

About Cramer Systems

Cramer is the leading provider of inventory powered back office automation software for the global telecommunications industry. Cramer5, the latest evolution of the Company's software solution, won the 2004 TeleStrategies Billing & OSS Excellence Award as the industry's "Best New Product." For top tier wireline and wireless operators worldwide, Cramer lowers costs and reduces time to market by automating processes that rely on a detailed knowledge of network inventory, capacity and service configuration information. The Company has over 240 staff at locations worldwide including Bath and London (UK), Washington (US) and Sydney (Australia).



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Industry Brief

Changing the Economics of Telecom Through Back Office Automation

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Changing the Economics of Telecom: The Real Outcome of the Downturn

Ask about the most significant outcome of the telecom downturn, and the focus invariably zeroes in on headlines.

But the headlines do not tell the full story. Telecom is on the verge of a fundamental industry transition, one which is set to **change the economics of telecom** forever.

The transition is one in which costs go down but service quality and consistency go up; in which productivity increases but staff numbers do not; in which investment in new network decreases but more network is actually used.

As other industry sectors have learned, the key to such a transition is enterprise-wide automation right at the heart of the business where value is created from raw materials. And that automation depends on ultra-reliable **processes** that track, direct, deploy, move, configure, assemble, consume and recover sellable **inventory** (capacity) throughout the enterprise.

The fact that this is essentially the domain of the telecom “back office” only serves to highlight the change in business strategy that is taking place in telecom.

Efforts to automate the “front office” (customer-facing) part of telecom have been under way for many years. Major investments

in CRM and Billing have aimed to increase customer self-service, provide flexibility and reduce costs.

But this latest downturn has forced telcos to consider the uncomfortable truth: further significant improvements in costs and customer experience will only be possible with a similarly strategic investment in automating the telecom back office.

Telcos are beginning to make such strategic investments. Many are adopting the same basic strategy, one that recognizes the central importance and new nature of an inventory system: **Inventory Powered Back Office Automation.**

Inventory powered automation is not just a vision or plan, but a very real, practical and strategic solution to the problem of under-efficiency in the telecom back office.

Inventory powered automation is the road back to increased market value, higher revenue and growth. Within three to five years, according to some forecasts, all operators will have embraced this model, which is the only solution to the problem of back office inefficiency, directly correlating to improvements in customer satisfaction and business performance.

Automating the Back Office: Common Perceptions and Wrong Turns

The fundamental obstacle to automation in telecom is the lack of a single, complete, reliable source of information about the configuration of the network.

In telecom, the quality of information about the network has a huge impact on costs because so many back office processes rely directly upon it. Where the information is incomplete, wrong or inconsistent, human intervention is required – rendering automation impossible.

Thus, the obvious benefits resulting from improving data quality have traditionally led telcos to conclude that they need a “better” inventory database. Unfortunately, limiting the scope of the solution to a traditional inventory database has resulted in some highly undesirable side-effects:

- Custom-built systems that become costly to maintain and require teams of specialists to change.
- Use of “passive” inventory databases that are only as good as what they are told, and provide no means of validating network change.
- Stacks (“stovepipes”) of technology components that act as vertically-integrated solutions that do not support all of the network technologies or services in use. Not scalable; also, expensive and complex.
- Hiring expensive specialists or contractors to handle the complexity and deal with the lack of system-held knowledge.

Waste in Telecom – Sizing the Problem

No one knows the scale of waste, loss and missed opportunity caused by inefficiency in the telecom industry, let alone the back office. But the signs are clear when. . .

. . . a major global operator announces plans to trim operational costs by \$2 billion over five years. Translation: they're currently wasting \$2 billion.

. . . the three largest U.S. incumbent and long distance operators cut 100,000 jobs, with no perceptible change in operational efficiency and productivity, or in financial performance attributable to back office automation.

. . . Telcos invested heavily in fiber, which reduced the cost of transmission to nil. The unexpected consequence: operators can no longer link or justify rate increases as offsets to the cost of the network. Many are now pinning future revenue hopes on another new set of investments: VoIP and Wi-Fi.

The real problem is not that the data is bad, but that the processes that surround the data allow it to become bad.

There are well-documented reasons why this scenario has been allowed to play out in telecoms' back offices.

Over time, traditional legacy solutions have gained a large following within operators' IT departments, which often display a deep commitment to maintaining the status quo. This attitude can be ingrained despite the overwhelming evidence that existing OSS systems produce error rates as high as 50% and are directly responsible for grossly inadequate knowledge of the network, higher operations costs, slow service delivery and escalating customer attrition rates.

In any other industry, such a high error rate would be inconceivable and unacceptable. In telecoms, it is the norm.

The attitude of maintaining the status quo is at least partly attributable to reluctance to change, and partly to skepticism about the new generation of commercial, off-the-shelf (COTS) solutions designed to replace legacy systems. The facts do not support such skepticism. Trials conducted on behalf of Tier 1 operators have proven on multiple occasions that select COTS products far exceed the performance and scalability requirements of leading global operators – at lower cost and optimal reliability, while totally eliminating the error-driven problems associated with legacy systems.

It's time for a change in attitude, and new thinking.

Competition and Technology – New Risks?

Competition and new technology increase pressure for sound decision-making – with no room for error, risk or guesswork. But the signs of the times show:

Long Distance Under Siege.

Incumbents' long distance service is ubiquitous, placing tremendous pressure on traditional LD firms, who think a counterattack on POTS is the best competitive response.

LD's Tenuous POTS Foray.

The LDs rely on discounted local loops to offer POTS. Those discounts could vanish in a heartbeat depending on how courts and regulators rule.

VoIP – Telecom Bubble Part II?

Operators of all stripes are racing to provide VoIP, convinced it will supplant circuit-switched voice. Customers want reassurance on quality and security, but this sobering feedback hasn't slowed telcos' VoIP investment binge.

The traditional answers have failed to provide a lasting solution to the problem telcos actually face. If the data and processes could be more tightly connected, and in a more comprehensive way, the vicious cycle of bad data, workaround and more discrepancy could be transformed into a virtuous cycle in which data accuracy is maintained automatically.

Such a system would ideally:

- Combine process automation with inventory management to provide complete control over all change to the network, allowing a much higher degree of control, visibility and consistency.
- Be an off-the-shelf application that provides generic capability that can be configured quickly and cheaply to meet specific needs.
- Be an enterprise-credible application that can extend across the business, across all the services and networks.

These high-level requirements set out the ground rules for inventory powered back office automation.

Inventory Powered Automation

It is a truism to say that telecom is about matching up available (or buildable) network capacity with demand for services. However, in order to do the match efficiently, telcos need a system that knows or provides:

- What sellable capacity there is – an inventory.
- How to connect and assemble any particular service type from the raw materials (ports, links, routes, indexes) – design automation.
- A way to coordinate all the thousands of network changes generated by service requests across field resources and network-facing systems.
- A continuous, automatic audit that compares what happened in the real world to what was supposed to happen.

Four components comprise an inventory powered back office automation system:

- An Active Inventory Core
- A Network Process Engine
- Implementation Control
- Data Integrity Management

Cramer is the first company to fully deliver all four components of inventory powered automation in a single software platform. Many of the world's leading operators use Cramer as the basis for cutting costs, improving network and staff utilization, while improving the quality of the customer experience.

Proven ROI

Cramer has demonstrated the value of inventory powered back office automation by delivering proven ROI to its customers, which include Bell Canada, BT, O2, KPN Telecom, Japan Telecom, and more than 50 other operators in 20 nations.

Proven ROI means:

- **Reduced opex through process automation.** BT's Bearer Management System (BMS), a new strategic back office system with Cramer at the core, is expected to save millions in operations costs for BT's massive copper access network. KPN Telecom will reap similar savings by consolidating 15 discrete inventory solutions into one central platform managed by Cramer.

- **Reduced capex through network visibility.** Inventory powered back office automation extends beyond the back office. Cramer influences equipment purchases, and ensures informed decisions on raising capital – based on a precise view of current network assets and capacity, and the ability to extrapolate future requirements. BT has precise knowledge of equipment in the network, and thus can better plan future purchases to replace or augment facilities.
- **An enhanced customer experience, through improved service fulfillment and assurance.** While inventory powered back office automation is technology and service agnostic, customers may approach it differently based on specific needs. Among many other uses, KPN Telecom and FastWeb leverage Cramer's pinpoint-accurate inventory to coordinate fault management solutions that boost service assurance and customer satisfaction. A major U.K. mobile operator, O2, finds ample ROI in that one area alone, using Cramer to ensure rapid problem isolation and problem resolution for core corporate customers.
- **Increased business agility through accelerated introduction of new services and new network technology.** Want to videoconference with extended family via your home TV, then check e-mail before hooking into a pay-per-view movie? In Italy, FastWeb's half-a-million customers can do all that, thus feeding the nation's highest revenue per customer of any service provider. Cramer's ability to handle diverse service and technology platforms is the key – quickly provisioning complex, high-margin service bundles for end users, and helping FastWeb take market share from Italy's incumbent.

These are a few illustrations of how inventory powered back office automation delivers proven ROI. For more detail, read on about BT, KPN Telecom and FastWeb.

BT

Like many Tier 1 operators, BT has a significant investment in its copper access network. While that network is now technically able to support more advanced and valuable services, delivering and supporting those services is the job of BT's back office IT systems.

Some of these systems were originally designed decades ago to deliver much simpler products, in a very different competitive landscape, and with vastly simpler technical requirements – essentially one service per circuit. They were also custom-built to meet BT's specific needs because at the time there was no viable, commercially available alternative.

The net result was that in order to meet its business objectives for service delivery of more complex, profitable broadband offerings over existing copper infrastructure, and operational savings, BT needed a new strategy right at the core of its back office systems. That new strategy uses Cramer inventory powered back office automation.

BT and Inventory Powered Automation

BT is deploying Cramer as a strategic back office platform supporting more automated service fulfillment across its nationwide access network.

How it works:

Active Inventory Core: Cramer's **ResourceManager** contains a representation of every service and every piece of network equipment in BT's nationwide access network: some 1.5 Terabytes of information. **ResourceManager** integrates with and drives other back office solutions provided by Siebel, BEA, Clarify, Oracle, Geneva and PTC.

BT now has a precise view of asset deployment, capacity utilization and customer records, expediting fast, accurate provisioning and delivery of services. Better insight on network availability means that BT now can optimize capacity utilization, driving more services and revenue across the network.

More detailed customer records enable BT to prioritize orders and cross-sell/upsell new services to existing customers, while more accurate customer and network records ensure speedy service issue resolution.

Network Process Automation: Cramer's **TaskEngine**, responsible for Network Process Automation, "templatizes" the expertise of back office specialists into repeatable, rules-based procedures, enabling BT to make better use of skilled personnel, and reducing error rates caused by manually-generated inventory change records. As a result, BT now is making significant headway in eliminating double-keying of order/change information. Orders are fulfilled correctly the first time – and on time – increasing customer satisfaction.

Implementation Control: Implementation Control, handled by Cramer's **DeliveryEngine**, automatically drives the correct order of workflow and field processes by commanding the correct sequencing of inventory change records into work at the field level. With the ability to order discrete inventory record changes, BT now can undertake field work in a single site visit vs. multiple trips, reducing truck rolls, field re-work, and their associated costs.

Data Integrity Management: Cramer's **SyncEngine** "audits" the system, ensuring that BT's field processes have been executed correctly. SyncEngine goes beyond autodiscovery to ensure that all changes at the field level, or anywhere in the network, are reflected in a continuously updated Active Inventory Core.

As a further aspect of Data Integrity Management, Cramer created a new product which meshes the worlds of operations and physical network planning. BT's Operations experts and network planners now have full visibility into one another's systems, improving their ability to plan new services or build new facilities – hence seeing the network "as it is, and as it will be."

Today, BT is moving forward to deliver broadband and reap new revenue streams from its greatest asset – the copper access network. Cramer is helping BT realize its vision of back office automation, delivering improvements that include:

- Accuracy of Network Records – to eliminate fallout from inaccurate records (for example disconnects), improve data control, build processes that keep data up to date, and ensure more accurate feedback from field engineers.
- Elimination of Double-Keying – to streamline headcount and reduce error rates through a process where data is entered one time, correctly.
- Minimization of Truck Roll – to reduce the cost of field work and re-work.
- Faster Time-to-Service – to ensure prompt delivery as a value add to customers.
- Flow-Through Restoration – based on more accurate records.
- Service Prioritization – to guarantee SLAs or rank delivery in order of importance (doctors, hospitals).
- Minimal Network Intervention – to have a system with built-in routing.
- Revenue Optimization – to cross-sell and up-sell to customers, making the inventory part of the sale.
- Improved Planning – to sync the inventory with spatial planning, ensuring tight coordination between operations and the physical network.

KPN Telecom

KPN Telecom Wireline’s back office has grown up over the years in a way similar to that of many Tier 1s: the challenge of addressing new services and technologies led to the creation of multiple disparate “stovepipe” inventory solutions.

Over time, back office complexity played havoc with KPN Telecom’s automated provisioning, requiring manual intervention that in turn fed higher rates of data errors. Costs rose across-the-board for planning, operations, and for personnel required to maintain an increasingly complex back office systems estate.

With the emergence of commercial-off-the-shelf solutions, KPN Telecom recognized an alternative that would centralize all back office applications in a single inventory-driven platform. After tests involving many competing vendors, KPN Telecom opted for Cramer inventory powered back office automation. Cramer is meeting KPN Telecom’s goal for a single COTS solution that works “out of the box” with no special implementation requirements.

KPN Telecom and Inventory Powered Automation

Beginning in 2004, KPN Telecom is deploying Cramer’s automation solution, which provides four complementary capabilities that directly address KPN Telecom’s vision of a consolidated, ultra-efficient back office. The four capabilities are: **Active Inventory Core, Network Process Automation, Implementation Control, and Data Integrity Management.**

On the Record

“Cramer has the only viable solution to replace our legacy system. Our new, strategic agreement elevates Inventory Management to a core application that will drive enterprise-wide performance gains at KPN Telecom. Cramer fits our target architecture, meets our requirements across-the-board, and supports a solid return on investment.”

Eelco Blok, Executive Vice President of Operations, KPN Telecom

Active Inventory Core: KPN Telecom is using Cramer’s **ResourceManager** as the central inventory management engine of its network, consolidating 15 separate inventory solutions into one platform providing continuously updated data on all network technologies and services including: SDH, PDH, DWDM, X.25, Frame Relay, DSL, PSTN and IP.

Precise knowledge of network resources and capacity enables KPN Telecom to quickly deliver services in the present, and to accurately plan network build-outs to support future offerings. Cramer integrates with and provides centralized data and management for other critical applications including BusinessObjects and Micromuse Netcool, for fault management. The end results of increased efficiency are greater customer satisfaction through rapid service delivery, and fast problem isolation and resolution.

Network Process Automation: Consolidating disparate inventory systems into one platform has meant that KPN Telecom can make better use of its skilled personnel in the back office. Cramer’s **TaskEngine** templatizes the expertise of these specialists into repeatable, rules-based procedures, freeing expertise for other tasks and reducing error rates caused by manually-generated inventory change records.

Implementation Control: Cramer’s **DeliveryEngine** automatically drives the correct order of workflow and field processes by commanding the correct sequencing of inventory change records into work at the field level. As a result, KPN Telecom is improving service delivery times and customer satisfaction.

Data Integrity Management: Data accuracy is maintained by **SyncEngine**, which “audits” the system for KPN Telecom, ensuring that field processes have been executed correctly. **SyncEngine** goes beyond autodiscovery to ensure that all changes at the field level, or anywhere in the network, are reflected in a continuously updated Active Inventory Core.

With Cramer’s solution, KPN Telecom is realizing its ambition to create a single, centralized solution managing all assets, capacity and network planning for the wireline division, using a COTS product that works “out of the box.”

FastWeb

With projected 2004 revenue of €1.0bn, a nationwide fiber network spanning all major urban markets, and close to half a million customers for its combined CATV, POTS, Internet and data services, Italy’s five-year-old FastWeb is one of the more remarkable success stories of the era of telecom deregulation.

Rapid growth has put FastWeb close on the heels of larger, better established incumbents in the market – and also created special back office challenges requiring innovative, far-reaching solutions.

FastWeb has worked closely with Cramer since 2002, deploying an inventory powered back office solution capable of supporting the operator’s diverse offering of advanced consumer and business services over a single robust OSS platform. The results have helped FastWeb achieve its two primary business objectives: ascendance as Italy’s dominant competitive provider of integrated voice/data/video services; and financial strength for continued expansion, as the leading low-cost provider.

Further, the Cramer solution’s ability to readily handle convergent service bundles has contributed to FastWeb’s owning one of the largest average revenue per user (ARPU) figures in the industry – €790/year or more than three times the ARPU of Italy’s incumbent.

FastWeb and Inventory Powered Automation

In 2002, FastWeb began using Cramer to plan the network build in Milan, its first market. Since then, inventory powered automation has been the force behind FastWeb’s rapid expansion to a dozen more key urban markets, and its ability to quickly process, provision and drive revenue from new customers.

The four capabilities of inventory powered automation are reflected in FastWeb’s back office: Active Inventory Core, Network Process Automation, Implementation Control, and Data Integrity Management.

Active Inventory Core: Cramer’s **ResourceManager** is the heart of FastWeb’s OSS, serving as the Active Inventory Core as the operator builds out multiple SDH rings in more than a dozen urban markets to provide facilities-based services, or to provision unbundled loops that deliver the same service package in smaller markets. ResourceManager manages the inventory for the full network, coordinates circuit design, and ensures reliable data for capacity management and fault management. As a result, FastWeb realizes higher reliability of the network database, and reduced time to design all circuits including those for SDH, ADSL and IP services.

Network Process Automation: FastWeb recently began using Cramer’s **TaskEngine** to facilitate network process automation in delivering services to business customers. TaskEngine creates templates that encapsulate the expertise of back office professionals, introducing the highest levels of consistency and accuracy by automating key back office procedures.

Implementation Control: Cramer’s **DeliveryEngine** produces further time and resource savings by generating accurate workorder detail, coordination and sequencing.

Data Integrity Management: Cramer’s **SyncEngine** continuously “audits” the system, comparing the Active Inventory Core with the results of field engineering processes. Because FastWeb’s network passes every home and business in the major Italian markets – with an anticipated reach of up to 10 million customers by 2008 – the ability to provision and deliver services accurately, and the first time, reduces the cost of field re-work, further strengthening FastWeb’s position as the low-cost provider of integrated voice/data/video services in Italy.

On the Record

“All network buildout and service delivery rely on Cramer. It would have been impossible to grow as quickly and as profitably as we have without Cramer at the core of our OSS.”

Tommaso Speroni, OSS Director, FastWeb

Inventory Powered Automation and Your Business

As the successful work at BT, KPN Telecom and FastWeb demonstrates, inventory powered automation is technology and services agnostic – for wireline, wireless, and next generation operators offering bundled voice/data/Internet/CATV services. These three case studies are representative of more than 50 global operators who have selected Cramer for inventory powered back office automation.

Is inventory powered automation for you? The best test is experience, as measured by factors that may include:

- Delays in service provisioning and delivery
- Lengthy order to bill cycle
- High rate of customer attrition
- Slow response to network faults
- Poor capacity utilization
- Poor infrastructure utilization
- Needless investment in capacity/infrastructure stemming from inadequate data/knowledge of what you already have
- High leased line costs
- Excess capex – or fear of committing to capex
- Geographically dispersed operations centers
- Reliance on manual procedures, spreadsheets
- Customization vs. automation of complex service orders
- High data error rate – contributing to more frequent re-work
- Need to implement a “stovepipe” solution for every new technology service
- High cost of maintaining/integrating multiple stovepipes
- Risk of staying with legacy system exceeds risk of change
- High levels of operational expenditure

It only takes one of the above to pull your business down. Conversely, it only takes inventory powered back office automation to address all – and put operations to work for rather than against – your business.

For more information on Cramer and inventory powered automation for the telecom back office, see www.cramer.com

Changing the Economics of Telecom

Caught between shrinking margins and rising costs, operators need a strategic approach to the back office that changes the economics of telecom. Indicators:

POTS and Wireless Revenue Under Fire.

Incumbents’ wireless ventures continue to cannibalize POTS. But their wireless success is small comfort: 2G rates are down 50%, and high margin 3G is a pipedream until they beef up the back office.

DSL No Help.

Despite recent 33% rate cuts, DSL is losing to cable modem. Widening the market share gap: telcos lack adequate operational tools to deliver DSL.

Operations’ Bundle\$\$ Appetite.

Opex and capex gobble money as fast as operators earn it. Telecoms made \$1 trillion revenue in 2002, but spent \$736 billion on opex and \$182 billion on networks.

What are people saying about inventory powered back office automation and Cramer?

“Visionary service providers have grasped that they must orient key processes and functions around the inventory.”

Larry Goldman, OSS Observer

“TIRKS was designed 25-plus years ago, and service providers need a new solution that can support existing services and new technologies.”

Karl Whitelock, Stratecast Partners

“As a mobile operator, it is essential for us to increase the speed of service rollout, improve operational efficiencies and ensure networks are ready for next generation services. Cramer has made this possible.”

Fionnuala Coburn, Head of Transport Networks, Vodafone Ireland

“Cramer met our criteria more comprehensively than any other product on the market.”

Brian Partridge, Director of Capacity Management, Telewest