E3 FDC

Questionnaire填写/Review 指南

AMAT FDC

11/24/2023

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Change Summary / Revision History

Date	Revision	Description of Changes	Author
11/24/2023	1.0	Initial version	Ivy Kang
4/9/2024	1.1	Remove duplicate slides	Alex Fan

Overview

- Questionnaire 是描述一个机台类型数据采集需求的问卷
- Questionnaire 由module user(PE/EE) 填写，须提供如下信息：
  - Tool Type 的基本信息：名称，型号，厂商，软件版本
  - Layout: chamber+ process type(chamber 类型）
  - SVID: 采集的参数及其SVID
  - CEID/VID: 触发数据采集开始/结束的事件CEID 及其关联的VID
- Questionnaire 可能会经过多次填写-review的循环，直到最终定版
- IT 根据Questionnaire 在FDC 中配置数据采集计划。

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Questionnaire 命名规范

- <Module>_<Vendor>_<Model>_<ToolList>_<Date>

  for example，

  CMP_EBARA_F-Rex300X 3SC_TOOL1_TOOL2_20190725

如果同型机的机台数量比较多，也可以用submodel 或者其他描述性文字来代替<ToolList>,比如描述机台配置：4EtchChambers;在Questionnaire 内的Tool Name 栏位列举该机型的所有机台

Tool Name 栏位是同型机rollout 的依据

Tool Name	Exx01,Exx02

Tool-基本信息

Tool Type(E3 equipment template)	**TF_AMAT_ENDURA2_TTN-NIPT-Cool (Follow the naming rule)**	
Tool Vendor	AMAT	
Tool Software Version	v8.973	
Main tool process type	TF_AMAT_ENDURA2_Main	
Tool Layout (Chamber name and Chamber process type name)	CHA	TF_AMAT_ENDURA2_TTN (Follow the naming rule)
	CHB	TF_AMAT_ENDURA2_NIPT (Follow the naming rule)
	CHC	TF_AMAT_ENDURA2_Cool (Follow the naming rule)
Material	**Single Wafer or Batch or Continuous or Other(additional explaination in "Other" tab)**	
Tool Name	**Exx01,Exx02**	

Item	必填/可选	Description
Tool Type	必填	请follow命名规范
Tool Vendor	必填	厂商
Tool Software Version	可选	软件版本
Main tool process type	可选	By default, <ToolType>_Main
Tool Layout-Chamber Name	必填	e.g. CHA
Tool Layout-Process Type	必填	Chamber 类型，比如polish,mega..
Material	必填	Single Wafer/Batch/Continuous/Other
Tool Name	必填	同型机tool 列表(for rollout)

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同型机定义

- 一个机型提供一个questionnaire
- 即使两个机台的型号相同，但是配置(Layout)略微有差异, 这两个机台也不属于同型机，需要提供两份questionnaire。 比如，tool1&tool2 都是同一个厂商生产的同型号CVD 机台，tool1有2个CVD chamber,tool2 有4个CVD chamber。需要为这两个机台分别提供questionnaire。
- 同型机必须满足如下条件：
  - ✓ 同一个厂商，相同型号
  - ✓ 相同的Layout
  - ✓ 收集相同的数据SVID
- 机型命名规则

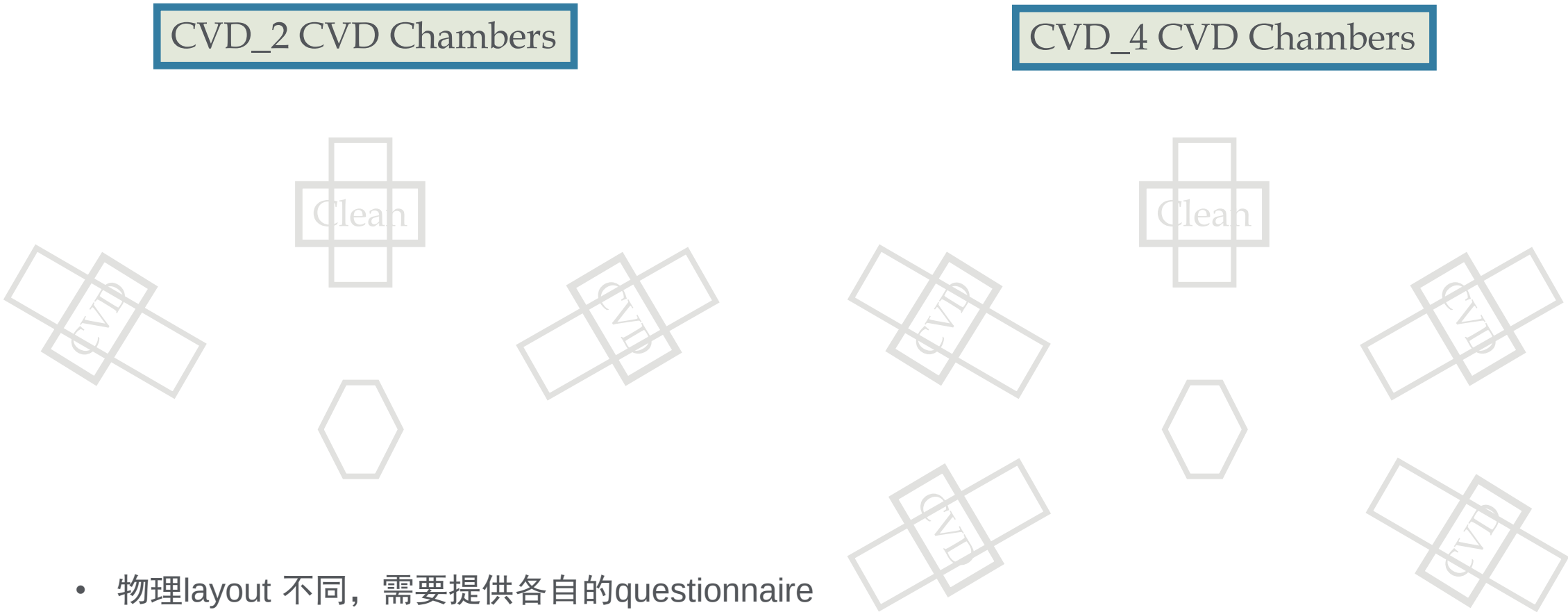
  <Module>_<Vendor>_<Model>_<SubModel/Configuration>

  例如，

  DIFF_TEL_IndyPlus_UPY

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Tool Type - Example



- 物理layout 不同，需要提供各自的questionnaire
- 同一个机台的不同chamber 可以共用一个process type
- 不同机台的chamber 也可以共用一个process type

Tool Name & Chamber Name

- 尽量保持FDC tool name & chamber name 和 MES 配置一致
- 特殊情况下，允许FDC 的chamber name 和MES 不一致，比如twin chamber 要by side 收值。FDC后台在做MES hold 之前会将FDC 的chamber 转换成MES chamber

Process Type 定义

- Process type 是对chamber 制程类型的一种抽象。
- 如果一个tool 的多个chamber 都定义成同一个process type，代表这些chamber 可以做同样的制程，Wafer 可以进入任意一个chamber 完成process
- 定义为同一个process type的chamber, 通常会有相同的参数集合，包括参数个数以及参数名称
- 例如,CMP 机台PA,PB,PC,PD 4 个chamber都是做polish的，那么就可以把它们定义成一个process type:POLISHER

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Process Type 命名规则

- <Module>_<Vendor>_<Model>_<Process>

  for example，

  CMP_EBARA_F-Rex300X 3SC_POLISHER

Tool Connection Info: SECS Tool 无须填写

- IT 会维护机台的IP、port 信息

Tool Integration Type	HSMS or EDA	
-Connectivity Details for HSMS(SECS/GEM)	Tool IP:	10.10.10.1,10.10.10.2
	Port:	5002,5002
	DeviceID:	
-Connectivity Details for Interface A	Freeze Version	
	E132(Session Management) Server URL:	
	E134(Data Collection Management) Server URL:	
	E125(Equipment Self Discovery) Server URL:	
	EDAServiceURL: (EDA Client service URL , where all the Communication from EDA Server is handled on the EDA Client side)	
	EDA Principla/Role:	
	EDAEquipmentName:	

Tool Connection Info: Interface A 机台必须填写

Tool Integration Type	HSMS or EDA	
-Connectivity Details for HSMS(SECS/GEM)	Tool IP:	10.10.10.1,10.10.10.2
	Port:	5002,5002
	DeviceID:	
-Connectivity Details for Interface A	Freeze Version	
	E132(Session Management) Server URL:	
	E134(Data Collection Management) Server URL:	
	E125(Equipment Self Discovery) Server URL:	
	EDAServiceURL: (EDA Client service URL , where all the Communication from EDA Server is handled on the EDA Client side)	
	EDA Principla/Role:	
	EDAEquipmentName:	

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Tool-Tool Owner Info

- 请填写PE,EE 的联系方式

Tool Owner Info	Item	Value
	Process Engineer Name/Email/Phone Number	(Need fill in Process Engineer information)
	Equipment Engineer Name/Email/Phone Number	(Need fill in Equipment Engineer information)

Tool-Questionnaire Update History

- 每次更新questionnaire时，请在Questionnaire Update History 中填写变更记录

Document Updated Date	Updated By	Comment
2/20/2013	XXX	add Tool Info and Sensor list

SVID

- 在这个sheet 里填写需要收集到各个chamber 的参数信息

Tool/Chamber Name	Sensor Name	SVID	Unit	Data Type	Limit	Group	Sensor Desc	Collection Rate	Collection plan Method	Start Triggers	End Triggers
CHA	APC	1001		Double			APC	1HZ	Process	ProcessStart	ProcessEnd
CHA	APCTemp	1002		Double			APCTemp	1HZ	Process	ProcessStart	ProcessEnd
CHA	EdgeHe	1009		Double			EdgeHe	1HZ	Process	ProcessStart	ProcessEnd
CHA	EP_226NM_CO	1010		Double			EP_226NM_CO	1HZ	Process	ProcessStart	ProcessEnd
CHA	StepNumber	1068		Int			StepNumber	1HZ	Process	ProcessStart	ProcessEnd
CHA	StepName	1069		Text			StepName	1HZ	Process	ProcessStart	ProcessEnd
CHB	……										
CHC	……										
(Need fill in all layout chambers you mentioned in page 'Tool')	Sensor name支持字母大小写，下划线，数字。（数字不得开头）										

Item	必填/可选	Description
Tool/Chamber Name	必填	参数收集到的chamber
Sensor Name	必填	Sensor name支持字母大小写，下划线，数字。（数字不得开头）
SVID	必填	参数SVID
Unit	可选	单位，如Volt, watt, Celsius etc
Data Type	必填	数据类型，如Double, Int,etc
Limit	可选	参数的范围
Group	可选	参数的类别:Counters,ESC,Flow,Magnets,Motion,Power,Pressure,Temperature
Sensor Desc	可选	参数的描述
Collection Rate	必填	采集频率，比如1 Hz. 如果参数是通过机台的event 上报的summary data,则填写ED
Collection Plan Method	必填	何时做数据采集：Process , Idle, Clean
Start Trigger	必填	触发开始数据采集的Event, e.g. ProcessStart;请在CEID/VID 中填写event 的CEID以及关联的VID
End Trigger	必填	触发结束数据采集的Event, e.g. ProcessEnd;请在CEID/VID 中填写event 的CEID以及关联的VID

重要: StepName/Step No

- 请确认chamber 的制程是否有step。如果是，必须在SVID 中包含Step 相关的参数，比如，StepName or StepNo
- 如果chamber 制程不分step,请在feedback sheet 中注明chamber 无须step 相关参数

No	Feedback Date	Feedback				Status	Close Date
		Sheet	Item	Feedback from AMAT	Feedback from Customer		
1	10/9/2017	Tool	Tool Layout (Chamber name and Chamber process type name)	Please confirm 1.whether chamber P1,P2,P3,P4 of the same process type or not. Looks like they are all POLISHER 2.whether MEGAA,MEGAB of the same process type. Looks like they are all POLISHER 3.whether BRUSHA,BRUSHB of the same process type. Looks like they are all BRUSH 4.whether PRECLEANA,PRECLEANB of the same process type. Looks like they are all PreClean 5.whether DRYERA,DRYERB of the same process type. Looks like they are all DRYER Same process type means the chambers are for the same process pursose, wafer can go to any chambers of the same process type to do the process. Normally, the same process type chamber have the same sensors.		Open	

CEID

- SVID sheet 中的每一个 start/end triggers事件都需要在CEID sheet 中列明对应的CEID
- 请从设备vendor 获取

Tool/Chamber Name	Sensor Name	SVID	Unit	Data Type	Limit	Group	Sensor Desc	Collection Rate	Collection plan Method	Start Triggers	End Triggers
P1	Platen RPM	2.346E+09	RPM	Double		Motion	Platen Rotation	1HZ	Process	ProcessStart	ProcessEnd
P1	Pad Conditioner RPM	2.346E+09	RPM	Double		Motion	Pad Conditioner Rotation	1HZ	Process	ProcessStart	ProcessEnd
P1	Head RPM	2.346E+09	RPM	Double		Motion	Head Rotation	1HZ	Process	ProcessStart	ProcessEnd
P1	Pad Temperature	2.347E+09	degC	Double		Temperature	Pad Temperature	1HZ	Process	ProcessStart	ProcessEnd
P1	Pad Conditioner Pressure	2.348E+09	psi	Double		Pressure	Condition Force Pressure	1HZ	Process	ProcessStart	ProcessEnd
P1	CR Pressure	2.348E+09	psi	Double		Pressure	CR Pressure	1HZ	Process	ProcessStart	ProcessEnd
								1HZ	Process	ProcessStart	ProcessEnd

Tool | SVID | CEID | VID | Other | InterfaceA-SensorList | InterfaceA-Events | Feedback

No	Module	Event Name	CEID	Description
1	P1	P1 ProcessStart	1500581501	
2	P1	P1 ProcessEnd	1500591501	
3	P2	P2 ProcessStart	1500581601	
4	P2	P2 ProcessEnd	1500591601	
5	P3	P3 ProcessStart	1500581701	
6	P3	P3 ProcessEnd	1500591701	
7	P4	P4 ProcessStart	1500581801	
8	P4	P4 ProcessEnd	1500591801	
9	MEGA A	MEGA A ProcessStart	1500583801	
10	MEGA A	MEGA A ProcessEnd	1500593801	
11	MEGA B	MEGA B ProcessStart	1500583802	
12	MEGA B	MEGA B ProcessEnd	1500593802	

Tool | SVID | CEID | VID | Other | InterfaceA-SensorList | InterfaceA-Events | Feedback

VID

- 请提供所有CEID 关联的VID
  - RecipeName(or PPID，必填)
  - WaferID
  - CarrierID
  - LotID
  - SlotID/SlotNo
  - WaferSeqNo
  - CarrierIDList
  - ModuleID(如果多个chamber 共用一个CEID，则需要提供ModuleID的VID，用以区分是哪个chamber 的事件)

- 对于非batch的机台，必须能从提供的VID 组合中识别出wafer
  - or (CarrierID and SlotNo)
  - or (LotID and SlotNo)
  - or (LotID and WaferSeqNo)
  - or others(not known)
- 对于batch 机台,提供CarrierIDList

- 请从设备vendor 获取

Event(SingleWafer)	CEID	Need Link DVID						
		RecipeName(PPID)	WaferID	CarrierID	LotID	SlotNo	WaferSeqNo	ModuleID
CHC-End	378572044							

Event(Batch)	CEID	Need Link DVID						
		RecipeName(PPID)		CarrierIDList				ModuleID
CHA-Batch Start	xxxxxx	2300240101		2.3E+09				

Tool | SVID | CEID | VID | Other | InterfaceA-SensorList | InterfaceA-Events | Feedback

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Tool Connectivity Details-Interface A/EDA

- Interface A/EDA 机台，以下连接信息必填

-Connectivity Details for Interface A	Freeze Version	Freeze 2
	Soap12	Yes
	E132(Session Management) Server URL:	http://10.102.16.78:1541/SessionManager
	E134(Data Collection Management) Server URL:	http://10.102.16.78:1541/DataCollectionManager
	E125(Equipment Self Discovery) Server URL:	http://10.102.16.78:1541/EquipmentMetadataManager
	EDA Principal/Role:	Admin
	EDAEquipmentName:	Exx01

Item	必填/可选	Description
Freeze Version	必填	Freeze 1 (1105) or Freeze2 (0710)
Soap12	必填	是否支持Soap12
E132 URL	必填	E132(Session Management) Server URL
E134 URL:	必填	E134(Data Collection Management) Server URL
EDA Principal/Role	必填	ACL Entry, 在EDA Server 上定义的用户名/角色，必须要有以下权限 • ManageAnyDCP • ManageOnlyAuthoredDCPs • UseAnyDCP
EDAEquipmentName	必填	EDA server 上定义的equipment name

InterfaceA_SensorList

- 在这个sheet 里填写需要收集到各个chamber 的参数信息

Tool/Chamber Name	Sensor Name	Equipment Tag ID	Source ID	Unit	Data Type	Limit	Group	Sensor Desc	Collection Rate	Collection plan Method	Start Triggers	End Triggers
CHA	StepNo	RecipeStep	Endura CGA/CHA						10HZ	Process	CHARecipeStart	CHARecipeEnd
CHA	RECIPE_NAME	RecipeName	Endura CGA/CHA						10HZ	Process	CHARecipeStart	CHARecipeEnd
CHA	VacSysPressGaugeConvectronP	Pressure	Endura CGA/CHA/VacSys/PressGauge/Convectron						10HZ	Process	CHARecipeStart	CHARecipeEnd
CHA	VacSysPressGaugePressure	Pressure	Endura CGA/CHA/VacSys/PressGauge						10HZ	Process	CHARecipeStart	CHARecipeEnd
CHA	VacSysRoughBasePressure	RoughBasePressure	Endura CGA/CHA/VacSys						10HZ	Process	CHARecipeStart	CHARecipeEnd

Item	必填/可选	Description
Tool/Chamber Name	必填	参数收集到的chamber
Sensor Name	必填	Sensor name支持字母大小写，下划线，数字。（数字不得开头）
Equipment Tag ID	必填	参数在EDA server 中定义的名字，对应到metadata里的parameter name, Source ID+Equipment Tag ID 唯一标识一个参数(SourceID+Tag ID 类似于SECS 的SVID)
Source ID	必填	参数在EDA server 中所在的节点，对应到metadata里的EquipmentNodeId Source ID+Equipment Tag ID 唯一标识一个参数(SourceID+Tag ID 类似于SECS 的SVID)
Unit	可选	单位，如Volt, watt, Celsius etc
Data Type	必填	数据类型，如Double, Int,etc
Limit	可选	参数的范围
Group	可选	参数的类别:Counters,ESC,Flow,Magnets,Motion,Power,Pressure,Temperature
Sensor Desc	可选	参数的描述
Collection Rate	必填	采集频率，比如1 Hz. 如果参数是通过机台的event 上报的summary data,则填写ED
Collection Plan Method	必填	何时做数据采集：Process , Idle, Clean
Start Trigger	必填	触发开始数据采集的Event, e.g. ProcessStart;请在InterfaceA_Events中填写event 以及Link Item 的source id,event id,tag id
End Trigger	必填	触发结束数据采集的Event, e.g. ProcessEnd;请在InterfaceA_Events中填写event 以及Link Item 的source id,event id,tag id

InterfaceA-Events

- InterfaceA_SensorList中的每一个 start/end triggers事件都需要在InterfaceA-Events sheet 中填写对应的Source ID+Event ID
- 除了Trigger Event 之外，还需要填写CarrierIDRead 事件的Source ID+Event ID
- 每一个event 还需要填写关联的参数的Source ID+Tag ID，用于提取process 的 recipe,lot,wafer 等信息, 必要关联的参数同SECS

Module	CarrierID Read	Source ID	Event ID	Linked Items			
				CarrierID		PortID	
				Source ID	Tage ID	Source ID	Tage ID
Main Module	CarrierID Read	Equipment/MaterialManager	ReadCID1MIDCompleted	Equipment/MaterialManager	SourceID	Equipment/MaterialManager	PortID

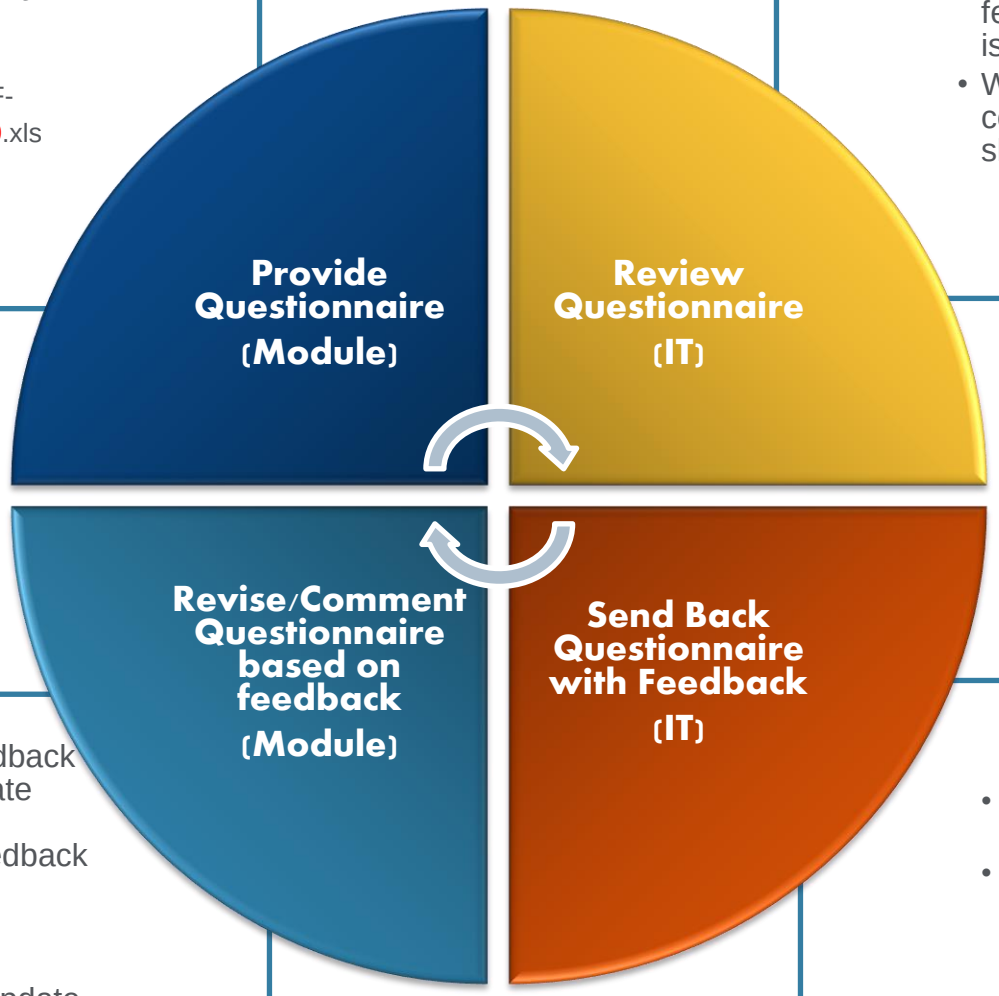
Module	Event (Single)	Source ID	Event ID	Linked Items									
				RecipeName(PPID)		WaferID		CarrierID		LotID		SlotNo	
				Source ID	Tage ID	Source ID	Tage ID	Source ID	Tage ID	Source ID	Tage ID	Source ID	Tage ID
CHA	CHAProcessStart	Endura CGA/CHA	ProcessRecipeStarted	Endura CGA/CHA	RecipeName	Endura CGA/CHA	Substrate	Endura CGA/CHA	CarrerId	Endura CGA/CHA	Lot	Endura CGA/CHA	Slot
CHA	CHAProcessEnd	Endura CGA/CHA	ProcessRecipeCompleted	Endura CGA/CHA	RecipeName	Endura CGA/CHA	Substrate	Endura CGA/CHA	CarrerId	Endura CGA/CHA	Lot	Endura CGA/CHA	Slot
CHB	CHBProcessStart	Endura CGA/CHB	ProcessRecipeStarted	Endura CGA/CHB	RecipeName	Endura CGA/CHB	Substrate	Endura CGA/CHB	Endura CGA/CHB	Endura CGA/CHB	Lot	Endura CGA/CHB	Slot
CHB	CHBProcessEnd	Endura CGA/CHB	ProcessRecipeCompleted	Endura CGA/CHB	RecipeName	Endura CGA/CHB	Substrate	Endura CGA/CHB	Endura CGA/CHB	Endura CGA/CHB	Lot	Endura CGA/CHB	Slot

Module	Event (Batch)	Source ID	Event ID	Linked Items			
				RecipeName(PPID)		CarrierIDList	
				Source ID	Tage ID	Source ID	Tage ID
CHA	CHA-Batch Start	Endura CGA/CHA	ProcessRecipeStarted	Endura CGA/CHA	RecipeName	Endura CGA/CHA	CarrierIDList
CHA	CHA-Batch End	Endura CGA/CHA	ProcessRecipeCompleted	Endura CGA/CHA	RecipeName	Endura CGA/CHA	CarrierIDList
CHB	CHBProcessStart	Endura CGA/CHB	ProcessRecipeStarted	Endura CGA/CHB	RecipeName	Endura CGA/CHB	CarrierIDList
CHB	CHBProcessEnd	Endura CGA/CHB	ProcessRecipeCompleted	Endura CGA/CHB	RecipeName	Endura CGA/CHB	CarrierIDList

Tool | SVID | CEID | VID | InterfaceA_SensorList | InterfaceA_Events | Feedback

Review 流程

- File Name ends with date for version control
- e.g.CMP_EBARA_F-Rex300X 3SC_0709.xls



- Check the history feedback if every item is closed
- Write down new comments in feedback sheet if needed

- Check each feedback item, either update questionnaire or comments in feedback sheet.
- Keep feedback history.
- Add document update history

- Add review date to the original file name.
- e.g.CMP_EBARA_F-Rex300X 3SC_0710.xls

Document Updated Date	Updated By	Comment
2/20/2013	XXX	add Tool Info and Sensor list

Review Comments

- 在review questionnaire 过程中发现的问题，IT会记录在Feedback sheet 中， user 可以参考feedback 进行questionnaire 修改

No	Feedback Date	Feedback				Status	Close Date
		Sheet	Item	Feedback from IT	Feedback from Module		
1	10/9/2017	NA	Quetionnarie file naming rule	<Module>_<Vendor>_<Model>_<ToolList><Date> for example: CMP_AMAT_LK Prime_CMBP101,CMCU101_20170725	Updated	Close	
2	10/9/2017	Tool	Process type naming rule	<Module>_<Vendor>_<Model>_<Process> for example: CMP_AMAT_LK Prime_POLISHER		Open	
3	10/11/2017	Tool	Tool Layout (Chamber name and Chamber process type name)	Please make sure the tool name,chamber name are aligned with third-party system,especially MES, for HoldLot,HoldEqp,HoldChamber etc		Open	
4	10/11/2017	SVID		Please confirm there're recipe step SVIDs for chambers that has process steps. This very import SVID for FDC modeling for processes that have steps. If the chamber process has no recipe steps, please comment in "Feedback from Module/IT" also. For example, do Brush have steps?		Open	

Tool | SVID | CEID | VID | InterfaceA_SensorList | InterfaceA_Events | Feedback

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