

Module name: Queued Message Handler (QMH) software architecture

- **Main functionalities:**

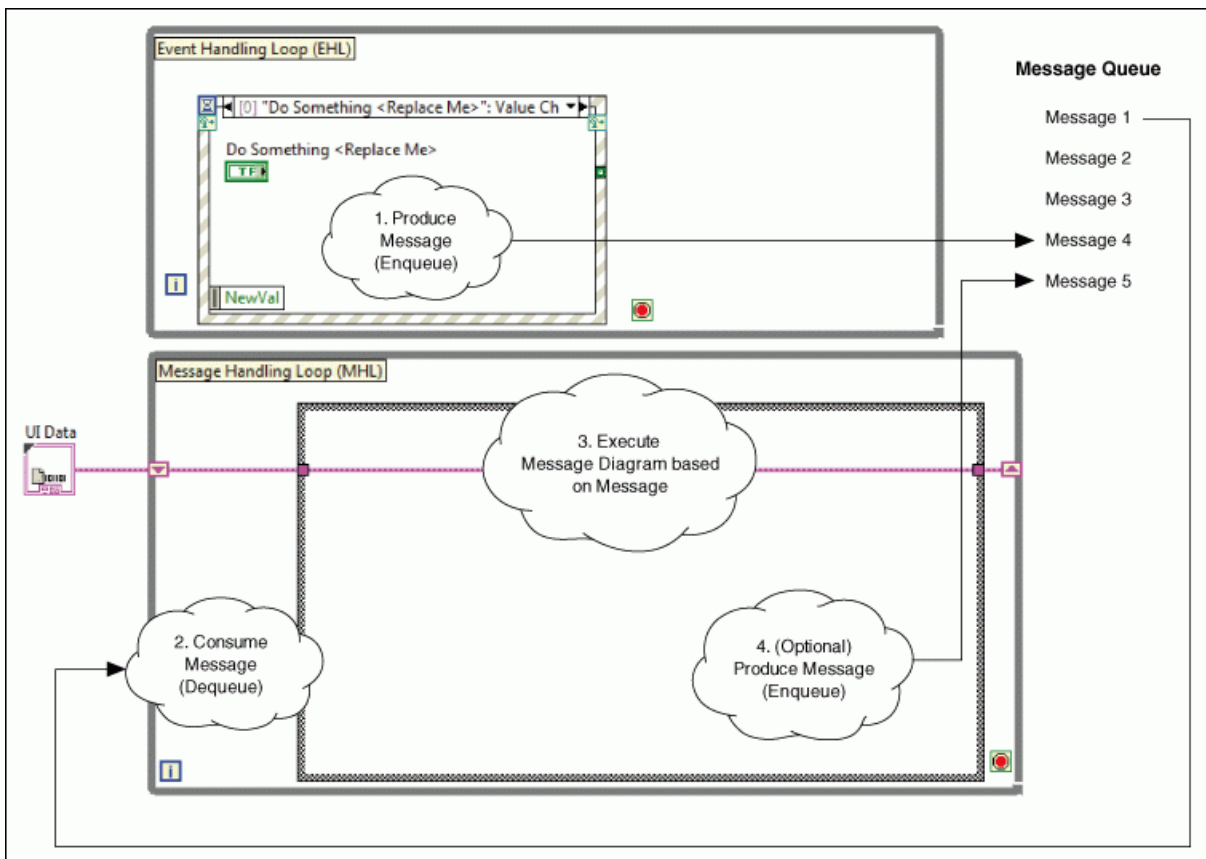
The main functionality of the module is to organize the whole software in separate tasks (modules) and execute them in parallel at different execution rates.

- **Technical specifications:**

The implemented Queued Message Handler is based on the Queued Message Handler Template¹ software architecture and it is custom tailored for the Use Case demonstration. The complete software is made with National Instruments LabVIEW™ graphical programming language.

The QMH template facilitates multiple sections of code running in parallel and sending data between them. Each section of code represents a task, such as acquiring data, and is designed similarly to a state machine. Because of this design, each task can be divided into states.

The QMH template is a version of the Producer/Consumer design pattern, where the user interface (producer) produces messages and the tasks (consumers) consume them. (See 1. Figure)



1. Figure Overview of the Queued Message Handler software architecture².

¹ Queued Message Handler Template documentation available at <http://www.ni.com/tutorial/53391/en/>

² Source: <http://www.ni.com/tutorial/53391/en/>

The software can be used with any computer that complies with the LabVIEW™ system requirements³.

- **Inputs and outputs:**

Non required.

- **Interface specification:**

This module is the interface between the end user and other parts of the software. An end user can operate the software through a user interface.

- **Formats and standards used:**

QMH design pattern.

- **Availability:**

The demonstration in prototype phase is already available both in source code and as a standalone desktop application by contacting the authors of this description. A linguistic upgrade of the user interface is necessary however to make the software multilingual if used internationally.

The software for the use case demonstration itself is free of charge, but if used as a source code, the LabVIEW™ software is to be purchased. If used as a standalone desktop application, no further purchase is required.

- **Application scenarios:**

The QMH template is useful for applications where multiple tasks occur in parallel, often at different execution rates and the application requires a responsive user interface; that is, users should be able to click buttons even while the application is executing another command.

- **Offered for internal / external use**

The demonstration is available both for internal and for external use.

- **Legal disclaimer:**

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³ System Requirements for LabVIEW Development Systems and Modules: <http://www.ni.com/product-documentation/53740/en/#toc1>