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## Focus: Interoperability

Tsugi is built upon a set of open source implementations of standards like IMS Learning Tools Interoperability, IMS Content Item, IMS Common Cartridge, and others. These libraries not only implement the standards but are also regularly tested against the various LMS systems in the marketplace and are adapted to work with subtle differences in the standards implementations of the LMS systems.

Each tool built with Tsugi supports interoperability standards and can be hosted on its own in a Tsugi container for many tenants. When Tsugi acts as a stand-alone MOOC platform, the platform communicates with its own Tsugi tools using interoperability standards.

## Focus: Innovation

The Tsugi platform has been in production for over two years at scale in support of a number of MOOC offerings on Coursera supporting >100K students. Tsugi is designed to run in continuous production at scale. Modularity, automatic database migration, and automatic upgrades allow constant evolution and innovation.

Deploying, maintaining and upgrading Tsugi is as easy as a WordPress installation.

The Tsugi APIs are available in PHP, Java and Node with plans for a Python API in the future. PHP is the most complete Tsugi implementation in order to make contributing to the Tsugi framework or developing a Tsugi tool possible for developers of any skill level.

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## Getting Started

### Developer Training

The [www.tsugi.org](http://www.tsugi.org) web site includes videos and documentation on how to install, configure and maintain a Tsugi implementation as well as how to build a Tsugi tool. The web site is designed as self-paced modules to get new developers and operations staff through their initial learning curve with Tsugi. The site includes assessments and even awards OBI compliant badges as milestones are achieved in the training.

### Research / Collaboration

The Tsugi research project is led by Dr. Charles Severance who is one of the founders of the Sakai Open Source LMS system as well as one of the primary authors of the IMS Learning Tools Interoperability 1.1 specification. He leads the Tsugi effort as a faculty member of the University of Michigan School of Information.

There is still a great deal of work to do on Tsugi. Collaborators are welcome and we are fundraising to expand the research staff working on Tsugi. Our goal in 2017 is to move Tsugi to a 1.0 release across our four programming languages.

[www.tsugi.org](http://www.tsugi.org)

Tsugi is an Apereo project [www.apereo.org](http://www.apereo.org)  
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# Tsugi

## Exploring the Next Generation Digital Learning Environment



次Tsugi



# Researching and Developing Next Generation Digital Learning Environment



**Educational Application Store**

By using Tsugi's training, documentation and open source implementations of interoperability standards, developers can focus on application functionality.

**API Libraries**

**Enriching Educational Content**

Tsugi can be used to transform static Open Educational Resources on the web into an interactive MOOC and educational community.

**Seamless Content Integration**

Tsugi's LOR features allow course content to be developed outside of the LMS and easily imported into any number of course shells.



## Independent Componentry

Tsugi is a ground-up implementation of learning tools and capabilities with standards compliance and seamless interoperability as founding principles, Tsugi is a leading research effort in defining the technical structure of the "Next Generation Digital Learning Environment" (NGDLE).

By focusing on a "lego block" approach, Tsugi can be used to achieve a wide variety of use cases by selecting and composing the core components in many different ways.

[www.tsugi.org](http://www.tsugi.org)

## Flexible Deployment Options

Tsugi enables a wide range of low-cost deployment options. A programmer can develop, and deploy a single tool in the cloud. A book author can build an interactive web site to promote and share course materials and supporting tools.

A university can provide an expandable education "app store" where faculty can use Tsugi tools from a wide range of curated and approved sources while keeping all of the learner data under control of the university. An startup can quickly build a multi-tenant cloud-hosted education application using Tsugi as infrastructure.

