MicroStation Configuration 101

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Bentley®
Advancing Infrastructure

Agenda

- MicroStation Configuration
  - Overview
  - Changes from MicroStation v8i
  - Walkthrough
  - Redirection

- Wake audience up
- Q&A

Configuration Concepts

- Two categories of Configuration Variables:
  - Framework Configuration Variables start with '_USTN_' and are generally building blocks for other configuration variables
    - Often specify installation root directories, or roots of a directory tree where users elect to store standards or working data
  - Operational Configuration Variables usually start with 'MS_'
    - Generally specify a directory, file, list of directories, or some other value that directs the flow of MicroStation at runtime
    - File, directory, and list of directories Operation Configuration Variables often refer to the value of Framework Configuration Variables

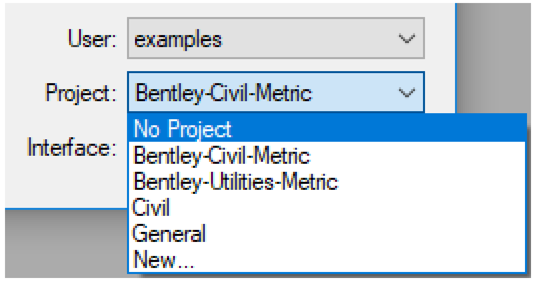
MicroStation Configuration Levels

MS v8i:	MS CONNECT:
System	System
Application	Application
Site	Organization
	WorkSpace
Project	WorkSet
	Role
User	User

Configuration Variables defined at "higher" levels (further down the list) override definitions at "lower" levels.
However, with v8i, selecting the User then set the Project so it was flawed.

Terminology Changes

- v8i WorkSpace - Configuration
- Site/Standards - Organization
- - WorkSpace
- Project - WorkSet
- User - User



User: examples

Project: Bentley-Civil-Metric

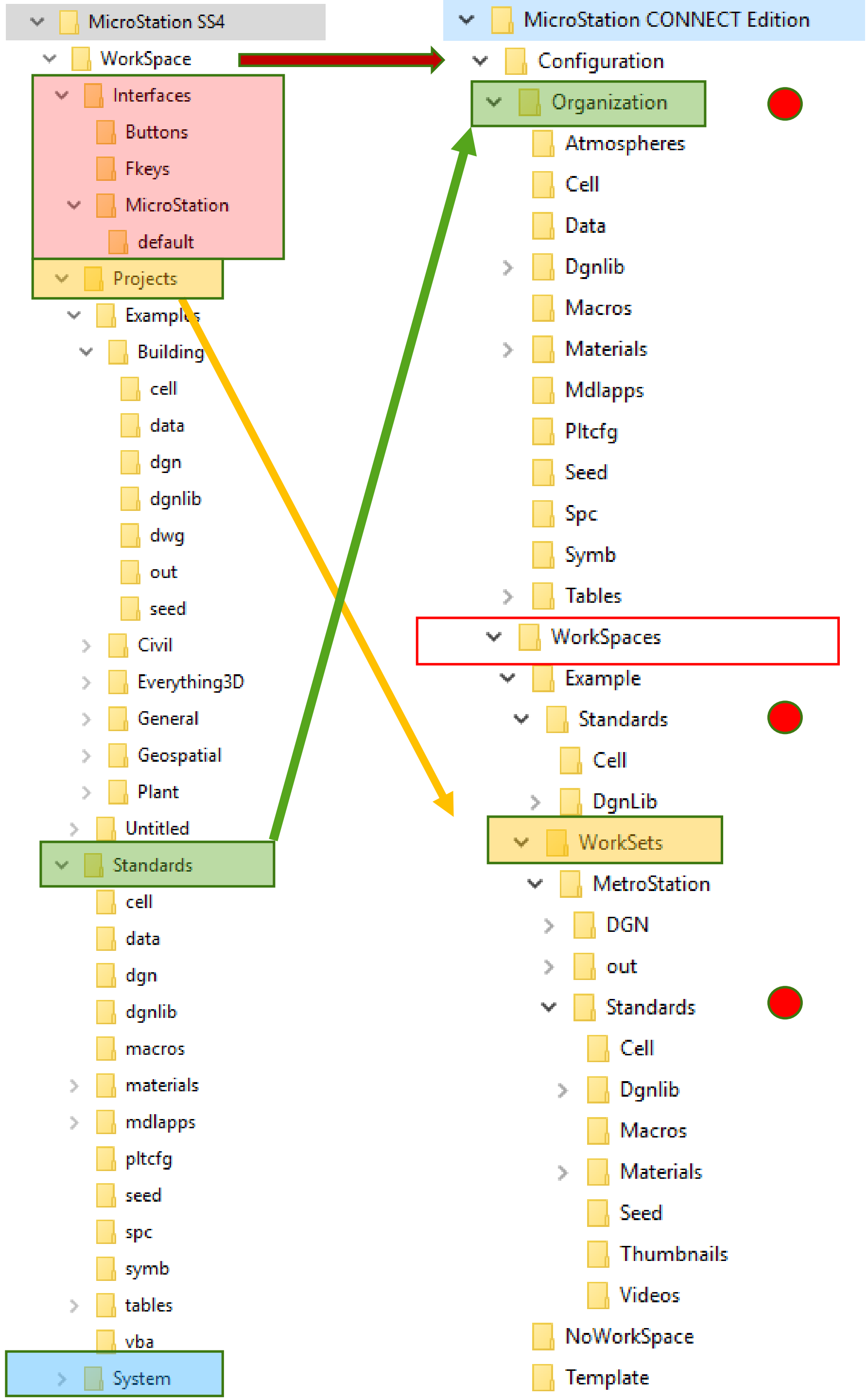
Interface:

MicroStation CONNECT Edition

- WorkSets organized by WorkSpace
  - Select WorkSpace (Example) and then WorkSet (MetroStation)

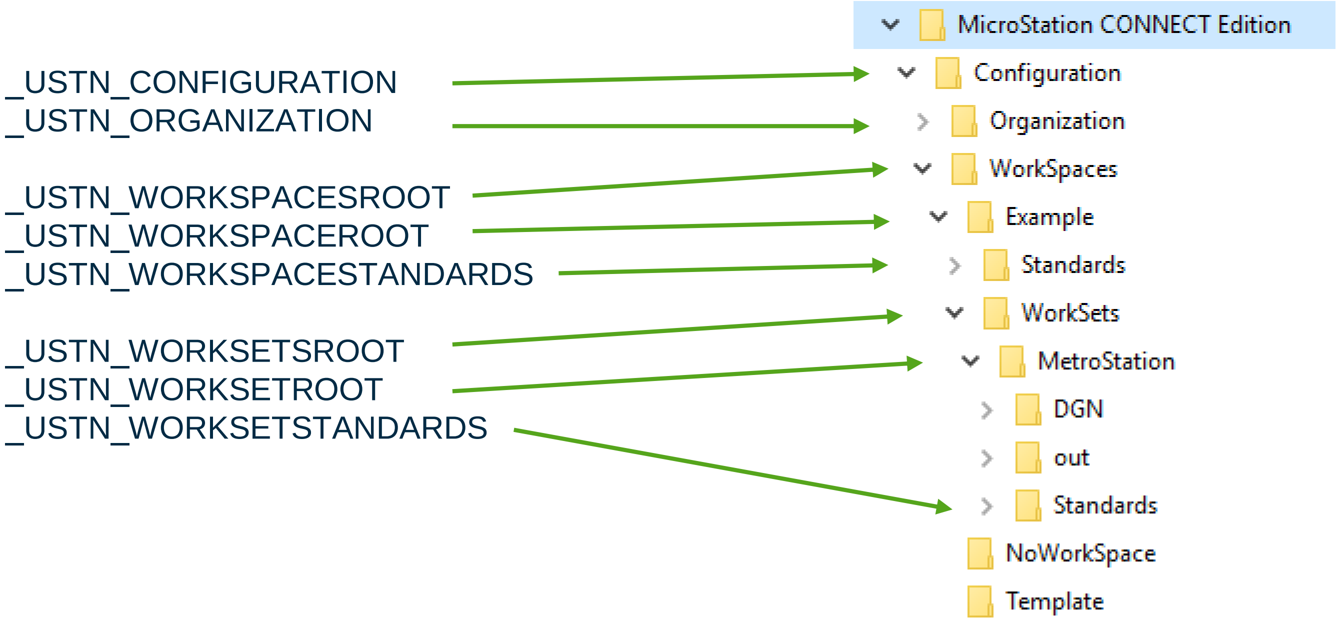
MicroStation Folder Structure

- WorkSpace = Configuration
- System – moved to MicroStation installation folder and renamed ‘Default’
- Interfaces – gone!
- Standards = Organization
- Projects = WorkSets



MicroStation CONNECT Configuration Variables

MS CONNECT:



_USTN_CONFIGURATION
_USTN_ORGANIZATION

_USTN_WORKSPACESROOT
_USTN_WORKSPACEROOT
_USTN_WORKSPACESTANDARDS

_USTN_WORKSETSROOT
_USTN_WORKSETROOT
_USTN_WORKSETSTANDARDS

- MicroStation CONNECT Edition
  - Configuration
    - Organization
    - WorkSpaces
      - Example
        - Standards
        - WorkSets
          - MetroStation
            - DGN
            - out
            - Standards
      - NoWorkSpace
      - Template

Walkthrough

- Configuration files are a simple text files
- Execution starts at **mslocal.cfg**
  - Generated at install time
  - Includes **msdir.cfg**, which identifies the MicroStation directory
  - Then includes **msconfig.cfg** which is the main file
- msconfig.cfg
  - Defines absolutely ***no*** 'MS_' Operational Configuration Variables
  - Don't even think about changing anything up to here
- ConfigurationSetup.cfg
  - First file that can be amended by a user, if necessary
- WorkSpaceSetup.cfg
  - Second file that can be amended by a user, if necessary

How can users customize their Configuration?

Organization Level

- Every .cfg file located in _USTN_ORGANIZATION is processed

How can users customize their Configuration?

WorkSpace Level

- Each WorkSpace must have a WorkSpace .cfg file in the _USTN_WORKSPACESROOT directory (<workspacename>.cfg)
- That WorkSpace .cfg file can be used to:
  - Redirect the entire WorkSpace to a network directory by changing _USTN_WORKSPACEROOT.
  - Redirect the WorkSpace standards to a network directory by changing _USTN_WORKSPACESTANDARDS
  - Redirect the WorkSet .cfg files to a network directory by changing _USTN_WORKSETSROOT.
- Additional .cfg files can be put into the _USTN_WORKSPACEROOT directory. They are all processed at the WorkSpace level

How can users customize their Configuration?

WorkSet Level

- Each WorkSet must have a WorkSet .cfg file in the _USTN_WORKSETSROOT directory of its WorkSpace (<worksetname>.cfg)
- That WorkSet .cfg file can be used to:
  - Redirect the entire WorkSet (both standards and data) to a network directory by changing _USTN_WORKSETROOT
  - Redirect the WorkSet standards to a network directory by changing _USTN_WORKSETSTANDARDS
  - Redirect the WorkSet DGN, DWG and other files to a network directory by changing _USTN_WORKSETDATA
- Additional .cfg files can be put into the _USTN_WORKSETROOT directory. They are all processed at the WorkSet level

How can users customize their Configuration?

Role Level – one method

- If '_USTN_ROLECFG' is defined at any level, the defined file is processed
  - In 'msconfig.cfg', after WorkSpace/WorkSet configuration files are processed, the following lines are written

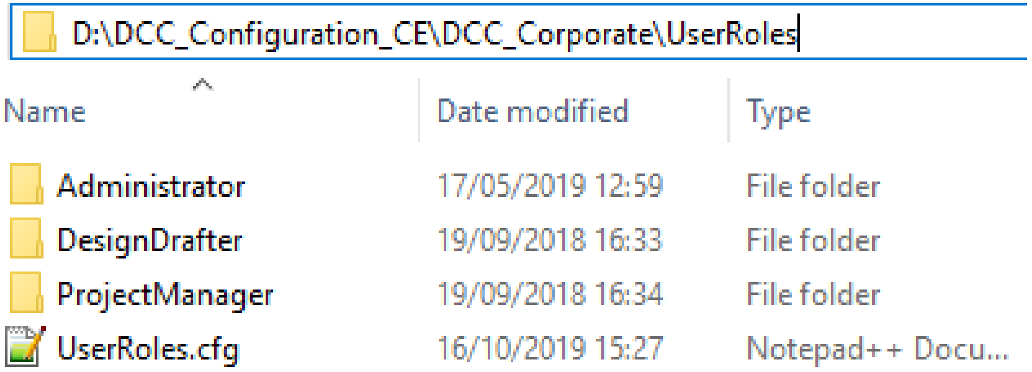
```
#----------------------------------------------------------------------
# If it is defined at any of the preceding levels, include $(_USTN_ROLECFG)
#----------------------------------------------------------------------
%if defined (_USTN_ROLECFG)
    %  include $(_USTN_ROLECFG) level Role
%endif
```

How can users customize their Configuration?

Role Level – another method

- In the Organization standards configuration file, use the following

```
#----------------------------------------------------------------------
# UserRole
#----------------------------------------------------------------------
%if exists  ($(_USTN_ORGANIZATION)UserRoles/UserRoles.cfg)
    %include $(_USTN_ORGANIZATION)UserRoles/UserRoles.cfg
%endif
```



D:\DCC_Configuration_CE\DCC_Corporate\UserRoles

Name	Date modified	Type
Administrator	17/05/2019 12:59	File folder
DesignDrafter	19/09/2018 16:33	File folder
ProjectManager	19/09/2018 16:34	File folder
UserRoles.cfg	16/10/2019 15:27	Notepad++ Docu...

How can users customize their Configuration?

Role Level – another method

- UserRoles.cfg – set the Role by User Name

```
%if !defined (USER_ROLE)
    %if $(USERNAME) == "Mark.Marnell"
      USER_ROLE = Administrator
    %elif $(USERNAME) == "Admin.LoginName"
      USER_ROLE = Administrator
    %elif $(USERNAME) == "ProjectManager.Name"
      USER_ROLE = ProjectManager
    %else
      USER_ROLE = DesignDrafter
    %endif
%endif
```

How can users customize their Configuration?

Role Level – another method

- UserRoles.cfg – and then load relevant DGNLIBs etc.

```
OrganizationRoleRscFolder = $(_USTN_ORGANIZATION)UserRoles/$(USER_ROLE)/
%if $(USER_ROLE) == "Administrator"
    MS_DGNLIBLIST > $(OrganizationRoleRscFolder)*.dgnlib
    MS_GUIDGNLIBLIST > $(OrganizationRoleRscFolder)*.dgnlib
%elif $(USER_ROLE) == "ProjectManager"
    MS_DGNLIBLIST > $(OrganizationRoleRscFolder)*.dgnlib
    MS_GUIDGNLIBLIST > $(OrganizationRoleRscFolder)*.dgnlib
%elif $(USER_ROLE) == "DesignDrafter"
    MS_DGNLIBLIST > $(OrganizationRoleRscFolder)*.dgnlib
    MS_GUIDGNLIBLIST > $(OrganizationRoleRscFolder)*.dgnlib
%endif
```

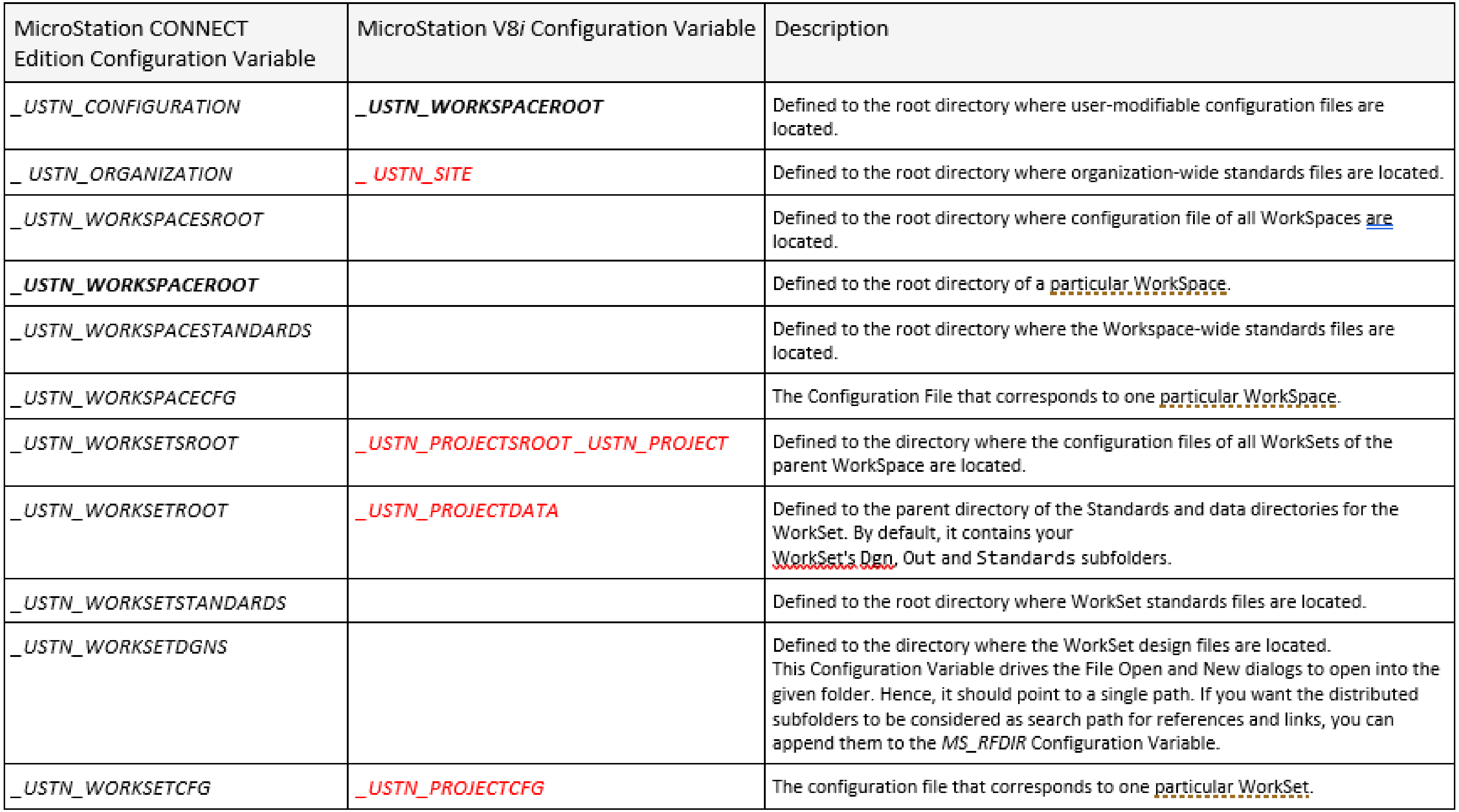
How can users customize their Configuration?

User Level

- The user is not expected to edit the _USTN_USERCFG file as a text file. It is located in the users _USTN_HOMEPREFS directory and called Personal.ucf. There is no longer a "User" selection in the GUI. Changes made in the Configuration dialog are stored in Personal.ucf

Configuration Variable Changes

The following table lists the framework configuration variables in MicroStation CONNECT Edition that are either new or have been replaced configuration variables in MicroStation V8*i*:



MicroStation CONNECT Edition Configuration Variable	MicroStation V8*i* Configuration Variable	Description
_USTN_CONFIGURATION	***_USTN_WORKSPACEROOT***	Defined to the root directory where user-modifiable configuration files are located.
_ USTN_ORGANIZATION	*_ USTN_SITE*	Defined to the root directory where organization-wide standards files are located.
_USTN_WORKSPACESROOT		Defined to the root directory where configuration file of all WorkSpaces are located.
_USTN_WORKSPACEROOT		Defined to the root directory of a particular WorkSpace.
_USTN_WORKSPACESTANDARDS		Defined to the root directory where the Workspace-wide standards files are located.
_USTN_WORKSPACECFG		The Configuration File that corresponds to one particular WorkSpace.
_USTN_WORKSETSROOT	*_USTN_PROJECTSROOT _USTN_PROJECT*	Defined to the directory where the configuration files of all WorkSets of the parent WorkSpace are located.
_USTN_WORKSETROOT	*_USTN_PROJECTDATA*	Defined to the parent directory of the Standards and data directories for the WorkSet. By default, it contains your WorkSet's Dgn, Out and Standards subfolders.
_USTN_WORKSETSTANDARDS		Defined to the root directory where WorkSet standards files are located.
_USTN_WORKSETDGNS		Defined to the directory where the WorkSet design files are located. This Configuration Variable drives the File Open and New dialogs to open into the given folder. Hence, it should point to a single path. If you want the distributed subfolders to be considered as search path for references and links, you can append them to the *MS_RFDIR* Configuration Variable.
_USTN_WORKSETCFG	*_USTN_PROJECTCFG*	The configuration file that corresponds to one particular WorkSet.

Other Configuration information

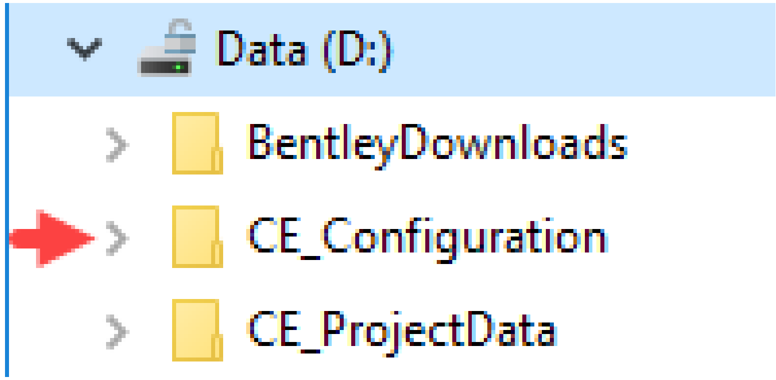
- Use ‘*-WK"WorkSpace name" -WW"WorkSet name" -Debug*’ to check a specific WorkSpace/WorkSet combination (double quotes only needed if WorkSpace or WorkSet name contains a space)

- microstation –debug now defaults to creating and opening a text file that shows how Configuration Files were processed and the resulting definitions (similar to microstation –debugopenfile in v8i)
- Command "Show Configuration" now shows the current values of all configuration variables in a text file

MicroStation Redirected Configuration Example

- msconfig.cfg – this file loads the system, appl, and standards '.cfg' files, and then loads
  - ConfigurationSetup.cfg (C:\ProgramData\Bentley\MicroStation CONNECT Edition\Configuration)
  - This can used to redirect to the folder where YOUR configuration is stored

```
_USTN_CUSTOM_CONFIGURATION=D:/CE_Configuration/
```

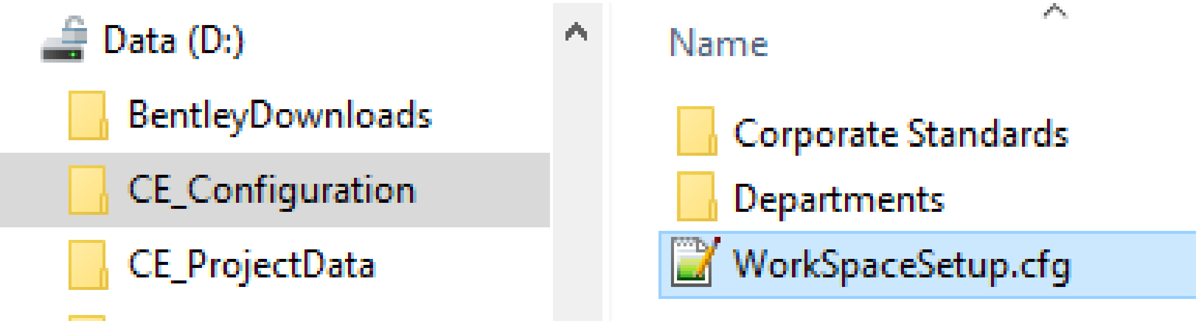


Data (D:)
BentleyDownloads
CE_Configuration
CE_ProjectData

MicroStation Redirected Configuration Example

- WorkSpaceSetup.cfg – this file is now processed as it is in the redirected drive
  - This specifies the location of the 'Organization' and 'WorkSpaces' folders

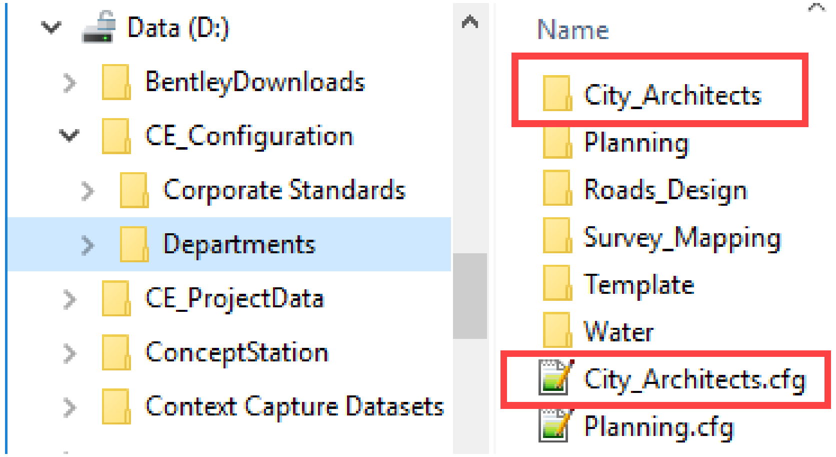
```
_USTN_WORKSPACELABEL      : DCC Department
MY_ORGANIZATION_LOCATION =
           D:/CE_Configuration/Corporate Standards/
MY_WORKSPACES_LOCATION   =
           D:/CE_Configuration/Departments/
```



MicroStation Redirected Configuration

- <workspace-name.cfg> - The selected file is used to define the relevant WorkSpace folder, and to redirect the project data.
  - City_Architects.cfg in this example

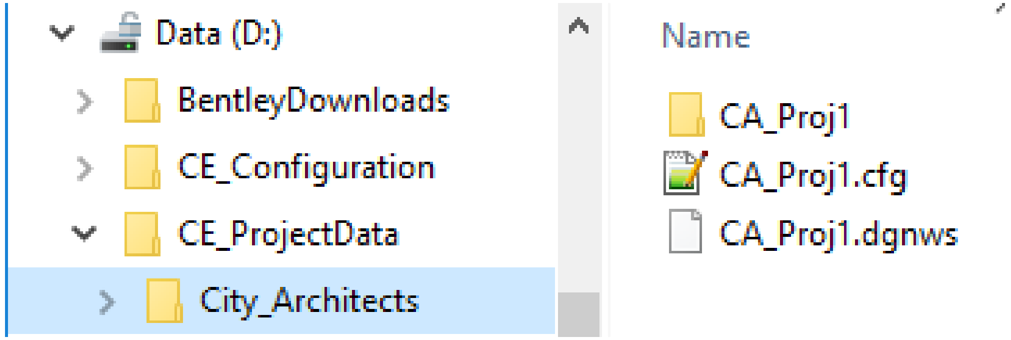
```
DCC_CA_PROJECTS = D:/CE_ProjectData/City_Architects/
_USTN_WORKSETSROOT = $(DCC_CA_PROJECTS)
_USTN_WORKSPACEDESCR = DCC Architects Department
```



MicroStation Redirected Configuration

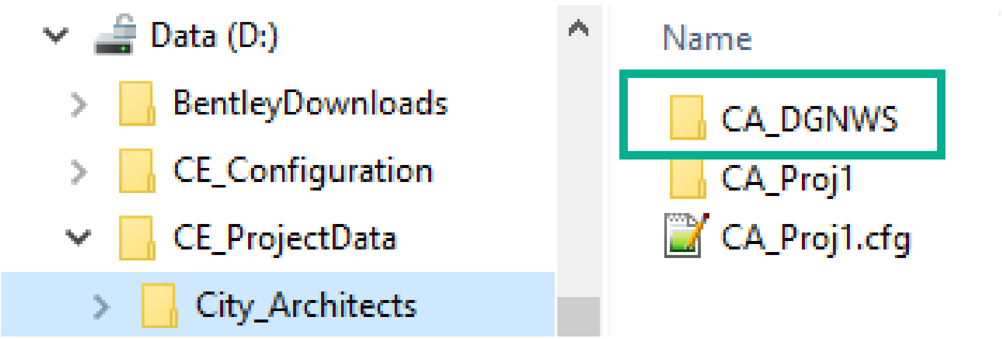
- <workset-name.cfg> - The selected WorkSet file is processed
  - ‘CA_Proj1.cfg’ in this example
  - The standard WorkSet ‘.cfg’ file will work without needing editing.
    - One possible change would be to put all the DGNWS file created in the ‘City_Architects’ workset folder into one folder (CA_DGNWS in the example on right)

```
_USTN_WORKSETSDGNWSROOT = $(_USTN_WORKSETSROOT)CA_DGNWS/
_USTN_WORKSETDGNWS =
    $(_USTN_WORKSETSDGNWSROOT)$(_USTN_WORKSETNAME).DGNWS
```



Data (D:)
BentleyDownloads
CE_Configuration
CE_ProjectData
City_Architects

Name
CA_Proj1
CA_Proj1.cfg
CA_Proj1.dgnws



Data (D:)
BentleyDownloads
CE_Configuration
CE_ProjectData
City_Architects

Name
CA_DGNWS
CA_Proj1
CA_Proj1.cfg

Configuration of multiple applications

- What is best practice for workspace configuration when using more applications than MicroStation - such as OpenRoads Designer?
- How should we configure one single workspace to fit all applications?

- WorkSpace or WorkSet level?

OpenRoads Designer Configuration Levels

MS CONNECT:

System
Application
Organization

WorkSpace
WorkSet
Role
User

ORD CONNECT:

System
Application
Organization
Organization-Civil
WorkSpace
WorkSet
Role
User

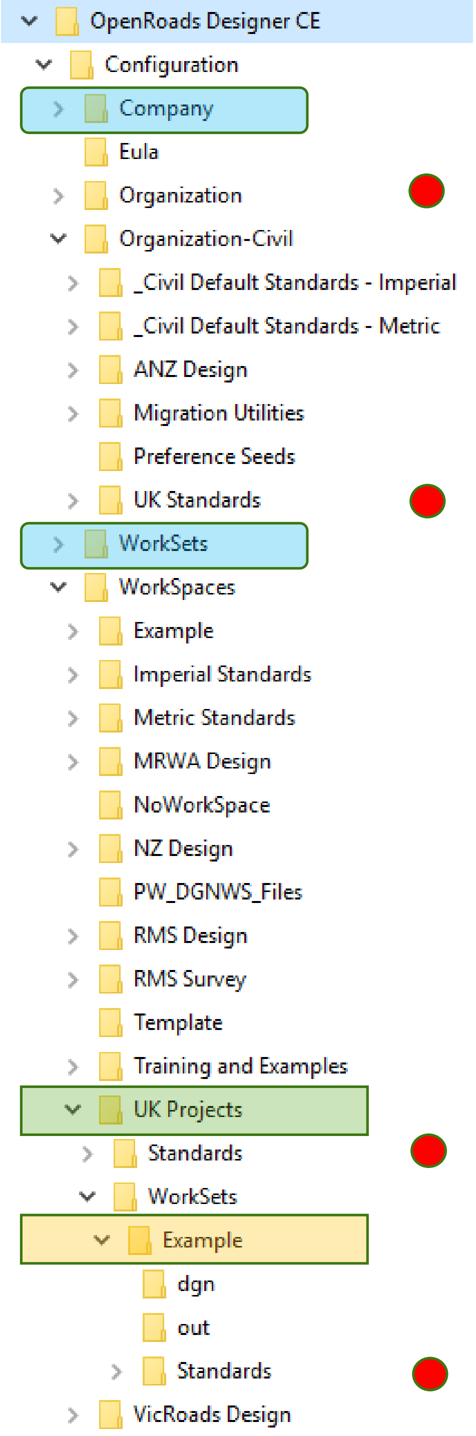
ORD adds another level ‘Organization-Civil’ for further ‘granularity’.

ORD Configuration Folder Structure

- Select WorkSpace e.g ‘UK Projects’
- Select WorkSet e.g. ‘Example’
- Select DGN to work with

- Multiple ‘Standards’ applied if required

- ‘Company’ and ‘WorkSets’ added by ‘ANZ Country Kit’



```
OpenRoads Designer CE
  Configuration
    Company
    Eula
    Organization                                ●
    Organization-Civil
      _Civil Default Standards - Imperial
      _Civil Default Standards - Metric
      ANZ Design
      Migration Utilities
      Preference Seeds
      UK Standards                              ●
    WorkSets
    WorkSpaces
      Example
      Imperial Standards
      Metric Standards
      MRWA Design
      NoWorkSpace
      NZ Design
      PW_DGNWS_Files
      RMS Design
      RMS Survey
      Template
      Training and Examples
      UK Projects
        Standards                               ●
        WorkSets
          Example
            dgn
            out
            Standards                           ●
      VicRoads Design
```

ORD Configuration Variables

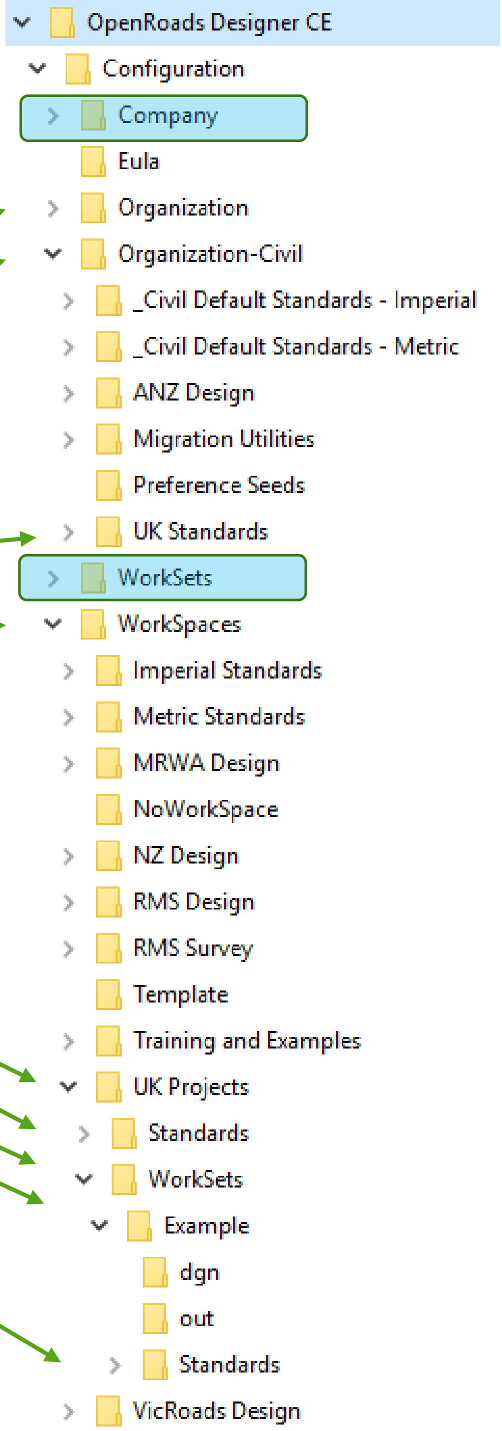
ORD CONNECT:

_USTN_CONFIGURATION
_USTN_ORGANIZATION

CIVIL_ORGANIZATION_ROOT
CIVIL_ORGANIZATION_NAME
CIVIL_ORGANIZATION_STANDARDS

_USTN_WORKSPACESROOT
_USTN_WORKSPACEROOT
_USTN_WORKSPACESTANDARDS

_USTN_WORKSETSROOT
_USTN_WORKSETROOT
_USTN_WORKSETSTANDARDS

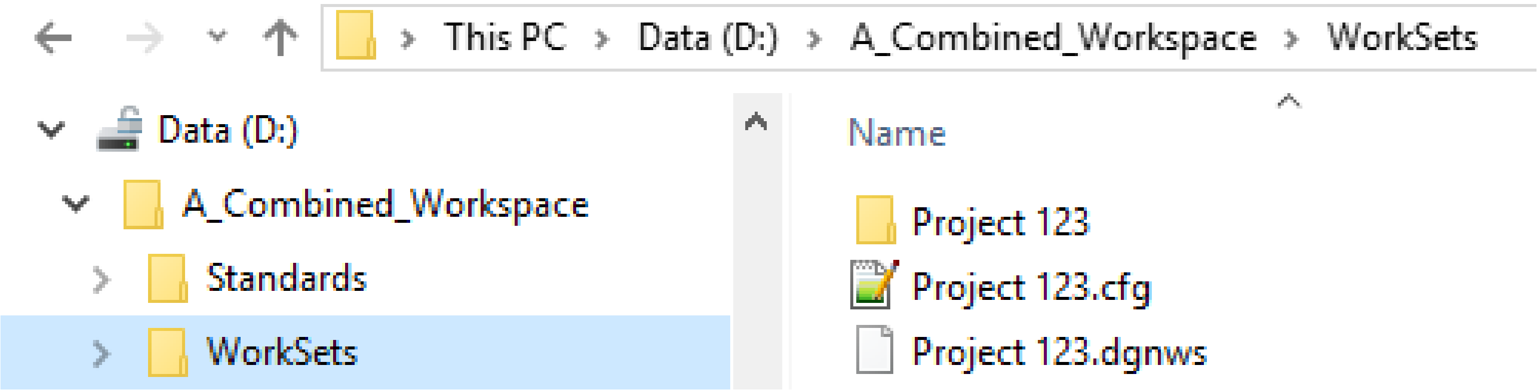


- OpenRoads Designer CE
  - Configuration
    - Company
    - Eula
    - Organization
    - Organization-Civil
      - _Civil Default Standards - Imperial
      - _Civil Default Standards - Metric
      - ANZ Design
      - Migration Utilities
      - Preference Seeds
      - UK Standards
    - WorkSets
    - WorkSpaces
      - Imperial Standards
      - Metric Standards
      - MRWA Design
      - NoWorkSpace
      - NZ Design
      - RMS Design
      - RMS Survey
      - Template
      - Training and Examples
      - UK Projects
        - Standards
        - WorkSets
          - Example
            - dgn
            - out
            - Standards
      - VicRoads Design

Combined **WorkSpace** for MicroStation and ORD

- The following structure used as an example
  - ‘A_Combined_Workspace’ is the WorkSpace name
  - ‘Project 123’ is the WorkSet being used

- ‘A_Combined_Workspace.cfg’ required
  - Stored in each application’s ‘\Configuration\WorkSpaces’ folder

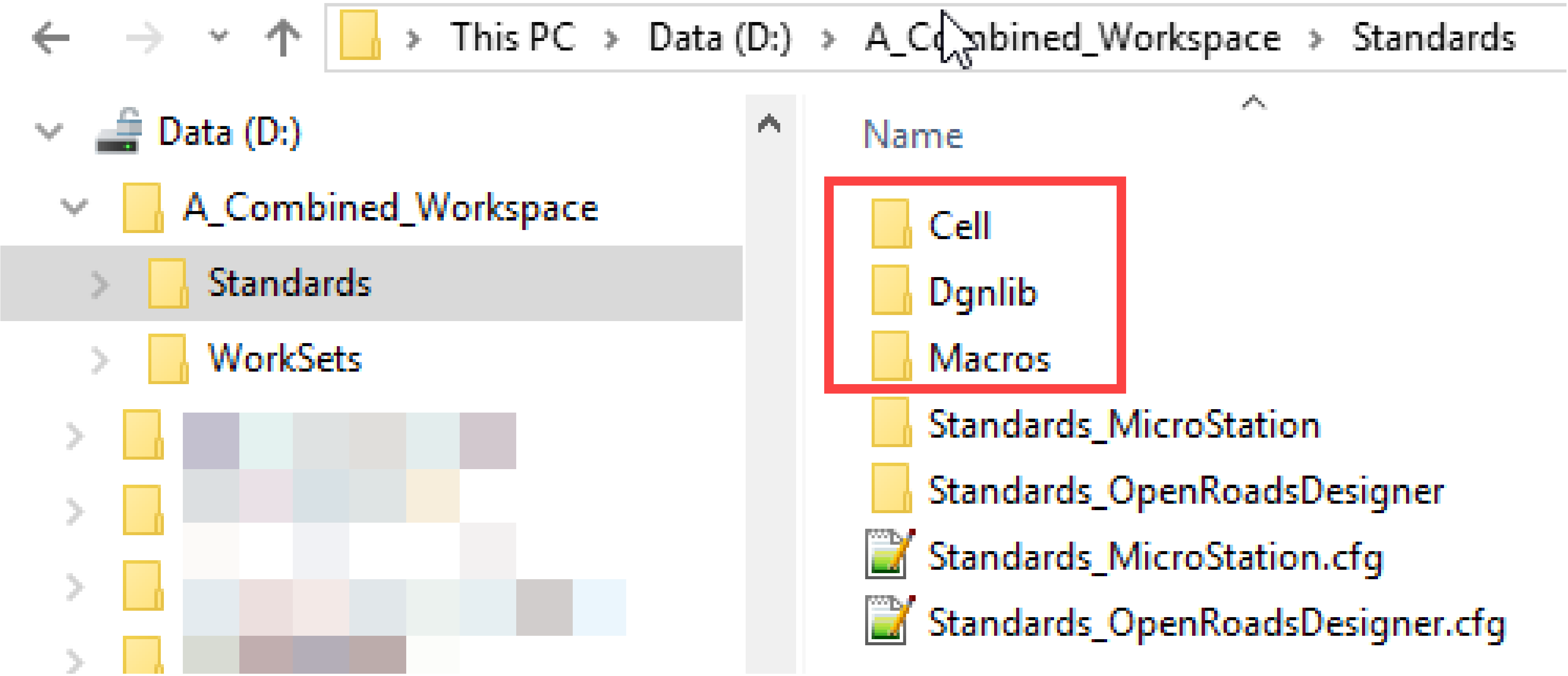


This PC › Data (D:) › A_Combined_Workspace › WorkSets

Data (D:)
A_Combined_Workspace
Standards
WorkSets

Name
Project 123
Project 123.cfg
Project 123.dgnws

A_Combined_Workspace.cfg



This PC › Data (D:) › A_Combined_Workspace › Standards

Data (D:)
- A_Combined_Workspace
  - Standards
  - WorkSets

Name
- Cell
- Dgnlib
- Macros
- Standards_MicroStation
- Standards_OpenRoadsDesigner
- Standards_MicroStation.cfg
- Standards_OpenRoadsDesigner.cfg

```
%if exists ($(_USTN_ WORKSPACESTANDARDS)Standards_$(_USTN_PRODUCT_SHORTNAME).cfg)
        %include $(_USTN_ WORKSPACESTANDARDS)Standards_$(_USTN_PRODUCT_SHORTNAME).cfg
%endif
```

Standards_MicroStation.cfg
Standards_OpenRoadsDesigner.cfg

- Loads the ‘extra’ standards needed for pure MicroStation or OpenRoads Designer (if any)

```
# This CFG file would contain MicroStation specific additions
#
APP_STANDARDS = $(_USTN_ WORKSPACESTANDARDS)Standards_$(_USTN_PRODUCT_SHORTNAME)/
MS_DGNLIBLIST > $(APP_STANDARDS)Dgnlib/*.dgnlib
```

```
# This CFG file would contain OpenRoads Designer specific additions

# Specific CFG per Application
APP_STANDARDS = $(_USTN_ WORKSPACESTANDARDS)Standards_$(_USTN_PRODUCT_SHORTNAME)/
# Uncomment the following lines and define the appropriate file names.
#CIVIL_WORKSPACE_TEMPLATE_LIBRARY_NAME = Replace with WorkSpace Template Library File Name.itl
#CIVIL_WORKSPACE_DESIGNSEED = Replace with WorkSpace Seed File Name.dgn
# OpenRoads CIVIL_ORGANIZATION standards loaded first
CIVIL_ORGANIZATION_NAME = UK Standards
CIVIL_LOCALIZATION_NAME = UK
%if exists ($(CIVIL_ORGANIZATION_ROOT)$(CIVIL_ORGANIZATION_NAME).cfg)
  % include $(CIVIL_ORGANIZATION_ROOT)$(CIVIL_ORGANIZATION_NAME).cfg
%endif
%if defined (CIVIL_WORKSPACE_TEMPLATE_LIBRARY_NAME) && exists ($(APP_STANDARDS)Template
Library/$(CIVIL_WORKSPACE_TEMPLATE_LIBRARY_NAME))
  CIVIL_ROADWAY_TEMPLATE_LIBRARY        = $(APP_STANDARDS)Template Library/$(CIVIL_WORKSPACE_TEMPLATE_LIBRARY_NAME)
%endif%if defined (CIVIL_WORKSPACE_DESIGNSEED) && exists ($(APP_STANDARDS)Seed/$(CIVIL_WORKSPACE_DESIGNSEED))
  MS_DESIGNSEED                         = $(APP_STANDARDS)Seed/$(CIVIL_WORKSPACE_DESIGNSEED)
  MS_SEEDFILES                          = $(APP_STANDARDS)Seed/
%endif

# Include Levels, Element Templates, and Text Styles from the WorkSpace (PW=Site) if they exist
MS_DGNLIBLIST                         < $(APP_STANDARDS)Dgnlib/Feature Definitions/*.dgnlib
```

MicroStation Configuration 101

- Q & A

- Thank you for your time!