**Requirements for the transfer of CSSPApps to a CIOB server**

Below you will find a list of things required for the transfer and management of the CSSPApps application to a CIOB server as well as a chart and brief description of the structure and flow of the application.

* Microsoft operating system (64 bit) – (all testing was done with Windows 7)
* Web Server - Internet Information Server (IIS) – (all testing was done with version 7.5 which comes with Windows 7)
  + <http://technet.microsoft.com/library/hh831725>
  + Will require writing privilege to upload new versions to the Web Sites (via direct access or Virtual Machine)
  + Current CSSPApps reside under the inetpub/wwwroot/csspapps (small 8 MB)
  + Mime types to be added in IIS
    - File name extension: .kml

MIME type: application/vnd.google-earth.kml+xml

* + - File name extension: .kmz

MIME type: application/vnd.google-earth.kmz

* Danish Hydraulic Institute Dongle with MIKE 21 and MIKE 3 software configuration (to be supplied by S&T branch)
  + <http://www.dhigroup.com/>
  + MIKE hydrodynamic software requires powerful machines to run their application with many CPUs and lots of RAM (min would be 12 CPUs and 12 GB RAM)
* 1 Terabyte of Hard Drive space for MIKE input and results file storage (preferably dedicated)
* SQL Server 2008 or higher – (all testing was done with SQL Server Express)
  + Only used for storing info – (not using triggers or other database specific functionality)
  + Require access to SQL Server - read, write, table creation and design, owner – full access
* Ability to run a Windows Task on startup – (using Windows Task Scheduler) – (%windir%\system32\taskschd.msc /s)
  + Create a task to runs the Windows application MikeAutoRun.exe as a background application at startup (not a service at this time but could be one if needed)
* All components (IIS, SQL and Hard Drive) should either reside on the same machine or a cluster of machines with very fast communication between the machines
  + MIKE software creates large files > 100 MB, these files are then being analyzed / processed by an IIS application. The processed files results which are smaller and of type (KMZ) are then send to Users when needed)
* The IIS will require reading and writing capability to the Terabyte Hard Drive (IIS\_user and/or NETWORK SERVICE will require access to the Hard Drive)
* Capability to send email via code (opening port 25 for email)
* Regular backup system of the SQL DataBase and the Terabyte Hard Drive

CSSPApps Flow Chart

Web Server - Internet Information Server (IIS)

SQL Server Database

CSSPAppDB2

Web Site “CSSPApps”

Hosting a Silverlight Application

(the only application controlled by users)

Windows 7 Operating System (64 bits)

“Updater” Windows Application (Runs when SQL Server Database has a scenario to run)

Windows Application from Danish Hydraulic Institute (MIKE 21 and MIKE 3) (requires Dongle)

“MikeAutoRun” Windows Application (Started at computer startup via windows task scheduler)

Users computer accessing “CSSPApps” Silverlight Application (Can be run using browser or as a desktop application)

Google Earth, Word, Excel etc…

(Viewing results)

Hard Drive hosting MIKE 21 and MIKE 3 input and result files as well as processed MIKE results files

Run

Run

Run

Read

Write

Run

Run

Read

Write

Write

Read

Read

Write

Run

Read

Write

Send

Read

Read

Read

Write

Knowledge

See next page for short description

**CSSPApps Flow Chart description:**

CSSPApps is currently running on a 64 bit Window 7 operating system. The system also has a web server, internet information server (IIS) and a SQL Server Database (CSSPAppDB2). At the computer startup, one windows application (MikeAutoRun.exe) is run using Windows Task Scheduler. MikeAutoRun.exe has reading and writing capability to the SQL Server Database (CSSPAppDB2) and is used to control which scenario should be run as well as the number of scenario running at the same time (3 max). It queries CSSPAppDB2 every 10 seconds while waiting for a task to be run. If a task needs to be run, it starts the Updater.exe windows program via code (process) and updates CSSPAppDB2 to indicate that the task is running. In order for MikeAutoRun.exe to be able to run Updater.exe it needs to read the CSSPAppDB2 as well as a few files from the Terabyte hard drive. The Updater.exe application is responsible to gather all required information from CSSPAppDB2 as well as a few files from the Terabyte hard drive. Once the information is gathered, the Updater.exe runs MzLaunch.exe (DHI software) which does all the hydrodynamic and pollution dispersion calculation for a requested MIKE scenario previously setup and saved to CSSPAppDB2 and in files on the Terabyte hard drive by the user. The MzLaunch.exe can take a long time to run (1 hour to a full day depending on the speed of the computer, the number of CPUs and the size of the RAM). MzLaunch.exe requires both read and write access to the Terabyte hard drive in order to read input files and save result files. While MZLaunch.exe is running, Updater.exe reads (every 10 seconds) the file properties created by MzLaunch.exe and send updates to the CSSPAppDB2 which is then use to inform the users on the status of their scenario run. Once the scenario run is completed (successful, cancelled or with errors), the MzLaunch.exe automatically closes as well as the Updater.exe. The user then has access to the results files for further interpretation and processing. All files created are stored on the Terabyte hard drive with a file reference in the SQL Server Database (CSSPAppDB2).

Under the Web Server (IIS), a web site / application was developed using the Silverlight technology from Microsoft. This technology was use to speed development and only serve as the front end of the information provided via web services. A normal HTML web site could also have been used and will probably be developed in the future, keeping all logic and web services intact. But for now and because of time and resource constraint, the Silverlight technology was chosen knowing that Microsoft has recently stop further development of the tool. The web site /inetpub/wwwroot/csspapps has all the dlls and html pages required for users to access files on the Terabyte hard drive and SQL Server Database information via the web server. Users access and control all this information using a normal web browser (IE, Firefox, Chrome …). On the security front, users have to register before being able to use the web site. The web site has various authorization levels providing access to some part of the information to some and not others. The user never has direct access to the server and always has to use the web site to change information to the SQL Server Database and read processed results via KMZ files. Only the back end web services are responsible for all information management and file access.