ADB

Digital Transformation and Emerging Technologies

Evaluating and Implementing Emerging Technologies to Improve Quality of Learning and Student Outcomes in Higher Education

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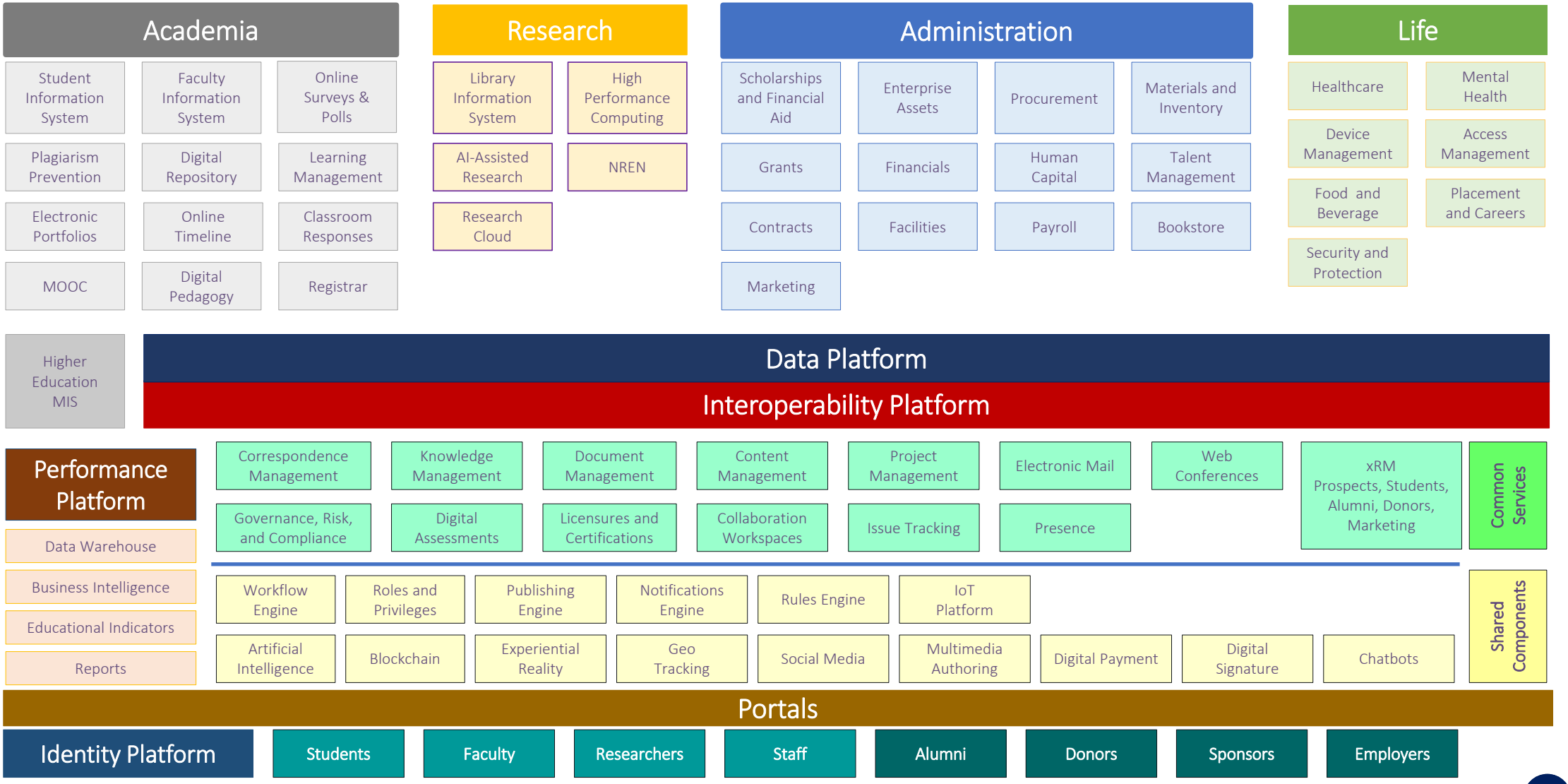
Digital Services Architecture for Higher Education



Webinar Agenda

- Blockchain
- Internet of Things (IoT)
- eXtended Reality
- Micro-Assessments
- Micro-Credentials & Nanodegrees
- Big Data & Predictive Analytics
- Artificial Intelligence

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Blockchain

- Self-Sovereign Identity and Verifiable Credentials (Issuer & Holder)
- Full learning history and reliable certification of learning outcomes
- Decentralized exchange of educational resources
- Log of research findings and intellectual property information
- Leverage Blockchain for Issuing Transcripts
  - Deloitte; University of California, Harvard University, Massachusetts Institute of Technology in the United States; Delft University of Technology in the Netherlands; Hasso Plattner Institute at the University of Potsdam and Technical University of Munich in Germany; Tecnologico de Monterrey in Mexico; and University of Toronto in Canada

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Presence, Attendance, and Digital Proctoring

- Face-to-Face and virtual attendance
- Student and Faculty check-ins
- Realtime presence through biometrics, IoT platforms, and RFID technologies
- Distance learning close monitoring
- Leverages BYOD
- However, Ethical and Legal Concerns Arise…

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eXtended Reality and Robotics

- Learners gain immersive experience that simulates real-world activities in low-risk, flexible environment
- Yale University has dozens of XR projects covering energy, electronics, medical training, and archaeological discovery
- University of California at Berkeley teaches architectural design with immersive sketching, structural energy analysis, and building scale
- Purdue University Global School of Nursing uses XR for virtual immersive learning in nursing education and psychiatric patient modeling
- Morgan State University applies XR to healthcare, medicine, and nursing education
- MIT launched *Collaborative Learning Environments in Virtual Reality (CLEVR)* project to develop VR simulations for classroom use

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Micro-Assessments

- Focus is less on writing and more on assessing knowledge and skills
- Hundreds of digital micro-assessments (2-3 minutes) aided by immersive XR
- New methods and techniques for assessing student academic achievements
- Online exam monitoring, proctoring, and invigilation
- Micro-Assessments can be AI-free zones that may be powered by AI tools

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Emergence of Micro-Credentials & Micro/Nano Degrees

- Rapid technological changes necessitate rapid upskilling, reskilling, and alignment of higher education workforce skills
- Subject-specific on-demand individualized learning experiences coupled with flexibility in learning time (MOOCs)
- More than 700,000 micro-credentials available globally from various sources
- Some platforms offer micro-masters and micro-bachelors (EdX) while others offer nano-degrees (Udacity)
- Most HEIs do not accredit micro-credentials, but some are integrating micro-credentials into curricula as part of much longer university course to bridge skills and knowledge gaps and improve academic qualifications and employability of graduates
- Malaysia and Indonesia enacted policies for credit-bearing online courses and micro-credentials while implementing regulations for quality assurance and assessment

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Student Performance Monitoring and Improvement

- *Predictive Analytics: Rethink the Way You Think*
- Focus on improving efficiencies and stakeholder satisfaction
- Detect and predict potential student failures and dropouts
- Data-Driven Decision-Making across institution
- Student advising with improved alignment of job market supply and demand

Bridging Skills Gap in Rapidly Evolving Markets

- Unfortunately, markets move much faster than academia
- Must develop more relevant curricula and syllabi to meet evolving market demands
- In some Asian countries, career paths that students chose required more than 10,000 unique missing skills (skills gap)
- Important to identify economic sectors and professions along with their knowledge and skills requirements
- Provide tailor-made career guidance to students and align curricula with market demand

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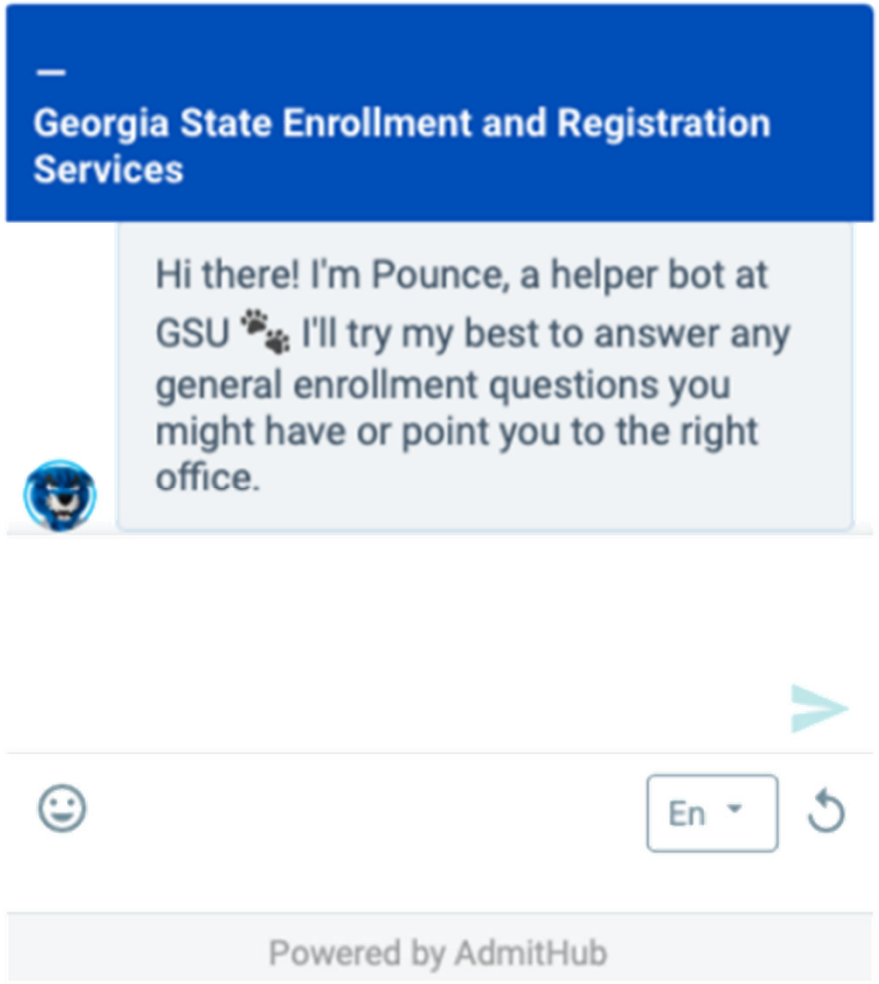
Artificial Intelligence

- *AI will not take our jobs from us;*
  it's other people using AI who will
- Suddenly, AI/AGI are rocking foundations of humanity
- Faculty is seeing tidal wave of AI-generated assignments
- AI-assisted test scoring and plagiarism detection
- Helps improve user experience for students with special needs who rely upon assistive technologies, e.g., natural voice text to speech, Seeing AI
- Identify at-risk students and issue early academic warnings

Enrollment

- Online processing of registration requests
- AI-assisted filtering of applicants
- Optimized smart scheduling and enrollment in course sections
- Leveraging emerging technologies
  - Using AI to boost enrollment and retention (Fight "summer melt")
  - Using Chatbots to encourage enrollment



Issues with AI in Higher Education

- Ethical and practical challenges to academic integrity in higher education. Ethical issues include:
  - **Plagiarism** compromising academic integrity
  - **Ownership** of intellectual property generated by AI as well authorship and ownership of content
  - **Bias** because AI language models depend on data used to train them leading to unintended bias, including racial, cultural, language biases
  - **Dependence** of students on AI language models could result in underdeveloped critical thinking skills and writing abilities
  - **Verification** of accuracy of AI-generated content makes it challenging to assess reliability of research leveraging such tools

To Embrace or Resist? That is THE Question!

- AI Classifiers detect AI-generated content, so ask students to use them like Turnitin for plagiarism detection
- Leverage AI to provide information while humans conduct deeper analytical, ethical, and critical thinking
- Help students prepare for the future by giving them tools and learning spaces that foster creative practices and collaboration
- Ensure all faculty members are digitally fluent to provide creative, equitable, and innovative engagement for students
- Implement AI-free spaces where students surrender technology gadgets to have AI-free conversations, group activities, and brainstorming sessions
- Emerging technologies are increasingly affecting current jobs while helping create new ones
- Workplace of the future will include AI so why not embrace AI in higher education by incorporating AI tools in curricula

Bangkok

End of Presentation