SW Integration Plan

Customer

Project

**Revision History**

| **Version** | **Date** | **Change Description / Reason** | **Author** |
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# Objective of this Integration Plan

This Integration Plan applies to the <project name> project and is mandatory for all phases of the project. It is kept under the unique name of <<Level Integration Plan ID (from ConfigMan)>>. The Integration Plan forms the basis for the documentation of the area of application, the expenditure and the scheduling of the integration activities. For personal responsibilities see <<Master Test Concept-ID (from ConfigMan)>>.

If no Master Test Plan exists for the project, then state the ID of the Project Manual, as in that case the appropriate information is to be given there and is the Project Manager's responsibility.

## Definitions, Glossary

If applicable own project-specific abbreviations and definitions.

# Integration



## Necessary Documents

This section lists all relevant documents for this Integration Plan with revision number.

The following documents are used as basis for the software integration:

* <Master Test Plan ID Revision >
* Release Plan <Revision>
* Relevant standards
* …

## Integration Strategy

The objective of this integration strategy is to coordinate the integration of the individual shares into sub-parts, to define the order in which the shares will be integrated and to plan the integration steps (only tested shares must be used for integration) to enable performance of the integration test activities as simply, quickly and efficiently as possible. There are several standard procedures available for the integration strategy: top-down, bottom-up, outside-in and big-bang strategy, as well as mixed strategies.

The strategy selected needs to be described sufficiently and justified.

The <procedure> is selected as the integration strategy for this project.

Reason: Give reasons why this procedure has been selected. This may be in the form of a list of reasons or a detailed description.

The order of the shares to be integrated follows from the integration strategy selected. The table below assigns the shares to an integration step. Integrated shares form a larger assembly, identified by the integration step number. By and by, larger assemblies are formed out of the integrated shares until in the last integration step all shares form the complete system. The shares to be integrated in the respective integration steps are marked with an "X" in the table.

*Example for Integration:*

|  |
| --- |
| **(Sub-)system** |
| **Integration step ID** | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| SW-Sys 1 | x |  |  |  |  |  |  |  |  |
| SW-Sys 2 | x |  |  |  |  |  |  |  |  |
| SW-Sys 3 |  | x |  |  |  |  |  |  |  |
| SW-Sys 4 |  | x |  |  |  |  |  |  |  |
| SW-Sys 5 |  |  |  | x |  |  |  |  |  |
| SW-Sys 6 |  |  |  |  | x |  |  |  |  |
| HW-Sys 1 | x |  |  |  |  |  |  |  |  |
| HW-Sys 2 | x |  |  |  |  |  |  |  |  |
| HW-Sys 3 |  |  | x |  |  |  |  |  |  |
| HW-Sys 4 |  |  | x |  |  |  |  |  |  |
| HW-Sys 5 |  |  |  | x |  |  |  |  |  |
| HW-Sys 6 |  |  |  |  | x |  |  |  |  |
| HW-Sys 7 |  |  |  |  | x |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

*Example for* Software *Integration:*

|  |
| --- |
| **Module** |
| **Integration step ID** | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| init.c | x |  |  |  |  |  |  |  |  |
| os3soft.c | x |  |  |  |  |  |  |  |  |
| adc\_drv.c |  | x |  |  |  |  |  |  |  |
| exint\_drv.c |  | x |  |  |  |  |  |  |  |
| port\_drv.c |  |  |  |  | x |  |  |  |  |
| pwm\_drv.c |  |  |  |  |  |  | x |  |  |
| spi\_drv.c |  |  |  |  |  |  |  | x |  |
| sys\_drv.c |  |  |  |  |  |  |  |  | x |
| tim\_drv.c |  |  |  |  |  | x |  |  |  |
| isr\_adc.c |  |  |  |  |  |  |  |  | x |
| isr\_tim.c |  | x |  |  |  |  |  |  |  |
| vector.c | x |  |  |  |  |  |  |  |  |
| csh\_h.c |  |  | x |  |  |  |  |  |  |
| Eeprom.c |  |  |  | x |  |  |  |  |  |
| eks\_h.c |  |  |  |  | x |  |  |  |  |
| key\_h.c |  |  |  |  |  | x |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

## Definition of the Integration Exit Criteria

The integration exit criteria define when the integration of the shares is regarded to be successfully completed and the integrated can be handed over to the test team.

If the integration exit criteria defined apply to all integration steps, then the following table doesn’t need to be used.

The following integration exit criteria are to be applied:

Example for System integration exit criteria:

|  |
| --- |
| **Integration exit criteria** |
| **Integration step ID** | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| No errors occur in the as high classified system parts |  |  | x | x |  |  |  |  |  |
| No interface problems | x | x | x | x |  |  |  |  |  |
| No customer relevant errors are found |  |  | x | x |  |  |  |  |  |
| No hardware errors |  | x | x | x |  |  |  |  |  |
| Missing hardware / system elements | x | x | x | x |  |  |  |  |  |
| Wrong system elements (e.g. wrong configuration) | x | x | x | x |  |  |  |  |  |
| Performance problems |  |  | x | x |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Example for Software integration exit criteria:

|  |
| --- |
| **Integration exit criteria** |
| **Integration step ID** | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| No remaining compilation errors | x |  |  |  |  |  |  |  |  |
| No remaining linker errors (e.g. name space conflicts) | x |  |  |  |  |  |  |  |  |
| No call graph recursions (e.g. endless loops) |  | x |  |  |  |  |  |  |  |
| Warning free |  |  |  |  | x | x | x | x | x |
| ROM/RAM usage out of limits  > 70% of available ROM/RAM  or  outside of the available ROM/RAM resources of the µC | x | x | x | x | x |  |  |  |  |
| Interface errors between modules (e.g. not used) |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

## Integration Environment

The necessary integration environment is to be identified and documented.   
**Note:** If already described elsewhere, insert references.



### Hardware Tools

Which and what number of hardware tools are required (if applicable: by when)?

The following hardware is required to carry out the tests:

<Target>

<Emulator>

<Additional cards (CAN, LIN ...>

<Other hardware ...>

### Software Tools

Which and what number of software tools are required (if applicable: by when)?

Project-specific software:

<Compiler, linker>

<QA-C>

<Other software …>

### Special Tools

Clear description of special tools. If none are needed, then please enter n/a.

## Scheduling of the Integration Steps

It is necessary to schedule the integration steps, so that the various development disciplines will complete the (sub-) systems at a particular time. Accordingly, the schedule needs to be updated with the integration activities. Make the schedule as granular as possible. The MS Project tool should be used to support the planning.

<< Draw up the schedule here or indicate the version of the MS Project plan. (Inserting a link is not recommended, because if changes are made to the MS Project plan, then the Master Test Plan needs to be checked and maybe updated.) >>