

# Integral Risk Management in Engineering

2. November 2009

### Risk Assessment of Large Concrete Structures

Monday, 2. November 2009

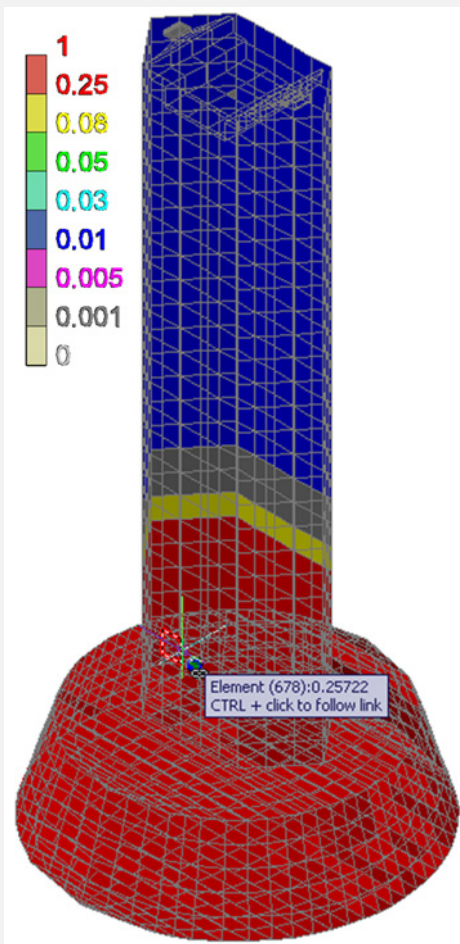
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17:00, HIL E6

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Assessment of risks of engineered systems is in general a difficult issue due to the significant uncertainties and complex interrelation between the events relating to the systems. Especially when systems are very large, the analysis of characteristics of the system performance as required in the context of risk assessment becomes numerical involving. It is important for large-scale systems to be able to manage the risk assessment models and relevant data efficiently, both from the perspective of facilitating the risk assessments and from the perspective of managing and communicating spatial data on inspection results and repair activities together with the risk assessment results. Based on ideas developed by the group of Risk and Safety at ETH Zurich in the context of indicator based risk modeling for concrete structures subject to corrosion and GIS based risk modeling concerning large-scale seismic risk management, a spatial visual integrity management platform is presented, facilitating life-cycle integrity management of large concrete structures subject to corrosion. The developed platform facilitates the storage and handling of all relevant data and information and moreover contains and manages the risk assessment models. The

probabilistic modeling utilized and implemented in the platform takes basis in a Bayesian hierarchical modeling philosophy and readily facilitates for the updating of risks as well as optimal inspection plans whenever new information about the conditions of the structure becomes available.