# Behaviour Analysis of Service Compositions

## SERVICE DECOMPOSITION AND ANALYSIS

### Scenario

The UK Police IT Organisation (PITO) have decided that parts of the single service composition should be decomposed in to two separate services, one for person related services (PersonRecords, DNA etc) and one for vehicle services (VehicleRecords, Insurance, ANPR) etc such that additional clients may utilize the functionality separately. However, the original client requirement still holds, therefore the original service composition is still required.

Demonstrate using WS-Engineer, decomposing the single composition process to three composition processes and ensure that requirements are upheld by model checking the implementations against designs.

### Service Decomposition

1. Using the **pitomsc1.xml** MSC model, extend the design scenarios to represent the individual scenarios for interactions between client and person service composition, and client and vehicle service composition.
2. Using a BPEL editor (such as that installed on the SENSUS VM image), take the PITO bpel process sequence composition (**pito_iteration1.bpel**) and decompose it in to two service processes based upon personal and vehicle types services.
3. Modify the original **pito_interaction1.bpel** process to use both person and vehicle service compositions to satisfy the original requirements.
4. Model check that the new service compositions fulfill the new design requirements and that the original requirements are still up-held.

### Deliverables

1. New design model (LTSA MSC xml file)
2. 3 BPEL processes and WSDL interfaces (processx.bpel, processx.wsdl files)
3. Results report from analysis of each service composition, including:
    a. Safety analysis of each process (default deadlock safety)
    b. Design and Implementation verification with trace results
    c. Interaction analysis and safety check traces