Closing the Analytics Inequality Gap
With a Value Factory Model Approach

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Introduction

The pervasiveness of data and pursuit of digital transformation is forecast to continue and accelerate. The worldwide big data market is projected to grow from $42 billion in 2018 to $103 billion in 2027.¹ Fueling that growth will be the 87 percent of organizations classified as having low business intelligence (BI) and analytics maturity ², those which are symptomatic to what we call the analytics inequality gap. Demand for actionable data insights continues to rise, with businesses that use big data seeing an 8-10 percent profit increase and a 10 percent reduction in costs.³ However, there are many obstacles that stall progress, including skill sets, processes, business culture, and technology. This paper addresses the technology side of that equation with a platform-based approach and best-practices methodology to help businesses accelerate their data analytics maturity while minimizing the costs, complexity and timelines that hinder progress. To illustrate the benefits, this paper will compare and contrast what most enterprises are still doing today – building analytics use cases with a “build and assemble your own” building block approach, to the experience of using an end-to-end purpose-built platform, with the comparison framed by a best-practices development methodology.

The Analytics Inequality Gap

Organizations today are seeking to power their businesses with data and analytics. Data collection has transitioned from periodic data points, to continuous streaming information. Forbes projects that more than 150 zettabytes of data will need analysis by 2025.⁴ The volume and diversity of our data continues to expand, at the edge with IoT devices, in the cloud with online services and infrastructure, in our connected devices, and in our data centers.

Analytics have become ubiquitous. Even consumers are bombarded with TV commercials from major tech firms touting how businesses are implementing artificial intelligence, machine learning and augmented reality to build better products, streamline operations, and reach new customers. Insurance companies are analyzing telemetry data to deliver personalized auto insurance. Jet engine manufacturers and airlines analyze data from 1000’s of sensors to improve the performance and safety of air travel. Utilities are deploying smart meters and smart lighting to optimize efficiency, costs, and customer experience.

At the same time, the analytics inequality gap keeps widening; all but the largest organizations struggle to overcome the cost, complexity and timelines needed to develop and implement use cases for data and advanced analytics. There are three common approaches used by most businesses:

1. Build your own
2. Integrate point products from niche vendors
3. Engage a major platform vendor or systems integrator (SI)

But most businesses encounter problems with each of these approaches. It’s too time-consuming and inefficient to start each analytics project from scratch. Few businesses have the requisite in-house data science expertise to implement the analytics models needed for predictive and prescriptive analytics.

¹ Forbes, 2019, ² Gartner, ³ Entrepreneur, 2019, ⁴ Forbes, 2019
Data silos inhibit cross-domain analytics and development of the *connected intelligence* that businesses seek. Creating a strategic and truly end-to-end analytics capability in-house can take years. Delivering real-time insights from disparate data sources often requires multiple tools, complex architectures and extensive infrastructure. Rip and replace approaches with vendor lock in are too expensive and are slow to implement. And specialty solutions from niche vendors require extensive integration and specialized skill sets.

These challenges have led to the widening *analytics inequality gap* where although many tier 2 and 3 businesses are making some progress with data and analytics maturity, they are simultaneously falling further and further behind tier 1s.

**Introduction to TCS Connected Intelligence Platform**

To help close the gap, TCS Digital Software & Solutions Group has introduced the Connected Intelligence Platform (CIP) – a scalable enterprise insights platform that accelerates business outcomes with data and analytics. CIP pre-integrates all the technology necessary to help businesses move faster. CIP unifies big data management, stream processing, AI/ML engines and real time analytics to fulfill customers’ needs for an easy to use platform for building analytic use cases from all types of data – from data ingestion to data transformation to data analysis to advanced analytic modeling, without requiring a Ph.D. in data science, coding or system integration.

*Figure 1: TCS Connected Intelligence Platform*
Comparison of CIP to building block approach

Unlike the typical situations where businesses struggle to stitch together numerous components, whether they come from niche vendors or major platform players, CIP is fully integrated to help avoid the need for multiple tools, reduce complexity, and increase speed. The low-code software platform ingests, processes and analyzes big data (internal/external, IoT, real time) to quickly convert data and information into visual and actionable insights. With no need to integrate multiple components, business users can get set up in just a day and start delivering use cases immediately. Because many organizations have made some progress with analytics, CIP is designed to complement and embrace customers’ existing IT environments and tools to keep costs down.

With CIP, customers get big data without the typical skills overhead, so existing teams can start immediately. CIP supports multiple use cases on a single platform and can be deployed on-prem or in the cloud and allows customers to continue to use current reporting tools. Furthermore, CIP has built-in enterprise-grade security and data privacy controls to support evolving regulations. Finally, to maximize value, TCS doesn’t charge by data volume. Customers can use as much data as they need, and capital expenditures are minimized with subscription-based pricing.

Value Factory Model for Use Case Development

To support accelerated development of analytics use cases on an ongoing basis, organizations need a methodology that standardizes best practice into its key steps. TCS has documented a 10-step Value Factory Model so that practitioners can follow best practices with a repeatable process. This model is intentionally generalized, in that it is applicable regardless of the user’s choice of individual tools. CIP is explicitly designed as an integrated solution to leverage this model for delivery of analytic use cases by providing all the components necessary to move from ideation to production.

Figure 2: Value Factory Model for Data Analytics
Value Factory Model with and without CIP

TCS Connected Intelligence Platform’s architecture supports the Value Factory Model approach with end-to-end data management and analytic features and functionality to accelerate business value realization from big data. Enterprises that practice the Value Factory Model approach with a supporting architecture and ready-on-day-one capabilities like those available in CIP will more quickly start empowering business stakeholders and front-line systems with real-time analytic insights. Technology Partners that do the same gain a buy one, serve many system to develop, deliver, and support branded analytic-driven apps and services for their clients.

The below table describes implementation of an analytic use case using the Value Factory Model both with and without CIP.

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<thead>
<tr>
<th>Component</th>
<th>With CIP</th>
<th>Without CIP</th>
</tr>
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<tbody>
<tr>
<td>Data Modeling</td>
<td>The CIP Data Modeling component provides the ability to physicalize a data model in any of its native data stores (Hive, Hbase, Postgres) directly from an Excel template or via reverse engineering. No coding required.</td>
<td>Physicalization of a data model would require a 3rd party tool such as Erwin or hand coded DDL. Each destination storage technology has its own rules, interfaces, and skills.</td>
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<td>Operational and Analytic Data Stores</td>
<td>Both operational and analytic data stores are automatically installed when CIP is setup. Leveraging these data stores for batch or real-time use cases is as simple as selecting the desired data store when creating your data model.</td>
<td>Each data storage technology needs to be separately licensed, installed and integrated before it can be used. Once setup, each data store is likely to have a unique UI and skill set for use.</td>
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<td>Data Source Catalog</td>
<td>CIP has a built-in data source catalog to facilitate the setup and curation of data sources. The Data Source Catalog is a component of CIP with a consistent UI and workspace.</td>
<td>Data catalogs are typically high-end, proprietary, 3rd party tools that operate outside of your normal analytics workflow.</td>
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<tr>
<td>Data Pipeline Processing</td>
<td>A sophisticated data pipeline component for both batch and real-time data processing is built into CIP. This tool operates similarly to the other CIP components and includes a drag and drop interface and low code approach to data transformation.</td>
<td>There are many data pipeline or ETL tools on the market. Typically, these tools need to be integrated with other 3rd party components to create an end to end use case. Depending on the tools selected, you might need separate tools for batch and real-time processing.</td>
</tr>
<tr>
<td>Component</td>
<td>With CIP</td>
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<tr>
<td>Data Set Catalog</td>
<td>CIP has a built-in data set catalog for sharing data with external users and applications via RESTful web services. Setting up a data set is as easy as writing a SQL query.</td>
<td>Sharing data with external applications is typically complex. Depending on the data storage technology used, there are a variety of ways to integrate. This is usually a fairly technical endeavor.</td>
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<tr>
<td>Data Visualization</td>
<td>CIP comes with a data visualization library that streamlines the process of creating charts and graphs using Javascript. You can also easily integrate with most 3rd party visualization tools.</td>
<td>Data visualization typically requires 3rd party tools or acquisition of tools and skills to create complex charts by hand.</td>
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<td>Data Science</td>
<td>CIP comes out-of-box with multiple components designed to leverage the curated data in CIP and accelerate and streamline the process to build and operationalize analytic data models.</td>
<td>There are no tools designed explicitly for curating the data for analytic data models. This is not typically an automated process. Operationalizing the data models once they are created is time consuming and often involves rewriting the data models in an enterprise language such as Java or C#.</td>
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<td>Decision Management</td>
<td>CIP comes with a rules engine as a component of the platform. This rules engine can be used to create both simple and complex rules that can be executed in either batch or real-time.</td>
<td>Rules engines are typically external applications. For many bespoke use cases decisioning is hard coded into the application.</td>
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<td>Workflow Automation and Audit/Log Management</td>
<td>CIP comes with a job scheduler and has audit/log management components built-in to help the enterprise automate use cases and manage all the jobs executed on the platform.</td>
<td>Job schedulers are common but typically external to other applications. Audit logs are generated at the individual application level, therefore the logs for a typical use case could be fragmented across several applications.</td>
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<td>Administration</td>
<td>CIP contains built-in administration components for user, role and project management, data and process classification, and data privacy. These components are designed to help organizations better govern their data and processes and comply with evolving regulations, such as, GDPR and CCPA.</td>
<td>All these components require separate tools that need to be integrated at several touchpoints to provide an effective solution. Often organizations forgo one or all of these components to reduce the complexity of the final solution.</td>
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Conclusions and Essential Guidance to Readers

Demand continues to rise for both batch and real-time data insights, AI, ML and even deep learning. Analytics practitioners, from end-user businesses, as well as from Solution Provider organizations, require solutions to speed the time to value and meet demand. They must minimize complexity and the need for specialized skill sets. These solutions unify big data management, stream processing and AI/ML engines to fulfill their needs for easily, and repeatedly, building end-to-end analytic use cases from all types of data.

The TCS Connected Intelligence Platform leverages the Value Factory Model to simplify and accelerate implementation of analytics use cases. It provides an effective, flexible, and TCO-efficient way to accelerate the development and deployment of IoT, big data and analytics initiatives with out-of-the-box pre-integrated, low-code, end-to-end capabilities. CIP can help bypass 12-24 month development cycles with a future-proof approach and platform which supports continued development of new use cases. CIP aligns to the Value Factory Model to provide superior results, with less effort, in a shorter time, at a lower cost, with reduced requirements for specialized skill sets.

For More Information

To learn more about TCS Connected Intelligence Platform, please click here, or contact us at: tcs.dssg@tcs.com

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