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ACE API

You Have The Power

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- **Intro To ACE Plug-In API**

- **Intro To New .NET AceEngine API**

- **Quick Example**

- **Side By Side Comparison**

ACE Plug-In API

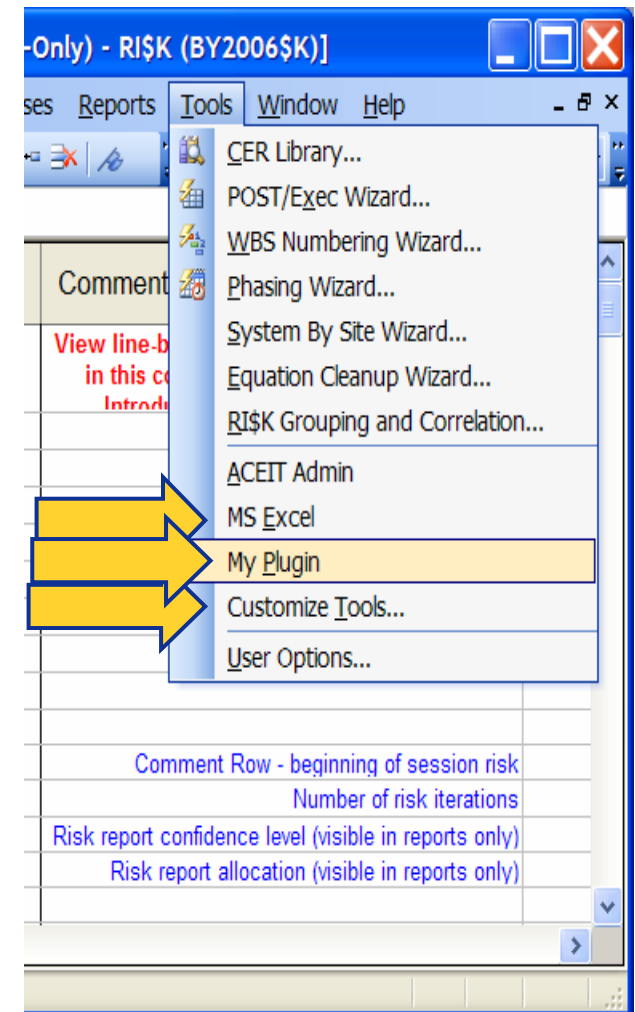**TECOLOTE RESEARCH, INC.**

- **ACE Can Launch Any Application**
  - Add using Tools > Customize Tools
  - Application appears on the Tools menu

- **What is an ACE Plug-In?**
  - It is an executable (.exe, .tlb, .dll) that implements the COM interface ACEPlug60Lib.IACEPlugIn
    - "AcePlug6.tlb" found in "PlugIns" folder
  - Through the Run() subroutine, it gets a reference to ACE (ACE.Application)
  - It can manipulate the open ACE sessions
  - ACE GUI waits until the plug-In closes

- **ACE Plug-In API Works with VB6**
  - You can use it for stand-alone apps, too

- **What Is Ace.Application?**
  - A COM object that encapsulates ACE application
  - From Ace.Application you can get to active session
- **What Is Ace.Session?**
  - A COM object that encapsulates an open session GUI
  - Same interface that ACE Executive uses
  - API has existed in ACE for nearly a decade
- **How Do I Use COM Objects?**
  - The document "ACE PlugIn Automation API.doc" details interface
  - You can get to any sheet data and many session properties
  - Data is retrieved and stored column by column using row filters
  - You manipulate a single "automation" case
- **Interface Will Be Supported Indefinitely**

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What is ACE Engine 7.0?

- New .NET API introduced in ACEIT 7.0
- Same API that POST, POSTDOC, and web services use
- "ACE Engine Automation API.doc" details interface
- Much more powerful and intuitive than ACE Plug-In API

Why a Second API?

- COM API is poorly structured
- We wanted a clean start
- ACE Engine reflects logic and workflow of session

Why Not Use It For Plug-In API?

- Some day ACE will support it

- **The Ace Engine Has Many Advantages Over COM API**
  - Full Intellisense support and strict type checking
  - COM works with generic object
- **The Ace Engine Runs Separately From ACE Application**
  - Means smaller memory footprint (still large because of .NET)
- **New Interface Is Object Oriented**
  - Tasks and data are delineated by different classes
  - Similar in style to other OO interfaces, such as Excel
  - You can even inherit from classes
  - Access information without the complicated row filtering
- **Unfortunately, it is only available to .NET applications**

- **You can manipulate virtually every aspect of the session**
  - Access and modify model's cases
  - Make as many cases as you like
  - Access multiple sets of results at once
  - Format and "unformat" numbers
  - New "Results" object remembers its own case inputs
  - Access all model properties (File | Properties tab in ACE)
  - Access rich text documentation
  - Create new sessions and save them
  - Access traceback information – which rows use which variables
  - Can also convert older ".acw" files using ACW Converter

Example

Plug-In (VB6)

> Only one function in API to implement

```
Implements ACEPlug60Lib.IACEPlugIn

Private Function _
IACEPlugIn_Run(ByVal ACE As Object) As Boolean
    Dim MySession As Object
    Set MySession = ACE.Sessions.ActiveSession
```

> ACE calls this

AceEngine (VB.NET)

> Have to open the file yourself

```
Private Sub MySub()
    Dim MySession As New AceEngine.Session
    Dim ErrCode As AceEngine.AceError

    ErrCode = MySession.Open("C:\my folder\my session.aceit")
    If ErrCode = AceEngine.AceError.NoError Then
        ' Do Stuff. . .
```

- **Plug-In (VB6)**

Using a case is easy

Setting overrides requires a row filter

```
MySession.RiskEnabled = True
MySession.CopyCaseOverrides "Case Of Interest"

' MySession.SetCaseOverrides Vals, Filter
```

- **AceEngine (VB.NET)**

MyConfig is like # functions in Exec

This is the actual session case

```
Dim MyConfig As New AceEngine.CaseConfiguration
MyConfig.IsRiskEnabled = True

Dim MyCase As AceEngine.CaseInputs
MyCase = MySession.Cases.Find("Case Of Interest")
MyCase.Unlink ' Case is now independent
```

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■ **Plug-In (VB6)**

Parameter defines BY,SY, TY calculation

```
If OpenSession.Evaluate(0) Then
   . . .
```

■ **AceEngine (VB.NET)**

Will contain risk statistic, too

```
Dim MyResults As AceEngine.Results

MyResults = MySession.Calculate(MyCase, MyConfig)
If MyResults.HasResults Then
   . . .
```

Contains full error log

Contains all calculation settings, (risk, FY, etc.)

- **Plug-In (VB6)**

```
' To Access data in session
' you need a row filter.

Dim FilterLen As Long
FilterLen = MySession.GetFilterLen(86) ' External Type

Dim MyFilter As Variant
ReDim MyFilter(0 To FilterLen - 1) As Long
MySession.GetFilter 86, MyFilter
```

> 86 is the "External Type" column

> Old OLE array handling passes a Variant

> Be sure to get the filter for the same column as the length

> You could do 1 to FilterLen, too

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- **Plug-In (VB6)**

```vb
Dim MyResults As Variant
ReDim MyResults(0 To FilterLen - 1) As String
OpenSession.GetTotals MyResults, MyFilter
Dim Value As String
For Each Value In MyResults
    ' Do Something. . .
Next
```

> Gets string representing value. Blank means no result or result is 0.

- **AceEngine (VB.NET)**

```vb
Dim MyItem As AceEngine.Row
For Each MyItem In MySession.Estimate
    If MyItem.IsSumming Then
        Dim Value As Double _
            = MyResults.GetTotalResult(MyItem.Index)
        ' Do something. . .
    End If
Next
```

> Skips no-sum rows and comments

Comparison

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Task	Ace Engine	Ace Plug-In
Manipulate a session open in ACE	No	Yes
Calculate existing case in session	Yes	Yes
Set common session properties	Yes	Yes
Evaluate session and retrieve results	Yes	Yes
Save modified session	Yes	Yes. As new file.
Manipulate existing case or add new case	Yes & copy case	No. Use base case.
Manipulate row attributes (cell data)	Yes	Yes
Add DECs	Yes	Yes
Access RI$K statistics	Yes	Yes
Format numbers	Yes	No
Manipulate documentation in Rich Text	Yes	No
Create a new session	Yes	No
Receive calculation progress	Yes	No
Traceback information and error log	Yes	No
Accessible through COM (VB6)	No	Yes

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- **Two powerful APIs allow you to access ACE results**
- **The Plug-In API works with COM and open ACE sessions**
  - Saves the arduous task of copy/paste to and from Excel
- **The Ace Engine API works with .NET and is more powerful**
  - Full control over session and object oriented
- **Extensive documentation available for both:**
  - Ace PlugIn Automation API.doc
  - Ace Engine Automation API.doc
  - Both available on web
- **Assistance also available through our technical support**
- **Use the API that is right for your task and skill level**