Child Care Under the Big Sky System Modernization and Security

Hunter McClure
Information Systems Auditor
March 9, 2021
CCUBS Helps Montana Families Receive Quality Child Care

- CCUBS Main Users
  - DPHHS Bureaus
  - Third Party Contractors
    - Referral Agencies

Families Apply for Child Care Assistance via CCUBS → Referral Agency Determines Eligibility → Families Receive Child Care Grant → Child Care Grants Directed Towards Providers

DPHHS Staff Set Up New Provider → Information on Training, Insurance, & Number of Children is Stored → Annual Inspections
CCUBS is an Old System that Contains Sensitive Information

- Over 15 years old
- Personal Information from Families
  - PII
  - PHI
- Provider Information
  - Training
  - Insurance
  - Number of Children in a Facility
  - Inspection Results and History
CCUBS Risks Require Us to Review Security and System Value

Objective 1

• Return on Investment
  – Determining System Value
    • 2011 to Present
    • Review Costs
    • Review Benefits System Provide

Objective 2

• Security Management
  – Security documentation created and maintained
  – Security risks identified, prioritized, and remedied
  – Major change prioritization and implementation
Section 1: Return on Investment Analysis
Information Systems Become Obsolete Over Time

- DPHHS determined CCUBS obsolete in 2014
- 2015 Session House Bill10 Long-Range IT funding requested
  - $2 million
  - Perform Planning, Request for Proposal, Feasibility Study, and Business Processing analysis for CCUBS replacement
- Request did not make it into Governor’s budget to be presented to legislators
- Incremental Investment over time instead
Information Systems Require Annual Evaluation

• Montana Operations Manual Policy 2017
  – IT systems reviewed yearly
    • Does not dictate how systems should be reviewed
  – Business Case or Return on Investment (ROI) must be conducted as part of a modernization strategy

• Business Case
  – Tool used to capture reasoning for initiating a project

\[
\text{ROI} = \frac{\text{Revenue} - \text{Cost of Investment}}{\text{Cost of Investment}}
\]
ROI Analysis Best Practices Allow Variability Depending on the Situation

- CCUBS was not intended to produce revenue
- Best Practices call for value/return generation from a public perspective

How do we identify revenue of a system not meant to produce revenue?

![Diagram showing the flow from Information System Processes to Public Value Generated with the formula: $\text{ROI} = \frac{\text{Public Value} - \text{Cost of System}}{\text{Cost of System}}$]
What is CCUBS’s Public Value?

• DPHHS Conversation
  – Capture processes only within the system

• Public impacts can include family or community relationships, social mobility, and status
  – No available data

• Public value based on procedures within CCUBS
  – Benefits generated for processing applications and conducting childcare facility inspections

• Personnel costs represent the money budgeted to provide a service to the public

CCUBS public value is based on its impact on MT citizens ability to receive childcare assistance funding and ensure licensed facilities are safe
### CCUBS Public Value and ROI

<table>
<thead>
<tr>
<th>ROI Factors</th>
<th>Definition</th>
<th>CCUBS Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Avoidance</td>
<td>Avoid Cost</td>
<td>Avoid Federal Fines</td>
</tr>
</tbody>
</table>

- Child Care and Development Fund
  - How federal childcare money is spent in MT
  - How MT will maintain a level of effort toward the program
- CCUBS helps avoid the potential loss of federal funding
- Cost Avoidance: $1.3 million per year
## CCUBS Public Value and ROI

<table>
<thead>
<tr>
<th>ROI Factors</th>
<th>Definition</th>
<th>CCUBS Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Reduction</td>
<td>Reduce (but not eliminate) a Cost</td>
<td>Quicker Processes</td>
</tr>
</tbody>
</table>

- Personnel cost of each transaction = worth of system
- Used to quantify value
- Metrics used to capture Public Value
  - Number of applicants in the system
  - Process application time
  - Number of childcare providers
  - Time to record childcare provider information within the system

Total Cost Reduction: $1,194,763
Overall Public Value Determination for CCUBS

<table>
<thead>
<tr>
<th>ROI Factors</th>
<th>Definition</th>
<th>CCUBS Application</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Avoidance</td>
<td>Avoid Cost</td>
<td>Avoid Federal Fines</td>
<td>$13,139,900</td>
</tr>
<tr>
<td>Cost Reduction</td>
<td>Reduce (but not eliminate) a Cost</td>
<td>Quicker Processes</td>
<td>$1,194,763</td>
</tr>
<tr>
<td></td>
<td><strong>Total Public Value</strong></td>
<td></td>
<td><strong>$14,334,663</strong></td>
</tr>
</tbody>
</table>

- CCUBS Total Public Value of $14,334,663

**ROI** = \[
\text{Public Value} / \text{Cost of System}
\]
Costs Associated with CCUBS

- Contract Costs
  - Straightforward

- System Training
  - Training dependent on CCR&R agencies

- System Support
  - Contract Costs
  - Support Tickets

ROI = \( \frac{\text{Public Value} - \text{Cost of System}}{\text{Cost of System}} \)

<table>
<thead>
<tr>
<th>Year</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$1,214,251</td>
</tr>
<tr>
<td>2012</td>
<td>$1,214,251</td>
</tr>
<tr>
<td>2013</td>
<td>$1,527,333</td>
</tr>
<tr>
<td>2014</td>
<td>$2,275,329</td>
</tr>
<tr>
<td>2015</td>
<td>$1,597,893</td>
</tr>
<tr>
<td>2016</td>
<td>$1,577,893</td>
</tr>
<tr>
<td>2017</td>
<td>$1,585,290</td>
</tr>
<tr>
<td>2018</td>
<td>$1,593,478</td>
</tr>
<tr>
<td>2019</td>
<td>$2,315,516</td>
</tr>
<tr>
<td>2020</td>
<td>$2,275,516</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$17,156,750.00</td>
</tr>
</tbody>
</table>
ROI over time should be used by DPHHS to determine to what level they are willing to let the system go before making significant changes to CCUBS.
A continual approach, with metrics such as ROI, is needed to accurately develop a modernization strategy for information systems.
Recommendation #1

• We recommend the Department of Public Health and Human Services develop a modernization strategy to address obsolete technologies and diminishing return on investment of Child Care Under the Big Sky that includes:
  – Proactive planning to address obsolete technologies,
  – Develop metrics, like return on investment or scoring, for continual measurement, and
  – Tracking these metrics and reviewing obsolescence on a yearly basis according to state policy.
Section 2: Security Management
Older Systems Have Increased Security Risks

Risk Assessment Process

<table>
<thead>
<tr>
<th>Risk Identification</th>
<th>Key Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of entire technology environment to identify potential risks</td>
<td>System Security Plan (SSP)</td>
</tr>
<tr>
<td></td>
<td>Requires periodic review and modification based on evolving risks and changing controls</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Risk Remediation</td>
<td>Plan of Action and Milestones (POAM)</td>
</tr>
<tr>
<td>Identification of current or needed controls to reduce risks</td>
<td>Outlines which risks need to be addressed first and should contain plans for remediation</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Risk Acceptance</td>
<td>Authorization to Operate (ATO)</td>
</tr>
<tr>
<td>Management’s approval of risk levels</td>
<td>Official sign off on the use of the system and to accept any identified risks and remediation plans</td>
</tr>
</tbody>
</table>
CCUBS’s Security Program Controls User Access but Lacks Monitoring Activity

- User access management contains key controls
- System Security Plan Review
- User Activity Monitoring Lacking
  - Plan of Action and Milestone
  - Audit Logging
    - Users
    - Reconstruction of Events
    - Intrusion Detection
Identified High Level Risks Need Remediation Plans

- Plan of Action and Milestone (POAM) document categorizes risks
  - High, Medium, Low
- High-level risks (audit logs)
  - Must have a plan in place
- DPHHS Authorization to Operate policy
  - Identifies individuals responsible for process
  - Lacks Timelines and Action Plans
Recommendation #2

• We recommend the Department of Health and Human Services improve risk mitigation policy by:
  – Developing and implementing Authorization to Operate procedures that include documented risk acceptance or procedures and timelines for remedying or reducing high risks, and
  – Establish a quarterly review of timelines and processes for addressing risks to ensure actions are completed.
Thank You!

Child Care Under the Big Sky
System Modernization and Security

Hunter McClure
Information Systems Auditor
March 9, 2021