WHITE PAPER

CIO's guide to becoming a strategic business executive

Shifting the conversation from technology to opportunity

Anaplan

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Written for CIOs, CDOs, CSOs/CISOs, and other IT leaders, this paper introduces the Anaplan platform and the value it can deliver toward your digital transformation goals. The paper will help IT leaders understand the need to align technology priorities and architectural roadmaps based on a forward-looking, innovative cloud-based platform. The paper highlights the Anaplan platform's architecture, security framework, and integration capabilities.

From task overload to delivering measurable business value

Many CIOs and IT leaders find themselves stuck in the technology delivery business when they would rather be providing measurable business value to the enterprise. "Digital disruption has placed technology at the heart of most business discussions," writes Susan Moore of Gartner. "Yet many CIOs are still fighting for a seat at the strategy table."[i] They find themselves caught between demanding users, executives who drive business priorities, and finance teams looking to maximize profits and cut costs—all while maintaining a technology stack that they inherited from someone who moved on a decade ago.

Rethinking how to deliver and evolve technology solutions

CIOs are asked to simultaneously reduce and rationalize IT footprints and infrastructure while delivering greater value and insights as strategic business leaders—no small feat. As their roles evolve, CIOs broker transformations across functions. From the bottom up, they modernize infrastructure and the architecture stack. From the top down, they organize, operate, and deliver technology capabilities in new ways. They become strategic advisors looking for the right systems and solutions to make the business successful. They are concerned about staying on top of product, service, and technology innovation like the Internet of Things (IoT), machine learning (ML), artificial intelligence (AI), blockchain, augmented and virtual reality (AR/VR), and conversational systems. CIOs think ahead about technology advancements and opportunities and then articulate the business implications to their CEO and the board. The following are some of the key priorities that IT leadership teams try to balance.

"Digital disruption has placed technology at the heart of most business discussions," writes Susan Moore of Gartner. "Yet many CIOs are still fighting for a seat at the strategy table."

- Susan Moore, Director of Public Relations, Gartner

Key priorities that IT leadership tries to balance

- **Cloud adoption.** The enterprise migration to the cloud continues at a breathtaking rate. Challenges remain in connecting on-premise applications and data to those in the cloud in the near term and adopting an enterprise-wide strategy to migrate everything to the cloud in the long term.
- **Application and vendor rationalization.** Although application and vendor rationalization initiatives have existed for years, many companies have far to go in their efforts to reduce the number of applications they manage. Shadow IT functions slow these efforts down.
- **Total cost of ownership.** Cloud-based platforms are usually delivered at a lower operating cost than on-premise applications. CIOs look at how that translates in the long term, and look at greater benefits as the application extends to additional use cases and business areas.
- **Speed of innovation.** Applications and platforms that are faster to deploy tend to foster quicker adoption. Not only does faster deployment result in much lower development costs and faster time-to-value, it also accelerates the innovation cycle.

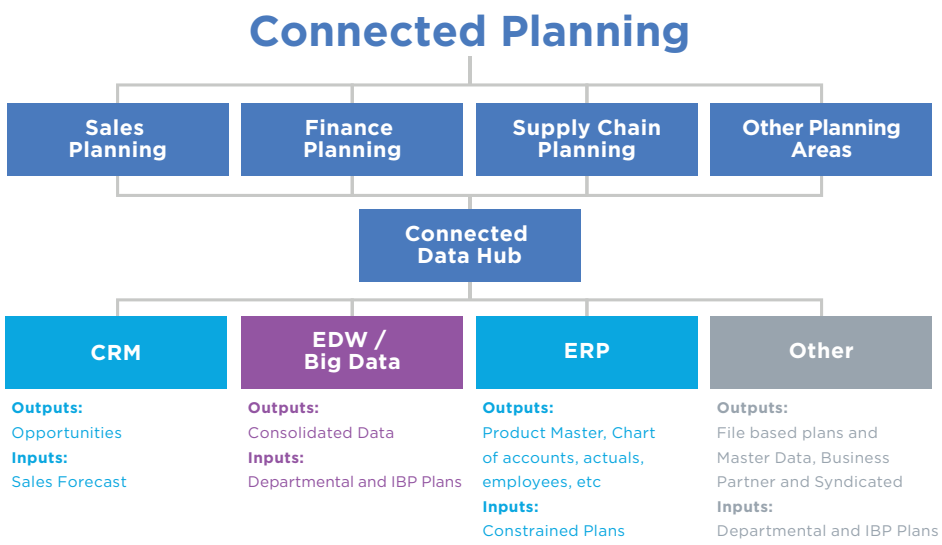
While balancing technology priorities against the criteria listed above, CIOs and IT professionals are also responsible for securing data and systems to ensure compliance and audit requirements. Cross-industry studies show that, on average, less than half of an organization's structured data is actively used in making decisions.[ii] This disconnect reveals the need for an enterprise data strategy. Accessing, cleansing, storing, and securing this data–from standard enterprise systems, cloud-based platforms, and unstructured sources—continues to be the focus of great IT investment and effort.

Data is increasingly multi-directional, thanks to new technology. Data is both produced and consumed by devices and systems at the speed of thought. An evolving digital mesh of smart machines connects billions of data points into a continuous digital experience. Privacy and security are critical to striking the right balance between the need to share information and being safe and assured of the right to privacy.[iii] Regardless of industry, with macro changes like these disrupting the status quo, CIOs have to make complex decisions about where to invest in technology in order to respond intelligently.

Harnessing the power of innovation without compromising key priorities

When it comes to planning, CIOs need a foundational platform that can harness the power of technological innovation without compromising their priorities. CIOs need a platform that brings data from any source, analyzes and processes data at a granular level, and connects the output in the form of actionable plans for the right people at the right time. It needs to be secure, flexible, scalable, forward thinking, and continuously available. At Anaplan, that's the core of a connected platform. Business users interact with a single platform to create plans across all business functions, including finance, sales, and supply chain. They can collaborate with each other in real time to drive business success. We call this Connected Planning. A platform that enables this vision is the *Connected Planning platform (as shown in figure 1)*.

Figure 1: The Anaplan Connected Data Hub aggregates all data needed for planning from existing systems and sources and serves it up through the Connected Planning platform.



Customer story:

Hewlett Packard Enterprise

The Anaplan platform was integral to an ambitious program at Hewlett Packard Enterprise to transform the IT landscape, move processes to the cloud, and reduce the number of applications in use by 75 percent, all in less than a year. The Anaplan platform, integrated with the company's existing CRM and ERP software, replaced legacy Excel spreadsheets to automate and standardize territory and quota planning as well as financial planning and analysis.[vii]

ERP, point solutions, and spreadsheet galore

Standard ERP systems are not able to provide this connected value. They try to stitch together a variety of planning applications, usually acquired through various acquisitions that share very little in common—with neither user experience nor data sharing mechanisms. Each has its own data and metadata integration methods, automation language, calculation language, and work flow, creating a very complex and disjointed technology stack. A team of administrators is needed on an on-going basis just to build and maintain these connections. These tools aren't always the best in-class solutions, but are acquired to fill a gap in a company's suite or in answer to competition. The solutions seldom work as promised and potentially put you at risk when it comes to flexibility, scalability, and even security.

Point-planning solutions or spreadsheets also create a segregated view of planning, only providing data for niche areas and producing numerous extracts of data. In these situations, in addition to your information being siloed, data is also at a risk from a security and manageability perspective because information is shared via email.

Whether it is salary information, corporate budgets, or sales commissions, business data should be confidential. Storing and updating this information in disconnected spreadsheets and then sharing in emails or uploading into different systems presents a huge security risk.

In turn, multiple data sources create an additional burden on IT to provide governance and ongoing support. Using point solutions or treating spreadsheets as if they were a database also creates size limitations and data staleness that limit agility responding to change or demand.

Spreadsheets simply cannot handle the complex dimensionality of business data. Any update or change in data has to be manually entered into disparate systems, dumped into various spreadsheets and reviewed in context of each silo of information before it can be used or compared to another silo's information. What a nightmare.

Business users can have little or no confidence in their planning data with such a convoluted trail. That's when such systems become a big headache for CIOs.

A platform to eliminate disparate systems and processes

The Anaplan Connected Planning platform helps CIOs and IT leaders meet these challenges head-on. The Anaplan platform delivers advanced planning technology in conjunction with or replacing existing ERP systems. And it provides a robust platform for future growth and expansion—all with documented ROI—that can scale with an organization growing in size and market share.

Connected Planning goes beyond standard ERP planning solutions to provide a platform for business users to connect financial, corporate, and operational planning. Planning then becomes collaborative and adaptable. Less time is spent on interlock, more on creating a future. A single Connected Planning platform replaces the need for multiple spreadsheets and point solutions, allowing aggregation, simplification, and governance control.

Key capabilities of a Connected Planning platform

There are several capabilities in the Connected Planning platform that are critical:

- **Cloud-native.** The Anaplan platform was designed to work in the cloud. Unlike some solutions, it is not legacy software application running in a shared data center. Because it is cloud-native, it can be implemented quickly and instantly made accessible to users anywhere in the world. The result is rapid time to value.
- **Multitenancy.** Anaplan delivers an architecture where one software application serves multiple customers. The advantage of multitenancy is resource optimization; instead of one instance of Anaplan and one server tied to one customer, multitenancy allows you to have one instance of Anaplan and one server used by multiple customers, which is far more efficient and cost-effective than multiple accounts for each customer. The system is scalable because you deploy the same software every time rather than to doing a custom set up for each customer.
- **Scalability.** The Anaplan platform leverages a patented in-memory, Java-based planning engine for calculation called Hyperblock, rather than conventional server-based on-premises computing. The platform's unrivaled modeling flexibility supports rapid calculation on large datasets—billions of cells and hundreds of models and use cases can be accessed by thousands of users.[iv] Scaling across servers does not slow down calculation on the Anaplan platform, so limitations imposed by server capacity are a thing of the past. Legacy solutions try to replicate Anaplan's scalability by breaking up applications and running them on multiple systems, but poor performance is the result. The Anaplan platform supports unlimited versions of plans and "what-if" scenario analysis of planning models. Common metadata and drivers provide guardrails for this flexibility. The Hyperblock technology is optimized for planning. Performance is not affected by a noisy neighbor because scaling across servers does not affect calculation speed.
- **Management/Administration.** The Anaplan platform offers enterprise-grade governance in the form of the first **application lifecycle management (ALM)** for in-the-cloud enterprise planning. Anaplan's ALM capability enables customers to effectively manage the development, testing, deployment, and ongoing maintenance of applications in Anaplan without disrupting the production environment. Anaplan's platform also offers auditing of user actions on models to enable administrators to understand and manage system usage.
    - For additional visibility and transparency, the Anaplan platform offers **Business Map**, a self-documenting tool that allows administrators and users to see how everything in the planning environment connects. Business Map shows all of the models in an Anaplan environment and documents how those models send data back and forth among them. In environments with multiple models and use cases, Business Map also helps administrators and model builders manage Anaplan integrations and processes.

Data-center level: Anaplan has made significant investments to strengthen the administrative control of the Anaplan platform, particularly with regard to data spread across geographies, data centers, and sub-organizational boundaries. Some of the key aspects are:

- **Policy.** Anaplan has adopted the ISO 27k framework (ISO 27002 and 27018) as the basis for information security and privacy policies, and scoped and tailored these standards to meet specific business requirements.
- **Physical security.** The hardware for the Anaplan platform is hosted at multiple third-party data centers. Data center operators provide power, lighting, fire suppression, and other utilities, and are subject to annual audits for ISO 27001 and SSAE 16 Type II compliance.
- **Perimeter.** Firewalls and FIPS 140-2 Level 2 intrusion protection guard the Anaplan infrastructure at its perimeter.
- **Internal network.** All data in transit is encrypted via HTTPS using TLS 1.2. Key exchange is done via the browser using 2048-bit certificates, with session key length negotiated by the browser.
- **Host.** Anaplan's platform hardware uses a redundant active/passive design for full operational failover. The infrastructure supporting the Anaplan platform at our production data centers is owned by Anaplan and controlled, managed, and maintained by Anaplan employees.
- **Application.** Anaplan maintains an ACID-compliant software stack. This ensures that data is always in a known safe state. Within the application layer, we observe the standard three pillars of security.

Anaplan continues to invest heavily in its Connected Planning platform to provide one of the most secure cloud-based platforms in the industry.

The Anaplan platform uses a multi-pronged, defense-in-depth approach to security. It's broken out in two major areas: at the data center level and at the platform level.

Platform level: Anaplan continues to invest heavily in its Connected Planning platform to provide one of the most secure cloud-based platforms in the industry. Key focus areas include:

- **Identity.** Identity management of users is a top priority. Anaplan maintains an identity for a user associated with a customer's tenant. This object is central to Anaplan and is used for any application at Anaplan. This allows properties for the identity to apply to different applications and workspaces and become the hook for federating with a customer's identity provider (IDP).
- **Authentication.** User authentication is based on predefined access controls, rights, and privileges. The Anaplan platform has basic username/password identity capabilities, and customers can also configure single sign-on with an IDP (such as Ping or ADFS) for simplified management and user-friendliness. Customers' administrators control user authentication, often through single sign-on (SSO). The platform supports SAML 2.0 for SSO and therefore can incorporate password-complexity policies, time-of-day access windows, two-factor authentication, and other controls required by customers' security policies that are available through their IDP. Anaplan also maintains standard Web-based login with logout and timeout control.
- **Authorization.** The foundation of user access control (OAuth) is based on the principal of least access. Customers have the ability to assign system roles, such as the tenant admin or process owner, to get access to resources on Anaplan. This can be centrally managed through the Administration UI. Anaplan also offers the ability for business users to apply granular data access through a feature called selective access.
- **Encryption.** Data at rest is stored in a proprietary non-readable binary format and is subject to full-disk AES-256 encryption; backups also use AES-256 encryption. Anaplan additionally offers an encryption option based on a "bring your own key" (BYOK) policy that enables customers to own and manage their own encryption keys. They can apply these keys to any Anaplan workspace on their tenant containing planning data that is protected from anyone without the key, such as an Anaplan internal administrator or any outside party. A detailed logging capability provides customers' administrators with full visibility of how and when such encrypted keys are created and applied to a workspace, ensuring the integrity of the operations. This option ensures protection of the most sensitive and proprietary data that can now be included within the scope of enterprise Connected Planning in the cloud.
- **Logging.** The Anaplan Platform maintains an active log of all activity on the platform. These logs are useful for security monitoring, auditing, and compliance reporting.
- **Interoperability.** The Anaplan platform supports Open API standards-based data sharing with many applications and systems. This capability allows seamless data ingestion from the source systems on the back end. The platform also enables companies to collaborate with users outside of the Anaplan Platform framework—trading partners in a supply chain, for example—by exposing platform output through third-party applications like Tableau and DocuSign.
- **Integrations.** Anaplan's data integration capabilities are straightforward, and basic integrations are driven by a self-service user interface. In many cases, integrations—in particular, those with the Anaplan Data Hub described earlier—can be created and managed by business users without IT intervention. Here are the ways the Anaplan platform supports today's complex data integration needs:
    - **HyperConnect.** The Anaplan platform can integrate with virtually any corporate data warehouse, regardless of vendor. To make this process easier, Anaplan and Informatica have formed a strategic partnership and built tight integration between their products. Called HyperConnect, this integration allows any user to leverage Informatica cloud connectors to pull data from hundreds of on-premise and cloud sources directly into the Anaplan platform. Adoption of the Anaplan platform is easier when end users know that familiar data sources can be connected with ease.

- **Anaplan Connectors and support for ETL platforms:** Anaplan's self-service data integration user interface is based on a philosophy of supporting best-of-breed integration options. Anaplan also uses several connectors that work with popular integration platforms from **Informatica**, **MuleSoft**, **Dell Boomi**, and **Snaplogic**.[v] These integration platforms allow you to set up and manage data access and integrations through a growing library of connectors to back-end data sources. From an end-user perspective, these connectors enable faster digestion of data for planning purposes.
- The Anaplan platform is integrated with **Microsoft Excel**® and the rest of the **Microsoft Office** suite for easy import and export of data for end-user collaboration purposes.
- Integration with **Tableau** enables any user to publish their plans with data visualization. This extends the usefulness of Anaplan's planning output in broad enterprise data analytics projects.
- The Anaplan platform also supports **DocuSign** integration to enable iterative workflows both within an organization, and with suppliers, partners, and candidates outside an organization. A complete transaction or contract negotiation can be completed with speed, security, and precision.
- **API strategy.** Customers who choose to build custom integrations can use Anaplan's fully supported and documented application programming interface (API), which is REST compliant. (All of Anaplan's connectors are based on the same API.) Anaplan's Open API supports bidirectional integration and programmatic automation. This capability is especially helpful for building connectors to nontraditional data sources, custom enterprise applications, and unstructured and online data sources.

- **Advanced analytics.** The Anaplan Connected Planning platform supports a number of strategies in the area of advanced analytics.
  - **Predictive algorithms:** Anaplan offers 26 predictive algorithms for time series forecasting. They fit in four categories: curve fitting, smoothing, seasonal, and basic and intermittent. Anaplan invests significant research and development resources to strengthen its predictive capabilities. Examples of algorithms supported are simple exponential smoothing, multiplicative decomposition, Holt-Winters, Erlang, etc.
  - **Optimization:** Anaplan offers one of the industry's fastest optimization engines that can determine an optimized path to maximize specific business goals based on a number of variables in complex conditions. Such functionality can be deployed supported by complete platform core services and driven by easy-to-use UI experience.
    - *Through the use of advanced mathematical modeling and algorithmic problem-solving, Anaplan's Optimizer determines pathways to ideal outcomes for any challenging multi-variable decision with incredible speed. Optimizer can determine preferred outcomes for many complex questions, from pricing and staffing to capitalization, asset utilization, and much more. Users can define objectives, such as revenue, profit maximization, or cost reduction, and then set multiple variables or constraints to guide the planning process.*
  - **Machine Learning (ML):**Anaplan is working with a number of ML techniques, including TensorFlow, to produce pilot studies and proof of concepts (POC) for several organizations by understanding the true application of ML in planning use cases. These POCs are designed to improve planning for specific areas, such as supply planning, revenue forecasting, sales predictions, workforce optimization, and demand sensing. These POCs are run in "supervised" learning mode and are able to draw on internal data, such as transaction records or promotion information, and connect that with a range of external data sources, such as weather or demographic information, to provide insights and inform planning models. ML algorithms iterate multiple times through this data set with the goal of improving the accuracy of predicted outcomes.
- **End-user Experience:** Anaplan's Connected Planning platform allows users to model and connect in real time. Users can visualize plans on a departmental and enterprise level to explore, analyze, and course-correct based on changing market conditions. Our easy-to-use user interface requires no training and allows business users to get up and running with little effort.

Meet (and exceed) your enterprise-wide planning initiatives with ease

Anaplan's platform is a robust and powerful cloud-based platform allowing for scaling across the enterprise with ease. It powers real-time planning and analysis and has the modeling flexibility to handle virtually any planning and optimization use case across the entire business. It's self-service capability ensures adoption by business users and accelerates decision-making in the face of uncertainty and evolving market changes.

The platform's predictive analytics capability allows forward-looking "what if" scenarios. Pre-built ETL connectors and open API based integration options allow companies to quickly integrate and easily access all of their source data. Designed with security in mind, the platform ensures that the right people with the right credentials can interact with the right data, ensuring confidence and trust in the business planning world.

Customer story:

UNITED AIRLINES

"Before Anaplan, there could be hundreds of files (spreadsheets) and just keeping track of that is a nightmare. Even worse is if you have an formula error, you have to fix hundreds of files. Or if we had a change—for instance, if we had a new plane type—we had to change that in so many different files. So we spent a lot of time doing process work, just maintaining files, making sure the numbers are right in Excel instead of doing more value-added work. Anaplan is like Excel on steroids. But it is more than that though. You are combining the ease in Excel to make formulas and models, and with this great collaboration tool, you make them all in one place but still have a decentralized way of getting information and getting that instantly rolled up." [vi]

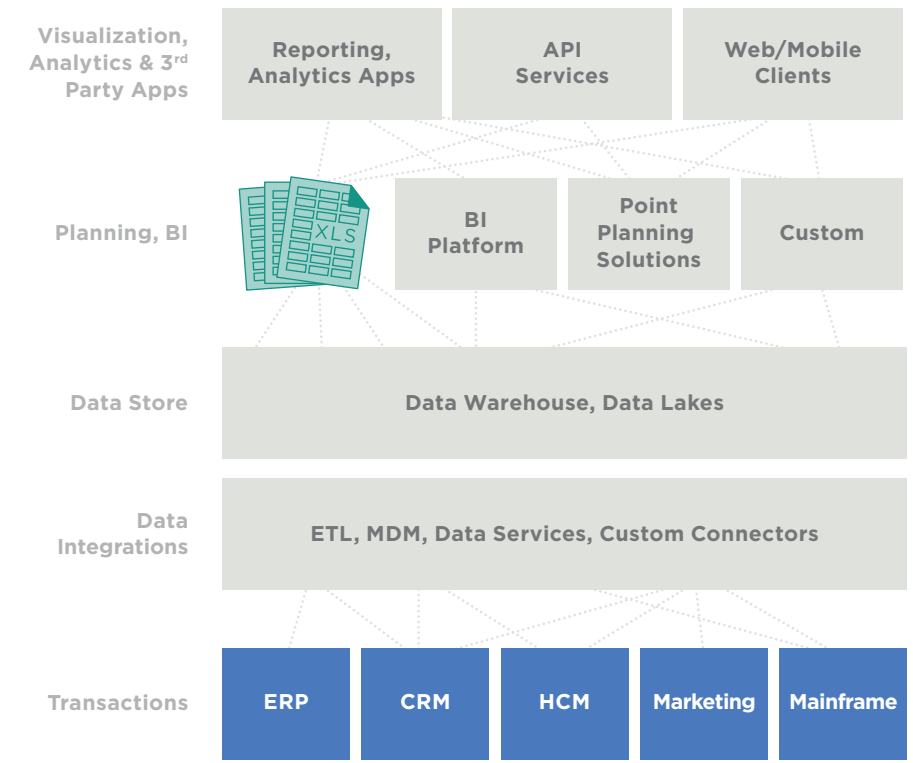
The platform allows business users to confidently run their planning across business functions, like finance, sales, and supply chain, with three key characteristics in mind:

- It's **dynamic**, connecting business users to data, plans, and, people in real-time, which allows a fast, flexible, and responsive planning environment.
- It's **collaborative**, allowing users to network with other users and access plans across functions with the platform's inclusive and distributed capabilities.
- It's **intelligent**, including self-learning and insightful, predictive capabilities that help users determine preferred outcomes for complex questions and construct "what-if" scenarios.

In yesterday's planning world, the landscape was fragmented. Planning across the company was difficult, managing IT costs was challenging, and gaining needed visibilities across siloes of information was nearly impossible. Data was drawn from a variety of complicated and rigid transactional systems, so that much of the actual panning happened in spreadsheets on individual users' desktops. The CIO was left with the task of connecting these systems, managing the data, controlling rights of data to the right people at the right time, doing one-off services, and making ad hoc adjustments. This headache was yesterday, providing no satisfying process and no accurate answers.

Today and tomorrow look much brighter with Anaplan's tools.

Disconnected and departmental planning, done backwards



The CIO's new view of the world with Connected Planning

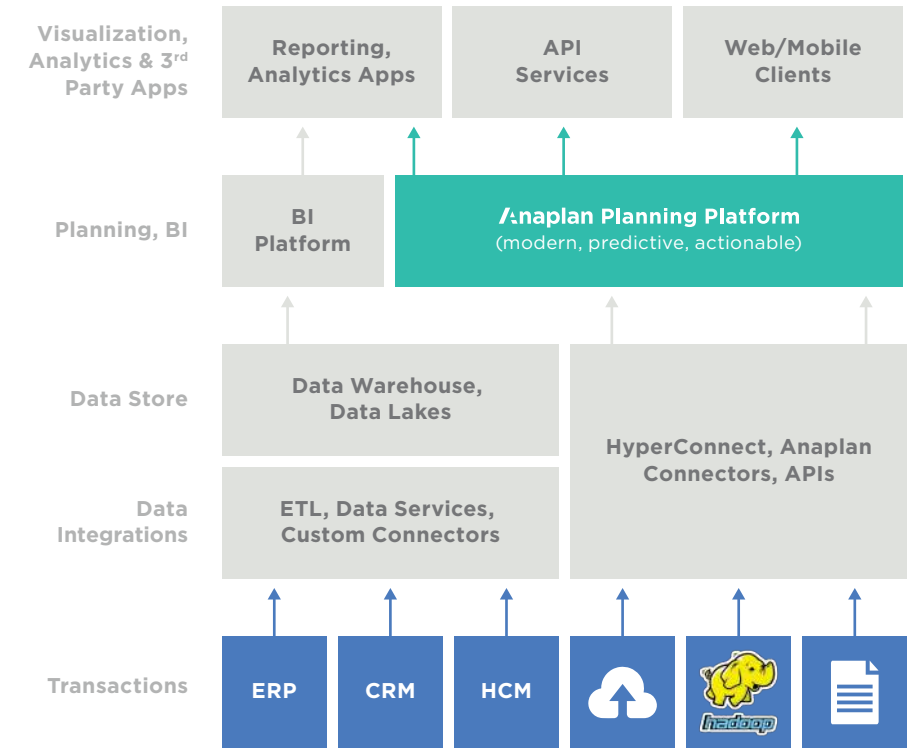
Using Anaplan, the outlook for CIOs is pleasant, with finance, sales, and supply chain connected across a single platform and allowing trusted business planning across the company. Anaplan's Connected Planning provides a flexible and secure platform, all with documented ROI, that can scale with an organization as it grows. The platform replaces the need to have multiple spreadsheet and point solutions, which allow aggregation, simplification, and governance control. The CIO can have confidence and trust in the data and use the new time savings to focus on other strategic initiatives.

Companies that replace legacy, packaged, and home-built solutions with the Anaplan platform experience simpler data integration, access to increasingly diverse data, fewer security vulnerabilities, and more opportunities to look forward as they plan rather than dwelling on the past. This Connected Planning platform approach is the foundation for true digital transformation.

The transition to this future-focused state can happen over time. In fact, most Anaplan customers first deploy the platform in a single use case and then expand to other areas of the business as their expertise grows and the platform's usability, power, and business value become established.

Forward-looking CIOs and IT leaders are moving their organizations toward a Connected Planning environment that empowers business users to stay on top of the changes around them and make appropriate decisions by incorporating them in their planning processes.

Forward-looking Connected Planning with Anaplan



About Anaplan

Anaplan is the leader in Connected Planning. Our purpose-built software—powered by our patented Hyperblock engine—enables dynamic, collaborative, and intelligent planning. Large and fast-growing companies worldwide use our solutions to connect the people and data required for trusted plans and accelerated decisions essential to leading in their markets.

To learn more, visit anaplan.com

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