This book presents a formal approach to dealing with agents and agent systems. The Z specification language is used to establish an accessible and unified formal account of agent systems and inter-agent relationships. In particular, the framework provides precise and unambiguous meanings for common concepts and terms for agent systems, allows for the description of alternative agent models and architectures, and serves as a foundation for subsequent development of increasingly refined agent concepts. The practicability of this approach is verified by applying the formal framework to three detailed case studies. The methodology presented constitutes a very significant step towards organising and structuring the diverse and disparate landscape of agent-based systems by applying formal methods to develop a defining and encompassing agent framework. The book will appeal equally to researchers, students, and professionals in industry interested in advanced applications of intelligent agents and multi-agent systems.