

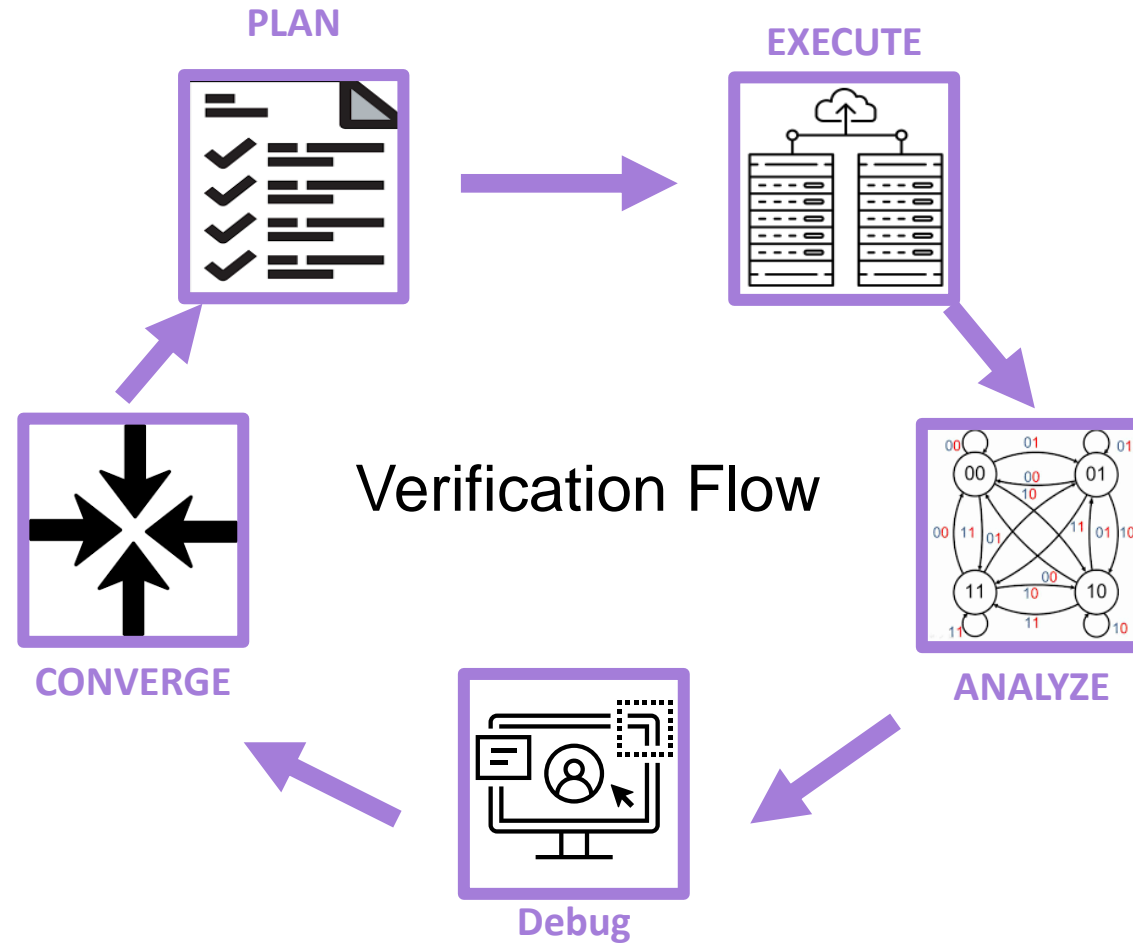


# Integrated Verification Ecosystem for Regression Management, Coverage Convergence, and Debug Automation

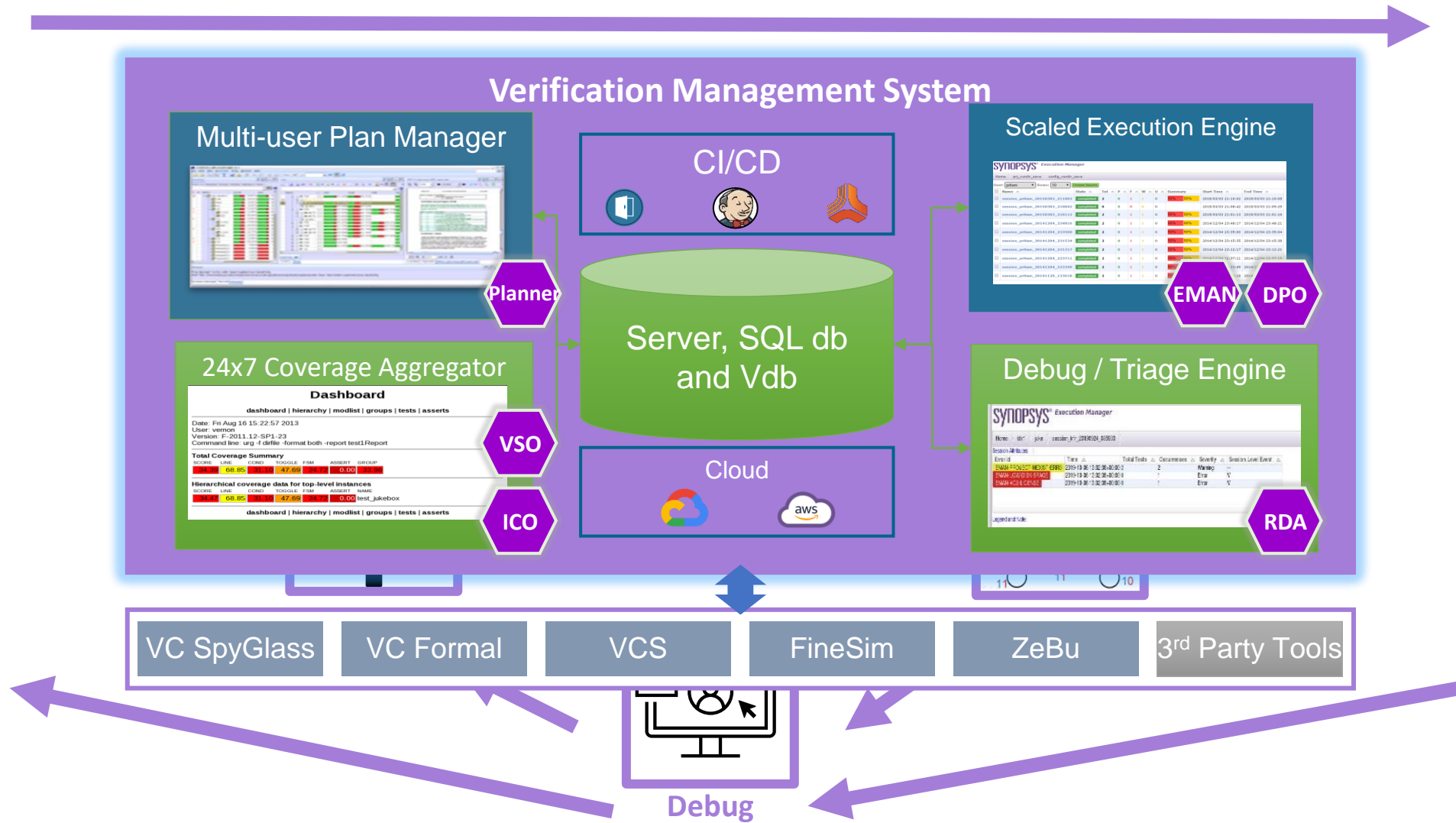
Ching-Yi Huang, William Huang, Craig Yang  
Synopsys



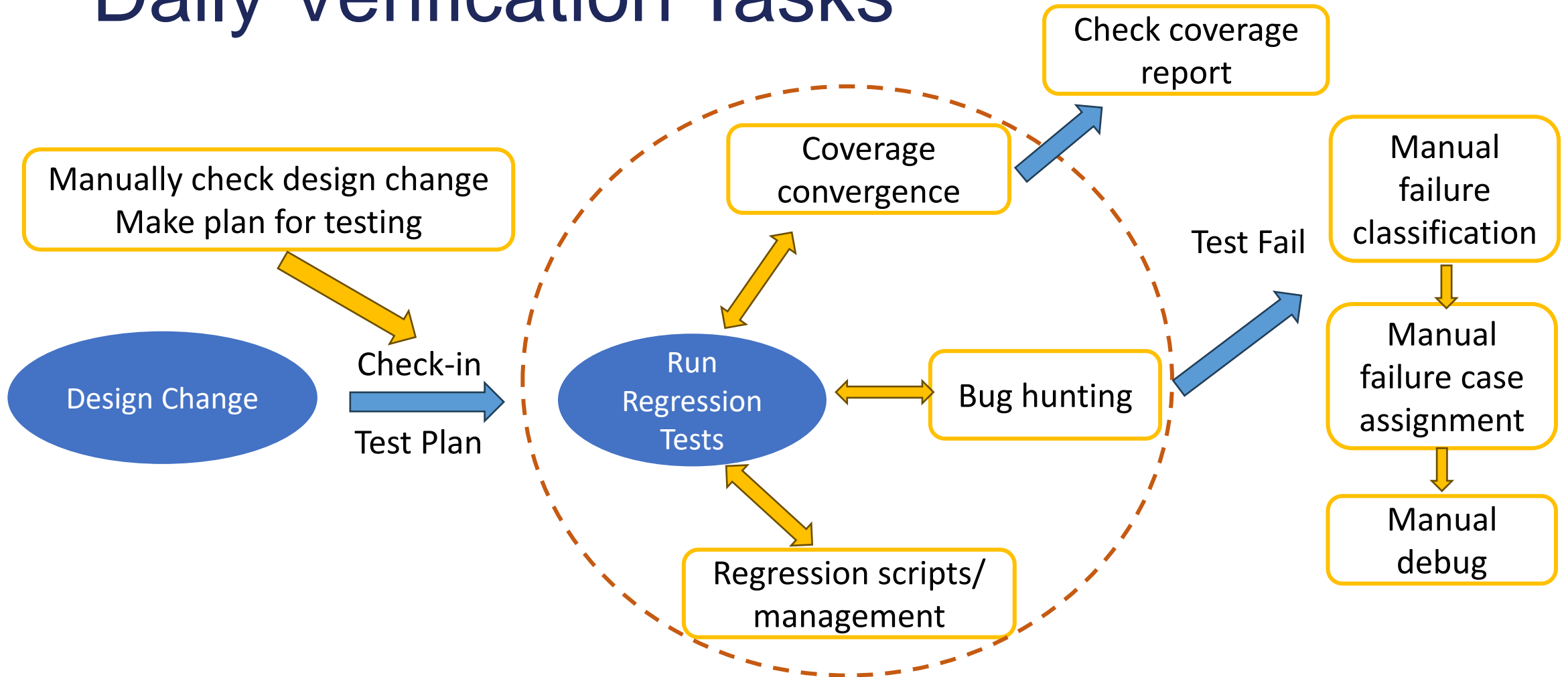
# Next-Generation Verdi



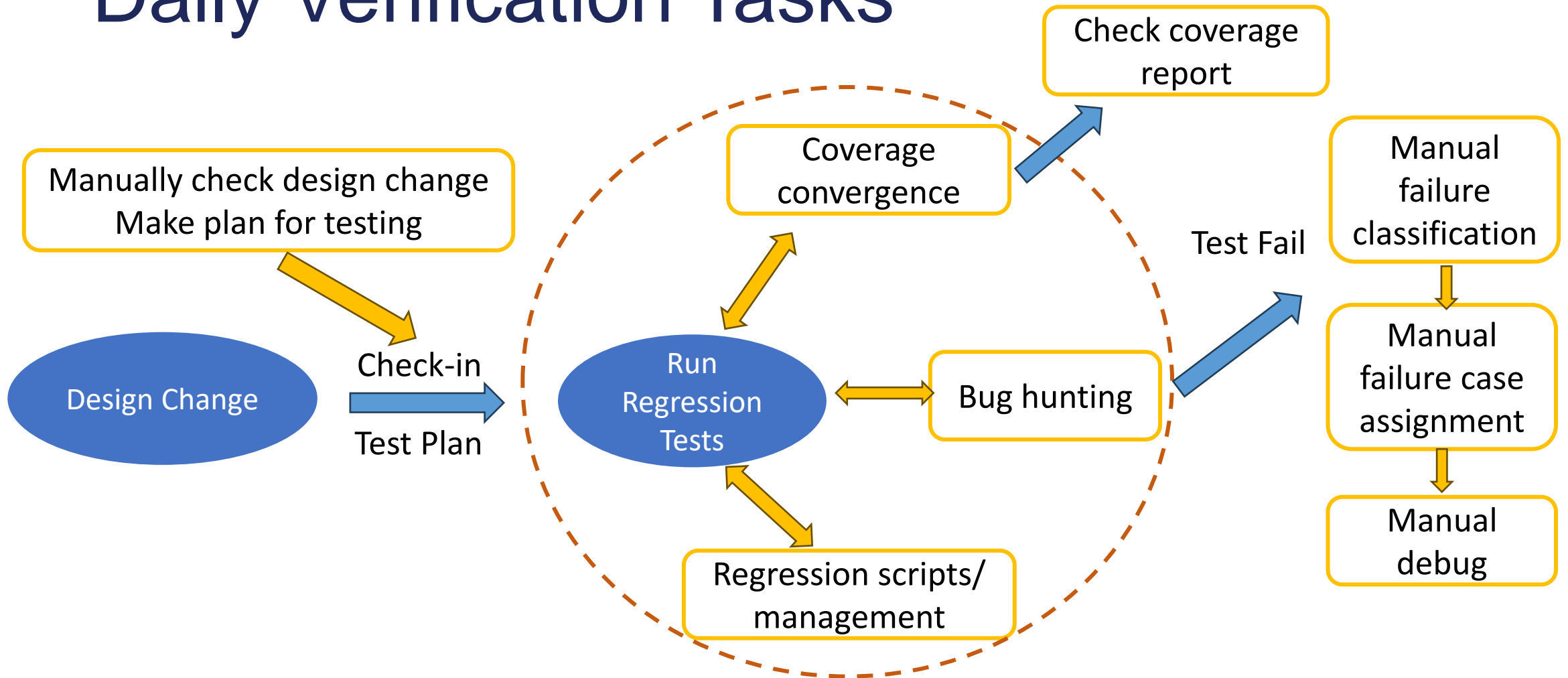
# Next-Generation Verdi



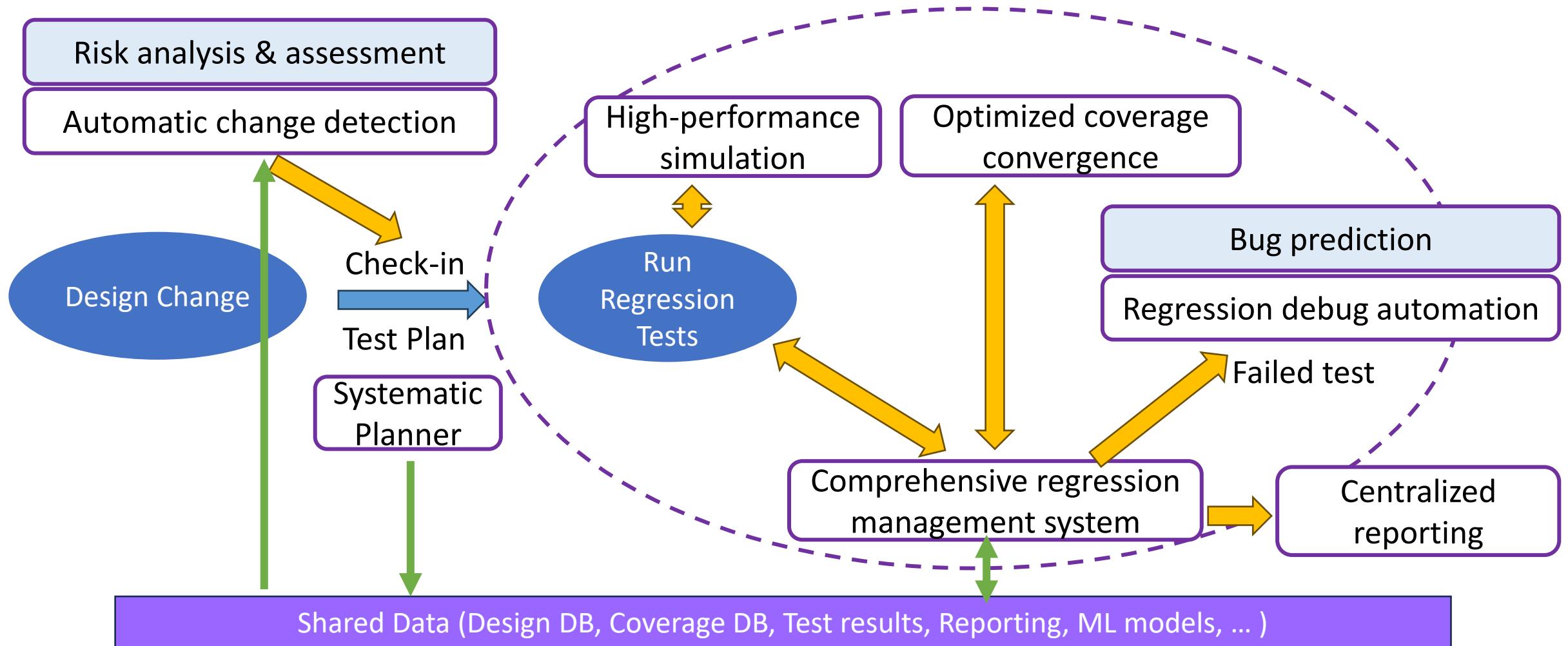
# Daily Verification Tasks



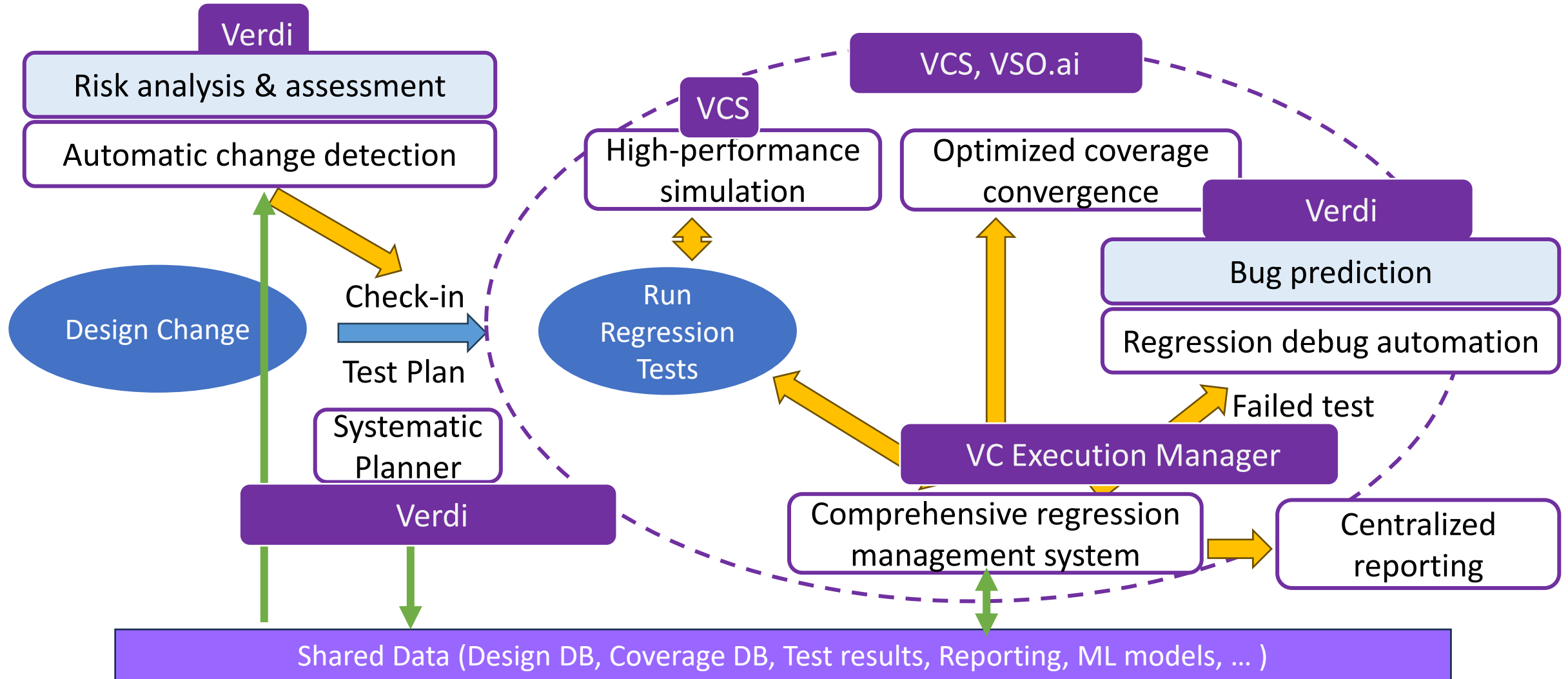
# Daily Verification Tasks



# Automatic Verification Flow



# Automatic Verification Flow

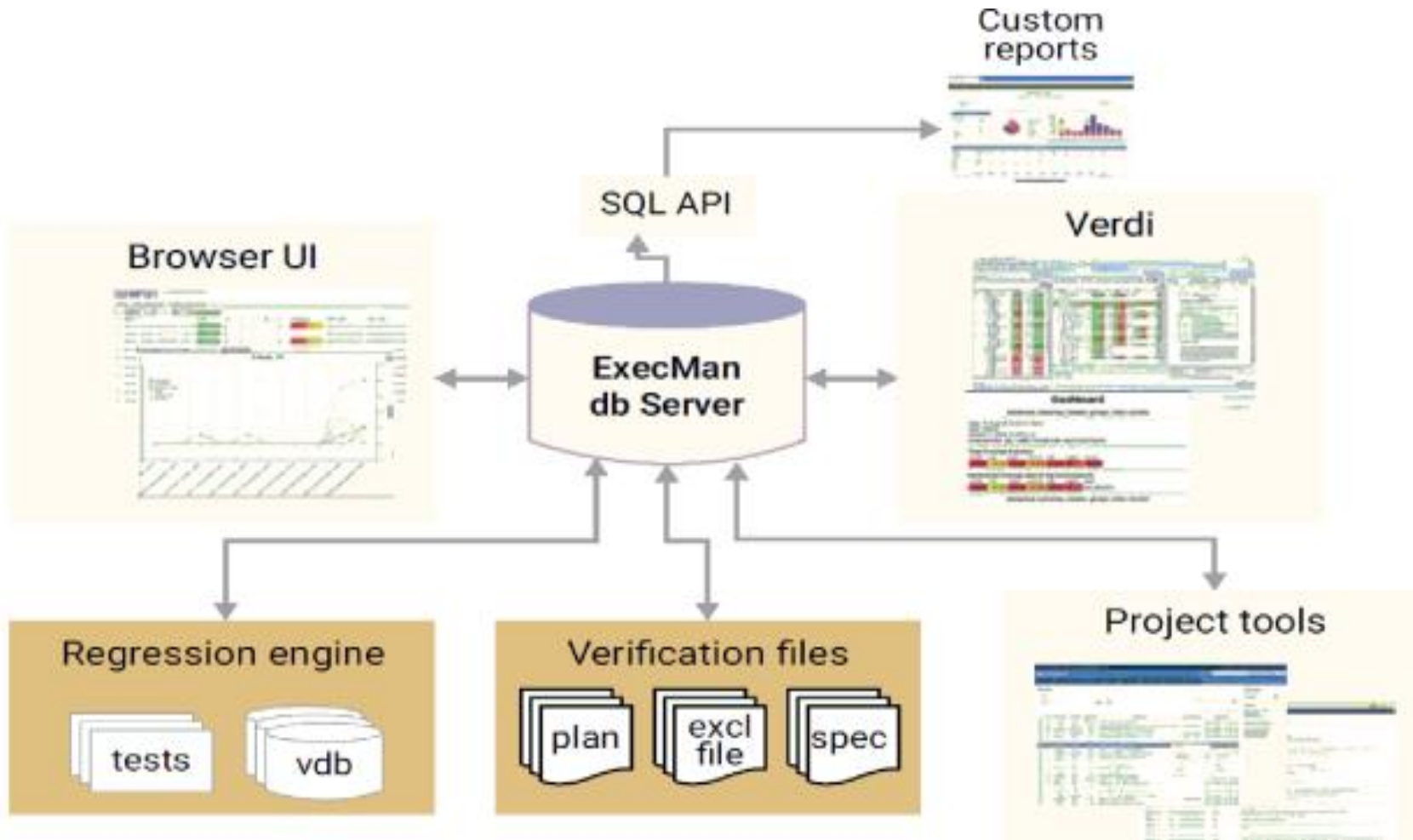


# Outline

- Introduction of the Synopsys Verdi debug and verification platform
- Introduction of VC Execution Manager
- Introduction of VSO.ai
- Introduction of RDA
- Benefits of integration
- Complementing technologies in the verification ecosystem
- Conclusion

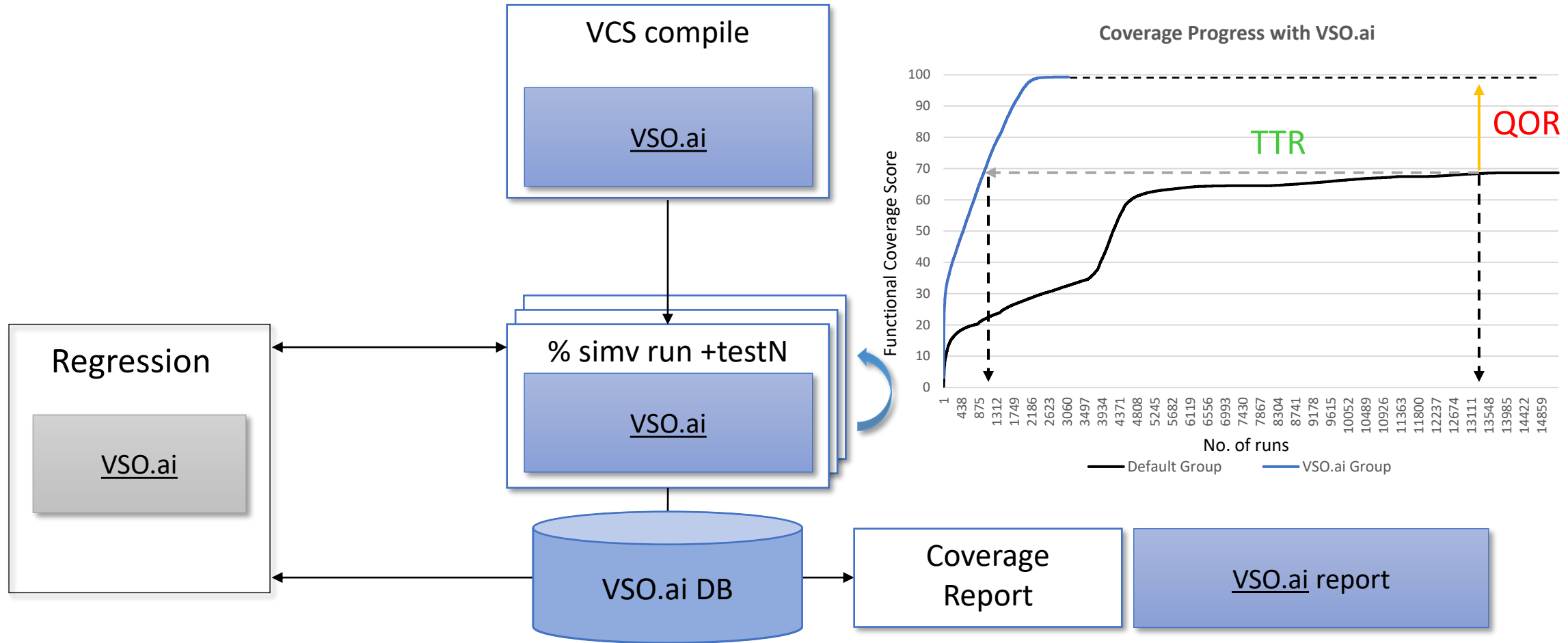


# VC Execution Manager

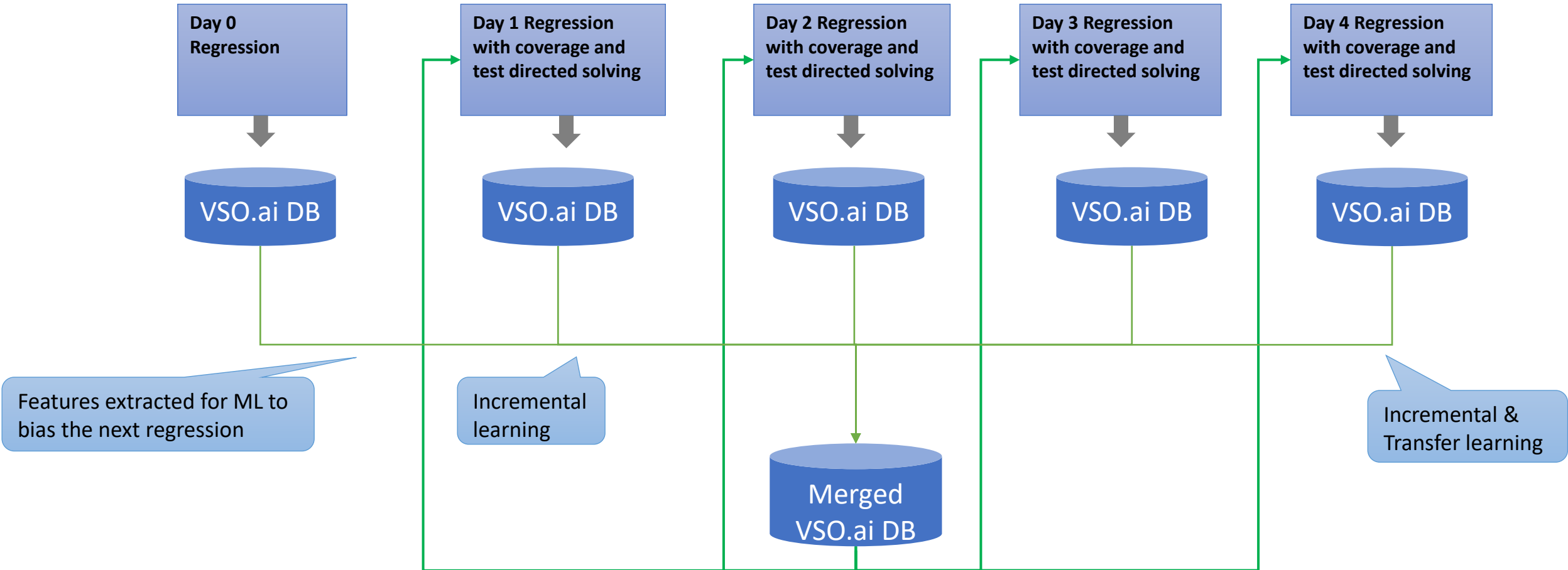


- Data organized by session
- Track across life of project
  - Test results & performance
  - Verification Plan scores
- Analysis & debug in Verdi
- Tracking in Browser UI
- Open API to all stored data for customized project tracking
- Enhance the teams to coordinate
- Support both database server and serverless capability
- Support execution on local host and grid managers
- Support automatic coverage merging and debug rerun

# Optimized Regression with VSO.ai



# Use Model for VSO.ai



# See What Customers Are Experiencing with VSO.ai

## REGRESSION

## COVERAGE

Automotive  
SoC

REDUCED  
TAT BY  
**2x**

IMPROVED BY  
**10%**

HIGHER  
QoR BY  
**50%**

High-  
Performance Data  
Center CPU

REDUCED  
TAT BY  
**16x**

IMPROVED BY  
**5%**

FASTER TTR IN  
**1<sup>st</sup>**  
ITERATION

High-  
Performance  
Wireless MCU

REDUCED  
TAT BY  
**10x**

IMPROVED BY  
**20%**

**2000**  
RARE COVERAGE  
TARGETS IDENTIFIED

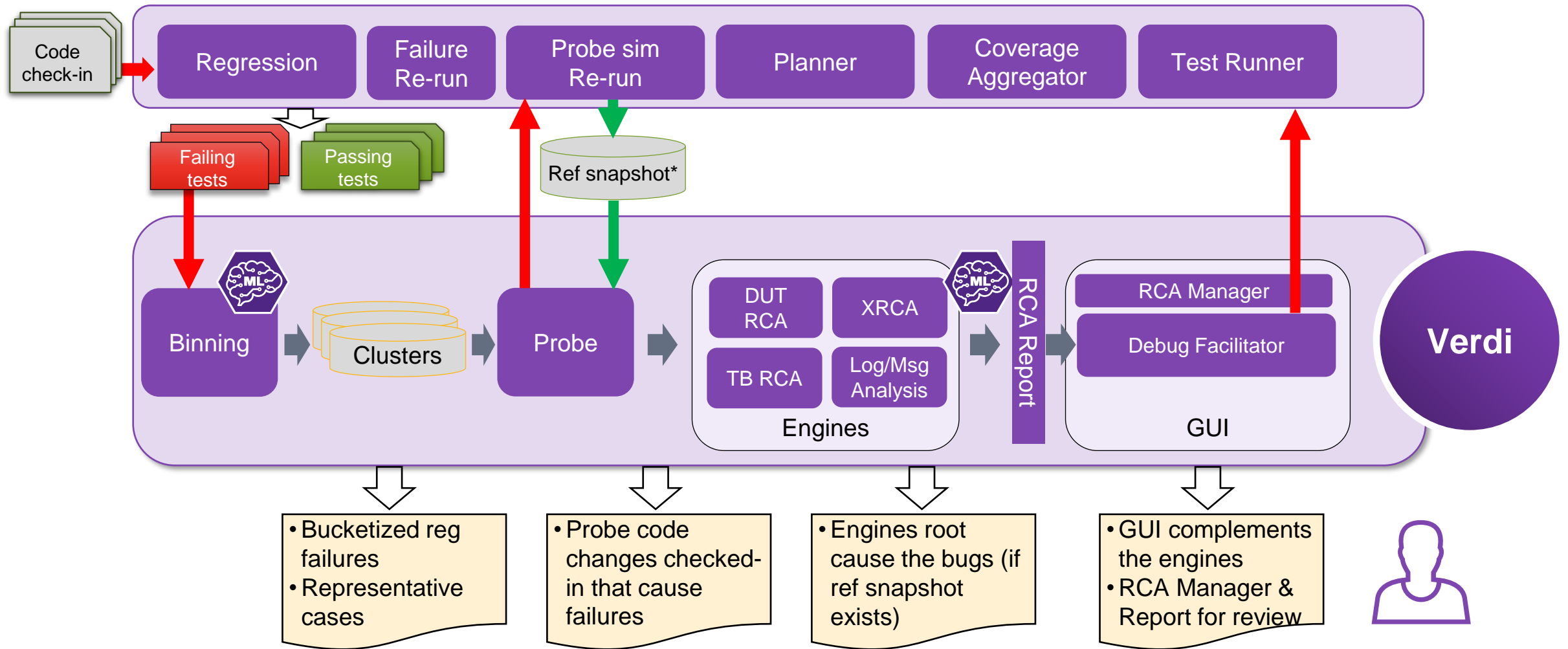
Mobile  
SoC

REDUCED  
TAT BY  
**8x**

IMPROVED BY  
**3%**

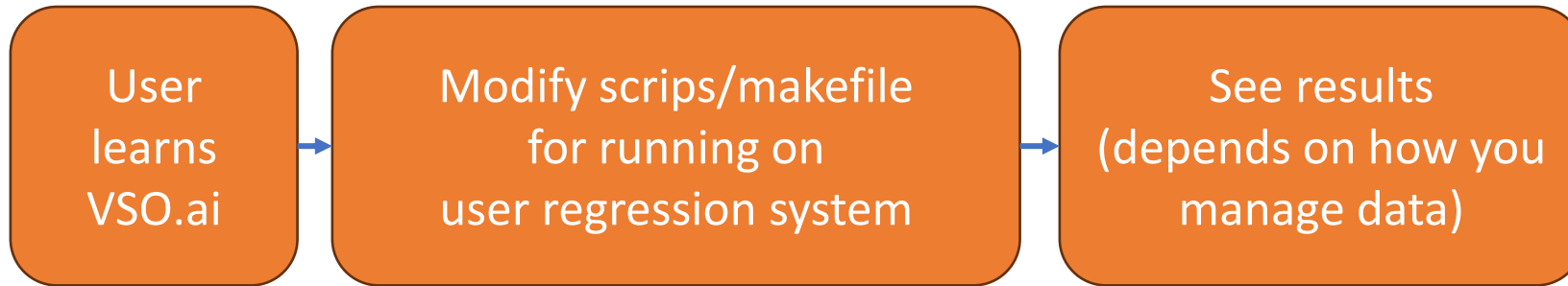
**2600**  
ILLEGAL BINS  
EXPOSED

# Regression Debug Automation

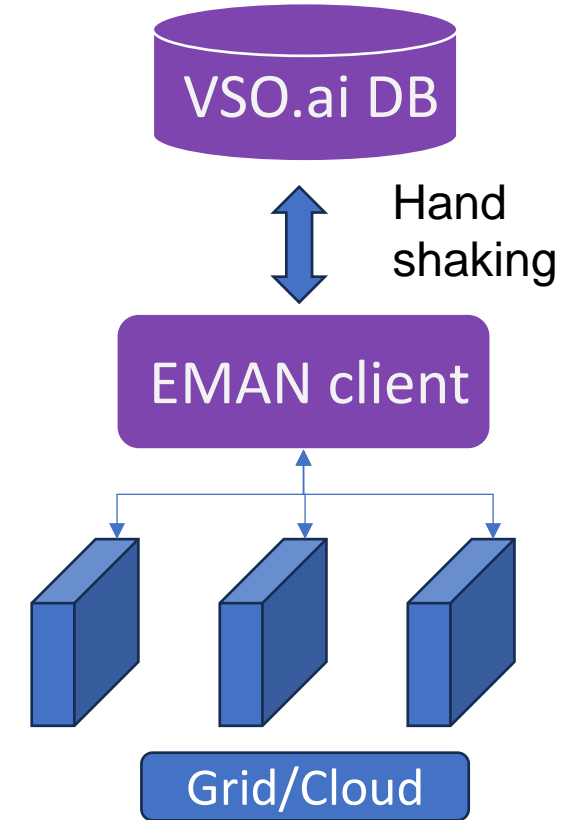
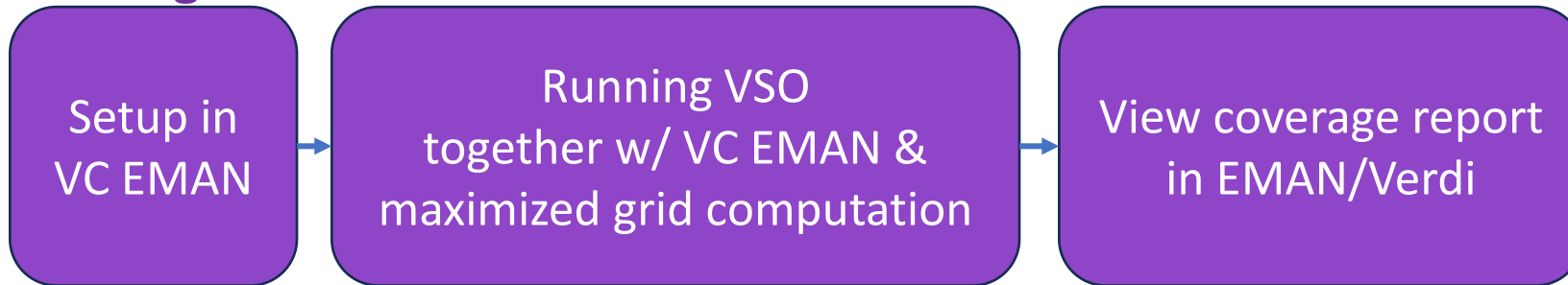


# VC Execution Manager – VSO.ai

w/o integration

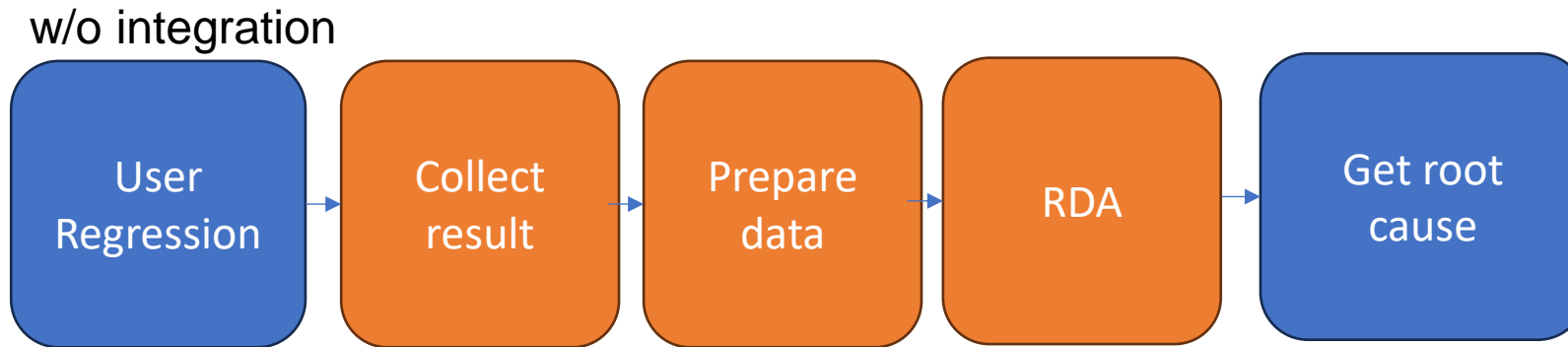


w/ integration



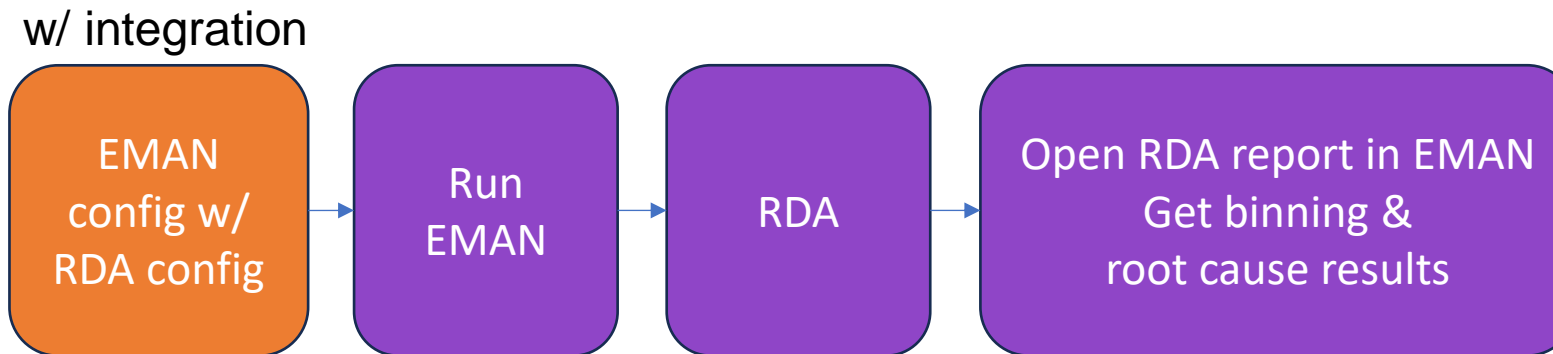
# VC Execution Manager - Verdi RDA

- Simpler configuration and automatically invoke RDA



# VC Execution Manager - Verdi RDA

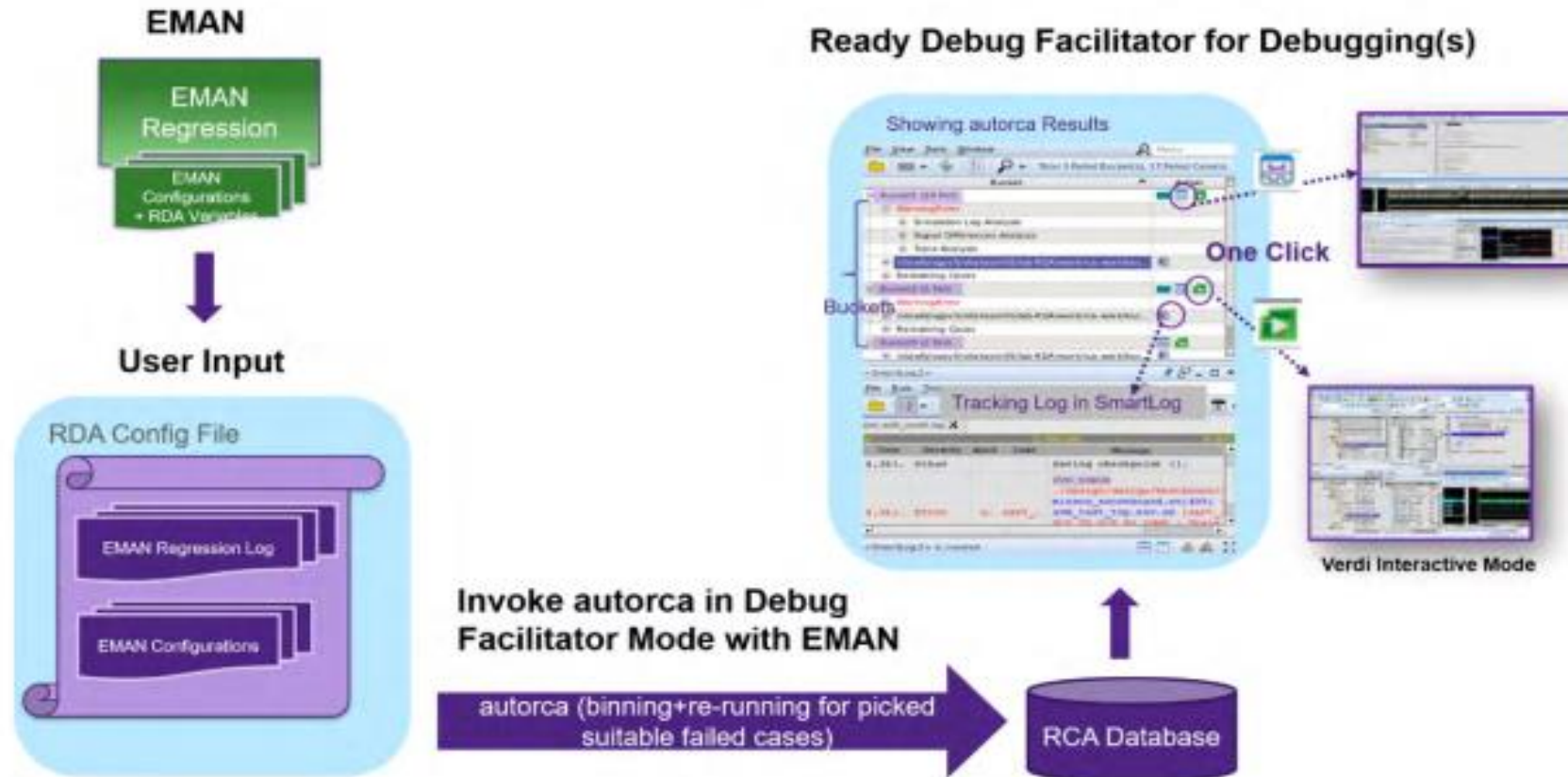
- Simpler configuration and automatically invoke RDA





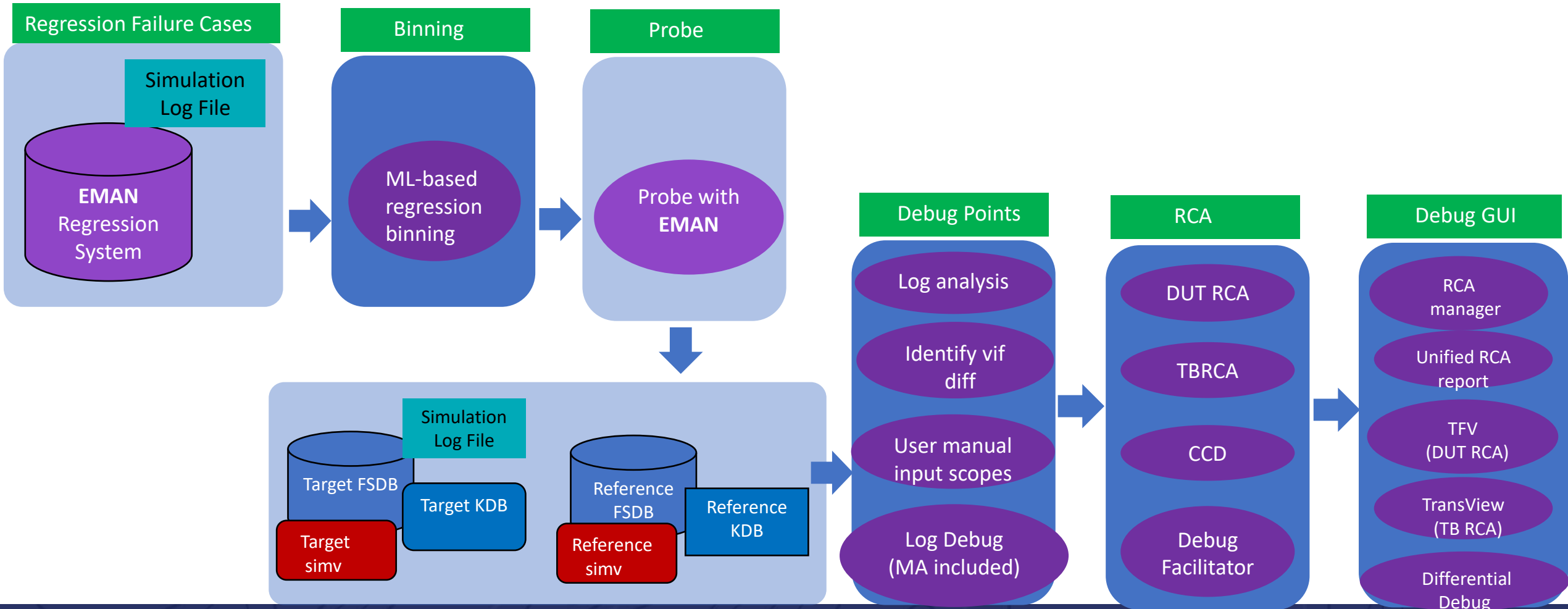
# VC Execution Manager - Verdi RDA

- Simpler configuration and automatically invoke RDA

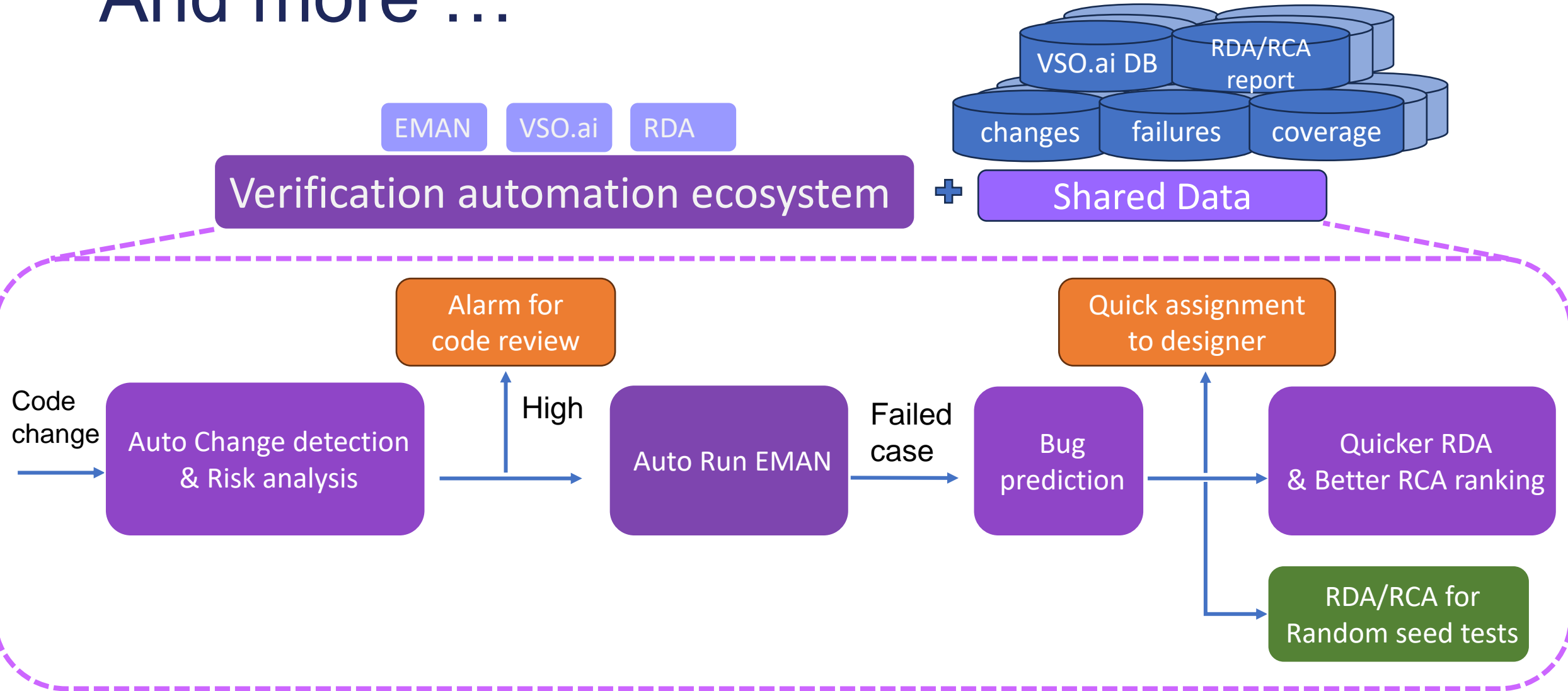


# VC Execution Manager - Verdi RDA

Unified Configuration, Usage Flow for Different Usage Scenarios



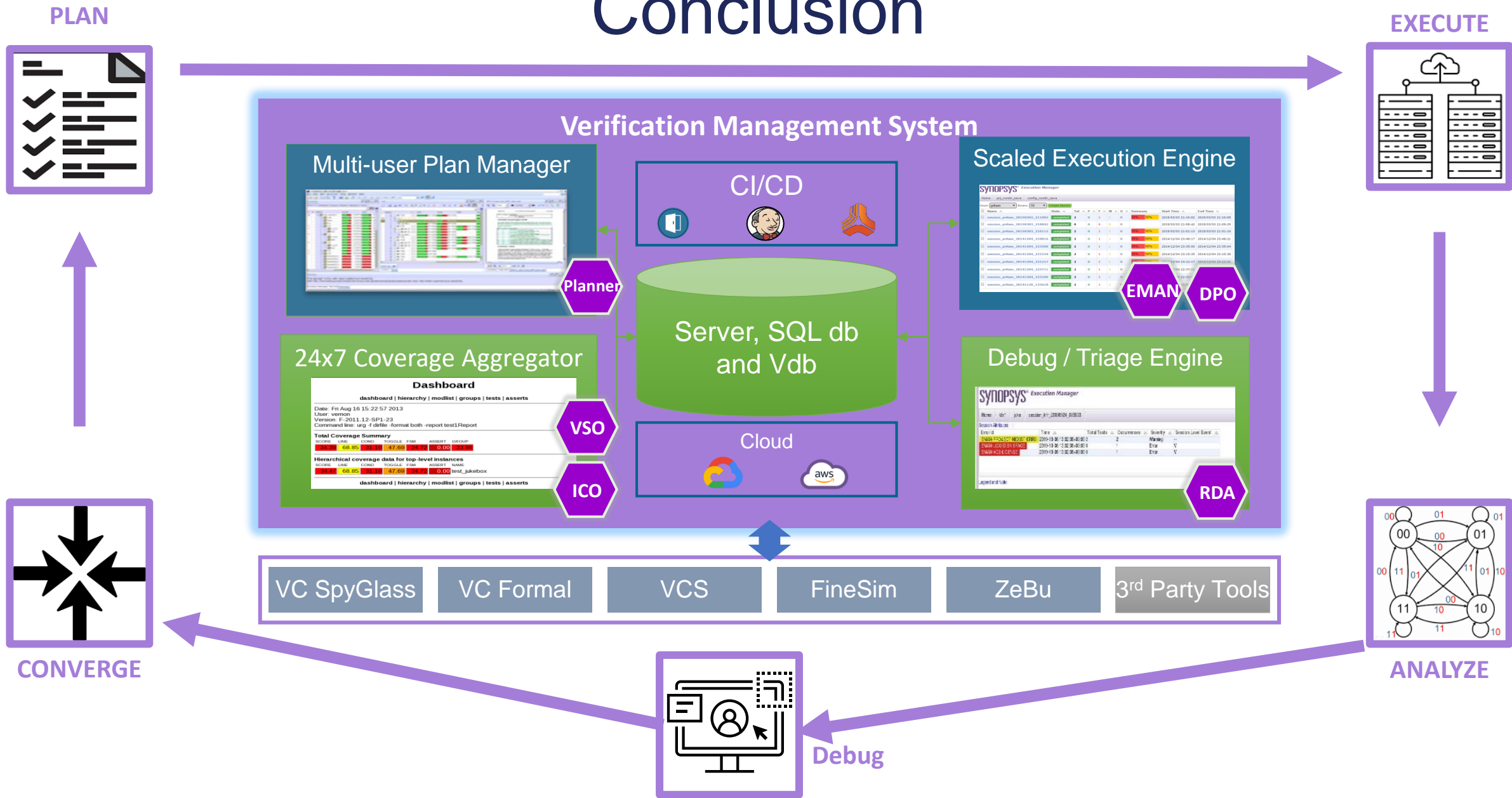
# And more ...



# Complementing technologies

- VCS DPO:
  - Dynamic Performance Optimizer (DPO) is an intelligent automated approach that enables necessary diagnostics during VCS compile and simulation and leverages AI to recommend the appropriate set of options for enabling maximum performance without manual intervention
- VCS ICO:
  - Add-on for VCS fits seamlessly in your regression environment and enables you to improve verification productivity (hitting more and efficiency by generating better stimulus using Reinforcement Learning
- ...

# Conclusion



# Questions?