

# ASAM Technical Seminar 2020

## XIL Access to Service-Oriented Communication (SOC)

### Content ideas for XIL V3.0.0

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# Agenda

<b>1</b>	<b>Motivation</b>
<b>2</b>	<b>Short Introduction: Service-oriented Communication (SOC)</b>
<b>3</b>	<b>Challenges for XIL</b>
<b>4</b>	<b>Project Content and Objectives</b>
<b>5</b>	<b>Schedule and Project Status</b>

# Motivation

At the final phase of the XIL 2.2 maintenance project

- the XIL working group collected the most important topics for a next version of the XIL standard
- the support of XIL to test ECU software architectures, that use **service-oriented communication (SOC)**, has been identified as very urgent to standardize
  - initial assessment: huge impact on a future XIL standard
  - effort required was estimated to be very large but could not exactly be addressed

⇒ XIL working group decided to start an ASAM concept project as preparation for the subsequent XIL development project

# Service-oriented Communication

## Terminology

“Service-oriented” stands for

- Access to data via services, based on a *provider-consumer concept*
- Use of the services *by any application*
- Ensuring autonomous services (*independence* of other services)
- *Platform independence*

Data exchanged by services are defined by *capability descriptions* for each service.

Examples of service-oriented communication:

SOME/IP protocol (Scalable Service-Oriented Middleware over IP), used in e.g. Adaptive AUTOSAR

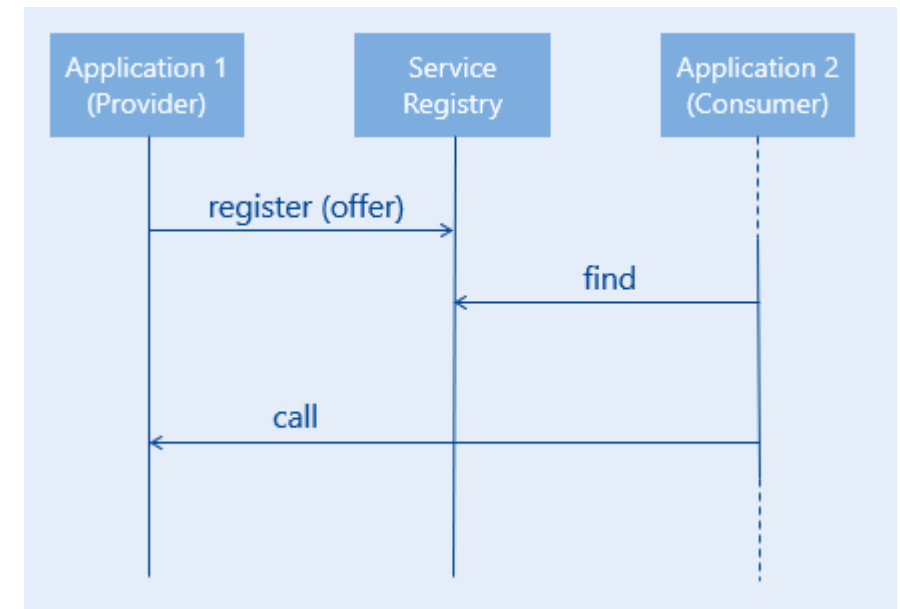
REST (Representational State Transfer)

SOVD (Service-oriented Vehicle Diagnostics), see ASAM project P2019-07

# Service-oriented Communication

## Provider-Consumer Concept in SOME/IP

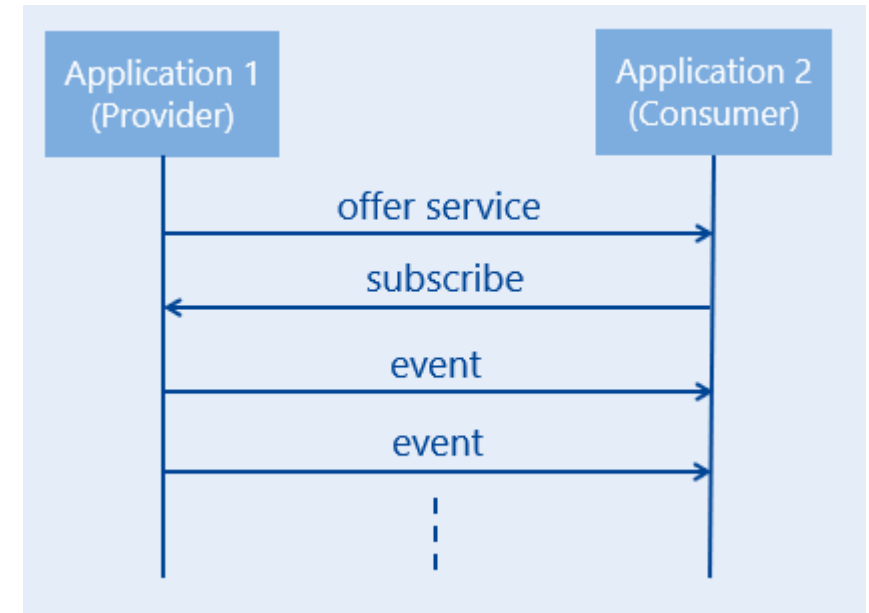
- communication between provider and consumer is established dynamically
- usable services are searched for or queried via a service discovery protocol
  - provided services are registered by the provider application at the Service Registry
  - consumer application queries the Service Registry to find and use these services



# Service-oriented Communication

## Event Transmission in SOME/IP

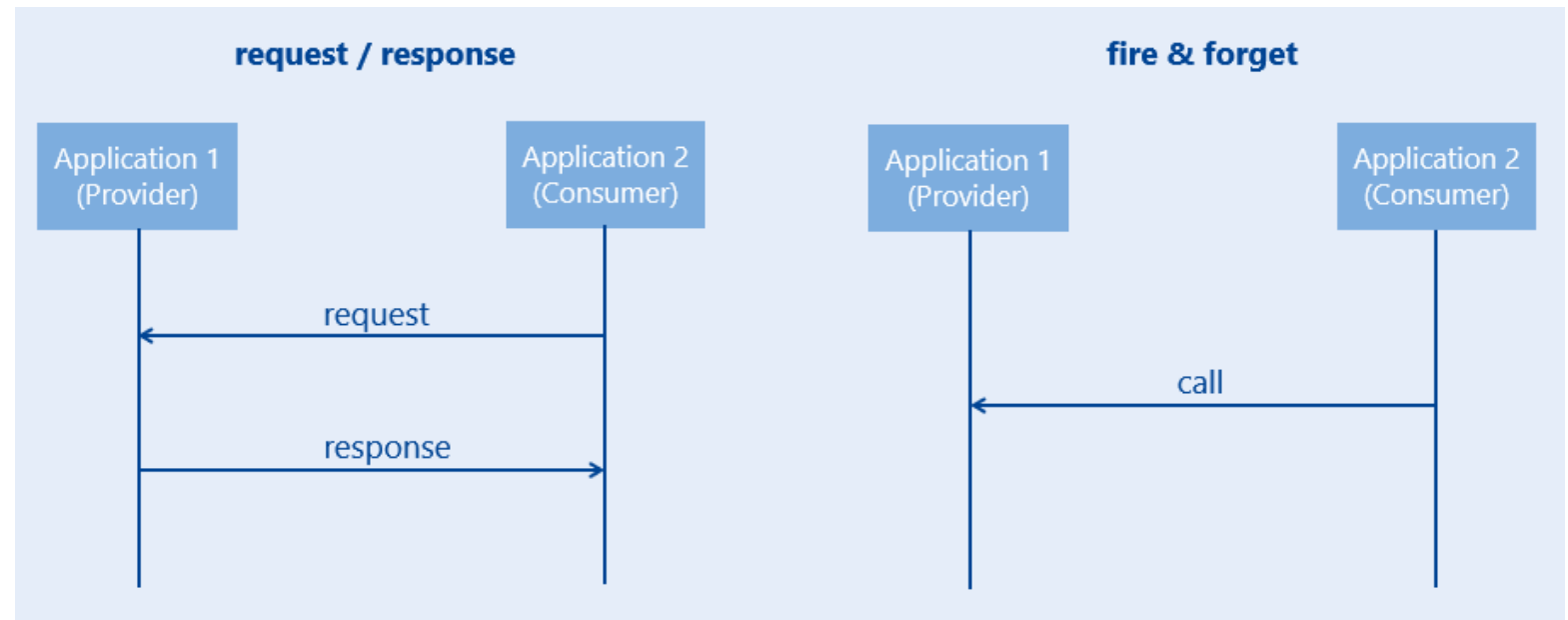
- Events represent unidirectional data transmissions from service provider to consumer
- Events can be sent cyclically or spontaneously on change by the provider



# Service-oriented Communication

Methods in SOME/IP

- Methods are operations that the consumer can call on the provider via remote procedure call (RPC)
- Two types of transmission:
  - Request / Response
  - Fire & Forget



# Service-oriented Communication

## Challenges for XIL

### Challenges for XIL:

- Handling of complex, structured data, dynamically sized
- Handling of dynamic adaption of the data transferred
- Handling of dynamic changes (e.g. adding/removal) of applications and services in the network
- XIL clients (test automation applications) may register itself as consumer or producer with different services in different roles
- Extension of the support of existing signal-oriented to service-oriented data transmission



# Project Content

- Definition of the field of application and the **use cases**, e.g.
  - Test of service providers
    - Call methods of service providers, analyze the results of the response
    - Register as event listener, analyze event notifications (functional, syntactic)
  - Test of service consumers
    - Simulate behavior of service provider (restbus-simulation / restservice-simulation)
- Based on use cases and **requirements** it shall be checked which extensions and changes to the APIs and file formats of XIL are required. This may result in ports to be completely redesigned or in new ports to be developed.
- **Clarification** of how data structures and their descriptions (e.g. AUTOSAR description file) used in service-oriented communication shall be handled by a future XIL standard
- **Definition of work packages** and their **effort** for the **follow-up XIL project**

# Project Objectives

Objectives:

- Clarification of the scope
- Determination of the use cases
- Definition of the requirements
- Analysis of the impact on the XIL standard
- Provision of a proposal for necessary extensions and modifications of the XIL standard

# Schedule and Project Status

**Duration of the project: August 2020 – January 2021**

Current status:

- First draft of use case definition available
- Derivation of requirements started
- First draft of the future XIL architecture under discussion

**Further participants are welcome to join the working group!**

