



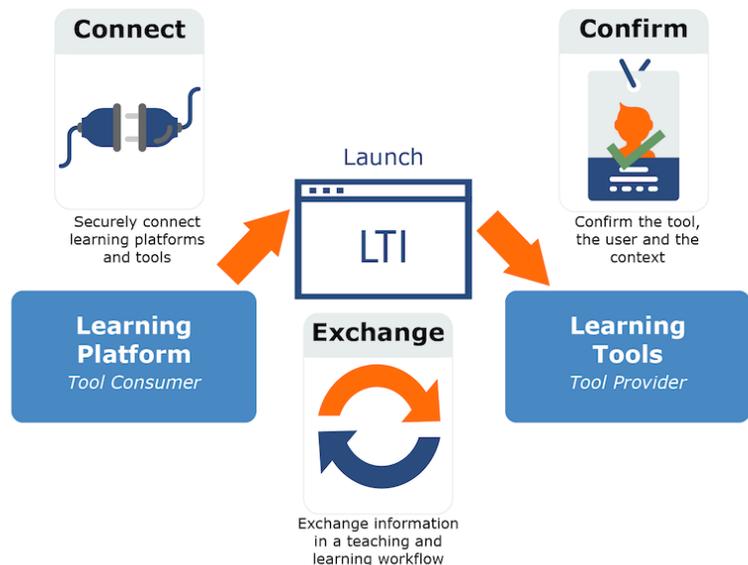
Learning Tools Interoperability[®] (LTI[®]) is a standard way for educational technology suppliers to securely connect their tools with an institution’s learning platform (e.g., LMS) while reducing the time and significant costs associated with developing separate product integrations.

LTI establishes the secure launch of a tool or learning object repository from a learning platform and performs specific data sharing functions. With LTI you can **connect** to a resource, **confirm** the tool and users’ access, and securely **exchange** data.

LTI’s extensible architecture allows for a variety of features to be added that address specific institutional needs. Currently, the portfolio consists of core LTI and several teaching and learning extensions described below.

LTI LAUNCH is the essential function of core LTI, which establishes a seamless and secure connection between a learning tool or repository and a learning platform. The launch is performed from the learning platform to the tool, passing the user’s credentials, which allows the learning tool to automatically sign in the user. In the initial launch message, data such as the user’s role (student, instructor, aide) and the course ID can be shared automatically, confirming that both the tool and the user are authorized.

Essential Features of Learning Tools Interoperability[®] (LTI[®])



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TO DISTINGUISH THE COMPONENTS OF LTI, THE LEARNING TOOL IS CALLED THE “TOOL PROVIDER” AND THE LEARNING PLATFORM IS THE “TOOL CONSUMER.”



To ensure successful integration without the need for custom development, both the tool consumer and the tool provider should be *certified LTI compliant* using IMS Global’s LTI conformance certification tools, which you will find on the IMS Global website. Non-compliant implementations may result in poor connections and mismatched data, dramatically decreasing the value of LTI. For interoperability confidence, institutions should insist on IMS Global certified LTI products.

The official directory of all IMS Global Conformance Certified products is maintained at imscert.org.

LTI EXTENSIONS provide a library of value-added features which amplify the benefit and usefulness of the secure connection. The following provides a brief summary of the extensions and their uses.

Content-Item Message provides a far more intuitive user experience and improves the workflow for adding content links to courses. Proving to be one of the most popular LTI extensions, Content-Item has attracted wide support among learning platforms and tools. For a learning content and tool provider, Content-Item simplifies the task of selecting and adding one or multiple links into a course or module. Content-Item can be used to resource beyond LTI links into a course, for example, it can return static HTML and it can also be used to add collections of content such as playlists or tables of content. Using Content-Item enables deep integration between the learning platform and selected tools while simplifying course setup steps.

Gradebook Service provides a way for numerically graded assignments in a tool, along with comments, to be passed back to an LMS gradebook. This extension supports the ability for the initial result from the tool to be overridden by the instructor in the learning platform and still maintain the original tool score for historic purposes. The number of attempts for a line item may also be reported and tracked in the tool consumer. The latest version of the Gradebook service also supports the transfer of groups of results in a single exchange.

Membership Service provides access to a list of users and their roles within an organizational context such as a course or program, allowing instructors and course designers to automate provisioning enrollment via LTI to an external tool in a safe and secure manner. The Membership service also allows instructors to be given a display showing the activity of all their students. Having a list of users allows the external tool to pre-provision

accounts and expedite the process for first-time use by the student. It also allows the tool or platform to display activity metrics for all the students including those who have not yet started. Finally, a tool provider may also use Membership service for license and subscription management for their products.

LTI Extensions for Deep Integration of Teaching and Learning Activities



Gradebook



- Gradable assignments shared with tool
- Numeric scores returned to LMS gradebook
- Assessor's comments returned if provided
- Multiple results supported in a single exchange
- Teacher override and history of attempts allowed

Course Materials (Content Items)



- Select and add course content in a few clicks
- Add playlists and tables of content
- Enable links and other HTML content
- Add pre-registered tools with a few clicks ('Content' can also be a tool)

Class Lists (Memberships)



- Exchange a list of users and their roles
- Class, course, team, virtually any grouping
- Provision a learner using LTI's secure exchange
- Learn who has not yet accessed a tool

Additional Tool Services: Registration, Profiles, and Settings further automate the initial setup of connections between the platform and learning tools, including more detailed information about the tools' capabilities. These are used by the tool consumer and the tool provider during the registration process to "negotiate" the data to be exchanged and the services to be shared, saving valuable staff time and ensuring the best integrations available.