Data Interoperability at OSU
Strategy and Positioning for 2015 and Beyond

University data – information about our people, our classes, our research, and more – must be available, true, and actionable. The data must be accessible so that we can conduct the university's business in real time and it must be reusable so that we can develop new and useful ways to analyze our progress. We also need to assure the data persists beyond the lifecycle of any particular technology. The systems we use 5, 10, or 100 years from now will be very different from the systems we use today, but across time, those systems must be able to access the same data.

Oregon State University has embarked on a Data Interoperability initiative that speaks to these needs. In the course of this initiative, we will build a new systems architecture that will enable ongoing innovation so that we can serve the evolving needs of our business and our community.

This paper and the companion architecture document address the technical aspects of Data Interoperability.

Principles for the Initiative

The Data Interoperability initiative adheres to the following principles:

- **A Single Version of the Truth**
  All systems and reports will look at the same data. That data shall then be able to be used and consumed in an unending number of ways and contexts.

- **System Sustainability**
  Systems will be based on proven architectural standards. New systems must be able to be integrated and deprecated easily.

- **Persistent Data Lifespan**
  Data will be preserved and forward migrated through versions of technology so it is available far into the future.

- **Standards-based Architecture**
  The new architecture will govern how data from discrete systems will be used and integrated. This will allow OSU to develop, evolve, and replace services over an extended timeframe.

- **University Ownership and Security**
  University-owned data will be available to be used strategically, tactically, and operationally. There are nuances of availability related to areas of sensitivity, and we will adhere to best practices for protecting and managing our data.
By following these principles, we won't be vendor-locked into a single solution or ecosystem of applications, but we can enable different kinds of SaaS and hosted systems – Salesforce, Unizin, Splunk and so forth – to access university data in meaningful ways. We'll be able to use differentiated tools that accomplish core tasks really well, then integrate the resulting data into elegant composite systems.

How Will We Access and Consume Data?

We need different tools to access and understand our data. Standardized reporting tools are essential to the operations of the university, but they must be augmented by ad hoc queries when deeper and specialized analysis is needed. We also need systems that support the wide and varied business and academic needs of our university.

A metaphor for understanding the new architecture is a three legged stool. A stool with three legs never wobbles – but if the legs aren't even, it tilts.

- **Systems Interoperability** allows data to be available in the systems people use to complete their work. We must enable system-to-system data feeds as well as system-to-application interactions, whether to locally managed or cloud-based systems. Near real-time, structured, and time/event based interactions should be enabled.
- **The CORE environment** enables people to consume data directly through predefined reports and dashboards. These allow for a common understanding of numbers and trends and enable ongoing university operations and regular decision making.
- **Ad hoc reporting** allows specialized data sets to be built for the small group of people who are tackling complex and unique analyses.

Examples

Some analyses can be done solely by looking at the data from the system of record, and some analyses require additional data that is generated from other systems and/or business processes. Similarly, some business processes rely on data generated from other systems, then extend the business functionality beyond that which was provided in the originating system.

Examples of analyses using data from multiple systems include:
- Understanding which students and courses in the Math sequencing have been using the Pearson study materials and how this has affected grades. Understanding which of these students attended study sections in the Math computer lab, and how this affected grades.
- Tracking the admission status of graduate students, collecting evaluator notes and scoring, and notifying applicants of their status.
- Collecting billing data from AT&T and passing through only international long distance charges to the appropriate units based on the phone number of the caller. This is done in a process that automatically debits the correct index and appears on monthly operating statements.
- Accreditation: aggregating data from a host of sources including tenure and instructor status, grades, college-developed curriculum rubrics, course loads, advising and program assessments to understand OSU’s progress and performance on improving student outcomes.

In each of these examples, and in hundreds more that happen every day at OSU, data from multiple systems and sources is aggregated, updated and analyzed. The three legs of the stool, data interoperability, CORE reporting, and Ad Hoc reporting, enables the OSU community to access the data it needs quickly and efficiently, and with confidence that the data is accurate.

### Timeline

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<tr>
<th>Summer &amp; Fall 2015</th>
<th>2016 calendar year</th>
<th>2017 calendar year</th>
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| - Set up API Gateway and Infrastructure  
- Develop guidelines for API development  
- Test and evaluate Banner-provided APIs  
- Develop online OSU community to submit and vote on API requests  
- Start developing APIs  
  ○ People  
  ○ Directory  
  ○ Others as requested  | - Create advisory group to help with API decisions and guide future development  
- Outreach to OSU developers community to improve API awareness and usage  
- Improve API development process, bring developed APIs to OSU systems more quickly  | - Guide departments and colleges that want to provide APIs  
- Improve API development and outreach  
- Survey developers on campus and measure success of API initiative |