



Virginia Department of Transportation

Client Server vs. Mainframe

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2000 TUG

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PURPOSE OF PRESENTATION?

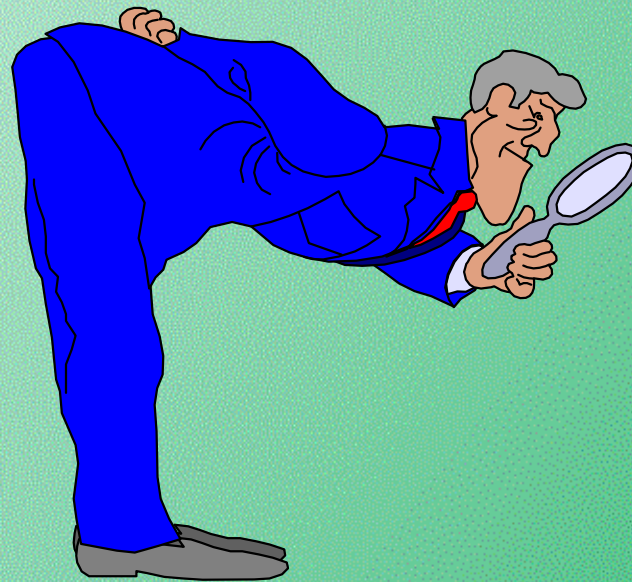


Virginia Department of Transportation

Mainframe vs. Client Server

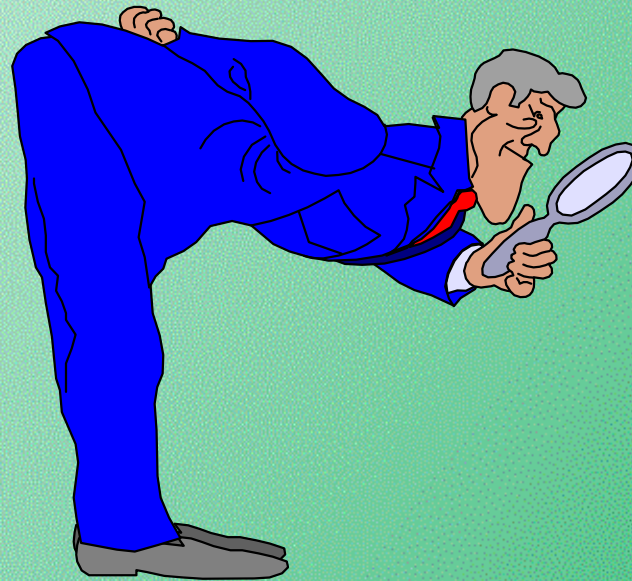
Mainframe vs. Client Server

In order to evaluate the best platform for a state, an in-depth study of the current infrastructure needs to be performed.



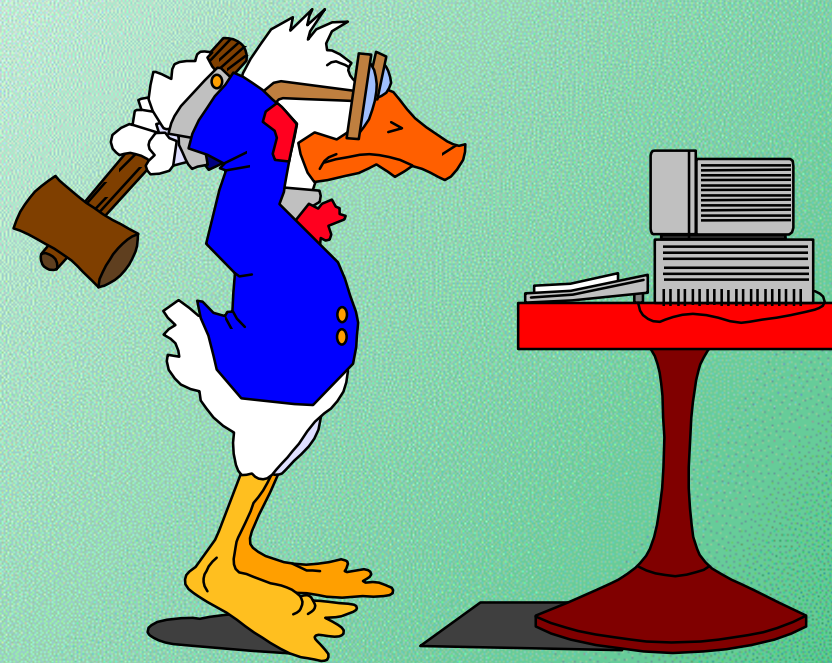
Mainframe vs. Client Server

WHAT KINDS OF THINGS ARE WE
ANALYZING?



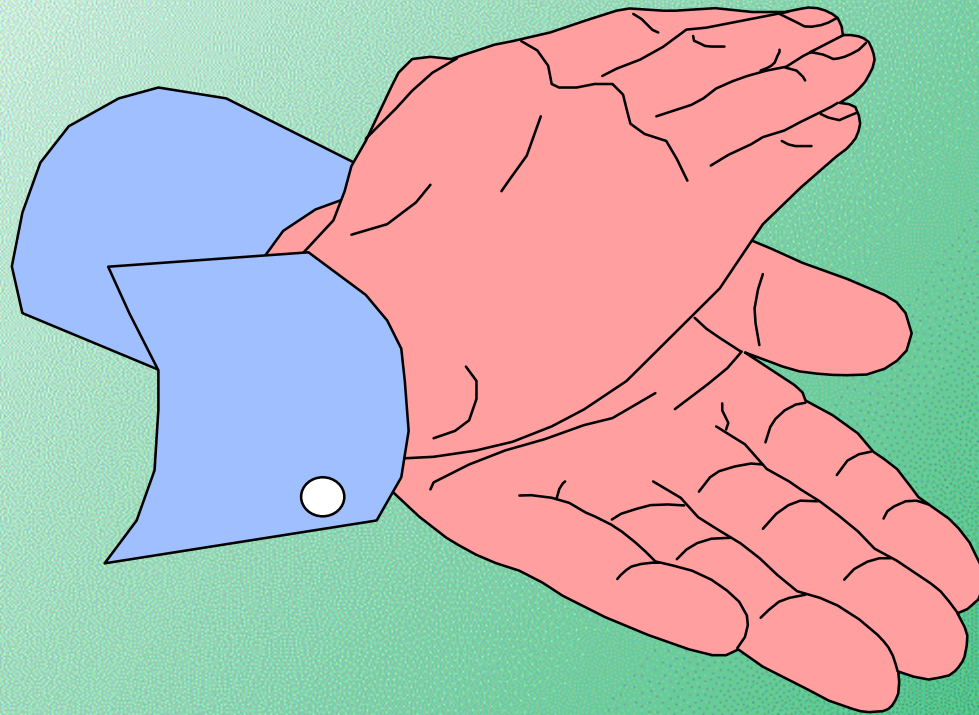
Mainframe vs. Client Server

READY FOR CHANGE?



Mainframe vs. Client Server

USER CONFIDENCE



Mainframe vs. Client Server

NUMBER OF USERS INVOLVED



Mainframe vs. Client Server

HARDWARE ISSUES

INSTALLATION OF SOFTWARE

NETWORKS



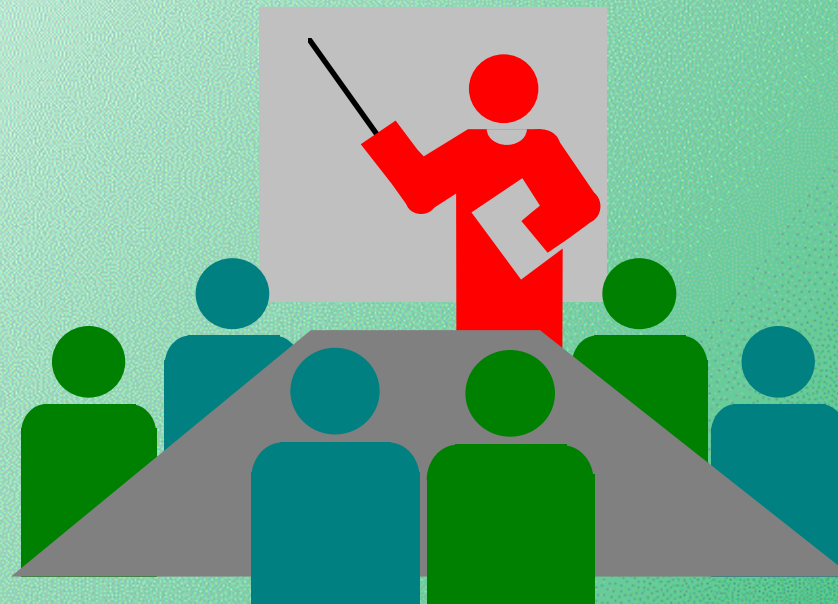
Mainframe vs. Client Server

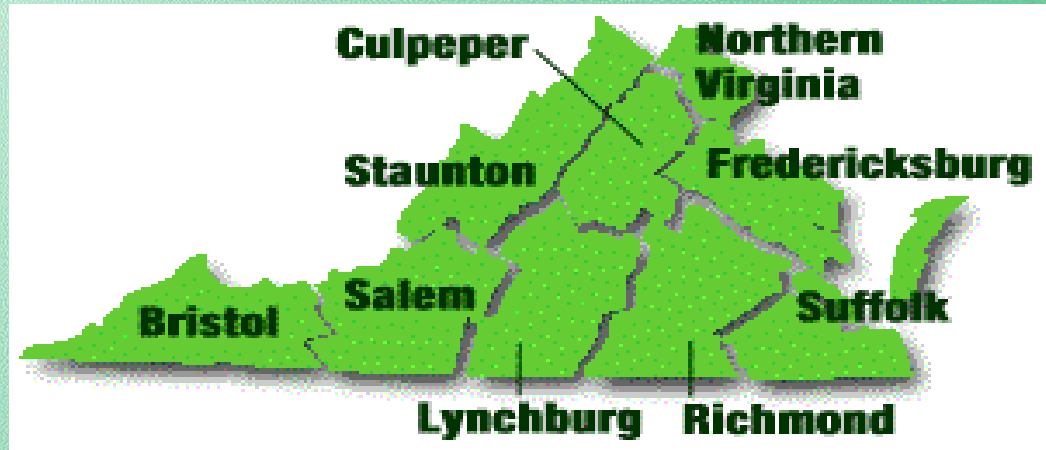
MONEY



Mainframe vs. Client Server

TESTING AND IMPLEMENTATION STRATEGY





Virginia Department of Transportation

Overview of VDOT Current Technology In Use

- Storing and Publishing of information:

VDOT Internet site -
www.vdot.state.va.us

VDOT Intranet site

Central Office Division Network Servers

District Network Servers

Mainframe owned by another state agency (Department of Information Technology)

Current Technology In Use, continued

- VDOT stores information on Internet, Intranet, CDs, diskettes, tape backups, servers, PCs and mainframe
- Most all VDOT employees have access to all of the above.
- VDOT employees are not allowed internet access through dial-up connections using modem(remote users, such as inspectors in field office trailers).
- Consultant employees are granted access to services on a basis of what is required to complete their job duties
- Industry has access to Internet site - no restrictions
- Correspondence with external customers (i.e.FHWA) done through Internet and Microsoft Office mail.

Current Technology In Use

- Construction Division Internet site -
www.vdot.state.va.us/conbbs/
 - Specifications, copied notes, Construction Division memoranda, and forms
 - Project descriptions
 - Request for proposals
 - Planholders list
 - Prequalification list
 - Certification list
 - Debarment list

Current Technology In Use, continued

- Construction Division Internet site (continued)-
www.vdot.state.va.us/conbbs/
 - 6 month advertisement schedule
 - Price sheets for advertised projects
 - Revision announcements
 - Bid results and tabulations
(including: Emergency bid tabs)
 - Standard and non-standard item code tables
 - Price and fuel adjustment indices
 - Division directory
 - Short list and selected firms

Current Technology In Use, continued

- VDOT Network
 - WAN -- ATM communication and protocol from Central Office to District offices (12 sites)
 - Frame relay from District Offices to Residency Offices (60 sites) and to Area Headquarters Offices (230 sites)
 - LAN -- Ethernet LAN for the 5 buildings at Central Office
 - Accelar switches between the 5 buildings at Central Office
- Internet connection -
 - DS3 link to Visinet (service provider)
 - Rapport firewall

Current Technology In Use, continued

- Construction Division Network Server-
Public Folder –
 - System Documentation/Installation programs:
 - CAS (VDOT manuals)
 - PES (VDOT manuals)
 - CWB (manuals and installation)
 - SiteManager (documentation/Info Tech manuals)
 - Other Documentation
 - Construction Division Publications
 - Forms
 - Item Code Lists
 - Maintenance contract Special Provisions and copied notes

Current Technology In Use, continued

- Trns-port project website-
ITD Network Server
 - Links to VDOT System Documentation on CD Server
 - Links to Info Tech Documentation
 - Links to documentation on VDOT customizations (copies of SAS code and Data Dictionaries)
 - Y2K Documentation
 - Software Development Configuration Control

Current Technology In Use, continued

- PC Standards - Seat Management Contract

Standard Windows 95 Desktop

- Compaq Deskpro EN P3-550MHz,
- Compaq SDRAM Memory Module 128MB
- Compaq Netelligent 10/100 NIC
- 10GB Ultra ATA HD
- Compaq 32X CD-ROM
- Windows 95
- Compaq 17" Color Monitor
- Scroll Mouse
- Labtec LCS 1016 Amplified Speakers
- Surge Arrest w/Telephone Protection
- RJ45 ENet Dataline Surge Protector
- Video Card

Current Technology In Use, continued

- PC Standards - Seat Management Contract (continued)

Windows 95 Inspector Laptop

- Compaq Armada V300, Celeron 466 MHz, 64 MB, 4.3GB, 24X CD-ROM, Modem, Windows 95
- Compaq 64MB Upgrade
- Mini PCI Modem/NIC Upgrade
- Tripp Lite Super 8 plus Tel Strip 8 outlet w/RJ11
- Fax/Modem/Lap w/1AC
- RJ45 ENet Dataline Surge Protector
- Targus Notepac Nylon Carrying Case

Current Technology In Use, continued

- Seat Management Contract (Halifax)

Purpose: to standardize hardware and software and allow VDOT to stay up to date on the replacement of hardware. Reduce hardware costs. Monthly lease fee. PCs will be replaced every 3 years automatically, with no additional cost.

- Software upgrades

VDOT stays relatively current on software upgrades. Usually we are no more than 1-2 versions behind the latest upgrade.

- Statewide committee reviews and approves all new implementation projects and major software releases and sets statewide standards.

Current Technology In Use, continued

- Microsoft Office 97 Professionals version suite of products:

Word, Excel, Access, PowerPoint

- Other Microsoft Office applications

FrontPage, Binder, Camcorder, Photo Editor, Project 98

- Microsoft Outlook - e-mail
- Internet Explorer version 4
- Norton anti-virus software

Current Technology In Use, continued

- ITD Configuration PC Lab

ITD has organized a PC lab that tests all new software at VDOT prior to implementation. New software (COTS and in-house) is required to be tested for compatibility with current VDOT Enterprise Software and Seat Management PC standard hardware before implementation. This ensures that new application installations will operate successfully statewide.

Current CMS Technology In Use

- AASHTO Products -
IBM Mainframe
 - PES - Proposal and Estimates System
 - LAS - Letting and Awards System
 - CAS - Contract Administration System
 - DSS - Decision Support System

 - Estimator - Highway Construction Cost Estimator
- CWB - Construction Workbook - Visual Basic/Access
- Project Tracking System - Microsoft Access
 - Sublets, Claims, Quality Index, Contractor Performance

New/Proposed Technology

- Pilots underway -
 - Electronic Bidding - Expedite and Bid Express
- Coming –
 - Purchasing plans and proposals on-line
 - SiteManager to replace CAS and CWB
 - Microsoft Office 2000
 - Internet Explorer version 5
 - Data Warehouse (Enterprise data from all VDOT systems)

New/Proposed Technology, continued

- Under consideration/testing –
 - CES Client-Server
 - DSS Workstation
 - SitePad hand held device for project data collection
 - Electronic submittal of data from contracting industry
 - Wireless LAN/WAN
 - Electronic Notepad technology
 - Electronic Document Management System

New/Proposed Technology, continued

- Aggressively pursuing –
 - Electronic Signatures
 - Electronic submittal of data to internal and external customers
- Current Governor issued an executive order to pursue Electronic Commerce and Electronic initiatives within State government. Until this administration, support for these kind of initiatives was not present.

Training

- All levels of personnel are required to have on-the-job training and classroom training.
- Training centers are located at Central Office, all 9 district offices and the Richmond Training Center.
- Training is primarily performed by VDOT personnel on project team. Other training resources have included contracted instructors from Community Colleges, Consultant companies, Vendor on-site and private training companies in the city.



Trns·port and CWB

- Trns·port Products in Production -

 - IBM Mainframe (version 2.7a)/DB2

 - PES - Proposal and Estimates System

 - LAS - Letting and Awards System

 - CAS - Contract Administration System

 - IBM Mainframe

 - DSS - Decision Support System

- VDOT in-house field book –

 - PC application (version 6.1)/Access

 - CWB – Construction WorkBook

Trns·port and CWB

- PES - using full functionality
- LAS - using full functionality
- CAS - using full functionality (Date tracking, schedules, progress, work orders, funding, Contractor payments)
 - Exception: No subcontracts are tracked in CAS
 - No testing, safety or materials management in Trns·port
 - Customized add-in code, adds additional error trapping, added functionality , produces custom voucher and progress reports out of the 6.6.1 process, and writes payment data to permanent SAS datasets for archiving and retrieval.
 - CWB interfaces with CAS to upload payment and progress information

Trns·port and CWB

- CWB

- PC application with local Access database
- No testing, safety or materials management
- Collects daily project diaries
- Collects daily transactions of items placed by contractor
- Collects site time information, including progress, shutdowns, etc.
- Inspector can access network through dial-up using modem to backup to network, do uploads/downloads, etc.

Trns·port and CWB

- CWB (continued)

- File transfers are done by FTP to get upload file for CAS to mainframe for loading of voucher and site time information.
- Documentation in paper format is still required to be signed for project diaries, work orders, schedules and forms.
- Electronic correspondence for project information, status of uploads/downloads, etc. is done by Microsoft Office e-mail.
- Consultant inspectors are supplied with CWB software
- Contractors can purchase CWB for use for a one-time fee and are eligible for free upgrades of the software.

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Trns·port and CWB

- Trns·port/CWB
 - Support personnel:
 - Central Office ITD – 5
 - Central Office CD – 5
 - Districts – 2 - 5 in each district
 - Trns·port/CWB users
 - PES/LAS - approximately 900 users
 - CAS – approximately 300 users
 - CWB - approximately 1000 users

Trns·port Access

- Trns·port query tools/reporting tools:
 - Custom Reports online with user selection parameters, written in SAS
 - SAS Ad Hoc queries from DSS using views
 - SAS/SQL Ad Hoc queries from DSS (to access PES and CAS tables directly)
 - Data Warehouse (in development stage)



Project Overview

- Virginia was one of the lead states in the original development process for this software and participated in the beta testing.
- When fully implemented, SiteManager is expected to replace the CAS (Contract Administration System) module of TRNS*PORT and Construction WorkBook (VDOT field book), as well as make available additional capabilities to inspectors and materials management personnel.
- Virginia is planning to keep customization to a minimum and any development tasks will be interfaces, generic fields, table entry, and report customizations.

Project Overview

- System testing has been completed by Info Tech, but Virginia will do system testing to check the customization work and will do a full scale user testing of the software prior to implementation.
- VDOT has contracted with Info Tech to write the SM to FMSII interface.

Time Line

- Current project plan dates
 - User Testing 12/2001
 - Pilot 4/2002
 - Begin User Training 11/2002
 - Implementation 1/2003
- Project plan will be revised as needed when proposals with Info Tech for FMSII interface are finalized.

Mainframe vs. Client Server

Mainframe vs. Client Server

MAINFRAME

CENTRAL PROCESSOR

CENTRAL SUPPORT

THIN CLIENT

DATABASE CONTENTION
MINIMUM

CLIENT SERVER

MULTIPLE
PROCESSORS/SERVERS

DECENTRALIZED SUPPORT
(MORE SUPPORT PERSONS)

FAT CLIENT OR THIN CLIENT
(DEPENDS ON SET-UP)

MINIMIZE DB CONTENTION
WITH MULTIPLE SERVERS
(NEED LARGE ENOUGH)

Mainframe vs. Client Server

MAINFRAME

INCREASED USERS
DOESN'T REQUIRE
MORE POWERFUL
HARDWARE

NETWORKING SIMPLE

CLIENT SERVER

INCREASED USERS
DOES REQUIRE
MORE POWERFUL OR
MORE EQUIPMENT

NETWORKING MORE
COMPLEX

Mainframe vs. Client Server

Virginia currently plans to keep Mainframe PES/LAS/CAS implemented (at least until SM is fully implemented)

- **Still running CAS Mainframe for existing contracts. Virginia is choosing not to convert contracts from CAS to SM, because of experiences of other states in performing this conversion.**
- **Would like to see mainframe version of PES/LAS continue to be supported by Info Tech for a few more years.**
- **Would like to see a TRNS-PORT Internet version of PES/LAS to enable a thin client application because of number of users and for use by consultant designers.**
- **Have approximately 900 PES/LAS users throughout the state**

Mainframe vs. Client Server

- **Massive amount of software installations involved in Client Server environment, if fat client. VDOT doing some testing with running application from applications server, to create a thinner client.**
- **Would need to have additional servers to support Client Server Trns-port for PES/LAS (considerable amount of money statewide)**
- **Massive amount of training to accommodate the Client Server version for designers statewide and consultant designers**
- **VDOT has another agency that owns and maintains mainframe, with minimal expense to VDOT. They do processing, backups, upgrades of hardware and software.**

Mainframe vs. Client Server

VDOT's prior experience with Client Server Applications:

- **APPLIX Helpdesk Software**
 - Small amount of users in Central Office
 - Small amount of users in 9 districts (e-mail from district helpdesk creates a helpdesk request in CO system)
 - Works well
 - Good performance
 - User Confidence

Mainframe vs. Client Server

VDOT's prior experience with Client Server Applications (continued):

- **RUMS (Right of Way and Utilities Management System)**
 - **Medium amount of users in Central Office**
 - **Medium amount of users in 9 district offices**
 - **Works well**
 - **Good performance**
 - **User Confidence**

Mainframe vs. Client Server

VDOT's prior experience with Client Server Applications(continued):

- **FMSII (Financial Management System)**
 - Extremely large amount of users in Central Office
 - Extremely large amount of users in 9 district offices
 - Impacts just about every VDOT employee, due to employee entering own timesheets and leave slips
 - Original implementation yielded very poor performance (took almost a year to fine tune system and acquire much larger, more powerful equipment to handle massive user volume)
 - Poor implementation plan
 - Training not done in a timely manner
 - Poor documentation
 - Yielded Poor User Confidence agency-wide for Client/Server applications

Mainframe vs. Client Server

VDOT's challenges with future Client/Server Applications(SiteManager):

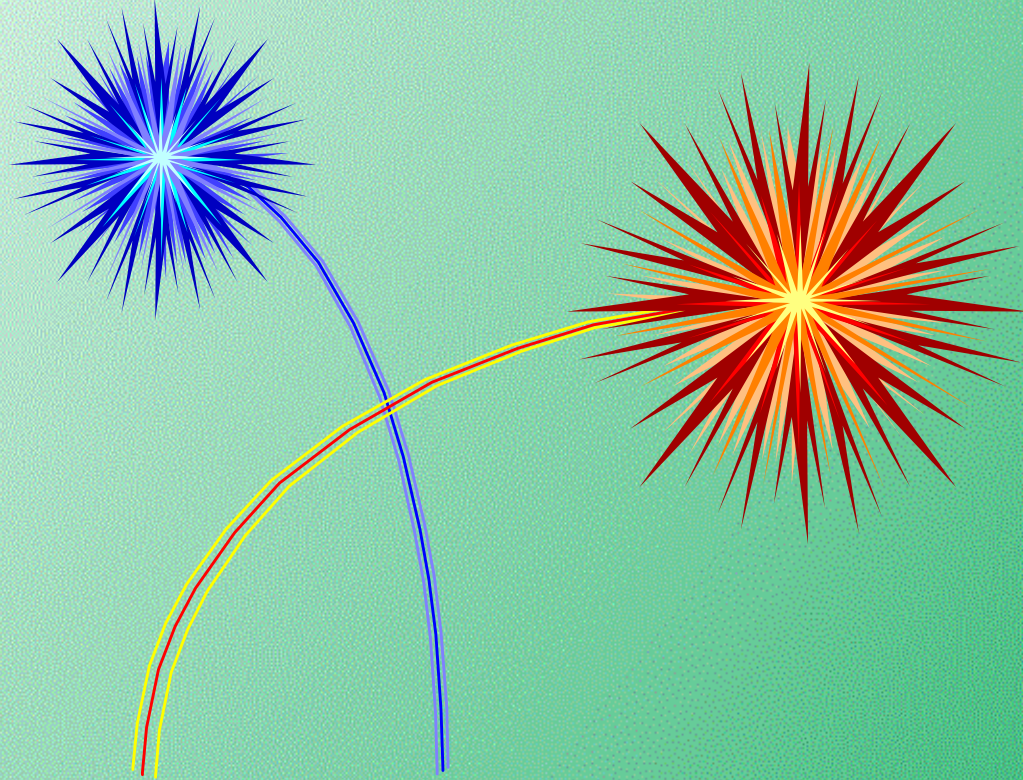
- **Restore User Confidence agency-wide for Client/Server applications that last application threatened massively**
- **Many changes in software have happened in the last few years and users feel overwhelmed with constant rapid change.**
- **Users really like and are extremely comfortable with current mainframe CAS and PC Construction Workbook.**
- **Applications have been tailored to meet their wants and needs.**
- **Applications were modified to VDOT's business practices**
- **SiteManager requires us to modify business practices, in some areas.**

Mainframe vs. Client Server

VDOT's plan to deal with these challenges with future Client/Server Applications(SiteManager):

- Prepare users for change with widespread User involvement in User committees and testing
- Prepare users for change by User involvement in writing procedures and documentation prior to implementation
- Prepare users by having timely, VDOT-centered training with VDOT data.
- Implementation of system when application is ready, after extensive applications, contention and volume testing.
- Parallel and Pilot of contracts in a phased approach state-wide

THE END





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