

Slides from Jonathan Petit
(Security Innovation)

Basic Safety Message (BSM) Part I

No PII!

```
BSMcoreData ::= SEQUENCE {  
  msgCnt MsgCount,  
  id TemporaryID,  
  secMark DSecond,  
  lat Latitude, long Longitude, elev Elevation,  
  accuracy PositionalAccuracy,  
  transmission TransmissionState,  
  speed Speed, heading Heading, angle SteeringWheelAngle,  
  accelSet AccelerationSet4Way, brakes BrakeSystemStatus,  
  size VehicleSize}
```

But:

- **tracking possible if TemporaryID isn't changed correctly**
- **VehicleSize: 0.2m accuracy**

BSM Part II (optional)

```
BSMpartIIExtension PARTII-EXT-ID-AND-TYPE ::= { {  
  VehicleSafetyExtensions IDENTIFIED BY vehicleSafetyExt} |  
  { SpecialVehicleExtensions IDENTIFIED BY specialVehicleExt} |  
  { SupplementalVehicleExtensions IDENTIFIED BY  
  supplementalVehicleExt} , ...  
}
```



BSM Part II - VehicleSafetyExtensions

```
VehicleSafetyExtensions ::= SEQUENCE {  
  events VehicleEventFlags OPTIONAL,  
  pathHistory PathHistory OPTIONAL,  
  pathPrediction PathPrediction OPTIONAL,  
  lights ExteriorLights OPTIONAL,  
  ...  
}
```



BSM Part II - SpecialVehicleExtensions

SpecialVehicleExtensions ::= SEQUENCE {

-- The content below requires SSP permissions to transmit

-- The entire EVA message has been reduced to these items

vehicleAlerts [EmergencyDetails](#) OPTIONAL,

-- Description or Direction from an emergency vehicle

description [EventDescription](#) OPTIONAL, -- short ITIS description

-- Trailers for both passenger vehicles and heavy trucks

trailers [TrailerData](#) OPTIONAL,

-- HAZMAT and Cargo details to be added in a future revision -- Wideload, oversized load to be added in a future revision

... }



BSM Part II - SupplementalVehicleExtensions

```
SupplementalVehicleExtensions ::= SEQUENCE {  
  classification BasicVehicleClass OPTIONAL -- May be required to be present for non passenger vehicles  
  classDetails VehicleClassification OPTIONAL -- Vehicle Type Classification Data  
  vehicleData VehicleData OPTIONAL -- Vehicle Type Classification Data  
  weatherReport WeatherReport OPTIONAL -- Various V2V Probe Data  
  weatherProbe WeatherProbe OPTIONAL -- Various V2V Probe Data  
  obstacle ObstacleDetection OPTIONAL -- Detected Obstacle data  
  status DisabledVehicle -- Disabled Vehicle Report  
  speedProfile SpeedProfile OPTIONAL, -- Oncoming lane speed reporting  
  theRTCM RTCMPackage OPTIONAL, -- Raw GNSS measurements  
  regional SEQUENCE (SIZE(1..4)) OF  
  RegionalExtension {{REGION.Reg-SupplementalVehicleExtensions}} OPTIONAL, -- Raw GNSS  
  measurements  
  ... }
```

No PII!

AV data

- AV data are rich (richer than CV): sensors data, driver information?
- AV data are stored in-vehicle and in the cloud
- Richer data are shared with neighboring AVs because this isn't only a warning system anymore
- AV data will be used for forensics/insurance
- Cloud can send command to the AV to control it (fleet of autonomous vehicles that could be tele-operated)