



HASH INFORMATION TECHNOLOGY

ECertificate.PRO



Product
Overview



ECertificate.PRO

Product Overview

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1 ECertificate.PRO Motive

The Electronic Certificates System (ECertificate.PRO) stands as a monumental and groundbreaking solution that revolutionizes the process of electronically issuing a wide array of student certificates. ECertificate.PRO covers an extensive range of certificates including but not limited to student records, transfer documents, conduct certificates, and more.

Our motive with ECertificate.PRO is to serve as a gateway to cost reduction and enhanced efficiency. It's dedicated to promoting paperless operations and activities while delivering affordable high performance, ultimately driving success in the digital age.

Distinguished by its state-of-the-art security measures, such as intricate tracking numbers and advanced QR codes, ECertificate.PRO stands as an impregnable fortress against certificate falsification attempts. Its primary objective is to guarantee the authenticity of every certificate while stopping any attempts to forge or manipulate it.

ECertificate.PRO gives students and graduates the ability to create their personalized portals within its framework. This part empowers them to seamlessly initiate applications for a variety of certificates, all through a singular access point. Furthermore, this portal comes with a real-time tracking function, enabling individuals to monitor the progression of their certificate requests from initiation to fulfillment.

Complementing this, administrators have access to an administrative portal, a tool meticulously designed to oversee student requests. This includes the streamlined processing of requests, subsequent generation of certificates, and the creation of thorough performance reports. This mix of functionalities consolidates the administrative workload into a singular interface, facilitating efficient management and speeding up response times. An inherent feature of ECertificate.PRO is its inherent adaptability. It effortlessly integrates with a plethora of other systems, resulting in an intricate web of cross-functionality that enhances the overall institutional workflow. Moreover, ECertificate.PRO exhibits commendable versatility by effortlessly transitioning between online and offline modes of operation, ensuring continuous functionality even in instances of connectivity constraints.

In summation, ECertificate.PRO stands as an embodiment of innovation, efficiency, and security. Its multifaceted approach to certificate issuance, real-time tracking, administrative management, and integration capabilities.



2 ECertificate.PRO Benefits



Where security, efficiency, and innovation converge for a smarter, safer, and more responsive future.

ECertificate.PRO is designed to satisfy your institution's most critical operational needs. It is efficient, secure, user-friendly, and scalable - making it easy to operate your learning institution's certificate process and increase efficiency and productivity.



ECertificate.PRO offers competitive benefits to all parties involved in the system: Employees, students, and management.

2.1 Saves Time and Reduces Costs

One of the most significant and immediate benefits of transitioning from traditional paper-based certificate issuance to ECertificate.PRO is the substantial cost savings it offers. In a conventional setup, the expenses associated with printing, mailing, and manually processing paper certificates can easily reach hundreds of thousands of dollars. The labor-intensive task of transcribing these paper forms into a student management system further escalates these costs, often requiring dedicated personnel.

In contrast, ECertificate.PRO revolutionizes this by digitizing the entire process, reducing costs, and expediting certificate issuance.

2.2 Enhanced Certificate Security

The use of tracking numbers and QR codes ensures that certificates are secure and difficult to forge. They can then have the authenticity of the issued certificate confirmed through those methods. This enhances the overall authenticity of the certificates issued.

2.3 Data Confidentiality

The system ensures robust data confidentiality measures, protecting sensitive student and graduate information.



2.4 Comprehensive Reporting

Administrators have access to an admin portal that offers a dashboard for monitoring student requests and statuses, along with the ability to extract various reports. This helps in managing and tracking the entire certificate issuance process effectively.

2.5 Efficient Certificate Application

The system streamlines the certificate application process, allowing students and graduates to apply for various certificates online, reducing paperwork and manual processing.

2.6 Convenient Delivery

Certificates are delivered through email, offering a convenient and quick method for students and graduates to receive their certificates.

2.7 High Performance at a Small Price

ECertificate.PRO delivers the features, reliability, and benefits you would expect from a much more expensive system. Yet it is reasonably priced for institutions with low initial investment and maintenance costs.

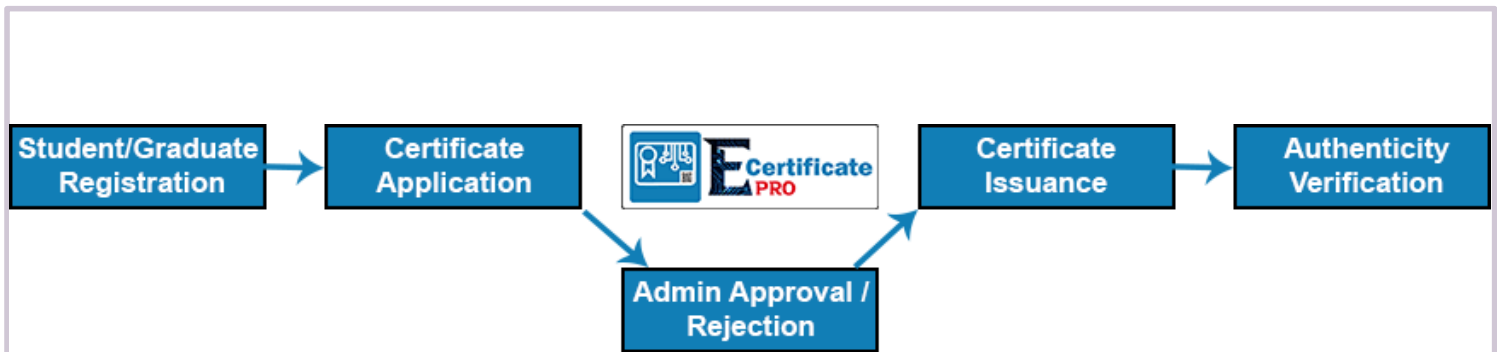
2.8 Integration Flexibility

The system can be integrated with other systems and is capable of both online and offline operations, making it adaptable to different technological environments.

2.9 Multi Approval Process

The system demonstrates a robust capability by facilitating a multi-tiered approval process for admin certificate approval. Furthermore, in the event of any delays, it is designed to seamlessly reroute the approval request to an alternate administrator, thereby ensuring uninterrupted business operations and preventing potential disruptions arising from unforeseen complications.

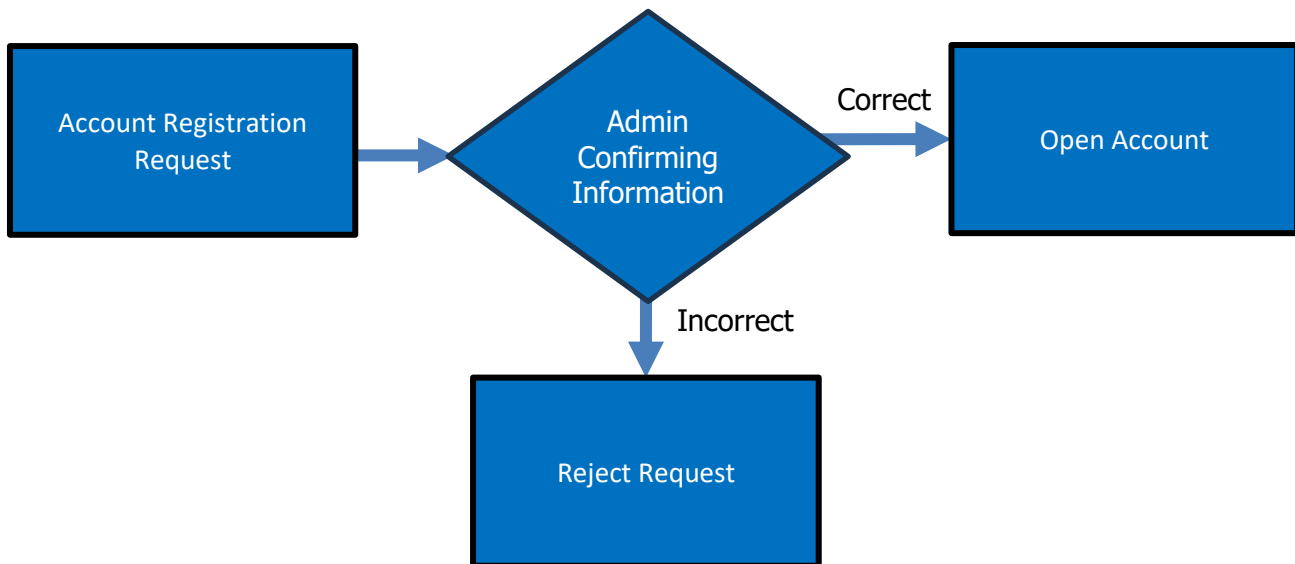
3 ECertificate.PRO GENERAL SYSTEM PROCESS



- **Student/Graduate Registration:** the system streamlines registration for students and graduates, enabling easy input of essential details.
- **Certificate Application:** After registration, individuals can log in to apply for various types of certificates, including general graduation, freeze, resignation, enrollment, fee, and good conduct certificates.
- **Admin Approval / Rejection:** The academic affairs department conducts a review phase where applications are assessed and can be either approved or rejected. If rejected, applicants receive email notifications explaining the reasons for rejection.
- **Certificate Issuance:** Users can verify the authenticity of their certificates by accessing electronically generated copies from the server. These copies match stored data and can be verified using document numbers or QR codes.
- **Authenticity Verification:** Each certificate is assigned a unique authentication number that cannot be replicated. This authentication number serves a dual purpose: first, it validates the certificate's authenticity, and second, it facilitates real-time tracking of the certificate request's status.

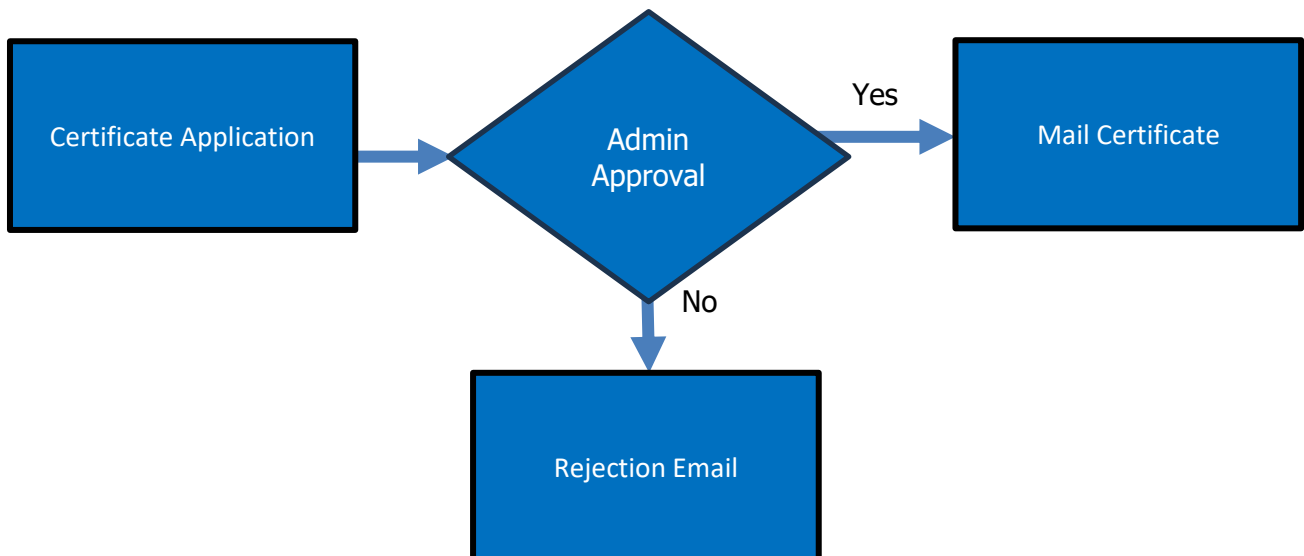


3.1 Account Opening Process



3.2 Certificate Application Process

- It also has the availability of multiple levels of authentication and precautions in case of delay.



4 ECertificate.PRO Features

4.1 General Features



Certificate Security

1

ECertificate.PRO employs cutting-edge technology to provide enhanced certificates security through the implementation of sophisticated tracking numbers and QR codes. These advanced security features not only safeguard the integrity of the certificates but also fortify the overall credibility of the certificate issuance process.



Data Storage

2

ECertificate.PRO has the ability to store data for all issued documents, allowing quick retrieval when needed by users or entities for document verification purposes. This ensures transparency and accessibility in the verification process.



Electronic Certificate Issuance

3

ECertificate.PRO provides electronic certificate issuance which saves time and cuts costs by eliminating paperwork, streamlining processes, and enabling instant digital delivery.



Email-Based Certificate Delivery

4

ECertificate.PRO ensures a seamless and efficient experience by incorporating a user-friendly approach to certificate delivery, making use of the convenience of email-based distribution. This modern delivery mechanism not only simplifies the process for recipients but also expedites the transmission of certificates, eliminating the need for physical mailing or in-person pickups.



Data Security

5

ECertificate.PRO allows data setting to be accessed only by authorized personnel, thus ensuring appropriate data security and confidentiality.



User Friendly Interface

6

ECertificate.PRO provides a very user-friendly and intuitive web-enabled interface, supplemented with icons and buttons, which work through the point-and-click mechanism.



Automatic Backup

7

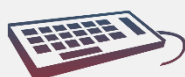
ECertificate.PRO includes a built-in automatic backup feature that consistently saves all the data and documents created within it. This protective mechanism ensures the security and accuracy of information by preventing loss, maintaining confidentiality, and providing a safety net against unexpected issues. As a result, important data remains safe, easily recoverable, and reliable at all times.



User-Management Mechanism

8

ECertificate.PRO comes with a user management feature that allows easy addition and removal of users, along with the ability to assign different roles and permissions. This also involves specifying which college or department a user belongs to and setting their access rights accordingly. This user-friendly management system ensures both security and flexibility in granting access to the system.



Data Integration

9

ECertificate.PRO offers a well-designed mechanism, including features like user-friendly help screens and the option to upload data through intermediary files. This mechanism is particularly beneficial for graduates who lack information in the university's database. Through this thoughtful provision, these graduates can seamlessly engage in the certificate issuance process, ensuring inclusivity and a smooth experience for all users.

4.2 Student/Admin Features

4.2.1 Student Features

- **ECertificate.PRO** provides secure access using personalized usernames and passwords, ensuring the confidentiality of user information.
- The process of applying for various certificates is designed to be user-friendly, making it easy for users to request the certificates they need.
- Students/Graduates can conveniently monitor the status of their certificate requests, whether they are in the processing phase, prepared for issuance, or have been received.
- The platform offers the option for certificates to be sent via email, enhancing user convenience, and expediting delivery.
- Each certificate is assigned a unique tracking number, adding to the credibility of the certificates. This tracking system provides users with a reliable means of authentication.

4.2.2 Admin Features

- The admin can manually verify information of the users requesting a certificate where upon approval the user receives a password for using their dedicated platform, ensuring data accuracy, and enhancing security for certificate issuance.
- Extraction of various reports enables comprehensive data analysis and supports data-driven decision-making.
- Efficiently Manage Student Requests and Stay Informed with the Dashboard for Monitoring Student Requests and Status.
- The ability to search for student requests bringing improved efficiency and cost-saving benefits ultimately providing a competitive edge and ongoing value to educational institutions.
- **ECertificate.PRO** provides secure access using personalized usernames and passwords, ensuring the confidentiality of user information.

4.3 Operational Features

4.3.1 Browser Interface

ECertificate.PRO supports a web-enabled user interface (WUI) with the application working on Internet Explorer. This ushers in the much-needed ease of use and simplicity of usage. Users familiar with Internet usage - the ubiquitous e-mail concepts, Office Automation tools, and access to e-reference sites, can get quickly adapted to the ECertificate.PRO functionality. The system also supports a state-of-the-art window-oriented, point-and-click interface. Extensive use is made of graphical icons, pull-down menus, buttons, and scrolling techniques to reduce keying efforts, wherever possible. The use of checkboxes, radio- buttons, and list boxes is also implemented.

4.3.2 Ad-hoc Queries

The organizational environment is dynamic and demanding. The information needs of statistics could vary considerably. Hence, users need extensive facilities to extract data and manipulate them easily and quickly. Using Crystal reports and related Query tools, users would be able to extract the requisite data/information using user-definable queries.

4.3.3 Customizable Messages

The errors and warning messages are stored in tables which can be customized if required. Messages can also be maintained in the local language for ethnic users.

System-wide standard user interface

The method of operations/navigation is uniform and standardized across the system for ease of usage.

The user interface is consistent throughout the system so that the user gets the same look and feel. All functions of ECertificate.PRO follows the same standard for defaults of various types, help functions, and display and correction of errors. The exit functions also follow a similar interface depending on the nature of the exit.

- The date and username are displayed along with the Organization name at the same location across all screens and modules.
- Standard displays.

4.3.4 Switching between functions

The system allows the user to 'suspend' a task currently being performed and invoke another associated function. The user can activate a Background Menu from any of the functions to shortcut the navigation process through the Menu Tree. This allows the user to access frequently used screens while using a particular function.

4.3.5 Parameterized Reporting

Reports allow a wide range of selection criteria and sort parameters, where applicable.

5 TECHNOLOGY / ARCHITECTURE

5.1 Open System Design

ECertificate.PRO also supports the standard network infrastructures such as:

- Standard Cabling with UTP, fiber optic, etc.
- LAN or WAN with a leased line or dial-up network
- Intranet / Internet

5.2 Web Enabled Architecture

ECertificate.PRO supports Web-enabled architecture. This architecture enables the deployment of **ECertificate.PRO** on 3-tier architecture in Intranet mode within a LAN or WAN.

5.3 Centralized Database Deployment

Under this methodology, **ECertificate.PRO** database would be maintained centrally covering multiple organization sites.

5.4 Schematic Representation of Distributed / Centralized Database Deployment

The deployment methodology of **ECertificate.PRO** will depend on whether the organization comprises of a single or a multi-site infrastructure (a set of organization sites).

5.5 Single Site Environment

If the organization is a single site, **ECertificate.PRO** deployment can be on ClientServer deployment architecture as per the following options:

5.5.1 Single Server holding Database as well as Application

The establishment can have a single server with all the clients connected through the network infrastructure. The single server will hold the SYSTEM database as well as the SYSTEM application objects. The clients will have Developer runtime components only.

5.5.2 Single Database and Multiple Application Servers

In this scenario, the establishment will have one server holding the entire THE SYSTEM database centrally. The SYSTEM application could be distributed, either individually on multiple application servers or can be located on a common hard disk, shared by multiple application servers. The number of application servers will depend on the size of the establishment in terms of the spread of the departments. All the clients will have only the Developer runtime components and will be connected through the network infrastructure.

6 SECURITY

6.1 Security Access Control

This section describes in detail the various system-wide security measures incorporated into the SYSTEM application across different levels. According to the inherent design of the **ECertificate.PRO**, the security system underlies and forms the basis for the entire application in a global manner.



6.2 Password: The Basic Level of Security

Every user of the application system will need to be identified and allocated a unique user identification that forms the key for identifying a user. Each user will be associated with a secret password for accessing the system. This password will never be displayed on the screen nor will it be accessible from the database directly by unauthorized users due to the encryption mechanisms.

Authentication of the user password forms the basis for user identification. Based on this verification, the system allows further access to the system. The system provides the following standard facilities in conjunction with the OS / RDBMS security systems:

Password Change

In addition to the password expiry based on the elapsed number of days, the system also allows users to change passwords as and when required.

The system provides an appropriate screen function for changing the password upon submitting the original password.

6.3 Auto Log-Off After Certain Interval of Inactivity

ECertificate.PRO ensures that the application logs off after a certain time interval of inactivity on the user terminal. This will prevent possible misuse of the system.

6.4 Database Level Security

ECertificate.PRO security concept is built on RDBMS database security concepts. Each user of the application has to be defined internally as the RDBMS database user. Based on this, it is determined what tables the user would have access to. If required, access can be controlled even up to the row- level. The system facilitates controlling standard database operations (i.e. insert, update, delete, query, and print) based on the role assigned internally to each user at the database level.

6.5 Functions / Sub-Function Level Access Control

ECertificate.PRO consists of different kinds of standard functions. These functions are correlated to the build-up of the menus within the application. Within these functions, there can be several sub-functions considered as sub-menus. Corresponding to each of the menu items or the sub-menu items, one or more standard functions (insert, update, delete, query, or print) may be associated through the appropriate program/function/object (forms, reports, graphs, etc.). **ECertificate.PRO** will enable or disable a menu item or a sub-menu item corresponding to the roles, responsibilities, and operating unit access controls.

6.6 Control of Access

The system allows pre-defining a System Administrator and a Menu Administrator associated with certain pre-defined responsibilities and access rights which are normally above the level of all other users.

6.7 Application Access Monitor

All the application access sessions are continuously monitored by a separate background monitoring function to ensure that permissions for access are valid, based on the restrictions of sign-on day and the sign-on time.

7 THE SYSTEM AUDIT CAPABILITIES

ECertificate.PRO provides for a system-wide audit control mechanism built by design.

7.1 Maintaining Date / Time Stamp and User ID

ECertificate.PRO captures and maintains the unique user identification, the date, and the time against every transaction entry. Based on these details, Audit reports can be generated for verification purposes.

7.2 Access Log

ECertificate.PRO has extensive inbuilt security and access control mechanisms. Based on this, **ECertificate.PRO** keeps track of the various functions accessed by any users.

7.3 Log of Inserts & Modifications

THE SYSTEM application maintains a comprehensive log of various activities such as record inserts and the changes carried out in the data by any user. This is determined by the activation of application-level (global) parameters corresponding to the required modules where the system needs to maintain a dynamic log of inserts and updates. The system is capable of maintaining the audit trail of the record inserts, the record deletes (if any), and the updates in terms of pre as well as post-changes, corresponding to the relevant functions.

7.4 THE SYSTEM Data Backup and Recovery Mechanism

Frequent and regular, full or partial, database backups are essential for any recovery mechanism. The frequency of backups should be related to the frequency of data changes that are being performed. Since the organization database will inevitably get changed at a high rate, database backup frequency should be proportionately higher – monthly, weekly, and daily.

Minimal loss of data in the event of a problem due to the online transaction-processing environment should be the ultimate aim. **HASH TECH** recommends an online backup system to be in place to ensure that database backups are taken without human intervention and without disrupting routine front-office activities.

To ensure that archiving and backup procedures are reliable, **HASH TECH** recommends that recovery tests be conducted regularly. This would also help the IT personnel to become familiar with recovery procedures and avoid costly mistakes in a real-time disaster recovery scenario.

8 SYSTEM SPECIFICATION

- Application Type:
 - Extranet Web-based system and Windows forms.
- Used Technologies:
 - ASP.NET
 - ADO.NET
 - AJAX
 - Crystal Report
- Programming Languages:
 - C#
 - PLSQL
 - JavaScript
 - CSS
 - HTML/DHTML
- Database Engines:
 - Microsoft SQL Server
- Tools:
 - Visual Studio.NET
 - Dream Weaver
 - Microsoft Visio
 - Adobe Photoshop CS2
- HW & SW Requirements:
 - Normal LAN
- Minimum Server Requirements:
 - 200GB Free Disk Space
 - 3GB Ram
 - 1.7 Core2 Duo Processor
 - IIS
 - .NET Framework 3.5
 - Crystal Report Runtime
 - SQL Server
- Minimum Client Requirements:
 - Web browser with Java enabled plus Adobe Flash player.