

Defect Reduction Domestic Cross-Cut TWG

Dallas 1-8-99

Robin Worley - TI

David Jensen - AMD

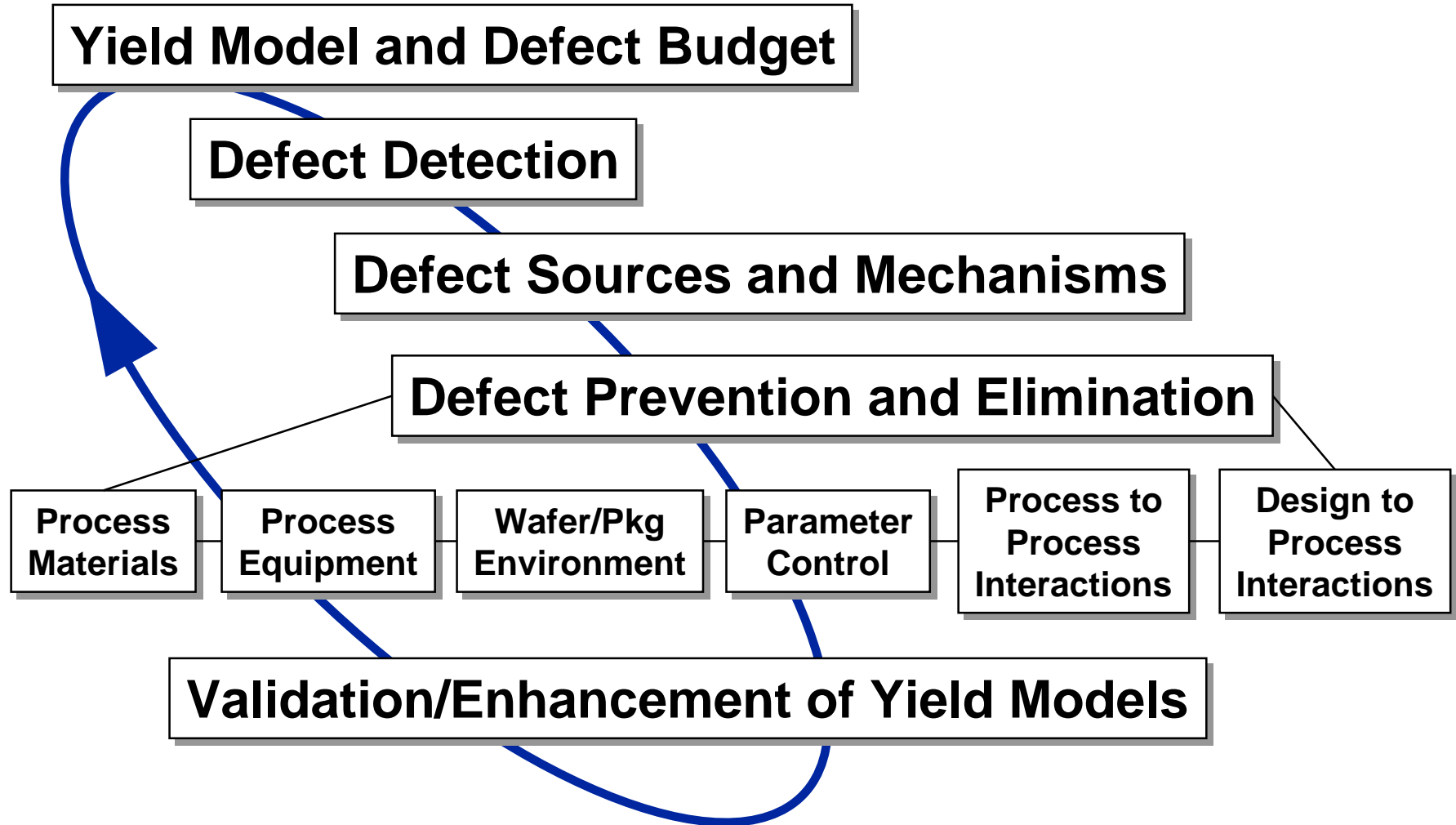
RCG Questions

- 1st and 3rd Year Yield Assumptions
 - 1997 NTRS 60% and 80% respectively
 - 1999 ITRS - hold same assumptions?
- Focus Topics
 - Same as 1997?
 - Will these be formalized as in 1997?
- Cross-Cut Representatives
 - timing for assigning these

RCG Questions

- Format
 - page count - TWG and cross-cut
 - additional figures?
 - are potential solutions tables of “real” use
- Advocate
 - Will these be assigned again?
- TWG Membership
 - as formal as 1997 or less formal

Defect Reduction Cross-Cut Technology Working Group



MICRO “Mapping the Roadmap Series”

- “New Industry Document Explores Defect Reduction Technology Challenges”
 - <http://www.micromagazine.com/archive/98/01/jensen.html>
- “Developing Yield Modeling and Defect Budgeting for 0.25 μm and Beyond”
 - <http://www.micromagazine.com/archive/98/03/roadmap.html>
- “What Drives Defect Detection Technology?”
 - <http://www.micromagazine.com/archive/98/06/jensen.html>
- “Future Technology Requirements for Rapid Isolation and Sourcing of Faults”
 - <http://www.micromagazine.com/archive/98/07/jensen.html>
- “Defect Prevention and Elimination: Final Destination”
 - <http://www.micromagazine.com/archive/98/10/jensen.html>

1999 NTRS DR CCTWG Co-chairs

- DR (I)nternational TWG
 - David Jensen - SEMATECH
 - Milt Godwin - AMAT
- DR (D)omestic TWG
 - Robin Worley - TI
 - David Jensen - AMD
- Yield Model and Defect Budget sub-TWG
 - Chris Long - IBM
 - Daren Dance - WWK
- Defect Detection sub-TWG
 - Vijay Sankaran - SEMATECH
 - Arye Shapiro - AMD
- Defect Sources and Mechanisms sub-TWG
 - Fred Lakhani - SEMATECH
 - Wand Tomlinson - IBM
- Defect Prevention and Elimination sub-TWG
 - Bill Fosnight - Asyst
 - Bill Fil - IBM

Changes for 1998 Electronic Update

- Table 54 Difficult Challenges
 - Added clarifying words
- Table 56 Yield Model and Defect Budget
 - Added PID budgets at critical particle size
- Table 57 Defect Detection
 - Added clarification of yield phases
 - Changed HARI as “Solutions Being Pursued” thru 150nm
- Table 58 Defect Sources and Mechanisms
 - Added clarifying words
- Table 59 Defect Prevention and Elimination
 - Changed TOC levels commensurate with SOA
 - Changed DI particles as “Solutions Being Pursued” thru 50nm

Defect Reduction ITWG

Present 12/11/98:

Rebecca Tang - Taiwan

Akihira Shinohara - Japan

David Jensen - US

Milton Godwin - US

Table 54 - Issues/Actions

- Substrate defect control
 - Lithographic distortion of levels following RTP steps, resulting in misalignment of overlaid levels
 - Crystal defects (distortion) captured at base silicon
- Possible Roadmap Changes
 - Relate oxygen-content control to degree of distortion
 - Relate uniformity of surface temperature and emissivity during RTP to placement of control sensors on front or back of the wafer
- Action
 - Resolve with FEP and starting materials

Table 56 - Issues/Actions

- Need targets based on DRAM electrical D_0
- Possible Roadmap Changes
 - Identify separate DRAM PID budget
 - Identify standard conversion factor for DRAM
- Action
 - Resolve with current yield model project

Table 57 - Issues/Actions

- Two Issues
 - No currently manufacturing method to do routine HARI inspection
 - Wafer backside particles can influence lithography significantly
- Possible Roadmap Changes
 - Specify required aspect ratio
 - Specify degree of z error than can be tolerated on front-side exposure
- Actions
 - Resolve by identifying manufacturing requirement for aspect ratio
 - Resolve by studying relationship of backside-particle size to local de-focus (z) on front-side lithography

Table 59 - Issues/Actions

- CMP consumables not included
 - Variation in consistency, slurry size, stability, solution composition, and pad mechanical parameters result in process variation
- Possible Roadmap Changes
 - Add parameters for CMP consumables to table
- Actions
 - Resolve checklist of characteristics of CMP consumables to be specified in Table 59

Summary and Follow-Up

- 1998 Update
 - Incorporate July and December ITWG inputs and email to ITWG members for review and final posting January 15
 - Consensus input from US and Taiwan
 - Individual input from Europe and Japan
 - Need input from Korea

Summary and Follow-Up

- 1999 Activity
 - Europe, Korea, US, Japan, Taiwan Meetings between January-April
 - ITWG Meeting April 16
 - ITWG Meeting (proposed) July 7-8
 - Roadmap Workshop July 9