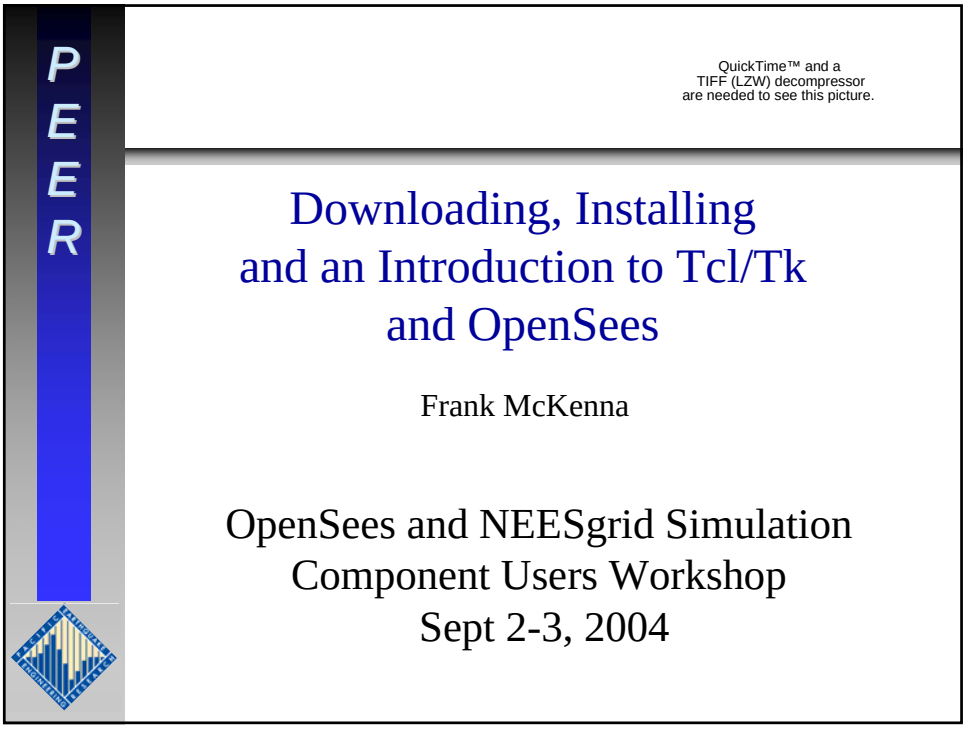

Downloading, Installing and an Introduction to Tcl/Tk and OpenSees

Frank McKenna

OpenSees and NEESgrid Simulation Component Users Workshop
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Getting OpenSees

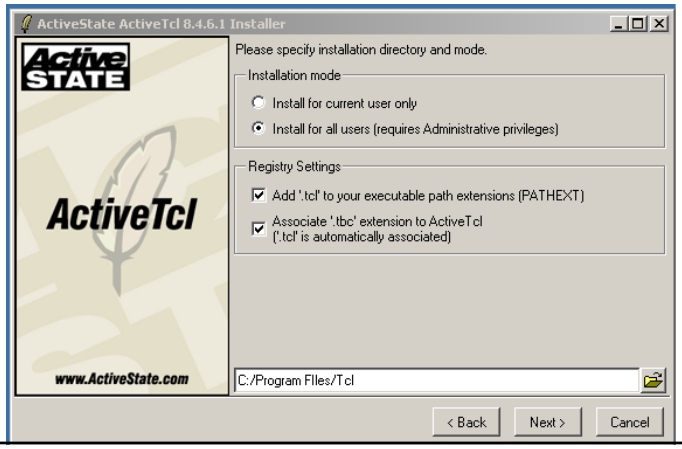
- Web site: http://opensees.berkeley.edu/
- User Pages
  - Download Center
  - Examples
  - Commands
  - Message Board
  - Bug Reporting!
- The download page for OpenSees and Tcl/Tk
  http://opensees.berkeley.edu/OpenSees/binaries.html

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

One thing to Watch When Installing Tcl/Tk

Make sure you install in **C:/Program Files/Tcl**

Mind theGap!



Tcl Basics

- Tcl is a string based scripting language.
- Variables and variable substitution
- Expression evaluation
- Basic control structures (if , while, for, foreach)
- Procedures
- File manipulation
- Sourcing other files.

Tcl

- Tcl scripts are made up of commands seperated by newlines or ;
- Comand syntax:

  command arg1 arg2 …

- Help
  1. http://dev.scriptics.com/scripting/primer.html
  2. Practical Programming in Tcl and Tk, Brent B. Welch, Prentice Hall.

- Let's demonstrate using OpenSees

Example Tcl:

```
>set a 1
>1
>set b a
>a
>set b $a
>1
>expr 2 + 3
>5
>expr 2 + $a
>3
>set b [expr 2 + $a]
>3
```

```
>proc sum{a b} {
   return [expr $a + $b]
}
>sum 2 3
>5
>set c [sum 2 3]
>5
```

```
>set fileId [open tmp w]
>??
>puts $fileId "hello"
>close $fileID
>type tmp
hello
>
```

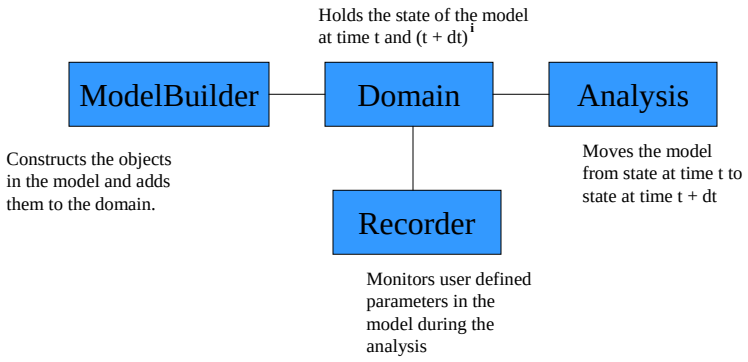
```
>source Example1.tcl
```

```
for {set i 1} {$i < 10} {incr i 1} {
            puts "i equals $i"
}
set sum 0
foreach value {1 2 3 4} {
   set sum [expr $sum + $value]
}
set $sum
>10
>proc guess {value} {
    global sum
    if {$value < $sum} {
       puts "too low"
    } else {
       if {$value > $sum} {
          puts "too high"
       } else { puts "you got it!"}
   }
}
 > guess 9
too low
>
```

Commands to Tcl for OpenSees

- For OpenSees we have added commands to Tcl for finite element analysis:
  1. Modeling – create nodes, elements, loads and constraints
  2. Analysis – specify the analysis procedure.
  3. Output specification – specify what it is you want to monitor during the analysis.
- For help
  1. http://opensees.berkeley.edu/OpenSees/primer.html

Main Abstractions in OpenSees



Help with OpenSees

- Email: opensees@peer.berkeley.edu
- Website: http://opensees.berkeley.edu