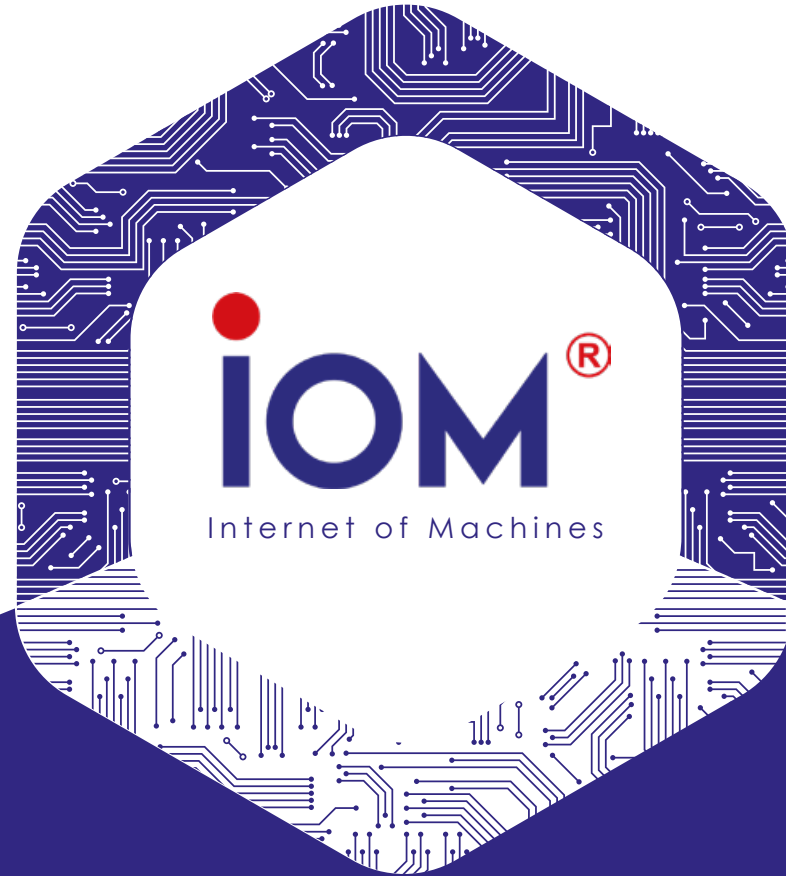




INNOVAL[®]
Value of Innovation



www.innoval.biz



“**Internet of Machines** is a next generation machine telemetry and fleet remote monitoring System that can satisfy customer needs”



Industries



Port



Construction



Quarry & Mining



Steel mill

What do customers want?

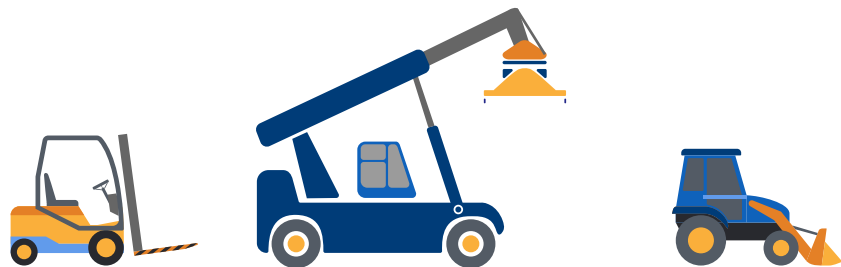
Know if the machine is working

Know if the machine is operating correctly

Inspect malfunctions easily and rapidly

Plan machine maintenance in advance

Quickly monitor all vehicles



What do INNOVAL provide?

Faster response to machine problems

Historical data for machine efficiency analysis

Machine fault predictions

Real time alerts and warnings

24/7 monitoring

A single interface to remote monitor all vehicle



Innoval System includes:

- Deployment of **DCU-C V2 control unit** in the machine
- Data Collector running to **collect data** and to **interact** with machines
- Interactive **dashboard** for end user

Innoval Data Collector

- Runs in **Local Server** or in **Cloud**
- Records machine data in a database allowing big data elaborations such as **KPI** (Key Performance Indicator) computation and **long term analysis**
- Allows to **inspect** last machine status in real time
- Allows to **interact** with the machines

iOM[®] is a “two ways” communication System:



Allows the user to remotely perform commands while machine is being used

Allows the reception of telemetry (status) from the machines

What WE MANAGE

ACCESS CONTROL TO THE VEHICLE



User authentication by NFC badge

Management of operator list enabled to the utilization

Checklist for the vehicle start

Operator detection (sensor located on the driver seat)

GEOFANCING



Speed reduction based on the vehicle operation zone

Acceleration ramp based on weight/position of the load

Speed reduction based on weight/position of the load

OPERATION MANAGEMENT



Tires pressure and temperature monitoring TPMS

Engine start and stop depending on machine stop/start

Monitoring of set point reached for operating hours (predictive maintenance)

Actuators and sensors status

PRODUCTIVITY MEASUREMENT



Counter of goods/container/trailers moved

Signalization for motor speed at minimum for long time

SAFETY



Recording and sending images in case of bumps

Pre alarms and alarm based on abnormal conditions

Inhibition to start the machine from remote

Black Box for events and alarms

ENGINE



Vehicle speed, current gear and engine hours

Temporary penalization of the vehicle speed whenever the driver is driving through a hole (pothole) at high speed (TILT)

FROM REMOTE



Data encryption and compression before being sent to remote Server

Remote file updating

Multi language software

Hardware on board

DCU-C V2

Master Control Unit

The DCU-C V2 is a fully programmable automotive grade controller designed to be used as high performance master controller and Man-Machine-Interface (combined with an external VGA) in industrial vehicles.



FEATURES:

- CPU master: NXP i.MX6DL (2 x Cortex-A9 @ 800Mhz), Internal memory:
 - 144 kByte RAM (OCRAM), 32i + 32d kByte L1 Cache, 512 kByte L2 Cache
- CPU slave (supervisor): NXP LPX5526 150 MHz (Cortex-M33), Memory: 256 kByte Flash, 144 kByte RAM
- 3 axis accelerometer, 3 axis gyroscope
- 3 axis magnetic-sensor (optional)
- miniPCIe slot for LTE/4G with micro SIM-Holder
- M.2 slot (optional)
- GPS module

Dashboard

Customer may develop its own dashboard by accessing the saved machine data or INNOVAL can supply its own dashboard

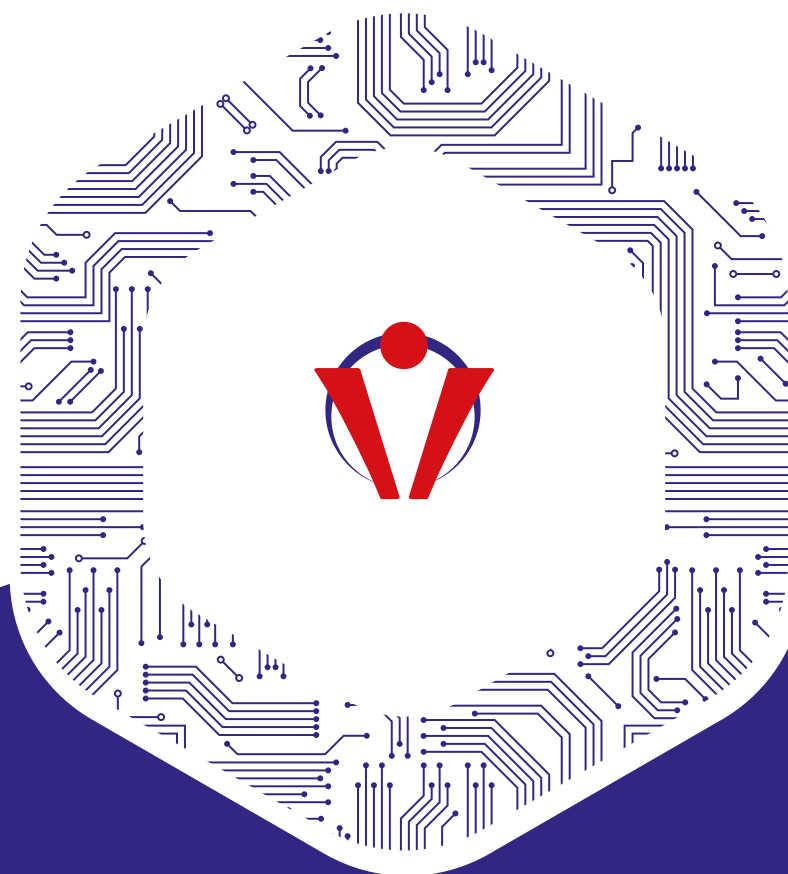
Web portal based
(Rest API based)

Customizable layout

Configurable machine
report measures

Multi user/customer/dealer
approach





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