

# SLOW ARCGIS DESKTOP? - UNLEASH IT!!!

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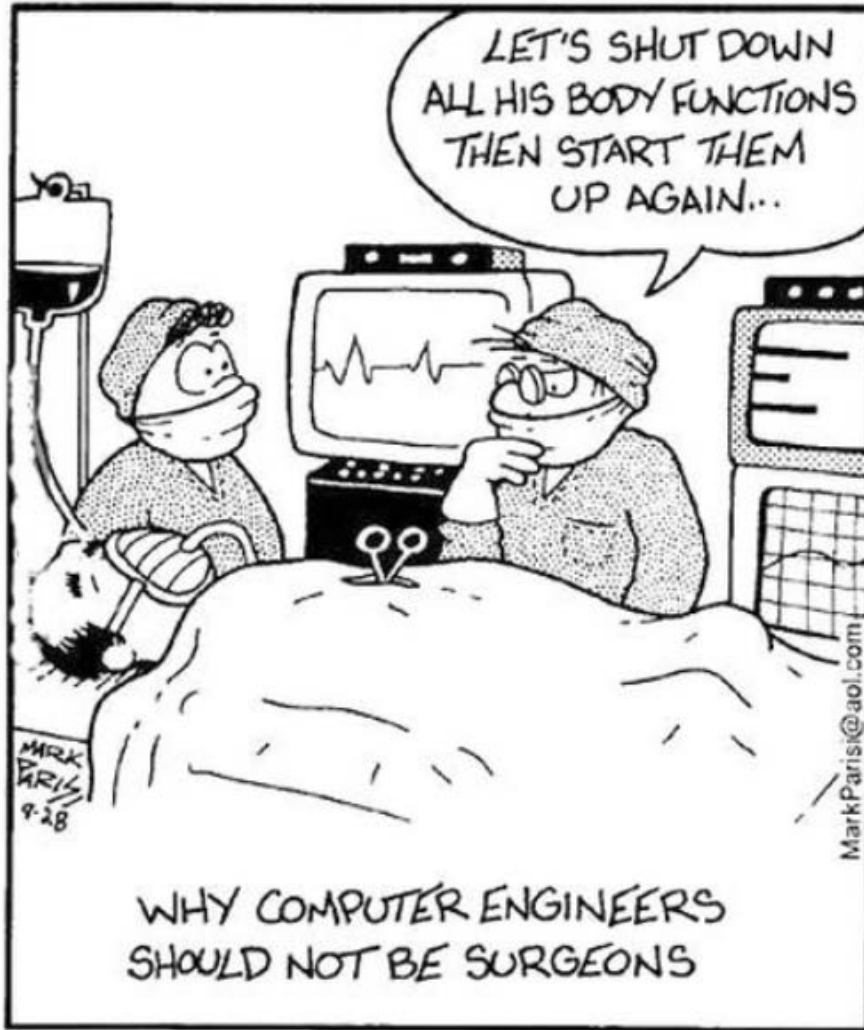
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**Occidental Petroleum Corporation**

# Yes! I am from GIS IT World



# Agenda

- Company Overview
- ArcGIS Performance
- Improvement Strategy
- Technical Recommendations
- ArcGIS Best Practices
- Results and Lessons Learned

# Occidental Petroleum Corporation

- Occidental is an international oil and gas exploration and production company with operations in the United States, the Middle East region and Latin America.
- Occidental's Midstream and Marketing segment gathers, processes, transports, stores, purchases and markets oil, condensate, natural gas liquids (NGLs), natural gas, carbon dioxide (CO<sub>2</sub>) and power in support of Occidental's businesses.
- OxyChem is a leading North American manufacturer of PVC resins, chlorine and caustic soda – key building blocks of products such as pharmaceuticals, water treatment chemicals and plastics.



# GIS at OXY

- Global ArcGIS Desktop users
- Multidisciplinary GIS Use
- Centralized GIS IT support Team



# Is slow application response really a problem?

*Google Analytics: “Users abandon slow websites in 4 seconds. 78% of those users never come back. 44% of them make negative impact on other users”*

*Credit: Google Analytics*

*“Americans spend two hours a week waiting on their **slow computers**, which **leaves people drained**, stressed, and less likely to engage in a healthy lifestyle, researchers said.”*

*Credit: Harris Interactive Research*

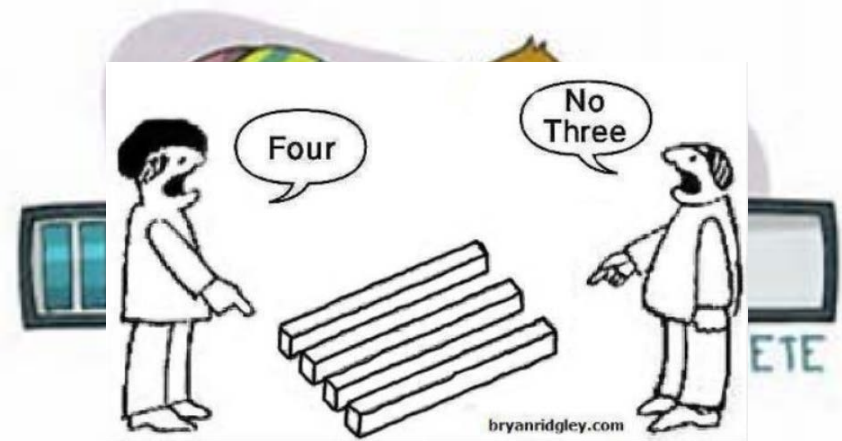


*“Waiting for laptops, programs and files to load is now one of the **seven most stressful** everyday experiences faced by people with computers, according to the research.”*

*Credit: Study Conducted by SanDisk*

# We are not Alone!

- Performance - Perspective and Relative
- ArcGIS Ideas – Fix performance Issues About 200
- Individual web pages talking about ArcGIS Performance 760,000
- Slower than the Previous Version



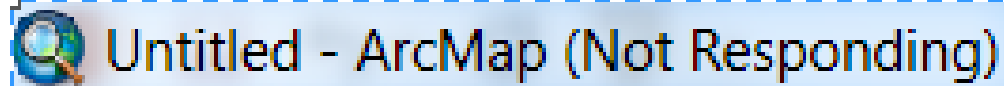
# Our Approach

- Engage the user community
- Engage IT infrastructure teams
- Measure Performance
- Improve supporting infrastructure
- Recommend/Implement best practices





# The Need to Define Slow



- Tools Used: MxdPerfStat, ProcMon
- Tested same mxds, same scales, same set of machines, different times of day
- Findings
  - 5 minutes to start ArcMap
  - Temporal Performance lag
  - Not Responding to most common tasks
    - Zoom/Pan, Identify, Layout, Create Annotation....
    - During Geo-processing
  - MXD Specific

# Complex Environment to Troubleshoot



- Network
- Security – Anti-virus scanning
  - Scheduled Scan
  - Scan during I/O
- Hardware dependency
  - Client Machine
  - Servers
  - Network
- Data and the location of data
- Application Installation and Configuration
- ArcGIS Desktop & IT Best Practices

# Root Cause Analysis

Problems	Reasons
5 minutes to start ArcMap	Network(License) /Corrupt Installation
Temporal Performance lag	Network/Anti-virus Scans
Not Responding within MXD	Data Locations/ArcGIS Best Practice
MXD Specific	Data Locations/ArcGIS Best Practice
Geoprocessing	Patches/Desktop Hardware

# Recommendations-Technical

- Hardware Requirement

- Minimum RAM Requirement
- Storage in Local Drive
- Memory Management/Disk Cleanup
- Network Utilization Configuration



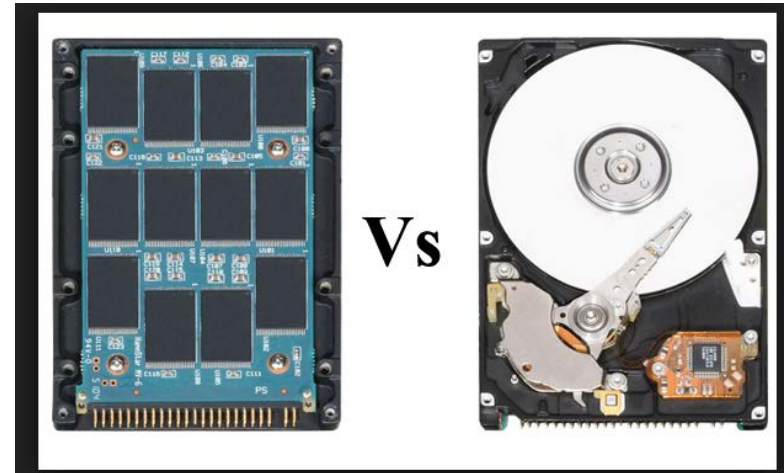
- Updated Anti-virus Policies

- Exclusion applied on ESRI Roaming and local servers
- Automated Policy update to all ArcGIS machines

# Recommendations

## Storage - Spatial Data Management

- Dedicated Centralized High Performance SSD Storage Device
- Linux/Windows Accessible
- Secured
- Data Management Best Practices
  - Using Layer Files & Avoid data replication in multiple Filers
  - Restrict non-GIS files
  - Simple Folder structure
- Easy MXD Migration

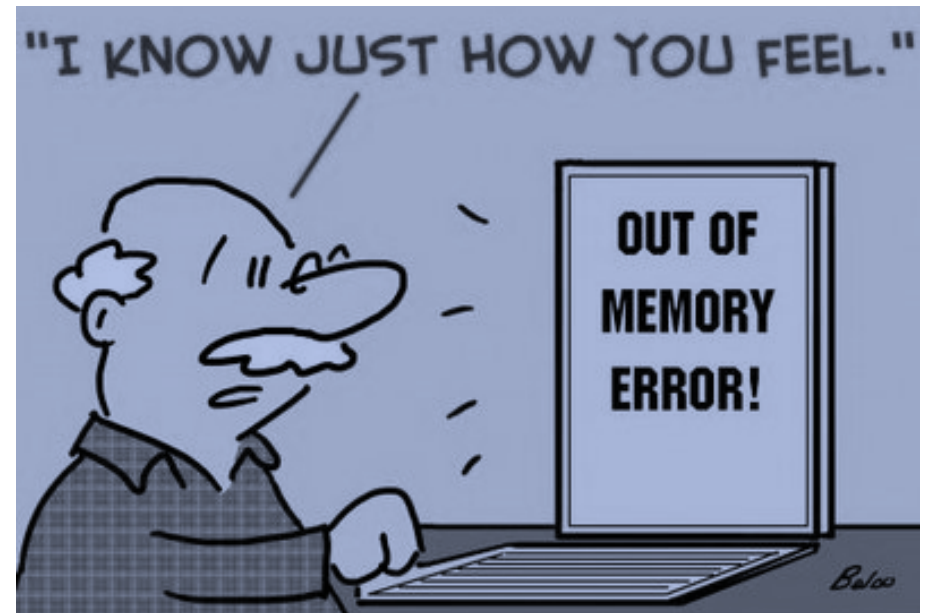


# Recommendations- ArcGIS Desktop Specific

- Corrupt installations
- Stay current on Patches and Service Pack Updates
- Consider 3<sup>rd</sup> party add-ins as a culprit
- Optimize ArcGIS Settings
  - Default Workspaces
  - Geo-processing Log
  - ArcGIS Online Connection
  - ArcMap/Arc Catalog Options
- ArcGIS/IT Best Practices

# ArcGIS/IT Best Practices

- Cache/Memory management
  - Restart your computer everyday
  - Close applications not in use
- MXD Management
  - Function Driven MXDs
  - MXDDoctor
  - Defragmenter Tools



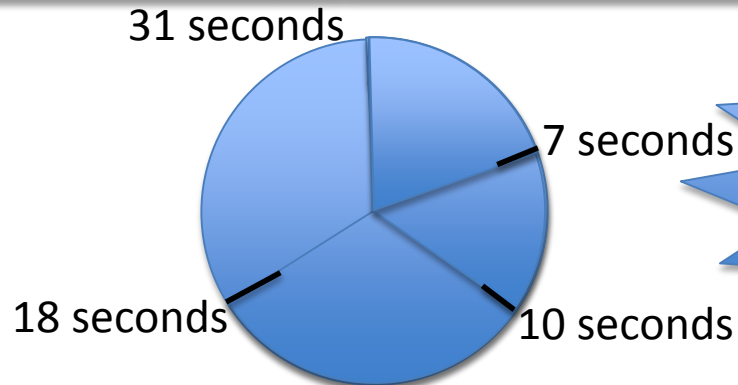
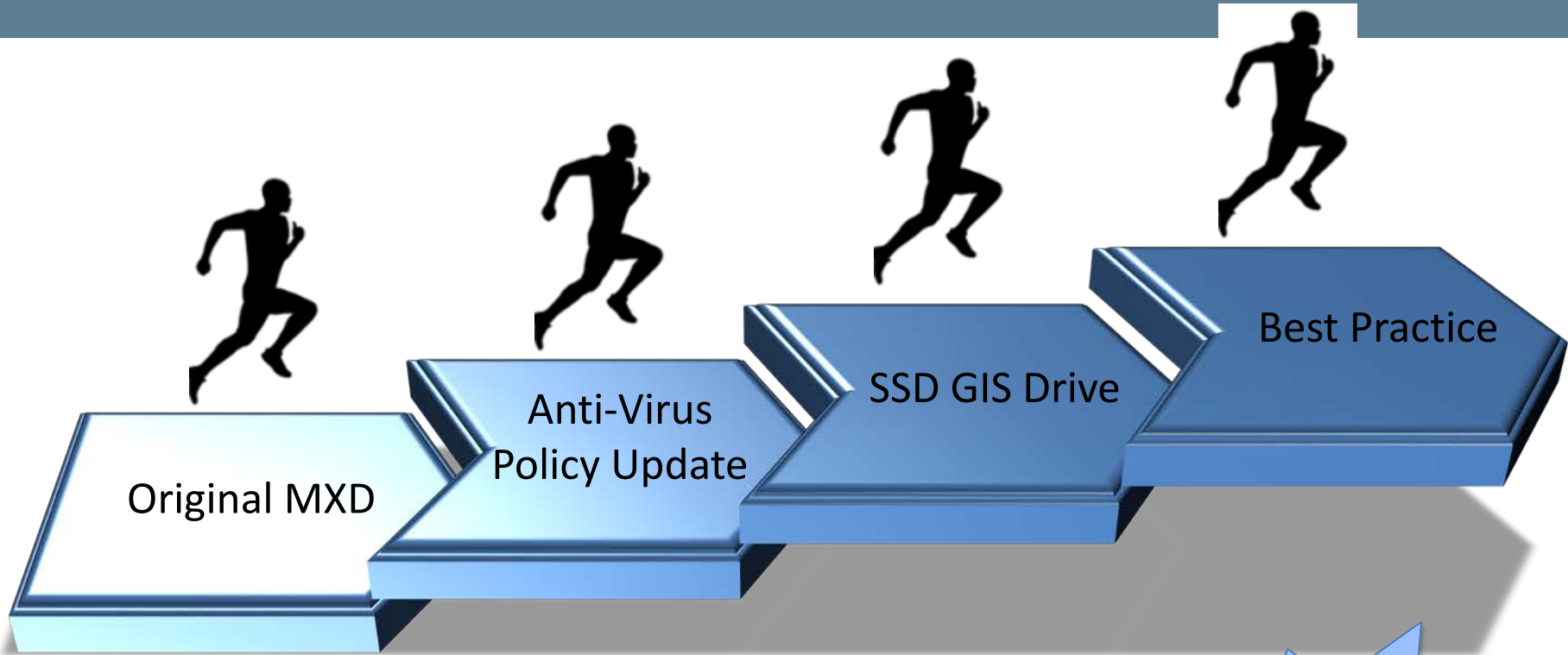
# ArcGIS/IT Best Practices

- TOC/Template Management
  - Too many/Broken Layers
  - Minimize Folder Connections/AddIns
- Layer Management
  - Definition Queries
  - Labelling and Expressions
  - Scale Dependency
  - Projection





# Results



**77% Improvement in Performance**

# Ongoing Monitoring & Education

- Study the growth of GIS Data Drive and enforce restrictions on non-GIS data files
- Monitor performance periodically using scheduled tasks
- Training on MXDDoctor and MxdPerfstat
- Educating end-users on best practices and tips/tricks



# Lessons Learned

- Performance of ArcGIS is not only related to ArcGIS
- Business Engagement is challenging but rewarding
- Importance of IT Architecture/Infrastructure
- Importance of Data Organization and Management
- Publicize the results and recommendations





# Recommended ArcGIS Setting Changes

## ArcGIS Desktop Performance Improvement Settings

<b>Change the Default Geodatabase</b>	File Menu → Map Document Properties. Change the Default Geodatabase to C:\Users\ <userid>\AppData\Roaming\ESRI\Default.GDB or Your Local Drive, but DO NOT use a network drive</userid>
<b>Turn Off the Geoprocessing Log</b>	Geoprocessing Menu → Geoprocessing Options. Uncheck Log check box.
<b>Turn Off the ArcGIS Online Connection</b>	Right click the ArcGIS Globe icon in System Tray → Properties. Uncheck ArcGIS Online Connection. 
<b>ArcMap</b>	Remove Broken Layers
<b>ArcMap Options</b>	Customize Menu → ArcMap Options → General Tab. Uncheck Load Last Map on startup
<b>ArcMap Options</b>	Customize Menu → ArcMap Options → General Tab. Uncheck Return to last used location when Add Data dialog first used
<b>ArcMap Options</b>	Customize Menu → ArcMap Options → General Tab. Label Engine-Standard Label Engine. For simple labels, avoid Maplex Label engine
<b>ArcMap Options</b>	Customize Menu → ArcMap Options → DataView Tab. Check Enable hardware acceleration
<b>ArcMap</b>	View Menu → Pause Drawing – until map view is needed
<b>ArcMap</b>	View Menu → Pause Labeling - until Labels are needed
<b>ArcMap Cache</b>	View Menu → Data Frame Properties → Feature Cache Tab → Check AutoCache
<b>Folder Connections</b>	In ArcCatalog tree, disconnect unused Folder connections.
<b>ArcCatalog</b>	Customize Menu → ArcCatalog Options. General Tab. Uncheck Return to last used location when ArcCatalog starts up.
<b>ArcCatalog</b>	Customize Menu → ArcCatalog Options → CAD Tab. Uncheck Examine all file extensions.
<b>ArcGIS Home Folder</b>	Catalog Options → Home Folder Tab. Change the Path to C:\Users\ <userid>\AppData\Roaming\ESRI\ </userid>

# THANK YOU!

Any Questions?  
Comments!



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