MESA Process Definition

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8-2-18 process.pptx
OUTLINE

Introduction
MESA Process Definition
Approach
Example
MES CIM SYSTEMS
MESA is an integrated relational database system for discrete part manufacturing (a computerized record-keeping system)

A relational database system is a database in which the data is perceived by the user as tables (and nothing but tables)

Operations include:
- Adding new tables to the database
- Inserting new data into existing tables
- Retrieving data from existing tables
- Updating data in existing tables
- Deleting data from existing tables
- Removing existing tables from the database
- Quarrying database tables for specific information
MESA PROCESS DEFINITION

PROCESS CLASS
(MOS, BiPolar, MEMs)

PROCESS
(PMOS ver 1.0, CMOS ver PW-3)

STEPS
(STEP1  STEP2  STEP3 .....STEP78)

SPECIFICATIONS

DOCUMENTS

DOCUMENT TYPE
(TEXT, GRAPHICAL)

DOCUMENT
CLE01.FFT
SHIPLEY.IMG
SCRIBE.IMG

INSTRUCTION
GROUP NAMES

OPERATION
CL01  ET01
CV01  ET07
CV02  ET08
CV03  IM01
DE01  OX06
DI01  PH03
DI02  SI01
ET01  TE01

PARAMETER GROUP NAMES

PARAMETER TYPE
(ALPHA, NUMERICAL)

PARAMETER
(XOX)
(XJ)
TEMP
TIME
POWER

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APPROACH

1. Sketch out the process flow
2. Define any new operations not already in MESA
3. Define instructions for each step
4. Define parameters for each step
5. Define specifications for each step
6. Create documents
7. Define the process
EXAMPLE CANTILEVER STRUCTURE

Top View

Cross Section View

Polysilicon Cantilever

Silicon Substrate

SacOx

SacOx Gone

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## SKETCH OUT THE PROCESS FLOW

<table>
<thead>
<tr>
<th>Step Number</th>
<th>MESA Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>ID wafer ID01</td>
</tr>
<tr>
<td>2.</td>
<td>RCA Clean CL01</td>
</tr>
<tr>
<td>3.</td>
<td>Sacrificial Oxide new</td>
</tr>
<tr>
<td>4.</td>
<td>Deposit Polysilicon CV01</td>
</tr>
<tr>
<td>5.</td>
<td>Dope Polysilicon IM01</td>
</tr>
<tr>
<td>6.</td>
<td>Thick Photoresist Pattern new</td>
</tr>
<tr>
<td>7.</td>
<td>Etch Polysilicon new</td>
</tr>
<tr>
<td>8.</td>
<td>Strip Photoresist ET07</td>
</tr>
<tr>
<td>9.</td>
<td>Etch Sacrificial Oxide new</td>
</tr>
<tr>
<td>10.</td>
<td>Test new</td>
</tr>
</tbody>
</table>
NEW OPERATIONS

NEW

Thick Photoresist Operation
CMP Operation
Rapid Thermal Operation
Spin-on Glass
Shallow Trench Etch
Etc.

EXISTING

CL01 - RCA Clean
OX04 - Wet Oxide Growth
CV01 - LPCVD Poly
Etc.
DEFINE NEW OPERATIONS

Type information. Then Enter, or use Roll keys to page.

Action ........... 1=Create, 2=Change, 3=Replace, 4=Delete
Plant ............. RIT
Operation ........__

Copy from (Create or replace only):

Plant ............. RIT
Operation ........__

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F20=Set Defaults
DEFINE INSTRUCTIONS FOR EACH STEP

Instructions include detailed information for each step.

For Example

12/16/02
17:00:27
MESA
Instruction Group Maintenance
QADEV0005
RIT

Type information. Then Enter.

Action .............. 1 1=Create, 2=Change, 3=Replace, 4=Delete
Plant ............... RIT
Instruction group name ... MEMS RCA CLEAN
Revision level ........ 1.0

Copy from (Create or replace only)
Plant ............... RIT
Instruction group name ...
Revision level ........

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel
CREATE DOCUMENTS

Documents are text or graphical files stored on a network drive. The J:/ drive resides on a PC in building 17. The J:/mesadoc directory is normally used for these documents.

Example document showing how to measure thickness

Example document showing how to electrically activate the cantilever
REGISTER DOCUMENTS IN MESA

Type information. Then Enter, or use Roll keys to page.

MESA Document Master Maintenance

12/16/02 17:09:03

Type information. Then Enter, or use Roll keys to page.

MESA Document Master Maintenance

12/16/02 17:11:15

Description
RCA Clean

Folder
J:/MESADV

Document name
RCACLEAN.PPS

Help label
POWERN1

Status
1 = Active, 2 = Inactive

Creator
FFFEEE

Password

F10=Show password
F12=Cancel

F3=Exit
F4=Prompt
F5=Refresh
DEFINE PARAMETERS FOR EACH STEP

FROM: QDCPMNU

12/16/02
17:17:27

MESA Parameter Definition Menu

Parameter ID maintenance (PINSMNT)
Parameter group maintenance (PGSMNT)
Parameter ID master inquiry (PINSINV)
Parameter group master inquiry (PGMSINV)
Parameter group detail inquiry (PGDINI)
Parameter ID master listing (PINSRPT)
Parameter group master listing (PGMSRPT)
Resource transaction parameter maintenance (RTRPMNT)
Resource transaction parameter listing (RTRPRPT)

Selection or command
===>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F10=Dataset  F12=Cancel
DEFINE SPECIFICATION FOR EACH STEP
DEFINE THE PROCESS

FROM: PCMSMNT

12/16/02
17:23:31

Type information. Then Enter.

Action .......... : 1=Create, 2=Change, 3=Replace, 4=Delete
Plant ............. : RIT
Process ........... :
Revision .......... :

Copy-from (Create or Replace only)

Plant ............. : RIT
Process ........... :
Revision .......... :

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F20=Sequence options
START UP REMOTE DESKTOP
LOG ON TO KIF SERVER, START UP MESA

Type in kif.microe.rit.edu
Click Connect

Then: Enter DCE Username and Password
(all registered students should have this)

Then: Click on MESA Icon

Sign onto AS400:

STUDENT NIGHTSHIFT
AS/400 SIGN ON

Sign On

System : HOST400
Subsystem : QINTER
Display : QPADEV0005

User 
Password
Program/procudre
Menu
Current library

STUDENT NIGHTSHIFT

(C) COPYRIGHT IBM CORP. 1980, 1999.
PLANT AND USER SIGN ON

12/16/02
10:47:34

MESA
User Signon

MESADB S99901
QPADEV0005 RIT

Version . . . . .: 2.00
A/C level . . . .: 0011

Type information. Then Enter.

RIT
ENGINEER
WAFER

(C) Copyright 1986,1998 Camstar Systems, Inc.
All Rights Reserved.

F3=Exit  F12=Cancel
MAIN MENU

File Maintenance Menu

FMNTMNU
MASTER FILES TABLE MAINTENANCE

12/16/02
16:49:27

MESA
Master Files/Table Maintenance

Select one of the following.

1. Product master maintenance
2. Operation master maintenance
3. Process master maintenance
4. Work center master maintenance
5. Table definition master maintenance
6. Table data master maintenance
7. Specification ID master maintenance
8. WIP message master maintenance
9. Instruction group master maintenance
10. Override spec ID master maintenance
11. Process override master maintenance
12. Document master maintenance
13. Product group master maintenance
14. Note master maintenance

Selection or command

F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F10=Dataset  F12=Cancel

FNMTMNU 90021
Process definition is at the core of basic work-in-progress tracking software. MESA needs a process definition in order to do transactions such as MOVE, MOVE-IN, START, SHIP, Etc.
REFERENCES

1. IBM AS/400 Manual.
2. MESA Manual.
Create your own process in MESA. (Three steps is enough) Use your name or your initials in naming the various new operations, process, specifications, parameter groups, etc.

1. RCA Clean, Grow Oxide …