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Using xAPI and cmi5 as the Replacement for SCORM

Andy Johnson
Specifications and Standards Mgr. (SETA Contractor)
ADL Initiative
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Purpose
To provide information on why xAPI and cmi5 need to replace SCORM where SCORM is relevant and how it opens non-LMS systems to support all DoD roles.

Advanced Distributed Learning Initiative (ADL)

The ADL Initiative stewards policy that guides the tracking, management, and governance of Learning data throughout an individual's lifetime to improve how DoD understand its personnel skills.

ADL Vision

Guide the innovative use of learner data to drive DoD personnel optimization

ADL Mission

Enhance the quality, quantity and accessibility of learner data to increase DoD effectiveness

ADL Purpose

Deliver a competitive advantage to upskill our DoD personnel to outpace our adversaries

How Does ADL Complete Its Mission?

Building the Future Learning Ecosystem

R&D for Distributed Learning Modernization *informs* → **Distributed Learning Policy and Technical Guidelines** *guides* → **Implementation Support and Cross-Coordination**

ADL Situated in Government

SECDEF Secretary of Defense

USD(P&R) Under Secretary for Personnel & Readiness

DHRA Defense Human Resources Activity

DSSC Defense Support Services Center

ADL Advanced Distributed Learning (ADL)

ADL's Role in Policy

- ADL is responsible for management and updating, through a governance body (Defense Advanced Distributed Learning Advisory Committee(DADLAC) the Department of Defense Instruction 1322.26 (Distributed Learning).

- This policy has standards-based recommendations for all distributed learning systems

- It was issued in 2006, 2017, and will be reissued between 2025 and 2027. References (https://adlnet.gov/policy/references/) are continuously updated (every 6 months)

- Most notably, this policy has changed from mandating SCORM (2006) as a standard for Learning Management Systems to mandating xAPI and cmi5 (2017) for Learning Management Systems and **allowing SCORM as an exception**

- The next version will call out all training and education systems, not just Learning Management Systems

## DoD INSTRUCTION 1322.26

DISTRIBUTED LEARNING (DL)

Originating Component:	Office of the Under Secretary of Defense for Personnel and Readiness
Effective:	October 5, 2017
Releasability:	Cleared for public release. Available on the Directives Division Website at http://www.esd.whs.mil/DD/.
Reissues and Cancels:	DoD Instruction 1322.26, "Development, Management, and Delivery of Distributed Learning." June 16, 2006
Approved by:	A. M. Kurta, Performing the Duties of the Under Secretary of Defense for Personnel and Readiness

Purpose: This issuance, in accordance with the authority in DoD Directive (DoDD) 5124.02:

- Establishes policy, assigns responsibilities, prescribes procedures, and establishes information requirements for developing, managing, providing, and evaluating DL for DoD military and civilian personnel, in accordance with the authority in Chapter 41 of Title 5, United States Code (U.S.C.), Title 10, U.S.C., and DoDD 1322.18.

- Addresses emerging learning science and technology concepts and challenges and implements policies from Chapter 41 of Title 5, U.S.C., various sections in Title 10, U.S.C. related to education and training, DoDD 1322.18 and DoD Instruction (DoDI) 8320.07, pursuant to the authority in Sections 113 and 136 of Title 10, U.S.C., and Executive Order 13111.

- Authorizes the recording, analysis, portability, and management of learning experience data.

- Establishes the Defense Advanced Distributed Learning Advisory Committee (DADLAC) to identify, evaluate, and recommend adoption of innovative technologies and techniques to improve DoD DL.
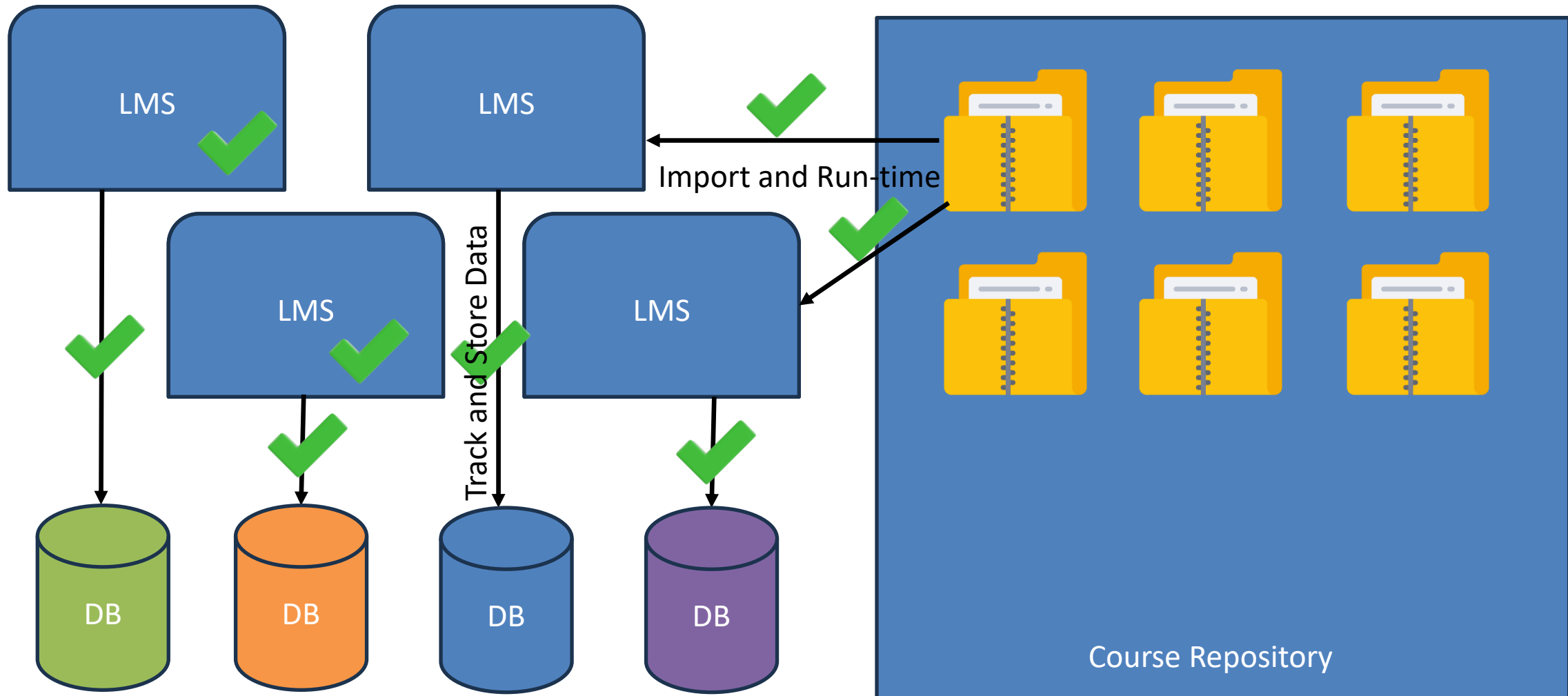
Course Repository

Import and Run-time

Track and Store Data
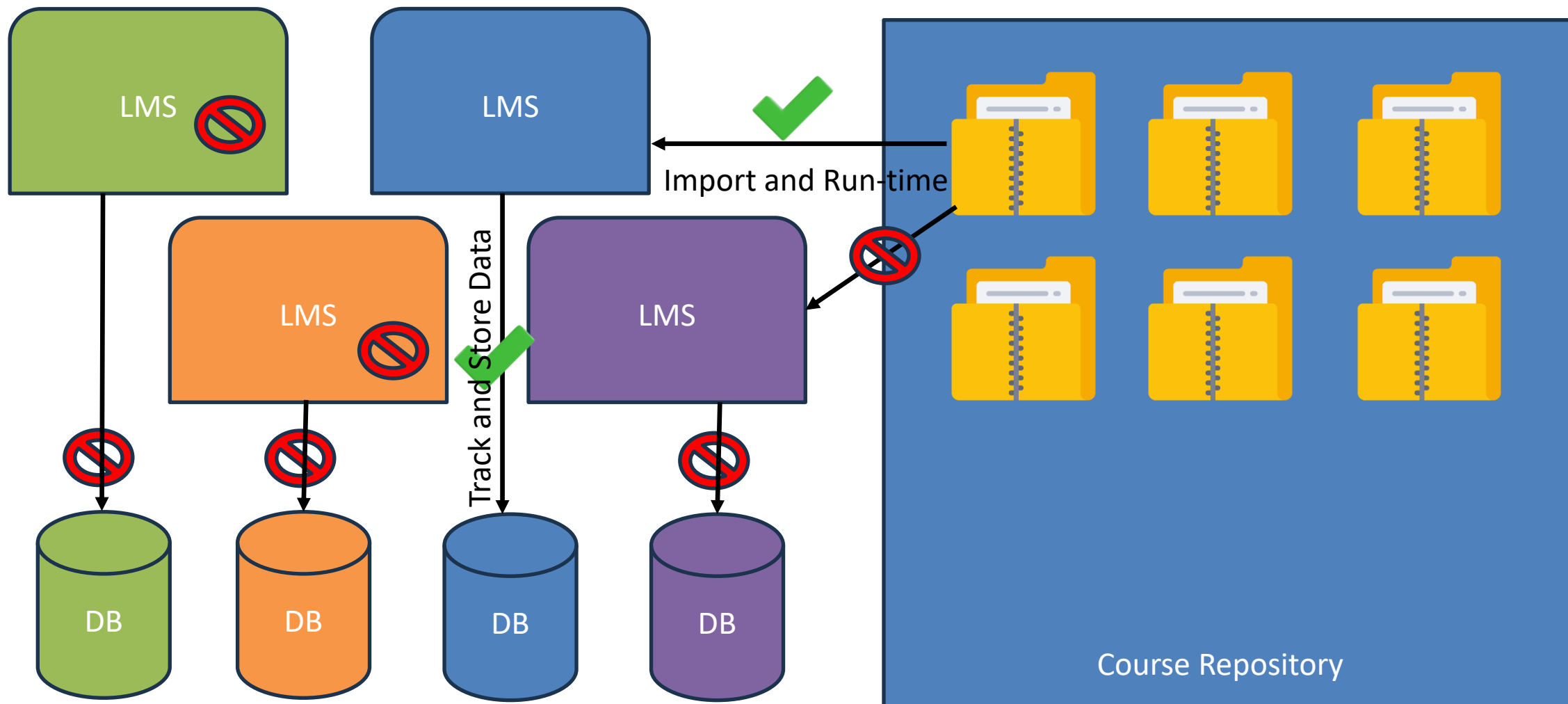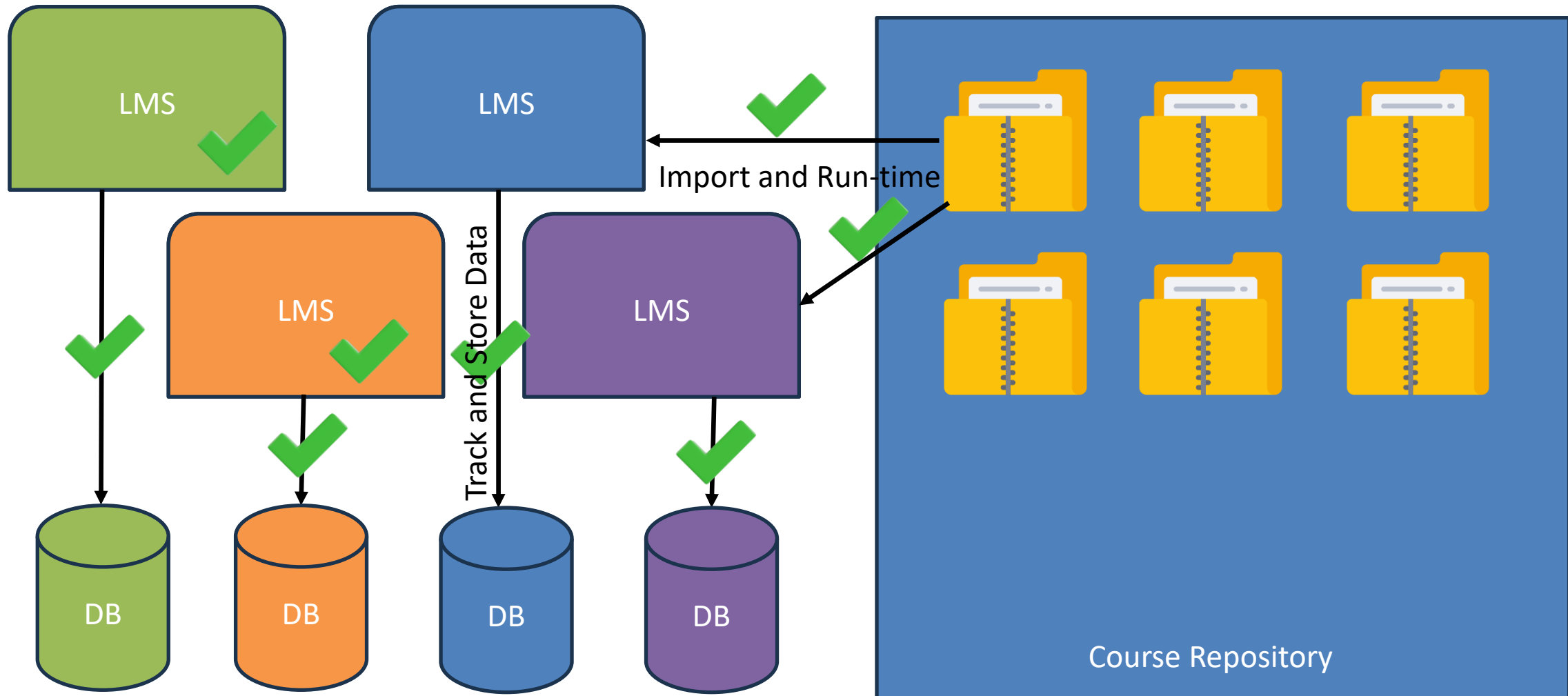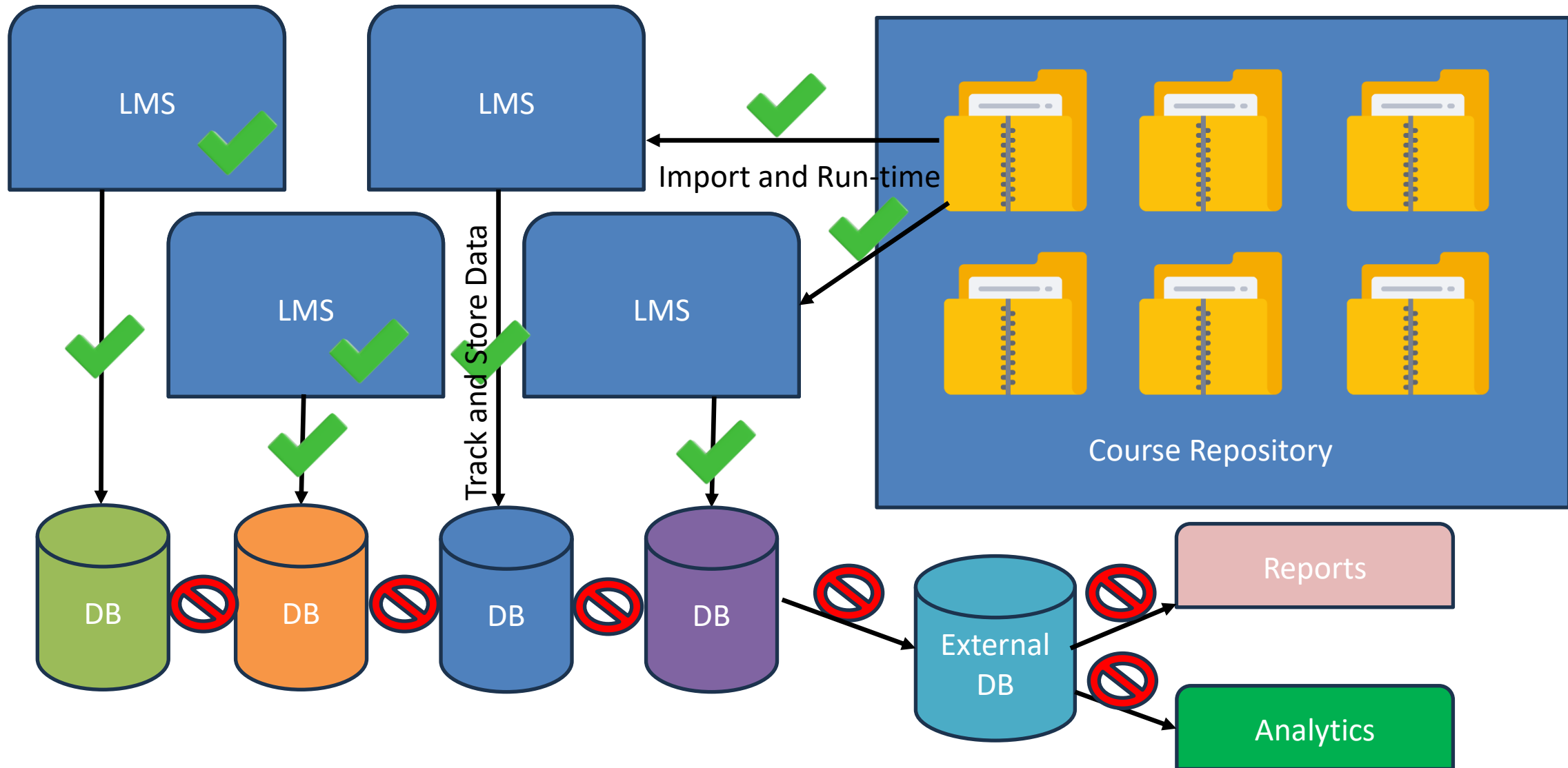
But the DoD Needs Data Interoperability

- **Current Capability**
  - Analytics/Reports are localized, customized, and expensive
  - Data cannot be migrated between databases
  - Level of granularity of passable information is course completions/grades on a transcript….MAYBE
  - Vendor lock is prevalent and will continuously result in higher costs and less responsiveness

- **Necessary Capability**
  - Easily share not just course completions, but item-level assessment data to roll up to individual competence
  - Track and share training data, performance data, LVC, augmented/virtual/mixed reality, simulator activities, live exercises
  - Attribute success or failures to individuals, teams, instructors, content, system
  - Revise what doesn't work and provide as a model what does
  - Connection to metadata systems and competency systems are critical – xAPI allows these connections
  - Learner Profile data is consistent within each DoD Component, with eyes across all DoD Components
  - Separation of monolithic systems into components allows specialization and competition – no vendor lock.
  - **THIS IS NOT "PIE IN THE SKY"**
  - The biggest enemy to this is **CULTURE** – willingness to change

- **What Can AI Do?**
  - Generative AI can populate metadata **for human review**
  - Generative AI can generate materials and assessment material **for human review**
  - Trained AI can validate metadata records **for human approval**
  - Adaptive Instructional AI can recommend specific learning resources, opportunities, and entire paths as a query **for human approval**
  - Trained AI can act as a tutor, teammate or adversary in complex scenarios
- **Is AI a big enough "carrot" to change culture?**

If you want to use AI tomorrow, you need to implement the data it will use today
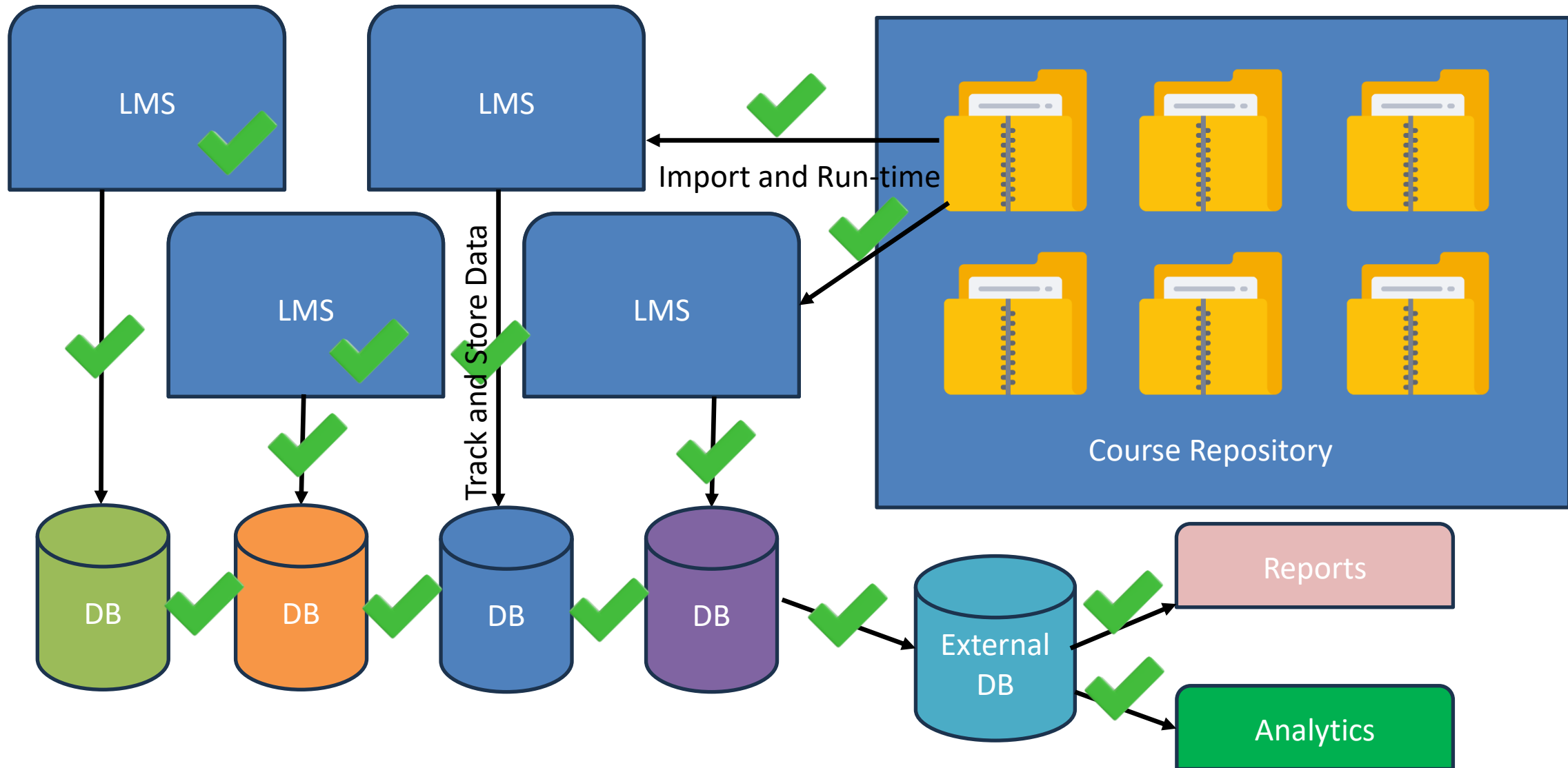
What About AI? Continued

- **AI Reality**
  - The expensiveness of AI means we will have a shared capability
  - It will need to be "trained" using data that is compatible across all of the services
  - Subtle differences in data will trip it up while it is being trained and possibly in application afterwards
- **Data Approaches**
  - Uniquely identified learning resources, activities, and competencies on the web
  - Graph technology allows machines to "crawl" to understand
  - Goes beyond simple databases and having the machine guess what correlations are meant
  - AI is modelled on understanding language syntax, xAPI also models language syntax
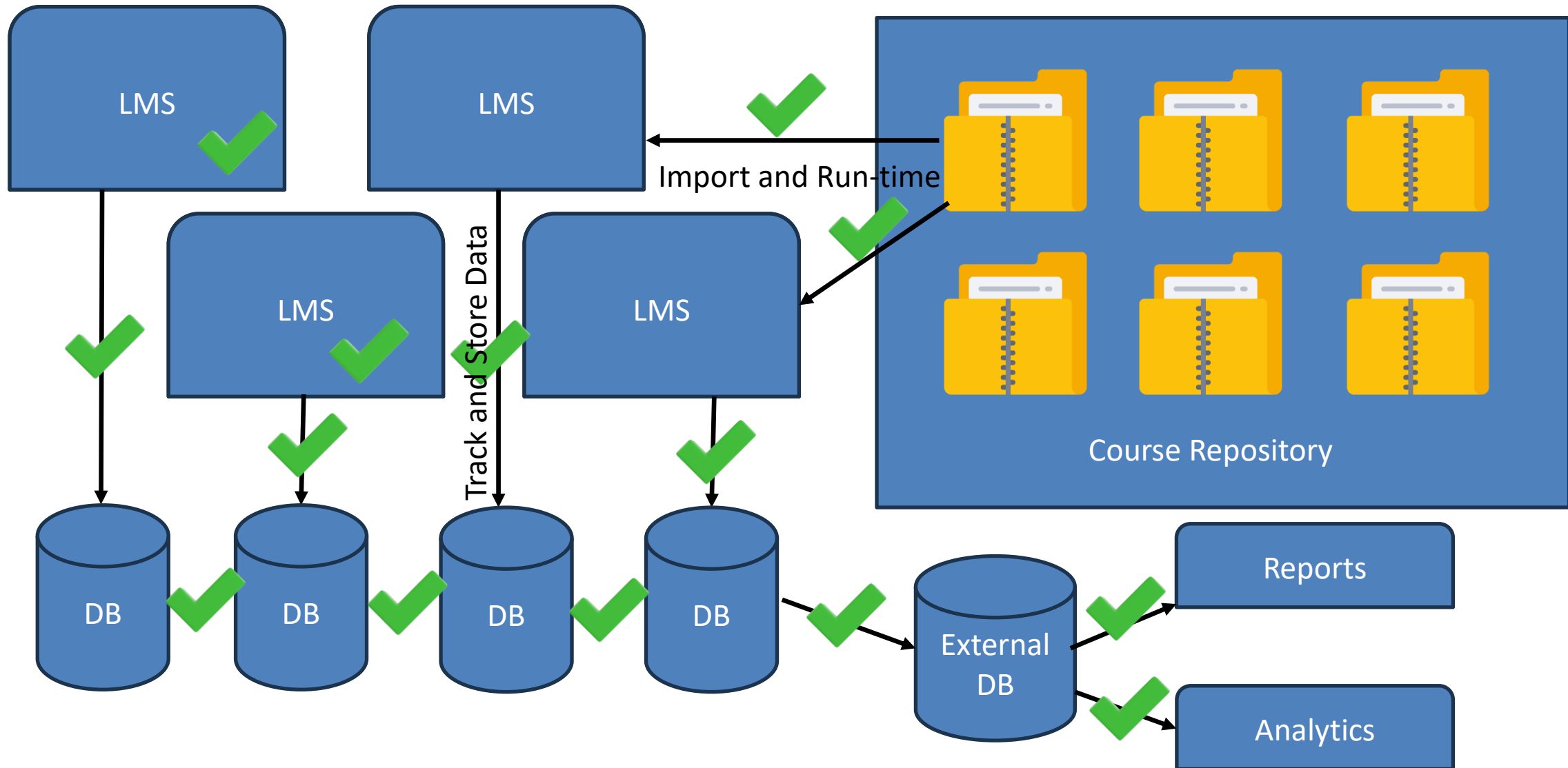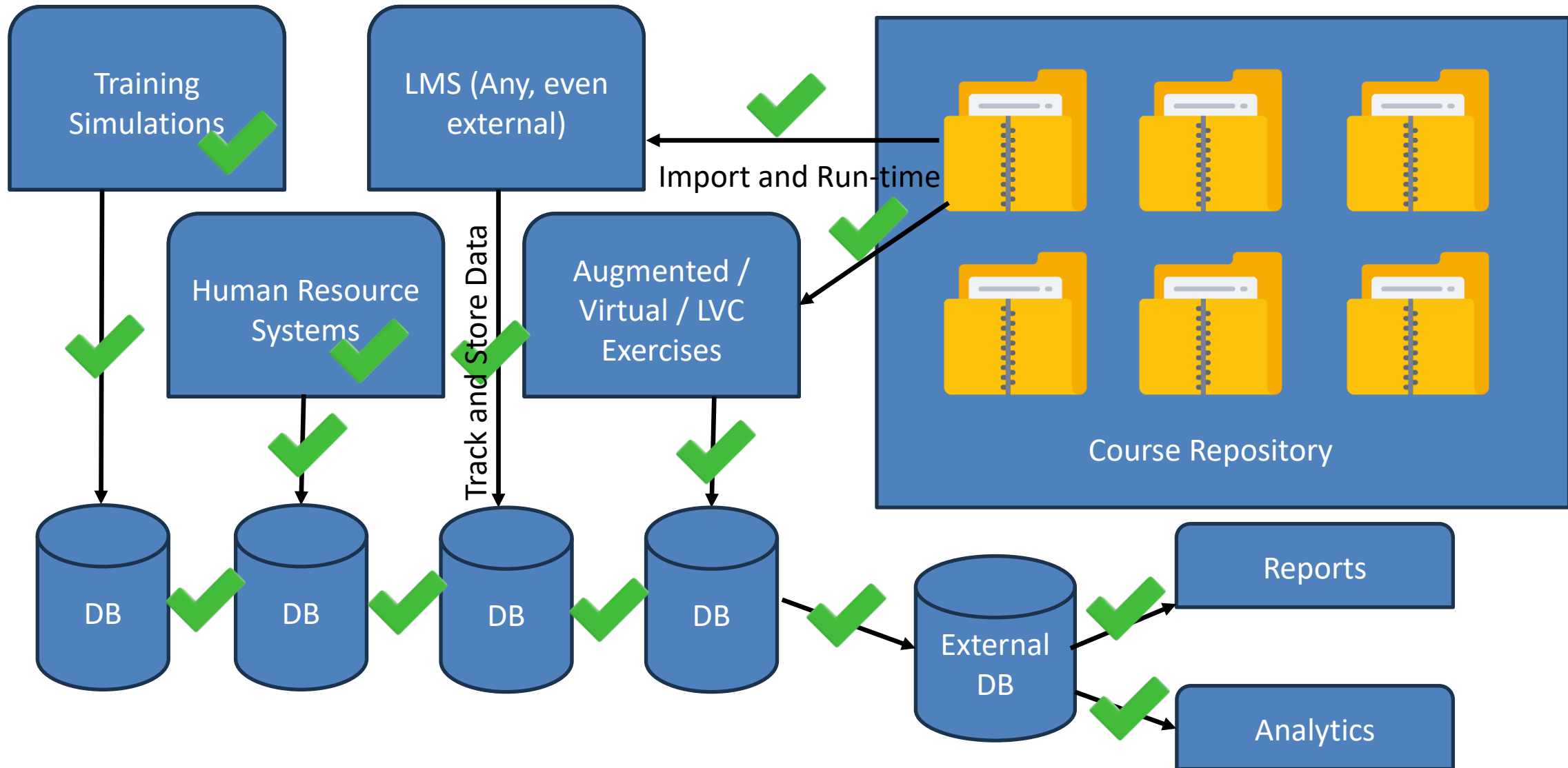- **Is AI a big enough "carrot" to change culture?**

xAPI and cmi5 Solution Realized

Import and Run-time

Track and Store Data
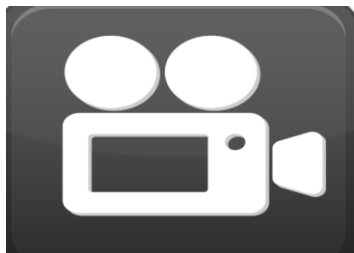
Course Repository

LMS

LMS

LMS

LMS

DB

DB
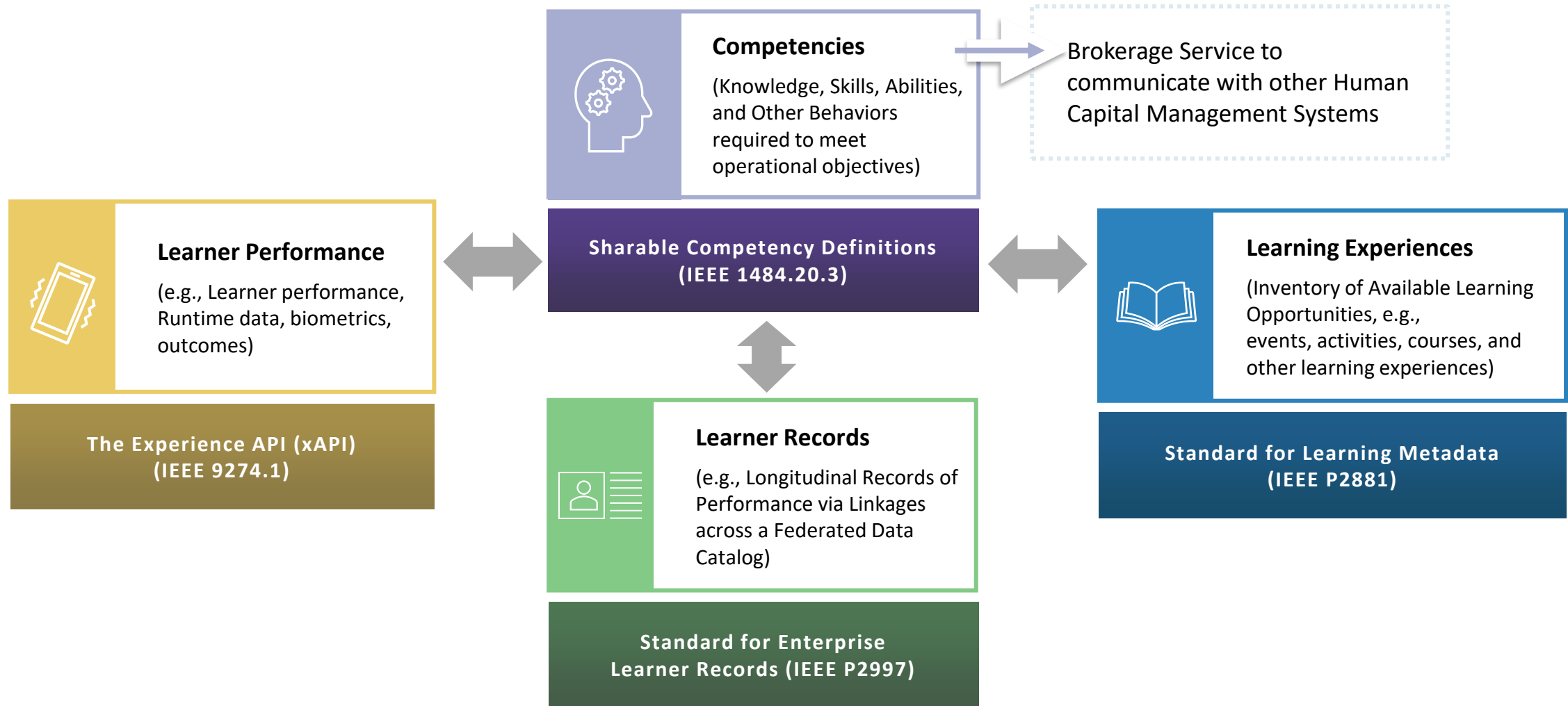
DB

DB

External DB

Reports

Analytics

xAPI and cmi5 Solution FULLY Realized

Training Simulations

LMS (Any, even external)

Human Resource Systems

Import and Run-time

Track and Store Data

Augmented / Virtual / LVC Exercises

Course Repository

DB · DB · DB · DB

External DB

Reports

Analytics
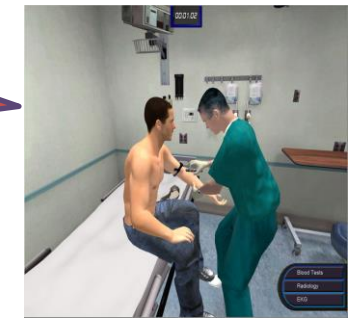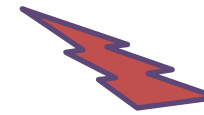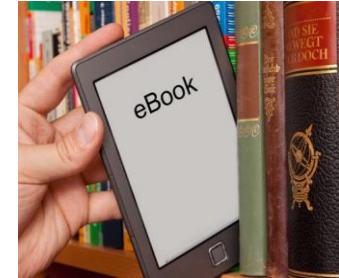
Begin to Understand Data Requirements

Competencies

(Knowledge, Skills, Abilities, and Other Behaviors required to meet operational objectives)

Brokerage Service to communicate with other Human Capital Management Systems

Sharable Competency Definitions (IEEE 1484.20.3)

Learner Performance

(e.g., Learner performance, Runtime data, biometrics, outcomes)

The Experience API (xAPI) (IEEE 9274.1)

Learning Experiences

(Inventory of Available Learning Opportunities, e.g., events, activities, courses, and other learning experiences)

Standard for Learning Metadata (IEEE P2881)

Learner Records

(e.g., Longitudinal Records of Performance via Linkages across a Federated Data Catalog)

Standard for Enterprise Learner Records (IEEE P2997)

Think About All Components in the Learning Ecosystem

https://adlnet.gov/guides/tla/service-definitions/The-TLA-Capability-Maturity-Model.html
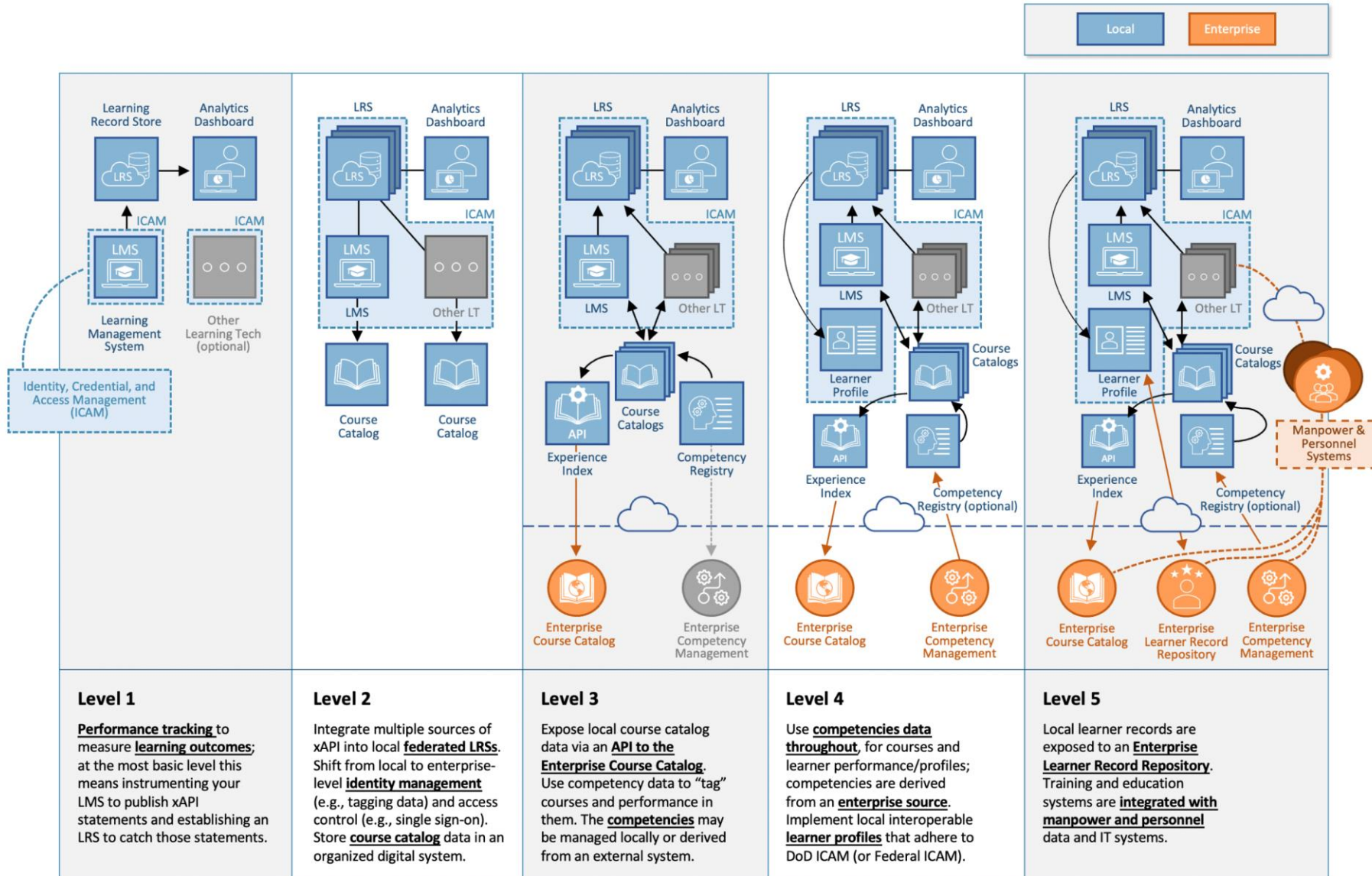
Identify and Classify ALL Data (And Give it a Home)

- **Basic Formula is <organizationalURL> + </type of data> + </unique string>**

- **Learning Resources**

- **Learning Events**

- **Competencies**
  - Knowledge
  - Skills
  - Abilities
  - Tasks
  - Duties
  - Outcomes

- **Learner Profile Attributes**
  - Learners
  - Instructors
  - Organizations

Thank you! Questions?
andy.johnson.ctr@adlnet.gov