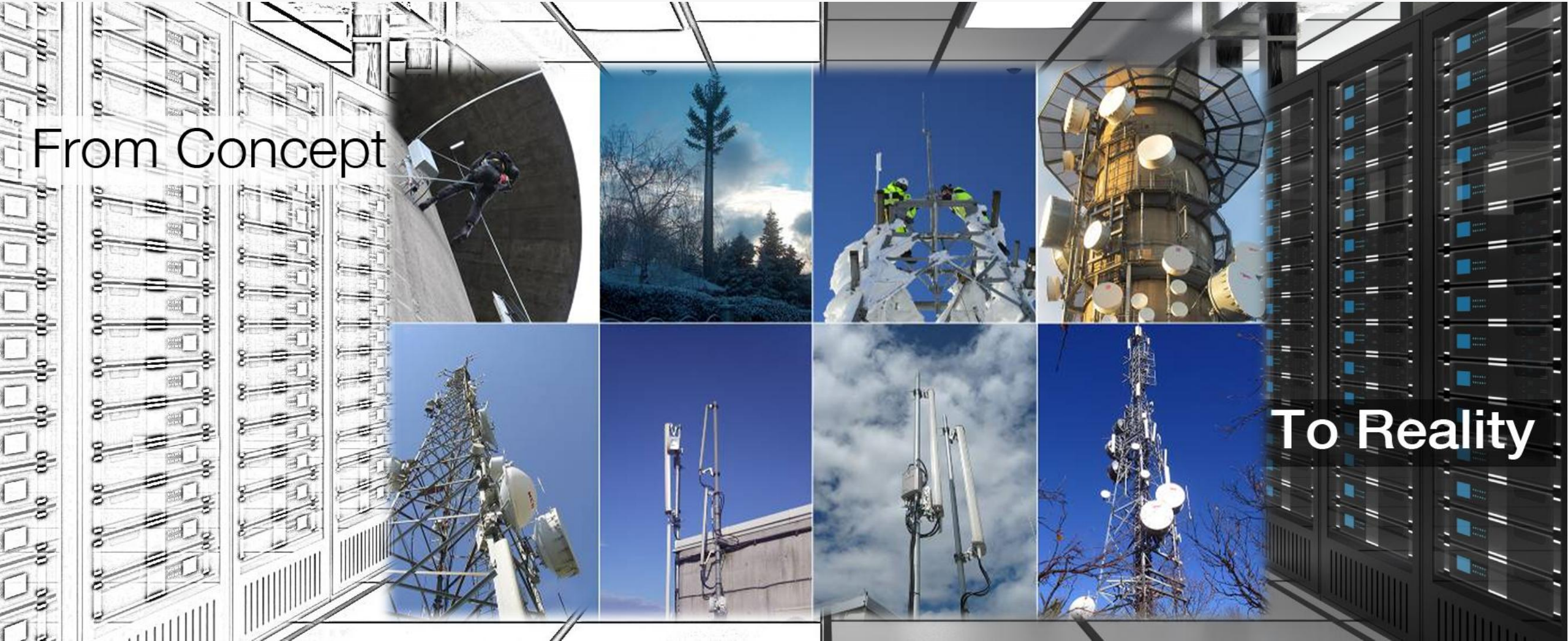


References

From Concept



To Reality

Overview of References

MOBILE TELEPHONY

- **Over 4000 sites** for operators in Norway and Netherlands (Telenor, Netcom, Direktoratet for nødkommunikasjon (dNk), Tele2, T Mobile Netherlands) – design, civil works where needed, installation, commissioning and integration
- **Over 900 sites** for operators in region (Montenegro, Bosnia and Herzegovina, Bulgaria, Turkey) – design, civil works, installation, commissioning and integration
- **Over 3700 sites** for operators in Serbia (Telekom, Telenor, VIP Mobile) – design, civil works, installation, commissioning and integration

TRANSMISSION SYSTEMS

- **Over 4000 MW hops** including several backbone rings for operators in Serbia, region, Norway – design, installation, commissioning and integration

FIXED WIRELESS COMMUNICATIONS, FIXED BROADBAND TELEPHONY, BROADCASTING NETWORKS

- **Over 500 sites** for clients in Serbia and worldwide (Czech Republic, Poland, Ireland, Sri Lanka) – design, civil works, installation, commissioning and integration



Worldwide references – Mobile Telephony

NORWAY

Operator	Projects	Number of sites/ hops	Scope of services
Telenor Norge AS, Norway	BRAIN RAN “SWAP Project”	102 sites	Technical Site Survey Reports, Site Design, Installation, Commissioning and integration, DT/WT TEMS measurements, RAN planning, Site acquisition
	LTE Roll-out	200+ sites	
	Radiolinje	50+ hops (MW links)	
	“ON Time” engagement (LTE1800, Wintersport)	1000+ sites	
	BID0 and BID2	650+ sites with max capacity of 60 sites per month	
Norkring	“ON Time” engagement (DAB)	40+ sites	Equipment installation
TeliaSonera Norge AS/ NetCom, Norway	Huawei swap – NeMo Project 2G/3G swap and new 4G	650+ sites with max capacity of 60 sites per month	Technical Site Survey Reports, Site Design, Installation, Commissioning and integration, WT TEMS measurements
	BSC & RNC expansion	10+ sites	
	4G Rollout	450+ sites	
	Rollout (new sites)	30+ sites	
	B.U.L.L.	250+ sites	
Mobile Norway/ Tele2	Huawei 4G pilot in Drammen	40+ sites	Technical Site Survey Reports, Installation, Commissioning and integration
	Tunnels Project		
dNK	Nodnett	640+ sites with max capacity of 35 sites per month	Design, Site preparation and equipment installation, Commissioning and integration in Phase 2 (South Norway) and in Phase 5 (North Norway)
	Nodnett expansion	250+ sites	Design, Site preparation and equipment installation, Commissioning and integration all over the Norway
Huawei/ Altibox	Green Mountain, Oslo Stavanger, 2015-2017	34 network cabinets with IPTV equipment	Technical Site Survey Reports, Site Design, Installation and Commissioning
	Norway Altibox New Horizon Hybrid Video Project	3000+ connections	

Operator	Vendor	Projects	Number of sites/ hops	Scope of work	Year / Period
UNITED KINGDOM					
O2	NSN	London Olympic Park – UMTS RAN Modeling		Preparation for global sport events in 2012, Final RAN coverage and capacity validation	2011
O2	NSN	Radio planning & Design verification		HAMPDEN PARK Glasgow and RICOH ARENA Coventry - radio planning and design verification	2011
NETHERLANDS					
T Mobile	Huawei	Infrastructure Modernization Project (InfraMod)	12 sites	Swap of the equipment and antenna system, commissioning and integration	2015
T Mobile	Huawei	SRAN Project (SWAP of RAN)	25 sites	Swap of the equipment, commissioning and integration	2015

Detailed references

WORLD – WIRELESS COMMUNICATIONS

FIXED WIRELESS COMMUNICATIONS - WORLD WIDE

Operator	Customer	Vendor	Projects	Number of sites	Scope of work
Santel Sri Lanka	Airspan	Airspan	WLL CDMA Network Rollout	23 sites	supervision of civil works, installation, commissioning, network integration
Aliatel Czech Republic	Airspan	Airspan	WLL CDMA Network Rollout	18 sites	commissioning, network integration
Telebeskid Poland	Airspan	Airspan	WLL CDMA Network Rollout	2 sites	installation, commissioning, troubleshooting, network optimization, CPE installation
Eircom Ireland	Airspan	Airspan	WLL CDMA Network Rollout	31 sites	installation, commissioning, network integration

Detailed references

REGION – MOBILE TELEPHONY, TRANSMISSION SYSTEMS, VARIOUS

MOBILE TELEPHONY

Operator	Customer	Vendor	Project	Number of sites	Scope of work	Year / Period
Aria, Turkey	Ericsson	Ericsson	Aria GSM Network Rollout	130	site acquisition and design, civil works and installation supervision	2000-2001
Bulgarian Telecommunications Company	Ericsson	Ericsson	BTC GSM Network Rollout	250	RNP verification and update	2005
M:Tel Montenegro	M:Tel Montenegro	Ericsson	M:Tel GSM/UMTS Network Rollout	200	design, civil works, installation, commissioning	2007-2016
M:Tel Montenegro	Ericsson	Ericsson	M:Tel GSM/UMTS Network Modernization	35	design, civil works, swap of the equipment, commissioning	2014
Telenor Montenegro	Alcatel-Lucent	Alcatel-Lucent	M:Tel LTE Network Pilot	5	design, civil works, installation, commissioning	2014
M:Tel Bosnia and Herzegovina	M:Tel B&H	Siemens	M:Tel GSM/UMTS Network Rollout	40	design, civil works, installation, commissioning	2007-2008
Eronet Bosnia & Herzegovina	Ericsson	Ericsson	Eronet GSM/UMTS Network Rollout	12	installation, commissioning	2012-2013
Eronet Bosnia & Herzegovina	Unis Telekom	Ericsson	Eronet GSM/UMTS Network Rollout	151	installation, commissioning	2012-2015

TRANSMISSION SYSTEMS

Operator	Customer	Vendor (Equipment)	Projects	Number of hops	Scope of work	Year / Period
M:Tel Montenegro	M:Tel Montenegro	Ericsson - Marcony (Long Haul)	M:Tel Montenegro MW Backbone Network Rollout	30	design, installation, commissioning	2007-2008
M:Tel Montenegro	M:Tel Montenegro	Ericsson (ML E, TN)	M:Tel Montenegro MW Access Network Rollout	95	design, installation, commissioning	2007-2013
M:Tel Montenegro	M:Tel Montenegro	NEC Pasolink	M:Tel Montenegro MW Access Network Rollout	100	design, installation, commissioning	2016
Telenor Montenegro	Telenor Montenegro	NEC Pasolink	M:Tel Montenegro MW Access Network Rollout	30	design, installation, commissioning	2016
M:Tel Montenegro	M:Tel Montenegro	NERA (PDH)	M:Tel Montenegro Access Network Modernization (Swap)	32	design, installation, commissioning	2014
M:Tel Bosnia & Herzegovina	M:Tel B&H	DMC (ML 18, 23)	M:Tel B&H MW Access Network Rollout	10	design, installation, commissioning	2007

VARIOUS REFERENCES

Field	Customer	Projects	Scope of work	Year / Period
Power Supply Systems	Elektroprivreda Crne Gore	Underwater 20/35 kV conductor cable in lake Skadar	civil works, installation	2008
Power Supply Systems	Elektroprivreda Crne Gore	35 kV power line on Cetinje	civil works, installation	2008
Power Supply Systems	Elektroprivreda Crne Gore	10 kV distribution network in Bar	civil works, installation	2008

Detailed references

SERBIA – MOBILE TELEPHONY

Operator	Customer	Vendor	Project	Number of sites	Scope of work	Year / Period
Telekom Srbija	Telekom Srbija	Glenayre	Paging System Rollout	41	design, civil works, installation, commissioning	1995
Telekom Srbija	Ericsson	Ericsson	MTS GSM Network Rollout	120	design, civil works, installation, commissioning	1998-2000
Telekom Srbija	Telekom Srbija	Ericsson	MTS GSM/UMTS Network Rollout	970	design, civil works, installation, commissioning	2000-2016
Telekom Srbija	Ericsson	Ericsson	MTS GSM/UMTS Network Rollout	103	design, civil works, installation, commissioning	2005-2006
Telekom Srbija	Telekom Srbija	Siemens	MTS GSM/UMTS Network Rollout	35	installation	2005-2006
Telekom Srbija	Telekom Srbija	LGC Wireless	MTS GSM/UMTS Network In Building Rollout	4	indoor installation, commissioning	2007-2008
Telekom Srbija	Ericsson	Ericsson	MTS GSM/UMTS/LTE Network Rollout	225	installation, commissioning	2010-2015
Telekom Srbija	Ericsson	Ericsson	MTS GSM/UMTS/LTE Network Maintenance	1400	maintenance	2010-2016
Telekom Srbija	Ericsson	Ericsson	MTS GSM/UMTS Network Modernization	150	design, civil works, swap of the equipment, commissioning	2012-2015
Telenor (Mobtel)	Telenor (Mobtel)	Ericsson	063 Mobtel Analogue Mobile Network, NMT 900	30	design, civil works, installation, commissioning	1995-1996
Telenor (Mobtel)	Telenor (Mobtel)		Center for Supervision of NMT Network		design, implementation	1995-1996
Telenor (Mobtel)	Telenor (Mobtel)	Ericsson	063 Mobtel GSM Network Rollout	224	civil works, installation, commissioning	1996 -1998
Telenor	Telenor	Huawei	Telenor GSM/UMTS Network Modernization Pilot	12	design, civil works, swap of the equipment, commissioning	2011
Telenor	Huawei	Huawei	Telenor GSM/UMTS Network Modernization	1700	maintenance	2011-2012
Telenor	Huawei	Huawei	Telenor GSM/UMTS Network Modernization	700	drive testing and optimization of the network	2011-2012
Telenor	Telenor	Huawei	Telenor GSM/UMTS/LTE Network Rollout	500	civil works, installation	2013-2016
Vip Mobile	Vip Mobile	ALU, Nortel, NSN	VIP Mobile GSM/UMTS Network Rollout	950	site acquisition, design, civil works, installation, commissioning	2007-2012
Vip Mobile	Vip Mobile	Alcatel-Lucent	VIP Mobile UMTS Network Swap	132	design, civil works, swap of the equipment, commissioning	2009
Vip Mobile	ZTE	ZTE	VIP Mobile UMTS Network Pilot	10	design, civil works, installation, commissioning	2009
Vip Mobile	Vip Mobile	ALU, NSN	VIP Mobile Measurement Campaign - Benchmark Drive Testing	4200	drive testing of the network, comparison of operators	2009-2011
Vip Mobile	NSN	NSN	VIP Mobile UMTS Network Swap	129	design, civil works, swap of the equipment, commissioning	2010
Vip Mobile	NSN	NSN	VIP Mobile UMTS Network Rollout	88	design, civil works, installation, commissioning	2012
Vip Mobile	NSN	NSN	VIP Mobile GSM Network Swap	56	design, civil works, swap of the equipment, commissioning	2013

Detailed references

SERBIA – TRANSMISSION SYSTEMS

Operator	Customer	Vendor (Equipment)	Project	Number of hops	Scope of work	Year / Period
Telekom Srbija	Telekom Srbija	Ericsson (ML C, E, TN)	Telekom Srbija MW Access Network Rollout	420	design, installation, commissioning	1998-2015
Telekom Srbija	Telekom Srbija	Various HDSL vendors (Alcatel, Ascom, Siemens, Ericsson)	Telekom Srbija Access Network Rollout	300	design, installation, commissioning	1998-2005
Telekom Srbija	Telekom Srbija	IMTEL (RRU 13, 18, 23)	Telekom Srbija MW Access Network Rollout	304	design, installation, commissioning	1999-2006
Telekom Srbija	Telekom Srbija	Teletra (HT12)	Telekom Srbija MW Backbone Network Rollout	9	optimization	2002
Telekom Srbija	Telekom Srbija	Siemens (DRS140)	Telekom Srbija MW Backbone Network Rollout	6	design, installation, commissioning	2003
Telekom Srbija	Telekom Srbija	IRITEL (ODS155)	Telekom Srbija Fiber Optics Backbone Network Rollout	5	design	2005
Telekom Srbija	Telekom Srbija	NEC (Pasolink NEO, iPasolink, V4)	Telekom Srbija MW Access Network Rollout	800	design, installation, commissioning	2005-2015
Telekom Srbija	Telekom Srbija	Nera (SDH)	Telekom Srbija MW Backbone Network Rollout	3	design, installation, commissioning	2009-2010
Telekom Srbija	Telekom Srbija	NEC (C-node)	Telekom Srbija Fiber Optics Backbone Network Rollout	20	design, installation, commissioning	2009-2010
Telekom Srbija	Telekom Srbija	NEC (Pasolink)	Telekom Srbija MW Access Network Optimization	40	optimization	2013-2015
Telenor (Mobtel)	Telenor (Mobtel)	Ericsson (ML C, E)	Mobtel MW Access Network Rollout	186	design, installation, commissioning	1995-1998
Telenor (Mobtel)	Telenor (Mobtel)	BOSCH (STM1 155 Mb/s)	Mobtel MW Backbone Network Rollout	6	design, installation, commissioning	1997-1998
Telenor	Telenor	Huawei	Telenor MW Access Network Rollout	50	design, installation, commissioning	2013-2015
VIP Mobile	VIP Mobile	Siemens, NSN (SRAL XD)	VIP Mobile MW Access Network Rollout	690	design, installation, commissioning	2007-2011
VIP Mobile	VIP Mobile	Siemens, NSN (SRA4, Surpass 7030)	VIP Mobile MW Backbone Network Rollout	35	design, installation, commissioning	2008-2009
VIP Mobile	ZTE	ZTE	VIP Mobile UMTS Network Pilot	10	design, installation, commissioning	2009
VIP Mobile	VIP Mobile	Siemens, NSN (SRAL XD)	VIP Mobile MW Access Network Modernization	710	optimization	2012
VIP Mobile	VIP Mobile	Ericsson (TN)	VIP Mobile MW Access Network Modernization (Swap)	325	design, installation, commissioning	2013

Detailed references

SERBIA – FIXED WIRELESS COMMUNICATIONS, FIXED BROADBAND TELEPHONY, BROADCASTING NETWORKS

FIXED WIRELESS COMMUNICATIONS

Operator	Customer	Vendor	Project	Number of sites	Scope of work	Year / Period
Telekom Srbija	Telekom Srbija	Alvarion	WLL eMGW Network Rollout in Southwestern Serbia (20.000 subscribers)	32 sites	site acquisition, design, civil works, installation, commissioning, subscriber equipment installation	2003-2004
Telekom Srbija	Telekom Srbija	Alvarion	WLL eMGW Network Maintenance	32 sites	maintenance	2003-2012
Telekom Srbija	Huawei	Huawei	CDMA Network Pilot	10 sites	design, civil works, installation, commissioning	2006

FIXED BROADBAND TELEPHONY

Operator	Customer	Vendor	Project	Number of sites	Scope of work	Year / Period
Telekom Srbija	Alcatel-Lucent	Alcatel-Lucent	FTTN network in Belgrade and Central Serbia (MSAN and DSLAM)	142 sites	design, installation, commissioning	2011
Telekom Srbija	Alcatel-Lucent	Alcatel-Lucent	FTTB network in Belgrade and Central Serbia (mini IPAN)	143 sites	design, installation, commissioning	2012
Telekom Srbija	Alcatel-Lucent	Alcatel-Lucent	DWDM optical rings (OR13, OR14, OR17 and OR18)	4 rings	design, installation, commissioning	2011-2012
Vip Mobile	Alcatel-Lucent	Alcatel-Lucent	DWDM	12 sites	installation and commissioning	2012

BROADCASTING NETWORKS

End user	Customer	Vendor	Project	Number of sites	Scope of work	Year / Period
Ministry of Trade, Tourism and Telecommunications	Ministry of Trade, Tourism and Telecommunications		Design and Feasibility study for Radio coverage with digital TV DVB-T2 signal on the territory of the Republic of Serbia		design and economic analysis	2011
Ministry of Trade, Tourism and Telecommunications	Ministry of Trade, Tourism and Telecommunications		Design of DVB-T2 transmission network infrastructure	25 sites	design	2011-2012
Ministry of Trade, Tourism and Telecommunications	European Commission	Rohde Schwarz	Installation of 67 DVB-T2 Transmitters	67 sites	design, installation, commissioning, troubleshooting	2012

Detailed references

SERBIA – INFORMATION TECHNOLOGIES

INFORMATION TECHNOLOGIES				
Customer	Project	Number of ports / sites	Scope of work	Year / Period
Ministry of Justice, Republic of Serbia	LAN in seven cities in Serbia	3000 ports	design, installation	1997-1999
Srbijavode	LAN and telephone network for Srbijavode business building	200 ports	design, installation	2004
Konsing Group	LAN and telephone network for Konsing business building, Surcinski put 1a, Belgrade	250 ports	design, installation, maintenance	2005
City of Belgrade	Reconstruction of „Stari Dvor“ building		design of LAN & telephone network	2006-2007
Telekom Srbija	WLAN - MTS064	10 sites	design	2007-2008
M:TEL Montenegro	Montenegro WiMAX Network Design	15 sites	design	2008
Konsing Group	LAN and telephone network for Konsing business building, Surcinski put 13, Belgrade	350 ports	design, installation, maintenance	2008
PRESS Publishing Group	VPN, LAN, VoIP, IP Video Surveillance in Press printing house	400 ports	design, installation, maintenance	2009
Microsoft Software Ltd	LAN and Server room Infrastructure, Microsoft office Belgrade	730 ports	design, installation	2012, 2014

VARIOUS REFERENCES

Field	Customer	Vendor	Project	Number of sites	Scope of work	Year / Period
Power Supply Systems	Telekom Srbija, Telenor, VIP Mobile	various	LV and MV Power Supply Systems for mobile network sites	2300+ sites	design, installation	1995-2015
Lightning Protection Systems	Telekom Srbija, Telenor, VIP Mobile	Franklin France, various	Lightning protection of mobile network sites	2300+ sites	design, installation	1995-2015
Navigation Systems	Federal Air Traffic Control Authority (FATCA), Belgrade, Serbia	Park Air Electronics, United Kingdom	Digital Ground-to-air Radio Communication System		system design	2002-2003
Navigation Systems	Federal Air Traffic Control Authority (FATCA), Belgrade, Serbia	Alcatel	PDH radio system for radar and voice networking		installation, commissioning	2002-2003
Consulting	Ministry of Capital Investments and City of Belgrade		Reconstruction of TV Tower on Avala		Consulting for design of: telecommunication technology concept, system for video surveillance, system for access control, installation of telecommunication and computer network	2006-2007