2015 Larry L. Sautter Award for Innovation in Information Technology

AUTOMATED JOB SCHEDULER (AJS)

STAKEHOLDERS

Productivity, business terms, innovate

Requirements, blueprint, timesheets, communications

Solutions, feedback, real-time

Year-end, reports, easy-to-use

Collaboration, calendars, teamwork

Efficiency, payroll, campus

Customer satisfaction, transparency

Office of the President, University of California

Berkeley, UC Davis, UC Riverside, UC Santa Cruz, UC San Diego, UC Irvine, UC Santa Barbara, UC Hastings, Associated Students, UCLA

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Automated Job Scheduler (AJS)

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Technical Highlights
AJS is a Java Web application and employs several well-known industry standard open source products in its technology stack, including:
- Spring
- Spring MVC
- JPA + Hibernate
- Twitter Bootstrap
- jQuery
- KIE/Drools

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URL
https://ajs.ucop.edu/AJS/start.htm
**Introducing – the Automated Job Scheduler (AJS)**

The Automated Job Scheduler (AJS) is new software developed by the UCOP Information Technology Services (ITS) to centralize and improve batch scheduling, providing a single, real-time repository of campus processing activities with the Payroll Personnel System (PPS) as its initial system.

The web-based software provides easy functional-events scheduling capabilities on a calendar form and features an automated real-time notification to stakeholders.

![Figure 1. AJS - UC Riverside for Month of April 2015](image1)

![Figure 2. AJS - UC Riverside - Week at a glance.](image2)

**History - How AJS Came About**

The concept for the Automated Job Scheduler (AJS) was borne out of several emergent business needs from the UCOP Payroll Personnel System (PPS) hosting.

- **Multi-version ‘Paper’ Calendars.** Campuses regularly prepared and updated their location’s payroll calendars. These ‘paper calendars’ were actually in electronic format (i.e., PDF, Excel, or Word doc), but functioned like paper calendars in that formats were independently chosen by each campus and multiple versions existed at the campus or at UCOP ITS as updates were made. Items on these calendars were reviewed / consolidated and the daily payroll schedules were manually prepared by 2 full time UCOP employees for Production Control use.

- **Central Translators.** While the technical infrastructure for PPS is maintained by UCOP ITS, UCOP adapted to each campus’ payroll lingo's. Consequently, the ability to use campuses’ terminologies became an acquired skill for a few long-term personnel. These personnel became central translators for payroll scheduling - taking and interpreting instructions from
local payroll offices and manually organizing each hosted site’s payroll schedule for delivery to the Production Control (now at Berkeley Production Control Shared Service Center (PCSSC)).

This dependence on a highly-specialized skill of a few posed a looming risk for the organization and highlighted the unsustainability of the existing process.

- **Institutional Knowledge Loss.** UCOP ITS and some Hosted locations have gone through cycles of payroll expertise loss as personnel retire or explore other opportunities.

  This highlights a necessity to capture payroll processing knowledge in a repository to ensure that institutional knowledge does not get lost with personnel or organizational change.

**The Journey - Finding the Right Solution**

The Payroll, Personnel and Effort Reporting (**PPERS**) unit within UCOP ITS proactively evaluated the existing risks and considered various options to address the above needs and to manage risks that are becoming more evident. From a common SharePoint calendar to knowledge transfer management plans, the pros and cons of each option were considered.

The goal was to provide the best option that would, at a minimum, address the original needs:

- Provide a central repository of campus payroll activities, optimally in a database, eliminating confusion over multiple versions of the ‘paper calendars’;
- Provide an automated way to prepare schedules;
- Implement standardized terminologies across sites, eliminating the need for a human ‘translator’;
- Capture business rules in a system, mitigating loss of institutional knowledge with personnel shifts.

This presented UCOP ITS a special opportunity to come up with the right solution to the business needs, integrate existing infrastructure, improve workflows, and mitigate risks that UCOP faced. It became apparent that a new tool was the optimal way to meet all these goals. In collaboration with various groups in UCOP, campuses and PCSSC, existing work flows were analyzed and a prototype was created to store hosted campuses’ payroll activities centrally.

This prototype was demonstrated to several campuses. Based on feedback and questions that were raised, the development team built upon the prototype to provide stakeholders an easy and intuitive way of scheduling activities.
The new software, the **Automated Job Scheduler**, boasts of:

**Creative Solution.** With limited timeframe and resources, the prototype was developed rapidly using innovative technologies. For example, the use of Bootstrap, an extremely popular web application framework, saved a tremendous amount of development hours.

AJS also leveraged technology that uses ‘responsive design’ that allows web pages to be viewed on multiple devices.

The AJS infrastructure can also be leveraged by other applications for scheduling batch processes requiring the services of a production control center. Currently, we are in testing to have the Effort Reporting System (ERS) use AJS for scheduling.

**Operational Efficiency and Transparency.** Campuses have expressed appreciation for the ease-of-use of the calendar user interface. Items can be easily dragged-and-dropped into calendar days. The user interface provides the choice of Monthly, Weekly, or Daily calendar views.

The software also features **AJS Notifications** where all relevant stakeholders, including the PCSSC ticketing system, are alerted in real time of the creation, rescheduling, or deletion of events. All stakeholders know exactly what is happening on their calendars the moment the change is made.

AJS also audits all activities that allows for easy debugging and identification of training opportunities.

AJS facilitates the usage of uniform terminology across campuses. Whereas campuses referred to ‘timesheets’ with varying terminologies before, it is now standardized. AJS likewise translates functional events that business users are familiar with into technical names of executable units (jobs).

AJS provides various reports tailored to specific needs: a daily summary report for PCSSC reference for the swing night schedule; several PCSSC special reports for beginning-of-year definitions.

AJS also features real time automated error reporting, alerting the development team of a technical problem in the system when it happens. It is also being actively monitored for system failures via Nimsoft Production Monitoring.

**Multiple-Application Ready.** Although initially the project was based on the needs of hosted payroll, AJS has been designed to accommodate potentially any application with scheduling
needs. Currently, in addition to PPS jobs, jobs from the Title Code System (TCS) are also scheduled in AJS. Testing is underway to schedule Effort Reporting system jobs (ERS) via AJS as well.

**Integration with UC infrastructure.** AJS leverages the UC Identity Management System (single sign-on) to allow logon into the system.

**Collaborative Efforts.** Development efforts for AJS necessitated extensive collaboration with the UCOP Hosted Applications Support team, production control personnel, PPS analysts, and campus payroll personnel to capture current processes and requirements. The AJS implementation further enlisted the partnership of the IT Analysis and Architecture team, IT Infrastructure unit, and PCSSC.

The AJS team continues to engage all stakeholders in its efforts to improve the software and provide a more robust customer experience. Regular campus reach-outs are scheduled to collect business stakeholders’ input on their experience and future features and services that will add value.

**Current Successes, Challenges Overcome and the Road Ahead**

The AJS system has been implemented in the 9 PPS Hosted campuses as of February 2015 and is currently being used by the UCOP On-Call support team and Berkeley PCSSC as the main reference for campuses’ payroll activities.

As with most implementations, the AJS had its share of challenges.

- The sheer number of stakeholders posed challenges in coordination and consensus building. Everyone understood and agreed on the benefits that AJS would provide and the risks it would mitigate. However, implementation had its push back as many campuses were having resource challenges, some had conflicting priorities (i.e., payroll year-end activities and UCPath activities were looming at the same time), or some simply had little bandwidth to transition to a new software.

- Process changes often cause confusion. There was initial misunderstanding as to how the processes and the roles and responsibilities of the support team members would change. There was initial campus confusion over entry of events and how AJS notifications work.

Persistent and consistent messaging, close coordination, and campus reach out allowed the AJS team to tackle the campuses’ concerns as a joint problem solving effort.
At implementation, the AJS team collaborated with the UCOP Architecture and Analysis team and the Hosted Applications Support team so that campuses got help for entering their initial calendar entries for 2015. Confusions at the early stages of transition to AJS provided the AJS team opportunities to communicate and coordinate effectively to clarify concepts, decisions, and process changes.

Today, campus payroll partners are very actively engaged, and new mindset and process changes are being successfully adopted at each hosted site.

Likewise, Hosted Applications support team has fully adapted to the new process and is expertly using AJS. PCSSC staff at UC Berkeley is actively engaged as well. Active collaboration amongst the AJS team, the Hosted applications team, and PCSSC staff is in play.

There are 11,300+ transactions entered in AJS for 2015 as of writing. This is still expected to grow. AJS will help facilitate the annual payment of approximately $7B in paychecks of over 180K active employees at PPS Hosted sites

Recent comments from campuses and collaborating teams presented good feedback on where we are:

“AJ S is the next best thing since sliced bread!” (UC Riverside)
“Easy to use, especially with scheduling...We really like the transparency!” (ASUCLA)
“It is handy to see all the information!” (UC Santa Cruz)
“It’s a handy little thing!” (UC San Diego)

Beyond the good words, the increased efficiency of the business process of the payroll batch scheduling, the increased transparency and real time nature of alerts, and mitigating the risk of dependence on the specialized skills and institutional knowledge of long term personnel prove that AJS was the best option.

Moving forward, new features and enhancements are in the pipeline. Recent campus feedback sessions provided the AJS team with bigger opportunities to improve the software to better serve the Hosted sites and new customers.

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1 Based on 2014 W-2s for PPS Hosted sites.