Federation and Cloud Services for the K12 Community

Quilt/InCommon K12 Pilot Project Summary
Two Cases: Illinois and Nebraska
What is Envisioned, Experiences, and Challenges

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Illinois Shared Learning Environment

The One-Slide Summary
Illinois Shared Learning Environment – ISLE

Participating LEA:
- 2 SLC Pilot
- 35 RttT-3
- ~20% of Illinois Students with RttT-3 SD, ~840 to go.

Local School District
Collect, Assemble, & Propagate
Ed-Fi Data Model

Partners:
- NCSA
- Irii
- SIU
- ISBE/LEA
- DCEO
- ISBE/DCEO

ISLE Grant: ISBE/LEA
ISLE-IGA: NCSA/NIU, SIU, & IC

Learning Maps & Learning Content

Create, Find, Map, Use, and Visualize Data Linked to Content and Standards enabling Personalized Learning and Career Preparedness for All Illinois Learners (P-K12 & Life-Long).

Dynamic Cloud Infrastructure
- Apps
- DB
- Compute

Students, Educators, Parents, Researchers, Schools, Institutions and Agencies empowered by the Middleware infrastructure and Dynamic Self-Service Procurement Cloud Platform Services:
- *Learning Maps*
- *Applications*
- *Dashboards*
- *Portal Integration*
- *Databases*
- *Collaboration Tools*
- *Development Incubator*
- *Advanced Analytics*
- *Shared Data Services*
- *Enterprise Services*
Create, Find, Map, Use, and Visualize Data Linked to Content and Standards enabling Personalized Learning and Career Preparedness for All Illinois Learners (P-K12 & Life-Long).

Learning Maps, Assessments, & Learning Content

Students, Educators, Parents, Researchers, Schools, Institutions and Agencies empowered by the Middleware infrastructure and Dynamic Self-Service Procurement Cloud Platform Services:

- Learning Maps
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- Portal Integration
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- Collaboration Tools
- Development Incubator
- Advanced Analytics
- Shared Data Services
- Enterprise Services
Nebraska K12/P20W Pilot

Four Slide Summary
Network Nebraska-Education Map by Year

Phase I Upgrade
- Green Shading of Northeast Region: 87 high school districts, 5 ESUs, & 2 college campuses

Phase II Upgrade
- Central Region: 78 high school districts, 6 ESUs, 3 colleges
- South Central Regions: 2008
  - 78 School districts
  - 4 ESU offices (10, 11, 15, & 16)
  - 7 College campuses
  - 1 NU (NCTA)

Phase III Upgrade
- Blue Shading on Counties
- Northeast Region: 10 school districts, 1 library, 1 zoo
- South Central Region: 3 ESUs (13, 14, & 19)
- 7 College campuses
- 1 NU (NCTA)

Phase IV Upgrade
- Gray Shading on Counties
- Eastern Region (2011-2012)
  - 18 School districts
  - 3 ESU offices (4, 5, & 6)
  - 4 College campuses
  - Henry Doorly Zoo
  - Grand Island Public Library

Internet2 (K.C. GigaPop)

Courtesy of Tom Rolfes, Nebraska Office of the CIO
• Network Nebraska-Education CURRENT Partners (261)
  – 223 public school districts
  – 16 Educational Service Units
  – 10 public colleges
  – 7 nonpublic colleges
  – 2 tribal colleges
  – 3 nonpublic schools
  – 1 public library

• Network Nebraska-Education POTENTIAL Partners (460+)
  – 28 public school districts
  – 1 Educational Service Unit
  – 7 nonpublic colleges
  – 159 nonpublic schools
  – 269 public libraries

Courtesy of Tom Rolfes, Nebraska Office of the CIO
K12 to P20
Vision Resources

• Compelling case for effective utilization of resources
  – Might call this zero system administration.

• Jack’s story is the vision of interoperability through standards

• Data Quality Campaign infographic vision on using data

• Visionary Resources: A little on the techie side
  – Learning Registry http://www.learningregistry.org
  – Advanced Distributed Learning: http://www.adlnet.gov/
  – SCORM http://scorm.com/scorm-explained/
  – IMS Global: http://www.imsglobal.org/
  – SETDA: http://www.setda.org
Illinois Shared Learning Environment

Exploring the Learning Map Concept: A Revolutionary Catalyst for the K12 Community and Pedagogy
1.) Visual Representation of a Series of Learning Objectives & Assessment of Mastery

- The visualization may be non-linear with branches and junctions having alternative paths.
How Does a Learning Map Work?

2.) Coded Alignment of Objectives and Measures enables Content to be Linked to a Map!

- **Objectives**
  - Linked Learning Modules
  - Aligned and Coded with
  - Objectives Empower:
    • Learners to explore proficiency tasks
    • Mentors to find, create, and share
    • Measures of effectiveness can be quantified by community experience and qualitative analysis of use.

- **Measures**
  - Linked Assessment Bank Items
  - Aligned and Coded with
  - Objectives Empower:
    • Learners to explore skill proficiency
    • Mentors to find, create, and share
    • Measures of effectiveness can be quantified by community experience and qualitative analysis of use.

- **Actions** (Clicks, Pop-up Options)
  - Related to Content
  - Creation, Find, Use, and Shared—Experience Pooling

- **User Interface Options** (Hoover Over & Zoom Into)
  - Related to Content
  - Creation, Find, Use, and Shared—Experience Pooling

- **Link Content Aligned by Codes (Tagging)**
  - Creating, Finding, Using, and Sharing—Experience Pooling

- Maps may be Presented using Interactive-Visual-Objects for each location marker along the path it shows.
Why are Learning Maps Centrally Important?

3.) Learning Map Perspectives (or Views) of Learners Progression using Data in Alignment with Codified Objectives, Measures, & Content with variability in number of Learners & Time Scale

**Learner Perspective**
- Where am I and what tasks are to do
- Find, create, use, and share content
- Peer & mentor collaboration
- Personalize pathway potential
- How do my peer compare with me
- Measures of effectiveness can be quantified by community experience with qualitative analytics capacity.

**Educator Perspective**
- All Educators are also Learners
- Find, create, use, and share content
- Professional Development Support
- Virtual Professional Peer Groups
- How do my peer compare with me
- Measures of effectiveness can be quantified by community experience with qualitative analytics capacity.

The Learning Map Concept may be Presented using Role-Based-Visual-Objects integrated with API Driven Dynamic-Data-Aggregation for a Variety of Role Perspectives

**Perspectives: Role & Aggregation**
- Guardian Perspectives
- Real-Time Perspectives
- Future Perspectives
- Workgroup Perspectives
- Building Perspectives
- State & Local Education Authority Perspectives
- Institutional Perspectives

Apply Learner & Educator Perspectives of Progress along the learning map pathways:
How can the Learning Map Concepts be Implemented?
What is Required to Implement Learning Map Concepts?

Parents & Guardians

Learner Progression & Achievement Data

Mentors & Interest Groups

Identity Access Management Services (IDP/Proxy Hybrid: IAM)

Data Services (Authoritative Source systems, ETL to SIF ZIS, and automated propagation to other data models).

What is Required to Implement Learning Map Concepts?

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Three Essential Pillars of Support:
A K12 Federation Model for the Core Centralized Services & Operations: Data, Identity, & Presentation

Application Services
Multi-tenant Portal for School Districts

SEA Curriculum Guidance & Standards

SEA Curriculum Guidance & Standards

Learning Content Repositories

LEA Curriculum Workgroups & Standards

Content Archives, Libraries, and Museums

Learning Registry Network of Nodes
Illinois Shared Learning Environment

The Platform’s Three Pillars of Support:
Data, Identity, & Application
The Core-Central K12 Federation Services
IlliniCloud is a non-profit organization providing services for primarily for K12 school district all over the state of Illinois. Acting as a K12 federation operator and service provider, the IlliniCloud is establishing three foundational service dimensions for the K12 community:

- **Data Services**
- **Identity Services**
- **Application Services**

**Minimal threshold of Adoption:** The implementation is focused on mitigating integration requirements for K12 school districts adoption of services with little to no modification of existing practices and procedures.

Backend Interfaces & Services
Tenants (School Districts)

End-User Facing Interfaces
Tenants (School Districts)

*Unicon*
Illinois Shared Learning Environment

The Platform’s First Pillar of Support: Data Services
How Does The Data Service Work?

Raw Source System

Data Matrices

Source 1
Source ...
Source N

Intermediate Data Model(s)

Collection Assemble Produce

Operational Data Store

Any Data Model

Reports
Analytics

Data Product Propagation

Collection

Assemble

Produce
Data Entry

User corrects data and resubmits

If the data is rejected, an error message is generated to the user

How Does the Data Validation Service Work?

Data is collected in the ODS, where the Data Validation Rules Engine runs to check for errors

Teacher/Staff Data

Student Information

User corrects data and resubmits

ERRORS

NO ERRORS

Valid data is moved to the Data Marts

Data is Stored in the Longitudinal Data Warehouse

Analyze the data in a spreadsheet

Prepare a report

Create a presentation

Better Research Leads to Better Decisions

Data can now be analyzed – longitudinal data analysis can be performed

REAL TIME REPORTS

IlliniCloud

28
How Does Data Service Propagation Work for Apps?

- **Ingest Data Validation and Assembly SIF 2.5 for each local district sites.**
- **Data Propagation for Alternative DataModels**
- **Implicitly enables use of Application Programmatic Interfaces (API)**

Diagram:
- School District ZIS
- SIF/ZIS Integration API
- Any DM
- Reports
- Analytics
- Relational Data Store
- Object Data Store
- Ed FI API
- InBloom API
How Can Data Service Propagation Work for State Reporting?

Authoritative Source Systems

SIS  FS  TR

Propagate Manage Error Resolution

Illinois State Board of Education Data Mart(s)

Data is collected in the xDStore, where the xDValidator runs to check for errors

Automate Data Set Assembly and Propagation
Illinois Shared Learning Environment

The Platform’s Second Pillar of Support: Identity Services
What is the Federated Identity Service?

3rd Party Service Providers & Other Federations

inCommon
Google 4 Edu
Other Service Providers

School District Users/Orgs

Federated Central Service
Read-Only Query Functionality

Proxy IDP/SP

School District Metadata
Non-School District Metadata

Authentication Delegation to Authoritative Source

Trust

Trust

Trust

Districts (1 .. N) using Active Directory
Districts (1 .. N) using eDirectory
Districts (1 .. N) using LDAP/Kerberos

Workforce Development Users/Orgs

SAML 2.0 OAuth OpenID
Native Directory Interface
How Does the Federated Identity Service Work?

External Federations & Service Providers

Publish

Subscribe

IDP

K12 Federation
IDP Proxy

Centralized Idm (SAML2) provides local directory mapping and profiles for federated service uses

K12 Organization
Local Service Providers

AD | LDAP | Kerberos | eDirectory

Authoritative Directory Source

School Districts have preexisting directories and business procedures that govern practices & processing

K12 Federation Service Providers

SSO Enabled

Custom ISLE Applications

Custom District Applications

K12 Organization

Not SSO Enabled
How Do Attribute/Value Assertions & Web SSO Sessions Work?

**SP Attributes Needed & Parsing:**
- `eduPersonPrincipalName`
- `eduPersonAffiliation`
- `eduPersonOrgDN`
- `eduPersonEntitlement *(Agreed)`

**IDP Attribute Resolvers & Filters:**
- `eduPersonPrincipalName`
- `eduPersonAffiliation`
- `eduPersonOrgDN`
- `eduPersonEntitlement *(Agreed)`

**May Have Distinct “Entitlements” for Individual Applications/Resources**
How Does the IDP use Tenant User’s Profile?

1. **UserName**
2. **PassWord**
3. **OrgDN**

Delegate Authentication

Tenant’s Authoritative Directory

Tenant(s) Authoritative User Session Profile

Populates Tenant User Profile Table

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Just-In-Time Provisioning OR Verification/Validation of Existing

Using attribute/value pairs available propagate authorized assertions to the SP

<dc:Column columnName="given_name" attributeID="givenName" />  
<dc:Column columnName="surname" attributeID="sn" />  
<dc:Column columnName="edu_personNickname" attributeID="eduPersonNickname" />  
<dc:Column columnName="mail" attributeID="mail" />  
<dc:Column columnName="organizationName" attributeID="organizationName" />  
<dc:Column columnName="edu_person_affiliation" attributeID="eduPersonAffiliationList" />  
<dc:Column columnName="edu_personPrimaryAffiliation" attributeID="eduPersonPrimaryAffiliation" />  
<dc:Column columnName="edu_personScopedAffiliation" attributeID="eduPersonScopedAffiliation" />  
<dc:Column columnName="edu_personOrgDN" attributeID="eduPersonOrgDN" />  
<dc:Column columnName="edu_personOrgUnitDNList" attributeID="eduPersonOrgUnitDNList" />  
<dc:Column columnName="edu_personPrimaryOrgUnitDN" attributeID="eduPersonPrimaryOrgUnitDN" />  
<dc:Column columnName="uid" attributeID="uid" />  
<dc:Column columnName="edu_personTargetedId" attributeID="eduPersonTargetedId" />  
<dc:Column columnName="edu_personUniqueID" attributeID="eduPersonUniqueID" />  
<dc:Column columnName="edu_personAssurance" attributeID="eduPersonAssurance" />  
<dc:Column columnName="edu_personEntitlement" attributeID="eduPersonEntitlement" />  
<dc:Column columnName="memberOfList" attributeID="memberOfList" />
How does eduPersonEntitlement Look Up-Close?

**Privilege Groups Of Interest**

- OUs: IlliniDate Related (28)
- CN: ILDATA BACC Announcement Administrators
- CN: ILDATA BACC Attendance
- CN: ILDATA BHS Announcement Administrators
- CN: ILDATA BHS Attendance
- CN: ILDATA BJHS Announcement Administrators
- CN: ILDATA BJHS Attendance
- CN: ILDATA Building Administrators
- CN: ILDATA District Administrators
- CN: ILDATA Irving Announcement Administrators
- CN: ILDATA Irving Attendance
- CN: ILDATA Lunch Counts
- CN: ILDATA Oakland Announcement Administrators
- CN: ILDATA Oakland Attendance
- CN: ILDATA Raymond Announcement Administrators
- CN: ILDATA Raymond Attendance
- CN: ILDATA Sheridan Announcement Administrators
- CN: ILDATA Sheridan Attendance
- CN: ILDATA Stevenson Announcement Administrator
- CN: ILDATA Stevenson Attendance
- CN: ILDATA Support Staff
- CN: ILDATA Teachers
- CN: ILDATA Washington Announcement Administrators
- CN: ILDATA Washington Attendance
- CN: IlliniData Core Team
- CN: IlliniPlanAdmins
- CN: IlliniSupport

**IDP Attribute Resolvers & Filters:**

- eduPersonPrincipleName: user@domain.ext
- eduPersonAffiliation: Faculty, Staff, ..., Library Walk-in
- eduPersonOrgDN: dc=district, dc=ext
- eduPersonEntitlement *(Agreed)*: Any String as a UR(N,L)

**SP Attributes Required Values When Group Member:**

Needs fine grain privilege mapping to align to some collection of cohort declarations the user is a member of in the authoritative source system of reference.

**“eduPersonEntitlement” Attribute value(s) to assert:**

- http://ApplicationName.ext/role/ILDATA_Building_Administrator
- http://ApplicationName.ext/role/ILDATA_Sheridan_Announcement
- http://ApplicationName.ext/role/ILDATA_Sheridan_Attendance

Because the Login User Has Relative: “memberOf” Attributes Associated
What is the “User Profile”? 

IlliniCloud IAM Service

1. 
   Anonymous User
   No Session

App Login or Registration

2. 
   Is User Registering?
   Yes
   Personal Profile?
   Yes
   Fed-Realm?
   No
   External AuthN?
   Yes
   Registered Public User Session Okay

3. 
   Is Managing Profile?
   Yes
   OrgDN Profile?
   Yes
   Is Fed-Realm
   Yes
   Known Person
   External Identity Provider OAuth
   Google, Facebook, MSN, Yahoo, & Others
   Is External
   Authenticate?
   Known Person
   Yes
   Persistent, & Session

4. 
   Is User AuthN?
   Yes
   Fed-Realm?
   No
   External AuthN?
   No
   Anonymous User No Session

4a. 
   Registered Realm User Session Okay

4b. 
   Delegate AuthN To District

4c. 
   Registered Public User Session Okay
Illinois Shared Learning Environment

The Platform’s Third Pillar of Support: Application Services

Multiple Tenant Portal and Application Launcher
Who Will Use the Application Service?

**CASE 1**: Non-Authenticated Users, Anonymous

- Unknown User
- May see only informational content

**CASE 2**: Federated IDP Other Than IC IDP/P

- Known User
- No Affiliation & Organization Domain
- may use public Applications

**CASE 3**: Authenticated by IC IDP/P

- Known User with Affiliation assigned may use organizations informational content, services, and applications

Presentation Service

Data

Identity

LEA Tenant

Known User with Affiliation assigned may use organizations informational content, services, and applications

**CASE 3**: Authenticated by IC IDP/P implies defined Domain and Affiliation with Authorities expressed in Entitlements
What is the Application Service, a “Portal”? 

1.) Web Browser Based Visual Presentation & Workspace

Much like the graphical user interface provided by a computer’s operating system (Windows, Macintosh, Tablets, & Smart-phones).

**Buttons & Menus**
- Clickable Actions or Pop-up
- May Take Input
- May Grouped
  - Visually
  - Functionally
- Can be Combined with
  - Visual Theme
  - Preferences
- May be Locate Anywhere

**Portlets**
- Optional Visual Window
- May Contain
  - Buttons
  - Input/Forms
  - Any Media Content
- May be an Application
- May be a Service
- May be Resized or Static
  - Full Screen (WkSpc)
  - Floating Window
  - Minimized (Visible)
  - Layered
- May be Remote Service
- May be Local Service
- May be Support Any Media
- Shares Session Attributes
  - User/Role
  - Organization
  - Access Rules
  - Authorizations

**Portal Leverages SSO Service**

**Header:**  
* Optional: May include Active Controls

**Visual Workspace:**

- Background Visual Attributes are generally user definable and persisted as Preferences
- Portlet Workspace
- Portlet #1 Floating Window
- Portlet Workspace
- Portlet #2 Window w/no Controls
- Portlet #3 : Minimized Window
- Portlet # N : Invisible Win/Service

**Portlet Attributes:** are generally user definable and persisted as Preferences (for each portlet) including size (min, max, full) & relative workspace location and window state.

**Footer:**  
* Optional: May include Active Controls

**Portal is the outer visual wrapper and user interface**
- Manages User Identity for primary SSO/Sessions
- Shares Session State with Gadgets & Portlets
How Does the “Portal” Work for Users?

**Anonymous & Non-District Authenticated Users:**
Public Apps & Informational Page(s)

- ISLE Apps
- Info Page
- Illinois Open Education
- Resource Search

**Multi-Tenancy Application Launcher:**
Individual school districts are “tenants”

- ISLE Apps
- District Apps
- My Page
- Educator Dashboard

Each tenant must be able to customize the appearance & content of the portal for its own needs. Users who log into the portal get the appropriate experience for the tenant (district) to which they are connected.

Customization examples include logo, colors, header/footer text, navigation (tabs), and content (portlets). Tenants, moreover, not only need to manage these items, they also need to “manage the managers” – they must be able to grant or deny access to these management functions with regard to their own staff.
How Does the “Portal” Login Process Work?

Multi-Tenancy Global Login (IDP/Proxy):
“Get User & Organization”

A.) Input eduPersonPrincipleName

UserID: MyLoginID @ Domain Name List. 123

Login Name @ [domainName.ext]

Populates “OrgDN” List for Login Name if more than one force a choice.

B.) Derive: eduPersonOrgDN(/OrgUnitDN)

Authentication Service Action

C.) Compute: eduPersonAffiliation

Typical “Affiliation” List for Login

- faculty
- student
- staff
- alum
- member
- affiliate
- employee
- library-walk-in

D.) Compute: eduPersonEntitlement

Determine Role Privileges

- https://uportal.illinicloud.org/role/tenancy-manager
- https://uportal.illinicloud.org/role/isle-app-manager
- https://uportal.illinicloud.org/role/portal-admin
- https://uportal.illinicloud.org/role/portal-educator
- https://uportal.illinicloud.org/role/portal-student
User’s “Tenant & Role” are Manifested as a Result of Login

**General Purpose Login Process**

1. Input `eduPersonPrincipalName`
2. Derive `eduPersonOrgDN/O rgUnitDN`
3. Compute `eduPersonAffiliation`

**Tenant Portal-Manager Controls**
- Visual Attribute Customizations
- User Role Based Content Customizations

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Staff@illiniCloud.org

Administrator@unit5.org

Teacher@district87.org

Student@usd116.org
Illinois Shared Learning Environment

Three Pillars of Support Married With Application Programmatic Interfaces:

Offer Significant Potential for LEAs* to Realize the Promise Envisioned for the ISLE Platform Operated as a K12 Federation for K12 by K12!

* Local Educational Authority
How Does the iBMLSS Define a Tenant from the Top-Level?

1. **Tenant Admin LDAP**
   - SLC Operator
   - New LDAP Entry

2. **inBloom Model Local Service Stack**
   - Service Owner
   - Create Tenant-Adm

3. **System Tools**
   - Approve Application Registration
   - Change Password
   - Manage Administrator Accounts

   **Tenant #1**
   - Tenant: illinCloud
   - Education Organization: STANDARD-SEA

   **LDAP Entry**
   ```
   root@demo-1:/home/illincelcloud
   cn: SLC Operator, ou=people, ou=SLAdmin, dc=inbloom, dc=org
   objectclass: inetOrgPerson
   objectclass: posixAccount
   objectclass: top
cn: SLC Operator
givenName: SLC
    sn: Operator
    dsn: /home/users/sloperator
    uid: slocoperator
    gidNumber: 1118
    userPassword: [MD5]jBz7xIlaZ1X1C7LwTjBuGw==
   ```

   **Good Text?**
   - SN= ?
   - Text?
How the iBMLSS Works with SimpleIDP & DataStore Services?


private static final String USER_TYPE = "userType";
private static final String SIMPLE_IDP_EXCEPTION_FORMAT = "SimpleIDP Authentication Exception with username %s";
private static final Map<String, String> LDAP_ROLE_MAPPINGS = new HashMap<String, String>();
static {
// Mapping from roles in LDAP which comply with requirements of POSIX systems
// to roles understood by the API
LDAP_ROLE_MAPPINGS.put("educator", "Educator");
LDAP_ROLE_MAPPINGS.put("aggregate_viewer", "Aggregate Viewer");
LDAP_ROLE_MAPPINGS.put("it_administrator", "IT Administrator");
LDAP_ROLE_MAPPINGS.put("leader", "Leader");
LDAP_ROLE_MAPPINGS.put("lea_administrator", "LEA Administrator");
LDAP_ROLE_MAPPINGS.put("sea_administrator", "SEA Administrator");
LDAP_ROLE_MAPPINGS.put("application_developer", "Application Developer");
LDAP_ROLE_MAPPINGS.put("scl_operator", "SLC Operator");
LDAP_ROLE_MAPPINGS.put("realm_administrator", "Realm Administrator");
LDAP_ROLE_MAPPINGS.put("ingestion_user", "Ingestion User");
LDAP_ROLE_MAPPINGS.put("acceptance_test_user", "Acceptance Test User");
LDAP_ROLE_MAPPINGS.put("sandbox_administrator", "sandbox Operator");
LDAP_ROLE_MAPPINGS.put("sandbox_scl_operator", "sandbox SLC Operator");
}
How Does the *iBMLSS* LDAP Service Work with SimpleIDP Service?

https://demo-1-sidp.demo.inbloom.org/simple-idp?realm=SLC-LDAP1

**Realm Management For SLC-LDAP1**

- **Display Name**: SLC-LDAP1
- **IDP URL**: https://demo-1-sidp.demo.inbloom.org
- **Redirect Endpoint**: https://demo-1-sidp.demo.inbloom.org
- **Attribute Resolution Endpoint**: 
- **IDP Source ID**: 
- **Realm Identifier**: SLC-LDAP1

- **Email Validation & Approval Process**
- **Tenant User #1**
- **Designate AuthN Service**
- **Create Logical LandingZone**

Create a Landing Zone for your Data

- **Delegate Administration**
- **Authorize Applications**
- **Create Custom Roles**
- **Manage Realm**
- **Create Landing Zone**
- **Change Password**
- **Manage Administrator Accounts**
How Does the iBMLSS Work with API User Roles & Dir-Groups?

Directory Groups Map To Fixed-Role Privileges (Manual)
Lifelong Learner

ILLINOIS SHARED LEARNING ENVIRONMENT

MODULES
- CONTENT MANAGEMENT
- CONTENT DELIVERY
- THE VAULT
- THE FEAST

PROFESSIONAL LEARNING

SPECIAL NEEDS

MENTORING NETWORK

STEAM DISCOVERY

E.C.E.

AREA CAREER CENTER

GAMING

THE DISCONNECTED LEARNER

WELLNESS & PLAY

PERSONALIZED LEARNING INNOVATION

VEHICLES
- SIIT
- ICE
- CONFERENCES
- THE BUS!
- SPEAKER BUREAU
- PROJECT WILDWOOD
- GWNN
- MAKER FAIRE

ILEARNEDGOING.ORG
Questions
&
Comments