Planning

MPW validation | MPW commercial | Tape-out

Technische Universiteit Eindhoven University of Technology

		SP19	SP20	SP21	SP22	SP23	SP24	SP25	SP26	SP27	SP28	SP29	SP30
		Dec-16	Mar-17	Jun-17	Sep-17	Dec-17	Mar-18	Jun-18	Sep-18	Dec-18	Mar-19	Jun-19	Sep-19
Modulator			1st	copy				2nd			3rd		
	SI-substrate		x										
	Plating	x											
	Effect MQW			x									
	Al-MQW										x		
	CL-TWE										x		
RF Line	conventional				1st					2nd			
	new planarization					to	be	determined					
SSC					x								
Prec. Filter	(ring, AWG, MZI)			1st			2nd			3rd			
	DBR	x EBL	EBL	DUV									
	DUV		x										
Low LW LD													
	DBR laser		1st			2nd			3rd				
	Triplex Hybrid					to	be	determined					
	High Q cavity laser									1st		2nd	
WP4 items	Zn diffusion									x			
	Thick insulation + RF									x			
Demo	both chips								1^{st}				

Milestones/Reports

Marcel	WP3.4.DF.R0	WP3.4.PDA.M0	WP3.4.PDA.R0	WP3.4.DF.R1	WP3.4.PDA.M1	WP3.4.DRC.R0	WP3.4.DRC.R1	WP3.4.DRC.M0	WP3.4.DF.M0	WP3.4.PDA.M2	WP3.4.DRC.R2	WP3.4.DF.R2
Pim	WP3.5.R1	WP3.5.M3										
Ronald	WP3.4.EF.R0	WP3.4.EF.M0	WP3.5.M1	WP3.4.EF.R1	WP3.1.M0	WP3.1.R0	WP3.1.M1	WP3.1.R1	WP3.1.M2	WP3.1.R2		
Rui	WP3.2.M0	WP3.2.M1	WP3.2.R1	WP3.2.R2	WP3.3.M0							
Saeed	WP3.5.R0	WP3.5.M0	WP3.5.M2									
Weiming	WP3.2.M2	WP3.3.R0	WP3.2.R0	WP3.3.R1	WP3.3.M1	WP3.1.M0	WP3.1.R0	WP3.1.M1	WP3.1.R1	WP3.1.M2	WP3.1.R2	

- Provide list of milestones/reports by June 1st
- Show that we completed what we aimed for
- → List of criteria (example sent around)
- → Full milestone/report (template sent)
- **→ 1 page summary for review (template sent)**

Template

Full report template

Open Innovation Photonic ICs

Report/Milestone (WP3.1.M1): Title

Authors: Max Mustermann

Due date:	***MXX***
Actual Submission Date:	***MYY***
Lead Partner:	***Partner1***
Contributing Partners:	***Partner2***

Summary

Table of Contents

1. Introduction

2. Section

3. Conclusions

1 page

Milestone Summary (WP3.1.M0): Technology and Design Concept - RF Lines

Author: Weiming Yao

Goals

The goal is to finalize the concept that will be pursuit for the high-speed RF line building block within this project and to indicate requirements on the technology platform.

Achievements

- We decided to follow an iterative development procedure for the RF lines with incremental bandwidth increases from 20 GHz to 40 GHz and 80 GHz. Specifications on attenuation, length, impedance and return loss have been finalized.
- We investigated main factors that influence RF bandwidth and explored how these can be minimized through literature research and simulations. This led to the proposition of a novel RF line concept that is compatible to the generic platform.
- First details of the new concept have been established and its requirement on the platform technology have been discussed.
- The concept is illustrated in Fig. 1. A second level passivation layer using either polyimide or BCB acts as the dielectric material for the RF line building block. Via technology will be developed to connect the second level metal to the first level metal.

Figures

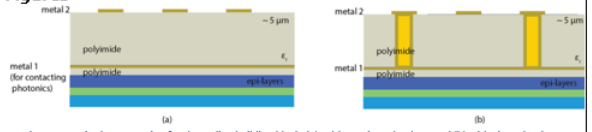
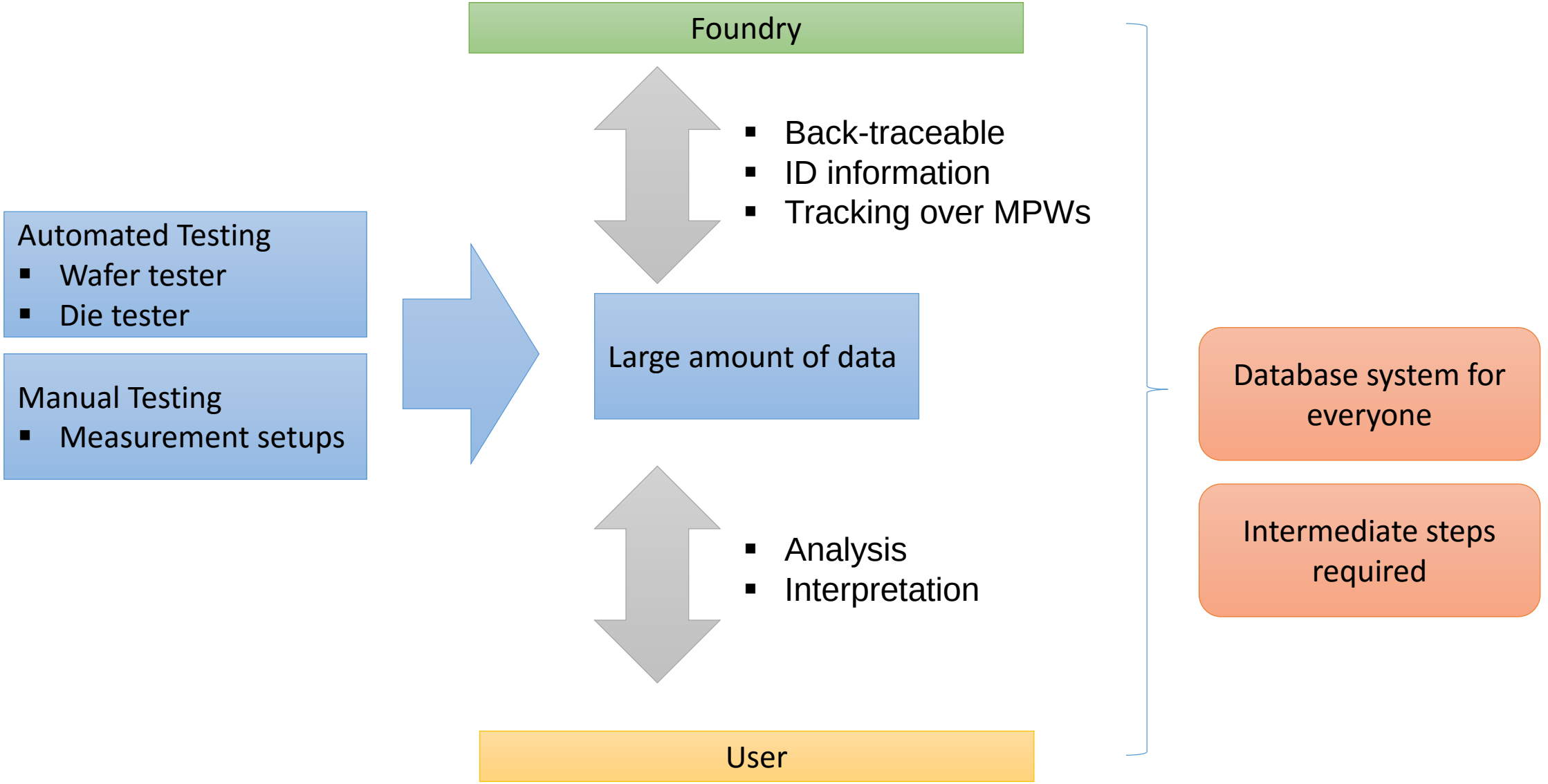
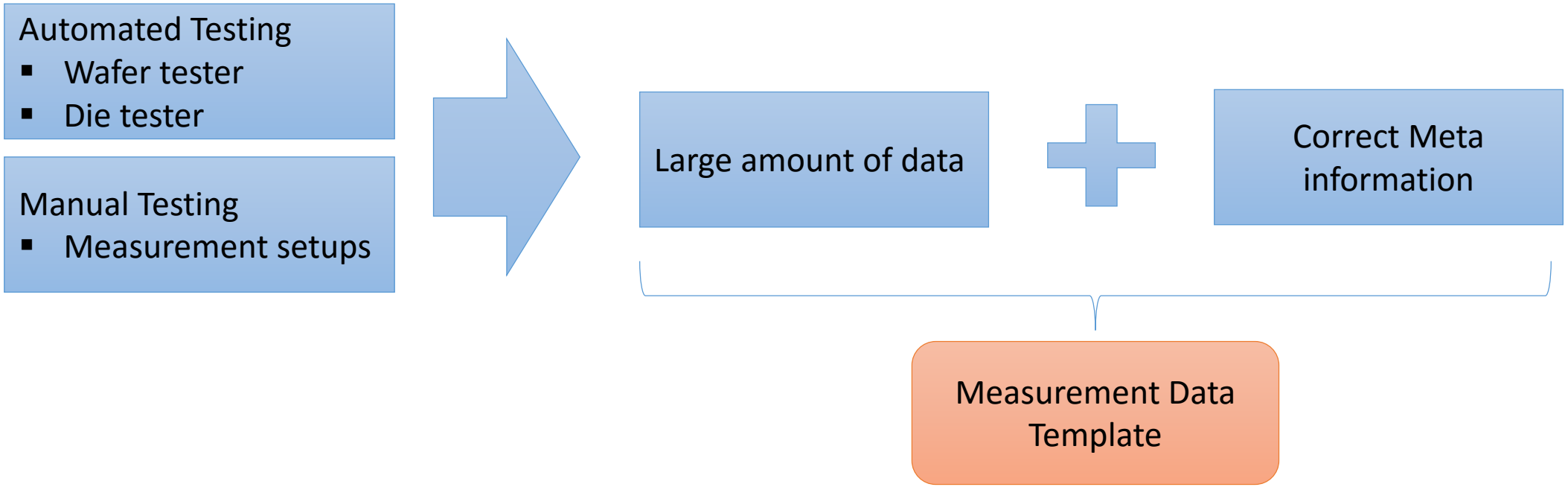


Figure 1: Desired cross section for the RF line building block. (a) Without via technology and (b) with via technology.

Data Structure Motivation



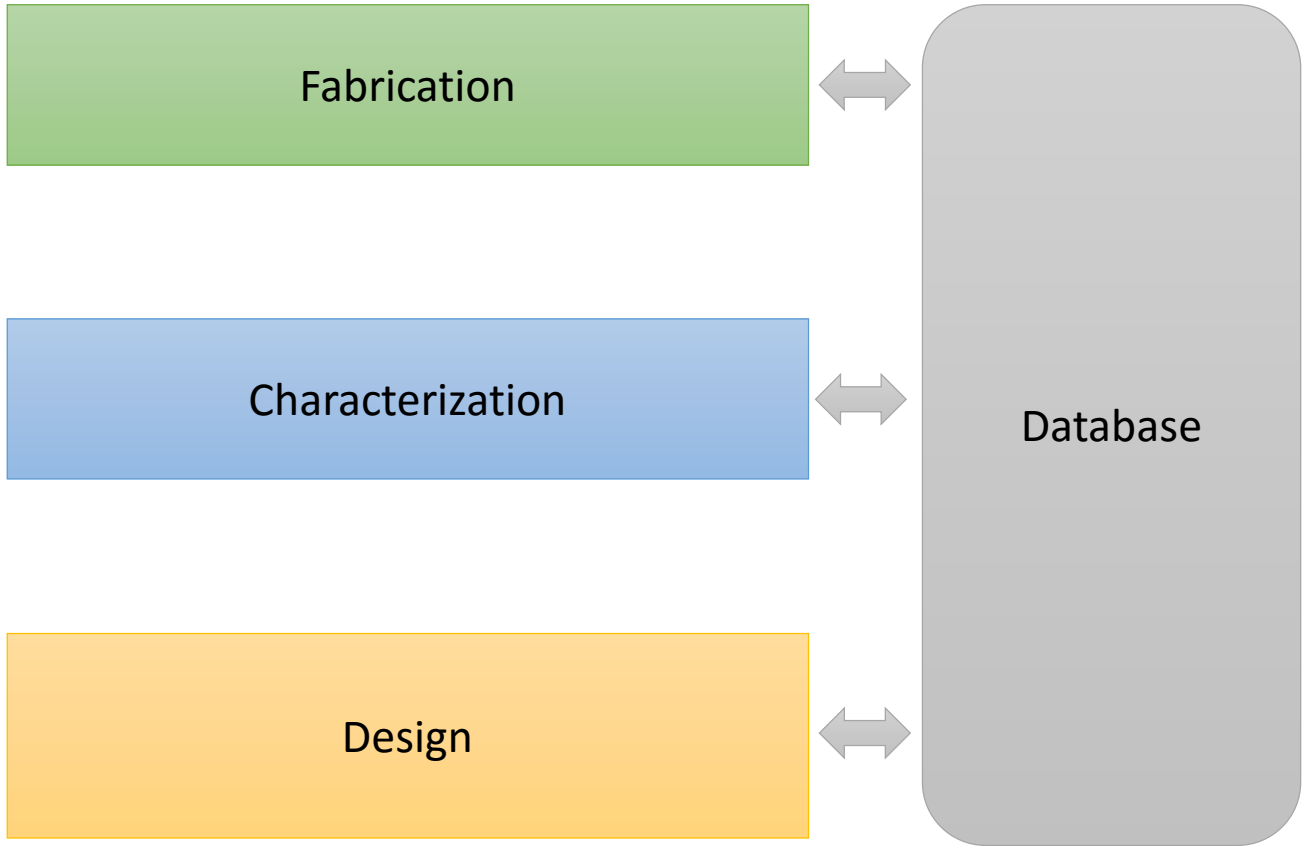
Measurement Data Templates



Example Information for Template

	Comments
Chip temperature	
Chip ID	unique for cell on wafer
wafer ID	unique for wafer per run
run ID	unique MPW run + foundry
Specification of raw data format	sweep variables
operator	
time	
Device ID	unique ID for measured device
number of stimulus	
kind of stimulus	
number of sensing	
kind of sensing	current, voltage, etc

Database



OpenPICs database

A. Problems to solve with database:

- Quick data access in validated format.
- Historical archive for statistical analysis.
- Compare simulation and measurement.
- Share and distribute data
- Secure data

B. Content:

1. What to store
    - Measurement data
    - Design data
    - Simulation data
    - Wafer-process data
2. Datamodel
    - Flexible first (Excel?, relational database later
    - Describe what users like to see in the data.
    - Describe attributes per component
    - Describe measurement conditions (calibration, etc)
    - Describe relations between data

C. Cooperation:

- Needs interactive development
- Filling data by multiple partners to iterate.

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Data Structure for Execution Database

openPICs WP3

MARCEL VAN DER VLIET

MAY 8TH 2017

CREATE YOUR DESIGN | MANAGE YOUR CLEANROOM

Outline

- Object Structure
- Main Object Types
- Data scenarios

Object structure

- Objects consist of the following
  - Object Type
  - Unique ID
  - Named Attributes
    - Required
    - Optional (known by specification)
    - Custom (defined by the user)
  - Named Object Links
    - Single links
    - Multidimensional links (to prevent separate link objects for N-N relations)

Internal Unique ID syntax

- The following can be considered w.r.t. the UID:
  - Should we add a prefix to the UID? To start we will use the following prefixes:
    - PR: Part Record
    - SR: Step Record
    - CR: Collection Record
  - Should we keep the number of digits fixed (if we take e.g. 9 digits, would we have sufficient possible records with 10 billion records?) to start we will use 9 digits and in the presentation examples 4 digits.

Named attributes and object links

- Considerations
  - Name is a string and starts with object prefix. E.g. PRID
  - Value can be:
    - Object
    - Array
    - String
    - Number
  - For presentation JSON will be used: E.g.: {“PRID”:”PR0001”}

Main Object Types

- Part Record
- Step Records
- Collection Records
- Definitions
  - Part Definition
  - Step Definition
  - Collection Definition

Part Record (PR)

- Part Records represent (in most cases) tangible records in the real world.
- Part Records can have the following types
  - Equipment
  - Carrier
  - Part
  - Location
  - Lot

Part Record Attributes

- Internal UID
- External UID (This could be multiple, so consider an array for this?)
- Quantity (depends on traceability)
- Link to the first Step Record

Step Record (SR)

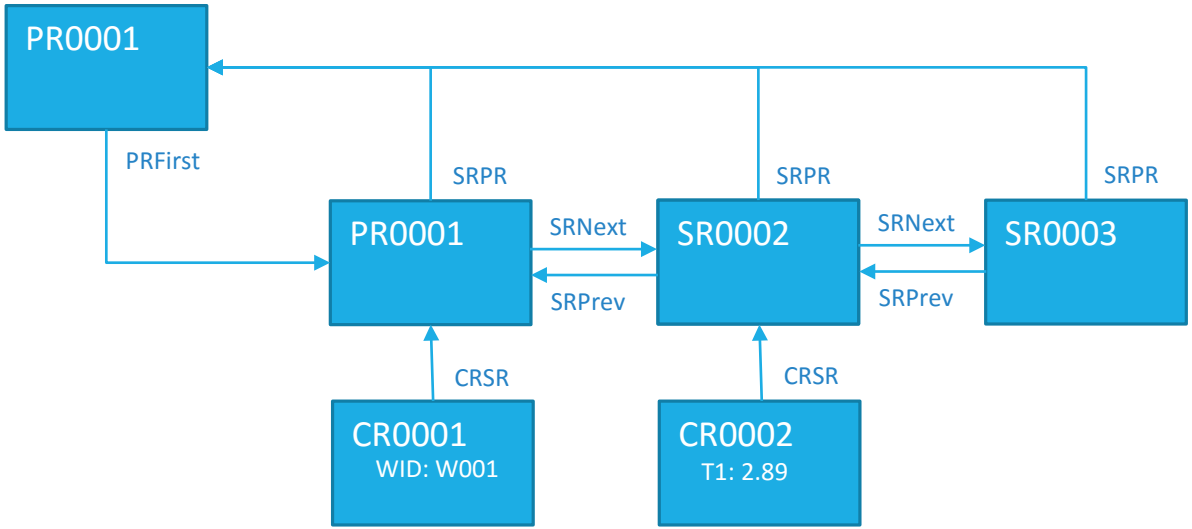
- The Step Records are used to created a complete time line for the Part Records
- In most cased when something changes to the Part Record, a new Step Record is created
- They have the following attributes
  - TimeIn (Required)
  - TimeOut (Optional)
  - Link to next step record

Collection Record (CR)

- Considerations
  - A Collection Record links to a Step Record

Example Scenarios

- Measurement on a wafer
  - Assign wafer number



Summary

- A start structure for data to record Execution data was presented

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