

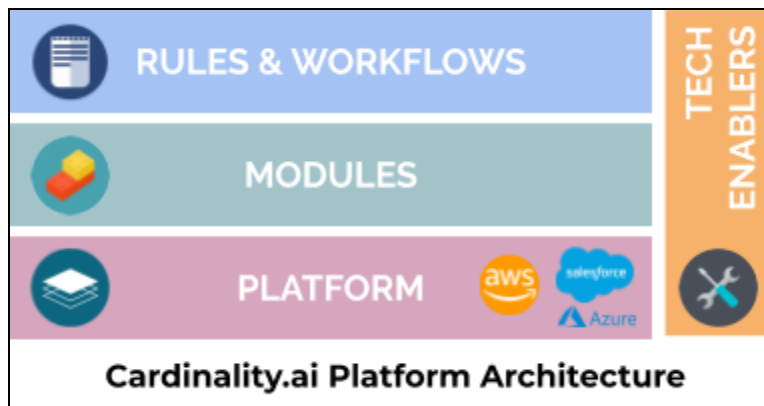
**NCCSD Systems Workgroup Vendor Forums – Q&A related to “Low Code/COTS”**

**Vendor Name: Elixir Lab USA Inc d/b/a Cardinality.ai**

**Q1. Since there is not yet a consistent term or definition for this approach, please give your company's description, including your terminology and definitions. How is this approach different from a "custom" build of a child support system? If you choose to do a quick demo or screenshots that would be welcome.**

### Low code/COTS Platforms

In the current digital age, a Platform approach is a preferred method of building large and complex applications, such as Child Support. A "Platform" approach, refers to a cloud-enabled, services-based architecture, with accelerators and tools (such as low-code) that can be used to easily create workflows and applications in an interoperable manner.



*"Low code" is a way to design and build software applications with minimal coding. Most Low-code enabled/COTS Platform comprises of:*

- An out of the box and cloud-agnostic Platform
- Modular technical and functional components with
- Technical enablers (such as low-code/self serve toolkits)
- Pre-built configurations, accelerators, rules, and workflows for Child support
- Framework for additional customizations

### Differences from a Custom built solution

Traditionally, applications require complex business process modeling that is translated into technical components (back-end or data access layer, front-end or presentation layer, and middleware or communication layer).

Alternatively, a COTS platform approach coupled with Low code is a framework with which we typically start with 50-70% out of the box/'vanilla' functionality and then perform a combination of configurations, low code development, and customizations by leveraging pre-built modules and interfaces. This approach is much faster than a custom build since it involves a Platform approach where users can constantly visualize changes and fine-tune to exacting requirements.

**Q2. With reference to the "core" functionality required by the OCSE Systems Certification Guide (Case Initiation, Locate, Establishment, Case Management, Enforcement, and Financial Management), how does this approach handle each area? In particular, since Child Support requires complicated financial processing, e.g.**

Modern COTS Platforms with low code come out of the box with most of the core and non-core requirements of the OCSE systems guide and can be configured and customized additionally to meet all requirements.

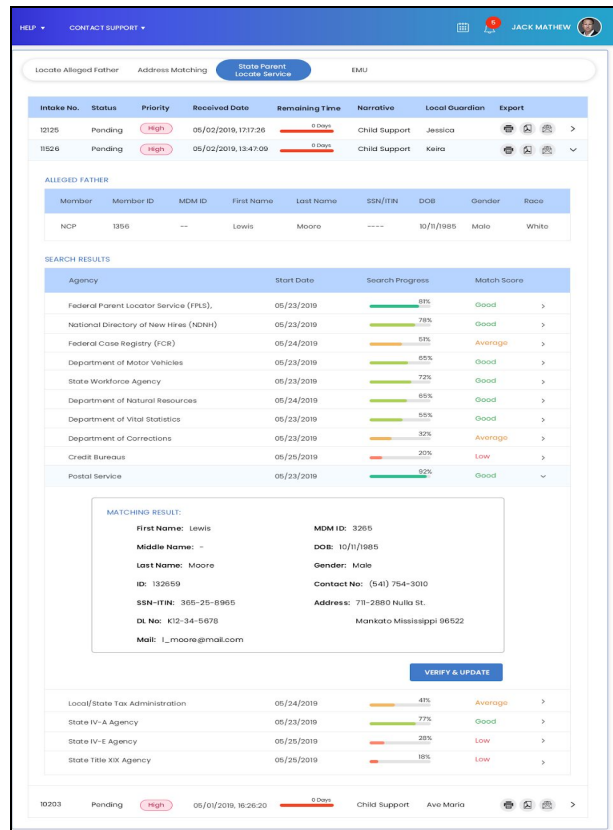
### Case Initiation

COTS platforms with out of the box citizen and employee experience portals can be used by CPs and NCPs to perform various activities such as applying for child support, viewing payments, making payments and conduct additional inquiries. The entire process can be carried out with conversational UI and enabled with Natural Language Processing (NLP), which means that the citizen experience can be as similar to having a conversation.

Additional experiences such as AI-enabled chatbots make it easy for citizens to easily access child support information. Integrated components such as workflow, rules engines that help to manage complex business processes involved in case initiation. The low code platforms come user interfaces that can be configured with drag and drop, which makes it easy to build/modify screens and processes. With this approach, the customization of features/functions can be done quickly.

### Locate

COTS Platforms come with pre-built connectors/APIs for Federal interfaces and State interfaces as well as UI for performing locate functionalities. Advanced algorithms with matching services vastly improve the accuracy of locate functions and customization can be carried out much faster compared to traditional development. The efficiency of locate functions is improved by employing AI capabilities such as bayesian self-correcting algorithms (which autocorrect search results automatically, based on new information), heuristics (automatically adjusting decisions with Machine learning) to improve the data confidence. Social enrichment capabilities such as social search, and utilizing AI to tag assets in images helps to better locate results. Capabilities such as automated workflows, rules engine enable duplicate identification,



automatic notifications, retrieving content, etc.

## Establishment

Utilize pre-built connectors and API's to connect with courts and major service providers. The platform with a low code approach brings in pre-built interfaces and workflows that can be modified for carrying out establishment out of the box, as shown in the sample image to the right.

The pre-built workflow configurations help with establishing paternity. The COTS platform can also be easily with web interfaces configured to handle intergovernmental requests for coordination and communication.

## Case Management

Case management functionality is available out of the box with most COTS Platforms. They are specifically engineered to address the complexities of a case management system with built-in

Intake No.	Status	Priority	Received Date	Narrative	Local Guardian	Enforcement	Arrears	Export
42125	In-progress	High	05/02/2019, 17:17:26	Child Support	Jessica	Active	2500\$	[Icons]
12574	In-progress	High	05/02/2019, 17:17:26	Child Support	Jamesh	Active	4960\$	[Icons]
45874	In-progress	High	05/02/2019, 17:17:26	Child Support	Krish Wink	Active	3250\$	[Icons]
65892	In-progress	High	05/02/2019, 17:17:26	Child Support	Christopher	Active	2000\$	[Icons]
78452	In-progress	High	05/02/2019, 17:17:26	Child Support	Jessica	Active	2800\$	[Icons]

workflows and rules that help to recognize the missing information, routing of cases and assignments of cases. They also contain embedded content management systems to capture artifacts such as document, image, video, and audio. Most business functions are addressed with prebuilt UI and workflows for most of the types of cases and can be customized for additional cases as well.

## Enforcement

Child support focused Platforms come with pre-built connectors/API's for federal interfaces and endpoints for connecting with State interfaces for carrying out enforcement actions.

These out of the box capabilities helps to speed up the integration with external systems. In-built rules engines with automated workflow capabilities allow the system to automatically handle enforcement actions such as Income withholding, federal tax offset, passport/license denials based on configurable parameters without human intervention. The platform is highly configurable. Also, the content management system assists in generating required documents for enforcement actions. And the built-in communications and notifications modules can be configured to notify appropriate stakeholders easily.

The screenshot displays a web-based interface for managing child support cases. At the top, there are navigation elements including 'PCA', 'Needs Attention', and a search bar. Below this is a table of cases with columns for Case No., Priority, Received Date, CP, Enforcement, Arrears, and Export. Two cases are listed: 65892 (Medium priority) and 78452 (High priority). Below the cases table, there are sections for 'NONCUSTODIAL PARENT' and 'SUPPORT ORDER'. The 'NONCUSTODIAL PARENT' section shows details for Lewis Moore, including SSN, DOB, and Address. The 'SUPPORT ORDER' section shows Order No. 23344, Order Date 01/12/2019, Payment Frequency: Weekly, Amount: \$100, and Last Paid Date: 03/12/2019. Below these sections are buttons for 'Notify', 'Create payment Plan', 'Generate Notice', and 'Upload Documents'. The bottom section is a table of enforcement actions with columns for Select, Enforcements, and Status. The table lists various actions such as Credit Bureau Reporting, Income Withholding Order, Federal Tax Offset, Administrative Offset, Passport Denial, Financial Institution Data Match (FIDM), Unemployment Compensation, Judicial Enforcement - Contempt, State Tax Refund Offset, Lottery Intercept, Gaming Offset, Real and Personal Property claims, and Medical Support Enforcement.

Case No.	Priority	Received Date	CP	Enforcement	Arrears	Export
65892	Medium	07/01/2019, 17:17:26	Christopher Web	Active	20005	[Icons]
78452	High	05/02/2019, 14:18:48	Jessica Summers	Active	28005	[Icons]

Name	SSN	DOB	Address
Lewis Moore	004620000	10/11/1985	7245 US-31, Indianapolis, IN 46227

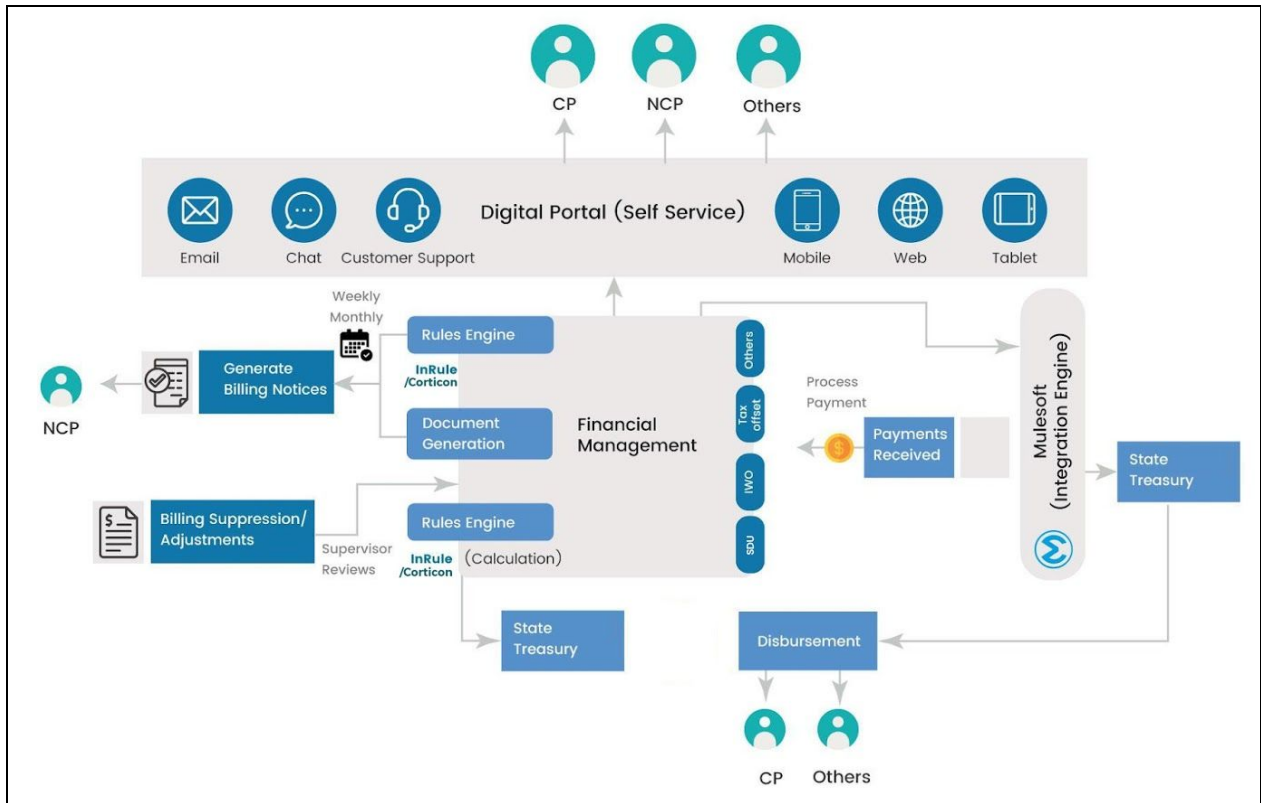
Order No: 23344  
Order Date: 01/12/2019  
Payment Frequency: Weekly  
Amount: \$100  
Last Paid Date: 03/12/2019  
Amount in Arrears: \$2500

Select	Enforcements	Status
<input type="checkbox"/>	Credit Bureau Reporting	Active
<input type="checkbox"/>	Income Withholding Order	Suppressed
<input type="checkbox"/>	Federal Tax Offset	Suppressed
<input type="checkbox"/>	Administrative Offset	Inactive
<input type="checkbox"/>	Passport Denial	Active
<input type="checkbox"/>	Financial Institution Data Match (FIDM)	Active
<input type="checkbox"/>	Unemployment Compensation	Suppressed
<input type="checkbox"/>	Judicial Enforcement - Contempt	Inactive
<input type="checkbox"/>	State Tax Refund Offset	Active
<input type="checkbox"/>	Lottery Intercept	Active
<input type="checkbox"/>	Gaming Offset	Inactive
<input type="checkbox"/>	Real and Personal Property claims	Inactive
<input type="checkbox"/>	Medical Support Enforcement	Suppressed

## Financial Management

The low code approach to financial modules utilizes pre-built financial models specifically designed for Child support financials. The platform typically contains pre-configured federal rules for accruals, distribution, and disbursements, which can be configured to meet the needs of the State using a centralized, user-friendly drag/drop or excel like rules engine.

Modern platforms keep all rules in a self contained external module, for reusability and ease of maintenance. They also integrate with most commercially available rules engines such as Corticon, InRule, and Open source Camunda. The advantage of a rules-based approach is that the business rules are extracted out of the application and stored in a dedicated rules repository. Changing the business rules becomes a matter of changing rules within the repository-not coding.



An effortless and secure integration framework allows the application of blockchain for distributed ledgers to track disbursements and predictive analysis algorithms to predict the failure of payments by NCP.

The platform’s inbuilt configuration gives unlimited flexibility to update the system with rules and workflows. The modular approach to platform design has made it smooth to carry out customization on top of the base features. Also, the fully responsive, configurable employer portal allows employers to track payments made against their employees’ child support obligations, also check the status of payments made. In case of failure, the payments can be reinstated using alternative payment methods. An integrated Employer portal acts as a single solution to handle IWO, payments, employee profiles, etc.

**Q3. What COTS or other products are used in conjunction with this approach to give a state a fully functional system?**

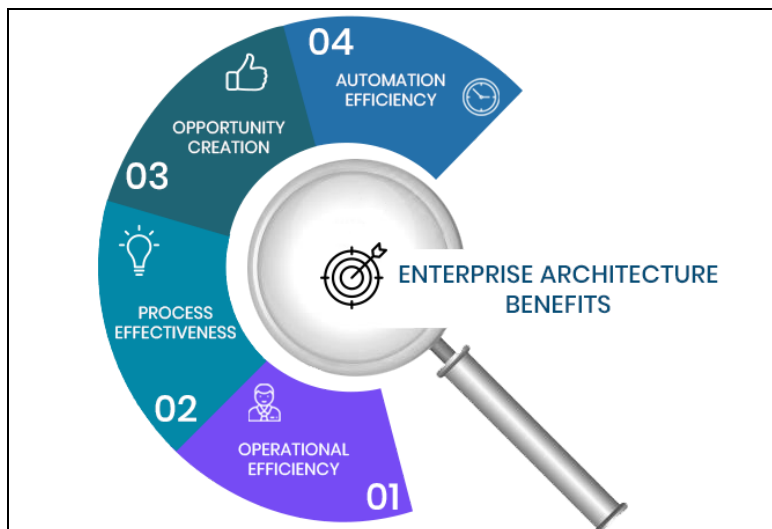
As agencies embark on digital transformation journey it is critical to have a sound architecture plan in place which aligns well with the agencies goals, because it is not just about adding new technologies but also building new structures and processes.

As new technologies evolve at a rapid pace it is imperative to have a short-term, mid-term and long term plans based on various factors such as business priorities, regulatory needs, pain points, budget constraints, re-usability to protect existing investments.

The Agencies can adopt the following framework to determine the choice of COTS and other products as shown in the table below

Approach	Goals of each approach
Component Centric	This approach focuses on aspects as proactive replacement of components rather than waiting for the components to break down or sunset.
User Centric	This approach covers the aspects such as usability, accessibility to improve productivity and overall satisfaction of the end-user by providing great user experience
Data Centric	This approach covers aspects such as domain data models, integration (sharing), availability, security, storage in application agnostic way.

In order to have an alignment among the above approach, a proper enterprise architecture plan would help the agency in deriving the following benefits :



**01. Operational Efficiency** pertains to the Go-To-Market(GTM), cost reduction, and quality benefits

**02. Process Effectiveness** relates to the set of provisions for improvement of process to improve outcomes efficiently while improving productivity

**03. Opportunity Creation** refers to the provision of a mechanism that ensures steady, future opportunities for improvements that will result in implementation of the new strategic initiatives

**04. The Automation Efficiency** is a benefit that provides for any future reduction in costs by the alignment of technology planning to the strategies of the agencies, and magnify efficiency. Enterprise Architecture here can be used in the assessment of the benefits of the impact of the new systems and emerging technologies. An example would be to focus on the strategic use of a specific technology.

We fully leverage the components provided by the Infra providers such as AWS / Azure (to ensure that costs are optimized) . A detailed list of cloud services that will be leveraged by Cardinality’s platform can be provided on request.

Following are select COTS components which Cardinality’s child support platform would be leveraging to provide a full suite solution to the State. These are only the sample components, several other COTS solutions may need to be added after analyzing the assets and infrastructure in place of the agencies

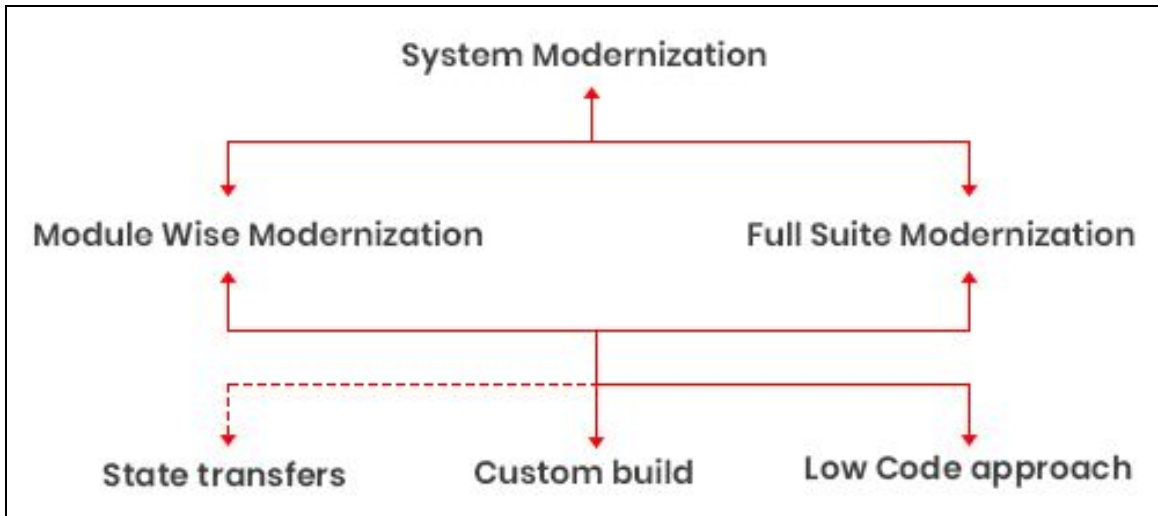
Components	Description	Recommended components
<b>Integration Layer</b>	The platform API Gateway and Enterprise Service Bus offers flexibility and enables easy integrating with different applications regardless of technologies that the external application uses including, REST, SOAP, JDBC, JMS.	Mulesoft, WSO2, Oracle ESB, Apache Kafka
<b>Data Management</b>	The platform includes a common data repository, document repository, and data lake (for analytics). The data management components embrace having a common data schema, which makes aggregation and reconciliation of data from multiple systems easier	Depending on choice of Data Lake/Data warehouse, several COTS tools like Snowflake, Redshift, SQL, Hadoop can be adopted
<b>Analytics and Reporting</b>	The platform provides dashboards and analytics tools. Using predictive analytics, agency staff can analyze KPIs to predict certain outcomes and provide the best	Cardinality comes built in Spago BI. Cardinality is fully integrated with leading Visual reporting providers like



	services to its citizens.	Tableau, Qlik, Power BI, DOMO among others
<b>Infrastructure</b>	The platform allows flexible deployment topologies including cloud traditional on premise deployment, and hybrid hosting options.	The Platform is cloud agnostic and can be hosted on AWS , Azure. It is also fully integrated with the Salesforce platform.
<b>Electronic Document Storage management system</b>	To store and access the scanned case artefacts	Case management systems such as Nuxeo, Filenet, Laserfiche, Sharepoint, Alfresco
<b>Security/IAG</b>	Built around open standards, integrations and extensions in the platform to any IAM / IAG solutions is effortless using open API's and connectors. The access including users and resources are managed through access management offering security. All communication are REST Based and SSL Encrypted over the network. Data in-motion and at rest are secured through AES Encryption	Cardinality is fully integrated with leading IAM Platforms like Forgerock, Open AM, Open ID, KeyCloak among others
<b>Workflow engine</b>	The platform has a workflow engine that can be easily configured to create custom processes, workflows, approval chains, forms and roles without coding requirement	Cardinality comes fully integrated with Camunda. It is also integrated with BPM engines like Decisions, Nintex
<b>Rule Engine</b>	The platform has an easily configurable rules engine for custom decision making	The platform is fully extensible across Inrule & Corticon

**Q4. Under what circumstances does it make the best sense for a state child support agency to consider this new approach versus other possible means of modernizing its child support system? Are there any characteristics of either a state’s IT system or its business processes that lend themselves more to this approach?**

We assume that States have the following major options when it comes to IT modernization.



*--- State transfer solution does not lend itself to full suite modernization efforts*

- We would now analyze each approach towards modernization and determine the best fit for Low code approach
- Of the above system modernization approaches, we would like to consider a module wise approach vs full suite modernization approach
- Module Wise Modernization: Module wise modernization allows us to update certain modules or add layers on top of the legacy systems. This approach the agencies experience marginal benefits of modernization without changing the core of the child support platforms
- When to use: To use this approach, when the agencies want to adopt a marginal approach towards modernization. Status Quo is maintained with incremental modernization on some of the key modules
- Budget by agencies also could be an important factor when agencies decide to implement a module wise modernization approach.

Our recommended approach is a full suite modernization approach by leveraging a low code platform. The benefits of a full suite modernization approach are well detailed in the earlier responses.

There are 2 approaches one could take for the full suite modernization approach

- 1) **State as a Systems Integrator** (similar to the ongoing modernization efforts by the State of Maryland)

- 2) **Full suite DDI by 3rd party vendor** (similar to the ongoing modernization efforts by the State of Indiana)

Few of the typical characteristics which lend itself to the modernization are

- 1) **Team:** State should have a dedicated modernization team comprising of Tech and Business users irrespective of the framework adopted ( State as an SI/ Vendor Led)
- 2) **Resources:** Significant resources including capital resources are required to undertake a full suite modernization
- 3) **Complete Buying from Business & IT:** One of the key characteristics which lend itself to the full suite modernization is the buy-in from all the decision-makers from Business to the Technology office to County officers
- 4) **Requirements capture:** Given that every county is unique in its requirements and the business process, one needs to have a robust requirement capture framework to ensure that the requirements of the business users across counties are met.

**Q5. Generally speaking, what should a state expect on the following: project timeframe, project cost, time to roll out statewide?**

Low code platforms can help bring the following advantages over State Transfer & or Custom build. It would significantly reduce the time for Go live including DDI Phase, reduce the project cost and help in quicker statewide rollout

**Project Time frame :**

From our experience and our extensive interactions with multiple stakeholders, the typical duration of Initiation & Development phase by leveraging a low code platform such as ours would be between 24-30 months ( a reduction of 12-15 months from a comparable go live using a custom development approach or a State transfer approach).

Post the Initiation & development phase, we recommend a phased rollout approach which typically lasts for 7-10 months depending on the learnings one encounters during the pilot phase.

In total, a typical DDI phase including a **Statewide roll out** would be between **31-40 months**.

**Project Cost :**

From our extensive research of analyzing 15 years of Child support modernization data using publicly available information, we believe that by leveraging a low code platform instead of custom build, the Agencies would be able to reduce the development time & cost by **25-30%**. These savings are generally a result of faster rollouts, lesser iterations, ability to add flexible workflows to the agencies without high degree of incremental coding.

From our interactions with various stakeholders, we have observed that the costs associated with the modernization depends on the core modules being modernized.

Agencies can adopt a module wise modernization approach or adopt a full suite modernization approach.

There are various factors which affect the cost of the DDI phase for the agencies. We have observed that for the full suite modernization approach, agencies might need to budget \$40-\$70 mn for the duration of 31-40 months.

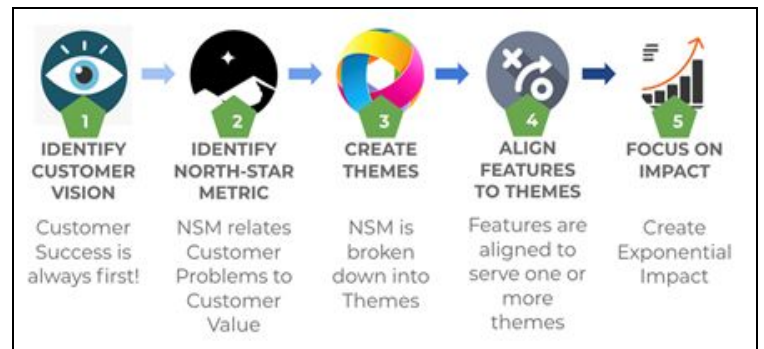
**Q6. The states don't want to again face the major system build and cost challenges once they have modernized. If they choose this approach, what is the continuous improvement model for the platform? Will the states benefit from the vendor efforts without major costs?**

Most COTS/SaaS (Software as a Service) Platforms, such as Salesforce and Cardinality are very well supported in terms of continuous improvement. Cardinality is a purpose-built Human services platform, with the intent of Consumerization of Human Services. Consumerization will help the users and citizens, workers and leadership enjoy delightful experiences with Enterprise-grade feature sets such as security, compliance in their everyday software tools at work.

Pure-play Human services focused Platforms cater to constantly evolving and highly relevant needs, for agency workers and constituents along with the cutting edge innovation, as well as combine the best practices from multiple implementations for common benefit.

**Platform Maturity Approach**

Human Services focused COTS Platforms focus on solving key problems as opposed to focusing on 'feature fixated' cycles. They adopt a Vision oriented continuous improvement model, as opposed to a typical 'Feature-based roadmap' as shown in the image below.



The best Platform vendors work closely with customers to understand their Vision and align the Platform's evolution to their Success. Platform features are aligned to success themes, which vastly helps with prioritization and impact/value-driven approach to continuous improvement.

For e.g., we introduce AI Chatbots across multiple themes to vastly improve user engagement for Citizens/NCPs/CPs/Employers, as well as to help Workers easily navigate eligibility, obligations. The same chatbot can be used by Leadership to understand trends and patterns in case handling.



Typical Continuous improvement Platform upgrades are carried out twice or thrice a year and include technical upgrades, as well as functional upgrades depending upon the type of Platform chosen.

This approach will provide scalability, and flexibility while avoiding "vendor lock-in" to a specific partner or

technology stack and major costs to the state.

## **Q7. What are the most important things that a state should do to prepare for this approach?**

The following steps are recommended as a precursor to any large IT modernization program

### **Shared understanding:**

For programs involving public assistance, a shared view among the stakeholders about the underlying causes of the problem is an essential foundation for effective product/platform implementation

### **Common vision and Organizational alignment:**

Re-alignment of understandings about goals, roles and outcomes, and a shift away from narrower departmental objectives

### **Conduct Business Needs assessment:**

Conduct needs assessment from a Business requirement, gaps, current backlog and customer experience standpoint

### **Conduct Technical assessment:**

Conduct thorough assessments around IT Strategy, Current State, Risks and Long-term viability

### **Detailed Cost-benefit analyses and Feasibility study:**

Conduct studies around cost-benefit analysis, feasibility, operational viability and overall fit with the organizational pattern

### **Detailed Business Process Analysis:**

Evaluate current manual and automated processes, Gather known future requirements, and process changes

### **Pain point identification and prioritization of needs:**

From all the exercises above, identify all pain points and prioritize key business and technology needs. This will help significantly with the identification of the right approach to IT modernization

**Q8. How does this type of child support system fit with states who need to have an enterprise approach? Many of the platforms seem to be creating the same old silos on a new platform. Is it possible to have one casefile for each person/family across the systems (child support, SNAP, TANF, family services, etc.)**

*We believe that the full benefits of modernization can be fully achieved only when the State has a 360 degree view of the constituents.*

*Without fully integrating the various agencies such as SNAP, TANF, Welfare Services, the States will not be able to leverage the full benefits of modernization.*

Our platform was selected and used in the State of Maryland Child, Juvenile, and Adult Management System (MD-CJAMS) which is the statewide case management system of record for Child Welfare, Adult Services, and the Department of Juvenile Services. The system handles case management, provider management, fiscal management, and Title IV-E program needs for the Maryland Department of Human Services and related activities for the Maryland Department of Juvenile Services.

In addition to these elements the system provides critical data exchanges for health records, case information, educational information, and court information. The MD-CJAMS is a multi-tenant system that provides a different user experience for users based on agency, role, and case type; this allows critical case management and data management to occur seamlessly while users perform daily duties within the system.

The system represents the only open source multi-organization CCWIS compliant multi-agency platform in the United States. We have seamlessly migrated close to 12 million records in the last 4 months for departments such as Health and Human Services, Maryland. MD- CJAMS platform is used by around 5000 caseworkers in the state of Maryland.

To provide the integration, State uses 2 critical components, Master Data Management platform (MDM) and Structured Data repository (SDR) engine. By having intra agency data sharing agreements in place, State of MD has been able to seamlessly create one “golden record”.

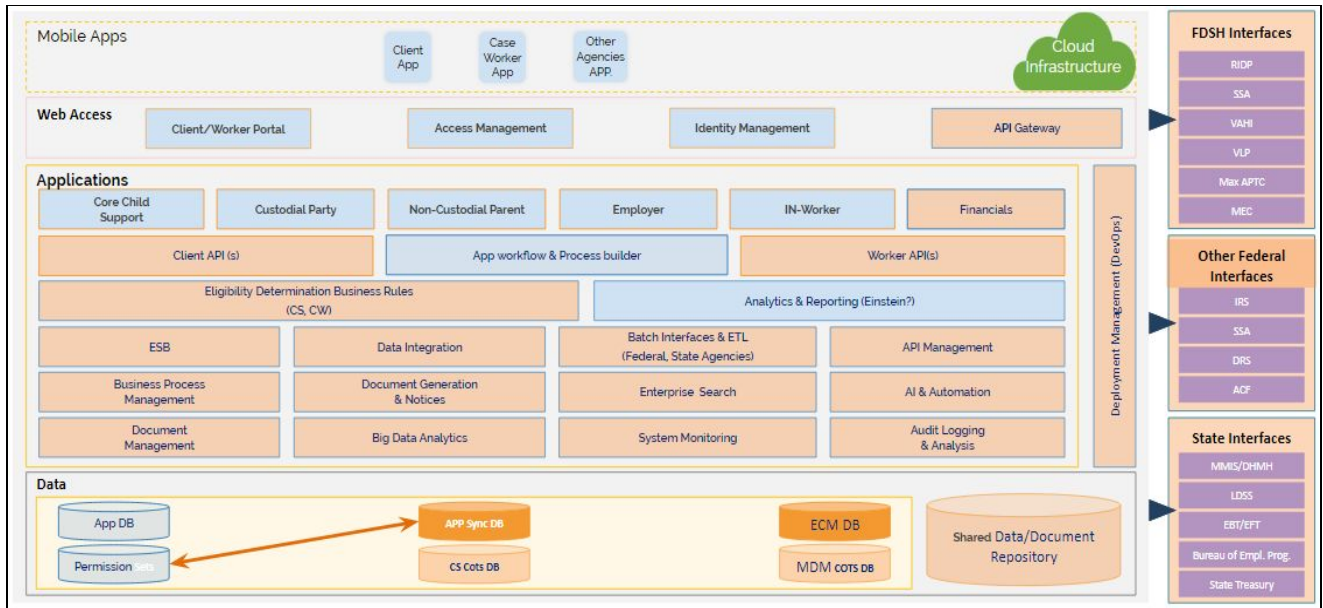
The Golden record of Maryland is one unified view of the constituent across agencies (Family Services, TANF, SNAP, Child support) so that agencies could have a seamless

Cardinality allows to have one case file for each person/family across the systems (child support, SNAP, TANF, family services, etc.) as our platform/solution/approach maintains a **single master reference source** for all critical business data. This helps in managing the data effectively across the systems. **Shared Data Repository (SDR) provides a 360 degree view and advanced analytics** across all programs and various product databases.

However to ensure a better level of data sharing and data normalization, one needs to have agreements between various agencies.

Following is the conceptual architecture diagram which allows data sharing between agencies.

MDM is a comprehensive method of linking all the critical data to a common point of reference. It is the process of managing, organizing and improving the quality of data.



A shared data repository (SDR) is a data store that allows synchronizing data with other applications through API. The API's communicate with each other through the agreed data sharing format/contract. The modern low code platform comes with an enhanced integration framework which makes it easy to integrate with external interfaces for sharing the data.

The sample screen below shows one unified view of case history for each person/family across the system.

