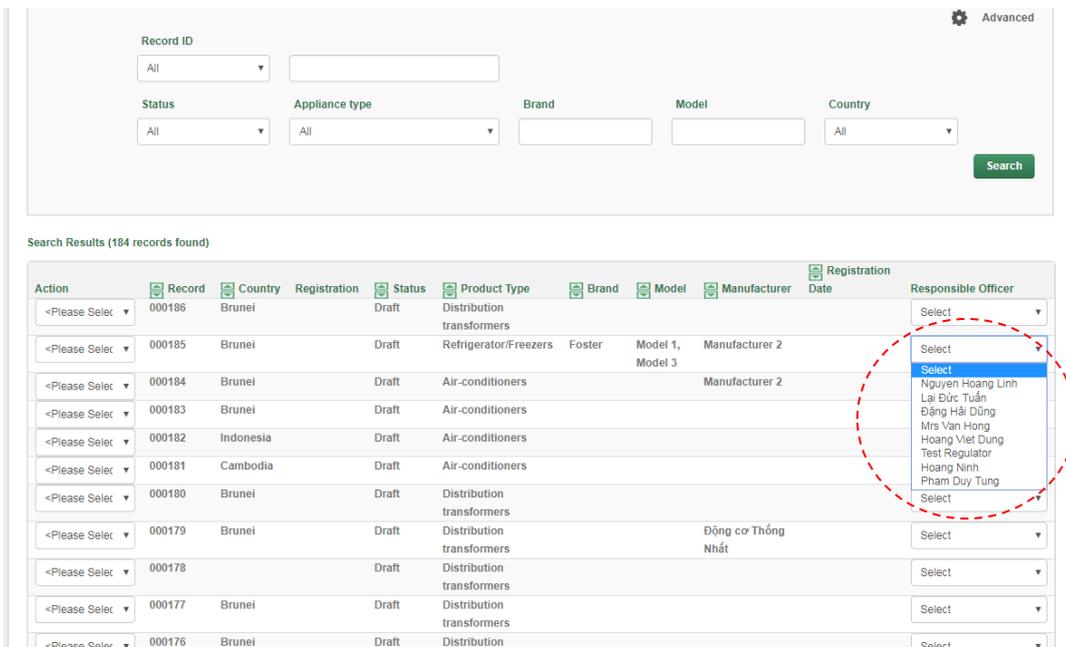
An example of such a facility can be seen in Figure 22 below:

Figure 22: Example of a “Create/Manage Assessor Account” facility (UNEP Demonstration site)



Once an assessor’s account is activated it is then selectable from a drop down list to appear in the regulator’s product registration search facility (see section 5.2.5). Officers can select their name against applications they nominate to process. Alternatively, the manager could assign applications to assessment officers. An example of an assessment officer’s drop down list is shown in Figure 23 below.

Figure 23: Example of an Assessment Officer Drop-down List (UNEP Demonstration site)



5.4.2 Search Applicants Facility

The Applicant search facility to be available from the regulator’s home page allows the regulator to Search for account holders

An example of such a facility can be seen in below:

Figure 24 below:

Figure 24: Example of an Applicant Search Facility (UNEP Demonstration site)

No.	Record ID	Name	Address	Company Name	Active	View/Edit
1	57	Iloyd Harrington	Lloyd street - Lloydtown - Iloydsville	Lloyd industries	<input checked="" type="checkbox"/>	View/Edit
2	56	Viet Anh	Hoang Quoc Viet - Hanoi - Hanoi	BH Tech	<input type="checkbox"/>	View/Edit
3	55	Pham Duy Tung	Hoang Hoa Tham - Ha Noi - 84	Gosei	<input type="checkbox"/>	View/Edit
4	53	Pham Duy Tung	Hoang Quoc Viet - Hanoi - Hanoi	Gosei Vietnam	<input checked="" type="checkbox"/>	View/Edit
5	52	Hoàng Ninh	25 Ngô Quyền - Hà Nội - Hoàn Kiếm	Hoang Ninh	<input checked="" type="checkbox"/>	View/Edit
6	51	Nguyen Anh Tuan	Hanoi - Hanoi - Hanoi	Cong ty TNHH XYZ	<input type="checkbox"/>	View/Edit
7	49	Nguyễn Hoàng Anh	25 Ngô Quyền - Hà Nội - Hoàn Kiếm	Công ty TNHH Hoàng Anh	<input type="checkbox"/>	View/Edit
8	48	Tuan Tuan	Hanoi - Hanoi - Hanoi	Cong ty ABC	<input type="checkbox"/>	View/Edit
9	47	ĐHẠM CÔNG CHỨNG ĐHẠM	766/M1 AC LONG QUẬN ĐHỊ HỖNG 9 QUẬN TÂN	CÔNG TY TNHH THƯƠNG MẠI	<input type="checkbox"/>	View/Edit

Note: The above figure shows a system that includes a capacity to both view and edit applicant records. For a regulator user only the view option should be made available. For an administrator user both a view and edit option should be available.

5.4.3 Certificate of Approval

Upon approval of a registration application by the regulator the system shall generate an A4 pdf approval certificate known as a “Certificate of Approval” (COA). The COA will have a common format across all jurisdictions but some of the wording will vary i.e. each jurisdiction shall have its own unique COA. The COA is to incorporate some official text (to be supplied) plus some key data from the record including:

- Record ID and registration number
- Jurisdiction in which the application was approved
- Jurisdictions in which the registration is recognised as valid
- Applicable Registration Standard
- Applicant details (applicant’s name and company name)
- Product type
- Product sub-category
- Date of issue of certificate
- Date of expiry
- Product identifiers (brand and model)
- Product Technical details

Product technical details may include a range of fields within the registration record. For example, in the case of a refrigerator product it might include:

- Energy Star Rating
- Energy Consumption
- Net Storage volume (total and by compartment type)
- Freezing capacity
- Climate class

- Noise level
- Refrigerant type
- Does the product have a frost free system?
- Is the product designed to be built-in?

The exact form of the certificate is yet to be confirmed, however a mock-up of a certificate including the above noted fields should be produced so that regulators can review the mock up and provide feedback in relation to their particular requirements. A sample of a simple certificate used in another jurisdiction (South Pacific) can be seen in Figure 25 below.

COAs should be accessible from the product registration record when in view mode - see example in Figure 21.

Figure 25: Example of a Certificate of Approval (Pacific Appliance Database)



<Government Act>

Certificate of Registration of Regulated Electrical Product Issued by the Regulator

Certificate Issued to:	Name Company	Applicant 1 Company 1
Issuing Jurisdiction:		Samoa
Product Type:		Refrigerators and freezers
Product Category (as applicable):		GROUP5T
Certificate (Registration) Number:		WSM-RF-000003
Electronic ID number:		WSM-PR-000071
Date Issued:		07/11/2017
Date Of Expiry:		07/11/2022

Product Details

Brand Name:	ELECTROLUX
Model Numbers:	MODEL 1234
Family Name (as applicable):::	SUPER COOL RANGE

Certified by the Regulator (all applicable fees having been paid)

.....

This certificate remains valid and may be used to import the named product/s as many times as the holder wishes, up to the date of expiry noted above, or the Regulator deregisters that model and advises the certificate holder accordingly.

5.4.4 Database search and download facilities

In addition to the download facilities included with the various search engines described in this specification, the regulator user shall have a separate page where they can select any of the databases for viewing (using a search engine) and or downloading (to their local drive).

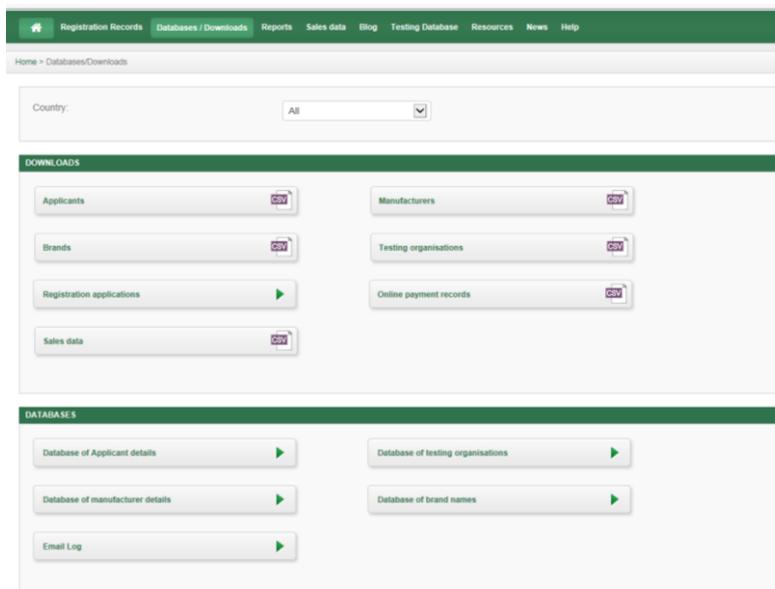
Downloads shall be in the form of CSV files. The following record types shall be downloadable:

- Applicants
- Brands
- Product registration applications by product type (all fields)
- Product registration applications by product type (selected public fields only)
- Import notifications
- Test laboratories

Column headings in data downloads need to provide a clear indication of the content of that column (these might be shortened versions of the relevant field caption or could be the actual field names provided the field names provide a clear indication of the content of the field).

An example of a database search and download page can be seen in Figure 26. In this example, in the upper part of the screen is a facility to download complete databases (click on the button and the entire database is downloaded). In the lower half of the screen is a set of links to search engines for each of the noted databases where a user can conduct searches and review returned records. The preferred option for the ECOWAS registration/database facility would be to just include the links to the database search engines (lower half of the screen) and in each search engine include a download facility for the returned search. This would then give the user the flexibility to just download the record set they are interested in downloading.

Figure 26: Example of Database Search and Download Facility (UNEP Demonstration site)



5.4.5 Product Registration Record Status Management Facility

The regulators and administrators view page for registration application records shall be provided with a facility that allows the regulator or administrator to change the status of the record (e.g. from a “submitted” status to an “approved” status for instance).

The change in status is recorded in the records “status field” and the date that the record was set to each of the possible statuses is recorded in the record in separate fields in the “administrative details” section of each registration record. The dates to be recorded (where applicable) are the dates for the following statuses:

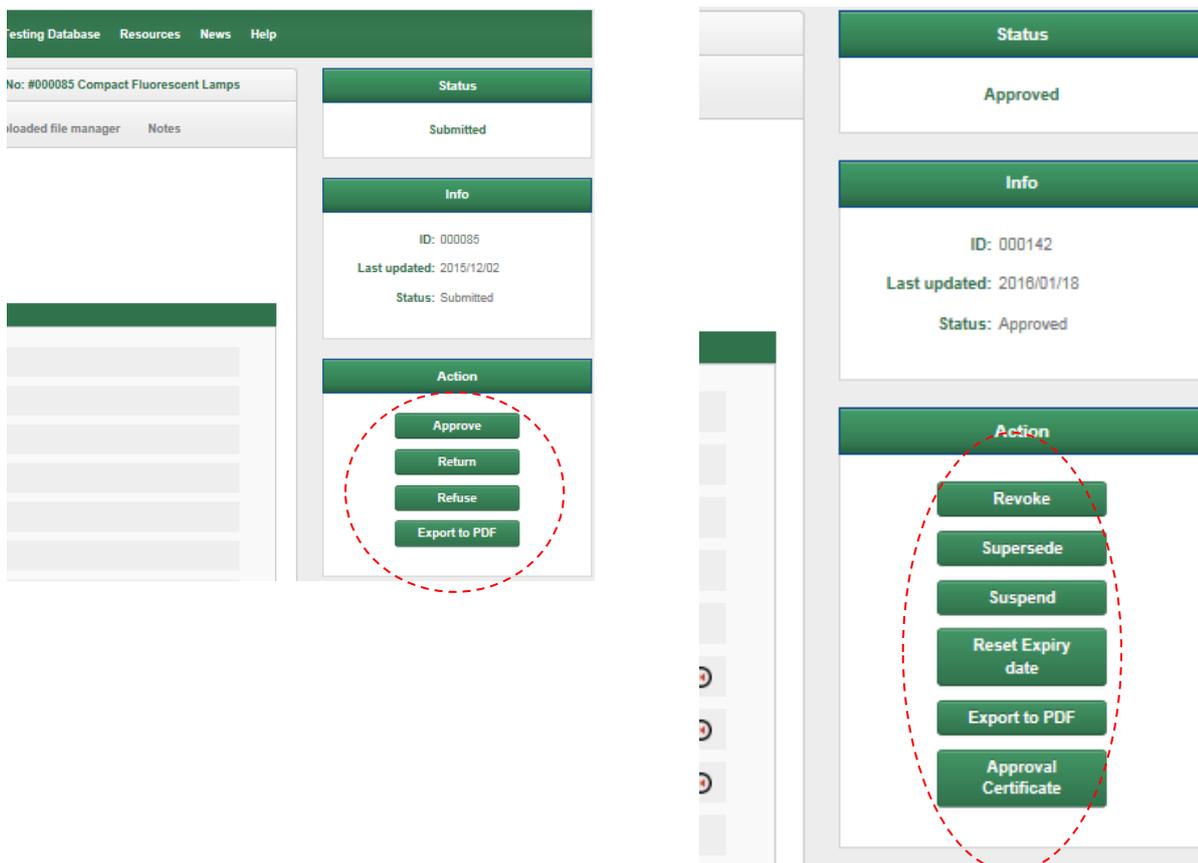
- Submitted
- Checked
- Approved (available only to the primary regulator user and administrator)
- Returned
- Refused
- Revoked
- Expiry (note this field is auto filled in based on the “approved” date)
- Superseded
- Suspended

In addition to the date, the name of the officer who amended the record to the “approved” status shall be recorded (this is recorded in the database but does not appear on the application form).

The suspended status shall be reversible (i.e. changed back to “approved” status) by the regulator. The date of each suspension and each reversal of a suspension shall be recorded in the database.

Examples of status change buttons from the UNEP Demonstration site can be found in Figure 27.

Figure 27 : Status change buttons – UNDP Demonstration Site



Note 1: Different options are made available depending on the current status of the record. The Image on the left of Figure 27 is for a “submitted” record and the image on the right for an “approved” record – refer to Table 9 for details of available options.

Note 2: In addition to the status management facility on the product registration record view page also include two fields for the regulator to insert notes as follows:

- Comments to Applicant : In this field the regulator can include a series of notes to the applicant associated with the particular record so as to explain why a registration application may have been returned or refused
- Regulators Notes: In this field the regulator can keep notes associated with the particular record for whatever reason. These notes are only to be viewable by the regulator or administrator but not the applicant

Whenever a record is set to “approved” a registration number shall automatically be assigned to that record and recorded as a field in that record. The registration number shall be a 6-digit number with the prefix as follows:

GHA-RF-000001

i.e. Ghana Refrigerator Registration record 000001

or a Nigerian Air-conditioner record might be tagged as:

NGA-AC-000001

The first three characters that indicate the approving jurisdiction are to be based on the UN (3 digit) country coding system (see <http://www.worldatlas.com/aatlas/ctycodes.htm>). The codes to be used are shown in Table 11. The second two characters relate to the product type where “RF”= Refrigerator and “AC”= Air-conditioner.

Table 11: Country codes (UN – 3 digit)

Country	Code
Benin	BEN
Burkina Faso	BFA
Cabo Verde	CPV
Gambia	GMB
Ghana	GHA
Guinea	GIN
Guinea Bissau	GNB
Ivory Coast (Cote d'Ivoire)	CIV
Liberia	LBR
Mali	MLI
Niger	NER
Nigeria	NGA
Senegal	SEN
Sierra Leone	SLE
Togo	TGO

5.4.6 Import Notification record status management

Import Notification forms have a much simpler status arrangement. The available status are as follows:

- Draft (form has been initiated but is yet to be submitted)
- Submitted (form has been submitted by the user i.e. submit button clicked at end of form)
- Cleared Customs (a customs officer has checked a button to indicate that the shipment has cleared customs)
- Deleted (record has been deleted by the applicant. This is only possible to do if the record is on either draft status or submitted status but not on Cleared Customs status)

The only management of these statuses is by the customs officer who has the option of changing the status of a viewed record from “Submitted” to “Cleared Customs” or by the administrator who can set any import notification record to any status.

The customs officer management status facility is to be similar to the regulators status management facility in relation to product registration records – see 5.4.5

5.4.7 Change Tracking

A system for logging changes to an input field should be included in the system. Only changes made post submission of a record (i.e. by a regulator or administrator user) need to be recorded.

Data recorded should include:

- The field name
- The field caption
- The initial input logged into the field (i.e. when it was submitted for the first time)
- A history of change including:
 - Date and time of each change
 - The user ID of who made each change
 - The field content of each change

As an example, see from the UNEP Demonstration site Figure 28.

5.4.8 Checktest Facility

The checktest facility is a database related to the registration database (via the Record ID number) where details of compliance testing in relation to a specific product are recorded. Recording of checktest records is to be undertaken on a single page Checktest Record form that shall include three main sections as follows:

- Product details (data imported from the registration database where the product is already registered, otherwise input directly by the officer in the case of un-registered products)
- Product supplier Details (data imported from the registration database where the product is already registered, otherwise input directly by the officer in the case of un-registered products)
- Checktest outcomes

In total there shall be approximately 25 fields which shall be specified by EES during the course of the contract.

The checktest facility is to include a search engine that allows the user to search checktest records by:

- Jurisdiction
- Record Status
- Registration record ID number
- Checktest record ID number
- Product Type

- Brand Name
- Model Number
- Year of test

Figure 28 : Example of a field change logging system – UNEP Demonstration Site

Date of change	Change By	Field Input/change
2018/01/15 09:05 AM	54 - regulator.product.registry@gmail.com	4 - Returned
2018/01/15 01:15 PM	53 - applicant.product.registry@gmail.com	2 - Submitted
2018/01/15 01:17 PM	54 - regulator.product.registry@gmail.com	3 - Approved

5.4.9 Store Survey Facility

The store survey facility is a database related to the registration database (via the Record ID number) where details of store survey inspections in relation to a specific product are recorded (note: a store survey can be either in a physical store or an on-line store). Recording of store survey records is to be undertaken on a single page Store Survey Record form that shall include four main sections as follows:

- Store Details
- Product details (data imported from the registration database where the product is already registered, otherwise input directly by the officer in the case of un-registered products)
- Recorded offences
- Regulatory actions

In total there shall be approximately 20 fields which shall be specified by EES during the course of the contract.

The store survey facility is to include a search engine that allows the user to search checktest records by:

- Jurisdiction
- Record Status
- Registration record ID number
- Store survey record ID number
- Location
- Product Type
- Brand Name
- Model Number
- Offence

5.4.10 Reporting Tools

The facility can generate a range of reports via the regulators portal including tables and related charts via queries applied to the various databases. These reports are mainly statistical in nature. Initially the following basic reporting functions are to be provided.

Status of Records

For each Jurisdiction, displays the number of records that are currently set at each of the possible status options. Returns a table with the various product types along the vertical axis and the various record status along the horizontal axis.

Provide an option to display as a pie chart.

Registrations by Month

For each jurisdiction, displays the number of registrations submitted or approved per month by product type. The user can select a year and a status (either "approved" or "submitted"). Returns a table with the various product types along the vertical axis and the months of the year along the horizontal axis.

Provide an option to display as a bar chart.

Registrations over a given period

For each jurisdiction, displays the number of registrations submitted and approved by product type over a set period of time. The user can set both the start and finish dates. Returns a table with the various product types along the vertical axis, and the number submitted and then the number approved during each month along the horizontal axis.

Provide an option to display as a clustered column bar chart.

5.4.11 Email Log

For the regulator and administrator portals, provide a search facility to a log of all emails sent and received by the system. This shall be located under the "databases/downloads" tab.

The email log shall record details of:

- Email ID number
- User ID number (i.e. user who had the email sent)
- The category of the email i.e.:
 - Sign-up
 - Account activation
 - Submission
 - Checked
 - Approval
 - Returned
 - Refused
 - Record suspended
 - Record expiring
 - Record expired
 - Record superseded
 - Record revoked
- Date
- Time
- Email title
- From
- To

A button next to each entry in the log shall allow each email to be viewed in full.

5.5 Functionality – Customs Officer Specific

The customs officer user is to be provided with a portal similar to that of the Regulator user but with fewer functions. The functions available to the customs officer shall include:

- **Search import notification records** - This page provides a search engine whereby a customs officer user can search the entire database of Import Notifications for their particular jurisdiction only. Searched records can then be viewed (along with any uploaded files), downloaded or printed as required. Customs officers can also re-set the status of records from “submitted” to having “cleared customs” and also provide comments in a comments section associated with the particular record – see Section 5.2.6 for general details relating to the import notifications search facility set-up
- **Search product registration record** - This page provides a search facility similar to that noted in section 5.2.5. For Customs officer users, searched product registration records can only be viewed (along with any uploaded files), downloaded or printed as required but not edited or copied. Unlike regulator users, customs users cannot alter the status of product registration records
- **Site Manager** – see section 5.2.9

5.6 Functionality – Administrator Specific

The Administrator user is to have all of the functionality of the regulator with expanded privileges as described earlier in this document (see Section 4.6). In addition the Administrator is to have capacity to manage the range of functions and access privileges as set out in the various sections of this document. In addition the administrator plus some additional features described in the following subsections

5.6.1 Administrators Applicant Manager

The Applicant Manager facility is to be available from the administrators “database search and download” page. The facility shall allow the administrator to:

- Review applications for an applicant user’s account
- Search for account holders
- Activate or deactivate an account holder’s account
- View and edit an account holder’s details

An example of such a facility can be seen in Figure 29 below:

Figure 29: Example of an Applicant Manager Facility (UNEP Demonstration site)

The screenshot shows a web application interface for managing applicants. At the top, there is a navigation bar with links: Home, Registration Records, Databases / Downloads, Reports, Sales data, Blog, Testing Database, Resources, News, and Help. Below the navigation bar, the breadcrumb path is "Home > Databases/Downloads > Manage Applicants". The main content area is titled "Database of Applicant Details" and contains a search form with fields for Record ID, Name, Company Name, and Country (set to "All"). A "Search" button is located to the right of the search fields. Below the search form is a table with the following columns: No., Record ID, Name, Address, Company Name, Active, and View/Edit. The table contains 9 rows of data.

No.	Record ID	Name	Address	Company Name	Active	View/Edit
1	57	Iloyd Harrington	Lloyd street - Lloydtown - lloydsville	Lloyd industries	<input checked="" type="checkbox"/>	View/Edit
2	56	Viet Anh	Hoang Quoc Viet - Hanoi - Hanoi	BH Tech	<input type="checkbox"/>	View/Edit
3	55	Pham Duy Tung	Hoang Hoa Tham - Ha Noi - 84	Gosei	<input type="checkbox"/>	View/Edit
4	53	Pham Duy Tung	Hoang Quoc Viet - Hanoi - Hanoi	Gosei Vietnam	<input checked="" type="checkbox"/>	View/Edit
5	52	Hoàng Ninh	25 Ngô Quyền - Hà Nội - Hoàn Kiếm	Hoang Ninh	<input checked="" type="checkbox"/>	View/Edit
6	51	Nguyen Anh Tuan	Hanoi - Hanoi - Hanoi	Cong ty TNHH XYZ	<input type="checkbox"/>	View/Edit
7	49	Nguyễn Hoàng Anh	25 Ngô Quyền - Hà Nội - Hoàn Kiếm	Công ty TNHH Hoàng Anh	<input type="checkbox"/>	View/Edit
8	48	Tuan Tuan	Hanoi - Hanoi - Hanoi	Cong ty ABC	<input type="checkbox"/>	View/Edit
9	47	ĐHAM CÔNG CHỨNG ĐHAM	766A/41 AC 1 CÔNG QUẢN ĐHĨHỨNG Đ QUẢN TÂM	CÔNG TY TNHH THƯƠNG MẠI	<input type="checkbox"/>	View/Edit

Note: As detailed in section 5.3.4, access to a cut down version of the applicant manager facility is also to be available from the bottom of the administrators's home page. The cut down version only displays submitted applications yet to be processed by the administrator and does not need to include a search facility (simple list only).

5.6.2 Mutual recognition agreement management

As noted in section 3.2, the system is to include a mutual recognition arrangement. The facility that manages which jurisdictions recognise which other jurisdictions is to be located in the administrators portal in the form of a matrix of jurisdictions – refer to section 3.2 for details of the required set-up and functionality.

Note that the management matrix needs to be expandable to include other jurisdictions that may wish to join the scheme in the future.

6 Appendices

6.1 Appendix 1 - Email Notifications

This section provides details in relation to each of the auto generated emails to be issued by the system including:

- Under what circumstances the email is to be issued
- Who the email is to be sent to (and cc'd to)
- The content of the subject line
- The date when the email should be issued
- The body text to be included
- Any attachments that need to be sent

Items shown within parenthesis {} are to be drawn from the registration database

Emails Relating to User Account Activation

Email Type	Sign up Sent when a potential applicant applies for an account
To	{Administrators email}
Subject	Application for user account
Date	Current Date
Body Text: Attention : Administrator {Applicants Name} of {Applicants Company} has today applied for a registration system account. Their applicant ID number is { Applicant ID}	

Email Type	Account activation Sent when the administrator activates an account
To	{Applicants email}
Subject	Registration account now activated
Date	Current Date
Body Text: Attention : {Applicants Name} of {Applicants Company} Please note that your account for registering products is now active To open your account go to <link to sign in page> and use the following username and password: Username: {Username} Password: {Password} To assist you in using this facility a user guide has been attached to this email	
Attachments	Applicants User guide

Emails Relating to Product Registration Applications

Email Type	Submission Sent when an applicant submits a product registration application for approval
To	{Target Regulators email}
Subject	Product registration application submission notification
Date	Current Date
Body Text: Attention : Regulator The following record ID has been submitted for product registration approval: {Record ID }	
Attachments	Nil

Email Type	Checked Sent when the regulator (assessor) completes a product registration application check and determines that it is suitable for approval.
To	{Applicants email} and {Regulator (primary user) email}
Subject	Registration checked notification
Date	Current Date
Body Text: Attention : {Applicants Name} of {Applicants Company} Please note that your product registration approval application, record ID {Record_ID} has been checked and is awaiting final approval	
Attachments	Nil

Email Type	Approval Sent when the regulator (primary account) approves a product registration application
To	{Applicants email}
Subject	Registration approval notification
Date	Current Date
Body Text: Attention : {Applicants Name} of {Applicants Company} Please note that your product registration approval application, record ID {Record_ID} has now been approved Log into your account to view or print your approved record. To log into your account go to <link to sign in page>	
Attachments	Certificate of Approval

Email Type	Returned Sent when the regulator returns an application
To	{Applicants email}
Subject	Return of a product registration application
Date	Current Date
<p>Body Text:</p> <p>Attention : {Applicants Name} of {Applicants Company}</p> <p>Please note that your product registration approval application, record ID {Record_ID} has been returned for correction. Log into your account to view your returned record. The notes tab in the returned record will provide details of the reason for the return of this application.</p> <p>To log into your account go to <link to sign in page></p>	
Attachments	Nil

Email Type	Refused Sent when the regulator refuses a product registration application
To	{Applicants email}
Subject	Refusal of a product registration application
Date	Current Date
<p>Body Text:</p> <p>Attention : {Applicants Name} of {Applicants Company}</p> <p>Please note that your product registration approval application, record ID {Record_ID} has been refused. Log into your account to view your refused record. The notes tab in the refused record will provide details of the reason for the refusal of this application.</p> <p>To log into your account go to <link to sign in page></p>	
Attachments	Nil

Email Type	Suspended Sent when the regulator suspends a product registration application
To	{Applicants email}
Subject	Suspension of a product registration application
Date	Current Date
<p>Body Text:</p> <p>Attention : {Applicants Name} of {Applicants Company}</p> <p>Please note that your product registration approval application, record ID {Record_ID} has been suspended. Log into your account to view your suspended record. The notes tab in the suspended record will provide details of the reason for the suspension of this application.</p> <p>To log into your account go to <link to sign in page></p>	
Attachments	Nil

Email Type	Record Expiring Sent 6 months before a product registration record is to expire
To	{Applicants email}
Subject	Impending expiry of a product registration
Date	Current Date
<p>Body Text:</p> <p>Attention : {Applicants Name} of {Applicants Company}</p> <p>Please note that your product registration approval, record ID {Record_ID} shall expire in 6 months time.</p> <p>To log into your account go to <link to sign in page></p>	
Attachments	Nil

Email Type	Record Expired Sent when a product registration reaches its expiry date
To	{Applicants email}
Subject	Expiry of a product registration
Date	Current Date
<p>Body Text:</p> <p>Attention : {Applicants Name} of {Applicants Company}</p> <p>Please note that your product registration approval, record ID {Record_ID} has now expired. If you wish to continue to sell this product please arrange to re-register this product.</p> <p>To log into your account go to <link to sign in page></p>	
Attachments	Nil

Email Type	Record Superseded Sent when a product registration is superseded
To	{Applicants email}
Subject	Superseding of a product registration
Date	Current Date
<p>Body Text:</p> <p>Attention : {Applicants Name} of {Applicants Company}</p> <p>Please note that your product registration approval, record ID {Record_ID} has now been superseded. If you wish to continue to sell this product into the market please contact the Regulator</p> <p>To log into your account go to <link to sign in page></p>	
Attachments	Nil

Email Type	Record Revoked Sent when a product registration is revoked
To	{Applicants email}
Subject	Revocation of a product registration
Date	Current Date
<p>Body Text:</p> <p>Attention : {Applicants Name} of {Applicants Company}</p> <p>Please note that your product registration approval application, record ID {Record_ID} has now been revoked.</p> <p>To log into your account go to <link to sign in page></p>	
Attachments	Nil

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