

DRAFT

Requirements and a Sketch of the Architecture for an Ohio Shared Application System (OSAS)

Scope of the OSAS:

Target Audience

An OSAS is proposed to serve students who are taking courses at multiple institutions in order to get a degree and are a degree-seeking student at one of those institutions.

Goal/Problem to be Solved

It is expected that students taking courses at multiple institutions will be discouraged from taking those courses if they must apply for admission repeatedly, once for each institution where they are going to take a course. The need to do this may dissuade students from taking best advantage of the collective offerings of those institutions or enrolling in multi-institutional degree programs.

Future Goals and Unanswered Questions about the OSAS

Future Goals

It is important to note that the OSAS does accept applications, but at least initially is not expected to be able to handle the admissions activities that result from that application. The committee has not yet discussed whether there are any situations in which such admissions could be automatically handled by the OSAS. If such situations are identified, the scope of the OSAS may be extended.

In the future we might also target the problem of the experience of the multiple course registration systems, but that is currently beyond the anticipated scope of the OSAS.

Fees

The student services taskforce discussion of applications is not yet sufficiently advanced to allow us to ask the question of what will be the development or ongoing cost of the OSAS. As a result we cannot yet determine how those costs should be covered through specific funding mechanisms such as student fees.

Basic Assumptions:

It is assumed that every institution has an integrated software system through which they track students, a Student Information System (SIS), and that there is one institution where a student is a degree seeking student whose SIS record for that student should be considered authoritative and will be used to determine whether and when the student should receive a degree.

Requirements:

Functional Requirements

1. The Shared Application System must not require students to re-enter data once they have already applied as a degree-seeking student at a Shared Application System participant school.

The point of a common application system is that the student not be forced to apply for admission as a non-degree seeking student at different institutions time and time again.

Architecture and Roles

2. The Shared Application System should not require a central (OLN) repository of student information

OLN is not a virtual university. It does not offer courses--OLN member institutions offer them. Likewise, OLN should not have students. It should not be the locus of the records for students who have used the Shared Application System. Students are primarily associated with a particular university to which they have applied and matriculated to seek their degree and from which they receive academic guidance and other non-instructional services.

Even if OLN managed a central repository of student information gathered through the operation of the Shared Application System, such a repository would not remove the necessity of individual institutions to maintain permanent academic records for the same students in their Student Information Systems. The resulting duplication of data would result in poor synchronization of information about students with one or the other repository (OLN or the institution) containing out of date data or increased technical overhead because of the need to find a way to synchronize the data. Only one authoritative database is permissible and desirable. It must reside with the degree, or credit granting institution.

Data Transfer:

The implication of having students register once as a degree seeking student, then not having to register to take courses at other institutions as a non-degree seeking student is that the OSAS will have to facilitate the transfer of the student data from the SIS at the institution where the student has degree-seeking status to the other institutions where the student does not have that status. The requirements below describe how that transfer should be handled.

3. An institution's SIS systems should not need to exchange data with all other Shared Application System participant's SIS systems. Instead, a central server should be used to interconnect the SIS systems.

One way of exchanging data among SIS systems would be to have each system contact the others to exchange data about their students. This would entail that each institutions would have to trust communication from all of the other institutions systems. Moreover, each institution would also be required to store information about the ports, protocols, network addresses, and other information

about each of the other systems, as well as to know how to translate the information from those institutions. Because of the burden that this architecture would place on OSAS participant institutions, a different architecture is required: the OSAS must provide a central means through which institutions can communicate and exchange data.

4. The Shared Application System must be compliant with relevant federal laws, especially the Family Educational Rights and Privacy Act of 1974 as Amended (FERPA). A FERPA Statement allowing a student to agree to share their personal data with other institutions must be developed and implemented for all students applying through the OSAS.

If students are to submit application data once, and that data is not to be stored at OLN, the data will need to be passed from one school with the data to another school where the student wants to apply. The use of the Shared Application System in this way will require that forms used by the student be constructed in such a manner to obtain for OLN the legal right to obtain the student's personal information from the first institution and pass it on to the second.

5. Data must be exchanged with the student via HTTP (SSL).

The use of SSL creates a means of validating the identity of the servers involved in exchanging the data in a transaction as well as protecting the privacy of the data exchanged with a student or between servers.

6. Data must be exchanged between campus SIS systems and the Shared Application System through either X.12 EDI over the Internet or HTTP (SSL).

Because of its comparative simplicity, HTTP with SSL would seem the simplest means of exchanging data. All that SSL transfer requires is for a CGI application to be written to interact with an SIS system.

It seems necessary however to also plan for the use of X.12 EDI, if the data to be exchanged maps well to the SPEEDE data standards. This seems necessary because of the existence of a number of prepackaged modules for SIS systems that already offer this interface. The use of the SPEEDE data standards does not require the use of X.12 EDI because of the comparative simplicity of mapping any X.12 transaction set to an XML representation. Therefore, SPEEDE records could be used but exchanged in XML form over HTTP.

Data Content:

Because we are going to facilitate the transfer of student data from one institution to another we know that it will be necessary for the OSAS to act as an exchange for institutions. It is not clear that it is necessary for the OSAS to go further and become the common web application through which a student enters the data provided to their degree granting institution. This is possible and may be desirable, but is not strictly necessary.

Whether or not data is not entered through a shared application form, there is still the question of whether the data exchanged through the OSAS must be identical for every institution. Although an OSAS application form would require that students enter data in a fixed manner—for example, they would all have to

type in birthdates in the same way—it does not need to force all institutions to store that data in the same way or to use exactly the same application data.

The OSAS as it exchanges data from one institution to another can be equipped to reformat that data. For example, it could know that the dates in the data from one institution need to be transformed to a different format to be sent to a particular institution. Just as there is no necessity for every institution to store data in exactly the same way, there is no necessity that every institution use exactly the same data items, e.g. gender or race, in its applications and SIS. When data is to be transferred to an institution that requires more information than was stored in the authoritative record at the school where the student is a degree seeking student, that recipient institution could ask the student for the few additional pieces of information needed. This kind of flexibility is important to build into the OSAS in order to limit the amount of redevelopment of institution SIS systems that will be required. The more development required the longer will be the time frame for OSIS development and the greater will be the cost to participant institutions.

As a result of these alternatives available for the operation of the OSAS, there are no data content requirements included in this document. Such requirements can be specified when we determine whether there is actually a need for a common application program or only a data exchange mechanism.

Logging:

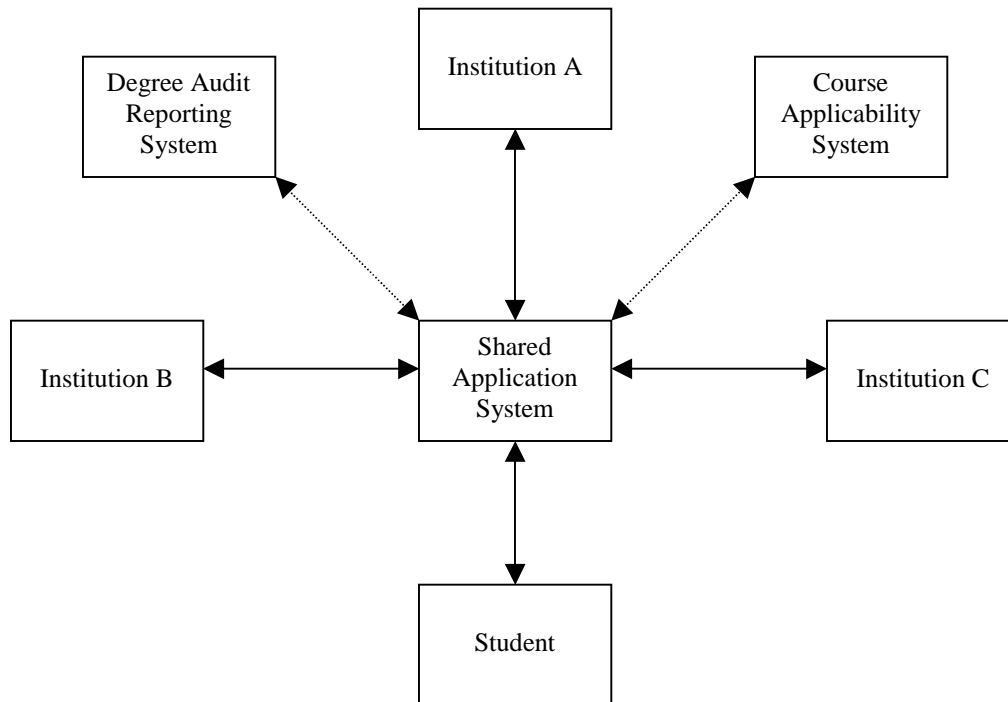
7. OLN must be able to account for the use of the Shared Application System.

While OLN should not operate as a permanent repository of information about students, it must be able to assess the value of the Shared Application System by analyzing who has used that system. This need to track system use while not permanently managing student data can best be accommodated by the design of the logging capabilities of the Shared Application System. The Shared Application System can be an exchange point for data through which data flows between participating institutions. The use of the system can be logged as data passes through the Shared Application System. Recording of statistics on aggregate use of the system, e.g., how many students from Institution X applied to Institution Y, or recording of transactions stripped of personal data, e.g., name of the student, could provide the foundation for an assessment of Shared Application System use. Like with transfer of data between institutions, the OSAS will have to be designed to log system use in a manner compliant with FERPA.

Architecture for a Shared Application System:

From the requirements described above emerges a picture of the Shared Application System architecture. It is a system very much like a B2B exchange. For those not familiar with such terminology, a B2B exchange functions as a web site through which companies exchange data. In the case of B2B exchanges, such transactions are usually requests to buy and sell goods. In the case of the Shared Application System, the system is an exchange of student data.

A graphical representation is as follows:



Potential future links to the DARS and CAS systems are shown as dotted arrows.

This architecture for the Shared Application System will mean that the Shared Application System must contain a.) the knowledge of where and how to contact each of the institutional SIS systems participating in the Shared Application System; b.) the Shared Application System can monitor whether individual SIS systems are unavailable, there is no need to propagate this information to other SIS systems. The Shared Application System can log whatever transactional data are needed for accounting purposes while not functioning as a permanent repository of student data.