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**Department of
Computer Science**

Shared Internet Of Things Infrastructure Platform:

ADD Application

Software Architecture (H09B5a and H07Z9a) – Part 2a

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Contents

1. Attribute-driven design documentation

1.1 Decomposition 1: SIoTIP System (Av3, P2, UC11, UC14, UC15, UC18)

1.1.1 Module to decompose

In this run we decompose the `SIoTIP System`.

1.1.2 Selected architectural drivers

The non-functional drivers for this decomposition are:

- *Av3*: Pluggable device or mote failure
- *P2*: Requests to the pluggable data database

The related functional drivers are:

- *UC11*: Send pluggable device data
- *UC14*: Send heartbeat
- *UC15*: Send notification
- *UC18*: Check and deactivate applications

Rationale We chose Av3 first since it had high priority and it was about the connectivity of sensors in the system more so than M1 and U2. We chose P2 along with Av3 as it was related to Av3 and would force us to think about the way sensor data, the core of the whole system, is handled. Handling Av3 and P2 would give a better starting point than M1 and U2 for the whole system for later ADD iterations.

1.1.3 Architectural design

Topic Discussion of the solution selected for (a part of) one of the architectural drivers.

Alternatives considered

Alternatives for solution A discussion of the alternative solutions and why that were not selected.

1.1.4 Instantiation and allocation of functionality

Decomposition Main aspects of the resulting decomposition.

ModuleB Per introduced component a paragraph describing its responsibilities.

ModuleC Per introduced component a paragraph describing its responsibilities.

Behaviour If needed and explanation of the behaviour of certain aspects of the design so far.

Deployment Rationale of the allocation of components to physical nodes.

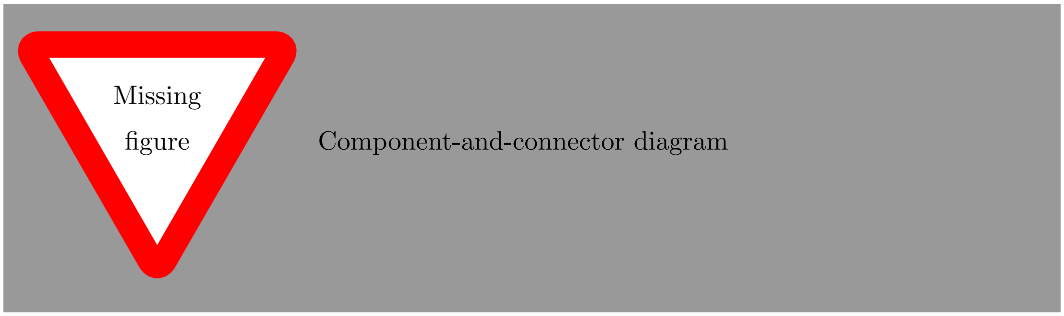

Figure 1.1: Component-and-connector diagram of this decomposition.

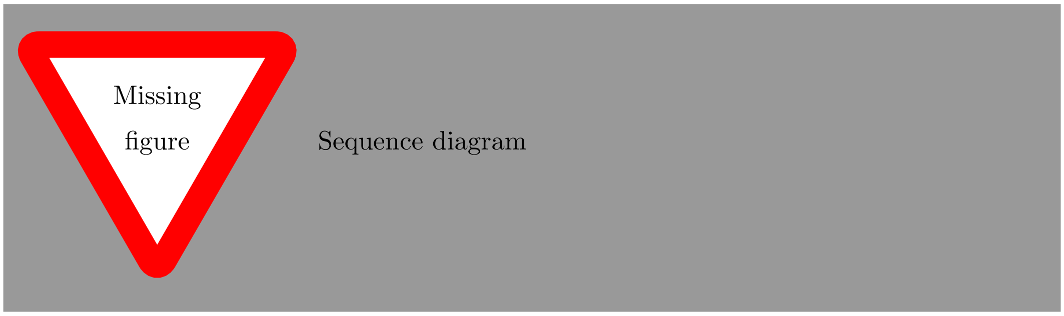

Figure 1.2: Sequence diagram illustrating a key behavioural aspect.

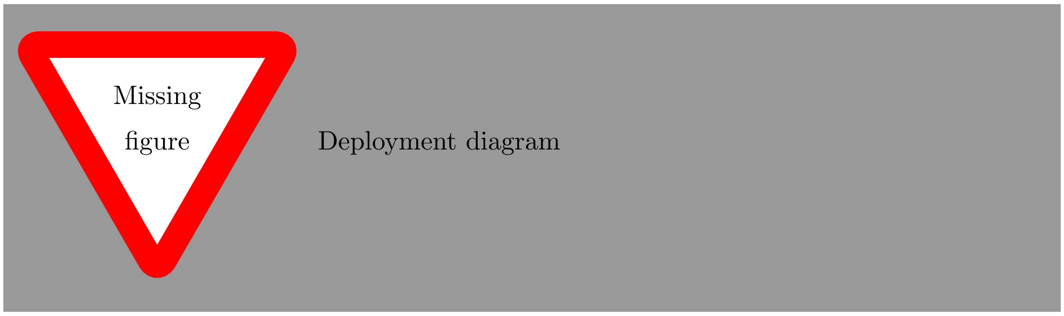

Figure 1.3: Deployment diagram of this decomposition.

1.1.5 Interfaces for child modules

ModuleB

- InterfaceA
  - `returnType operation1(ParamType param1)` throws TypeOfException
    - Effect: Describe the effect of calling this operation.
    - Exceptions:
      - TypeOfException: Describe when this exception is thrown.
  - `returnType operation2()`
    - Effect: Describe the effect of calling this operation.
    - Exceptions: None

1.1.6 Data type definitions

Describe per complex data type used in the interfaces what it represents.

returnType This data element represents X.

ParamType This data element represents Y.

1.1.7 Verify and refine

This section describes per component which (parts of) the remaining requirements it is responsible for.

ModuleB

- *Z1*: name
- *UCd*: name

ModuleC

- *UCba*: name
  Description which part of the original use case is the responsibility of this component.

1.2 Decomposition 2: Module (drivers)

1.2.1 Module to decompose

1.2.2 Selected architectural drivers

1.2.3 Architectural design

1.2.4 Instantiation and allocation of functionality

1.2.5 Interfaces for child modules

1.2.6 Data type definitions

1.2.7 Verify and refine

2. Resulting partial architecture

This section provides an over of the architecture constructed through ADD.

2.1 Context diagram

This subsection discusses the context diagram.

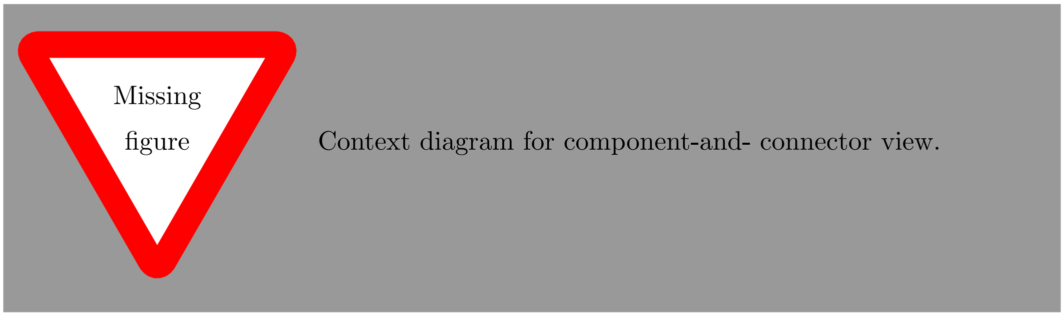

Figure 2.1: Context diagram for the component-and-connector view.

2.2 Component-and-connector view

A short discussion of the component-and-connector view with the key decompositions if any.

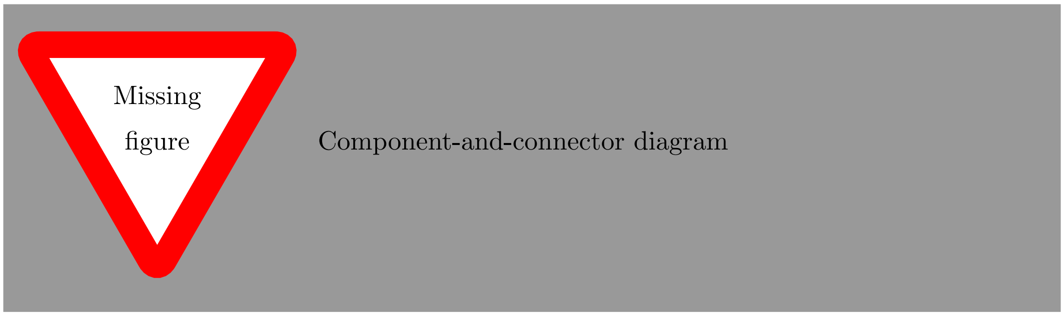

Figure 2.2: Primary diagram for the component-and-connector view.

2.3 Deployment view

A short discussion of the allocation of components to physical nodes based on a context diagram and a deployment diagram.

Figure 2.3: Decomposition of a component shown in Figure 2.2

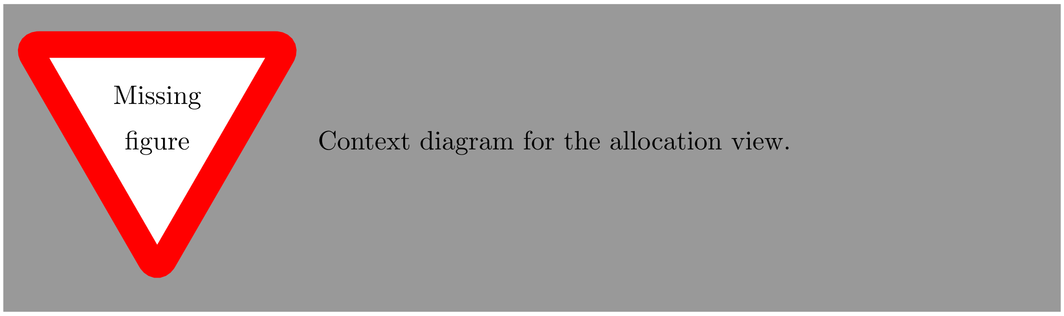

Figure 2.4: Context diagram for the allocation view.

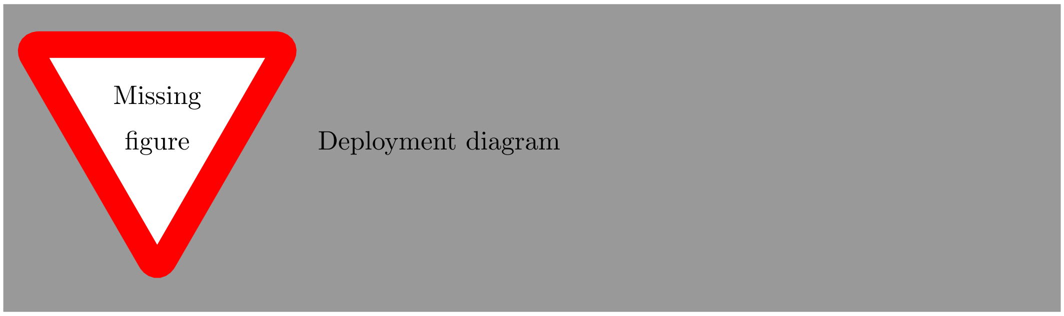

Figure 2.5: Primary diagram for the allocation view.