



# xAPI in L&D:

## A Handbook for Learning and Development Organizations

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# Introduction

One of the biggest challenges when implementing new technology into your organization is knowing where to start. This is particularly true when it comes to xAPI, a data technology with seemingly endless potential applications. That's why we have brought together a set of case studies demonstrating the value of xAPI for learning and development organizations. Think of this as a handbook for xAPI in the real world.

The Experience API™, otherwise known as xAPI, is an open data interoperability specification for collecting the experiences people have across, with, and through technologies in the connected world. In a sense, xAPI makes it possible for data from different sources to speak the same language and become meaningful for the business user.

Modern learners are no longer constrained by what is available in their LMS. These days, a variety of sources — including web services, wearables, mobile simulations, and serious games — provide learning content and learning opportunities. Yet's analytics platform and enterprise scale Learning Record Store leverages xAPI to help instructors and analysts to understand learning and engagement across platforms and devices. In sum, xAPI helps you to capture and understand learning and performance in the real world.

Consider this your xAPI handbook - a reference manual featuring examples and blueprints of how other organizations have brought the power of xAPI to their systems and teams to unify their data, gain insights, and take action to improve their organizational learning outcomes in ways never before possible.

And when you're ready to get started bringing the roadmap to life for your organization, let us know. We're ready to help when you're ready to go.

– Margaret and the Yet Analytics Team

# Table of Contents

Introduction	2
<i>Case Studies</i>	
Increasing Retention	4
Modeling Competencies	7
Capturing the Choreography	10
Learner Experience	13
About the Author	17



# Increasing Retention

## in a Distributed Workforce Development Program

A global workforce development program is using experience intelligence to measure participant experience, engagement, and performance in order to increase their professional capabilities, to stimulate their productivity, and to ensure their readiness for the jobs market.



## The Challenge

A multinational firm is building a globally scalable distributed workforce training program. The biggest challenge faced is one shared with all distributed learning programs - how to keep participants continuously engaged so that they make it to employment.

The firm developed a suite of digital experiences for the program. The suite includes a mobile app that tracks program participation, content delivery and consumption, and communication among participants and trainers. The suite also includes a mobile simulation which tracks soft skills and decision making processes. In addition to the purely digital experiences, the program also includes traditional in-person group sessions as well as remote training sessions leveraging webinar and e-learning technologies.



## The Yet Process

In order to optimize participant performance and increase their productivity within the program, the project focused on using big data to improve participant engagement and retention.

The approach used included:

### Conceptualization and Strategy

Identification of instructional outcomes, in the form of competencies and skills and the creation of a semantic data structure that reflected these objectives.

### Engineering and Development

Integration of that structure into the activity data streams of the instructional and content delivery applications for the purpose of passively collecting participant experience data.

### Data Integration and Analysis

Translation of all data streams into a unified format and the querying and analysis of data to identify engagement patterns across the Yet platform.

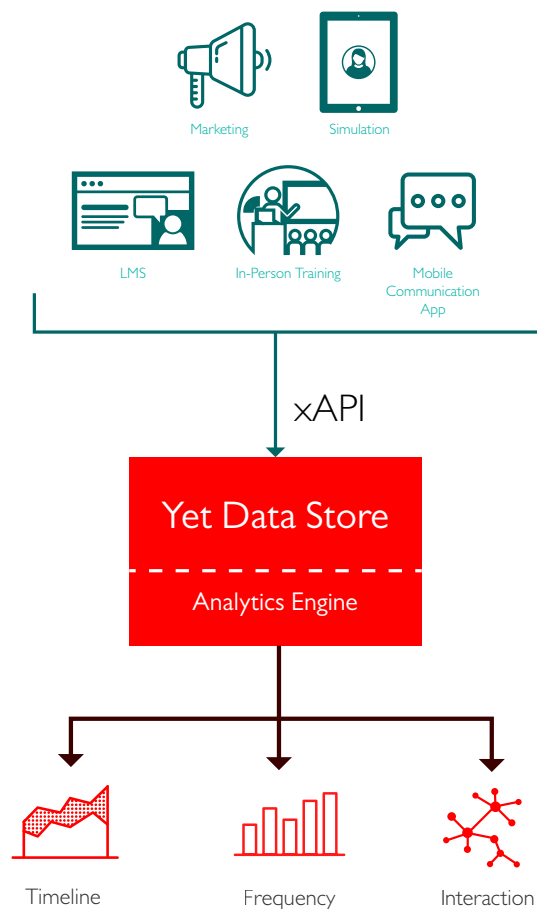
### Visualization and Reporting

Visualization of behavior frequencies, content engagement, communication habits, and the reporting of participant performance.

## Customer Value

Using Yet's platform solution, the firm is measuring participant interactions with the program platforms and applications; the formative engagements between participants, mentors, and trainers; and the types of experience-based patterns identifiable through the activities, behaviors, and performance outcomes both at individual and cohort-based levels with the training content.

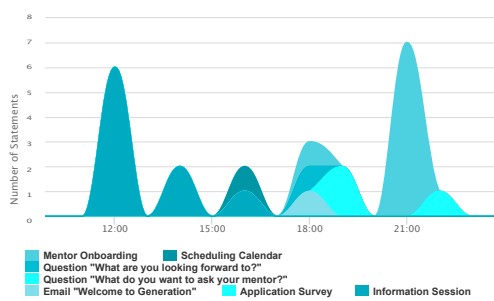
The key value proposition is that the firm is now able to use the actual experiences of participants — through their activity and experience data — to improve productivity within the program. By identifying patterns of high engagement that lead to success, as well as patterns of low engagement that signal a need for intervention, the firm is able to maintain a relevant, sustainable, and data-driven strategy of engagement and retention. Further, because the performance is captured within Yet's platform in a semantically sound and immutable event-based format, over time the system can be automated to make intelligent interventions.



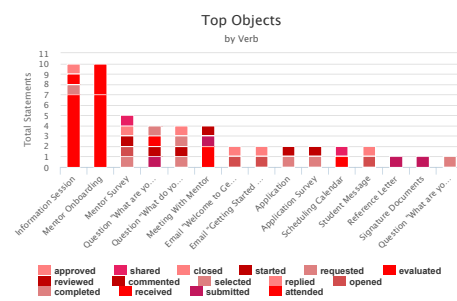


## Platform Insights

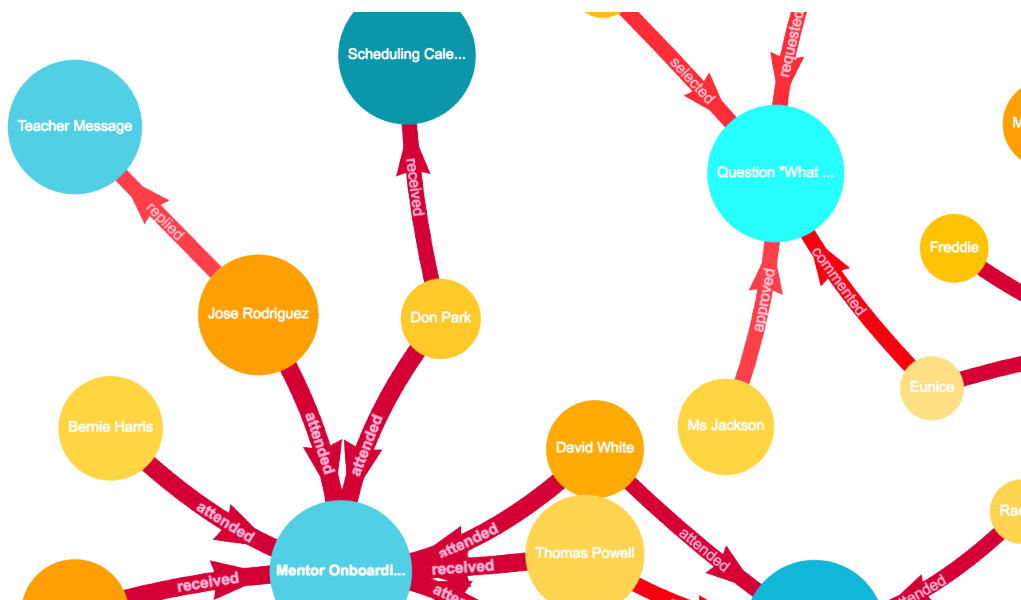
Using the Yet Analytics platform, the global workforce development program was able to track and measure the impact of teacher performance, mentor participation, and student engagement on retention in real time. By monitoring the day-to-day activities of the program, the organization was able to use experience intelligence to make instructional improvements and student interventions at the moment of need, rather than after it was already too late. The organization leveraged the ability to see directly into the patterns of experience of their learners to improve the overall effectiveness of the program.



Patterns of student experience over time.



Analysis of engagement by activity type.



Visual network of teacher, mentor, and student interaction.



# Modeling Competencies

## Improving the Impact of Professional Development Through a Competency Framework

The Learning Accelerator and Yet Analytics produced a competency-based framework for professional educators based on research-based standards and supported by an experience data architecture.



### The Challenge

The Learning Accelerator sought to build new models for adult learning reflecting the level of personalization, competency-based learning, and effective use of data that we are asking educators to implement in their classrooms. The biggest challenge was that to accomplish this, it was necessary to create a common language and frame to help users identify resources and learn across organizations and platforms, making it possible for content to be more accessible to educators at all levels as well as allow educators to more effectively own and track their learning. In short: Content and data must be made more interoperable.



### The Yet Process

An optimal framework would provide The Learning Accelerator with a means to increase the impact of its efforts to link content and data and to improve the outcomes of competency-based learning for educators.

The approach used included:

#### Conceptualization and Strategy

Review of content and activity sources and correspondence of those sources to competency objectives.

#### Engineering and Development

Creation of a framework and registry to support the build out of an interoperable data tracking system.

#### Data Integration and Analysis

Application of the Experience API to interoperability integrating the experiences of participants taking part in the competency-tracking activities.

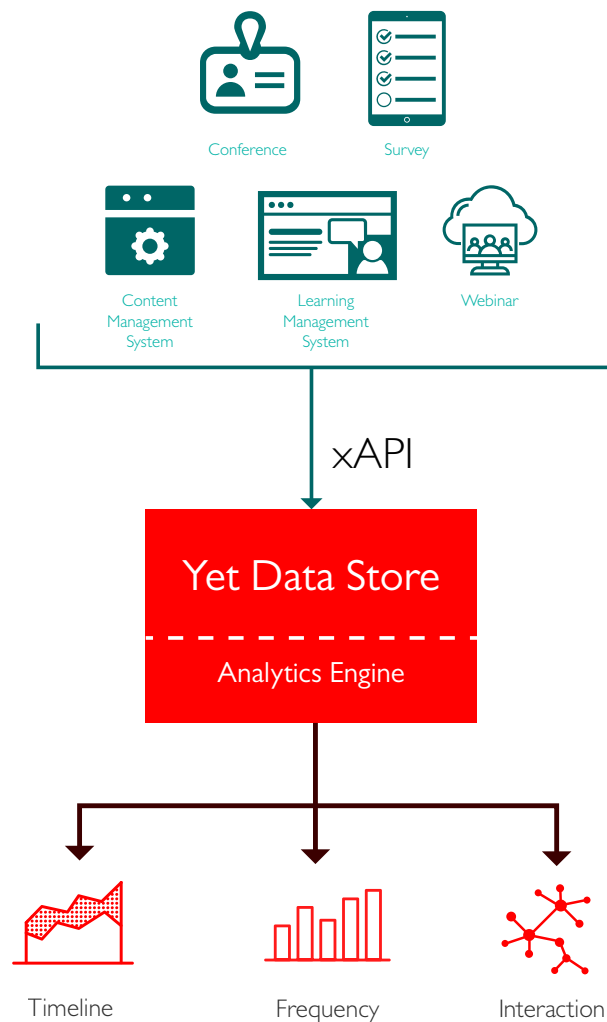
### Visualization and Reporting

Ability to visualize the experiences of educators engaging with content and taking part in activities along the competency framework.

## Customer Value

Using Yet's platform solution, The Learning Accelerator will be able to support educators through a competency-based approach to professional development based on research and a sound data architecture.

The key value proposition is that because the content and data are now interoperable, The Learning Accelerator has an increased ability to provide educators with a competency-based program of professional development which reflects the level of personalization that the profession deserves.

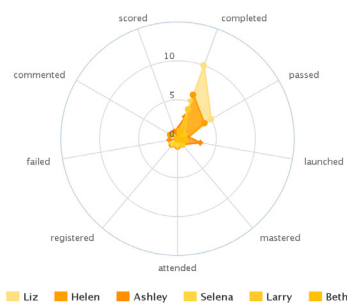




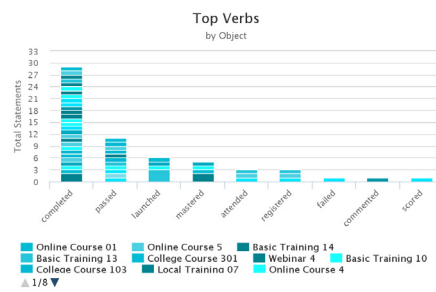


## Platform Insights

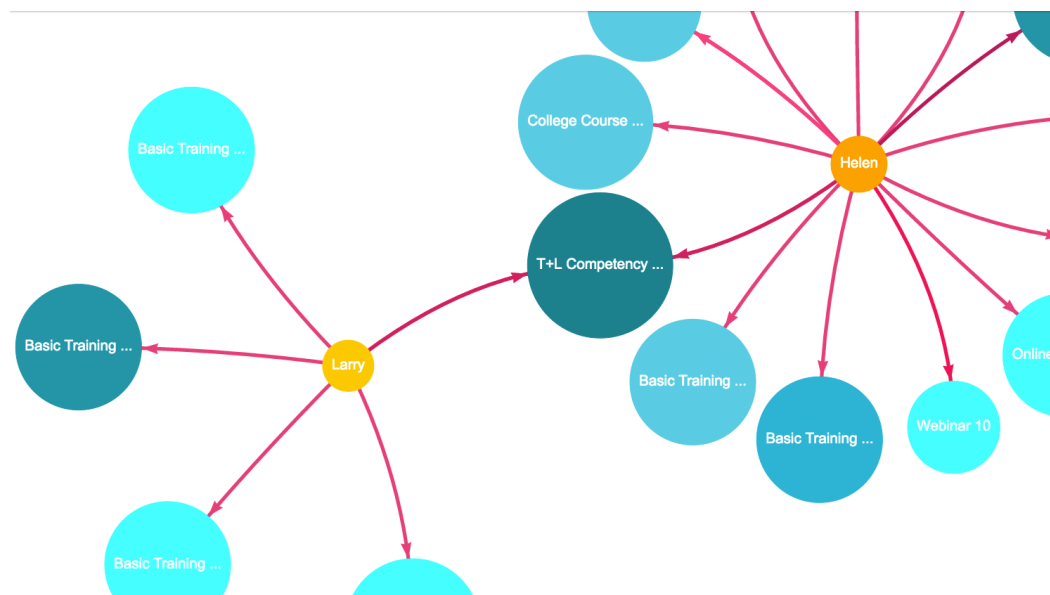
By aligning content to competencies utilizing a shared semantic data framework, The Learning Accelerator will be able to track educator skill development across multiple platforms, through different experiences, in real time. In order to democratize high-quality blended learning instruction, educators and their schools must have the ability to access, learn, and demonstrate their effectiveness through high-quality training materials. The Learning Accelerator will be able to continue to support blended-learning access at scale and measure the impact of high-quality programs leveraging the experience intelligence gained with the Yet Analytics platform.



Activity map of educator engagement pattern.



Analysis of activity participation and preferences.



Experience graph of educator content engagement and shared training participation.



## Capturing the Choreography of a Live-action Team Training through Experience Data

As part of the Global Cities Team Challenge sponsored by NIST and US Ignite, Yet Analytics provided its platform to support the work of Inova Hospitals, George Mason University, and Fairfax County Fire and Rescue in the development of IoT enabled simulation training backed by experience data.



### The Challenge

A researcher from George Mason University led a study of team training in the context of an emergency medical simulation. The biggest challenge faced was how to capture the experience and performance of the choreography of the rescue in order to identify ways to improve the team's process.

The decision was made to take an Internet of Things (IoT) approach. Beacons were pinned to each of the EMTs, firefighters, nurses, and doctors taking part in the simulation. Portals such as ambulance doors, emergency room hallways, and operating rooms were dressed with beacon readers and turned into IoT-enabled areas of observation. The simulation mannequin used in the rescue training exercise was fitted with a beacon reader as well.



### The Yet Process

In order to optimize the ability to capture and visualize all of the levels of activity and hand-off during the performance of the simulation, these data sources were all linked to Yet's platform.

The approach used included:

#### Conceptualization and Strategy

Creation of a semantic framework for machines-as-observers in an xAPI performance tracking environment.

#### Engineering and Development

Development of beacon integrations and an xAPI Android reader.

#### Data Integration and Analysis

Capture of all activity and performance streams and analysis of choreographed hand-offs of the patient between teams.

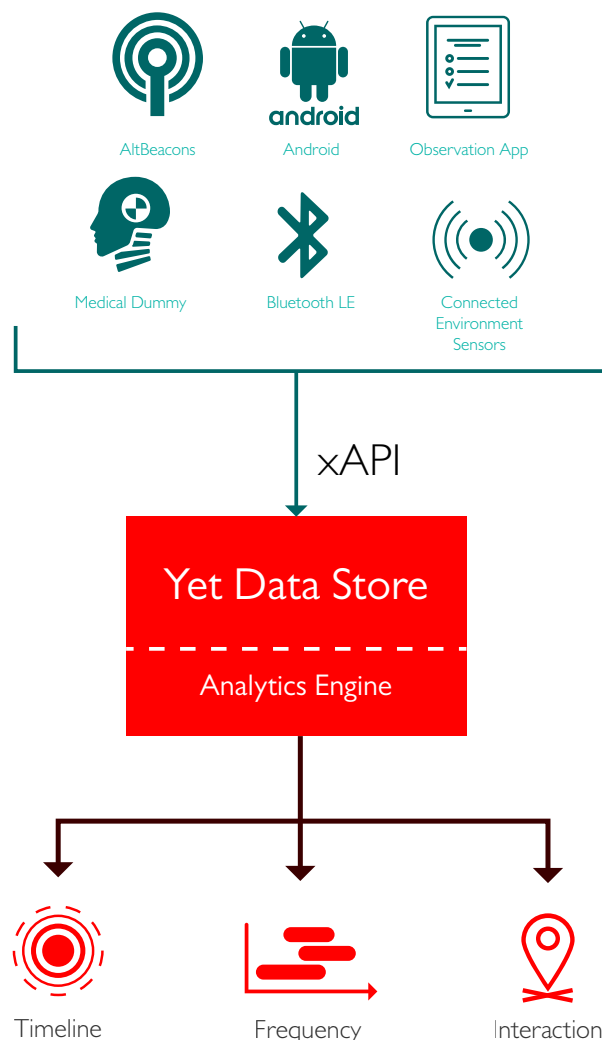
## Visualization and Reporting

Visualization of proximity of participants and hand-offs between teams over a time-series.

## Customer Value

Using the IoT beacons in concert with Yet's platform solution, the researcher team was able to identify with metric precision the location of each active participant throughout the course of the 45 minute simulation and the choreography of each hand-off — a task otherwise impossible even with video.

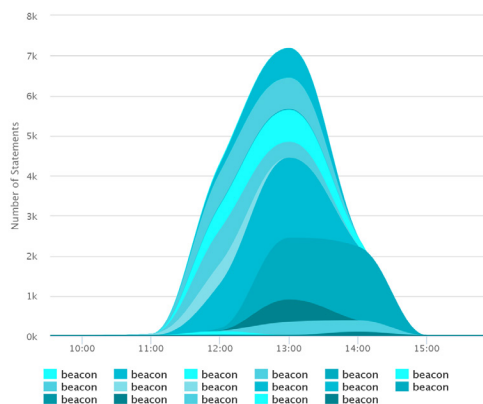
The key value proposition is that the researchers were able to collect data in a space — namely the space of the activity itself in real space and time — that heretofore had been unavailable to them. In their goal of improving the impact of simulation team training, the Yet platform had been able to provide key new data.



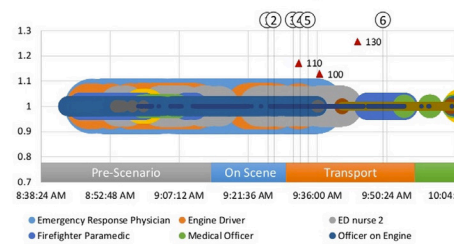


## Platform Insights

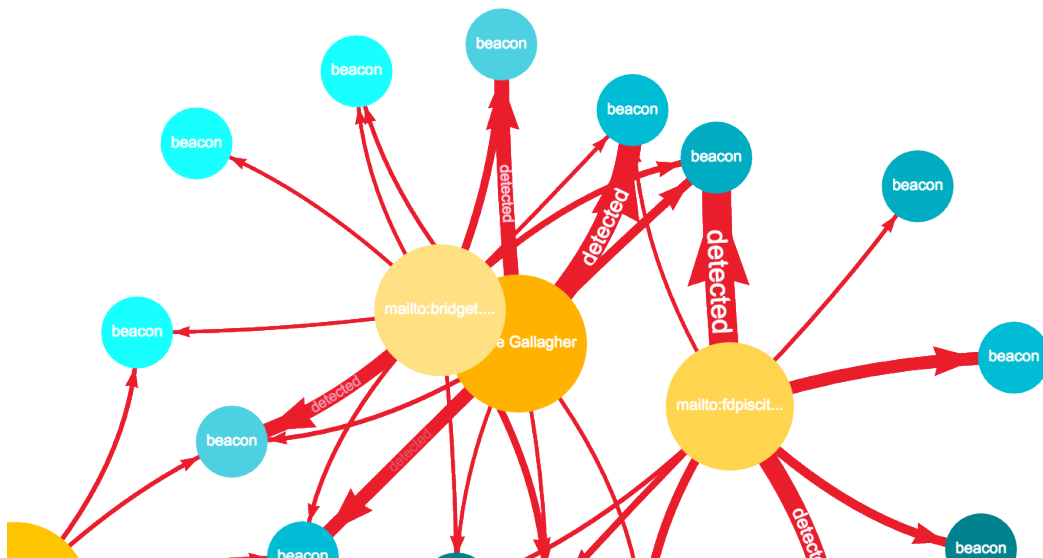
By combining the granularity of xAPI data with an embedded IoT sensor infrastructure, an entirely new level of performance evaluation was made possible. The training organization was able to apply the insights gained with experience intelligence from the Yet Analytics platform to incorporate an entirely new and critical dimension of success into their simulation-based training.



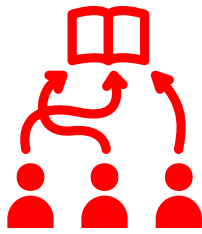
Beacon engagement frequency and duration during simulation.



Analysis of participation by trainee role during simulation.



Visual network of trainee and patient interaction by location during simulation.



# Learner Experience

## Leveraging xAPI Data to Gain Insight into Learner Experience

Learning and Development professionals are using Yet's platform to gain insight into the experience, performance, and growth pathways of their learners; to understand what content is most engaging; and to design improved instruction and assessment.



## The Challenge

A Learning and Development department is trying to increase insight into the impact of their programs. The biggest challenge faced is one shared with all L&D programs - how to measure the impact of content, instruction, and assessment on learner outcomes.

The department has authored content in Lectora and has a subscription to an xAPI-enabled video content library. They are launching content via an xAPI compliant learning management system (LMS), but they need to choose an xAPI Learning Record Store (LRS) in which to capture the event-based learner experiences and engagement with the content.



## The Yet Process

In order to optimize their ability to gain insight into the experience of learners and the impact of their programs, the department needs an LRS which is built for enterprise scale and security. They also need analytics, data visualization, reporting, and data portability features and they need the system to run on a predictable budget no matter how many users access the system or no matter how much data may be consumed in a given month.

The approach used included:

### Conceptualization and Strategy

Identify which deployment of Yet's LRS product makes the most sense — Enterprise SaaS, Virtual Private Cloud, or On-prem.

### Engineering and Development

Establishment of the corporate dashboard and regular queries.

### Data Integration and Analysis

Integration of the LRS with Lectora and the xAPI content and LMS is as simple as sharing API keys.

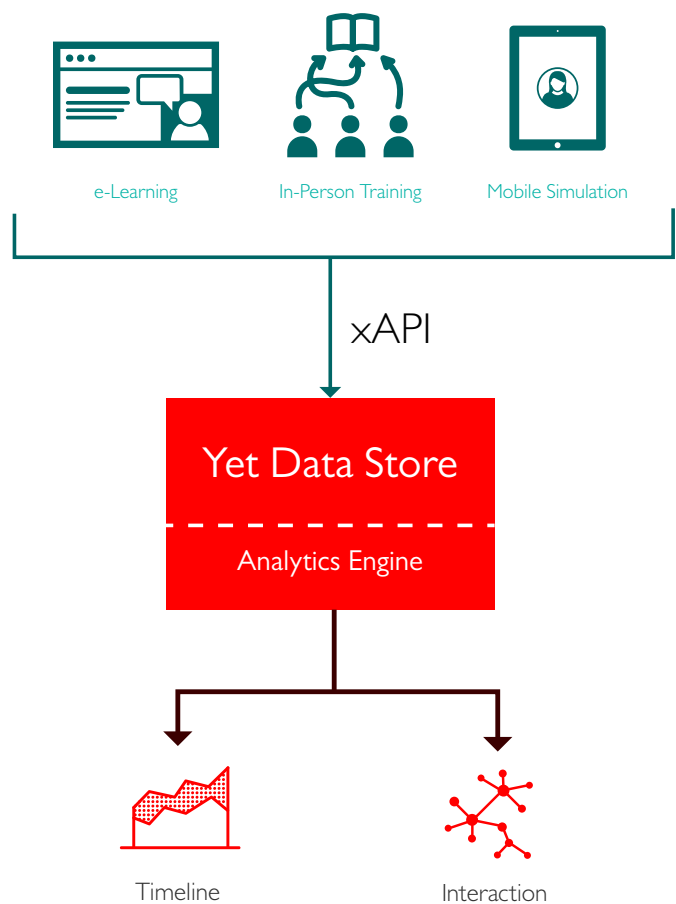
## Visualization and Reporting

Visualization of learner behaviors and experience is automated and is delivered in real-time; reports are exportable to BI and productivity platforms.

## Customer Value

Using Yet's platform solution, the Learning and Development department is able to see learner engagement with all aspects of their content and instruction system. Because all xAPI data is comprised of the core elements of Actor (Learner), Verb, and Object (Activity), the L&D professional can query Yet's LRS for individual, team, and organizational behavior and performance. Comparative data is at the fingertips of the analysts, and because Yet's datastore is completely immutable they can have confidence that the quick response to their queries are accurate.

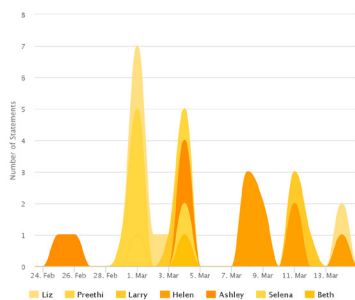
The key value proposition is that the L&D professional will be able to measure the impact of content, instruction, and assessment on learner outcomes by capturing and querying an immutable audit trail of the learning experience, performance, and outcome of their whole learner population live and in real-time. This will increase the impact of the L&D program and will provide clear ROI on learning and development investments.



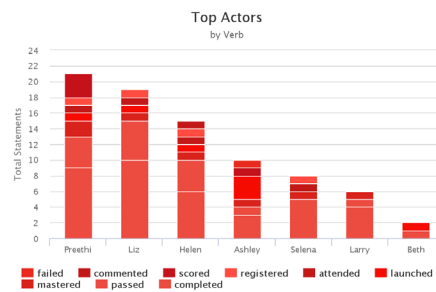


## Platform Insights

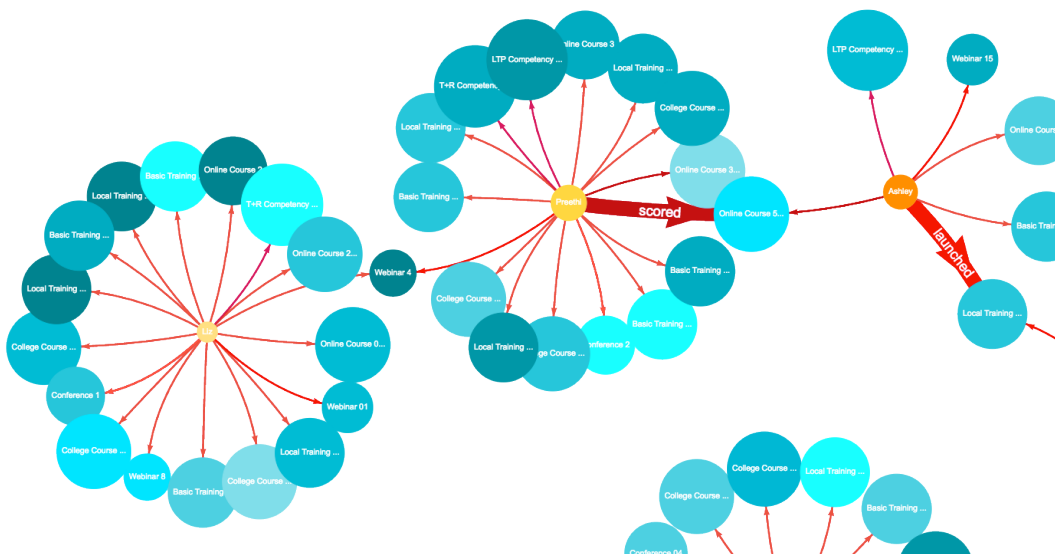
Using the Yet Analytics platform, a learning and development department was able to gain insight into the personalized learning decisions of their team members across the organization. By connecting data from the LMS with granular xAPI data about content utilized, instruction selected, and on-the-go formative assessment, the learning and development department was able to make data-driven decisions on what kinds of training resources and professional development instruction to invest in. The L&D team was able to identify the experience pattern that yields the greatest return to the employees and to the company.



Patterns of team member utilization of training content over time.



Analysis of activity engagement and social participation of team members.



Visual network of team member engagement with content, assignments, and colleagues.

# Yet Powers Performance

Clients across industries use the Yet Analytics software platform to unify experience data from diverse sources and to deliver experience intelligence.

In unifying diverse data sources including performance management systems, productivity tools, social media and mobile simulations, and next generation virtual and wearable tech, users of the Yet Analytics software platform are able to connect training to productivity, resources to impact, and tools to efficiency. With the Yet Analytics platform, organizations get a 360-degree view full of insights about the experience of their people in real-time.

The Yet platform provides customers with a means to bring together disparate data sources; to capture, visualize, and analyze data; and to create reports which provide insight and intelligence into the experience of their people, organizations, and systems.

To learn more about Yet Analytics and find out how the Yet Analytics software platform can deliver experience intelligence to your organization, reach out to [margaret@yetanalytics.com](mailto:margaret@yetanalytics.com) or visit us on the web at [www.yetanalytics.com](http://www.yetanalytics.com).



# About the Author

Margaret Roth is Chief Revenue Officer and Co-Founder at Yet Analytics. Margaret works to develop and design connected learning environments through real-world applications of the Experience API. She has presented nationally on data interoperability and experiential training at conferences including iNACOL, xAPI Camp, ISTE, the NIST Global Cities Teams Challenge, SXSWedu, and SXSW Interactive.



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