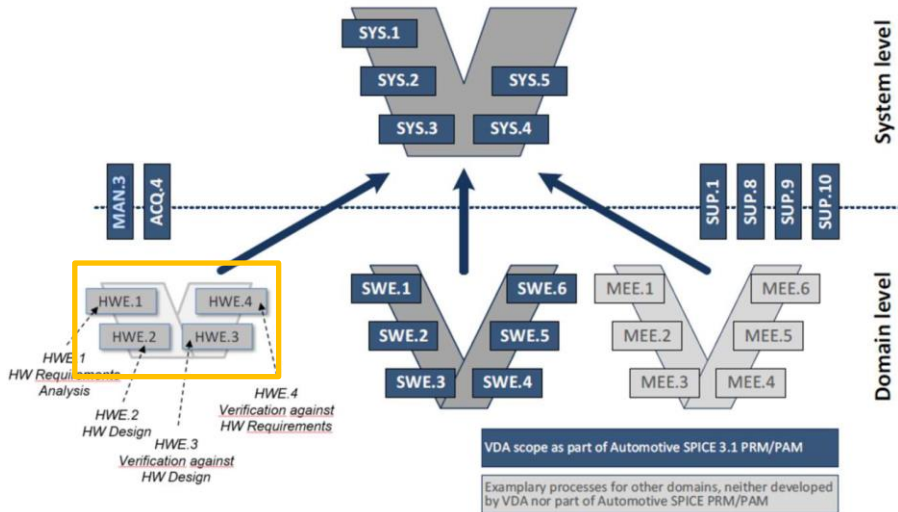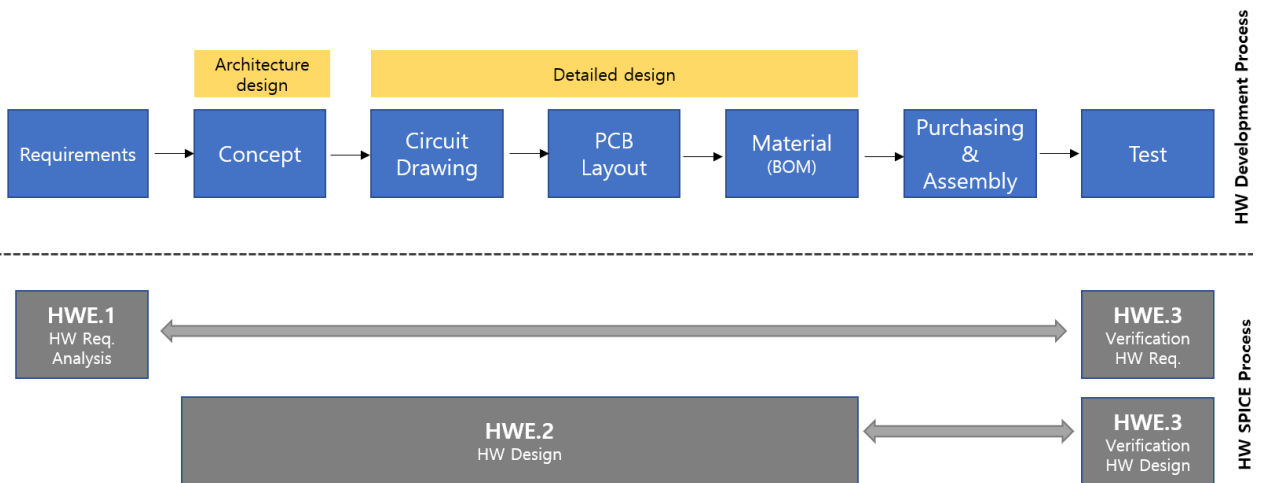# Hardware SPICE

Hardware SPICE는 ISO/IEC33004에 따라 반복 가능하고 신뢰할 수 있는 방식을 통해 하드웨어 엔지니어링을 수행하기 위한 프로세스 참조 모델(PRM)과 프로세스 평가 모델(PAM)을 지원합니다.

Hardware SPICE는 A-SPICE ver3.1 의 플러그인 형태로 고안되었으나, Hardware SPICE 단독 수행도 가능합니다. 향후 A-SPICE V4.0에서는 Hardware, Cybersecurity 가 통합된 형태로 릴리즈가 예정되어 있습니다.

ASPICE - Sketch of the plug-in concept, based on the corresponding

Hardware SPICE는 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

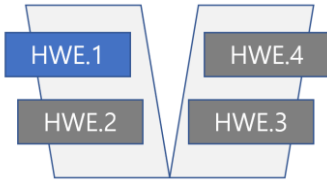SOLUTIONLINK

Hardware SPICE

	프로세스에 정의된 활동 **Base Practices**	프로세스에 정의된 산출물 **Work Product**

HWE.1

Base Practices

HWE.1.BP1: Specify hardware requirements.

HWE.1.BP2: Structure hardware requirements.

HWE.1.BP3: Analyse hardware requirements.

HWE.1.BP4: Analyse the impact on the operating environment.

HWE.1.BP5: Ensure consistency and establish bidirectional traceability.

HWE.1.BP6: Communicate agreed hardware requirements.

Work Product

13-04 Communication record

13-19 Review record

13-21 Change control record

13-22 Traceability record

15-01 Analysis report

17-08 Interface requirements specification

17-HW01 Hardware requirements specification

HWE.2

Base Practices

HWE.2.BP1: Develop hardware architecture.

HWE.2.BP2: Develop hardware detailed design.

HWE.2.BP3: Allocate hardware requirements.

HWE.2.BP4: Define interfaces of the hardware elements.

HWE.2.BP5: Describe dynamic behaviour.

HWE.2.BP6: Evaluate the hardware architecture and the hardware detailed design.

HWE.2.BP7: Ensure consistency and establish bidirectional traceability.

HWE.2.BP8: Communicate all information needed to relevant parties.

Work Product

04-HW01 Hardware architecture

04-HW02 Hardware detailed design description

04-HW03 Schematics

04-HW04 Bill of materials

04-HW05 Layout

11-HW01 Hardware production data

11-HW02 Special characteristics

13-04 Communication record

13-19 Review record

13-22 Traceability record

15-01 Analysis report

17-08 Interface requirement specification

HWE.3

Base Practices

HWE.3.BP1: Develop a strategy for the verification against hardware design.

HWE.3.BP2: Develop specification for the verification against hardware design.

HWE.3.BP3: Ensure use of compliant samples.

HWE.3.BP4: Select verification measures.

HWE.3.BP5: Verify hardware design.

HWE.3.BP6: Ensure consistency and establish bidirectional traceability.

HWE.3.BP7: Summarise and communicate results.

Work Product

08-HW01 Verification plan

08-HW02 Verification specification

13-01 Acceptance record

13-04 Communication record

13-19 Review record

13-22 Traceability record

13-HW01 Verification result

HWE.4

Base Practices

HWE.4.BP1: Develop a strategy for the verification against hardware requirements.

HWE.4.BP2: Develop specification for the verification against hardware requirements.

HWE.4.BP3: Ensure use of compliant samples.

HWE.4.BP4: Select verification measures.

HWE.4.BP5: Verify hardware.

HWE.4.BP6: Ensure consistency and establish bidirectional traceability.

HWE.4.BP7: Summarise and communicate results.

Work Product

08-HW01 Verification plan

08-HW02 Verification specification

13-01 Acceptance record

13-04 Communication record

13-19 Review record

13-22 Traceability record

13-HW01 Verification result

추적과 일관성 BP가 통합되었습니다. Base Practices 중 일관성(Consistency) 확인과 양방향 추적(bidirectional traceability) 관련 Base Practices가 통합되었습니다.

- **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?**
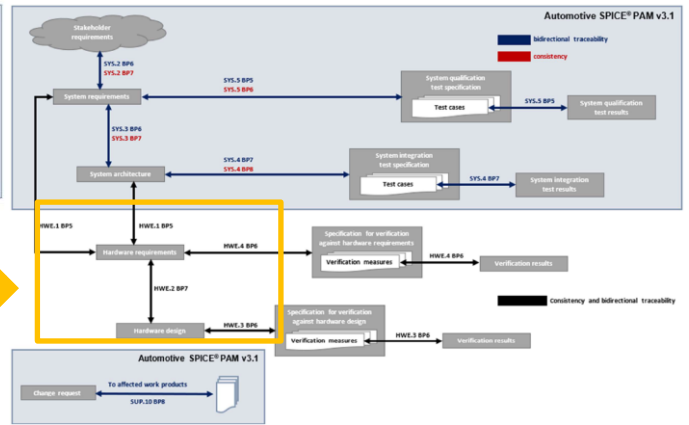
HW-SPICE Ver 2.0
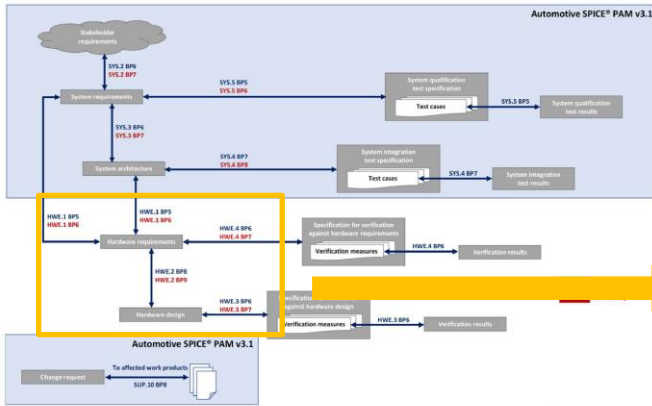
HW-SPICE Ver 2.1

Traceability and consistency in the HWE PRM/PAM in relation to Automotive SPICE
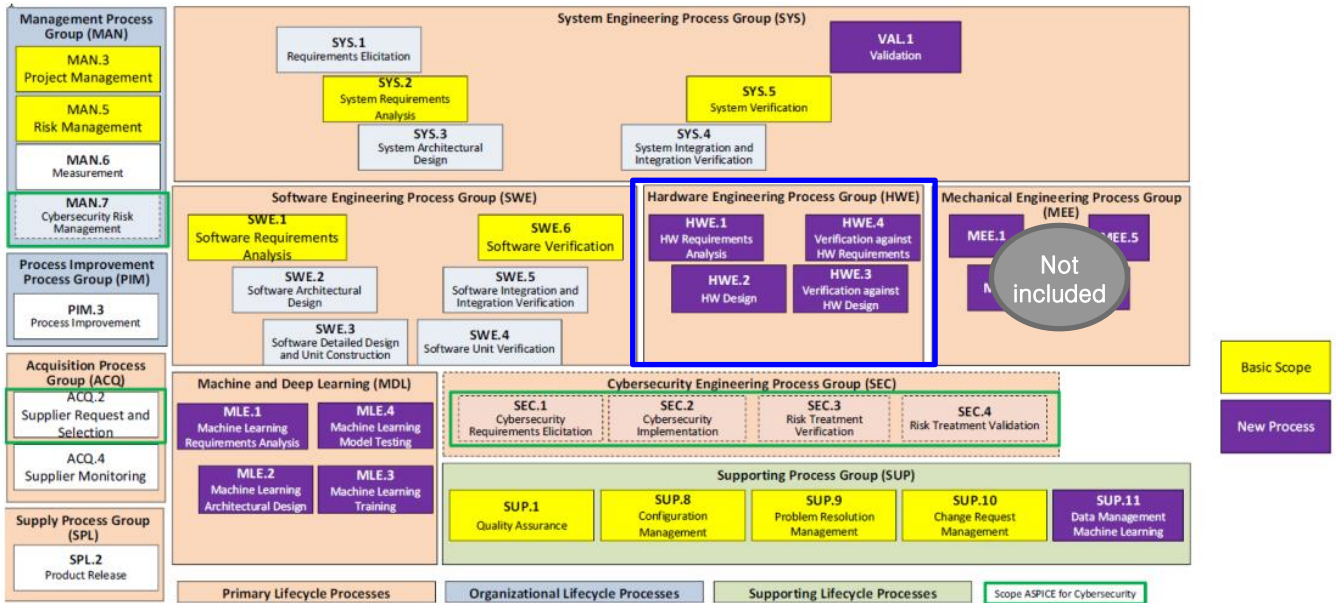
23년 하반기 A-SPICE 4.0 에는 HW-SPICE 가 통합된 상태로 배포될 예정입니다.

Figure 2: Automotive SPICE® PAM 4.0 (draft)

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