**Watchdog driver** present in MCAL layer of AUTOSAR. Main use of watchdog driver is to trigger Hardware watchdog.

Watchdog driver is used to initialize & trigger the HW watchdog and to change the mode of watchdog(Slow/Fast/slow)

Watchdog has its counter, when system starts and wdg is initialized   this counter starts counting from 0.When count reaches to particular count ie, watchdog timeout period watchdog will generate reset. To avoid reset, SW need to trigger watchdog before watchdog count reaches wdg time period.

Slow mode means timeout of watchdog is high e.g 1000ms (Generally used at system startup)   
Fast mode means timeout of watchdog is low e.g. 100ms (Generally used at run time)  
OFF mode means watchdog functionality is OFF.  
  
**GPT driver**

It present in micro controller abstrasction layer of AUTOSAR.  
To trigger watchdog at correct time, in AUTOSAR it is mentioned that use GPT timer service.

e.g. if you want to trigger watchdog at 60ms, then configure GPT timer for 60ms and use GPT interrupt mechanism to trigger the watchdog at particular time.  
  
Mainly we want to Start GPT timer immediately after WDG is triggered, Otherwise WDG will not triggered at particular setup time.   
  
e.g. if watchdog timeout period is 100ms and you want to trigger watchdog every 75ms then configure GPT timer for 75 ms.  
  
 **ICU Driver** is a Basic Software Module of the I/O Drivers using the Input Capture Unit (ICU) for demodulation of a PWM signal, counting pulses, measuring of frequency and duty cycle, generating simple interrupts and also wakeup interrupts.

Pwm Demodulator : recreation of orginal s/g by using detector and LPF.  
Dependable on MCu, OS, Ports.

**FlexRay Driver (Fr)** is a Basic Software Module of the Communication Drivers. It is designed to be faster and more reliable than CAN , but it is also more expensive.  
FlexRay is a communication bus designed to ensure high data rates, fault tolerance, operating on a time cycle, split into static and dynamic segments for event-triggered and time-triggered communications  
.The static segment is predetermined for individual communication types, providing stronger determinism & clear timimg behaviour. The dynamic segment operates more like CAN, with nodes taking control of the bus as available, allowing event-triggered behavior

Application  
BMW X5  
BMW X7 Series, Bentley, audi , volvo, Mercedes Benz.  
**ETHERNET**

In the AUTOSAR Layered Software Architecture, the Ethernet Driver belongs to Microcontroller Abstraction Layer, or more precisely, to the Communication Drivers.  
The interface provides functionality for initialization, configuration and data transmission

.A single Ethernet Driver module supports only one type of controller hardware, but several controllers of the same type.

Eg : router connection with all computer network

**SPI Handler driver**

The SPI Handler/Driver provides services for reading from and writing to devices  
connected via SPI busses.  
  
The Serial Peripheral Interface (SPI) is a synchronus and serial commucation interface specification used for short-distance communication, mainly in embedded systems.  
SPI devices communicate in full duplex mode using a master-slave  technology. The master (controller) device originates the frame for reading and writing. Multiple slave-devices may be supported through selection with individual chip select (CS), sometimes called slave select (SS) lines.  
Typical applications include Secure Digital cards and liquid crystal displays.