

1. Record Nr.	UNINA9910828280603321
Titolo	Automotive internetworking // Timo Kosch ... [et al.]
Pubbl/distr/stampa	Chichester, West Sussex, U.K. ; ; Hoboken, N.J., : Wiley, 2012
ISBN	9786613620392 1-119-94473-2 1-119-94472-4 1-280-59056-4 1-119-94510-0
Edizione	[1st ed.]
Descrizione fisica	xix, 377 p
Collana	Intelligent transportation systems
Altri autori (Persone)	KoschTimo
Disciplina	388.3/12
Soggetti	Vehicular ad hoc networks (Computer networks) Intelligent transportation systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- AUTOMOTIVE INTERNETWORKING -- Contents -- Preface -- List of Abbreviations -- 1 Automotive Internetworking: The Evolution Towards Connected and Cooperative Vehicles -- 1.1 Evolution of In-Vehicle Electronics -- 1.2 Motivation for Connected Vehicles -- 1.3 Terminology -- 1.4 Stakeholders -- 1.5 Outline of this Book -- References -- 2 Application Classifications and Requirements -- 2.1 Classification of Applications and their Implications -- 2.1.1 Driving-Related Applications -- 2.1.2 Vehicle-Related Applications -- 2.1.3 Passenger-Related Applications -- 2.2 Requirements and Overall System Properties -- 2.3 Overview on Suitable Communication Technologies -- 2.3.1 Communication Technologies -- 2.3.2 Suitability for AutoNet Applications -- 2.4 Summary -- References -- 3 System Architecture -- 3.1 Domain View of AutoNets -- 3.2 ISO/OSI Reference Model View -- 3.3 Profiling -- 3.4 Standardised Architectures -- 3.4.1 Architecture of the C2C Communication Consortium (C2C-CC) -- 3.4.2 ISO TC204 CALM Architecture -- 3.4.3 ETSI TC ITS Architecture: EN 302 655 -- 3.4.4 IEEE WAVE Architecture Featuring IEEE802.11p and IEEE1609.x Standards -- 3.5 Subsystem Architectures -- 3.5.1 Vehicle Architecture -- 3.5.2 Roadside Architecture -- 3.5.3 Infrastructure

Architecture -- 3.5.4 Mobile Device Architecture -- 3.6 Summary --
References -- 4 Applications: Functionality and Protocols -- 4.1
Foresighted Safety Case Study: Environmental Notifications -- 4.1.1
Data Collection and Individual Situation Analysis -- 4.1.2 Cooperative
Situation Analysis -- 4.1.3 Distributed Knowledge Management --
4.1.4 Individual Relevance and Interface to the Driver -- 4.1.5 Data
Security and Privacy -- 4.1.6 Reliable Estimation of the Current Driving
Condition -- 4.1.7 Communication and Information Dissemination --
4.1.8 Standardisation Issues.
4.2 Active Safety Case Study: Cooperative Collision Avoidance and
Intersection Assistance -- 4.2.1 Data Collection -- 4.2.2 Situation
Analysis and Application Logic -- 4.2.3 Knowledge Management --
4.2.4 Communication -- 4.2.5 Security and Privacy -- 4.2.6 Driver
Interaction -- 4.3 Green Driving Case Study: Traffic Lights Assistance
-- 4.3.1 Green Light Optimal Speed Advisory -- 4.3.2 Example:
TRAVOLUTION -- 4.4 Business and Convenience Case Study: Insurance
and Financial Services -- 4.4.1 Accident Management Services -- 4.4.2
Examples for Insurance and Financial Services (IFS) -- References -- 5
Application Support -- 5.1 Application Support in the AutoNet Generic
Reference Protocol Stack -- 5.2 Communication Aspects in the
Application Support -- 5.2.1 CAM: Cooperative Awareness Messages --
5.2.2 DENM: Decentralised Environmental Notification Messages -- 5.3
AutoNet Facilities -- 5.3.1 Application Plane -- 5.3.2 Information Plane
-- 5.3.3 Communication Plane -- 5.4 Implementation Issues for the
Application Support Layer -- 5.5 Summary -- References -- 6
Transport Layer -- 6.1 Transport Layer Integration in the AutoNet
Generic Reference Protocol Stack -- 6.1.1 AutoNet Transport -- 6.1.2
TCP, UDP -- 6.2 TCP in AutoNets -- 6.2.1 Congestion Control in TCP
-- 6.2.2 Impact of AutoNets -- 6.2.3 Enhancements of TCP and
Technical Requirements for AutoNet Scenarios -- 6.2.4 The MOCCA
Transport Protocol -- 6.2.5 Evaluation Results -- 6.3 Summary --
References -- 7 Networking -- 7.1 Networking Principles in the
AutoNet Generic Reference Protocol Stack -- 7.1.1 Network Layer
Functionality in AutoNets -- 7.1.2 Network Protocol Data Units -- 7.2
AutoNet Ad-Hoc Networking -- 7.2.1 AutoNet Ad-Hoc Network
Characteristics -- 7.2.2 AutoNet Ad-Hoc Network Addressing and
Routing -- 7.2.3 Beaconing -- 7.2.4 Network Utility Maximisation in
AutoNets.
7.3 AutoNet Cellular Networking -- 7.3.1 Communication Architecture
for AutoNet Cellular Networking -- 7.3.2 Deployment Strategies --
7.3.3 Interactions and Cross-Layer Optimisations -- 7.4 IPv6 and
Mobility Extensions -- 7.4.1 IPv6 -- 7.4.2 Mobility Extensions -- 7.4.3
Deployment Issues -- References -- 8 Physical Communication
Technologies -- 8.1 Wireless Networks in the AutoNet Generic
Reference Protocol Stack -- 8.2 Automotive WLAN and DSRC -- 8.2.1
Spectrum Policies -- 8.2.2 IEEE 802.11p -- 8.2.3 ETSI G5A -- 8.3
Utility-Centric Medium Access in IEEE 802.11p -- 8.3.1 Data
Differentiation -- 8.3.2 Inter-Vehicle Contention -- 8.3.3 Cross-Layer
Issues -- 8.3.4 Evaluation of Utility-Centric Medium Access -- 8.4
Technology Comparison -- 8.5 Conclusion -- References -- 9 Security
and Privacy -- 9.1 Stakes, Assets, Threats and Attacks -- 9.1.1
Stakeholders and Assets -- 9.1.2 Threats and Attacks -- 9.2
Challenges and Requirements -- 9.3 AutoNet Security Architecture and
Management -- 9.4 Security Services -- 9.4.1 Cryptographic
Mechanisms -- 9.4.2 Digital Signatures -- 9.5 Certification -- 9.5.1
Trust -- 9.5.2 Trusted Third Platforms: Certificate Authorities -- 9.5.3
Certificate Generation and Distribution -- 9.5.4 Certificate Revocation
-- 9.6 Securing Vehicles -- 9.7 Secure Communication -- 9.7.1 Secure

Messaging -- 9.7.2 Secure Routing and Forwarding -- 9.7.3 Secure Group Communication -- 9.7.4 Plausibility Checks -- 9.8 Privacy -- 9.8.1 Secret Information -- 9.9 Conclusion -- References -- 10 System Management -- 10.1 System Management in the AutoNet Generic Reference Protocol Stack -- 10.2 Functional Management Building Blocks -- 10.3 Selected Management Issues of an AutoNet Station -- 10.3.1 Cost/Benefit Management -- 10.3.2 Congestion Control -- 10.3.3 Mobility Management -- 10.3.4 TCP Management. 10.4 Implementation Issues of the Management Layer -- 10.5 Summary -- References -- 11 Research Methodologies -- 11.1 Early Activities to Investigate AutoNets -- 11.1.1 Activities at the University of Duisburg -- 11.1.2 Activities at the Ohio State University -- 11.2 Methodologies -- 11.2.1 Model Domains for AutoNets -- 11.2.2 Dependency Examples -- 11.3 Simulation Methodology -- 11.3.1 Communication Network Simulation -- 11.3.2 Traffic Simulation -- 11.3.3 Implementation Issues -- 11.4 Field Operational Testing Methodology -- 11.4.1 Applications and Requirements -- 11.4.2 System Architecture -- 11.4.3 Trials -- 11.4.4 Analysis -- 11.5 Summary -- References -- 12 Markets -- 12.1 Current Market Developments -- 12.1.1 Technological Push -- 12.1.2 Economic Pull -- 12.1.3 Stakeholder Analysis -- 12.2 Challenges -- 12.2.1 Harmonisation and Standardisation -- 12.2.2 Life Cycle -- 12.2.3 Costs and Revenues in an Emerging Business Ecosystem -- 12.2.4 Customer Acceptance -- 12.3 Driving the Emergence of a Coherent Business Ecosystem -- 12.3.1 Strategies for the Development of a Modular Business Ecosystem -- 12.3.2 Early Examples of Telematic Business Ecosystems -- 12.4 Summary -- References -- 13 Impact and Future Projections -- A Appendix -- A.1 Standardisation Bodies for AutoNets -- A.1.1 ETSI -- A.1.2 CEN -- A.1.3 ISO -- A.1.4 IETF -- A.1.5 IEEE -- A.1.6 Car2Car Communication Consortium -- A.2 Research Projects on AutoNets -- A.2.1 Early Activities -- A.2.2 The eSafety Initiative -- A.2.3 COMeSafety -- A.2.4 COOPERS -- A.2.5 CVIS -- A.2.6 SAFESPOT -- A.2.7 SeVeCom -- A.2.8 GeoNet -- A.2.9 FRAME, E-FRAME -- A.2.10 VII and IntelliDrive -- A.2.11 Travolution -- A.2.12 Aktiv -- A.2.13 PRE-DRIVE C2X -- A.2.14 simTD -- References -- Index.
