

LSB Certification System

Design Proposal

Abstract

Certification system is intended to support LSB certification process. This document describes details of the structure and functionality of the system.

Revision History

| Date | Version | Description |
|------------|---------|---|
| 2007-06-06 | 1.0 | Initial public version |
| 2007-06-21 | 1.1 | Confirmation on the stage of company registration was removed. PayPal became the primary payment system. LDAP was decided to be used for authorization and keeping user-company relations. |
| 2007-09-05 | 1.2 | Changes in Certification Management User interface: Status page was added, Products page was separated from company homepage. Few words about administrating the system. 'Review' table was added to the certification database schema. |

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High Level View

At the topmost level Certification System may be split into two parts:

1. **Certification Management**
2. **Problem Reporting**

Certification Management deals with company management and product certification process. It includes:

- company registration,
- company members management,
- addition/modification of products,
- executing tests with DTK/ATK Manager,
- applying for certification,
- certified products directory,
- fee payment.

Problem Reporting deals with problems in certification test suites and in products. There are:

- list of problems,
- problem reporting page,
- problem homepages.

It also provides DTK/ATK manager with a DB of known issues ('problem_db').

Certification Management Details

A Customer, who is not a member of any company, can register a new company. Information about the company should be provided (post address, telephone, contact person, web site [if any]). This information could be modified in future.

Status Page

This page is to be a starting point for all customer's actions. It contains the overview of the current situation and some advices on what the customer could do. For example, it suggests you create an account and log in at the very start, then register a company and products, then start certification and thereafter guides you through the steps of certification process.

Company Details

This page contains information about the company and company members.

From this page one can proceed with:

- modifying information about the company,
- inviting new members and managing member's permissions.

People Invitation

Company member (with enough rights) can invite a registered user to join the organization. Invited person will be notified by e-mail and should agree with joining the organization by following an URL specified. A person cannot be a member of more than one organization. (Otherwise it would be not clear what company the person pays for.).

Products Page

This page contains the list of all company products with their certification status. Applications and distributions are grouped in separate tables.

At this page one can add new products, edit product information and also continue certification of a product.

Certification Process

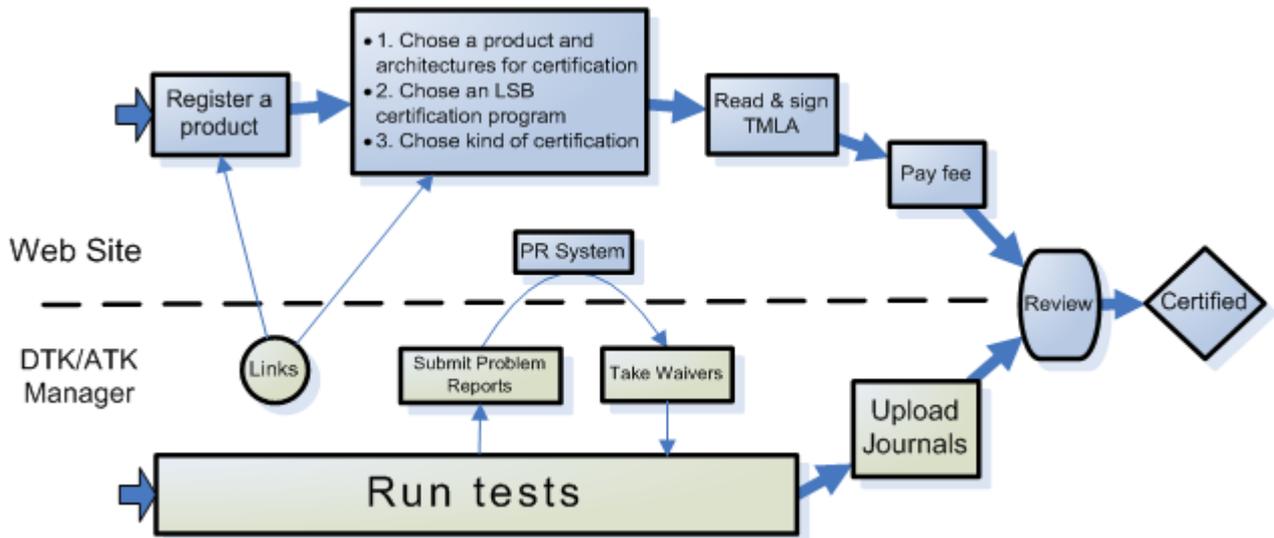


Fig. 1. The certification workflow.

To apply for certification, Customer should pass the following stages:

- Register a product.
- Choose a product and architectures for certification.
- Choose an LSB certification program.
- Choose kind of registration (new product/additional architectures/maintenance release).
- Read the TMLA and sign it. (Put 'I agree' checkmark and press the 'Sign' button.) Fee sum is calculated automatically (using the kind of registration and the pricing level of the company) and is mentioned in the TMLA.
 - Before performing the payment, administrator will be notified (by e-mail) to review the signup and confirm that everything is OK. When confirmation is granted, Customer could proceed with the payment.
 - Payment is carried out through the PayPal system.
- Customer uses Testkit Manager to test the product. If there are errors that are suspected to be a Test Suite Deficiency, Customer submits a problem report (preferably through the Testkit Manager). LSB engineers review the report and may grant a waiver.
- Once the product passes the tests, Customer can submit a request for final audit (with journals attached). It can be done via the Testkit Manager (preferably) or via the web interface at the LF website.
- LF authority can accept or decline the certification request.
- After successful final audit, organization receives documents, logos, and other access/materials accordingly. The product gets to the list of LSB certified products (Product Directory).

Help system

Integrated help system shall simplify work of users by providing description of the system.

Administration

Administration mode allows managing certification system and carrying out certification process on the part of LF authority. Therefore, there are three parts of administration system: the certification part for LF authority to control certification process and push it forward, high-level administration facilities which allow easy system management, and low-level administration facilities that virtually provide direct editing of database entries.

Product Directory

Product Directory provides different views on the list of LSB certified products (Distributions and Applications). Every user has access to the Product Directory. The views support ordering, filtering and search capabilities.

- Ordering and grouping capabilities include at least the following variants:
 - by names;
 - by Certification Program (LSB version);
 - by companies;
 - by kind of product.
- Filter capabilities support at least filtering by architecture.
- Certification system implements search of certified products by all attributes.

Problem Reporting Details

Any problem discovered by a test can be a problem in the test or a problem in the system under test (SUT). Both these problems are to be reported and stored in the Problem Reporting database. LSB engineers investigate if the bug is in the test or in the SUT. In the first case a waiver shall be granted. In the second case information about the error will be included as additional information in the test reports generated by the DTK/ATK Manager. There are also links to problems from the LSB Navigator. For example, interface “homepage” in the LSB Navigator contains the list of problems for the interface given.

Web service at the linux-foundation.org site provides Testkit Manager with a 'problem_db' text file containing up to date information of all the problems registered. LSB DTK Manager tarball contains a snapshot of 'problem_db' file to be used if Internet is not available. An example of 'problem_db' file and a report generator based on the work of Jiri Dluhos are included in the current version of the LSB DTK Manager. It works with local copy of 'problem_db' file only.

End users and LSB Workgroup mainly work with problems through web interface provided by LSB Certification System. LSB DTK/ATK Manager automates submission of problem reports detected during test execution.

Problem Management Functionality

The problem management functionality of the LSB Certification System shall provide the users with the following possibilities:

- New problem report submission.
- Problem “homepage”.
- Problem attributes modification
- Listing of all problems.
- Problem reports search.
- Watching a certain problem by subscription on change notifications.
- Help system.

New problem report submission

There may be two modes of submission: simple and advanced. The difference is in the number of problem attributes available for editing. When submitting a problem from the DTK/ATK Manager, it automatically completes the majority of the fields.

The full list of attributes to be filled is as follows:

- Summary.
- Detailed description.
- Test output (part of a journal or log).
- Test Suite.
- Test Suite Version if apply.
- System architecture(s).
- Visibility (Public or Private) if needed.
- Additional links:
 - List of Test Case Identifiers.
 - Location in Specification.
 - Operating environment (distribution(s) and component(s) where bug appears).

Problem “homepage”

Each problem shall have a “homepage” in the LSB Certification system. The page represents all details of the problem. There are three main ways to visit a problem “homepage”:

- from search result;
- from the corresponding interface “homepage” in LSB DB Navigator;
- from the test result report generated by the LSB DTK/ATK Manager.

“Homepage” contains a link to the page, which allows modifying the problem attributes.

Problem attributes modification

There shall be a possibility to update any attribute of each problem. Significant changes shall be commented and history of such changes shall be saved. Modification of the problem leads to e-mail notification of all concerned users registered as watchers of the problem and to e-mail to the predefined mail list. But one could suppress mail-flooding if a change is minor. Also any user is able to post a comment to the problem.

The aim of administrator is to update the description of the problem, add details and fill attributes that were skipped by submitter. Administrator also should maintain the list of matchers (it is used by the DTK/ATK Manager for problem linking).

Though, Problem Reporting system isn't a good place for discussion. It is supposed that all the workflow concerning the problem settling goes in bugzilla. The problem should have a link to the corresponding bugzilla bug(s).

Listing of all problems

There shall be a list of those problems that have 'Visibility' attribute set to 'Public' and also those 'Private' records for which user is the author. Administrator shall see all the problems.

Problem reports search

There shall be two modes of search: simple and advanced. Simple search returns a list of problems containing a substring in one of basic attributes. Advanced search allows defining complex search conditions.

Technical Details

We propose to keep information concerning problems and products in the LSB DB. Information about certification and license agreements is supposed to be kept in a separate database (Certification DB) to prevent publishing of private information (since LSB DB is stored in Bazaar and thus available to everyone).

aMember and LDAP are supposed to be used for authorization and single sign in.

All information about user (contacts and rights) is supposed to be stored in LDAP. Information about companies is also supposed to be stored in LDAP.

Product addition, certification process management, journal uploading and problem reporting will be integrated into the LSB DTK/ATK Managers.

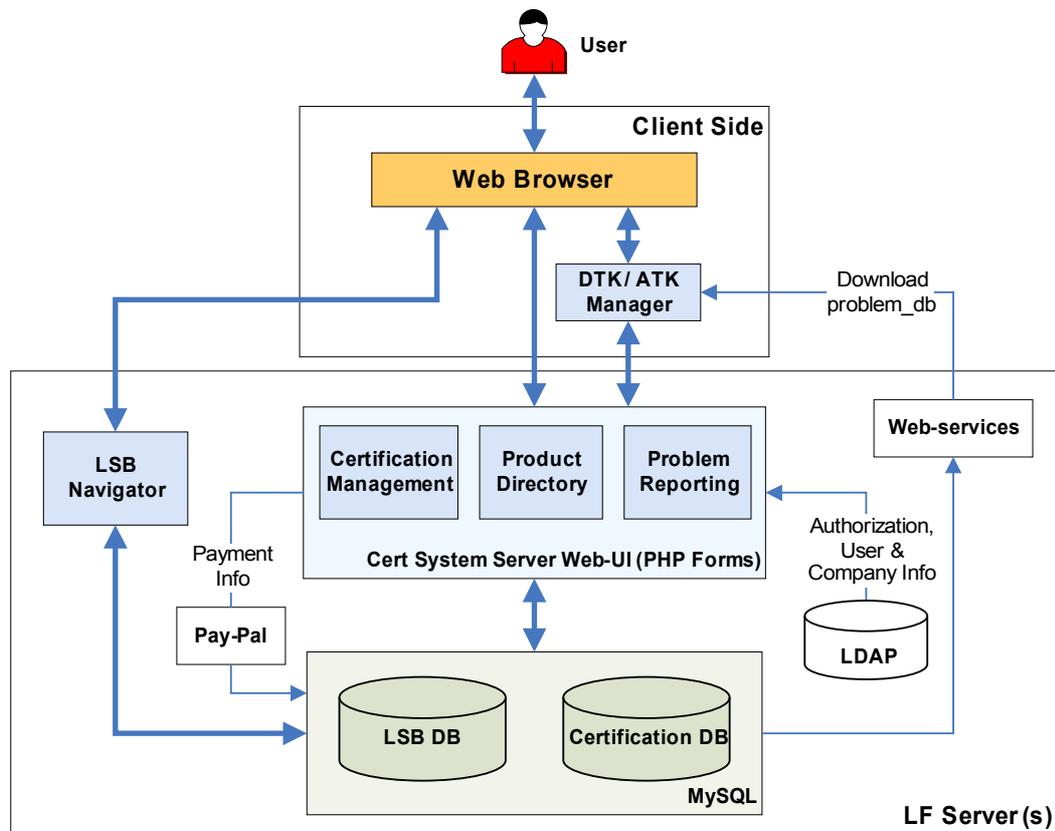


Fig. 2. Architecture of Certification System and related components.

Certification Database Schema

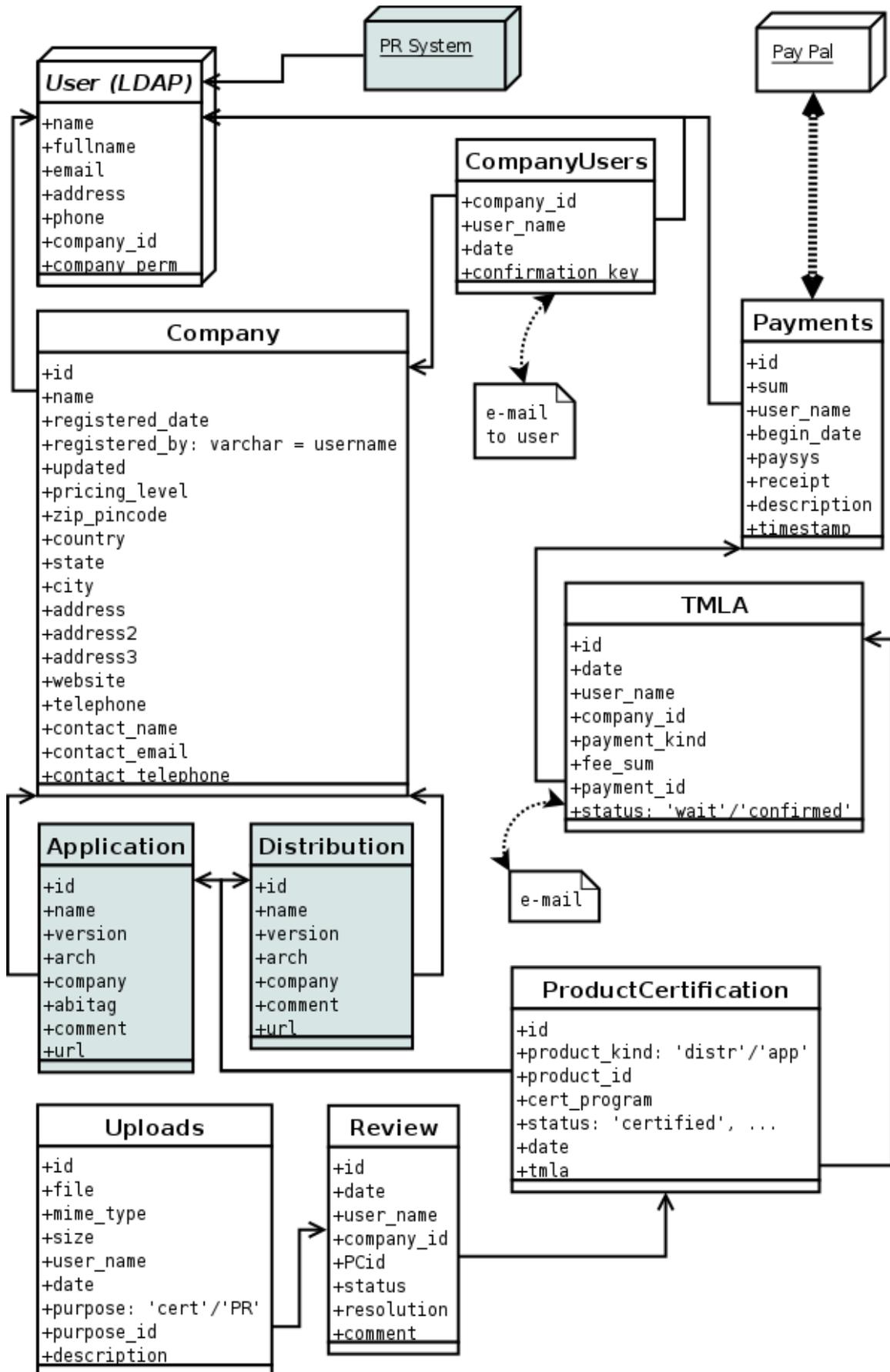


Fig. 3. Certification Management database schema.

Detailed description of the database

Tables 'Application' and 'Distribution' are proposed to be stored in the LSB DB. Other tables are proposed to be stored in a separate database to prevent publishing of private information. Prefixes of field names are omitted.

User: This data is supposed to be stored in LDAP.

| | |
|--------------------|---|
| uid | User identifier (usually login name). |
| cn | User's name. |
| company | Company this user belongs to. |
| companyPermissions | User's permissions to manage the company he belongs to. |
| Mail | User's e-mail. |
| telephoneNumber | User's telephone number. |
| postalAddress | User's postal address |

Table **Company:**

| | |
|-------------------|--|
| Id | Company identifier |
| name | Company name. |
| registered_date | Registration date/time. |
| registered_by | The name of the user that had registered this company. |
| updated | Modification date/time. |
| pricing_level | Pricing level set up by administrator. |
| zip_pincode | The official address of the company. |
| country | |
| state | |
| city | |
| address | |
| address2 | Additional information |
| address3 | |
| website | |
| telephone | |
| contact_name | Contact information |
| contact_email | |
| contact_telephone | |

Table **CompanyUser:**

| | |
|------------------|--|
| company_id | ID of the company. |
| user_name | User name. |
| date | Date of joining the company. |
| confirmation_key | URL for confirmation in the e-mail sent to invited user contains this key. |

Table ProductCertification:

| | |
|--------------|---|
| id | |
| product_kind | Application or distribution. |
| product_id | ID of the product in the Application or Distribution table correspondingly. |
| cert_program | e. g. 'LSB3.1'. |
| status | 'non-certified', 'in_review', 'declined', 'certified'. |
| date | Last modification date. |
| tmla | ID of the corresponfing TMLA. |

Table TMLA:

| | |
|--------------|---|
| id | |
| date | Date/time of signup. |
| user_name | Name of the user who signed the TMLA. |
| company_id | ID of the company. |
| payment_kind | 'new product' / 'additional architectures' / 'maintenance release'. |
| fee_sum | Fee sum. |
| payment_id | ID of the payment in the Payments table. |
| status | 'wait' / 'confirmed'. |

Table Uploads:

| | |
|-------------|--|
| id | |
| file | File name. |
| mime_type | MIME-type of the file is required to give this file back properly. |
| size | File size. |
| user_name | The name of the user who have uploaded the file. |
| date | Date/time of the upload. |
| purpose | 'cert' for journals submitted for certification review, 'PR' for files attached to a problem report. |
| purpose_id | Foreign key to link uploads e.g. to the Review records |
| description | Additional information about the file. |

Table Review:

| | |
|------------|--|
| id | |
| date | Date/time of the post. |
| user_name | The name of the submitter. |
| company_id | Submitter's company. |
| PCid | Link to a ProductCertification entitiy. |
| status | New (or unchanged) certification status. |
| resolution | Review summary |
| comment | |

Table **Payments**: This table is to be updated by PayPal system on payment completion.

| | |
|-------------|--|
| id | |
| sum | The sum of the payment. |
| user_name | The name of the user. |
| begin_date | Date/time of starting the payment (to detect failed payments). |
| paysys | The system, used to pay. |
| receipt | Auxilliary information about the payment. |
| description | Description of the payment (text). |
| timestamp | Date/Time of the last modification. |

Problem Reporting Tables Schema (in LSB DB)

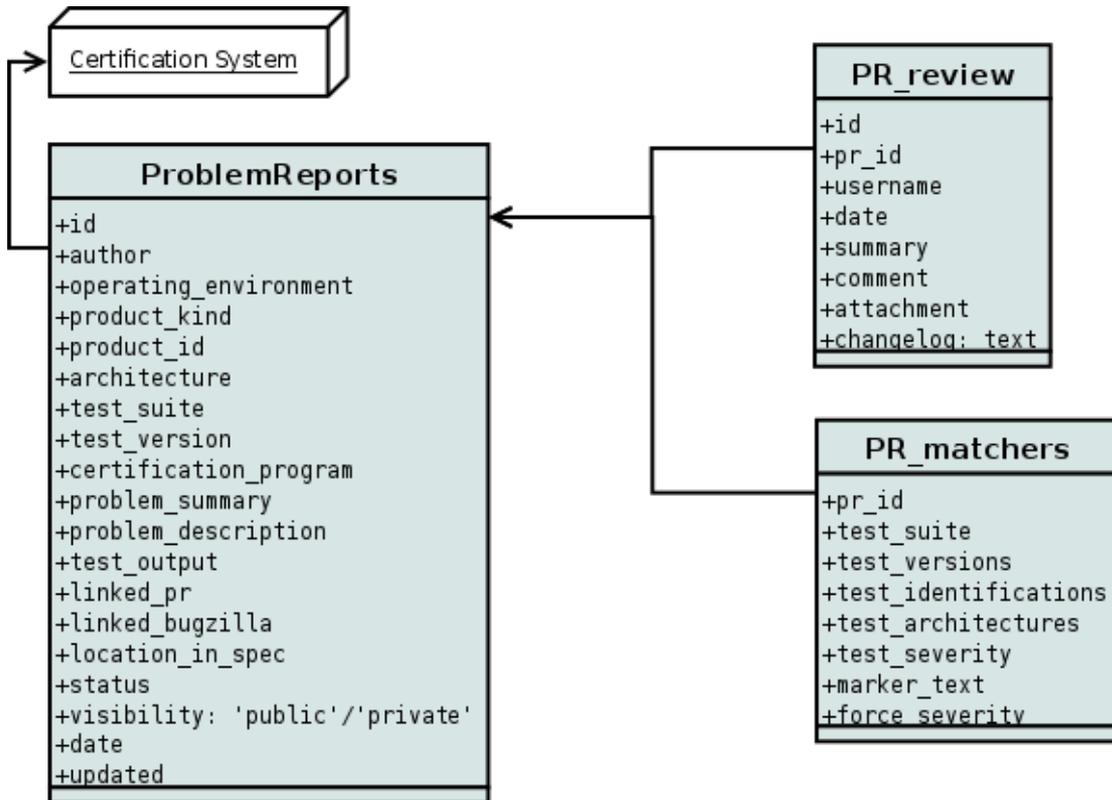


Fig. 4. Problem Reporting database schema.

Detailed description of the database

All these tables are proposed to be stored in the LSB DB.

Table **ProblemReports**:

| | |
|-----------------------|--|
| id | |
| author | The name of the user who posted a problem. |
| operating_environment | Distribution and components with their versions. |
| product_kind | Application or distribution. |
| product_id | ID of the product under test. |
| architecture | Architecture(s) where the bug appears. |
| test_suite | Corresponding test suite. |
| test_version | Version of the test suite. |
| certification_program | e. g. 'LSB3.1'. |
| problem_summary | Short description of the problem. |

| | |
|---------------------|--|
| problem_description | Detailed description of the problem. |
| test_output | Part of a journal or a log. |
| linked_pr | IDs of one or more related problems. |
| linked_bugzilla | ID of the Corresponding bug(s) in the bugzilla system. |
| location_in_spec | Optional link to the point in standard. |
| status | <p>'open' – This status is assigned to each new problem.</p> <p>'work in progress' – This status is assigned by administrator at the first review of the problem.</p> <p>'FIP' – This status means that further information is required to continue working on the problem.</p> <p>'TSD' – Test Suite Deficiency.</p> <p>'INT' – An interpretation is made on the specification to clarify a possible contradiction.</p> <p>'REJ' – The report was rejected for some reason (e. g. not a bug).</p> <p>'DUP' – The problem was reported earlier.</p> <p>'Bug In SUT' – The problem is in the System Under Test.</p> |
| visibility | 'Public' / 'Private'. |
| date | Date/time of creation. |
| updated | Date/time of the last update. |

Table **PR_review**: A log of problem modifications.

| | |
|------------|---|
| id | |
| pr_id | Problem report ID. |
| username | The name of the user. |
| date | Date/time of creation. |
| summary | Short description. |
| comment | Text of the message. |
| attachment | ID of uploaded file (from the 'Uploads' table). |
| changelog | Contains information about old contents of important attributes in the Problem record and about the changes that were made. |

Table **PR_matchers**: This information is used to produce 'problem_db'.

| | |
|----------------------|---|
| pr_id | Problem report ID. |
| test_suite | Test Suite identifier. |
| test_versions | Affected versions of the test suite. |
| test_identifications | Identifications of the corresponding test cases. |
| test_architectures | For architecture-specific problems. |
| test_severity | Result reported by the test suite (e. g. 'FAILED') |
| marker_text | Parts of the test output to distinguish the problem. |
| force_severity | This overrides the status reported by the test suite. |