SmartCampus

The SmartCampus Eduverse:
A Next Generation Distributed Decentralized Learning Solution

Concept Paper by DXtera Institute and Smart Republic

Context:

Emerging technologies for distributed and decentralized information management have a potential to re-define teaching and learning. To date, next generation techniques such as linked data, distributed ledgers and micro-service architecture, have not been fully realized in support of educational processes. When they are, it will open up a world of global distributed educational opportunities to help democratize teaching and learning and make more effective educational opportunities available to those who need them.

Vision:

SmartCampus (SC) will be the first of its kind distributed and decentralized teaching, learning and knowledge sharing platform. The SmartCampus platform will allow individuals and organizations to link together educational resources, activities, assessments, courses, learning outcome and competency models, with analytics to support global knowledge exchange. The SC platform is designed to support next generation tools and products including AI enabled services and virtual and augmented reality environments, in addition to traditional web and mobile educational applications.

SC is envisioned as a platform to bring the Eduverse to life. It is designed to be a global social network for defining and navigating knowledge taxonomies and learning pathways with the goal of transforming teaching and learning across all sectors. The SC platform provides participants with a social network, knowledge applications, data management solutions and communities of practices for engaged participants. SmartCampus was developed to support the critical needs of organizing, tracking and connecting information and providing educators and learners the infrastructure and tools to support both formal (curricular-based) and informal (self-paced) education and training.

We are proposing a revolutionary model for distributed and decentralized curriculum creation and management built around a framework for collaboration, assessment, and knowledge sharing. It will provide tools for educators to assemble learning outcome based educational pathways. It will help measure user knowledge and proficiency against learning outcomes and skills in support of educational goals.

The application of SC can extend beyond traditional teaching and learning. It can help measure how individuals, firms, regions and nations are addressing performance goals, including the United Nations' Sustainable Development Goals (SDGs). For instance, SmartRepublic envisions using the platform for knowledge sharing, assessment and metrics related to global sustainability. In addition, SmartCampus can allow users to describe and promote projects for potential funding by making taxonomical connections with available financial organizations related to target SDGs.

The platform will also support any user's ability to create, manage and expose taxonomies, content, learning opportunities, assessments and projects that bring together both curated information from official sources with their own ontologies, goals and content to create a true social network of educational resources.

The SmartCampus platform is designed to be federatable, allowing any organization to set up its own SmartCampus and linking it as desired to the broader SmartCampus network. SC is an Eduverse Impact Platform that will accelerate the success to support the SDGs by allowing smaller projects to be aggregated in sharing knowledge, efficiencies and impacts. The platform is the horizontal, and the specific sectors that your organization seeks to be engaged with are the verticals.

Technology: (An Innovative Knowledge Platform Based on Open Digital Solutions)

Our technology allows for any efforts within education-sustainability to be linked to or integrated with your choice of technology applications including AI, VR, Mobile and others. We envision an environment that is more adaptive to users needs and enables the choice of products within sectors to be integrated and optimized.

SC will also provide a means of assessing instructional effectiveness and sharing that information with others, allowing teachers and teaching staff to optimize their instruction, and learners to quickly identify online learning activities that best suit their needs.

Traditional online learning environments are like isolated islands of activity, scoped only to the context of a single school, college, university and rarely across a system of such organizations, but typically managed in a centralized fashion. Even those solutions that are managed via a hosted SaaS typically do not provide the ability for instructors and students to investigate and share educational experiences among their peers, across institutions, and certainly not on a global scale. The emerging trend in most sectors that utilize knowledge and learning systems where the silos historically segment the data, are increasingly being integrated through next generation platforms to optimize the performance of the organization and its management.

SmartCampus

The SmartCampus platform will use a multi-modal, micro-service strategy for global distributed decentralized platform federation, allowing teachers and learners anywhere to take advantage of educational opportunities, materials, assessments, learning outcome and skill pathways defined across the entire internet of educational offerings. Techniques include:

- Federated interoperability between SC instances through linked data. Linked data protocols based on DXtera Institute's CampusAPI will allow distributed web and mobile applications to interoperate with one or more SC platforms in the network to take advantage of the growing global online corpus of educational content and activities.
- Information synchronization through distributed messaging and distributed ledger technologies. SC enabled tools and services will be able to join into distributed and decentralized teaching and learning networks as desired.
- High performance real-time integration with third-party enabler infrastructure, including social networks, content repositories, crypto-currency, and legacy educational technology systems.

SC users can create their own learning environments, assert ownership and rights over their own learning materials, activities, programs and credentials, and share these assets with other networked users through simple but powerful authorization models. They can set access control of other users or across linked platforms through the various modes of interconnection as desired. By taking advantage of the multi-modal platform network, teachers and learners alike will be able to access educational materials, activities and assessments across the global network, and attach their own educational offerings to the growing network of defined learning pathways. In addition, data measuring effectiveness and linking learners with content and activities best suited to their needs can be securely or openly shared within and across systems.

In addition to the SmartCampus platform, the project will deliver a related developer toolkit that will allow legacy learning systems, and other technologies, to expose information and functionality to actively participate in the SmartCampus network through the CampusAPI microservice specifications.

Opportunity:

Seeking collaborating firms and investors, SmartCampus is being developed and deployed through an emerging joint venture with Smart Republic (a multinational firm with presence in France and the UK) and the DXtera Institute (a multinational non-profit organization headquartered in Boston, Massachusetts, USA). We are interested in exploring investment and business partnerships that can assist with the launch and scaling of SmartCampus and assist us in developing a presence in additional markets in the European Union, Latin America and other regions.