

repackaged edge cases and software FMEAs

Quas Ai Blueprint supercharges edge
cases and software FMEAs

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Other defect discovery methods are necessary but not sufficient.
Traditional FMEA approaches fail for software development projects.

02. Facts

Where the defects that cause failures really originate.
Software doesn't fail in a silo.

03. The 6D CDE FMEA process

The steps and the CDEs

04. Requs Ai Core Value and ROI

Requs does the heavy lifting in an Agile environment. Plus, MBSE in
and optional prepackaged FMEAs.

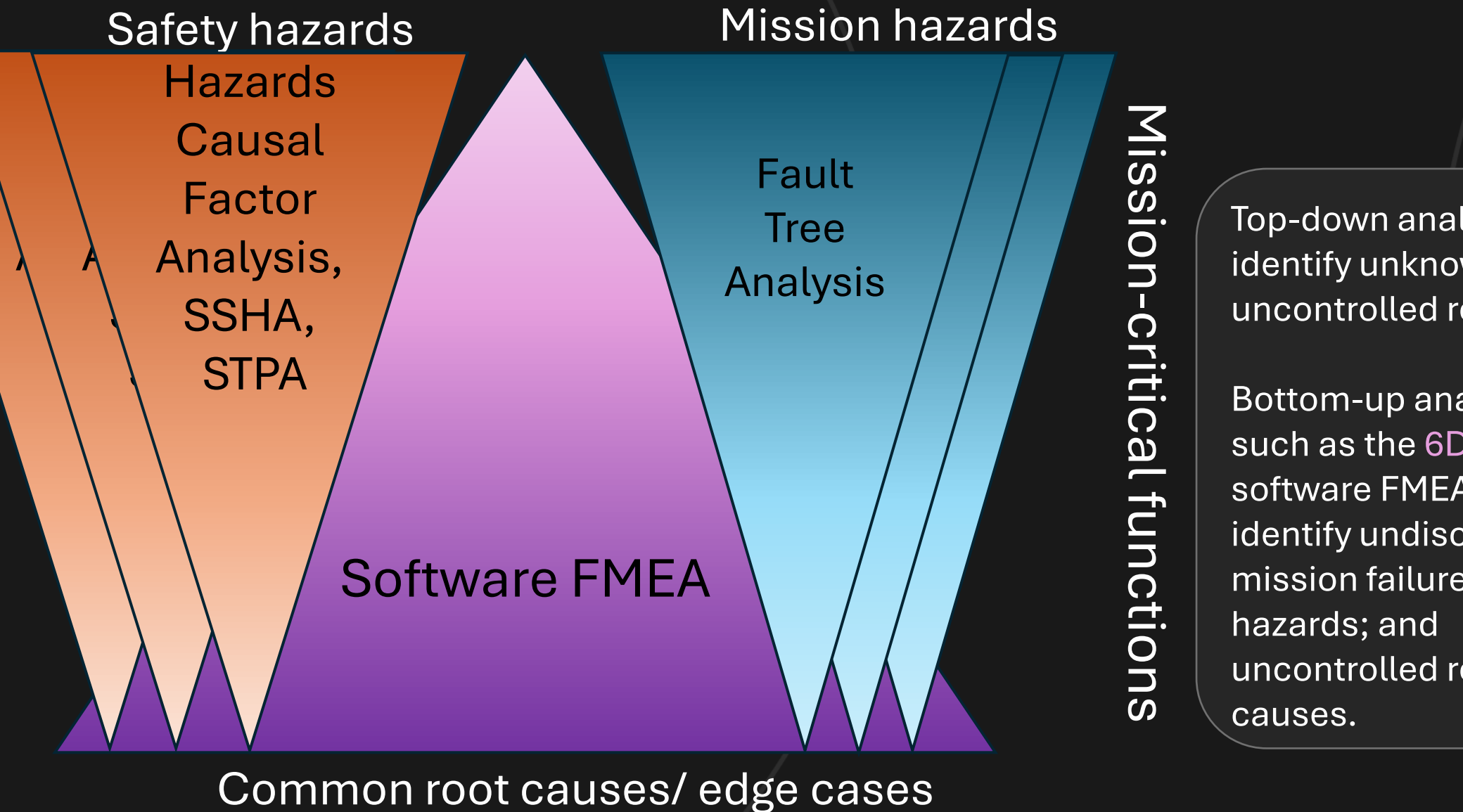
05. Target users

Safety and reliability engineers, software and test engineers

06. Solution demo and next steps

How to get started Requs AI Software FMEA.

ange: Other defect discovery methods are necessary but not suff



Challenge: Traditional FMEA Fail When Applied to Software

Traditional FMEA is inefficient and ineffective

Traditional FMEA approaches aren't efficient or effective

Traditional FMEA focuses on code implementation details
Defects actually originate in design phase
Wastes significant time without finding root causes

Statement Focus

Every requirement individually overlooks critical system failures. INCOSE tools find problems with shall be better.

System-Centric Approach

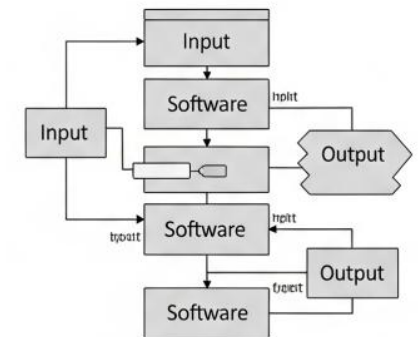
Traditional analysis fails for software
Critical software-specific failure modes
Traditional risk assessment wastes time. High resolution analysis means high accuracy. Objective relative measures

Line-by-Line Source Code
(Ineffective for Software Defects)



Misses interdependencies
and system-level issues

CSCI (Hardware-Centric Approach)



Ignores software logic
and complexity

Requires

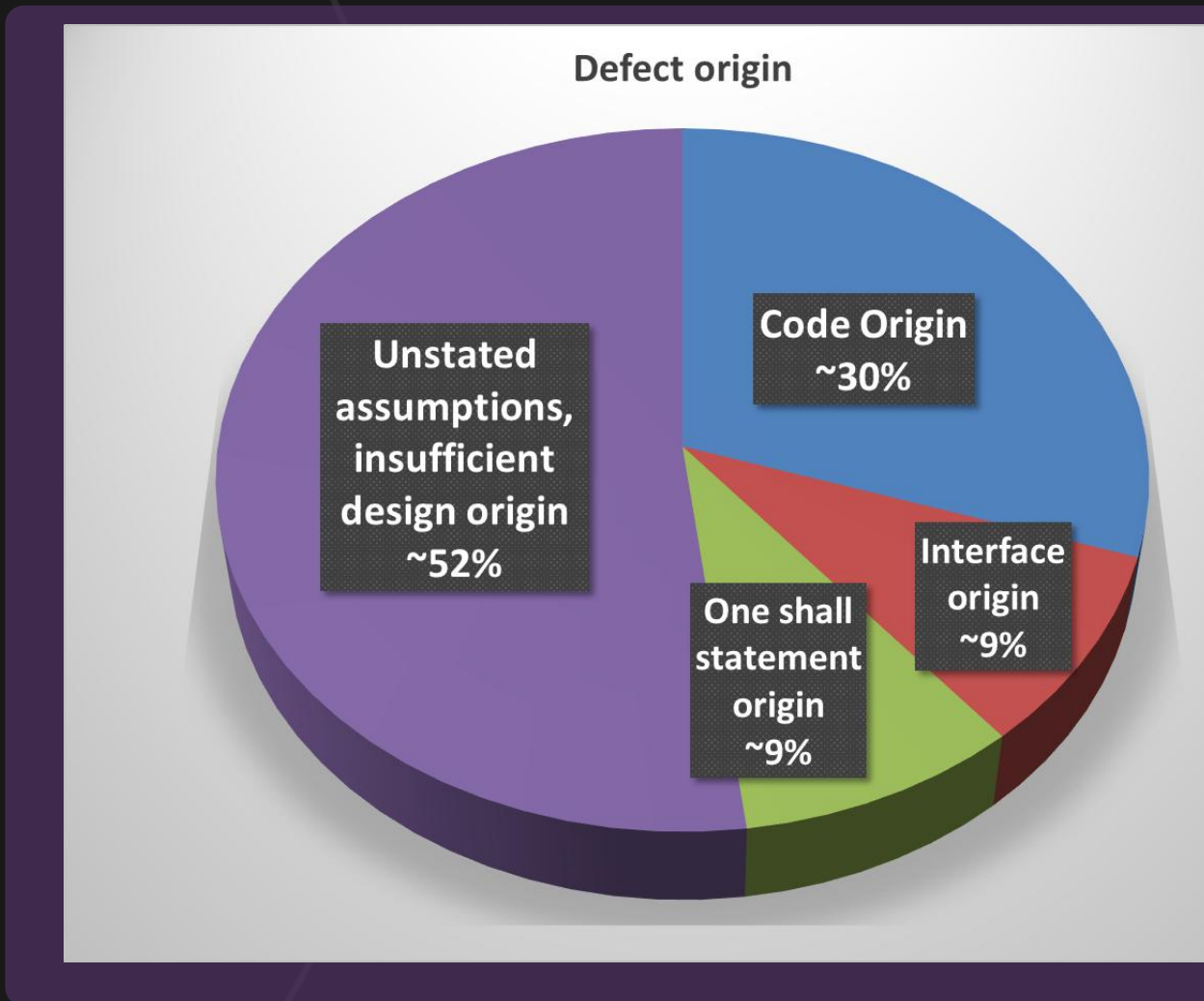
Lack of system

Where The Defects That Cause Failures Actually Originate

Critical Insight

Developed the Common Defect
Classification from pre-coding
representing 70% of the

CDE was designed to find the root
that other methods and tools



As per largest database of software failures analyzed by root c

Software doesn't work or fail in a vacuum

Dimensions of Failure

Unanticipated Behavior

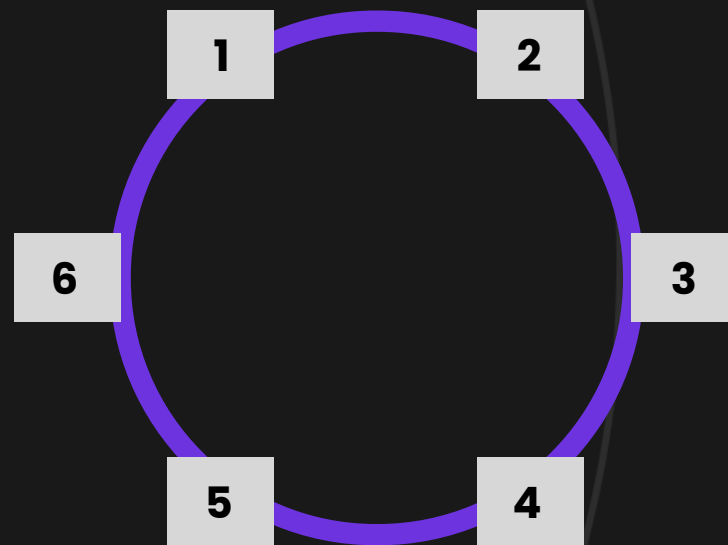
Executing functions at wrong time, sequence, data, calculations

2D – Environment Effects

Software behavior affected by unanticipated environment

3D – Mission Degradation

Software behavior changing from start to end of mission



2D – Sensor/Electronics Interface

Software behaving incorrectly interfacing with hardware

3D – System Integration

Software behaving incorrectly integrated with subsystems

4D – User Interaction

Software behavior causing user to instigate failure

Key: Software is the brains of the system and must work with electronics, system interfaces, users, and environment for the entire mission.

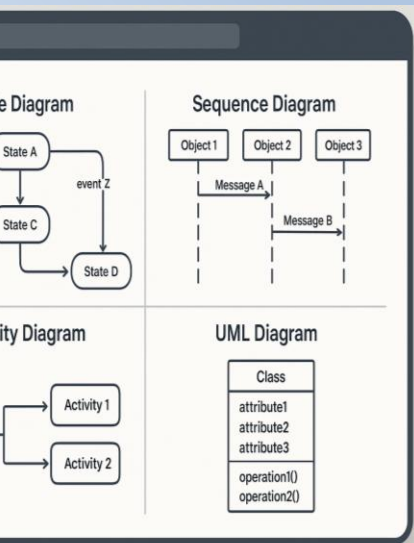
6D CDE Framework

on defect types across 6 system dimensions. Each has specific controls and test cases.

Defect Type	Count	Failure Modes	Root Cause
State Management	17	Loss of state management	Prohibited transitions, stuck states, etc.
Error Handling	32	Undetected system failures	Hardware/software/comms faults ignored
Quality	9	Software does wrong thing	Unwritten assumptions, extra/ missing functions
Performance	10	Can't execute entire mission	Peak loading or endurance limits exceeded
Timing	9	Real-time requirement not met	Scheduling, race conditions, etc.
User Interface	12	Doesn't support users needs	Interface causes critical mistakes
Data	10	Conflicts with data	Unit, scale, type, or missing data mismatch
Dependencies	2	Out-of-order functions	Dependencies not enforced
Algorithms	9	Insufficient algorithms	Wrong or incomplete algorithms
Models	21	Wrong predictions	Population, process, or model errors

REQUIS Ai 6D CDE SOFTWARE A WORKFLOW

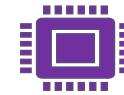
DESCRIBES
PRODUCT CHARACTERISTICS
BASED ON MODELS



COMMON DEFECT
ENUMERATIONS (CDEs)



Software



Electronics



System



Users



Mission Time



Environment

2. REQUIS Ai EXTRACTS SPECIFIC EDGE CASES BASED ON YOUR PRODUCT AND MODELS

3. REQUIS Ai RECOMMENDS MITIGATIONS, CONTROLS AND TEST STRATEGY



4. REQUIS Ai CALCULATES OCCURRENCE OBJECTIVELY

5. USER CONNECTS THE DOTS BETWEEN CDE AND MODELS, FAILURES (FDSC) AND/OR SAFETY HAZARDS (PHA)

6. REQUIS Ai GENERATES CRITICAL ITEM LIST AND SS WORKSHEETS



Requs AI Blueprint

Prepackaged edge cases and failure modes

Provide **public release** info about your system or subsystem

We preload the Requs Ai Edge Case and/or Requs Ai Software FMEA Software with edge cases, test cases, and design controls all tagged to safety requirements and critical failure modes

- We don't need your control algorithms.
- We don't need your sensor fusion recipes.
- We don't need your source code.

Requs Ai evaluates the integrity of the architecture itself, ensuring the foundation is sound before the first line of code is ever written.



Plus Ai Core Features

AI based

Focuses on the most overlooked areas

Supports MBSE integration

Systematic process for identifying root causes based on what's missing or conflicting in your models

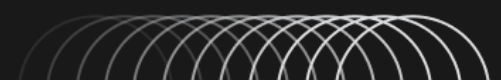
AI Automation

You answer questions; it predicts applicable edge cases allowing focus on effects analysis.

- Predicts likelihood occurrence of each CDE
- Determines which CDEs are relevant to your product and which are not

Agile Speed

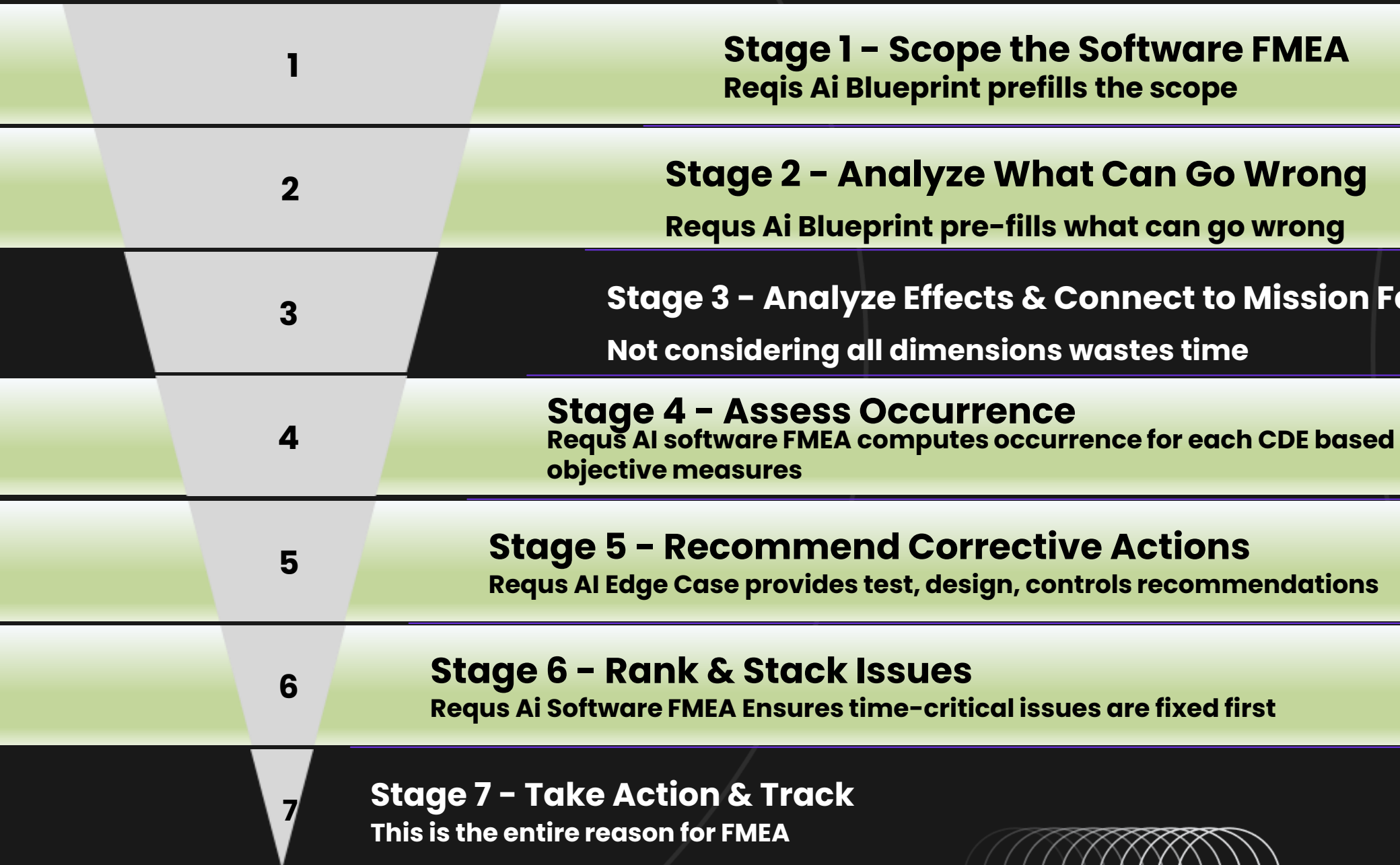
Generate effective FMEA in 2 weeks to match agile development cycles.

- Rapid setup and configuration process
 - Prepackaged edge case/FMEAs available for several industries
- 



on Investment

does the most time-consuming and error-prone tasks, so you can focus on stages 3 and 7



Get users of Requs Ai Blueprint combined with Requs A Case/Software FMEA



Reliability Engineers

seat the table with an
ive FMEA tool
falling behind schedule in
environment
tain project timelines with
ent methodology



Safety Engineers

- Use Requs AI Software FMEA as starting point for hazards analysis
- Cover both safety and availability failures efficiently
- Integrate with existing safety management systems



Software Engineers Testers

- Find design issues early in development cycle
- Use CDEs to improve design and reduce technical debt
- Develop better test procedures for fault injection

Started: Licensing and Trial Options

Flexible Licensing

• Perpetual and floating license
options available
• Pay as you go subscription or
perpetual licensing models
• Small and enterprise
deployment configurations
supported



Schedule Demo

- See your hidden defect risks today with a personalized demonstration session
- Contact sales@missionreadysoftware.com for scheduling
- Personalized demonstration of your specific use case
- Discover hidden defect risks in your projects



Start Trial

- Get hands-on experience with the desktop version or try the cloud trial immediately
- Desktop trial version available for download
- Cloud trial at <https://requisaipredict.com> instantly accessible
- Experience full functionality with sample projects

Hit the Ground Running



Hands on Training Options

- **Virtual self-guided: \$1,450/student**
- **Virtual instructor-led: \$5,000-\$7,000/day**
- **On-site: By request**
- **Add customization for \$2,500**

**/ for rapid edge cases and
FMEAs?**

**Contact us at
[@missionreadysoftware.com](mailto:missionreadysoftware.com)
for a demo today.**

Thank You

