



VERIFICATION BY DOCUMENTATION

THINK BUG ESCAPE

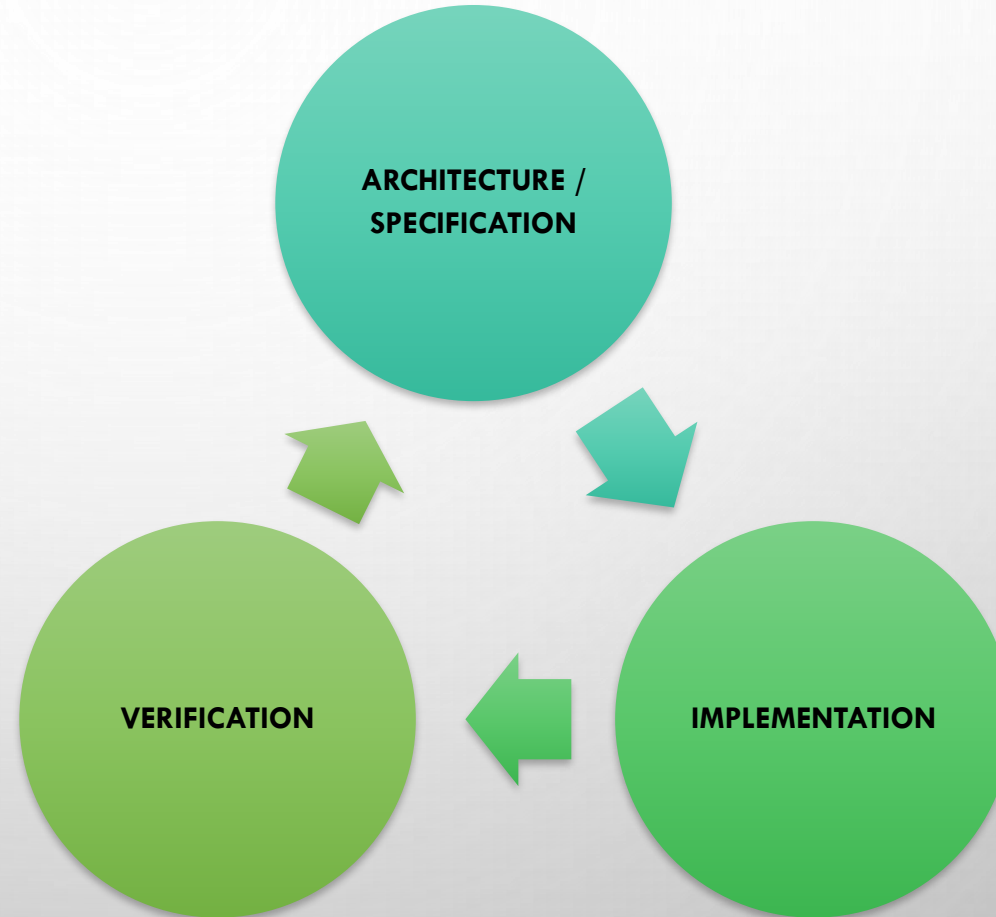
Hemendra Talesara
Advisor, Mentor, Board Member
Verification Startups

A photograph of a man in a white lab coat looking at a computer monitor in a laboratory or office setting. The image is overlaid with a dark blue gradient.

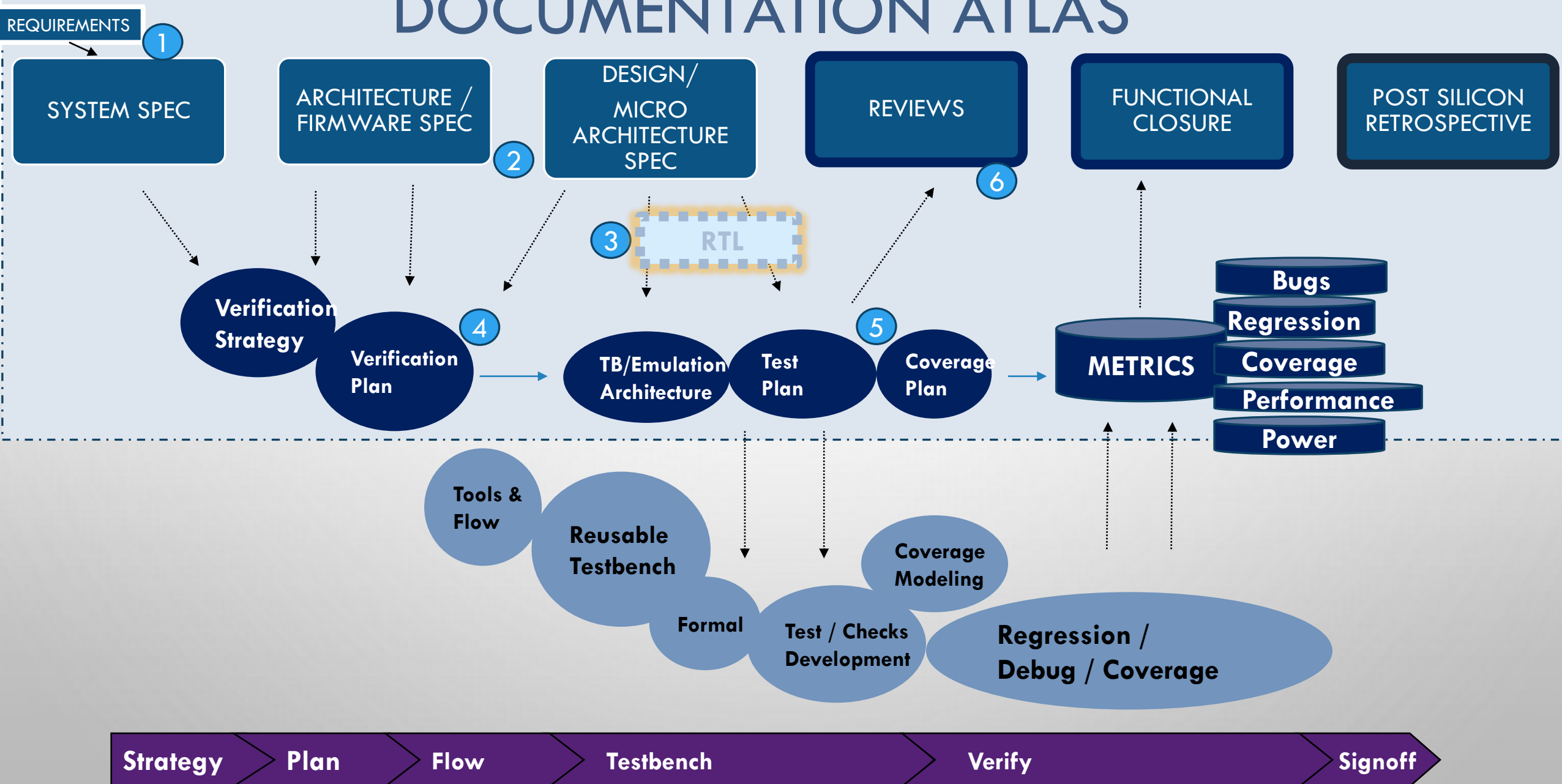
**Bitstar
Technologies**



DOCUMENTATION CYCLE



DOCUMENTATION ATLAS





SELECT SOURCES OF BUG ESCAPES

1. REQUIREMENT DOCUMENTS

ERRORS, OVERSIGHTS OR GAPS IN THE REQUIREMENTS.

2. SPECIFICATIONS

ERRORS IN THE DESIGN OR ARCHITECTURE. MISSING ASSUMPTIONS

3. IMPLEMENTATION

ERRORS IN THE CODING OR IMPLEMENTATION.

4. VERIFICATION PLAN

ERRORS IN THE TEST PLANNING OR TEST ACTIVITIES..

5. COVERAGE PLAN

GAPS IN TESTING; VERIFICATION UNIVERSE IS VERY LARGE

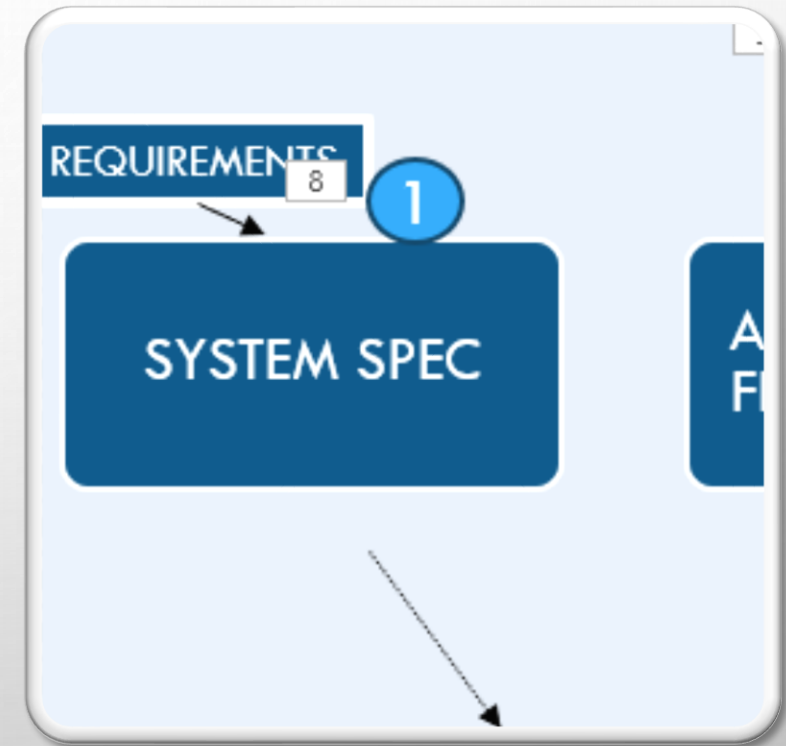
6. REVIEWS (DOCUMENTS AND CODE)

ERRORS IN THE PROCESS OR POLICIES

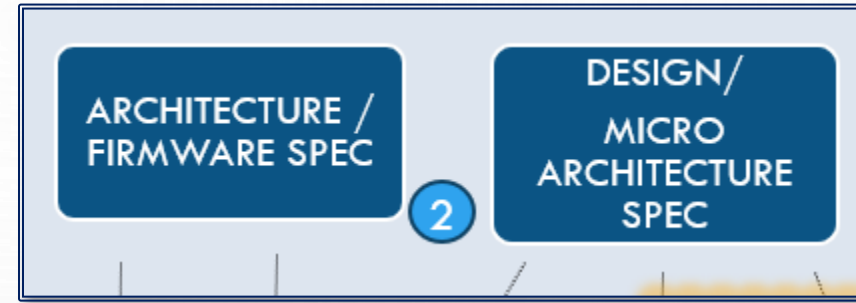
BUGS IN REQUIREMENT DOCUMENTS

ERRORS, OVERSIGHTS, OR GAPS IN THE REQUIREMENTS

1. A REQUIREMENT IS NOT CAPTURED
2. PHRASED POORLY
3. MISUNDERSTOOD BY ARCHITECTS
4. MISUNDERSTOOD BY DESIGNERS



BUGS IN DESIGN SPECIFICATIONS

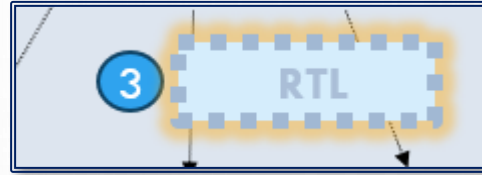


ERRORS IN THE DESIGN

OR ARCHITECTURE / MICRO-ARCHITECTURE

1. ARCHITECT/DESIGNER CREATES AN INEFFICIENT ALGORITHM OR CONFIGURATION
2. ALGORITHM OR CONFIGURATION DOESN'T YIELD THE REQUIRED PERFORMANCE OR POWER
3. SPECS PHRASED POORLY, INADEQUATELY OR MISSING
4. SPECS MISUNDERSTOOD BY ENGINEERS
5. LEGACY SPECS MISSING OR INADEQUATE

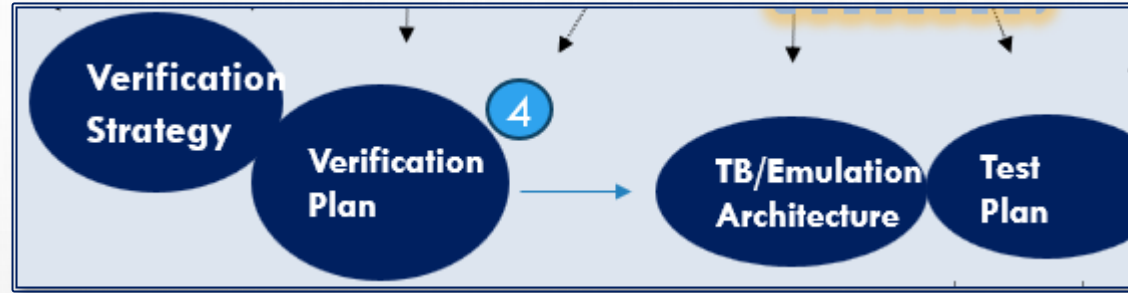
BUGS IN IMPLEMENTATION



ERRORS IN THE CODING OR IMPLEMENTATION

1. TRADITIONAL BUGS FROM SIMPLE TO COMPLEX
2. UNGRACEFUL ERROR HANDLING
3. LACK OF DOCUMENTATION IN CODE IMPLEMENTATION
4. **LEGACY CODE MISMATCH WITH ARCHITECTURE UPDATES**
5. **INADEQUATE DESIGN SPEC**

GAPS IN VERIFICATION PLAN



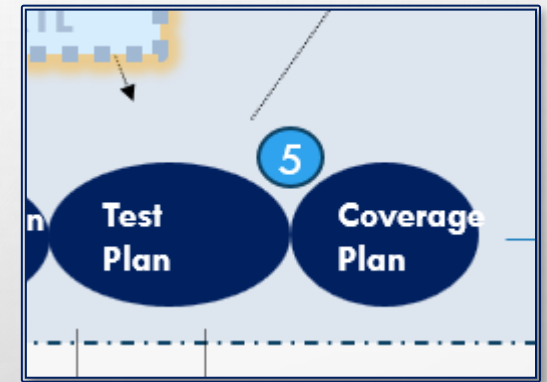
ERRORS IN THE TEST PLANNING OR TEST ACTIVITIES

1. RIGHT METHODOLOGY, RIGHT TESTBENCH ARCHITECTURE
2. GAPS IN SCENARIO PLANNING
3. INCOMPLETE BOUNDARY CONDITIONS
4. CONSTRAINT SETTING, TWEAKING
5. FEATURE TESTING **TRACEABILITY TO SPECS**
6. TRACKABLE **ENUMERATED TEST TEMPLATES**

GAPS IN COVERAGE PLAN

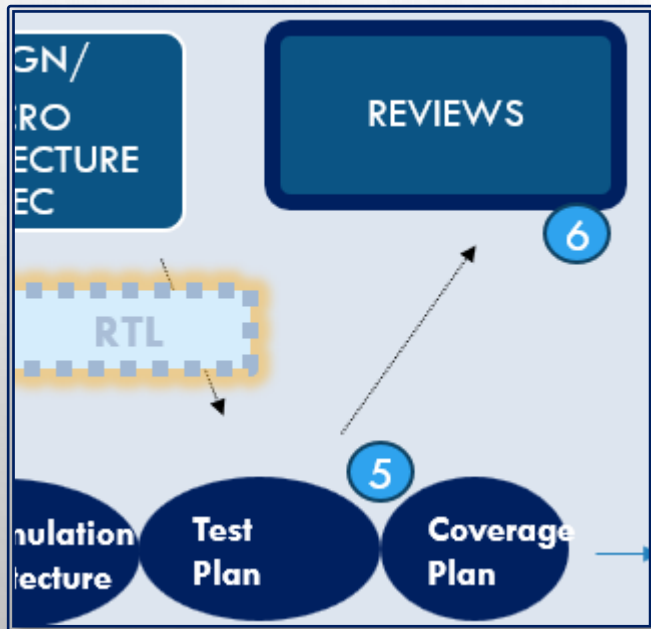
INADEQUATE TESTING DUE TO FALSE CONFIDENCE

1. VERIFICATION UNIVERSE IS VERY LARGE
2. PSEUDO-RANDOM TESTING NEEDS TO BE CONSTRAINED
3. GAPS LEAD TO FALSE CONFIDENCE AND INADEQUATE TESTING



NO TIME FOR REVIEWS

ERRORS IN THE PROCESS OR POLICIES



1. REVIEW CONSIDERED SIDE ACTIVITY
 - NOT A PRIMARY CONTRIBUTION
2. APPROVALS WITHOUT ADEQUATE REVIEWS
 - DESIGN, CODING OR TESTING
3. CONFLICTS IN PRIORITIES
 - REVIEWING RESOURCES INCLUDE OTHER TEAMS
4. TIME/RESOURCE ALLOCATION POORLY PLANNED
 - AND YET ARE MOST CRITICAL FOR DUE DILIGENCE

TAKEAWAYS

1. VERIFICATION IS A “**WRITTEN**” CONTRACT
2. GAPS IN DOCUMENTS = GAPS IN VERIFICATION
3. ROI ON DOCUMENTATION CLOSURE
 - ✓ IMPROVED QUALITY
 - ✓ IMPROVED MAINTENANCE
 - ✓ IMPROVED SCHEDULE (*COUNTER INTUITIVE?*)
 - ✓ FUTUREPROOFING
 - ✓ FOUNDATION FOR AI-BASED VERIFICATION



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THANK YOU



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