ANITE NETWORK TESTING
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DIRECTOR, SOFTWARE ENGINEERING
WE ENABLE OUR CUSTOMER TO IMPROVE
OPERATIONAL EFFICIENCY, WIRELESS NETWORK
QUALITY AND END USER EXPERIENCE

Customers can align test & measurement investment to scale with business growth

Serves wireless ecosystem
Mobile operators
Network equipment manufacturers
Chipset vendors
Regulatory bodies
Service contractors

Employs 250 employees globally. Main sites:
Oulu Finland, Paris France, Singapore, Dallas Texas USA, Forest & Chantilly Virginia USA

Anite is now part of Keysight Technologies
“Anite’s Nemo products are used by more than 400 mobile operators, network equipment manufacturers, service contractors and regulatory bodies from over 100 countries worldwide”
FOR THE WIRELESS NETWORK LIFECYCLE
AIR INTERFACE MEASUREMENT, ANALYTICS & AUTOMATION SOLUTIONS

Nemo Outdoor
Nemo Handy
Nemo FSR1

Nemo Outdoor
Nemo Handy
Nemo FSR1

Nemo Invex II
Nemo Walker Air
Nemo FSR1

Nemo CEM Solution
Nemo IBC Meter
Nemo Autonomous

Network Rollout
Network Optimization
Network Benchmarking
Network Monitoring

Nemo Cloud
Nemo Cloud Commander

Control & Monitoring

Nemo Xynergy
Nemo WindCather
Nemo Analyze

Post processing and Network analytics

© 2016 | Page 4
Features

- LTE & LTE-A (Cat 6-9, VoLTE), HSPA+, DC, WCDMA, GSM, 1xEVDO, CDMA, iDEN, WiMAX, TD-SCDMA, and TETRA networks.
- Wide application testing
- Connects up to 8 terminals to one laptop
- Supports more than 280 test terminals and scanners

Use case

- Drive test solution for measurement of air interface parameters in wireless networks
Use case

✓ Discreet handheld measurements of wireless networks parameters
  ✓ Measures real time application level as well as deep network level parameters
  ✓ For android smartphones and tablets

Features

✓ GSM/WCDMA/HSPA/Wi-Fi/LTE/LTE-A (Volte, Cat 6/9)
✓ Wide application testing
✓ Real-time voice quality testing, POLQA and PESQ
✓ Forcing commands for system, band, preferred carrier lock, SC, channel and PCI lock for selected devices
✓ Indoor map with markers and geodetic coordinates
✓ Live outdoor map with base station overlay
Use case

- Accurate, reliable high-speed measurements of wireless networks across multiple RF bands and technologies

Features

- LTE, WCDMA, GSM, CDMA, TD-SCDMA, TD LTE, FDD LTE and EVDO, LTE MIMO measurements
- Two plug-in modular RF down converters (DC)
- DC cards in many frequency band configurations
- Wide selection of frequency bands in a single receiver
- DC cards can be quickly and easily changed in the field
Features

- LTE & LTE-A (Cat 6-9, Volte), HSPA+ DC, WCDMA, GSM, 1xEVDO, CDMA, iDEN, WiMAX, TD-SCDMA, and TETRA networks.
- Supports up-to 50 test devices
- ~50% power reduction per test device
- Longer, more reliable uninterrupted measurements
- Wireless connectivity to management PC
- Built-in KVM (keyboard, video, and mouse).
- Embedded lighting enables efficient work even at night time

Use case

- Comparing / benchmarking multiple wireless networks & technologies simultaneously
  - Installed in car
  - Capacity of system enables all measurements to be done in one drive
  - Accurate, easy to install & use, power efficient
NEMO WALKER AIR

Use case
✓ Carry-on solution for comparing / benchmarking multiple wireless networks & technologies simultaneously

Features
✓ GSM/WCDMA/HSPA/Wi-Fi/LTE/LTE-A (Volte, Cat 6/9)
✓ Wide application testing
✓ Real-time voice quality testing, POLQA and PESQ
✓ Tablet for centralized control of up to six devices and a portable scanner
✓ Log files can be uploaded to FTP/HTTP server or collected manually from the devices
✓ USB battery pack ensures uninterrupted measurements without external power source
NEMO IN-BUILDING COVERAGE METER

Use case

✓ Handheld solution for easy on-site measurement and verification of wireless network coverage

Features

✓ Runs simple test indicating graphically status
✓ Unlike crowdsourced / free applications > gives also deep network level parameters
✓ Instantly showing network performance
✓ Automatically reporting data back to the operator’s network planning team
✓ Possibility to use floor plans to pinpoint location of the test
✓ All data can be sent / uploaded to central server or customer as report
Use case
- Un-attended measurements of wireless networks
- Enables 24/7 measurements without the cost of staff
- Continuous benchmarking and measurements, collection of statistics

Features
- Supports GSM/WCDMA/HSPA/HSPA+/LTE/WiFi
- Can be installed anywhere in any moving vehicle or in a fixed hotspot location
- Remotely manageable autonomous data collection with up to 4 measurement devices
- Voice and data Coverage, Quality, Voice, ftp, htp, applications
Use case

- Client (device) server solution measuring how customers perceive the quality of mobile service usage / how well applications work (QoE)

Features

- Works on commercial devices
- KPIs computed on the phone
- Merge of technical and customer based information
- Fully configurable Over the Air (OTA)
- Anonymous and controlled by the user
- Data visually available in dashboards and reports
NEMO CLOUD

Use case

✓ Centralized, web-based service for the remote control and management of test and measurement fleets

✓ Connects Nemo products, measurement and analysis processes, various data feeds into one unique end-to-end solution
  ✓ Enables streamlined operations and OPEX savings

Features

✓ Online access provides real-time control and monitoring of measurement product fleets

✓ Improved responsiveness of measurement projects in the field

✓ Online visibility to test data

✓ Centralized control and product upgrade

✓ Online license and inventory management
Use case

✓ Platform for central control and monitoring of Nemo measurement equipment and related measurement work

Features

✓ Near real-time status and configuration check
✓ Spot problems and reconfigure quickly
✓ Near real-time location tracking
✓ Single user is able to monitor and manage numerous Nemo measurement kits on the field
Use case

✓ Desktop based solution for analyzing data from Nemo products

Features

✓ Powerful post-processing analysis, troubleshooting and statistical reporting based on data from Nemo tools
✓ Innovative, low-maintenance database engine designed and optimized specifically for high-performance post-processing of drive test data
✓ Provides technology- and task-specific Key Performance Indicators (KPIs)
✓ Views with cutting-edge data visualization
NEMO WINDCATCHER

Use case
- Multi-vendor, feature rich desktop based post-processing solution that provides deeper network insight utilized for network optimization, network benchmarking and accelerate Network Acceptance rollouts

Features
- Supports all major drive test data formats
- LTE FDD/TDD, GSM/UMTS/HSPA+, CDMA/EVDO, WiMAX, iDEN, WiFi
- Provides layer 3 drilldown, PCAP (TCP/IP, SIP, RTP) and layer 2/layer 1 message extraction
- Features include: site/cluster/system acceptance, online maps, user defined events/reports, delta analysis, troubleshooting metrics, call trace analysis
- Modules include: Automation, VoLTE, PTT, DAS and Small Cell Module, Carrier Aggregation and Call Trace
Use case

✓ Web-based Enterprise level platform for analyzing Drive test, OSS call trace, small cell/DAS, and network management data.

✓ Enables solving key network related technical and business challenges

✓ Consists of four separate products: Drive Test, Small Cells, Network Management, and CEM

Features

✓ Automates key tasks in the network management life cycle
✓ Data Source agnostic - supports multiple data sources
✓ Technology agnostic - Supports LTE (4G), 3G/2G technologies
✓ Vendor agnostic - Supports multiple equipment vendors and data formats
✓ Unique User-definable Business Rules Engine for easy customization and correlate data creatively
Drive Test module
- Network Benchmarking
- Network Acceptance
- Network Optimization

Network management module
- Performance management
- Configuration management
- Fault management

Small Cells module
- Indoor/DAS/small cells:
  - Acceptance
  - Planning
  - Optimization

CEM module
- Giving True customer view/QoE
- Geolocation of call trace data correlated with drive test data
- Predictive analysis based on technical KPIs
RF TEST AND MEASUREMENT PRODUCTS FOR FULL WIRELESS NETWORK LIFECYCLE

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Network Optimization
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- Nemo Invex II

Network Benchmarking
- Nemo IBC Meter
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Network Monitoring
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Control & monitoring
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- Nemo WindCather
- Nemo Analyze

Post processing and Network analytics
- DAS
- Network Management
- Drive Test
- CEM
SOFTWARE TECHNOLOGY

Windows
✓ C++ and C#
✓ Visual Studio

Android
✓ C++ and Java
✓ Eclipse

Web back-end
✓ PHP, WebSockets, SQL database

Web front-end
✓ JavaScript
EXAMPLE PROJECT 1

Automatic handset tester for special functions

- Windows-based application
- Test handset connected to network simulator
- Executes automatic test sequences requiring specific network conditions
- Project team: 2-3
EXAMPLE PROJECT 2

VoLTE configuration application

✔ Android-based application
✔ Test handset with special firmware
✔ User interface for configuring VoLTE-related network and handset settings
✔ Project team: 1-2
EXAMPLE PROJECT 3

Web UI testing

✓ Test case planning and implementation for Nemo Cloud platform
✓ Project team: 1-2
CONTACT THE TEAM

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