A Trusted Partner in Success
NCVTPL

NEO TECHNOLOGIES

Neo Creative Vision Technologies
Private Limited

OFF-HIGHWAY & SPECIAL-PURPOSE VEHICLE AUTOMATION

Hardware. Application engineering. Connected machines.



A Trusted Partner in Success

Controllers & I/O / CAN & J1939 / Electrohydraulics
Machine displays / Telematics / Training & support

One company. Connected expertise.

Neo Technologies / NCVTPL | Neo Creative Vision Technologies Private Limited



FOUNDER

Niketansingh K Lakum

Also known as Neo

Neo Technologies and NCVTPL are the same company. Our off-highway portfolio brings together hardware supply, control-system engineering, software integration, technical support and practical training.

MACHINE BUILDERS

Define controls for a new machine, an attachment or a specialised vehicle body. Develop a documented package for production.

MACHINE OWNERS

Improve monitoring, diagnostics and service information around installed equipment and available OEM interfaces.

ENGINEERING TEAMS

Connect electrical, hydraulic, software and service requirements through a clear integration scope.

TECHNICAL TEAMS

Use NCVT training and demonstration systems to develop practical communication, controls and troubleshooting skills.

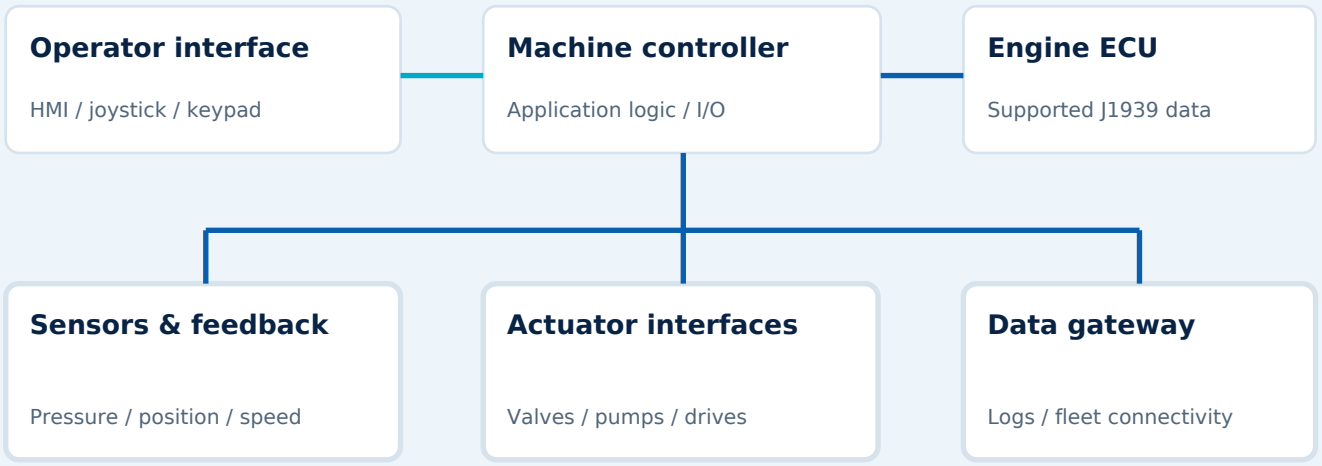
INSIDE THIS BROCHURE

Hardware	Machinery verticals	Engineering & support
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Project scope, product models, delivery responsibility and acceptance criteria are agreed for each application.

From machine signals to useful control

A functional view of the interfaces that may form an off-highway automation solution.



Supporting design: protected power supply, sealed harnesses, network layout, environmental suitability and service access.

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1 Specify the function

Describe what the machine must do, how the operator works and how faults should be handled.

2 Select the interfaces

Confirm actual sensors, actuators, ECU messages, network access and component ratings.

3 Implement and test

Build the application, check it on a bench and validate the defined scope on the machine.

4 Release and support

Deliver drawings, software/configuration records, operator guidance and an agreed support plan.

ifm: Systems for mobile machines

Mobile controllers, ECUs & I/O

Build the control foundation around the machine duty, signals and required response.



Illustrative hardware arrangement; final models are selected per application.

Hardware / function	What the project must define
Main controller	Rugged mobile PLC, ECU or VCU; choose processing, memory and supported development tools.
Distributed I/O	Remote modules near sensors and actuators; select signal types, channels and diagnostics.
Output interfaces	Digital outputs, PWM/current-controlled outputs and appropriate load interfaces.
Selection review	Supply conditions, vibration, ingress protection, connectors, temperature and software lifecycle.

Engineering services

I/O schedules, controller sizing, functional specifications, application programming, configuration and bench verification.

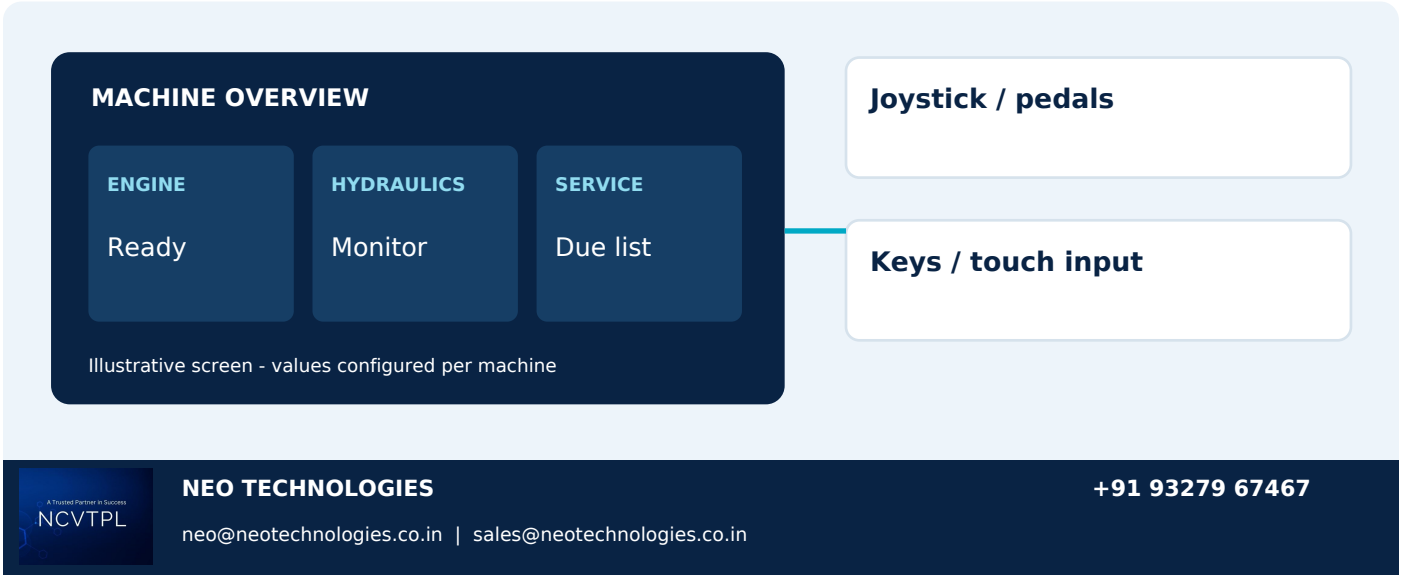
Platform evaluation

Examples include ifm ecomatmobile, DSEControl M-Series and Parker IQAN. Final model, licensing and availability are confirmed for each project.

DSE: M640 mobile controller Parker: Mobile electronics / IQAN

Displays & operator controls

Bring operating information, commands and service guidance into a clear operator interface.



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Hardware / function	What the project must define
Rugged displays	Select screen size, daylight readability, mounting, environmental rating and supported interfaces.
Operator inputs	Joysticks, keypads, switches, pedals and encoders suited to the actual control task.
Application screens	Machine overview, operating modes, alarms, trends, service counters and diagnostic pages.
Usability	Glove operation, language requirements, alarm priority and access levels agreed with the OEM.

Software services

Screen hierarchy, graphics, parameter pages, alarm logic and display-to-controller integration.

Project deliverables

Screen list, tag mapping, operator navigation, parameter limits and a tested release package.

Parker: Mobile electronics / IQAN ifm: Systems for mobile machines

Sensors & machine instrumentation

Turn pressure, movement, temperature and position into useful machine information.

Pressure
Hydraulic / pneumatic

Temperature
Oil / coolant

Position
Stroke / angle

Inclination
Pitch / roll

Speed
Shaft / wheel

Level / flow
Tank / delivery

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Hardware / function	What the project must define
Pressure / temperature	Hydraulic, pneumatic and thermal measurements selected for medium, range and connection.
Position / motion	Encoders, displacement, proximity, speed and inclination sensors for movement feedback.
Level / flow / location	Tank sensing, flow measurement and GNSS where the machine application needs them.
Signal compatibility	Confirm voltage/current signals, CAN interfaces, supply requirements, accuracy and environmental suitability.

Integration services

Sensor selection, mechanical interface coordination, scaling, filtering, plausibility checks and calibration support.

Useful outputs

Live measurements, operating limits, trend logs and diagnostic messages that help technicians find faults.

ifm: Systems for mobile machines ifm: Agriculture and forestry

Electrohydraulic interfaces

Connect electronic commands to controlled hydraulic functions with measured feedback.



Functional relationship only; hydraulic and safety design is machine-specific.

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Hardware / function	What the project must define
Control hardware	Valve drivers, compatible proportional valves, pump interfaces and rugged output modules.
Feedback hardware	Pressure, position, speed and temperature sensing relevant to the hydraulic circuit.
Application software	Ramps, mode sequences, feedback loops and diagnostic responses specified for the machine.
Joint engineering	Mechanical, hydraulic and electrical teams agree circuit behaviour, load conditions and safe states.

Engineering services

Interface definition, control programming, response tuning, data recording and witnessed application tests.

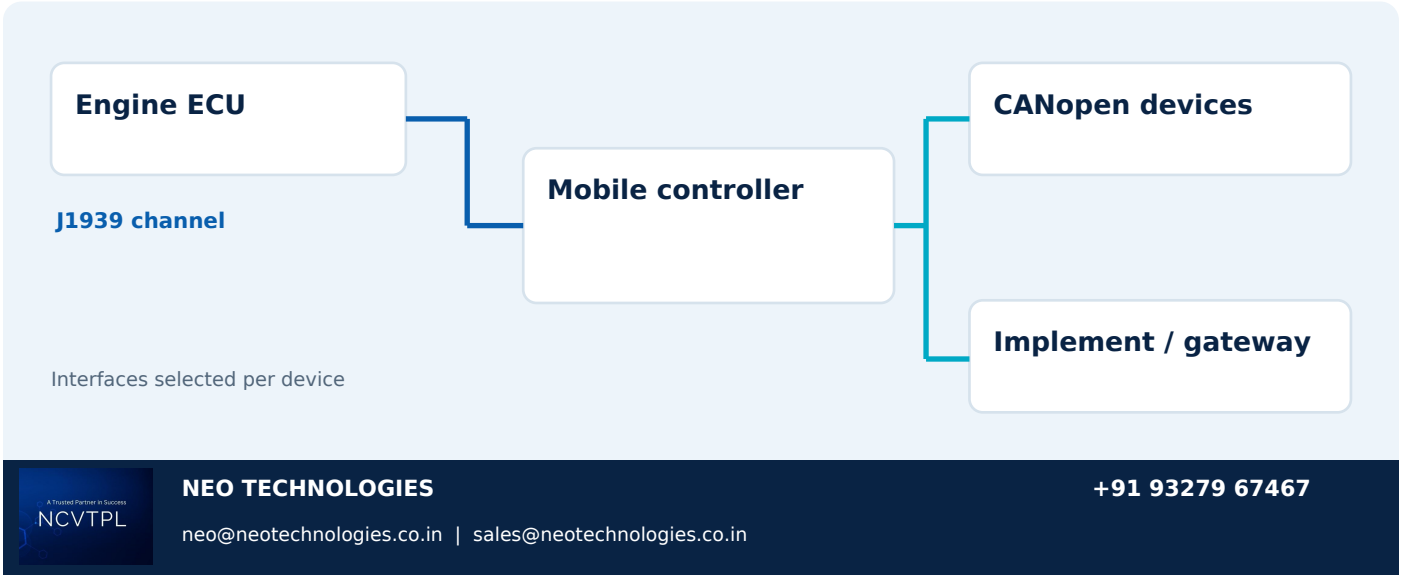
Scope boundary

Hydraulic sizing and safety-related motion require the appropriate specialist design and machine-level validation.

Parker: Mobile electronics / IQAN ifm: Construction machinery

CAN, J1939, CANopen & ISOBUS

Choose the communication method that the installed devices and OEM architecture support.



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Hardware / function	What the project must define
SAE J1939	Engine/vehicle messages, PGN/SPN mapping and supported diagnostic information; ECU access determines scope.
CANopen	Device configuration, object dictionaries, PDO/SDO exchange and network-state supervision.
ISOBUS	Agricultural implement interfaces; confirm required functions and actual tractor/terminal/implement compatibility.
Gateways / custom CAN	Map supported interfaces using manufacturer documentation. A CAN connector alone does not establish interoperability.

Integration services

Network inventory, signal matrix, gateway mapping, data logging, CAN trace review and communication fault diagnosis.

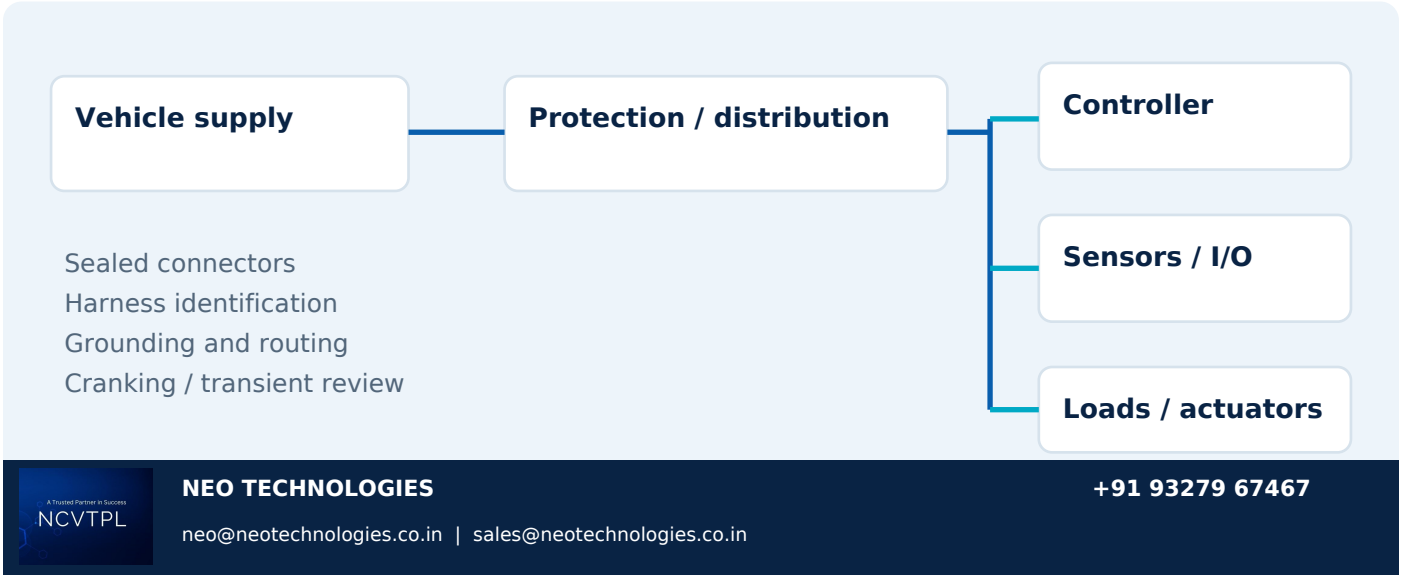
Practical boundaries

Read-only monitoring is distinct from control. Command access, timing and behaviour must be approved and validated for the machine.

CAN in Automation: CANopen AEF: ISOBUS compatibility NCVT: J1939 / CAN Bus

Harnesses, connectors & power

Design the electrical installation for serviceability and the machine environment.



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Hardware / function	What the project must define
Wiring assemblies	Application harnesses, sealed connectors, breakouts, junction boxes and service connectors.
Power distribution	Fuses, relays, DC/DC converters and load interfaces chosen for actual voltage and load conditions.
Electrical documentation	Connector pin schedules, cable identification, I/O drawings and harness routing information.
Verification	Continuity, polarity, load review, grounding and environmental suitability of the complete installed assembly.

Supply & build services

Component selection, harness drawings, assembly coordination, installation support and replacement planning.

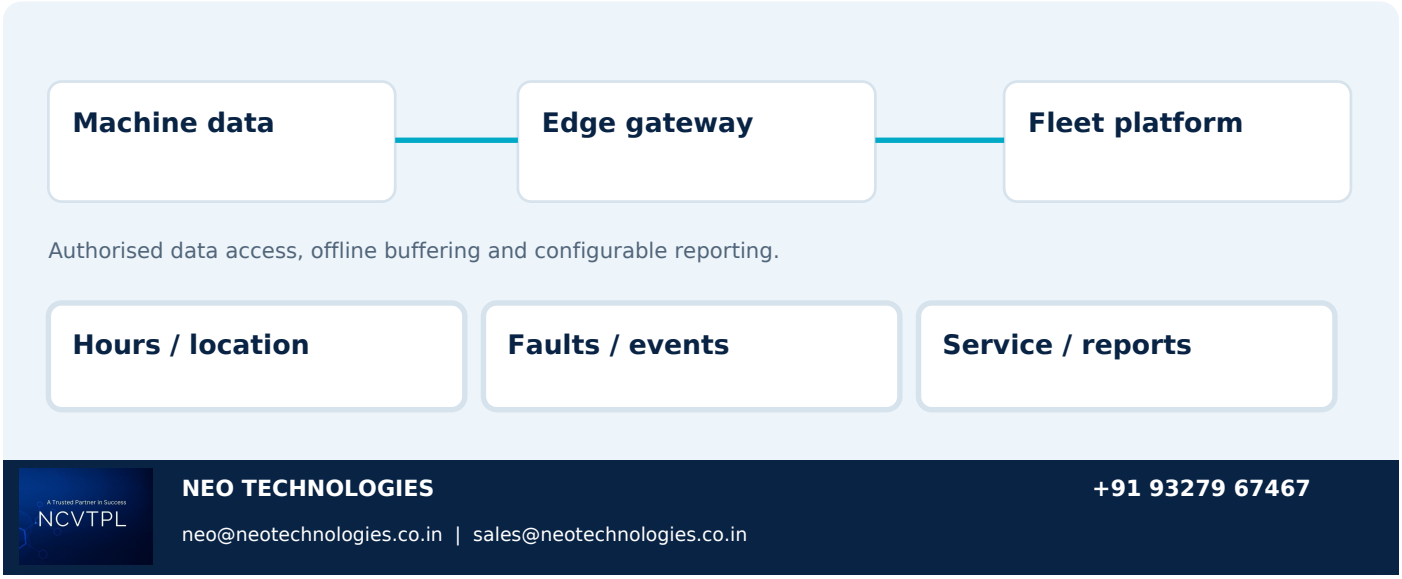
Selection discipline

Connector families such as DEUTSCH or AMPSEAL are examples. Seal performance depends on the correct parts, assembly and installation.

TE: Sealed vehicle connectors DSE: M640 mobile controller

Telematics & remote diagnostics

Give machine owners a useful view of operating activity, conditions and maintenance needs.



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Hardware / function	What the project must define
Connectivity hardware	Vehicle gateways, GNSS, cellular modems, antennas and local data logging as required.
Useful machine data	Hours, location, utilisation, supported fault messages and selected measurements.
Software services	Dashboards, alert rules, reports, asset history and maintenance schedules.
Deployment choices	Data ownership, user access, network coverage, offline storage and subscription scope agreed before deployment.

Integration services

Select signals, connect the gateway, configure dashboards and verify end-to-end data quality.

Recurring support

Hosting, connectivity and monitoring can be quoted separately. Remote changes require an authorised update and recovery process.

ifm: Systems for mobile machines Parker: Mobile electronics / IQAN

Cameras & operator assistance

Support visibility and awareness around mobile equipment with application-specific sensing.

Camera / sensor

Mounting & field of view

Operator display

Clear views & warnings

Validation

Test real site conditions

Operator assistance and safety functions are scoped separately. A camera or alarm alone is not a validated collision-prevention system.

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Hardware / function	What the project must define
Vision hardware	Rear/side-view cameras, compatible displays and optional detection sensors.
Operator information	Camera selection, visual/audio warnings and useful machine-status information.
Installation review	Field of view, blind spots, mounting, lighting, contamination and cable protection.
Validation scope	Test the installed arrangement under representative operating conditions and document its limitations.

Engineering services

System selection, display integration, mounting coordination, warning configuration and acceptance trials.

Specialist safety scope

Automatic intervention, collision prevention and personnel-protection functions require separate risk assessment and validated safety engineering.

ifm: Transport and logistics ifm: Systems for mobile machines

Electric & hybrid machine interfaces

Develop supervisory controls and monitoring around a defined electrification architecture.

Battery / BMS — **VCU supervision** — **Inverter / drive**

Functional interfaces only - high-voltage design requires specialist scope.

Thermal / auxiliary control

HMI / energy monitoring

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Hardware / function	What the project must define
Supervisory hardware	VCU, compatible motor/inverter interfaces, battery/BMS communications and auxiliary control.
Monitoring	Energy use, battery state information, temperatures and supported drivetrain diagnostics.
Application interfaces	HMI, thermal-management commands and auxiliary pump/fan coordination within approved limits.
Delivery model	Powertrain, battery, charging and high-voltage work is defined with the OEM and qualified specialist partners.

Potential engineering scope

Interface specifications, CAN mapping, supervisory software, data logging and controlled integration testing.

Qualification before commitment

Select supported components and agree ownership of safety design, electrical protection, validation and production release.

Parker: Smart electrification DSE: M640 mobile controller

Construction & earthmoving

Excavators, backhoe loaders, wheel loaders, dozers and skid-steer machines.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Engine & health	J1939 interface, display, pressure/temperature sensors	Engine-data pages, alarms, service counters and diagnostics.
Attachments	Mobile controller, joystick, I/O and valve interfaces	Attachment selection, operating sequences and calibrated response.
Fleet visibility	Gateway, GNSS and selected data inputs	Utilisation logs, supported fault alerts and maintenance reports.

Package approach: Start with a defined subsystem: a monitoring display, attachment controller or diagnostic upgrade. Confirm engine access and hydraulic interfaces with the OEM.

VALUE: Clearer operating information and more structured service support.

ifm: Construction machinery

Road & concrete equipment

Pavers, compactors, sprayers, concrete pumps, transit mixers and self-loading mixers.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Road applications	Controller, speed/temperature sensors and I/O	Paving, spraying or auxiliary-function sequences matched to the machine.
Concrete applications	Display, pump/valve interfaces and level/flow sensors	Mixer or pumping functions, operating modes and diagnostic screens.
Service & records	Engine interface, logger and gateway	Hours, event history, condition monitoring and maintenance reminders.

Package approach: Define the first offer around a pump, mixer, spray or auxiliary subsystem. Boom movement and other safety-related functions need a separately validated scope.

VALUE: Consistent operation with accessible settings and service information.

ifm: Construction machinery DSE: E400 engine controller

Mining, quarrying & drilling

Drill rigs, mobile crushers, screens, haul trucks and foundation equipment.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Process functions	Controller, I/O, speed and pressure sensors	Feeder/conveyor sequences and operating-condition monitoring.
Drilling functions	HMI, hydraulic interfaces and position sensors	Parameter displays, defined operating sequences and data capture.
Fleet / service	J1939 gateway, logger and telematics	Supported machine diagnostics, utilisation and remote service records.

Package approach: Develop an application-specific package around available signals and the service problem. Confirm environmental duty and any site-specific equipment requirements.

VALUE: Useful machine data and a structured route from fault to diagnosis.

ifm: Construction machinery

Agriculture & implements

Tractors, sprayers, seeders, spreaders, harvesters and balers.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Implement control	Controller, I/O, flow/speed/position sensors	Implement sequences, monitoring and application-rate interfaces.
Operator terminal	Rugged display, keypad and compatible gateway	Setup pages, operating feedback and service diagnostics.
Connected functions	ISOBUS interfaces, GNSS and data gateway	Function-specific integration, field records and supported fleet data.

Package approach: Check the required ISOBUS functions against the actual tractor, implement and terminal combination. Add precision or automatic functions only after compatibility and field validation.

VALUE: More usable implement information and configurable operating functions.

ifm: Agriculture and forestry AEF: ISOBUS compatibility

Forestry, biomass & recycling

Forwarders, harvesters, chippers, mobile shredders and compost turners.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Feed / processing	Controller, speed/load sensing and I/O	Feed sequences, process monitoring and event recording.
Hydraulic functions	Joysticks, valve interfaces and feedback sensors	Defined implement functions and diagnostic support.
Machine health	Temperature/pressure sensors, HMI and gateway	Condition trends, operating hours and maintenance notifications.

Package approach: Agree duty cycles, hydraulic functions, guarding interfaces and service access. Crane, cutting and automatic reversing functions require machine-specific safety validation.

VALUE: Better process visibility and organised maintenance information.

ifm: Agriculture and forestry ifm: Municipal vehicles

Municipal & sanitation vehicles

Refuse compactors, sweepers, sewer jetting and vacuum/suction vehicles.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Body functions	Controller, remote I/O and position switches	Defined compactor, brush, fan or body-function sequences.
Pumps & tanks	Pressure/level sensors, engine interface and HMI	Pump monitoring, tank displays and approved operating controls.
Service & fleet	Diagnostic logger, GNSS and gateway	Event history, operating hours and service scheduling.

Package approach: A practical body-builder package combines a display, sensor set, controller, harness and machine-specific software. Validate lifting and compaction functions with the OEM.

VALUE: A coordinated body-control interface and clearer troubleshooting.

ifm: Municipal vehicles

Firefighting & emergency vehicles

Fire tenders, water/foam tenders, rescue support and emergency-service bodies.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Pump information	Pressure/flow/level sensing and rugged display	Pump status, tank information and supported engine data.
Body electricals	Controller, I/O, harness and power distribution	Equipment-status indication, lighting and approved body functions.
Readiness / service	Logger and maintenance counters	Inspection records, fault history and service reminders.

Package approach: Specify the operational duty and acceptance criteria with the vehicle builder. Fire pump control, foam dosing, aerial equipment and emergency functions need specialist validation.

VALUE: Clear operating information and documented equipment readiness.

ifm: Municipal vehicles

Material handling & lifting

Forklifts, telehandlers, mobile cranes, access platforms and handling attachments.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Operator interface	Rugged HMI, keypad/joystick and controller	Mode selection, machine information and diagnostic pages.
Movement feedback	Position/angle/tilt sensors and I/O	Measured feedback and approved hydraulic/motion interfaces.
Service & use	CAN interface, event logger and gateway	Utilisation, fault history and maintenance reporting.

Package approach: Begin with monitoring, diagnostics or a defined OEM subsystem. Load limiting, stability, braking, steering and personnel lifting need validated safety engineering.

VALUE: Better visibility of machine conditions and traceable service data.

ifm: Transport and logistics ifm: Construction machinery

Airports, ports & logistics

Belt loaders, baggage tractors, service vehicles, reach stackers and terminal equipment.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Equipment functions	Controller, I/O, position sensors and drives	Conveyor and service-equipment sequences within agreed scope.
Operator assistance	Display, cameras and selected detection sensors	Machine views, position information and configured warnings.
Fleet operations	CAN gateway, GNSS and telematics	Operating hours, fault reports and maintenance coordination.

Package approach: Develop the controls around equipment duty, operator workflow and customer acceptance tests. Aircraft interfaces, lifting and vehicle movement require specialist/OEM approval.

VALUE: A common approach to equipment information and fleet support.

ifm: Transport and logistics

Special-purpose bodies & mobile plant

Hook loaders, tippers, service bodies, mobile pumps, compressors and power packs.



Illustrative machinery scene.

Application	Hardware package	Engineering service
Engine-driven equipment	Engine controller, HMI and pressure/level sensing	Pump/compressor monitoring and approved engine-demand control.
Vehicle body systems	Mobile controller, I/O, harness and position sensors	Body-status indication and defined equipment sequences.
After-sales support	Logger, gateway and service interface	Fault finding, event history and maintenance planning.

Package approach: Build a repeatable body-builder or equipment package with drawings, harness, configured controls and test records. Confirm chassis interfaces and shutdown behaviour with the OEM.

VALUE: A defined control package that can be repeated across machine variants.

DSE: E400 engine controller ifm: Municipal vehicles

OEM engineering & system integration

Translate the machine requirement into a documented hardware and software package.

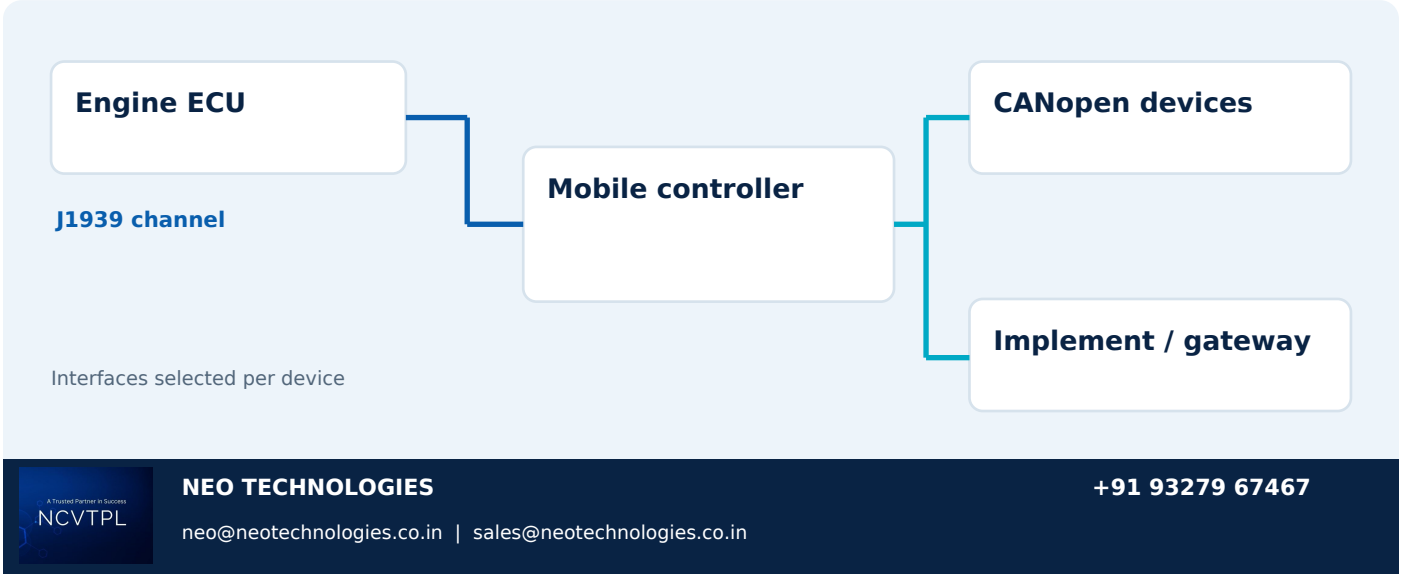
Work package	Typical deliverables
Requirements & scope	Operating modes, signals, performance needs, service access, interfaces and acceptance criteria.
System architecture	Controller/display selection, I/O distribution, network topology and power concept.
Electrical engineering	BOM, schematics, connector schedules, harness information and panel/enclosure details.
Application development	Controller logic, HMI, signal processing, alarms, diagnostics and configuration.
Integration & release	Bench verification, machine integration, commissioning records and release documentation.



Commercial structure: one-time engineering, per-machine hardware, application commissioning and ongoing support can be quoted separately. Software ownership, licences and source handover are defined in the contract.

Programming, integration & diagnostics

Create maintainable applications and a clear route for finding network and machine faults.



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Service	Deliverable
Controller / HMI software	Documented logic, screens, parameters, alarms, configuration and version records.
J1939 integration	Supported PGN/SPN matrix, data scaling, ECU interfaces and diagnostic display/logging.
CANopen / gateways	Device configuration, signal mapping and network behaviour checked against manufacturer documentation.
Troubleshooting	Wiring/network checks, trace capture, symptom reproduction and a fault report with proposed corrective actions.

Retrofit planning: review the installed architecture, available source/configuration files, spare parts and machine condition. Define migration, test, rollback and handover before changing the system.

CAN in Automation: CANopen NCVT: J1939 / CAN Bus

Testing, commissioning & support

Agree how the system will be accepted, maintained and changed throughout its working life.

01

Bench verification

Check I/O, communications, screens, sequences and failure responses before installation.

02

Machine commissioning

Verify installation, calibrate signals and tune the defined functions under controlled conditions.

03

Acceptance & handover

Witness agreed tests, record results and deliver drawings, configurations and operating guidance.

04

After-sales support

Provide fault diagnosis, spare-part planning, software revision control and scheduled technical assistance.

SUPPORT OPTIONS

Commissioning visits, remote diagnostic sessions, scheduled maintenance support and service agreements can be scoped separately. Response times, coverage, travel and exclusions are specified in the quotation.

Practical training for technical teams

Application-based learning linked to mobile hardware, communication and machine service tasks.



Training area	Practical focus
Off-highway interfaces	ECU architecture, rugged components, sensors, wiring and machine data.
CAN / SAE J1939	Network fundamentals, PGNs/SPNs, trace analysis and diagnostic messages.
CANopen / controls	Device configuration and integration topics tailored to the selected equipment.
Demonstration kits	Controller, display, joystick, sensor and CAN-network rigs configured for the learning objective.

Delivery: corporate workshops, OEM/service-team sessions and customised programmes. Confirm learning outcomes, platform access, practical equipment and duration before booking.

Explore training: ncvttraining.com

NCVT: Off-highway programme NCVT: J1939 / CAN Bus

A clear scope. A practical handover.

Start with one machine, one defined problem and a measurable acceptance plan.

Stage	Information / decision
Enquiry	Machine type, make/model, present controller, problem, target function and expected quantity.
Assessment	Review drawings, hydraulic functions, signal access, environment and delivery responsibilities.
Proposal	Agree hardware, engineering work, licences, testing, commercial terms and exclusions.
Execution	Design, develop, bench-test, integrate, validate and document the approved scope.
Handover & support	Release configuration/software records and agree training, spares and support arrangements.

Specialist work: functional safety, load limiting, personnel lifting, steering/braking, autonomy and high-voltage powertrain tasks are separately qualified with the OEM and suitable specialists. Capability, approvals and responsibilities are confirmed before commitment.

TECHNICAL REFERENCE LIBRARY

ifm: Systems for mobile machines

Parker: Mobile electronics / IQAN

AEF: ISOBUS compatibility

DSE: E400 engine controller

ifm: Construction machinery

ifm: Transport and logistics

DSE: M640 mobile controller

CAN in Automation: CANopen

TE: Sealed vehicle connectors

Parker: Smart electrification

ifm: Municipal vehicles

ifm: Agriculture and forestry

Technical references reviewed October 2026. Product names identify platform examples; manufacturer authorisation is not implied. Images are AI-generated illustrations, not photographs of completed projects or exact catalogue products. Final selection and performance depend on the agreed application.

Let us discuss your machine.

Hardware supply, integration, diagnostics, training and ongoing technical support.



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