

Preface

We used the word *active* in the title of our book, *Active System Control*, because we are actively trying to predict the future behaviour of the system, and react accordingly in order to manage the safety and continue the operation of the system being controlled.

We used the word *system* because we create a model of a system, based on an aggregate of models of its elements. It is used to try to predict the parameters of the system's behaviour.

We use the word *control* because we continually monitor the current situation and adapt the control of the system to make the best of the circumstances.

Therefore, *Active System Control* is the right title, and the abbreviation ASC will be used in the text.

In this book we briefly analyse what is required from on-board devices in order to support active system control, that is, what must be done to sustain everyday safe operation and summarise the requirements for this class of devices.

We also introduce the new concept of a safety device—the “active black box”—which might be used for aviation, transport, and nuclear and chemical plants. In the coming age of “driverless” transport, it is particularly relevant to the automotive sector to monitor the behaviour of semi-autonomous and fully autonomous vehicles carrying passengers.

Separately, and briefly, we describe the regulations in transport segments relevant to the application of existing and proposed devices. We start with an analysis of air transport because this is a well-established and reasonably well-understood domain with a relatively mature safety culture.

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Active System Control

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