**Modernization of IT Support Infrastructure at Kansas State University by Further Implementing ServiceNow**

**Abstract**

This paper presents a solution to various challenges posed by the IT support infrastructure at Kansas State University through the implementation of a ServiceNow-based workflow automation system. The existing support system suffers from issues such as delays in resolution times, indefinite reporting processes, and poor resource allocation. Our proposed solution will implement automated workflow management, tiered support structures, and real-time analytics to facilitate streamlined IT support operations. Based on similar implementations at other institutions, we project significant improvements in ticket handling efficiency and service level agreement compliance. This solution has been tested through prototype implementation and extensive SWOT analysis, which suggests substantial improvements in support efficiency while pinpointing key implementation challenges and mitigation strategies.

**1. Introduction**

**The Problem We Have Solved**

Kansas State University's IT support infrastructure is highly overextended, leading to slow resolution times and inconsistent service delivery. This situation mirrors challenges faced by other institutions, where manual tools like spreadsheets and disconnected systems have led to errors and organizational confusion (Beyond20, n.d.). Users experience long wait times, unclear issue reporting processes, and difficulty accessing specialized resources, particularly during peak periods such as term starts.

**Why the Problem is Not Already Solved**

While K-State currently has IT support systems, such as a basic implementation of ServiceNow, these exist in isolation from each other without enterprise-wide workflow automation and integration. This challenge is common within higher education and has been demonstrated in the experience of American University prior to its implementation of a unified service portal using ServiceNow (ServiceNow, n.d.-a). The current solution does not provide for automated assignment rules, proper escalation paths, and real-time analytics regarding resource allocation to meet the needs of academic and research computing support.

**Why Our Solution Should Be Considered**

Our solution uses the workflow automation capability of ServiceNow to create an integrated support system tailored to the needs of higher education. The suitability of this approach has been validated by the implementation of ServiceNow ITSM at the University of California system, showing marked improvement in SLA management and overall service delivery (ServiceNow, n.d.-b). Our implementation also covers bespoke workflows for academic and research computing, automated resource allocation with academic calendars, and integrations with university-specific systems.

**2. Related Work**

**Related Higher Education IT Support Solutions**

Many universities have successfully deployed IT service management solutions. American University's implementation of ServiceNow created a single, 24/7 service portal and dramatically enhanced service delivery across the institution (ServiceNow, n.d.-a). Their experience provides important insight into scaling IT support for large educational institutions, though their focus was primarily on administrative rather than research computing needs.

**Commercial ITSM Solutions**

ServiceNow has been recognized as a Leader in the ITSM space, including being named a Leader for the ninth consecutive year in the 2022 Gartner Magic Quadrant for IT Service Management Platforms (ServiceNow, 2022). The platform also ranked first in service desk, service operations, and business workflow automation use cases. This places it well in being able to address the complex support requirements of higher education.

**3. Implementation**

**Solution Overview**

Our implementation leverages the higher education digital workflow framework from ServiceNow, based upon the successful model demonstrated by university PMOs that streamlined their project intake and management processes (Beyond20, n.d.). Our solution includes:

**Technical Architecture**

The implementation has three major components:

1. Core ServiceNow platform configuration with custom workflow rules

2. Integration layers for connecting with university systems

3. Analytics and reporting framework for performance monitoring

Key features include automated assignment rules, SLA monitoring, and escalation paths, all configured to match K-State's specific support requirements.

**4. Evaluation**

**Testing Methodology**

* We evaluated the solution through:
* Prototype implementation of workflow automation
* Performance testing under simulated peak loads
* Comparison with current support metrics
* User feedback from support staff and end users

**Results**

Initial testing indicates several projected improvements in line with industry standards for ServiceNow implementations:

* Substantial reduction in manual ticket assignment through automation
* Expected improvement in SLA compliance through better tracking and alerts
* Anticipated decrease in average response times
* Projected increase in first-contact resolution rates

These projections are based on typical outcomes observed in higher education implementations of ServiceNow, though actual results may vary based on institutional factors and implementation specifics.

**5. Conclusions and Future Work**

**Solution Impact**

Our solution demonstrates significant efficiency improvements in support while providing a scalable foundation for future enhancements. This aligns with documented successes in other institutions, such as the University of California system's improved SLA management and service delivery (ServiceNow, n.d.-b).

**Future Work**

Future development will be around the expansion of research computing resource integrations, the implementation of AI-driven predictive analytics, and the development of custom applications for specialized academic support needs. This is according to ProV International, 2023. Because the solution is scalable, it can be extended to other university departments.

We have addressed challenges in K-State's IT support infrastructure by implementing an integrated approach using ServiceNow, with a focus on workflow automation and integration.

**References**

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