What We'll Cover

- Impact of AI on Software Testing

- AI-Powered Quality Assurance

- Future in Software Testing

- Wrap-up

Impact of AI on Software Testing

Impact of AI on Software Testing

> " Artificial Intelligence, deep learning, machine learning—whatever you're doing if you don't understand it—**learn it**. Because otherwise you're going to be a **dinosaur within 3 years**.

Mark Cuban
American businessman | Investor, TV Personality | Billionaire

AI adoption is increasing at an unbelievable pace…

Large organizations actively deployed AI with an additional 40% exploring its use (IBM) **42%**

Organizations are using generative AI for code generation and auto-completion (Simform) **61%**

Enterprise software engineers will use AI code assistants by 2028, up from less than 10% in early 2023 (Gartner) **75%**

AI's contribution to the global economy by 2030 (PwC) **$15.7 T**

80%

of software teams will be using AI a year from now

-Tricentis research

5

AI is cool…
but can be risky

AI is cool...
but can be risky

> ## Major airline must pay damages after chatbot lies to grieving passenger about discount
>
> Airline tried arguing virtual assistant was solely responsible for its own actions.
>
> Katyanna Quach | Thu 15 Feb 2024

> ## Major search engine loses $96B in value on Copilot fallout
>
> CEO says the company is working round the clock' to fix AI tool's bias issues.
>
> FOX Business | February 28, 2024

American global financial services firm loses $440 million in 30 minutes due to trading algorithm glitch

CIO.com |Aug. 2012

> ## EEOC Secures First Workplace Artificial Intelligence Settlement
>
> Tutoring company pays $365,000 in when using AI for workplace discrimination for hiring and workplace decisions. Cited the **employer** responsible not AI.
>
> GreenbergTaurig | August 23, 2023

Will AI take over jobs?

"

There's a lot of automation that can happen that isn't a replacement of humans but of mind-numbing behavior.
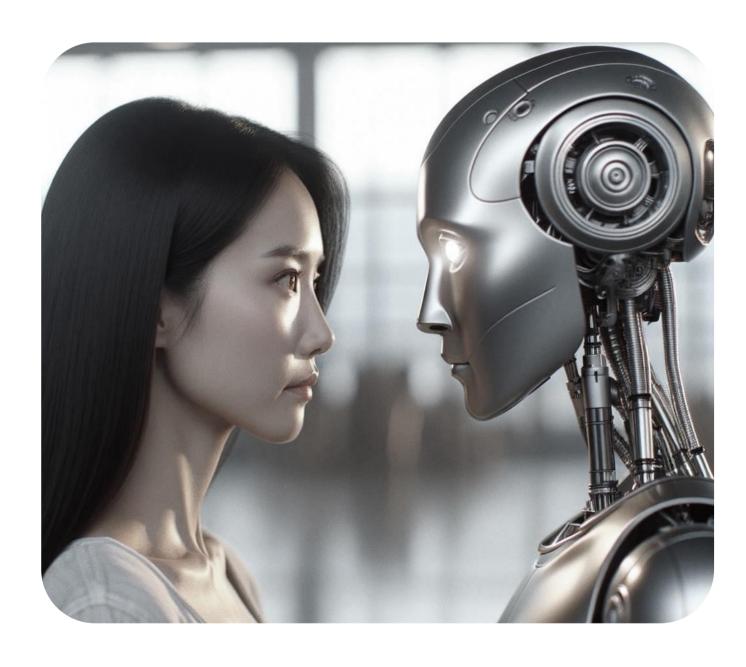
Stewart Butterfield
Co-Founder – Flickr | Slack

Misconceptions

▶ AI-driven tools will replace human testers

▶ Unfamiliarity with AI capabilities

▶ Constant evolution of AI models

▶ AI testing lacks human touch

Reality

▶ AI will enhance productivity

▶ Interactive, iterative, collaborative relationship

▶ Tester's role will evolve to testing accuracy, consistency, quality of AI models

▶ Humans will supervise highly autonomous Turing Bots – this is the future.

15-20% average human productivity increase in SDLC (Forrester prediction 2023)

AI-Powered Quality Assurance for Faster, More Accurate Testing

AI-Powered Quality Assurance for Faster, More Accurate Testing

"

The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday's logic.

Peter Drucker
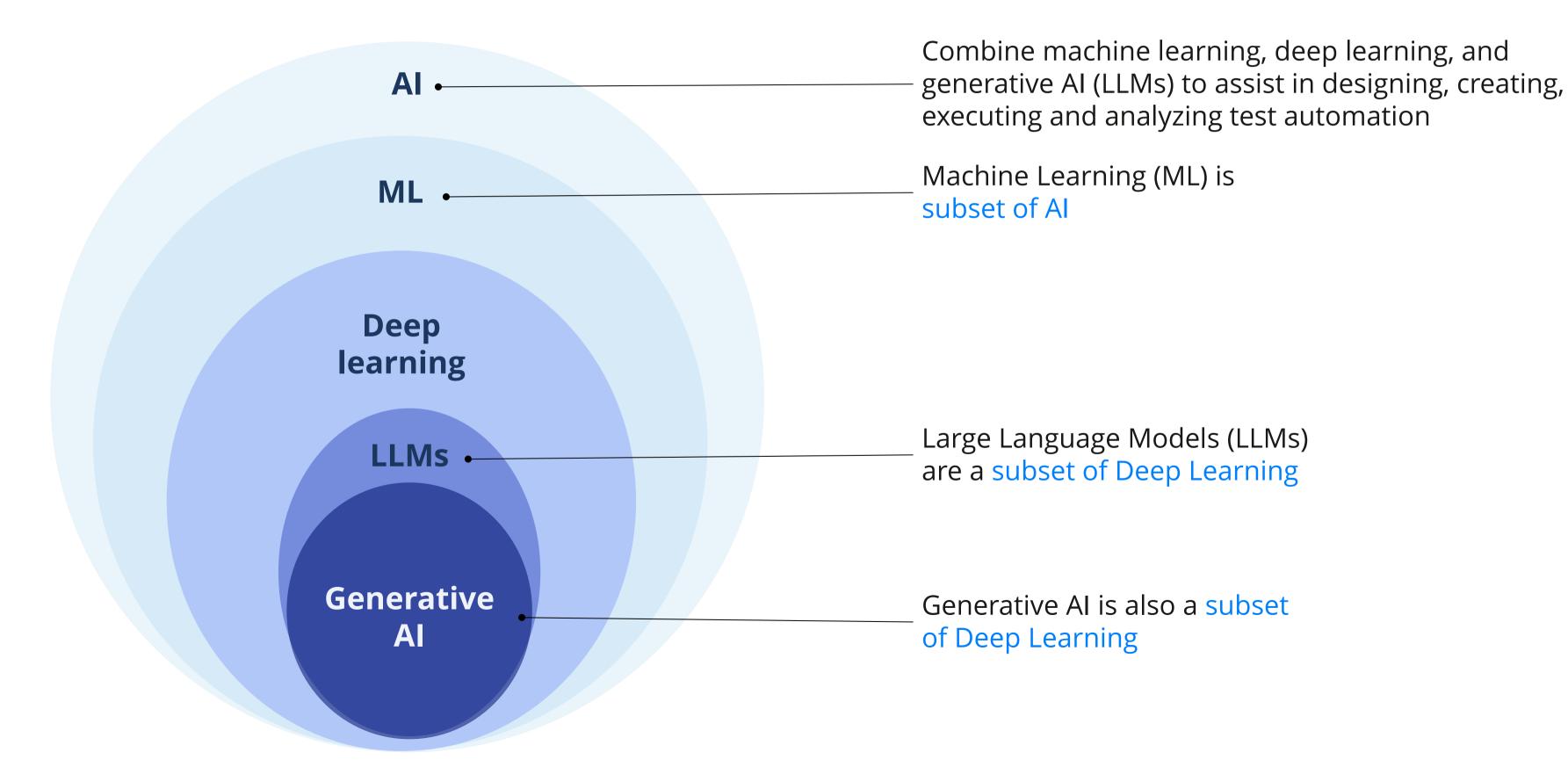Austrian American management consultant | Educator | Author
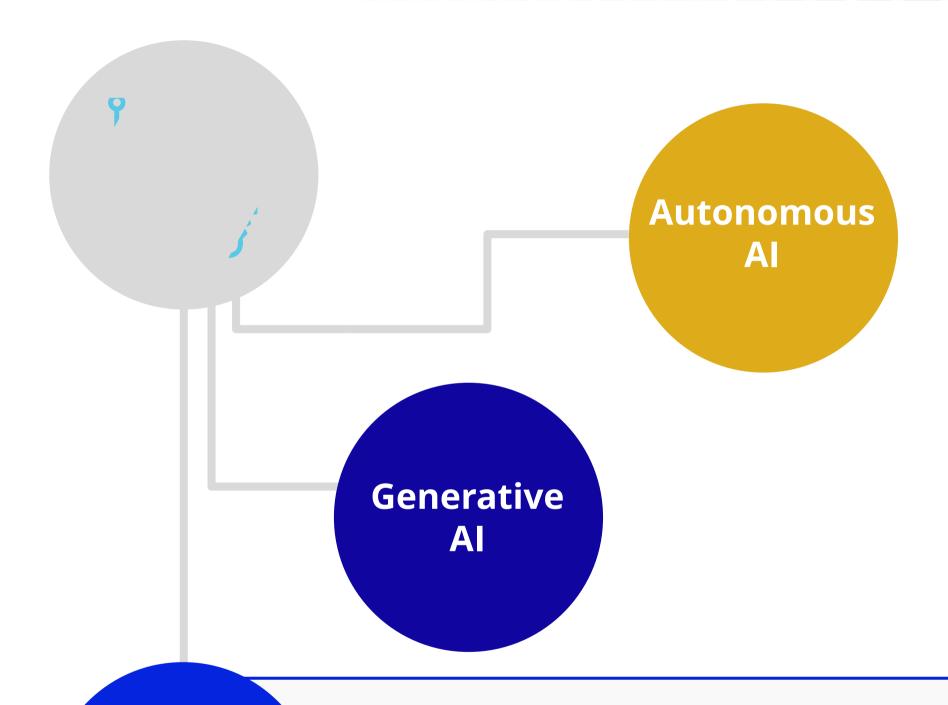
How to view Narrow AI and our focus areas

Artificial Intelligence (AI)

Machine Learning (ML)

Deep learning

Large Language Models (LLMs)

Generative AI

How to view Narrow AI and our focus areas

AI — Combine machine learning, deep learning, and generative AI (LLMs) to assist in designing, creating, executing and analyzing test automation

ML — Machine Learning (ML) is subset of AI

Deep learning

LLMs — Large Language Models (LLMs) are a subset of Deep Learning

Generative AI — Generative AI is also a subset of Deep Learning

Tricentis leads in AI-powered Quality Engineering

Autonomous AI

Generative AI

Machine Learning (Narrow AI)

Vision AI
Automated detection of UX elements and controls

Deep Healing
Automated recovery from app changes

Risk AI
Impact analysis of code and data changes

Mobile AI
Automated detection of UX, performance, and network issues
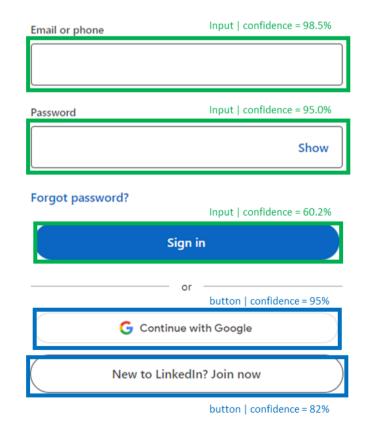
Test automation from mock-up to mainframe
with Vision AI and Tosca
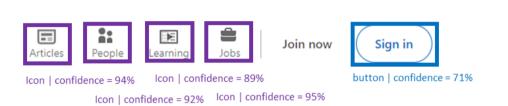
Vision AI
Comprehend any UI, converting pixels into human understandable controls, labels, content, and tables

+ Tosca = Automation everywhere
Automate through Citrix, on complex legacy applications and bleeding edge technologies
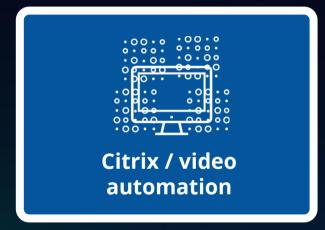
Automate before UI
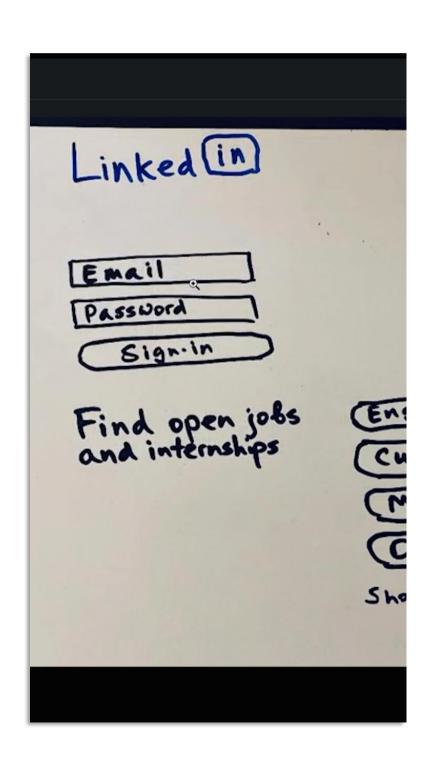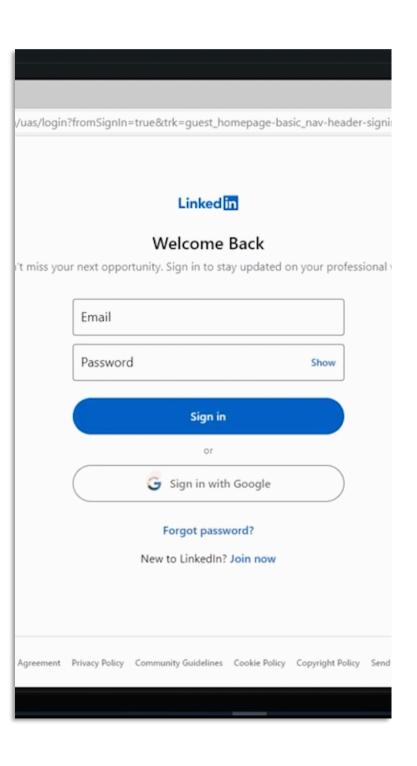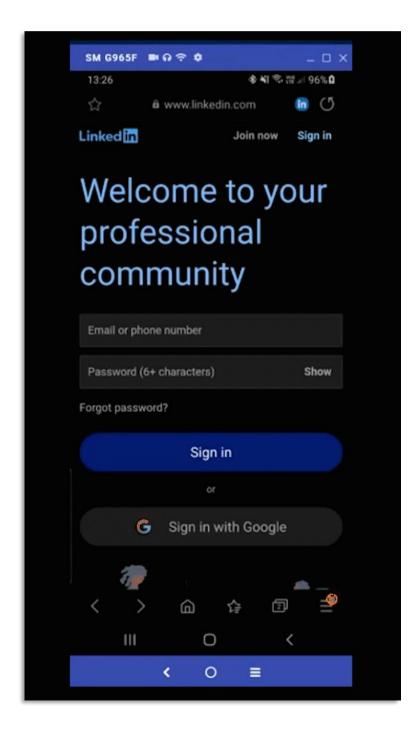Natural language automation allows automation from mock-ups and whiteboard diagrams

Use Cases:

Mockup Designs

Citrix / video automation

Technology agnostic

Self-healing

If you can see it, you can test it

Tricentis Tosca | Vision AI

Tosca, powered by Vision AI

Machine Learning excels at providing specific answers to specific questions

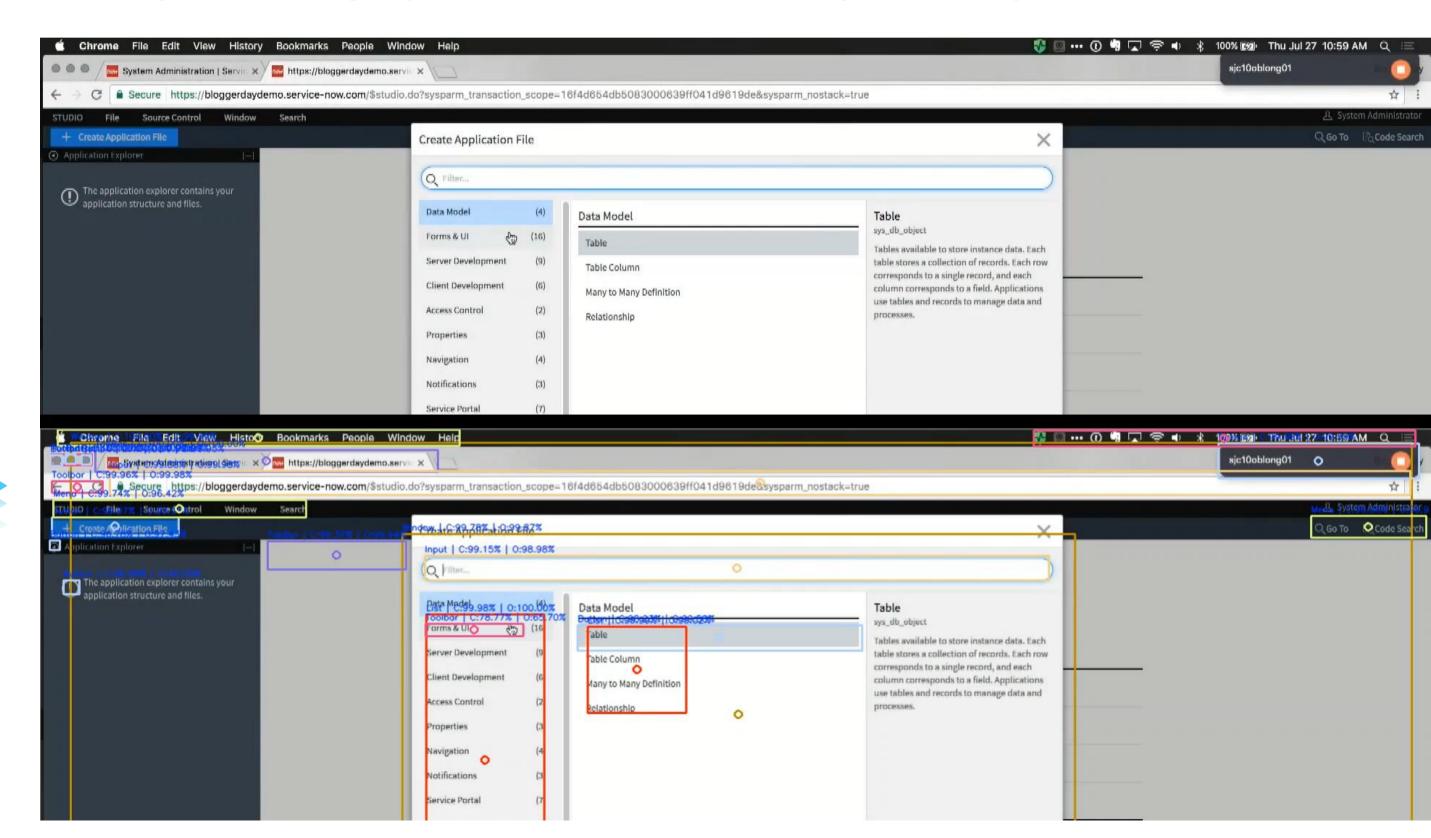**Trained on a wide range of SAP applications:**

SAP Fiori

SAP GUI

Ariba

Concur

SuccessFactors

C4C (Hybris)

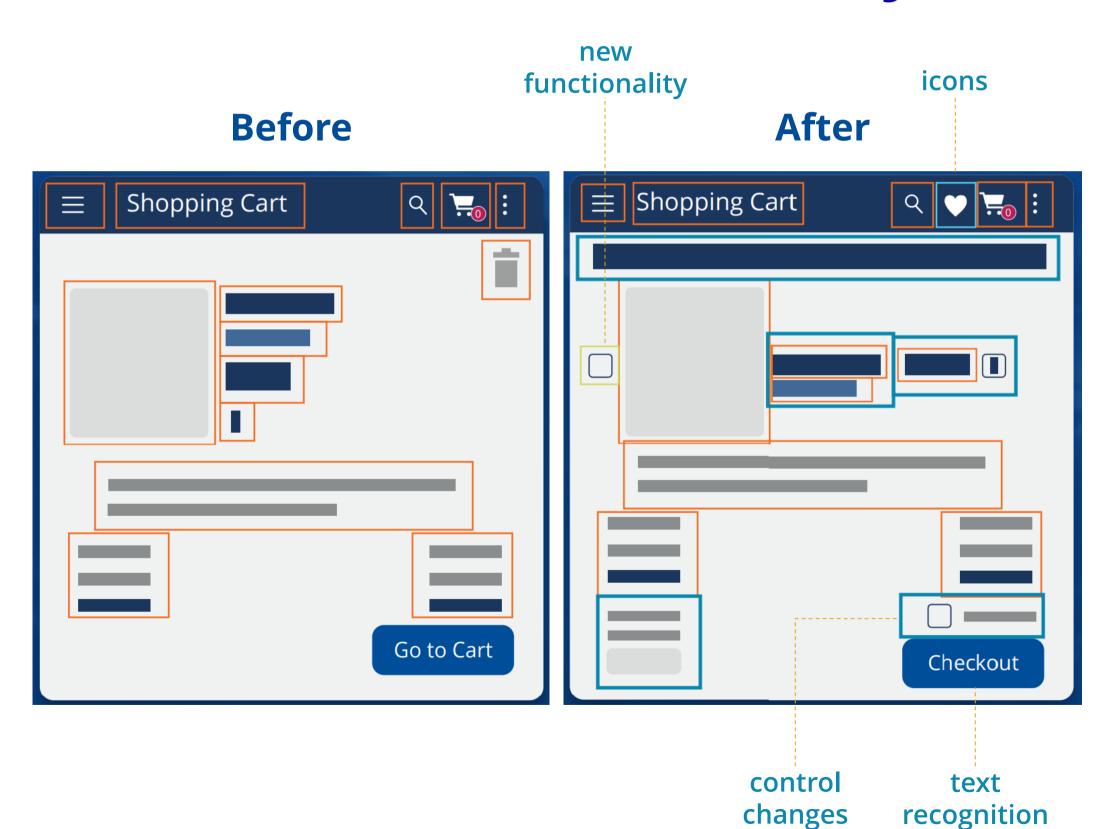# Stabilize automation and increase efficiency

What is it

Self-healing AI automatically recognizes changes to controls and runs the test case by informing the tester what was changed, thereby helping reduce maintenance.

How it works

- Detects changes to control types (shape, color, name, location)
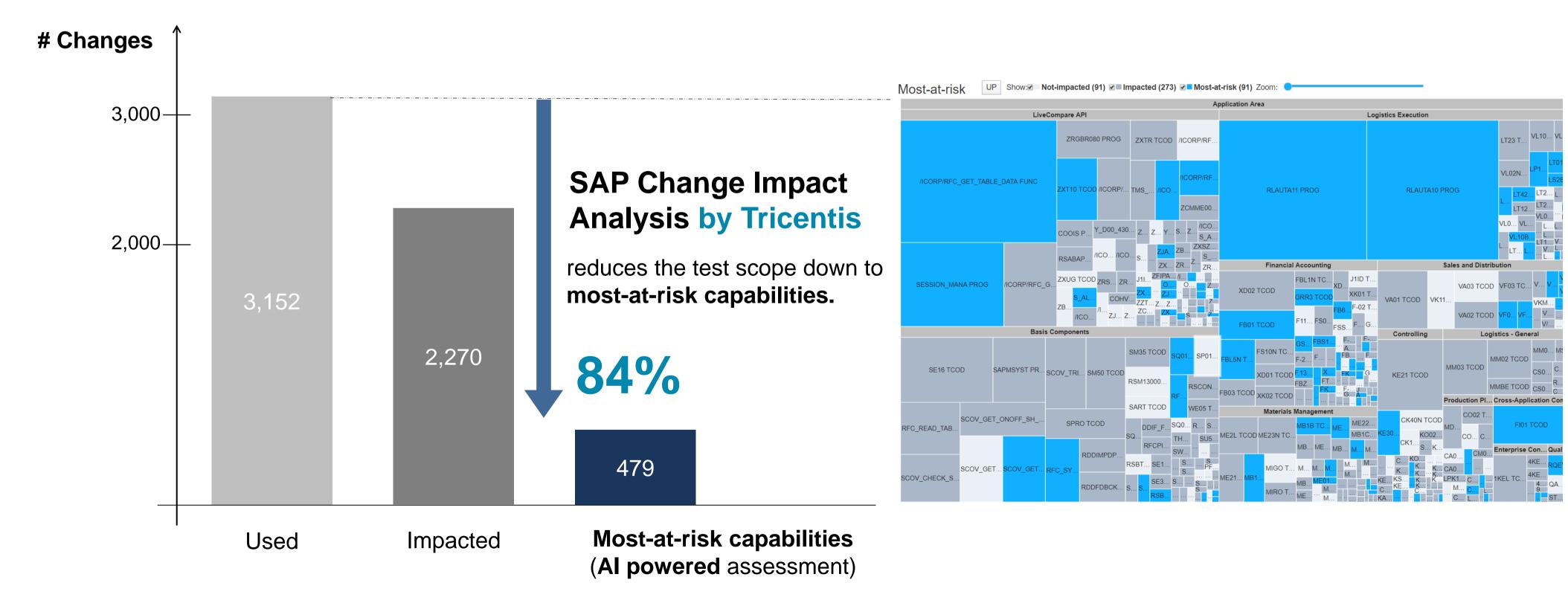- Uses machine learning to compare baseline screenshot with future screenshot of app

Benefits

- Increased test resilience & stability
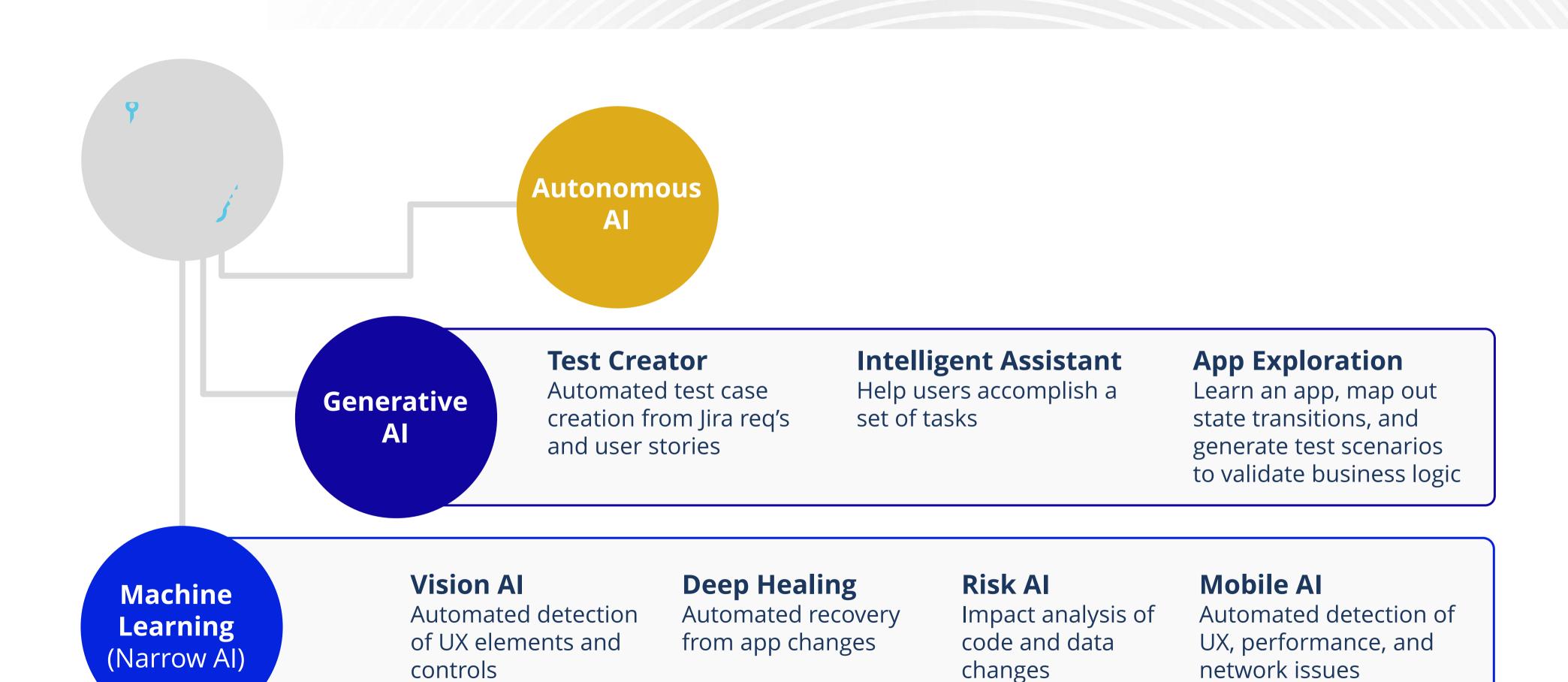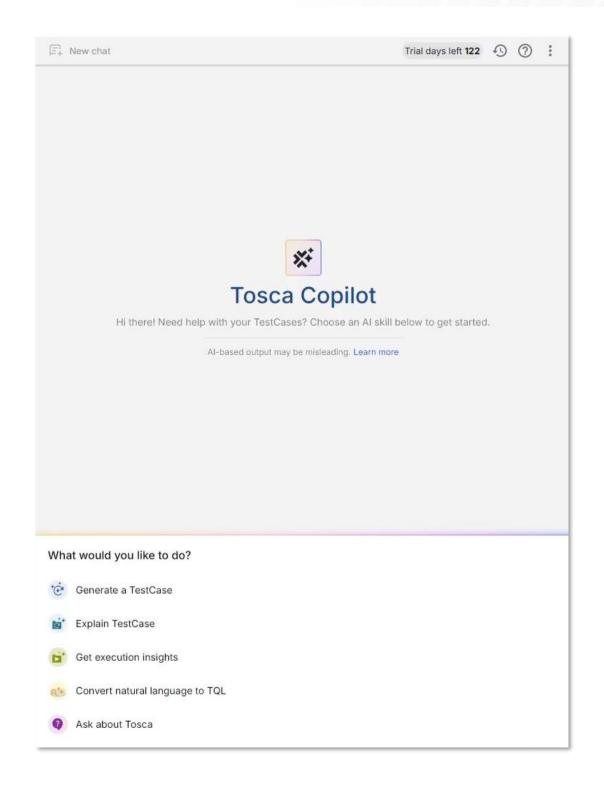- Reduced maintenance
- Saved time & effort

Before

After

new functionality

icons

control changes

text recognition

AI-powered impact analysis for SAP
Focus your testing with Tricentis LiveCompare
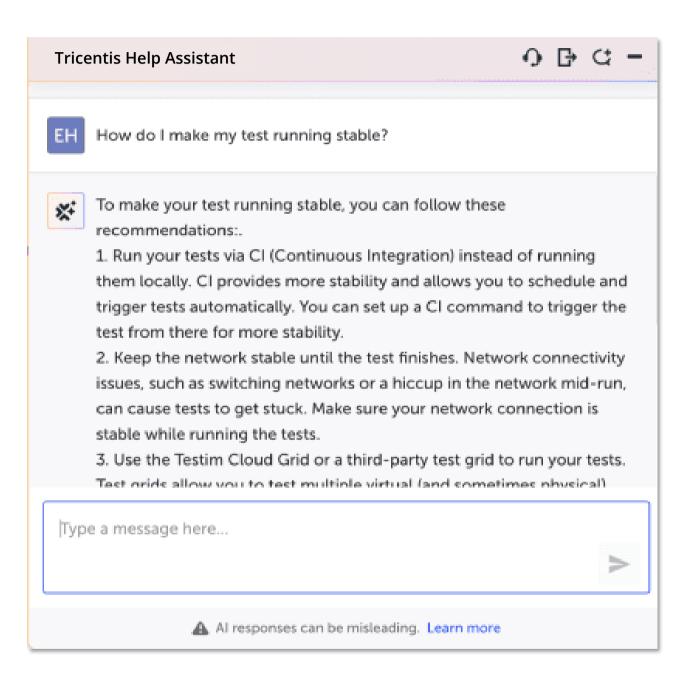
 # Changes

3,000

2,000

3,152

2,270

479

Used

Impacted

Most-at-risk capabilities
(**AI powered** assessment)

SAP Change Impact Analysis by Tricentis

reduces the test scope down to **most-at-risk capabilities.**

84%

Most-at-risk   UP   Show: ☑ Not-impacted (91) ☑ Impacted (273) ☑ Most-at-risk (91)   Zoom:
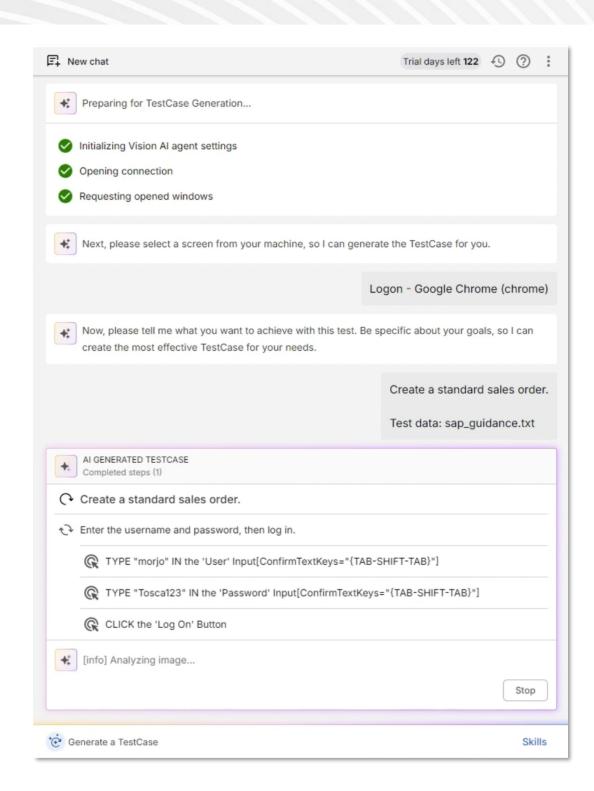
TEACH me how...

Expert insights on tests, results, and how to perform actions within the solution
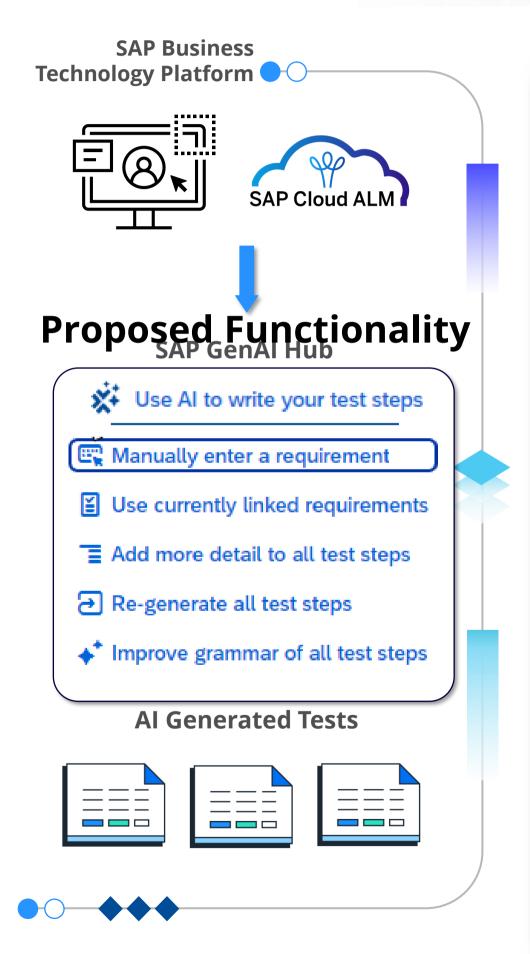
GUIDE me there...

Quality Intelligence insights to make test automation bette and where to go next.
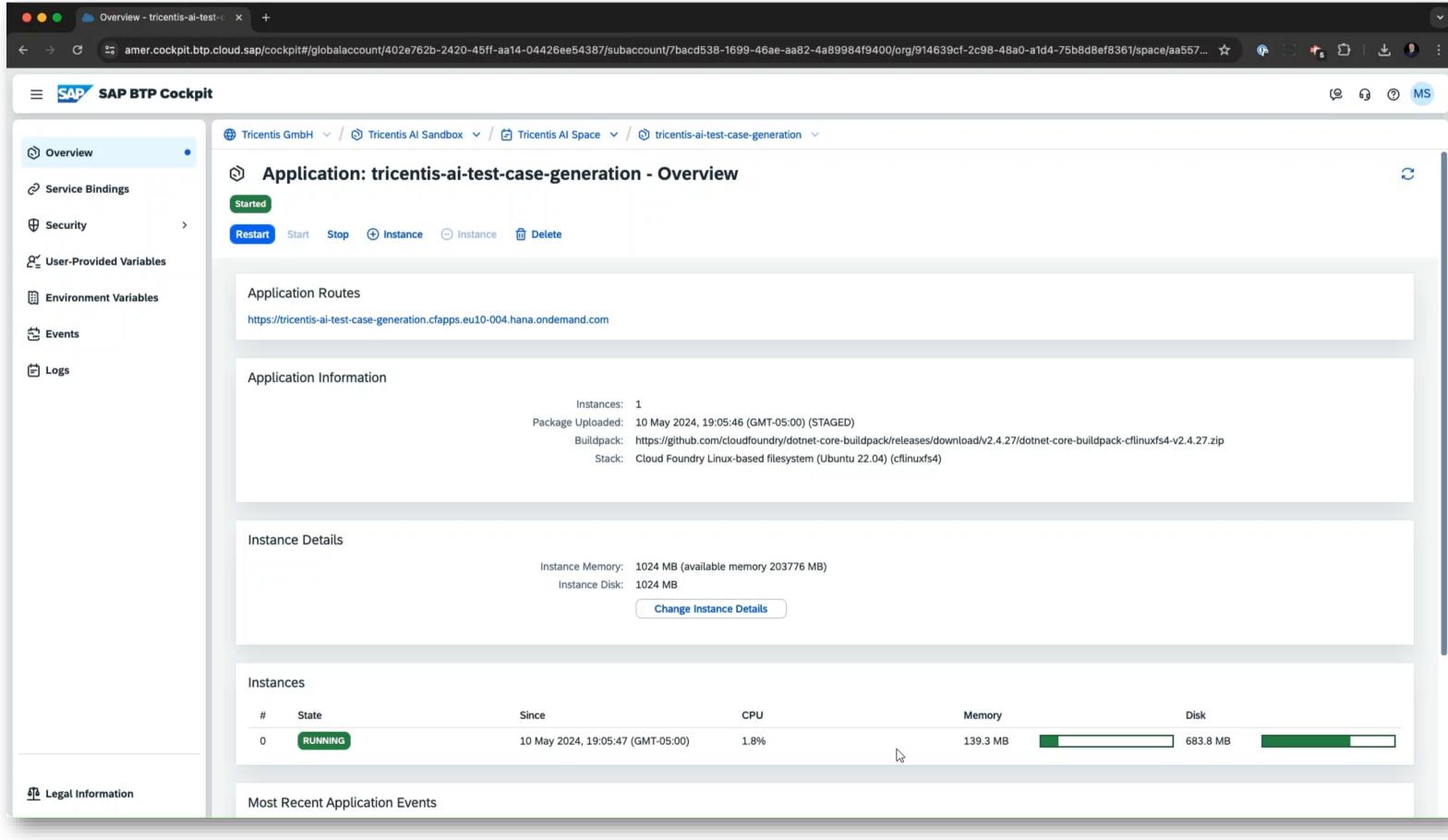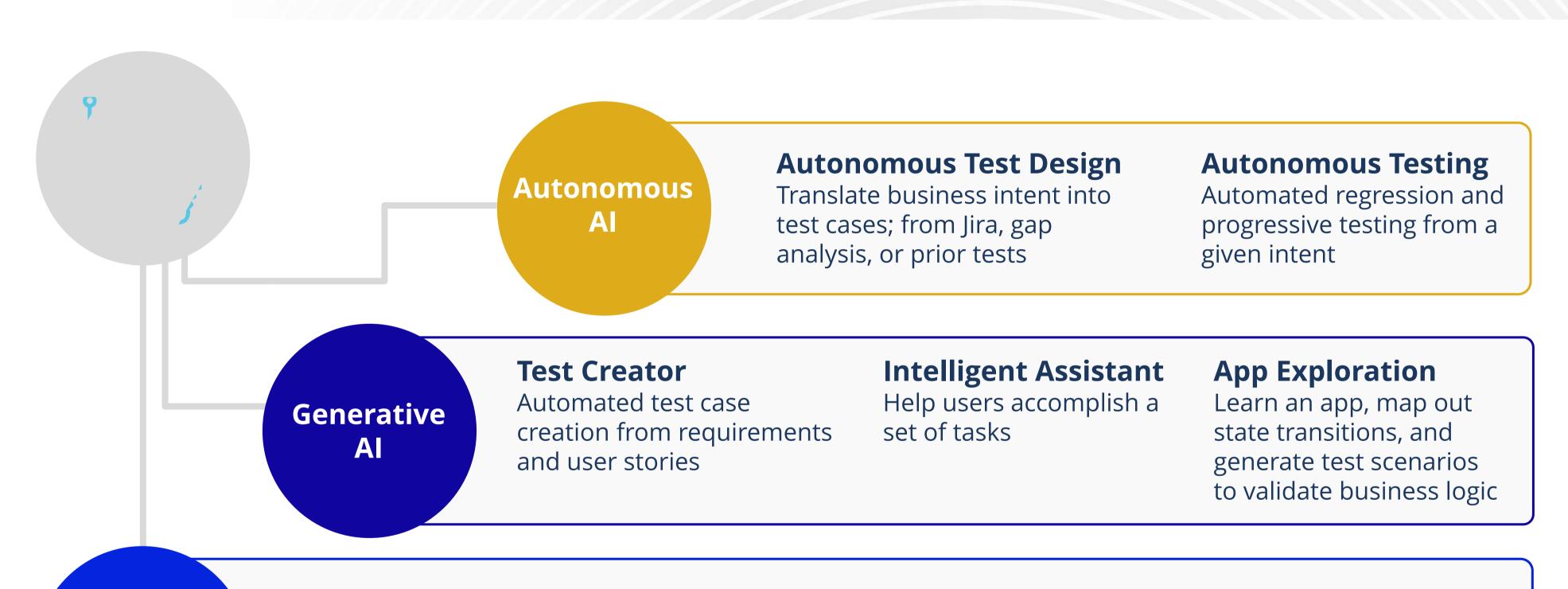
PERFORM this action...

Autonomous Test Automation
Manual Test case generation

Tricentis leads in AI-powered Quality Engineering

Autonomous AI

Autonomous Test Design
Translate business intent into test cases; from Jira, gap analysis, or prior tests

Autonomous Testing
Automated regression and progressive testing from a given intent

Generative AI

Test Creator
Automated test case creation from requirements and user stories

Intelligent Assistant
Help users accomplish a set of tasks

App Exploration
Learn an app, map out state transitions, and generate test scenarios to validate business logic

Machine Learning
(Narrow AI)

Vision AI
Automated detection of UX elements and controls

Deep Healing
Automated recovery from app changes

Risk AI
Impact analysis of code and data changes

Mobile AI
Automated detection of UX, performance, and network issues

Defining autonomous testing

Discovery and Design

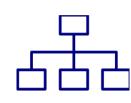- Unstructured documentation
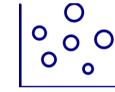- Structured documentation
- Working systems
- Undocumented knowledge

Create and Automate

- Process discovery
- Data generation and location
- System exploration
- Automated instructions

Execute and Maintain

- Run, edit, and debug
- Execute at scale
- Autonomous healing
- Insights and analytics

The future: Autonomous Testing (Preview)

Turn on battery saver

Create insurance policy

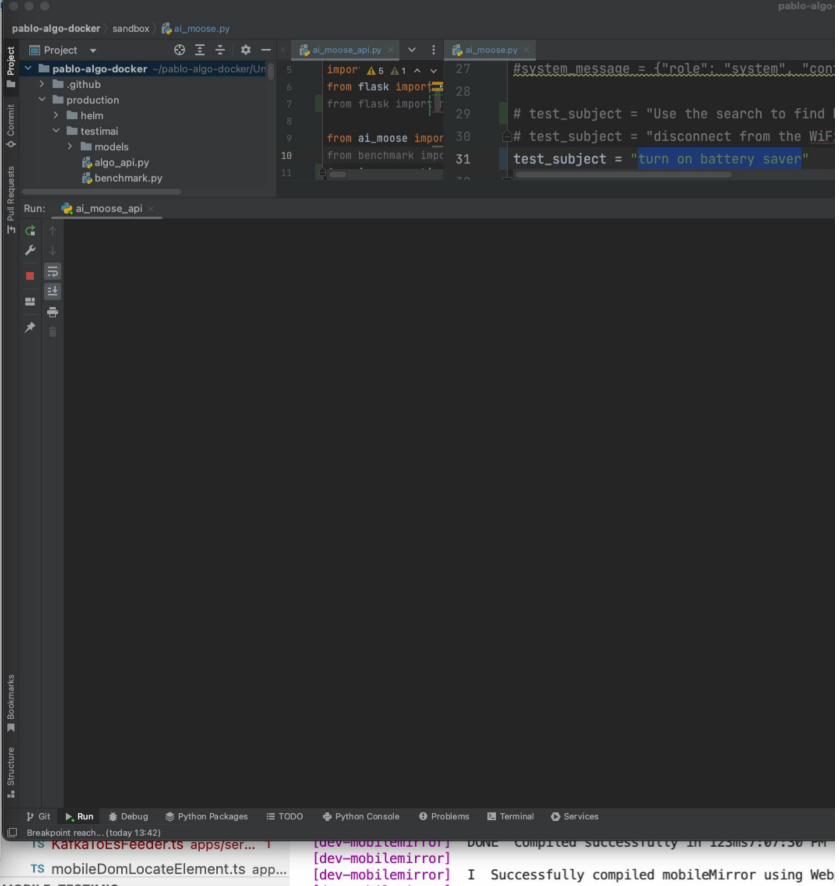Create Sales Order

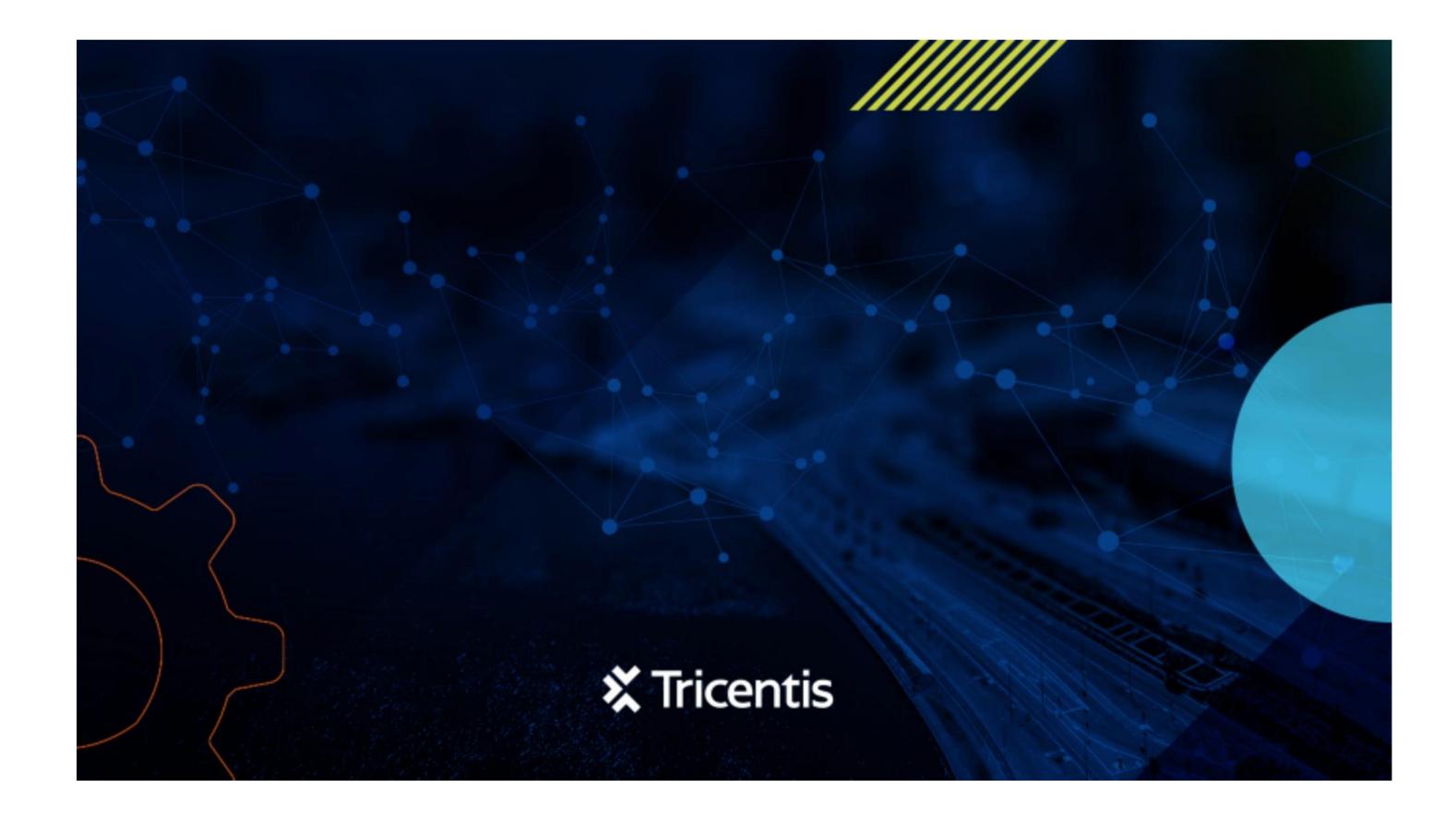Ready for testing?

Initializing device screen mirroring...

The future: Autonomous Testing (Preview)

Turn on battery saver

Create insurance policy
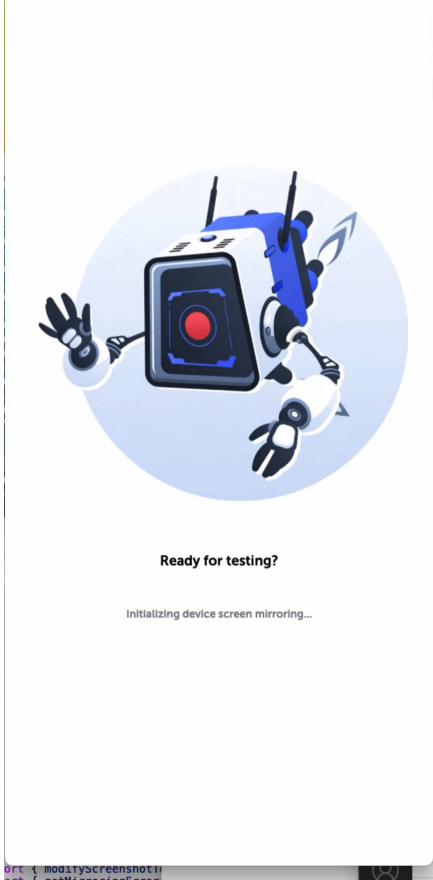
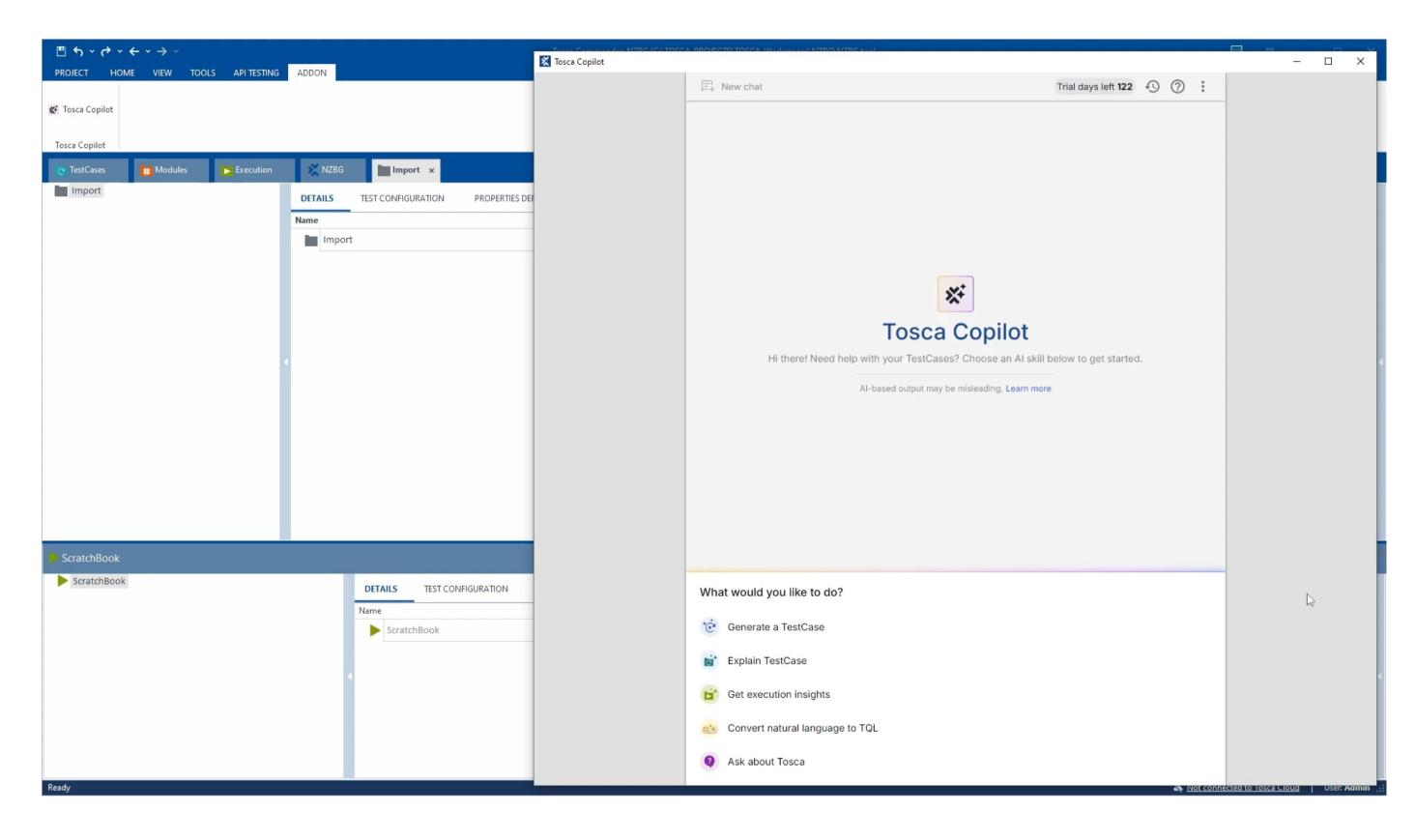Create Sales Order

The future: Autonomous Testing (Preview)

Example Prompt:
Create a sales order and validate
it was submitted successfully

Key Technologies:
GPT 4 + GPT Vision + Vision AI

Future in Software Testing: Insights & Integration Strategies

Future in Software Testing: Insights & Integration Strategies

" AI will probably most likely lead to the end of the world, but in the meantime, there'll be great companies. ☺
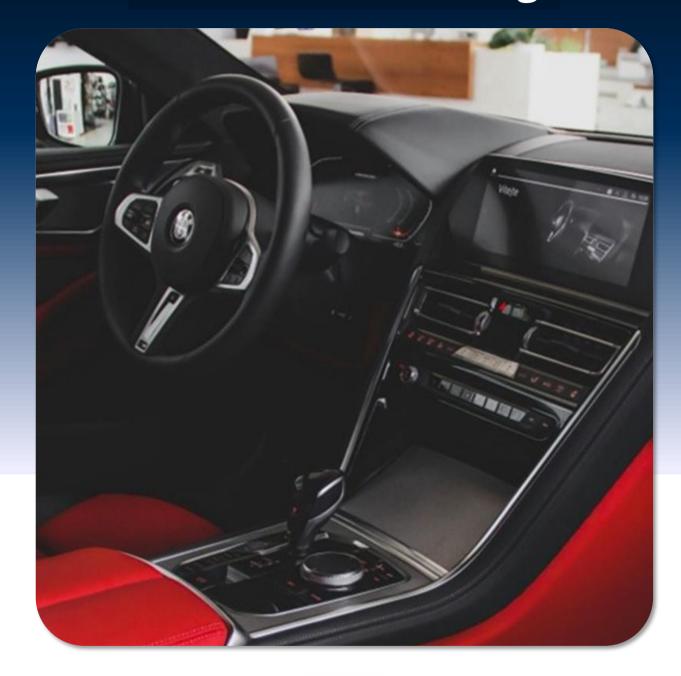
Sam Altman
Chairman of OpenAI

Imagine what driving used to be like...
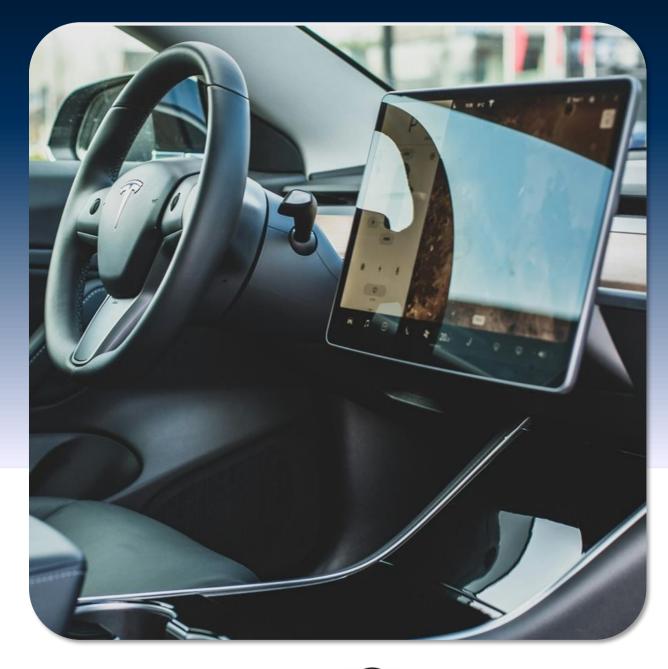Cruise control maintains a steady speed

The evolution of driving & business process management

Evolution of Driving

Foundational
Standard Cruise Control
SAP Best Practices | Clean Core

Dynamic
Adaptive Cruise Control | Advanced Navigation
SAP Build | Process Automation

Transformative
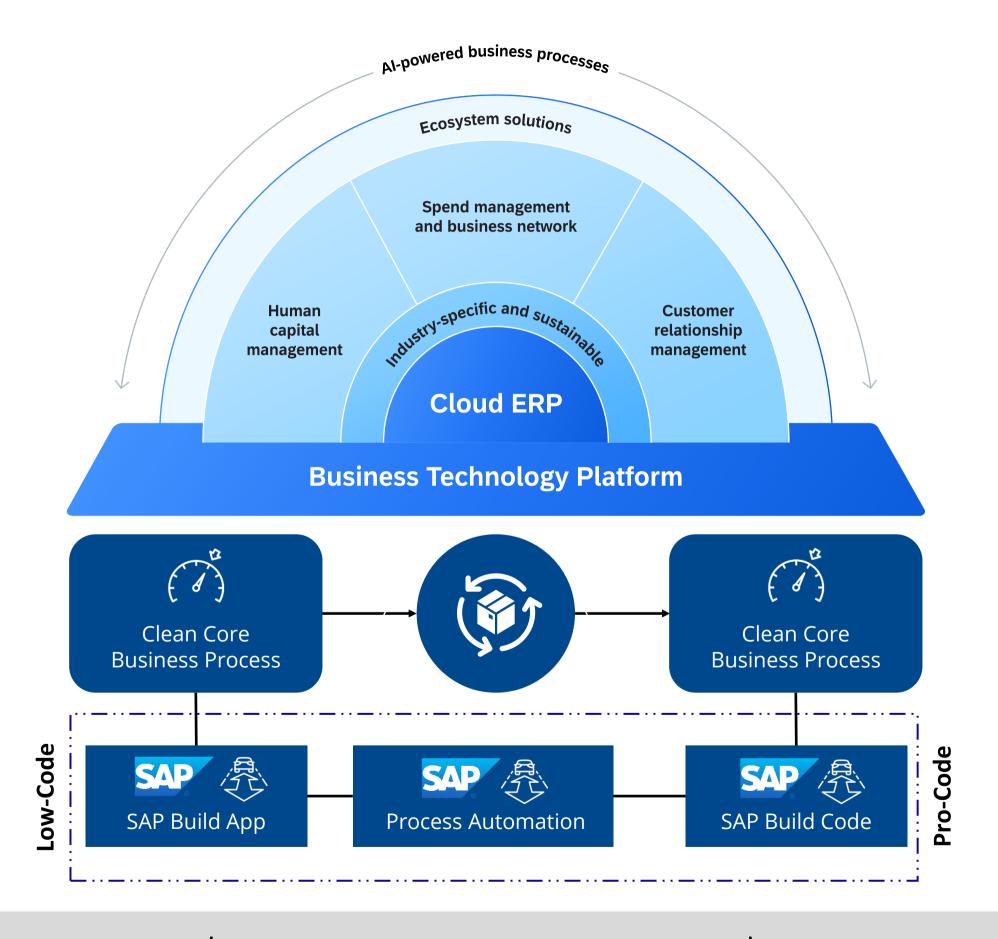**Autonomous Driving**
SAP Joule | Gen-AI code

Business Process Management

Foundational
Standard Cruise Control

Dynamic
Adaptive Cruise Control

Transformative
Autonomous Driving
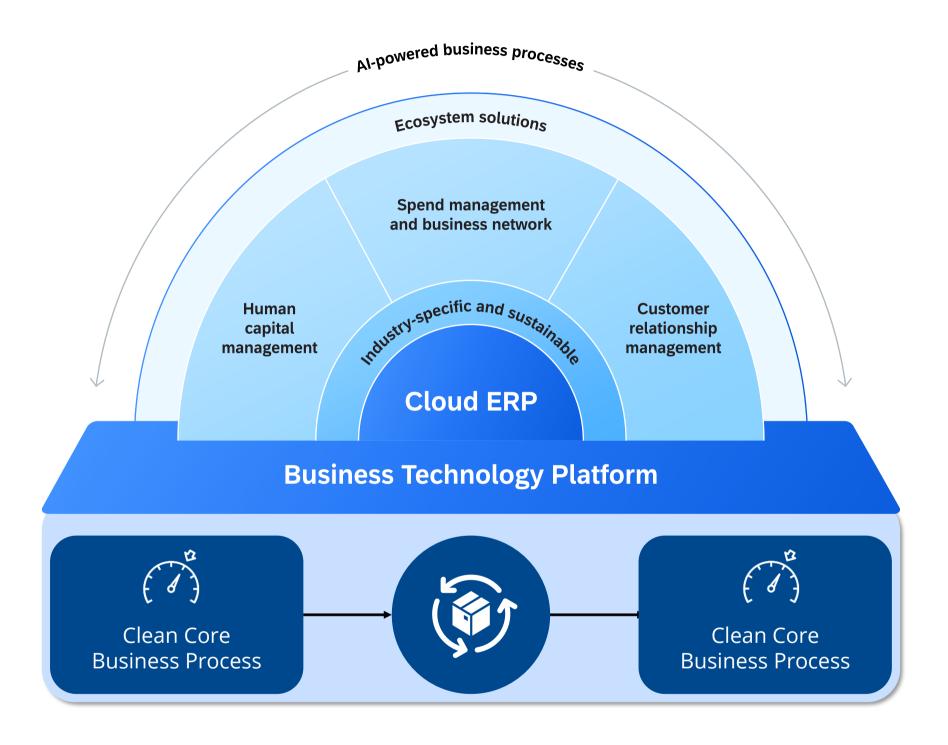
FOUNDATIONAL

SAP Clean Core
SAP Best Practices
Greenfield

Business Process Management

Foundational
Standard Cruise Control

Dynamic
Adaptive Cruise Control

Transformative
Autonomous Driving

SAP Clean Core

AI-powered business processes

Ecosystem solutions

Spend management and business network

Human capital management

Industry-specific and sustainable

Customer relationship management

Cloud ERP

Business Technology Platform

Clean Core Business Process

Clean Core Business Process

Enterprise Agility | Efficiency & Reduced TCO | Reduce Complexity

Business Process Management

Foundational
Standard Cruise Control

Dynamic
Adaptive Cruise Control

Transformative
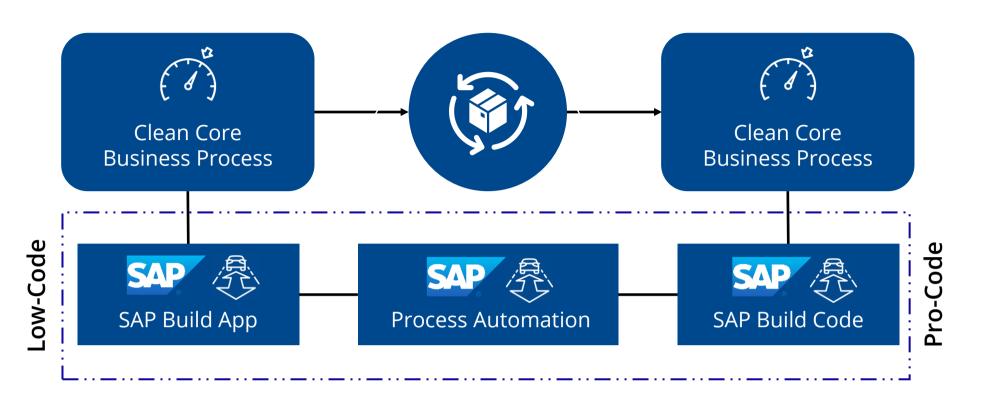Autonomous Driving

SAP Customization & Innovation

Clean Core Business Process → Clean Core Business Process

Low-Code | SAP Build App — Process Automation — SAP Build Code | Pro-Code

**Vision AI
Enterprise Continuous Testing**

Test Sooner

Shift testing left by automating tests based on mockups and use those same tests as the application is developed

Test Smarter

Neural network-based machine learning keeps up with your application changes, regardless of the underlying platform, avoiding massive rework as the application evolves.

Test More

Create stable and resilient automation for any technology regardless of the user interface
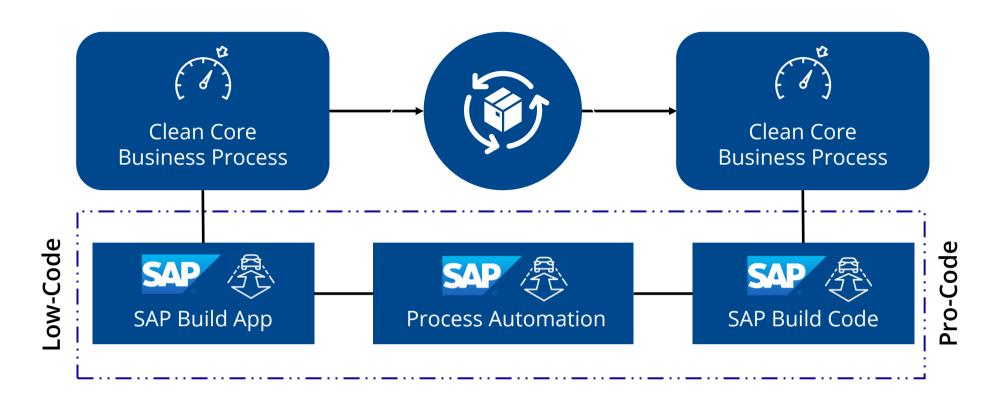
Business Process Management

Foundational
Standard Cruise Control

Dynamic
Adaptive Cruise Control

Transformative
Autonomous Driving

SAP Customization & Innovation

Clean Core
Business Process

Clean Core
Business Process

Low-Code

SAP SAP Build App

SAP Process Automation

SAP SAP Build Code

Pro-Code

Change Impact Analysis
ABAP and Custom Applications

Test Coverage Analysis

Eliminate blind-spots by identifying matching and missing tests (Hits & gaps)

Intelligent Test Selection

Reduces test scope by 85% by selecting only the tests in your integrated repositories that contain most at-risk objects

Test Audit

Reports the testing status for a release of most at-risk objects, ensuring they have been executed in QA
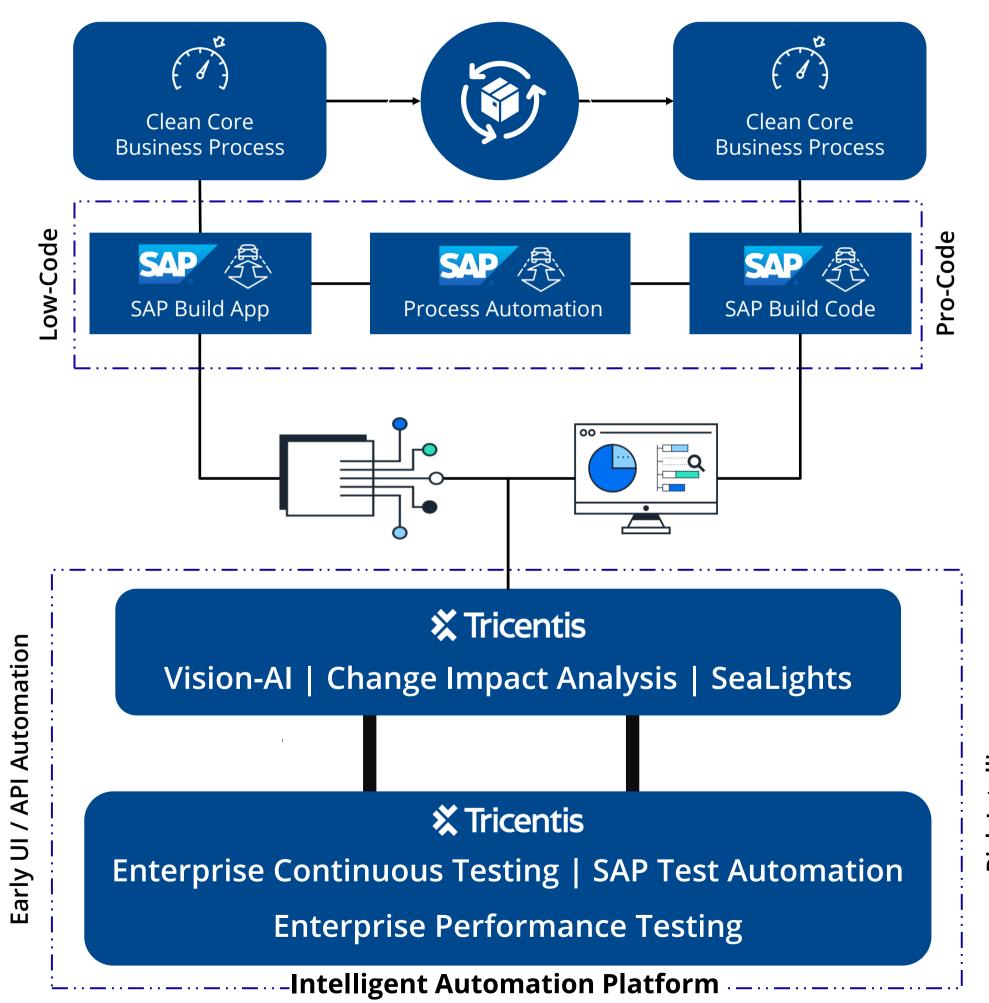
Business Process Management

Foundational
Standard Cruise Control

Dynamic
Adaptive Cruise Control

Transformative
Autonomous Driving

TRANSFORMATIVE
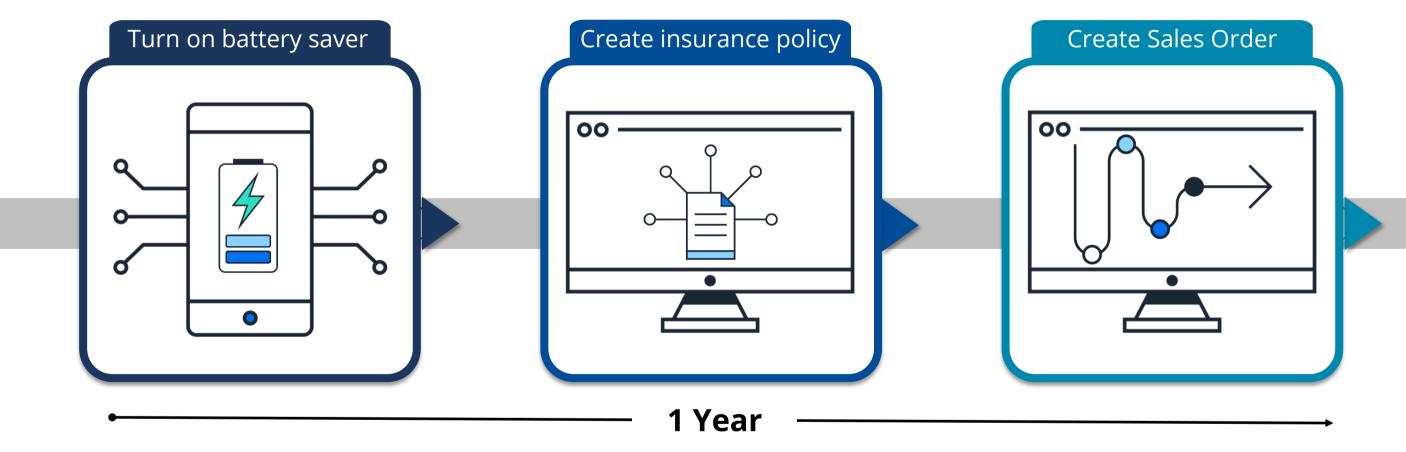
SAP Joule
Gen-AI based Code

Autonomous Testing

Business Process Management

Foundational
Standard Cruise Control

Dynamic
Adaptive Cruise Control

Transformative
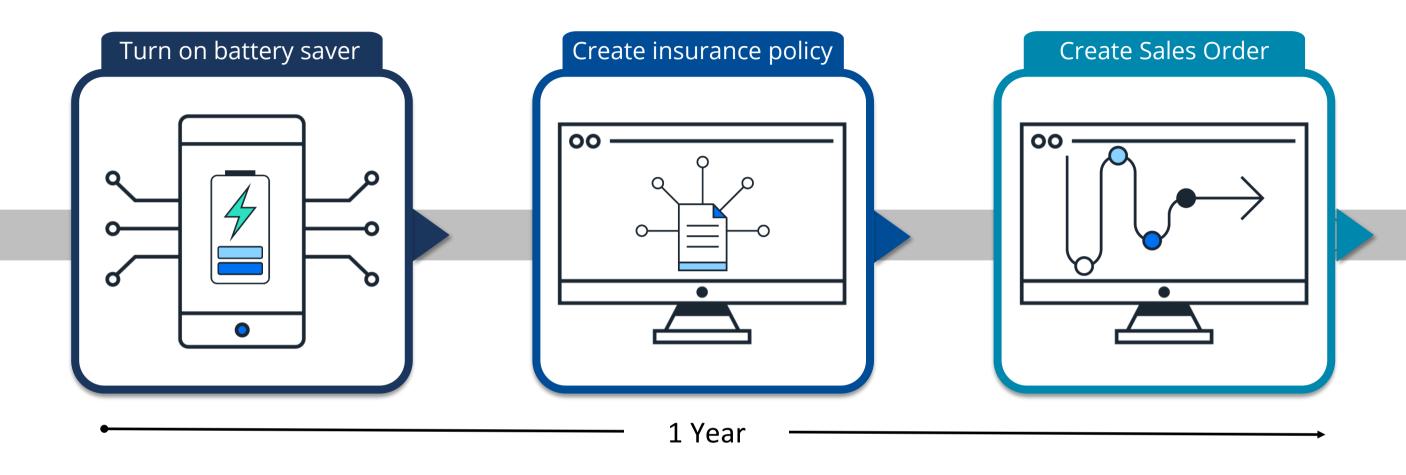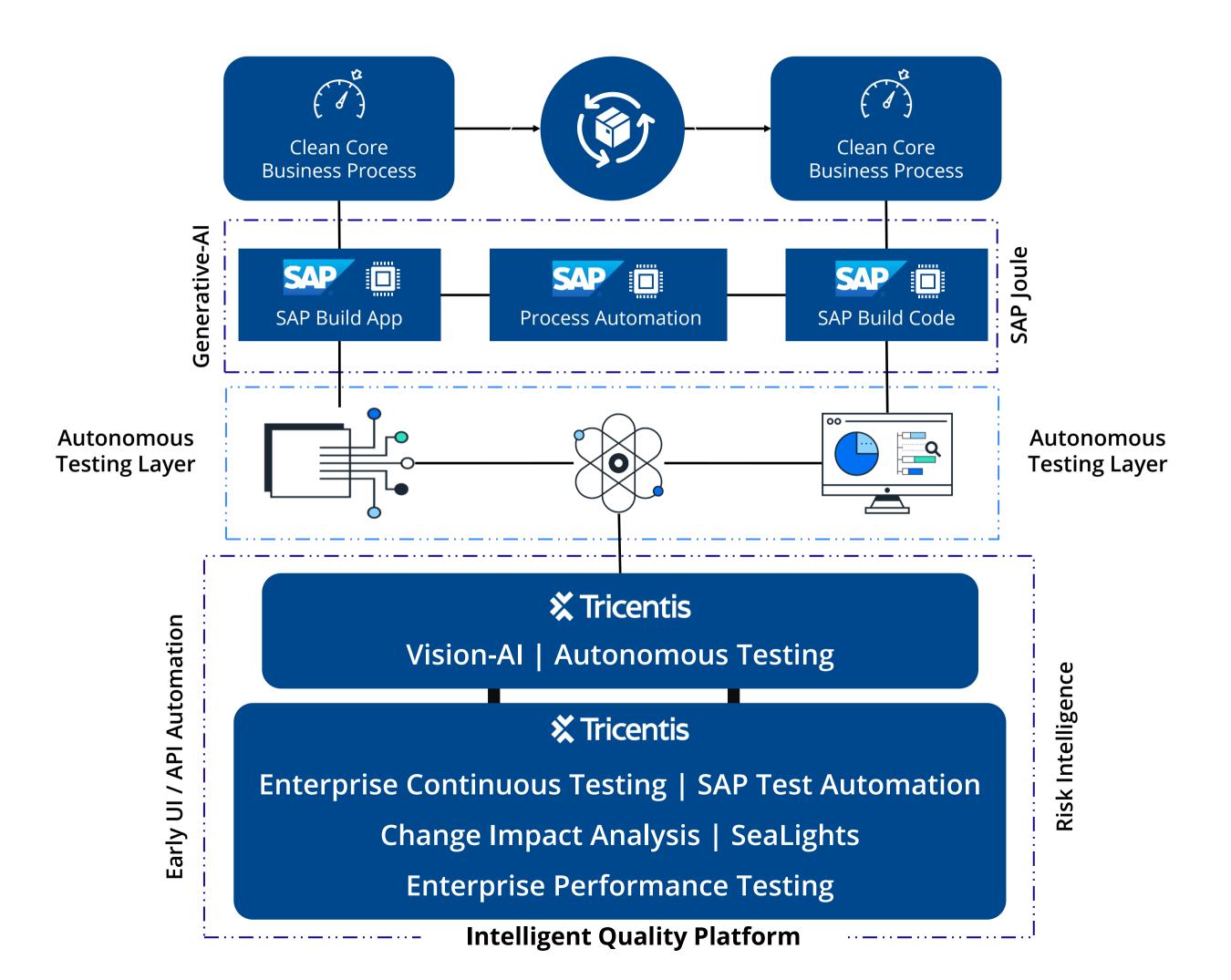Autonomous Driving

Generative AI-based Innovation

Turn on battery saver

Create insurance policy

Create Sales Order

1 Year

The New Innovation Normal

Days

Months

Project
Start

Accelerated
Timeline

Original
Timeline

Autonomous Test
Automation

Wrap-up

2024 Business Predictions for AI

Transforming how business gets done

Maximizing AI's Potential

Think big—customize and scale GenAI models
Reimagine business processes for maximum impact

GenAI – The Missing Link for Data

GenAI can process complex, unstructured data
Modernize data infrastructure to maximize AI benefits

Redefining Work with AI

Leaders must develop AI management skills
Empower employees to innovate and redefine roles

GenAI Transforms Business Transformation

GenAI accelerates data-driven transformation
Bringing outsourced processes back in-house

Trust in AI – The moment of Truth

Embed trust from the start—responsible AI is key
Avoid mistakes that could hinder transformation

New Products Powered by Gen AI

Start with trust—responsible AI is key
Avoid mistakes hindering transformation

The future of AI for Quality Assurance

AI for QA

Vision AI & Self-Healing
Foundation for autonomous testing
Reduce test cycles & DevOps ready

Gen-AI Based Test Creation
Make a big impact with professional slides, charts, infographics and more.

Copilots & Smart Assistants
Copilots perform tasks
Smart Assistants provide insight

Autonomous Testing
Automatically design and execute, tests without human intervention

Risk Intelligence
Insights into change identifying, assessing, and prioritizing most-at-risk areas

QA for AI

Prompt Engineering
Guides AI in generating effective test cases, or analysis to improve software quality.

Prompt Intent Validation
Ensures the intent of an AI prompt is executed correctly.

Bias Validation
Evaluating AI to detect unintended biases to ensure fairness and accuracy.

Red Teaming
Simulate real-world attacks by ethical hackers to identify vulnerabilities and improve system security defenses.

Quality Assurance
The Last Line of Defense

AI-Powered Quality Engineering Solutions – Tricentis

(https://www.Tricentis.com/solutions/ai-powered-solutions)

Home page for AI-powered quality engineering solutions by Tricentis.

Tricentis Blog site for Artificial Intelligence
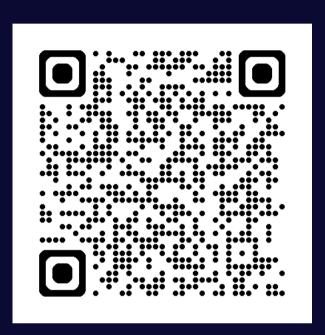Https://www.Tricentis.com/blog (filter on Artificial Intelligence)

- **AI is powerful** but still needs to be tested

- **AI is not going to take over jobs**, but will change the way we work

- **Autonomous testing** is the future with Copilots teaching and guiding users

- **AI for QA** will enhance and drive **QA for AI**

Thank you! Any questions?

Brad Purcell

linkedin.com/in/bradpurcell

Please remember to complete your session evaluation.

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