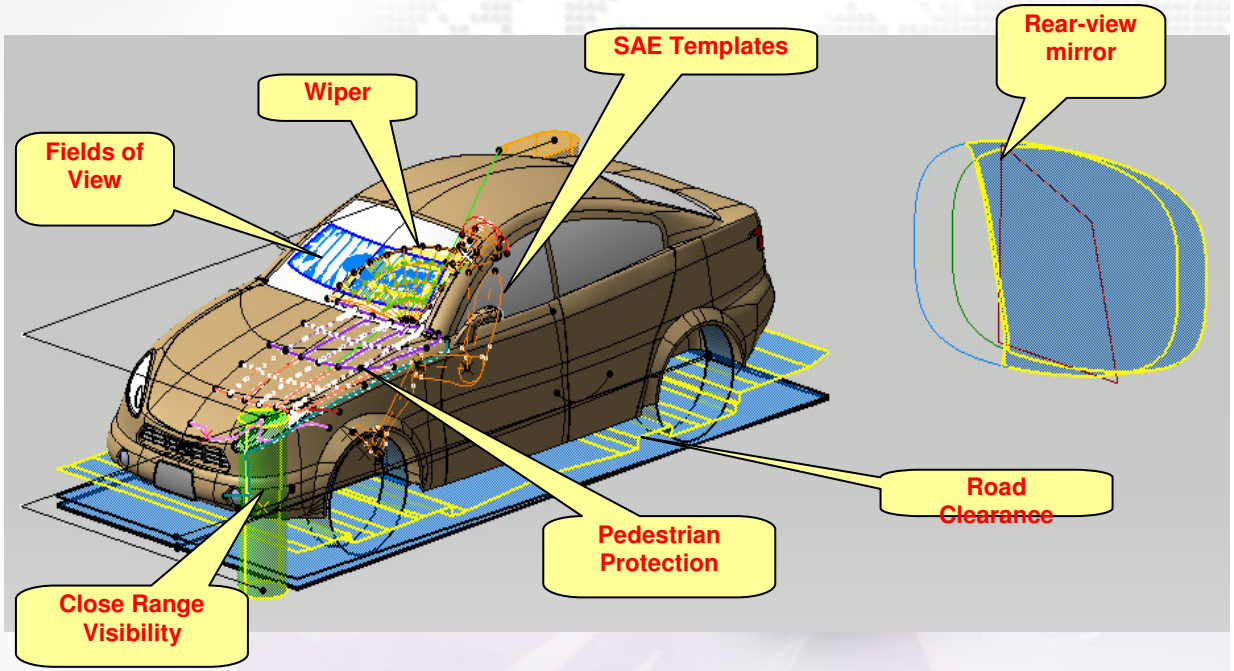
CAVA

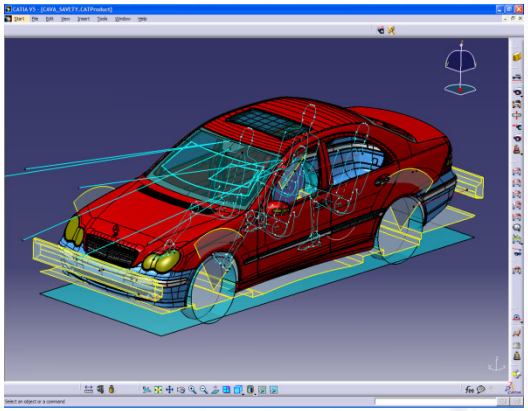


CATIA V5 – **A**utomotive Extensions **V**ehicle **A**rchitecture

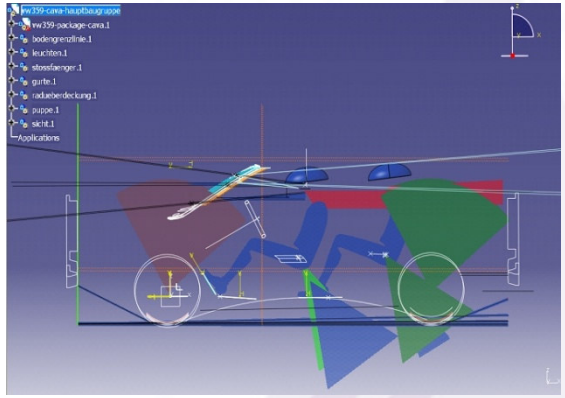
© EDS Technologies 2011

CAVA

- **Makes standards and guidelines relevant for the vehicle concept available as V5 features**

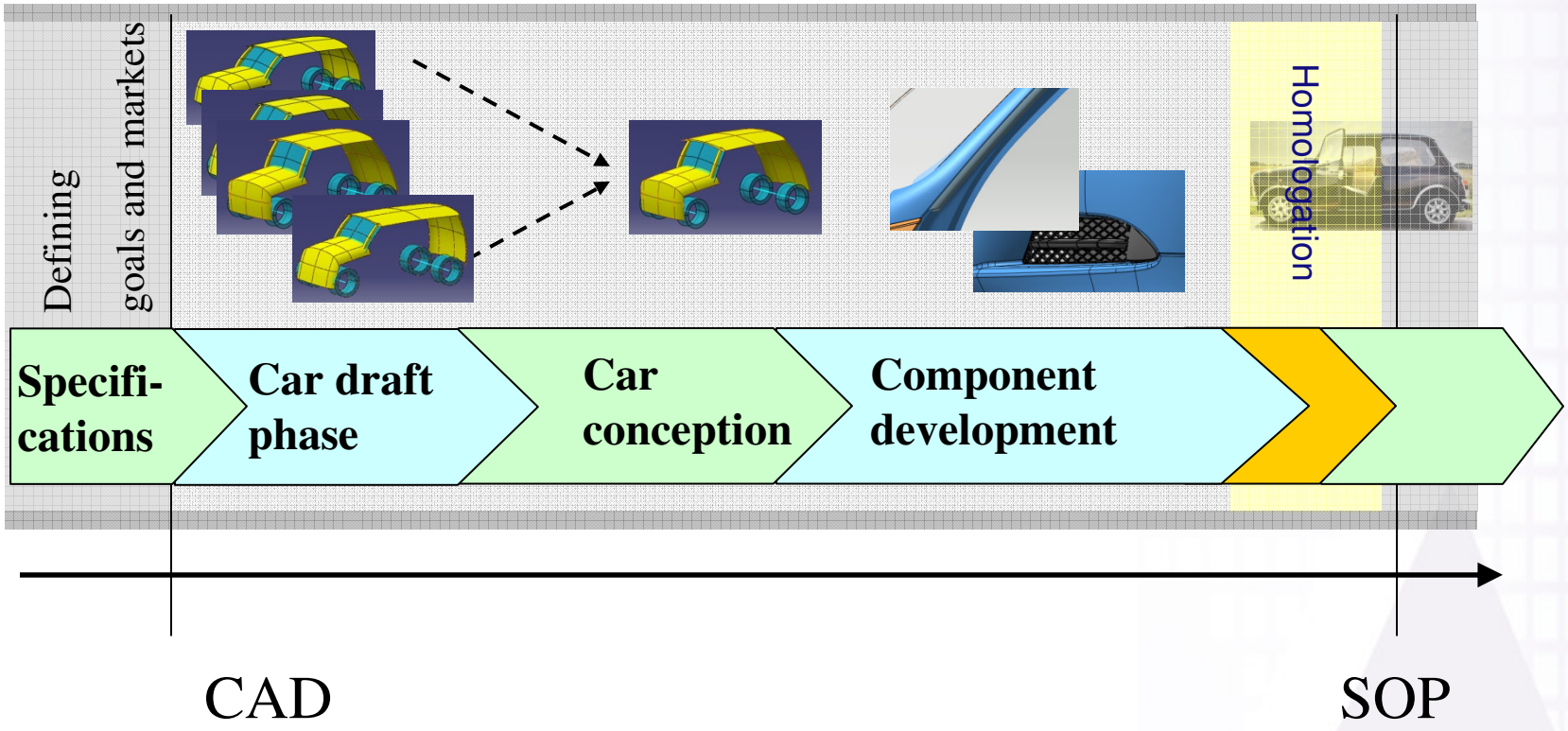


- **CAVA is a set of products**
  - CO9 - CAVA Overall Vehicle Architecture
  - CV9 - CAVA Vision
  - CA9 - CAVA Safety
  - CM9 - CAVA Manikin
  - CW9 - CAVA Wiper



© EDS Technologies 2011

From conception to Start Of Production



Aim: Ensuring the observation of legal regulations during whole the design process

© EDS Technologies 2011

• CAVA Overall Vehicle Architecture (CAVA OVA)

- **Underfloor functionalities**
  - Calculation and visualization of the ground clearance
  - Measure Standard values against vehicle geometry
- **Lamp Positions**
  - Visualization of the allowed positions for front, back and side lamps
- **Number Plates**
  - Visualization of the allowed positions for number plates
- **Bumpers**
  - Positioning the bumper test pendulums
- **Wheel Covering**
  - Calculation and visualization of required coverage of the wheel by vehicle geometry
- **Seating Belts**
  - Create areas where to fix the belt anchor points
- **Child protection**
  - Visualize an area where to fix the top tether for child seats
- **Free Space**
  - Visualization of the space needed to fix the top tether at the anchor point

© EDS Technologies 2011

- **CAVA Manikin**
  - **2D Manikin Template (SAE):**
    - Position Manikin in car
    - Clash detection with vehicle geometry
  - **Head position contour**
    - Visualize contour
    - Measure vertical and diagonal clearance to vehicle roof
  - **Eye points/ellipses**
    - Create eye points and ellipses
  - **SRP positioning curves**
    - Ergonomical seat points

© EDS Technologies 2011

- **CAVA Vision**
  - **Mirror**
    - Calculation and visualization of the instruction field behind the car and on the rear view mirror surface regarding view obstruction by vehicle geometry
  - **Fields of View**
    - Visualization of the allowed positions for front, back and side lamps
  - **A-Pillar obstruction**
    - Calculation of the field vision limitation caused by the A-pillar
  - **Vision Points**
    - Points that have to be in the visual part of the windshield
  - **Vision Cone, Vision Planes**
    - Visualization of areas that have to be free from blinding and view obstructing vehicle geometry
  - **Optical Distortion, Multiple reflection**
    - Calculation and visualization of the optical quality of the windshield
  - **Direct view, Direct view 3D**
    - Check visibility of points outside the car – All around view visualization
  - **Close Range Visibility**
    - Check visibility of an obstacle (cylinder) around the car using rear view mirror and video

© EDS Technologies 2011

- **CAVA Safety**
  - **Pedestrian Protection**
    - Calculation and visualization of boundaries and areas on the frontal part of the car to indicate possible contact positions of a pedestrian
  - **Head Impact**
    - Calculation and visualization of points inside the car to indicate possible contact points of the driver and passengers head

- **CAVA Wiper**
  - **Calculation and visualization of wiped part of the windshield**
    - Separate calculation for the Fields of Vision
  - **Calculation and visualization of the quality of the wiped areas**
    - Separate calculation for the Fields of Vision

© EDS Technologies 2011

CAVA Customers

- ***Automotive OEMs***
  - *5 German OEMs*
    - Subsidaries (Skoda, Bentley,…)
  - *PSA*
  - *FAW Volkswagen (China)*
  - *Tesla Motors (US)*
  - *Autovaz (Russia)*

- Supplier
  - Magna Steyr, Edag, Karmann, Bertrandt,….
  - Mirror supplier

© EDS Technologies 2011