Welcome!

▸ Please open this link to access training materials *prior* to start time

<div style="border:1px solid #2a7a8c; background:#daf0f5;">

https://courses.nrsweb.org/login/index.php

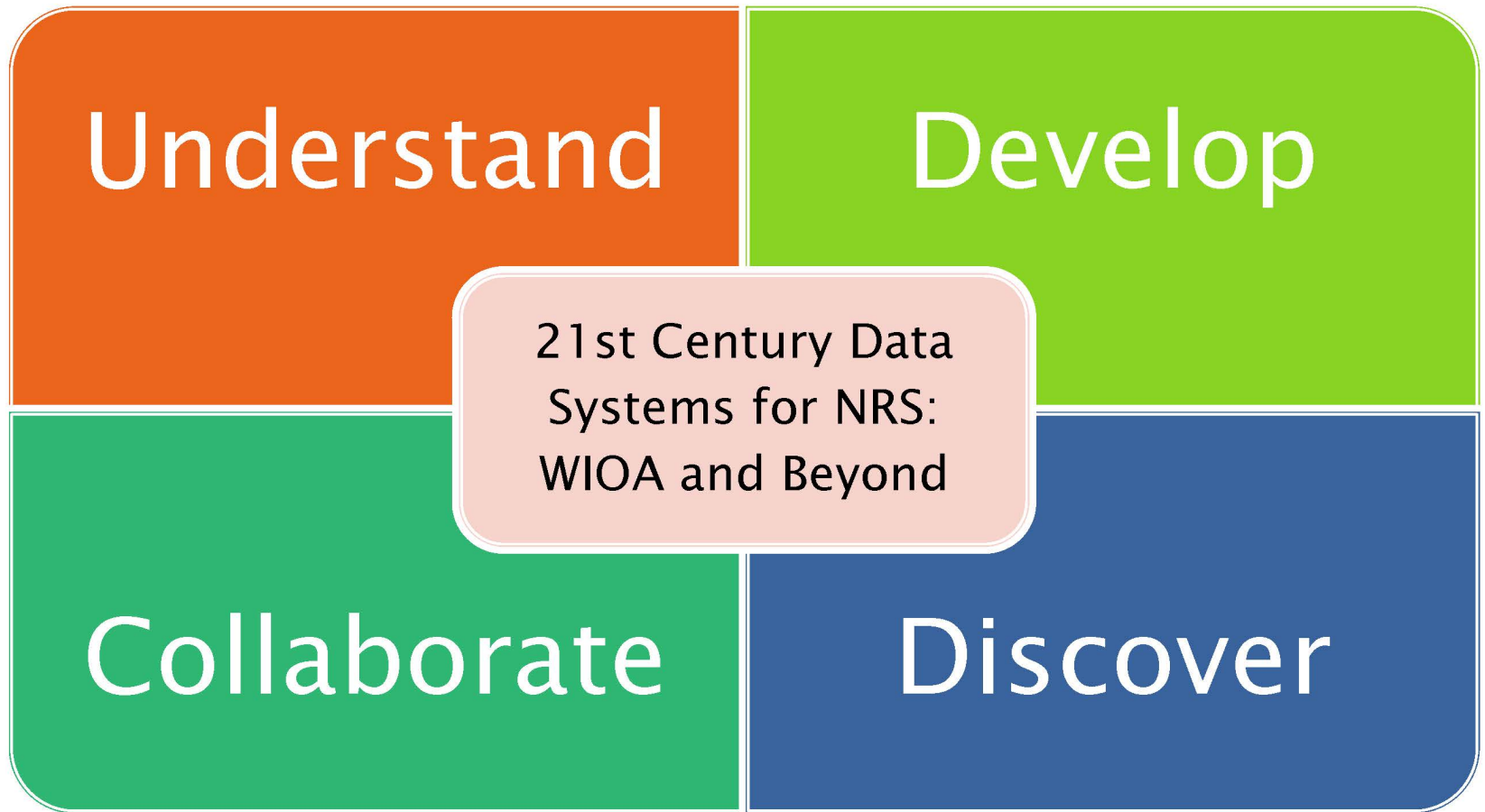</div>

21st Century Data Systems for NRS: WIOA and Beyond

NRS Targeted Training 2017
March 22-24, 2017

NRS
National Reporting System
for Adult Education

Goals of Training

Understand	Develop
Collaborate	Discover

21st Century Data Systems for NRS: WIOA and Beyond

Agenda

21st Century Data Systems for the NRS: WIOA and Beyond
March 22–24, 2017
Training Agenda

Purpose

The purpose of the 2017 NRS Targeted Training is to support state staff members think through, plan for and communicate requirements for updating their current data system to meet the requirements of WIOA and modifying it to produce data reports to support program operations and program improvement. Participants will have opportunities to consider relevant use cases, articulate specific functionality needs, and develop documentation to share key characteristics of the updated data system with developers.

Day 1		
8:30–9:00 a.m.	**Registration** Breakfast Provided*	
9:00 a.m. – 9:10 a.m.	**Welcome** Cheryl L. Keenan Director, Division of Adult Education and Literacy Office of Career, Technical, and Adult Education American Institutes for Research (AIR) Project Staff	
9:10–9:15 a.m.	**Overview of the Training**	
9:15–9:45 a.m.	**Icebreaker**	
9:45 a.m. – 10:00 a.m.	**Training Tools** Overview of the specification workbook and project management tool.	
10:00 a.m.–10:30 a.m.	**Getting Started** Review main factors that determine which functions and features should be included in an NRS data system, and key qualities in successful data systems.	
10:30-10:45 a.m.	Break	
10:45-11:30 a.m.	**Implementation Process** Discuss a method for producing a work system and begin to outline your data system plan.	
11:30-12:00 p.m.	**State Planning Time**	

* All meals are provided through optional attendee conference fees.

	Day 2	
8:30–9:00 a.m.	**Registration** Breakfast is provided.[2]	
9:00–9:15 a.m.	**Review of Day 1 and Overview of Day 2**	
9:15–9:30 a.m.	**Determining What to Build** An overview.	
9:30–10:00 a.m.	**Determining What to Build, continued** Outputs.	
10:00–10:45 a.m.	**State Planning Time** Create a mock-up.	
10:45–11:00 a.m.	**Break**	
11:00–11:45 a.m.	**Determining What to Build, continued** Use cases.	
11:45 a.m.–12:30 p.m.	**State Planning Time** Develop a use case.	
12:30–1:30 p.m.	Lunch	
1:30–1:45 p.m.	**Determining What to Build, continued** Functions.	
1:45–2:15 p.m.	**State Planning Time** Align functions and use cases.	
2:15–2:45 p.m.	**Determining What to Build, continued** Inputs.	
2:45–3:15 p.m.	**State Planning Time, Inputs** Document entities in workbook.	
3:15–3:30 p.m.	**Break**	
3:30–4:15 p.m.	**Determining what to Build, continued** Inputs, continued.	
4:15–4:45 p.m.	**State Planning Time** Begin data dictionary development.	
4:45–5:00 p.m.	**Day 2 Wrap Up**	

(Day 3)

...s.

...ss which tools to use, how
...c outputs needed.

...g and feedback.

...t tool and specification
...h plan with another state.

...e your evaluations. Safe

See Handout: Agenda

Icebreaker

Shining Moments

- Identify two events, activities, accomplishments, or collaborations that were "shining moments" related to your data system development
- In your group, introduce yourself and share your shining moments
  - *Listen carefully for common themes and similarities in the stories*
- Chart summary of each response
  - Include state abbreviations next to each response

Training Tools

Project Management Tool

Project Planner

| Project Start Date: | 1/1/2017 |
| Project End Date: | 5/21/2017 |

Phase	Key To-Dos	Participants	Anticiapted Challeges	Est Start Date	Duration (Days)	Effort (Hours)	Est End Date
Discovery	Stakeholder Focus Group Review of Old System Research Capabilities of Vendor Offerings	Planning Team Stakeholders, as needed	Prioritizing feature requests from stakeholders	1/1/2017	21	160	1/22/2017
Requirements Definition	Prepare: - Roles and Use Cases - System Functions - Data Entities - Data Dictionary - List of capacity, security and other Considerations - Rubric for evaluating RFPS - Final RFP	Planning Team	None	1/22/2017	14	160	2/5/2017
Evaluate/Develop Solutions	Receive, Review and Evaluate Propsosals Obtain feedback from IT Discuss preferred solutions Review with State Director	Planning Team State Director IT Resource Staff	None	3/1/2017	14	120	3/15/2017
Quality Assurance	Prepare testing protocol Recruit Alpha and Beta Testers Conduct performance and usability tests Address issues with vendor and/or staff	QA Team Alpha and Beta Testers Vendor IT Resource Staff, if needed	Minor performance/usability issues	4/1/2017	31	320	5/2/2017
Pre-Launch	Data Conversion Configuration on Hosted Platform Prepare training materials Conduct training webinar	Data System Administrator State Staff (Resource) Vendor	None anticipated	5/7/2017	14	60	5/21/2017
Support	Provide Helpdesk style support via phone for critical issues, and email for questions	State Training Staff	None anticipated	6/30/2017	Ongoing	6 hrs/week	ongoing

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

Specification Workbook

Specification Workbook

Part A - What Works Well? What Should Change? Assess Your Current System's Strengths

During the *Discovery Process* , you have an opportunity to think about the strengths (and weaknessess) of your current data system and identify the specific needs that the new one will address. What features are critical, which could you do without? Are any missing? Does the system function reliably, even when lots of people are using it? Is it capable of sharing data with other agency systems?

Finding answers to these questions may require effort, but the process will help assure that your new system has all needed features and that it functions well. You may want to talk with current users, partners in other agencies about how your system will interact with theirs, and whether you definition of certain common data fields are consistent with theirs. You should also discuss aspects of the system with your agency's IT staff.

With input from others, address the questions below. Your answers will help you identify gaps in your current system, and considerations for developing a new one.

Requirements	Rating Completely, Partially, or Not Enough	What Is Needed to address in NEW system? What to Add, Remove, Fix
Completeness		
Does your system offer all required functions and features?	Partially	Need decision-support tools Assessment Status Report
Does your system generate all required NRS/WIOA tables?	Not Enough	Update NRS Tables for WIOA
Features to Provide Usability, Data Quality or Impactful Data Use	Partially	Need better participant lookup function
Reliability		
Does system operate consistently and reliably, even under load?	Partially	Sometimes get errors when running custom reports, formatting gets messed up.

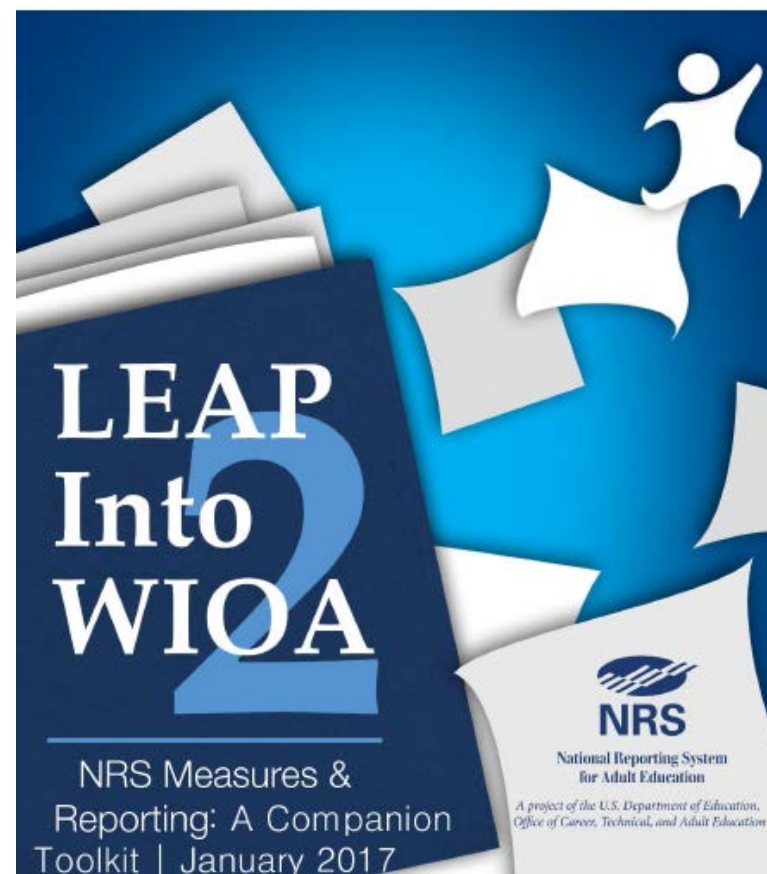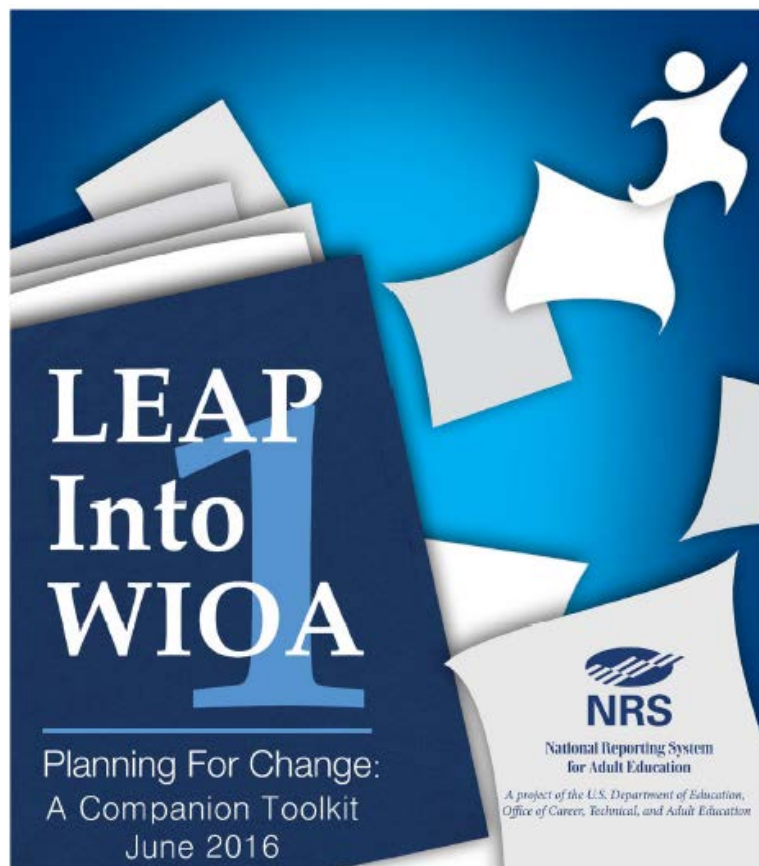**Part A - Assess Your System** | Part B - Report Mockups | Part C - Use Cases | Part D - System Functions | Part E - Inpu ... ⊕ ⋮ ◀

See Handout 2: Specification Workbook
See Handout 2a: Specification Workbook With Samples

LEAP Toolkit, Parts I and II

Toolkits can be found in here:
https://courses.nrsweb.org/login/index.php

Getting Started

Goals of a 21st Century NRS Data System

1. Meet federal and state reporting requirements under the WIOA

2. Achieve greater interagency collaboration

3. Provide insight into state performance for program management and improvement
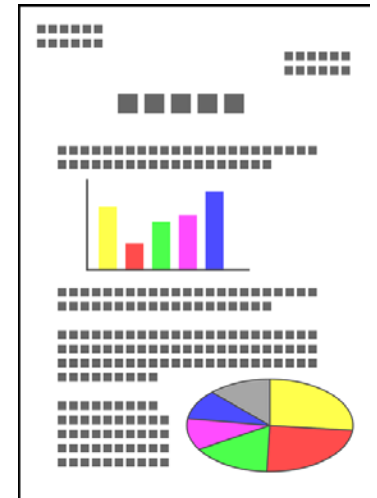
4. Maximize more advanced technology and tools

1. Meet Federal and State Reporting Requirements for Your Data System

▸ **Federal**
  ◦ Joint Information Collection Report (ICR) Table
    • Provide additional data needed for joint report to OCTAE portal
  ◦ **NRS Reporting Tables**
    • Interface with OCTAE's data portal

Joint Reporting Table (ICR)

- New data and features to include:
  - Participant barriers to employment
  - Record for each Period of Participation
  - Additional data elements (e.g., career and training services, participant co-enrollment)
  - Additional breakdown of indicators by participant types

See LEAP II Toolkit, pp. 28–34, 131

NRS Reporting Tables

- New for NRS Tables
  - New WIOA indicators
  - Expansion of educational functioning gain definitions
  - Periods of participation
  - Longer time lag for reporting indicators
  - Breakdowns for IEL–EL Civics and IET participants
  - Data element changes, added and deleted

See LEAP II Toolkit, pp. 4–8

State Reporting Requirements

State and local accountability reports

Local provider–specific data

Classroom management reports

2. Achieve Greater Interagency Collaboration for Follow-Up for Your Data System

▸ WIOA requires follow-up on all participants (except incarcerated and excluded) **after exit for two or more** indicators
  ◦ Employment indicator
  ◦ Credential indicator
  ◦ Measurable Skill Gain (MSG)

See LEAP II Toolkit, pp. 9-14

Follow-Up Requirements Requiring Interagency Collaboration

Employment indicators	Credential Indicator	MSG
• Second- and fourth-quarter employment • Earnings—if employed in the second quarter after exit	• Secondary credential—eligible participants entered employment or postsecondary education within 1 year of exit • Postsecondary credential attainment—eligible participants within 1 year of exit	• Entered postsecondary education or obtained secondary credential attainment

Tracking for Post-Exit Indicators

- Needed for tracking:
  - Exit date for each Period of Participation
  - Appropriate indicator tied to participant
  - Correct time by indicator (e.g., within one year of exit for credential measures, quarters for employment)
  - Common identification number for data matching (e.g., Social Security number)
  - Participant contact information for survey

3. Provide Insights for Program Management and Improvement for Your Data System

- Track progress toward state performance targets
- Monitor local performance
- Aggregate participant characteristics and outcomes

Student Records Management

Management information system organizes data on programs and participants

Achievement

Management by function

Separation

Student Records Management
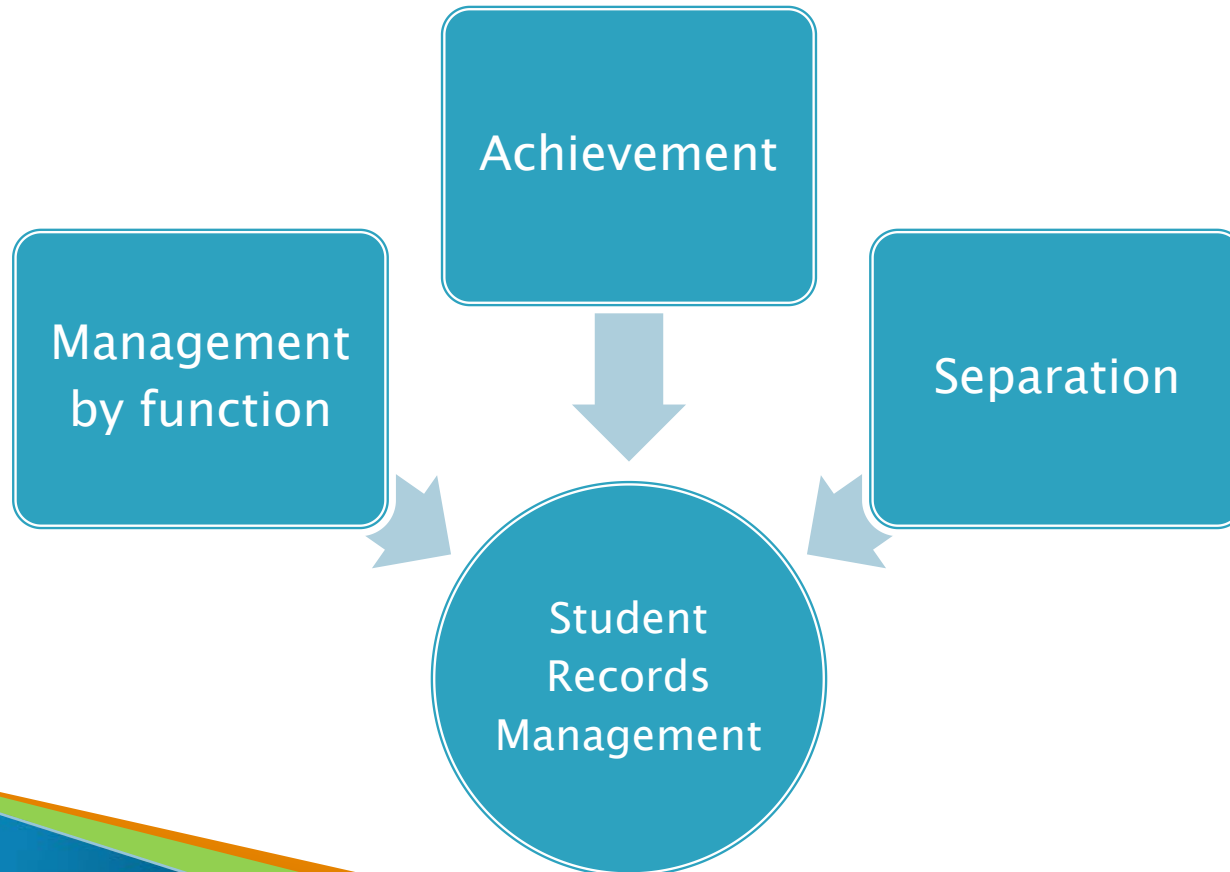
4. Maximize More Advanced Technology and Tools for Your Data System

- Data Exploration Tools
  - Business intelligence tools
- Data Visualization Tools
  - Infographics
  - Dashboards

See LEAP II Toolkit, pp. 139–140

Break
Please return in 15 minutes.

Implementation Process

System Implementation Process

Step 1
DISCOVERY

Step 2
REQUIREMENTS DEFINITION

Step 3
EVALUATE/DEVELOP SOLUTIONS

Step 4
QUALITY ASSURANCE

Step 5
PRE-LAUNCH

Step 6
SUPPORT
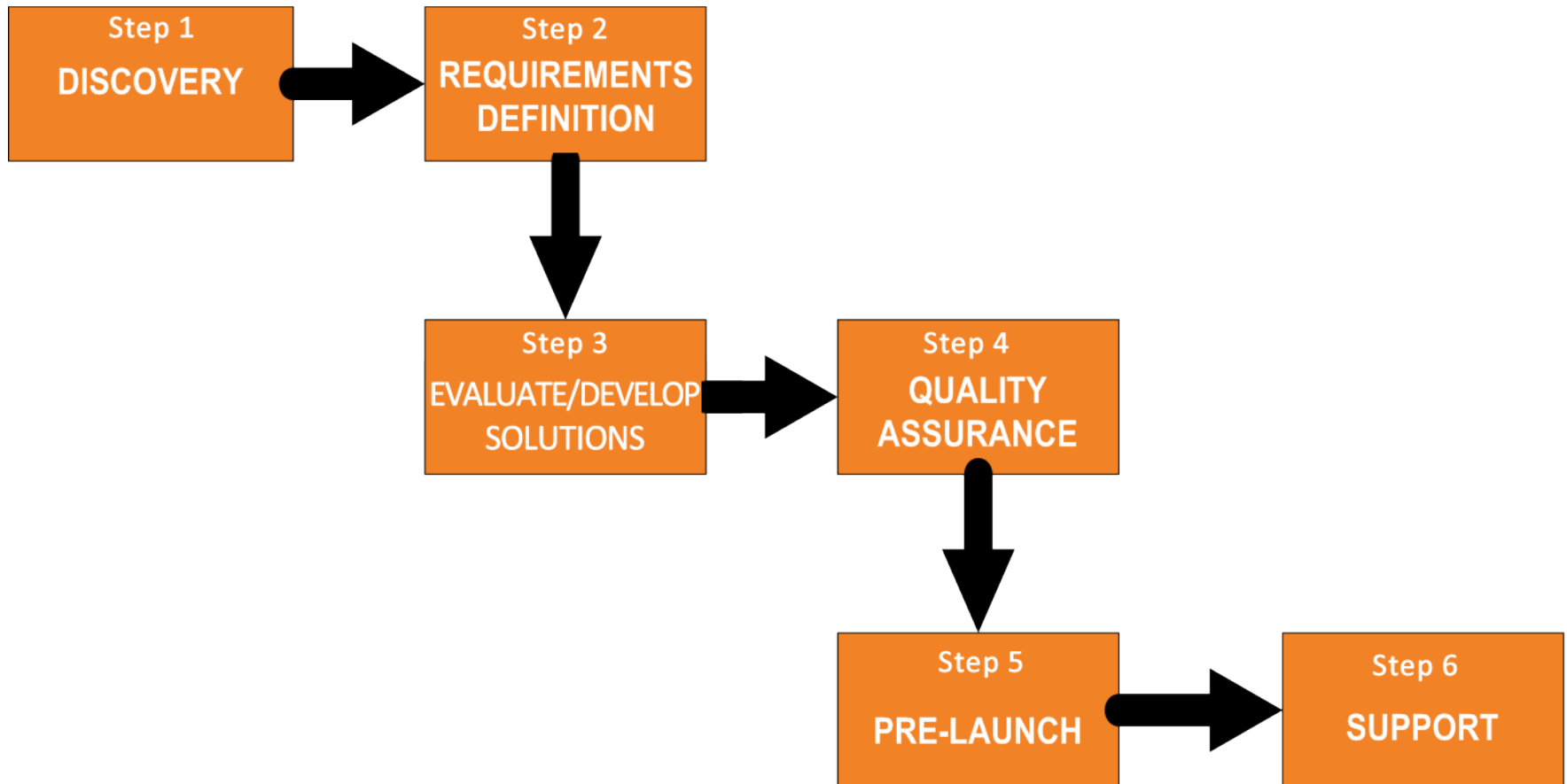
See Handout 3: System Implementation Process

25

Project Management Tool

Project Management Tool

Project Planner

Fill In Project To-Dos, People Responsible, Challenges, Dates and Duration in the *Unshaded* Cells.

WARNING: Do Not Change Shaded Cells

Project Start Date: 1/1/2017
Project End Date: 5/22/2017

Phase	Key To-Dos	People/Person Responsible	Anticipated Challenges	Est Start Date	Duration (Days)	Effort (Hours)	Est End Date
Discovery	Stakeholder Focus Group Review of Old System Research Capabilities of Vendor Offerings	Planning Team Stakeholders, as needed	Prioritizing feature requests from stakeholder	1/1/2017	20	160	1/21/2017
Requirements Definition	Prepare: – Roles and Use Cases – System Functions – Data Entities – Data Dictionary – List of capacity, security and other Considerations – Rubric for evaluating RFPS	Planning Team	None	1/22/2017	22	160	2/13/2017
Evaluate/Develop Solutions	Receive, Review and Evaluate Propsosals Obtain feedback from IT Discuss preferred solutions Review with State Director	Planning Team State Director IT Resource Staff	None	3/1/2017	21	120	3/22/2017
Quality Assurance	Prepare testing protocol Recruit Alpha and Beta Testers Conduct performance and usability tests Address issues with vendor and/or staff	QA Team Alpha and Beta Testers Vendor IT Resource Staff, if needed	Minor performance/usability issues	4/1/2017	31	320	5/2/2017
Pre-Launch	Data Conversion Configuration on Hosted Platform Prepare Training Materials Conduct Training	Data System Administrator State Staff (Resource) Vendor State Training Staff Program Staff to be Trained	None anticipated	5/1/2017	21	500	5/22/2017
Post-Rollout Support	Provide Helpdesk style support via phone for critical issues, and email for questions	State Training Staff	None anticipated	6/1/2017	Ongoing	6 hrs/week	ongoing

See Handout 1a: Project Management Tool With Samples

Project Gantt Chart
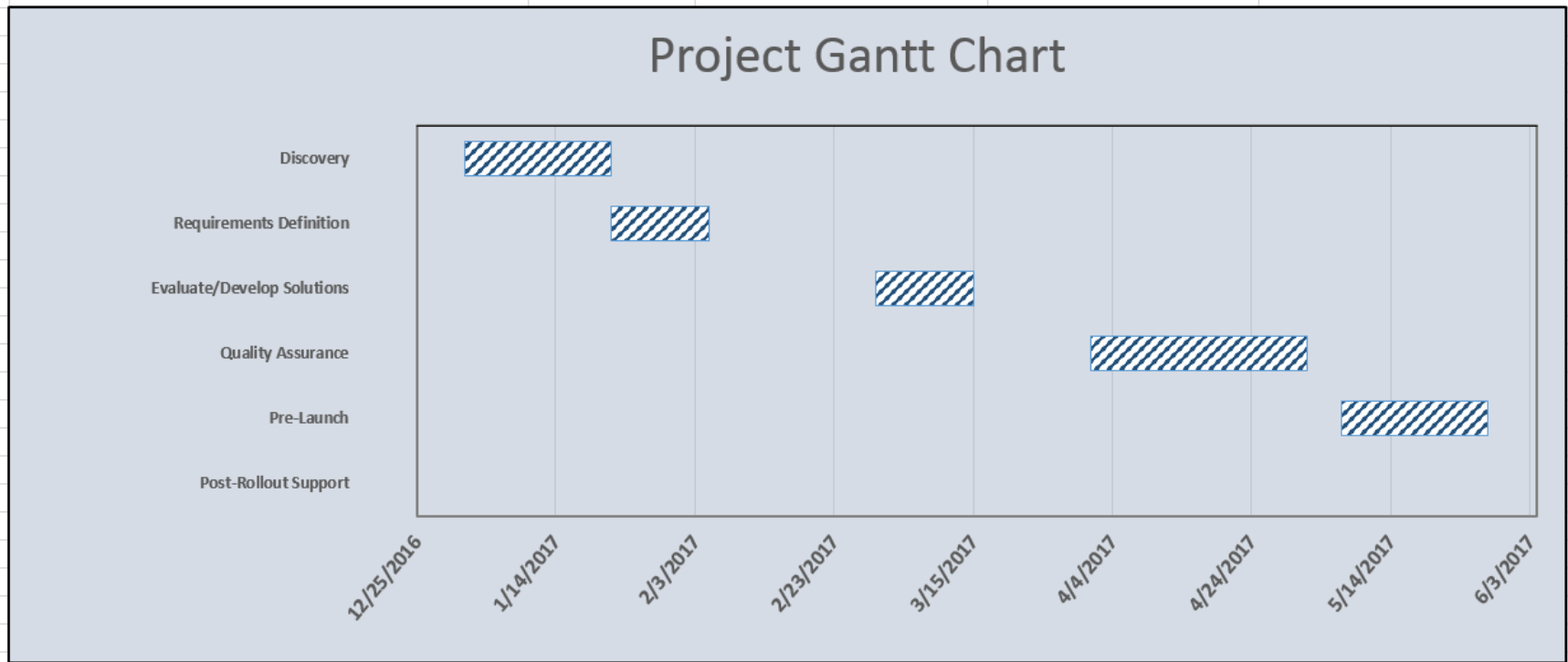
See Handout 1a: Project Management Tool With Samples

Step 1: Discovery

- Have conversation with stakeholders.
- Review NRS Accountability Guidelines.
- Determine special challenges (distance, demographics, etc.).
- Analyze existing policies, procedures, and timelines.
- Identify areas that need special attention.

Discovery Planning

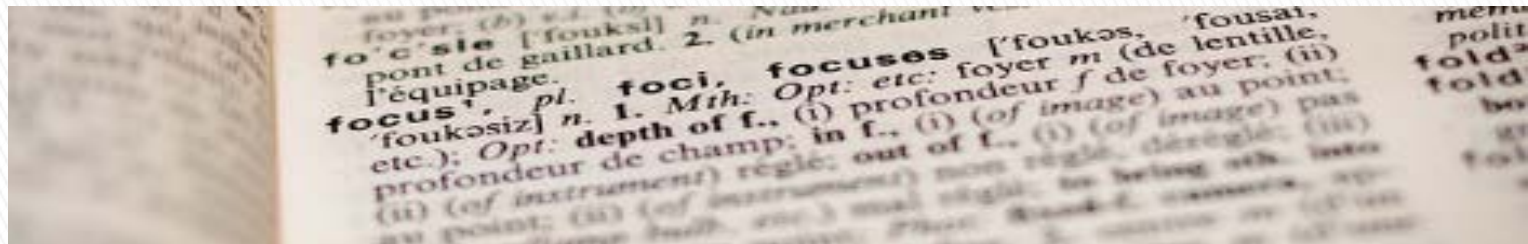▸ Go to your project management tool and begin to complete the "Discovery Phase" row by noting

- ◦ Key "To Dos"
- ◦ People/person responsible
- ◦ Anticipated challenges
- ◦ Estimated start date
- ◦ Duration
- ◦ Effort (hours)
- ◦ Estimated end date

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

Step 2: Requirements Definition

- Audiences and use cases.
- Specify outputs and create mockups.
- Identify system functions and create function descriptions.
- Describe inputs and entity relationships.

- Document business rules.
- Identify nonfunctional must haves and selection criteria.
- Assemble a request for proposal if needed.

Requirements Definition Planning

▸ Go to your project management tool and begin to complete the "Requirements Definition Phase" row by noting
  ◦ Key "To Dos"
  ◦ People/person responsible
  ◦ Anticipated challenges
  ◦ Estimated start date
  ◦ Duration
  ◦ Effort (hours)
  ◦ Estimated end date

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

Step 3: Evaluate/Develop Solutions

▸ Develop a rubric or guidelines for reviewing options.
▸ Consider candidates.
▸ Make sure responsibilities are clear.
▸ Consider legal/governance issues.
▸ Provide feedback or needed revisions.

Evaluate/Develop Solutions Planning

▸ Go to your project management tool and begin to complete the "Evaluate/Develop Phase" row by noting
  ◦ Key "To Dos"
  ◦ People/person responsible
  ◦ Anticipated challenges
  ◦ Estimated start date
  ◦ Duration
  ◦ Effort (hours)
  ◦ Estimated end date

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

Step 4: Quality Assurance

- Document most common use case scenarios for testing.
- Create step-by-step scripts and open scenarios.
- Recruit testers (alpha and beta)
- Obtain and address feedback.
- Repeat as necessary.
- Perform usability test using step-by-step scripts.

Usability Testing

1. Identify Tasks for Testing
2. Create Task
3. Recruit Participants
4. Carry Out Test
5. Review Results and Gather Insights
6. Identify and Prioritize Data System Changes
7. Implement Data System Changes
8. Retest, If feasible

See Handout 4: Usability Testing Protocol

Quality Assurance Planning

- Go to your project management tool and begin to complete the "Quality Assurance Phase" row by noting
  - Key "To Dos"
  - People/person responsible
  - Anticipated challenges
  - Estimated start date
  - Duration
  - Effort (hours)
  - Estimated end date

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

Step 5: Pre-Launch, Technical Tasks

- Installation
  - IT Department or Vendor—if hosted
- Configuration
  - Setup Programs, Sites, Classes, Assessment Metadata, etc.
- Convert Data from old system

Step 5: Pre-Launch, Training

- Promote Confidence and Enthusiasm for New System
- Content
- Implementation Depends Upon Model

Pre-Launch Planning

▸ Go to your project management tool and begin to complete the "Pre-Launch Phase" row by noting
  ◦ Key "To Dos"
  ◦ People/person responsible
  ◦ Anticipated challenges
  ◦ Estimated start date
  ◦ Duration
  ◦ Effort (hours)
  ◦ Estimated end date

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

Step 6: Support

- Establish self-service help
- Provide technical assistance or hotline, e-mail or chat
- Plan for ongoing training

Support Planning

▸ Go to your project management tool and begin to complete the "Support Phase" row by noting
  ◦ Key "To Dos"
  ◦ People/person responsible
  ◦ Anticipated challenges
  ◦ Estimated start date
  ◦ Duration
  ◦ Effort (hours)
  ◦ Estimated end date

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

State Planning Time

▸ As a team, briefly review and update your project management tool and Gantt chart

▸ Pair up with another state team and share an overview of your tool, discussing
  ◦ Potential challenges and potential solutions

See Handout 1: Project Management Tool
See Handout 1a: Project Management Tool With Samples

How Ready Are You?

▸ Using the stickers provided, indicate your readiness at <u>each</u> implementation stage

100% ready!	On our way, but lots to do	Not yet ready

Key Success Factors of a Data System

Your Success Factors

- Working in your state teams, brainstorm a list of successful elements of a data system. Consider why your current system is successful or not.
- These characteristics should be transferable to any data system.

Example

▸ A success factor may include these elements:
- Comprehensive range checking for all relevant inputs
- Standardized and regular training on data entry rules for all users
- Data-entry audit reports to flag outlier data values entered

Success Factor—Accuracy of Entered Data

Key Success Factors

▸ How do I know our state system is well built?
1. Completeness
2. Reliability
3. Compatibility
4. Vendor Considerations
5. Cost

1. Completeness
Appropriate Tools and Reports

▸ Should include required accountability reports
  ◦ NRS Tables
▸ Address Operational Needs, for example:
  ◦ Post-Tests Required Report
  ◦ Follow-Up Required Report
  ◦ Enrollment tracking over time: errors or reality?
  ◦ Attendance/contact hour tracking: participation issues or missing data?
▸ Provide Insights for Decision Support/Communication

1. Completeness
Tracking Relevant Content

- System must be capable of managing information for reporting
- Additional data needed for operations (state specific)

2. Reliability

Timeliness

Stability

Accuracy

2. Reliability: Ways to Ensure

- Alerts and reports
- Appropriate data validation checks
- Exception reports to identify outliers
- Compliance with business rules
- Activity reports to identify lapses in data entry
- Reviews of new reports/products for accuracy

3. Compatibility

▸ Functions within Agency's Operating Environment

▸ Meets Agency's Security/Privacy Requirements

▸ Capable of Receiving/Sharing Data (e.g., Data Matching)

4. Vendor Considerations

▸ Ensure Agency Ownership of Data

▸ Able to Export Data for Use Elsewhere

▸ Continuity of Service

▸ Vendor Provides Appropriate Security Measures

▸ Able to Change System to Address State Policy Changes

▸ Vendor Is Responsive and Helpful

5. Cost

- Initial Cost
- Installation, Configuration, Data Conversion
- Hosting
- Vendor Support
- Cost of Training
- Updates and Improvements

Evaluate/Develop Solutions Rubric

Proposed Solution Evaluation Rubric		
Provider		Score 0.00%

Requirements	Points Awarded
Points: 1=Not Adequate, 2=Mostly Adequate, 3=Completely Adequate	
Completeness	0
Does system offer all required functions and features?	
Does system generate all required NRS/WIOA tables?	
Does it offer additional *nice-to-have* features?	
Reliability	0
Does system operate consistently and reliably, even under load?	
Does system provide sufficiently fast response time, even under load?	
Does system appropriately enforce agency's business rules?	
Does system provide sufficient data validation checks and alerts?	
Compatibility	0
Will system function within agency's prescribed operating environment? Operating systems?	
Does system meet agency's security/privacy requirements?	
Is system capable of receiving and sharing interagency data, as needed for data matching and other	
Vendor Considerations	0
Is agency ownership of data assured? Can data be easily exported for use in another system?	
Is continuity of service ensured, should vendor cease operations?	
Does vendor take appropriate steps to secure state and participant data?	
Can changes in the system be made to address changes in state policies/procedures, if necessary?	
Does vendor appear to be responsive and helpful?	
Cost	0
Do system costs—including development, updates, and training costs—meet state requirements?	

See Handout 1: Project Management Tool, Part B

55

Lunch
Please return in 1 hour.

State Planning

- In your state teams, assess your current system's strengths using the table in Part A of your workbook, "Assess Your System"
- First, rate each descriptor of a successful data system
- Then, indicate what needs to be addressed in your new system based on the rating in the previous column. Identify what needs to be added, fixed, etc.

See Handout 2: Specification Workbook, Part A, State Strengths
See Handout 2a: Specification Workbook With Samples, Part A

Project Management Tool

▸ Return to the "Discovery" phase of your project management tool

▸ Based on your self-assessment activity completed in Section A of your workbook, identify any tasks that need to be updated or added during the Discovery phase

See Handout 1: Project Management Tool, Part A

About Operating Environments

Common Operating Environment

▸ State NRS data system is part of a larger system within the state

▸ Need for systems to interact with each other for data sharing and common reporting

▸ Requires common definitions and business rules

▸ Approach needs to fit state needs, budget, and capabilities

See LEAP I Toolkit, pp. 18–20

Architectures or Models

Federated

Data Warehouse

Linked

Integrated

Architectures or Models

61
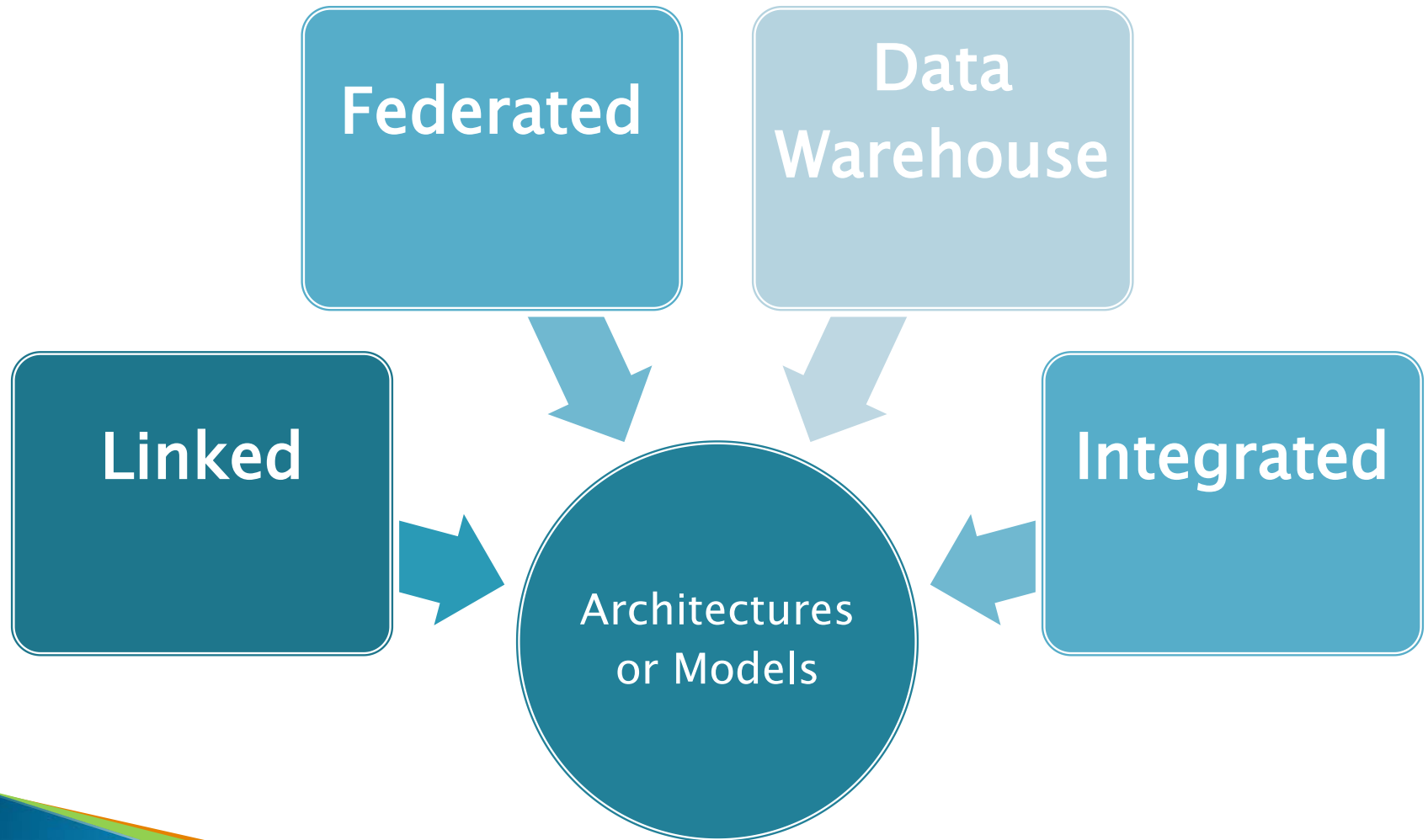
Linked Architecture
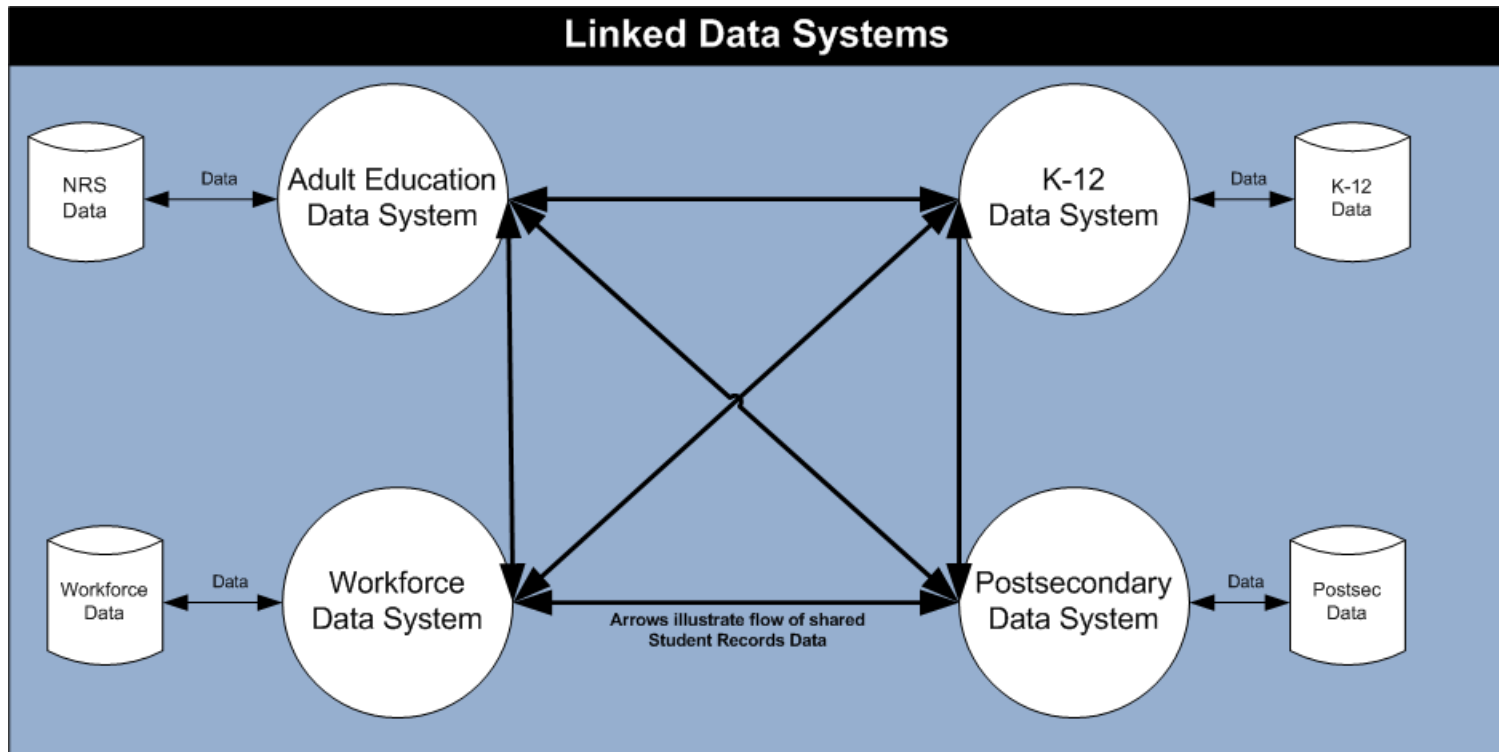
Linked Data Systems offer informal or as-needed data sharing for reporting or operational activities.

Federated Architecture
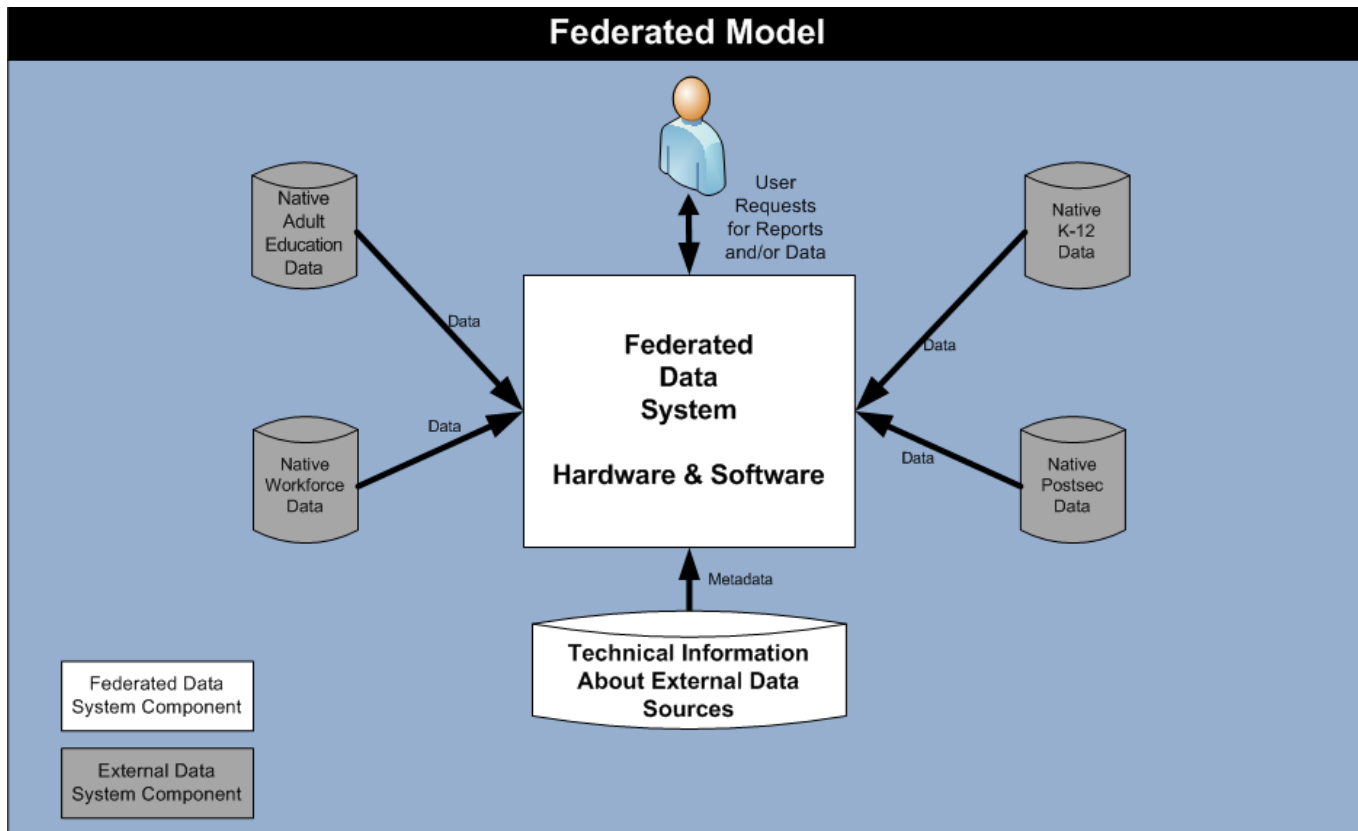
Draws data from many agencies to support student case management, reporting, and analysis. Scalable.

Data Warehouse Architecture
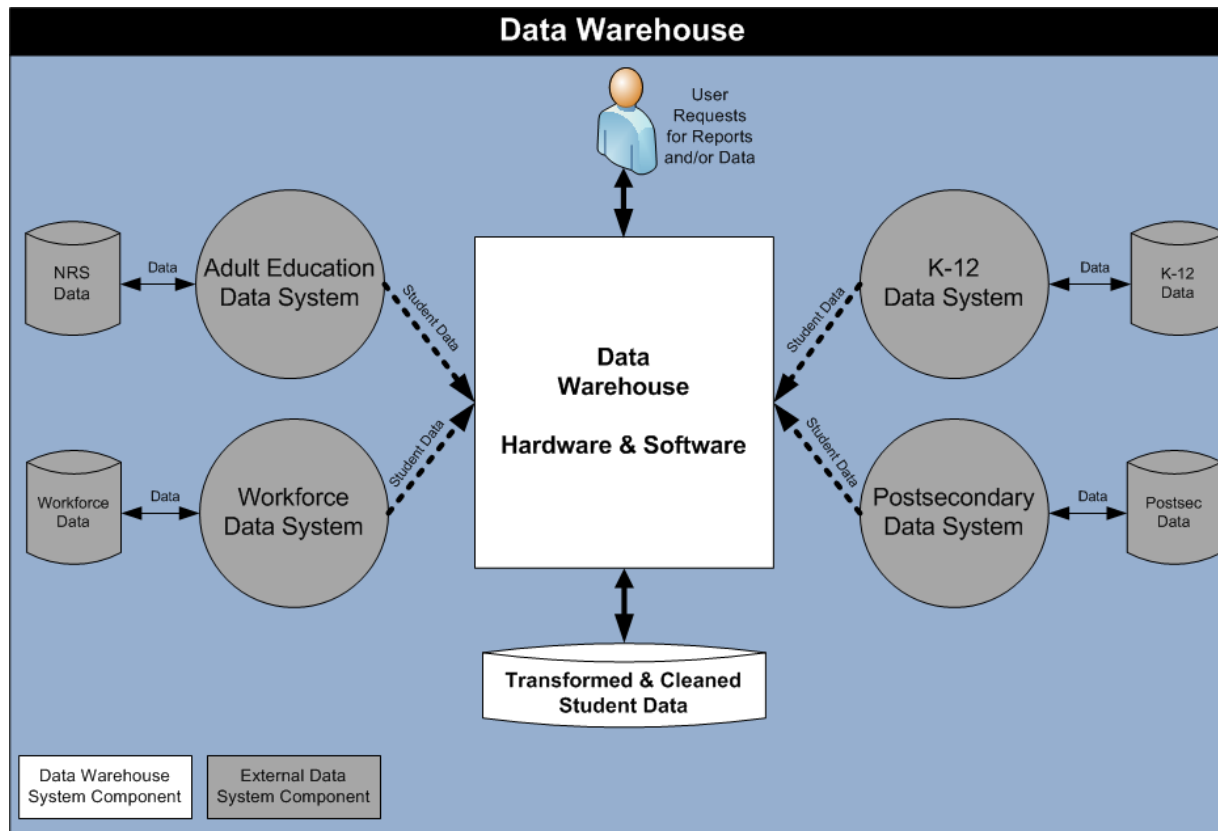
Brings together data from multiple agencies for analysis and reporting.

Integrated Architecture

Integrated Data System

- K-12 Student Records Module
- Adult Education Student Records Module
- Workforce Student Records Module
- Postsecondary Student Records Module

User Requests for Reports and/or Data

Student Records Data
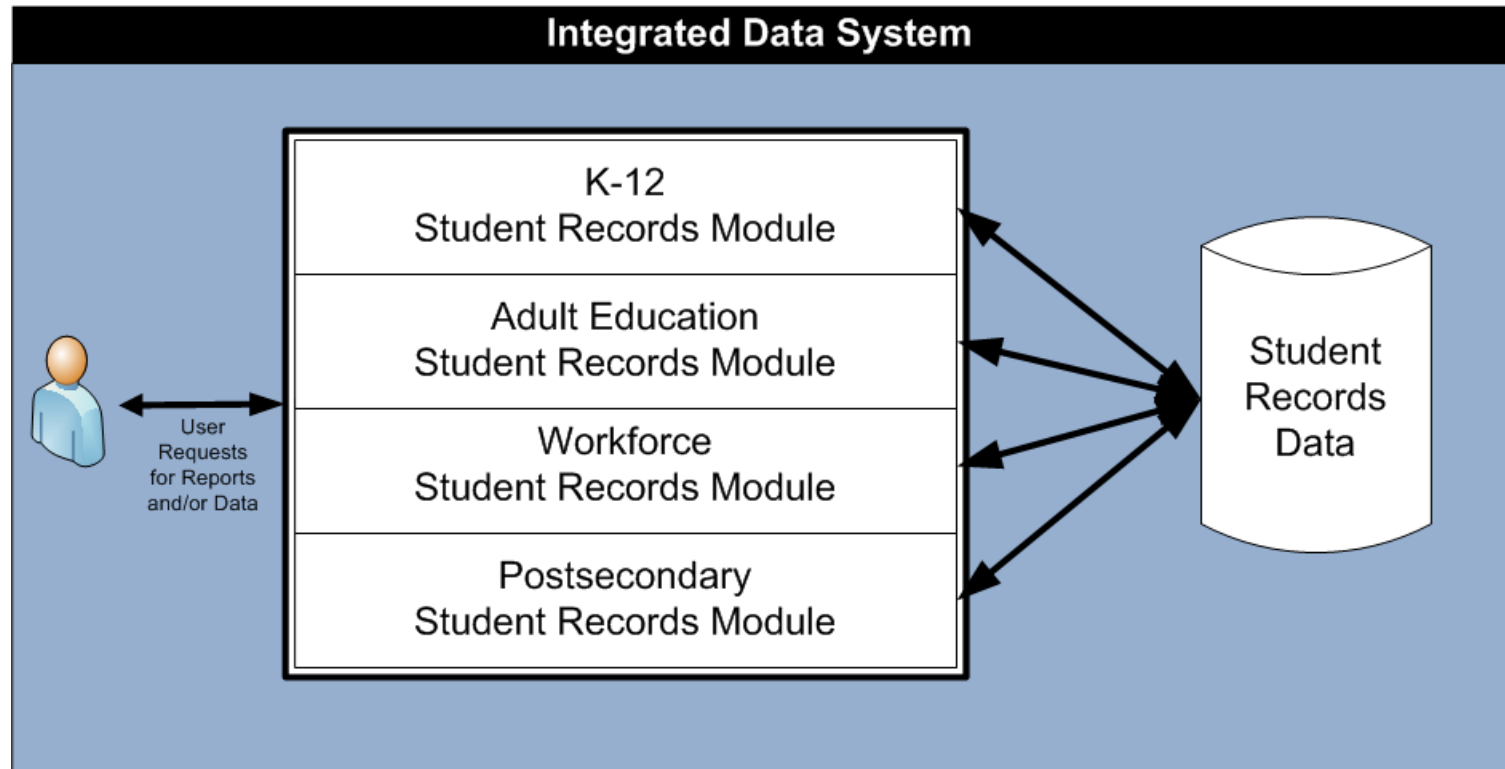
Complete student records system supporting more than one education organization.

Cross-State Sharing

▸ Discuss and respond to question prompts around data sharing. Identify and discuss
   ◦ Which operating environment your state uses
   ◦ Current data sharing practices with other agencies
   ◦ Challenges faced and strategies for resolving them that are you considering
   ◦ What, if any, your planned next steps around data sharing are
▸ Chart responses

Cross-State Sharing (continued)

- Review other groups' responses and note any strategies or next steps that your state may benefit from

Design Challenges and Operating Environment

National Reporting System
for Adult Education

Design Challenges

1. Method of Sharing Data

2. Governance Issues

3. Consistency of Data Definitions

4. Concurrency Issues

5. Privacy and Security

1. Method of Sharing Data

- Seamless Connection
  - Requires standard access methods SQL
  - Address interagency security needs
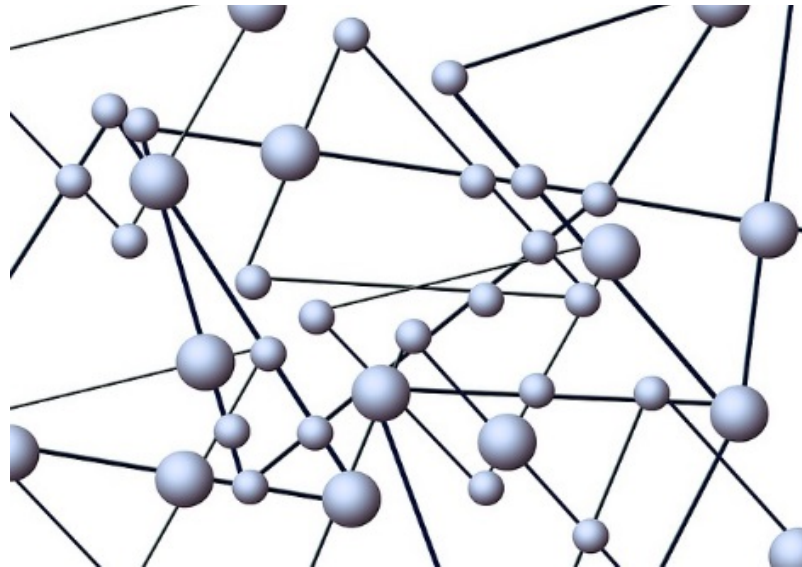
2. Governance Issues

- MOUs
- Agency regulations

3. Consistency of Data Definitions

▸ Data Definitions and Formats
  ◦ Common Definitions—measure means the same thing
  ◦ Granularity–ability to disaggregate
  ◦ Common Coding Categories
  ◦ Consistent Linking Method
    SSN, State Education ID, Name + DOB + Other Info

4. Concurrency Issues

▸ Must ensure that data being used are for consistent time periods

▸ Different agencies' databases may be accurate for different time periods

▸ Storing data more granularly helps this

5. Security and Privacy

▸ Data Security and Personal Privacy
  ◦ Limitations on Use of SSN
  ◦ Terms of Use for Data
  ◦ Security of Data Transmission and Storage
  ◦ Managing Authorized Access

What Data Will You Need to Share?

- Employment
  - Second- and fourth-quarter post-exit
- Earnings
  - Second-quarter post-exit for employed
- Secondary Credential
  - Education agency awarding credential
- Postsecondary Credential or Entry
  - Postsecondary institution awarding credential or entered by participants

State Planning

- Go to your project management tool
- What updates do you need to make to each phase depending on your data system operating environment?
- What does your data system operating environment imply for your to-do list? Anticipated challenges?
- Note any changes

See Handout 1: Project Management Tool, Part A

Break
Please return in 15 minutes.

Data Sharing Initiatives

National Reporting System
for Adult Education

Data Sharing Initiatives

▸ Statewide Longitudinal Data Systems (SLDS) Grant Program

▸ Wage Record Interchange System (WRIS)

▸ Wage Record Interchange System 2 (WRIS 2)

▸ State Wage Interchange System (SWIS)

2005

2010

2011

TODAY

Data Sharing Initiatives: Statewide Longitudinal Data Systems (SLDS) Grant Program

▸ Educational Technical Assistance Act of 2002.

▸ Title II of the statute created the Institute of Education Sciences (IES) which manages the program.

▸ SLDS grant program promotes the successful design, development, implementation, and expansion of longitudinal data systems.

▸ 3-5 year grants – up to $20 million per grantee.

▸ Number of grant awards made by IES:
  ◦ November 2005 – 14 states
  ◦ June 2007 – 12 states
  ◦ March 2009 – 27 states
  ◦ May 2010 – 20 states (ARRA)
  ◦ May 2012 – 21 states, DC, PR, and VI

▸ Annual and final grantee reports required.

SLDS Grantee States
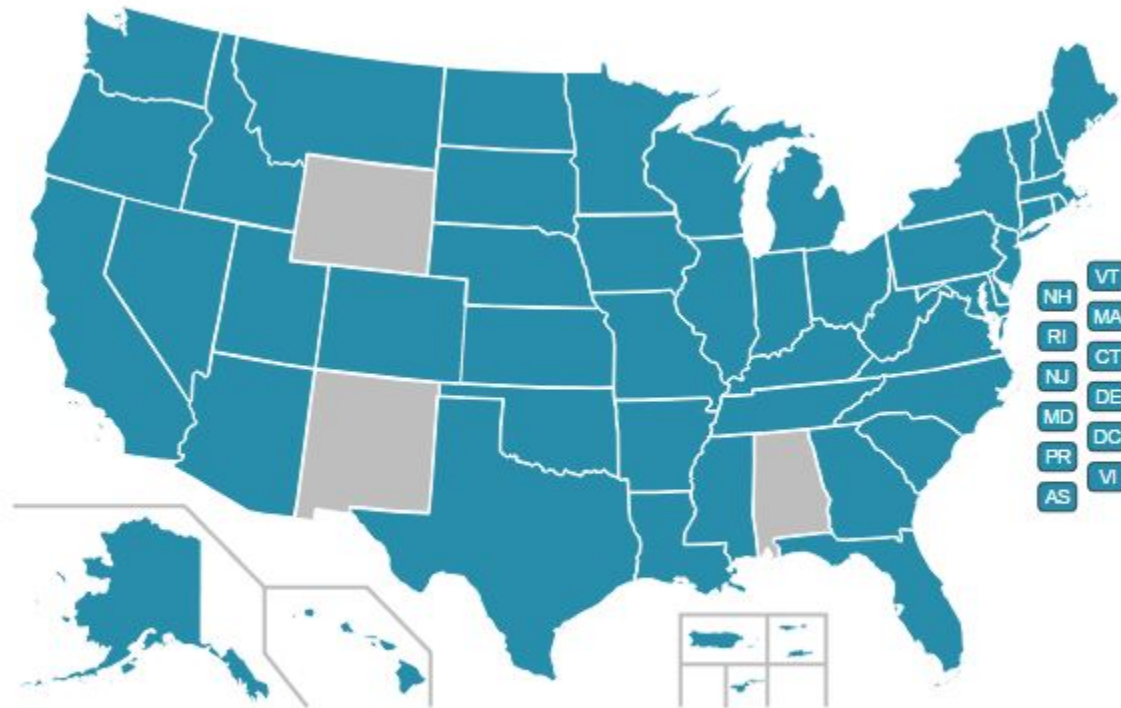
Data Sharing Initiatives:
Wage Record Interchange System (WRIS)

- Facilitates voluntary exchange of employment data for training programs authorized under WIA.

- Interstate access.

- Additional outcomes.

- Interstate Connection Network (ICON).

Data Sharing Initiatives:
Wage Record Interchange System 2 (WRIS 2)

- Extends voluntary employment data sharing model to additional partners.
- Facilitates preparation of aggregate statistical reports for certain federal or state education programs.
- Separate platform.
- States must already participate in WRIS.

States in WRIS 2

WRIS2 Membership

45 WRIS Entities (43 States, District of Columbia, and Puerto Rico)

Updated October 2016

Data Sharing Initiatives:
State Wage Interchange System (SWIS)

▸ Enables voluntary sharing of employment data for all of the WIOA core programs.

▸ Currently being developed by state representatives in collaboration with the Departments of Education and Labor.

▸ Structured to comply with confidentiality laws and regulations.

▸ Would enable interstate wage record sharing without having to enter into separate agreements with participating states.
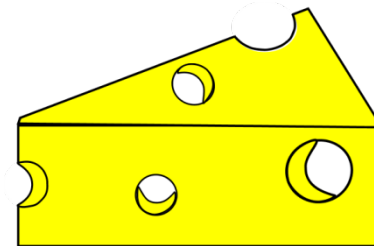
Day 1 Wrap-Up

Day 1 Wrap-Up

▸ Parking lot questions
▸ Evaluations

Evaluation Link:
http://bit.ly/2mAMw1x

Also:

https://courses.nrsweb.org/login/index.php

Overview of Day 2

▸ Determining What to Build
  ◦ Requirements Definition Phase

Reflections

Something I learned today…

Something I still want to know…

21st Century Data Systems for NRS: WIOA and Beyond

Day 2

NRS
National Reporting System
for Adult Education

Review of Day 1

- Getting Started—WIOA Requirements
- Implementation Process
- Key Success Factors of a Data System
- Operating Environments
- Factors to Consider When Implementing an Operating System Within Each Environment

Determining What to Build

An Overview

Determining What to Build

- Requirements Definition Phase
- Broken down into multiple components:
  - Outputs
  - Use cases
  - Functions
  - Inputs
    - Data dictionaries

Ultimate goal is a specification for your data system developer

Specification

Specification describes in some detail what a system does. Specifically, it describes its inputs, outputs, and functionality.	▸ Think through system details ▸ Accurately communicate requirements
What	**Why**

Determining What to Build

Inputs	Functionality	Outputs
3	2	1
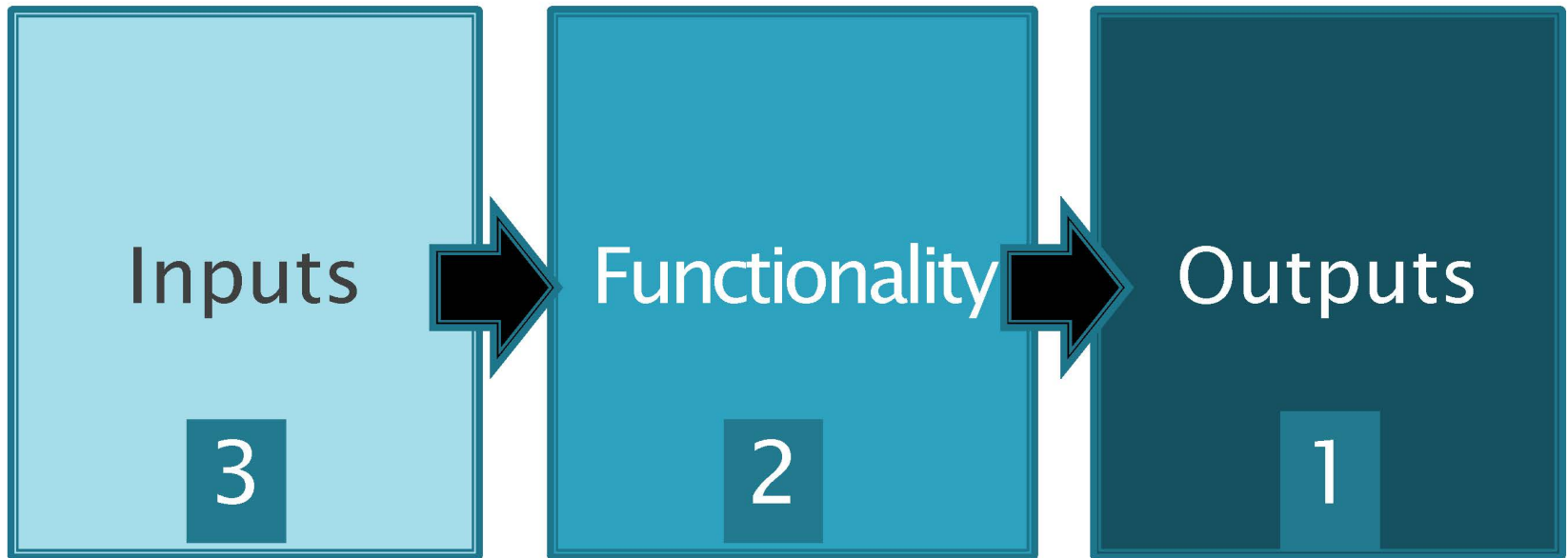
Determining What to Build

Outputs

1. Outputs
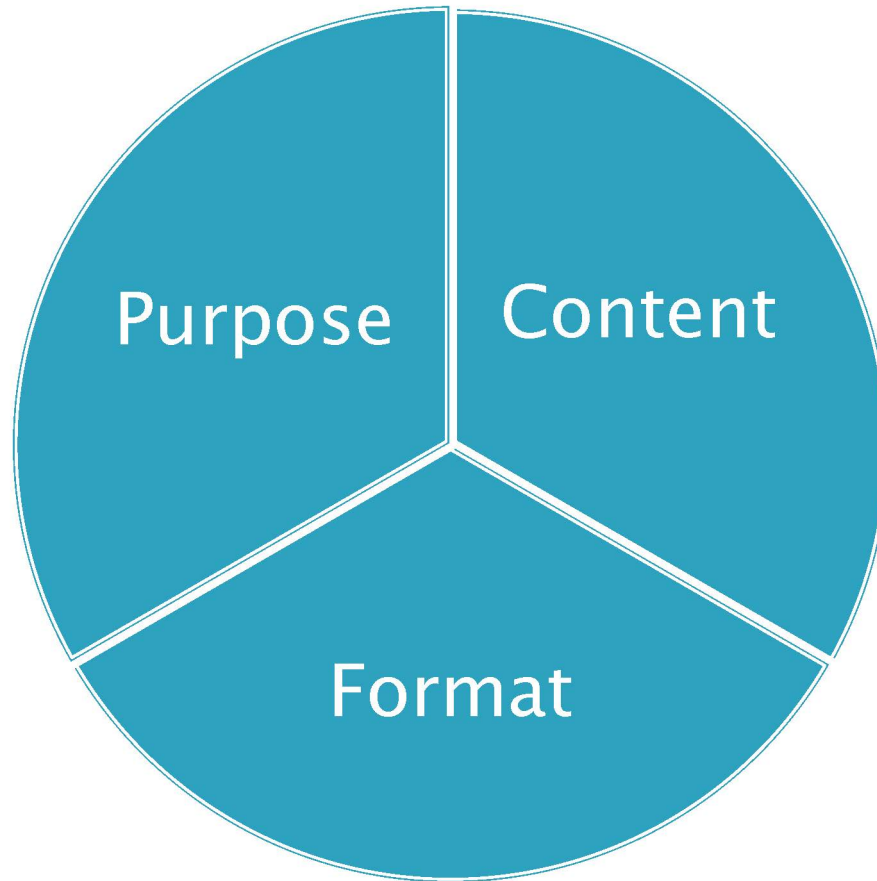
Required Reports

- Joint ICR report
- NRS Tables

Supplemental Reports

▸ State Accountability, Planning, and Management Tools Reports

▸ Program Management Reports

▸ Data shared with other agencies

These reports may be required in your state but are not required through NRS reporting.

Mock-Ups

Content + Layout

Report Mock-Ups

▸ What's the purpose?

▸ What information does the report require?

▸ How should the report be laid out so the content is clear and actionable?

What reports do you need/want in your state?

Example NRS Mockup

Entering Educational Functioning Level (EFL) (A)	American Indian or Alaska Native		Asian		Black or African American		Hispanic/ Latino		Native Hawaiian or Other Pacific Islander		White		More than One Race		Total
	Male (B)	Female (C)	Male (D)	Female (E)	Male (F)	Female (G)	Male (H)	Female (I)	Male (J)	Female (K)	Male (L)	Female (M)	Male (N)	Female (O)	(P)
ABE*** Level 1															
ABE Level 2															
ABE Level 3															
ABE Level 4															
ABE Level 5															
ABE Level 6															
ESL*** Level 1															
ESL Level 2															
ESL Level 3															
ESL Level 4															
ESL Level 5															
ESL Level 6															
Total															

State Planning Time, Part 1

- Consider the feedback received from the survey in the pretraining
  - *Activity 2: Obtain feedback from key stakeholders about what type of data reports they believe are necessary for continuous program improvement*
- Select at least <u>one</u> suggestion from your stakeholders to create a mock-up

State Planning Time, Part 2

▸ Using the chart paper provided, respond to the following questions based on the suggestion on which you are focusing:
  ◦ What's the purpose?
  ◦ What information does the report require?
  ◦ How should the report be laid out so the content is clear and actionable?

State Planning Time, Part 3

▸ Create a mock-up based on responses for your new report (on chart paper)

▸ Partner with another state

▸ Share mock-ups and provide feedback

▸ Update mock-up as needed

▸ Document your mockup in the training workbook, Part B

See Handout 2: Specification Workbook, Part B

Break
Please return in 15 minutes.

Determining What to Build

Use Cases

Value of a Use Case

- Understand who will use the system (roles)
- Understand/Specify how the system will be used
- Discover gaps between requirements and software options
- Facilitate communication about system functions

Use Case

▸ A use case briefly describes how users interact with an existing or proposed system
  - ◦ Defines user roles
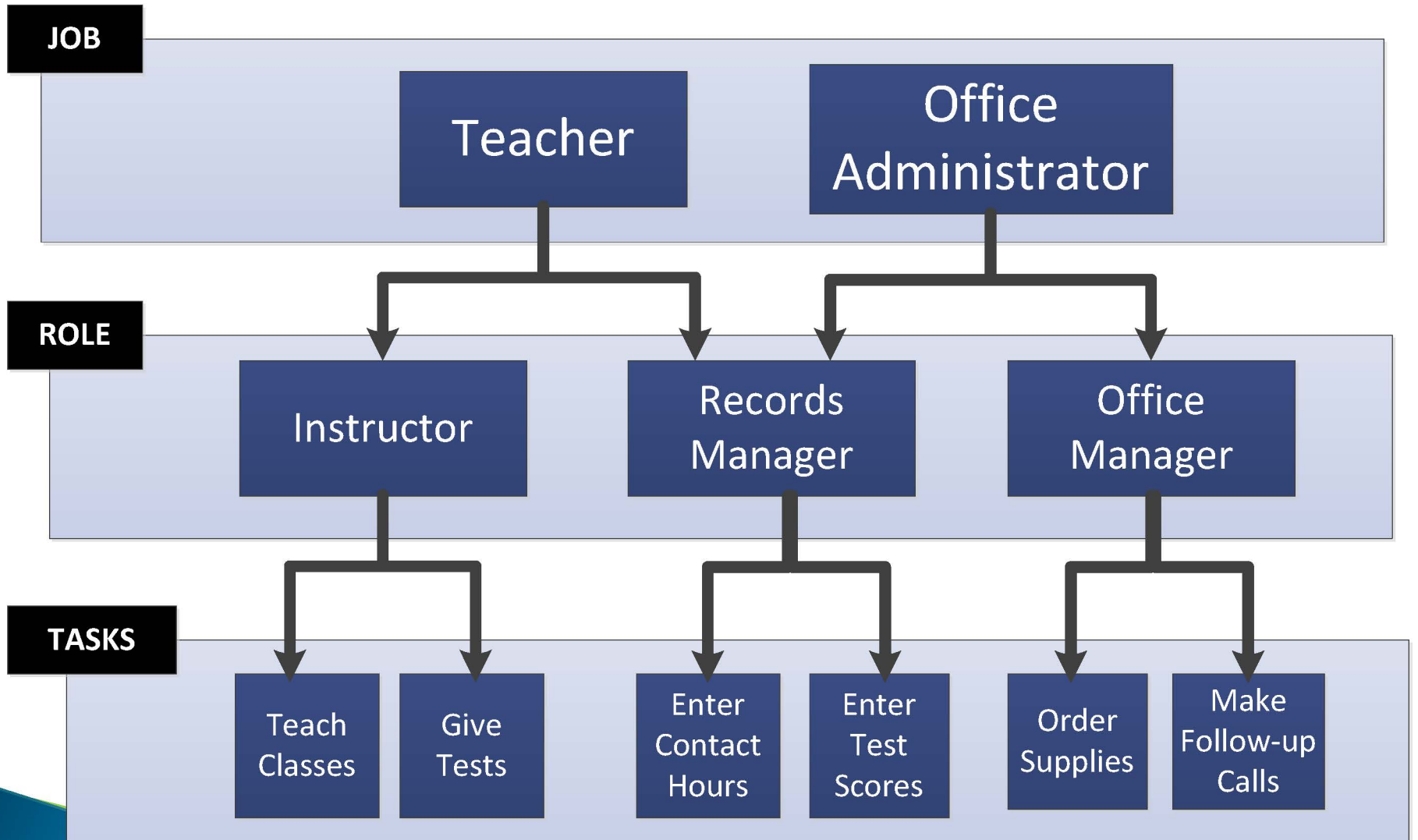 - ◦ Outlines how they will use the system to complete tasks

What a Use Case Does/Doesn't Include

| Includes	Doesn't Include
Who is using the website	Description of system functions
What the user wants to do	Data system logic
The steps the user takes to accomplish a particular task	Prototypes/mock-ups
What the system might do to handle user requests	

JOBS, ROLES and TASKS

JOB

Teacher

Office Administrator

ROLE

Instructor

Records Manager

Office Manager

TASKS

Teach Classes

Give Tests

Enter Contact Hours

Enter Test Scores

Order Supplies

Make Follow-up Calls

Jobs, Roles, and Tasks Activity

- In your state team, create a graphic organizer similar to the one on the previous screen
- Identify jobs, roles, and tasks
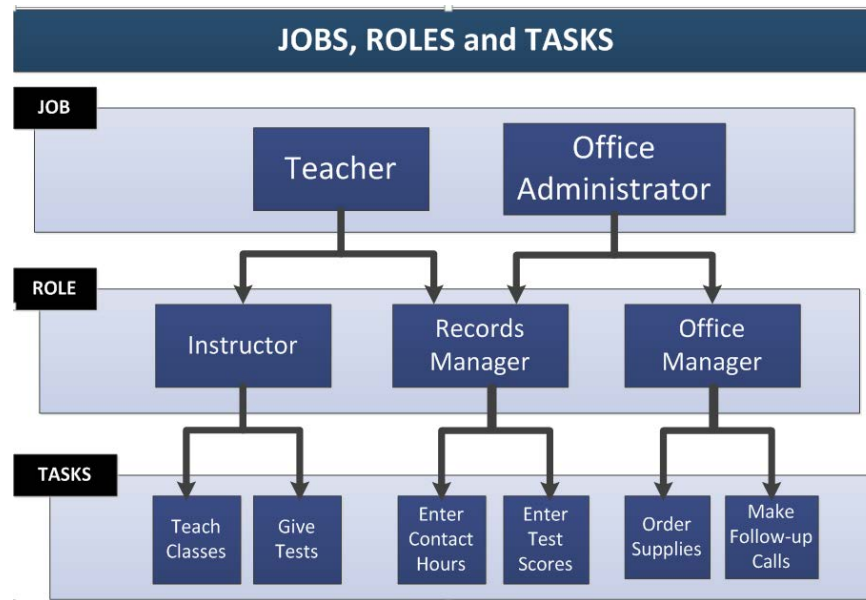
How to Write a Use Case

1. **Identify roles**
2. **Define specific tasks that each role engages in (e.g., Student Intake Interview)**
3. Describe how the user interacts with the system to complete the task
4. Identify which function(s) a programmer needs to create for the user to complete the task using the system (step 3)
5. Indicate function grouping (where does the user carry out the task?)

See Handout 5: How to Write a Use Case

A Simple Use Case Example

Role	Use (Task)	Steps That User Will Complete Using the System
Communicator	Send e-mail message	• Click e-mail "Compose" button • Enter recipient address • Enter text of message • Click e-mail "Send" button

Jobs associated with role: Teacher, program administrator, data specialist, PD coordinator, records manager, office manager

More Complex Use Cases

Role	Uses (Tasks)	Steps User Will Complete Using System
Intake Specialist	Manage entry of student intake information. Including: 1) Entry of intake information 2) Update of intake information 3) Removal of intake information with approval from Program Admin.	Find Existing Participant
		Enter Participant Information
		Save Participant Information
		Delete Participant Informaton

See Handout 2: Specification Workbook With Samples, Part C

More Complex Use Cases

Role	Uses (Tasks)	Steps User Will Complete Using System
Program Admin	Assure the accuracy and integrity of student intake information. 1) Approve removal and changes in core student intake information - like id number, name. 2) Monitor timely entry of information by Intake Specialists and Instructors. 3) Track consistency and accuracy by running exception reports.	Approve change in participant name or student id
		Approve removal of intake information, if entered erroneously
		Run activity report
		Run data entry consistency report

See Handout 2: Specification Workbook with Samples, Part C

State Planning Time

▸ Open Part C of your workbook

▸ Transcribe the roles and tasks that you identified in the graphic organizer previously created to the use case form (Part C)

▸ Fill out the steps for each task

▸ *Do not complete system functions and function grouping yet*

See Handout 2: Specification Workbook, Part C

Lunch
Please return in 1 hour.

Determining What to Build

Functions

Functional Description

▸ Description of System Functions

▸ Functions are Tools to Systematize Use Case

▸ Map Use Cases to Concrete Function

Mapping Use Cases

Use Case	Function Description
Intake Student - Ask student name - DOB - Prior Registration - Educational Background - Determine Desired Outcome **Separate Student** - Archive record - DOB - Prior Registration - Educational Background - Determine Desired Outcome	Add Student Info Inputs Validation & Business Rules

Describe each function and identify who has access

- Describe what each function does
- How it is completed
- Other considerations

State Planning

▶ Based on the process explained in the previous two slides:

◦ **Take the use cases developed in previous activities and think about what functions the system will need to support the use case**

◦ **Go back to Part C, and identify system functions that individuals would use in completing a use case in columns E and F**

◦ Go to Part D of your workbook and describe the functions you identified in Part C, columns E and F

See Handout 2: Specification Workbook, Parts C

Matching to Use Case

Use Cases describe tasks that individuals will be able to complete using the data system. In the far left column, enter a user role (intake specialist, program administrator, instructor, state staff member, etc). In the next column, list a use with which the data system will assist. In the third column, enter the steps a user in that role will go through to complete the task -- with the help of the system. You will often have multiple rows for ea user role, each describing a different task. We will fill-in the last two columns when describing the actual functions that the system will provide to complete these tasks.

In the spaces below, create a few cases for a particular user role.

Role	Uses	Steps User Will Complete Using System	System Functions Required	Function Grouping
Intake Specialist	Manage entry of student intake information. Including: 1) Entry of intake information 2) Update of intake information 3) Removal of intake information with approval from Program Admin.	Find Existing Participant	Find Existing Participant	Participant Intake Entry Page
		Enter Participant Information	Enter Participant Information	Participant Intake Entry Page
		Save Participant Information	Save Participant Information	Participant Intake Entry Page
		Delete Participant Informaton	Delete Participant Informaton	Participant Intake Entry Page

See Handout 2: Specification Workbook With samples, Part Cs & D

124

State Planning

- Based on the process explained in the previous two slides:
  - Take the use cases developed in previous activities and think about what functions the system will need to support the use case
  - Go back to Part C, and identify system functions that individuals would use in completing a use case in columns E and F
  - **Go to Part D of your workbook and describe the functions you identified in Part C, columns E and F**

See Handout 2: Specification Workbook, Parts D

How to Complete Task

Part D - System Functions				
Functions built-in to a system provide a means for users to complete tasks described in their use cases. These functions may stand alone, or be used in combination with others on data-entry or other pages to provide a complete set of tools for system users. Consider the which tools are needed to support records management for student intake, enrollment, assessment and other activities. Think about which ones would logically be grouped together on a particular data entry page. It is helpful to be specific. Enter information about function groups (e.g. entry pages) and specific functions they provide in the spaces below. Base your function descriptions on tasks specified in the use cases you created on the Part C Tab. When done, enter the functions that apply to each use case in the last two columns on the Part C Tab.				
System Page/Screen Where would a user find this function?	**Description** Describe task these functions address	**Functions** List and describe each function	**Considerations** Format, Validation, etc.	**Roles** Who uses the function?
Participant Entry Page	Provides fields for entering student contact, demographic and basic educational background information, as shown in prototype.	**Find Existing Participant** Lookup record for student by id number or name.		Intake Specialist
		Enter Participant Information Enter Information for student in format definied by data dictionary.		Intake Specialist
		Save Participant Information Validate information and save in database.		Intake Specialist
		Delete Participant Informaton Remove information for student from database		Intake Specialist

Determining What to Build

Inputs

Determining Inputs

1. Overview
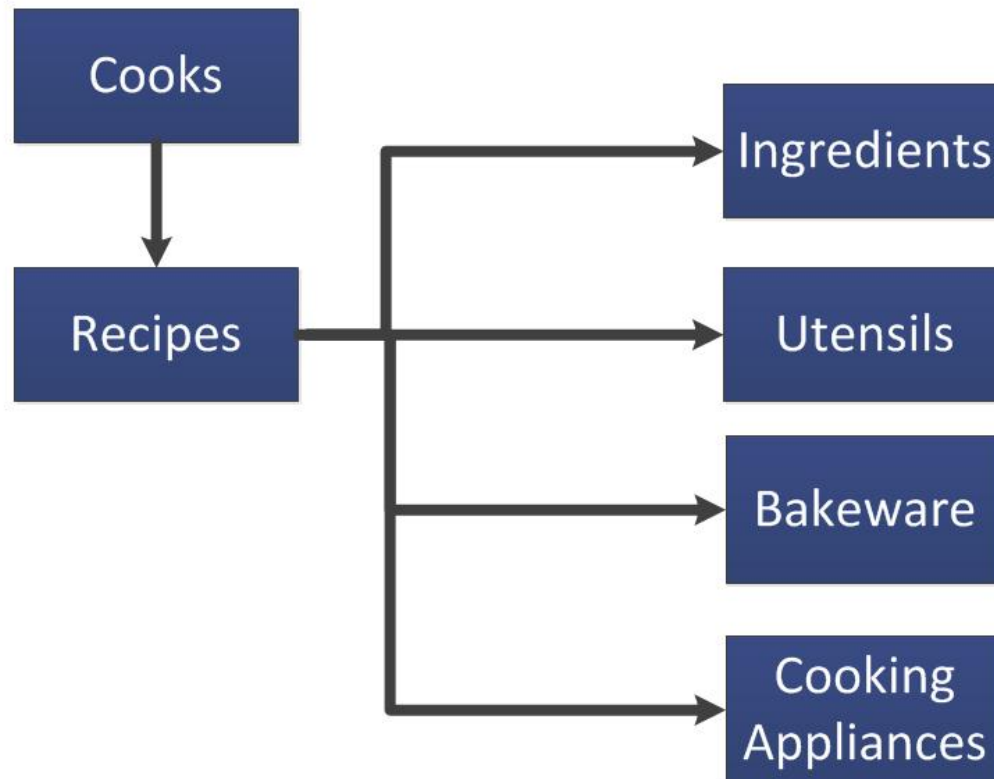2. Entities and Entity Relationships
3. Data Items

Overview

Recipe Analogy: Baking a Cake

- Items required to bake a cake
  - Stove, pans, utensils, ingredients
  - Each item is related because of its function in the process of making a cake
- Relevant characteristics of those items
  - Temperature, 9×11 Pyrex®, spatula, eggs

Recipe Analogy

Entities for Baking a Cake

Cooks → Recipes

Recipes → Ingredients

Recipes → Utensils

Recipes → Bakeware

Recipes → Cooking Appliances

Input Terminology

Term	Meaning	Recipe Analogy
Entity	Specific Item to Manage	• Cook • Recipe • Utensils
Entity Relationship	How Entities Relate	• Cook uses a recipe • Recipe requires certain ingredients
Data Items	Characteristics of Entities	• How much of an ingredient? • Brown sugar or molasses to sweeten the batter?

Entities and Entity Relationships

Entities in Data Systems

- Items managed by system
- May be entered or calculated or may come from another source

Describing Your Entities

- In general, about what kinds of things do we need information?
  - Participants
  - Classes
  - Assessments
- How do entities relate?
  - Participants are enrolled in classes
  - Participants take assessments
- What are characteristics of entities?
  - Participant DOB must be entered as MM/DD/YYYY
  - Participant may not be under 16 years old

Internal Entities

▸ Intake data
▸ Assessment
▸ Enrollment
▸ Attendance
▸ Achievement
▸ Outcomes

Remember: An entity is the specific item to manage.

External Entities

- State Unemployment Insurance Records
  - Date of Employment
  - Earnings
- Secondary Education Agencies
  - Credential
  - Date Received
- Postsecondary Education Agencies
  - Entry Date
  - Credential

What's Included

Entity	Description
Individuals	Personal Identifiers, Contact Information, Demographics for students and prospective students
Period of Performance	Period of Performance Dates and identifier for individuals
Hours	Record of Individuals' contact records for a specified period
Outcomes	Record of Individual employment or educational outcome
Assessment	Record of individual pre/post test scores
Assessment Type	Information about Assessment, name, scoring, and so on

See Handout 2: Specification Workbook With Samples, Part E

Group Brainstorm

‣ Based on required NRS tables, state-specific reports, and joint WIOA reporting, what are some entities that your system will use in managing student records?
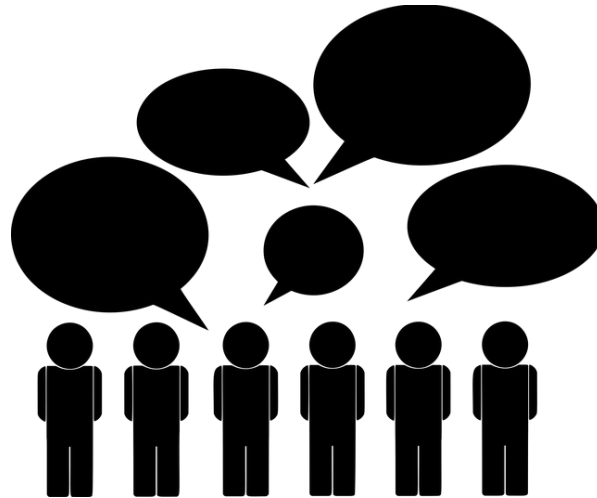
State Planning Time

▶ Begin with the list of entities developed during the brainstorm

▶ With your team, add any additional entities needed for your state system

▶ Document the entities in Part E of your workbook

▶ Begin to develop descriptions of each entity

See Handout 2: Specification Workbook, Part E

Entity Relationships

- Entities are complex and interact with each other
- Rules of interaction affect how data are managed
- Need a formal way to describe relationships between entities
  - Help developers build out an appropriate database structure

Entity Relationship Diagrams
Describe interactions

Entity Relationship
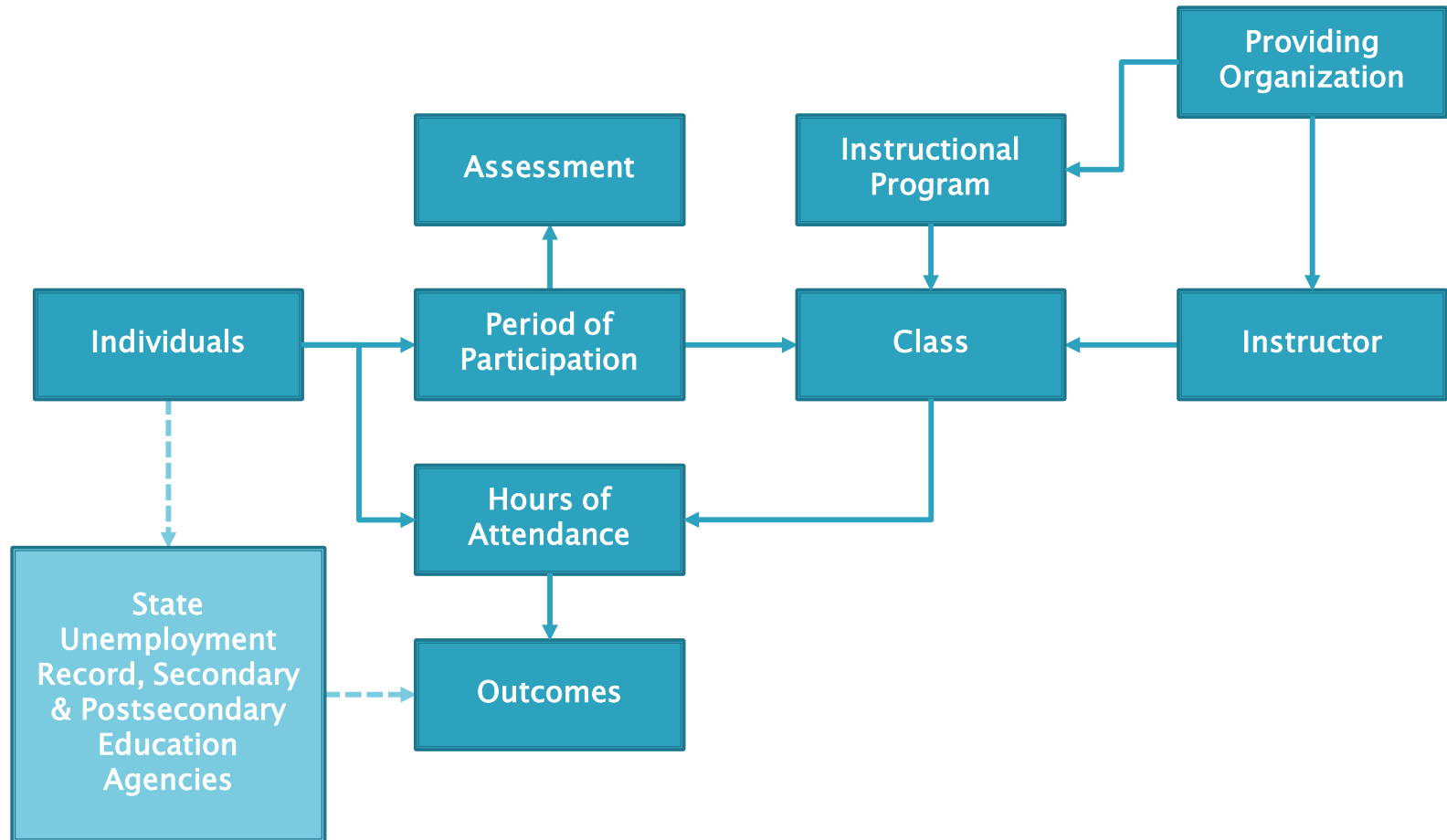
Break
Please return in 15 minutes.

Determining What to Build

Inputs (continued)

Data Items

Data Items

- Entities may have many characteristics
- Data Items represent characteristics of particular entities
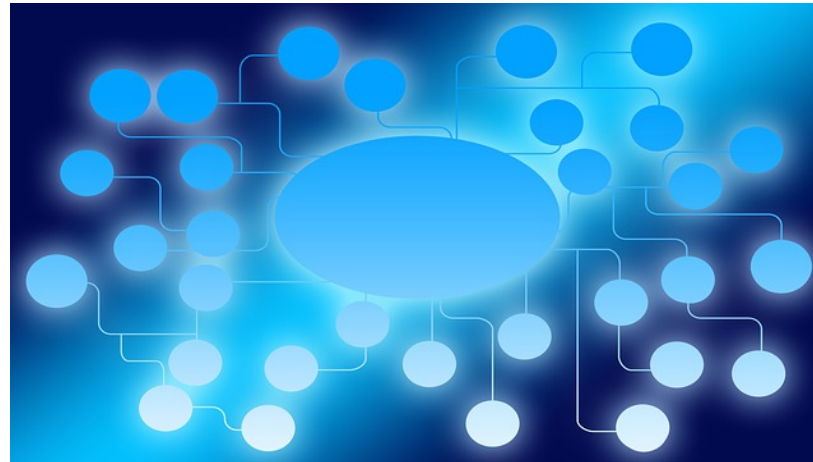
Data Items for an Entity
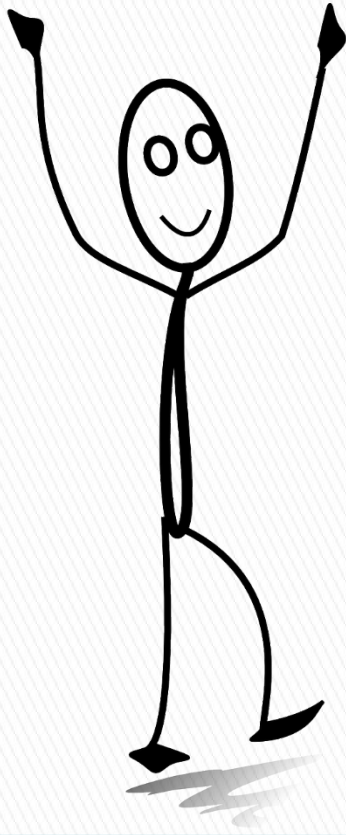
- Age
- Education background
- Social Security number
- Date of Birth
- Student ID
- Name
- Ethnicity

Entity = the individual

Data Item = characteristic of entity

147

Data Dictionaries

- Way to Document Entities and Characteristics (PIRL)
- Provide guidance for developers creating data system
- Tool for checking and double checking how data are stored, managed, and validated

What's Included in Your Data Dictionary

1. Entity

2. Data Items

3. Formats

4. Validation Rules

5. How Data Are Acquired

6. Permissions / Security

1. Entity

- Thing about which we need information
  - Participant
  - Class
  - Assessment

Specification Workbook

- ▸ Go to Part F of your specification workbook
- ▸ Select one entity from your list (previous section) and add it to column B

Specification Workbook

Part F - Data Dictionary

The data dictionary provides detailed information about system entitie understand the characteristics of each element, how it should be store that your data definitions match.

In the spaces below, list and describe elements associated with each er

Entity	Data Item
Entity to which element applies	
	ssn

See Handout 2: Specification Workbook, Part F

2. Data Item (Characteristic)

▸ Characteristic of an Entity
▸ Consider consistency with other agency partners

Example:
Participant ID number uniquely identifies a participant. It also provides a means of connecting different but related pieces of information about a participant (intake, attendance, enrollment, etc.) within the data system, and provides a means of linking our participant data with data from other agency-partner systems.

Specification Workbook

- ▸ Go to Part F of your specification workbook
- ▸ Identify and add all data items related to the entity you selected in column C

Entity Entity to which element applies	Data Item
	ssn
	student_id
	name
Student	DOB

See Handout 2: Specification Workbook, Part F

3. Data Formats

- Appropriateness for Intended Use
  - What do your outputs require?
  - Age or DOB?
  - MM/DD/YY or MM/DD/YYYY?

Specification Workbook

- ▸ Go to Part F of your specification workbook
- ▸ Add data formats for each of the data elements identified
- ▸ Add in column D

C	D
Data Item	**Format** Format used to store element
ssn	Numeric 999-99-9999
student_id	Numeric 999999999
name	Character 30 validate alphanum, length
DOB	Date MM/DD/YYYY
ethnicity	Coded 1-6 (1 white, 2 black,3... etc)

See Handout 2: Specification Workbook, Part F

4. Validation Rules

- Ensure data quality
- Promote consistency
- Make system easier to use
- Development of validation checks helps state think through meaning and use of data

Applying Rules (Validation)

- When
  - On Intake
  - On Exit
  - On Follow-Up
  - When Generating Reports
- Handling Exceptions
  - Error Messages / Block Erroneous Entries
  - Alerts
  - Write to Error/Exception Log

Validation Examples

- ▸ Social Security numbers
- ▸ Duplicate students
- ▸ Reasonable ranges (DOB, test scores, etc.)

Business Rules

▸ How to Count
- ◦ Period of Participation
- ◦ Participant Advancements
- ◦ Outcomes
- ◦ Official Program Exit
- ◦ Measurable Skill Gain

▸ How to Report
- ◦ Participant Counts (Multiple Enrollment)

Describe Business Rules, Relevant to Functions

- 12-hour rule to define participants and reportable individuals
- Periods of participation
- Pre-/Post-testing
- Intake procedures/rules
- Separation and follow-up
- Concurrent enrollment
- Attendance

Specification Workbook

- Go to Part F of your specification workbook
- Add validation rules for each data item you identified in column E

D **Format** Format used to store element	E **Validation & Business Rules** Applicable Data Checks
Numeric 999-99-9999	validate format, digits only must be unique
Numeric 999999999	digits only, unique
Character 30 validate alphanum, length	validate alphanum, length
Date MM/DD/YYYY	validate ranges, format validate Age > 16 years
Coded 1-6 (1 white, 2 black,3... etc)	Validate range

See Handout 2: Specification Workbook, Part F

5. How Data Are Acquired

- Manually entered data
- Supplemental data collection
  - Data matching
  - Data warehouse or other common database

How Data Are Acquired: Manual Entry

- Data entered as part of which function?
- Consider creating data-entry screen prototypes

How Data Are Acquired: Supplemental Data Collection

▸ Post-exit follow-up surveys
▸ Satisfaction or other surveys

Specification Workbook

- Go to Part F of your specification workbook
- Indicate how each data item listed will be acquired in column F

Validation & Business Rules Applicable Data Checks	How Acquired How data get into database
validate format, digits only must be unique	Hand entered at intake
digits only, unique	Automatically generated
validate alphanum, length	Hand entered at intake
validate ranges, format validate Age > 16 years	Hand entered at intake
Validate range	Hand entered at intake

See Handout 2: Specification Workbook, Part F
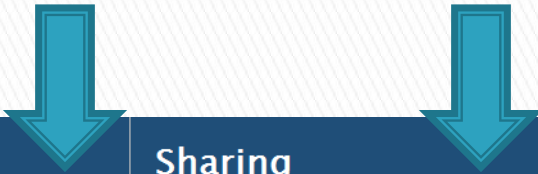
6. How Data Are Used and Shared

▸ Other than to describe an entity, does the element have a notable use that we should be aware of?

  ◦ As a linking field

  ◦ Used in monthly reporting, so must be updated more than once per month

  ◦ Part of a calculation—test score used as lookup for EFL

Specification Workbook

- Go to Part F of your specification workbook
- Indicate how each data item listed will be used in column G
- Indicate how each data item listed will be shared in column H

How Used How element is used	Sharing Whether/how element is shared
Linkage with external data systems	Linkage
Linkage within Adult Education Data System Tables	Linkage
Information	none
Age verification Reporting	none
Reporting	none

See Handout 2: Specification Workbook, Part F

Congratulations!

▸ You just created the first piece of your data dictionary!

Entity Entity to which element applies	Data Item	Format Format used to store	Validation & Business Rules Applicable Data Checks	How Acquired How data get into database	How Used How element is used	Sharing Whether/how element is shared
Student	ssn	Numeric 999-99-9999	validate format, digits only must be unique	Hand entered at intake	Linkage with external data systems	Linkage
	student_id	Numeric 999999999	digits only, unique	Automatically generated	Linkage within Adult Education Data System	Linkage
	name	Character 30 validate alphanum, length	validate alphanum, length	Hand entered at intake	Information	none
	DOB	Date MM/DD/YYYY	validate ranges, format validate Age > 16 years	Hand entered at intake	Age verification Reporting	none
	ethnicity	Coded 1-6 (1 white, 2 black,3... etc)	Validate range	Hand entered at intake	Reporting	none

State Planning Time

▸ Each state will continue to expand the data dictionary

▸ Data dictionary development is time consuming!

See Handout 2: Specification Workbook, Part F

Day 2 Wrap-Up

Day 2 Wrap-Up

▸ Parking lot questions
▸ Evaluations

Evaluation Link:
http://bit.ly/2mAMw1x

Also:

https://courses.nrsweb.org/
login/index.php

Day 2 Wrap-Up

Something I learned today…

Something I still want to know…

Overview of Day 3

- Tools for using your data
- State planning time
- Cross-state sharing

21st Century Data Systems for NRS: WIOA and Beyond

Day 3

National Reporting System for Adult Education

Review of Day 2

- Determining What to Build
  - Inputs
  - Outputs
  - Functionality
- State Planning Time

Overview of Day 3

- Tools for Using Your Data
- Small-Group Feedback
- State Planning Time

Tools for Using Your Data

Why Use 21st Century Visualization Tools?

Understand Key Challenges

What should we do to improve employment outcomes? → OLAP/BI

Explain or Persuade

- Enrollment increased
- Improved outcomes
- Especially for underemployed

→ INFOGRAPHIC

Track Progress Toward Goals

Improve employment outcomes by 20% → DASHBOARD
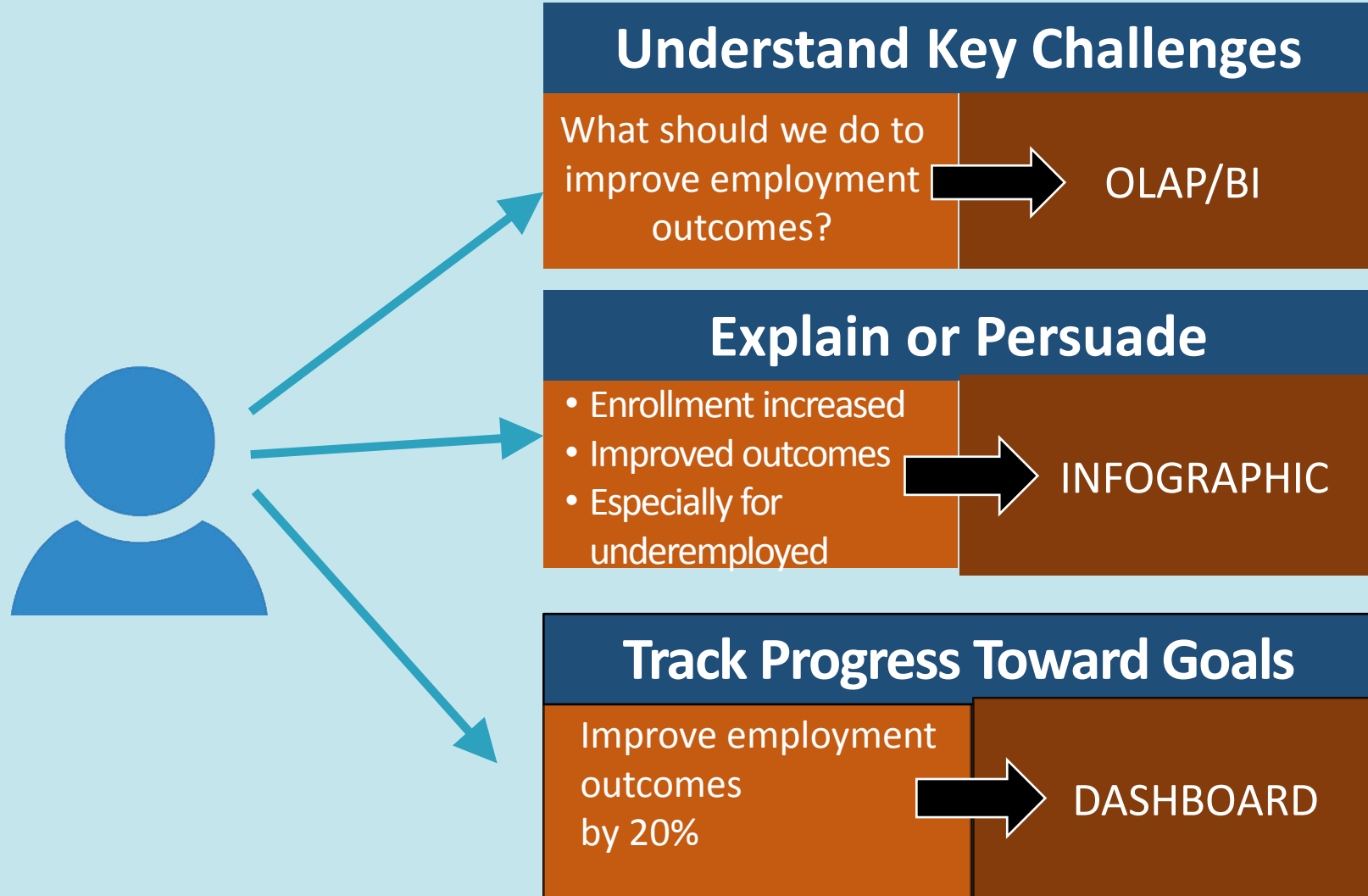
Data Exploration Tools Defined

▸ **Business intelligence**
- Tools to "drill down," explore, and mine your data for insights
- Retrieves, analyzes, transforms, and reports data in alternative ways
- Data come from student records or other sources, possibly from a data warehouse

Purpose: Understand Key Challenges

Data Exploration (Business Intelligence) Tools

Example Demo Video
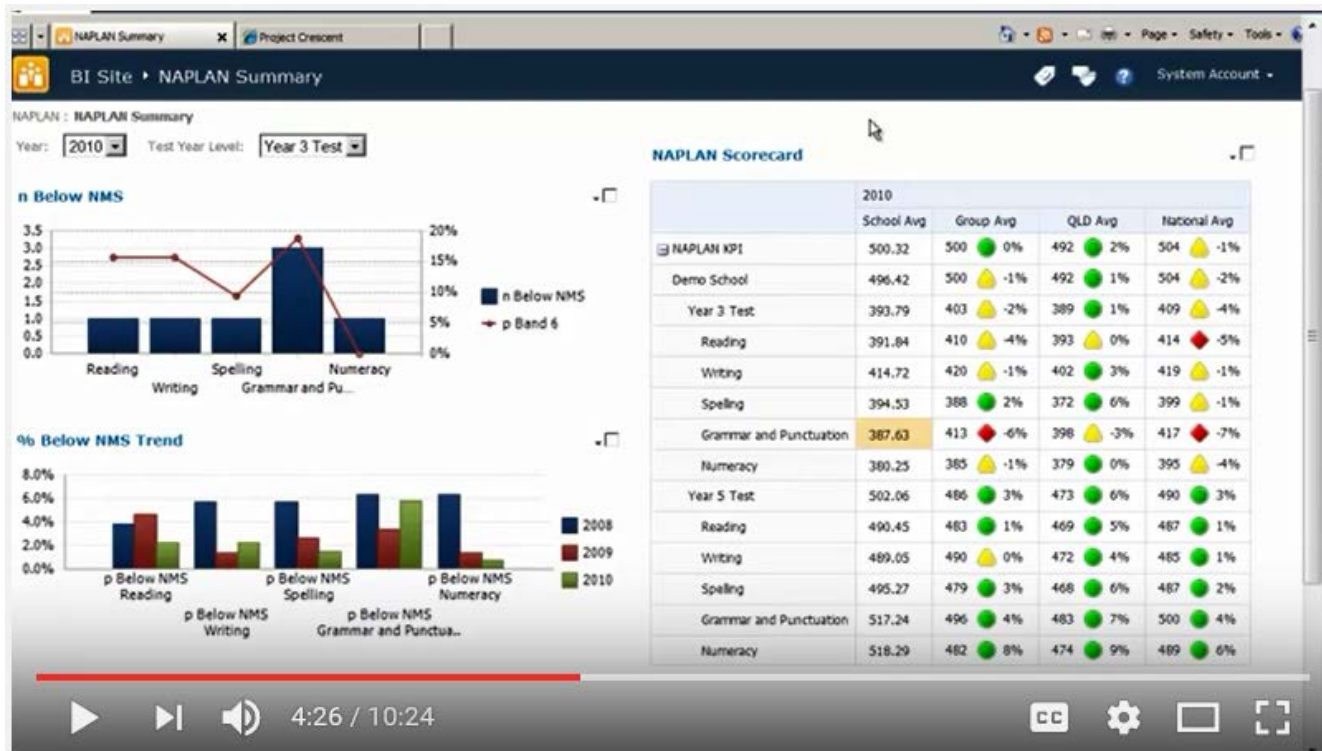
Microsoft Business Intelligence in the Education Sector

Group Brainstorm

- How might you use data exploration tools?
- What data would you share using this tool?
- What types of conversations do you want people who will have access to/see the business intelligence tools having?

182

Infographics Defined

- An **infographic** is a visual image, such as a chart or diagram, used to represent information or data
  - Simple visual format: cartoon-like
  - Often uses numbers to tell a story or describe a process
  - May include a single metric or a group of related ones

Purpose: Explain or Persuade

Infographics
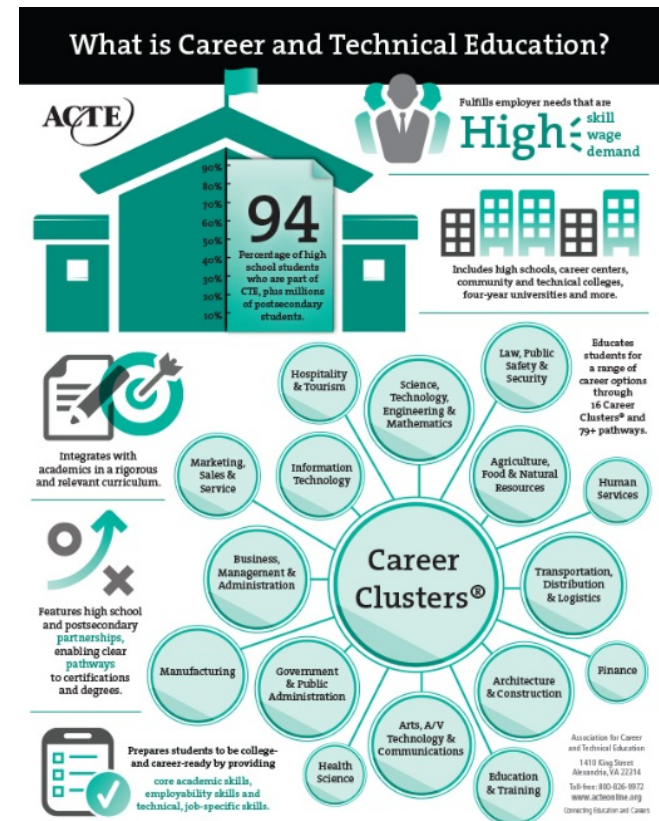
Example of an Infographic

Source:

185

Example of an Infographic

Source: http://www.digitalpromise.org/blog/entry/americas-adult-skills-gap
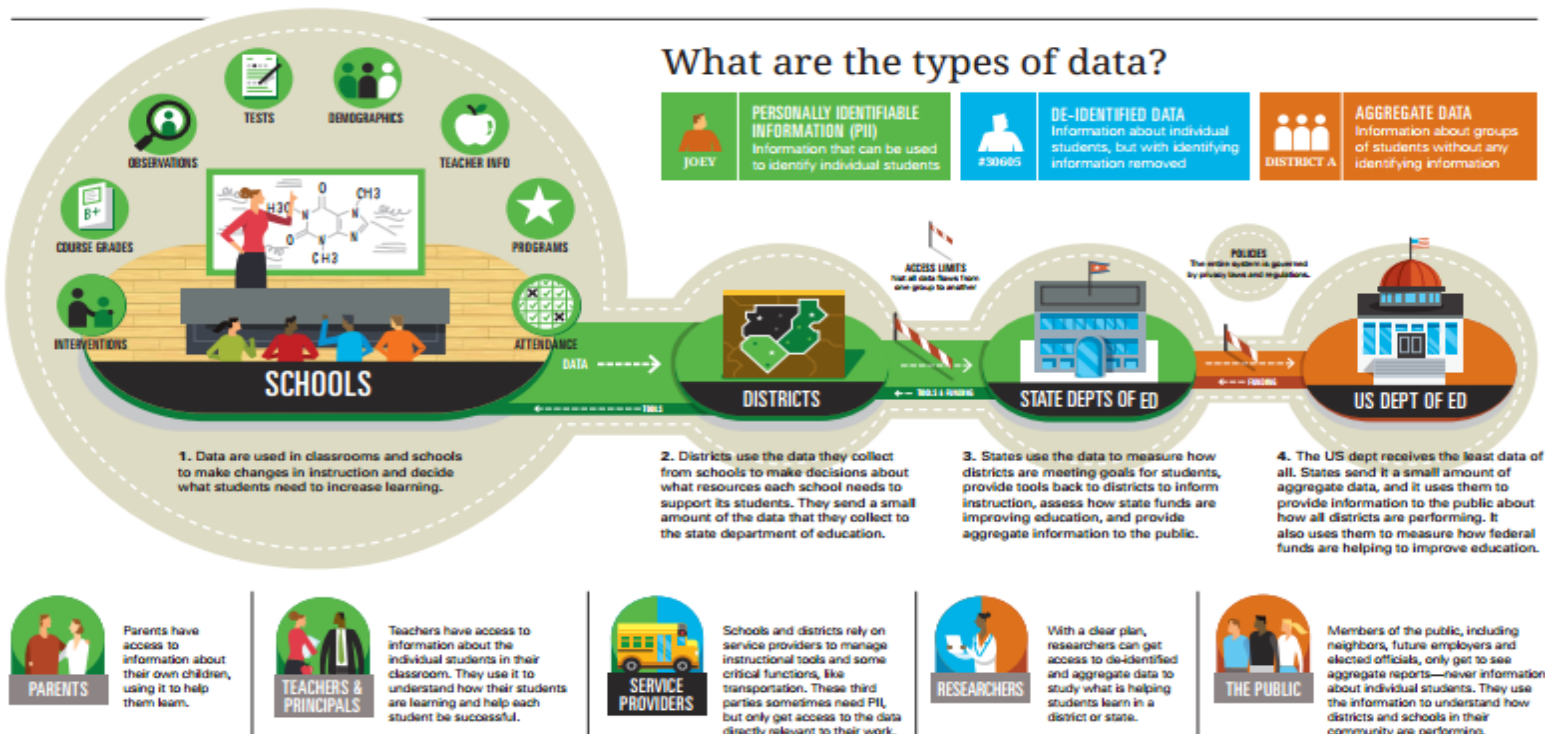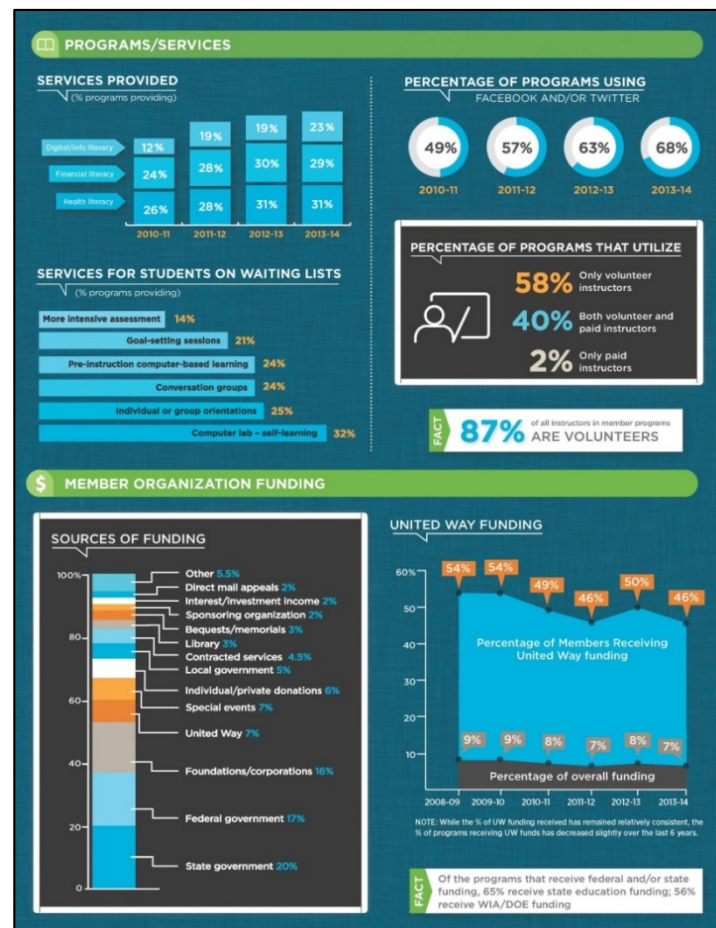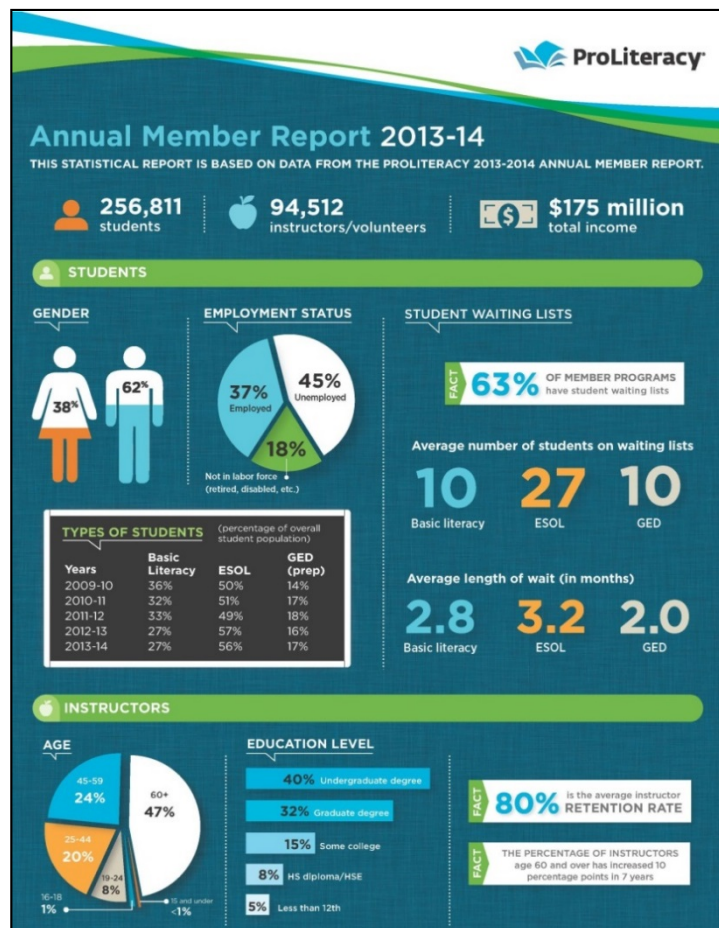
Group Brainstorm

- How might you use infographics?
- What data would you share using this tool?
- What types of conversations do you want people who will have access to/see the infographics having?

Dashboards Defined

- Visual conversation starters
- Summarize and present information
- Compact, simple, and relevant
- Provide needed information:
  - To track progress toward a goal
  - To identify challenges

Purpose: Track Progress
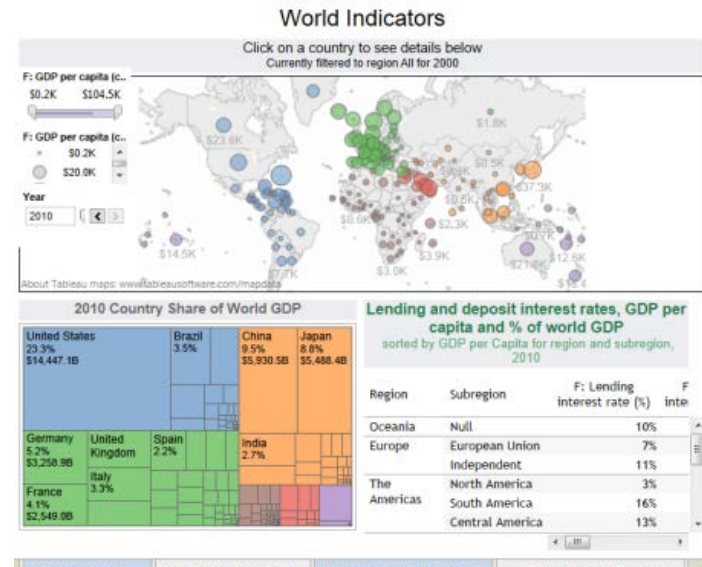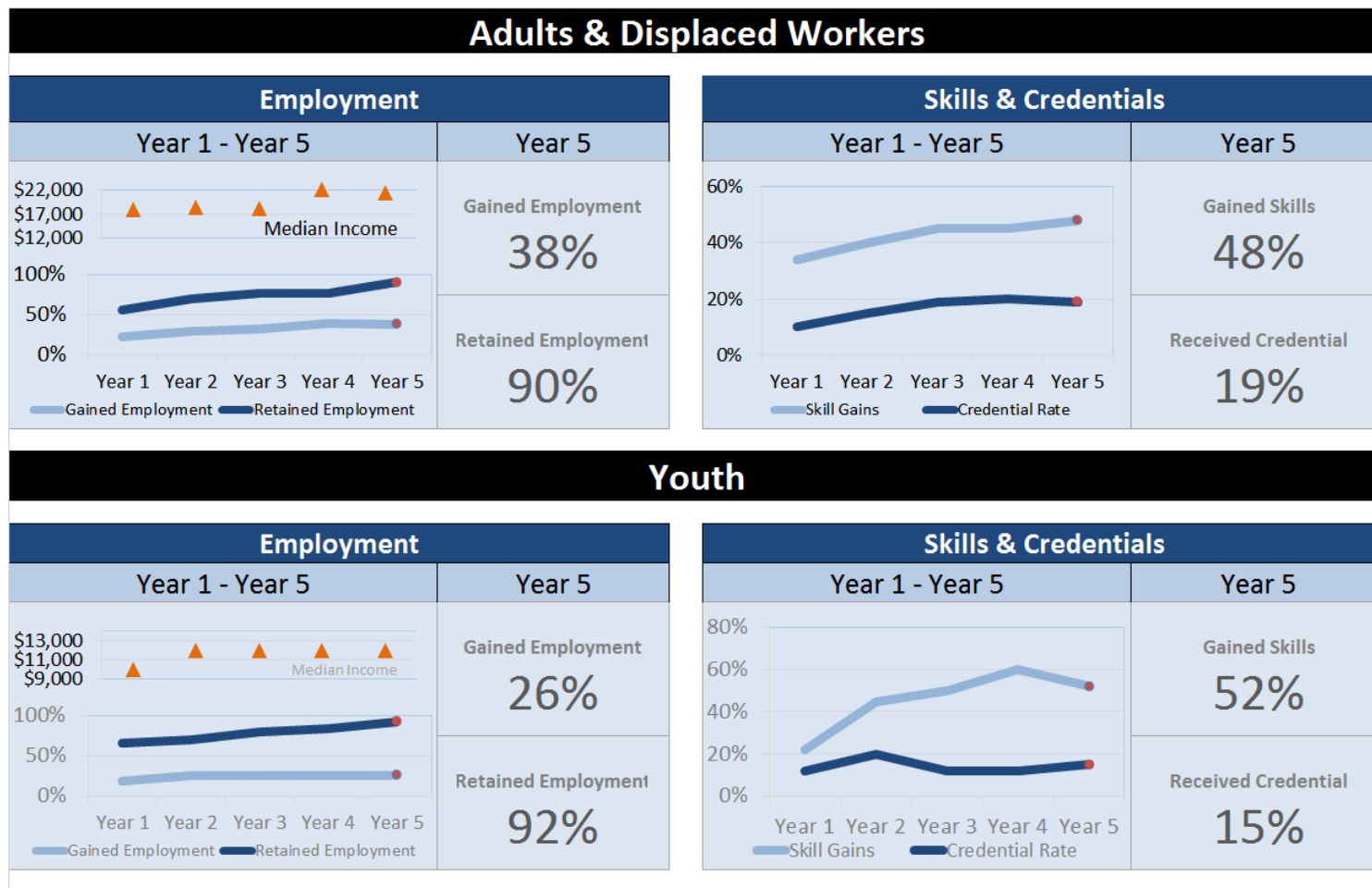
Dashboard Creation Tools

| MS Excel | Tableau |

Source: https://www.tableau.com/
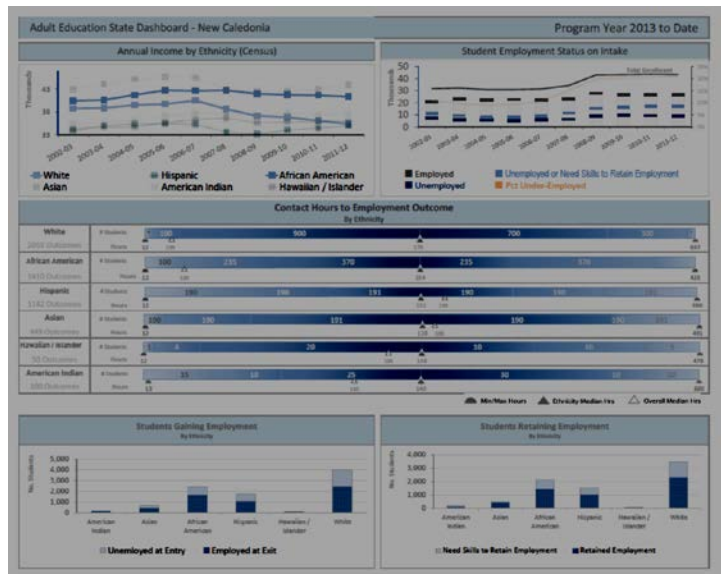
Example of a Dashboard

Developed by NRS

Example of a Dashboard

Source: http://infosolblog.com/wp-content/uploads/2010/04/DQ-dashboard-1.jpg
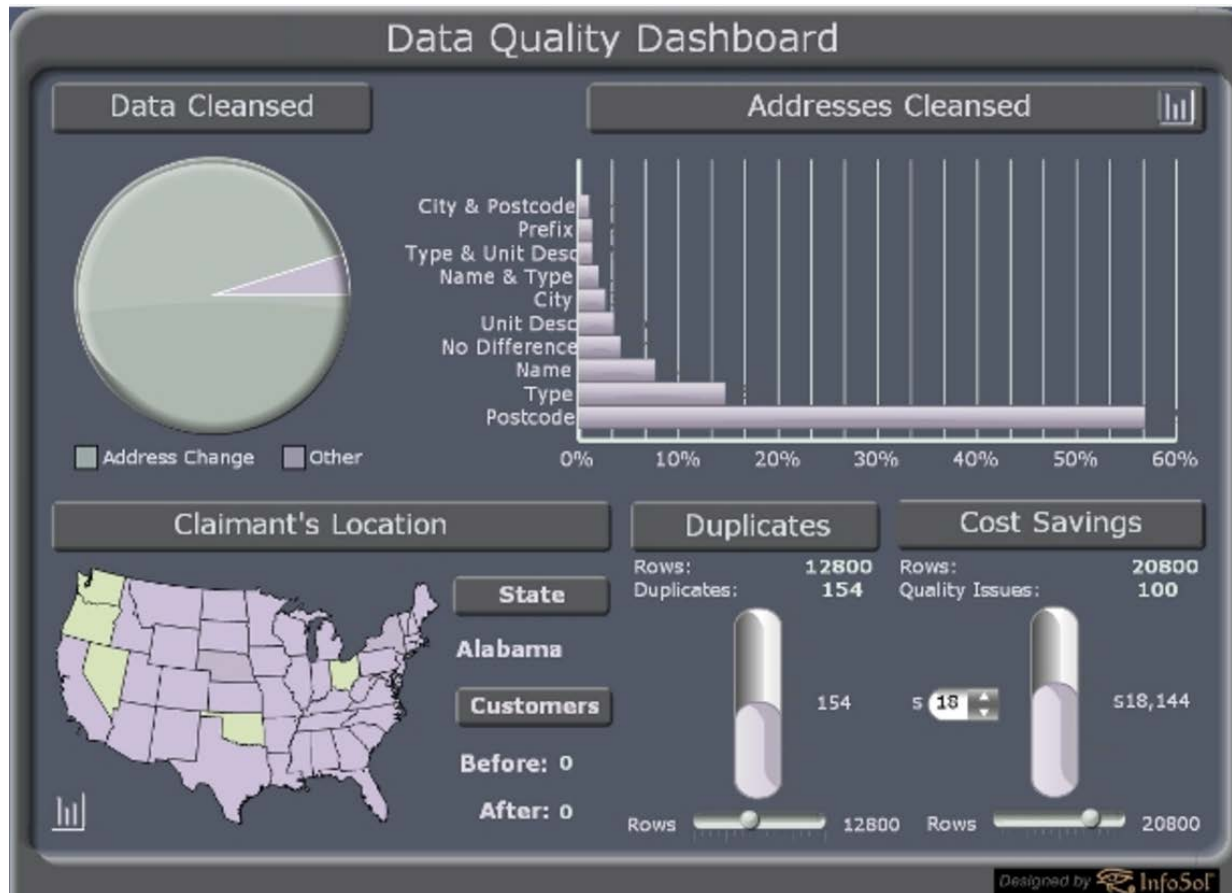
Group Brainstorm

- Do you have dashboards on your current system?
  - How do you use them?
  - Do you need to improve them?
- How might you use dashboards?
- What data would you share using this tool? How would these data help you?
- What types of conversations do you want people who will have access to/see the dashboards having?

State Planning Time

▸ Teams will consider the three tools and discuss

  ◦ Which tools would you like to use? How will you use that tool(s)? How will you update your use of the tool? What do/will you use each tool for?

  ◦ What specific outputs are needed to include in plans to provide the conditions for using the tool(s) identified for use?

▸ Go to your project management tool and update if necessary based on decisions made

See Handout 6: 21st Century Tools for Using Data

Break
Please return in 15 minutes.

Cross-State Exchange

Activity

- Select <u>one</u> aspect of your workbook on which you would like feedback or suggestions
- Discuss item with group and note suggestions

Lunch
Please return in 1 hour.

State Sharing/Planning

Team Time

OPTION 1

- Update your specification workbook and/or project management tool
- Use the time to plan with your team

OPTION 2

- Pair up with another state to learn more about their data system plans
- Share ideas for improvement and implementation

Whole Group Share-Out

Share-Out

- Each state will briefly share the following:
    - One "aha moment" from the last 3 days that will influence your plan moving forward
    - Immediate next steps

How Ready Are You?

▸ Using the stickers provided, indicate your readiness at <u>each</u> implementation stage

100% ready!	On our way, but lots to do	Not yet ready

Training Debrief

▸ What questions do you still have?

▸ What is going to stop you/hinder your progress?

Day 3 Wrap-Up

Summary of Days 1, 2, and 3

Day 1: Implementation Process

Data Collection and System Requirements

Day 2: Determining What to Build

Inputs, Outputs, Functionality

Day 3: 21st Century Data Tools

Team Planning

Next Steps

- Finalize plan
- Begin/continue implementation
- Attend follow-up webinar on May 9, 2017

NRS Support

- Upcoming tools and webinars on data
  - New NRS Tables for 2017–18
  - Validation and business rules
  - New NRS Guidelines
  - User experiences—state sharing of challenges and approaches
- 2017 Regional Training—Summer/Fall
- Personalized technical assistance
  - Please submit request to OCTAE

Evaluation

Evaluation Link:
http://bit.ly/2mAMw1x

Also:

https://courses.nrsweb.org/
login/index.php