

Prospects and Expectations for Learning Analytics

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in figure 1, which is adapted from the book “Analytics at Work” by Davenport et al [1].

Key Questions Positioning			
	Past	Present	Future
Information	Reports & Description	Alerting	Extrapolation
Insight	Models & Explanation	Recommendations	Prediction

Figure 1 - Key Questions Matrix from Davenport et al

Source: CETIS: Adam Cooper; A brief history of analytics

<http://publications.cetis.ac.uk/wp-content/uploads/2012/12/Analytics-Brief-History-Vol-1-No9.pdf>

TABLE 1: LEARNING AND ACADEMIC ANALYTICS

TYPE OF ANALYTICS	LEVEL OR OBJECT OF ANALYSIS	WHO BENEFITS?
Learning Analytics	Course-level: social networks, conceptual development, discourse analysis, "intelligent curriculum"	Learners, faculty
	Departmental: predictive modeling, patterns of success/failure	Learners, faculty
Academic Analytics	Institutional: learner profiles, performance of academics, knowledge flow	Administrators, funders, marketing
	Regional (state/provincial): comparisons between systems	Funders, administrators
	National and International	National governments, education authorities

Source: EDUCAUSE

www.cdn.educause.edu/visuals/shared/er/ERM1151/ERM1151_table.jpg

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Learning Analytics: Does student appear to be understanding a key concept?

Academic Analytics: Is student not participating and therefore likely to drop?

Source: EDUCAUSE:
Two Case Studies of
Learner Analytics in the
University System of
Maryland
[http://
www.educause.edu/
ero/article/two-case-
studies-learner-
analytics-university-
system-maryland](http://www.educause.edu/ero/article/two-case-studies-learner-analytics-university-system-maryland)

Financial

6/8/2012

	Actual	Target
Enrolled Paid	3871	3876 
Enrolled Unpaid	5	0 
Housing Paid	2399	2398 
Housing Unpaid	0	0 
Housing with No Enrollment	1	0 
Zero Balance But No Payment Confirmed	5	0 
No Tuition Calculation	0	0 
Last FT/FT Cohort Paid	0	0 
Last FT/FT Cohort Unpaid	0	0 
Students Not Returning from Prev Term	270	

UNIVERSITY of MARYLAND
EASTERN SHORE

Director of Retention

Students with unpaid bills are dropped from course registration before the data freeze date. The Retention Director takes proactive steps to help these students through the process. The Actionable Information includes account balances to help tailor support services according to the level of financial need.

Director of Residence Life

Residence Life staff help the Retention Director of Retention by reaching out to those students who are in campus housing to guide them to resources to complete the registration process.

Residence Life and Enrollment Management

This tracks students who have registered for campus housing, but may not have completed the registration process, or who may have subsequently withdrawn.

Comptroller

There are instances where a student is enrolled and has paid their account balance for the semester, but may not have completed a final step that confirms enrollment. This step often confuses new or non-traditional students. The Comptroller is able to monitor this count and help aid those students through the registration process.

Actionable Information

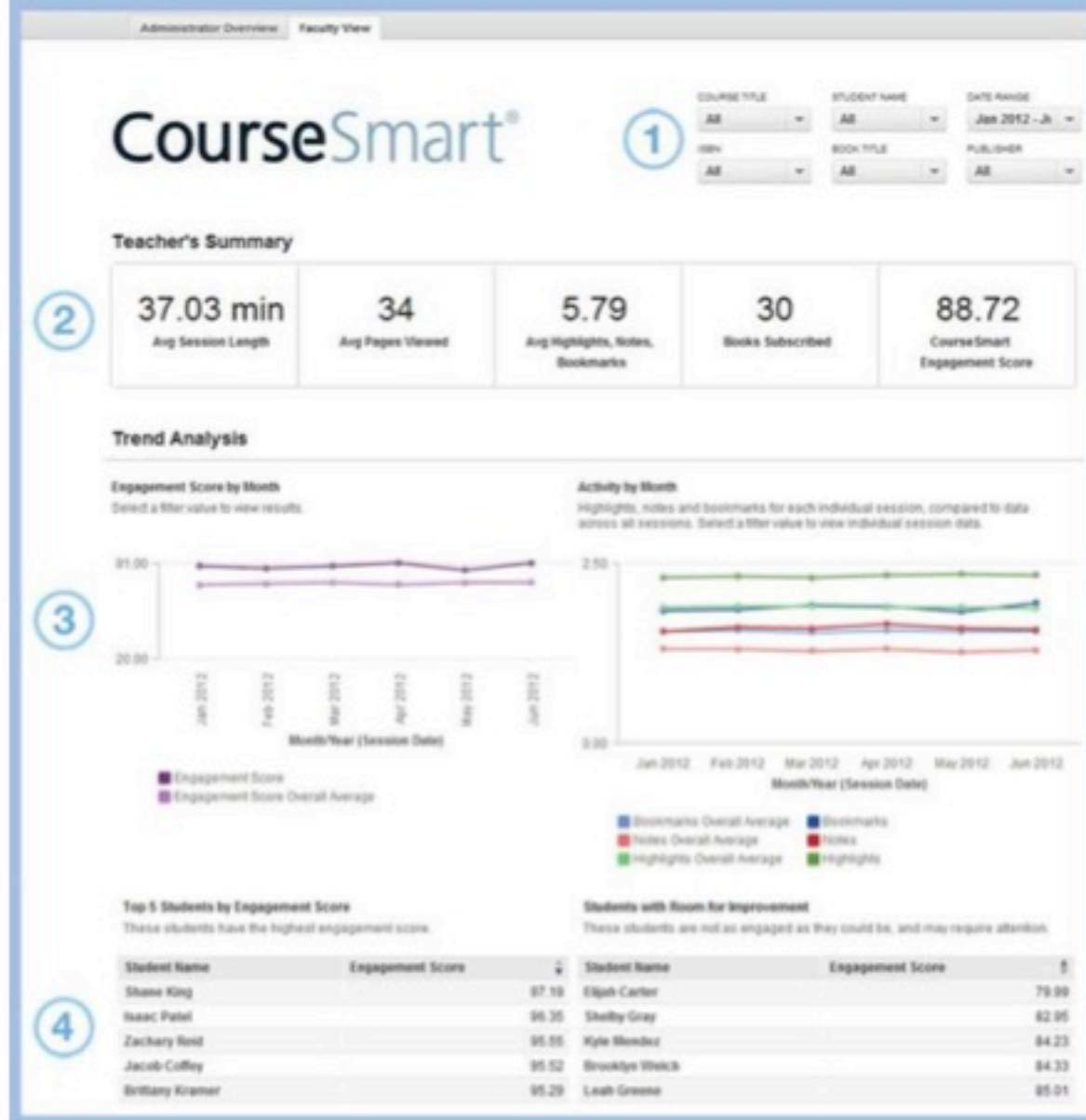
Clicking on the number in the "Actual" column will provide a list of students and all relevant contact information to facilitate follow up communication and outreach efforts.

Clearly Defined Targets

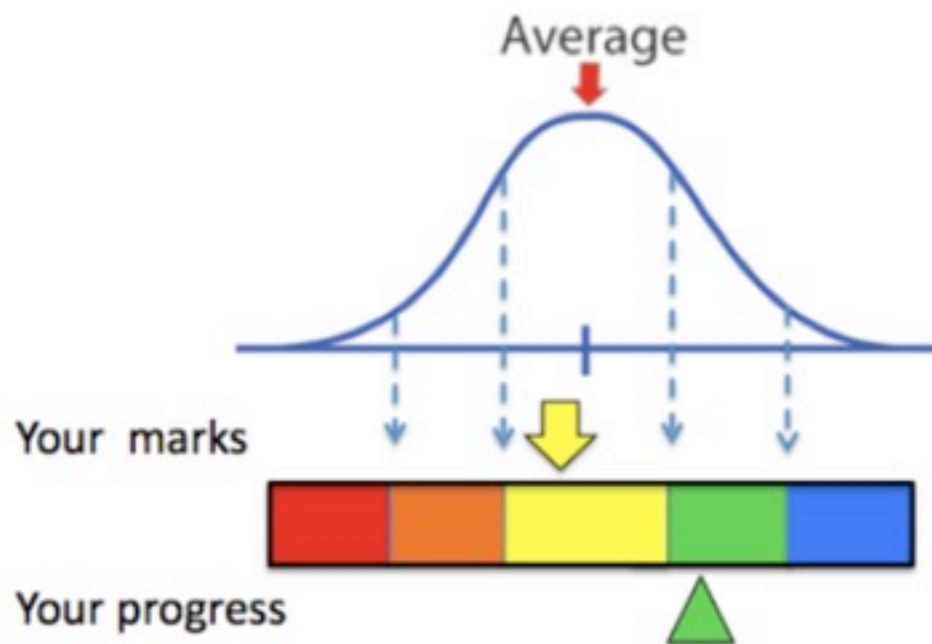
Targets include icons to help identify indicators that need attention. The target for Enrolled Paid is at the "Caution" level since the total enrollment is close to established target. The Enrolled Unpaid is at the "Warning" level since all enrolled students should have completed the payment process.

Director of Retention

An indicator monitors the status of the last First Time/ Full Time Freshman cohort. Extra steps are taken to strengthen 2nd semester and 2nd year return rates.



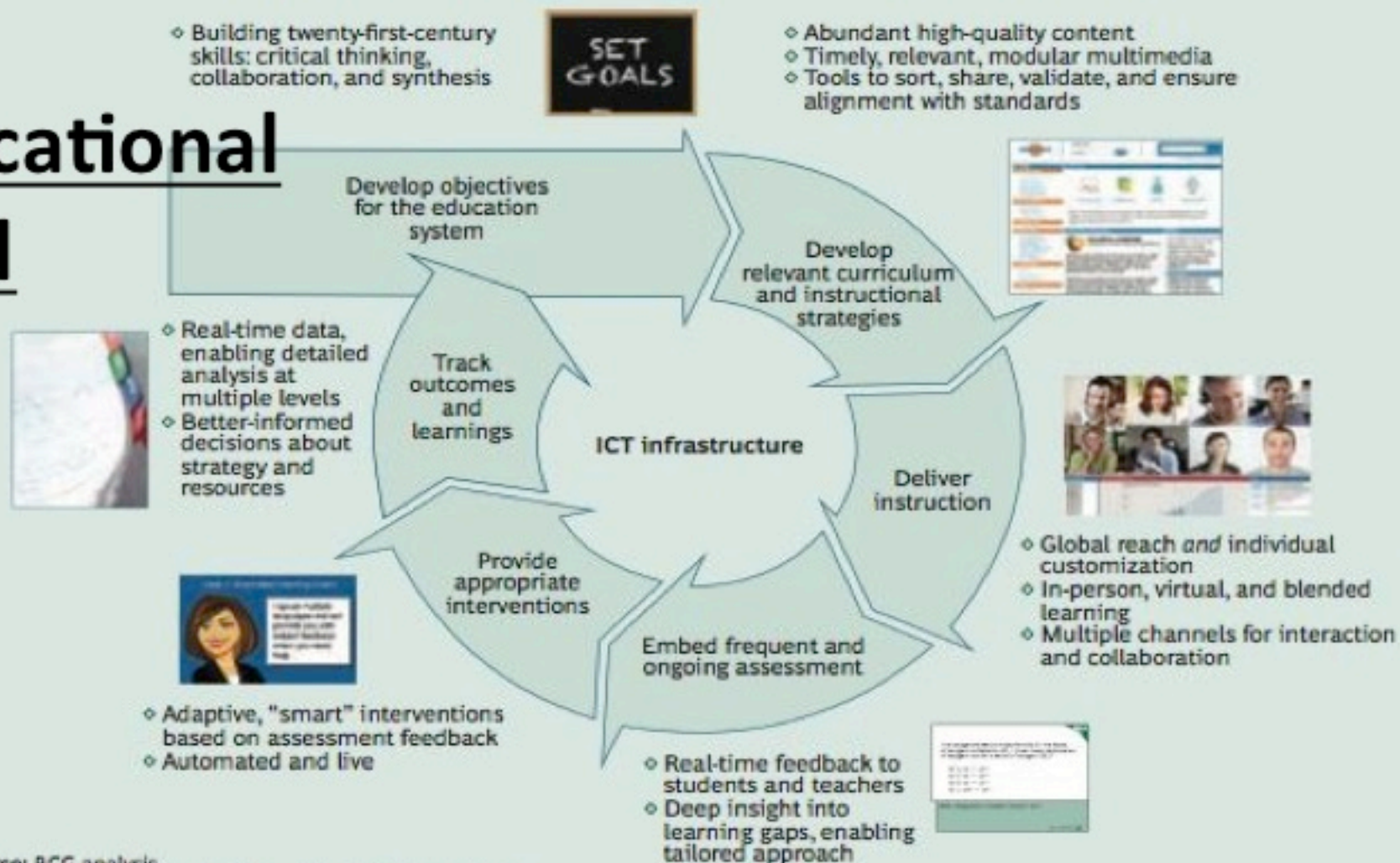
Source: WikiSpaces: Big Data and Learning Analytics
<http://21cgl.wikispaces.com/Big+Data+and+Learning+Analytics>



*Figure 3. Hypothetical learner dashboard showing progress and grades in comparison to historical performance.
(Normal curve added to aid explanation)*

Exhibit 4. Technology Enables a Closed-Loop Instructional System to Deliver Better Student Outcomes

The Educational Goal



Source: BCG analysis.

Note: ICT is information and communications technology.

Source: BCG: Unleashing the Potential of Technology in Education

<http://www.bcg.com/documents/file82603.pdf>

Edu Analytics Hot Areas

- HED: Early warning/alerts based on lack of LMS/tool engagement
- HED: Prediction of student success in an academic program based on incoming student characteristics
- K12: Dashboards to understand student achievement at the local and state authority levels
- K12: “Recommendation engines” to recommend alternate digital learning materials



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A New Architecture for Learning

by [Rob Abel](#), [Malcolm Brown](#), and [John J. Suess](#)

Published on Monday, October 7, 2013 | 0 Comments

If we are to support students and faculty as connected learners and instructors, we must rethink our approach to academic technology architecture. At the foundation and core of that architecture is information technology, in its role as the strategic enabler of connected learning.



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Rob Abel is Chief Executive Officer, IMS Global Learning Consortium. **Malcolm Brown** is Director, EDUCAUSE Learning Initiative (ELI). **Jack Suess** is Vice President of Information Technology and CIO, University of Maryland, Baltimore County.

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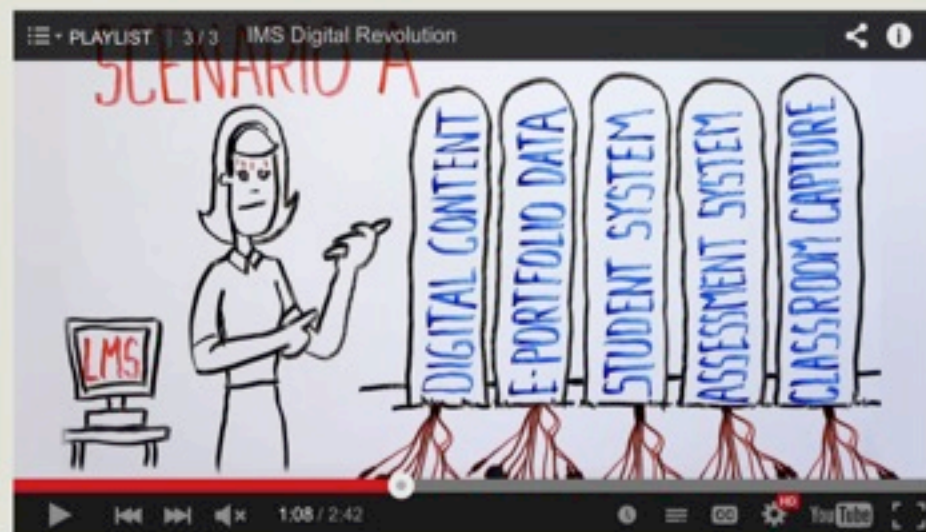
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<http://www.educause.edu/ero/article/new-architecture-learning>

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We are living in a world full of exciting new technologies that have the potential to help students learn, teachers teach and institutions deliver personalized educational experiences. The hopes for educational technology has never been higher as we transition from primarily print to predominantly digital learning resources and evolve to more digital learning options that student's desire.

Unfortunately, the reality today is that incorporating or combining innovative applications and content from diverse sources is difficult. New technologies are not easily combined to enable the efficient, effective and personalized experiences that teachers and students desire.



The good news is that IMS Global Learning Consortium, a non-profit alliance of suppliers, higher education institutions, school districts and states, are working together to develop and bring to market a set of open standards that make educational applications, content and data plug and play. Together we are helping education move towards an open platform to enable greater efficiency, effectiveness, and innovation.

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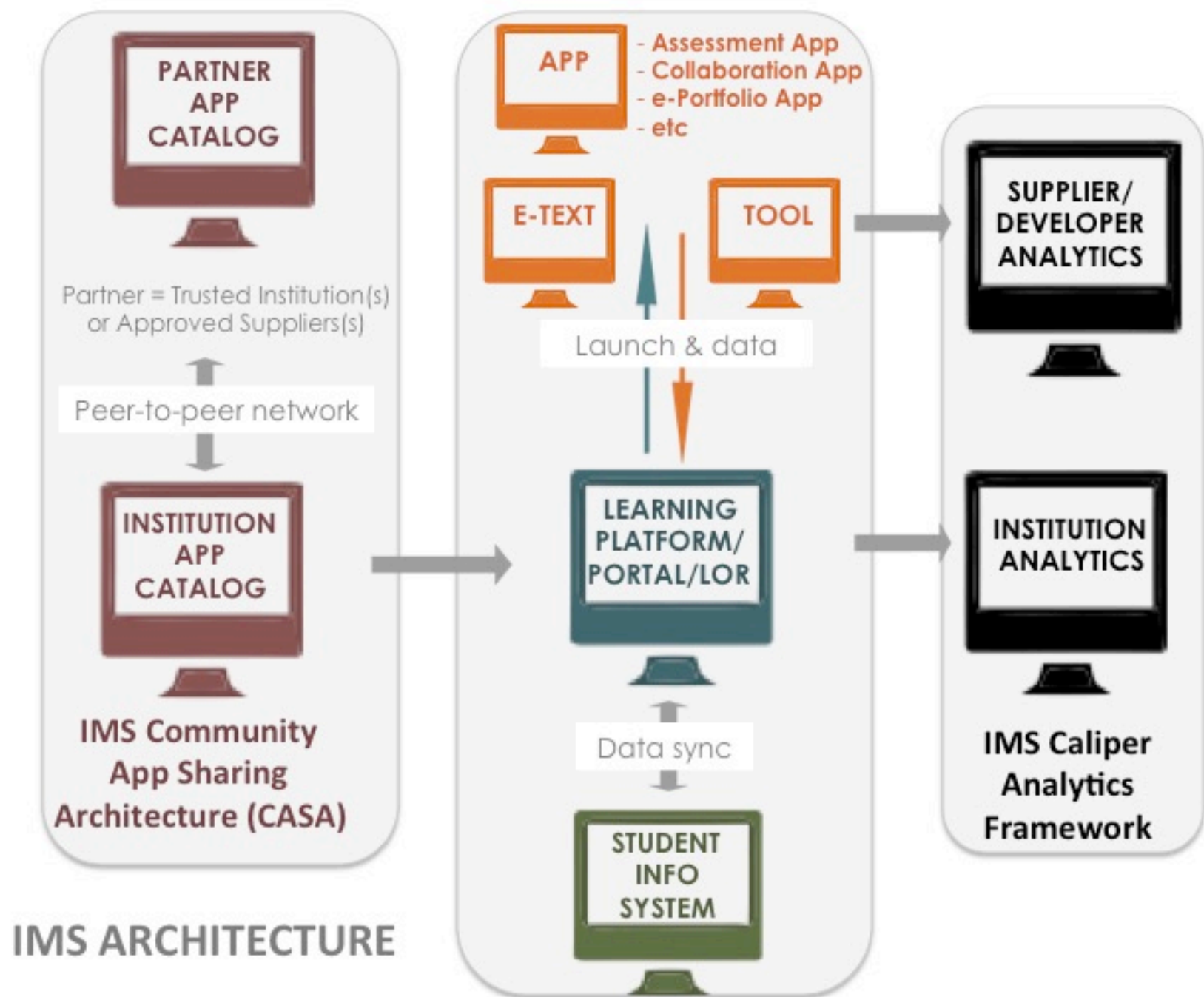
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The Prerequisite Goal

<http://www.imsglobal.org/imsrevolution.html>



1,000,000



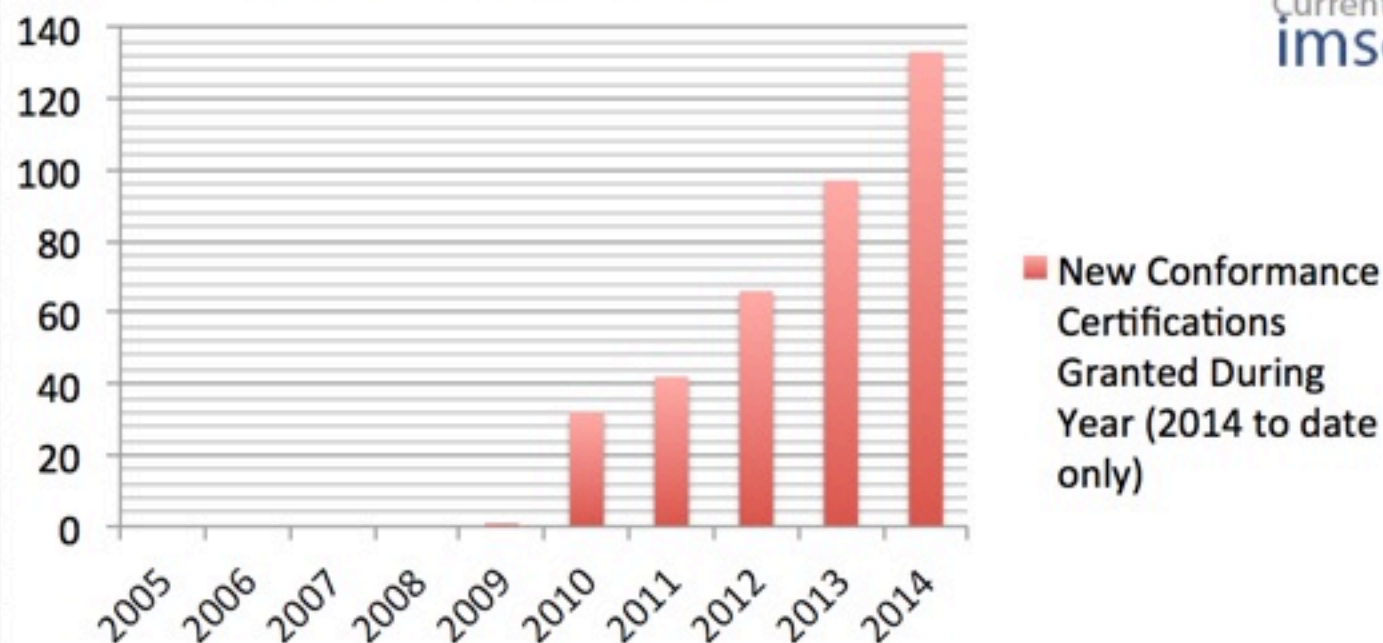
available in the catalog

Is there a vendor-neutral way to create an explosion of connected educational applications to help enable new innovative lifelong educational models?



Current Registrations:
imscert.org

IMS Global Conformance Certification Growth



Learning Platforms that Accept IMS Apps!

<http://imscatalog.org/>

campuscruiser



Blackboard



learning3.com



Sakai

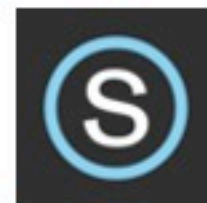


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IMS GLOBAL
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Annual Report 2013

[http://www.imsglobal.org/
imsglobal2013annualReport.pdf](http://www.imsglobal.org/imsglobal2013annualReport.pdf)

"A New Architecture for Learning"
- EDUCAUSE Review

"LTI is the Highway" - The EvoLLLution

10-1000X Improved Time & Cost to Integrate


8th Straight Year of Solid Growth

"Caliper Learning Analytics Deeply Interesting"

IMS, IDPF & W3C - e-Literate

Accelerating Adoption of e-Textbooks
e-Assessments Now a Reality with APIP & QTI

**An Architecture for Innovation
and Global Community Enabling
Transformative Models for Education**

 **IMS GLOBAL**
Learning Consortium

2013 Fiscal Results and Progress

Record 97 IMS Certifications **in 2013**

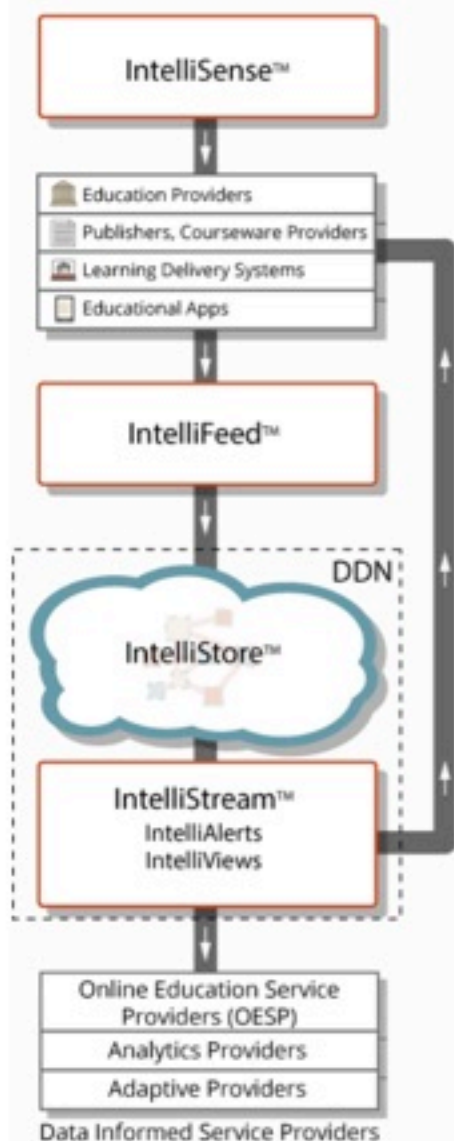
IMS Digital Innovation Revolution Making Headlines

25 Learning Platforms Now Certified

"LTI...Promises a Kinder, Gentler LMS"
- Campus Technology

IMS Global Announces Education
Community Supported Innovation Challenge
for Learning Apps, Tools and Platforms

"LTI as the Next Big Thing" - IHE Blog



We Collect

Using the IntelliSense™ web/mobile, emerging open standards (IMS Caliper) based measurement APIs, Intellify "sensors" are applied to instrument learning content and activities such as reading, assessment, lecture/video viewing, social/collaboration, etc., to capture extensive and granular activity metrics from your LMS, educational apps or any other learning content delivery system.

We Measure

Once the IntelliSense sensors are in place to collect metrics, IntelliFeeds package and marshal streams of learning events efficiently at scale to an Intellify sensor endpoint which in turn intelligently routes these event streams to the IntelliStore cloud storage service.

We Store

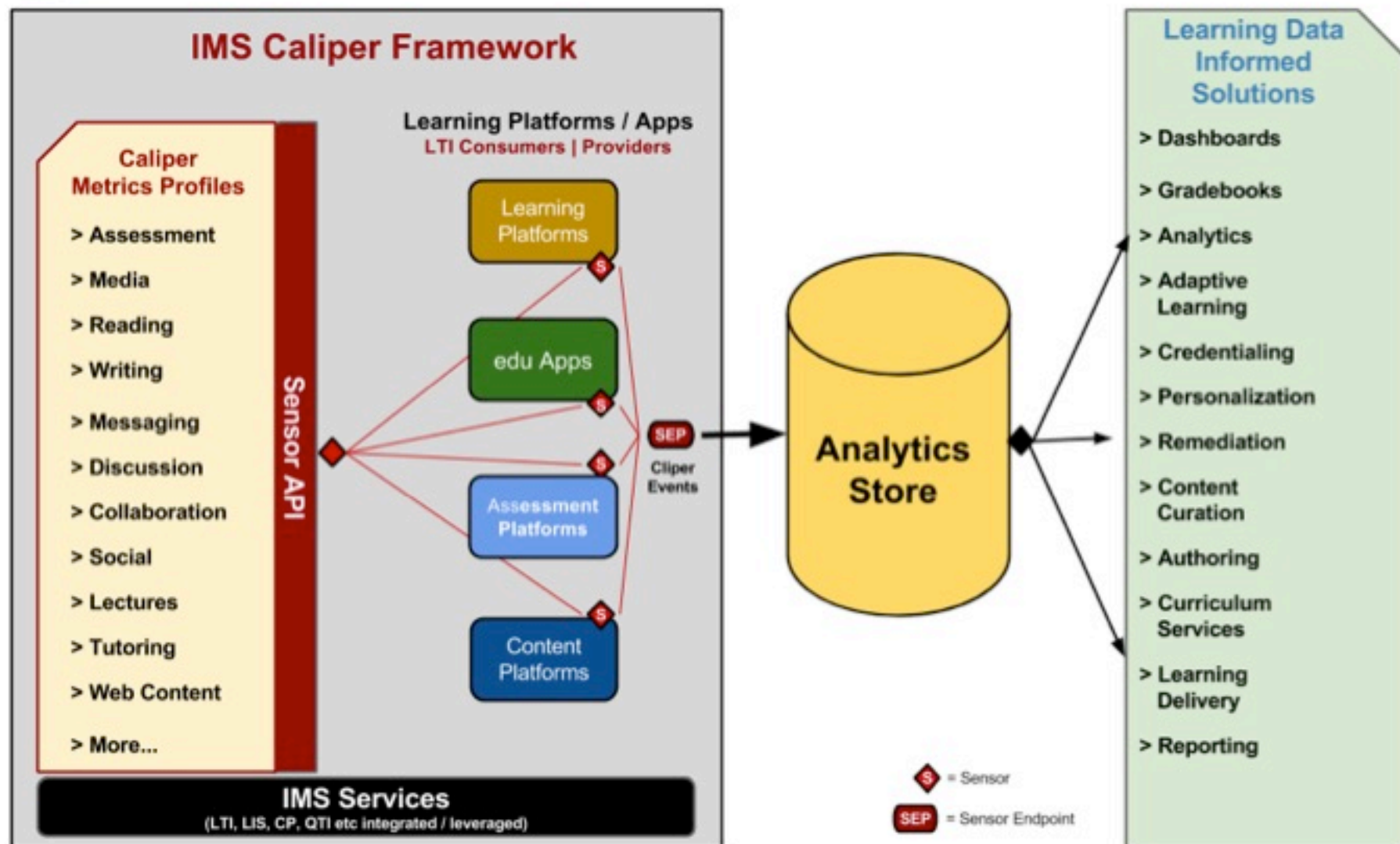
IntelliStore is a highly configurable, learning data optimized, storage repository for learning metrics. Options include privatized as well as shared cloud configuration, data lifecycle management capabilities, integration with other external data warehouses and more.

You Consume

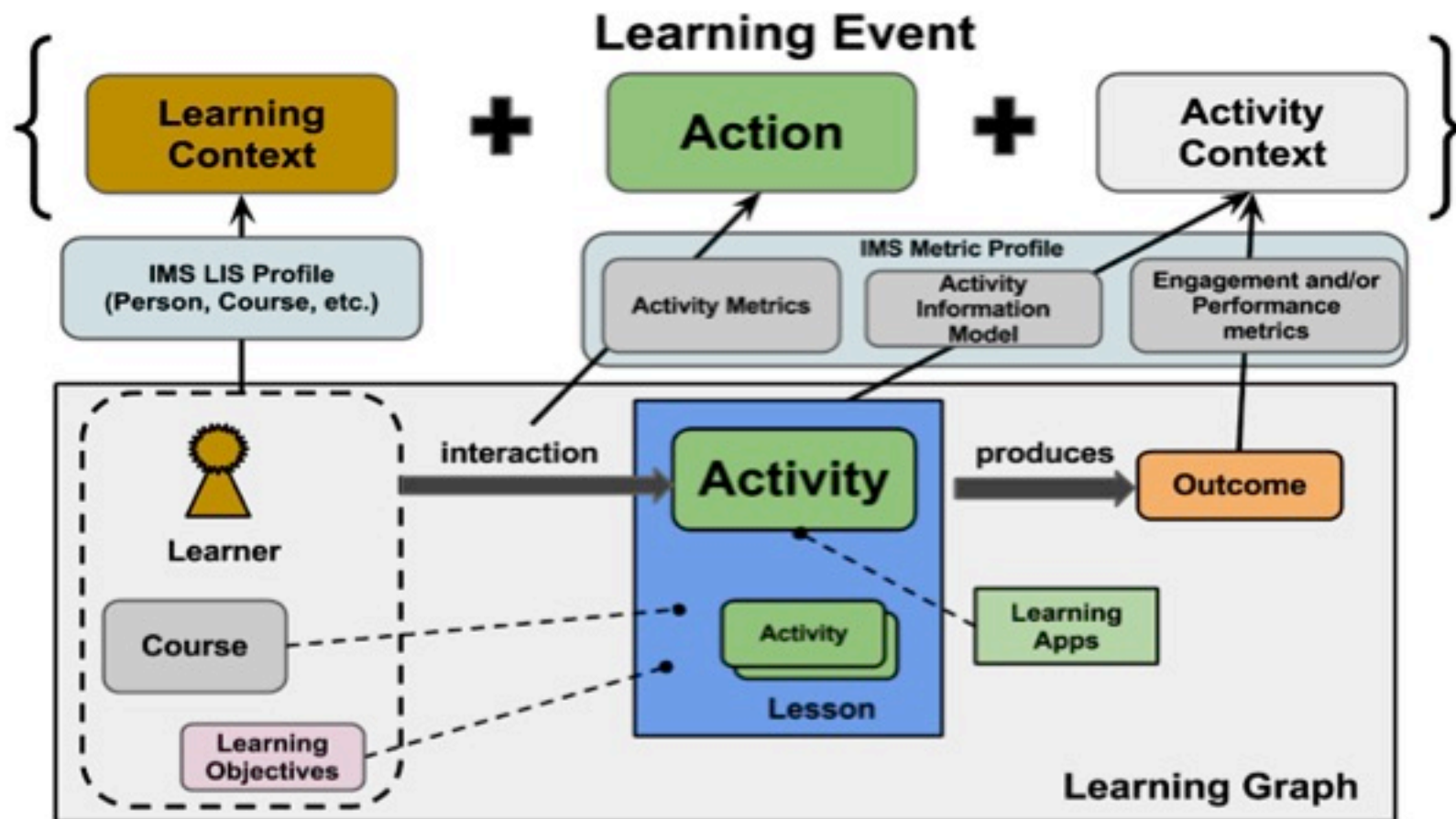
The Intellify Intelligence APIs are used to access or consume learning data from the IntelliStore.

IntelliStreams enable high capacity and configurable access to all learning data that needs to be consumed programmatically by software services or applications. IntelliViews enable off-the-shelf, ready to integrate, visualization components to present key insights. IntelliAlerts, enable invaluable push alerts to learners, instructors, administrators or any stakeholder that can benefit from getting timely, criteria-based notification of key data reflected changes occurring.

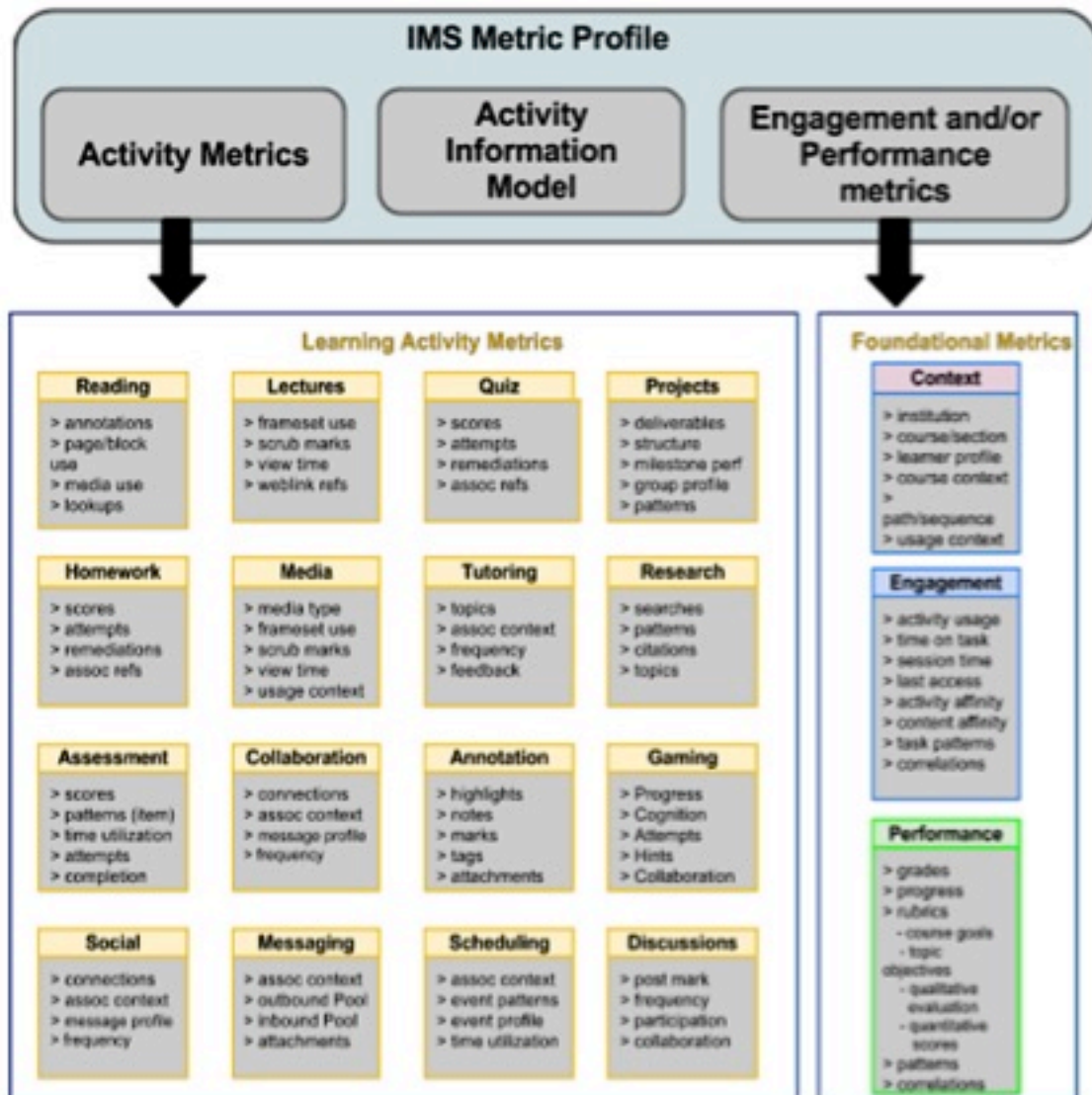
The IntelliStream access/consumption APIs are made available as part of the Intellify Data Delivery Network (DDN) capability which enables flexible aggregation and potential routing of IntelliStreams across one or more target consumption points requiring access to the data. With that, the DDN enables secure, private and/or trusted routing or shared access to IntelliStreams to enable partners and similar external parties to access a configurable and controlled data set via the IntelliStreams they are permitted to access. Basically, no need to create custom APIs or controlled access capabilities to enable any trusted access for your internal stakeholders or external partners.



Caliper Events



Caliper Analytics Metric Profiles



Analytics Challenges

- Need to start with good data
- Need to have a clear project goal
- Need organizational culture and capacity to enact action
- To achieve any of the above in education motivation for improvement must be compelling
- “Good judgment” is still required

Thank You!

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