

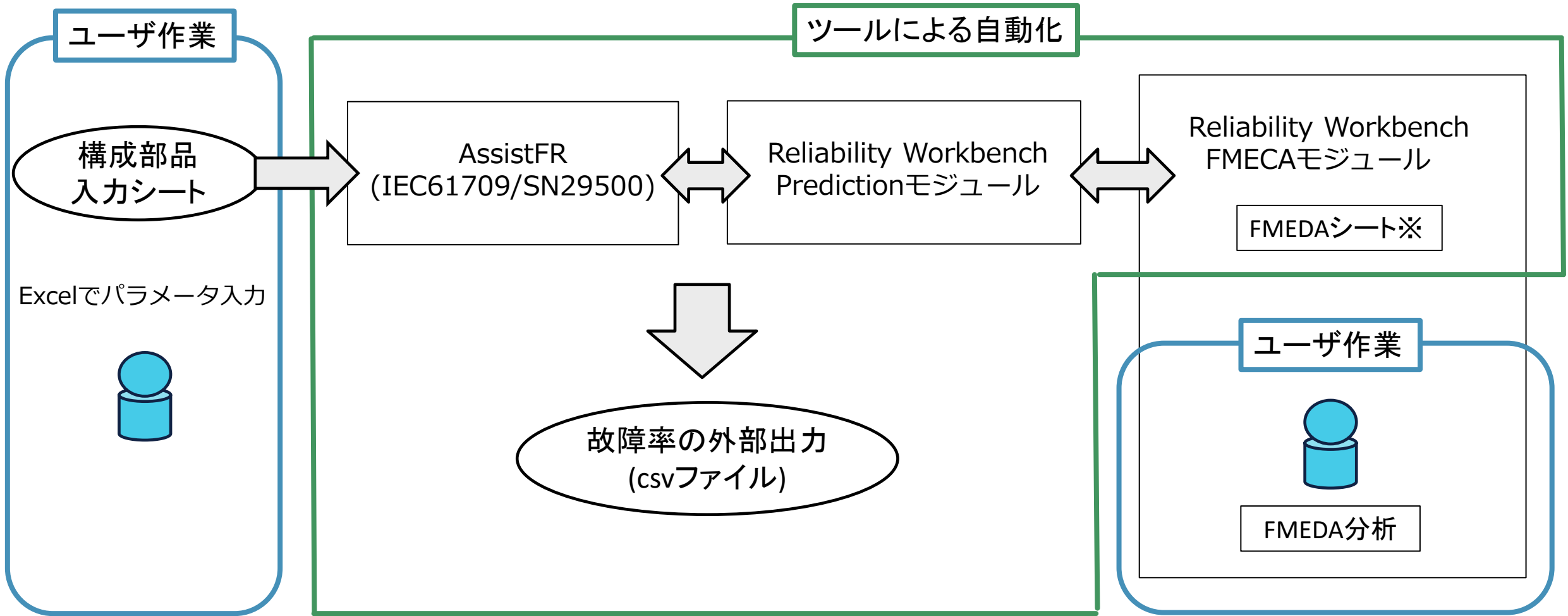
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# AssistFRv5.1

## PredictionモジュールとFMECAモジュールの連携強化についてのご紹介

株式会社ウェーブフロント  
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## AssistFRv5.1の概要



※AssistFRが部品ごとに故障モードと故障の分布を自動生成

## AssistFRv5.1の新機能 IEC61709 Annex Aに基づく故障モード対応

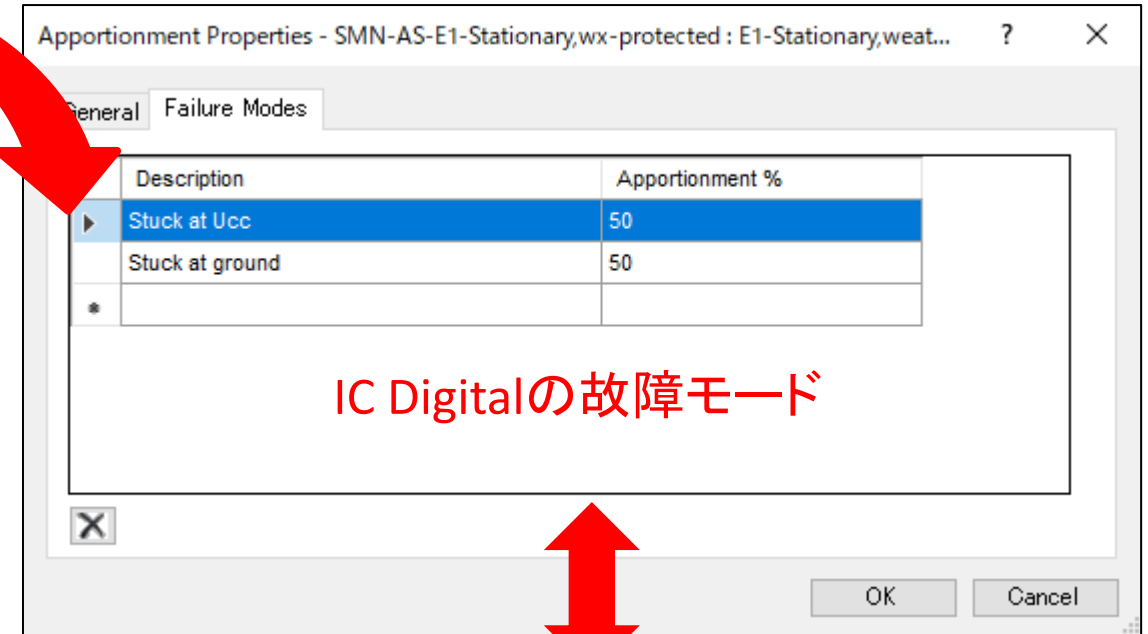
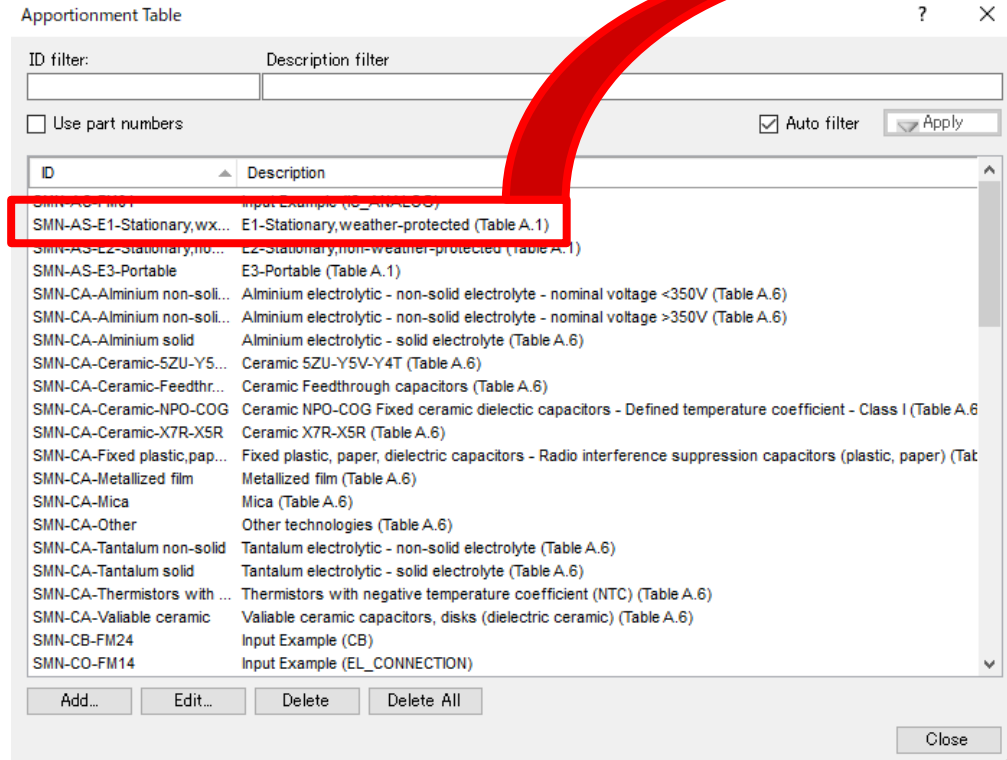
## 故障モード一覧

Parent	ID	Description	Alpha	Not safety related	Failure rate	Safe failure %	Operational Mode	Potential to violate safety goal %	Safety mechanism in place	SPF diagnostic coverage %	Single point fault rate	Residual fault rate	Detection Method	MPF detected %	MPF perceived %	Latent multiple point fault rate
Capacitors	Capacitors.1	Short circuit	70	<input type="checkbox"/>	40.66	0		100	<input type="checkbox"/>	0	40.66	0		0	0	0
Capacitors	Capacitors.2	Open circuit	10	<input type="checkbox"/>	5.808	0		100	<input type="checkbox"/>	0	5.808	0		0	0	0
Capacitors	Capacitors.3	Drift	20	<input type="checkbox"/>	11.62	0		100	<input type="checkbox"/>	0	11.62	0		0	0	0
Circuit Breaker	Circuit Bre...	Example	100	<input type="checkbox"/>	165.6	0		100	<input type="checkbox"/>	0	165.6	0		0	0	0
Contactors	Contactors.1	Example	100	<input type="checkbox"/>	800	0		100	<input type="checkbox"/>	0	800	0		0	0	0
Current Protective	Current Pr...	Example	100	<input type="checkbox"/>	1676	0		100	<input type="checkbox"/>	0	1676	0		0	0	0
Diode	Diode.1	Short circuit	80	<input type="checkbox"/>	1.935	0		100	<input type="checkbox"/>	0	1.935	0		0	0	0
Diode	Diode.2	Open circuit	20	<input type="checkbox"/>	0.4836	0		100	<input type="checkbox"/>	0	0.4836	0		0	0	0
Electrical Connec...	Electrical C...	Example	100	<input type="checkbox"/>	1.867	0		100	<input type="checkbox"/>	0	1.867	0		0	0	0
IC ANALOG 1	IC Analog ...	Example	100	<input type="checkbox"/>	5.996	0		100	<input type="checkbox"/>	0	5.996	0		0	0	0
IC Analog 2	IC Analog ...	Example	100	<input type="checkbox"/>	2.351	0		100	<input type="checkbox"/>	0	2.351	0		0	0	0
IC Analog 3	IC Analog ...	Example	100	<input type="checkbox"/>	5.096	0		100	<input type="checkbox"/>	0	5.096	0		0	0	0
IC ASIC 2	IC ASIC 2.1	Stuck at Ucc	5	<input type="checkbox"/>	8.98	0		100	<input type="checkbox"/>	0	8.98	0		0	0	0
IC ASIC 2	IC ASIC 2.2	Stuck at ground	5	<input type="checkbox"/>	8.98	0		100	<input type="checkbox"/>	0	8.98	0		0	0	0
IC ASIC 2	IC ASIC 2.3	Open circuit	90	<input type="checkbox"/>	161.6	0		100	<input type="checkbox"/>	0	161.6	0		0	0	0
IC ASIC	IC ASIC.1	Stuck at Ucc	50	<input type="checkbox"/>	24.45	0		100	<input type="checkbox"/>	0	24.45	0		0	0	0
IC ASIC	IC ASIC.2	Stuck at ground	50	<input type="checkbox"/>	24.45	0		100	<input type="checkbox"/>	0	24.45	0		0	0	0
IC Digital/Bus Inte...	IC Digital/B...	Stuck at Ucc	50	<input type="checkbox"/>	3.649	0		100	<input type="checkbox"/>	0	3.649	0		0	0	0
IC Digital/Bus Inte...	IC Digital/B...	Stuck at ground	50	<input type="checkbox"/>	3.649	0		100	<input type="checkbox"/>	0	3.649	0		0	0	0
IC Memory	IC Memory.1	Stuck at Ucc	5	<input type="checkbox"/>	2.71	0		100	<input type="checkbox"/>	0	2.71	0		0	0	0
IC Memory	IC Memory.2	Stuck at ground	5	<input type="checkbox"/>	2.71	0		100	<input type="checkbox"/>	0	2.71	0		0	0	0
IC Memory	IC Memory.3	Open circuit	90	<input type="checkbox"/>	48.77	0		100	<input type="checkbox"/>	0	48.7	0		0	0	0
IC Microprocess...	IC Micropr...	Stuck at Ucc	50	<input type="checkbox"/>	33.29	0		100	<input type="checkbox"/>	0	33.2	0		0	0	0
IC Microprocess...	IC Micropr...	Stuck at ground	50	<input type="checkbox"/>	33.29	0		100	<input type="checkbox"/>	0	33.2	0		0	0	0
Inductors	Inductors.1	Open circuit	80	<input type="checkbox"/>	3.036	0		100	<input type="checkbox"/>	0	3.03	0		0	0	0
Inductors	Inductors.2	Short circuit	20	<input type="checkbox"/>	0.7591	0		100	<input type="checkbox"/>	0	0.75	0		0	0	0

AssistFRv5.1がIEC61709のAnnex A  
対応の故障モードを自動生成

すぐにFMEDA分析を開始できます

# AssistFRv5.1の新機能 IEC61709 Annex Aに基づく故障モード対応



IC Digitalの故障モード

Table A.1 – Failure modes: ICs (digital)

Environment type	Input/output fixed to 1 Stuck at $U_{cc}$ %	Input/output fixed to 0 Stuck at ground %	Open circuit %
Stationary use at weather-protected locations E1 <sup>a</sup>	50	50	-

IEC61709のAnnex A対応の  
故障モードのテーブル