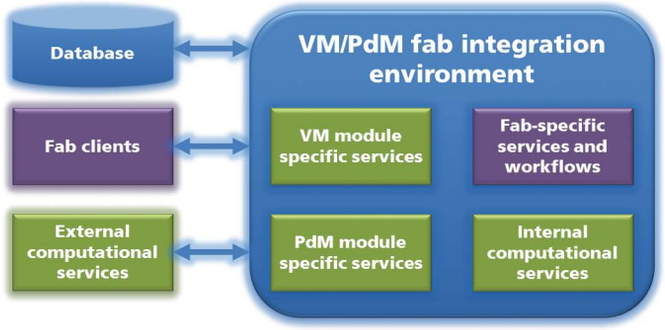

VM / PDM SERVICES

- Identification of benefits from VM and PdM applications in your enterprise including feasibility studies and return-of-invest (RoI) estimation
- Data mining services and analysis of process and equipment data
- "Virtual Equipment": Dedicated software tool for development and test of VM and PdM algorithms
- Development of VM and PdM solutions for your production data and applications
- VM and PdM algorithms ready for integration in your production environment

What is your application?

CONTACT

Fraunhofer Institute for
Integrated Systems and Device Technology IISB
Schottkystrasse 10
91058 Erlangen, Germany

www.iisb.fraunhofer.de

Dr. Georg Roeder
Phone: +49 9131 761 234
Fax: +49 9131 761 112
E-mail: georg.roeder@iisb.fraunhofer.de

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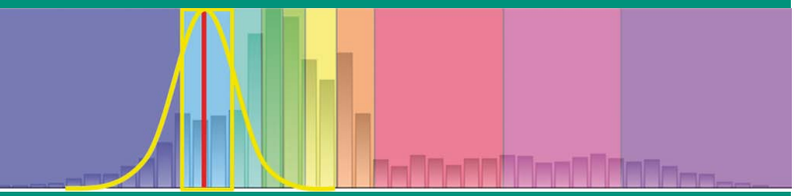
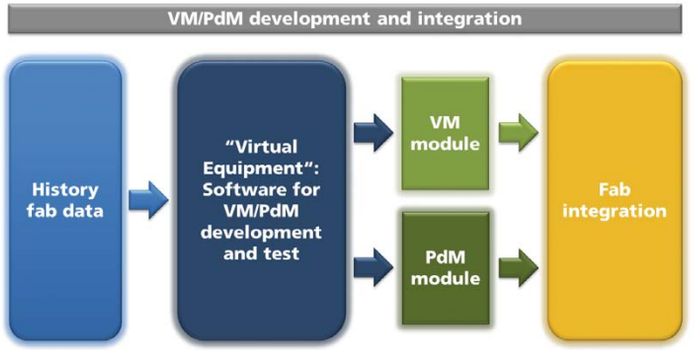
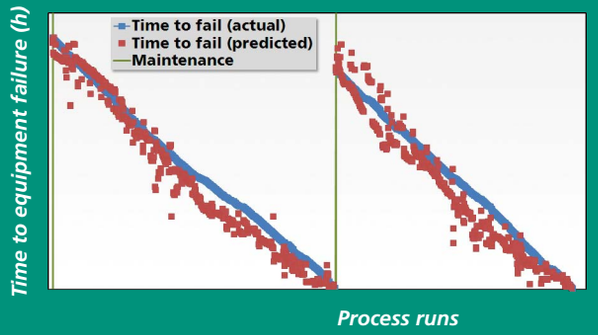
VIRTUAL METROLOGY AND PREDICTIVE MAINTENANCE

PREDICTION OF QUALITY PARAMETERS AND MAINTENANCE







NOVEL CONTROL METHODS

Statistical models for predictive process and equipment control

Application description:

- **Virtual Metrology (VM):**
  → Virtual measurement of quality parameters based on available equipment, process and logistic data
- **Predictive Maintenance (PdM):**
  → Support for maintenance planning by prediction of best point-in-time for maintenance and repair
- **Assessment of VM/PdM models:**
  → Test and optimization of existing models with an exclusive virtual equipment test bench

VIRTUAL METROLOGY

Prediction of process results from equipment and process data

Benefits:

- **Improved product control:**
  → Enables 100% wafer-to-wafer control without additional metrology equipment
  → No metrology delay
- **Metrology cost reduction:**
  → Reduction of required metrology equipment within a fab
  → Improved cycle time due to omitted metrology operations
- **Support for APC systems:**
  → Improvement of run-to-run control by providing virtual metrology results for each wafer

PREDICTIVE MAINTENANCE

Prediction of equipment failure and wear part degradation

Benefits:

- **Better maintenance planning:**
  → Prevention of unscheduled downtime
  → Just-in-time allocation of personnel and spare parts
- **Improved process control:**
  → Reduction of scrap and equipment failures
  → Enabling of recipe updates based on equipment condition
- **Improved control planning:**
  → Equipment-health monitoring enables adaptive control strategies
  → Prevention of unnecessary measurements