

Apereo Incubation Proposal: Notifications Backbone

Proposed Project Name: Notifications Backbone

When in incubation it is thought a vote amongst the community could choose the future project name.

Alternative(s): notifyU

(There has been an organisation with this name in India, but its web domain now forwards to generic advertising, <http://www.notifyu.in/>)

Need and Benefits

Brief explanation of why the project wishes to enter Apereo incubation, and how the project would benefit higher education.

The use of a central notifications service will transform task-related communications within higher education institutions. Integrating with user-authenticated institutional sources of notifications, for staff and students, it is hoped the solution will improve end-user experience, increase efficiency and effectiveness of internal communication, and standardise and simplify key communication processes, allowing for:

- Better-targeted and more-personalised communication with students and staff, leading to fewer internal emails received by staff and students
- Better completion rates for key tasks and activities
- Cross-media communication in the case of emergencies
- Better potential to track success, and audit receipt of, communications, leading to better designed communication strategies

This can be achieved by:

- Notifications how and when students want them
- Notifications not just by email
- Notifications to arrive at a user's device
- Users being able to choose how they want to be notified and when they want to be notified – aggregation service

The University of Edinburgh hopes that by engaging with the open community through this Apereo incubation, other institutions will not only gain its benefits up to now, but feed into its continued development and roadmap, share maintenance responsibilities and ensure it

becomes a sustainable notifications solution for higher education, which will only be fully realised by building a wider community of adopters, supporters and developers around it.

Areas to be explored through incubation

- Further licensing investigating, and subsequent decision. Apache 2.0 has previously been discussed amongst stakeholders. We would welcome further recommendation from the Apereo licensing-committee.
- How we are using the Blackboard API and its software (one of current the publishing integrations), in respect to licensing the Notification Backbone
- Splitting the project into discrete modules with their own repository, making it easier to maintain and for adopters to pick and choose
- Consideration of a more flexible security model
- Investigation into Docker containers
- Confirming a structure within the University that will support the solution through its incubation and beyond
- Who will be involved, commitment levels and setting expectations within the institution
- Sustainability of the 'team' after the closure of our UoE project
- Creating an open culture; communicating within an open environment
- Guidelines for working within this development

Project Summary

A short preface for the mailing lists, for use if the Project or Community is accepted

Notification Backbone is a cross-system solution for personalised notifications and emergency communications, enabling notifications to be created-by and distributed-across multiple institutional systems.

The Notification Backbone provides:

- An enterprise-scale publish/subscribe model for applications and services to communicate with users
- High throughput of notification message handling
- Appropriate security mechanisms to ensure the security and SSL encryption of notifications
- A User Interface to allow messaging support and administration of publishers and subscribers
- A documented REST API, for further integrations
- Audit of notifications to ensure whether notifications have been sent
- The ability to publish a single notification to multiple subscribers

It is hoped the solution will improve end-user experience, increase efficiency and effectiveness of internal communication, and standardise and simplify key communication processes, through allowing for:

- Notifications how and when students want them
- Notifications not just by email
- Notifications to arrive at a user's device
- Users to choose how they want to be notified and when they want to be notified – aggregation service

Project Governance

A proposed Project Lead or Community Chair, with contact information

- Project Lead: Brendan Owers brendan.owers@ed.ac.uk
- Project Coordinators: Marissa Warner-Wu Marissa.Warner-Wu@ed.ac.uk
- Steering Group: uPortal Steering Group
- Community Chair: Jim Helwig jim.helwig@wisc.edu

Aims of the Project

An overview of the aims of the Project or Community

The aim of the project is to realise the picture of the future for notifications within higher education, by meeting the communication preferences and expectations of students and staff. An efficient and personalised notifications interface wants to improve end-user experiences (in relation to internal communications) and simplify key communication processes.

We propose to share costs of maintaining this solution by making the Java source code available as open-source to the education community, in hope of turning this into a sustainable notifications solution for higher education.

Technology Overview

A technology overview if known

All components are written in Java, and have an underlying Oracle Database back end. For the components we use the Spring framework, with the following main dependencies/libraries:

Notification-ui:

- angularjs 1.6.4 for front end
- Bootstrap 3.3.7
- Maven 3 for dependency management
- Wro4j Maven plugin for static resources
- Quartz scheduler (scheduling of publisher jobs)
- Liquibase (database patching)
- Java 8
- Spring Boot 1.2 (Spring projects):
- Spring Data JPA
- Spring Cloud Security
- Spring Cloud Zuul
- Spring Security OAuth

Notification-microservice:

- Notification Portlet Api (Jasig)
- Spring Boot 1.4
- Spring Data JPA
- Spring Security OAuth
- Spring Boot Actuator
- WebSockets (spring-boot-starter-websocket, sockjs-client, stomp-websocket)
- Java 8
- Swagger
- FasterXML Jackson

Whilst these are current settings, our aim is to upgrade these libraries as we go along, so the Notification Backbone will have more recent versions of libraries.

User Base

An overview of any current user base or user community

Up to now the solution has been presented at Open Apereo 2017 and across various relevant groups within our own institution. External contributors listed earlier in the proposal have expressed interest with the Project Lead.

The Notification Service at the University of Edinburgh is not currently in service. There is an internal project to deliver the rollout of the MVP during 2017/2018.

Relationships in Apereo

An overview of how the Project or Community relates to other parts of Apereo, if appropriate

It is hoped this solution could, in time, integrate with other tools and systems within the uPortal Community.

Current Information

A pointer to any current information (for example, an existing Web page) for the project

[An Open-Source Notifications System for Higher Education slide deck](#)