

AUTOSAR SERVICE LAYER

Application Layer

Runtime Environment

System Services

Memory Services

Crypto Services

Off-board
Communication
Services

Communication
Services

I/O Hardware
Abstraction

Complex
Drivers

Onboard
Device
Abstraction

Memory
Hardware
Abstraction

Crypto
Hardware
Abstraction

Wireless
Communication
HW Abstraction

Communication
Hardware
Abstraction

Microcontroller
Drivers

Memory
Drivers

Crypto Drivers

Wireless
Communication
Drivers

Communication
Drivers

I/O Drivers

Microcontroller



SERVICE LAYER

Service Layer is the Highest Layer of Basic Software . The Services Layer offers Operating system services, Vehicle network communication and management services, Memory services, Diagnostic Services, ECU state management. Services could be broadly classified into

1. System Services
2. Memory Services
3. Crypto Services
4. Onboard Communication Services
5. Communication Services

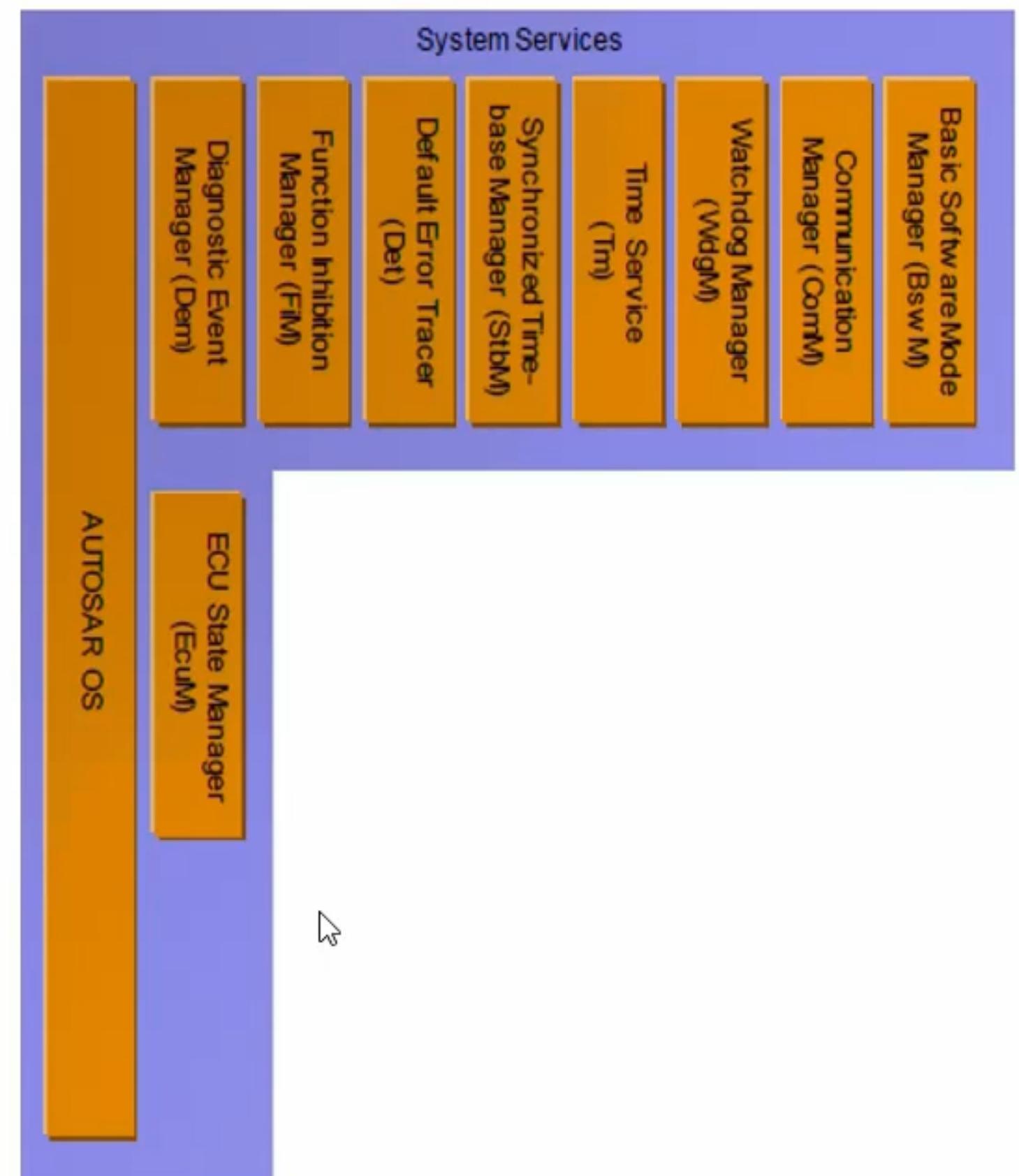
SYSTEM SERVICES

The System Services are a group of modules and functions which can be used by modules of all layers.

E.X : RTOS,DEM,DET and ECUM

Some Services:

- μC dependent (like OS), and may support special μC capabilities (like Time Service),
- partly ECU hardware and application dependent (like ECU State Manager) or
- hardware and μC independent.



DEM – Diagnostic Error Manager

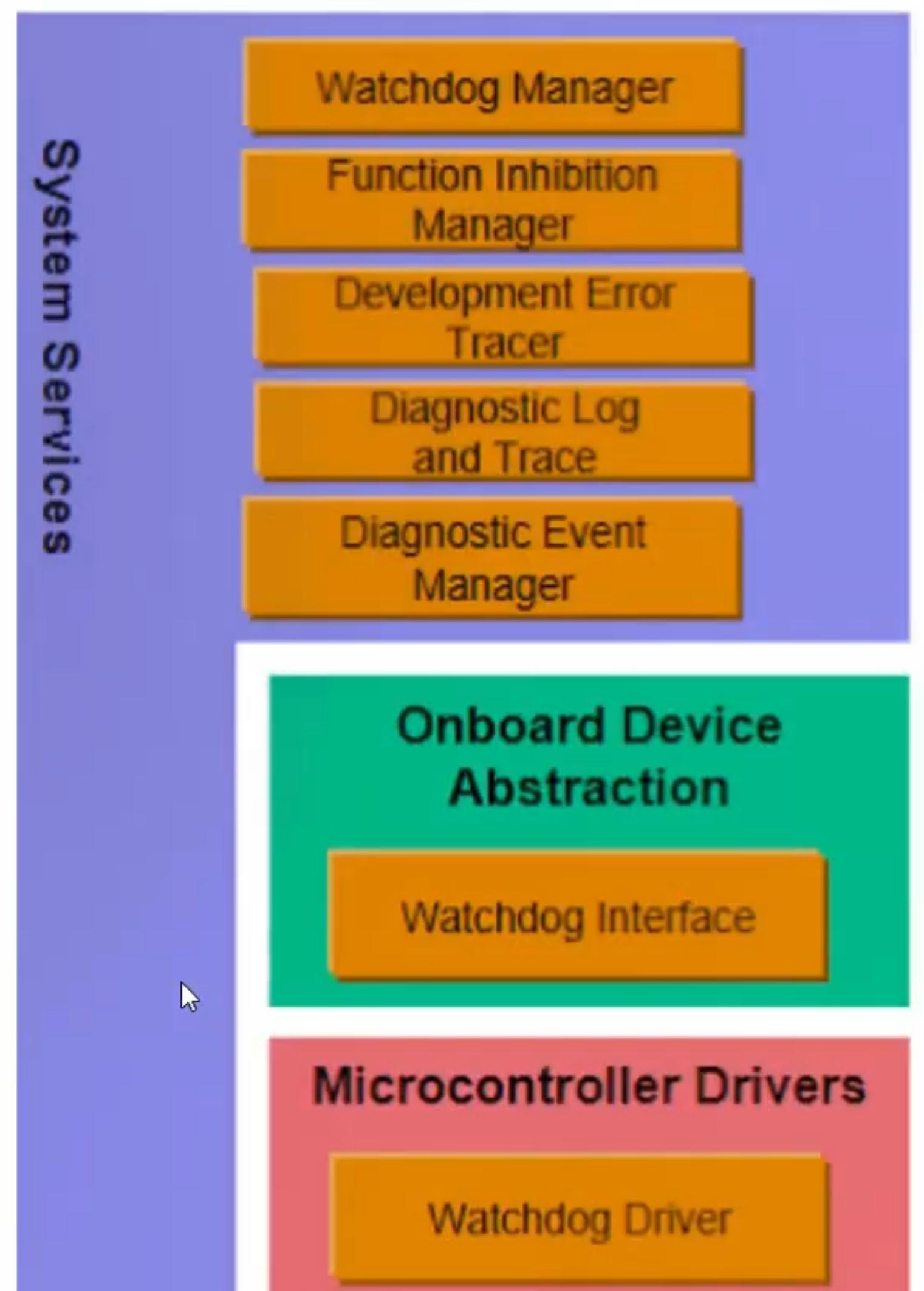
The Diagnostic Event Manager is responsible for processing and storing diagnostic events (errors) and associated Freezeframe data.

DLT – Diagnostic Log and Trace

Diagnostic Log and Trace supports logging and tracing of applications. It collects user defined log messages and converts them into a standardized format.

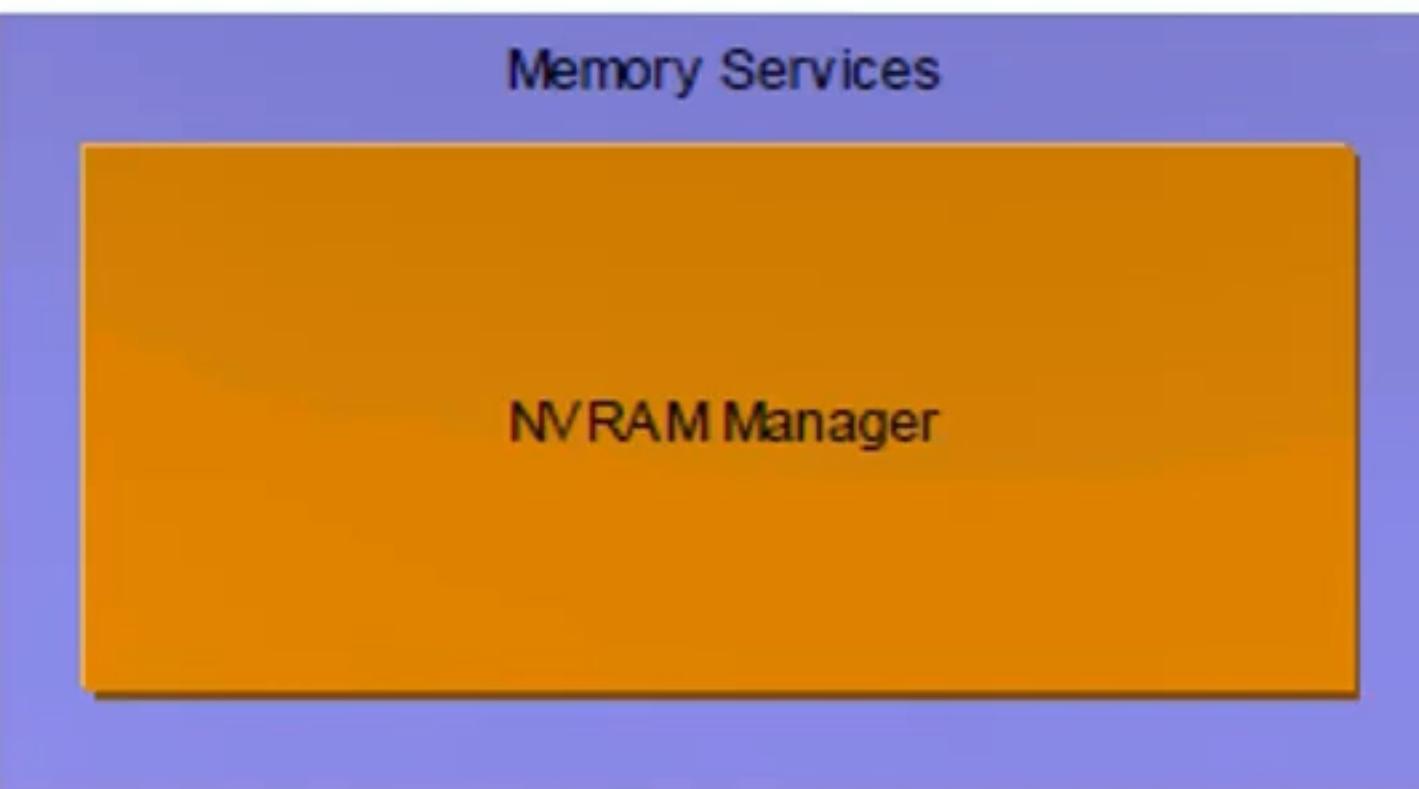
DET – Development Error Tracer

All detected development errors in the Basic Software are reported to Development Error Tracer.



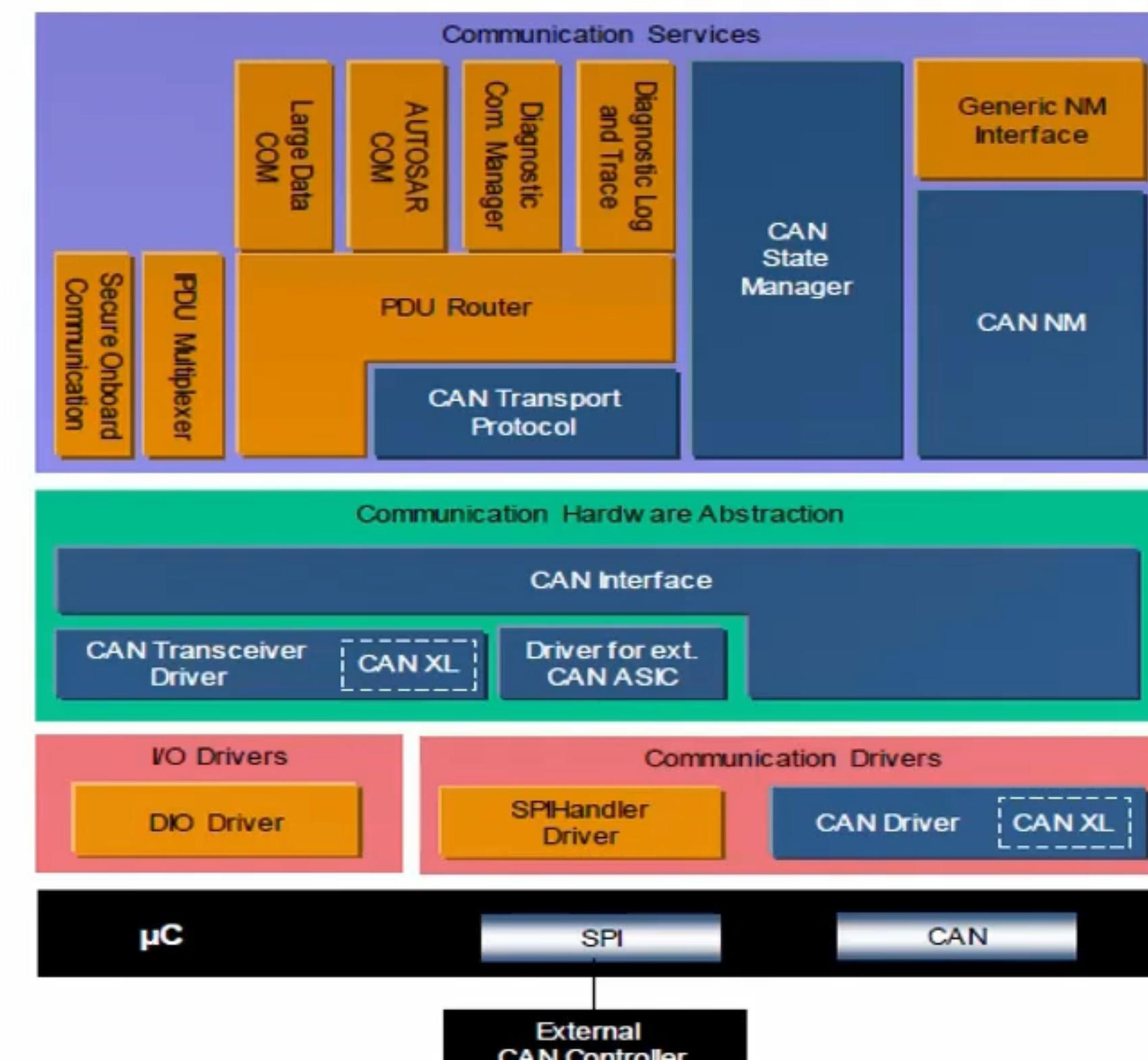
MEMORY SERVICES

- The Memory Services consist of one module, the NVRAM Manager. It is responsible for the management of non volatile data (read/write from different memory drivers).
- Provide non volatile data to the application in a uniform way.
- saving, loading, checksum protection and verification, reliable storage etc.



COMMUNICATION SERVICES

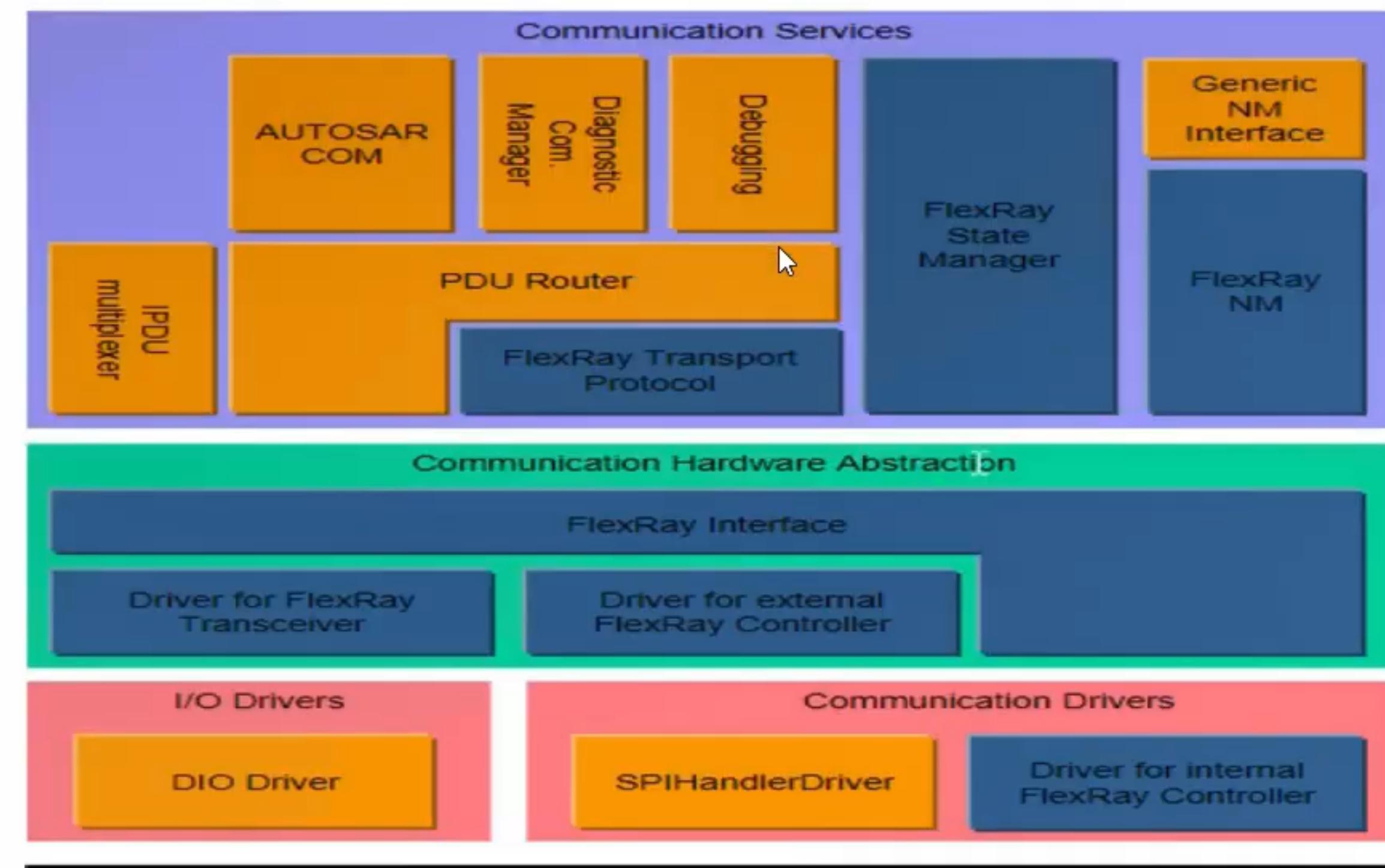
The Communication Services are a group of modules for vehicle network communication (CAN, LIN, FlexRay and Ethernet). They interface with the communication drivers via the communication hardware abstraction.



The CAN Communication Stack supports:

Classic CAN communication (CAN 2.0)

- CAN FD communication, if supported by hardware
- CAN XL communication, if supported by hardware



CRYPTO SERVICES

The Crypto Services consist of three modules

- The Crypto Service Manager is responsible for the management of cryptographic jobs
- The Key Manager interacts with the key provisioning master (either in NVM or Crypto Driver) and manages the storage and verification of certificate chains
- The Intrusion Detection System Manager is responsible for handling security events reported by BSW modules or SW-C



OFF BOARD COMMUNICATION SERVICES

Group of modules for Vehicle-to-X communication via an ad-hoc wireless network.

Provide a uniform interface to the Wireless Ethernet network. Hide protocol and message properties from the application.

V2X Management manages cross-layer functionality (like dynamic congestion control, security, position and time)

