

Index

Table of Contents

Table of Contents.....	i
List of Figures.....	iv
Executive summary.....	1
1 Construction equipment telematics solutions.....	2
1.1 Introduction to CE telematics.....	2
1.2 CE telematics infrastructure.....	3
1.2.1 CE segment.....	4
1.2.2 GNSS segment.....	6
1.2.3 Network segment.....	6
1.2.4 Backoffice segment.....	8
1.2.5 OEM/dealer segment.....	10
1.3 Construction equipment management.....	10
1.3.1 Machine location tracking and status monitoring.....	11
1.3.2 Security tracking and intervention.....	12
1.3.3 Remote diagnostics, preventive maintenance and machine health prognostics.....	12
1.4 Equipment operator management.....	13
1.4.1 Collection of operator-related data.....	14
1.4.2 Interaction with operators in the field.....	14
1.4.3 Video-based operator monitoring.....	15
1.5 Worksite management.....	15
1.5.1 Worksite optimisation and site reporting.....	16
1.5.2 Integration with auxiliary systems.....	16
1.6 Business models.....	17
2 Market forecasts and trends.....	20
2.1 Market analysis.....	20
2.1.1 The global construction equipment market.....	21
2.1.2 The installed base of construction equipment OEM telematics systems.....	23
2.1.3 Construction equipment OEM telematics vendor market shares.....	24

- 2.1.4 Variations on the global CE telematics market 25
- 2.2 Market drivers and barriers..... 27
 - 2.2.1 Macroeconomic environment 27
 - 2.2.2 Regulatory environment 29
 - 2.2.3 Competitive environment 30
 - 2.2.4 Technology environment 31
- 2.3 Value chain analysis 32
 - 2.3.1 Construction equipment industry players 32
 - 2.3.2 Telematics industry players..... 38
 - 2.3.3 Telecom industry players 48
 - 2.3.4 IT industry players 56
- 2.4 Future industry trends 58
- 3 Company profiles..... 60
 - 3.1 Caterpillar 60
 - 3.2 CNH Industrial 67
 - 3.3 Deere & Company 71
 - 3.4 Doosan 78
 - 3.5 Hitachi Construction Machinery 84
 - 3.6 Hyundai Construction Equipment 92
 - 3.7 JCB 97
 - 3.8 Komatsu..... 103
 - 3.9 Liebherr..... 110
 - 3.10 Volvo CE 113
 - 3.11 Other construction equipment OEMs..... 120
 - 3.11.1 Bell Equipment 120
 - 3.11.2 BOMAG 122
 - 3.11.3 JLG Industries 124
 - 3.11.4 Kobelco 125
 - 3.11.5 Kubota 127
 - 3.11.6 Link-Belt and LBX (Sumitomo) 128
 - 3.11.7 LiuGong..... 131
 - 3.11.8 Mahindra & Mahindra..... 132

3.11.9 Manitowoc 132
3.11.10 Mecalac 134
3.11.11 SANY 134
3.11.12 Tadano 135
3.11.13 Takeuchi 136
3.11.14 Terex 137
3.11.15 Wacker Neuson 141
Glossary 142

Index

List of Figures

Figure 1.1: Construction equipment telematics infrastructure overview 3

Figure 1.2: Examples of construction equipment telematics hardware 5

Figure 1.3: Top mobile network operators by subscriber base (World Q1-2017)..... 7

Figure 1.4: Schematic construction equipment telematics backoffice segment..... 9

Figure 2.1: Sales of construction equipment (World 2010–2017) 20

Figure 2.2: Construction equipment sales by region (World 2017) 21

Figure 2.3: Examples of construction equipment types 22

Figure 2.4: Leading construction equipment manufacturers by market share (2016–2017) ... 23

Figure 2.5: Construction equipment OEM telematics systems by region (World 2017–2022) 24

Figure 2.6: Top-10 construction equipment OEMs by telematics units (World Q4-2017) 25

Figure 2.7: Construction spending by market (World 2017) 28

Figure 2.8: Mixed fleet telematics example enabled by ISO 15143-3 (AEMP 2.0) standard.... 34

Figure 2.9: Construction equipment OEM systems and associated telematics partners 37

Figure 2.10: Leica MCH100 Machine Monitoring device used for iCON telematics 40

Figure 2.11: Overview of the EquipmentShare Track mixed-fleet solution 44

Figure 2.12: Mobile operators by M2M subscriber base (World Q2-2017) 48

Figure 2.13: ORBCOMM’s rugged PT 7000 device for construction equipment telematics.... 50

Figure 2.14: ORBCOMM’s FleetEdge web application for heavy equipment management.... 52

Figure 2.15: Overview of AT&T Asset Management – Operations Center..... 53

Figure 2.16: Hardware used for AT&T Asset Management for equipment and machinery 55

Figure 3.1: Cat Product Link remote monitoring hardware device..... 62

Figure 3.2: VisionLink Unified Fleet interface 63

Figure 3.3: CASE SiteWatch web-based backoffice interface..... 68

Figure 3.4: Overview of John Deere WorkSight Technologies including JDLINK..... 72

Figure 3.5: JDLINK Dashboard web-based telematics user interface..... 73

Figure 3.6: Overview of John Deere’s dual approach to machine health monitoring..... 76

Figure 3.7: Schematic overview and functionality of DoosanCONNECT 80

Figure 3.8: Schematic overview of Hitachi Construction Machinery’s Global e-Service..... 85

Figure 3.9: Hitachi Construction Machinery’s new ConSite Pocket app..... 87

Figure 3.10: Number of machines with ConSite contracts (2014–2018)..... 90

Figure 3.11: Hitachi Construction Machinery’s Solution Linkage ICT/IoT-based solutions 91

Figure 3.12: Hyundai Construction Equipment’s Hi-MATE user interface 94

Figure 3.13: Hi-MATE Android app..... 95

Figure 3.14: JCB LiveLink machine capability matrix..... 99

Figure 3.15: Schematic overview of JCB LiveLink options for various equipment 100

Figure 3.16: Models and features of Komatsu’s remote monitoring system KOMTRAX..... 104

Figure 3.17: KOMTRAX fleet management interface..... 105

Figure 3.18: Schematic overview of Komatsu’s KOMTRAX machine tracking system 106

Figure 3.19: Installed base of Komatsu’s KOMTRAX (2011–2018) 109

Figure 3.20: Schematic overview of Liebherr’s LiDAT fleet & plant management system..... 111

Figure 3.21: LiDAT packages and features 112

Figure 3.22: Example of Volvo CE’s Fuel Report..... 115

Figure 3.23: Bell Equipment’s Fleetm@tic fleet management interface 121

Figure 3.24: BOMAG TELEMATIC web interface and iOS app interface 123

Figure 3.25: JLG’s ClearSky fleet management platform interfaces 125

Figure 3.26: Schematic overview of Kobelco’s KOMEXS remote monitoring system 126

Figure 3.27: Link-Belt Telematics portal – A1A Software’s iCraneTrax 129

Figure 3.28: LBX Company’s RemoteCARE telematics app 130

Figure 3.29: Manitowoc’s CraneSTAR powered by A1A Software’s iCraneTrax..... 133

Figure 3.30: Schematic overview of Tadano’s Hello-Net..... 135

Figure 3.31: Customised web portal for Terex powered by ORBCOMM 138

Figure 3.32: Terex Fuchs Telematics system powered by Proemion 139

Figure 3.33: Genie’s telematics-ready connector and telematics device connector 140