

From automated to comprehensive

What child welfare organizations need to succeed



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Foreword

Of all the programs and services regulated, administered or delivered by government, there are arguably none more important than the delivery of child welfare services: child protection, foster care and adoption. World Health Organization statistics show that 25 percent of adults worldwide report having been physically abused as children.¹ The economic cost associated with the consequences of physical, psychological and sexual violence against children is estimated at USD 7 trillion annually.² And then, of course, there are the costs that each individual child experiences. It is difficult, and probably unnecessary, to quantify the impact of child abuse and neglect on the victims, but 25 percent of abused and neglected children will experience problems such as delinquency, teen pregnancy, low academic achievement, drug use and mental health problems.³ This, of course, doesn't take into account the more immediate physical, emotional and psychological consequences of child maltreatment.

The impact of child maltreatment is profound. Understanding and addressing its etiology is complicated. Technology cannot solve all of the issues and challenges facing child welfare organizations but it can help provide better access to information, streamline and (where appropriate) automate work processes so that caseworkers can spend more time with children and families, coordinate services across systems, and improve communication among workers and the people they serve. Since 1990, IBM® Cúram Software solutions have been focused on one thing: offering full lifecycle support for managing health and social programs from needs to outcomes. We accomplish this by designing around the individual and by empowering organizations

to collaborate around individual needs. Many of the people on our team began their careers as professionals in child welfare programs. Our commitment to child welfare can be found in the name Cúram—an Irish word that means “Care and Protection.”

As US child welfare organizations begin the process of transforming their Statewide Automated Child Welfare Information Systems (SACWIS) into the new vision of Comprehensive Child Welfare Information Systems (CCWIS), it is a good time for us to examine the Notice of Proposed Rulemaking for CCWIS. We approached our review from the context of our experience with over eighty implementations of integrated case management systems in eighteen countries over the past twenty-five years, including modern child welfare systems across Canada and in Germany. Our goal in writing this paper was to not only offer our insights into how agencies could optimally meet the key provisions of CCWIS, but how they might go beyond those provisions to implement a system that takes advantage of 21st century technology advancements such as mobility tools, analytics and cognitive computing.

Ultimately, the success of CCWIS will be measured in the efficacy of the agencies and programs providing care and protection to children reported as abused and neglected. For some readers, this paper may represent a starting point to begin thinking about the tools they need to succeed. Others may be much further along in their planning process. Either way, if we have done our job, this report will initiate conversations aimed at re-thinking how technology can help them do their jobs. Those conversations can go a long way toward better outcomes for children and families.

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Part 1: An information system by any other name...

In December 1993, the US Department of Health and Human Services published the regulations for Statewide Automated Child Welfare Information Systems (SACWIS), later to become Statewide and Tribal Automated Child Welfare Information Systems (S/TACWIS). The regulations were implemented in response to amendments to the Social Security Act that provided time-limited Title IV-E enhanced funding (Foster Care and Adoption Assistance) and a perpetual enhanced cost allocation for statewide automated child welfare information systems. Under these regulations, states and (from 2009 onward) tribes had the option to build a S/TACWIS to support case management, data collection and reporting related to the needs of children receiving foster care and adoption services provided by the Title IV-E agency.

The original 1993 SACWIS regulations defined a large, one-size-fits-all, function-based application that caseworkers would use to manage, track and report on child welfare caseloads. But since then, both technology and child welfare practice have changed considerably. For example, in 1993 the first “smart phone” was just becoming available to consumers. The Simon personal communicator was a joint IBM and Bellsouth⁴ project that was approximately the size and shape of a brick, could make and receive cellular phone calls, and send and receive faxes, emails and electronic pages. It had an address book, calendar, world clock and note pad. The functionality we’ve come to expect in today’s smart phones didn’t exist—at least not in a phone. Video recorders, the Walkman, Polaroid cameras, and laptops provided the functionality we take for granted in today’s smart phones. And widespread use of the Internet was still a few years away. In fact, it was only in 1995 that the Federal Networking Council passed a resolution defining the term Internet.⁵ Cognitive computing, the cloud, data analytics and “big data” were not even on the horizon. In the context of 1990s technology, an automated child welfare information system was leading edge.

The original 1993 SACWIS regulations defined a large, one-size-fits-all, function-based application that caseworkers would use to manage, track and report on child welfare caseloads. But since then, both technology and child welfare practice have changed considerably.

Child welfare practice has also undergone dramatic change. In the early 1990s, a multidisciplinary team (MDT) approach to child abuse and neglect was still in its infancy, having been first funded in the Child Abuse Prevention and Treatment Act of 1974.⁶ MDTs required cross-system information sharing—something not easily embraced by government organizations—which was practiced by team members gathering in a conference room with paper files. The first differential response (also referred to as dual track, multiple track or alternative response) laws had just been passed in Florida and Missouri.⁷ It was also in the 1990s that professionals began to re-examine the efficacy of family preservation, a dominant model in the 1980s that was being called in to question. And of course, the number of child abuse reports continued to grow; from about 60,000 cases per year in the mid-1970s, to 1 million reports in 1980, 2 million in 1990 and about 3 million in 2000.⁸ By 2010, reports to child protective services were up to 5.9 million referrals annually.⁹

The overarching goal of SACWIS was to support states and localities in developing IT systems that collect and manage uniform data across the child welfare ecosystem. But between 1994 and 2011, the states and federal government spent \$4.7 billion on SACWIS operation and development¹⁰ with only limited success to show for the effort and investment. As of November 2015, the HHS Children’s Bureau SACWIS Status web page shows thirty-four operational systems. Only eleven states have achieved compliance with all SACWIS requirements. Thirteen states have opted to build non-SACWIS systems.¹¹ Under Title IV-B, Subpart 1 of the SSA, every state child welfare agency must have a statewide information system capable of providing certain information for each child in foster care. But they can do this with a SACWIS or non-SACWIS system. States using a non-SACWIS model may also claim reimbursement from the federal government, but reimbursement is restricted compared to states with a SACWIS-model system.

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The challenges of SACWIS implementation

The many challenges and difficulties faced by the states trying to implement SACWIS have been well-documented elsewhere. For example, see the GAO Report to Congress: Most States Are Developing Statewide Information Systems, but the Reliability of Child Welfare Data Could Be Improved.¹² But it is important to at least have a high-level understanding of the

problems encountered by child welfare organizations because the new Comprehensive Child Welfare Information System (CCWIS) recommendations are intended to address most, if not all, of them. These SACWIS issues include:

- Difficulties automating title IV-E Foster Care eligibility determination
- Missing or one-way only interfaces with other required and optional IT systems
- Missing or faulty financial components that support timely authorization, processing, and reconciliation of financial records and transactions
- Continued reliance on paper processes that should have been sunset
- Redundant data entry
- Difficulties working offline
- Non-functional ticklers, alerts and notifications

In addition to the above issues, SACWIS is not being used completely or consistently throughout some states because of local preferences and business practices. Some jurisdictions are relying on external systems such as accounting systems or an external data warehouse and reporting tool to support child welfare business processes.

Security issues include the sharing of user IDs and passwords, levels of system access that don’t always align with job responsibilities, and the lack of complete and tested disaster recovery and business continuity plans. Sealing, purging, and archiving records based on state laws and regulations have also been a challenge for some states. Clearly, something needed to change.

Comprehensive Child Welfare Information Systems (CCWIS) is born

In August of 2015, the Department of Health and Human Services (HHS) Administration for Children and Families (ACF) published a Notice of Proposed Rule Making (NPRM) for CCWIS. The intent of the NPRM was to seek input from state and local child welfare organizations, as well as others, regarding federal requirements for the next generation of child welfare information systems: CCWIS. As of November 2015 the new CCWIS requirements have not been finalized, but as currently envisioned CCWIS will:

- Accommodate changes in child welfare practice (e.g., MDT, Differential Response) that have occurred since the early 1990s.
- Leverage the IT advances made since 1993.
- Focus on quality data, not functions.
- Provide the flexibility to “right size” child welfare systems for states and tribes.
- Allow states and tribes to leverage existing systems.
- Reduce costs for system development and maintenance.
- Encourage interoperability through new data exchanges.
- Support interoperability through standard exchange protocols.
- Maximize flexibility.¹³

Although they are not required to, some states and tribes may elect to develop a case management information system that supports their child welfare program needs. If they do, according to the CCWIS NPRM FAQs, “the federal government will provide additional funds to help pay for it as long as the system is designed to support social workers automation needs to organize and record quality case information about the children and families receiving child welfare services.”¹⁴ The question is: What do states and tribes need to consider if they opt to build a CCWIS?

Although they are not required to, some states and tribes may elect to develop a case management information system that supports their child welfare program needs. The question is: What do they need to consider if they opt to build a CCWIS?

A system that aligns to business needs

Under the proposed NPRM, states and tribes are not required to build a CCWIS. Like S/TACWIS before it, CCWIS is optional. But where S/TACWIS provides a greater amount of federal matching funds and was envisioned and implemented as a single, one-size-fits-all case management system, CCWIS will allow child welfare organizations to take advantage of modern technology that will enable them to share data between multiple systems. States and tribes actually have three options under the proposed rule:

1. Enhance an existing S/TACWIS or non-S/TACWIS to meet CCWIS requirements.
2. Build a new system that meets all CCWIS requirements.
3. Build a new, or maintain an existing, non-CCWIS system.

Within these options, states and tribes will have the flexibility to implement a CCWIS that has all the functionality needed to collect and maintain child welfare data, or they can implement a CCWIS that is simply a data repository collecting, exchanging, and reporting data from a variety of external systems. It should be noted that, if a state or tribe elects to only implement a data repository, only the repository itself would be eligible for CCWIS enhanced funding. CCWIS funding would not be available to enhance the other system or systems that exchange data. State and tribes could also opt to implement something that falls in between the two other options.

CCWIS represents the first comprehensive revision of S/TACWIS regulations since 1993, and it changes the types of child welfare automation that would benefit from enhanced federal funding. Compared to S/TACWIS, CCWIS provides child welfare agencies the flexibility to build smaller systems that more closely mirror their practice models.

CCWIS represents the first comprehensive revision of S/TACWIS regulations since 1993, and it changes the types of child welfare automation that would benefit from enhanced federal funding.

As envisioned, CCWIS will promote data sharing with other health and human services systems related to education, mental health, developmental disabilities and drug and alcohol abuse prevention. Data exchanges will enable coordination of services between health and human services systems, help eliminate redundancies, and have the potential to improve both client outcomes and data quality. Of significant importance here is that, even though the CCWIS will be required to store and manage mandatory data, it does not need to be the system into which data would be originally entered (as is the requirement under S/TACWIS). It can obtain that data from external sources. This is important because, under S/TACWIS, data collection has created significant challenges for caseworker productivity. They report that they spend at least 50 percent of their time engaged in data entry and documenting case records.¹⁵ Although the problem may be more related to the amount of data that caseworkers are required to collect, rather than the necessity to enter all data into S/TACWIS directly, the flexibility of being able to obtain data from external sources under CCWIS should help to alleviate this issue.

Under the proposed CCWIS NPRM Title IV-E agencies will be required to implement data quality plans and processes in order to monitor data quality. They will also need to take corrective action to address identified problems. Quality data is, of course, vitally important to sound child welfare practice. It begins at intake and referral, and remains a critical part of case management and supervision up until the time a case is closed. Quality data is also key to documenting outcomes, both individual and programmatic.

CCWIS functional requirements will be greatly reduced compared to S/TACWIS requirements. Where S/TACWIS regulations specified 51 mandatory and 36 optional federal functional requirements, section 1355.52 of the CCWIS NPRM proposes only fourteen functional requirements that fall into ten categories. Eleven of the requirements relate to bi-directional data exchanges and the use of electronic data exchange standards. Six requirements are already part of S/TACWIS: Title IV-E/IV-B financial system, Title IV-E eligibility, Child Abuse and Neglect System, TANF (Temporary Assistance to Needy Families), Medicaid eligibility, and Child Support. Five requirements are new: Child Welfare Contributing Agencies, Other Systems used by IV-E Agency to Collect CCWIS Data, Medicaid Claims Processing (Title XIX), Courts, and Education. The proposed bi-directional exchanges are intended to:

- Support the efficient, economical, and effective administration of the Titles IV–B and IV–E programs.
- Improve outcomes for children and families by promoting collaboration and service coordination with other programs.
- Gather comprehensive data on client histories, needs, and services.
- Eliminate duplicate work and service delivery across programs.
- Reduce data collection costs.

Proposed CCWIS requirements are organized into 10 categories

- Efficient, economical, and effective support of title IV—B and IV-E plans (1355.52a)
 - Data categories that must be maintained by CCWIS (1355.52b)
 - CCWIS reporting requirements (1355.52c)
 - Data quality requirements (1355.52d)
 - Bi-directional data exchange with specified program systems (1355.52e)
 - Single data exchange standard for electronic bi-directional data exchanges (1355.52f)
 - Support for title IV-E eligibility determination process (1355.52g)
 - Agency-owned software and documentation provided upon ACF request (1355.52h)
 - Submission of CCWIS project documentation to qualify for cost allocation (1355.52i)
 - Advanced Planning Documents requirements (1355.52j)
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As a group, these requirements will allow child welfare organizations to build functionality in the CCWIS or collect necessary data through exchanges with other systems. They will also allow agencies to design systems that are tailored to their specific needs. They should go a long way toward meeting the needs of both state and county-administered child welfare agencies, as well as states, counties and tribes of various sizes. But they may also present some challenges.

As states and tribes explore the possibilities and challenges related to the development of a CCWIS, a number of fundamental questions will most likely present themselves. The first is: “Should we undertake a CCWIS?” The answer to this question will depend largely on how well a state or tribe is being served by their current child welfare information system, regardless of whether it is a SACWIS or non-SACWIS. But it is also dependent on how well the state or tribe will be served in the future by their existing system. Technology changes rapidly, and child welfare practices, policies and regulations will change as well. So the second question for states and tribes to ponder is: “How flexible and adaptable is our current information system, and will it be able to meet our needs in the future?” Of course, states and tribes must also ask themselves, “Can we afford a new system?” But they must also ask, “Can we afford not to build a new system?”

What exactly does comprehensive mean?

The proposed CCWIS regulations provide an opportunity for states or tribes to build new or updated child welfare information systems without the requirement of having to build and maintain a single, comprehensive system. If the CCWIS NPRM is removing the requirement of a single, comprehensive system that was required by S/TACWIS, what exactly does “comprehensive” mean in the context of CCWIS? While the NPRM does not specifically define “comprehensive,” it does specify key provisions. If a state or tribe elects to build a CCWIS, the proposed NPRM specifies that:

- The CCWIS must promote data sharing with other agencies.
- The agency must develop and implement data quality plans.
- Agencies will have the flexibility to build functions in the CCWIS or collect needed data through exchanges with other systems.
- Agencies will be allowed to build systems tailored to their needs.
- CCWIS must be the source of data for federally required and other agency reports including on-going federal reports such as AFCARS (Adoption and Foster Care Analysis and Reporting System) and National Youth in Transition Database (NYTD), and voluntary reports such as National Child Abuse and Neglect Data System (NCANDS).

Given these key provisions of the proposed rule, what should child welfare agencies look for in a potential CCWIS solution?

The CCWIS NPRM is removing the requirement of a single, comprehensive system that was required by S/TACWIS.

An emphasis on data

One doesn’t have to delve too deeply into the NPRM to recognize that there is a heavy emphasis on data. This includes data collection, storage, integrity, quality, sharing and reporting. The NPRM would allow states and tribes to implement a CCWIS that has all the functionality needed to collect, maintain and report child welfare data or they can implement a CCWIS that is simply a data repository that would draw data from numerous systems, aggregate that data, and generate or contribute to reports required at all levels of government. They could also opt to create a system that falls somewhere in between. But either way, they would be required to ensure the quality, integrity and reporting of that data. And once the data is collected and stored, a state or tribe would need to be able to make that data available to their staff as well as to other organizations.

As detailed in Table 2, the ten requirements proposed in the CCWIS NPRM have an almost singular focus on data and data quality. But in order to meet these requirements, states and tribes will need to design and build systems that have a broad array of capabilities. Organizations will need a flexible, up-to-date IT infrastructure that enables enterprises to deliver benefits and supports effectively. They will need a solution that allows them to adapt to changing requirements, technology and regulations over time. They cannot afford to be locked into outdated, siloed legacy systems any longer.

Child welfare organizations will need to ensure that the CCWIS they design and implement can be easily and cost-effectively integrated with existing platforms both within, and outside of, the organization. The solution must be designed to comply with open standards and must be configurable by business analysts. And it must be usable by caseworkers with minimal training.

CCWIS Proposed Requirement	What's needed in a CCWIS solution to meet the requirement
Efficient, economical, and effective support of title IV—B and IV-E plans (1355.52a)	A solution that is flexible, configurable and based on best practices
Data categories that must be maintained by CCWIS (1355.52b)	Capabilities to not only enable the collection of data, but also organize it in such a way that it can be easily analyzed, extracted, reported on and made available
CCWIS reporting requirements (1355.52c)	Agency-specific ad-hoc reporting, dashboarding, analytic and distribution capabilities
Data quality requirements (1355.52d)	Capabilities to collect and manage data related to all aspects of child welfare services including investigations, assessments, case management, service provision, placements and licensing
Bi-directional data exchange with specified program systems (1355.52e)	An open architecture that adheres to open standards as set forth by technology standards boards (such as W3C and OASIS) and industry standards boards (such as MITA and HIPAA)
Single data exchange standard for electronic bi-directional data exchanges (1355.52f)	Built-in security capabilities to support the authentication of a user at login time as well as providing support for the authorization process
Support for title IV-E eligibility determination process (1355.52g)	Capabilities to screen eligible program participants to identify optimal programs for their needs, determine benefit entitlement and eligibility, make payments, and manage ongoing changes in circumstances that may affect entitlement over a range of programs
Agency-owned software and documentation provided upon ACF request (1355.52h)	Availability of standardized, certification-level technical and business training, and comprehensive reference materials and business guides for users
Submission of CCWIS project documentation to qualify for cost allocation (1355.52i)	Capabilities to support entire child welfare enterprise to optimize use of automated functions and reduce duplication. It is not cost-effective or efficient to fund implementation of automated functions that are duplicated or inconsistently used by all users performing the function.
Advanced Planning Documents requirements (1355.52j)	A proven track record that demonstrates low cost, low risk, improved client outcomes and supports program accountability

Table 1: Ten requirements proposed in the CCWIS NPRM



Part 2: Are flexibility, data sharing and efficiency enough?

The goals and priorities proposed in the CCWIS NPRM are substantial and hold great promise for improving the way in which child welfare data is collected, shared and reported. The proposed requirements give agencies the flexibility to determine the size, scope and functionality of their information systems. Data can be obtained from external sources. There is a strong emphasis on data quality, reporting and bi-directional data sharing. And the NPRM stresses more efficient and less expensive development of systems. These are all important. But an agency considering the development and implementation of a CCWIS should be asking itself if these provisions are enough. If they have the flexibility to determine the size, scope and functionality of their CCWIS, they should be asking if there are additional considerations and goals worth exploring.

A data model that is social-program-specific is critically important.

The need for a data model

A data model that is social-program-specific is critically important. The data model identifies and organizes required data logically and physically. A logical data model allows an agency to describe their data in as much detail as possible, without regard to how the data will be physically implemented in a database. Features of a logical data model include:

- Ability to contain and describe all entities and relationships
- All attributes for each entity
- A primary key or unique identifier (for example, social security number, driver's license number, passport number)
- Foreign keys (an identifier that links data in two different tables)

A physical data model represents how the model will be built in the database. It shows all table structures, including column name, column data type, column constraints, primary key, foreign key and relationships between tables. Physical data models will be different for different database management systems, and physical considerations may cause the physical data model to be quite different from the logical data model. Features of a physical data model include:

- Specification of all tables and columns
- How foreign keys are used to identify relationships between tables

Social program data in general, and child welfare data in particular, can be quite complicated. Within a typical child welfare system, data is collected for three major programs: child protection, foster care and adoption. Data will be shared at the state and county levels, as well as with the courts. And depending on the state, data may also be shared with the juvenile justice system, education or child support enforcement. And that is just the start of what the child welfare enterprise may look like. Data may be collected and shared between child welfare and any number of other government entities including health, law enforcement, behavioral health, developmental disabilities, housing, substance abuse, refugee assistance, economic assistance or the Supplemental Nutrition Assistance Program. Therefore, maintaining and assuring the accuracy and consistency of data (data integrity) over its life-cycle is both complex and critical to the design, implementation, and utilization of any system, whether it is a simple data repository or rich in functionality. An information system that includes a single, integrated data model that has been proven over numerous types of health and social programs can save time and expense while also helping to ensure data integrity.

In addition to supporting multiple programs, a data model should also be designed to be client-centric. It should empower child welfare organizations to collaborate around the needs of the child and family, making access to services easier and, more importantly, more effective in achieving desired goals. The objective, after all, is to not just bring data together, but to provide support for all those who are involved in collaborating with each other in identifying and addressing the needs of children and families. The focus needs to be on people, not programs. And the data model is the place where that focus begins.

Traditionally, social programs delivered benefits and services on a per-client, per-program basis. Although these programs may ensure that a client's basic needs are met, it is difficult with such a narrow focus to address the root cause of problems because, more often than not, a child or family involved with the child welfare system is receiving multiple benefits and services from more than one government agency. Without visibility between agencies and programs, it can be very difficult for caseworkers to track overall client progress. As a result, desired outcomes may not be achieved as quickly as desired, if at all, and clients may develop long-term dependency on government assistance. A holistic view of the child and family, along with collaboration tools, can enable agencies and other interested parties to work together to identify and address the root cause of family problems and to help the family achieve positive outcomes. This type of view also helps eliminate duplication of benefits and services, protect against fraud, and support the matching of worker and provider expertise and experience to the needs of clients.

A data model that is both multi-program and client-centric can enable a multidisciplinary approach to services, as well as a differential response. The focus of the CCWIS NPRM on data sharing across multiple systems is based on the premise that families involved in the child welfare system have complex needs requiring a response from multiple government systems. The role

of the multidisciplinary team (MDT) is to enable collaboration among professionals from different areas of expertise. By working together, an MDT can:

- Help to resolve difficult cases.
- Promote coordination between agencies.
- Identify service gaps and breakdowns in coordination and communication between agencies and individuals.
- Provide a forum for learning more about the strategies, resources, and approaches used by various disciplines.

As a result, an MDT addresses the CCWIS goals of being efficient, effective and economical. Compared to a paper-based, manual process, an MDT enabled by CCWIS allows easier and greater data sharing. Case planning and service coordination across multiple programs is also easier and more efficient. In addition, many activities that might otherwise require face-to-face meetings, phone calls or correspondence can be handled more economically by MDT functionality.

Professional disciplines that could be represented on an MDT include, but are not limited to: child and adult protective services, the civil and criminal justice systems, juvenile justice, health, social assistance, behavioral health, developmental disabilities, domestic violence, and substance abuse services.

A focus on outcomes

As pointed out earlier, S/TACWIS had a functions focus while CCWIS is envisioned as having a data quality focus. The quality data that will be inherent in CCWIS, along with a multi-program, client-centric data model as described above, would make it possible to create an outcome-focused, citizen-centric approach to care that can not only personalize the child welfare process; it

can change the way that caseworkers do their job. An outcome-focused approach would give caseworkers the information they need to analyze the challenges that face each of the children and families they serve. The result can be better outcomes for children, families, and society. But what, exactly, does that mean?

The quality data that will be inherent in CCWIS would make it possible to create an outcome-focused, citizen-centric approach to care that can not only personalize the child welfare process; it can change the way that caseworkers do their job.

At the heart of any social policy is the desire to achieve a good social outcome for individuals as well as society. In child welfare, the overriding desired outcome is the safety of the child. But then what? Most people would probably point to permanency as another child welfare desired outcome. But that could mean many things, including keeping a child safely in their own home, returning a child as quickly and as safely as possible to their home after a foster care placement, a kinship placement, adoption for those children who cannot return home, or independent living for those children who age out of foster care. The optimal outcome will vary from individual to individual, as well as from jurisdiction to jurisdiction.

So the first step in an outcomes-focused approach includes an assessment of the individual's or family's strengths and needs. It also includes the identification of the desired individual outcome or outcomes. And this must be balanced against policy. For example, if a state has implemented a policy decision to reduce the number of children in foster care, length-of-stay goals might be shorter than they were prior to the policy implementation.

Outcome identification can be a cooperative process: for instance, working with a family to set goals so that a child can return to the home from a foster placement. Or it could be a mandatory process in the context of an ongoing child protective investigation. In all likelihood, there will be a range of outcomes for individuals and family groups. Having a full and complete picture of the household and each member's contribution to it is essential for the identification of outcomes. Assessment tools—whether through links to outside assessments, use of existing assessments, or add-on packages that are integrated into a case management system—can be an important component of this process. Children's Research Center (CRC) Structured Decision Making (SDM) is one example of an assessment tool that could be part of an outcome-focused approach to child welfare service delivery. The integration of the SDM structured assessments with best-practice case management capabilities can support more reliable, valid and equitable caseworker decision-making.

Once outcomes have been identified, the next step is to decide the services that are necessary to achieve the outcome. Ideally, service provisioning will be designed to work contiguously with outcomes identification. As services are identified, other participants in the family's case should also be identified. These could include family members, medical practitioners, teachers, specialist case workers or other professionals. These participants will need to be aware of their role and their contribution toward achieving the outcome.

The outcome plan should be designed to be realistic and measurable so that progress can be made and monitored. All the appropriate participants should clearly understand their contributions and have a securely managed view of the plan. For complex family situations with multiple service providers and outcomes, redundancies are a potential challenge but can

be avoided through information sharing and case coordination. The case worker will need to help ensure there is no conflict between outcomes and assess the relevant priority of services. If a caseworker is unsure of which services to recommend for a family, analytics tools might be used to recommend benefits and services that align with assessment results.

The final component of an outcome-focused approach to service delivery is evaluating progress in achieving desired outcomes. Case participants provide input on progress toward outcomes and undertake any corrective action required. Once an outcome is achieved, the plan—in part or whole—can be revised or closed and the learning applied to the evidential base for future assessments.

Support for child welfare best practices

As mentioned at the outset of this paper, child welfare practice has changed significantly since SACWIS was first implemented in the early 1990s. Best practices that didn't exist in the 1990s now need to be supported. One example of this is the multidisciplinary team that spans multiple systems and organizations. An MDT facilitates collaboration between all key stakeholders for effective team-based planning and decision making. Furthermore, it promotes the coordination of services across organizations. To that end, best-practice case management capabilities can, and should:

- Provide a series of role-based portals and workspaces for clients, providers, employers, caseworkers, agency participants and others who require a personalized solution experience that provides the information they need to receive services or do their jobs.
- Enable teams of internal and external professionals and other stakeholders to view and act on case and citizen information while maintaining citizen privacy.

- Enable team members to collaborate and communicate about the creation, maintenance and status of outcome plans, team interactions and client progress.
- Provide teams with all of the relevant information about existing cases, benefits and services currently being received from multiple organizations and programs.
- Serve as a forum where professionals can learn about strategies, resources and approaches used by different disciplines.

These capabilities can help professionals:

- Quickly identify and resolve challenges with difficult cases.
- Identify service gaps.
- Prevent breakdowns in coordination and communication between agencies and individuals.

Mobility

Given the flexibility built in to the NPRM, states and tribes considering the implementation of a CCWIS would be well-advised to also consider how mobility tools can play a role in the delivery of child welfare services. The average caseworker only spends about 18 percent of their time in face-to-face contact with children and families (Figure 1). Over 33 percent of their time is spent preparing documentation. Seven percent of their time is spent preparing for, appearing in, or waiting to appear in court, and over 12 percent of their time is spent traveling.¹⁶

The average caseworker only spends about 18 percent of their time in face-to-face contact with children and families. Over 33 percent of their time is spent preparing documentation. Seven percent of their time is spent preparing for, appearing in, or waiting to appear in court, and over 12 percent of their time is spent traveling.

Mobility and access to mobile devices are ingrained in our personal lives, but have not become a regular part of the caseworker's professional career. In fact, acceptance of mobile technology by social workers has been slow.¹⁷ According to the National Association of Social Workers (NASW), child welfare agencies are about 10 years behind the private sector when it comes to the use of technology. Eighty-five percent of younger caseworkers (35 years old and younger) and 75 percent of older caseworkers (36 years old and older) reported to NASW that they had never used a tablet PC in the field. About half of both groups reported never using a notebook computer in the field.¹⁸

There are, in fact, a number of good reasons why notebook computers have not been widely utilized in the field. For example, many child welfare agencies simply handed out notebooks with only office productivity tools on them; an expensive and inefficient approach to note-taking. Some jurisdictions took an "all or nothing" approach that led to attempts to place the entire SACWIS client on the laptop. This was not only expensive and cumbersome to navigate, it added to the already prevalent view that the laptop was a physical barrier to interpersonal communication between the caseworker and the client. Last, but not least, was the concern of caseworkers that the conspicuousness of the devices made them targets for crime. The advent of small-form-factor devices has mitigated concerns around conspicuousness and the device as a barrier to communication. As a result, mobile access to case management systems, data and information, assessment and referral capabilities, and other tools is today viewed as having the potential to reduce caseloads and workload, and improve worker efficiency and effectiveness.

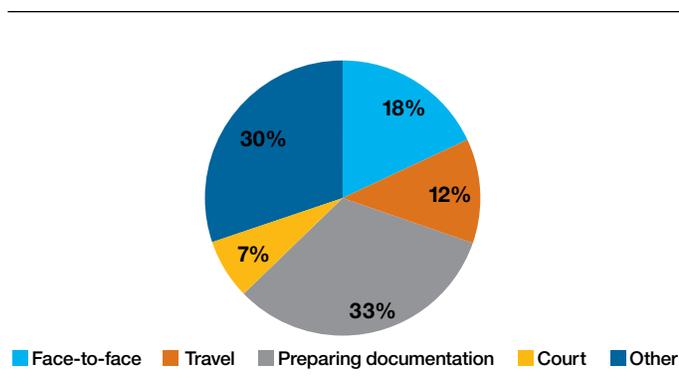


Figure 1: Time spent by caseworkers on job activities (2011)

A CCWIS with mobile capabilities would enable caseworkers to prepare for client visits while on the go and then deliver quality care in the convenience of the home or wherever the family may be. They would be able to fully prepare for a visit by being able to search for a registered client in CCWIS and view critically needed information when they need it, without having to return to their office to prepare.

At a minimum, caseworkers should be able to view the following client information in the field, if it's known prior to a visit:

- A client summary with name, age, address and contact details
- A photo of the client (if one exists)
- Client's location on a map along with directions to that location
- Any special cautions for the client
- Relationships with names and contact details for persons related to the client
- Current outcome plans
- Completed outcome plans

During a visit, the caseworker should be able to view, capture and update information about the client, the outcome plan and the environment to determine an appropriate course of action. They need to do this while staying focused and without losing vital information. The caseworker needs to capture and manage:

- Special cautions
- Contact logs, which are the official narratives for previous client visits
- Content log attachments
- Photographs, video and audio
- Notes

The ability to access CCWIS data and functional capabilities while in the field could help optimize investigation and case management drive time through GPS and mapping capabilities, and by reducing the need to return to the office for files and other information. It could make interactions between investigators, case workers, supervisors, service providers and clients seamless regardless of physical location. It could enable professionals to access needed information without returning to their office and allow them to document investigations and initiate actions immediately while still in the client's home. And it could provide new ways to engage, and stay connected with, children and families.

Data analytics

The amount of data available in information systems is growing every second, in both structured and unstructured form. Ninety percent of the data in the world today was created in the last two years, and an average of 80 percent of the world's data is unstructured.¹⁹ For child welfare professionals, the data currently collected in S/TACWIS and the data that will be collected in CCWIS holds valuable insights that can transform the way in which children are protected and services are provided. But to realize this transformation, data systems in general, and CCWIS in particular, needs to be intelligent.

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As pointed out earlier, one of the major challenges related to S/TACWIS has been the amount of data that caseworkers are expected to collect while also managing cases. So the goal here is not to turn caseworkers into data entry specialists, but rather, to make better use of the data that are collected during the normal course of business.

In order to make full use of the data collected in CCWIS, agencies will need an infrastructure that supports secure and efficient access to data—without adding complexity. But with the implementation of CCWIS many child welfare organizations will be accessing data that is dispersed throughout an enterprise that consists of fragmented systems. They will not only be sharing data with new organizations, they may be managing complex new data sources, such as video content captured during a child protection investigation. And they may be dealing with information that is not trusted. Child welfare organizations should be able to search, assess and extract meaning from large volumes of information found in emails, documents, chat logs and other unstructured data. And decision makers should be able to use these insights to make faster, more informed decisions. A highly integrated platform with proven, incorporated mobility tools can help address these needs.

Without analytics tools, big data is just big noise. An analytics tool that uses a wide range of existing data combined with new data sources can provide a more vivid picture of a family and the forces that impact it. It can help identify the optimal mix of programs and services to support that family, support supervisors managing unwieldy caseloads, and help identify the clients who are most at risk. It can also help guide new workers who may not be fully trained on all policies and regulations.

Data and analytics tools, in combination with automation capabilities can play a major role in redefining the job of the caseworker. Automated alerts and workflows can help ensure that children and families are visited on schedule without falling through the cracks. Automated eligibility determinations can free up time for workers to spend face-to-face with clients. Automated forms generation can also be a time saver. The goal is not to replace caseworkers or to take decision-making responsibility away from them. Rather, the goal is to support them so that they can do their job more effectively and efficiently. This is accomplished by providing actionable information that is readily accessible to workers at the right time to help them make better decisions on behalf of children and families. These tools are widely used by professionals in other professions and should be part of CCWIS.

The future is cognitive computing

Cognitive computing refers to systems that learn at scale, reason with purpose and interact with humans naturally. These systems aren't programmed; they're trained to sense, predict, infer and, in some ways, think, using artificial intelligence and machine learning algorithms that are exposed to massive data sets. The systems improve over time as they build knowledge and acquire depth in specialty areas or domains like child welfare. In contrast to current computing systems, which require that rules be hard-coded into a system by a human expert, cognitive computers program themselves. They process natural language, make sense of unstructured data such as case notes, and learn by experience much in the same way humans do. These systems not only bring massive parallel processing capabilities to churn through enormous volumes of often fluid data, but also use image and speech recognition as their "eyes" and "ears," making interaction with humans more natural. The dynamic learning inherent in these systems provides a feedback loop for machines and humans to refine insights and teach one another.

Like some of the other capabilities discussed in this paper (for example, mobility tools and analytics), cognitive computing can enable new child welfare business models and change the way caseworkers and other professionals work. Government leaders can take on projects of previously insoluble size and complexity. Massive data sets from multiple programs and organizations can be combined with sophisticated analytics, natural language processing, and machine learning to help human experts synthesize findings and improve decision-making. For example, cognitive computing systems can combine data from education, substance abuse systems, healthcare and child welfare to identify the best programmatic and services options for individual children or families in a manner that would otherwise be impossible. The system can combine thousands of pages of permanency plans, case notes, medical records, investigative notes and images, school attendance records, and court documents to help recommend personalized service options to caseworkers.

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Cognitive computing will require collaboration and different types of partnerships, ones that extend across the public and private sector and into academic and research organizations. The capabilities enabled by cognitive computing may require government leaders to rethink their operating models. While some processes may be refined, others will need to be reinvented, and still others built from scratch. New skills and training will be required, such as developing the ability to design and frame appropriate challenges for cognitive systems. New ways of thinking, working and collaborating will invariably lead to cultural and organizational change, some of which may be challenging, particularly for managers accustomed to relying on their own judgment and experience to form decisions rather than working in a data-driven partnership. But these issues, like any transformation, can be resolved through an effective change management program.

In the context of CCWIS, child welfare organizations should be thinking about which data sets—both structured and unstructured—are the most valuable for their organization to access. They should be considering the long-term challenges that their organization could address by combining and analyzing those data sets. They need to identify the skills they will need in order to take full advantage of cognitive capabilities. And they need to consider who they can partner with on a business and technological front to pilot initiatives and optimize investments.

Realizing the promise of CCWIS

When the federal government initiated SACWIS in 1993, many states were not collecting child welfare data, at least not electronically. States received 75 percent of their funding from the government initially and then, in 1997, a 50 percent match for implementing S/TACWIS. Even though the only federal requirement for electronic data collection and reporting under S/TACWIS was for AFCARS, the funding stimulus jump-started child welfare data collection in the US and the technology was leading edge, for a time. With CCWIS, states and tribes now have a new opportunity to take advantage of advances in technology in order to improve the ways in which they collect, manage and utilize child welfare data. They will have increased flexibility to build systems that more closely mirror their practice models, and they will have several benefits: higher quality data than ever before, a greater ability to share that data among all of the health and human services organizations that make up the child welfare enterprise, and a case management system that does a better job of supporting the workers who provide services to children and families in the child welfare system. Ultimately, CCWIS will enable better outcomes for those children and families.

IBM Watson Health

Worldwide, health and human services systems are facing economic and technological unsustainability and other serious challenges that threaten their efficacy. Existing systems of care, wellness and support must come together with technology, data and expertise in order to help people live healthier and more productive lives. An opportunity exists to address this need. By utilizing a vast amount of untapped data from a variety of sources—clinical, genomic, behavioral and social factors—it is now possible to unlock insights for a holistic view of an individual.

With advanced analytics, this data can help drive more informed decisions. To achieve optimal outcomes at the point of impact, cognitive systems can help create new knowledge ecosystems that unlock the full potential of data. IBM Watson Health works to enhance, scale and accelerate expertise across the domains of health and human services, and to facilitate collaboration throughout the community of care. IBM Watson Health helps bring together individuals and organizations to provide access to tools and information that help everyone lead healthier and more productive lives.

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