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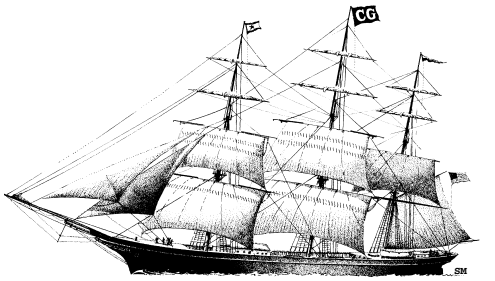

Navigating Information Technology Horizons℠

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IBM Rational Adds UNIX Tools and Redefines Next-Generation Enterprise Development

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Management Summary

The social networks and collaboration that technology can support has changed our lives. It has spawned new kinds of responses to disasters, and supports a collaboration with customers that can guide the details of product development. There is another equally pervasive wave that technology supports – one of industry-specific ideas that leverage technology to enhance profitability. This second wave is evident in the increasing role of technology in automobiles and in new kinds of medical devices, but is equally applicable to organizational processes. This second wave may seem may seem natural, and even, to some, overdue. However, it has ramifications that resonate back from the wallet-opening enthusiasm of customers, through the glee of business profit, all the way to the world of the world of enterprise software development. That world is about to undergo significant change.

There is growing acceptance of outsourcing and cloud. The administrative controls and visibility given by browser-based mashups of real-time data feeds validate and enhance remote management. This may become a significant drain of development opportunities, but there is still a large role for enterprise development. Cloud providers cannot make a profit handling the constantly changing peculiarities of business operations; they work effectively where there is a lot of commonality to leverage with scale-out. Enterprise software development still has a critical role in supporting integrated diverse processes whose scale and configuration are not met by commercial or open source software "off the shelf."

The realm of information technology has changed both in the breadth of business functions it supports (more) and in the granularity at which it consumes code (smaller chunks, primarily as services). Micro-processor multi-threading can circumvent latency to address formerly intractable business challenges. Virtualization breaks the bonds that once made infrastructures whole, but brittle. Virtualization now supports non-disruptive upgrades, new modes of software-based resilience, and quicker response to change. With more resilient systems, more application functionality can be and often is offloaded – to outsourcing and to end-point self-service and customization. Enterprise computing is a complex space for most large enterprises whose value – unlike, say, that of Google – goes beyond Internet-delivered services. For many of these unique organizations, it is a multi-platform environment. Each platform has its own advantages. Increasingly, development organizations, IT operations, and business units must collaborate to putting the right code on the platform that best suits the business objective.

IBM Rational has been working to keep enterprise development efficient, effective, and sustainable in the face of the possible outsourcing of commodity business processes. Recently, Rational has added some new tools for developing for execution on UNIX platforms. The build-out signaled by these tools heralds the beginning of a new era of enterprise development capabilities – one that supports both (1) multi-platform development, with visibility as to the tradeoffs and (2) the new backwash of bright ideas from users and IT operations that used to be considered beyond the development horizon. For more details of this evolution, please read on.

IN THIS ISSUE

The Changing World of Software Development

In a world where freshness sells, but cannot command an exorbitant price, enterprise development will never be the craft-style process that we like to imagine it once was.

- **The environment in which enterprise developers operate has become more complex in many dimensions.** Sensors create new sources of data to be consumed. Situational applications filter output to suit particular roles (and user devices). Optimizing a business process, while necessary and important, is no longer sufficient.
- **The objectives of development have also broadened.** With the adoption of SOA, software assets become components of a larger, evolvable whole. In this larger arena, each component must be aware of the larger systems it inhabits if it is to work well – like any other business process overlay. IBM's *Smarter Planet* automated traffic-water-sewage systems illustrate the scope that developers must be able to build to – even if their project, at first instantiation, seems more limited.
- **Code reuse requires good documentation.** Even failed development projects may be valuable as evidence of what did not work and why. Well-organized software asset repositories addressable by distributed teams via the Web, have become a key development asset. They support localization – not just for geographies, but also for specific organizational situations.
- **At the same time, all this newness must coexist with and leverage decades of legacy code** which, like other older generations, has great value but demands to be taken on its own terms. Each successful code deployment becomes instant legacy, rather like a new car. In this kind of evolving environment, change management capabilities become as important as documentation. They must be designed in at development time and must be fully supported over the lifetime over which the software is deployed.

Thus, as the enterprise become *systems of systems* through outsourcing and extension, they need to leverage all their technology assets in a coordinated way.

The enemy of any systems discipline is subjectivity – but satisfaction is very subjective, and particularly so in business, where the customer is always right. The challenge in enterprise software development is that three are three sets of stakeholders involved, who have very different but overlapping perspectives.

- *Developers* are creators. They want to write good code and to have the information they need to write it well. Requirements traditionally have been gathered at design time. More and more, particularly with large-scale projects (which interconnected processes foster), new requirements are harvested as feedback from users of the code.
- *IT Operations* is a consumer, pragmatically focused on all that is on its plate. It wants applications that install cleanly, run well, and will be easy to diagnose.
- *Business* is the shopper in this equation – focused on cost, outcome, and risk.

All of these attitudes are valid, necessary, and inevitable. The duties of these three stakeholders have been separated to the point of insufficient cooperation – leading to name calling and blame. The expansion of Rational into multi-platform support gives more commonality on which to base a pragmatic consideration of operational outcomes – a focus that is common to all three groups.

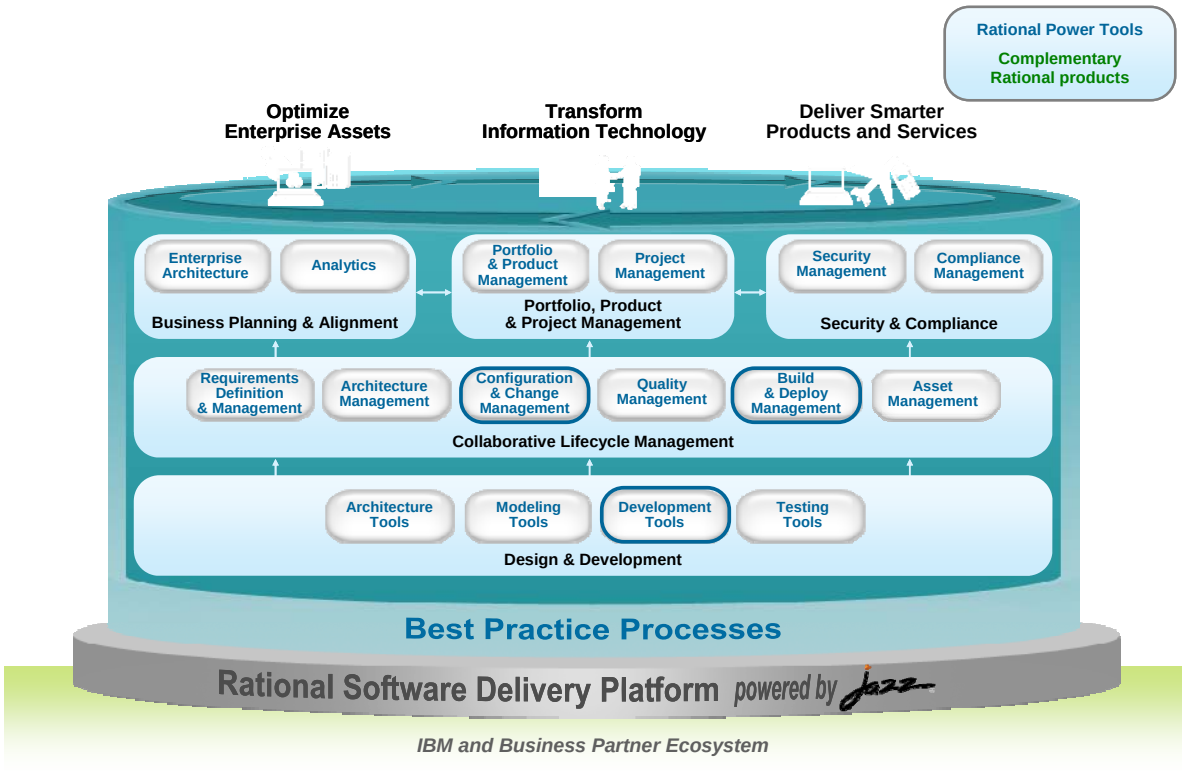
The enormous role that technology has taken, not just in organizational administration but in operations and services such as logistics and outsourcing, demands new disciplines in design as well as development. Whether it is low energy draw in devices, like the business apps running on a mobile device, or the longevity and reliability required by applications powering automotive functionality, intelligent devices place new demands on application development. It cannot merely work or work well – it must work well enough to differentiate.

The new choices that can and must be made must be documented and traceable, so that bad choices can be identified sooner, and good choices may be repurposed more widely. Requirements for software now come from a far broader field of constituents – think of the input now being harvested from customers and potential customers via the Web. There is, now, more work to be done. It begs for more sophistication in the development environment.

Rational Aligns with Reality

Some years ago, IBM Rational realized that, while new tools were helpful, the organization

Exhibit 1 — Rational offers a rich set of software delivery capabilities



Source: IBM

of those tools, and of the associated development processes, was also needed. It developed the *Eclipse Integrated Developer Environment (IDE)*. Open sourcing Eclipse was a bold move that endeared IBM to many and set Eclipse as a worthy paradigm. *IBM Rational Team Concert* added collaborative capabilities that to support core development roles and the distributed teams that were becoming more prevalent in large enterprises.

As businesses continue to convert conventional process silos into a more integrated business whole, more collaboration becomes a critical asset. Rational's Jazz initiative allowed more roles, languages, and platforms to be addressed. Collaboration enhancements, such as *BPMN 2.0*,[1] allow tangential roles to be more securely added to the process. More recently, IBM's acquisition of *Telelogic* added an infusion of new DNA and another operational dimension to the opportunities Rational could address.

Rational Augments the Reality

As an execution environment, UNIX has been a key asset for both large enterprises and high-performance computing projects, and IBM's *AIX* and *i5-OS* offer sophistication beyond that of *Linux*. In adding tools for developing to UNIX application platforms, Rational is reiterating what it did for *System z*[2] tools a few years ago. This expansion of the platforms addressed by Rational with tooling that is consistent between platforms produces a new contextual richness (much of it unique to IBM but not limited to IBM) that gives you more options for optimizing performance and taking out costs. Its completeness (see Exhibit 1, above) poses – and answers – some interesting new questions.

- *Where do you want to run that application?*
- *What kind of virtualization will be most effective for a particular workload?* Platform-based virtualization differs in granularity, density, and overhead.
- *Which platform will be least costly at the scale at which the workload will be run?*

[1] BPMN is an open standard that specifies a graphical notation for business processes, including semantics. It is a pragmatic, Esperanto-kind of initiative, and a work in progress. It should support better participation by the stakeholder groups mentioned earlier, each on its own terms.

[2] There are many interesting features on each of IBM platforms, for none is offered as a commodity.

- *What kinds of multi-tenancy controls are most appropriate, IBM i? IBM system z? IBM Cloudburst?*
- *How can you place data to optimize throughput where that is important?*
- *What business processes can you fast track by leveraging platform choice?*
- *What less urgent routines can be optimized for asynchronous operations to add more flexibility to the system as a whole?*
- *How can analysis of your portfolio help* answer these questions?

IBM Rational Developer for Power Systems

IBM now offers an Eclipse-based IDE for Power that addresses both AIX and IBM i[3]. The many new features just announced on IBM i 1.7 are all supported. I *Rational Developer for Power Systems* supports multiple languages (COBOL, Java[4], RPG, C and C++) and, of course, multiple developer teams. The congruence of this basic IDE with those for other platforms, including System z, makes new kinds of application rationalization –addressing those questions listed above – easier. This, in turn can support new kinds of application consolidation and modernization via SOA,

IBM Rational Team Concert for Power Systems

Team Concert adds the collaboration and development lifecycle support. With the new inclusion of UNIX and IBMi, more extensive multi-platform development teams can be supported. Multiple operating systems and multiple languages can be leveraged. It provides much-needed visibility and traceability across the development landscape. This in turn adds flexibility to enterprise development as a whole. Because of its collaborative base, new stakeholders can be accommodated and fully integrated into the development process where they have to be.

Rational Team Concert comes in an Express edition, as well as Standard and Enterprise Editions. If you have distributed development teams, this ability to meet a range of functionality and to do so within budget constraints will be welcome.

Rational Development Studio for i

This is a rebranding of *WebSphere Development Studio*. It includes RPG language enhancements, extended XML processing support and has many other new features to support developer productivity.

Part of Rational Development Studio is a tool called *Rational Open Access, RPG Edition.* This offering allows ISVs, Business Partners, and organizations to develop RPG code to access and to be output to new devices, including Cloud resources, Web Services, and spreadsheets. A popular use of this tool on IBM i is to convert the display of applications from green screens to modern GUIs, complete with mashups – an important feature in a developer environment focused on customer satisfaction and outsourcing avoidance.

The green-screen-to-GUI transformation is an example of the *iPhone* model of easy plugability. It is faster and safer than full-scale integration. It requires vetting and discipline (such as no *Flash*). This ability to virtualize the destination of an application underlies the role-specific functionality that most business users are coming to expect. It supports, not just change management, but change as the *new normal*. It also may require a change from a platform-specific mindset to a more pragmatic cosmopolitan attitude.

Compilers: XL C for AIX and XL C++ for AIX

Compilers[5] for the new *POWER7* microprocessor may seem mundane, but it is part of an evolution brewing in compilers – not just IBM's – to achieve a clear separation of *what* is to be done (an application thing) from *where and how* it is to be done (a chip functionality thing).[6]

More pragmatically, there is a huge body of legacy code, still indispensible to business operations, which cannot inherently leverage the multi-threaded nature of modern chipsets. Installing a new compiler is a low-risk way to get a 10-15% productivity boost. This boost may give you a window of time to prioritize which applications could best benefit from more mod-

[3] IBM i includes support of *Windows* on i, which, while not directly supported by Rational, pulls in significant application real estate.

[4] Java is supported through integration with *Rational Application Developer*.

[5] A compiler is a translator that converts developer's code into reusable machine code that runs on a specific processor.

[6] Yes, it is another instance of virtualization. It may just make compilers a strategic compute element again.

ernization – perhaps just upgrading to a modern UI, or perhaps something more substantial.

Rethinking Your Application Portfolio

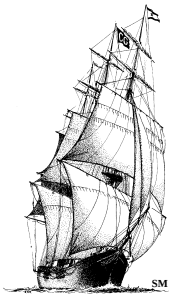
The drive to commodity computing has produced several endangered platforms and a new facility in getting applications migrated to one with more longevity. This facility, spawned by tactical need, also has strategic value. The ability to migrate easily gives data centers a deployment finesse that can also be leveraged when applications or application components are used only occasionally.

IBM's Migration Factory has had great success in the UNIX space, with over 2100 migrations to date (500 in 2009, with over 200 of those occurring in the fourth quarter.). Together with Rational's new UNIX tools, it offers developers some very potent ways to meet business needs. It also makes application retirement, and the harvesting and repurposing of legacy application data that often accompanies that retirement, a more rational (excuse the pun) process.

Conclusion

What Rational has created has the rich potential of a city. Living in a city puts an array of choices at your disposal. Many will seem unnecessary to your lifestyle at first, but will become attractive as you adjust and situations change. Data centers, like cities, are not collections of monuments but living, changing organisms.

The complexity and interrelation of business operations now crosses organizational boundaries and uses many elements that must function on a vast scale. An environment where a full set of tools, strategies, and deployment targets can be brought to bear in support of enterprise application development offers strategic and tactical values. Think of how its adoption can benefit your enterprise.



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