



AGV (Automatic Guided Vehicle)
AMR (Autonomous Mobile Robot)
SI (System Integration)

PRODUCTS

AGV · MOBILE ROBOT · FORKLIFT

AGV is automated equipment(unmanned guided vehicle) designed to be used for distribution during supplies transportation / finished products transportation / test processes in various industries



AGV · MOBILE ROBOT



Small size AGV

- Automatic transfer of semiconductor manufacturing process
- Transportation of other small cargo



Medium size AGV

- Automatic transfer of semiconductor and display manufacturing process
- Transportation of other medium, large cargo



Large size AGV

- Automatic transfer of metal mold
- Transportation of other heavy cargo



Autonomous Mobile Robot

The SLAM type mobile robot that is applied to Nsquare's advanced and high technologies of AGV



AUTONOMOUS FORKLIFT



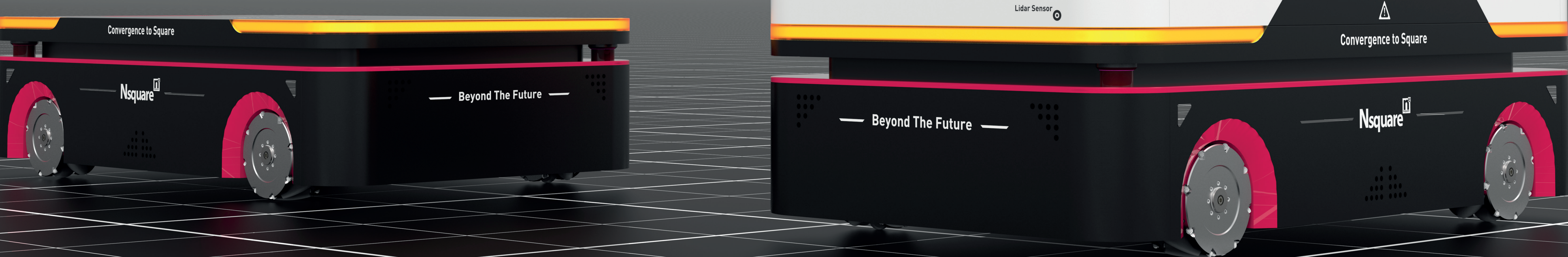
Autonomous forklift

- High level driverless forklift for loading and unloading in warehouse or factory
- Improve of delivery speed
- Reduction of delivery cost
- Fast and accuracy of delivery data processing

PRODUCTS

AUTONOMOUS MOBILE ROBOT

Autonomous mobile robots(AMR) is one of the most innovative automation solutions on various industries and service. AMR needless some form of external guidance, Such as permanent wires, Laser reflectors or sensors embedded in the floor.

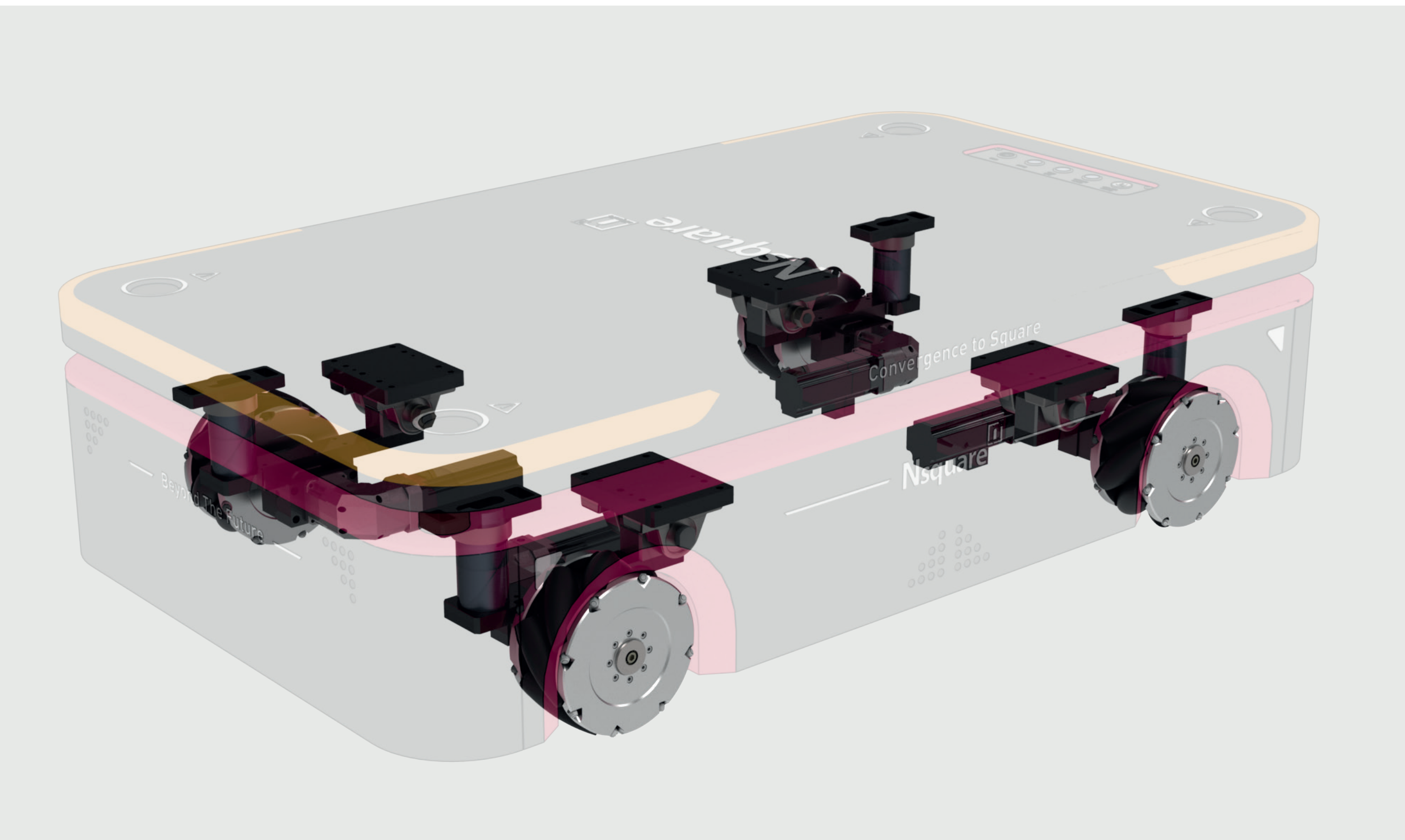


AUTONOMOUS MOBILE ROBOT



Mobile robot (AMR)

- Mecanum wheeled type
- SLAM navigation



Mecanum wheeled type drive

- Mecanum wheeled AMR can move any direction.
- Not required steering motors

COMPARE TO TRADITIONAL AGV'S DRIVING METHOD

	STEERING MOTOR	STRAIGHT	CURVE	SIDE	DIAG	SPIN
Mecanum		●	●	●	●	●
Single	●	●	●			
Diff		●	●			●
Quad	●	●	●	●	●	●

PRODUCTS

LASER SCANNER (LiDAR)

Radar using laser technology, technique for detecting the distance, direction, speed etc. by reflecting the laser to the target



LASER SCANNER



LiDAR technology products using sensor. It used in a variety of fields depending on the performance (distance and angle, resolution etc.) and especially for the position recognition of the unmanned mobile robot path generation. Essential sensors which are used for obstacle detection for safety control.

SPECIFICATION

N2 LiDAR	905 nm, LD Source	Class 1 Laser grade (Eye safety)	180° Field of View (FOV)	25 Hz Scanning freq.
0.3° Angle res.	≥30 m Range	-30°C ~ 60°C Ambient temperature	IP5X Dust protection	5 to 50Hz (2G) Vibration Test

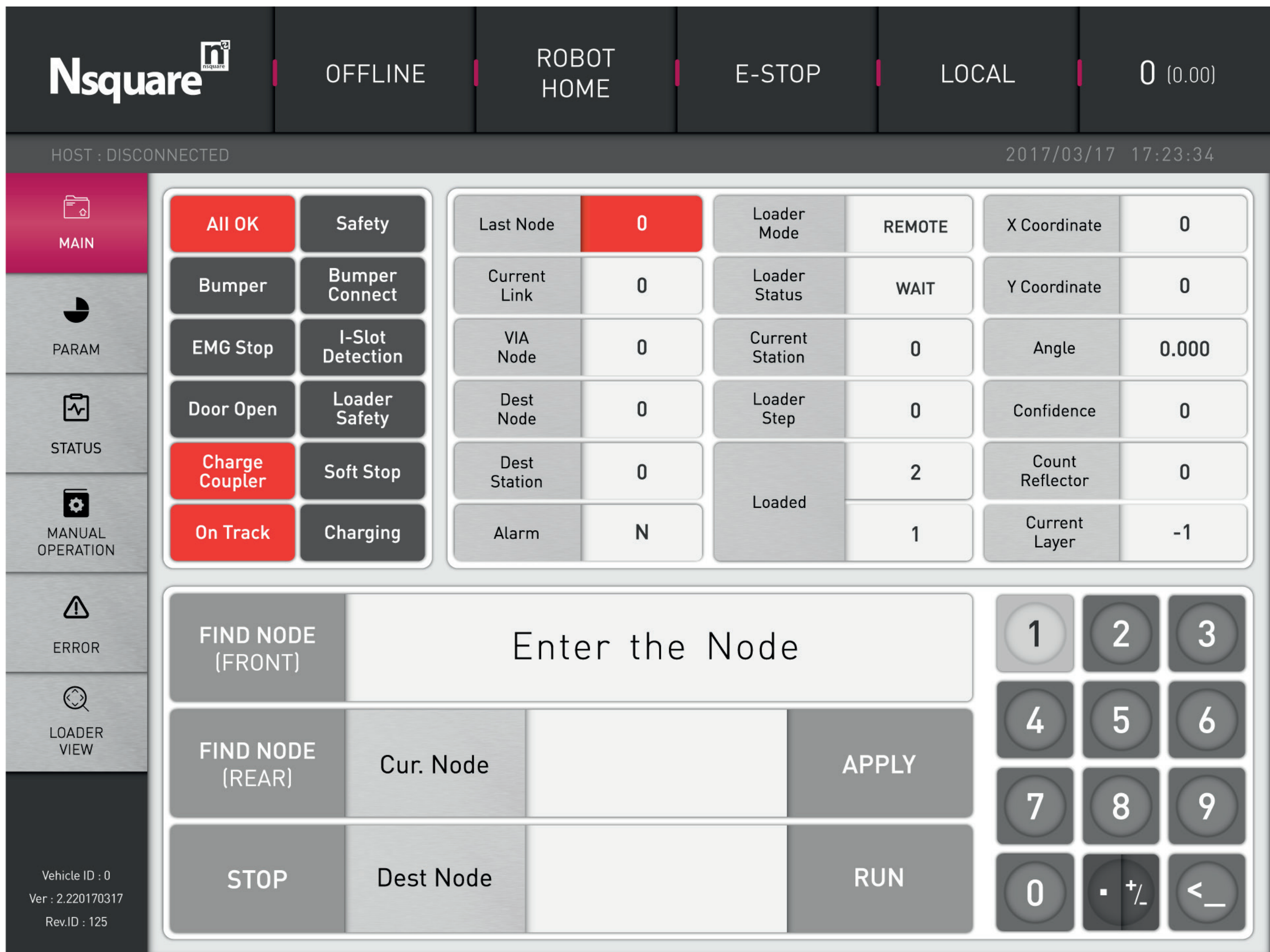


SOFTWARE & SYSTEM

N² SERIES

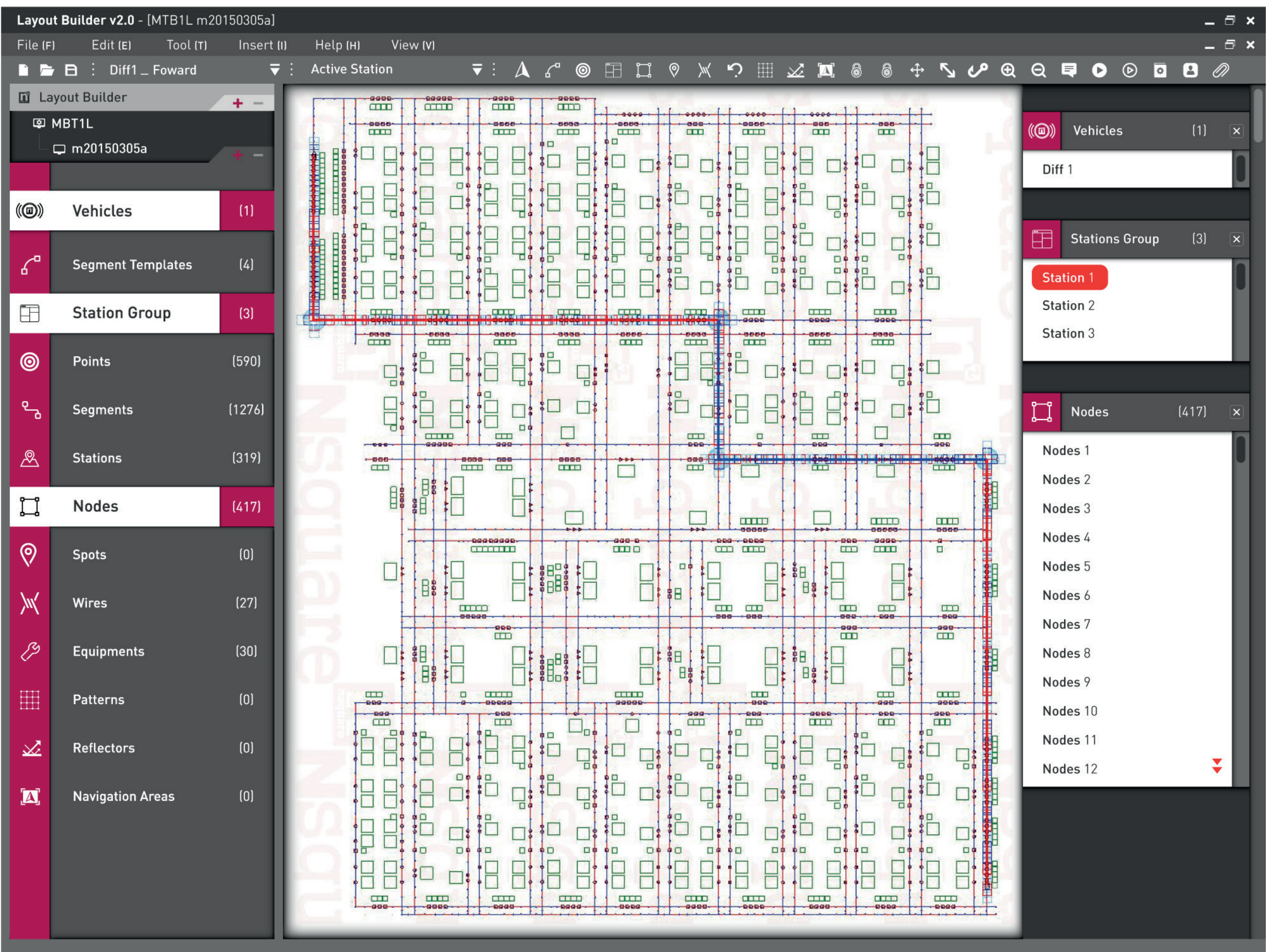


SOFTWARE & SYSTEM



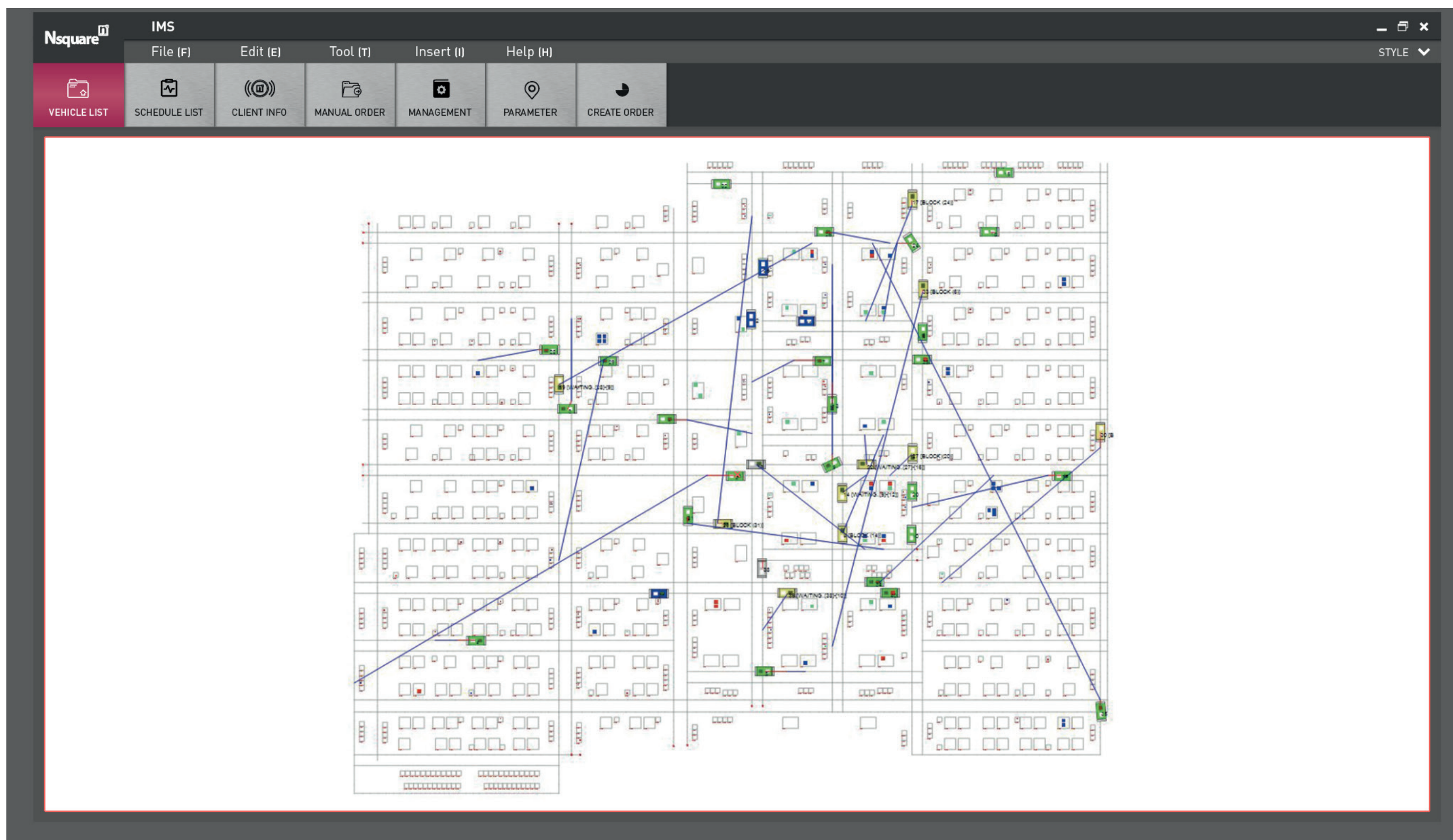
N² MCP

- Nsquare’s AGV motion control program (Driving and Loading/Unloading control)
- Display AGV position and status



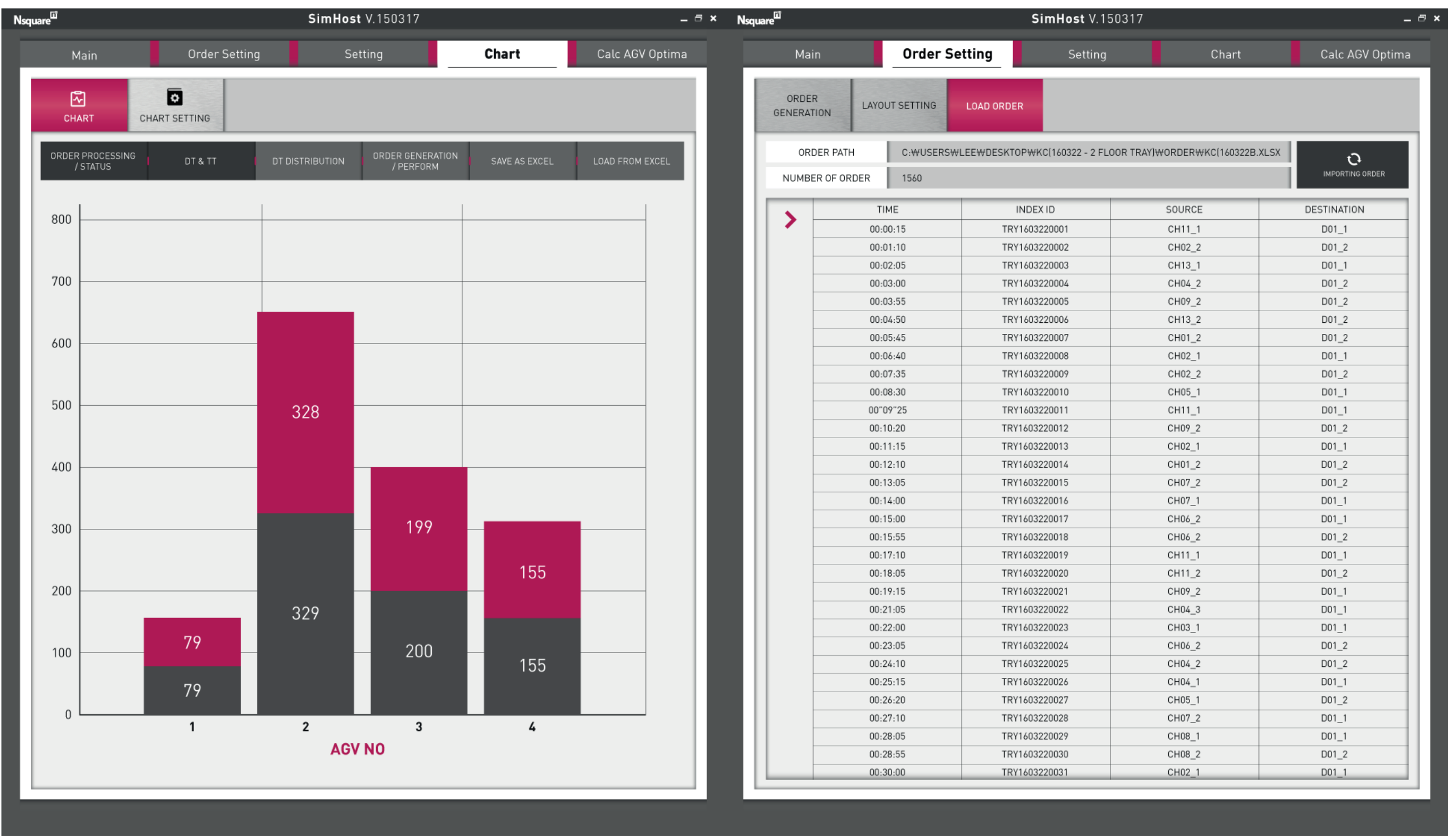
N² Layout builder

- AGV path planning S/W
- Graph-based method



N² RCS

- AGV order control system
- AGV traffic control



N² Simulation

- Virtual vehicle and host simulation S/W
- System simulation and optimization

COMPANY STATUS

Nsquare has experienced and developed a variety of products in the areas of automated distribution and automated transport. Our main products include a control system for automatic guided vehicles(AGV) and automatic forklifts, which has been supplied to many customers, home and abroad. In addition, Nsquare carries monitoring software and robot solutions which can apply to various industries and has invested in R&D every year.

HISTORY

2002

- Nsquare Co., Ltd. was founded.
- Logistics automation · AGV System.
- Supplied and verified AGV for Samsung.
- Established Nsquare research institute and registered as a venture business.
- Signed a supply agreement to provide AGV to Samsung Electronics.
- Developed and supplied an automated packing machine to Korea Petrochemical IND. Co., Ltd.

2010

- Signed a supply agreement to provide AGVs to Samsung Electronics (in Onyang·Giheung in Korea, Sozhou in China)
- Newly supplied to Samsung Electronics (in Gwangju and Gumi in Korea)
- Received commendation from the governor of Chungcheongnam-do province / Main-biz
- Signed a supply agreement to provide AGVs to LG Display (in Paju in Korea, Guangzhou in China)
- SK Hynix (Icheon in Korea)
- Laser scanner technology and product development
- SLAM navigation type logistics robot development (CJ logistics distribution center demonstration)

2018

AGV SYSTEM CONSULTING

