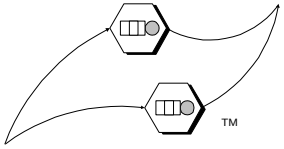

NTSMF Goes Simalytic!

Demand Technology User Group Meeting

CMG2001, December 3, 2001

http://www.simalytic.com/CMG01/NTSMFppt.pdf

Dr. Tim R. Norton

Simalytic Solutions, LLC

719-635-5825

email: tim.norton@simalytic.com

http://www.simalytic.com

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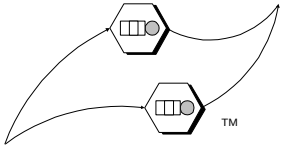

Agenda

- **Transaction Modeling**
  - General Discussion
  - What's the Problem?
- **Leveraging NTSMF Data Collection**
  - Response Time Pipe
  - DevelopNET's PredictNET Service
- **Questions**

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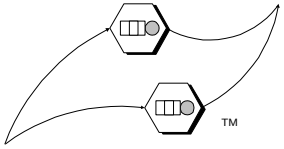

Transaction Modeling

- **What is a Transaction?**
  - Recognizable unit of work
    - Measurable resource usage
    - Related to a business function
      - More than web ‘hits’ or SQL queries
  - Definition dependent on the environment
    - Well defined in some environments
      - CICS, Tuxedo, Database, Web, Custom client
    - Poorly defined in interactive environments
      - TSO, DOS, Windows, Unix

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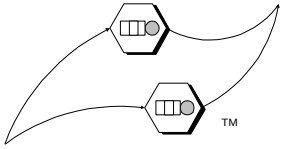

Transaction Measurement

- **Understanding IT Transactions**
  - Functions within a server process
  - Issue: Correlation to external functions
  - Data: NTSMF, PerfMon, SNMP, others…
- **Understanding Business Transactions**
  - Functions meaningful to the Business
  - Issue: Correlation to IT transactions
  - Data: ARM, External measures, others…

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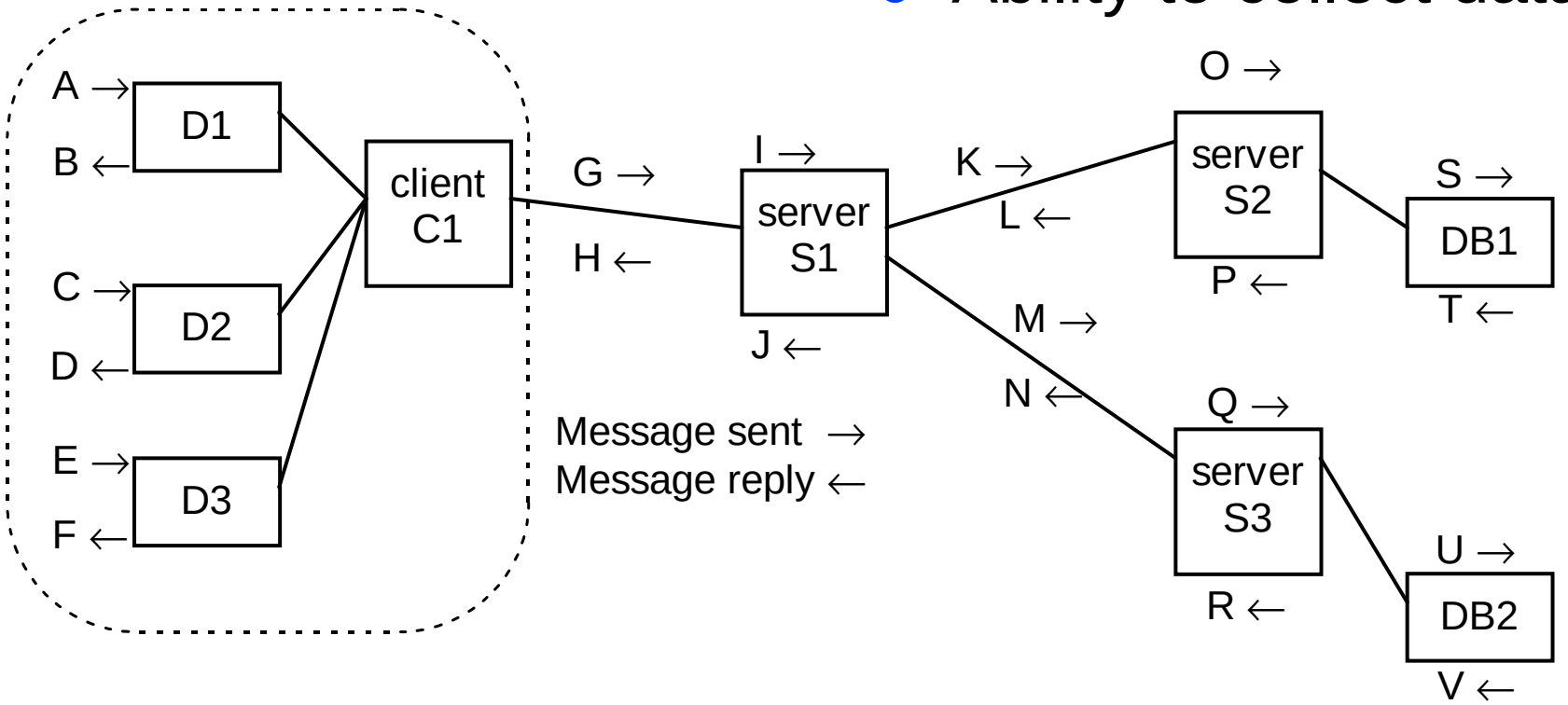
Transaction Topology

- **Where to Measure?**
  - Objective of the measurement
- **What to Measure?**
  - Ability to “see” events
  - Ability to collect data



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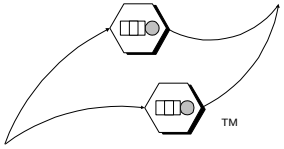

What's the Problem

- **How Does Performance Effect the Business?**
  - Business result when the application changes?
  - Application result when the business changes?
  - Implies there is a "good" and a "bad"
    - Assessment of the relationship
    - How to predict when it will become "bad"?
  - ⇨ **How to use performance numbers to answer business (i.e., financial) questions?**

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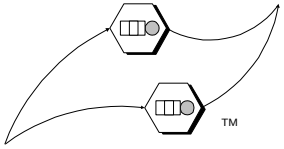

What's the Problem

- **Different types of "Needs"**
  - Business - Impact to overall process?
  - Capacity - What do we have to buy?
  - Performance - Is there a cost for failure? (SLAs)
  - Design - Will it ever work? (SPE)
  - Operations - Impact of management functions?
  - Availability - Impact of component failure?

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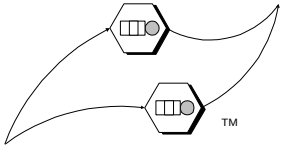

What's the Problem

- **Measurement Issues**
  - What is the end-user's experience?
  - Measure everything or just what's "important"?
  - Different units of work (transactions, messages, etc.)
  - Component response times lack continuity
  - End-to-end response times lack enough detail
- **Performance Metrics**
  - Neither good nor bad
  - Relationship to business provides the context

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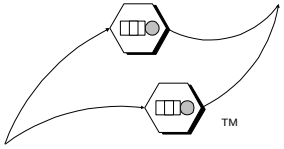

What's the Solution

- **Better Analysis with Less Effort**
  - Use data for multiple purposes
  - Reduce operational effort
  - Connect robust data collection directly to specialized analysis techniques
- **Leveraging NTSMF Data Collection**
  - Simalytic Solutions' Response Time Pipe
  - DevelopNET's PredictNET Service

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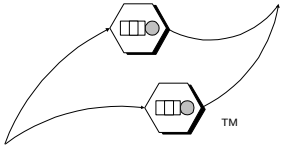

Response Time Pipe

- **What is a Response Time Pipe?**
  - Way to visualize the relationships between components used by an application.
  - A technique that quickly connects different types of component performance measurements or approximations.
  - A technique to relate the performance of the components to the business objective.

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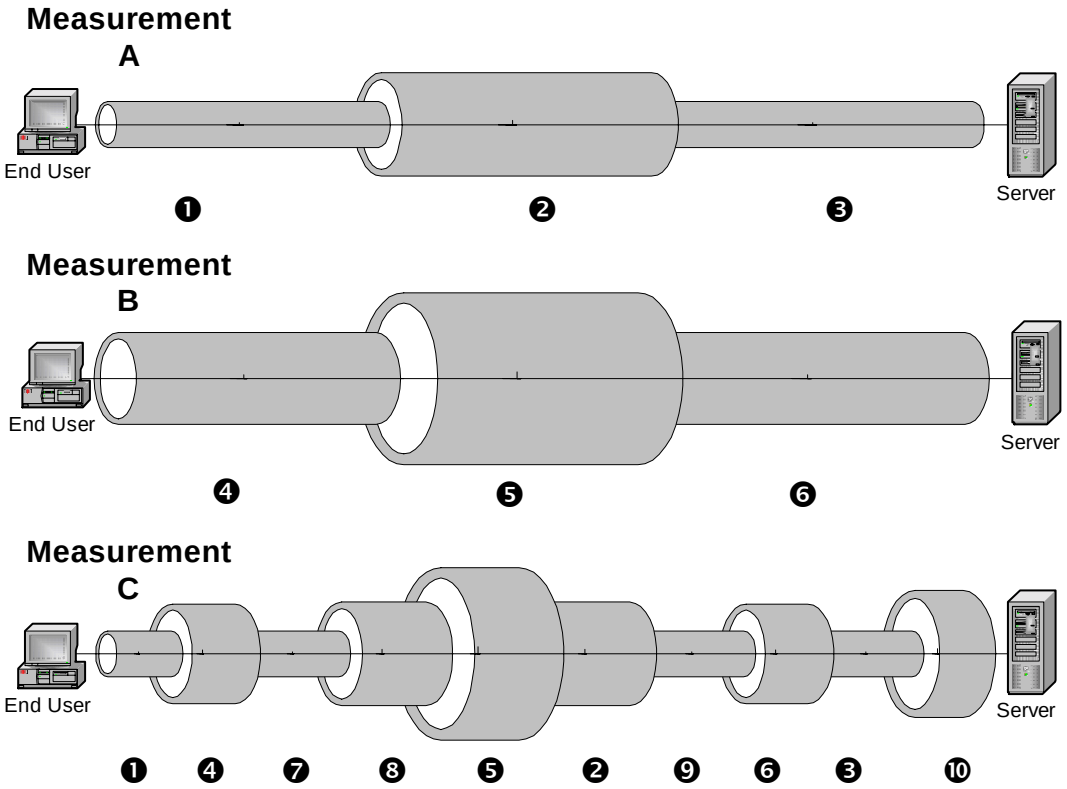
Response Time Pipe

- **Why a Pipe?**
  - To provide a visual framework that expresses:
    - Capacity
    - Connection
    - Flow
    - Sections
    - Constrictions
  - Looking at different sections provides different perceptions of capacity and performance



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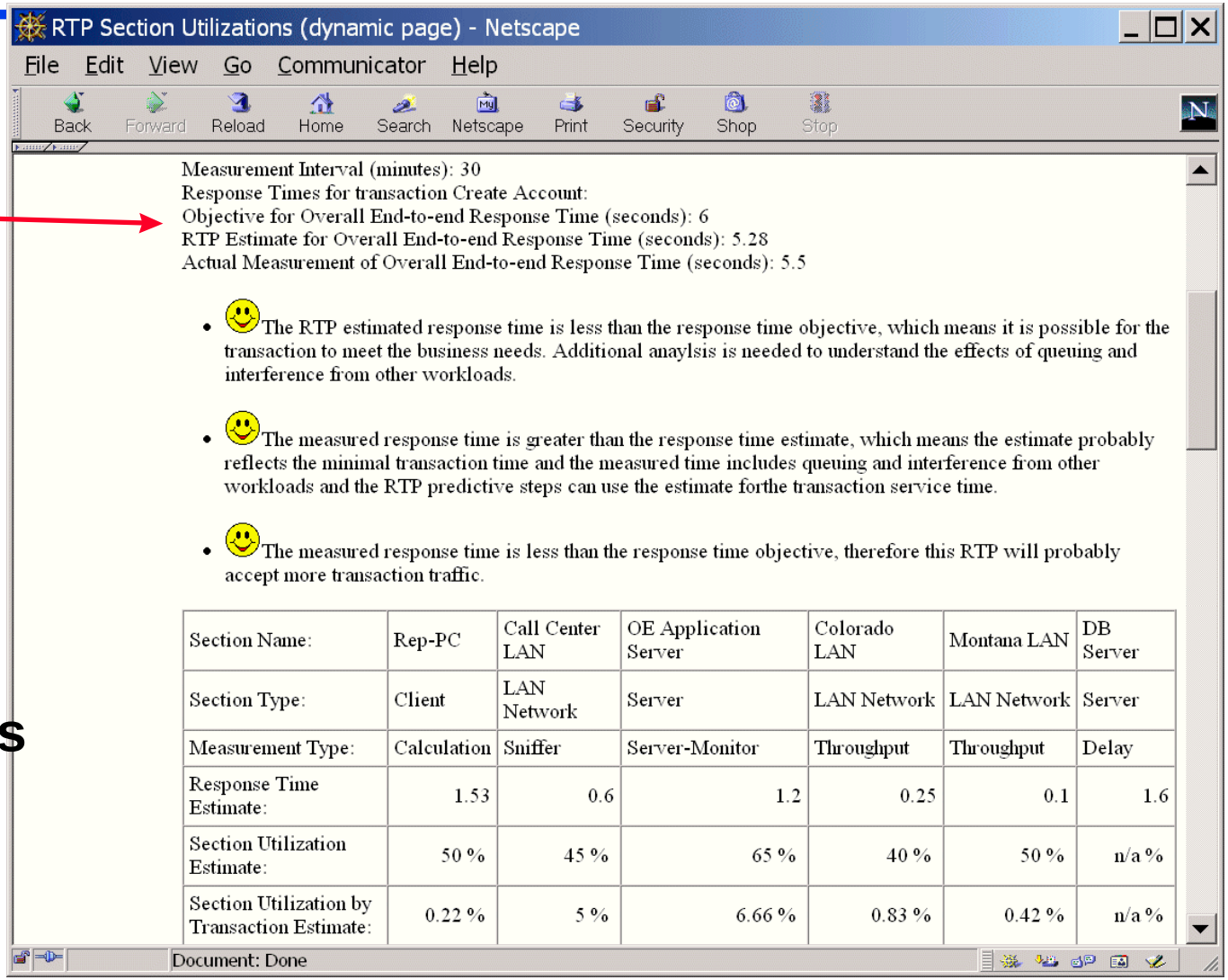
Response Time Pipe Example

- **Compare Response Times:**
  - Objective
  - Actual
  - Estimate
  - Forecast
- **Conclusions Based on Relationships**
- **Explore Component Impacts**



Section Name:	Rep-PC	Call Center LAN	OE Application Server	Colorado LAN	Montana LAN	DB Server
Section Type:	Client	LAN Network	Server	LAN Network	LAN Network	Server
Measurement Type:	Calculation	Sniffer	Server-Monitor	Throughput	Throughput	Delay
Response Time Estimate:	1.53	0.6	1.2	0.25	0.1	1.6
Section Utilization Estimate:	50 %	45 %	65 %	40 %	50 %	n/a %
Section Utilization by Transaction Estimate:	0.22 %	5 %	6.66 %	0.83 %	0.42 %	n/a %

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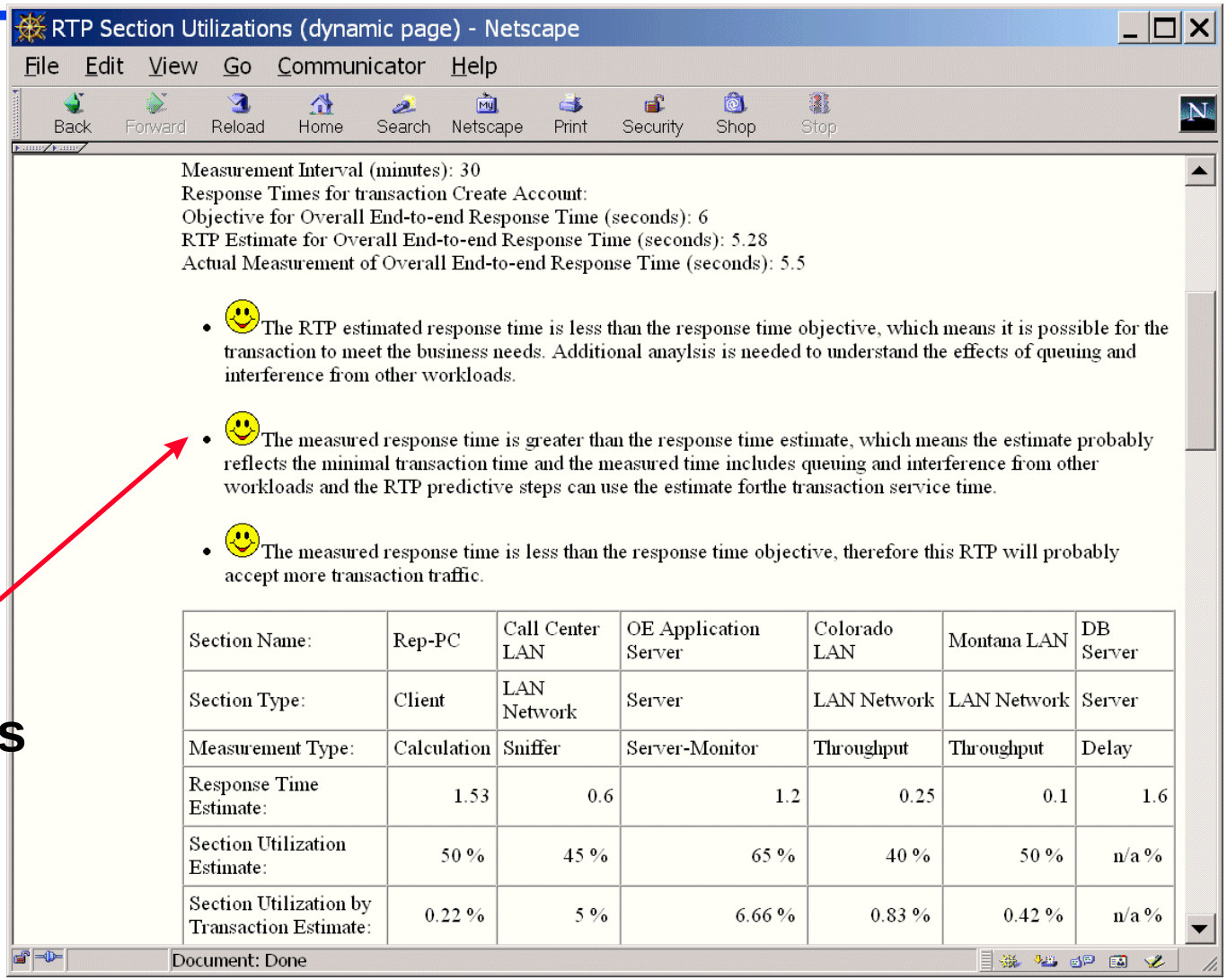

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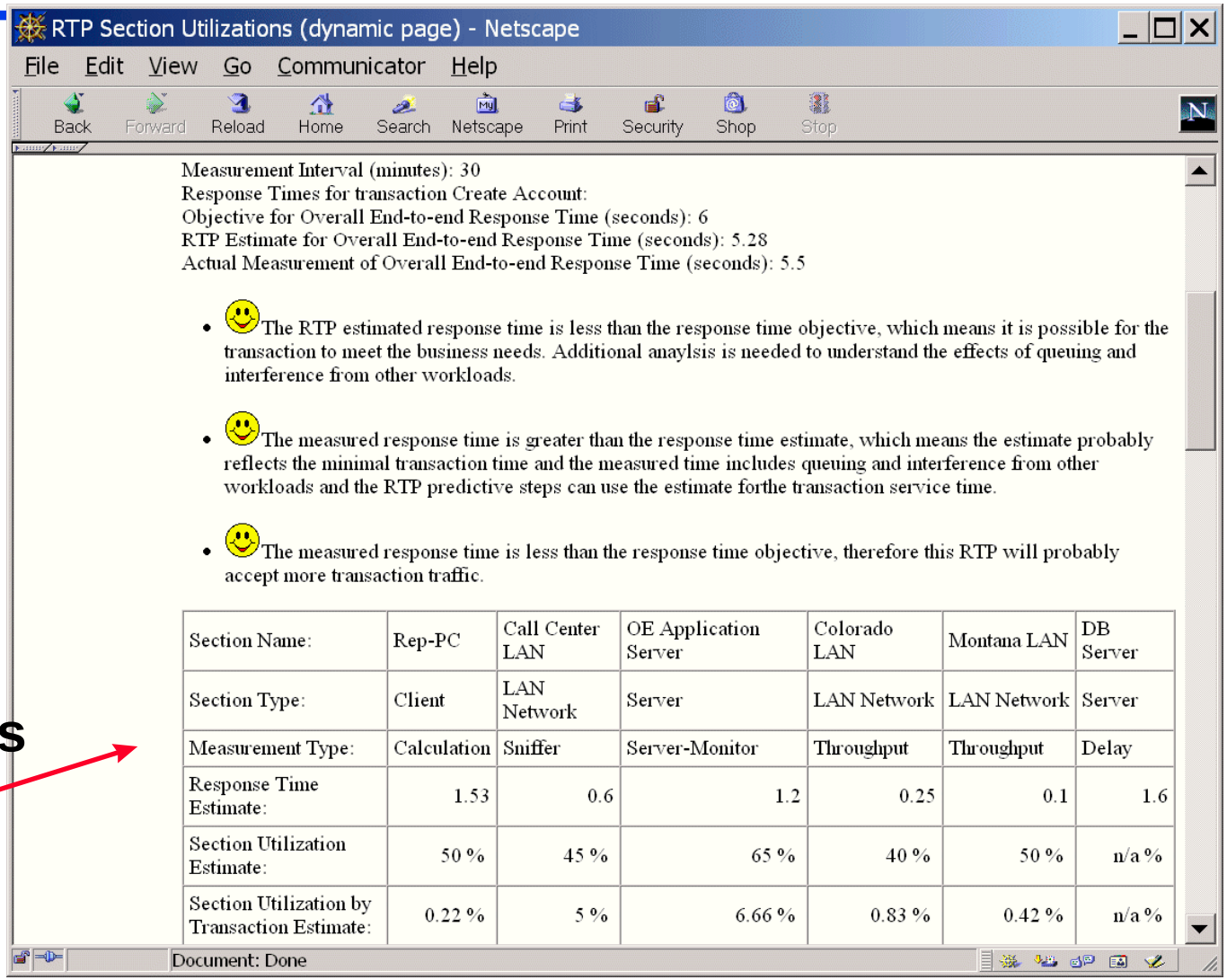

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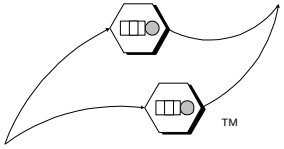

RTP and NTSMF

- **RTP Provides the Analysis**
- **NTSMF Provides the Metrics**
  - Example:
    - Getting Server CPU metrics for a calculation measurement
    - Hard way:
      - Requires a custom PerfMon report, special collection process and calculations using \Process(XXXX)\% Processor Time for workload processes
    - Easy way:
      - Summarization report data from NTSMF

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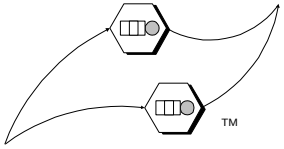

DevelopNET's PredictNET

- **PredictNET Service**
  - "User view" response time measurements
  - Correlations to system resource usage measurements
  - Web delivered reports
    - Current assessments ("Health Check")
    - Forecasts using statistical techniques
    - Predictive models using Simalytic techniques

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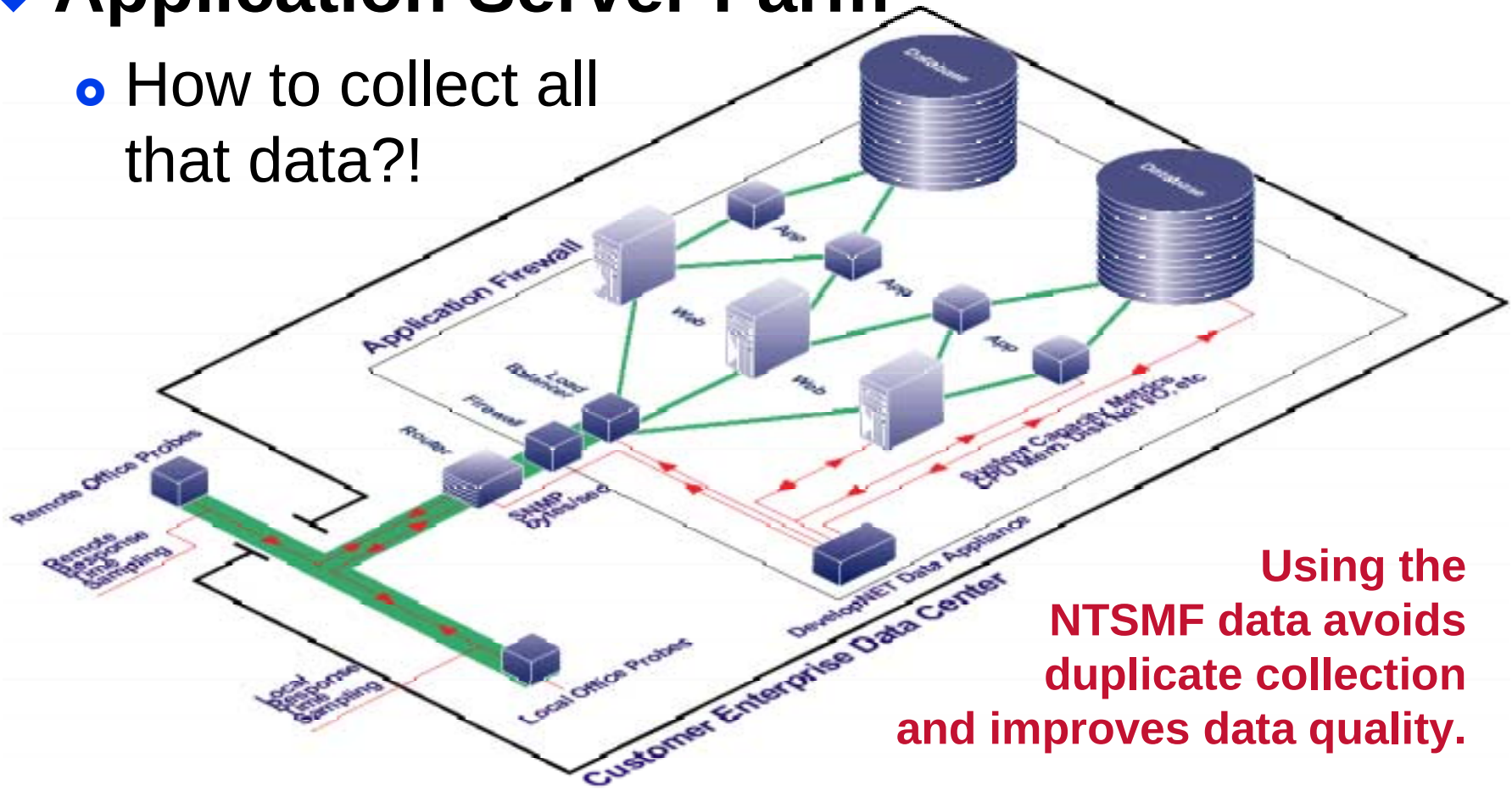
DevelopNET's PredictNET

- **Application Server Farm**
  - How to collect all that data?!



Using the NTSMF data avoids duplicate collection and improves data quality.

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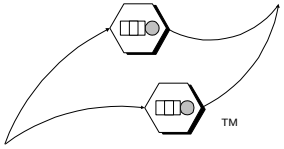

PredictNET Data Collection

- **System Level Resource Measurement**
  - Low impact sampling methodology
  - Adaptive technique to further reduce overhead
- **External Response Time Sampling**
  - Workload characterization through browser interface enables ‘workload targeting’

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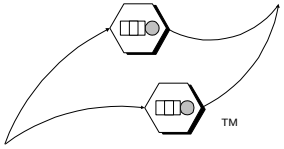

PredictNET Data Collection

- **Meta-Collection:**
  - Integrate with existing data collection and management frameworks
    - **Demand Technology NTSMF**, BMC Patrol, NetIQ
  - Import third party transaction data
    - Keynote
  - Import traffic data for workload characterization

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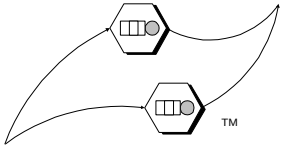

PredictNET Analysis

- **Data Conversion & Reduction**
  - SmartMetrics data reduction techniques
  - Principal components and factor analysis
  - Normalize, clean and store in metric warehouse
  - Utilize existing NTSMF metric warehouse
- **Statistical**
  - Regressive and auto-regressive constructs
  - Linear and nonlinear, multi-variate regression

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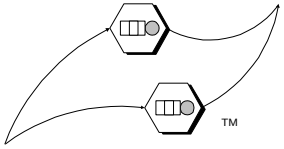

PredictNET Analysis

- **Correlation**
  - Connects response times with resource usage
  - Direct measurements NOT required
  - Identifies resources that actually impact users
- **Forecasting and Prediction**
  - Multiple techniques:
    - Statistical, Analytic, Simalytic Modeling
  - Appropriate technique = fast, usable results

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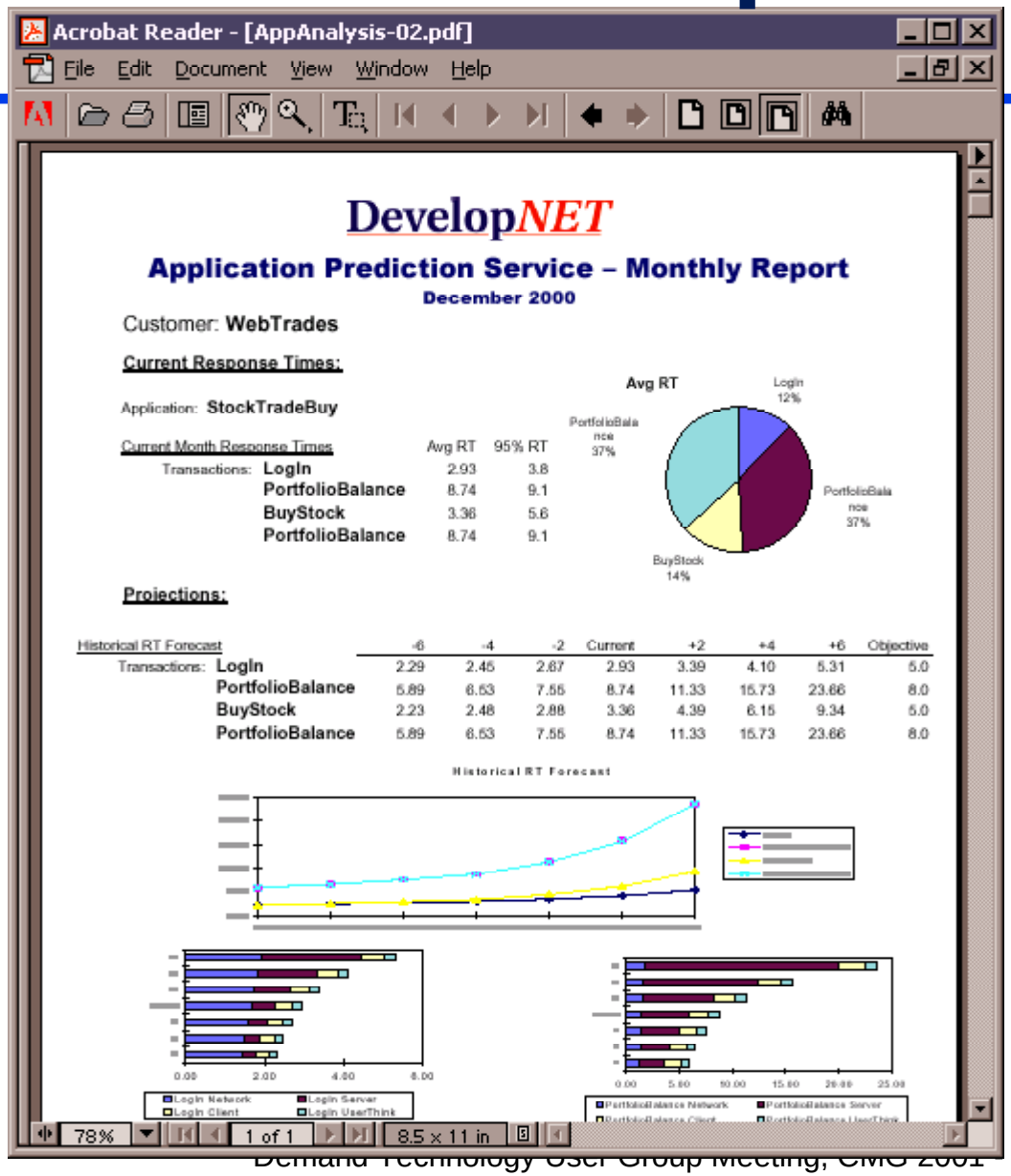
PredictNET Sample Report



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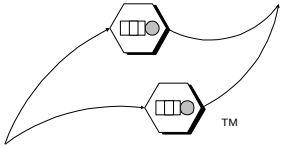

DevelopNET and NTSMF

- **PredictNET Provides the Analysis**
- **NTSMF Provides the Metrics**
  - Example:
    - Getting NT IIS Web Server metrics
    - Default collector:
      - Coarse-Granular measurements
      - Not usable for other analysis
    - NTSMF collector :
      - Fine-Granular measurements
      - Wide variety of generalized reporting also available
      - Automatically imported without additional server overhead

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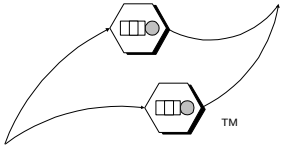

What's Next?

- **After You Have the Data…**
  - Relate it to the Business
  - Predict future performance
  - Anticipate capacity needs

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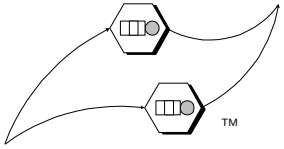

Questions?

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