

Data elements and attributes	Comments	Earth moving			
		Excavator	Compaction	Dumper	Wheel loader
Header information (EquipmentHeader)					
- Telematics Unit Installation Date (UnitInstallDateTime)	which each new installation once	Yes	Yes	Yes	Yes
- Equipment Make (OEMName)		Yes	Yes	Yes	Yes
- Equipment Model (Model)		Yes	Yes	Yes	Yes
- Equipment ID (EquipmentID)		Yes	Yes	Yes	Yes
- Serial Number (SerialNumber)		Yes	Yes	Yes	Yes
- OEM ISO Number (PIN)	NOTE: PIN and VIN are interchangeable mutually exclusive.	Yes	Yes	Yes	Yes
- Vehicle Identification Number (VIN)		Yes	Yes	Yes	Yes
- Telematics hardware ID number		Yes	Yes	Yes	Yes
- Telematics hardware model		Yes	Yes	Yes	Yes
- Telematics hardware make		Yes	Yes	Yes	Yes
- Telematics network types		Yes	Yes	Yes	Yes
Last known location (Location)					
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Latitude of location (Latitude)		Yes	Yes	Yes	Yes
- Longitude of location (Longitude)		Yes	Yes	Yes	Yes
- Altitude of location (Altitude)		Yes	Yes	Yes	Yes
- Units of Altitude (AltitudeUnits)		Yes	Yes	Yes	Yes
Operating hours (CumulativeOperatingHours)					
- Date and time (datetime)	Engine on and only key on (idling)	Yes	Yes	Yes	Yes
- Cumulative operating hours (Hour)	Engine on and only key on (idling)	Yes	Yes	Yes	Yes
Cumulative fuel used (FuelUsed)					
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Unit of measure of fuel (FuelUnits)		Yes	Yes	Yes	Yes
- Cumulative fuel used (FuelConsumed)		Yes	Yes	Yes	Yes
Fuel used in the preceding 24hr (FuelUsedLast24)					
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Unit of measure of fuel (FuelUnits)		Yes	Yes	Yes	Yes
- Fuel used preceding 24 hrs (FuelConsumed)		Yes	Yes	Yes	Yes
Cumulative distance travelled (Distance)					
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Unit of measure of distance (OdometerUnits)		Yes	Yes	Yes	Yes
- Cumulative distance travelled (Odometer)		Yes	Yes	Yes	Yes
Caution Codes (CautionMessages)	Specify caution codes that are most important	A list of all codes from the OEMs would help to decide the level of importance			
- Date and time (datetime)	Push function / coloured	Yes	Yes	Yes	Yes
- Caution codes referencing number identifier (Identifier)	Push function / coloured	Yes	Yes	Yes	Yes
- Description of caution (Description)	Push function / coloured	Yes	Yes	Yes	Yes
Cumulative idle operating hours (Cumulative Idle Hours)	daily 24 hours / reports / customer info				
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Cumulative idle hour (Hour)		Yes	Yes	Yes	Yes
Fuel remaining ratio (FuelRemaining)					
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Fuel remaining ratio (Percent)		Yes	Yes	Yes	Yes
- Unit of Measure of Fuel Tank (FuelTankCapacityUnits)		Yes	Yes	Yes	Yes
- Fuel Tank Capacity (FuelTankCapacity)		Yes	Yes	Yes	Yes
DPF Filter status					
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Pressure % (all the time)	Error code (push message), when % too high	Yes	Yes	Yes	Yes
DEF remaining ratio (DEFRemaining)					
- Date and time (datetime)		Yes	Yes	Yes	Yes
- DEF remaining ratio (Percent)	Error code (push message), when % too high	Yes	Yes	Yes	Yes
- Unit of Measure of DEF Tank (DEFTankCapacityUnits)		Yes	Yes	Yes	Yes
- DEF Tank Capacity (DEFTankCapacity)		Yes	Yes	Yes	Yes

DATA POINTS TELEMATICS ERA - EARTH MOVING EQUIPMENT

		Earth moving			
Data elements and attributes	Comments	Excavator	Compaction	Dumper	Wheel loader
Engine condition (EngineStatus)		Yes	Yes	Yes	Yes
- Date and time (datetime)	Information needed only once or in case of a replacement Engine is switched on	No	No	No	No
- Engine number (EngineNumber)		Yes	Yes	Yes	Yes
- Engine running (Running)					
Digital input state (SwitchStatus)		Yes	Yes	Yes	Yes
- Date and time (datetime)		No	No	No	No
- Digital input number (SwitchNumber)		Yes	Yes	Yes	Yes
- Is switch on or off (IsOn)					
Cumulative power take off hours (CumulativePowerTakeOffHours)		Yes	No	No	No
- Date and time (datetime)		Yes	No	No	No
- Cumulative power take off hours (Hour)		Yes	No	No	No
Attachmenttype					
Average daily engine load factor (AverageLoadFactorLast24)	(unit of measurement: torque/pressure/etc.)	Yes	Yes	Yes	Yes
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Average daily load factor (LoadFactor)					
Peak Daily and Actual Speed (MaximumSpeedLast24)		No	No	No	Yes
- Date and time (datetime)		No	No	No	Yes
- Unit used for speed (SpeedUnits)		No	No	No	Yes
- Peak speed (Speed)		Yes	Yes	Yes	Yes
- Actual speed					
Cumulative Load Count (CumulativeLoadCount)					
- Date time (datetime)					
- Cumulative load count (Count)					
Cumulative Payload Totals (CumulativePayloadTotals)		Yes	No	Yes	Yes
- Date and time (datetime)		Yes	No	Yes	Yes
- Unit of measure for payload (weightuom)					
- Cumulative payload (Payload)					
Cumulative Nonproductive Regeneration Hours (CumulativeActiveRegenerationHours)		Yes	Yes	Yes	Yes
- Date and time (datetime)		Yes	Yes	Yes	Yes
- Cumulative regeneration hour (Hour)		Yes	Yes	Yes	Yes
- Date and time skipped regeneration cycle					
Cumulative idle non operating hours (CumulativeNonProductiveIdleHours)		Yes	Yes	Yes	Yes
- Date and time (datetime)	Can be reviewed by the battery status (error code)	Yes	Yes	Yes	Yes
- Cumulative non productive idle (Hour)					
Diagnostic Trouble Codes (DiagnosticTroubleCode)	A list of all codes from the OEMs would help to decide the level of importance	Yes	Yes	Yes	Yes
- Diagnostic Trouble Code Identifier (CodeIdentifier)	Push function / coloured	Yes	Yes	Yes	Yes
- Date and time (datetime)	Push function / coloured	Yes	Yes	Yes	Yes
- Code severity (CodeSeverity)	Push function / coloured	Yes	Yes	Yes	Yes
- Code description (CodeDescription)	Push function / coloured	Yes	Yes	Yes	Yes
- Temperature units (temperatureunits)	Push function / coloured	Yes	Yes	Yes	Yes
- Ambient air temperature (airtemp)	Push function / coloured	Yes	Yes	Yes	Yes
- Description of Code Source (CodeSource)	Push function / coloured	Yes	Yes	Yes	Yes
Battery status	Battery operated machines	Yes	Yes	Yes	Yes
- Date and time of load cycle (at partly electric driven machines)		Yes	Yes	Yes	Yes
- Battery voltage		Yes	Yes	Yes	Yes
- Remaining capacity		Yes	Yes	Yes	Yes
- Battery level		Yes	Yes	Yes	Yes
Starter Battery status		Yes	Yes	Yes	Yes
- Date and time of load cycle (at partly electric driven machines)		Yes	Yes	Yes	Yes
- Battery voltage		Yes	Yes	Yes	Yes
- Remaining capacity		Yes	Yes	Yes	Yes
- Battery level		Yes	Yes	Yes	Yes
Emergency shutdown		Yes	Yes	Yes	Yes
- Activation date & Time emergency shutdown	Push information				

DATA POINTS TELEMATICS ERA - EARTH MOVING EQUIPMENT

Data elements and attributes		Earth moving			
Extraction & Elevation	Comments	Excavator	Compaction	Dumper	Wheel loader
- Length		No	No	No	No
- Height		No	No	No	No
- Reach (in Meters)		No	No	No	No
- Angle		No	No	No	No
Outriggers					
- Date and time		Yes	No	No	Yes
- Outriggers deployed yes/no		Yes	No	No	Yes
Collisions					
Date and time of collision	As soon it happens / push function	Yes	Yes	Yes	Yes
Amount of collision	As soon it happens / push function	Yes	Yes	Yes	Yes
Low impact (KJ)	As soon it happens / push function	Yes	Yes	Yes	Yes
Medium impact (KJ)	As soon it happens / push function	Yes	Yes	Yes	Yes
High impact (KJ)	As soon it happens / push function	Yes	Yes	Yes	Yes
Hydraulics					
- level		Yes	Yes	Yes	Yes
- temp		Yes	Yes	Yes	Yes
Inclination					
Inclination	When max. is reached	Yes	Yes	Yes	Yes
Seat sensor					
Seat sensor	In case the machine drives and the operator doesn't sit on his seat	Yes	Yes	Yes	Yes

Data elements	Comments
	ISO - Urgently needed by the rental companies
	ISO - Not needed in priority by the rental companies
	Addition to ISO standard, needed by the rental companies

Frequency

	once per setup / possible to pull
	once per day
	every 15 minutes
	push function / as soon it happens