A Changing Workforce Development Landscape

The Current State of Data Technology Systems and Preparing for What Lies Ahead

Insights into common successes, challenges, and lessons learned during the Workforce Data Project

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NASWA
NATIONAL ASSOCIATION OF STATE WORKFORCE AGENCIES

National Association of Workforce Boards

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The viewpoints in this report are those of NASWA and NAWB, who are solely responsible for the content of the report.

About the Authoring Organizations

The **National Association of Workforce Boards** (NAWB) and its members are working to ensure that workforce development remains a national priority. NAWB champions and supports the work of its members by developing advocacy and outreach tools, communicating the latest developments in Washington, and providing best-in-class learning opportunities.

National Association of State Workforce Agencies (NASWA) is the national organization representing the workforce agencies for all states, the District of Columbia, and US territories.

Whiteboard Advisors is a unique research and strategic consulting firm. Our team brings an unmatched understanding of the education-to-employment landscape to bear on designing strategies for leading institutions, high-growth companies, and innovative nonprofits.

BrightHive is a for-purpose data technology company using data trusts to transform the way social services providers share data, make decisions, and affect the behavioral outcomes of beneficiaries.

World Data Insights is a full-service data consulting group with extensive experience in all aspects of designing, implementing, and maintaining data-driven technologies and processes across industry, government, and international spheres.

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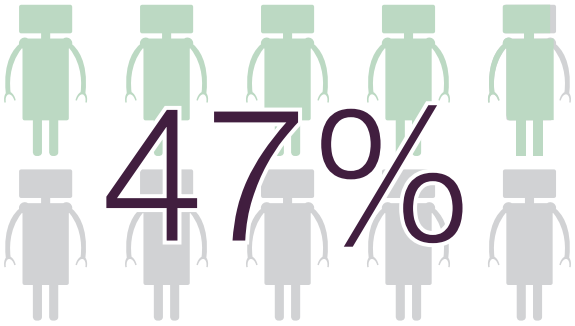
Introduction

In 2014, the Workforce Innovation and Opportunity Act (WIOA) became law, replacing the Workforce Investment Act (WIA) of 1998. It retained the contours of the prior law charging Workforce Investment Boards (WIBs) with staying on top of changing labor and demographic trends and One Stop centers with helping local job seekers find jobs and local communities develop their economy. But it added a dimension of responsibility tasking WIBS, now known as Workforce Development Boards (WDBs), and One Stops, also known as American Job Centers (AJCs), to harness the benefits of technology on behalf of the public U.S. workforce system. Lawmakers believed that, with the help of technology, WDBs and states could better assess and predict the changing labor markets and improve communications. AJCs could use it to continually improve services by streamlining case management, increase access for job-seekers (particularly in remote areas), and deploy individualized skill development models. If well-executed, the experience for job seekers would be transformative.

WIOA's Technology Vision

Workforce Development Boards	American Job Centers
Better predict market needs	Streamline case management
Improve efficiency and effectiveness of services	Provide individualized training and services
Increase capacity and utilization	Increase access for rural and underserved areas



Current jobs that are at-risk for automation or other technology-based elimination.

WIOA charged the U.S. workforce system — a cornerstone for economic development and upward-mobility — to keep pace with and be part of the technology transformation in other sectors of the American economy, many of which are disrupting existing practices and leading to vast improvements in service-oriented industries. In healthcare, for example, hospitals and clinicians implemented electronic medical record initiatives to improve the patient experience and medical outcomes by sharing information among a broad range of providers, from social services to hospitals and other clinical settings. In banking, digital services have changed the relationship between banks, customers, and vendors by reducing the costs and inefficiencies of financial transactions. Public education has also been making significant strides designing and deploying personalized learning across the secondary and post-secondary sectors. Changes envisioned in WIOA could also help workforce skill development programs keep up with and prepare American workers for rapidly changing labor markets. The pace of technological innovation and the rise of the automation economy is affecting the kinds of skills and competencies job seekers need to succeed. According to recent studies, anywhere from 10 to 47 percent of current jobs are at risk for automation or other technology-based elimination.[1] The shelf-life of skills necessary to keep a job is getting shorter (it is currently at about five years), and the challenge of employee preparation and training is getting harder. To illustrate the point, 7 in 10 manufacturing employers recently observed that the shortage of workers with the required technology, computer, or technical skills obstructed them from meeting consumer demand.[2] Both job seekers and employers need the workforce system to adapt.

The pace of change, however, relies on the capacity of WDBs, AJCs, and partners to navigate a slew of challenges and overcome barriers. It's not just a matter of purchasing and installing the right off-the-shelf system. The many challenges make implementation of a holistic technology solution, aligned across multiple programs, difficult. And while states and local agencies have made significant progress in their use of data and technology, a lot of work remains.

1 Carl Benedikt Frey and Michael Osborne, "The Future of Employment: How susceptible are jobs to computerisation?" (University of Oxford: 2013).

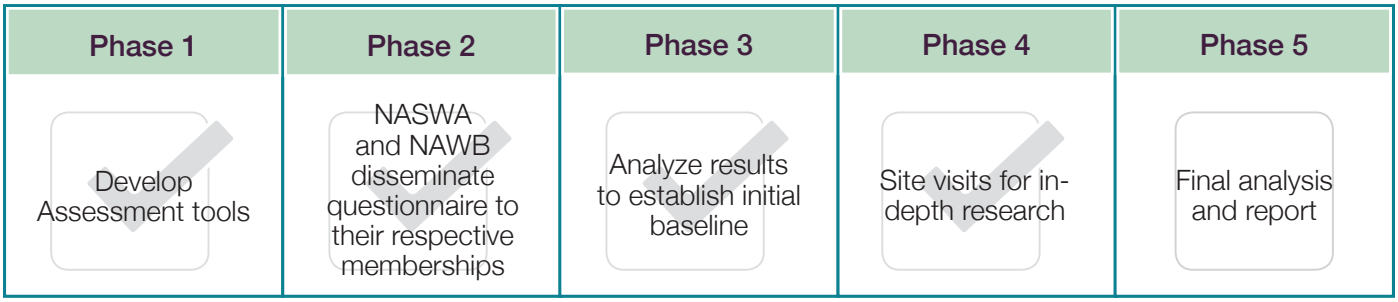
This paper helps to clarify some of the key barriers so that the workforce community can quickly find some resolutions. It is the fifth and final phase of the "Workforce Data Systems Project," an initiative to better understand how technology is currently being used to meet the goals and expectations of WIOA, and to facilitate sharing and collaboration between NASWA and NAWB members on best innovation practices. NASWA and NAWB recognize that WIOA has many partners, for this report the organizations focused on Titles 1 & 3 of WIOA.

The paper begins with an overview of the project's phases, it then shares common challenges, notable responses to those challenges by the states, and further considerations for practitioners and policymakers. It closes by pointing out that this work needs to connect to the significant innovations to skill development programming and credentialing by employers, education institutions, and private organizations. The effective use of technology will help to transform and improve and workforce system. This paper hopes to speed that process along.

Project Methodology

The National Association of State Workforce Agencies (NASWA) and National Association of Workforce Boards (NAWB), with funding from the U.S. Department of Labor's Employment and Training Administration, initiated the Workforce Data Systems Project to provide a common framework to compare different state-level experiences with WIOA implementation. Divided into five phases, the overall goal of the project has been to:

- Analyze the data innovation challenges and successes workforce agencies and boards are experiencing while trying to meet WIOA mandates;
- Identify workforce agencies and boards sharing similar successes and challenges;
- Facilitate sharing and collaboration among NASWA and NAWB members on best innovation practices; and
- Develop a body of knowledge and resources to which state and local entities can turn if they need extra help.



Phase 1 of the project focused on building a common framework for understanding the complex interplay between multiple federal, state and local WIOA policies, different federal, state, and vendor technologies, and varying workforce customer needs across different states.

During Phase 2, NAWB and NASWA disseminated surveys to technical implementation representatives in each state to collect high-level baseline data on technical successes and challenges to date. Representatives from 46 out of 50 states participated. Nearly all of the respondents held roles as state decision makers, implementation managers or technical implementers. They represented state workforce agencies, local workforce boards, or America's Job Centers (AJCs).

For Phase 3, NASWA and NAWB analyzed and compared state-based results, identifying common themes and issues that needed further analysis and understanding.

2 The Skills Gap in U.S. Manufacturing, 2015 and Beyond (Deloitte and The Manufacturing Institute: 2015).

In Phase 4, NASWA and NAWB visited select state agencies, workforce boards, and AJCs to better understand how technology is currently being used to meet WIOA goals and expectations. The locations chosen for state-based site visits - Washington, Utah, Colorado, and Tennessee - represent a broad swath of the kinds of technical and policy environments being faced across different states. At each site, NASWA and NAWB spent two to three days on intense fact finding and intelligence gathering, conducting:

- In-depth interviews with managers tasked with implementing programs at the state and local level, as well as those responsible for setting the strategic direction of their regional board;
- Deep-dive sessions to understand exactly how data collection, oversight, analytics, and reporting flows, the technical systems being used, as well as a hands-on demonstration of IT systems and processes; and
- Follow-up conversations to synthesize findings and make recommendations for moving forward.

The findings from the site visits are memorialized in four case studies that inform the development of this report and provide the framework for the Getting Started Guides, a step-by-step overview to support WIOA technology implementation at the state and local level. The case studies and the guides are available at the National Association of State Workforce Agencies (NASWA) site, www.naswa.org/.

This paper represents Phase 5 of the project and provides analytical insight into the common successes, challenges, and lessons learned during the study.

The National Baseline

The surveys of Phase 2 and visits of Phase 4 provide visibility into the breath of the challenge before workforce agency staff. The complexity of the work cannot be understated. There are many workforce programs coming from three federal agencies to multiple state agencies and organizations in each state. Within each state agency, there may be independent and, often, siloed data systems managed by their own protocols, legal requirements, and staff. These systems interact with local AJC systems, tools, and system add-ons. Sometimes the data flows well across all of the systems, but often individuals make it work despite inefficiencies.

The following section shines a light on the environment that study participants are trying to manage. It provides a baseline understanding of the many factors limiting their ability to harness the benefits of technology in their work, and it helps to explain why there is some fatigue and frustration across the states.

The Complex Web of Administering Workforce Programs

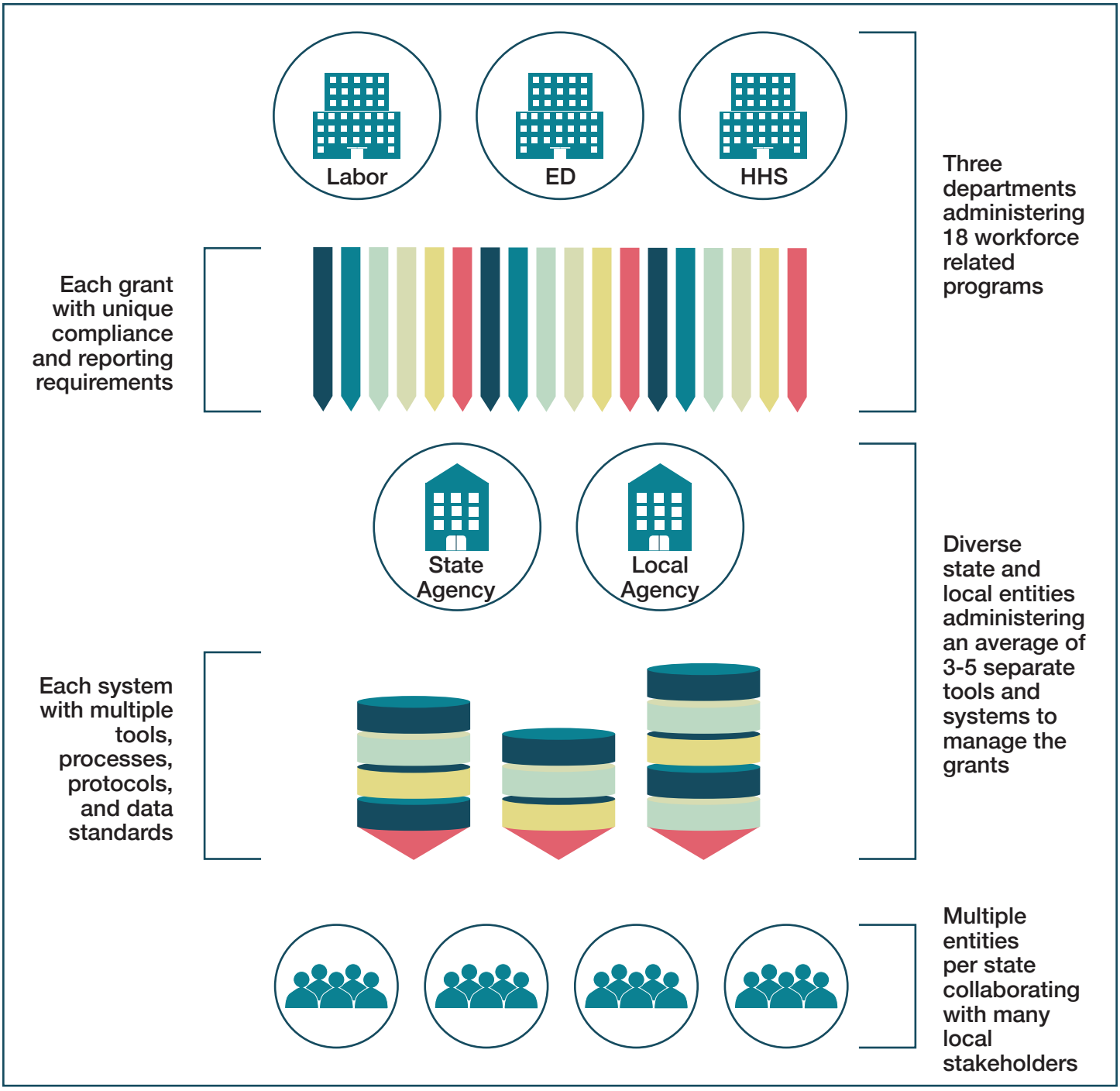
According to study participants, the tangled administrative web of workforce processes is one of the most complex challenges states face in implementing WIOA.

At the Federal level, three different agencies administer 18 different WIOA related federal programs. Each program maintains unique compliance and reporting requirements which sometimes overlap and conflict with each other. Additionally, each program administers separate nationwide workforce related data systems that encompass different technical directives, are built to different data and systems standards, and require different levels of legal authorization to access. See Image X.

At the state level, WIOA programs are normally administered by multiple state agencies which may include the state's labor, workforce or unemployment agencies, their departments of health, human services, education, welfare, and other state agencies serving the needs of particular groups (such as the disabled, veterans, seniors, and Native Americans). In most instances, the state agency responsible for a given WIOA program must administer the federal data system separately from other state workforce system, requiring multiple tools, protocols, and data management requirements.

At the local level, AJC must comply with multiple, sometimes conflicting federal and state directives on a variety of matters (such as data privacy and security). Typically, they must patch together disparate systems to assure that the needs of diverse stakeholders — including job providers, skill development and education providers, non-profits, and other workforce service groups — are met. Many build or buy their own tools and databases to augment essential state system functionality. As a result, the number of tools, additional data sources, and databases will vary drastically from AJC to AJC within a state, and from state to state.

The process of integrating these systems into the larger statewide system(s) requires time and



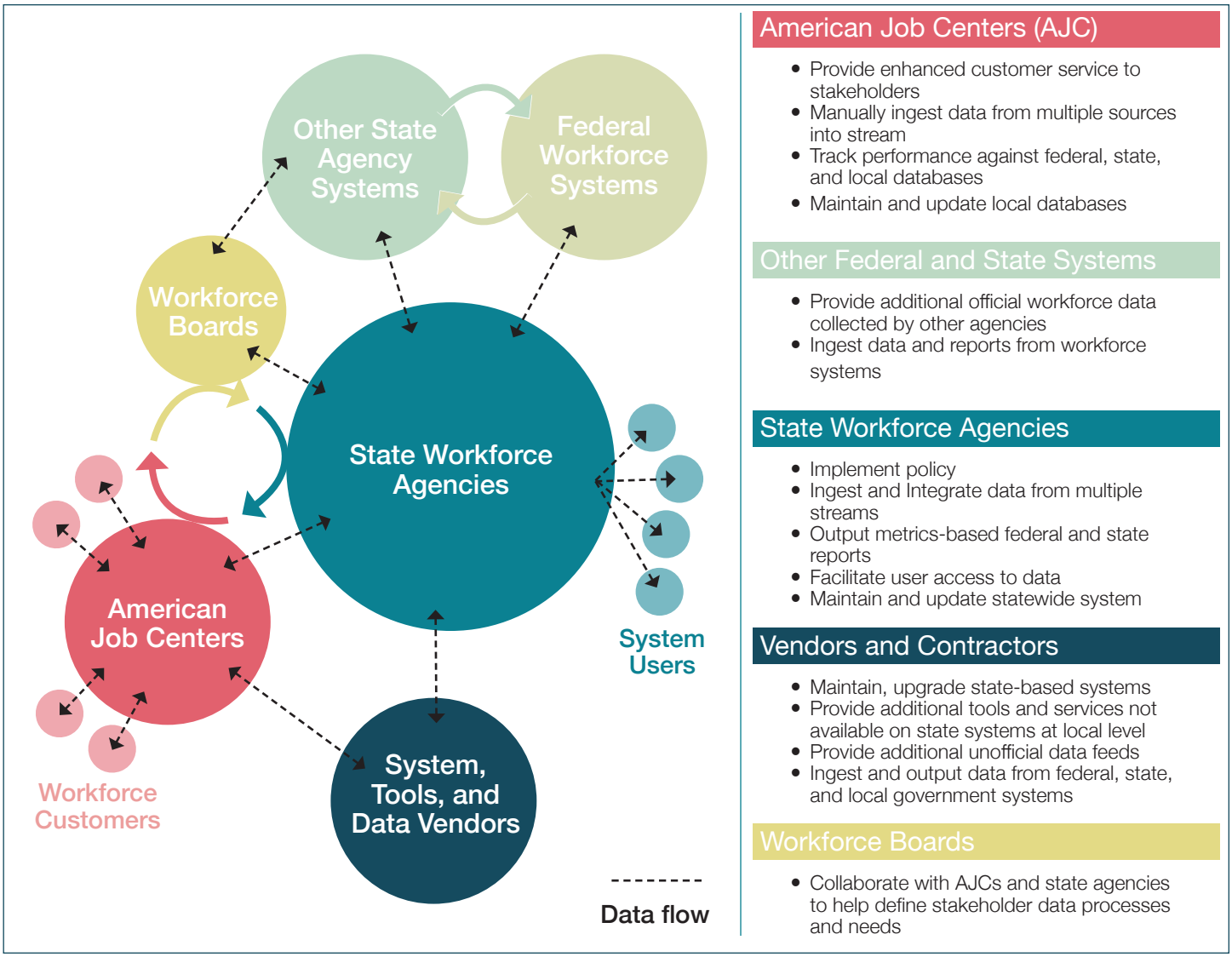
many negotiations with multiple stakeholders. At a minimum, state implementers must negotiate agreements with all system owners that respect existing policy and licensing parameters. They must then establish administrative mechanisms to foster ongoing collaboration across stakeholder groups, and develop clear change management systems that incorporates user feedback and communication procedures that keep stakeholders informed and involved through iterative maintenance and upgrade cycles.

Given the complexity of the administrative environment, it should be no surprise that the study revealed that most of the participating states are still early in the process of developing their systems to fully comply with WIOA. For example, of the 22 workforce boards that participated in the Phase 2 NAWB survey, 50 percent revealed that their strategic approach to implementation was still in development. 63 percent had achieved some understanding among key system stakeholders on how to move forward. Less than 45 percent had developed the data architectures and process flows that would enable technical implementation. And 45 percent of respondents reported that the major reason they had not completed their data architectures was because they were awaiting state policy guidance.

To date, many states continue to struggle to establish administrative frameworks that enable technical implementation teams to execute WIOA related policy directives. It is a process that requires careful negotiations and engaged state political leadership, and it can take years.

The Challenge of Data Flows

Administrative complexity can also hinder users' ability to connect with and get what they need out of workforce systems. Image X (below) provides a generalized overview of how different state-based stakeholders interact with workforce data systems, including the areas where the interests and needs of various stakeholders may differ.



In an idealized system, the processes behind the scenes would help assure that users would be able to log on to one workforce system, find the information that they need, and complete the tasks at hand on their own, reaching out to get the help they want when they want it from the system interface. To that end, multiple stakeholders would work together to ensure that there are clear agreements and policy guidance that help unify data from different systems. Implementers would be able to design their data architecture to meet system-wide data needs and facilitate ongoing system maintenance and improvement from a common policy framework. Providers would be able to focus their resources on providing quality service to online and walk-in customers. Analysts and community stakeholders would be able to easily access and generate performance reports, assess and predict shifts in the labor markets, tap into rapidly improving changing education and skill development services, and continually identify opportunities for improvement. And job seekers would be able to choose between using online services or visiting an AJC

to obtain comprehensive counseling, support and skill development, and additional opportunities and information that will help them succeed.

Reality, however, is not idealized. Most implementers have to make due with minimal administrative agreements and inadequate technical guidance to develop and maintain their workforce systems. They have found ways to work around choke points to get what they need while supporting users' ability to interact with and across multiple workforce systems. They make the status quo work. For example, while more than 70 percent of NAWB survey respondents indicated their states had separate data management, user interface/ user experience, and data ingest and output process, less than half of respondents indicated those processes were part of an overarching data architecture. The promise of a cohesive ecosystem remains distant, while the challenge of data integration and access is immediate.

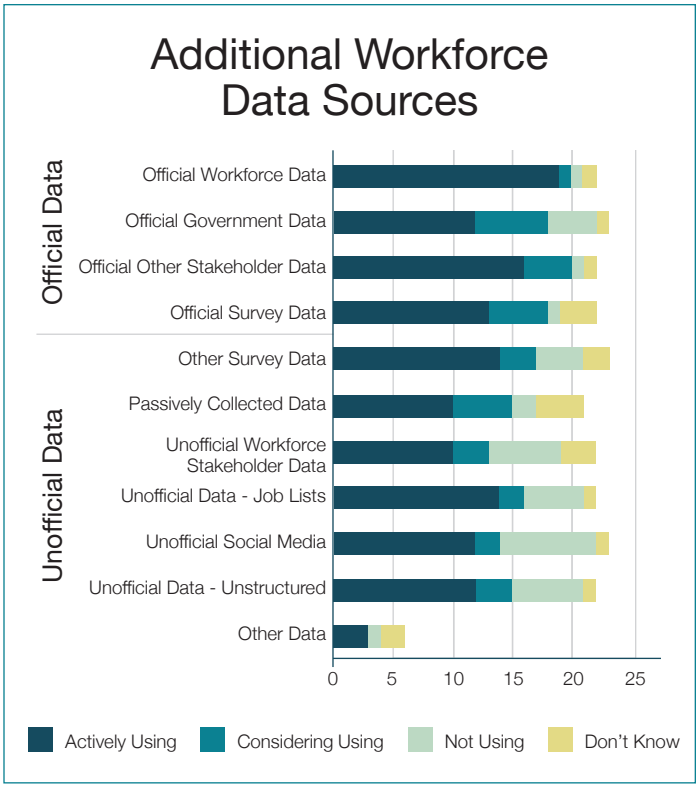
The Challenge of Integration

Centralized data systems owned and controlled by state workforce agencies can facilitate integration. In general, it is easier for states that have centralized the administration of multiple workforce organizations to integrate systems within a single environment. It is also easier to foster administrative cultures that promote collaboration between agencies to support technical integration of many workforce related systems. The centrally integrated and managed data system is, however, the exception.

In most states, workforce related systems are controlled by agencies that either own or are responsible for different system components. Often the agencies must keep the components apart to comply with federal and state regulations, and this can obstruct data exchange and system interoperability.

For example, official data coming from AJCs into state workforce systems for reporting activities tends to flow more easily within state systems that are more integrated. AJC customers are either encouraged to log on to state systems and input their own data or are guided through the input process by workforce staff. The data is immediately available and can be used to output federal and state reports at regular intervals.

Official data from external federal and state systems may also be required for reporting, but how it flows across systems is often ad hoc. Some states provide the capacity to autofill data from external systems directly from the statewide system's user interface. Other states give their users links to



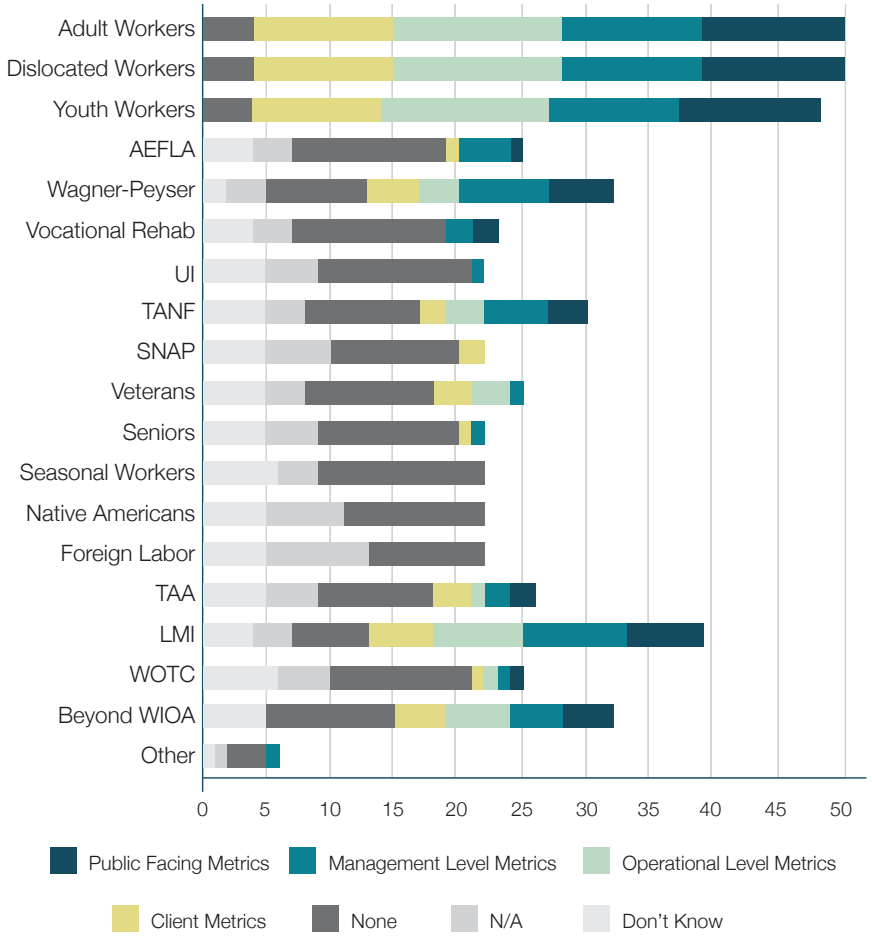
external systems from a common front end. Yet others provide no direct link, requiring users to access data separately and manually cut and paste data between systems.

In most states, administrative, policy and data sharing firewalls compound the problem. They create barriers that restrict the ability of implementers to integrate the full gamut of data, tools, and services that staff need to perform key operations and track performance metrics. As a result, study participants reported using an average of 3-5 separate workforce systems, tools and data sources central to their job activities on a daily basis.

Unofficial data - the data that is used and shared at the local AJC level between AJCs and local partners - is also rarely integrated. Local AJCs and their partners use the data primarily to track performance on local activities that are not part of either state or federal reporting requirements, but that are integral to local operations and reflect how they function. For many locally based study participants, the lack of integration of metrics and data to measure local performance contributes to a misunderstanding of the full scope of what occurs at AJCs at the state and federal level.

This lack of integration and accessibility of multiple workforce data streams is limiting performance analytics. Most state systems enable federally-mandated performance tracking and some level of state-mandated performance tracking, particularly

Additional Workforce Performance Metrics at the State and Local Level



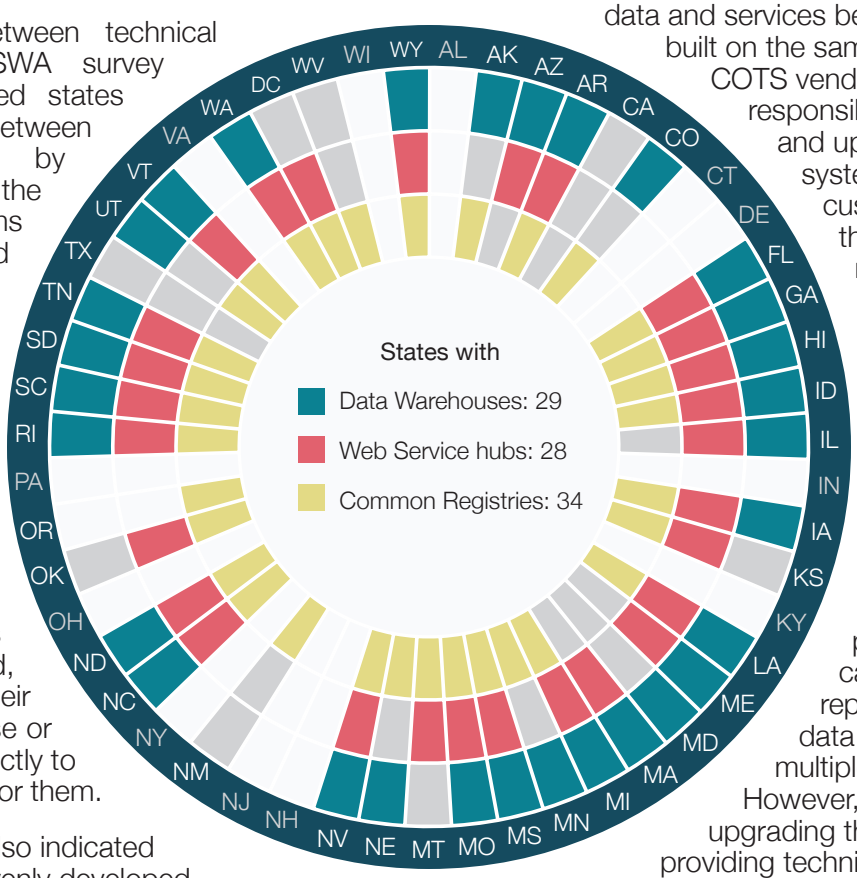
for Title I and II programs. However, very few take full advantage of new data analytic programs to measure and report on the full gamut of workforce activities conducted on a daily basis, especially at the local level. Study participants revealed that performance data at the local level are typically compiled and aggregated manually. The existence of additional metrics and their usefulness in tracking aggregations of performance on key workforce tasks beyond WIOA is one of the areas study participants identified as an area in particular need of improvement across multiple workforce systems.

Despite the many limitations, workforce personnel manage to make their respective systems work. Where technical systems are weak, workforce stakeholders fall back on using the human systems that existed before them. Where technical systems are stronger, they have been able to spend more time on customer service, facilitating change management, and aligning policy to technical needs.

The State of Technical Infrastructures

Those who maintain workforce systems report that they oversee mixed infrastructures systems and software solutions that help them provide technical services for, on average, 10 WIOA programs per state. Roughly 65 percent of states workforce systems focus technical support on Dislocated Worker, Adult Worker, Youth Worker, Wagner Peyser, and TAA Programs while less than half provide support to other programs.

When choosing between technical infrastructures, NASWA survey respondents indicated states are nearly evenly split between systems supported by Government Off the Shelf (GOTS) systems built in house and Custom Off the Shelf (COTS) systems. Of the 46 states participating in the survey, 56 percent indicated they had active licensing agreements with vendor products customized to state specifications while 44 percent of states owned, operated, and maintained their own systems in house or hired contractors directly to maintain the system for them.



Survey participants also indicated that states have unevenly developed system infrastructures to support workforce system integration. While 70 percent reported their states share common registries that enable system integrators to more seamlessly coordinate data and components between systems, only 60 percent provide a web services hub from which to integrate data and functions from external systems. Likewise, only 63 percent provide data warehousing functions that allow different systems to pool their data and make it accessible to different users for job searching, case management, performance tracking, or analysis and reporting. See Image X.

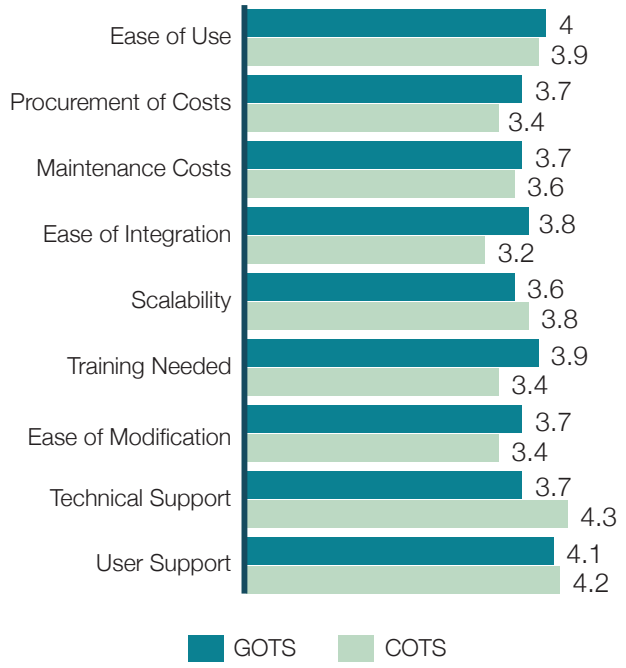
The scalability and transferability of different state systems is also mixed. Roughly half of states report that their workforce systems are scalable and can be expanded to support additional users or services as needed. However, less than half of the states report that their technology is transferable to other technical or state systems, a number that most likely correlates to whether a state's system is built on a COTS or GOTS infrastructure.

Although COTS systems are somewhat more prevalent nationally, most system administrators consider choosing between GOTS and COTS systems a matter of accepting trade-offs between greater technical support in COTS systems and greater flexibility and capacity to customize in GOTS systems. For instance, COTS systems tend to be more scalable in terms of capacity and number of available services and can more easily transfer data and services between systems built on the same infrastructure. COTS vendors also remain responsible for maintaining and upgrading their core system and for pushing custom upgrades to their customers as required. However, COTS systems are limited in the amount of customization they provide.

In contrast, GOTS systems are highly customized to workforce system user needs and preferences. This can make custom reporting and ad hoc data integration across multiple agencies easier. However, maintaining and upgrading the system and providing technical and user support remains the responsibility of the state entity.

Study participants report that the total costs for maintaining and updating workforce systems is not determined by the GOTS or COTS status, but on the number of users a system serves, the number of WIOA programs it administers, and the number of external services it integrates into the core infrastructure. Whether a state chooses COTS or GOTS, they must still contend with assuring their state budgets allow administrators to: develop, maintain, and upgrade their systems on a regular basis; consistently interface with external systems, tools, and data; enable users and systems to provide feedback; provide technical and user support to workforce stakeholders, and; maintain an effective change management system helps implementers manage costs and expectations.

Do WIOA Implementers Prefer COTS or GOTS Systems Applications for Functionality?



Likewise, users did not show any great preference for COTS or GOTS based tools. Rather, preference for a system tended to be geared towards users' familiarity and comfort level with their state system. States implementing new systems were more likely to have frustrated users. In contrast, users in states with systems that had been in place for more than three years found their system more satisfactory overall.

Notably, states with strong cultures of collaboration between agencies, agile development practices, and stronger communication and skill development protocols were better equipped to mitigate user frustrations, proactively solve problems, and bootstrap effectively no matter what the status of their workforce system. The next section takes a closer look at these notable responses to shared challenges.

Shared Challenges and Notable Responses

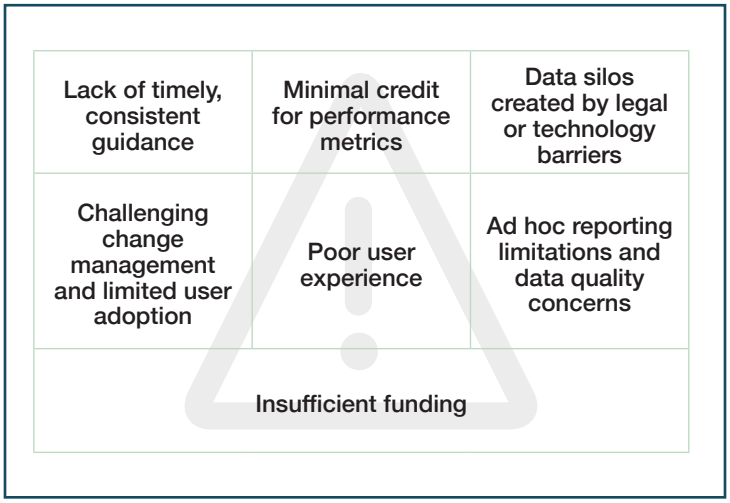
During Phase 4, NASWA and NAWB conducted four site visits to state agencies, workforce boards, and AJCs to better assess the use of technology, clarify common challenges, and gain insights in successful responses to those challenges. The visits resulted in separate reports detailing the successes and challenges of the participating states as they develop or retool their systems to implement WIOA. The reports are available at NASWA's site, www.naswa.org/.

During the site visits, workforce participants identified several shared pain-points in their work to update their systems. Some are perennial challenges, such as insufficient funding. Others are technical, such as non-compatible data systems. Many of the pain-points are related to politics and policies, like the barriers that frustrate the establishment of data sharing agreements between agencies. While the challenges and responses vary by scale and urgency within each state (due to policy environment, resource constraints, and existing processes, etc.), there are observable similarities across the country.

The purpose of enumerating the shared challenges and notable responses is to focus the attention of the workforce community on ways to improve the performance of the data systems for administrators and job seekers. While some of the challenges are outside of state or local control (lack of timely Federal guidance or additional funding for WIOA compliance, for example), others present opportunities for service improvement. Innovative agency staff are exploring approaches to solving these problems in ways that may provide a jumping-off point for others facing similar challenges.

Insufficient Funding

Challenge: Respondents reported concern that WIOA required significant and expensive changes to technology systems but did not provide additional federal funding for the changes. Colorado, for example, noted the lack of federal funding, and that their state budget allowed for only ad hoc solutions rather than a meaningful (and needed) overhaul of their state data system. This is a problem that stalks all states and underlies all of the listed challenges.



Response: Scarce resources have forced states to focus efforts on carefully planned core infrastructure development. In Utah, for example, limited funding forced state workforce staff to apply an agile and modular process to develop services based on state priorities as existing funds allowed. It is agile in that the core development team frequently reviews development and maintenance needs. It is bootstrapping because the limited funding forces the development team to extend existing technology to its capacity.

The scarcity of funding has also led to creative community engagement campaigns. Utah piloted an Intergenerational Poverty (IGP) program that weaves together education, poverty, health, social service and LMI data on industries and employers to identify workforce readiness trends and to assess how communities have been able or are working to break the cycles of poverty. Those data help to create powerful stories about the impact of skill development services on communities, and state implementers have been using that data and the stories to pursue additional funding in support of their work.

Compressed Timeline on WIOA Guidance

Challenge: Many states noted that a primary challenge with WIOA technology implementation was the compressed timeline on WIOA Guidance. In some cases, a change in expectations caused by the released guidance differed from original state assumptions resulting in project delays. For example, TEGL 10-16-7 caused Tennessee to need to retool their entire platform to make the necessary modifications around "reportable individuals" versus "participants" and start, end, and eligibility dates. Washington state was forced to delay the launch of their new system several times in order to retool their system and comply with evolving changes to the PIRL.

Response: To mitigate the time required for system adjustments, successful states have adopted some version of the agile-development philosophy into their procedures. This generally implies a system for submitting, prioritizing, and resolving feature requests, customization, and bug reports on a short iterative cycle. It has paid off for some states. Colorado and Utah, for example, operate on monthly update and maintenance schedules that are nimble enough to ensure that their systems are stable and operational. They were able to incorporate WIOA mandated changes into their existing agile management cycles. In the case of Colorado, the agile process also contributes to the durability of their long-standing legacy system.

Minimal Credit for and Implementation of State and Local Performance Metrics

Challenge: Study respondents were particularly frustrated for the lack of credit given to key workforce related tasks in WIOA related performance metrics. First, there is currently no credit given for the work that goes into developing and maintaining the technical environment that enables self-service functions for users. Secondly, current metrics do not differentiate between simple one-off tasks at AJCs that take minimal time and more complex customer interaction work that involves multiple steps and agencies to resolve. Third, local partners infrequently get credit for their local activities, which are largely ignored in federal and state performance metrics.

Response: Jurisdictions have built value around local metrics. In Arapahoe County, Colorado, the county uses locally developed metrics to measure performance across the AJCs in the area. The local investment board and the job centers then use that data and reporting for "economic impact" reports that quantify their impact on the community, promote the benefits of bringing businesses to the area, and to go after additional funders and community partners. Similarly in Utah, local workforce development boards can easily incorporate local data into performance reports that inform state policymakers about their work and advertise the benefits of their work amongst local businesses, community partners, and organizations that are interested in doing business in their counties.

Data Silos Created by Legal or Technology Barriers

Challenge: Most stakeholders have to manage both internal and external data sharing and privacy rules and requirements. Conflicts are common, and they can have real consequences for program improvement. At least one innovative workforce board had to abandon a philanthropic foundation-based grant opportunity to merge data from different state IT systems because there was no policy or legal mechanism in place to reconcile the multiple privacy and data sharing rules. Though well-intended, the protections conspired against them.

The process of coordinating data sources is just as challenging. An effective workforce data system aggregates information from various sources: multiple agencies, learning providers, wage records, case managers, job seekers, funders, and so on. Tennessee reported using 14 workforce systems, and Colorado uses 18 at the state and local level. Even when a single agency or oversight body is anointed as the data

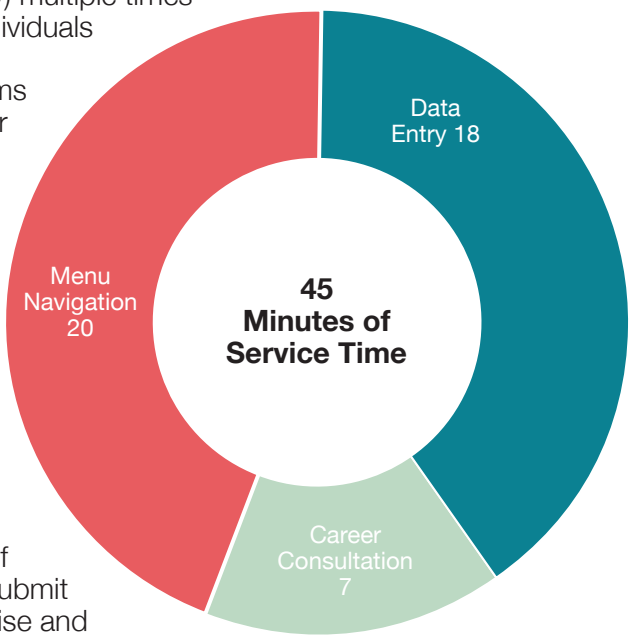
custodian, and each data provider negotiates a data sharing agreement with that custodian, the agreements (or MOUs) take time to finalize. Utah, for example, began the process of reaching out to stakeholders far in advance of the launch of their new workforce platform in order to gain access to SNAP, TANF and other federal data sources. The state estimates that it took 18-24 months to secure the necessary memorandum of understanding for each entity.

Response: Some states mitigate the coordination delays by focusing on shared governance practices that rely on common document and contract templates. The most successful integration efforts support data collection and sharing in two ways: (1) by encouraging a culture of robust collaboration across the stakeholders, and (2) by harmonizing practices through the use of high-level guidance and legal document templates. Utah has successfully established both of these. Several states have also tried a "data trust." This is a governing framework for providers to share data with the centralized custodian and amongst themselves, steered by consistent rules that allow access to future collaborators such as researchers or app developers. King County, Washington, found a practical way to promote coordination. Stakeholders built a physical infrastructure that allows all of the state's workforce agencies, the King County AJC and other community stakeholders to co-locate and share resources and information in order to help assure that customers receive quality service.

At a minimum, states should establish a shared governance body and provide legal guidance and template documents to providers for the data-sharing agreements. If parties other than the custodian will develop apps or conduct research on the merged data, then data ownership, approval process, and governance should be addressed in these sharing agreements. Feedback from the field strongly suggests that workforce agencies supplement the agreements with convenings and coalitions that develop trust amongst the parties.

Challenging Change Management and Limited User Adoption

Challenge: New technology may be transformative, but the implementation of new systems will create transition challenges. For example, the rollout of new tools in Tennessee required workforce agency users to re-learn simple tasks (like accessing reporting functionality) multiple times throughout the deployment, wasting time and preventing individuals from quickly developing fluency with the new tool. In both Washington and Colorado, lack of familiarity with new systems or lack of desired functionality has led users to revert to older outside tools like Excel, MySQL and other platforms to accomplish the desired tasks.



Response: How states manage the challenges of technology enhancements can depend on how they manage their cross-agency collaboration culture. Do internal stakeholders maintain productive relationships? Is there a process for prioritization and change management? Is the existing infrastructure amenable to iterative improvement? Colorado and Utah provide an illustrative example. In those states, workforce leadership spent a lot of time focusing on and improving the workflow across the state and local workforce partners. This allows them to solve problems collaboratively, even in the context of an underfunded legacy system. Staff review, prioritize, and submit technical issues on a monthly basis. Technical staff then devise and push out system improvement or repairs, utilizing a small budget ongoing maintenance and development. In Washington, workforce leadership is building the management infrastructure to support the new system and has embedded technical staff and vendor representatives to collect feedback and work with technical management and users to make sure that the system will continue to fit their needs.

Though changing internal culture inevitably takes time, the establishment of formal collaboration and change management processes across the range of state and local partners can and should happen as part of the WIOA compliance process. Once established, these help to maintain trust between staff and decision makers while mitigating transition challenges.

Poor User Experience for AJC Customers

Challenge: Ensuring that users can navigate workforce systems to get the services they need is a constant concern. Whether a user is an online customer or a walk-in, they expect a smooth customer experience that gives them the ability to independently complete tasks and receive help when needed. While most states have found workable solutions that provide good customer service for walk-ins at AJCs, the extent to which workforce systems supports or hinders customer service varies considerably from state to state. For customers interacting directly with workforce systems, the level of customer satisfactions is tied to the quality of the workforce system's interface, how simple and clear it is to use, and how much support a user can receive directly from the interface. And for customers who need more intensive and personal customer support, the ability of case managers to access, see, and directly and humanly respond to customer issues is key.

Respondents highlighted the lack of integration, and the need for customers and case managers to access multiple systems from multiple interfaces as a major issue. For example, case managers in Colorado noted that duplicative data entry limited their time available to provide high-quality, personal services. (See Image). They noted spending 30 to 45 minutes with each customer. Screen navigation and form-filling took most of that time, leaving few moments for higher-order personal counseling.

Another issue is the need for proper planning and preparation when adopting new systems. For example, one ambitious state did a cold launch of its new COTS based system, foregoing beta-testing before rolling out services. Soon after, the state received 43,000 troubleshooting calls per week from customers unable to complete basic functions online, and an early glitch caused a backlog of 20,000 unemployment insurance claims. These glitches led to a drop-in customer satisfaction of 50-60 percent in the short-term. Exhibiting quality management, that state's leadership stepped in and took responsibility when customer satisfaction dropped. Leadership made a promise to resolve the backlog and empowered workforce staff to work diligently to remedy these errors as quickly as possible. As a result, customer approval rating climbed back to 87 percent, meeting the state leadership's new customer satisfaction goals.

Response: States have done exceptionally well coming up with solutions to provide good customer service for walk-ins at AJCs. For example, Utah has brought in staff with customer service experience in retail to help train staff and create practices that keep customers happy. King County, Washington, created a "one-stop" for all workforce related services by putting all local agencies under one roof, working around technical impediments as they wait for their new system to become fully integrated. And Tennessee has built a fleet of mobile units equipped with computer kiosks and wireless connectivity that can be deployed to underserved communities as needed.

While the delivery of online services to discover skill development and employment opportunities is not a WIOA performance metric, many states recognized their value. Indeed, many interviewees highlighted the fact that job seekers are increasingly relying on self-service web-based tools, with a much smaller portion of higher-need individuals taking advantage of in-person support. Washington and Tennessee have both added online chat and mirroring services that allow customer representatives to guide users through their respective systems and find and sign up for services they need. By designing their user-facing applications, like job boards and skill development program registries, to serve the needs of the majority of users ready to explore opportunities on their own, states are able to refocus their front-line staff on serving the most challenging populations.

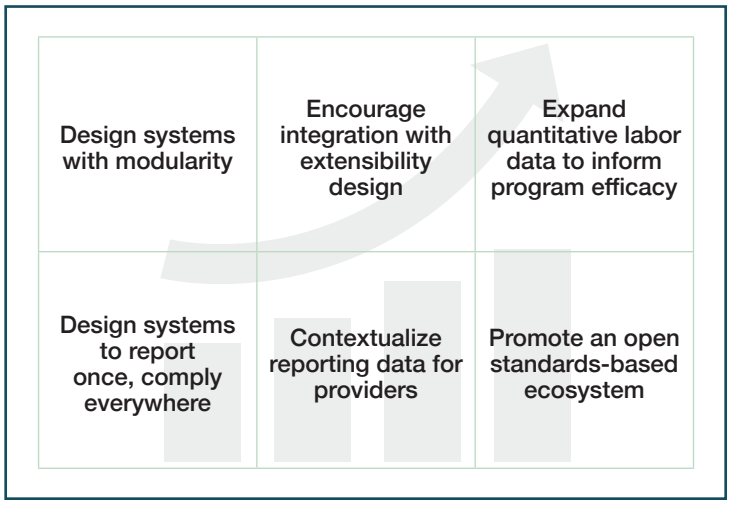
Ad Hoc Reporting Limitations

Challenge: The ability for users to develop custom reports is a key component of any integrated workforce system. Yet across the board, while most systems have integrated federal reporting and some measure of statewide reporting into their systems, few states have enabled users to collect and capture data and build reports that respond to emerging stakeholder needs. Washington state noted that they had to turn down 70 percent of requests for ad hoc reports. Colorado conveyed significant frustration with their legacy system's capacity to produce non-standard, ad hoc reports.

Response: Every state has encountered troubles with the capacity to generate ad hoc reporting, highlighting the importance of staff skill development and technical support. Tennessee quickly identified the problem and has been working to provide additional staff skill development while also developing a more robust and accessible query database. Select counties in Colorado work around the state system and use external tools to build reports with data they collate manually. On the other hand, Utah has integrated the capacity to download and

build custom reports directly into their interface. Users with appropriate access rights can use the readily accessible data to build multiple custom reports, which in turn has increased demand in the state for custom reporting products.

Additional Considerations for Practitioners



The notable responses in the prior section begin to share some best practices and approaches to the challenges that emerged during the project. As the conversations around shared responses and best practices evolve, it is helpful to couple the thinking with design principles that can help accelerate the effective development of workforce technologies.

Design for the Long Term Through Modularity and Extensibility

When faced with a technology challenge like WIOA's, it is tempting for a state to invest in a new technology ecosystem to replace its legacy systems that is proprietary (and likely closed). The temptation is understandable, particularly given the complexity of the WIOA regulations. However, regulations change and internal needs evolve over time. In the worst (and not uncommon) case, this approach can lead to a cycle of investment, deployment, and training — only to outgrow the closed system and switch to yet another one years later. This exacerbates the change management challenges noted above.

Two complementary themes have emerged among states such as Utah which have successfully avoided this sort of disruptive cycle. The first is modularity. By designing a system of relatively self-contained components (e.g., the data warehouse, the data extraction/transformation/loading routines, and analytics and reporting modules) that are interoperable, the state can set itself up for less disruptive upgrade cycles down the road. This principle holds even when the components are all provided at the outset by the same internal team or external vendor.

The second theme is extensibility. By forcing the various components of its integrated data system to expose well-documented application programming interfaces (APIs), the state can support the integration of third-party tools and ongoing innovation. Importantly, enforcing this discipline also avoids vendor lock-in: if a particular component of the system cannot be repaired or extended by its original developers, it can be replaced by a new component with a compatible API.

Expand Quantitative Workforce Related Data to Enable Better Performance Management

As labor data becomes more granular and accessible (such as employment, wage, and trend data by location and industry), it will be critical to use that information to better gauge the efficacy of skill development programs and services. For example, funding decisions for skill development programs are guided by a combination of expert advice and quantitative feedback. By integrating program participation data with wage and employment outcomes, integrated data systems will dramatically improve the quality of quantitative feedback. The effect on employment and wages of specific providers, programs, and credentials can all be measured using unemployment insurance records, allowing the most effective services to bubble up to the top.

While these metrics are helpful, they should not supplant the role of expert advice. For example, some skill development programs may be aimed at high-needs populations and are not necessarily apples-to-apples comparisons with professional certification programs. Notwithstanding, the fact that most decision-makers now have access to these metrics should help to better filter and evaluate learning providers that connect to employment opportunities offering the most opportunity for upward economic mobility.

Use Integrated Data Systems to Contextualize Reporting Data for Providers

Workforce providers often complain that they spend significant time and resources meeting their reporting obligations, and yet rarely receive any value from the data they report. States have long had the ability in principle to enhance and contextualize reporting data for use by providers in improving their offerings but doing so was often challenging in practice. WIOA-compliant integrated data systems have the ability to simplify and encourage the establishment of this two-way communication between funders and providers.

Many of the same metrics used by job-seekers to discover and compare programs are at least equally useful for providers. In particular, community college systems and other large institutions are likely to derive significant benefit from participant employment and earnings metrics. We encourage workforce agencies and boards to reach out to their largest providers and engage them in conversation on how this feedback may be most effectively communicated.

Design Systems to Report Once and Comply Everywhere

Many of the WIOA reporting requirements, once streamlined by an integrated data system, can be leveraged or expanded upon to fulfill other reporting requirements as well. For example, public higher education institutions must also report to their state, as well as to programs like the Carl D. Perkins Vocational and Technical Education Act. States like Colorado are already moving toward data standardization and metric generation that would reduce reporting demands on learning providers, ideally to a single comprehensive data upload on a well-defined cadence.

Promote an Open Standards-Based Ecosystem

Sharing standardized information about skill development opportunities, employment, wages and outcomes — both locally and nationally — could redefine the experience for job seekers and allow more efficient allocation of resources to respond to changes in workforce needs. In the argument for supporting open standards, the success of the General Transit Feed Specification (GTFS) is referenced again and again, and for good reason. First authored in 2006 by Google staff to more efficiently ingest public transit data into Google Maps, it's now the default standard for transit agencies around the world.3 Promoting an open standards-based ecosystem to the development of workforce systems would be similarly transformative.

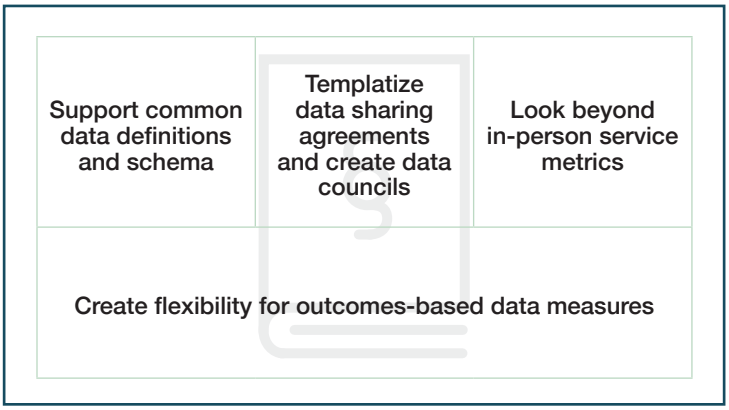
Build Internal Capacity to Respond to Ongoing Challenges

A key lesson from the baseline assessment is that states should try to ensure that sufficient resources are set aside for system maintenance and upgrades, internal support and customization after the initial deployment has come and gone. To our knowledge, no state regrets building internal development capacity, even if some or most of their software is vendor-provided. There are regrets, however, when capacity building is neglected and states are stuck with development plans hamstrung by inadequate protocols, and staff knowledge that leaves the state at the will of the vendor.

Additionally, care must be taken in the adoption and announcement of a new platform to avoid disruption. In Washington, for example, the announcement of a search for a new COTS system led to the mass exodus of individuals working on the prior system, and a significant loss of institutional knowledge.

Opportunities for Policymakers

State and local WIOA grantees are working hard to harness the benefits of technology for their workforce systems and services, but they cannot do it alone. Throughout the project, the importance of smart and supportive policymaking stood out. Beyond providing more funding, this section identifies key opportunities for policymakers to help the sector understand the complex changes underway in the labor market and to use those changes to continually improve state and local workforce systems and services.



3 To learn more about the General Transit Feed Specification visit https://developers.google.com/transit/.

Identify Opportunities to Support Common Data Definitions and Schema

Across industries (healthcare, telecommunications, education, etc.), standardization has created efficiencies, improved utilization, and provided opportunities for innovation. The widespread adoption of data standards for workforce systems can accelerate innovation. Common data standards create more system interoperability, which reduces the cost of data exchange. Standards allow for faster switching and upgrading of systems and platforms. Standards also allow for more competition in the system, creating opportunities for small players in the private sector able to create point solutions for particular challenges that can integrate into existing platforms or warehouses.

Templatize Data Sharing Agreements and Create Data Councils

States have varying levels of internal data governance protocols and rules that can slow data sharing practices. Utah, for example, slowly obtained MOUs to pull data directly from multiple state and federal sources, including UI, SNAP, and TANF. To improve data sharing, those responsible for data access at related agencies should be able to be a part of an established cross-agency workforce-data coordinating council to develop consistent data sharing policies and protocols addressing matters of privacy, security, user access requirements, and more.

Look Beyond In-Person Service Metrics

Current metrics are limited to tracking the number of individuals who come in to AJCs and receive in-person services. In states like Utah with easy-to-use online self-service tools, this means that the estimated 80 to 85 percent of individuals who receive support via the online portal, but who never come in person to an AJC are excluded from these measures. Given the ubiquity of mobile access and resulting shifts in the ways job-seekers and employers engage with the workforce system, tracking users that derive benefit from the system through remote access is an important measure of success.

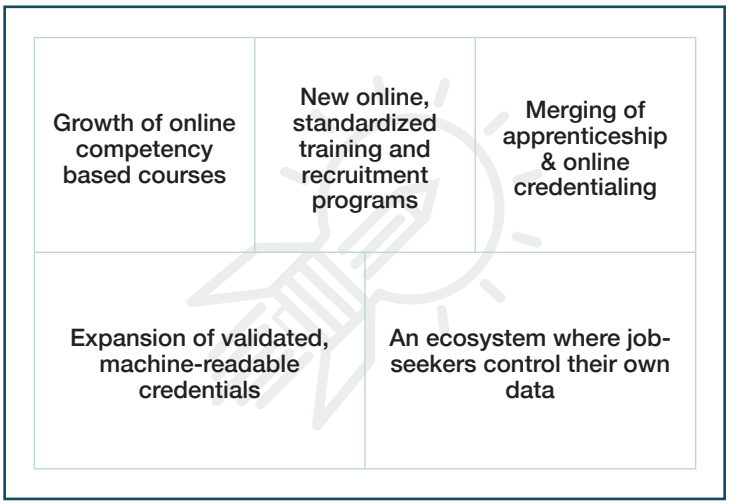
A corollary challenge is the need to include measures of case complexity or other metrics to denote level of support needed. As more states implement user-friendly online systems, job seekers with relatively straightforward needs may be more likely to self-select into using online tools, while those who need more help or whose cases are more complex may be more likely to visit an AJC in person. (Consider those who choose to do taxes with an online tool vs. those who want the additional support of a human tax professional.) Reporting that only considers in-person visits may fail to account for both the number of job-seekers able to meet their own needs using online tools, as well as the fact that those who come in person are likely to have more complex needs that required more nuanced support and guidance.

Create Flexibility for Outcomes-Based Data Measures

As the workforce system begins moving from an outputs-based to a outcomes-based mindset, it will become more important for measures of quality to be collected and standardized to increase usability both across state agencies as well as nationally. Utah's system currently captures data on human interactions from several locations around the state, allowing them to understand how customers are interacting with workforce systems, and to track, test, and make analytical decisions on how to deploy resources across the state. Colorado has also expressed interest in a standardization of metrics to capture qualitative activities.

Moving Beyond Compliance

As the prior sections demonstrate, the responsibility of transforming the U.S. workforce system with the help of technology requires a diligent and resourceful mindset. Leading states are applying an agile development philosophy to their technical update and bug-squashing protocols. Every state has devised effective workarounds to technical barriers. Despite frustrations and challenges, they are making their data systems work. But good-enough is not enough to deliver on WIOA's promise of innovation to create economic opportunities for job seekers.



A transformation of workforce technologies requires that our vision go beyond technical compliance. There is a transforming ecosystem of education and skill development technologies and services that should inform the development of state and local data-systems and employment services. With or without the participation of WDBs, AJCs, and WIOA's investments, this ecosystem is changing how individuals learn, find work, up-skill, and generally prepare themselves for their next job or career. It will be critical to try to map existing data systems and services to these new activities that are erasing traditional lines between employment, education, and skill development. Some notable examples include the following:

- **Staffing agencies are embedding online competency-based courses into their programming**. This service is not only attractive to job seekers, but is it attracting employers who now view them as a no-to-low costs outsourced skill development resource generating large cohorts of potential employees.
- **National companies and organizations are creating low-cost, online, standardized skill development and recruitment programs**. The benefits of consistent quality control across the country outweigh the challenge of cobbling together disparate prerequisite skill development programs across the country through AJCs and community colleges. It also creates opportunities for new career advancement and pay structures within the organization.
- **Apprenticeship programs are coupling with online and credentialed skill development programs.** These services provide potential employees with prerequisite and extended learning opportunities that enhance the value of the on the job training for both the employer and potential employee.
- **Organizations are creating validated, machine-readable credentials that allow employers and others to rapidly discover talents**. As digital credentials become more secure, standardized and machine-readable, they become more actionable for employers. HR divisions can more quickly filter and prioritize candidates and seek out underutilized talents that traditional resumes and networking may not have been able to expose. Job matchmaking is poised to become a high growth sector. The maturation of credential validation also brings us close to the aspiration of lifelong learning and stackable credentials.
- **Stakeholders are building toward a future where job-seekers have more control of their own data.** States, technology vendors, and training and learning providers have all started to envision a world where students and job-seekers have access to their own integrated work and learning records, and can authorize third parties to access portions of those records. It is an approach to future-proofing workforce data that is gaining traction. As the Illinois General Assembly Blockchain and Distributed Ledger Task Force recently observed, "it is clear that distributed ledgers can begin a transition to a smarter, cheaper and safer way to administer government" and benefit the state's workforce ecosystem.

All of these activities, of course, can be a part-of and complement the skill development services now offered in AJCs across the country. In some locations, the integration is already happening. What's important is that they illustrate a segment of the new and innovative services and potential partners that WDBs and AJCs could tap into to ensure they effectively use technology to improve the workforce systems. They could and should be

used as nodes that extend the breadth and quality of services available, which is one of WIOA's key objectives.

As one local workforce leader observed during this project: "The true value of an integrated system is the customer experience and their ability to reach the services they need." The services that job seekers need are increasingly being offered by non-traditional workforce development organizations in new and creative ways that leverage the ubiquity of online resources.

Recommendations-at-a-Glance

As this paper illustrates, there is no shortage of challenges and restraints to the goal of effectively using technology to transform the workforce system. Just as evident, however, is that there is no shortage of dedicated and innovative individuals, teams, and organizations applying their efforts to the work. The challenge before us is to engage in productive conversations continually and to share the practices that will reward these individuals and ensure that we successfully harness the benefits of technology on behalf of the U.S. workforce system.

With those goals in mind, this paper concludes with a summary of paper's key points. We look forward to the conversations and the ideas that they may inspire.

Responding to Challenges

- To manage shifting reporting requirements, adopt and develop an agile development philosophy for implementation practices to mitigate impacts of changes.
- To mitigate data sharing and improve data connectivity, improve shared governance and collaboration practices and support that with common document and contract templates.
- To support technology implementation and user uptake, encourage frequent cross-agency collaboration to foster a quick-response culture to known user-experience issues.
- To meet the increasing demand for online services, design user-facing job boards and training and learning program registries to facilitate self-service options for job seekers.
- To mitigate ad hoc reporting limitations and ensure data quality, dedicate resources to build the necessary technology for nimble reporting and invest in the staff skill development to build internal capacity down to the local level.

Designing for Change

- Enable better selection of training and learning programs with expanded quantitative labor data.
- Use integrated data systems to contextualize reporting data for use by providers.
- Design systems to report once and comply everywhere.
- Promote an open standards-based ecosystem.
- Establish change management practices that keep stakeholders included in and informed about system developments.

Opportunities for Policymakers

- Create national standards for developing workforce tools, components, plug-ins that protect data and streamline opportunities for disparate workforce systems to exchange workforce data.
- Identify opportunities to support common data definitions and schema.
- Templatize data sharing agreements and create data councils.
- Focus on outcomes and allow for state and local workforce professionals the flexibility to respond to their market conditions.
- Look beyond in-person service metrics. Current federal metrics that measure case level or business service interactions as a single touchpoint with a workforce stakeholder do not sufficiently account for the complexity of different cases, the level of knowledge and research required to address various stakeholder issues, or the quality of service provided. Federal decision makers would benefit from incorporating additional performance metrics that more accurately reflect the reality of the customer oriented online and in-person services that state and local workforce personnel support on a daily basis.
- Create flexibility for outcomes-based data measure. Federal performance metrics are not sufficiently documenting or giving credit to workforce services online or at the state and local level. For example, the roughly 90 percent of workforce stakeholder activity that is self-service and online on WorkSourceWA does not get credited as performance touchpoint under the current WIOA guidelines. This is despite the significant level of state workforce resources essential to system development and ongoing maintenance.

- Provide implementation guidance beyond current regulations. The WIOA regulations and other documentation published to date does not provide sufficient guidance in how WIOA mandates should be transformed into operational processes and implemented on digital platforms. In the absence of standardized operational procedures, usage manuals, example executable software code, federally vetted data maps or schema, or other process oriented WIOA guidance, state implementers are left to transform federal mandates into executables to the best of their ability and hope that they are compliant. Additional guidance would help assure standardization across performance metrics and minimize the potential for mistakes.
- Foster capacity for states to exchange ideas, develop approaches, and learn from each other's WIOA implementation experiences. States are currently developing bodies of knowledge, experience and software executables that provide different functionality and can be used to implement WIOA and other regulations on digital platforms. States would benefit from being able to share operational and technical workforce knowledge in a digital forum – for example a workforce Wiki, Quora or GitHub like collaborative, online space – where users could post and search for useful processes, schema, metrics, algorithms, code, etc. as well problem solve with others facing similar implementation issues.