

DVA

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Outline

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- Data Flow
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- Data Download
- Data Integrity
- Scope Selection
- Visual Exploration
- Live Demo

Background

- Design and manufacturing of modern semiconductor products is very complex
- Increased complexity necessitates more verification and testing
- More testing means more infrastructure and economic issues for the company

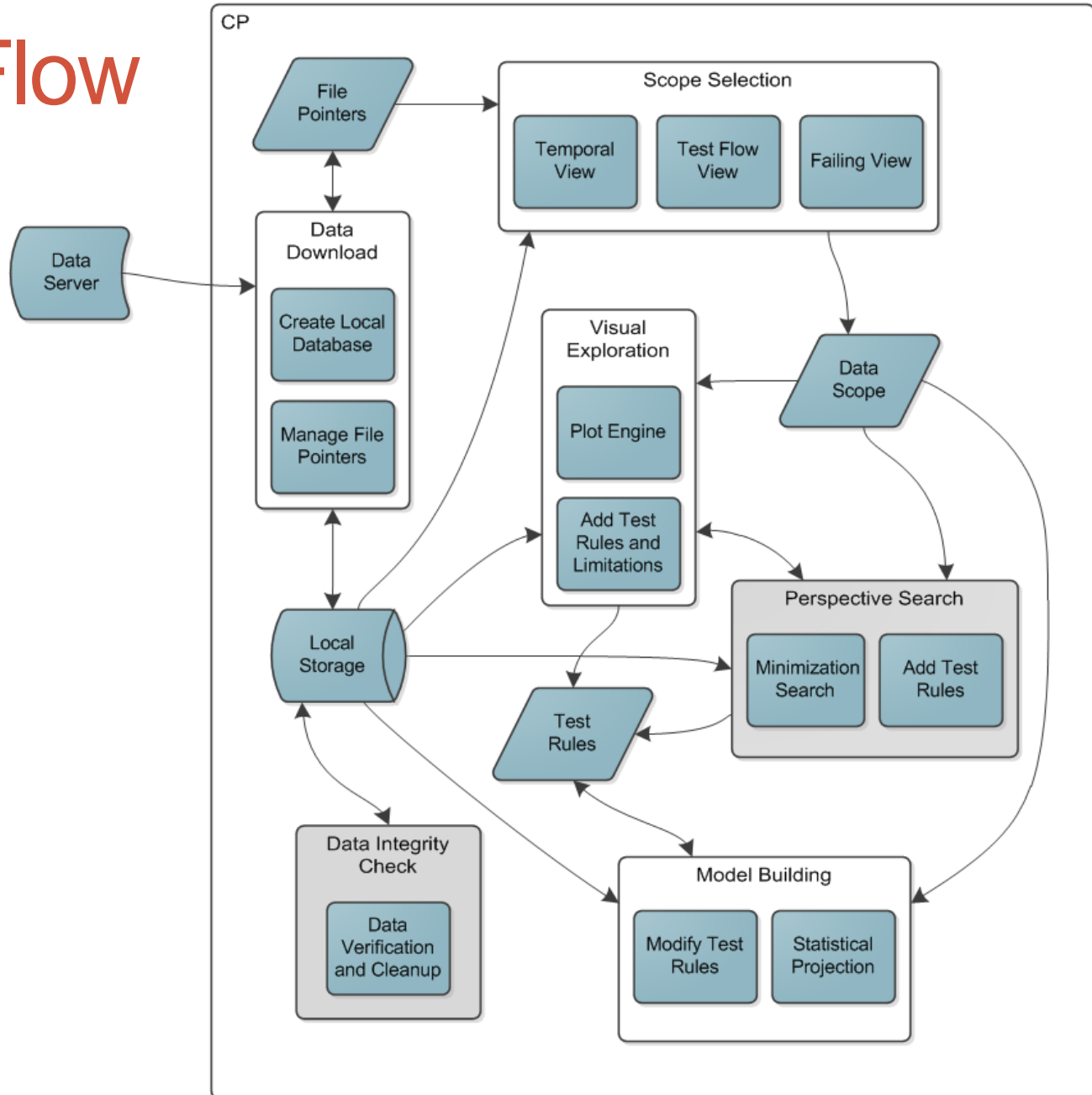
Background

- Issue: Verification and testing is usually an ad-hoc process done overseas.
- Makes it difficult to centralize data for analysis
- Test data is very large – often multiple GBs
- General approach is to write individual custom scripts to manually extract desired information from data sets for analysis

Design Objective

- Develop a tool to automate the analysis and visualization of test data
- Intuitive usage
- Fully modular
- Locate variations and abnormalities
 - Screen out future failures
- Intended users: Product Engineers

Data Flow



Data Format

- Insertions
 - Specific set of tests (i.e. tests done at high temperature)
- Lots
 - Each lot contains a set of silicon wafers
- Wafers
 - Silicon substrate that contains a set of parts (integrated circuits)
- Parts
 - Specific part on a wafer
- Tests
 - Test values measured at each part

Data Download

- Module that will access data from the store (disk)
- Design philosophy:
 - Maximize efficiency by minimizing disk access
 - Optimize data caching

Data Integrity

- Module that verifies the validity of input data
- Design philosophy:
 - Need to ensure that test data is not corrupted
 - Check that test values are valid for each test

Scope Selection

- Module that enables the user to select granularity
- Design Philosophy:
 - Provide a non-restrictive way to access various test sets
 - I.e. selection of insertions/lots/wafers/parts/tests

Visual Exploration

- Module that enables user to plot and visualize test data
- Design Philosophy:
 - Provide a large set of functions to plot various data selections
 - Example plots: KDEs, Histograms, Scatter Plots, Wafer Plots