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Highlight of Eclipse Scripting API

Overview of Eclipse Scripting API and Scripting Automation.

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Varian Medical Systems

General linac fair balance safety statement

Intended Use Summary

Varian Medical Systems' linear accelerators are intended to provide stereotactic radiosurgery and precision radiotherapy for lesions, tumors, and conditions anywhere in the body where radiation treatment is indicated.

Important Safety Information

Radiation treatments may cause side effects that can vary depending on the part of the body being treated. The most frequent ones are typically temporary and may include, but are not limited to, irritation to the respiratory, digestive, urinary or reproductive systems, fatigue, nausea, skin irritation, and hair loss. In some patients, they can be severe. Treatment sessions may vary in complexity and time. Radiation treatment is not appropriate for all cancers.

Medical Advice Disclaimer

Varian as a medical device manufacturer cannot and does not recommend specific treatment approaches. Individual treatment results may vary.

Eclipse Scripting Introduction

What is ESAPI?

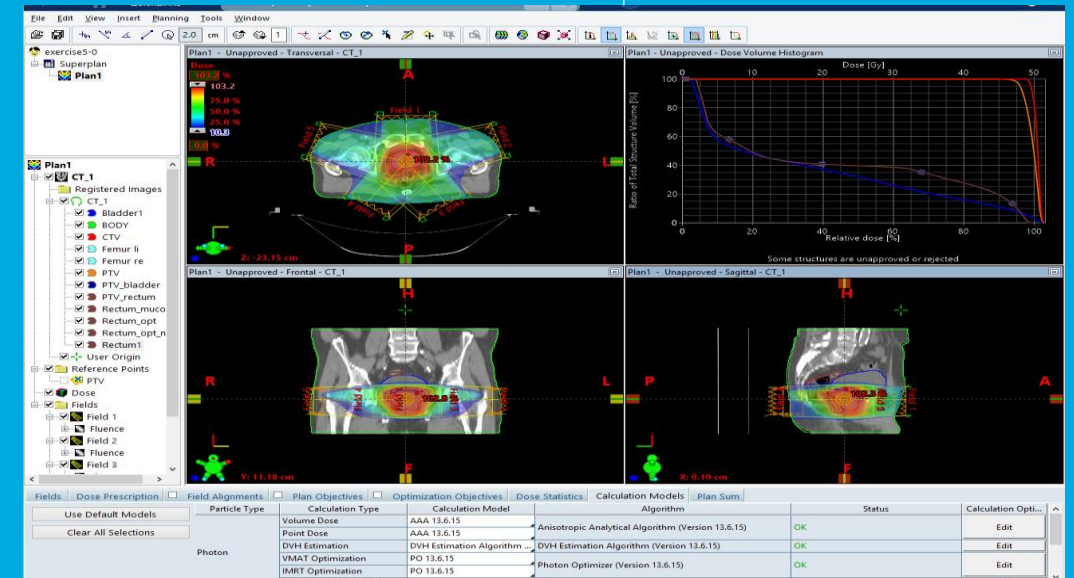
- A package of .NET class libraries assembled for use in C#
 - VMS.TPS.Common.Model.API
 - VMS.TPS.Common.Model.Types
- Provides Access to services and data models used by Eclipse
- Eclipse Script Wizard
 - As plugins
 - As executables

The screenshot shows the 'Eclipse Script Wizard' dialog box. It has two tabs: 'Create New Script' (selected) and 'Copy Example Scripts'. The 'Create New Script' tab contains the following fields and options:

- Help:** Specify the name, type and location for the script. Click 'Create' to create a working script skeleton to the selected location.
- Name of the script:** A text input field.
- Type of the script:** A group box containing four radio buttons:
 - ☒ Single-file plug-in
 - ☐ Binary plug-in
 - ☐ Stand-alone executable
 - ☐ Visual Scripting Action Pack
- Destination Location:** A text input field containing 'C:\Users\cwalker\Documents\Eclipse Scripting API\'. A 'Browse...' button is to the right.
- Create:** A button at the bottom right.

```
22 public void Execute(ScriptContext context /*, System.Windows.Window window, ScriptEnvironment env
23 {
24     // TODO : Add here the code that is called when the script is launched from Eclipse.
25     string approve_output = String.Format("Approval History for {0} for plan {1}",
26         context.Patient.Name, context.PlanSetup.Id);
27
28     foreach (ApprovalHistoryEntry ahe in context.PlanSetup.ApprovalHistory)
29     {
30         approve_output += String.Format("\nStatus: {0}; User: {1}; Date: {2}\n\tComment: {1}",
31             ahe.ApprovalStatus, ahe.UserId, ahe.ApprovalDateTime, ahe.StatusComment);
32     }
33     MessageBox.Show(approve_output);
34 }
```

Eclipse Scripting API



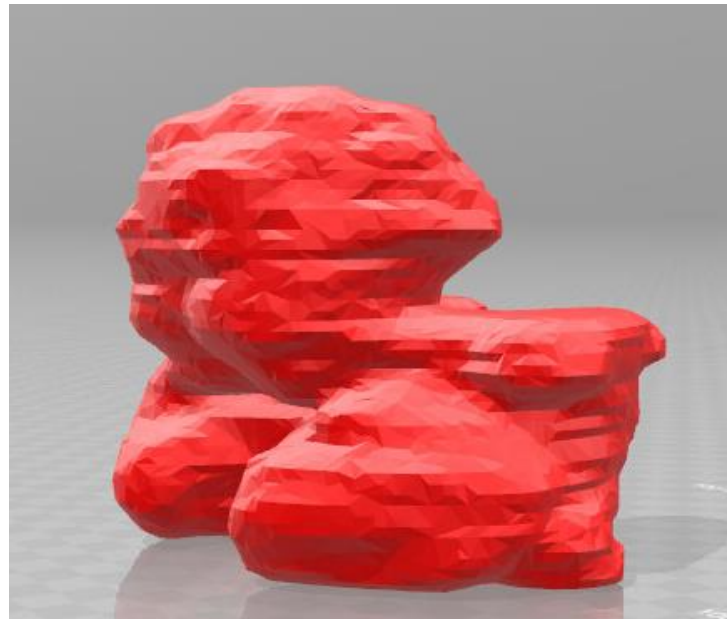
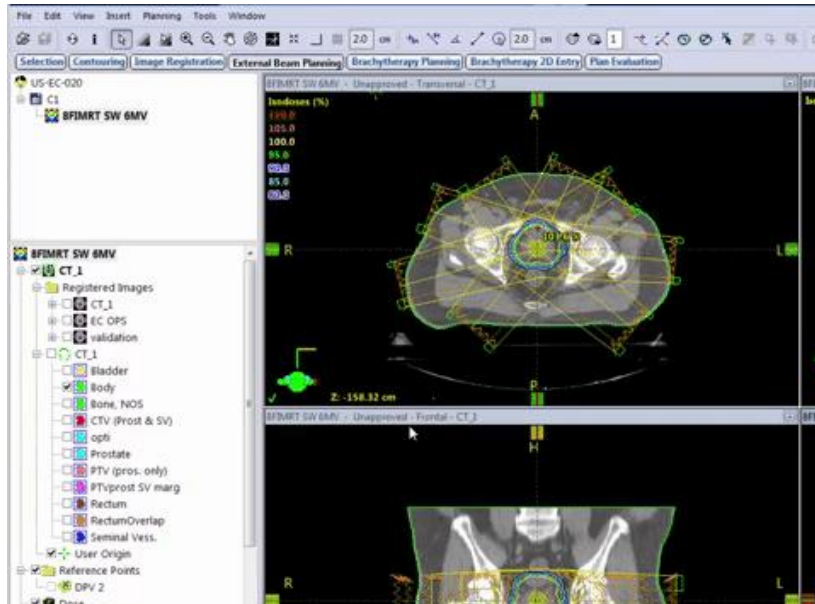
Motivations for Eclipse Scripting

Why ESAPI?

Speed of Data Access

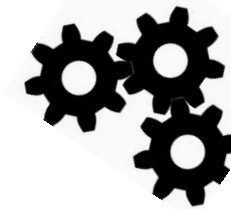
Access Complex Data Types

Task Automation / Efficiency



DICOM
Services

DVH
Engine



Document
Services

Eclipse Scripting API Features by Version

	v.11	v13.6	V13.7	v.15.5
Access to Eclipse EXB Photon Data (Patient, Course, Plan, Beams, Structures, DVHs, Doses, Images,)	✓	✓	✓	✓
Access to Eclipse Brachytherapy Data, Portal Dosimetry, and MIRS application	-	✓	✓	✓
Access to Eclipse Proton Data	-	-	✓	✓
Eclipse Automation for EXB Photon Planning (Create Courses, Plans, Beams, Optimize & Calculate Dose)	-	rm	rm	✓
Script Approval	-	-	-	✓
Visual Scripting	-	-	-	✓

rm = Available in Research Mode only

Script Automation



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Prerequisites for Eclipse Scripting Automation

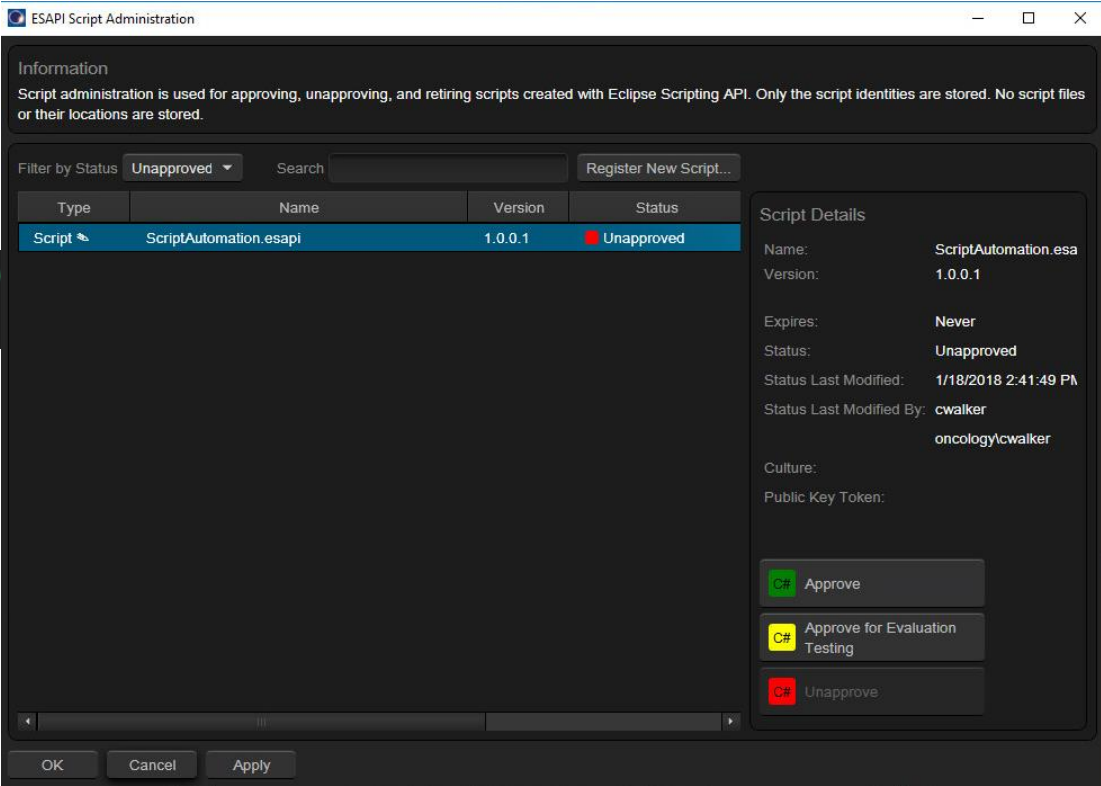
- Eclipse
- Assembly Version Must be Specified

Name	Version
<input type="text" value="script"/>	<input type="text" value=""/>
EclipseScriptingClinicalWrite	15.1
EclipseScriptingInterface	11.0
EclipseScriptingIfWriteAccess	13.0

- ```
11 // TODO: Replace the following version attribute with the version of the assembly you are using.
12 [assembly: AssemblyVersion("1.8.4.1")]
13
16 // TODO: Uncomment the following line if the script requires write access to the database.
17 [assembly: ESAPIScript(IsWriteable = true)]
18
```

- Script Approved

```
31
32 //access the patient
33 Patient p = context.Patient;
34 p.BeginModifications();
35
```



# Eclipse Automation - Approval

- Clinical development process support
- Write-enabled scripts must be approved
- Optional system setting to force read-only scripts to be approved

Research system

Clinical system

In  
development

Approved for  
evaluation

Approved

Retired



# ESAPI Automation Features

| Feature               | Note        |
|-----------------------|-------------|
| Create Course         |             |
| Create PlanSetup      | EXB Photons |
| Create Structure Set  |             |
| Copy Structure Set    |             |
| Set CT Imaging Device |             |
| Search Body Structure |             |
| Structure Booleans    |             |
| Create Ref Point      |             |
| DVH Estimation        |             |
| Copy Image            | For QA      |
| Create Phantom        |             |
| Generate DRR          | EXB Photons |

| Feature                        | Note                                        |
|--------------------------------|---------------------------------------------|
| Create Beams                   | EXB Photons                                 |
| MLC Autofit                    | EXB Photon                                  |
| Set Optimal Fluence            | EXB Photon                                  |
| Optimize                       | EXB Photon                                  |
| MLC Sequencing                 | EXB Photon                                  |
| Dose Calculation               | EXB Photon + Proton                         |
| Run MCO                        | EXP Photon                                  |
| Set Raw + Final Scanning Spots | Proton                                      |
| Create Verification Plans      | EXB Photon                                  |
| Delete Objects                 | Course, Plan, Beam, Phantom, Structure Set  |
| Rename IDs                     | Course, Plan, Beam, Structure, StructureSet |
| Create Evaluation Dose         |                                             |

📦 13 commits

🌿 1 branch

📦 0 releases

👤 4 contributors


📄 MIT

Branch: master ▾

New pull request


Find file

Clone or download ▾

 **stuomaal** Changed First to FirstOrDefault

Latest commit 7e1aec9 13 days ago

|                         |                                                                        |             |
|-------------------------|------------------------------------------------------------------------|-------------|
| 📁 Eclipse Scripting API | references touchup                                                     | 14 days ago |
| 📁 webinars & workshops  | Changed First to FirstOrDefault                                        | 13 days ago |
| 📄 .gitignore            | loading code samples from codeplex archive (removed binary/.dll files) | 15 days ago |
| 📄 LICENSE               | Update LICENSE                                                         | 15 days ago |
| 📄 README.md             | Update README.md                                                       | 14 days ago |

 README.md

# Scripting Assistance

<https://varianapis.github.io/>

( Thank You )

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