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Innovate2010

The premier software and product delivery event



**1 Trillion Interconnected
Devices**

**Software is the invisible thread
enabling systems-of-systems**

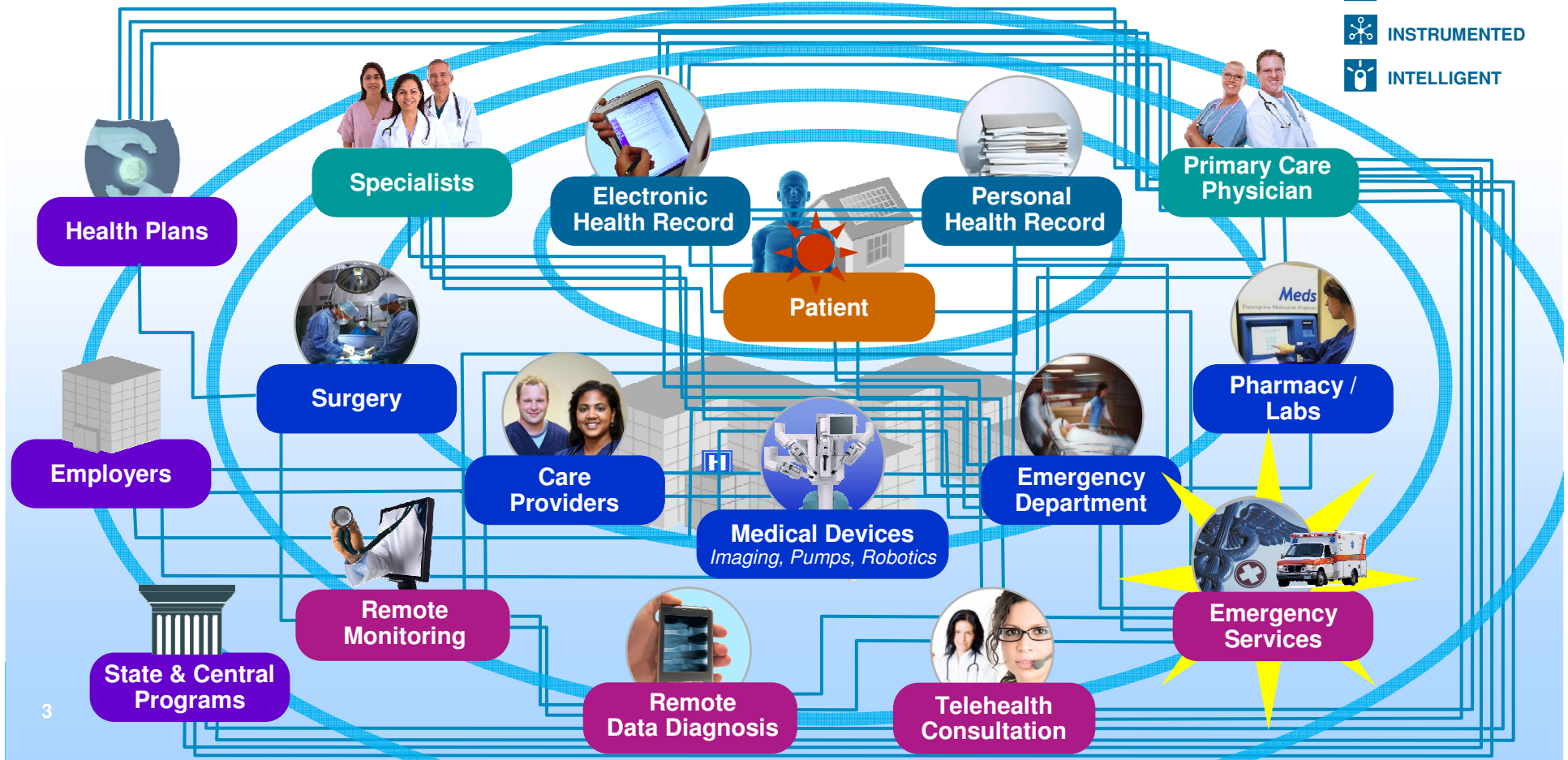
**The difference between SoS and
Enterprise is greater than between
Enterprise and single-user systems**

The premier software and product delivery event

Healthcare delivery becoming mission-critical system-of-systems

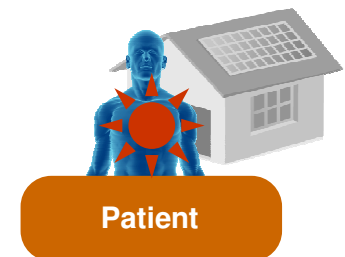
Key objectives around efficiency, quality, innovation

-  INTERCONNECTED
-  INSTRUMENTED
-  INTELLIGENT



Emergency services system-of-systems

- Heart disease is *the* leading cause of death
- In 2010, heart disease will cost the U.S. more than **\$316 billion**
- With congestive heart failure cases, **30–50% of patients are readmitted within 3 months**



Emergency services system-of-systems

1. Implanted medical device generates event that notifies cardiac center

Enabled by:

- 200,000 lines of software code in the device
- Wireless transmissions (alarm signal, data stream from device)
- Monitors and sensors (event duration, thresholds)
- GPS for location of implanted device

Cardiac
Center

Patient

Remote
Monitoring and
Data Diagnosis

Emergency services system-of-systems

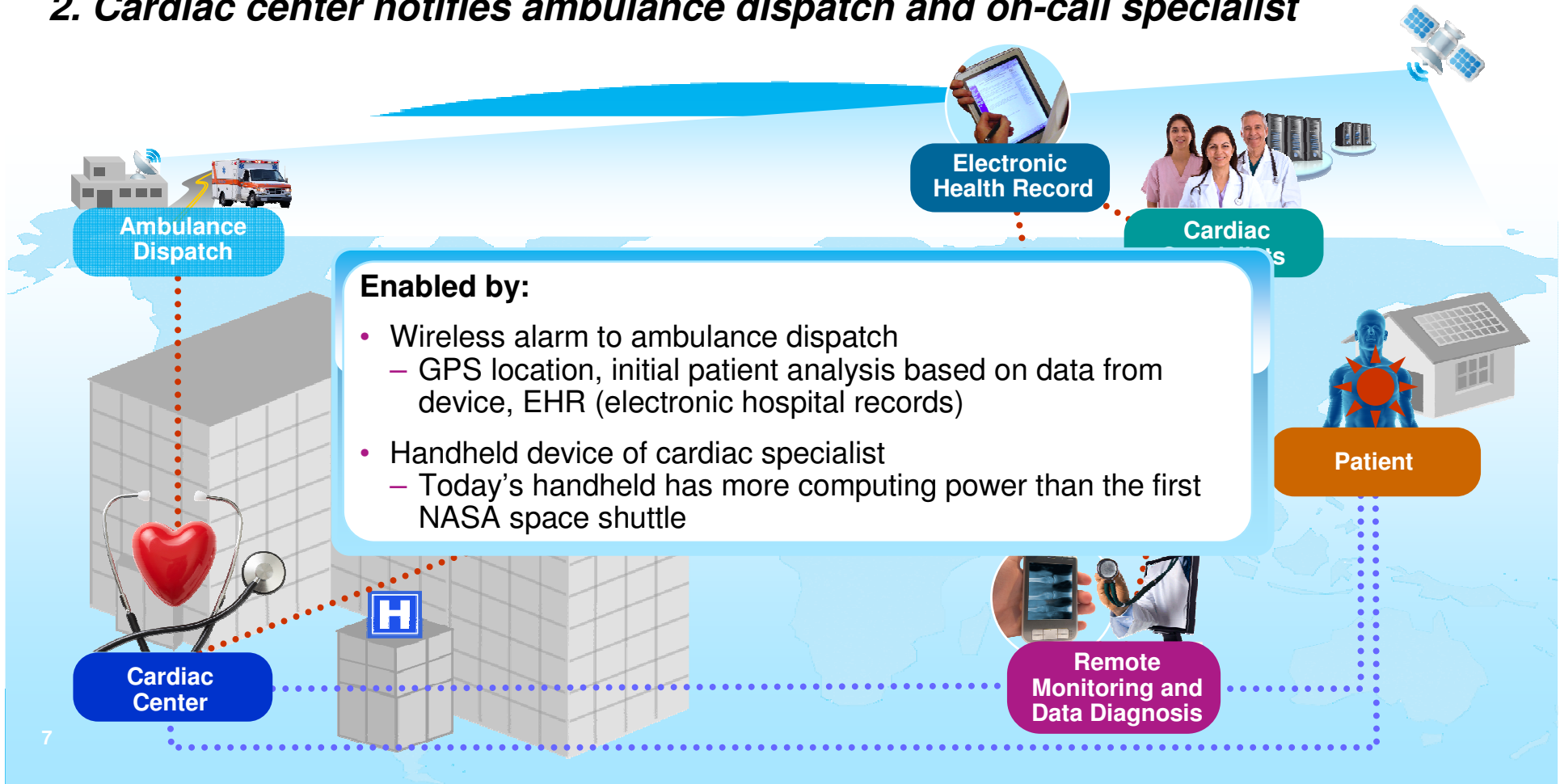
- Patient whose heart has short-circuited **has six minutes to live**
- **National standard is four-minute response time** to 90% of all emergencies



Patient

Emergency services system-of-systems

2. Cardiac center notifies ambulance dispatch and on-call specialist



Emergency services system-of-systems

3. Ambulance dispatch prioritizes response based on patient criticality, location, ambulance readiness

- Most ambulance services report that **only 10% of calls are true life and death situations**
- More than **80% of false alarms are due to human error**

Enabled by:

- Ambulance queuing system – analyzes available health, situational data
- Decision support system – selects resources (Fire, Air Support, etc.)
- Assign ambulance based on vehicle service readiness, onboard staffing skills

Ambulance Dispatch

Cardiac Center

Remote Monitoring and Data Diagnosis

Patient

Emergency services system-of-systems

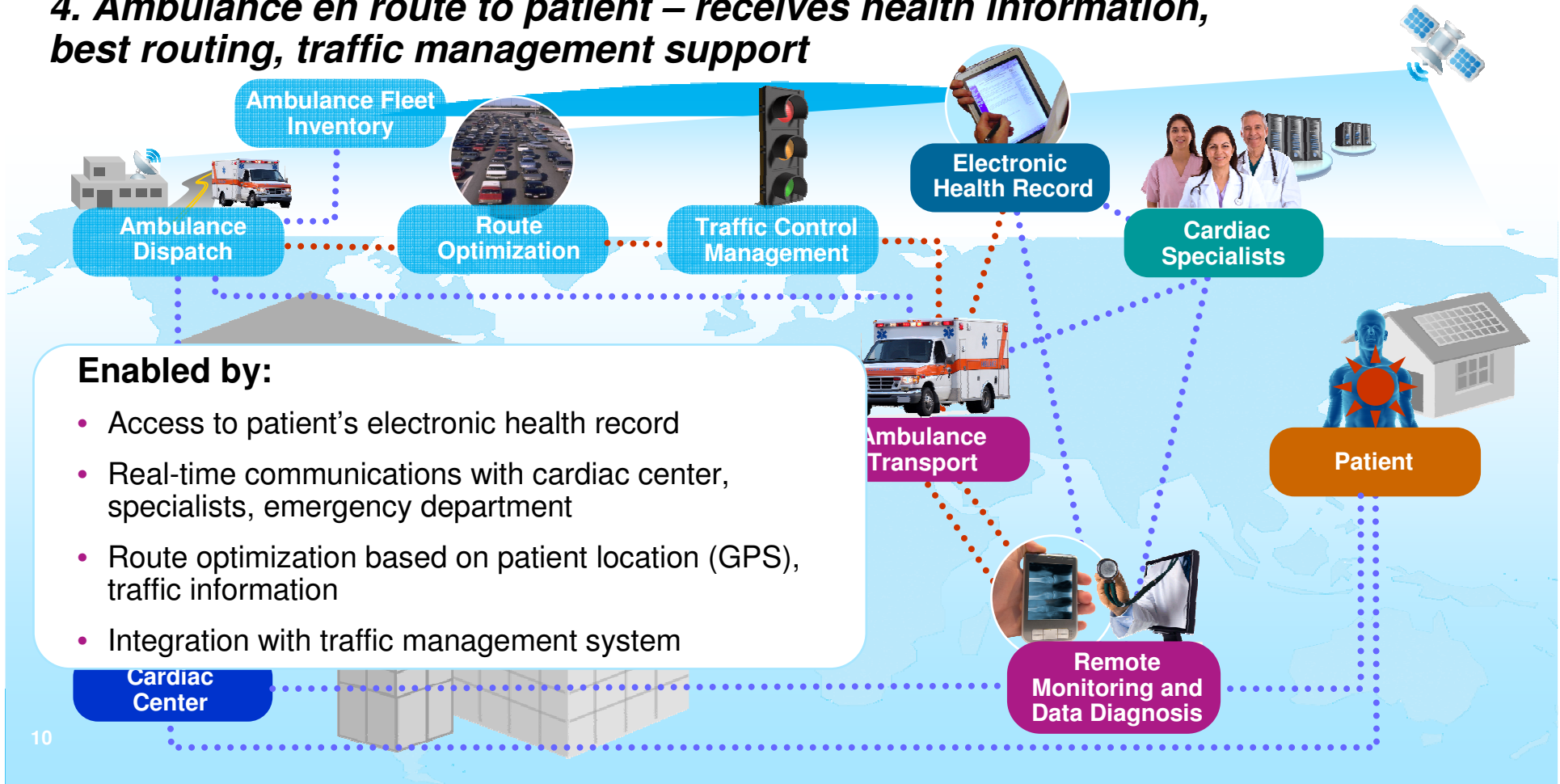
- There are **8,500 ambulance collisions** per year in the U.S.
- Ambulance transport **costs range from \$300–\$700**, plus **\$10 per mile**



Ambulance
Transport

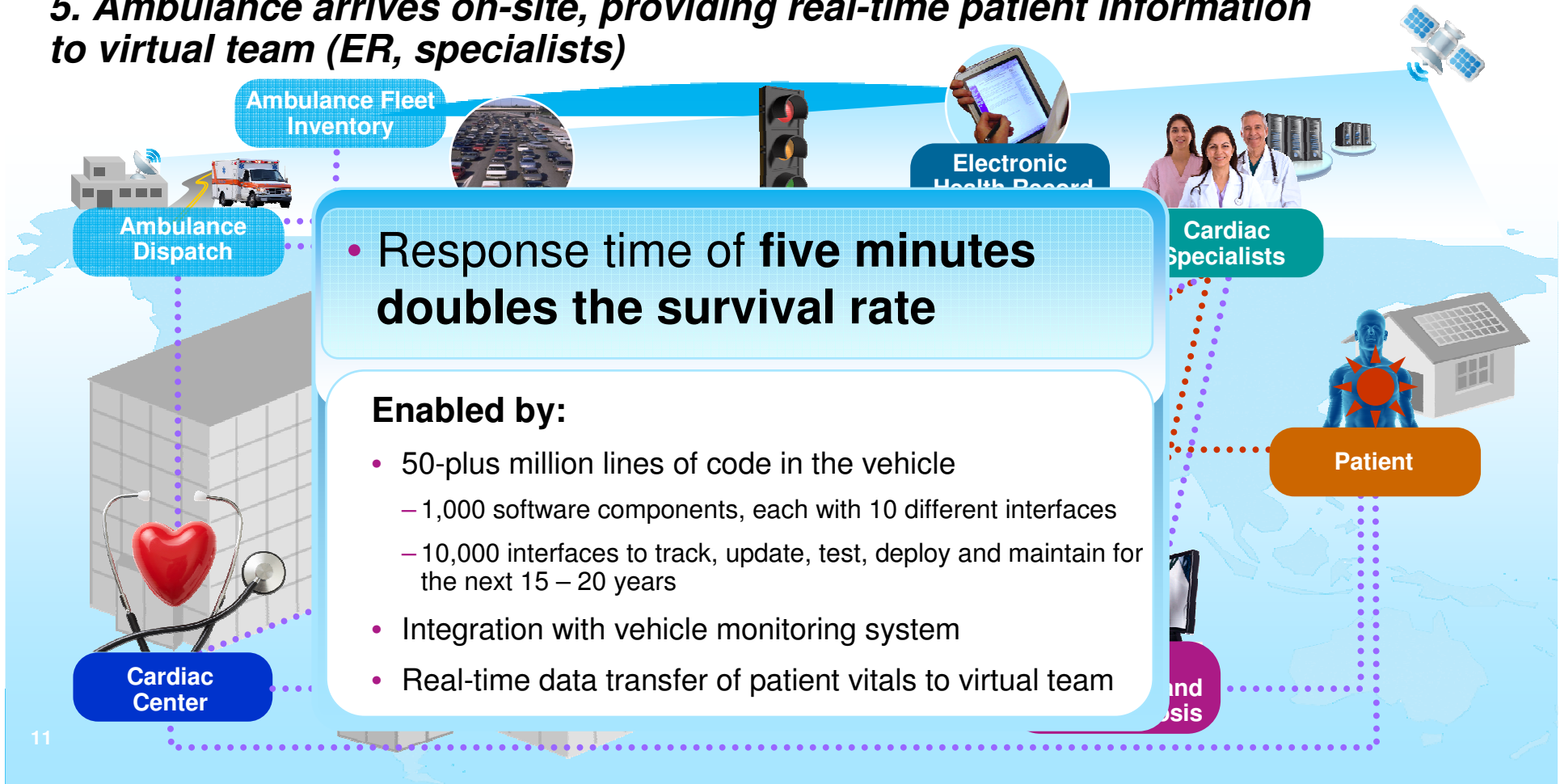
Emergency services system-of-systems

4. Ambulance en route to patient – receives health information, best routing, traffic management support



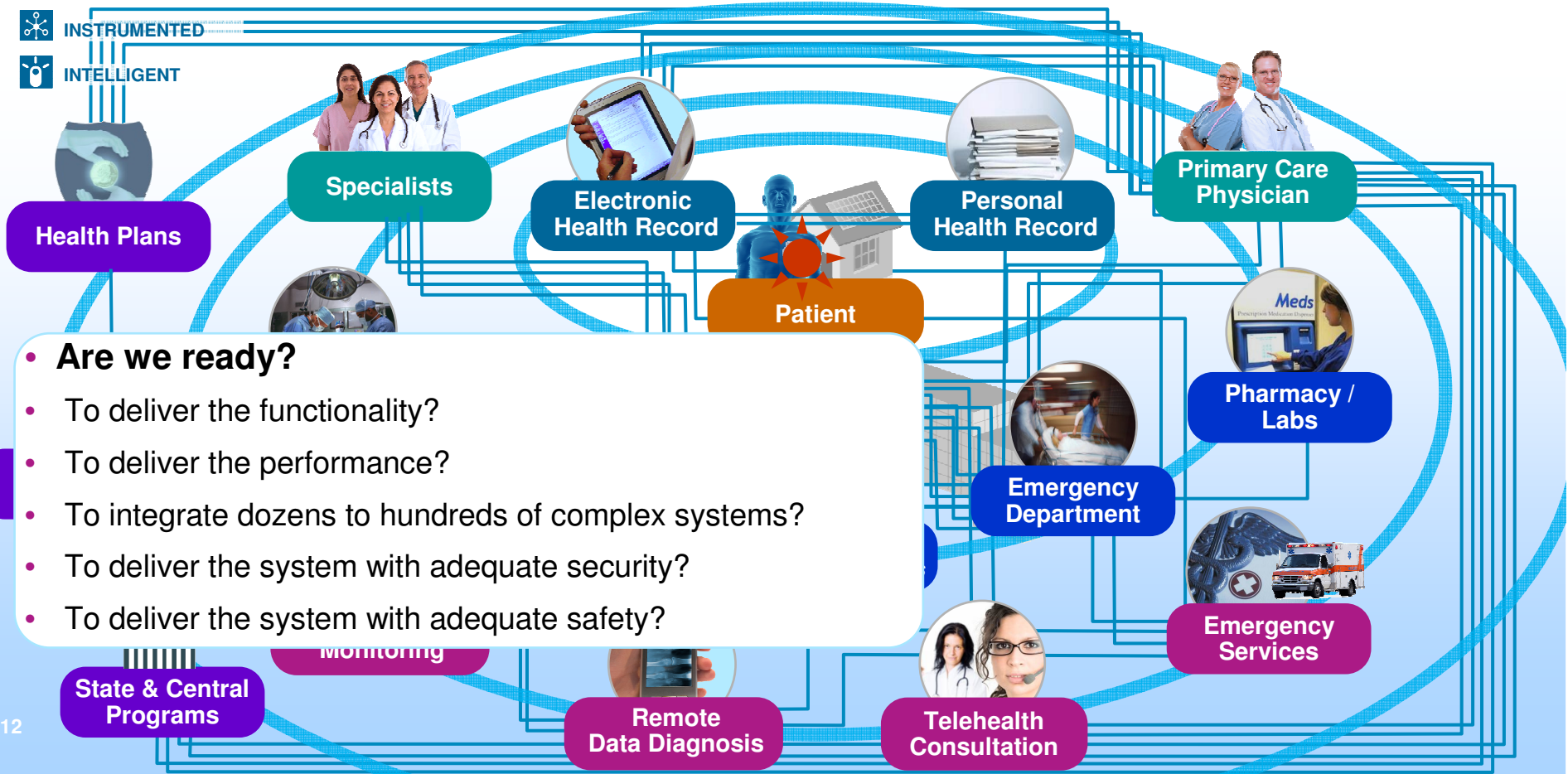
Emergency services system-of-systems

5. Ambulance arrives on-site, providing real-time patient information to virtual team (ER, specialists)



One industry, thousands of systems-of-systems scenarios

- INTERCONNECTED
- INSTRUMENTED
- INTELLIGENT



- **Are we ready?**
- To deliver the functionality?
- To deliver the performance?
- To integrate dozens to hundreds of complex systems?
- To deliver the system with adequate security?
- To deliver the system with adequate safety?

Malware implicated in fatal Spanair plane crash

- msnbc.com August 23, 2010

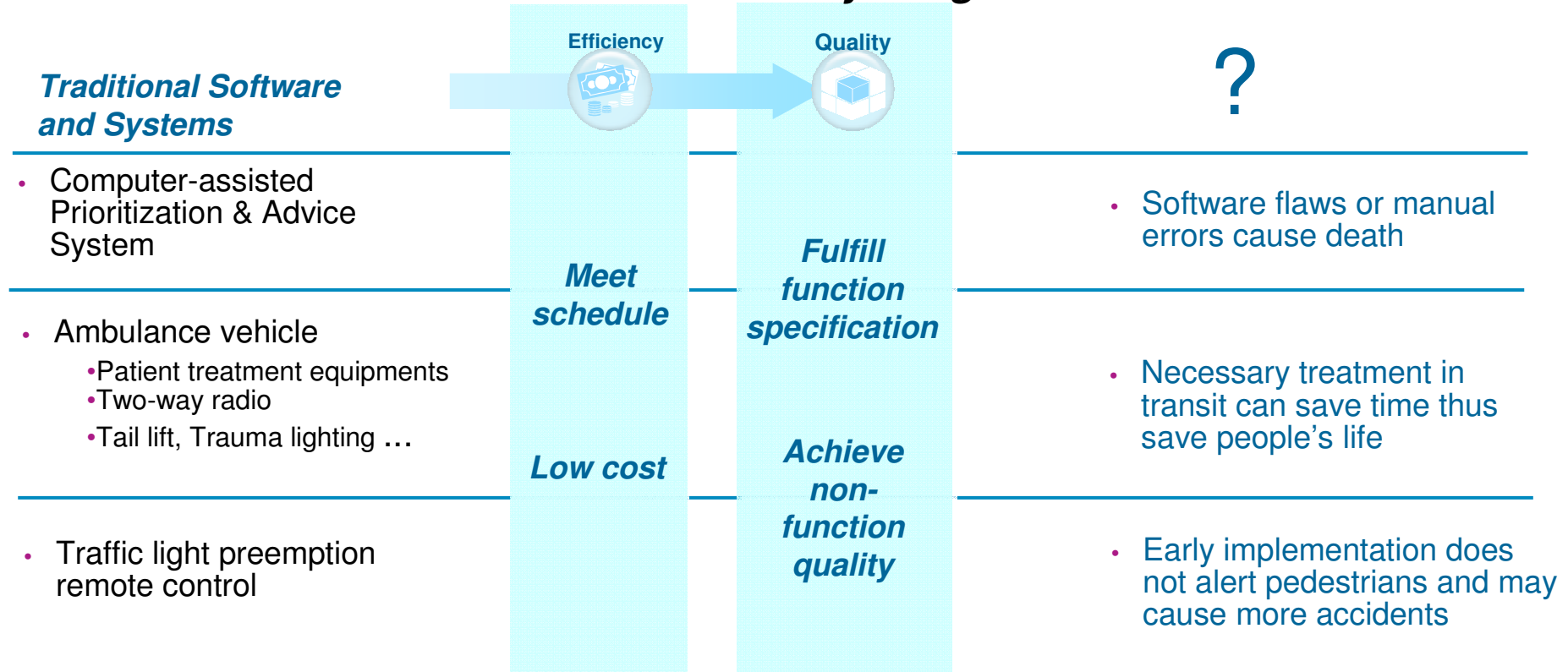


**Agile systems and software
delivery practices with outcome-
based management is a better
approach**



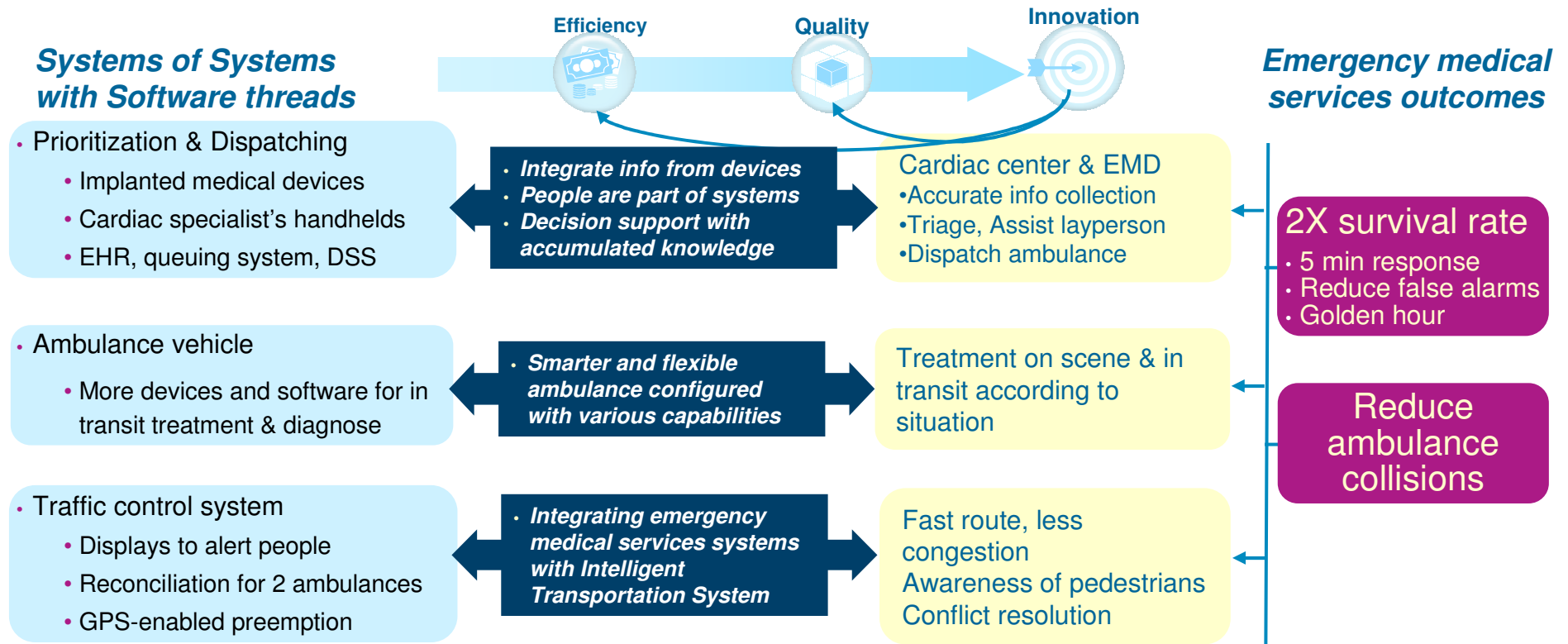
Traditional engineering approach

Measurements based on internal focus may not generate real value



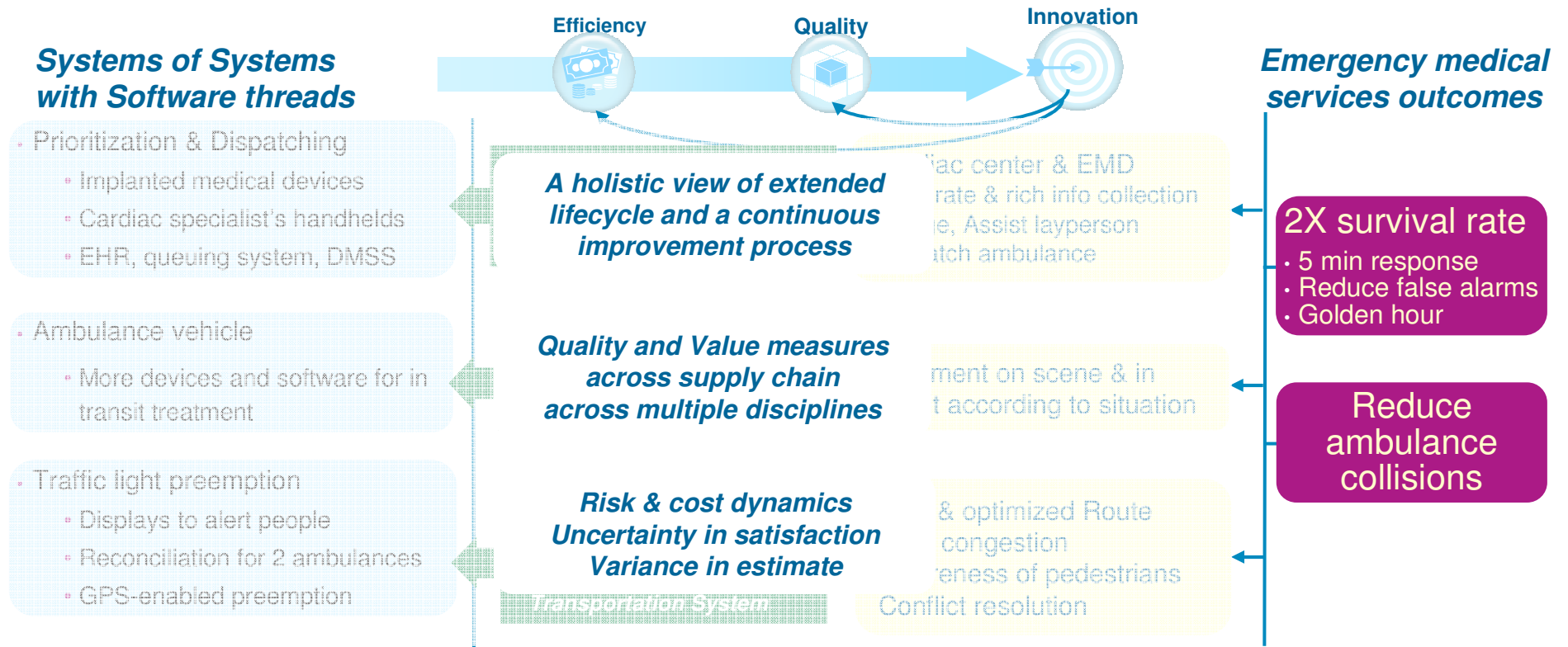
From the angle of social and fiscal impact

Innovation is part of the delivery process



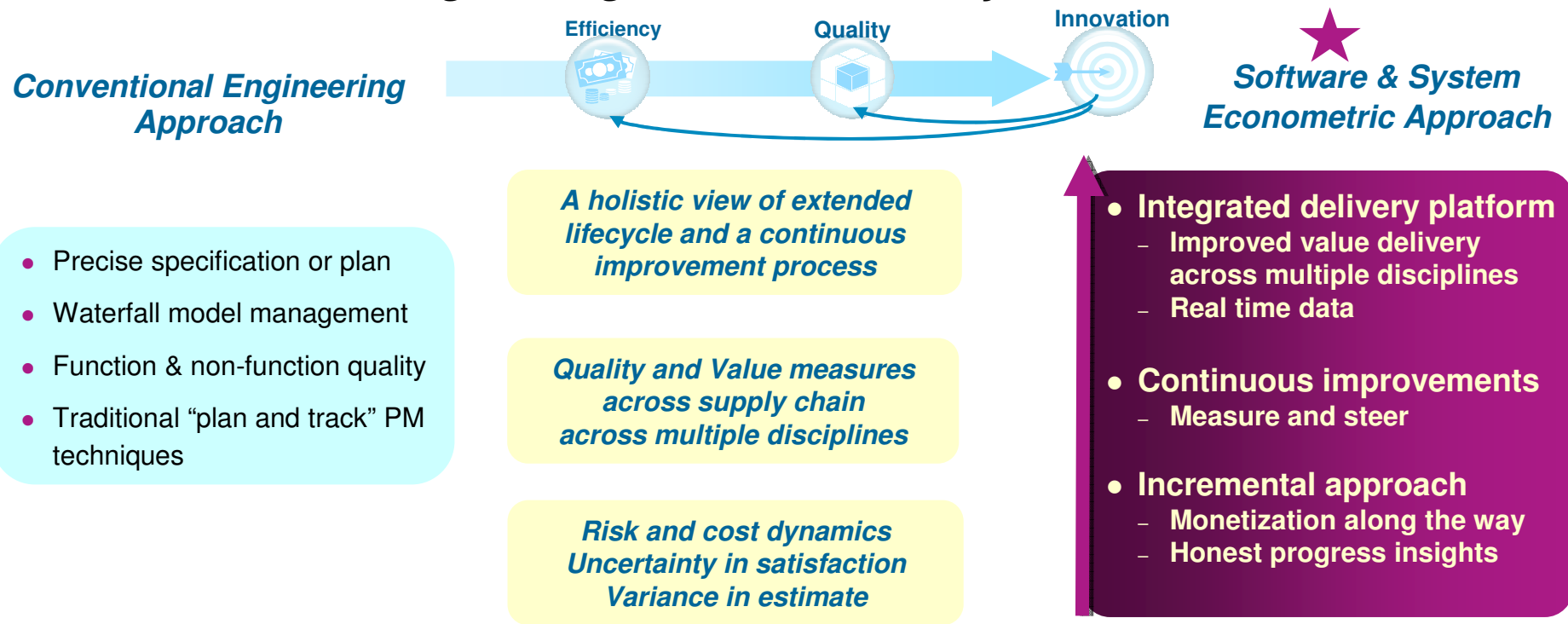
From the angle of social and fiscal impact

Key elements to map economic measurements to delivery process metrics



Efficiency & quality measurement paradigm shift

from Conventional Engineering to Software and System Econometrics

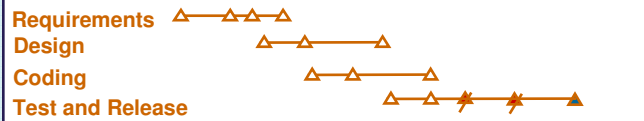


Software & systems econometrics – incremental approach

Core metrics for honest progress insight

Conventional Engineering Governance

Sequence of documents and artifacts



Activity based—document baselines

Planning Progress

Modern Economic Governance

Sequence of demonstrable results



Result based --Code and test baselines

Dishonest early optimism



False precision in early artifacts

Technical Progress

Honest earned value



Demonstrated and measured capability/quality

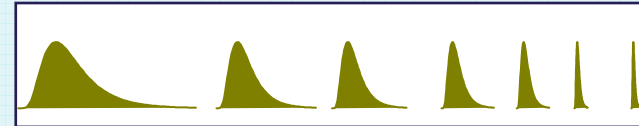
Dishonest early optimism



Postponed understanding of architecturally significant risks

Economic Progress

Honest reduction in uncertainties/risks



Reducing the variance in the estimated cost to complete

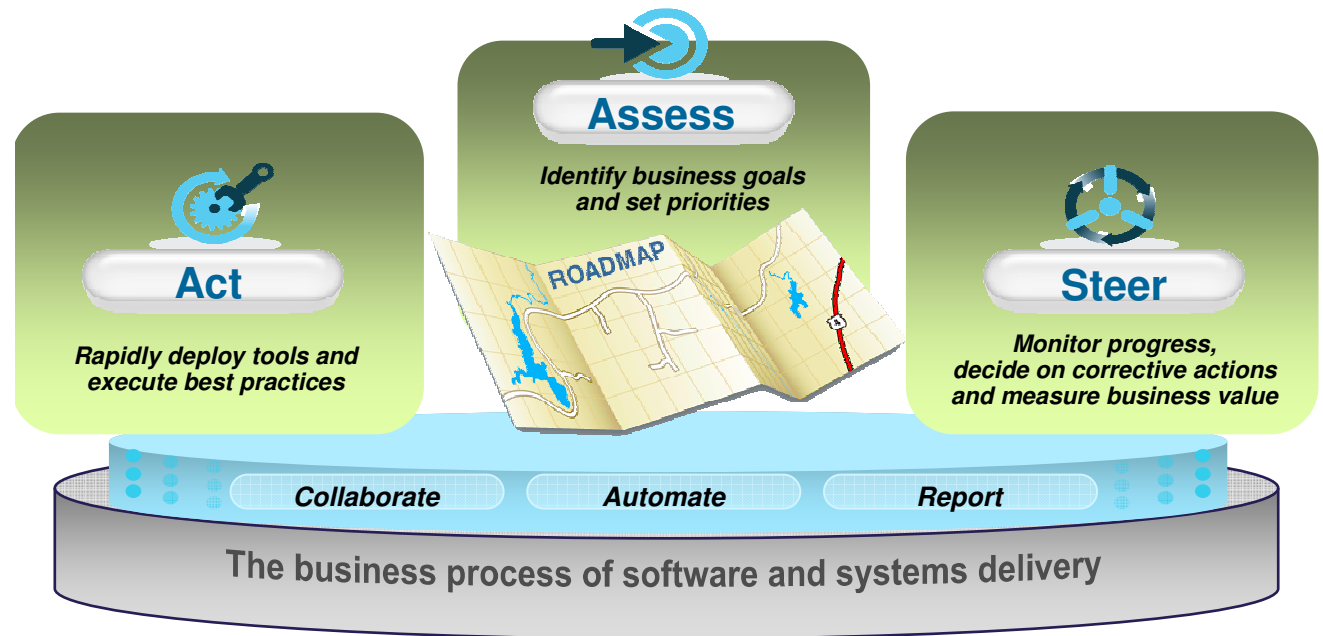


Software & Systems Econometrics - Measured Improvement

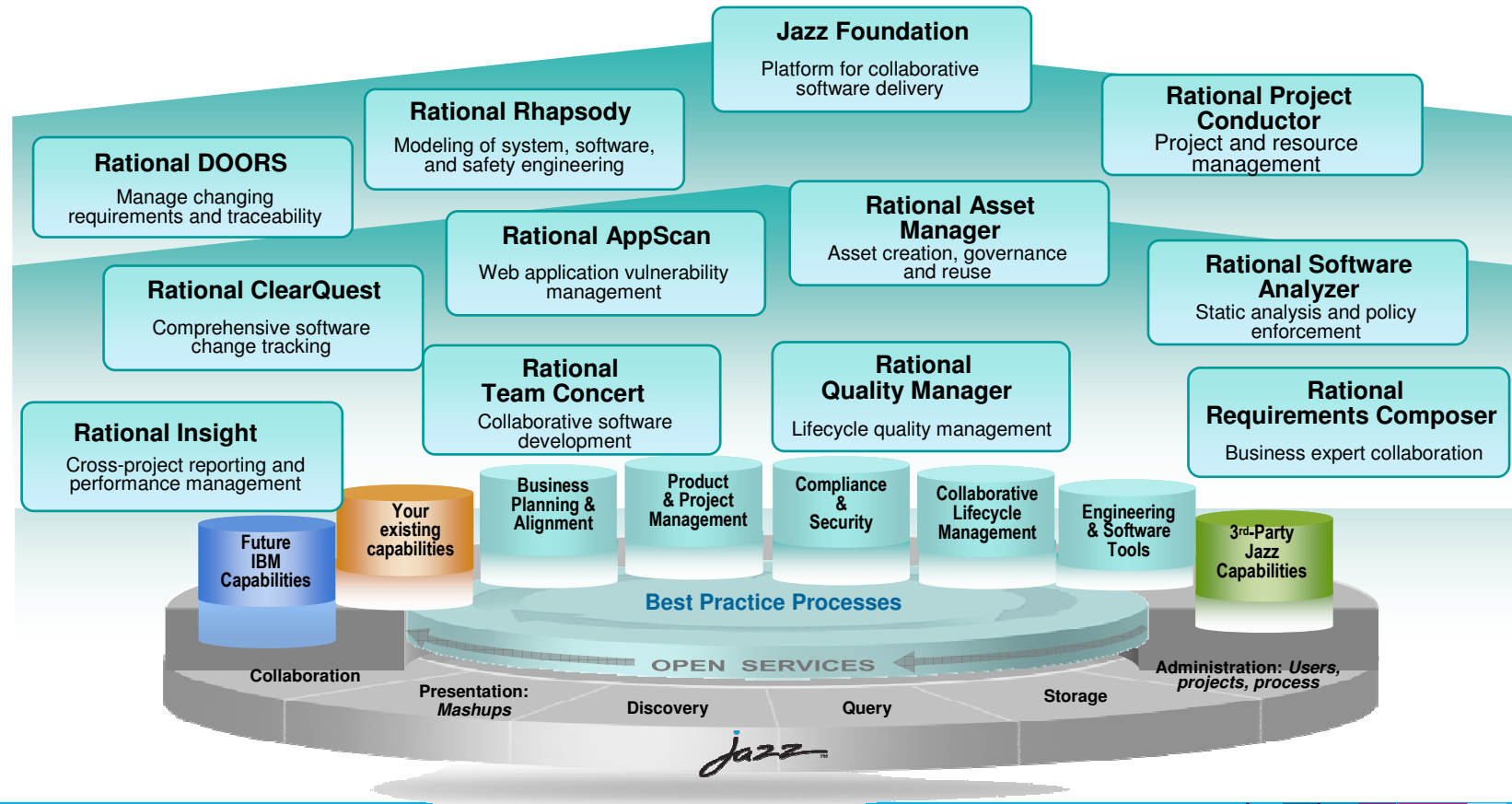
Drive business innovation through measured & continuous process improvement

Captures over 10 years of Rational experiences in incremental adoption

- Used in over 80 IBM agile projects
- Used in conjunction with RUP, Harmony, XP, Scrum and other processes
- Demonstrated in the Rational Executive Dashboard



Jazz Platform and Capabilities



IBM client results - Gain efficiency in development & production

Collaboration and automation driven by standardization to reduce cost, and drive more predictable, measurable outcomes

“Reduced product development time by 60% – from five months to two months”

“Reduced development costs by 25%, reduced development time by a factor of 10”

“Reduced project overrun costs 20% by making project deliveries more repeatable and predictable”

“Achieved 30% productivity gain on global projects”



Efficiency

On-Time Delivery Risk
Fixed and Variable Costs
Process Adoption

Staffing Variance

Productivity

Technical Debt

Schedule Fidelity

Project Velocity
Burn-down

STANDARDIZE, MEASURE AND IMPROVE

Cloud Deployment

Open and OSLC
Specs

C/ALM Adoption

Project
Management

Application
Security

Jazz



IBM client results - Improve product quality & flexibility

Deliver more perceived value at lower cost of ownership

“Six-fold increase in targeted promotion effectiveness, more than 95% reduction in time and cost of developing new promotions”

“Achieved 50% reuse of services”

“Saved more than \$25 million in defects, plus \$7 million a year in defect avoidance”

“Improved insight is helping managers improve predictability and mitigate business risk”



IBM client results - Drive new value and faster innovation

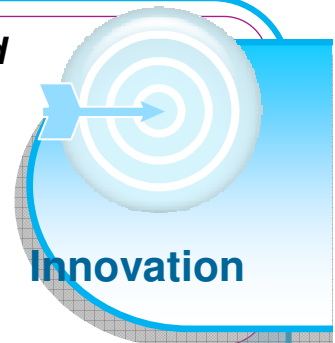
Reduce financial, market and organizational risks – make innovation through software the driver of opportunity

“Saved \$20 million by finding and avoiding risk in the consolidation of merchandising operations”

“Regulators removed industry-standard 15% ‘risk premium,’ providing competitive advantage”

“Improved fuel economy 60 – 70%, according to EPA, 40% reduction in CO2 emissions”

“Recovered £10 million in costs by using enterprise planning to optimize IT landscapes and processes”



New Product Revenue **ROI** **ROA** **R&D** **Margin** **Risk-Value Ratios**
Operational and Maintenance Ratios
Asset Reuse **Velocity** **Time to Value** **Customer Share of Wallet**

STANDARDIZE, MEASURE AND IMPROVE

Enterprise Architecture

Portfolio Management

Product Management

Business Analytics

Requirements Management

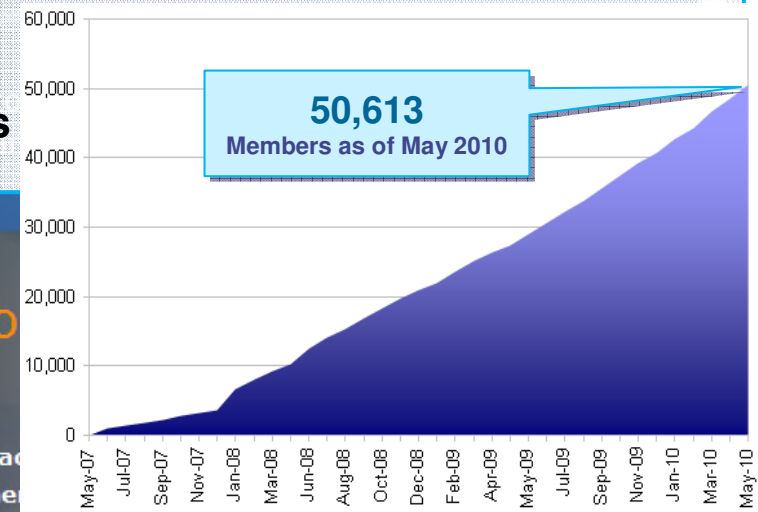
Jazz



What we do - Jazz.net



- Agile planning – half month iterations
- Agile development
- Agile response to requests in the next iteration
- Community drives faster adoption of our products



Free RTC developer licenses
Rational Team Concert is now more affordable for small teams

Raising the bar
Top rating for Rational Team Concert

One tool for collaboration
Bugs, source control, planning, reporting, and more

Managing quality

IBM Rational Team Concert earns top rating

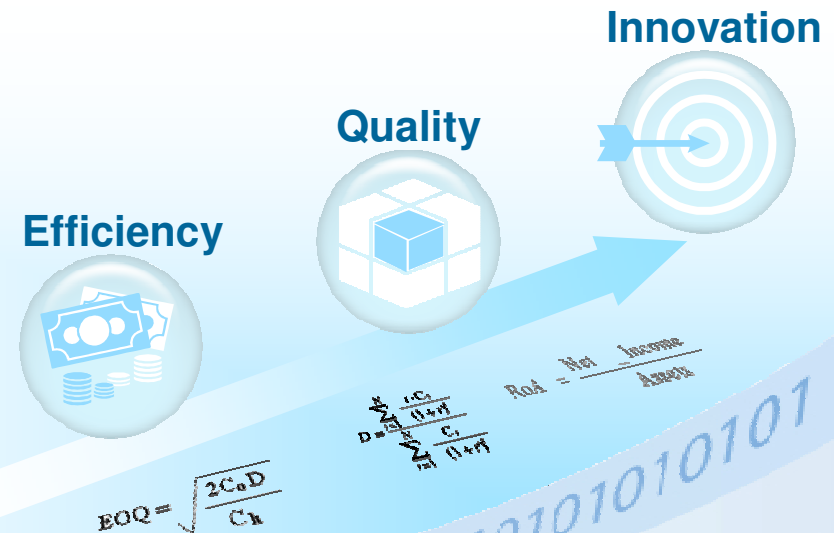
IBM Rational has the best current offering according to the The Forrester Wave™: Agile Development Management Tools, Q2 2010 (May 2010). IBM, focusing on collaborative development, adds strong project management and analytics.



Econometrics: a discipline to optimize software delivery processes towards continuously measured innovation

Systematic management for desired outcomes and failure avoidance

- Quantify emerging opportunity and risk
- Manage new collaborators in value chains
- Design for flexibility and extensibility
- Configure for multiple, diverse linkages
- Deliver perceived quality sustainably



Quantify value measures, and tie to fiscal and societal impact – monetize!

Thank
You

www.ibm/software/rational

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