

## Success Story

# Building a Records Management System (RMS) for Digital India Corporation | National eGovernance Division (NeGD)



### Client:

National Academic Depository

### Industry:

Education

### Country:

India

### Our Role:

Product Engineering

## About the Client

The National eGovernance Division (NeGD) is an independent business wing established by the Ministry of Electronics and Information Technology (MeitY), Government of India. The National Academy Depository (NAD) is a flagship undertaking of the NeGD to serve as a digital storehouse of academic awards for central

and state educational institutions and universities. This is being developed as part of the \$14 billion Digital India initiative to make India the world's biggest digital democracy.

## Key Facts

**5X**

decrease in documentation  
transmission time

**20%**

reduction in TAT for the  
NAD portal

**92%**

test coverage

## Services Used

 Software Engineering

## Technology Stack

-  React Native
-  mongoDB
-  Lumen
-  MySQL
-  python™
-  aws

# The Situation

The NeGD had envisioned NAD to serve as a portal for secure issuance of academic awards. The aim was to create a portal that would allow students of approximately 60 school boards, over 400 state universities, 124 deemed universities, 54 central universities, and 364 private universities across India to securely access their academic awards.

Executing a project of this magnitude required a skilled team of dedicated software developers with a track record of producing highly scalable digital solutions. The NeGD decided to capitalize on the past successes of Daffodil Software in contributing to the Digital India mission.

So, the Daffodil team was offered the prestigious task of developing NAD, and the following capabilities were to be implemented in it:

- A convenient and secure mechanism for educational institutions to issue degrees, diplomas and certificates, mark sheets, and evaluation reports
- Academic awards should be issued according to standard certificate template
- Ensure that the academic awards are legally valid to eliminate issuance of fake certificates
- Bulk insertion/upload of documents by universities must be fast and seamless
- Implement end-to-end security protocols to reduce web security vulnerabilities
- Enable bulk messaging across multiple channels without issues such as data loss

# The Solution

The Daffodil team realized that NeGD's primary aim with the NAD web application was to eliminate certification forgery and issuance of fake academic awards from the entire Indian education system. With this end goal and the sheer scale of this undertaking in mind, the team set out to develop a highly compliant, secure and resolute solution for the same.

The UI for the NAD web portal was built using the high-performance React library with Laravel Lumen serving as the API backend. Data migration was carried out on the AWS cloud with managed workflows for unlimited scalability using the Apache Airflow tool.

The Daffodil team made sure that as per NeGD's requirements, the NAD portal had the following competencies:

## High-Speed Document Transmission

NAD was linked with DigiLocker, another NeGD flagship undertaking, which serves as a nation-wide virtual storehouse for authentic documents. Universities would sign up for NAD through DigiLocker and prepare students' certificates in a CSV file for upload. Initially, the upload duration for 15-16 lakh student records was 1 hour, but was brought down to about 12 minutes using Apache Spark Pi deployments and Redis for reading and writing sensitive data at scale.

## Managed Scalability

Once the university uploads its academic records to the NAD portal, they are made available to students. Students can sign up for a DigiLocker account to get direct access to a securely maintained record of their academic certificates and exam results published via the NAD. DigiLocker IDs are sent to students through bulk messaging. These IDs are sent to a large database of students which can be scaled up as required through asynchronous group messaging mode.

### Airtight Security

The Daffodil team carried out periodic security audits on NAD to identify and weed out vulnerabilities in the system. Authentication keys were open to multiple usage which made them vulnerable to attacks but this has now been eliminated. The system has also been shielded against Cross-Site Scripting (XSS) attacks and comprehensive access logs can help identify future vulnerabilities.

### Streamlined Registration Workflow

Registering on the NAD portal is an intuitive process, made easier by the instruction on how to register available to first time users. A university registered on the portal has immense flexibility in modifying degree name dropdowns, configuring doctypes, and uploading records.

The upload status and verification stage can be tracked for all academic awards and a dummy view of the final look of the certificate is also available to check for formatting errors. There are several templates available for universities to model their academic awards on.

### Other Enhancements

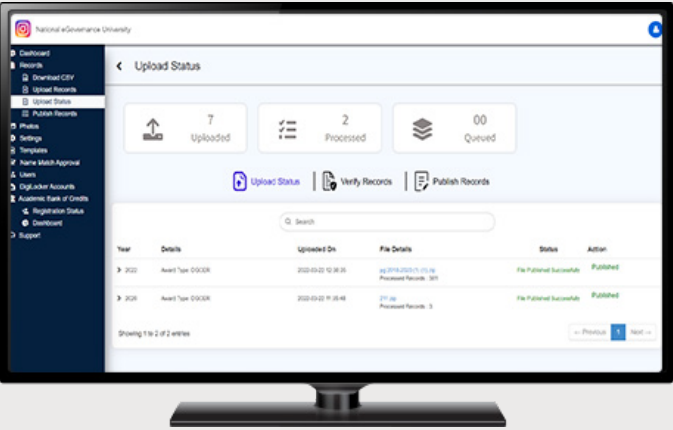
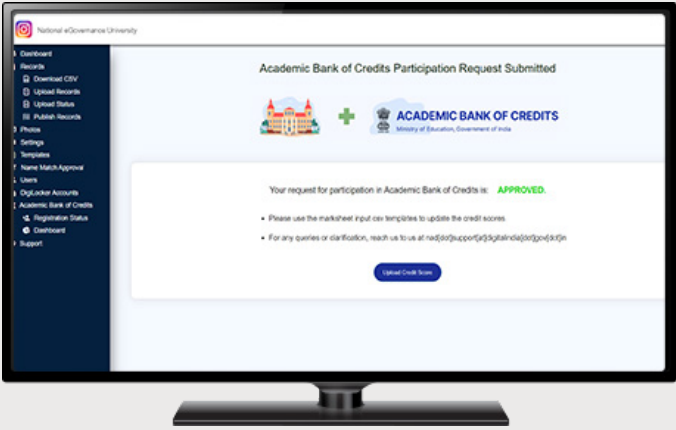
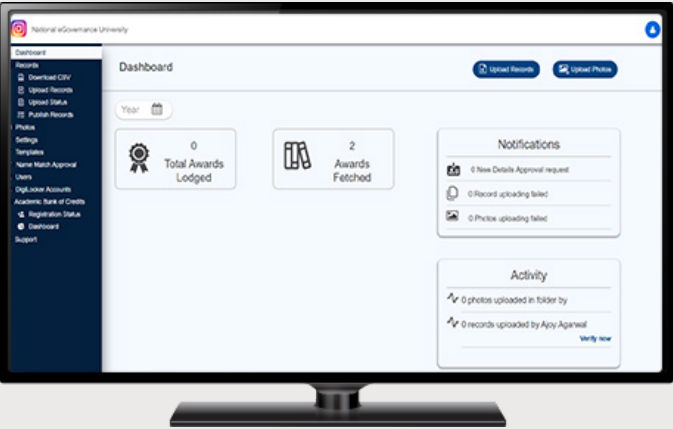
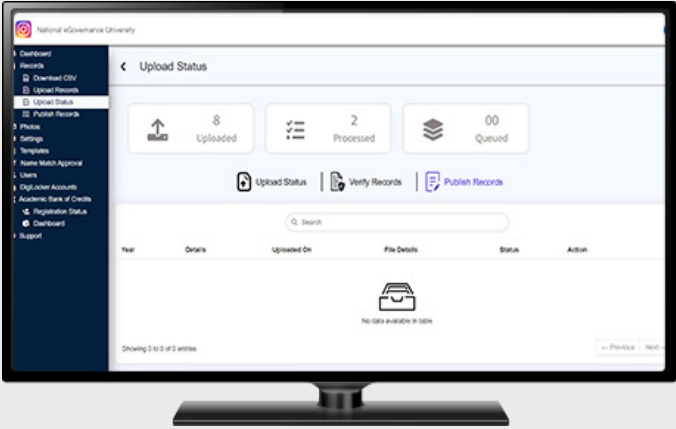
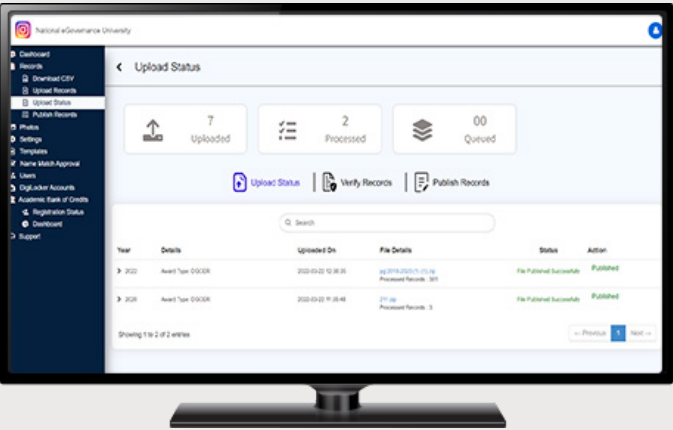
- Several government portals show errors when displaying names of students from regions in India that use special English characters such as 'ü' or 'é'. But the NAD portal has been calibrated to avoid this issue as it could lead to potential legal issues for students.
- Universities can upload and have flexibility to modify the curriculum of courses offered by them. There is also flexibility when it comes to credit exchange between universities.
- Users can add QR codes and digital signatures to academic awards to enhance their authenticity through the NAD portal.

## The Impact

Daffodil developed the NAD portal with an impressive turnaround time and in line with the NeGD's vision. Immensely satisfied by how the NAD application came out, NeGD has tasked the team with the creation of the application for the Academic Bank Of Credit (ABC), an ambitious project that would give versatile options to students to fund their education. NAD would be linked to ABC in the near future, creating a self-sufficient ecosystem for students to gain a holistic higher education in India.



# Product Screenshots















# About Daffodil

For more than 20 years, Daffodil Software has been a trusted software technology partner to organizations across the globe. We take pride in our ability to look beyond technologies & deliver innovative solutions.

Daffodil is a CMMI level 3 accredited organization with innovation, tech agility & process orientation rooted deep within the core. Our team of 1000+ technologists strive to shape the tech industry and help businesses elevate their value proposition through technology.

## Technology Partnerships & Certifications

 Silver Application Development partner  Silver Collaboration and Content	 Premier Partner	
 registered consulting partner		
		

## Awards & Accolades

 Technology Fast500 APAC Winner			
			

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