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Sommario/riassunto	This open access book considers the role of uncertainty in the design and development of large-scale engineering systems. The focus of the book is the safe behaviour of nuclear power plants in both routine operations and in incident situations. The book introduces various types of uncertainty and addresses the extent to which uncertainties may be reduced. The role of multiple dimensions of uncertainty is

discussed, as is the importance of modern computational techniques in handling large data sets. Modern IT also provides engineers with new tools, such as digital twins with the potential to greatly reduce cost both in design and in operations. The book focuses on both system safety and efficiency and, to do this, reference is made to the Advanced Gas-Cooled Reactor (AGR). The AGR is a mature established system through which the book elucidates various key concepts and ideas. As well as being of interest to those working in the nuclear industry, the book is likely to appeal to those working in other safety critical engineering sectors and, for example, reference is made to experiences in aviation and railway engineering. This is neither a text book nor a review, it is a primer for those seeking an introduction to modern approaches to uncertainty. .