CGI i korthet

Experience the commitment®

På CGI gör vi kunder nöjda genom att hjälpa dem lyckas. Sedan företaget grundades 1976 har vi drivits av att dela våra kunders utmaningar och att leverera kvalitativa tjänster för att möta dem. Med förvärvet av Logica under augusti 2012 har vi utökat vår närvaro, kompetens och vårt utbud av kompletta IT-tjänster för att möta kundernas affärsbehov var som helst, när som helst.

VÅR STRATEGI

Vi förstår att det är sättet som vi levererar våra tjänster på som gör oss till en självklar samarbetspartner. Vår affärsstrategi placerar kunderna och deras resultat främst.

- **Nära kunder i över 40 länder** – organiserar verksamheter kring större mark-nader, gör oss djupt förankrade i våra kunders nätverk och ansvariga för projektframgångar
- **Branschexpertis** – driver vår omfattande kunskap om kundernas verkligheter för att verkställa lösningar som förbättrar och omvandlar deras affärsmiljöer
- **Unika globala leveransalternativ** – kombinerar lyhördhet på plats genom våra lokala kontor, med möjligheter till leveranskapacitet via CGI:s onshore, nearshore och offshore centers of excellence
- **Kvalitetsprocesser** – ISO 9001-certifierade verksamheter garanterar en hög nöjdhet hos kunder, medlemmar och aktieägare, och globala leveranscenter som följer CMMI-nivåer 3 och 5 erhåller en flexibel, kvalitativ leverans, på utsatt tid och enligt budget

VÅRA TJÄNSTER

CGI har en omfattande tjänsteportfölj som gör att vi kan vara kundens helhetsleverantör när det gäller att förbättra alla delar i dennes verksamhet. Våra fokusområden inkluderar:

- **Avancerad affärs- och IT-konsulting** – ett brett utbud av tjänster, inklusive affärs- och IT-strategi, organisations- och IT-arkitektur, processdesign och verksamhetseffektivisering
- **Systemintegration** – systemarkitektur, systemutveckling och implementering av affärs- och tekniklösningar
- **Applikationsutveckling och förvaltning** – design, utveckling, implementering och dagligt underhåll och förbättring av kundernas affärsapplikationer
- **Infrastrukturtjänster** – omfattande möjligheter för infrastrukturhantering som anpassas till kundernas unika affärskrav och tjänsteprioriteringar

FÖRETAGSPROFIL

NYCKELSTATISTIK

- Världens sjätte största oberoende företag för IT- och affärsprocesstjänster
- 71 000 medarbetare
- Omsättning: C$ 10,4 miljarder
- Uppskattad orderstock: C$ 17,7 miljarder
- Närvarande i över 40 länder
- NYSE: GIB – TSX: GIB.A

GLOBAL END-TO-END-LEVERANTÖR

- Avancerad affärs- och IT-konsulting
- Systemintegration
- Administrering av IT- och affärsfunktioner
- Över 100 egenutvecklade affärslösningar

DJUP BRANSCHEXPERTIS

- Government
- Financial Services
- Manufacturing, retail and distribution
- Telecommunications and Utilities
- Health

Nyckelstatistiken är justerad efter förvärvet av Logica den 20 augusti 2012. CGI-omsättningen är baserad på resultaten för 12-månaders-perioden som slutar 31 december 2011 (IFRS); Logicas omsättning är baserad på 2011 kalenderårs resultat på en proforma-basis ("Underlying Revenue").

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- **Affärsprocesstjänster** – hantering av backoffice-affärsprocesser för att rationalisera verksamheter
- **Egenutvecklade lösningar** – en stor portfölj av över 100 uppdragskritiska lösningar som minskar kostnaderna och skapar konkurrensfördelar för våra kunder

VÅR BRANSCHEXPERTIS

CGI erbjuder sina end-to-end-tjänster till utvalda sektorer som täcker 90 % av den globala IT-användningen. Vi har djupgående affärsmässig och teknisk expertis inom dessa områden, vilket gör att vi fullt ut förstår våra kunders verklighet och har de kunskaper och lösningar som behövs för att främja deras affärsmål. Våra fokusbranscher inkluderar:

- **Government**– Vi stödjer federala, statliga, regionala och lokala styren i Nordamerika, Europa och Asien, inklusive över 100 federala myndigheter och nästan 200 statliga och lokala kunder i USA och 95 federala avdelningar, myndigheter och statliga företag, utöver majoriteten regionala styrelser och territorier i Kanada
- **Financial Services** – Vi hjälper ledande finansiella institutioner skapa värde genom att kombinera affärsexpertis med ledande tekniktjänster och -lösningar samt globala leveransalternativ. Kunderna inkluderar 23 av de 25 främsta bankerna i USA och 22 av de 25 främsta i Europa, utöver fler än 175 globala skade-, livs- och sjukförsäkringsföretag
- **Manufacturing, retail and distribution** – Vi banar vägen för affärsförändring för våra över 1 000 kunder genom att förbättra effektiviteten, sänka kostnaderna och lyfta hållbar tillväxt och kundlojalitet; vi levererar till flera affärsområden, inklusive rymdfart, gruv- och metallverksamhet, fordon, industritillverkning, återförsäljning, konsumenttjänster, förpackade konsumtionsvaror, logistik, järnväg, flyg och post
- **Telecommunication/media and Utilities** – Vi hjälper till med att leverera nya intäktsflöden och förbättra produktivitet och kundtjänst med lösningar som stödjer världens ledande kommunikationstjänstleverantörer och genom partnerskap med över 60 samhällsnyttiga företag i Nordamerika och Europa
- **Oil and Gas** – Vi erbjuder expertis och lösningar för att hjälpa våra kunder få ut mer värde från varje del av sina flödeskedjor och över branschens alla sektorer, inklusive upstream, midstream och downstream
- **Health** – Vi hjälper över 1 000 hälsovårdsinrättningar, inklusive fler än 250 sjukhus och hälsoavdelningar. Vi implementerar IT-lösningar för bättre vård, bättre affärer och bättre resultat. Dessa branschlösningar och ASP-erbjudanden används av 200 000 auktoriserade utövare

VÅRT ENGAGEMANG

CGI:s kontinuerliga tillväxt är ett bevis på våra kunders förtroende för oss och på hängivenheten hos våra medarbetare. På CGI kallas medarbetare för medlemmar, eftersom vi känner en stark känsla av ägarskap och ansvar. Det är därför den stora majoriteten av oss är aktieägare i CGI.

Resultatet för våra kunder: vi är helhetsleverantören med de globala resurserna, branschexpertisen, stabiliteten och hängivna experterna som behövs för att uppnå resultat.

REPRESENTATIVA KUNDER

- ABN AMRO
- AirFrance/KLM
- Australia and New Zealand Bank (ANZ)
- AXA
- Bell Canada
- Blue Cross Clue Shield
- BNP Paribas
- Bombardier
- BT Group plc.
- Carrefour
- Cirque du Soleil
- E.ON
- EDF
- EDP
- European Aeronautic Defence and Space Company
- GDF Suez
- Government of Canada
- ING
- New York City
- Pfizer
- PostNord
- Rio Tinto
- Shell
- Société Générale
- Southern California Edison
- State of California
- Statoil
- TD Bank Financial Group
- TeliaSonera
- U.S. Department of Defense
- U.S. Department of Health and Human Services
- U.S. Department of State
- U.S. Environmental Protection Agency
- Vodafone
- Volvo

För mer information om CGI, besök oss på www.cgi.se

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CGI Sverige AB

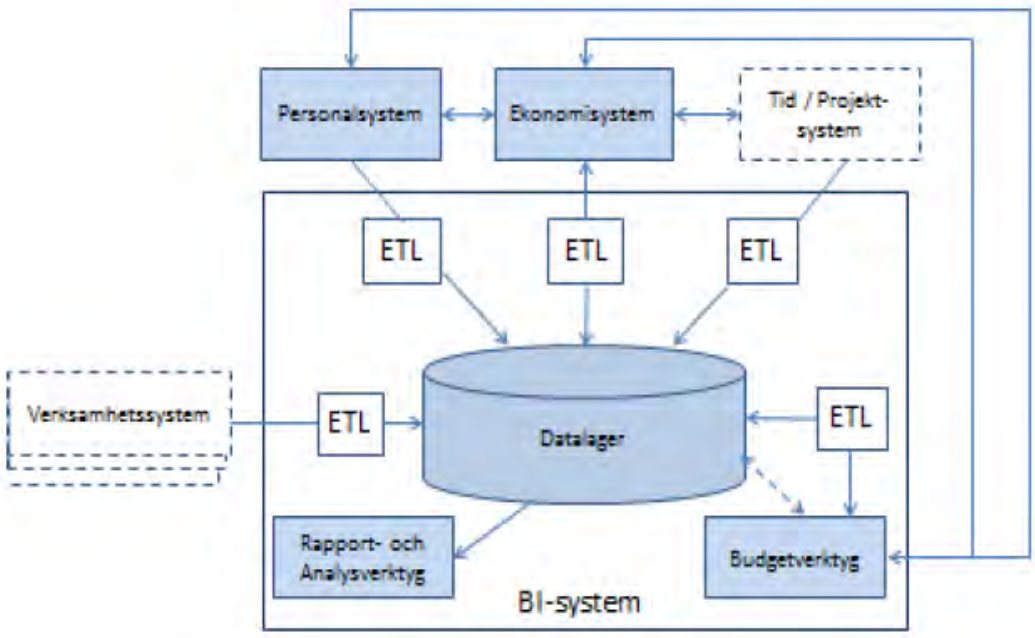
ESV - UPPHANDLING AV STATLIGT RAMAVTAL AVSEENDE BI-SYSTEM

Beskrivning och Redovisning av föreslagen lösning för BI-system och tillhörande tjänster (tillsammans med bilagan för Teknisk specifikation, bilaga 9)

INTRODUKTION

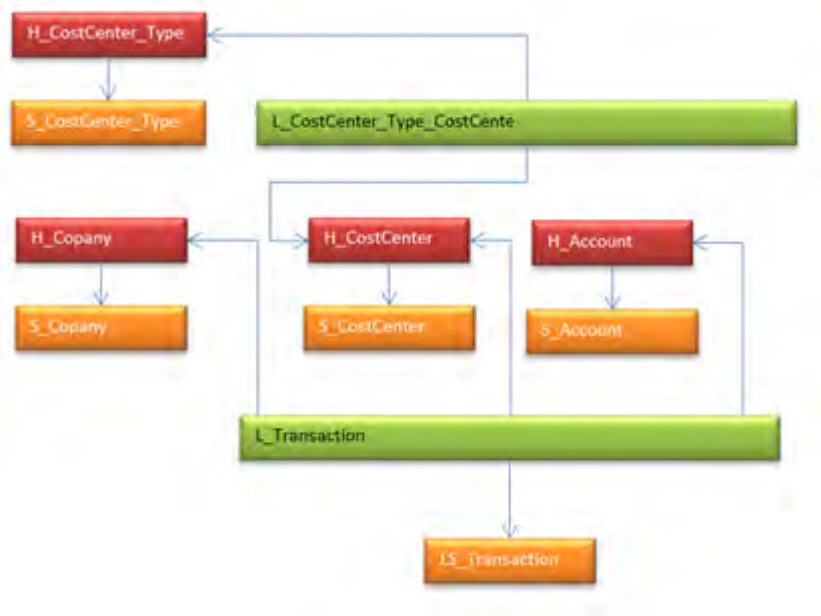
CGI har för ESVs upphandling av statligt ramavtal för BI-system framtagit följande lösning där Microsoft SQL Server används som datalager med Microsoft SQL Server Integration Services (SSIS) som ETL-verktyg. För rapport och analys-verktyg används QlikView och som budgetverktyg används budget och prognos modulen i Raindance.

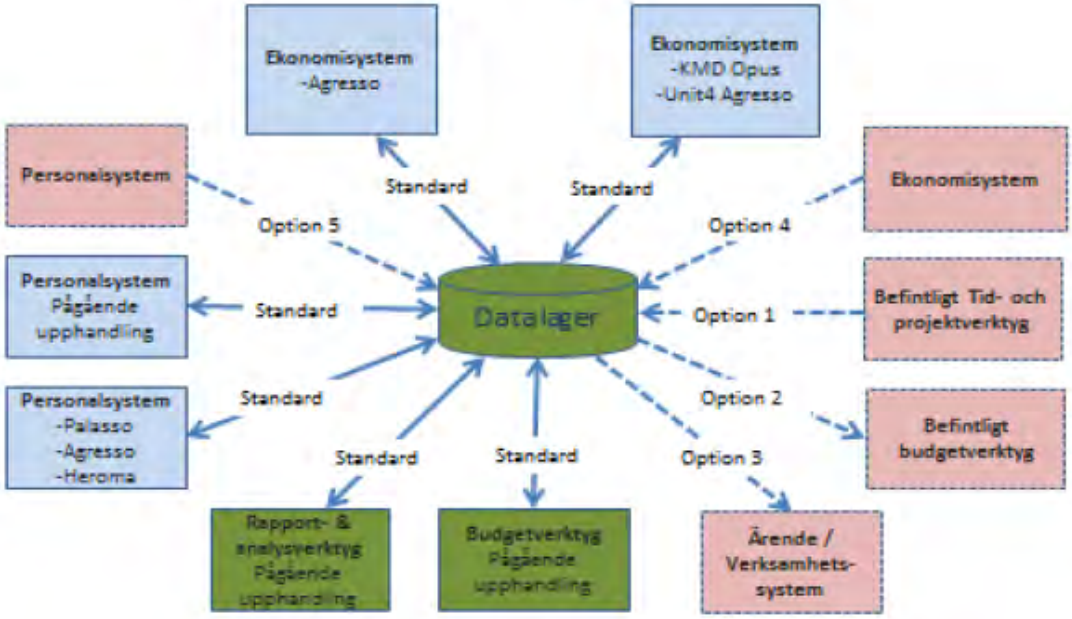
DATALAGER/DATA WAREHOUSE

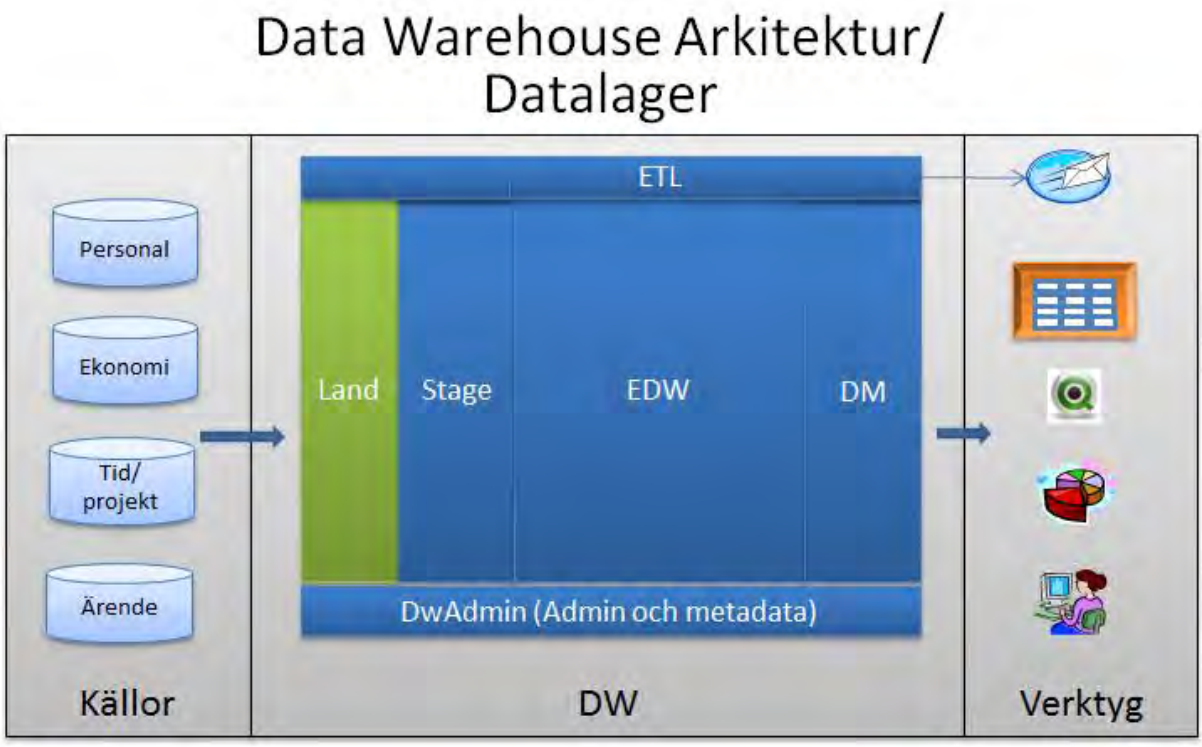


Ett datalager kommer att byggas upp enligt Data Vault principen i SQL Server. Det kommer att innehålla data inläst från angivna system för att försörja Rapporter, Analyser och Budget med data. Datalagret kommer att vara strukturerat med flera lager så att det finns tillgång till både rådata och tvättad data. Med Data Vault får man bättre prestanda, hållbarhet samt hög grad av anpassningsförmåga.

Kortfattat går metodologin ut på affärsenhets-identifierarna (hubbar) sparas i separata tabeller från affärs-attributen (satelliter). Relationerna mellan affärsenhets-identifierarna implementeras med länkar där ofta också länkarna till transaktionerna ingår. Om länkarna innehåller attribut som kan förändras över tidens gång implementeras dessa med satellitlänkar.




Ekonomisystem
-Agresso
Ekonomisystem
-KMD Opus
-Unit4 Agresso
Personalsystem
Standard
Standard
Ekonomisystem
Option 5
Option 4
Personalsystem
Pågående
upphandling
Standard
Datalager
Option 1
Befintligt Tid- och
projektverktyg
Personalsystem
-Palasso
-Agresso
-Heroma
Standard
Option 2
Befintligt
budgetverktyg
Standard
Standard
Option 3
Rapport- &
analysverktyg
Pågående
upphandling
Budgetverktyg
Pågående
upphandling
Ärende /
Verksamhets-
system


Data Warehouse Arkitektur/
Datalager
ETL
Personal
Ekonomi
Tid/
projekt
Ärende
Land
Stage
EDW
DM
DwAdmin (Admin och metadata)
Källor
DW
Verktyg

Land-area

Hit sparas rådata från de olika källsystemen ned före eventuell transformering och laddning av själva Data Warehouse. För att minska störningen av källsystemen räcker det att data hämtas en gång med bulkladdning.

Stage-area

Här finns data sparad formatterad för själva DW. Endast ny eller förändrad data laddas från land-arean.

EDW-area

Detta är själva DataWarehouset som sparar den historiska datan (och forecast data för budget). Data är sparad med DataVault arkitektur med namngivningsstandard.

DW-Admin

Arean innehåller tabeller som används för att underhålla och logga DWs laddningsprocess.

ETL – Microsoft SQL Server Integration Services (a.k.a SSIS)

Förflyttning, kontroll och transformering av data görs av paket skapade i SSIS. Dessa är i sin tur uppbyggda av funktioner och procedurer.

Rapport och Analys – QlikView

Rapporter och Analyser gör vi i verktyget QlikView. QlikView är ett mycket grafiskt och användarvänligt verktyg som ger användaren många möjligheter. I lösningen ingår Qlikview Server som presentationslager och Qlikview Publisher för omladdningar och distribution.

BUDGET & PROGNOS – RAINDANCE

Raindance är ett webbaserat affärssystem från CGI där modulen för budget och prognos kommer användas som budgetverktyg.

ÖVRIGT

SUPPORT & ÄRENDEHANTERING

Support och Ärendehantering kommer att ske via CGI befintliga system för support och ärendehantering med möjlighet att ringa, maila och följa sina ärenden via webb. Det kommer också att gå att prioritera ärenden enligt de krav som ställts i upphandlingsmaterialet.

Utbildning

Utbildning kommer att ske genom respektive verktygsleverantör. I detta fall kommer QlikTech hålla i utbildningsbehov som är av teknisk art och som rör QlikView. CGI håller i resterande utbildningar, dvs. i det som rör användning av byggd BI-lösning (gränssnitt), Datalager, Raindance etc.

Raindance Budget & Prognos

Experience the commitment®

Ordet “budget” lånades till svenskan från engelskan i slutet av 1700-talet. Engelsmännen hade i sin tur lånat det från franskans “bougette”, vilket betyder “liten väska”. Väskan i fråga är den portfölj som finansministern bär den statliga budgeten i när den ska presenteras för omvärlden.

Till vardags är en budget förstås ett ramverk för en ekonomisk planering. Lättanvända och kostnadseffektiva Raindance Budget & Prognos är den modul inom CGIs affärssystem Raindance som hanterar själva planeringen av ditt företags eller din organisations framtid. Modulen låter dig snabbt och enkelt sammanställa såväl budgetar som prognoser utifrån simuleringar av till exempel omkostnader, kvantiteter, priser, personal, investeringar och likviditet.

PLANERING OCH SIMULERING

Med Raindance Budget & Prognos planerar du resultatet för nästkommande år utifrån olika budgetalternativ där intäkter och kostnader manövreras för att åstadkomma olika effekter. Den fullständiga integrationen med övriga Raindance-moduler innebär att andelen administration minimeras; ingen dubbellagring av kodplaner behövs. Budget & Prognos är direktintegrerad med kodplanen och andra tabeller i Raindance.

Raindance Budget & Prognos låter dig planera den kommande budgeten utifrån intäkter, volymer, personal, semestrar, löneökningar och så vidare. Eftersom all information redan finns i systemet är det enkelt att komma igång – föregående års budgetar och resultat kan dessutom enkelt användas som jämförelsevärden vid budget- och prognosarbetet. Det elektroniska flödet stödjer en process som leder till ökad delaktighet i beslutsfattandet: du kan sätta ihop en budget utifrån föregående års uppgifter och sedan skicka den vidare till din chef, som kan skicka tillbaka den med kommentarer före godkännandet.

Modulen samlar all information från tidigare år på ett ställe. Modulen integreras enkelt med såväl andra moduler i Raindance som med olika arbetsflöden eller till och med Excel. Eftersom alla budgetansvariga arbetar mot en gemensam databas är all information konsoliderad på företags- eller organisationsnivå: så fort någon lägger in en ny budget eller prognos kan de övriga medarbetarna få tillgång till den i mån av behov, utan krångliga uppdateringsprocesser. Även exempelvis en preliminär budget kan publiceras för att andra ska kunna kommentera och påverka det slutliga resultatet.

Grafiska överblicksbilder låter dig enkelt se statusen på budgetarbetet. Du ser genast vilka som ännu inte har börjat, vilka som registrerar budget, vilka som är färdiga och vilka som har klarmarkerat sin budget.

RAINDANCE

- Raindance Budget & Prognos är ett lättanvänt och kostnadseffektivt verktyg för att hantera planeringen av ditt företags eller din organisations framtid.
- Modulen låter dig snabbt och enkelt sammanställa budgetar och prognoser utifrån simuleringar av en mängd faktorer.
- Föregående års budgetar och resultat kan enkelt användas som jämförelsevärden vid budget- och prognosarbetet.
- Raindance levereras och utvecklas av CGI – en långsiktigt trygg leverantör.

Raindance

cgi.se

ANVÄNDARVÄNLIGT OCH FLEXIBELT

För att du enkelt ska kunna se vilka värden som ändrats men ännu inte sparats så färgmarkeras alla förändringar i Raindance Budget & Prognos. Även om du ännu inte har fullständig information inför budget- och prognosarbetet går det att lägga till neutrala rader för budgeterade anläggningar som ännu inte köpts in, eller planerade nyanställningar.

Värdefälten kan beräknas och simuleras för såväl utfall som antal. Även vid simuleringar kan du kontrollera fördelning av summor och utföra procentberäkningar. Allt går vid behov att ångra så många led bakåt du vill. Liksom de övriga användarvänliga modulerna i systemet är Raindance Budget & Prognos helt anpassningsbart efter just dina behov – du bestämmer vilka rader, sidor, arbetsflöden och värden du vill behandla från en övergripande nivå ner till detaljnivå. Eftersom alla användare arbetar med samma verktyg och mot samma databas bibehåller du alltid en aktuell överblick över budget och prognos.

VILL DU VETA MER?

Skicka gärna ett e-brev till raindance@cgi.com eller ring 08-670 20 00.

Planera din organisations framtid

Om CGI

CGI Group Inc grundades 1976 och är den femte största oberoende leverantören av tjänster inom IT och affärsprocesser i världen. Med cirka 71 000 medarbetare på kontor och globala leveranscenters i Amerika, Europa och Asien erbjuder CGI en heltäckande tjänsteportfölj med avancerade konsulttjänster inom IT och affärsprocesser, systemintegration, applikationsutveckling och underhåll, drift och hantering av infrastruktur och ett brett sortiment av patenterade lösningar. Sedan förvärvet av Logica har företaget en kombinerad årlig omsättning på över 10 miljarder CAD och en orderstock uppskattad till 18,3 miljarder CAD. CGI:s aktier är noterade på NYSE (GIB) och TSX (GIB:A) och är inkluderade i FTSE4Good Index. Webb: www.cgi.com

För mer information om CGI, besök oss på www.cgi.se

ESV Dnr 7.1-728/2014

QlikView

THE QLIKVIEW BUSINESS DISCOVERY PLATFORM

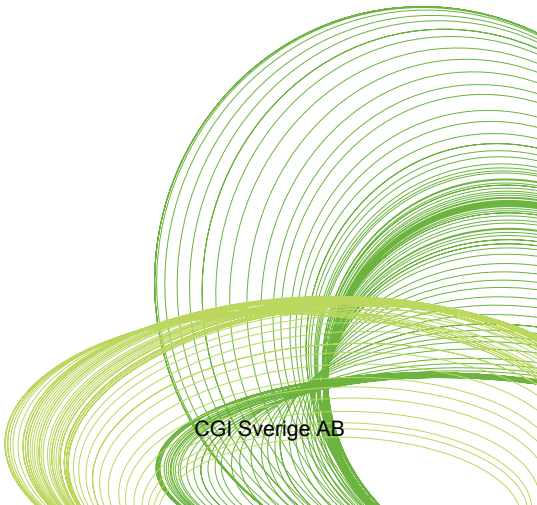
With QlikView, organizations can rapidly deploy fast, flexible Business Discovery apps that provide information workers with dynamic views of the information they need to make decisions. Unlike most business intelligence software, with QlikView information workers can ask and answer the next question, and the question after that, without going back to an expert for a new report or data visualization. The answers are already there, available through simple clicks and taps.

At the core of QlikView is our patented software engine, which generates new views of data on the fly. QlikView compresses data and holds it in memory, where it is available for immediate exploration by multiple users. For datasets too large to fit in memory, QlikView connects directly to the data source. QlikView delivers an associative experience across *all* the data used for analysis, regardless of where it is stored. Users can start anywhere and go anywhere; they are not limited to pre-defined drill paths and preconfigured dashboards.

With QlikView's patented core technology, associative experience, and collaboration and mobile capabilities, users can ask and answer streams of questions on their own or in teams and groups, wherever they happen to be working. The more users, the more questions, the more value. Empowering the information workforce to derive insights from data helps organizations streamline, simplify, and optimize decision making.

USER-CENTRIC INTERACTIVITY

Ask your own questions and formulate your own insights in a simple and straightforward way. Forgot the exact name of a customer? Universal search with fuzzy logic shows you all potential matches. Ask and answer what-if questions with comparative analysis. Preserve a record of decisions with in-app threaded discussions. Visualize data any way you want: charts, tables, maps, graphs, and list boxes. Click or tap anywhere for new views or more detail. Remix and reassemble data any way you want to.



qlikview.com

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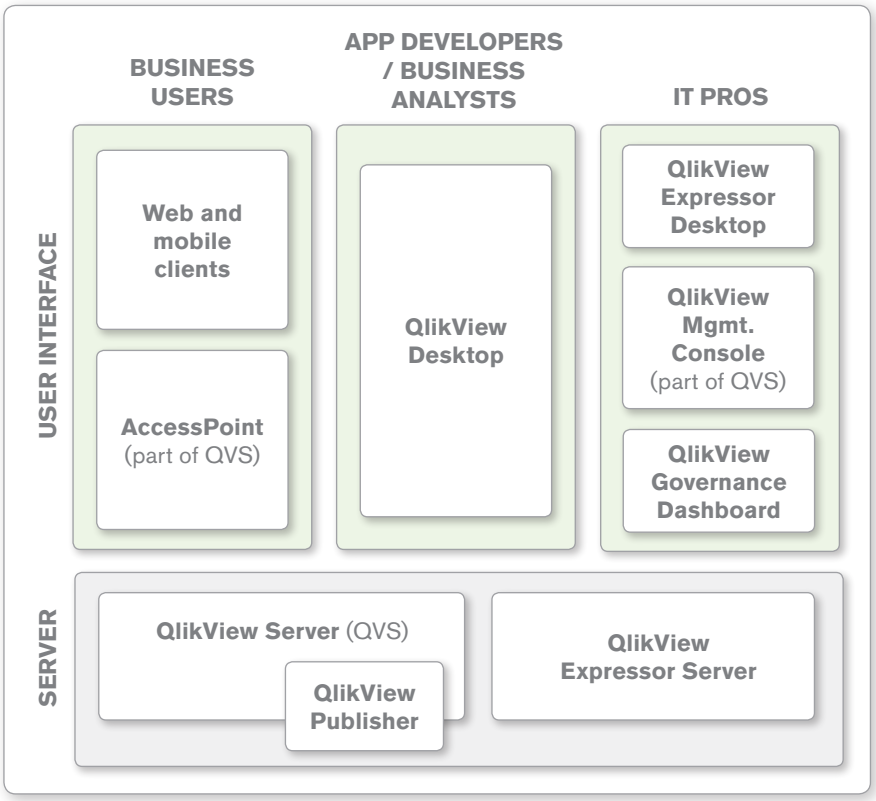
CGI Sverige AB

AN ASSOCIATIVE USER EXPERIENCE

Conduct direct and indirect searches across all data anywhere in the app—globally or within a single field. Make a selection and see all objects in the app update instantly. Gain unexpected insights and make discoveries by clearly seeing how data is associated. See not only what data is associated—but what data is *not* related. The data related to your selection is highlighted in white while unrelated data is highlighted in gray. The power of gray—seeing what is *not* related—differentiates QlikView and reveals unexpected business insights.

Figure 1: The QlikView Business Discovery Platform



QLIKVIEW FOR BUSINESS USERS

Business users primarily interact with the QlikView browser and mobile clients—though they can also use QlikView Desktop.

QLIKVIEW BROWSER CLIENTS

QlikView users access apps running on QlikView Server with a browser-independent, download-free Ajax client or a Microsoft Internet Explorer plug-in. Users can make selections in list boxes and charts and can change charts or create new ones for new views of data. They conduct direct and indirect searches—globally or within a particular field. They can always see in an instant what data is related to their selections and what data is not.

Right there in the browser, users can collaborate in real time with colleagues, partners, or customers—even those who don't have QlikView licenses. QlikView also provides in-app threaded discussions to preserve a record of

ACCESS TO BUSINESS DATA FROM ANYWHERE

Access relevant data sourced from multiple systems with incremental loading of updates. Combine data in a single in-memory location for access to a full range of detail from top-level indicators to full transactional detail—or leave Big Data where it is and still include it in analytic apps. Work with dynamic, interactive analytics using the most popular mobile devices. Get data selection, associative search, and advanced visualization on your tablet or smartphone while you're connected to the server. Take views of data offline with your Apple iPad.

how decisions were made. With a server-based QlikView app, all users are working with the same data. Any modifications a user makes to an app (e.g., modify or add a graph or chart) can be kept private or shared with others.

QLIKVIEW ON MOBILE

With mobile Business Discovery, information workers can take advantage of being in a particular place at a particular time and can generate insights "on location." QlikView on mobile delivers full Business Discovery and the power of QlikView to mobile devices connected to a server—including the associative experience, interactive analysis, access to live data, and search. For Apple iPads, QlikView also provides users with offline views of data.

At no additional license cost, QlikView delivers full mobile functionality for Apple iPad and Android tablets as well as small-screen devices such as Apple iPhone and Android phones. Using a browser-based, build once / deploy anywhere approach, QlikView on mobile takes full advantage of native mobile gestures and features while providing centralized security, scalability, and manageability.

QLIKVIEW FOR APP DEVELOPERS AND BUSINESS ANALYSTS

To create apps, BI application developers and business analysts primarily use QlikView Desktop and QlikView Workbench. They connect to data sources using standard interfaces, an open QlikView format for non-standard sources, and a set of direct connectors to some of today's most popular business applications and systems.

QLIKVIEW DESKTOP

QlikView Desktop enables the rapid construction of secure, multi-tabbed, multi-user apps that provide multi-faceted views of what's happening in an enterprise. With QlikView, users can test and prototype with their data, learning all the while, without taking their eyes off the data or interrupting their thought process.

QlikView Desktop is a Windows application that is a single point of interaction for extracting and transforming data, designing analytics, and building dashboards and reports. Using QlikView Desktop's intuitive interface, developers create SQL-like scripts (augmented by wizards) that power the collection and transformation of data from multiple sources into an associative model. App designers choose the best visual representations of the data from a wide array of available options—including out of the box, custom-built, and third-party visualizations.

QLIKVIEW WORKBENCH

QlikView Workbench is a Microsoft Visual Studio® plug-in developers use to create powerful, web-based QlikView extensions. It is a drag-and-drop web integration toolkit that combines the flexibility of a powerful QlikView API (application programming interface) with an easy-to-use Visual Studio integrated development environment. QlikView Workbench also includes a Visual Studio template to help developers quickly and easily get started building powerful QlikView extensions.

QlikView Workbench is also the easiest way to integrate QlikView analytics into websites or Windows applications. Many business applications can benefit from embedding powerful and intuitive dashboards and reports directly into the user interface.

QLIKVIEW DIRECT DISCOVERY

With Direct Discovery, QlikView brings relevance and context to Big Data. QlikView Direct Discovery provides connectivity to SQL-based data sources such as Cloudera Impala and Teradata Integrated Data Warehouse. Business users query data in Big Data repositories on the fly and QlikView caches query results in memory for fast recall by multiple users. In a single app, users can work with data stored in Big Data repositories as well as in QlikView's in-memory data model.

This hybrid approach enables business users to tap into Big Data without knowledge of programming. Users get the associative experience across *all* data in the app, regardless of where it is stored—a capability unique to QlikView. Users can start anywhere and go anywhere, drilling down to granular details when necessary. Direct Discovery is a capability of QlikView 11.2, available at no additional license charge.

QLIKVIEW DATA CONNECTORS

Out of the box, QlikView can extract data from Microsoft Excel as well as sources that adhere to standards such as ODBC (open database connectivity) and XML (extensible markup language). Developers can use the open QVX (QlikView data exchange) format for importing data from non-standard data sources (e.g., Google BigQuery). In addition, QlikView provides connectors for extracting data from some of today's most popular business applications and platforms. And with QlikView Direct Discovery, QlikView can connect directly to any SQL-compliant data source; the data is left in its original location and included in the QlikView app alongside the in-memory data sourced from other systems.

QlikView Connector for Use with SAP NetWeaver

Using QlikView, organizations complement their centralized SAP reporting capabilities with instant, user-driven analysis, enabling decision making at the speed of business. The QlikView connector for use with SAP NetWeaver® enables SAP users to perform quick, flexible, visual, ad hoc analysis. QlikView combines data from SAP® R/3®, mySAP™, SAP BW, and BEX queries with data from non-SAP systems. All of this data is available for analysis with a single click.

SPEED-OF-THOUGHT ANALYSIS

Call up data, ask questions, and get answers—all on the fly. Fire up a shared session and engage with others in real-time, collaborative decision making. Leverage QlikView's highly optimized, scalable, in-memory engine for instant access to very large data sets. See the relationships and uncover meaning in data, for a quick path to insight.

QlikView also offers out-of-the-box QlikStart templates for a range of SAP modules including Sales and Distribution (SD), Materials Management (MM), Project Systems (PS), Production Planning (PP), Human Resources (HR), Controlling (CO), and Finance (Account Receivable (AR), Accounts Payable (AP), and General Ledger (GL)).

QlikView Connector for Salesforce.com

The QlikView connector for Salesforce.com® enables content developers to create QlikView apps that utilize Salesforce.com data. By merging Salesforce.com data with data from other systems, organizations provide business users with unprecedented visibility and insight. This connector works in QlikView Desktop and in the browser, including on mobile devices, with apps deployed on QlikView Server. The QlikView connector for Salesforce.com is available as a free QlikView add-on.

QlikView Informatica Connector

Many organizations use an Informatica data warehouse to manage a single source of data and meet compliance and governance requirements. To facilitate agile, high-performance analytics, organizations can use the QlikView Informatica® Connector to extend the value of their Informatica data warehouse by producing QVX files that can be directly read into QlikView.

Additional connectors are available from QlikTech and our partners on QlikMarket (market.qlikview.com).

QLIKVIEW FOR IT PROFESSIONALS

QlikView administrators interact with QlikView primarily through QlikView Server and its subcomponents, as well as QlikView Expressor.

QLIKVIEW SERVER

QlikView Server ensures a single version of the truth across an organization. It provides a simple way to ensure that everyone has access to the latest data and analysis. QlikView Server delivers enterprise manageability with role-based administration to ensure that only those who have permissions to use data can access it. QlikView Server plugs into existing security infrastructures to keep data fully protected.

Users can access apps hosted on QlikView Server through any of the Windows, browser, or mobile QlikView clients. Administrators manage QlikView Server with the web-based QlikView Management Console.

RAPID TIME TO VALUE

Measure time to value (or time to market, for QlikTech partners) in weeks, days, or even hours. Gartner has characterized QlikTech as having the lowest cost per user of all the data discovery vendors, and below average implementation costs per user.[i] Aberdeen Group has found that organizations that deployed QlikView were able to deliver dashboards to business users at the lowest cost of all the best in class vendors—and that QlikView users were on average able to drive a revision to dashboards from conception to completion in a single day, as opposed to an average of 3.5 days for all survey respondents.[ii]

QLIKVIEW WEB SERVER

QlikView Server ships with the built-in QlikView Web Server, which includes AccessPoint, a portal through which users can search for, discover, "favorite," and rate QlikView apps. Customers can use QlikView Web Server or swap it out for Microsoft IIS (Internet Information Server).

QLIKVIEW PUBLISHER

QlikView Publisher, an add-on to QlikView Server, ensures that the right information reaches the right user at the right time in the right format. QlikView Publisher automates the data refresh process and delivers complete control over the distribution of QlikView analytic content. Publisher distributes apps securely to the right users and groups and makes sure PDF reports go out on time. (Distributing PDF reports to users requires the optional QlikView PDF Report Distribution add-on module.)

QLIKVIEW EXPRESSOR DESKTOP AND SERVER

QlikView Expressor provides IT professionals and app developers/business analysts with a rich graphical development studio for preparing data for QlikView. Technical users can visually define and centrally store common data definitions and business rules for use across the entire QlikView deployment. QlikView Expressor ensures data confidence and consistency while retaining the speed and flexibility of QlikView.

QLIKVIEW GOVERNANCE DASHBOARD

The QlikView Governance Dashboard helps IT professionals maximize data governance and optimize their QlikView investments by discovering how QlikView is used at a granular level. With this knowledge, they can introduce more manageable and repeatable processes when developing QlikView apps, as well as address data lineage and impact analysis questions. They can also ensure compliance with regulatory acts, policies and standards that require an understanding on how data is created, protected and delivered. The QlikView Governance Dashboard is a free QlikView app available on QlikMarket.

To learn more about the QlikView Business Discovery platform visit us on the web at www.qlikview.com.

[i] Gartner found that QlikTech was among the data discovery vendors that most often supported interactive dashboards and ad hoc analysis, sometimes with complex types of queries. See the March 29, 2011 Gartner report, "BI Platforms User Survey, 2011: Customers Rate Their BI Platform Vendor Cost of Ownership." (Report available to Gartner subscribers, or for purchase.)

[ii] Aberdeen found that QlikView customers were able to deliver dashboards at a per-user cost that was roughly three quarters that of the best in class. See the August, 2010 Aberdeen research brief, "QlikView Customers Outperform the Best-in-Class with Dashboards." You can download the report in its entirety here: http://qlik.to/mQ3lYu.

QlikView

QLIKVIEW ARCHITECTURAL OVERVIEW

A QlikView Technology White Paper

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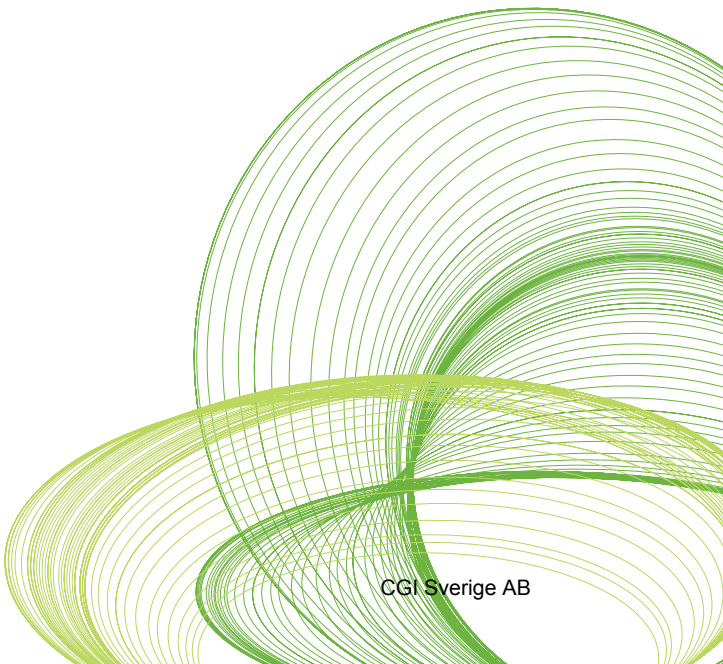
qlikview.com

ESV Dnr 7.1-728/2014



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QlikView

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Making Sense of the QlikView Platform

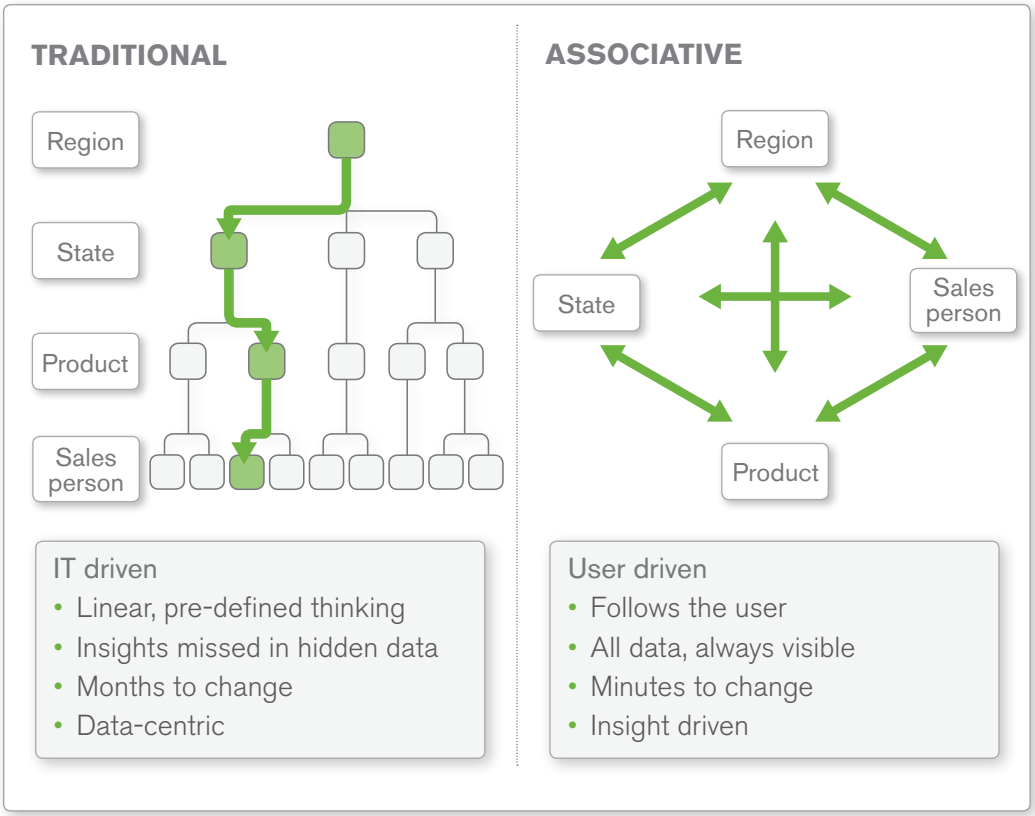
Our customers often ask about what goes on under the hood of QlikView. In this *QlikView Technology White Paper* we shed light on the inner workings of QlikView from the perspective of three roles: IT professional, BI (Business Intelligence) professional (business analyst / BI developer), and business user. The target audience for this paper consists of IT professionals and tech-savvy business people who are exploring BI solutions. This paper answers the question, "What are the basics I should know about the QlikView Business Discovery platform so I can make an informed buying decision?"

Most BI Software Is Built on Old Technology

Query-based BI tools have been the status quo for decision support for decades now. Many variations of query-based BI software are on the market. Some are flexible and others are high-performance. But they all share one critical flaw: they are unable to inherently maintain associations among data elements (see Figure 1).

- **Query-based tools divorce data from its context.** People making complex business decisions don't always have full access to their supporting data – even when they have access to BI software. Some data is available only as isolated and discrete queries, without context between one query and the next. This leaves gaps for people trying to make data-driven business decisions.
- **Where there is a query, there is dissociation.** With query-based tools, creating associations among all available data elements would require a business analyst or IT professional to cram every associated field into a single query — a nearly impossible task. The alternative — hard coding associations among queries into the application layer — is equally daunting.

Figure 1 Traditional BI solutions don't maintain all the data associations



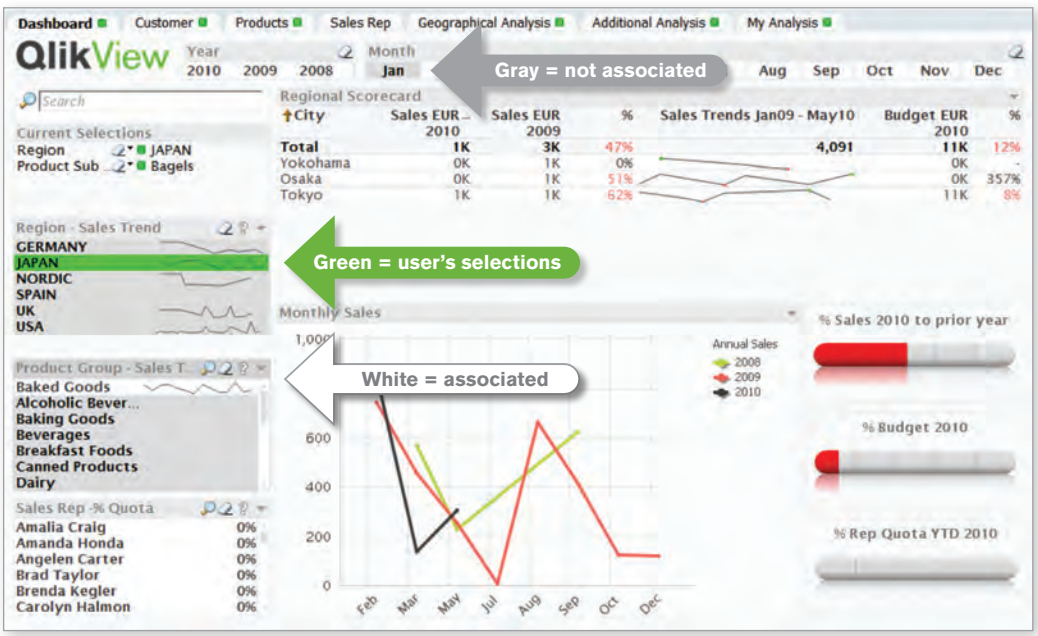
The QlikView Difference: The Associative Experience

One of the QlikView's primary differentiators is the associative user experience it delivers. QlikView is the leading Business Discovery platform. It enables users to explore data, make discoveries, and uncover insights that enable them to solve business problems in new ways. Business users conduct searches and interact with dynamic dashboards and analytics from any device. Users can gain unexpected business insights because QlikView:

- **Works the way the mind works**. With QlikView, users can navigate and interact with data any way they want to — they are not limited to just following predefined drill paths or using preconfigured dashboards. Users ask and answer questions on their own and in groups and teams, forging new paths to insight and decision. With QlikView, discovery is flexible. Business users can see hidden trends and make discoveries like with no other BI platform on the market.

- **Delivers direct — and indirect — search.** With Google-like search, users type relevant words or phrases, in any order, and get instant, associative results. With a global search bar, users can search across the entire data set in an application. With search boxes affiliated with individual list boxes, users can confine the search to just that list box. They can both conduct direct and indirect searches. For example, if a user wanted to identify a sales rep but can't remember the sales rep's name — just details about the rep, such as that he sells fish to customers in the Nordic region — the user can search on the sales rep list box for "Nordic" and "fish" to get the names of sales reps who meet those criteria.
- **Delivers answers as fast as users can think up questions.** A user can ask a question in QlikView in many different ways, such as lassoing data in charts and graphs and maps, clicking on items in list boxes, manipulating sliders, and selecting dates in calendars. Instantly, all the data in the entire application filters itself instantly around the user's selections. The user can quickly and easily see relationships and find meaning in the data, for a quick path to insight. The user can continue to click on field values in the application, further filtering the data based on questions that come to mind.
- **Illuminates the power of gray.** With QlikView, users can literally see relationships in the data. They can see not just which data is associated with the user's selections — they can just as easily see which data is not associated (see Figure 1). How? The user's selections are highlighted in green. Field values related to the user's selection are highlighted in white. Unrelated data is highlighted in gray. For example, when a user clicks on a product category (say, bagels) and a region (e.g., Japan), QlikView instantly shows everything in the entire data set that is associated with these selections — as well as the data that is not associated. The result? New insights and unexpected discoveries. For example, the user might see that no bagels were sold in Japan in January or June, and begin an investigation into why.

Figure 2 QlikView delivers an associative experience



Components of the QlikView Business Discovery Platform

The QlikView Business Discovery platform consists of 3 major components – QlikView Server, QlikView Publisher and QlikView Desktop, each playing an important part in designing, developing and implementing almost every QlikView deployment (see Figure 3). Each component is used primarily by either an IT professional, a business analyst/developer, or a business user.

Figure 3 Components of the QlikView Business Discovery platform

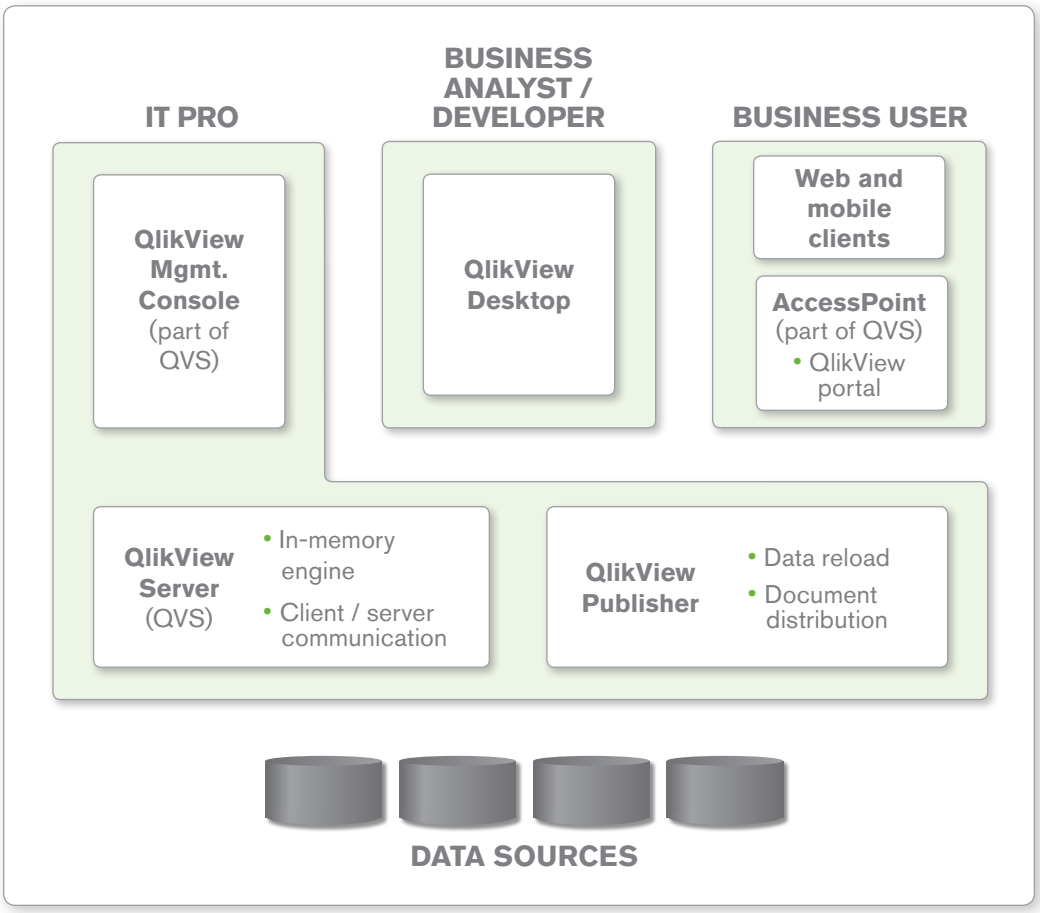
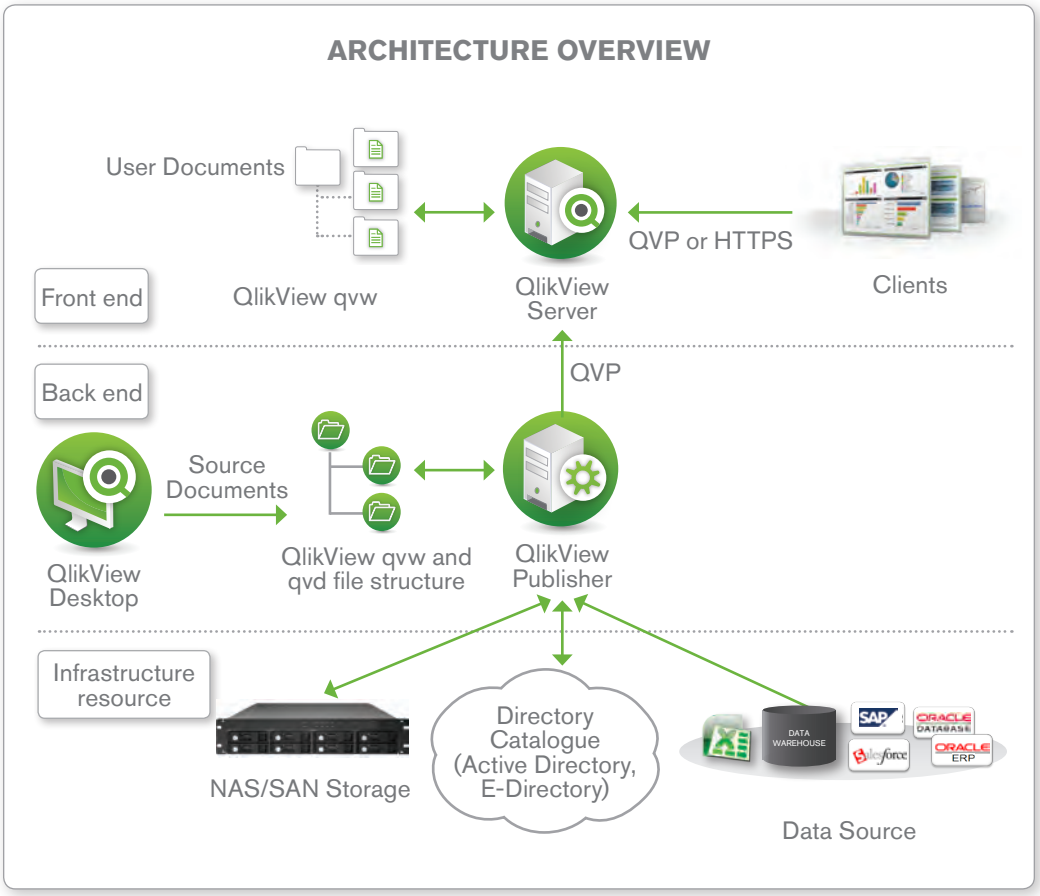


Figure 4 depicts a simplified view of a typical QlikView deployment containing the location of the various QlikView products as well as both data and application locations.

Figure 4: Typical QlikView deployment



QLIKVIEW DESKTOP

The QlikView Desktop is a Windows-based desktop tool that is used by business analysts and developers to create a data model and to lay out the graphical user interface (GUI or presentation layer) for QlikView apps. It is within this environment where a developer will use a SQL-like scripting environment (augmented by 'wizards') to create the linkages (connection strings) to the source data and to transform the data (e.g. rename fields, apply expressions) so that it can be analyzed and used within the UI, as well as re-used by other QlikView files. The QlikView Desktop is also the environment where all user interface design and user experience is developed in a drag-and-drop paradigm: everything from graphs and tables containing slices of data to multi-tab architectures to application of color scheme templates and company logos is done here.

The file type that is created using the QlikView Desktop is known as a QVW (.qvw, or QlikView file). Upon reload, a QVW can be used to create a data-only QVD (QlikView data) file, which is binary and contains no UI.

QLIKVIEW SERVER (QVS)

The QVS is a server-side product that contains the in-memory analytics engine and which handles all client/server communication between a QlikView client (i.e. desktop, IE plugin, AJAX or Mobile) and the server. It includes a management environment (QlikView Management Console) for providing administrator access to control all aspects of the server deployments (including security, clustering, distribution etc.) and also includes a web server to provide front-end access to the documents within. The web server's user portal is known as Access Point. (It's important to note that while the QVS contains its own web server, one can also utilize Microsoft IIS (Internet Information Server) for this purpose, too). The QVS handles client authorization against existing directory providers (e.g. Microsoft Active Directory, eDirectory) and also performs read and write to ACLs (access control lists) for QVW documents.

QLIKVIEW PUBLISHER

The QlikView Publisher is a server-side product that performs two main functions:

1) It is used to load data directly from data sources defined via connection strings in the source QVW files.
2) It is also used as a distribution service to reduce data and applications from source QVW files based on various rules (such as user authorization or data access privileges) and to distribute these newly-created documents to the appropriate QlikView Servers or as static PDF reports via email.

Data sources that can be readily accessed by QlikView include standard ODBC or OLEDB-compliant databases, standard flat files such as Microsoft Excel, XML, etc. as well as from systems such as SAP NetWeaver, Salesforce.com, and Informatica.

QlikView and the IT Pro

QlikView's approach to BI allows for a self-service model for business users on the front end while maintaining strict data security and governance on the back end. Because of this approach, IT professionals—from enterprise architects to data analysts — can remain focused on their core competencies: data security, data and application provisioning, data governance and system maintenance. They no longer have to spend time writing and re-writing reports for business users.

In a typical QlikView deployment, IT professionals focus on:

- Managing data extracts and data and system security
- Creating and maintaining source QlikView files (QVWs and QVDs)
- Controlling data refresh and application distribution through QlikView Publisher
- Administering QlikView deployments via the QlikView Management Console (part of QVS)

QlikView and the Business Analyst / BI Developer

The role of a business analyst or BI developer in a typical QlikView deployment primarily involves the use of QlikView Desktop. QlikView developers use this Windows desktop application to extract data from source systems, create data models, and transform the data. It is where they describe all metadata, create data storage layers (QVD layers), and lay out the user interface.

The BA or BI developer can also reuse existing extracted and pre-modeled data from the QVD layer by pulling "off-the-shelf" data from the QVD, when relevant for their application.

The BA or BI developer also wants to ensure that their QlikView business applications are using the most recent data and that QlikView apps are being distributed to the correct business user community. For this reason, BAs and BI developers typically work closely with IT pros who use QlikView Publisher on the back end to ensure data refresh rates and QlikView Server on the front end to ensure the applications are correctly distributed and meet the business' needs.

QlikView and the Business User

Business users interact with QlikView applications exclusively via the front end of a deployment, most typically using a browser on their desktop, laptop, or mobile device (such as an iPad). Users simply open their AccessPoint portal (or, in the case of integrated solutions, their organization's own enterprise portal) and select the QlikView application they wish to use.

QlikView Server provides all client-server communication and is the engine that drives the in-memory associative experience. Once the user's security credentials are verified, they then open and can begin working with the application, exploring and interacting with the data and asking and answering their own stream of questions in a self-service mode. Users can also collaborate with other users in the organization, sharing insights and exploring data together, in real time or asynchronously.

How QlikView Works: A Quick Look Under the Covers

When a QlikView document is published on a QlikView Server, the content it contains becomes available for consumption by any user with privileges to access it. QlikView works like this:

- **When a user first opens a QlikView document, data is loaded in memory.** The compressed and unaggregated dataset is loaded off the disk and into the QlikView Server's RAM (random access memory). This in-memory repository serves as the base dataset for this initial user and all other users requesting the same document. This repository stays in memory until no user activity has occurred within a defined time-out period.
- **Users explore data via selections.** Central to QlikView is the concept of a user-defined selection state. As users click around in a QlikView document, they indicate which subsets of data they are interested in analyzing and which subsets should be ignored. QlikView takes advantage of the highly indexed nature of the unaggregated dataset. QlikView dynamically presents a subset of all the data available to the QlikView document based on the selection state. This happens in real time as the user executes clicks.
- **Upon selection, aggregates render instantly.** On the fly, QlikView renders aggregates as intuitive and interactive user interface objects: charts, graphs, tables, etc. Users interact with objects in QlikView documents through any supported client. Users can create their own objects using the collaboration features of QlikView.

For a more comprehensive understanding of how QlikView works, please refer to the QlikView Architecture and System Resource Usage Technical Brief at http://www.qlikview.com/us/explore/resources/technical-briefs?language=english

QlikView's Architecture Raises the Bar for Business Discovery

Through the technology decisions we've made, QlikTech gives our customers the fastest, most intuitive, most flexible BI platform in history. The QlikView platform delivers:

- **A rich, full, overview of the business.** With QlikView, all user interface objects and their underlying aggregates are always in context (associated) with one another. This associative experience gives decision makers a better overview of their business. They can create and use dimensions in charts, and consume content any way they want to: an installed client that works offline, a Web browser, or a mobile device. Business data is available to users any place, anytime.
- **Broad, deep business insights.** Nearly all organizations deal with large datasets. Loading large volumes of data into QlikView from a combination of many data sources allows insights into aspects of the organization not otherwise apparent. With QlikView, even large volumes of data don't have to be pre-aggregated. Users get near-instantaneous response speeds as each and every QlikView object responds to their every click.
- **A shared version of the truth for all.** QlikView can scale to support thousands of connected users, giving everyone in the organization access to one shared version of the truth. With QlikView, an application originally intended for a single user or small group can be deployed to many others simply by adding memory and processing power. The application itself does not have to be changed.
- **Speedy time to value.** QlikView is quickly and easily deployed and integrated with existing enterprise systems. Developers don't have to spend time hard-coding answers to specific business questions. This saves a vast amount of time in the implementation process. As a result, users get answers to questions when they need them, rather than waiting weeks or months. High user adoption and satisfaction invariably means better return on investment.
- **Low ongoing total cost of ownership.** QlikView offers a simple way to create and manage data analysis. QlikView simplifies the extraction and combining of various data sources to create a single, detailed, flexible view of an organization's data. The platform has a central, web-based management console that enables administrators, wherever they may be, to manage everything that has to do with QlikView.

Appendix

RELATED QLIKVIEW WHITE PAPERS AND TECHNICAL BRIEFS

The QlikView Associative Experience Technology White Paper
http://www.qlikview.com/us/explore/resources/whitepapers/the-associative-experience

QlikView Development and Deployment Technical Brief
http://www.qlikview.com/us/explore/resources/technical-briefs?language=english

QlikView Architecture and System Resource Usage Technical Brief
http://www.qlikview.com/us/explore/resources/technical-briefs?language=english

RELATED QLIKVIEW BLOG ARTICLES

The Insights You Can Glean in Just Five Clicks, December 6 2010
http://community.qlikview.com/blogs/theqlikviewblog/archive/2010/12/06/the-insight-you-can-glean-in-just-five-clicks.aspx

The Five Things that Make QlikView Unique, February 2011
http://community.qlikview.com/blogs/theqlikviewblog/archive/2011/02/02/qlikview-s-uniqueness-better-for-end-users.aspx

Business Discovery: The Next Generation of BI, January 28 2011
http://community.qlikview.com/blogs/theqlikviewblog/archive/2011/01/28/business-discovery-the-next-generation-of-bi.aspx

Donald Farmer's Take on Business Discovery, July 28 2011
http://community.qlikview.com/blogs/theqlikviewblog/2011/07/26/donald-farmer-s-take-on-business-discovery

"Unpredictable Questions and the Power of Gray," August 18, 2010
http://community.qlikview.com/blogs/theqlikviewblog/archive/2010/08/18/unpredictable-questions-and-the-power-of-gray.aspx

"QlikView Is Associative to Its Very Core," August 16, 2010
http://community.qlikview.com/blogs/theqlikviewblog/archive/2010/08/16/qlikview-is-associative-at-its-very-core.aspx

"The Car Engine Analogy," August 13, 2010
http://community.qlikview.com/blogs/theqlikviewblog/archive/2010/08/13/car-engines-and-the-associative-experience-an-analogy.aspx

"It All Comes Down to Simplicity," August 12, 2010
http://community.qlikview.com/blogs/theqlikviewblog/archive/2010/08/12/simplicity-equals-success.aspx