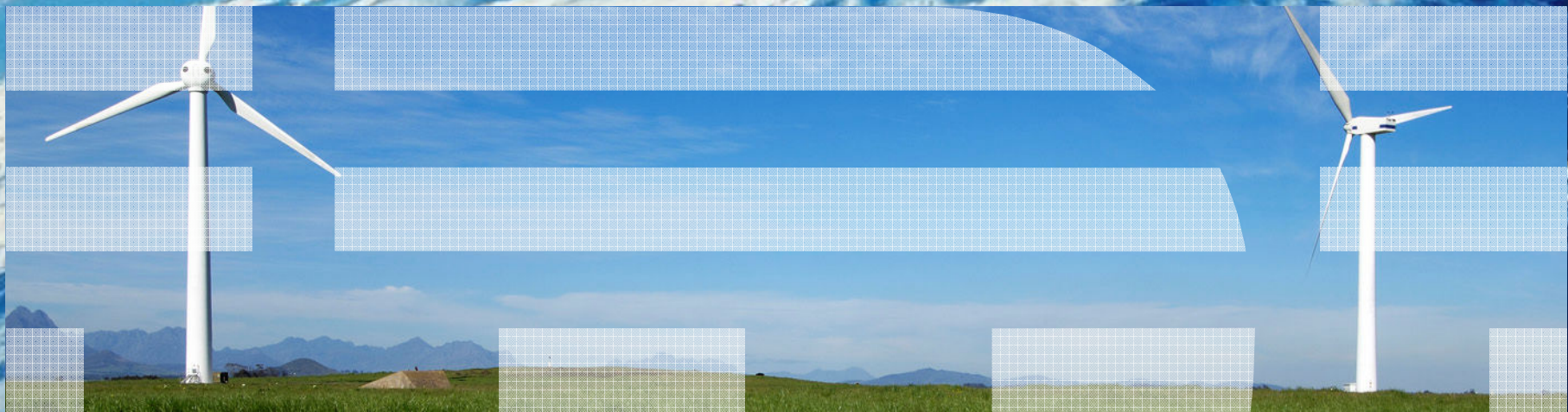


Safety Driven Development with IBM Rational

Antonio Rodriguez
Rational IMT Leader



Rational. software



The Chevrolet Volt Reference Case

- <http://www.youtube.com/watch?v=CjjASGV36mw>



Agenda

- 09:00 Bienvenida

- 09:30 Estrategia y Novedades de IBM Rational
- 10:00 Gestión de requisitos con Rational DOORS

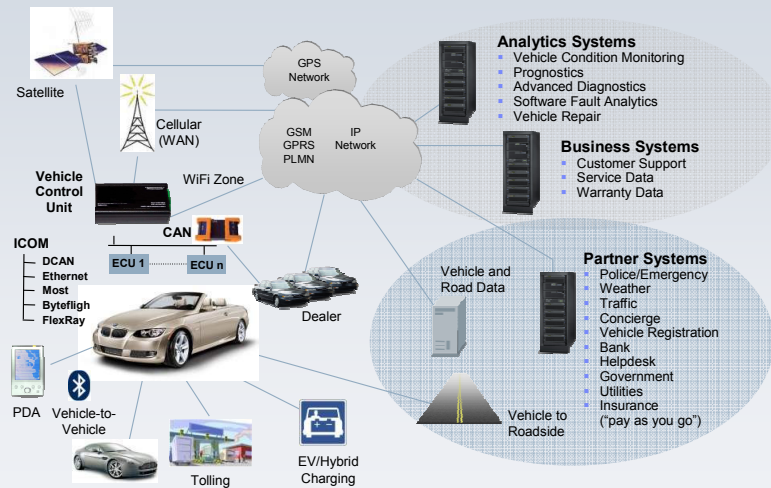
- 11:20 Café

- 11:45 Model Driven Development con Rational Rhapsody
-
- 13:15 Visita guiada del Palacio de Linares
- 13:45 Cóctel



Tendencias en el Desarrollo de Productos

Increasing Design Complexity - The Connected Vehicle is Part of a Larger 'System of Systems'



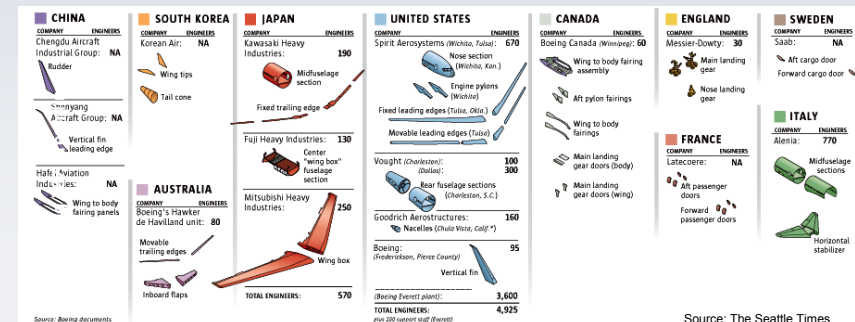
Increasing Complexity across the Supply Chain Boeing Commercial Aircraft: 787 Development Program

Number of parts: 6 million
Peak number of suppliers: 2,600



Who makes the parts and where the engineering jobs are:

Boeing 787: # of engineers are 2005 projections and may not include all engineering specialties. Production workers are not included.



Software Delivers Increasing Value

Year	Example	Key Software Features
1968	e.g. VW Squareback	Fuel injection, Manifold pressure control, Digital clock
1983	e.g. Chrysler Imperial	Ignition, Engine controls, Instrumentation
1995	e.g. Honda CRX Si	Engine management, ABS, Digital dashboard, Electronic seats / doors, Automated climate control, Safety sensors
2008	e.g. BMW 7 Series Sedan	Dynamic Damping Control, Brake Energy Regeneration, Integral Active Steering, Electrically controlled air vents, Night Vision, Lane Departure Warning, Lane Change Warning, Adaptive Headlights, Head-Up Display, Active Cruise Control, Camera systems, Driver assistant systems

Platform	Year	% of Specification Requirements requiring SW Control
F-4	1960	8%
A-7	1964	10%
F-111	1970	20%
F-15	1975	35%
F-16	1982	45%
B-2	1990	65%
F-22	2000	80%



La industria esta liderando estos cambios

Aeronáutica y Defensa

- Necesidad de reducción de costes y mejora de la comunicación a través de consorcios internacionales multi-empresa

Automoción

- 35% del valor del coche esta en el desarrollo SW
- 90% de la innovacion esta basado en sistemas electrónicos con SW empotrado



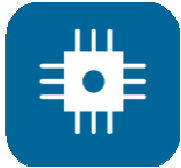
Electrónica

- La necesidad de diferenciación esta llevando a un aumento exponencial de SW dentro de cada producto

Estos cambios están afectando a toda la cadena de suministro, incluso las partes mas comoditizadas requieren ahora de sofisticados elementos electrónicos



¿Que hace a un producto “smart”?



INSTRUMENTALIZADO

Tienen la capacidad de medir, ver y sentir las condiciones exactas de su entorno



INTERCONECTADO

Tienen la capacidad de comunicarse e interactuar con personas, sistemas y otros productos de múltiples maneras



INTELIGENTE

Tienen la capacidad des responder a los cambios y obtener resultados mediante la predicción de eventos futuros

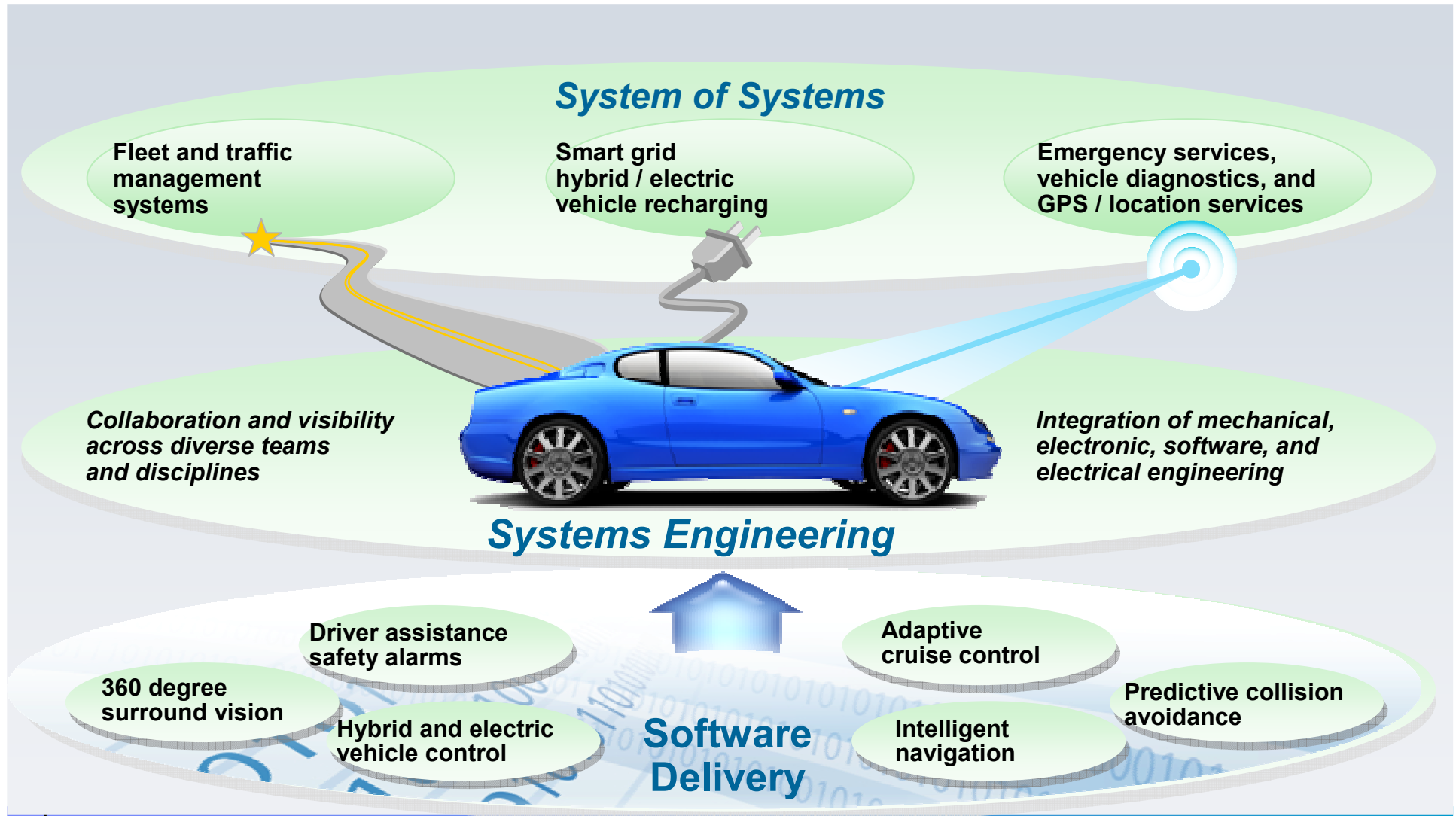


Piensa en Software

“Smart Products” superan el concepto de que un diseño encaja con la mayoría de las necesidades de sus usuarios para ser personalizado a las necesidades exactas de cada usuario



¿Como queda afectado el desarrollo de productos?



¿Qué necesitamos para desarrollar mejor estos productos?



Business View

Product missed customer needs	46%
Late to market/missed demand	33%
Poor commercialization / promotion	26%
Product quality	24%
Pricing	23%
No clear product differentiation	19%

The CIO's Guide to the PERFECT Launch: Translating Innovation to Business Benefit, AMR Research, 2005



Engineering View of Changes Needed

Improve communication and collaboration across disciplines	71%
Increase visibility into status of requirements	49%
Increase ability to predict system behavior prior to testing	46%
Implement or alter new product development processes for a multi-disciplinary approach	43%
Increase real time visibility of product Bill of Materials (BOM) throughout the development process	39%

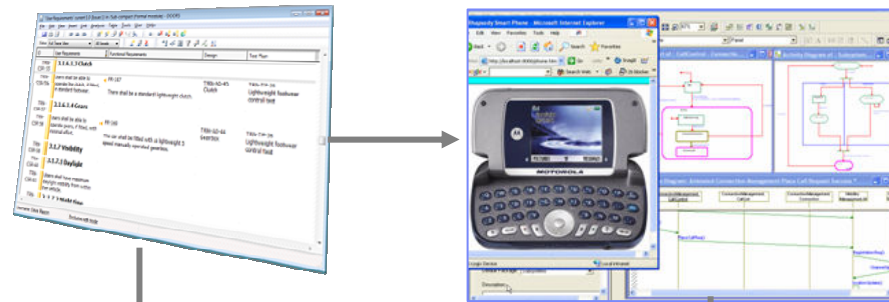
Aberdeen Group, System Design: New Product Development for Mechatronics, Michelle Boucher, David Houlihan, January, 2008



Overview of Rational Solutions for Systems Development

Reduce complexity and increase the ability to predict system behavior through a model based approach to systems architecture & development

Model Driven Systems Development



Requirements Engineering

Software Delivery Platform for Systems

Ensure the complete product is built to market & client requirements through traceability into the supply chain and full understanding of the impact of changes by all engineering disciplines

Greatly Increase SW development productivity through the use of an integrated, automated platform of tools to deliver the software for systems

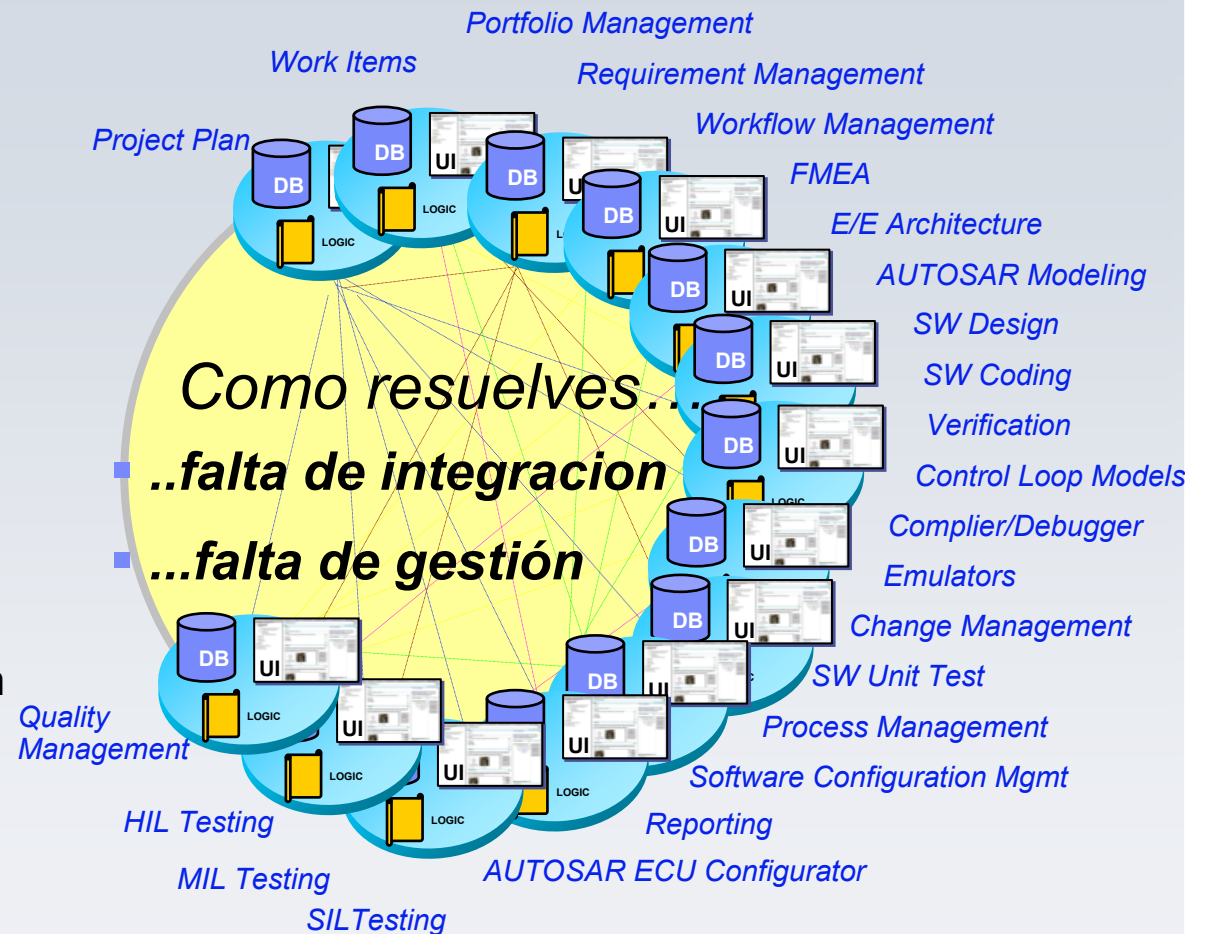
Integrated Product Change Management

Integrate the management of product changes across all engineering domains and PDM systems



El entorno de desarrollo actual esta altamente fragmentado

- Tradicionalmente, cada herramienta viene con su propio...
 - ▶ Interfaz de Usuario
 - ▶ Lógica
 - ▶ Base de Datos
- Lo que resulta en...
 - ▶ Falta de Integración
 - ▶ Silos de Información
 - ▶ Altos Costes de Administración
 - ▶ Baja reutilización

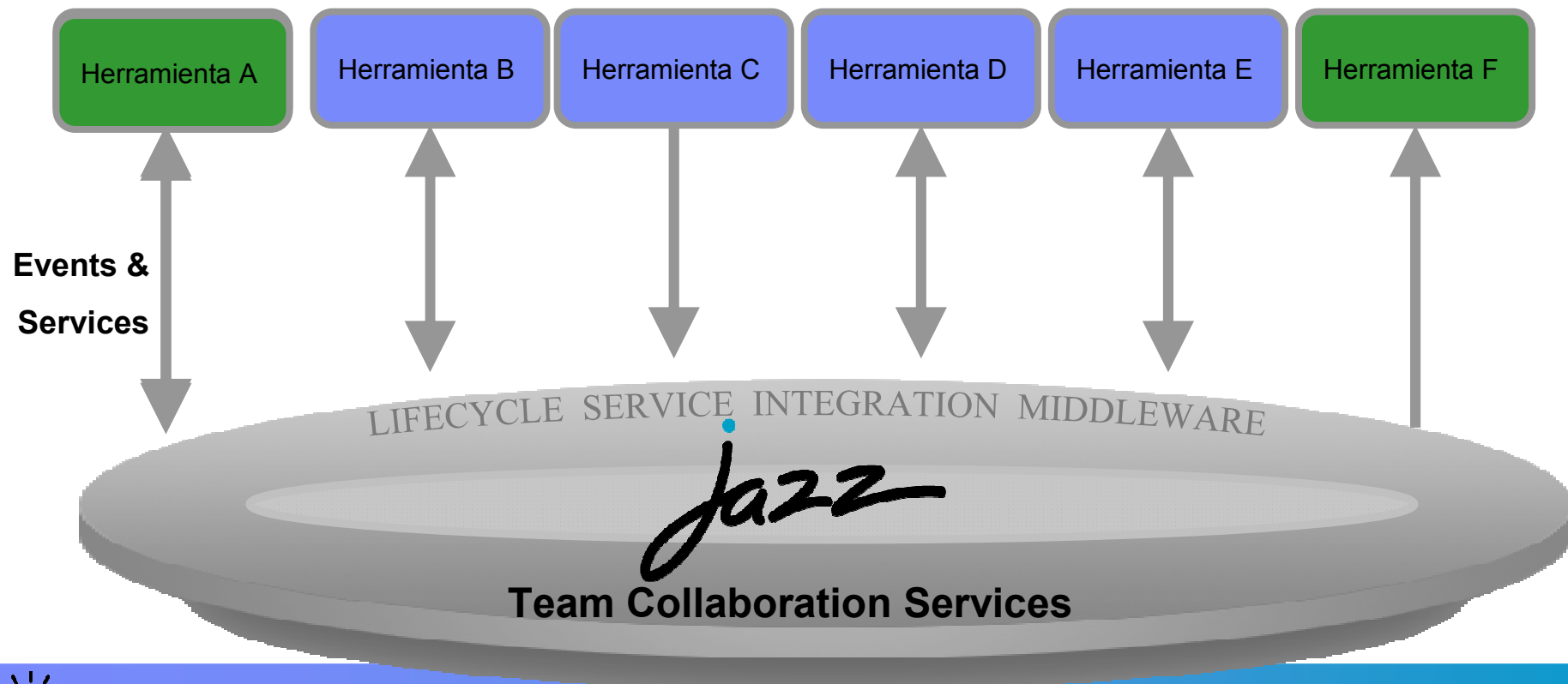




La solución: Jazz (www.jazz.net)

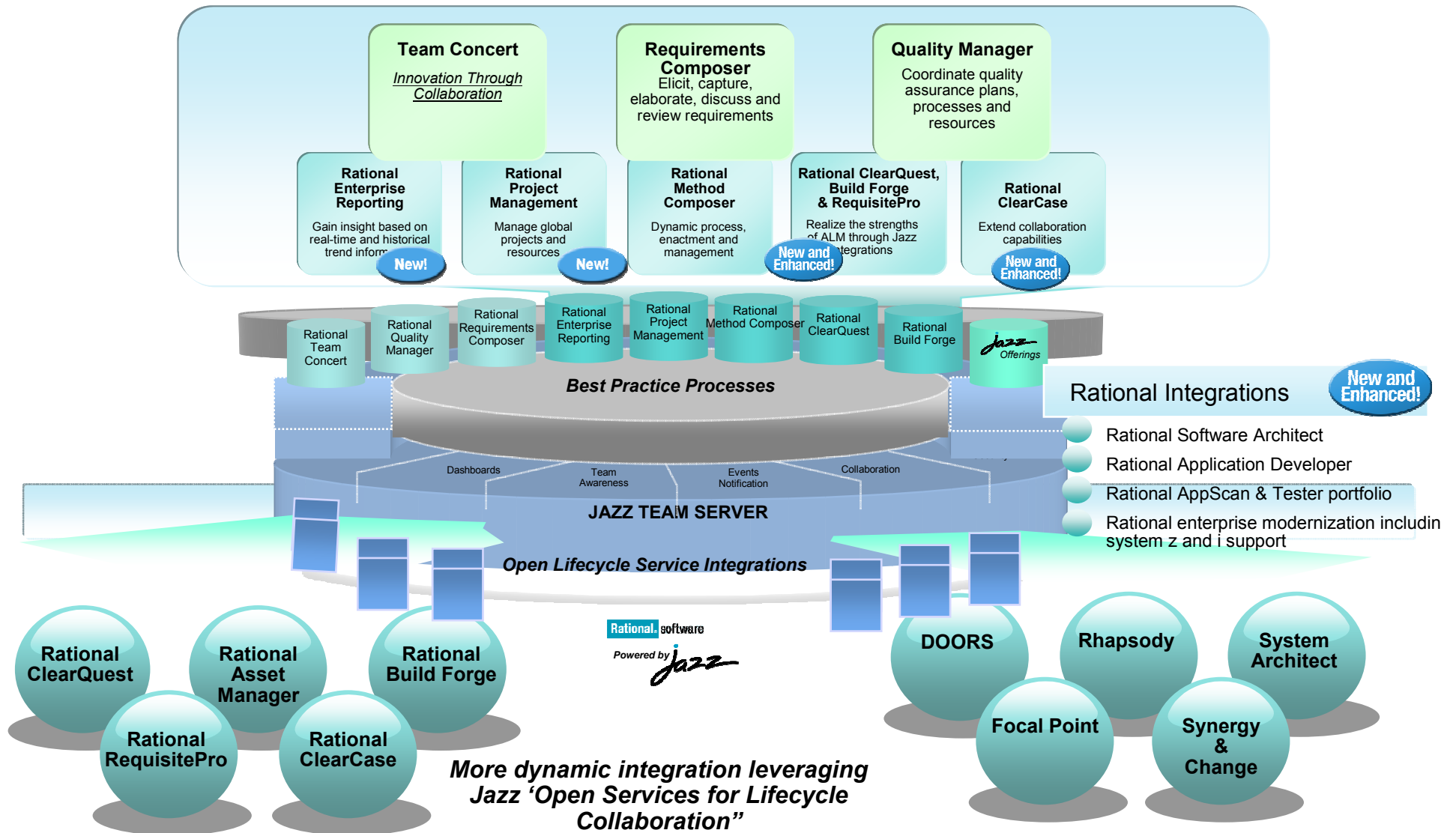
Una iniciativa de IBM Rational de cara a promover la integración de las distintas tareas realizadas en el ciclo de vida del desarrollo

Middleware de integración

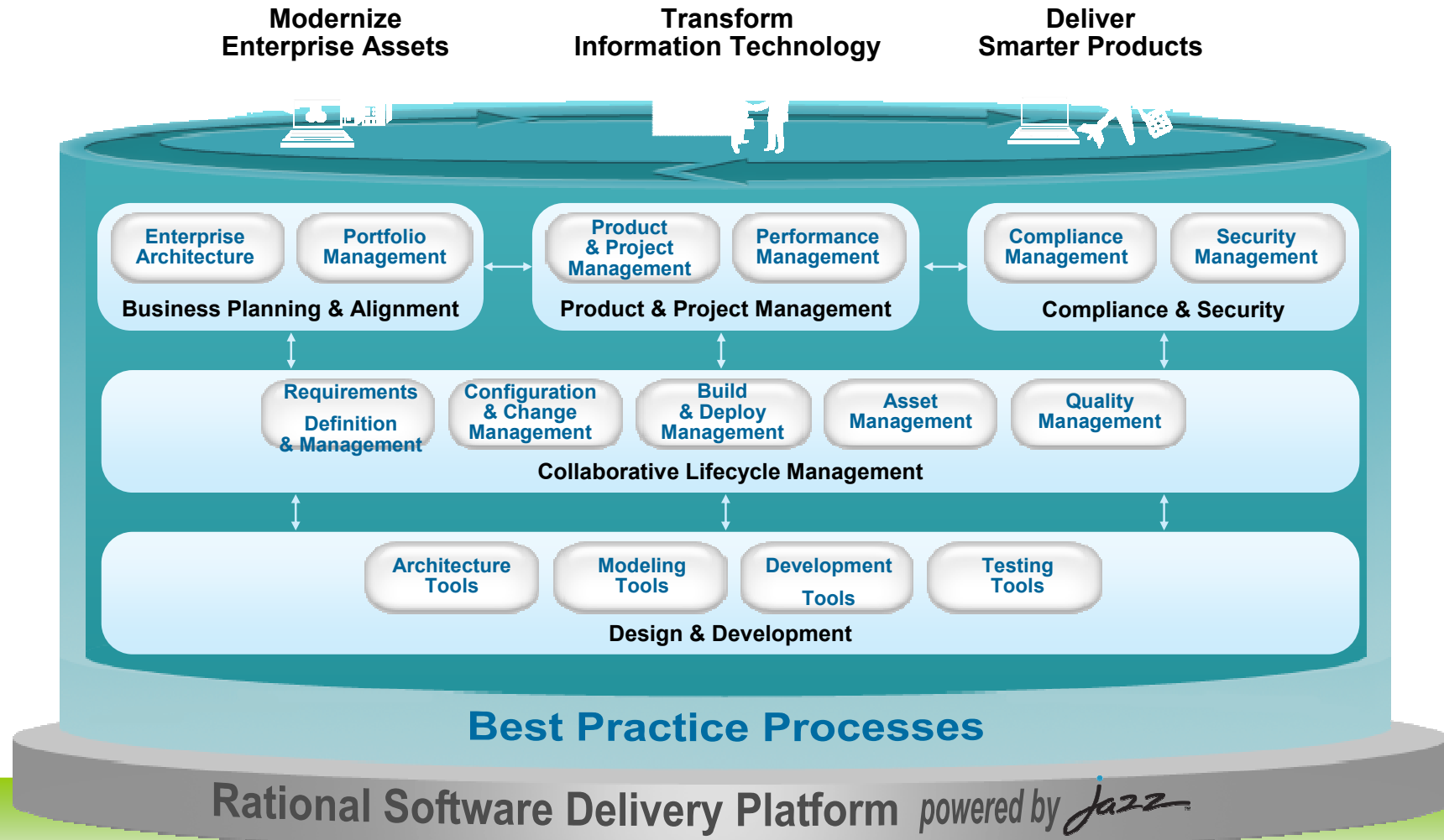


IBM Systems and Software Foundation

Powered by *Jazz*



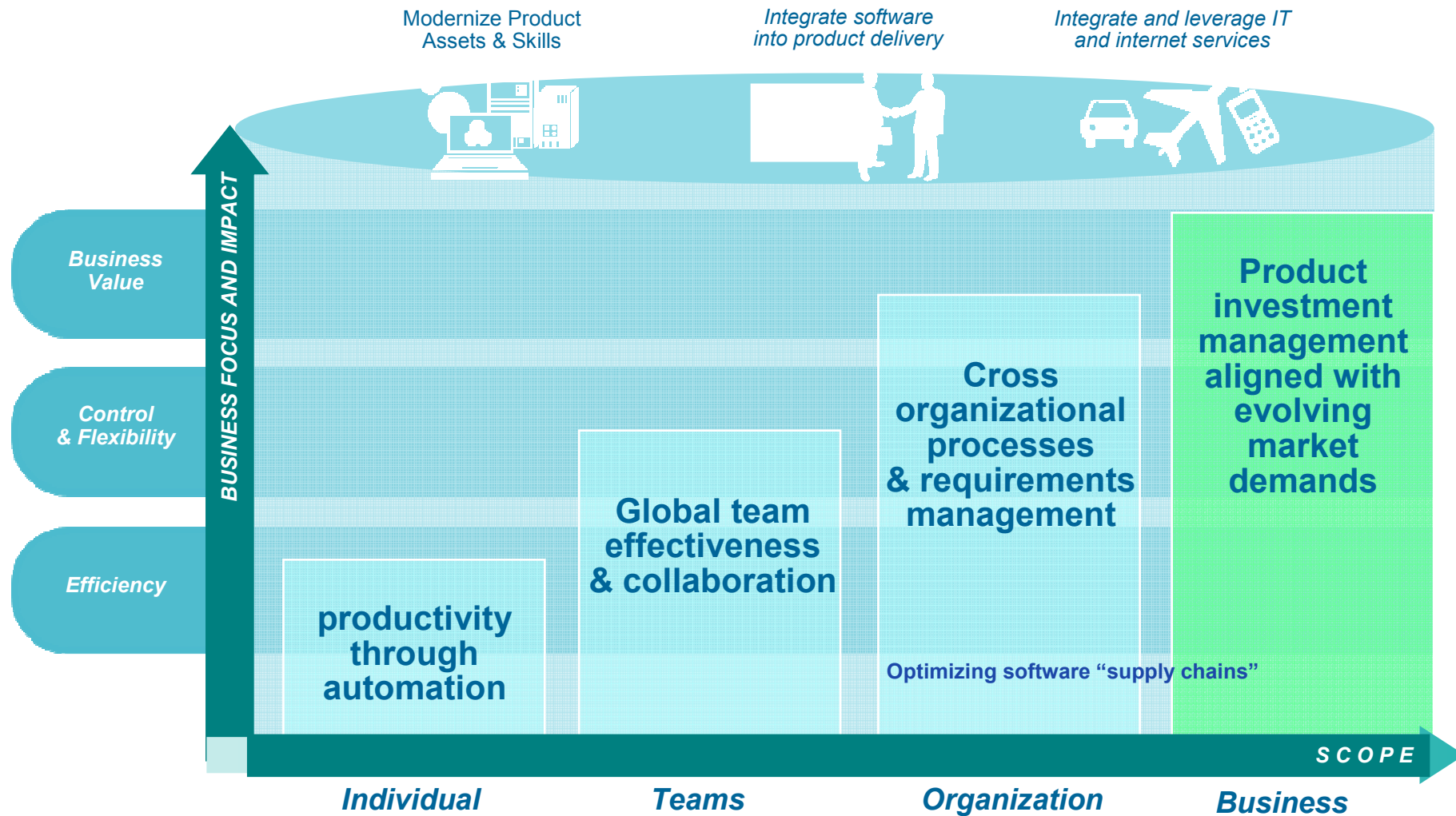
Capacidades principales de la plataforma Rational



IBM and Business Partner Ecosystem



Deploying an integrated, continuously improving business model



Liderando el mercado del desarrollo de SW

>9000 Clientes en España

>100 000 licencias en España

	RATING				
	Strong Negative	Caution	Promising	Positive	Strong Positive
Aldon			X		
Borland				X	
CollabNet			X		
IBM					X
Kovair			X		
Microsoft				X	
MKS				X	
Polarion			X		
Rally Software				X	
Serena Software				X	
TechExcel				X	
VersionOne			X		

As of 11 December 2008

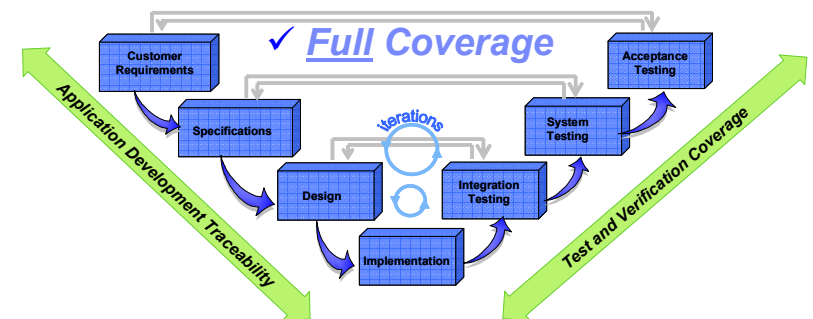
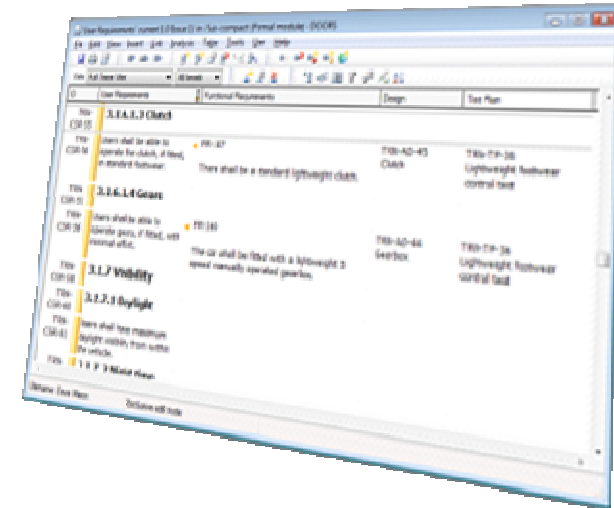
Gartner MarketScope for Application Life Cycle Management, Jim Duggan, Matt Light, Thomas E. Murphy, December 17, 2008



Gestión de Requisitos y Validación (Rational DOORS)

¿Qué valor damos a nuestros clientes?

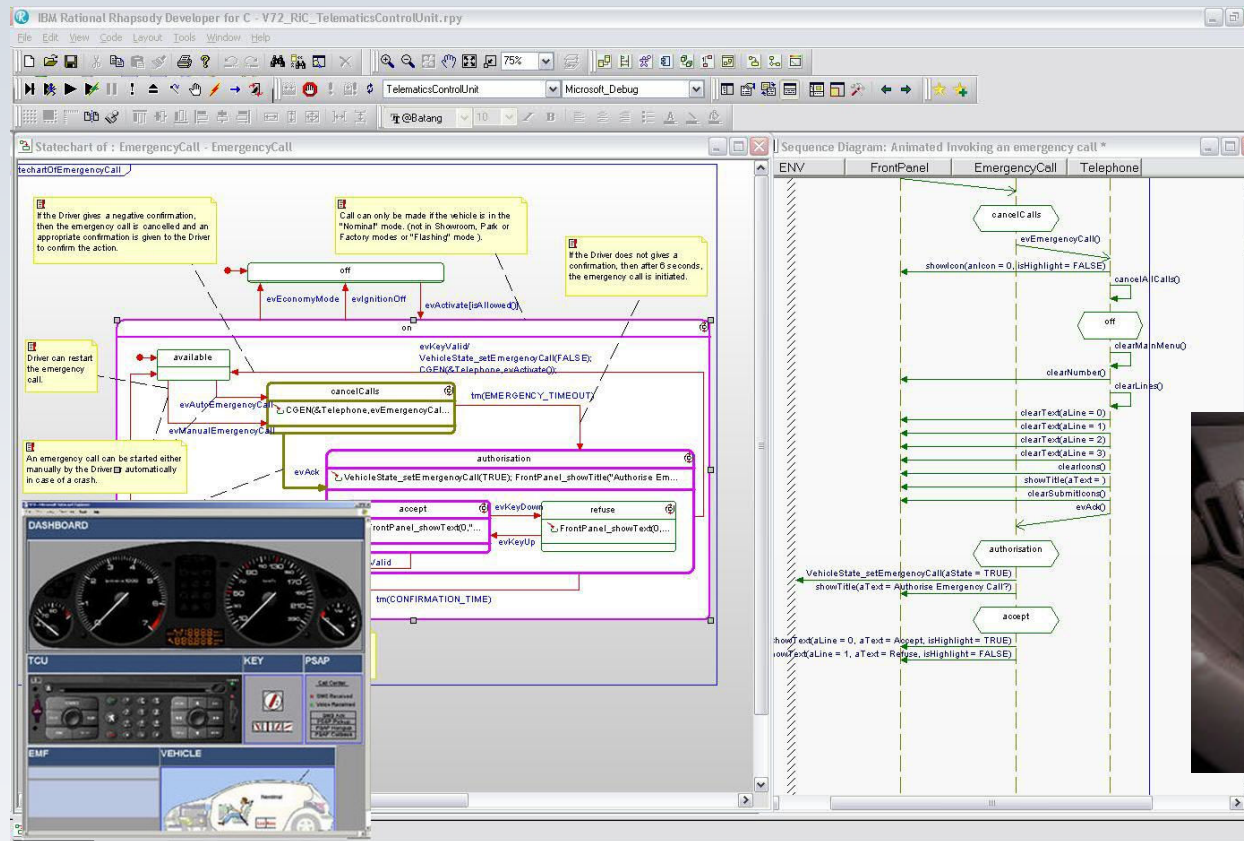
- Plataforma común de gestión de requisitos
 - ▶ Comunicar, revisar y validar el estado de los requisitos
 - ▶ Repositorio centralizado, modelo de información común
- Trazabilidad
 - ▶ Demostrar que el producto final cumple con todos los requisitos
 - ▶ Demostrar que las pruebas cubren todos los requisitos
 - ▶ Presentar evidencias de esta trazabilidad en documentación formal
- Gestión del Cambio
 - ▶ El cambio es inevitable, hay que gestionarlo!!!
 - ▶ Análisis de Impacto y Gestión del estado de los Cambios
- “The sooner, the better”
 - ▶ Una incorrecta gestión de requisitos, lleva al rediseño del producto y a grandes costes



Model Driven Systems Development

Model Driven Systems Development (MDSD):

Una práctica de desarrollo estandar para el desarrollo de sistemas complejos



“Our civilization runs on software”

-- Bjarne Stroustrup

Yet the art of creating it continues to be a dark mystery.
Never in history have we depended so completely on a
product that so few know how to make well.

