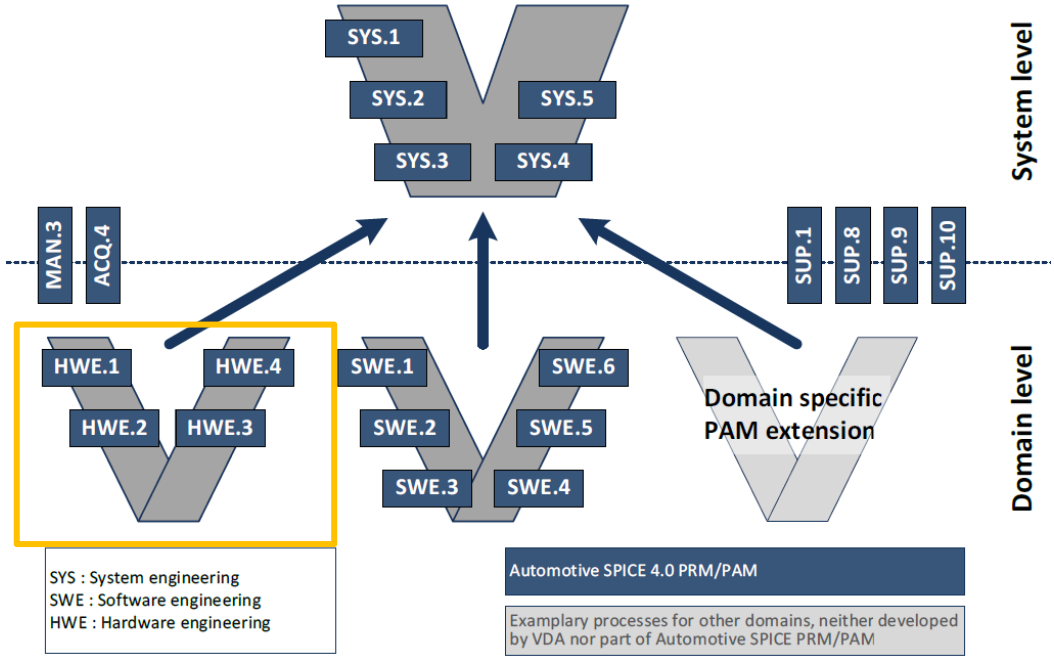
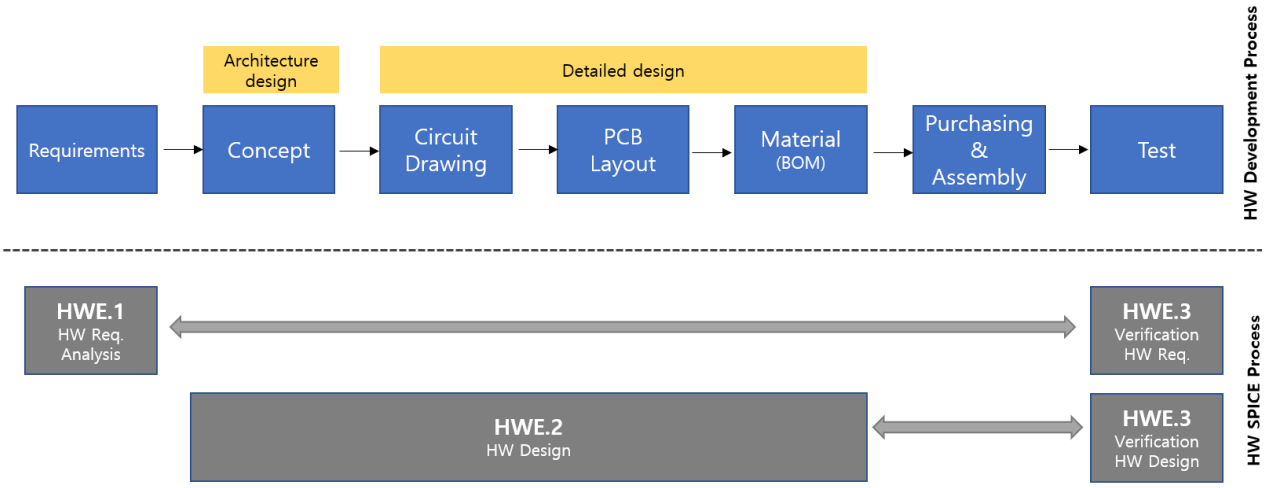
ASPICE 4.0 for Hardware Engineering

ASPICE 4.0은 Hardware 엔지니어링을 수행하기 위한 프로세스 참조 모델(PRM)과 프로세스 평가 모델(PAM)을 지원합니다. ASPICE 4.0에서 Hardware는 다음의 Plug-in과 같이 Recommended VDA scope 영역에 포함되어 프로젝트 상황에 따라 적용하도록 새롭게 개정되었습니다.



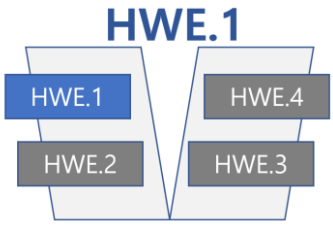
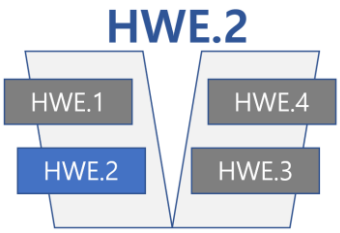
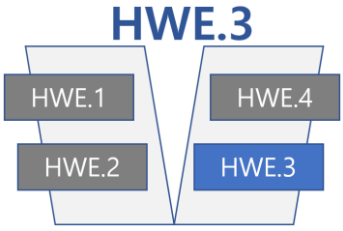
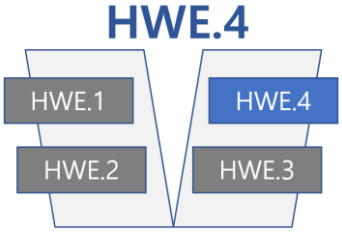
ASPICE - The "Plug-in" concept

ASPICE 4.0 Hardware 는 HWE.1, HWE.2, HWE.3, HWE.4 4단계로 구성됩니다. 기능안전과의 호환성이 고려되었으며, HWE.3 ,HWE4 영역은 ISO26262 Part5 의 Verification 영역과 매핑 될 수 있습니다.



HW 개발 프로세스와 HW SPICE 프로세스의 매핑

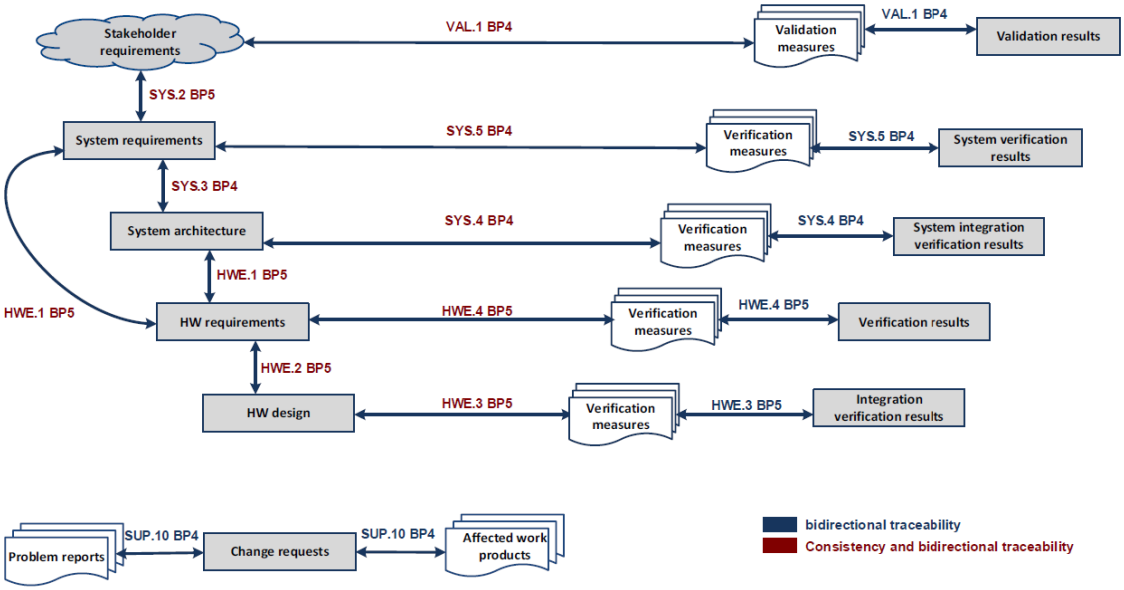
ASPICE 4.0 for Hardware Engineering

	프로세스에 정의된 기본 사례 **Base Practices**	프로세스에 정의된 출력 정보 항목 **Output Information Items**
	HWE.1.BP1: Specify hardware requirements. HWE.1.BP2: Structure hardware requirements. HWE.1.BP3: Analyze hardware requirements. HWE.1.BP4: Analyze the impact on the operating environment. HWE.1.BP5: Ensure consistency and establish bidirectional traceability. HWE.1.BP6: Communicate agreed hardware requirements and impact on the operating environment.	13-52 Communication Evidence 13-51 Consistency Evidence 17-00 Requirement 17-54 Requirement Attribute 15-51 Analysis Results
	HWE.2.BP1: Specify the hardware architecture. HWE.2.BP2: Specify the hardware detailed design. HWE.2.BP3: Specify dynamic aspects. HWE.2.BP4: Analyze the hardware architecture and the hardware detailed design. HWE.2.BP5: Ensure consistency and establish bidirectional traceability. HWE.2.BP6: Communicate agreed hardware architecture and hardware detailed design.	04-52 Hardware Architecture 04-53 Hardware Detailed Design 15-51 Analysis Results 13-51 Consistency Evidence 17-57 Special Characteristics 13-52 Communication Evidence 04-54 Hardware Schematics 14-54 Hardware Bill of Materials 04-55 Hardware Layout 03-54 Hardware Production Data 04-56 Hardware Element Interface
	HWE.3.BP1: Specify verification measures for the verification against hardware design. HWE.3.BP2: Ensure use of compliant samples. HWE.3.BP3: Select verification measures. HWE.3.BP4: Verify hardware design. HWE.3.BP5: Ensure consistency and establish bidirectional traceability. HWE.3.BP6: Summarize and communicate results.	08-60 Verification Measure 03-50 Verification Measure Data 08-58 Verification Measure Selection Set 15-52 Verification Results 13-51 Consistency Evidence 13-52 Communication Evidence
	HWE.4.BP1: Specify verification measures for the verification against hardware requirements. HWE.4.BP2: Ensure use of compliant samples. HWE.4.BP3: Select verification measures. HWE.4.BP4: Verify the compliant hardware samples. HWE.4.BP5: Ensure consistency and establish bidirectional traceability. HWE.4.BP6: Summarize and communicate results. .	08-60 Verification Measure 03-50 Verification Measure Data 08-58 Verification Measure Selection Set 15-52 Verification Results 13-51 Consistency Evidence 13-52 Communication Evidence

ASPICE 4.0 for Hardware Engineering

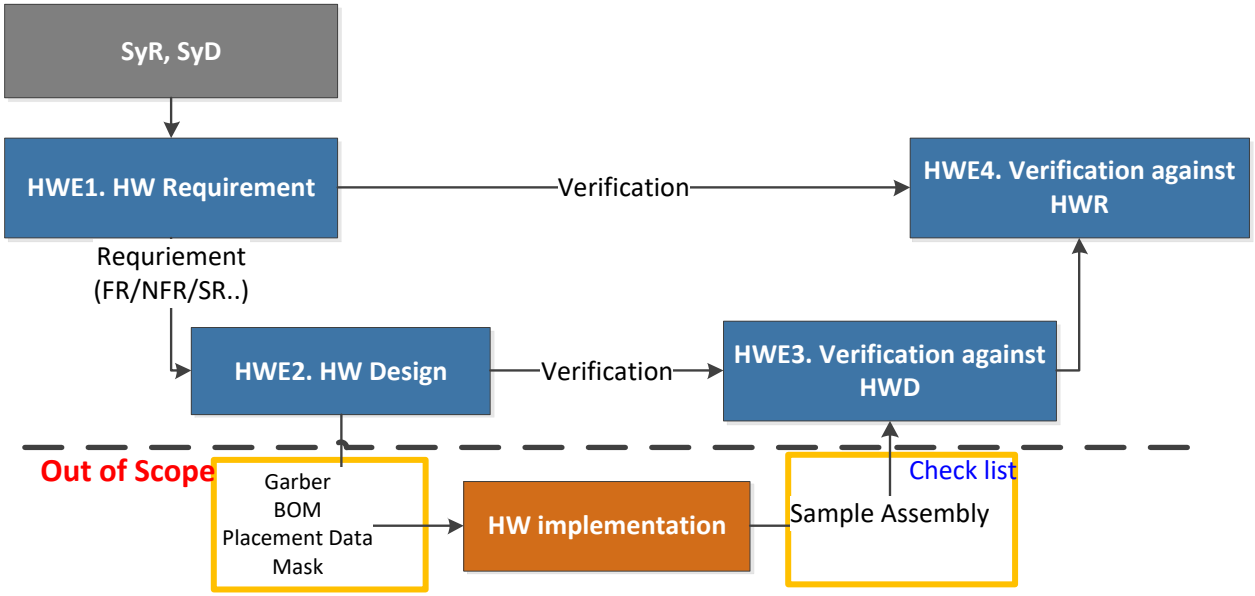
ASPICE 4.0 Hardware Engineering의 일관성(Consistency) 확인과 양방향 추적(bidirectional traceability) 관련 Base Practices는 아래와 같습니다.

- **Consistency : 앞 단계 산출물과 내용 일관성을 검토하고 완전하고 일관되게 충족하는가?**
- **bidirectional traceability : 선후관계 산출물간, test case 와 test result간, 변경 요청과 영향 받는 산출물 간 양방향 추적이 가능한가?**



ASPICE - Consistency and traceability between system and hardware work products

ASPICE 4.0 의 HWE.2 Hardware Design 에서는 생산에 적합한 HW 설계를 요구하고 있습니다. 아래와 같이 HW implementation의 경우 ASPICE 범위에는 포함되지 않지만 적합한 HW 제작하기 위한 연결 고리의 관리를 요구하고 있습니다.



ASPICE – Hardware Engineering Scope