

# CampusIL and MidLink Making Open edX Aspects Production-Ready



## Introduction

**CampusIL**, Israel's national digital learning initiative led by the Israel National Digital Agency, set out to strengthen its data-driven decision-making capabilities. With more than 1.2 million learners and over 30,000 courses and Custom Course Experience (CCX) classrooms delivered to date, CampusIL required a scalable and reliable analytics platform to support educators, learners, and policymakers.

The foundation for this effort was Open edX Aspects, an open-source analytics framework designed to transform LMS activity data into actionable insights. While powerful, Aspects in its default form can be challenging to run at national scale, requiring careful attention to performance, scalability, and cost-effectiveness.

To address this, CampusIL partnered with MidLink Cloud, an AWS Consulting Partner specializing in cloud migration and modernization. MidLink focuses on delivering scalable, secure, and cost-efficient production-ready and well-architected cloud environments. Leveraging its expertise, MidLink implemented and optimized Aspects on AWS, transforming it into a robust, cloud-native solution capable of meeting CampusIL's national-scale needs.

**CCX is an Open edX feature** which allows course creators to create a private, customized version of an existing course for a specific group of students. Using content from the original course, it enables a new schedule or private instance, and is frequently used by organizations/ instructors to run their own private MOOCs or to re-run content for a specific cohort. As part of its roadmap, the Open edX platform plans to allow CCX functionality on top of Content Libraries.

CampusIL relies heavily on CCX to deliver hybrid learning that blends self-paced online study with teacher-led classroom instruction. This approach supports K-12 STEM - an Israeli Ministry of Education priority, aimed at building a tech-ready workforce.

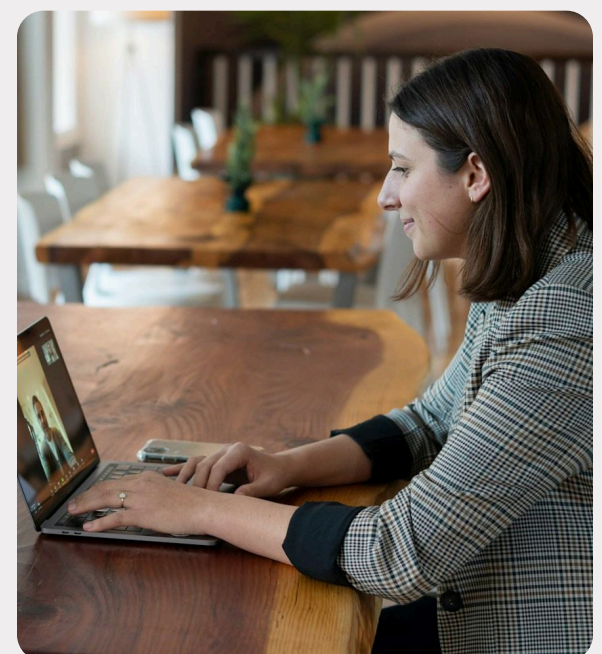
To further enhance the mechanism, CampusIL developed a unique process for opening a CCX course, which tags the classrooms according to knowledge fields, schools, areas and other data. This metadata is then ingested into Aspects, where it becomes available for reporting, filtering, and analytics across the platform.

## The Challenge

Open edX Aspects provides strong capabilities for learner analytics. However, institutions often encounter challenges when attempting to run it in production. Common hurdles include:

- **Scalability** - efficiently handling millions of daily learner events.
- **Performance** - delivering timely insights without delays.
- **Operational Complexity** - deploying, maintaining, and monitoring large-scale analytics clusters.
- **Cost Optimization** - avoiding unnecessary over-provisioning while ensuring stability.

For a national initiative such as CampusIL, with more than 1.2 million registered users, and a scope of Aspects' database including more than 704.7 million events (representing a small part of CampusIL history, since January 2024 only, and with additional historical data to be added), these challenges risked delaying access to the actionable insights required to inform policy, course design, and learner support strategies.



# MidLink's Contribution

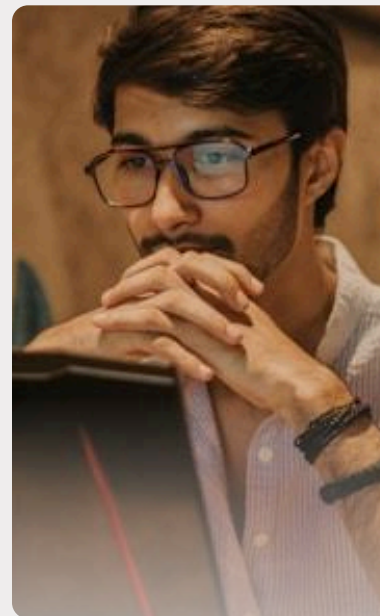
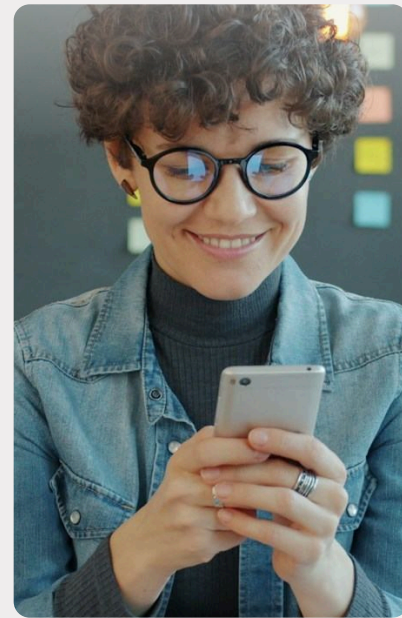
## Making Open edX Aspects Production-Ready

Rather than reinventing the wheel, CampusIL and MidLink built on the strengths of the open-source Aspects framework. MidLink's role was to harden, scale, and optimize Aspects for production readiness on AWS.

Key enhancements delivered included:

- **Cloud-Native Architecture:** Running Aspects on Kubernetes with modern CI/CD pipelines (ArgoCD, GitHub Actions).
- **Dynamic Scalability and Cost-Effectiveness:** Auto-scaling ensures the platform flexibly adjusts resources to actual demand, supporting more than 2 million daily learning events while maintaining infrastructure efficiency.
- **AWS Well-Architected Foundation:** Leveraging AWS Graviton for cost/performance optimization, along with CDN and WAF for secure delivery.
- **Observability and Reliability:** Full operational visibility via Grafana dashboards, ensuring performance and stability are continuously monitored.
- **Operational Simplification:** Providing a deployment approach that removes barriers to adopting and maintaining Aspects at scale.

This modernization allowed CampusIL to unlock the full potential of Aspects — not just as an open-source framework, but as a production-ready national analytics platform.



## Outcomes for CampusIL

The impact of the production-ready deployment is measurable and observable:

- **Enhanced Data-Driven Decision-Making:** Raw learning events are transformed into dashboards and visualizations, enabling instructors and administrators to optimize course design, learner engagement, and educational outcomes.
- **Operational Efficiency and Cost Savings:** Auto-scaling ensures infrastructure matches workload demand, preventing over-provisioning and enabling cost-effectiveness.
- **Proven Scalability:** The platform reliably processes over 2 million learner events per day, across more than 3,000 courses and more than 30,000 opened courses and CC X classrooms - demonstrating national-level scalability - with the largest course having more than 1 K blocks (university acceptance test preparation course).
- **Simplified Management & Faster Insights:** Cloud-native automation reduces operational complexity, ensuring analytics are delivered quickly and consistently.
- **Observable Performance:** CampusIL monitors analytics performance in Grafana, providing continuous evidence of stability, throughput, and growth capacity.
- **Information Security:** A strict information security team defines cross-organizational security requirements and policies, including the implementation of raw-level security and extended permission management, integrated with the Open edX platform.

"The insights made available to the CampusIL team and its partners enable the maximization of pedagogical investment by identifying which courses are more preferred and which are less so. The more successful courses can be further refined, invested in, and replicated to create future offerings. This directly enhances CampusIL's ability to optimize its active course catalog, thereby increasing the number of learners and encouraging more active learning. Ultimately, this supports CampusIL's broader vision of reducing educational gaps across diverse populations."

Shachar Prizat | Technology & Software Development Manager at Campus IL at Israel National Digital Agency

## Key Success Factors

For CampusIL, three factors were critical to realizing the full value of Aspects at scale:

- 1. Strategic Deployment:** Leveraging MidLink's expertise to ensure a smooth, optimized implementation on AWS.
- 2. Continuous Data Utilization:** Actively using real-time insights to drive ongoing improvements in course delivery and learner support.
- 3. Scalability Planning:** Designing with future growth in mind, ensuring the solution seamlessly scales with demand.

## Future Directions

With production-ready analytics in place, CampusIL is well-positioned to expand capabilities further:

- **GenAI Integration:** Leveraging AWS Bedrock to develop generative AI components (e.g., personal tutors).
- **Advanced Analytics:** Extending reporting and predictive analytics to support deeper educational research and policy-making.
- **Continuous Improvement:** Institutionalizing feedback loops where analytics directly inform and refine course design and learner support.

### The Partners Behind the Outcome



## Conclusion

This collaboration between the Open edX platform (innovation), MidLink (production expertise), and CampusIL (national vision) demonstrates the power of combining open-source with cloud-native modernization. By making Open edX Aspects production-ready, CampusIL has unlocked a scalable, cost-effective, and observable analytics platform that directly improves learner outcomes and strengthens national digital education strategy.

This case highlights how open-source, when implemented with the right expertise, can be elevated into an enterprise-grade solution serving millions of learners daily.



"Our collaboration focused on hardening and optimizing Open edX Aspects on AWS, overcoming the common hurdles of scalability and cost. We transformed it into a reliable, production-ready cloud solution that ensures CampusIL and its partners get fast, consistent access to the data they need to maximize their pedagogical investment and improve learning outcomes for every student."

Udi Altaratz | CEO at MidLink Cloud



MidLink Cloud is an AWS Advanced Consulting Partner, delivering full-spectrum cloud migration and modernization services powered by an all-in-AWS team of experts.