

Framework for Integration and Visualization of Structural State Data

Satoshi Ohrui
Akira Endoh
Yoshifumi Yamamoto
Izuru Fukushima

Bozidar Stojadinovic

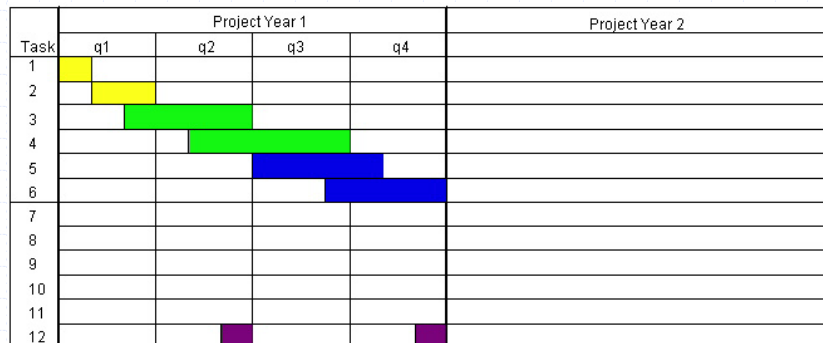
Project Goals

- ◆ Develop framework and database
 - Agree with proposed plan for Year 1
- ◆ Enable growth of the database framework
 - For new data with time
 - For new sensors with time
- ◆ Include sources:
 - Actual buildings (drawings, material, etc.)
 - Examination data (drawings, material, etc.)
 - Numerical analysis
- ◆ Examine possibilities for adjusting the framework to changes in building configuration resulting from seismic strengthening or retrofit

Project Goals

- ◆ Develop visualization interface
 - Web interface, as described in presentation for architect and engineer users
 - Interface to Kajima software for presentation to clients, structural design and estimation of seismic risk
- ◆ Consider effect of damage evaluation and retrofit:
 - Add data to account for effect of retrofit
 - Add methods to evaluate the effect of retrofit based on collected data comparison

Timetable: Year 1



Next meeting to be coordinated with other Phase V projects

- Yellow Data Type Identification
- Green Data Structure Definition
- Blue Visual User Interface
- Purple Reports

Project Goals: Second Year

- ◆ Develop interface for selected Kajima software
- ◆ Conduct shaking table test to prove concept for database data entry, retrieval and visual interface
- ◆ Consider visualization for Kajima client:
 - Damage and risk visualization
 - Visualization of effects of seismic risk mitigation

Contribution to Seismic Risk Assessment and Mitigation

- ◆ Database enables collection of data pertinent to seismic risk assessment and mitigation from a large number of sensors
 - ◆ Enables simplified seismic damage assessment methods based on data fusion techniques:
 - Comparison of material strength
 - Comparison of building frequencies and modes
 - Frequency domain analysis of recorded signal with windowing
- These techniques will be implemented in Year 1

Contribution to Seismic Risk Assessment and Mitigation

- ◆ Enables interfaces to damage assessment and mitigation software
 - Use of more complex tools
 - Use of projections of damage progression based on the collected data
- ◆ Enables a Kajima client to:
 - Visualize damage in their structure
 - Visualize the effect of strengthening or other risk mitigation techniques on the quality of their structure

Communication

- ◆ To date, interaction has been fruitful:
 - Many differences resolved and agreements on future work made
 - Better understanding of Kajima requirements
- ◆ Agreed to continue sharing of data and exchange of ideas during the project
 - E-mail and Internet resources