1.   COMBINEEVENTS

If there is a need to combine different independent monitors to one single 3-Byte-DTC in OBDonUDS, this should be done with a central mechanism.

Definition how to summarize the different data:

- **-IUMPR: output the lowest event Ratio for the DTC (same logic/algorithm like for IUMPR-grouping in 22 F8 xx)**

- **-Test result: If the DTC requires DTC based Test results CombineEvents is not available for this specific DTC.**

- **FreezeFrames:**

    o **Output the first FreezeFrame from the event that first set the pending bit.**

    o **The latest FreezFrame will updated once a DCY with first occurrence of TestFailedThisDCY=1 in combined DTC Status Byte. More often updates are optional and OEM-specific.**

- Combining Logic

Combined DTC Status Bit	
Bit 0 – TestFailed	OR (Event[i].Bit0)
Bit 1 – Test Failed This Operation Cycle	OR (Event[i].Bit1)
Bit 2 – PendingDTC	OR (Event[i].Bit2)
Bit 3 – ConfirmedDTC	OR (Event[i].Bit3)
Bit 4 – Test not Completed Since Last Clear	OR (Event[i].Bit4) AND NOT Bit5
Bit 5 – Test Failed Since Last Clear	OR (Event[i].Bit5)
Bit 6 – Test not Completed This Operation Cycle	OR (Event[i].Bit6) AND NOT Bit1
Bit 7 – Warning Indicator Requested	OR (Event[i].Bit7)

- Permanent Status of DTC = OR (Event[i].permanentFlag)

All Bits, excluded Bit #4 and Bit #6 are an logical OR. DTC based readiness (Bit #4 and Bit #6) takes also in account that a fail makes the combined Monitor also completed.

All combined events in a DTC have to belong to the same readiness group.