

AI in Enterprise Learning Systems

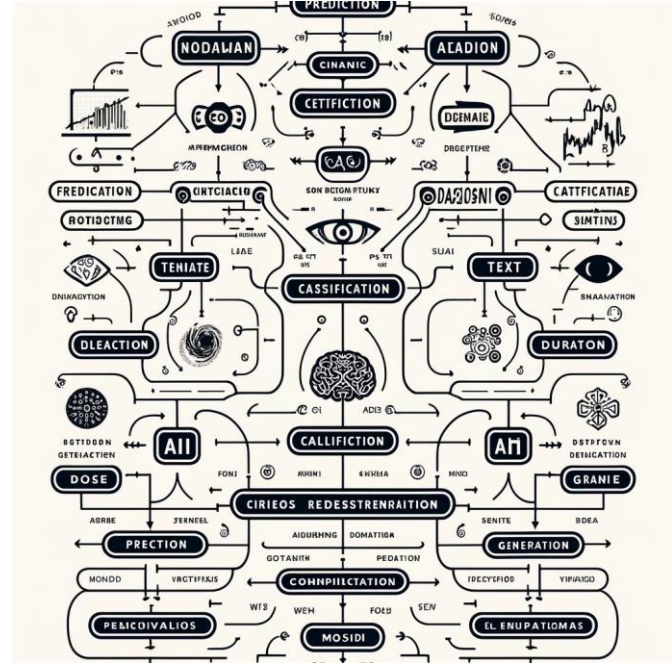


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Concordia University Summer Institute on AI and Education

<https://www.downes.ca/presentation/582>



Abstract

Description: This presentation will provide a general perspective on the use of AI in enterprise learning systems like Learning Experience Platforms, Learning Management Systems, and Talent Management Systems, and what that might mean for learning. We will explore uses including learning and performance analytics, learning and competencies assessment, content and learning path recommendations, and similar types of work. We will also consider how various standards, such as xAPI, facilitate 'intelligence' in enterprise systems, and consider wider issues such as data management and analytics, the enterprise AI workflow, and evolving needs in enterprise learning and development.

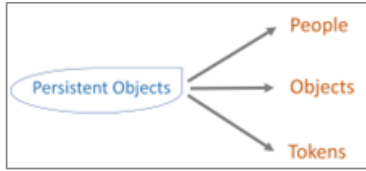
What to Expect

1. A Technology Overview
2. What AI Does
3. Enterprise Learning Systems
4. Interlude: How We Predict
5. Some Predictions
6. What The Pros Do
7. Wider Issues



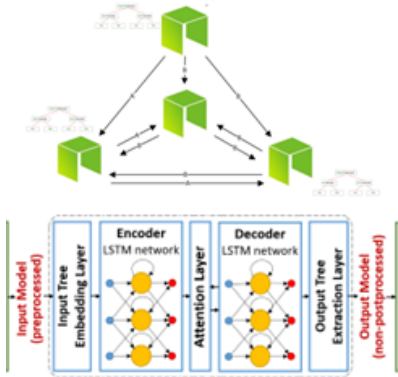
It's not rocket surgery

Metaverse



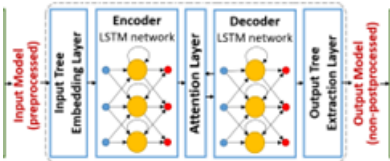
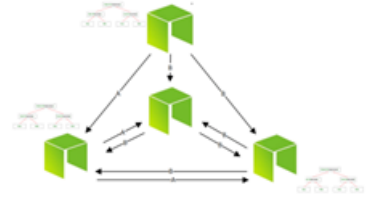
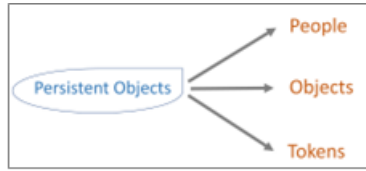
Persistent Objects

- Distributed ID (DID)
- Open Educational Resources
- Badges and Credentials



- Accessible and usable learning resources
- Support for informal and lifelong learning

Blockchain

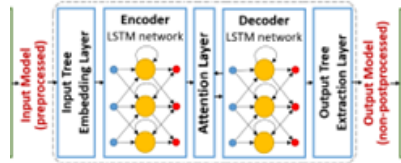
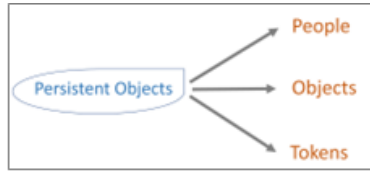


Consensus

- Peer Networks
- Fediverse (Mastodon)
- Open Community

- Building and facilitating mechanisms for people to support their own learning
- For example, Personal Learning Environments

Artificial Intelligence

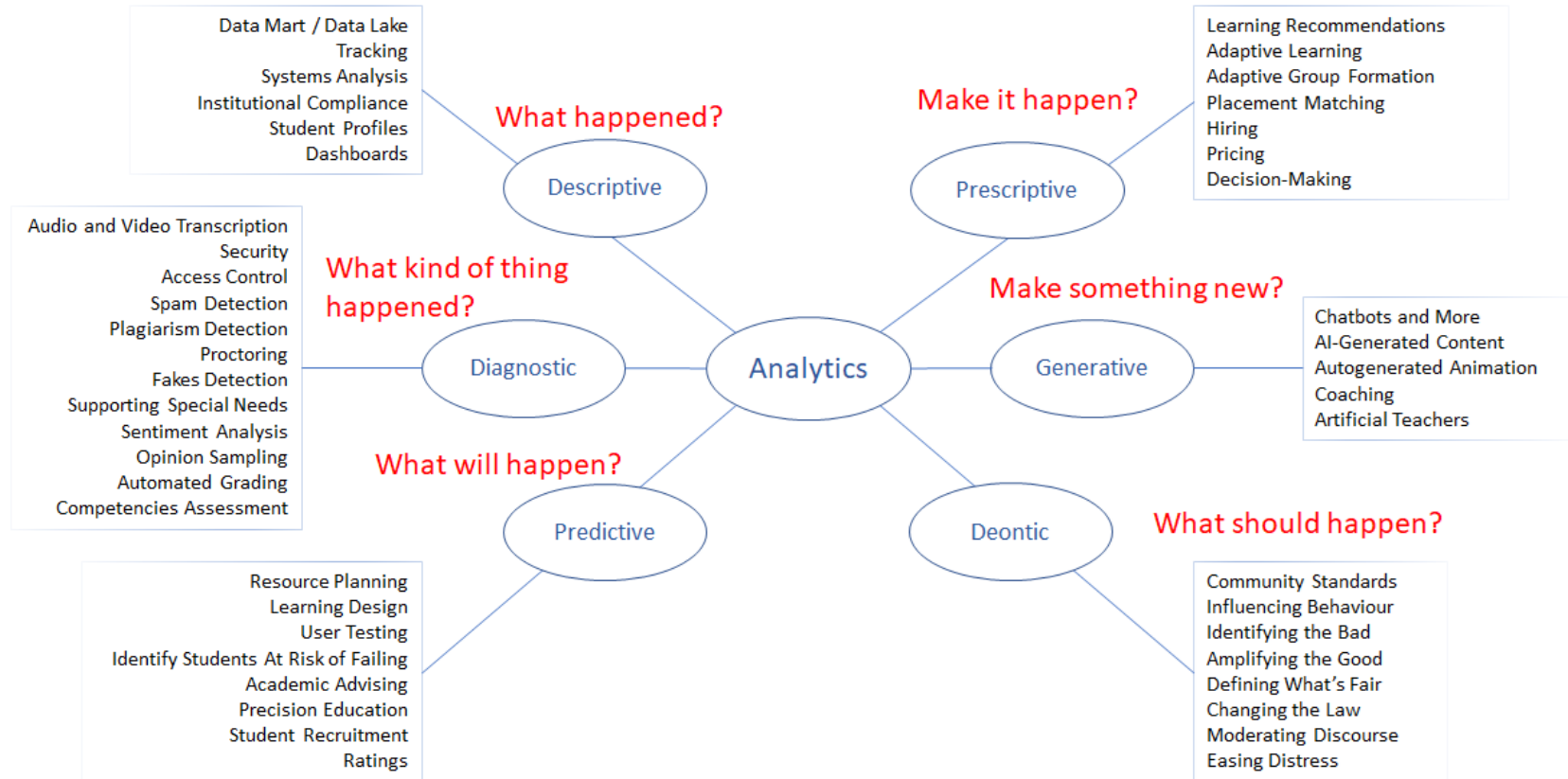


Artificial Intelligence

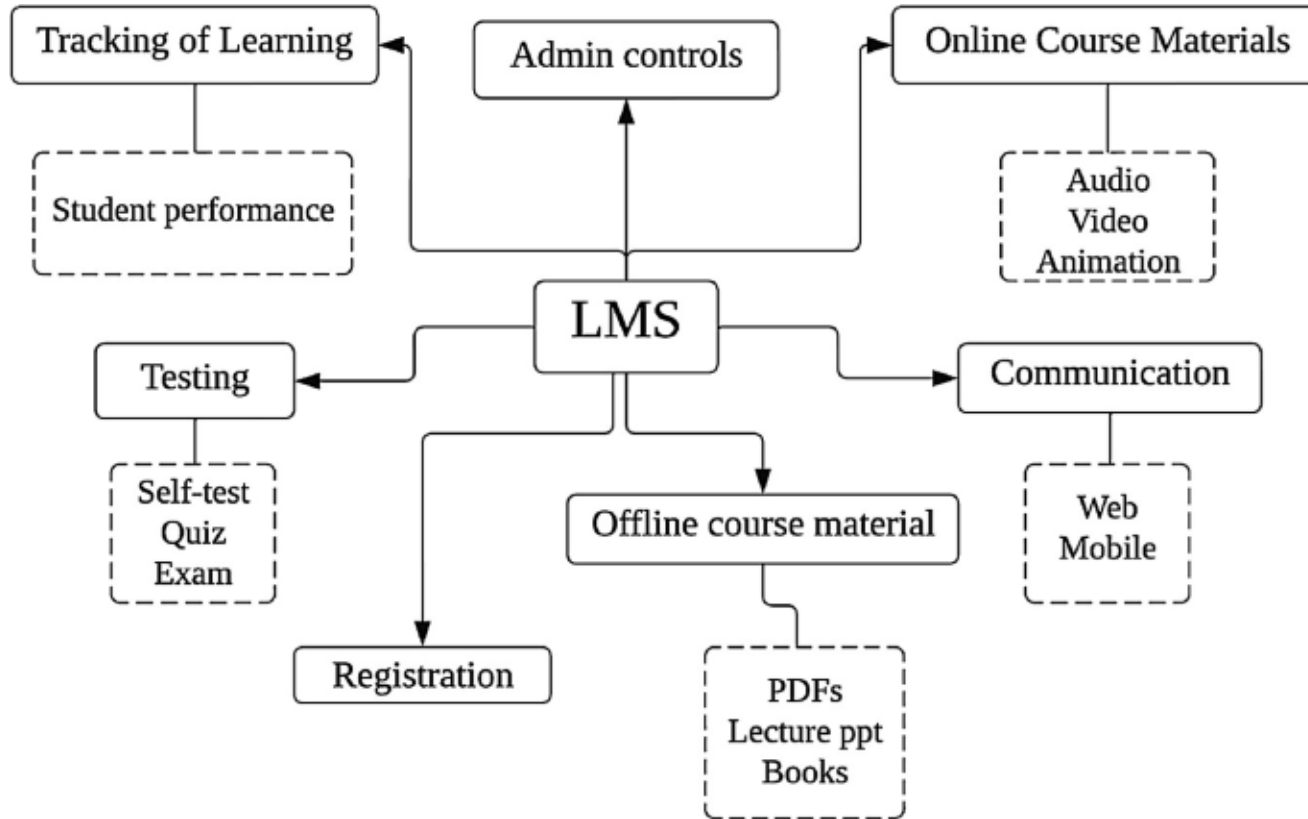
- Software Development
- Concept Formation
- Prediction

- Research ethics review
- What we need vs what we want vs what we can do

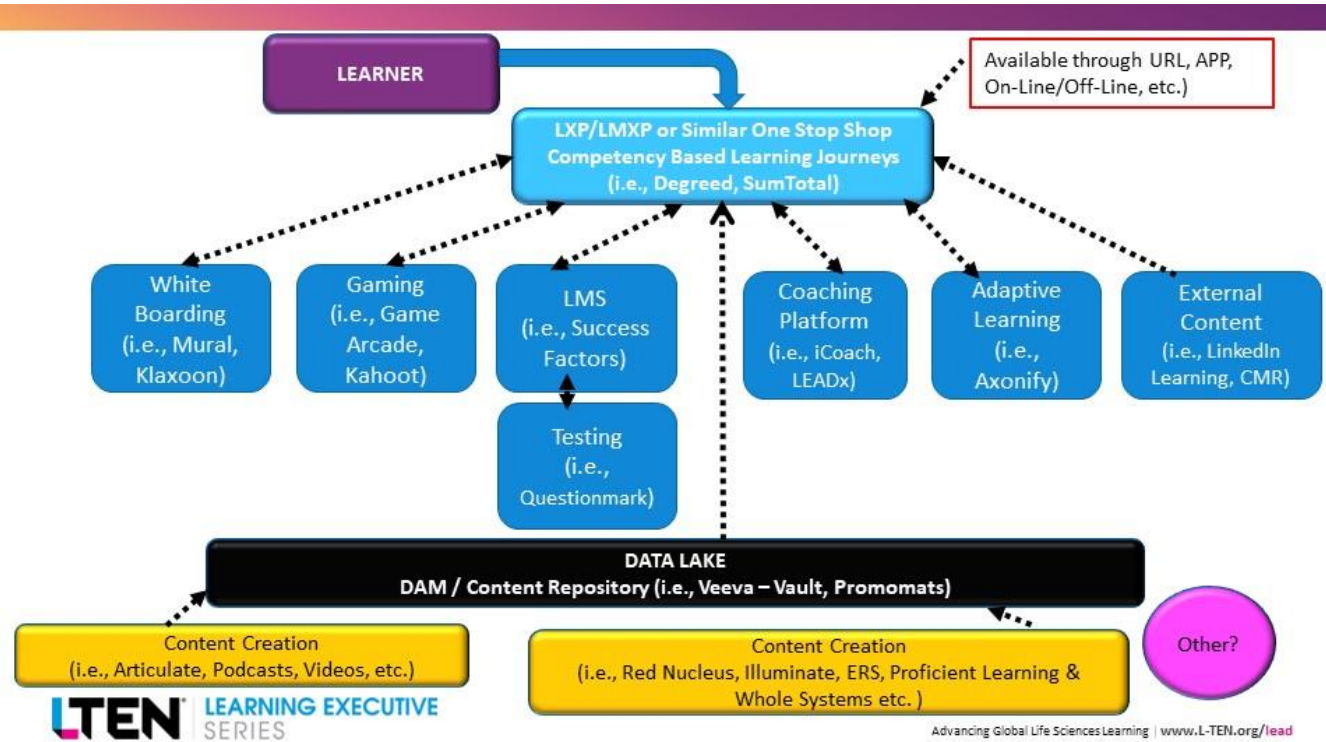
Applications of AI - A Taxonomy



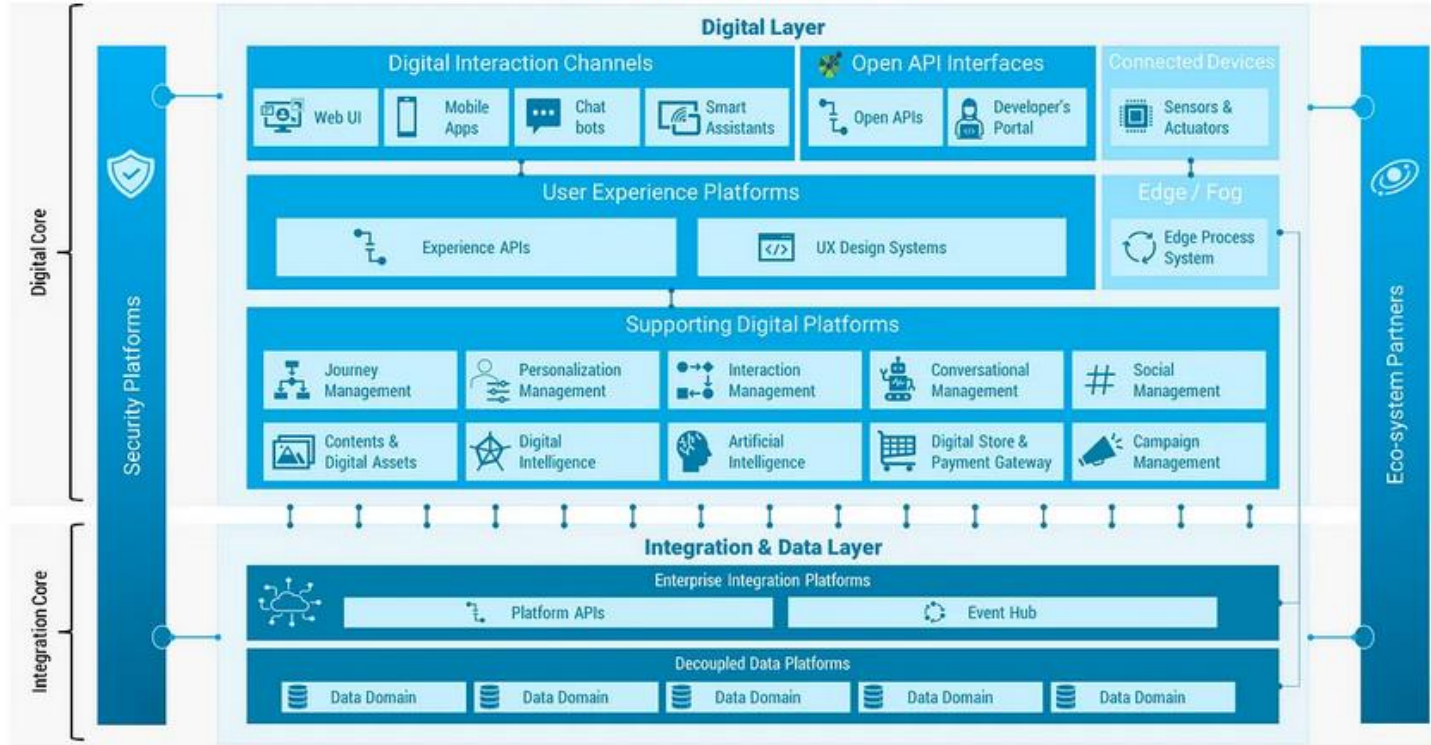
Learning Management System



Learning Experience Platform



Digital Experience Platforms

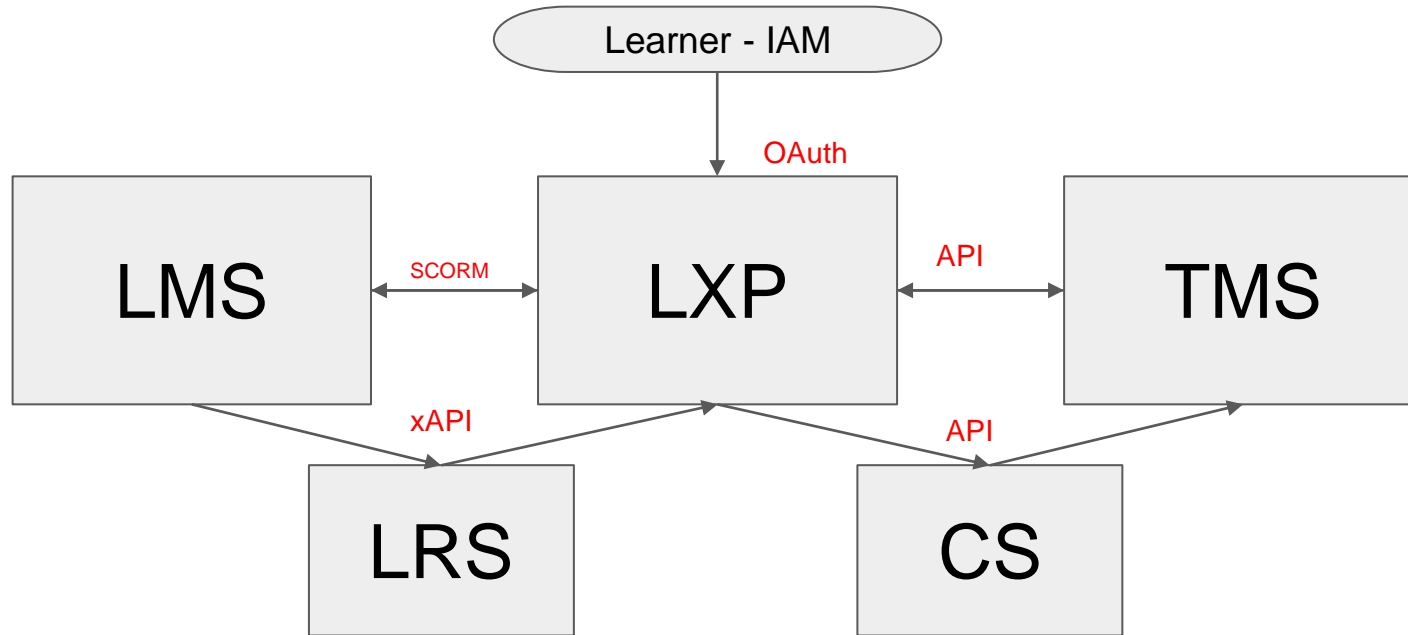


https://medium.com/@razi_chaudhry/explaining-the-blueprint-for-digital-experience-platforms-e6fe5a088701

Talent Management System



Combining Enterprise Systems



Learning Record Store: <https://xapi.com/learning-record-store/>

Credential Store (CS): <https://www.techopedia.com/definition/23914/credential-store>

How We Predict - the Wider Context

	Artificial Intelligence	Metaverse	Blockchain
Learning Management			
Learning Experience			
Talent Management			

How We Predict - the Narrower Context

	Artificial Intelligence					
	Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
LMS						
LXP						
TMS						

How We Predict - the Narrower Context

	Artificial Intelligence					
LMS	Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
Course Materials						
Testing of Learning						
Tracking of Learning						

Predictions

Course Materials	<i>Count words, word frequencies, how many reads, upvotes</i>
	<i>Classify, identify topics, extract keywords, rate quality</i>
	<i>Assess readability</i>
	<i>Content recommendations, learning path planning</i>
	<i>Create novel content, images, videos, custom content</i>
	<i>Define what content is needed, best pedagogical method</i>

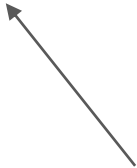
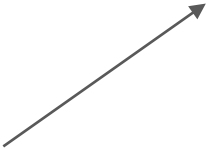
Beyond Predictions

Who or what is harmed?



Course
Materials

Count words, word frequencies, how many reads, upvotes



What problem
does this solve?

What new thing
can we do?

What needs to
exist to make this
possible?

What would make
it impossible?

Your Turn



Topics

LMS	LXP	TMS
Registration	Digital Interaction	Recruitment
Course Materials	User Experience	Onboarding
Testing of Learning	Data Management	Performance
Tracking of Learning	Enterprise Integration	Compensation

LMS

Registration	List of registration data collected, transcript data, counts
	Application success rates, registrar demographics
	How many next year, where from, success rate
	How to improve success rate, change demographics
	Create new registration forms
	Redefine acceptance logic, recommend target groups

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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LMS

Testing	List of test questions, scores, grading curve
	Classification of responses, automated grading
	Projected success rate for a given assessment
	How to improve success rate, change demographics
	Create new tests, assessment rubrics
	Determine what should be assessed

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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LMS

Tracking	List of attendance, test scores, interaction frequency
	Identify areas of strengths, weaknesses, topic preferences
	Projected program success, projected discipline choice
	Learning path recommendations, career recommendations
	Create resumé or c.v., write letters of recommendation
	What career should this person choose?

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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LXP

Digital Interaction	Track messages, contacts, message frequency & time
	Diagnose types of comments; filter harmful comments
	Predicted role in conversation, predicted areas of success
	Identify compatible discussion lists, correspondents
	Autogenerate comments, auto-summarize discussions
	Offer advice on improving social skills

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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LXP

User Experience	Keyboard logging, eye tracking, task success
	Identify areas of focus, identify disabilities
	Predicted responses to specific experience designs
	Identify optimal presentation styles, digital modalities
	Generate personal user interface design
	Recommend accessibility adaptations

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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LXP

Data Management	Data contents, types, source, associated metadata
	Classify data according to content, type, function
	Predict incoming data, requirements for data
	Recommend metadata profile, data requirements
	Generate test data
	Define metrics for data trustworthiness

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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LXP

Enterprise Integration	List enterprise systems, transit protocols, logs
	Identify data format requirements, orchestration patterns
	Predict incoming requests, demand load
	Recommend external data services, sources of truth
	Generate requests for external services (agents)
	Define ideal network configuration for enterprise

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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TMS

Recruitment	Job descriptions, openings, application data, requirements
	Match role to credentials and experience required
	How long it takes to fill, likely quality of applicants
	Assess and pre-screen incoming applications
	Match openings with potential applications and invite
	Create job profiles, define screening criteria

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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TMS

Onboarding	New staff, credentials, role descriptions
	Match with special interest groups, teams
	Project length of employment, career path
	Recommend training materials, forms, policies, goals
	Create personal welcome, list of contacts, expectations
	Define new onboarding practices

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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TMS

Performance Management	Key performance indicators, performance review data
	Identify areas of strength, weakness
	Project future performance path, issues, staffing needs
	Suggest performance indicators, recommend tasks
	Generate performance assessments, formative training
	Define performance metrics, relevant goals

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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TMS

Compensation	Compensation grid, employment data, time or task records
	Rate performance (by results, consistency, etc)
	Project future compensation rates, incentives needed
	Recommend compensation profile for past/future work
	Generate performance assessment reports
	Define new definition of value, create compensation grid

Descriptive	Diagnostic	Predictive	Prescriptive	Generative	Deontic
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What the Pros Do - Tell the Story

Using AI to Support Staff Diversity at Institution P

Recruitment	Job descriptions, openings, application data, requirements
	Match role to credentials and experience required
	How long it takes to fill, likely quality of applicants
	Assess and pre-screen incoming applications
	Match openings with potential applications and invite
	Create job profiles, define screening criteria

Recruit

Onboarding	New staff, credentials, role descriptions
	Match with special interest groups, teams
	Project length of employment, career path
	Recommend training materials, forms, policies, goals
	Create personal welcome, list of contacts, expectations
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Connect

Registration	List of registration data collected, transcript data, counts
	Application success rates, registrar demographics
	How many next year, where from, success rate
	How to improve success rate, change demographics
	Create new registration forms
	Redefine acceptance logic, recommend target groups

Enrol

Course Materials	Count words, word frequencies, how many reads, updates
	Classify, identify topics, extract keywords, rate quality
	Assess readability
	Content recommendations, learning path planning
	Create novel content, images, videos, custom content
	Define what content is needed, best pedagogical method

Adapt

Testing	List of test questions, scores, grading curve
	Classification of responses, automated grading
	Projected success rate for a given assessment
	How to improve success rate, change demographics
	Create new tests, assessment rubrics
	Determine what should be assessed

Assess

Tracking	List of attendance, test scores, interaction frequency
	Identify areas of strengths, weaknesses, topic preferences
	Projected program success, projected discipline choice
	Learning path recommendations, career recommendations
	Create resumé or c.v., write letters of recommendation
	What career should this person choose?

Strengths

Digital Interaction	Track messages, contacts, message frequency & time
	Diagnose types of comments; filter harmful comments
	Predicted role in conversation, predicted areas of success
	Identify compatible discussion lists, correspondents
	Autogenerate comments, auto-summarize discussions
	Offer advice on improving social skills

Engage

User Experience	Keyboard logging, eye tracking, task success
	Identify areas of focus, identify disabilities
	Predicted responses to specific experience designs
	Identify optimal presentation styles, digital modalities
	Generate personal user interface design
	Recommend accessibility adaptations

Assist

Data Management	Data contents, types, source, associated metadata
	Classify data according to content, type, function
	Predict incoming data, requirements for data
	Recommend metadata profile, data requirements
	Generate test data
	Define metrics for data trustworthiness

Metrics

Enterprise Integration	List enterprise systems, transit protocols, logs
	Identify data format requirements, orchestration patterns
	Predict incoming requests, demand load
	Recommend external data services, sources of truth
	Generate requests for external services (agents)
	Define ideal network configuration for enterprise

Support

Performance Management	Key performance indicators, performance review data
	Identify areas of strength, weakness
	Project future performance path, issues, staffing needs
	Suggest performance indicators, recommend tasks
	Generate performance assessments, formative training
	Define performance metrics, relevant goals

Recommend

Compensation	Compensation grid, employment data, time or task records
	Rate performance (by results, consistency, etc)
	Project future compensation rates, incentives needed
	Recommend compensation profile for past/future work
	Generate performance assessment reports
	Define new definition of value, create compensation grid

Compensate Fairly

Wider Issues

- Data management and analytics
 - Data Management - Data Lakes, Data Marts
 - Data Literacy - <https://www.downes.ca/cgi-bin/page.cgi?presentation=574>
- The enterprise AI workflow
 - DevOPs
 - AI Workflkow - <https://ethics.mooc.ca/cgi-bin/page.cgi?module=11>
- Evolving needs in enterprise learning and development
 - Identity and Access Management (IAM)
 - The future is decentralized

Thank You

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<https://www.downes.ca>

