OpenSees

Open System for Earthquake Engineering Simulation

Pacific Earthquake Engineering Research Center

PEER

NEES collaborative project

OpenSees User Workshop 2004

Getting ready to build the model: Introduction to the user manual and input-file format

Silvia Mazzoni

University of California, Berkeley

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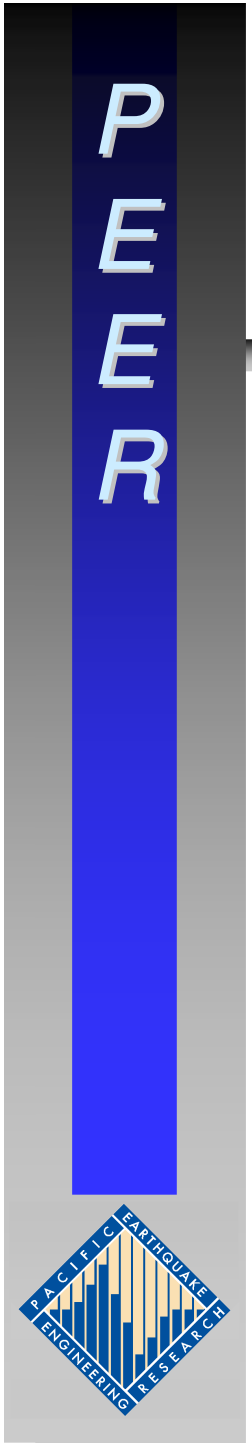
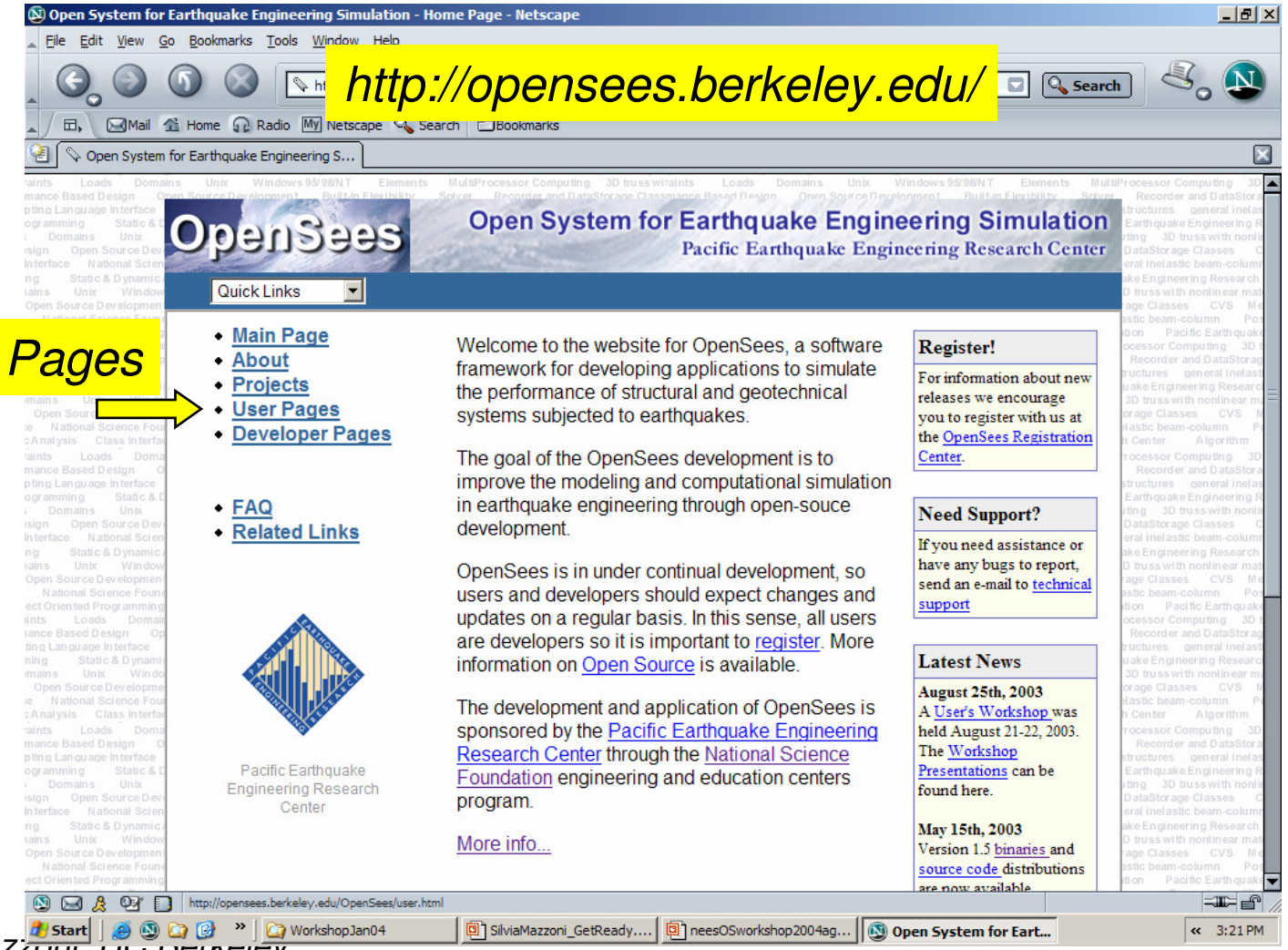
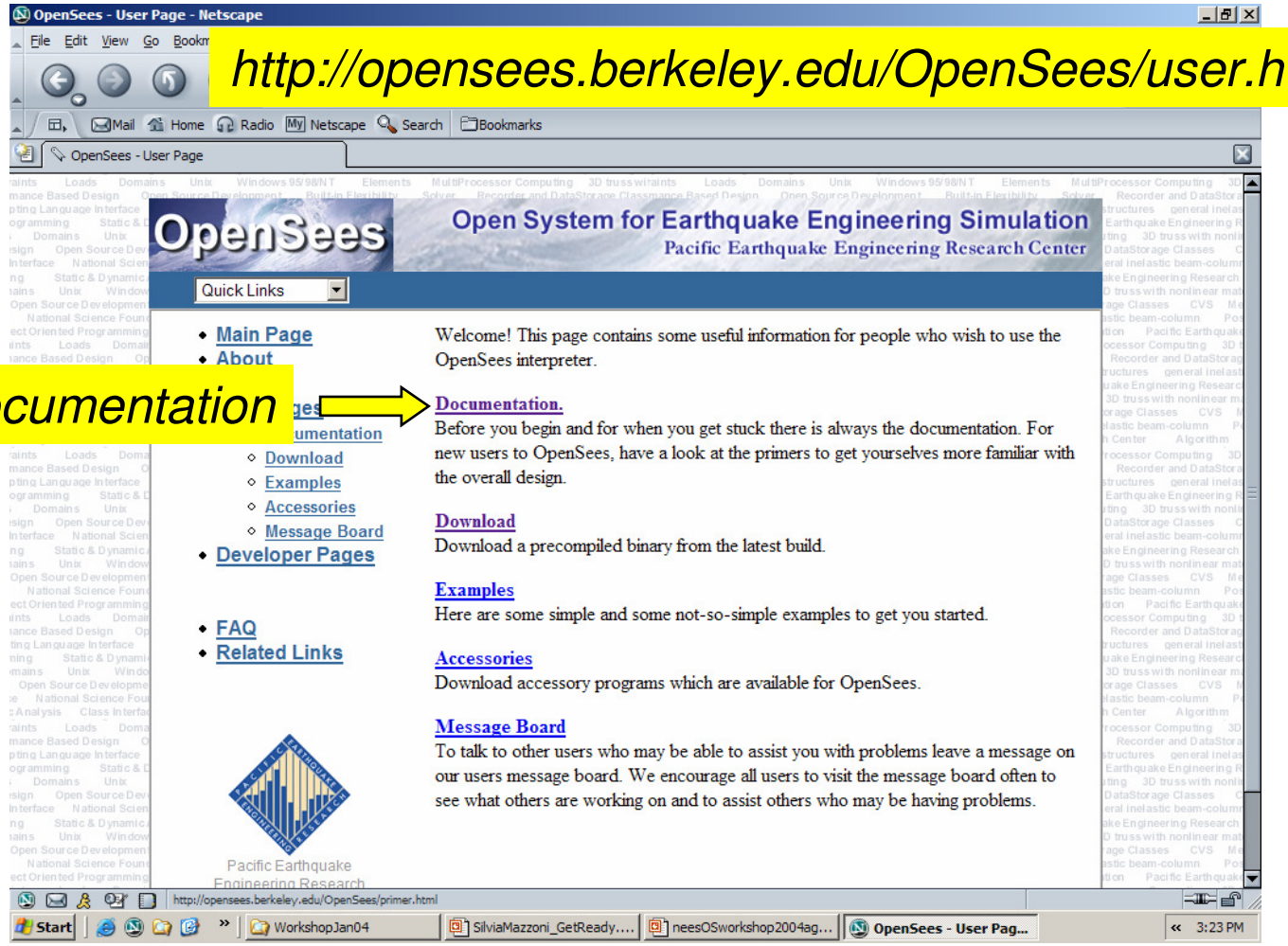


Part I – the user manual

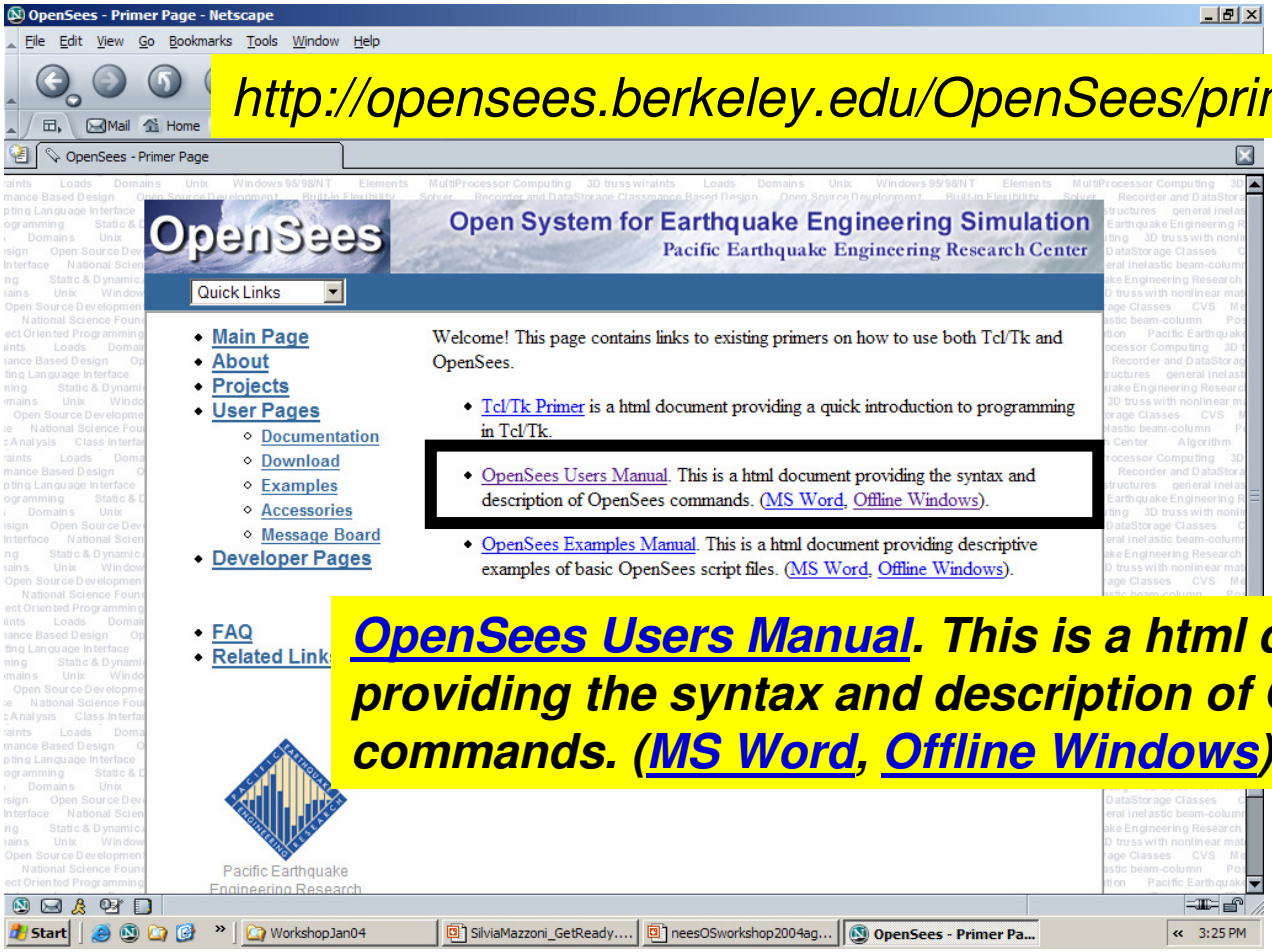
download documentation



documentation



download User Manual



http://opensees.berkeley.edu/OpenSees/primer.html

OpenSees Users Manual. This is a html document providing the syntax and description of OpenSees commands. (MS Word, Offline Windows).

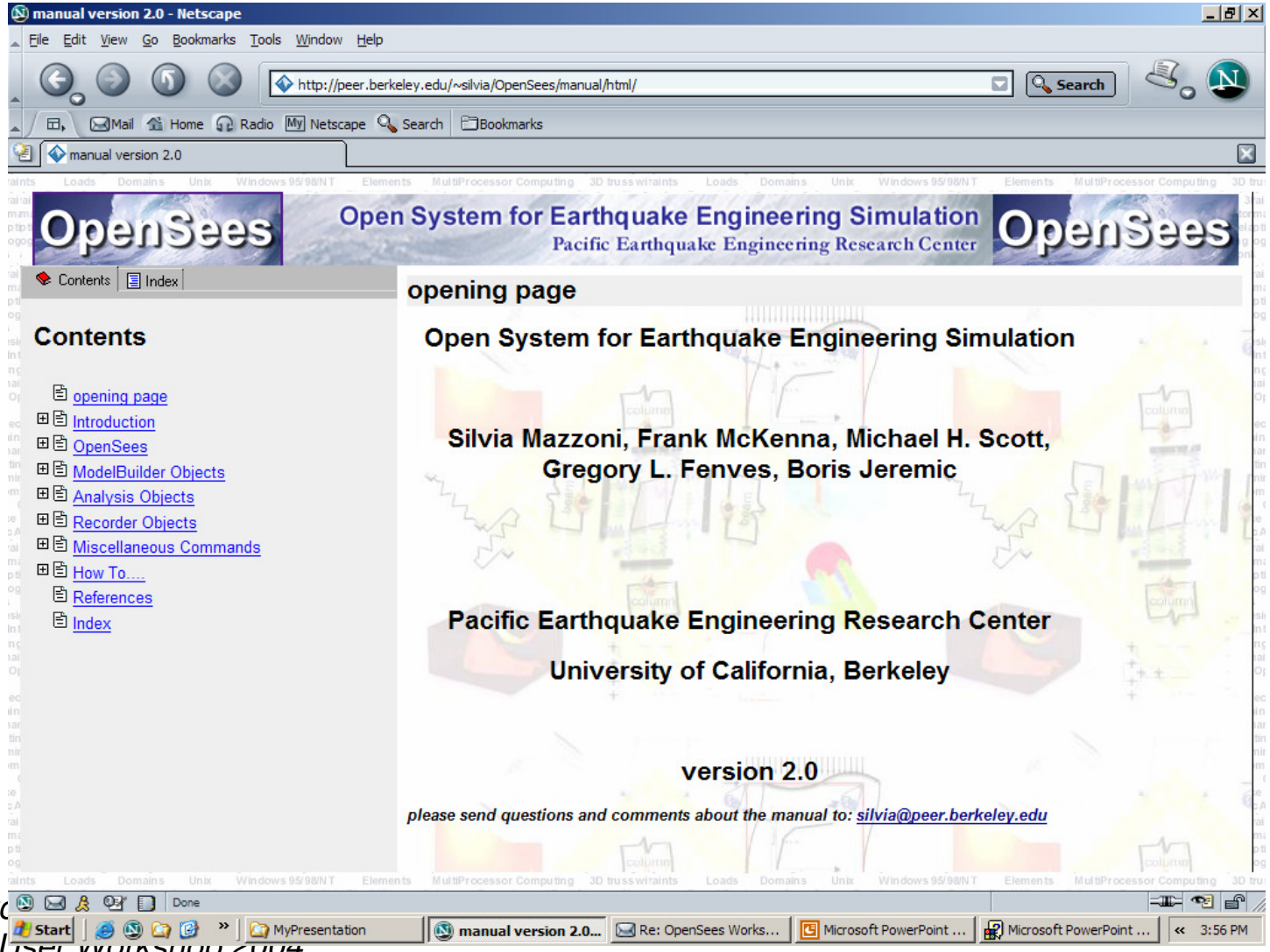
3 manual formats

***OpenSees Users Manual*. This is a html document providing the syntax and description of OpenSees commands. (*MS Word*, *Offline Windows*).**

1. **OpenSees Users Manual** – on-line HTML document, residing on OpenSees server. Always going to be the most current.
2. **MS Word** – downloadable Word document
3. **Offline Windows** – downloadable .chm file. it is similar to the HTML format, but the file resides on your computer.You may not have downloaded the latest version of manual

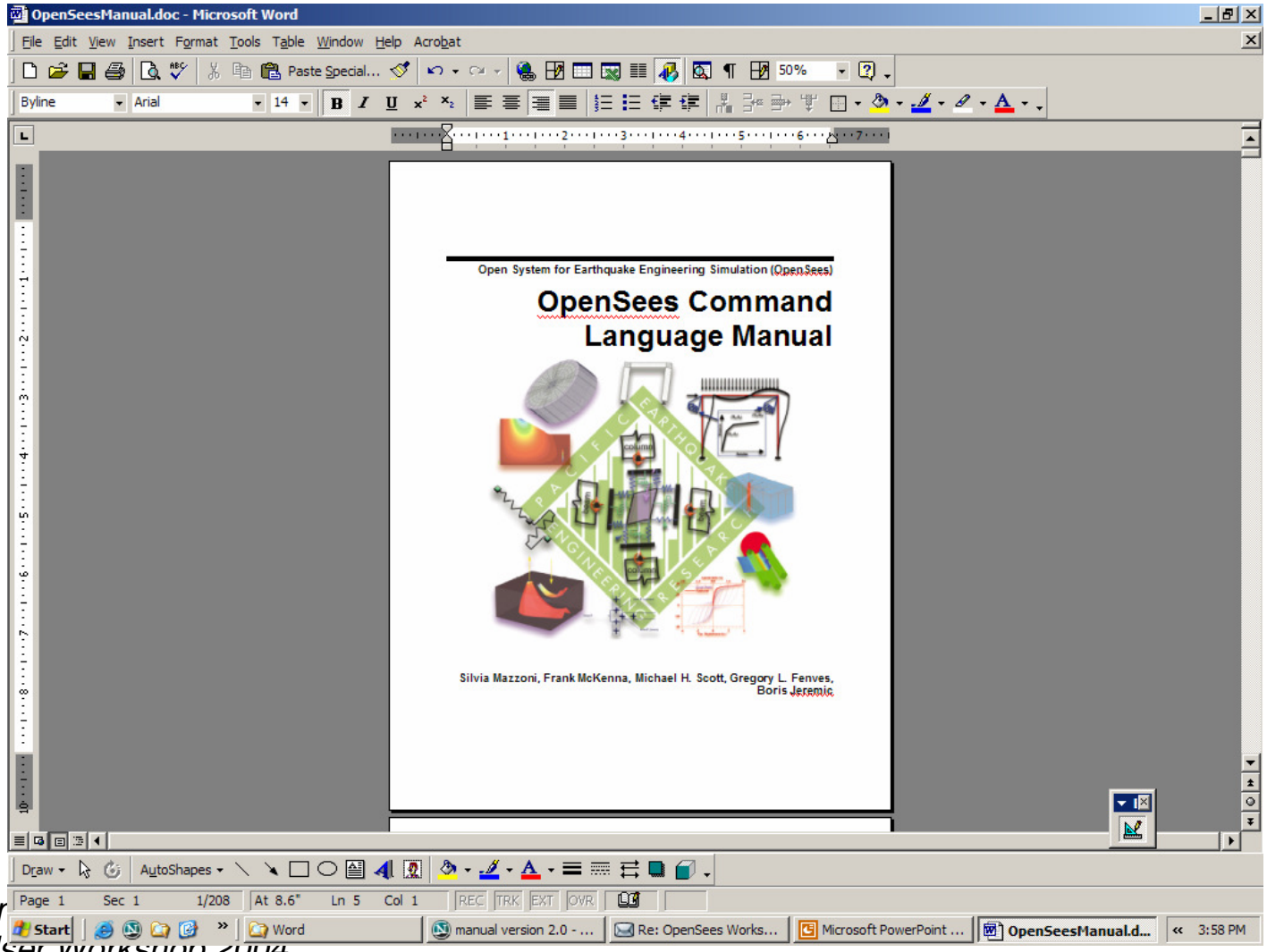
1. HTML on-line format

http://peer.berkeley.edu/~silvia/OpenSees/manual/html/



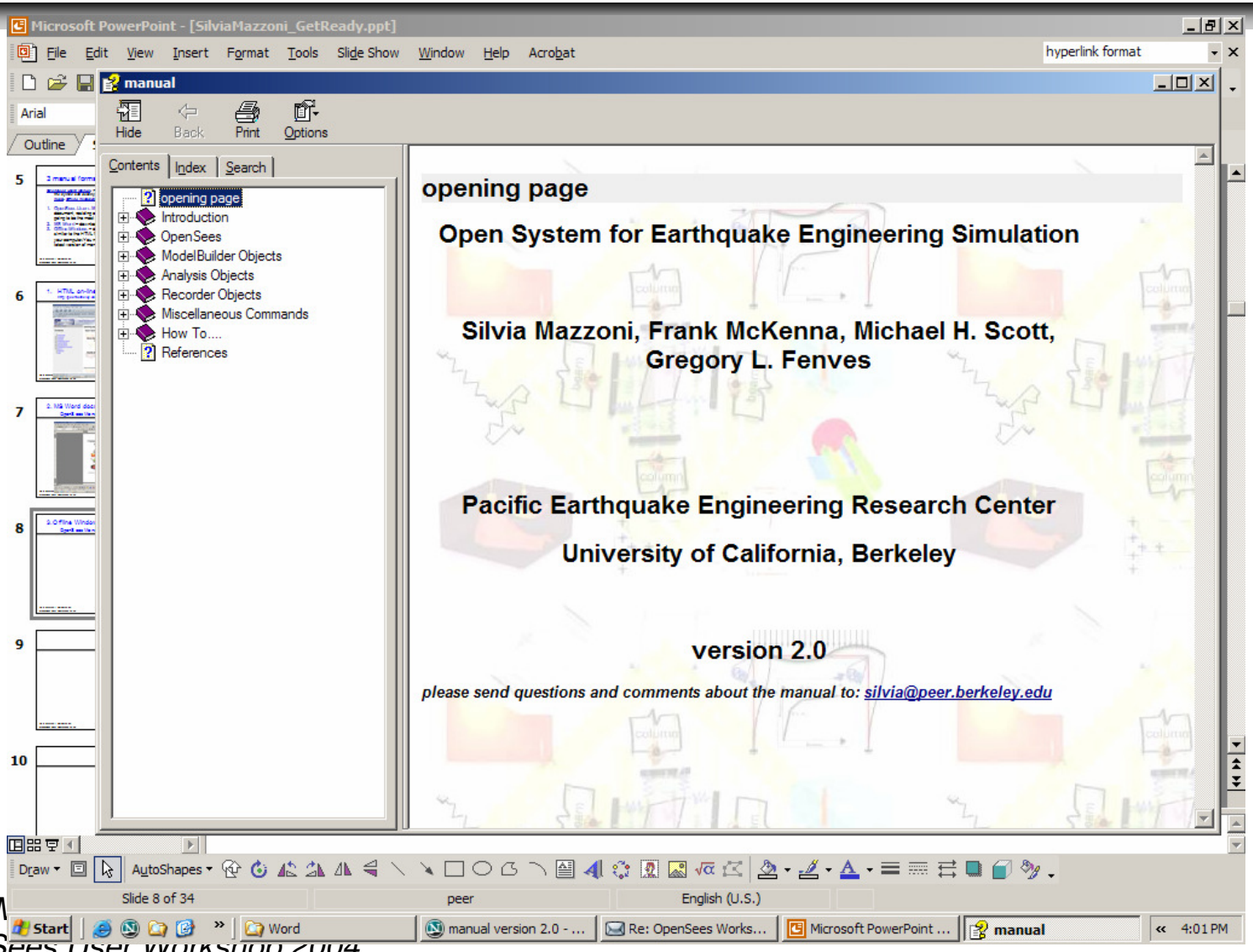
2. MS Word document

OpenSeesManual.doc



3. Offline Windows

OpenSeesManual.chm



Manual Chapters

- opening page
- Introduction
- OpenSees
- ModelBuilder Objects
- Analysis Objects
- Recorder Objects
  Miscellaneous Commands
- How To....
- References
- Index

OpenSees

- OpenSees
  - ModelBuilder Object is responsible for building the following objects in the model and adding them to the domain
  - Domain Object is responsible for storing the objects created by the ModelBuilder object and for providing the Analysis and Recorder objects access to these objects
  - Analysis Object is responsible for performing the analysis
  - Recorder Object monitors user-defined parameters in the model during the analysis

ModelBuilder Objects

- model Command
- node Command
- mass Command
- Constraints objects
- uniaxialMaterial Command
- nDMaterial Command
- section Command
- element Command
- block Command
- region Command
- Geometric Transformation Command
- Time Series
- pattern Command

Analysis Objects

- constraints Command
- numberer Command
- analysis Command
- algorithm Command
- integrator Command
- system Command
- test Command
- analyze Command
- rayleigh command 

- eigen Command
- dataBase Commands

Recorder Objects

- Node Recorder
- EnvelopeNode Recorder
- MaxNodeDisp Recorder
- Drift Recorder
- Element Recorder
- EnvelopeElement Recorder
- Display Recorder
- Plot Recorder
- playback Command

Miscellaneous Commands

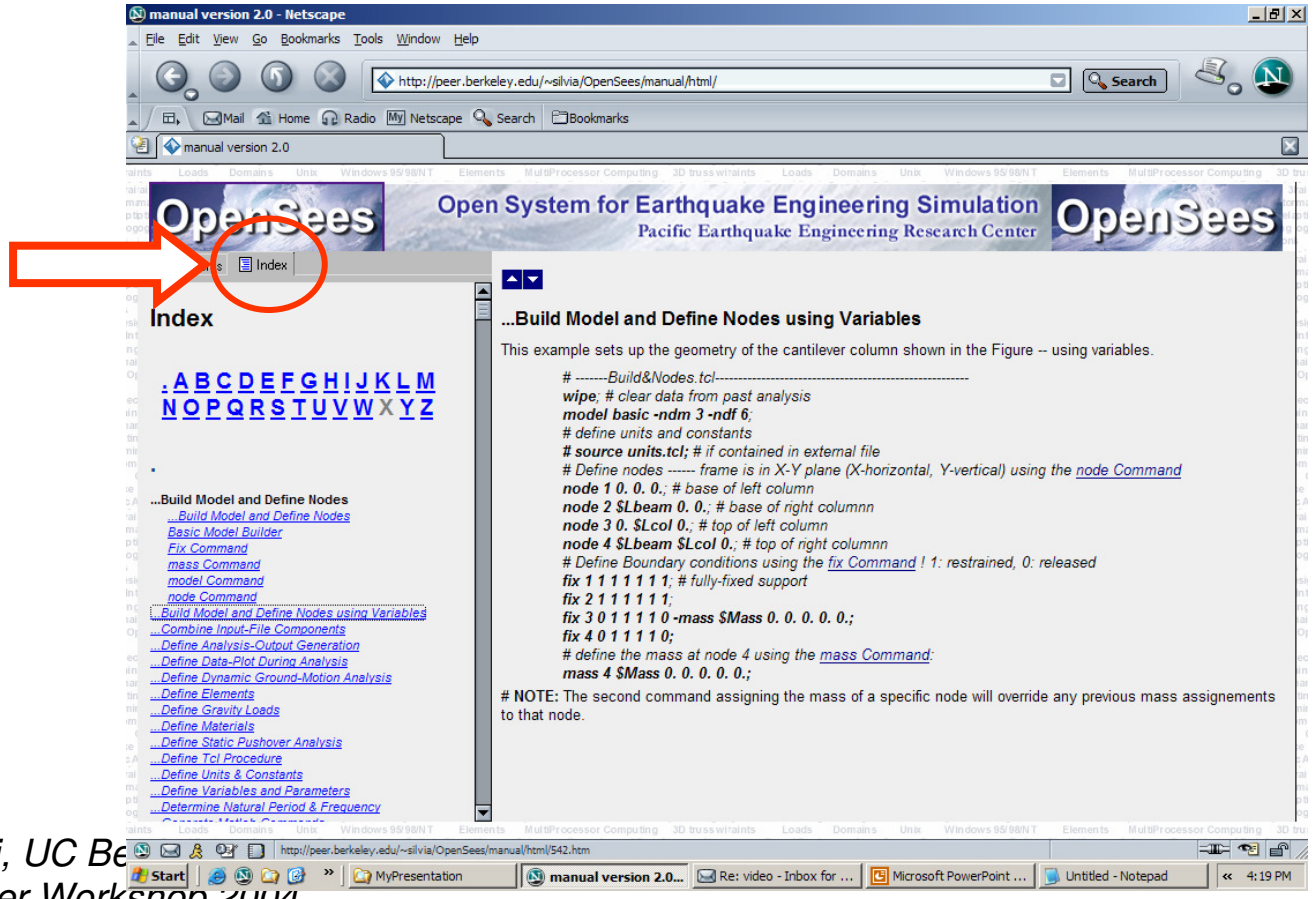
- print Command
- reset Command
- wipe Command
- wipeAnalysis Command
- loadConst Command
- getTime Command
- nodeDisp Command
- video Command

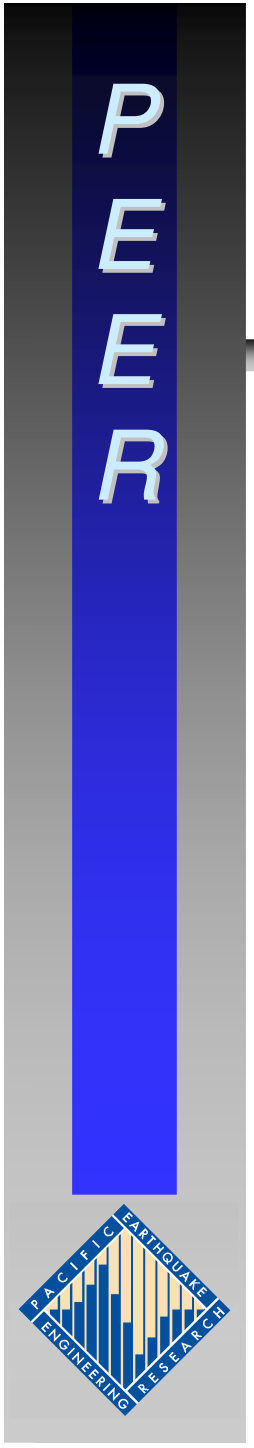
How To....

- ...Run OpenSees
- ...Define Units & Constants
- ...Generate Matlab Commands
- ...Define Tcl Procedure
- ...Read External files
- Building The Model
- Defining Output
- Gravity Loads
- Static Analysis
- Dynamic Analysis
- ...Combine Input-File Components
- ...Run Parameter Study
- ...Run Moment-Curvature Analysis on Fiber Section
- ...Determine Natural Period & Frequency

note

- you can also use the index tab to search specific commands





Part II – input-file format

Tcl Scripting language

- ability to “source-in” files
  - break-down input file into component files
- variables
  - unit and constant definition
  - parameter definition
- simplifies error check
- generate new-analysis input by using component files of previously-generated and tested input

input-file architecture