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Ignite IT Performance™

What Are You Waiting For? Performance Tuning Made Easy

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Who Am I?

Microsoft Certified Database Administrator

Microsoft MVP Most Valuable Professional

PASS

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follow me

@SQLRockstar

http://thomaslarock.com

I Wrote A Book!

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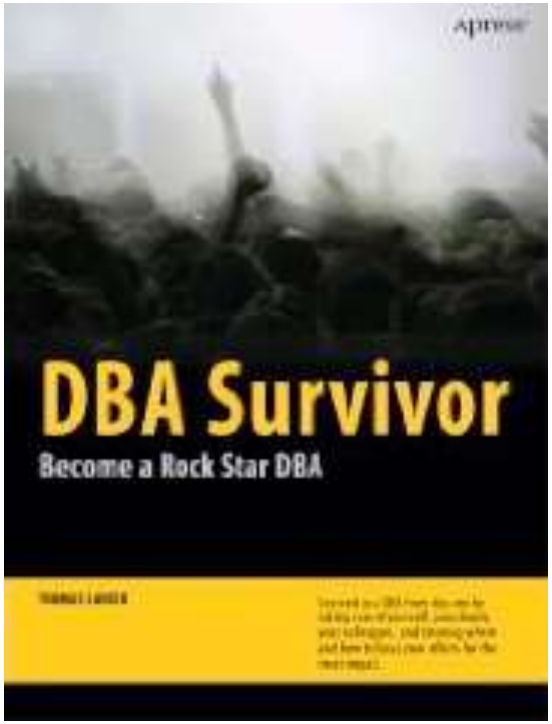
http://dbasurvivor.com/



Do You Have Value?

What Are You Measured By?

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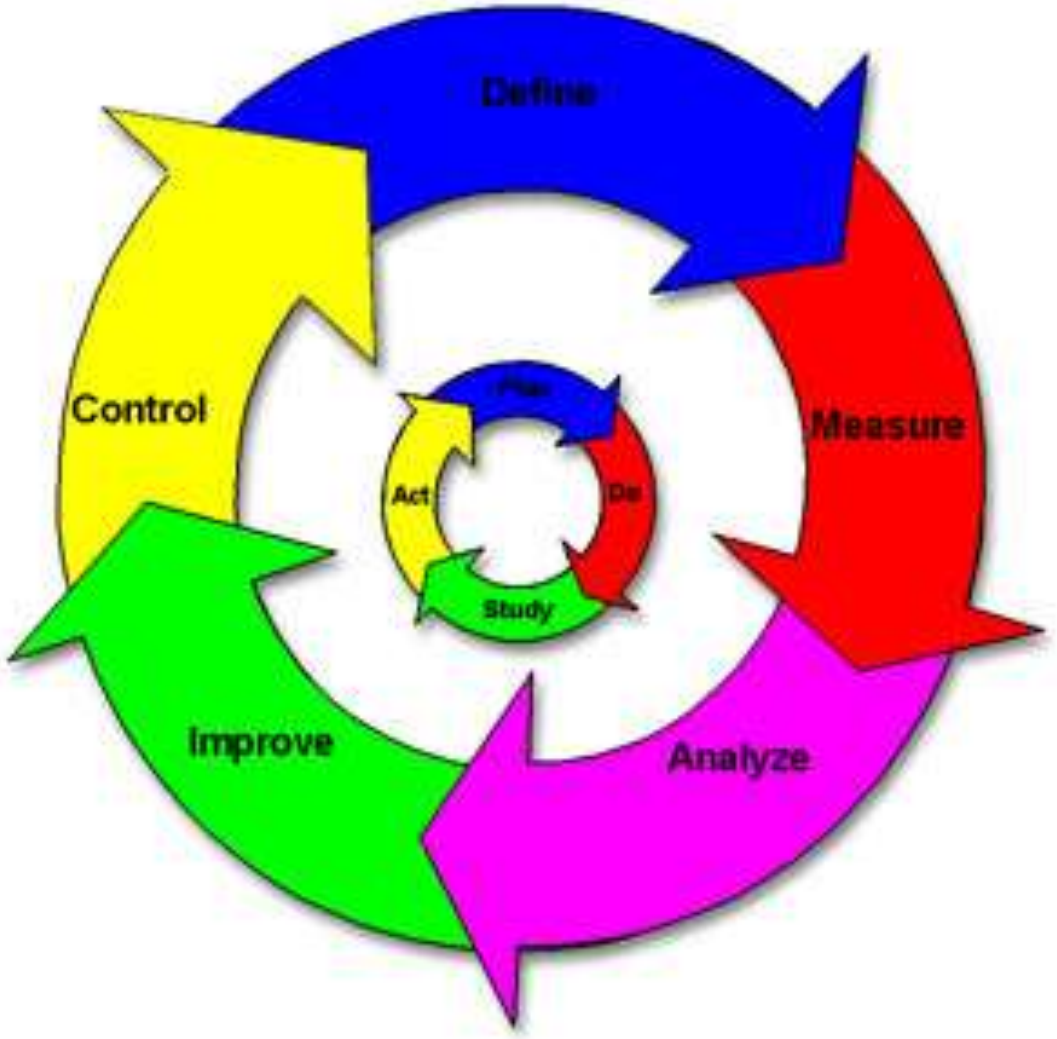
Performance Tuning is Hard!

- 3-5 Day Classes are typical
- Cannot be everything to everyone
- Requires expertise in m areas
- Takes time
- Low Priority
- Where do you begin?

What Do People Crave?

Same Thing For Adults



Six Sigma Lessons

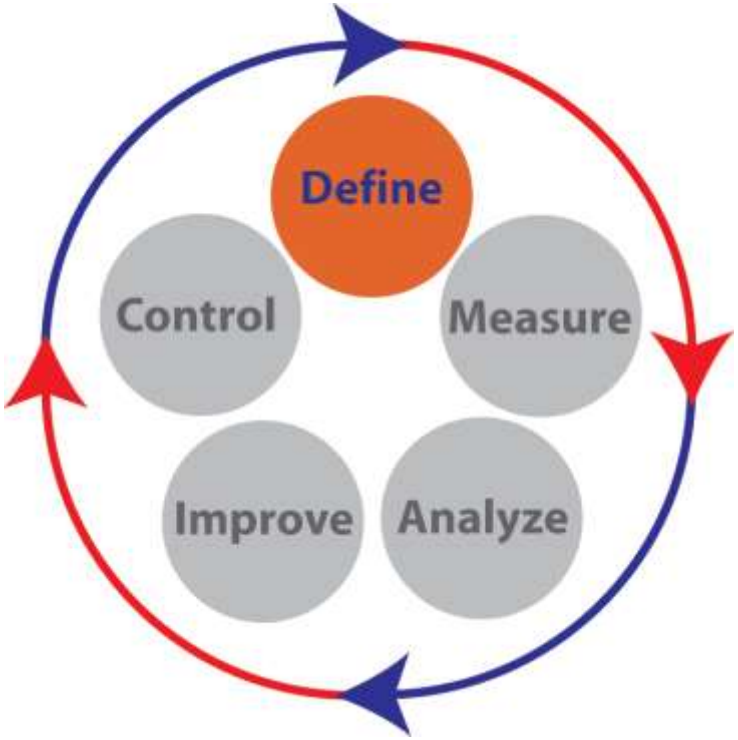
- DMAIC
  - Define
  - Measure
  - Analyze
  - Improve
  - Control

What Can DMAIC Do For Me?

- Help you locate bottler
- Help you resolve bottle
- Help you become effici
- Help you to demonstra

DMAIC: Define

- How are issues defined?
- What are the challenges you face when trying to define issues?



DMAIC: Define

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- Common sources for issues:
  - Benchmarks
  - User experience
  - Business requirements
- Common challenges:
  - User perception
  - OLTP vs. OLAP
  - Business requirements keep changing

DMAIC: Measure

- What are you measuring?
- How do you measure?

DMAIC: Measure

- Common measures:
  - Memory
  - CPU
  - Disk I/O
  - Network
- How are metrics gathered?
  - SQL Trace
  - DMVs
  - 3rd party tools

"Roll Your Own"

DMAIC: Measure

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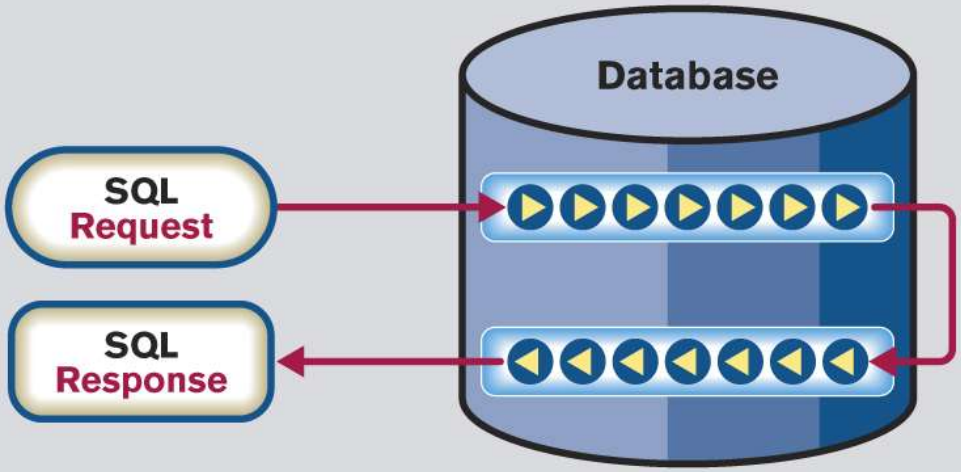
Focus on End User *Response Time*



Identify Wait-Time at every step and rank bottlenecks by user impact.

- Understand the total time a Query spends in Database
- Measure time while Query executes
- SQL Server helps by providing Wait Types

DMAIC: Measure

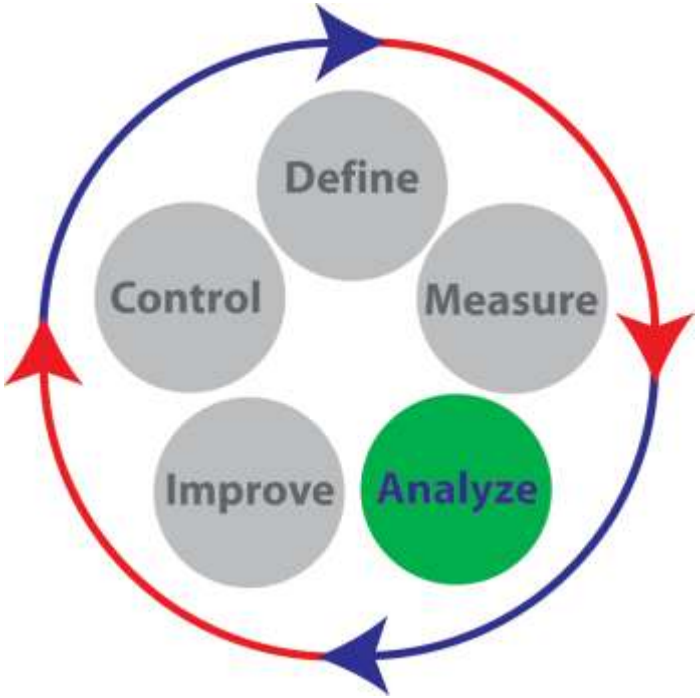
Common Wait Types:

- ASYNC_NETWORK_IO
- CXPACKET
- LATCH_x
- LOCK_x
- PAGEIOLATCH_x
- WRITELOG

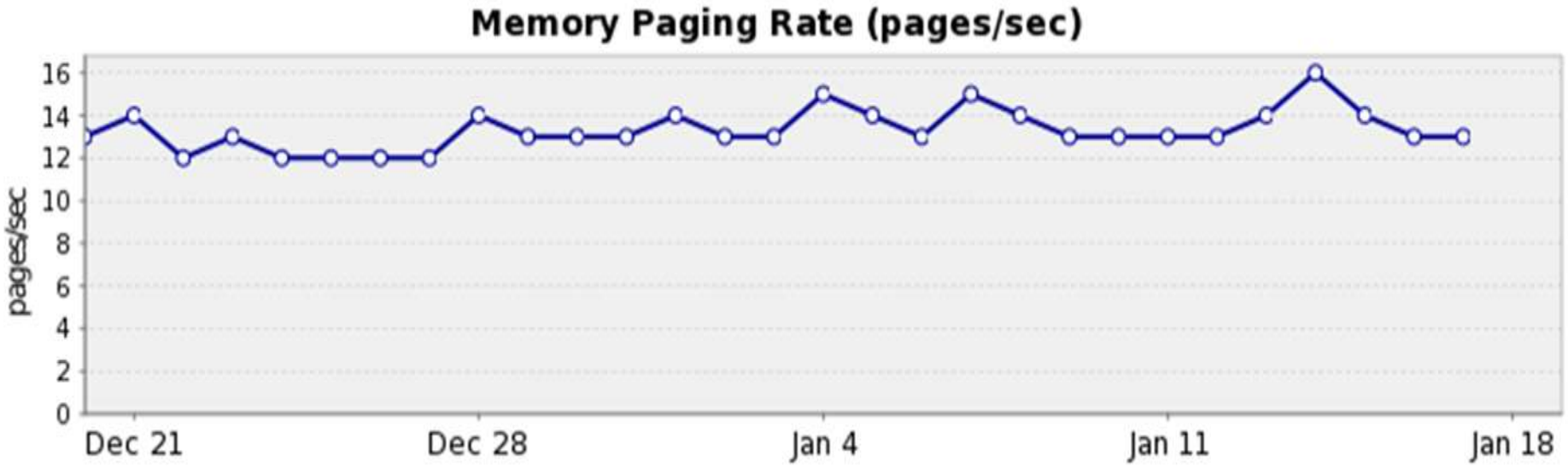
http://technet.microsoft.com/en-us/library/cc966413.aspx

DMAIC: Analyze

- Is it a problem?
- Experience is valued here the most
- How do you analyze?

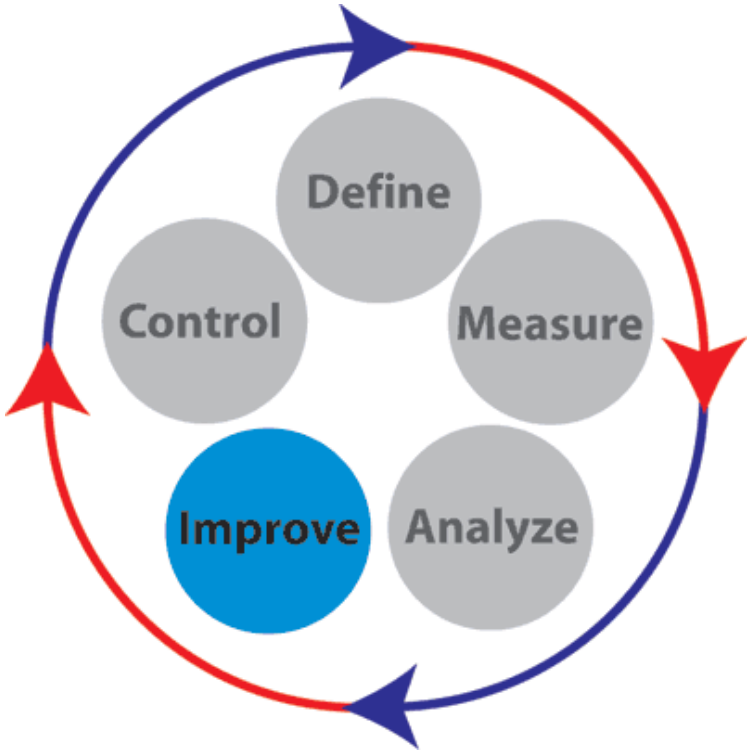


DMAIC: Analyze



DMAIC: Improve

- How do you make improvements?
- Where do you look to make changes first?



DMAIC: Improve

- Which scenario is worse?
- SQL Statement 1
  - Executed 100 times
  - Caused 10 minutes of wait time for end user
  - Waited 90% of time on “PAGEIOLATCH_SH”
- SQL Statement 2
  - Executed 1 time
  - Caused 10 minutes of wait time for end user
  - Waited 90% on “LCK_M_X”

DMAIC: Improve

- Where would you begin to improve this?

```
SELECT Top 50 T_ID,  T_DTS,  ST_NAME,
TT_NAME,  T_S_SYMB,  T_QTY,T_EXEC_NAME,
T_CHRG,  S_NAME,  EX_NAME
FROM E_TRADE,  E_STATUS_TYPE,
  E_TRADE_TYPE,  E_SECURITY,  E_EXCHANGE
WHERE T_CA_ID = 490
AND ST_ID = T_ST_ID
AND TT_ID = T_TT_ID
AND S_SYMB = T_S_SYMB
AND EX_ID = S_EX_ID
ORDER BY T_DTS desc;
```

DMAIC: Improve

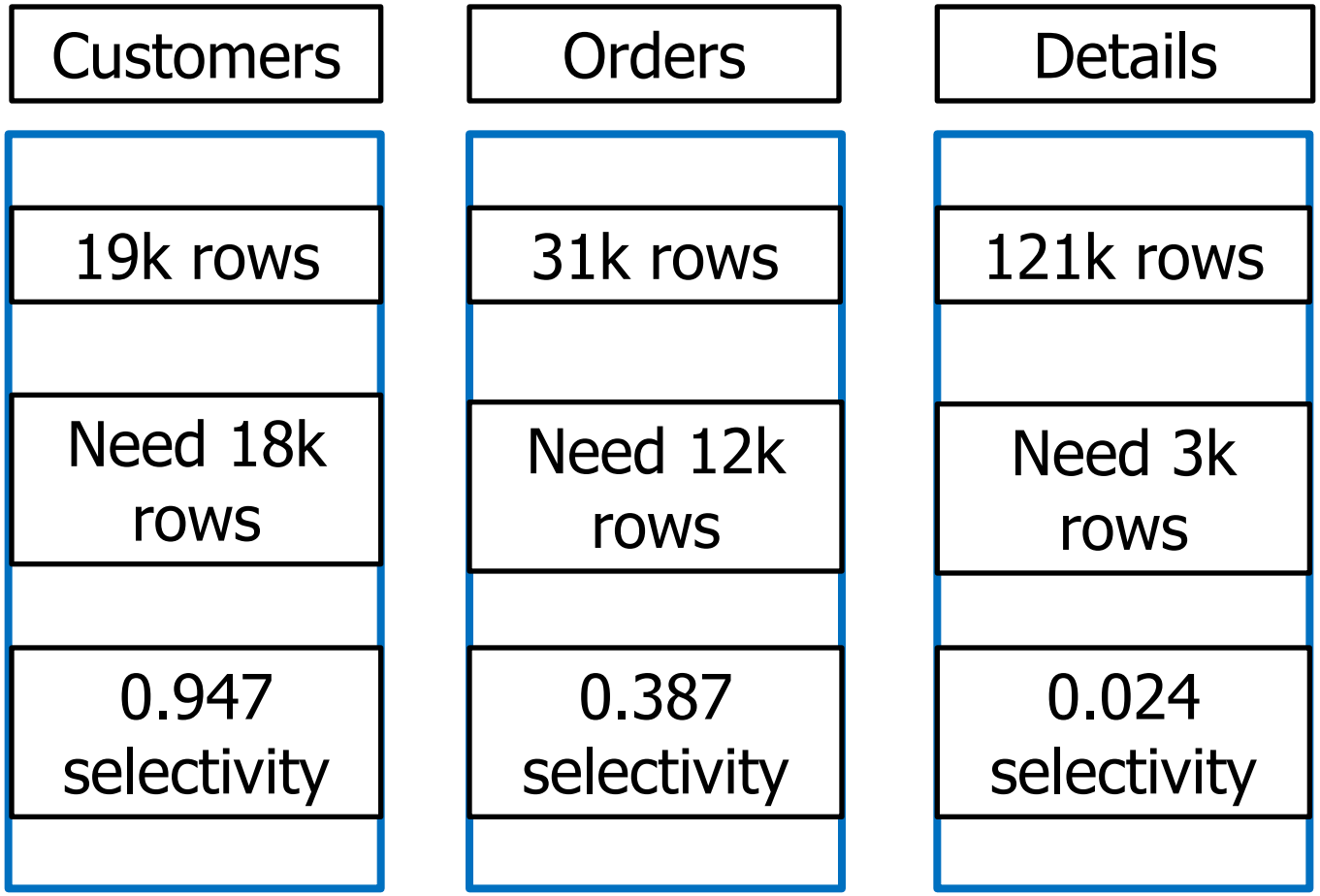
- SQL Diagramming
- Dan Tow
- http://www.singingsql.com/index.html

DMAIC: Improve

When handed a query to build or tune, perform the following 12 steps:

1. List all tables in query
2. Gather rowcounts for each table
3. Find all filters
   a) WHERE clause
   b) JOIN clause
4. Calculate the selectivity

DMAIC: Improve



DMAIC: Improve

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Next Steps:

5. Gather info on additional columns used
6. Gather info on existing keys and indexes
7. Examine the execution plan
   a) SET STATISTICS IO ON
   b) SET STATISTICS TIME ON
8. Record results

DMAIC: Improve

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Demo script:

```
SELECT c.CustomerID, soh.ShipDate
FROM Sales.SalesOrderDetail sod
INNER JOIN Sales.SalesOrderHeader soh ON
        sod.SalesOrderID = soh.SalesOrderID
INNER JOIN Sales.Customer c ON c.CustomerID =
        soh.CustomerID
WHERE sod.SpecialOfferID = 2
AND soh.ShipDate between '2003-01-01 00:00:00.000' and
'2004-01-01 00:00:00.000'
AND c.CustomerType = 'I'
```

DMAIC: Improve

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9. Adjust indexes for table with lowest selectivity first
10. Re-run query and examine results and execution plans
11. Repeat on next lowest selectivity table
12. Continue on, reducing your logical and physical reads

WARNING: Adding additional indexes is *not always* the right thing to do!

Compare volume of other DUI statements!

DMAIC: Control

- Run the *same* measures again!

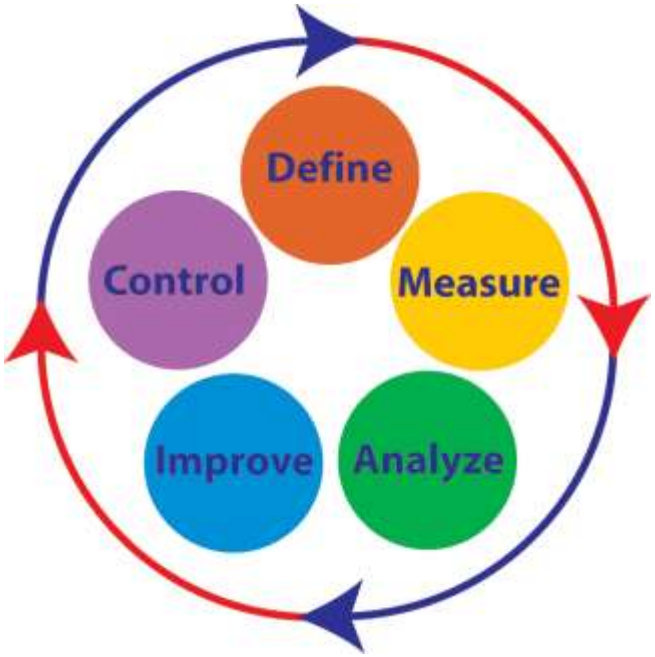
Now What?

Show Your Value!

- You can track your progress
  - Note significant improvements
  - Create "Top Ten" lists
  - Provide weekly summaries
- Note success for high-profile projects
  - Ask for a raise/promotion/training
  - Explain "what do you do here?"

What Are You Waiting For?

- Get your definitions
- Get your measures in place
- Start analyzing
- Suggest improvements
- Control reports
- Rinse, lather, repeat



For More Information

- http://technet.microsoft.com/en-us/library/cc966413.aspx
- http://pal.codeplex.com/
- http://speakerrate.com/talks/5138-performance-tuning-made-easy
- http://thomaslarock/presentations

Thanks!

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THANK YOU NEW YORK CITY!

NEXT STOP: WASHINGTON, D.C.!

Questions?