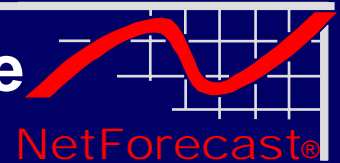


Understanding Performance: Knowledge and Action

NetWorld+Interop Performance Conference
Las Vegas – May 3, 2005

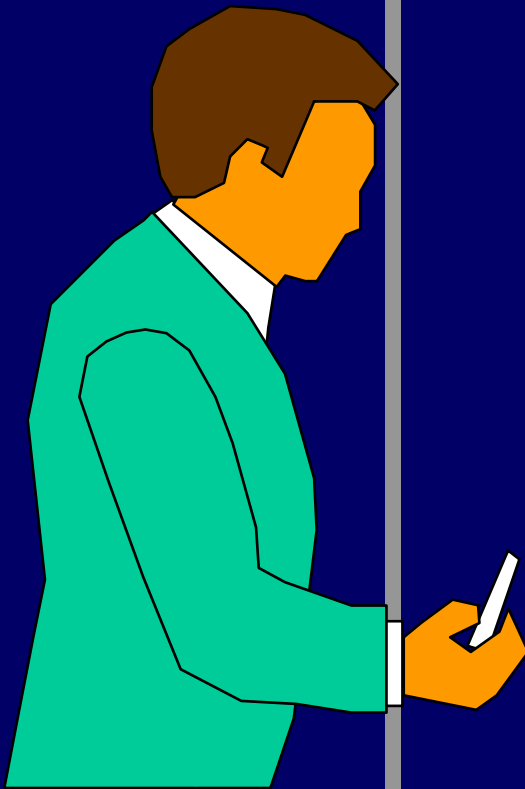


Peter Sevcik

NetForecast, Inc.
955 Emerson Drive
Charlottesville, VA 22901

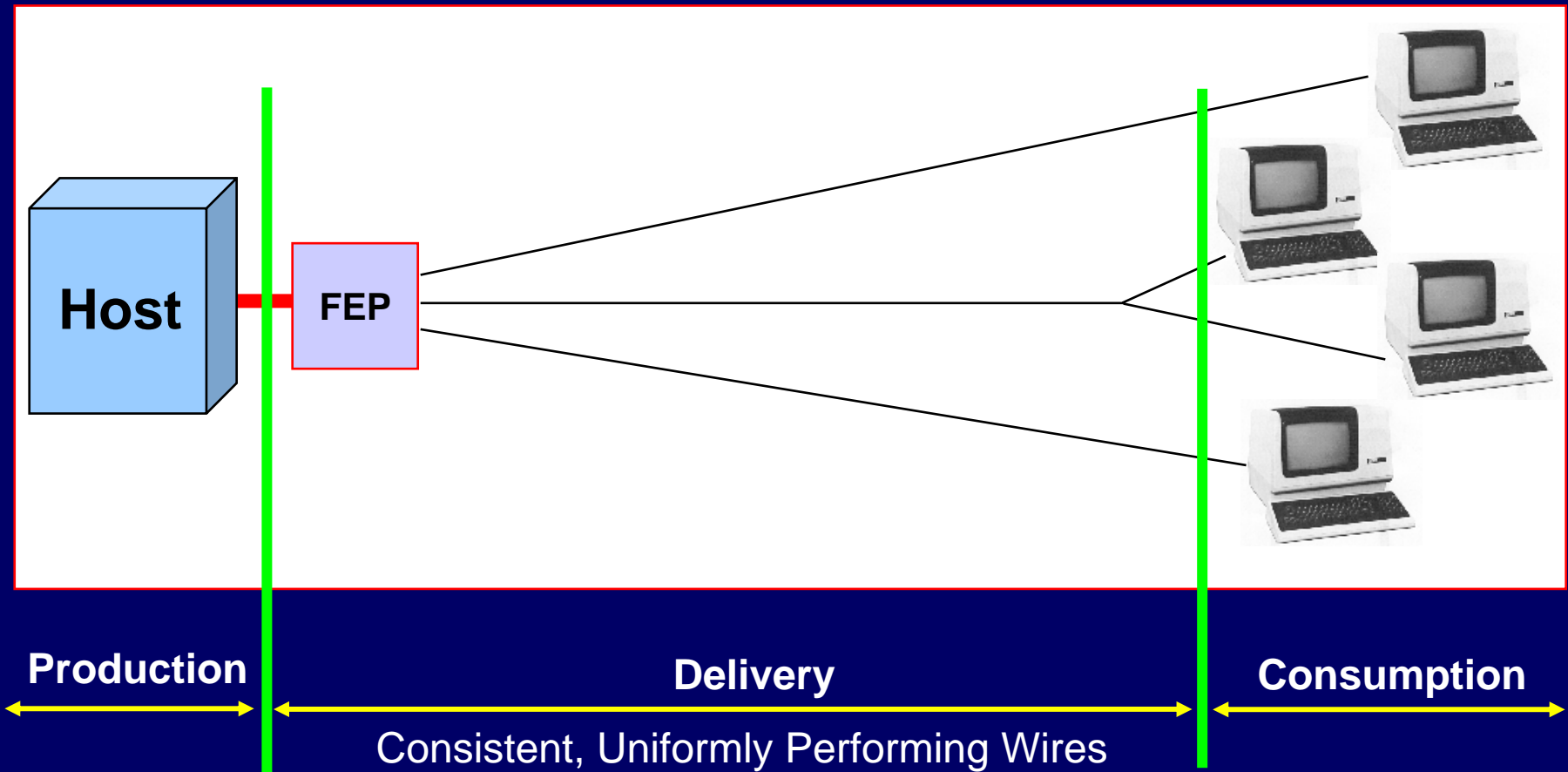
434 249 1310
www.netforecast.com

Outline

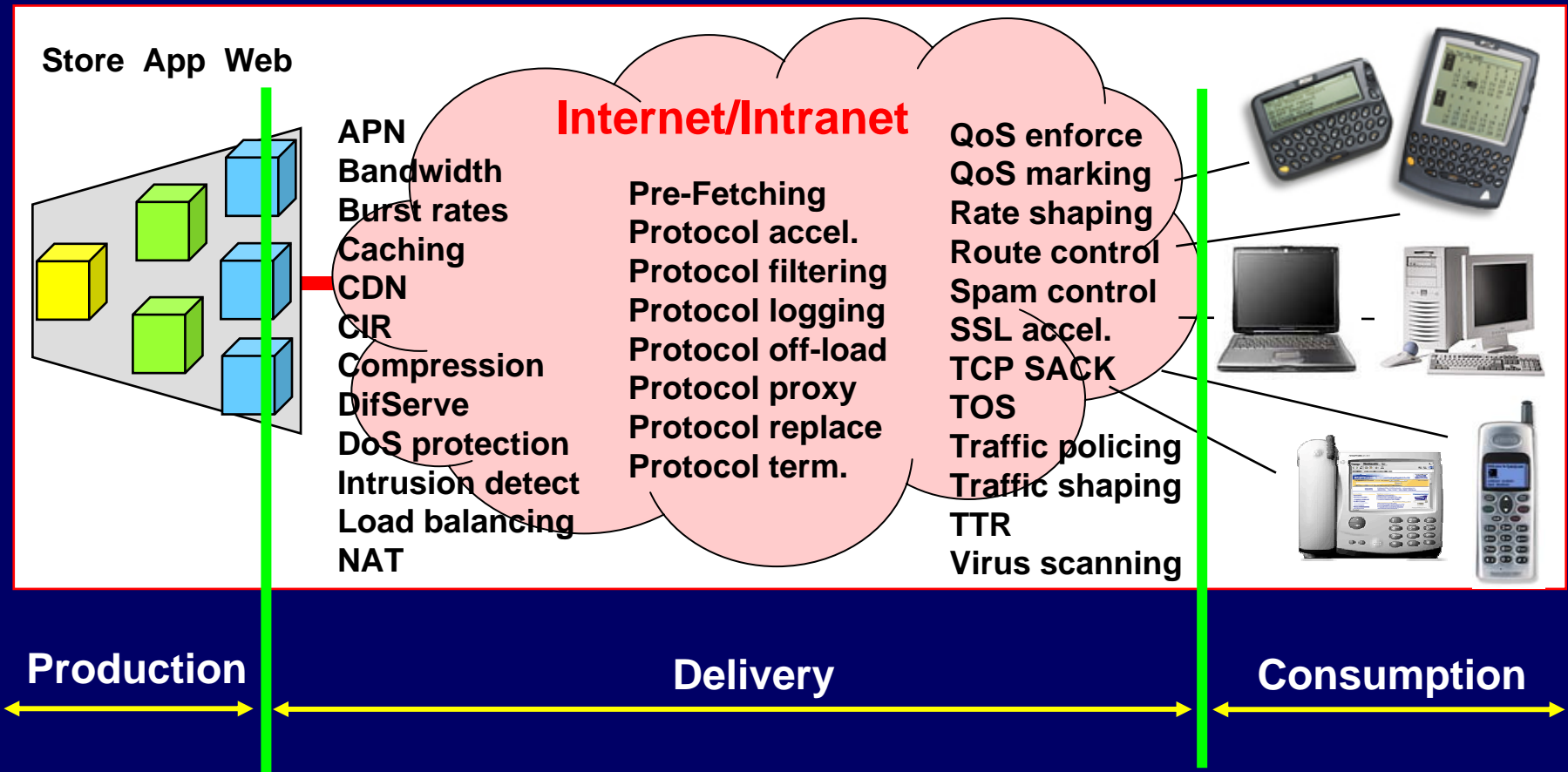


- **Application Delivery System**
- **Performance Framework**
- **Application Performance Index**
- **The N+1 Performance Conference**

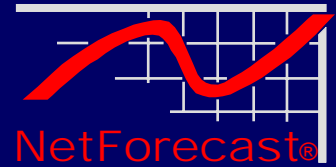
In the Beginning Life Was Simple



Today Complexity Abounds

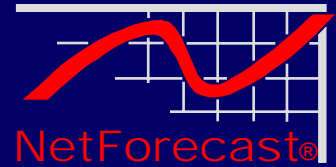


The Problem



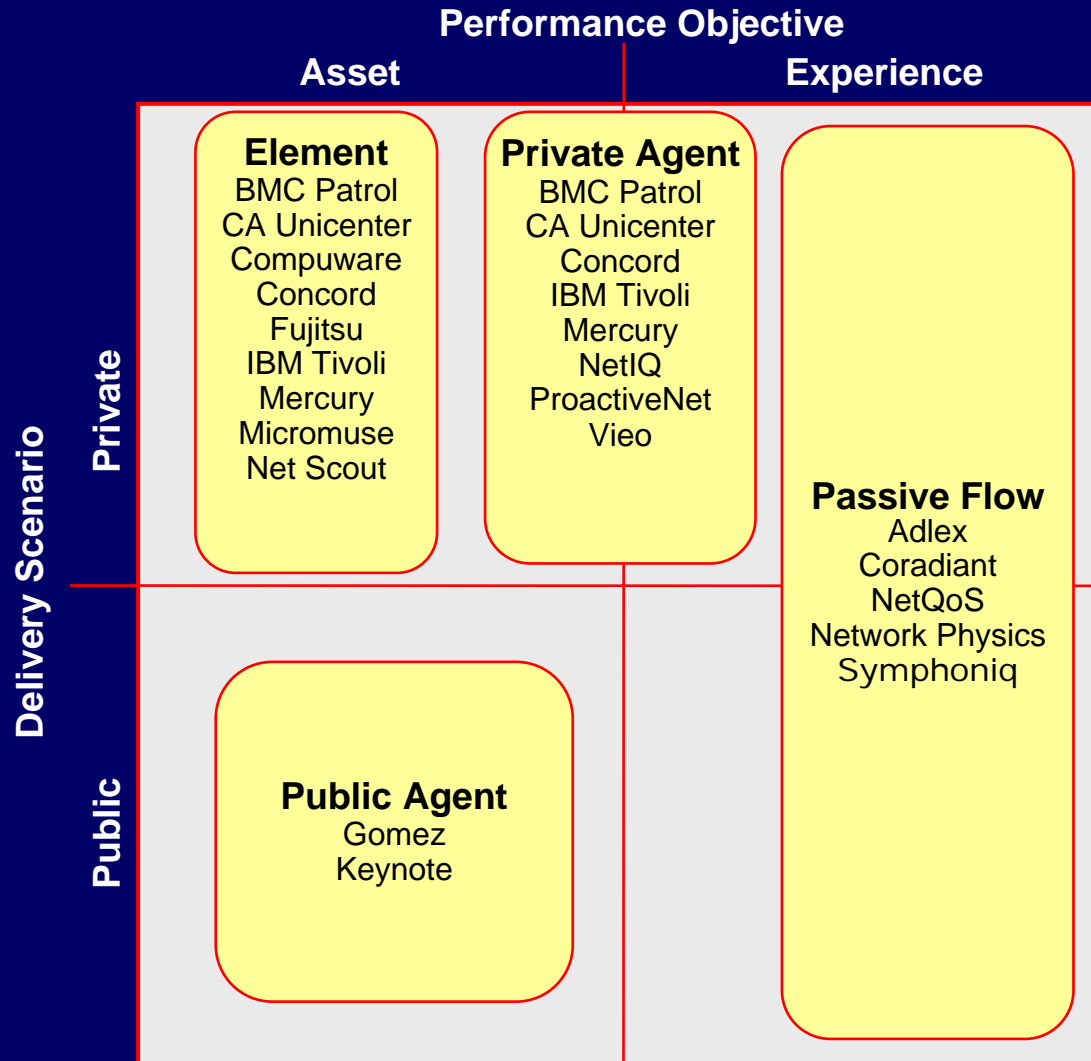
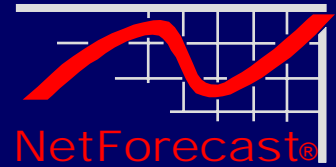
- **Applications are less network-smart**
 - **Business class applications are more dynamic**
 - **Performance is becoming a more important goal**
 - **Application developers are not helping**
 - Motivated by development speed, not performance
 - SOA movement adds deployment and management complexity
- **But the network is less application friendly**
 - **Network distance is increasing**
 - Data centers are consolidating
 - Cost savings and regulatory compliance moves servers to HQ
 - Users are moving away from the data center
 - HQ staff is traveling, 60% of the staff is in branch offices, rest are business partners
 - **Network is not under the enterprise control**
 - Outsourcing of functions
 - **Security is an increasing threat**
 - Viruses, denial of service attacks, worms, spyware, phishing

Application Delivery System (ADS)

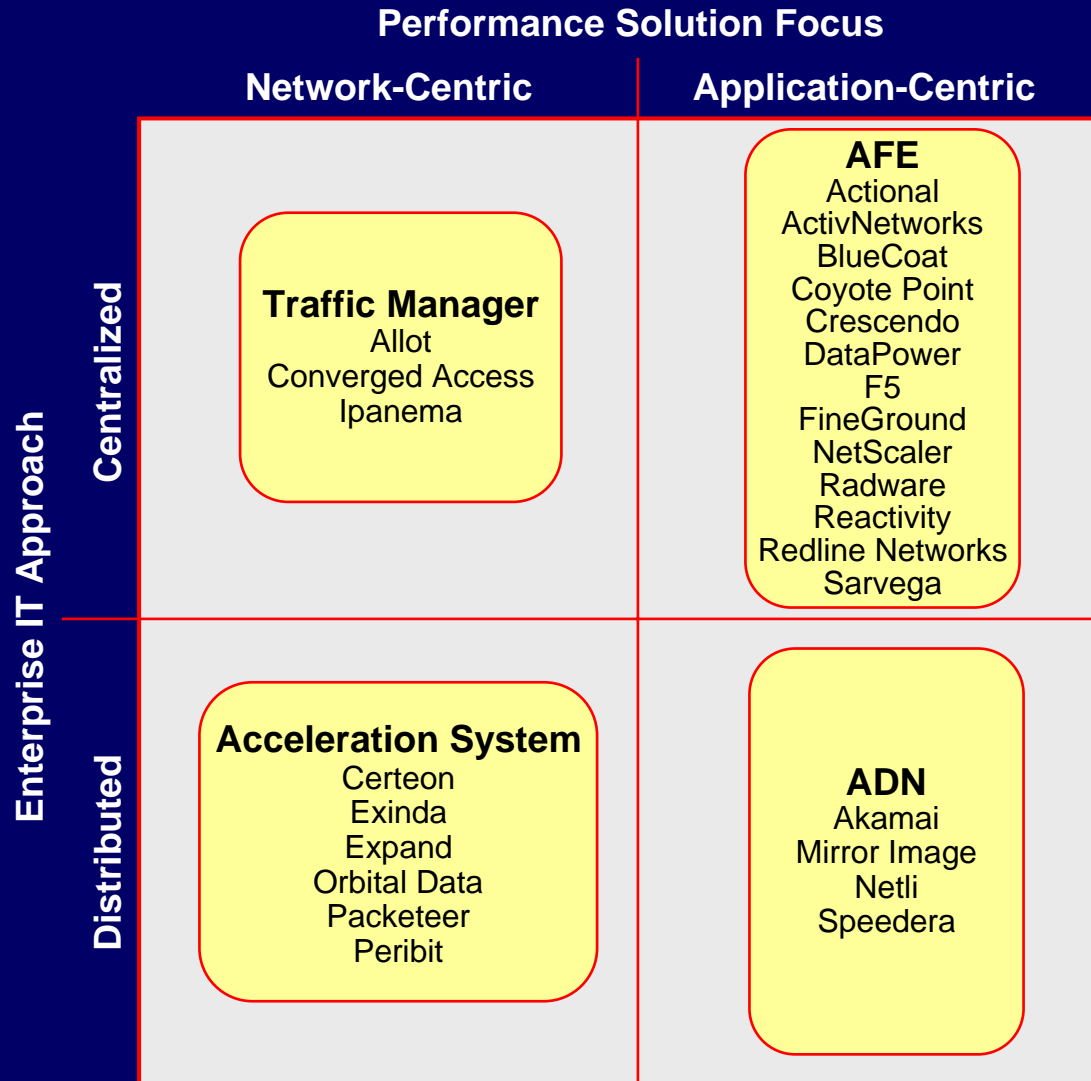


- **Technologies that adapt application output to the needs of the user**
 - Make new applications work on existing networks
- **Operate between the network and application layers**
 - Some are network-based helping all applications
 - Some are focused on a few applications
 - Some are user focused helping specific user groups
- **Operate transparently to the user and application**

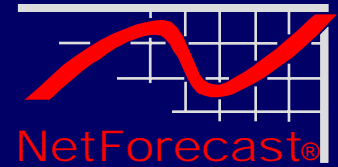
Measurement Vendors



Improvement Vendors



ADS Solutions Deliver Value



● Better applications

- Increased user satisfaction
- User acceptance of a new application
- Improved employee productivity
- Improved global reach
- Enable new application to work

**These make
the IT strategy
succeed!**

● Better infrastructure

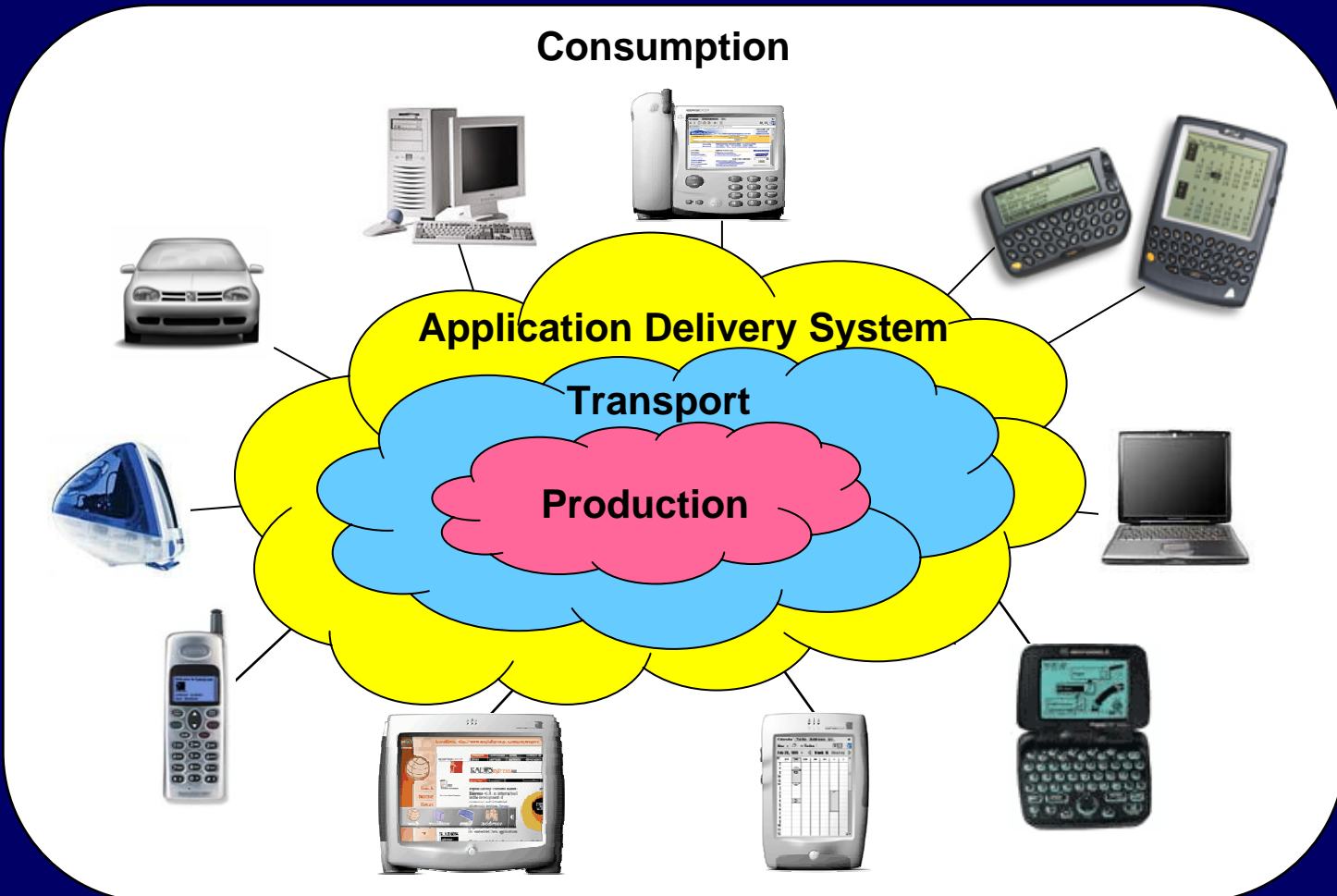
- Improved security
- Better management information
- Better reliability

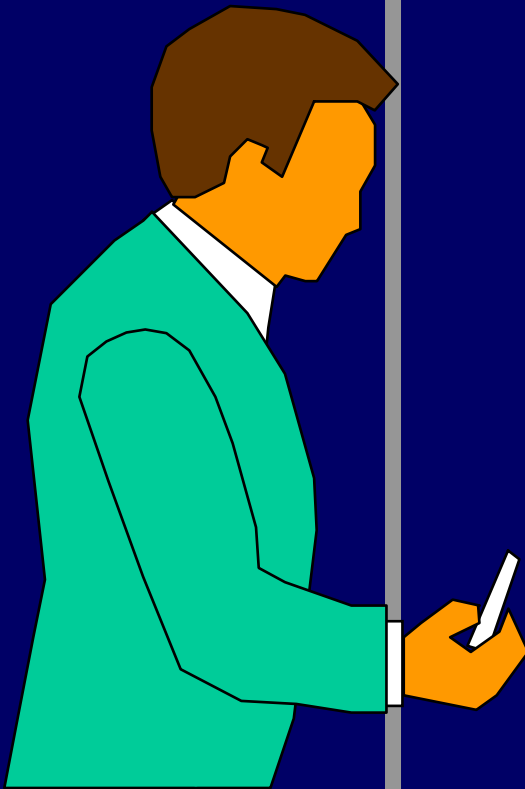
● Cost savings

- Server savings
- Bandwidth savings
- Staff savings from faster troubleshooting
- Cost savings in finding worms and viruses

Enabling the Pervasive Internet

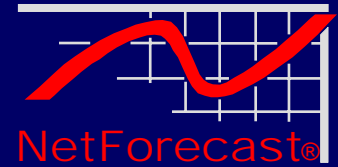
The Application Delivery System is the Next Generation Network





- **Application Delivery System**
- **Performance Framework**
- **Application Performance Index**
- **The N+1 Performance Conference**

Performance Functions



Asset Management

Provisioning - ability of the system to offer a service

Establish new service or add features seamlessly

Recover failed service (service continuity)

Efficiency - maintaining high utilization of system assets

Maintain target utilization level of key assets

Improve utilization of key assets for a better ROI

Protection - avoiding malicious service degradation

Proper authentication and access control

Protection against denial of service attacks

Experience Management

Accessibility - provide access to the broadest number users

Ability for the user population to access the service

Expand the user population in a meaningful way

Quality - users that are satisfied with the interaction process

Maintain user experience quality during a period of system stress

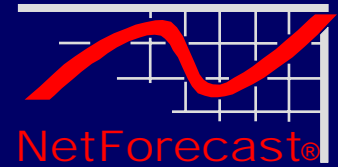
The users can tell that their experience has improved

Safety - users feel safe interacting with the system

Assurance of user privacy, identity protection, anti-virus, spam, spyware

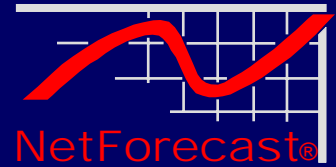
Users can tell that they will have a safe experience

Performance Objective



- **Measure (watch what is going on)**
 - Monitor performance
 - Gather real-time data on the application delivery system
 - Report meaningful information that directly aids decisions
 - Analyze data to find and fix performance problems
- **Control (ensure bad things don't happen)**
 - Maintain “good” performance during system stress
 - Too much traffic, resource loss, congestion, conflicting traffic
 - Optimize the application delivery system
 - Effect is evident only during times of stress
- **Improve (improve behavior in all situations)**
 - Improve performance regardless of system stress
 - Change how the delivery system operates
 - Overcome technical limitations by streamlining the process
 - Effect is evident all the time

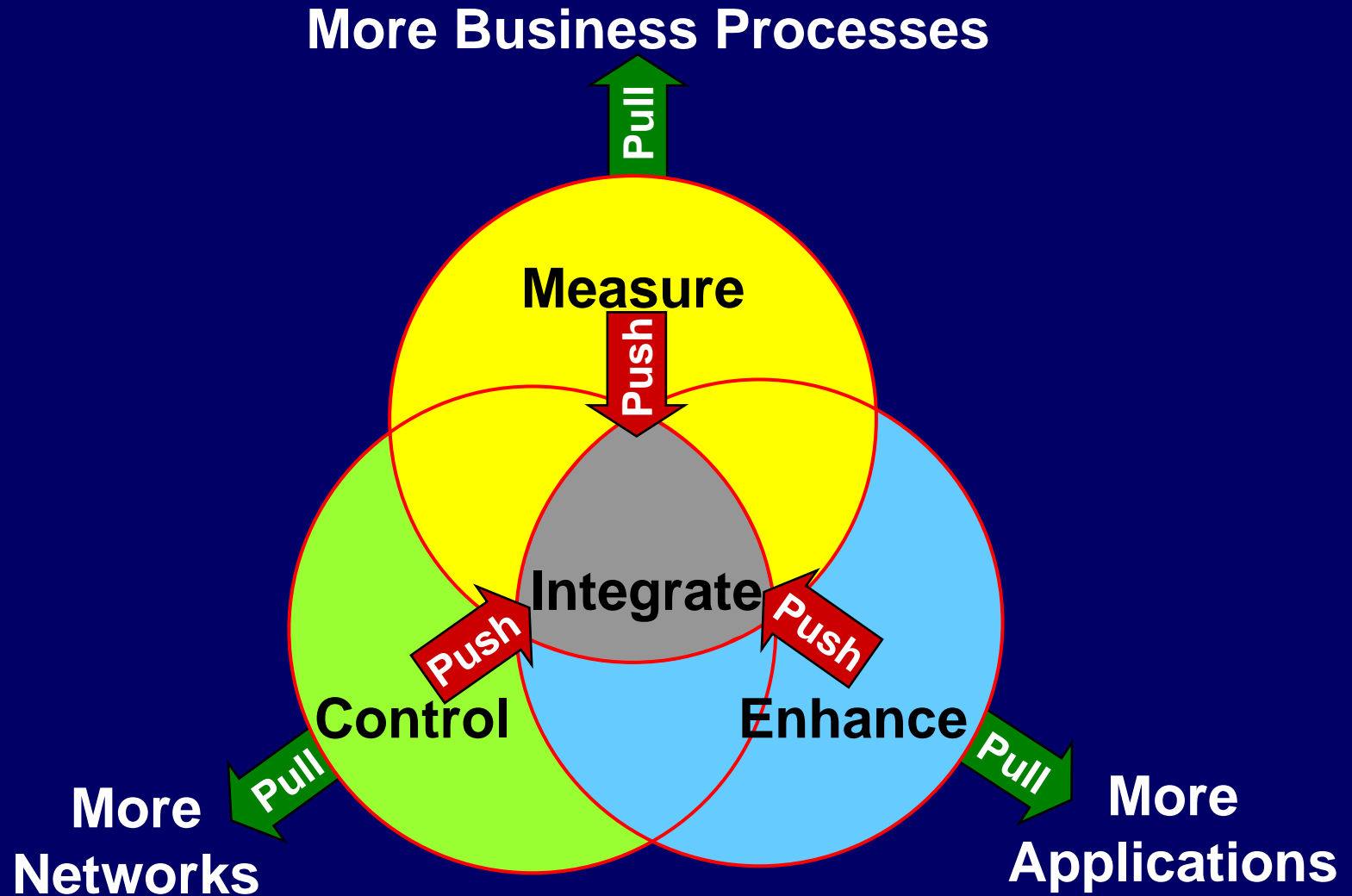
ADS Features Framework



		Asset Management			Experience Management		
		Provisioning	Efficiency	Protection	Accessibility	Quality	Safety
Objective	Measure						
	Control						
	Enhance						

There are about 100 vendors providing solutions across some of the 18 value cells

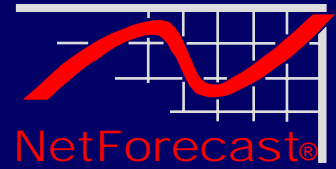
Product Cross Currents





- **Application Delivery System**
- **Performance Framework**
- **Application Performance Index**
- **The N+1 Performance Conference**

Today's Problem: Many Numbers, Little Insight



Which application is in trouble?

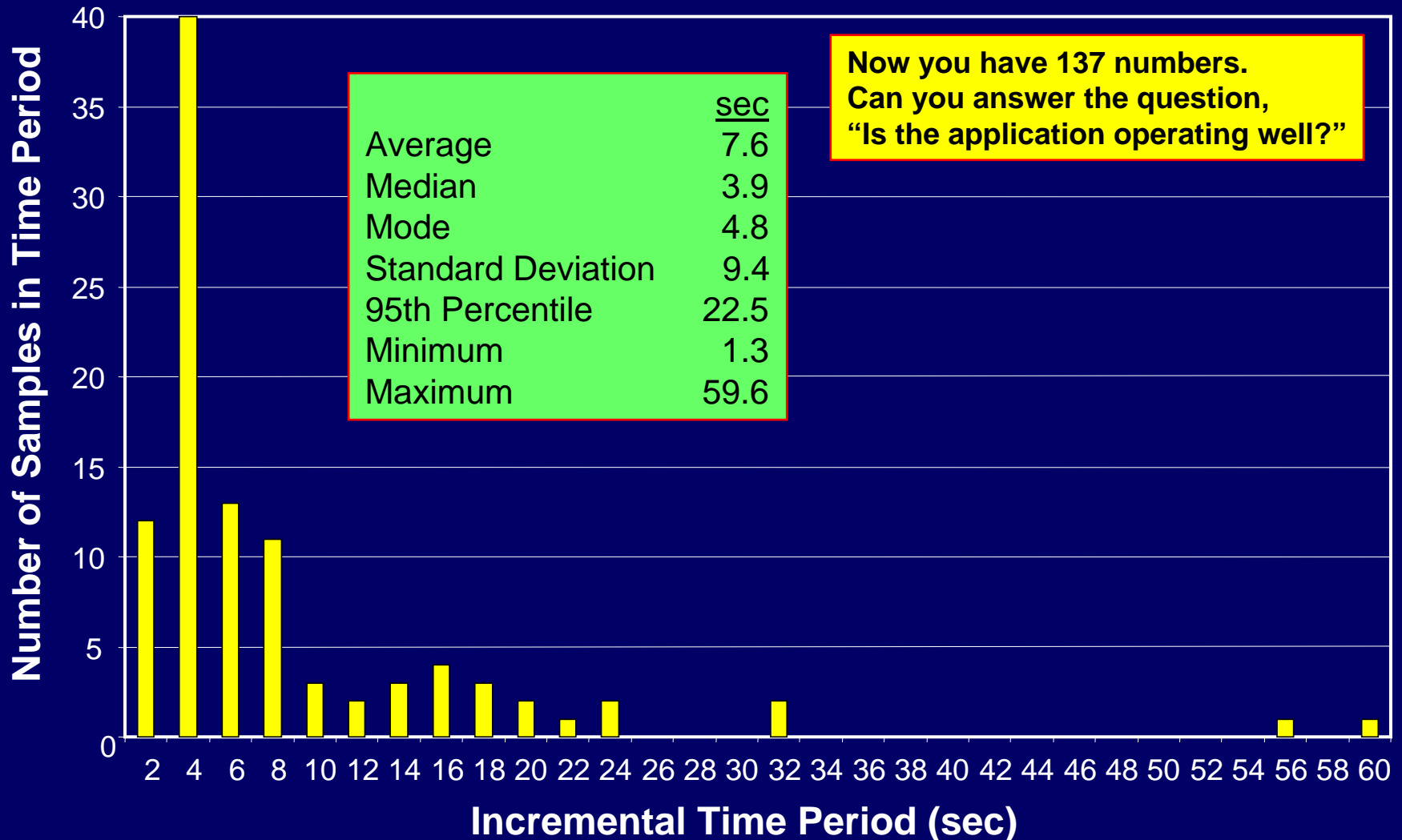
	Measured Response Time (seconds)				
	App A	App B	App C	App D	App E
Day Average	6.0	12.5	3.1	8.4	2.0
Best Hour	5.0	6.8	2.8	4.1	1.7
Worst Hour	18.6	18.9	8.6	19.3	6.5
95th Percentile	8.1	17.3	10.7	12.9	9.5

Example: 100 Numbers

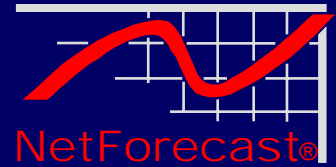
6.45	16.89	3.36	54.50
59.55	13.25	3.33	2.51
16.67	4.50	2.22	4.75
12.56	8.44	9.76	3.84
2.99	4.75	13.20	11.98
14.55	8.83	3.73	2.94
7.37	3.78	3.28	3.99
2.78	3.54	4.90	4.29
7.38	6.39	6.21	23.56
19.69	21.33	22.50	18.10
1.61	1.46	2.15	10.46
5.60	3.67	2.20	2.35
1.64	2.13	15.35	2.48
3.87	4.90	4.64	3.42
2.02	1.99	3.69	3.22
6.09	2.32	3.83	16.37
3.74	2.70	2.95	30.08
30.54	1.76	4.53	1.46
2.76	1.74	5.33	4.11
7.50	1.36	2.49	2.77
2.38	6.38	7.98	3.85
5.85	2.20	7.57	1.77
15.00	6.02	1.26	14.83
3.28	3.34	3.46	1.87
1.80	2.24	2.65	5.20

- **Start with what you have**
 - Your ADS tool produced 100 samples
- **The samples are**
 - Single application
 - User-level response time measurements
 - One hour of samples
- **Is the application operating well?**

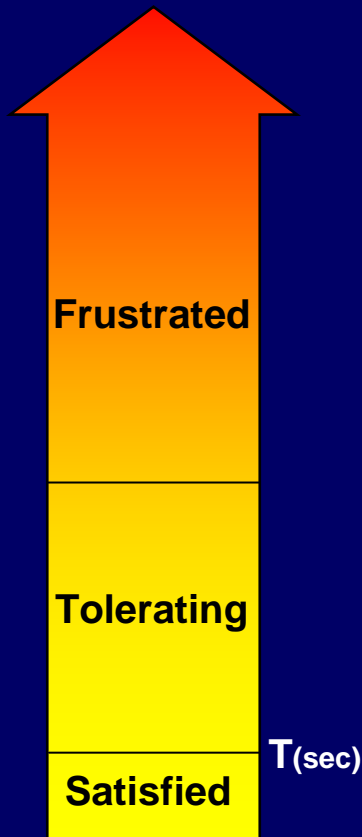
Numbers Beget Numbers



Applying Apdex to the 100 Numbers



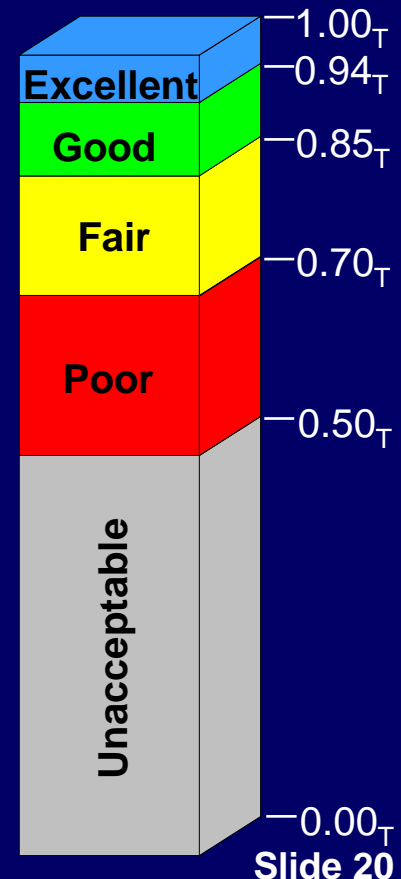
Step 1
Count
samples in three
performance zones



Step 2
Calculate
Apdex
formula

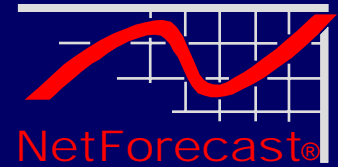
$$\text{Apdex}_T = \frac{\text{Satisfied} + \frac{\text{Tolerating}}{2}}{\text{Total samples}}$$

Step 3
Display
Apdex
results



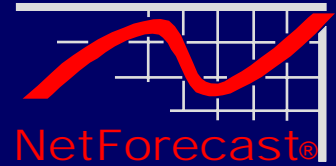
T = the application target time
(threshold between satisfied
and tolerating users).

The Apdex View



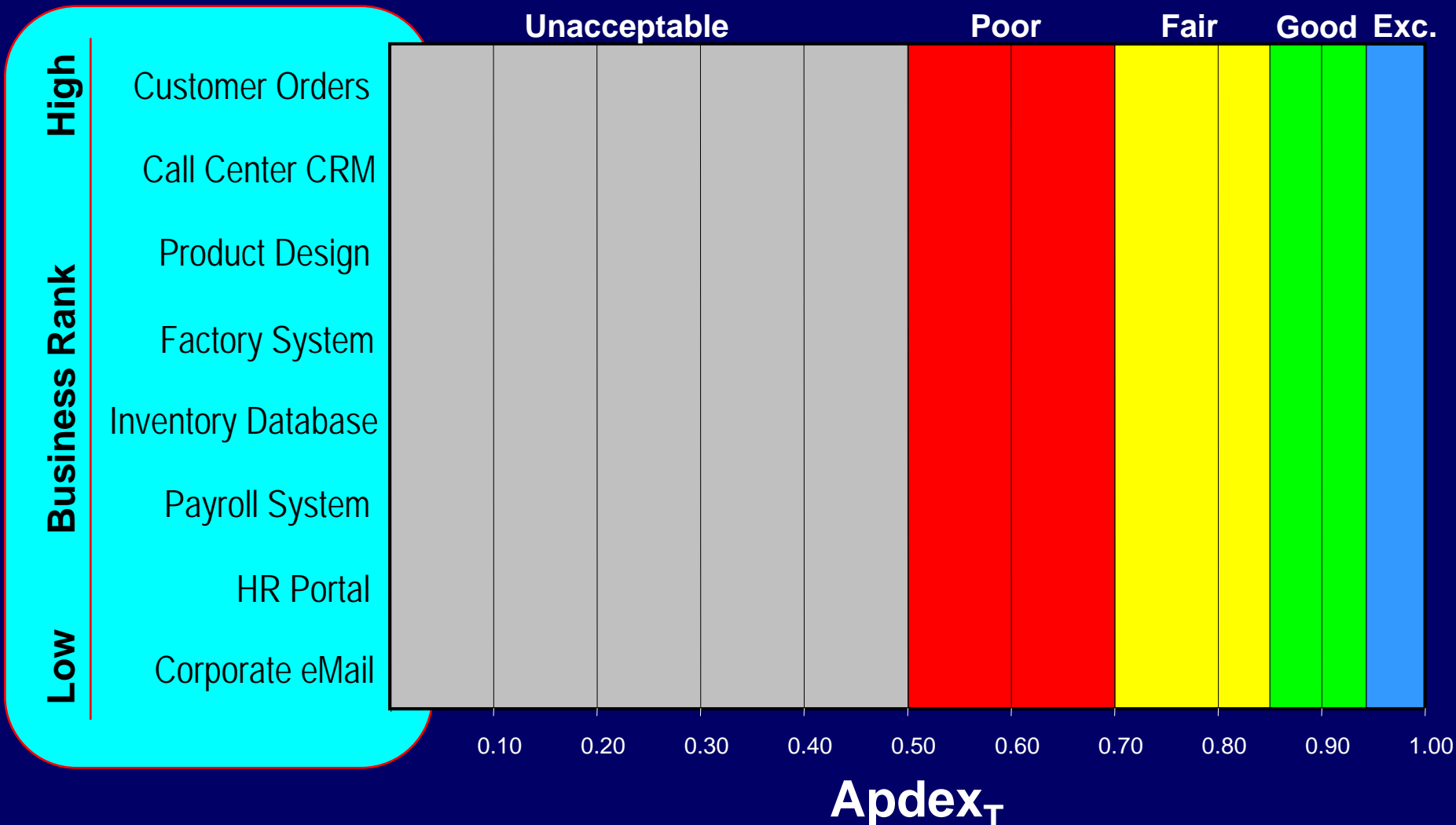
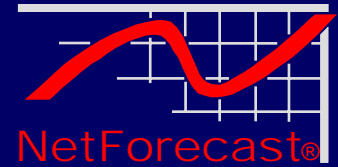
- **Users of this application are not performance impeded if the task responds in less than 8 seconds**
 - **T = 8 sec**
- **Apdex for the 100 samples = 0.87₈**
 - **The application barely providing “Good” performance**

Apdex Benefits

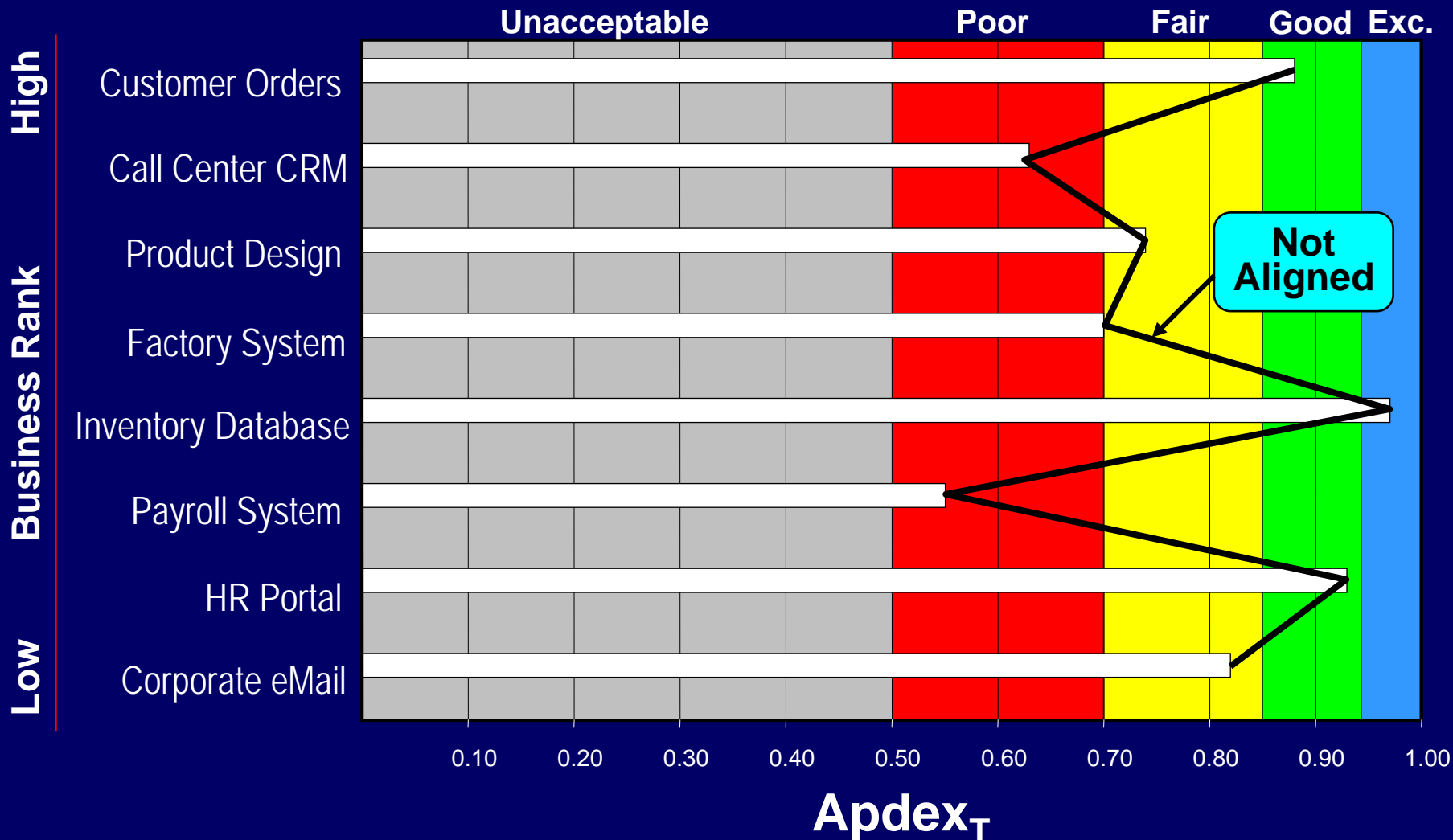
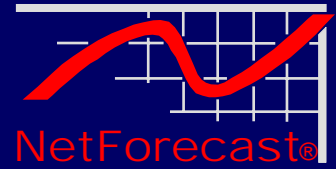


- **A way to measure effectiveness of IT investments**
 - Know where to invest IT to improve performance
 - Know when to stop investing
- **Proactive versus reactive management**
 - Enterprises can respond faster to user dissatisfaction
- **Align IT and business goals**
 - Top CIO management priority
(State of the CIO 2004 Survey, CIO Magazine, Oct 2004)

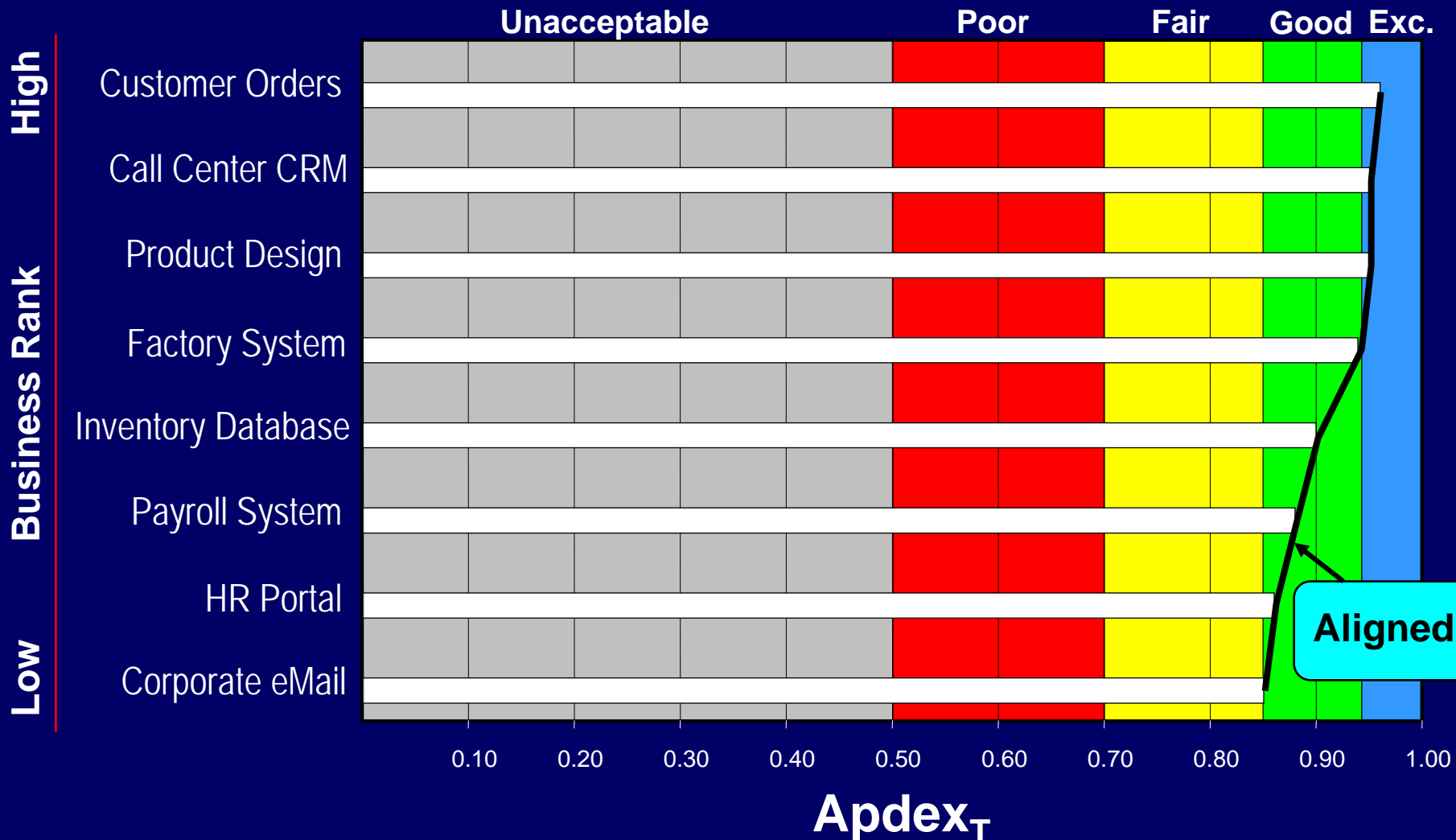
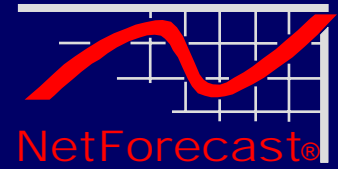
1 - Aligning IT to the Business: Rank The Applications



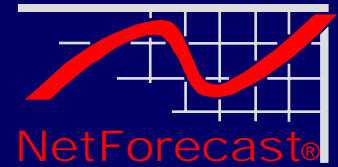
2 - Aligning IT to the Business: Apdex Report for Business Period



3 - Aligning IT to the Business: Apdex Report After Changes



The Apdex Alliance



- **Apdex Alliance goals**
 - Research effects of application performance on users & businesses
 - Specify methodologies for application performance measurement & reporting
 - Advance IT management processes through the use of Apdex
- **Open collaborative approach**
- **Many ways participate in the Apdex community:**
 - Observer**

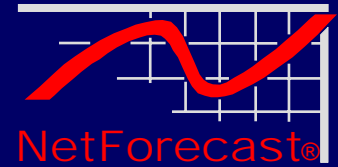
You want to be kept informed on new developments
 - User**

Interested in learning more about Apdex for possible use within your organization
 - Advisory Board**

Expert in application performance measurement and willing to add to the development of the methodology
 - Member**

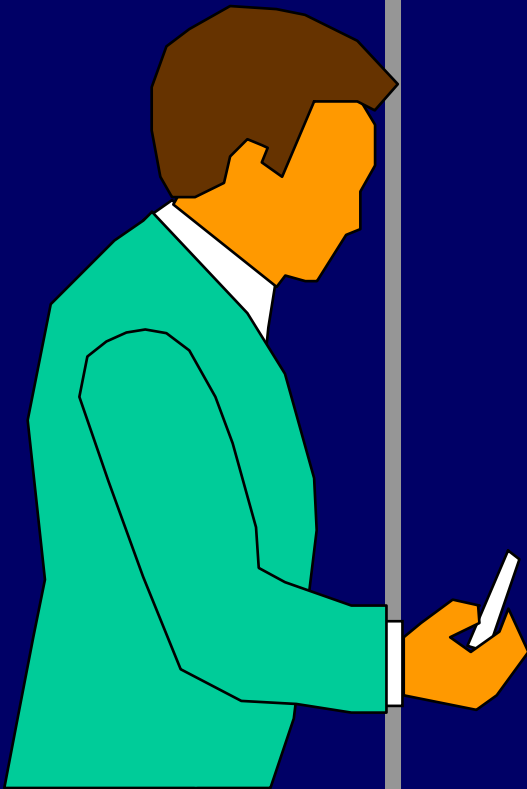
Company offers performance measurement and reporting products or services
- **Please visit www.apdex.org to learn more**

Current Alliance Members



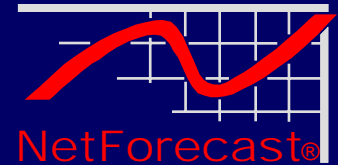
Please visit Booth 449-9 in the Performance Pavilion to learn more





- Application Delivery System
- Performance Framework
- Application Performance Index
- The N+1 Performance Conference

This Performance Conference



● Tuesday

- **Understanding Performance: Knowledge and Action**
- **Leveraging Infrastructure Data for Performance Management**
- **Performance Enhanced ROI: Choosing Between Application and Network Centric Solutions**
- **Choosing the Best User Measurement Solution: The Experts Speak**

● Wednesday

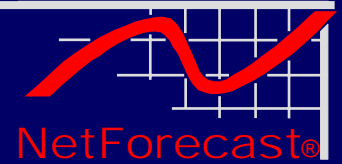
- **Improving Application Performance: User Case Studies**
- **Should Performance Management Follow your Organization Structure or Business Flow?**
- **Application Delivery Systems: Teaching Old Applications New Performance Tricks**
- **The Business Value of Performance: Lessons from the Field**

● Thursday

- **Measuring VoIP Performance**
- **Avoiding the Train Wreck of Boxes: Is a Performance Improvement Platform Right for You?**
- **Improving Performance over the Internet—It CAN be Done**

Smart Strategies From Hard Data

Thank You



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for free articles and reports on these topics**