**In AUTOSAR, the component responsible for mapping PDU (Protocol Data Unit) to a CAN frame is the CanIf (CAN Interface) module.**

Here's a breakdown of the process:

1. **COM Layer**

* **COM Module**:
  + This is the main component in the AUTOSAR stack responsible for the management of communication. It abstracts the application layer from the complexities of the underlying network technologies like CAN, LIN, or Ethernet.
  + The COM module handles the sending and receiving of PDUs, managing their packing into frames or their extraction from frames.
  + The configuration of the COM module determines which signals are packed into which PDUs and how these PDUs are subsequently mapped to specific CAN frames.

1. **CanIf**: This module receives the PDUs from the COM layer (via the PDU router) and handles the transmission of these PDUs onto the actual CAN network. It deals with the CAN frame aspects, like setting up the correct identifier and ensuring the PDU is correctly formatted within the CAN frame data field. This involves:

* **ID Mapping**: CanIf translates the PDU identifier to a CAN Identifier

(CAN ID) that will be used on the CAN bus.

* **Data Mapping**: CanIf maps the data bytes within the PDU to the data bytes within the CAN frame. This might involve padding the data or re-arranging it to fit the CAN frame format.

1. **Lower Layers:** Once the CAN frame is constructed by CanIf, it interacts with the lower software layers:

* **PduR (PDU Router):** PduR might be involved in routing the CAN frame to the appropriate CAN transceiver based on the configuration.
* **CAN driver:** The CAN driver interacts with the specific CAN hardware on the Electronic Control Unit (ECU) to transmit the CAN frame onto the physical CAN bus.

1. **Configuration**

* **System and ECU Configuration**: AUTOSAR uses a system description file, often in XML format, to configure how PDUs are mapped to CAN frames. This configuration includes the mapping of signal groups to PDUs and PDUs to CAN frames, the CAN identifiers, and other transmission properties.

**Example Scenario**

1. **Application Layer**: Sends or receives data.
2. **COM Layer:** Takes the application data and forms PDUs. It decides, based on the configuration, which CAN frame will carry which PDU.
3. **PDU Router**: Directs these PDUs to the correct interface module based on the network type.
4. **CAN Interface**: Packs the PDUs into CAN frames and sends them over the network.