

WHAT'S NEXT IN Digital

Dark Data Analytics

The Caseworker's Toolkit

External Systems



Courts



Education

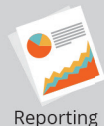


Financial



Contributing Agencies

Micro-Services



Reporting



Intake



Assessments



Financial



CCWIS



Case



Provider



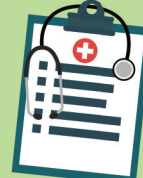
Permanency



Child Abuse and Neglect



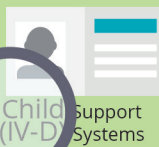
IV-E Eligibility



MMIS



Medicaid Eligibility

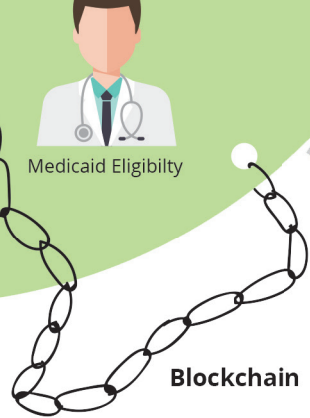


Child Support (IV-D) Systems

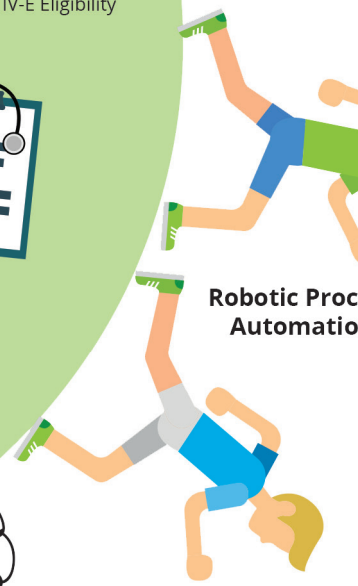
Anomaly Detection



Blockchain



Robotic Process Automation



THE CASEWORKER'S Toolkit?

Leveraging Advanced Technologies in Child Welfare

By Shelley Mills-Brinkley, Roberto Cota, Kathryn Miller, and Jamia McDonald

Child welfare caseworkers are inundated with high caseloads, many documentation requirements, and a lack of insightful support from antiquated systems. This leaves them with less time to interact with families and make any necessary fast-paced decisions. Time-consuming processes are often put in place to respond to adverse situations. Even when all steps are perfectly followed, something may inevitably happen to a child, which results in yet another protocol being created. These protocols tend to be manual at first and have a pile-on effect. Manual processes take precious time away from what is needed most in good casework practice—time to focus on the child's physical, psychological,

and emotional well-being, and that of the family unit as a whole.

Imagine smart technologies taking over some of these routine, high-volume, and repetitive tasks. Imagine your child welfare information system providing intuitive decision support suggestions. It may seem far-fetched, but not very long ago using mobile technology to do casework in the field seemed futuristic. Today smartphones, laptops, and tablets are a necessity and a critical part of a caseworker's equipment. Another example is the use of predictive analytics. What was once theoretical talk about the power of machine learning to support predictive analytics to help establish a course of action that abates risk and improves outcomes is no longer theoretical.¹ It is here and

in use. We are once again at an inflection point to test and understand how other advances in technology can be adapted and applied to improve social casework. Along with the induction of mobile in day-to-day casework, the possibilities that technology advancements bring to the modern casework practice are in sight. The only question is how quickly are we willing to move?

The Comprehensive Child Welfare Information System (CCWIS) federal regulations are a catalyst for infusing advanced technologies into child welfare casework. The CCWIS empowers child welfare agencies to break free from their current and dated monolithic systems—designed primarily as data collection and reporting tools—to modern, modular, and nimble solutions that support contemporary casework practices. What role can modern technologies, like robotic process automation, dark data analytics, anomaly detection, micro-services and blockchain play in technology support for casework? Let's examine some of the many possibilities.

Can a “Bot” Do It?

Robotic process automation (RPA) is a technology with the singular purpose of automating repeatable tasks. Unlike a typical automated system function, RPA is software that operates at the user interface level and mimics the activities of a caseworker using one or multiple applications. In the health insurance industry for example, a medical insurer used these automated users (“bots”) to process claim adjustments, with a 44 percent cost savings compared to manual entry and administration.²

Using “bots” nests with the CCWIS requirement to be efficient, economical, and effective by allowing administrative tasks to be automated, saving caseworkers and supporting staff precious time. For example, the foster family application process can take hours of worker time in repetitive tasks. Imagine having a bot take a scanned foster family application, enter it into the appropriate system, and even do a check in a separate system to determine if a mandatory lead inspection was completed in the home. This not only allows more time

to determine if the home qualitatively meets the expectations of a foster home, but it also provides an automated check of the lead inspection information without requiring a data exchange to be established with that system. This is one example. The challenge is to continuously look for those low-risk, high-volume, repetitive tasks that traditionally take time away from the caseworker and support staff and give those tasks to the “bot.”

Dark Data Analytics: Finding Unknown Connections Using Under-Exploited Data

As a new, relatively untapped source of understanding, “Dark Data Analytics” is the ability to draw insights from unstructured data, or data that have typically never been used for analytics. These data can be found in narratives, documents, email, and even video and pictures. The data can reveal important interrelationships—especially across health and human services programs and data repositories that were previously difficult or impossible to determine. With the explosive growth of technologies such as natural language processing and semantic analysis, deriving insights and drawing conclusions from these data has never been more real—or more important.

Caseworkers make hundreds of determinations every day based on years of experience. This experience brings lessons learned to achieve a higher rate of positive outcomes to meet the needs of the children served. In many states, decades’ worth of data sit buried in narratives throughout systems. This is dark data—hidden and unmined by current analytic tools—data that detail caseworkers’ experience with families, services, and outcomes. How can dark data knowledge and experience be systematically leveraged to provide insights to caseworkers of all levels of expertise to create positive child outcomes more quickly?

There are many examples of dark data analytics in use today in the commercial sector. For example, retailers use dark data analytics to drive highly personalized shopping experiences.

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Likewise, by leveraging powerful data analytic tools, child welfare agencies can have enhanced information to drive improved program outcomes. A variety of documented risks are lurking just under the surface of the agency's data. Take the risk of a child becoming a human trafficking victim. There may not be an obvious indication during a particular visit, but key descriptions of interactions documented in the case notes over time may alert the caseworker of the possibility. Use of dark data analytics can provide the caseworker with insight to evaluate and take preventive measures if the situation warrants.

Anomaly Detection: Finding the Mistake Easily

Anomaly detection systems use advanced deep cognitive learning approaches such as neural networks to identify atypical data patterns. These anomalies often translate into fraudulent activity or errors in data that were not prevented by traditionally established system controls. Banks have long implemented anomaly detection to catch potentially fraudulent transactions at ATMs or through online software to prevent misallocation of funds.

Anomalies in data can mean many things to a child welfare agency, from basic worker typos to growing patterns of concern within a case. In its most basic use, spotting anomalies in data is a proactive approach to monitoring data quality, which is a requirement for CCWIS. From a supervisory or program management perspective, cases that have outliers in specific areas can be targeted for further analysis or investigation to support data quality standards.

In a field where subjective data on multiple dimensions are used to determine complex and difficult decisions, anomaly detection can provide enhanced decision support capabilities. For example, if a caseworker enters a safety assessment evaluated as "safe," but the case lacks the typical supporting evidence, anomaly detection can "see" the facts. Without defining and building specific data validations into the system, the system can detect unusual or abnormal data and can quickly signal

that something is askew that requires deeper investigation.

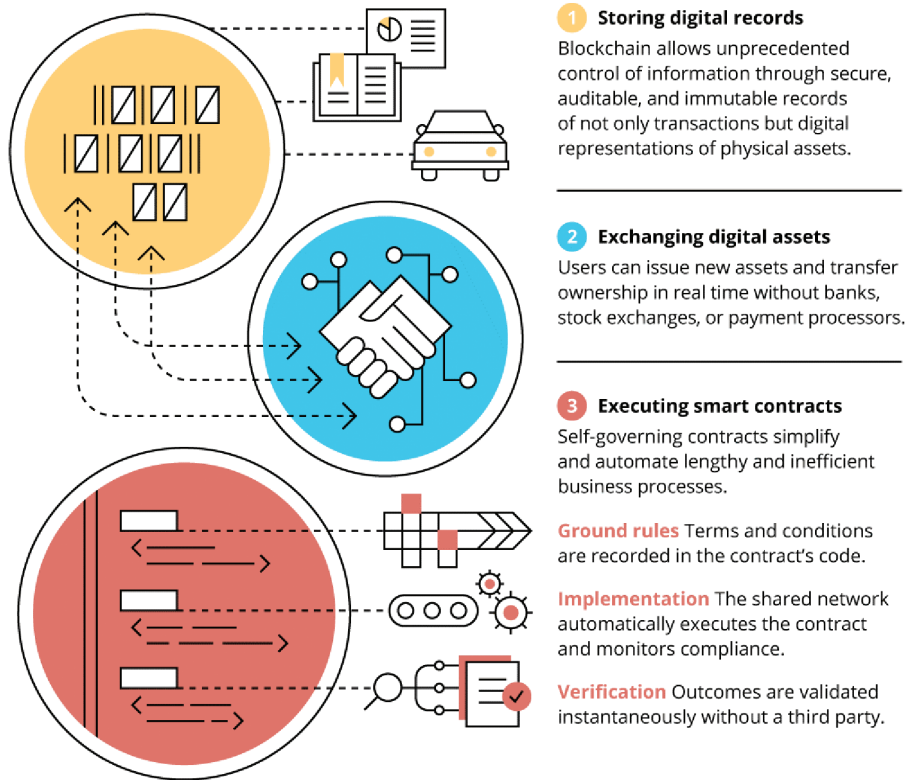
Micro-Services: Rethinking Traditional "Monolithic" Systems

Micro-services are an approach to application design utilizing small modular services, each running in its own process and communicating with other services. They are built around business capabilities and are independent, allowing simpler deployments and less impact to operating areas. Because these services are smaller and represent more focused functional processes, they can be developed and implemented more easily and with minimal disruption to the system of record and business users.

Why is this important? The data exchanges required by the CCWIS with courts, education, Medicaid claims, and child welfare contributing systems are likely to be leveraged

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Figure 1. Three Levels of Blockchain



across multiple business processes and serve multiple purposes. Although a single massive data exchange within each entity may technically work, micro-services make these interfaces easier to build, prevent a single point of failure, allow greater flexibility in phased implementation approaches, and are easily scalable and modifiable to meet the needs of the casework business.

The CCWIS requires system modularity. Modular systems typically have more failure points and more dependencies on infrastructure stability. Due to the nature of the work, child welfare systems require stability around the clock, every day of the year. Employing self-monitoring and self-healing capabilities within the micro-services solution and infrastructure provide an extra layer to insure that impacts to connectivity are detected early and resolved as quickly as possible.

Blockchain: A Better Way to Identify People in the Digital Age

Blockchain, the foundational technology behind the famous cryptocurrency “Bitcoin,” is making its way

into the public sector. Blockchain enables the transfer of value. Defining value beyond money is where some of the most exciting opportunities for blockchain exist. Blockchain is a distributed ledger, or database, that records digital interactions and is designed to be secure, transparent, immutable, and auditable, without having to rely on a trusted intermediary.

The financial industry has been exploring and embracing blockchain technology. Globally, governments are also taking an interest and are actively exploring blockchain uses. Estonia has established digital identities for 98 percent of its citizens,³ in lieu of traditional identification documents such as birth certificates, social security cards, driver’s licenses, and passports.

Digital identity is at the core of the most effective uses of blockchain technology. Imagine gaining access to a child’s birth records and parent information, or other government service information and trusting its accuracy; or the elimination of duplicate children records in your systems. We can finally have an accurate and true digital identity for clients to provide more streamlined identity verification

processes and a better understanding of how the government is serving them across programs.

Summing Up

Thousands of children come into the care of our caseworkers every year. Caseworkers are tasked with caring for them at arguably the worst moments of their lives, all while following extensive decision-making processes and documentation guidelines. Advancements in technology present an opportunity to enable and support difficult and complex decision-making and alleviate time-consuming repetitive tasks. The technology is here and the CCWIS gives states and jurisdictions the freedom needed to explore and use these newer technologies in support of modern casework models. Are you ready to expand your digital toolkit? 🚀

Reference Notes

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3. <https://e-estonia.com/solutions/e-identity/>

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