The Future of Testing: Continuous Enterprise Testing

ANZTB Test Conference, Canberra, 1 June 2018

Thomas Hadorn

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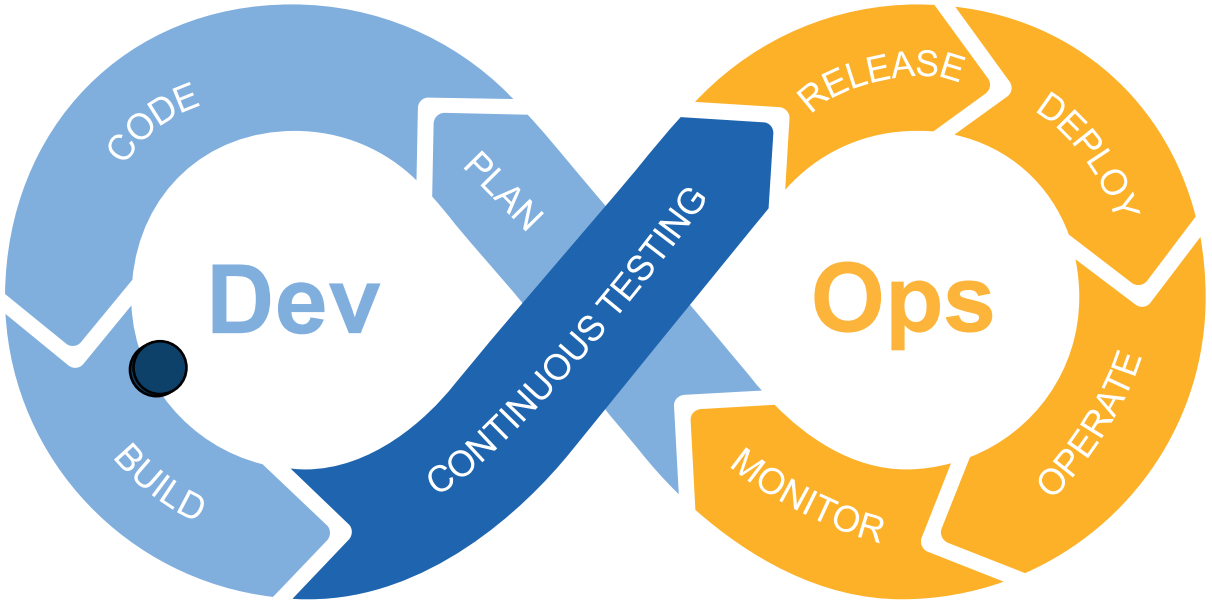

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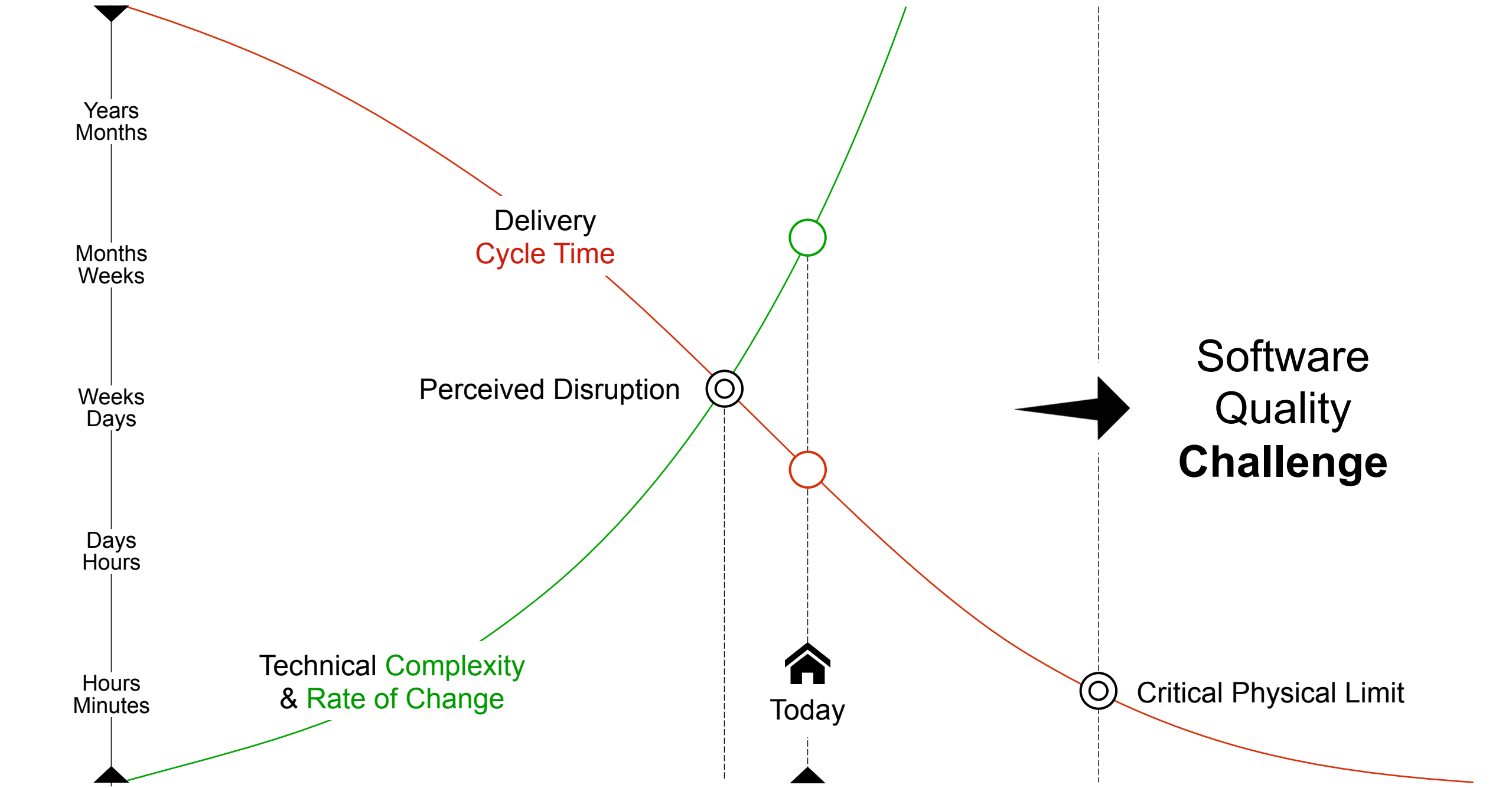

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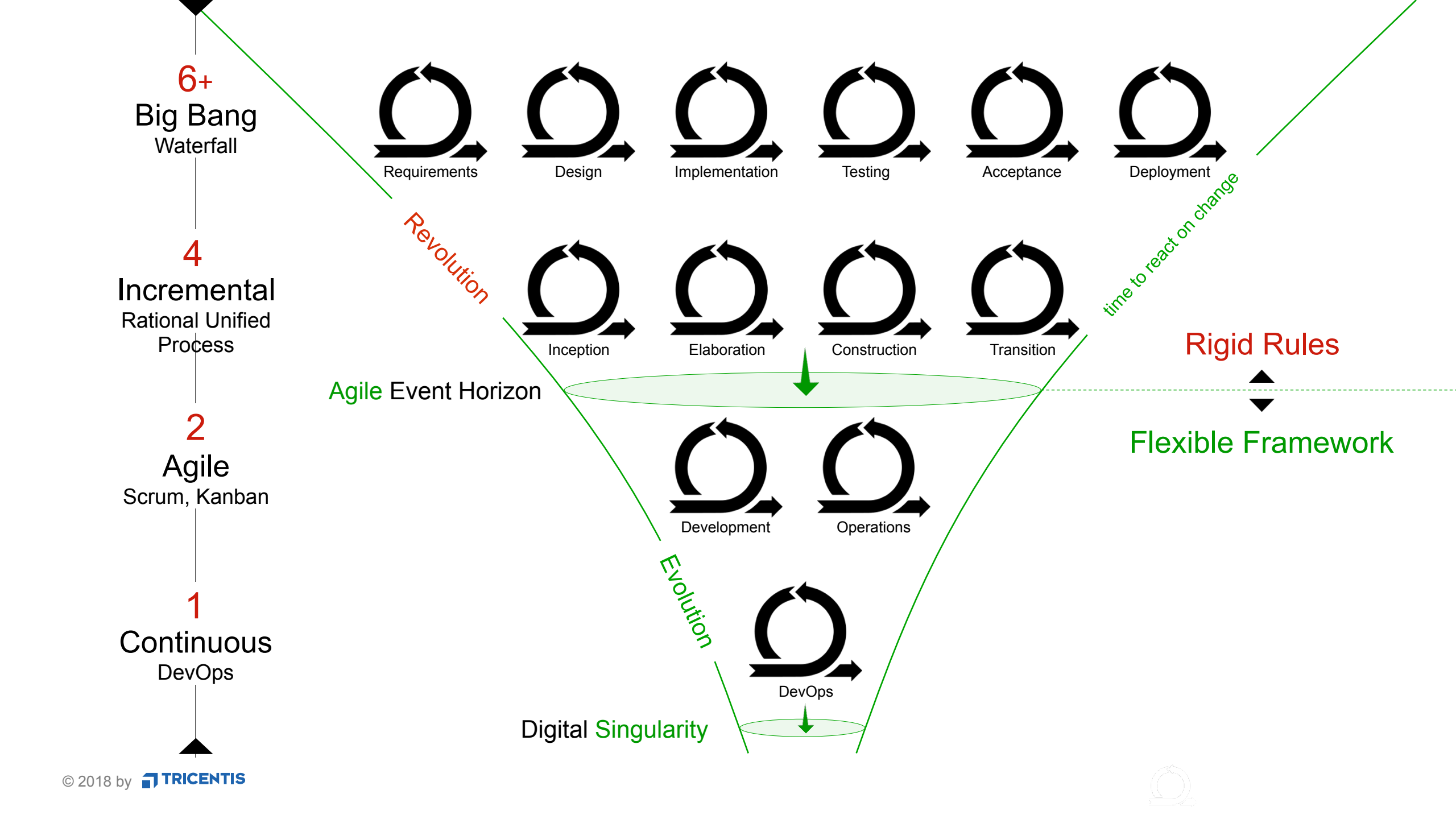

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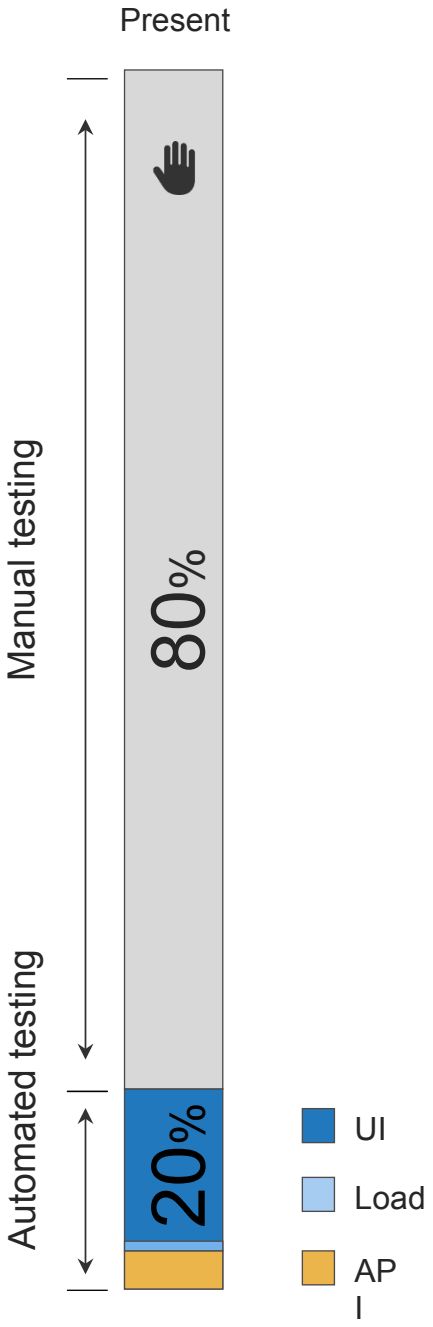

The reliance on manual testing is the top technical challenge in app development

World Quality Report, 2015/16

Test automation requires developers

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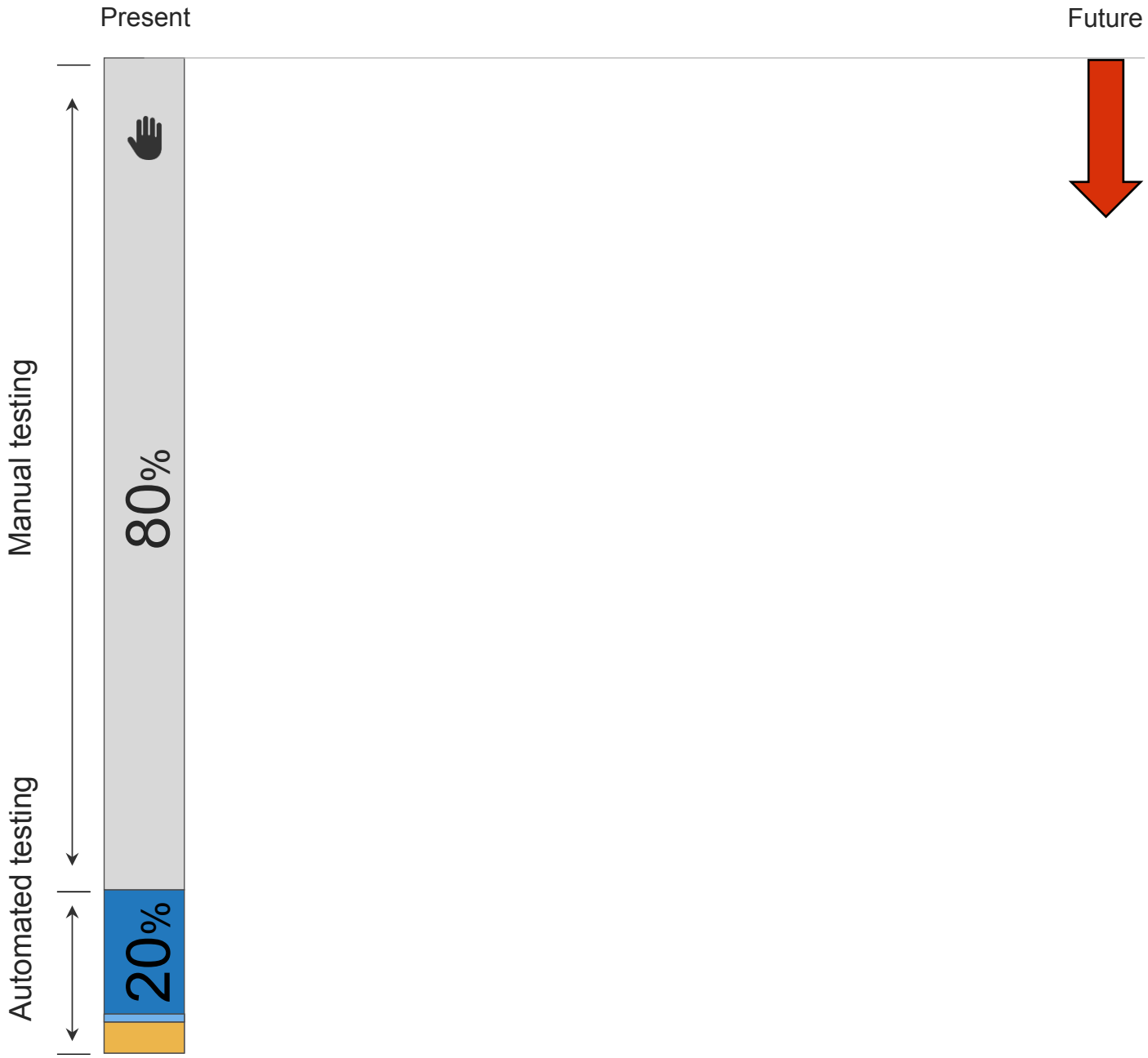

Higher coverage. Fewer tests.
Model-based Test Coverage Design (MBT)

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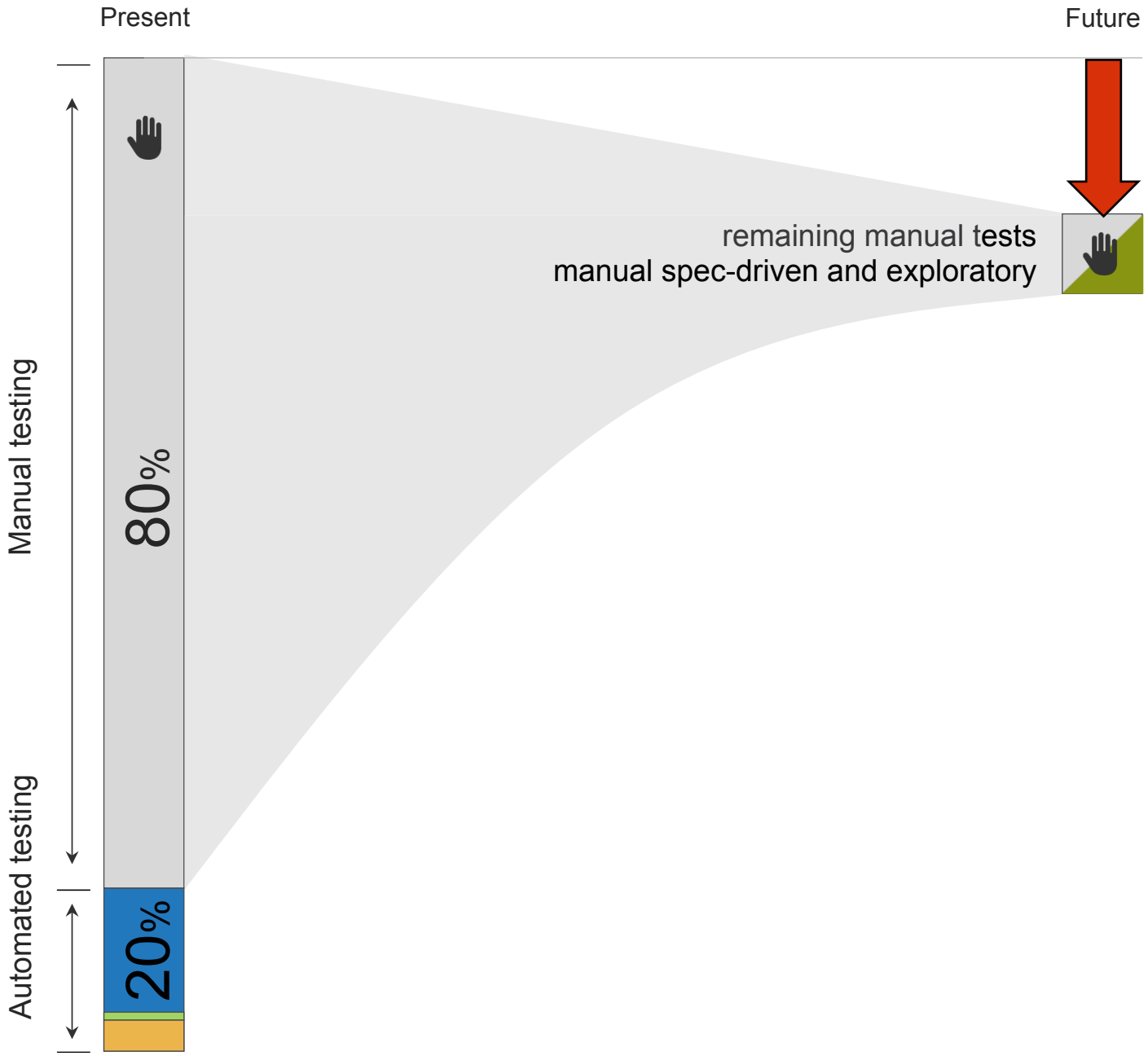


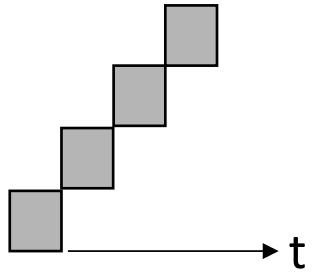
Optimize

Higher coverage. Fewer tests.
Model-based Test Coverage Design (MBT)

Explore

Test the unknown.
Session-Based Exploratory Testing

Progression testing



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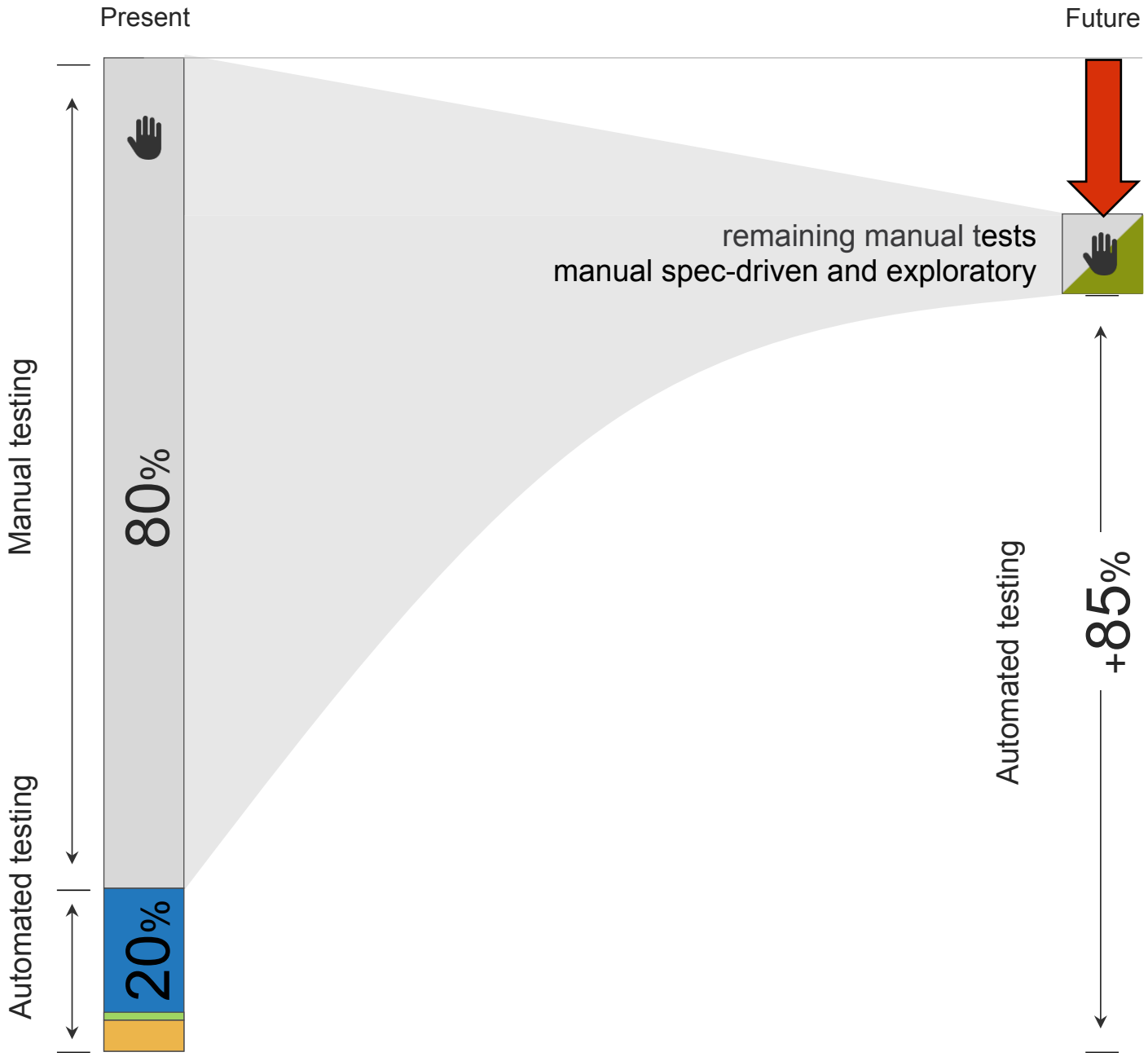

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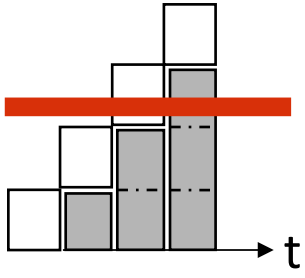
Progression testing

Regression testing



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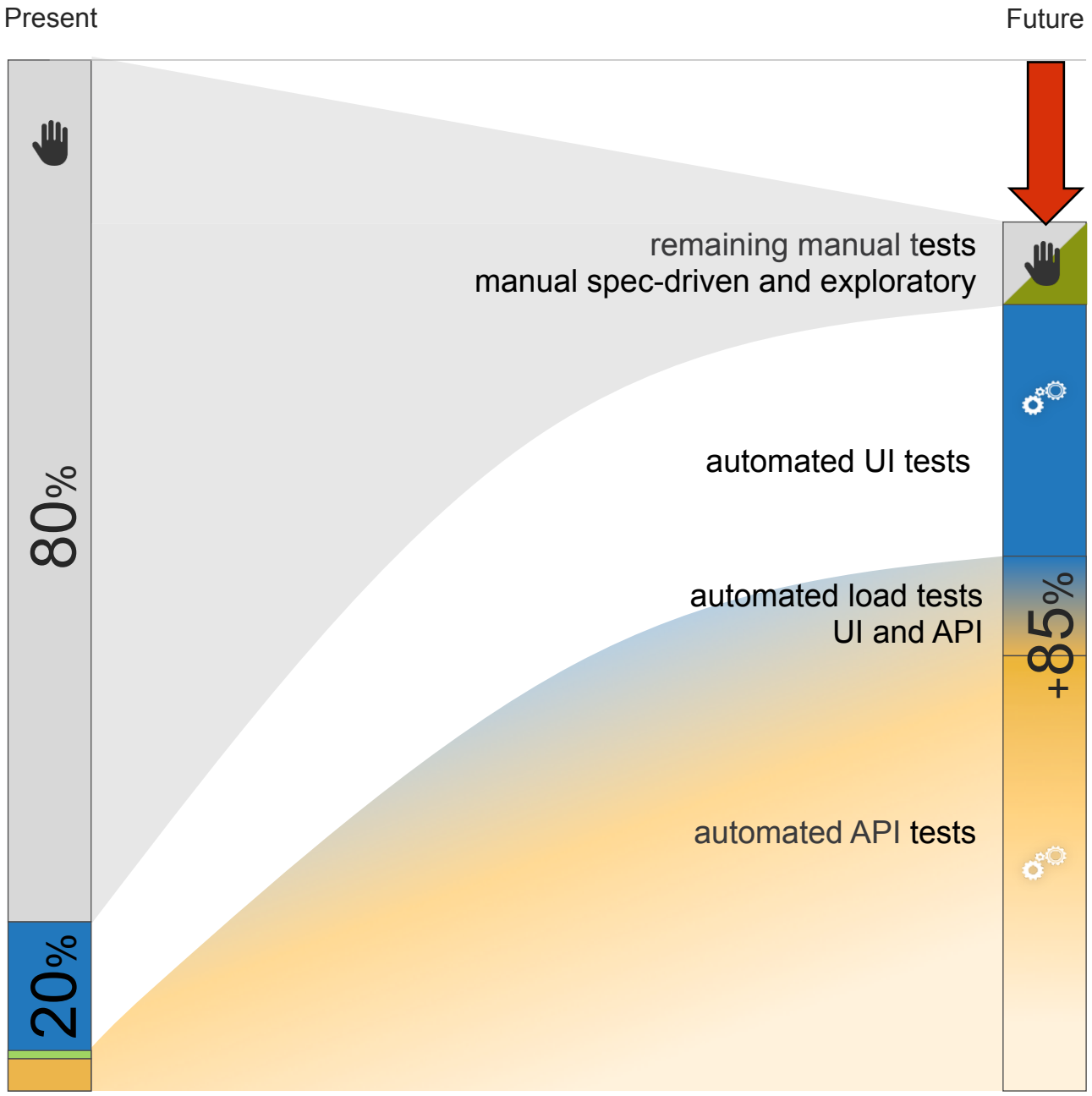

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Automate

Automating the automation framework for UI and API.
Model-based Test Automation (MBTA)

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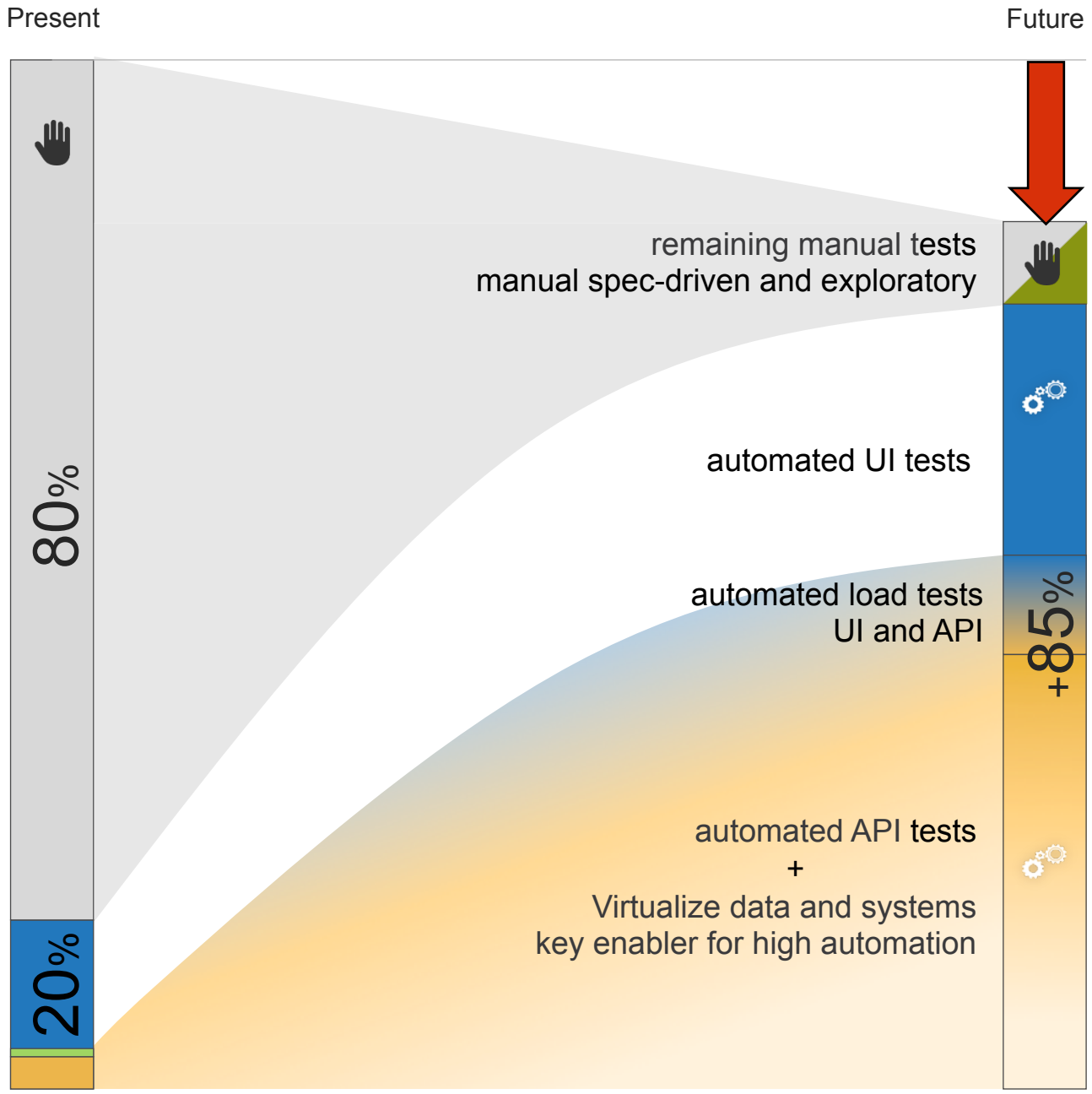

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Automate

Automating the automation framework for UI and API.
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Manage

Increase the testing window.
Test-Driven Service Virtualization

Provide matching test data in time.
Stateful Test Data Management

Integrate

Automate build to release process.
Continuous Integration/Testing/Delivery (CI, CT, CD)
Distributed Execution

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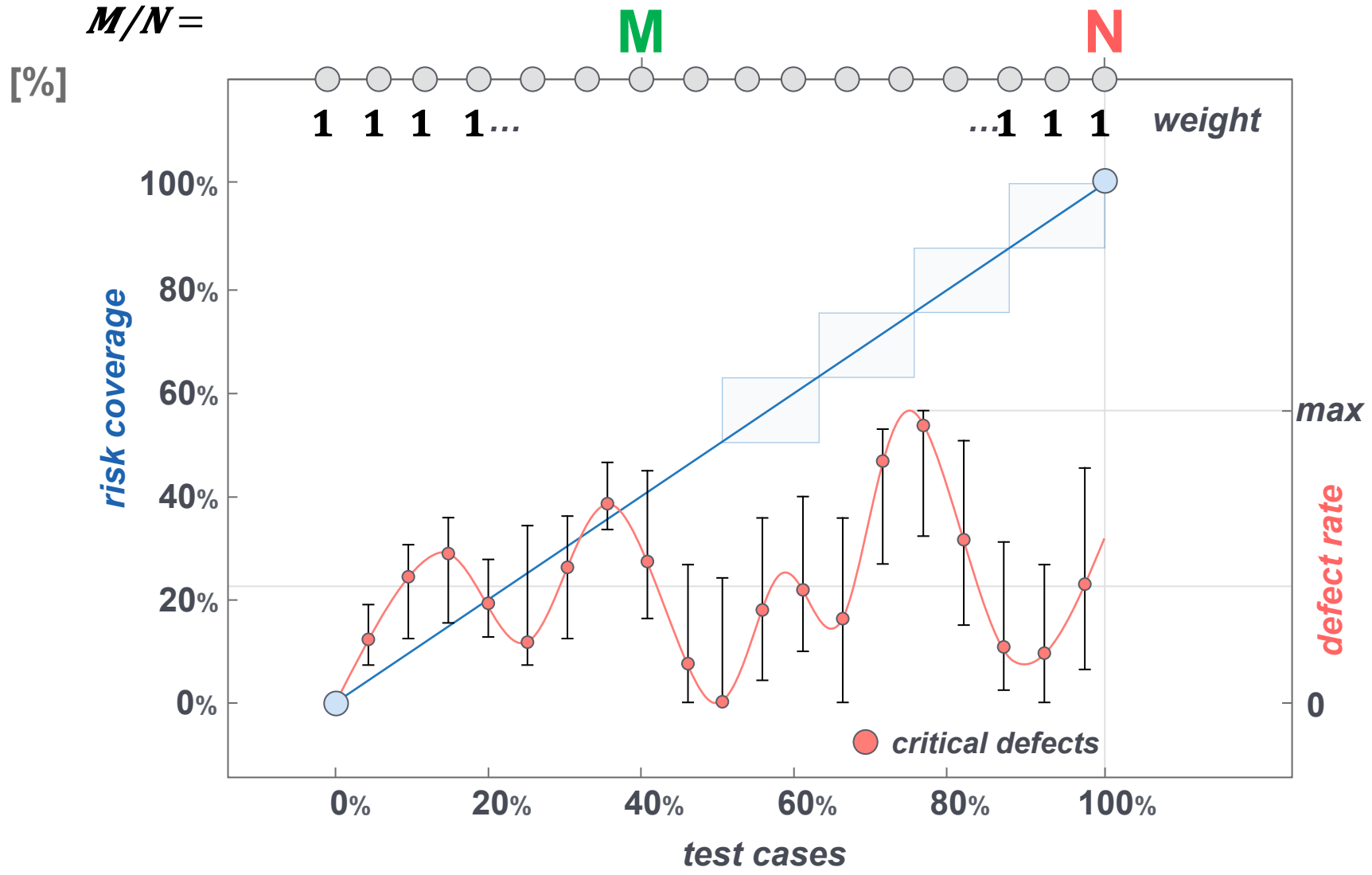

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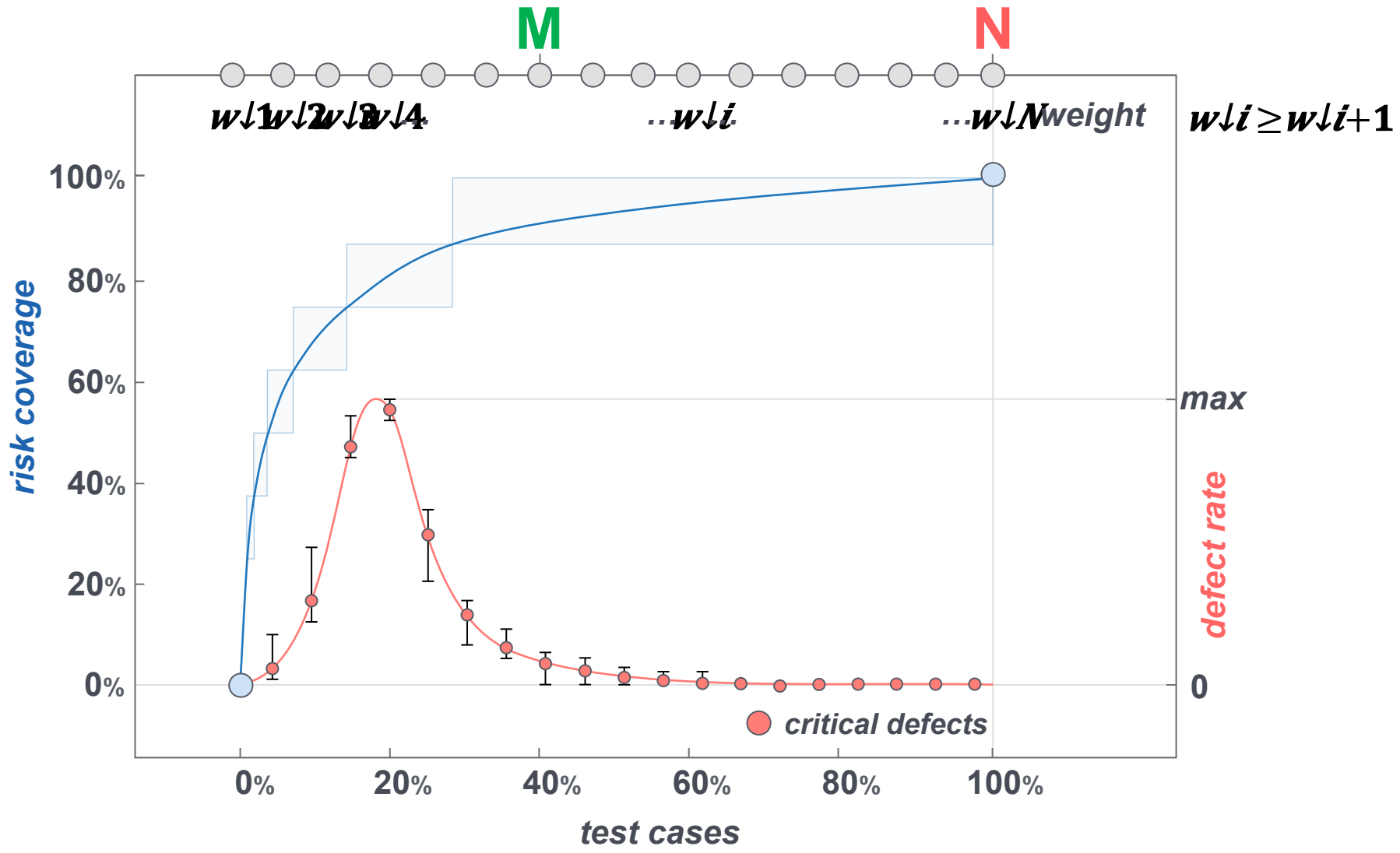

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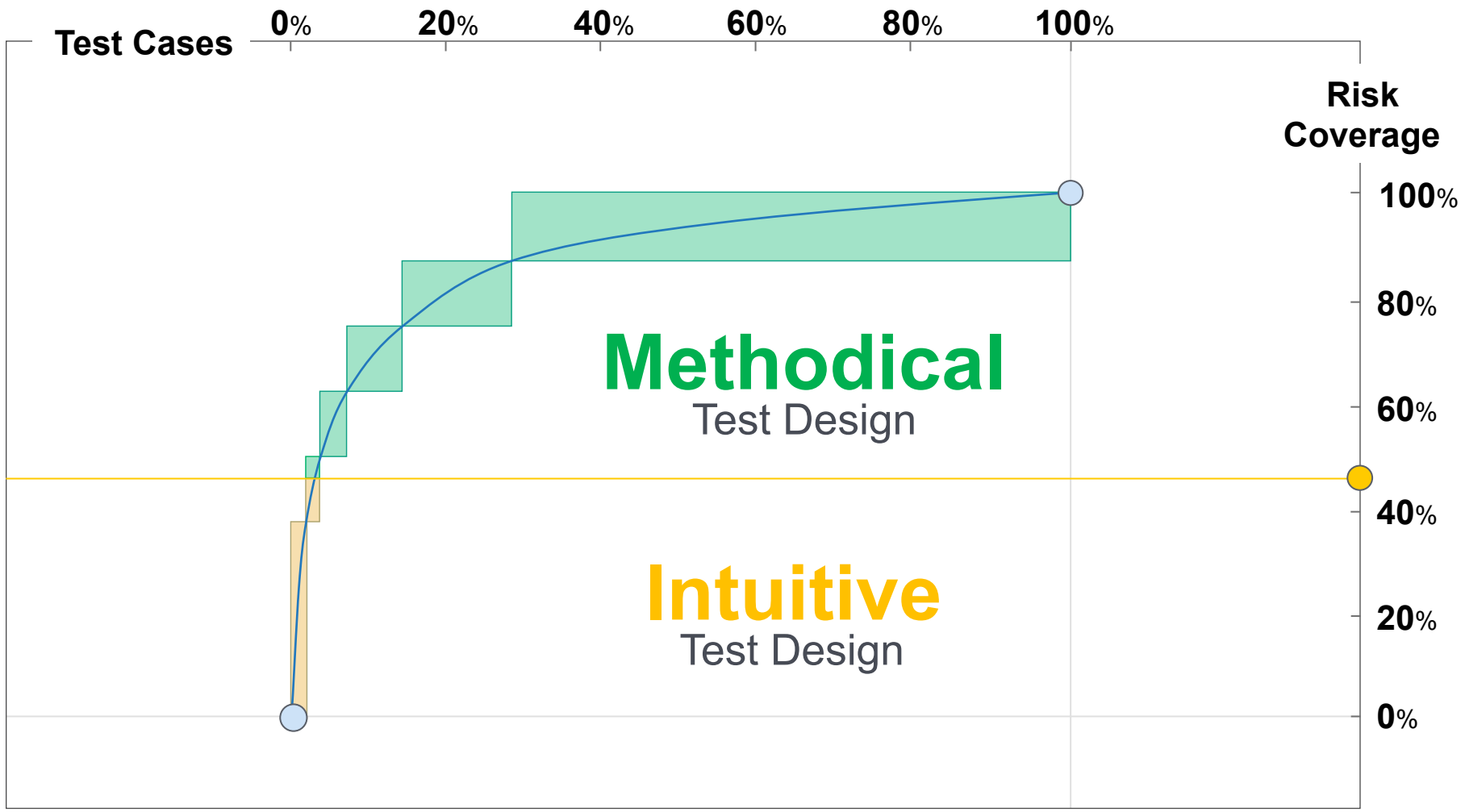
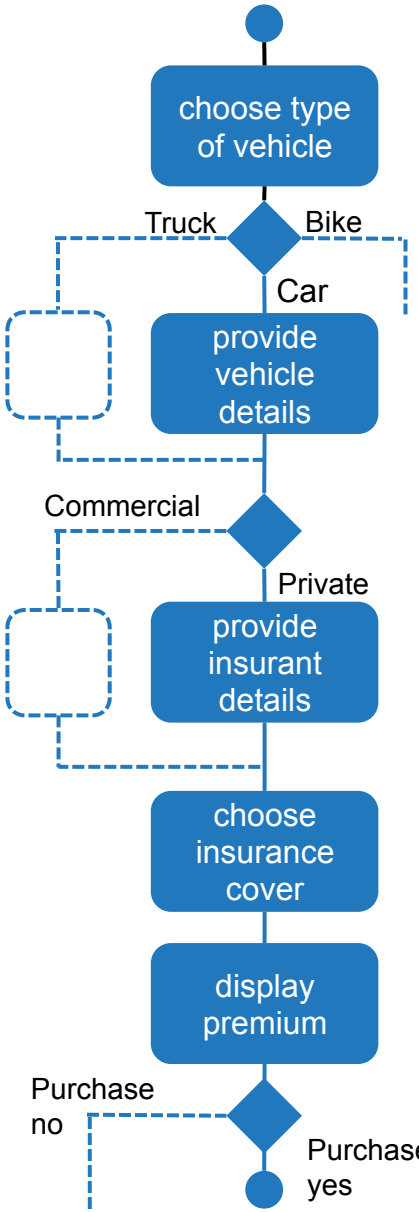


Achieve maximum risk coverage with
a minimal number of powerful test cases.

Get a Quote



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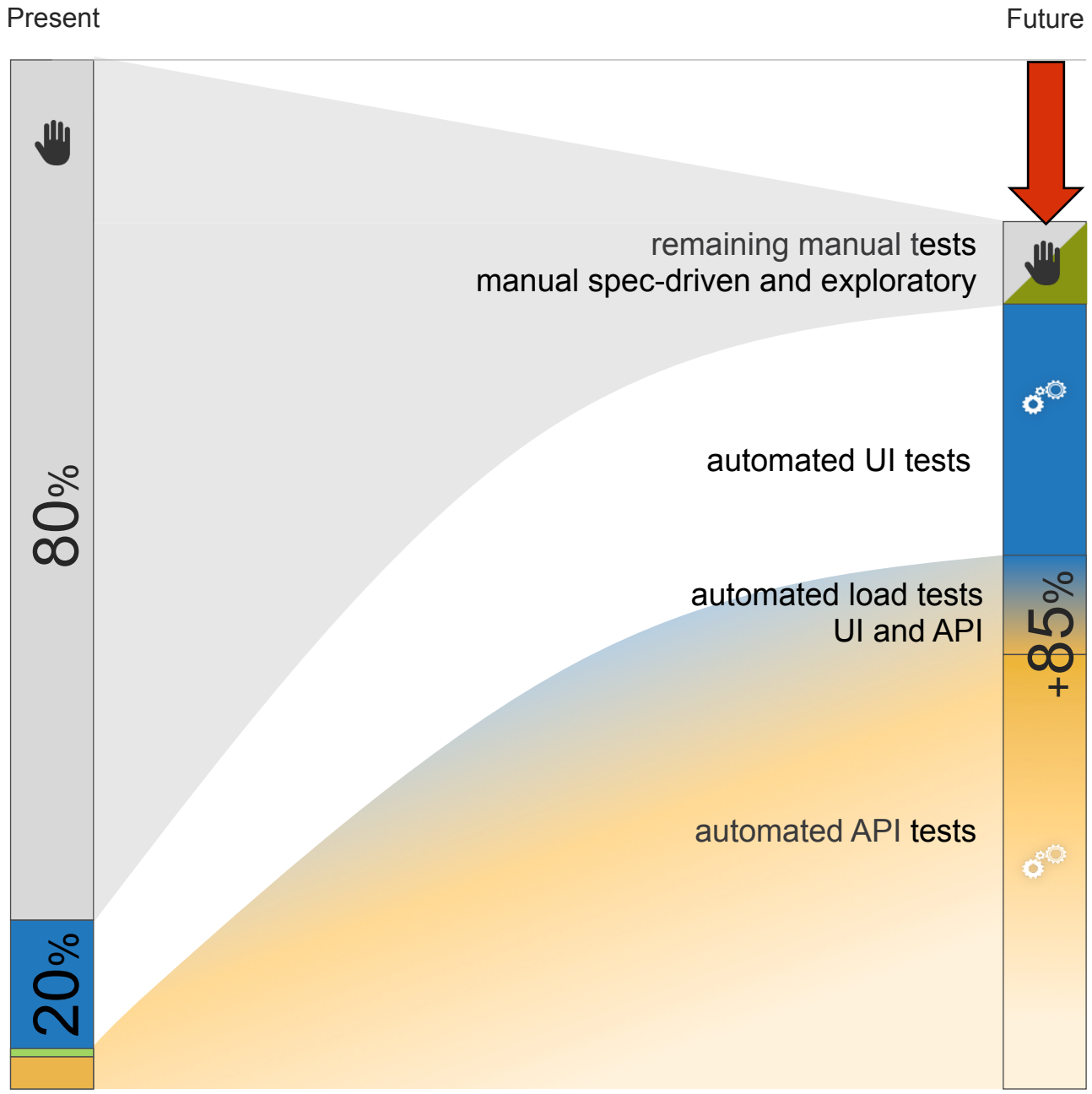
Name	Instance Usage	StraightT...	<75	125-200	>200	EMPTY	INVALID	75	125	126
Get a Quote		StraightT...	<75	125-200	>200	EMPTY	INVALID	75	125	126
Instances										
Make*	100%	BMW	BMW	BMW	BMW	BMW	BMW	BMW	BMW	BMW
Engine Performance [kW]*	100%	75-124	<75	125-200	>200	EMPTY	INVALID	75	125	126
Instances										
<75	1									
75-124	44									
125-200	1									
>200	1									
EMPTY	1									
INVALID	1									
75	1									
125	1									
126	1									
Date of Manufacture*	100%	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...
Number of Seats*	100%	5	5	5	5	5	5	5	5	5
Fuel Type*	100%	Petrol	Petrol	Petrol	Petrol	Petrol	Petrol	Petrol	Petrol	Petrol
List Price [$]*	100%	50000	50000	50000	50000	50000	50000	50000	50000	50000
Annual Mileage [mi]*	100%	10000	10000	10000	10000	10000	10000	10000	10000	10000
Name*	100%	Thomas	Thomas	Thomas	Thomas	Thomas	Thomas	Thomas	Thomas	Thomas
Date of Birth*	100%	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...
Address	100%	10 Liver...	10 Liver...	10 Liver...	10 Liver...	10 Liver...	10 Liver...	10 Liver...	10 Liver...	10 Liver...
Occupation*	100%	Employ...	Employ...	Employ...	Employ...	Employ...	Employ...	Employ...	Employ...	Employ...
Start Date*	100%	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...	01/01/...
Insurance Sum*	100%	10.000...	10.000...	10.000...	10.000...	10.000...	10.000...	10.000...	10.000...	10.000...
Merit Rating*	100%	Bonus 2	Bonus 2	Bonus 2	Bonus 2	Bonus 2	Bonus 2	Bonus 2	Bonus 2	Bonus 2
Damage Insurance*	100%	Full Co...	Full Co...	Full Co...	Full Co...	Full Co...	Full Co...	Full Co...	Full Co...	Full Co...
priceTable	48%									
Price per Year ($)	48%									
Silver	50%	$500	$400	$600				$500	$550	$600
Gold	50%	$600	$500	$700				$600	$650	$700
Platinum	50%	$700	$600	$800				$700	$750	$800

Auto generate…
Orthogonal Arrays
Linear Expansion
Pairwise Tests
All Combinations
Negative Tests
Boundary Tests



Explore

Test the unknown.
Session-Based Exploratory Testing

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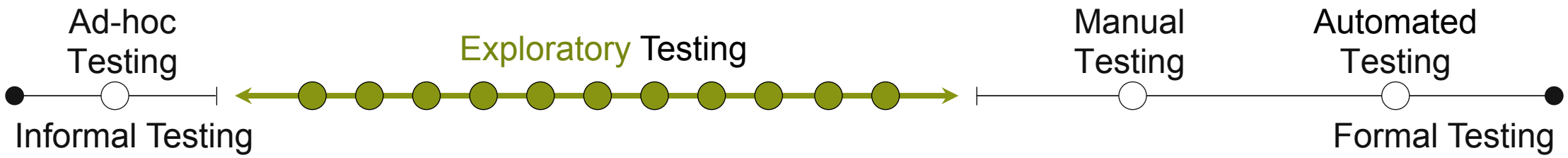
Testing Continuum



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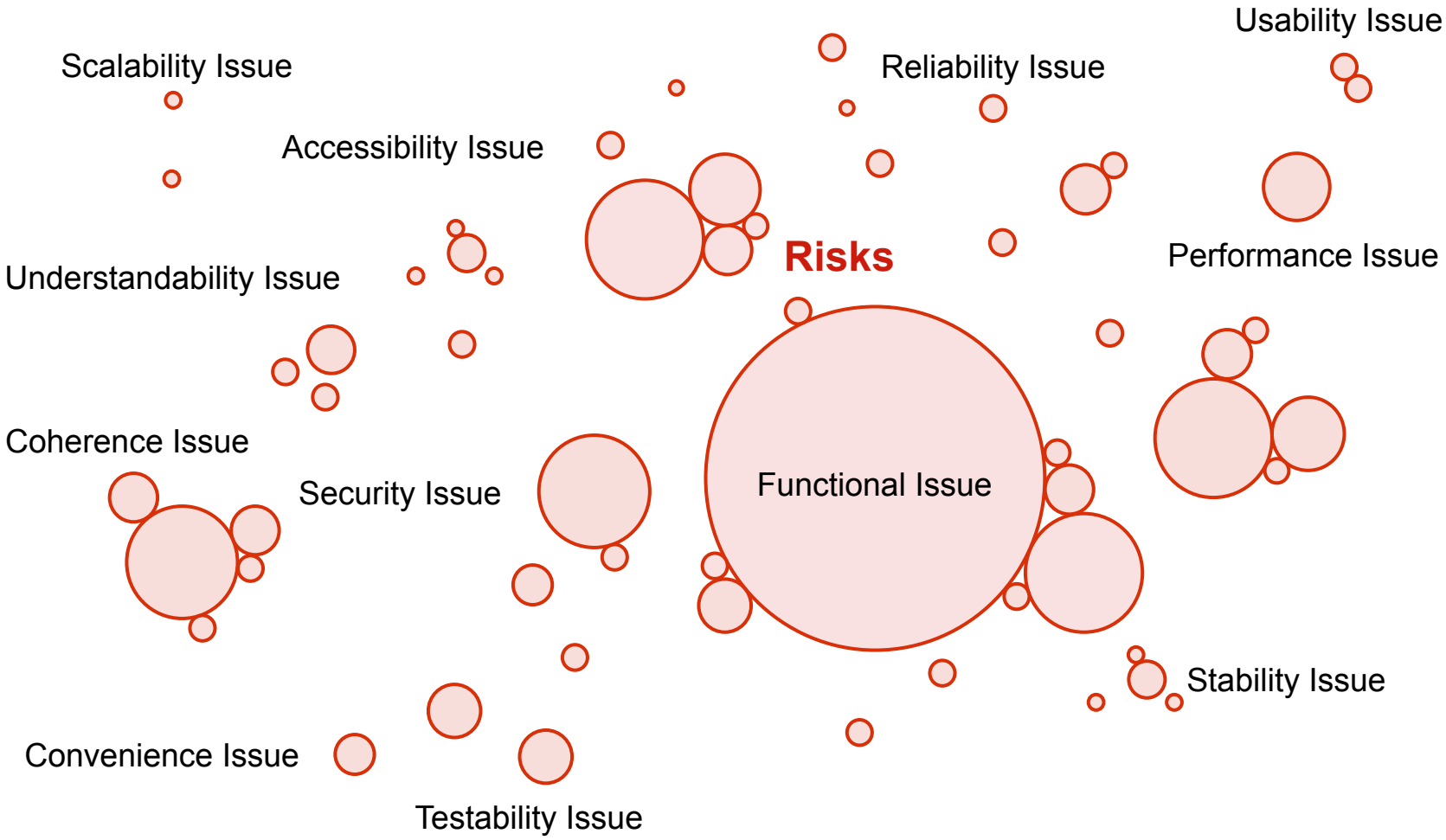

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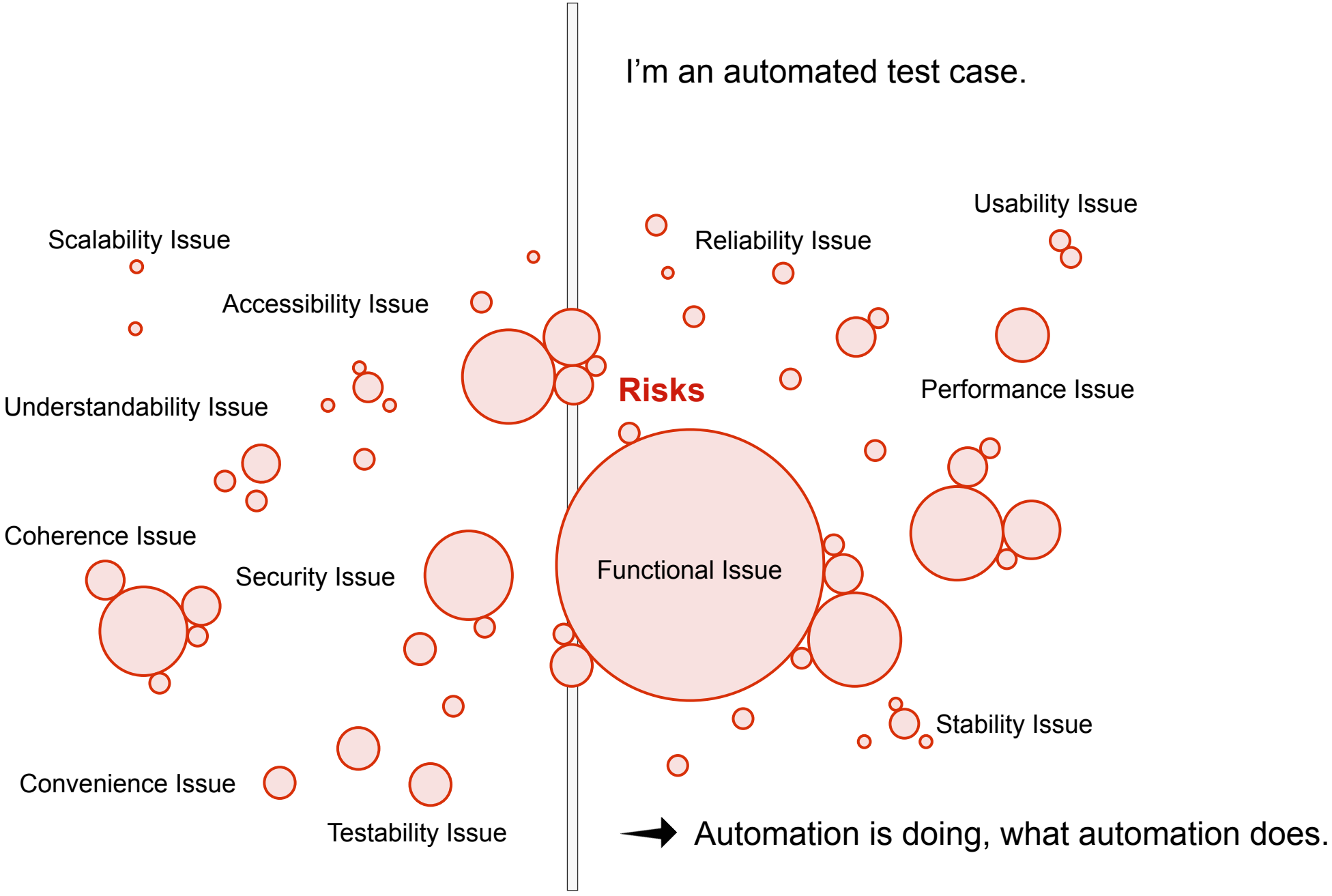

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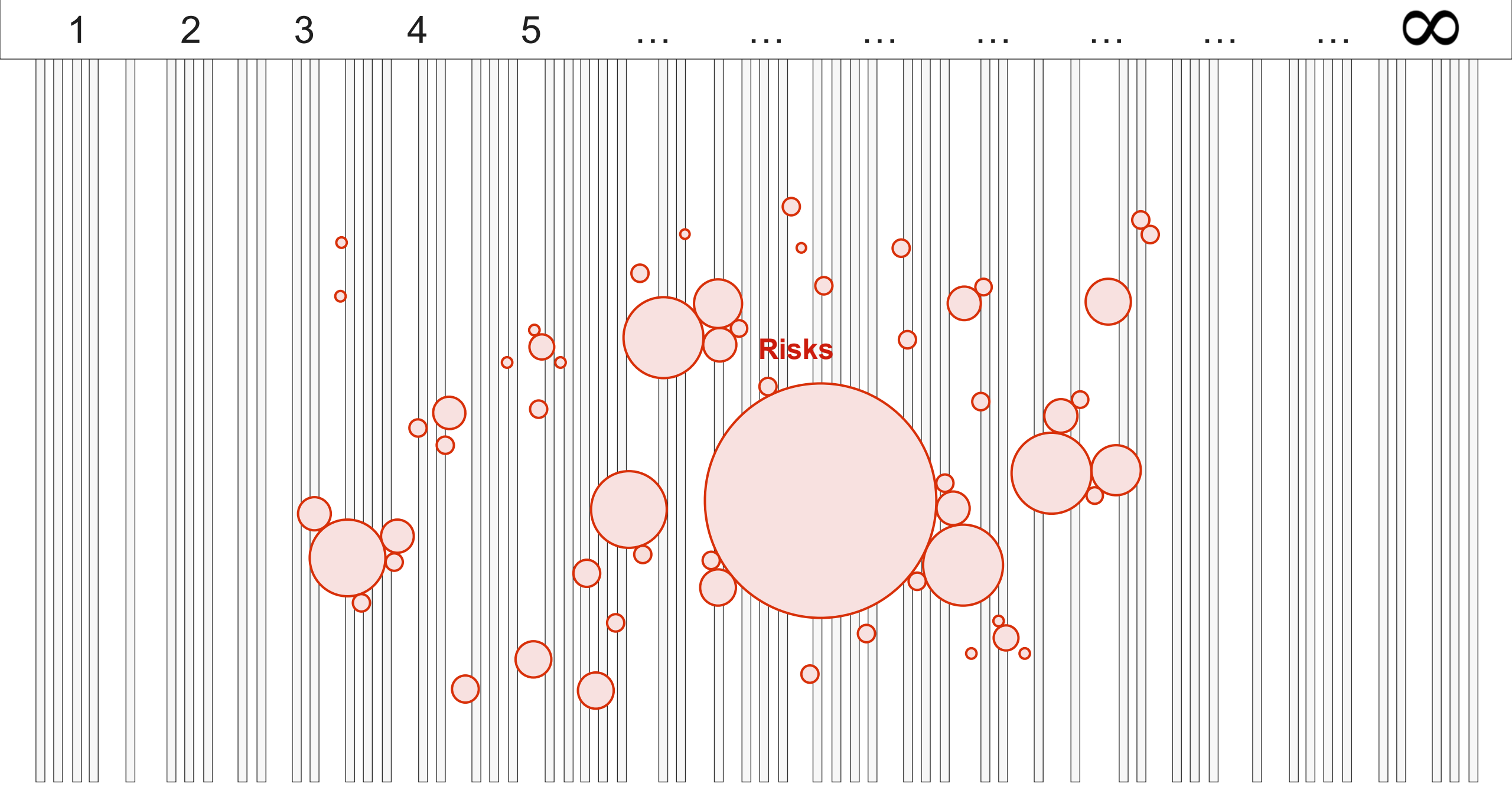

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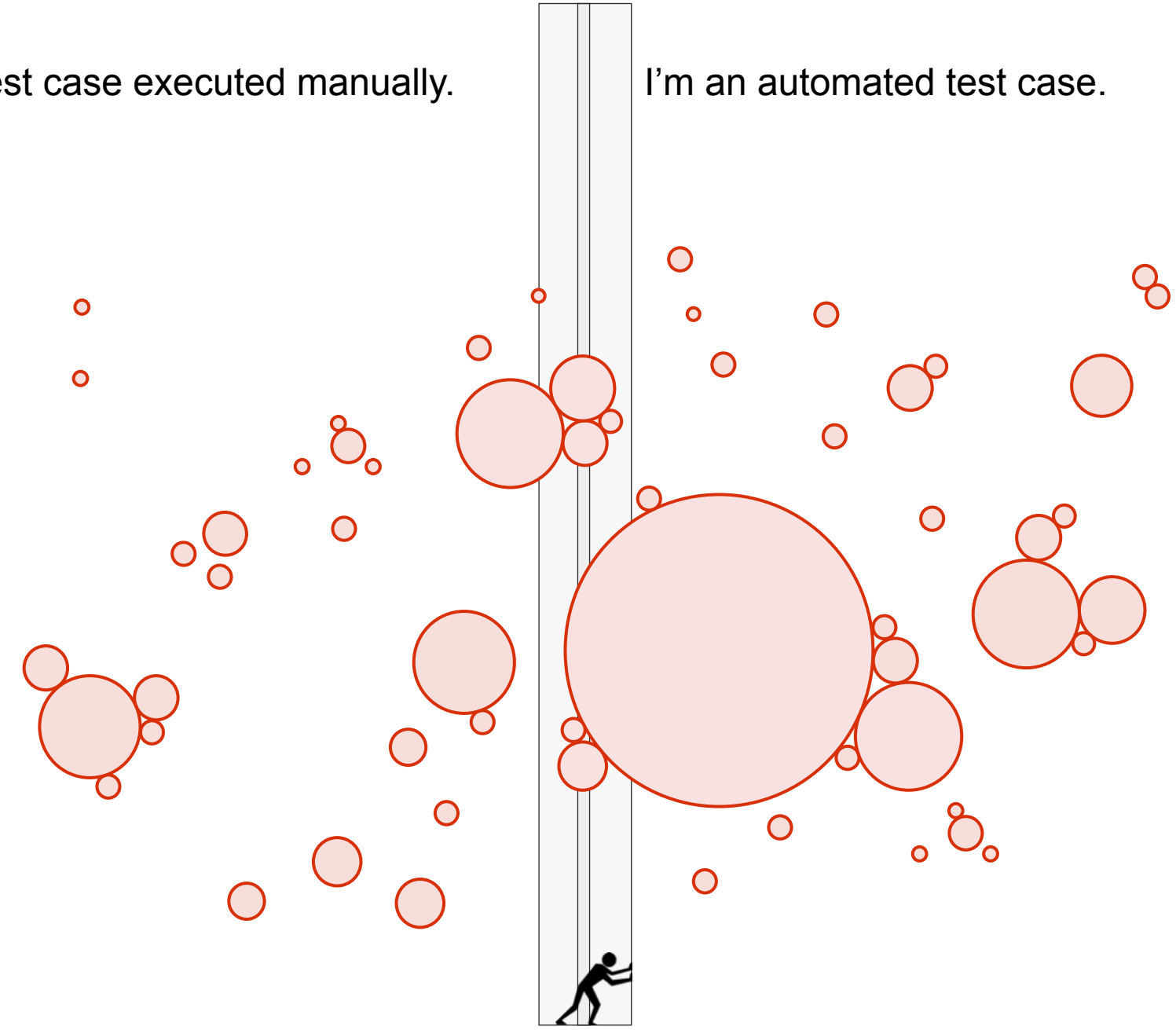
I’m the same test case executed manually.

I’m an automated test case.



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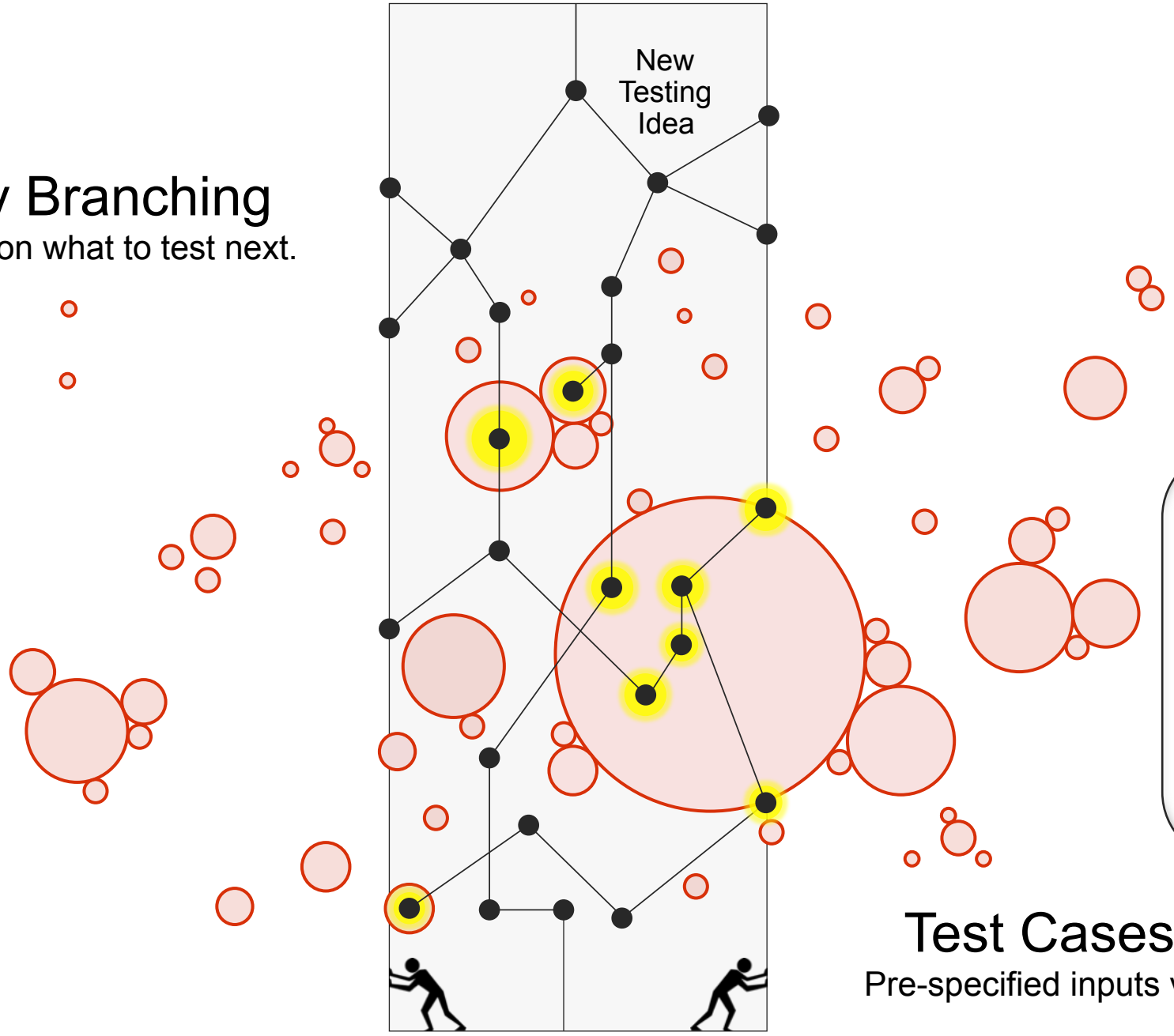
Exploratory Branching

The art of deciding on what to test next.



Plan as you test!

Story-Based

Motivating

Credible

Test Cases vs. Scenarios

Pre-specified inputs vs. hypothetical situation

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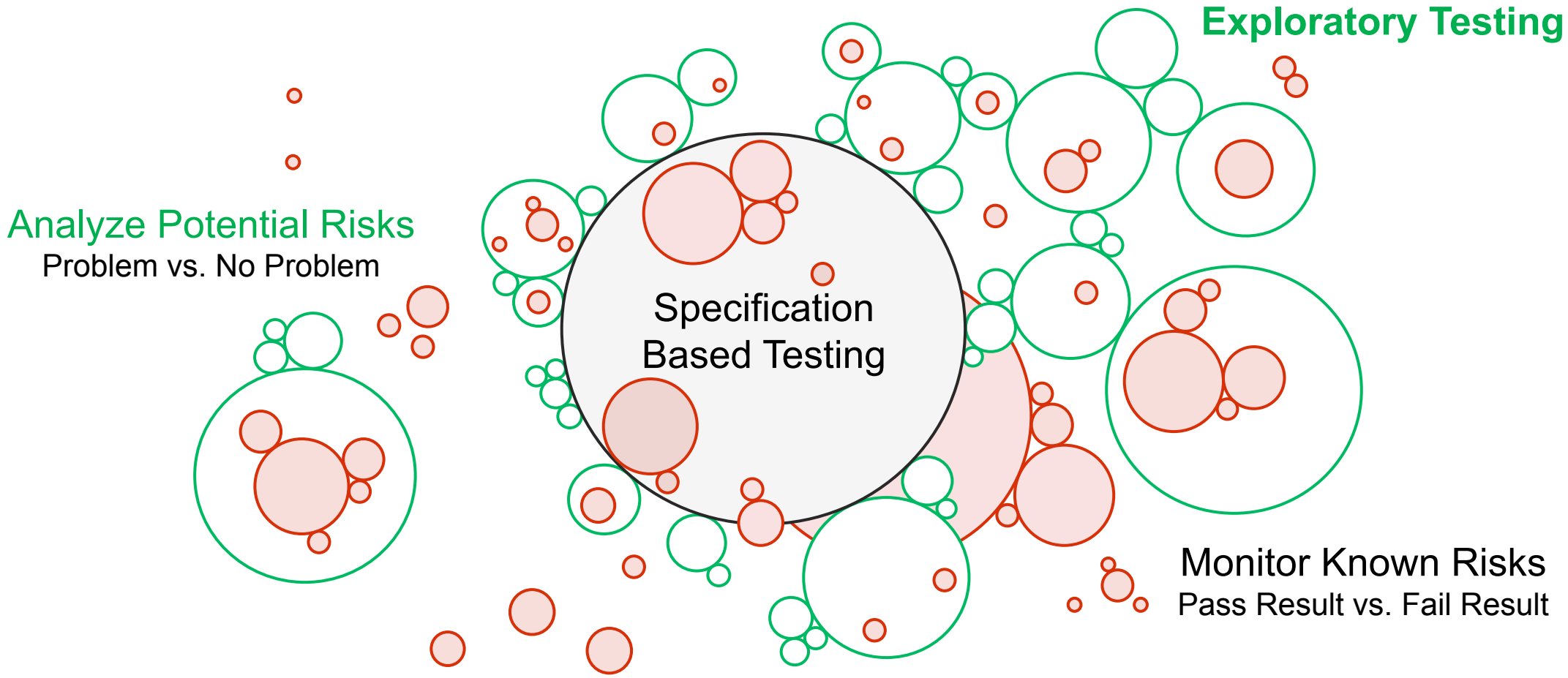

*That's an illustration. Don't confuse it with reality.

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Exploratory Testing

« Testing as performance »

Intelligent Testing

Create new test ideas based on what you have learned

Analyze Potential Risks

Focus on the things you don't know

High Information Value

Learn something new

Low Risk Coverage

Hard to scale continuously because it relies on humans

Problem Detector

Formal Testing

« Testing as artifact creation »

Mechanical Testing

Process pre-defined data in pre-designed steps

Monitor Known Risks

Confirm what you already know (measurable things)

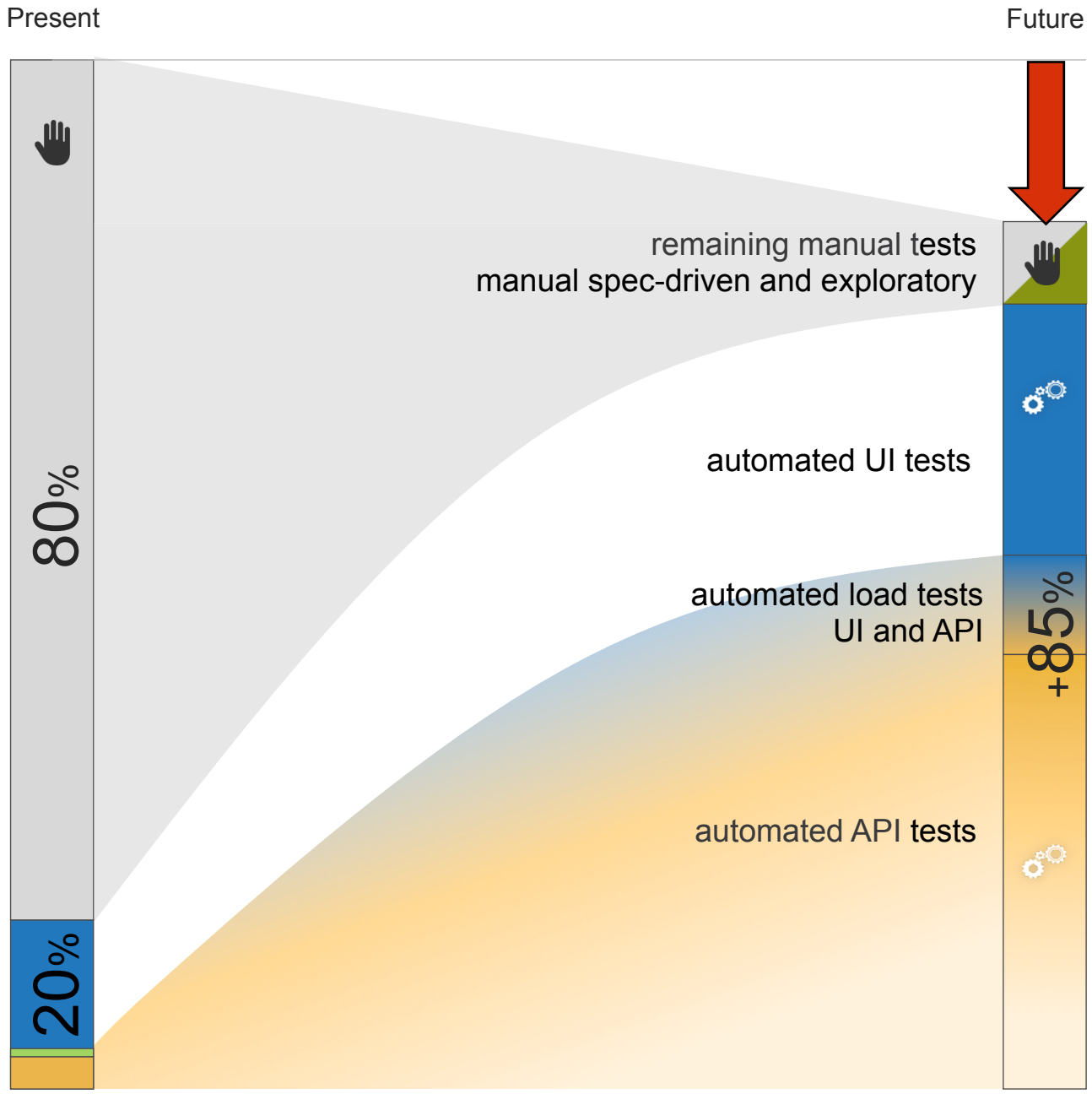
Low Information Value

Repeat what you have already learned

High Risk Coverage

Easy to scale because it's parallelizable

Change Detector



Automate

Automating the automation framework for UI and API.
Model-based Test Automation (MBTA)

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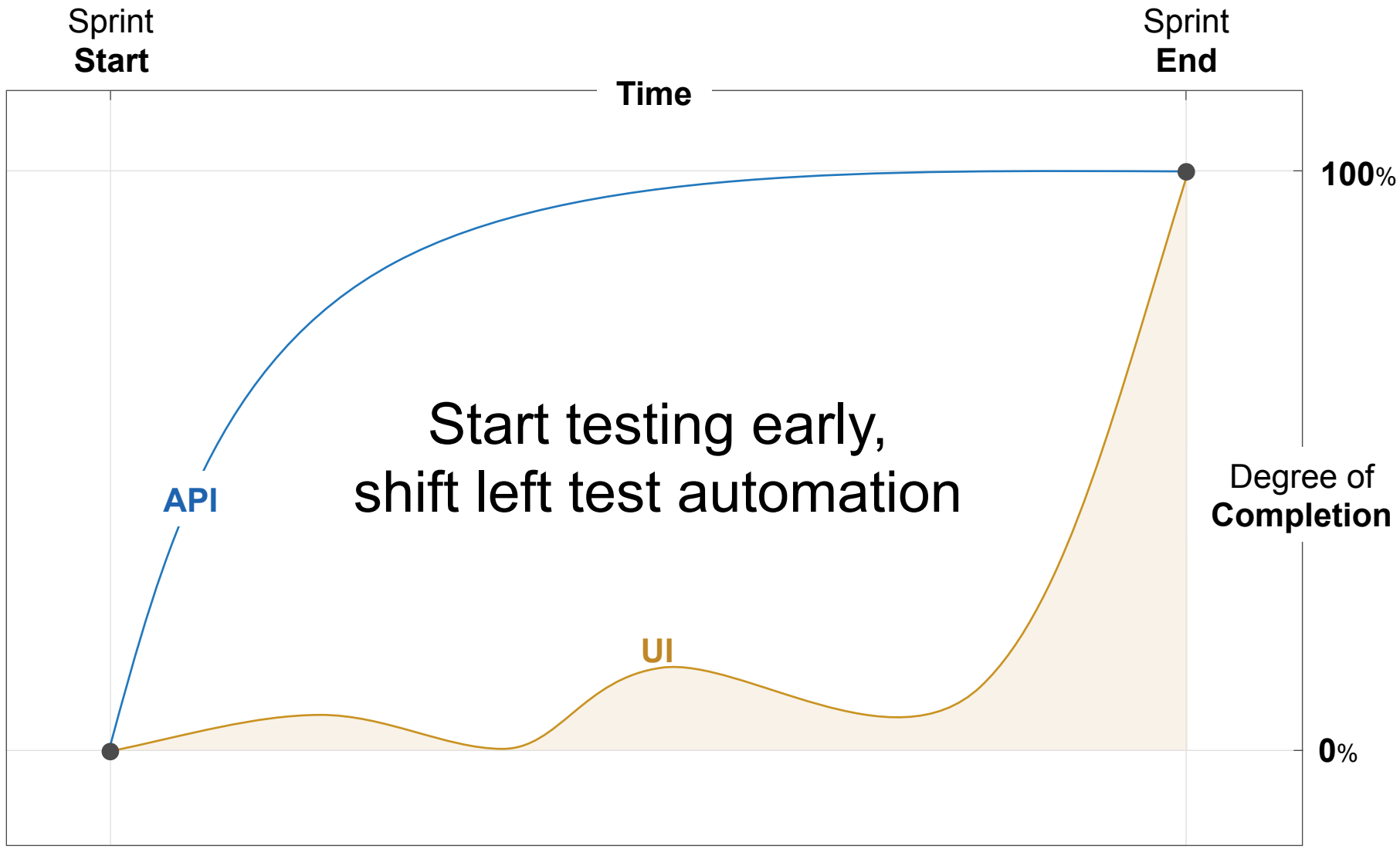
Efficiency
Gain

+4x
Creation

+6x
Maintenance

+20x
Execution



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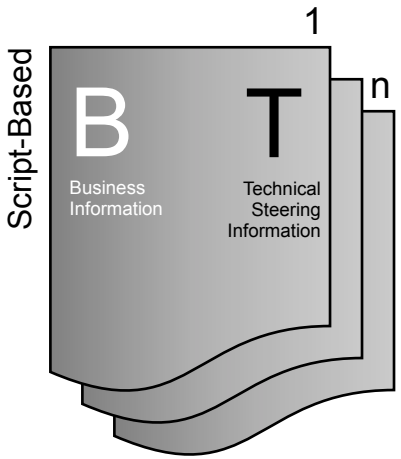
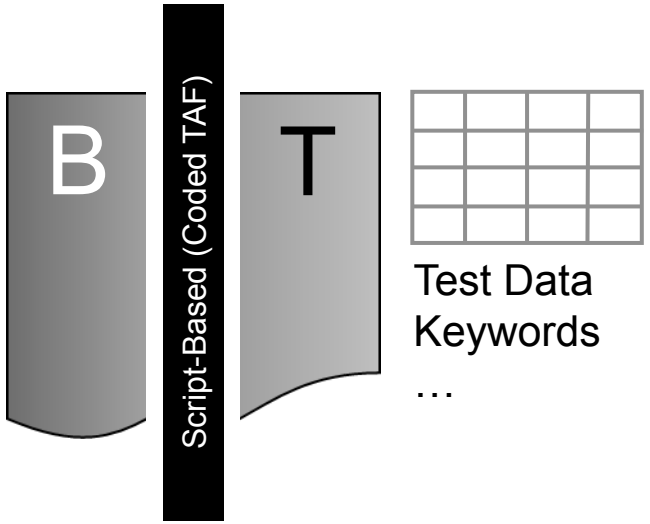
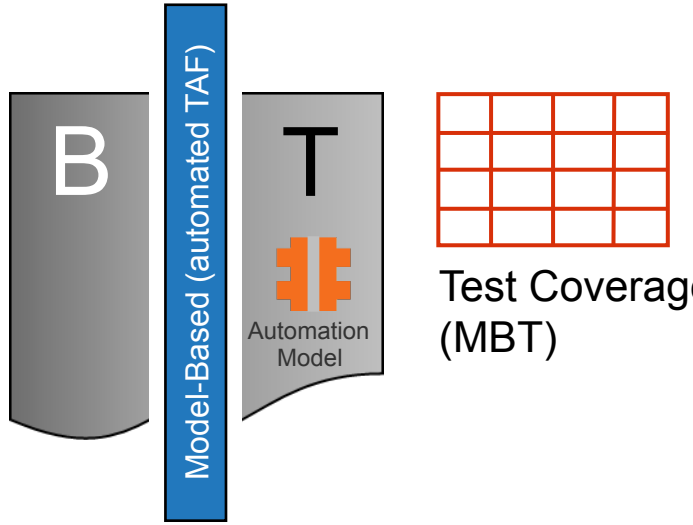
Record Replay

Test Automation Framework (TAF)

Model-Based Test Automation (MBTA)

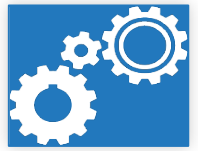






B and/or T change requires re-recording.

Manually, coded framework.



Automating the automation framework.

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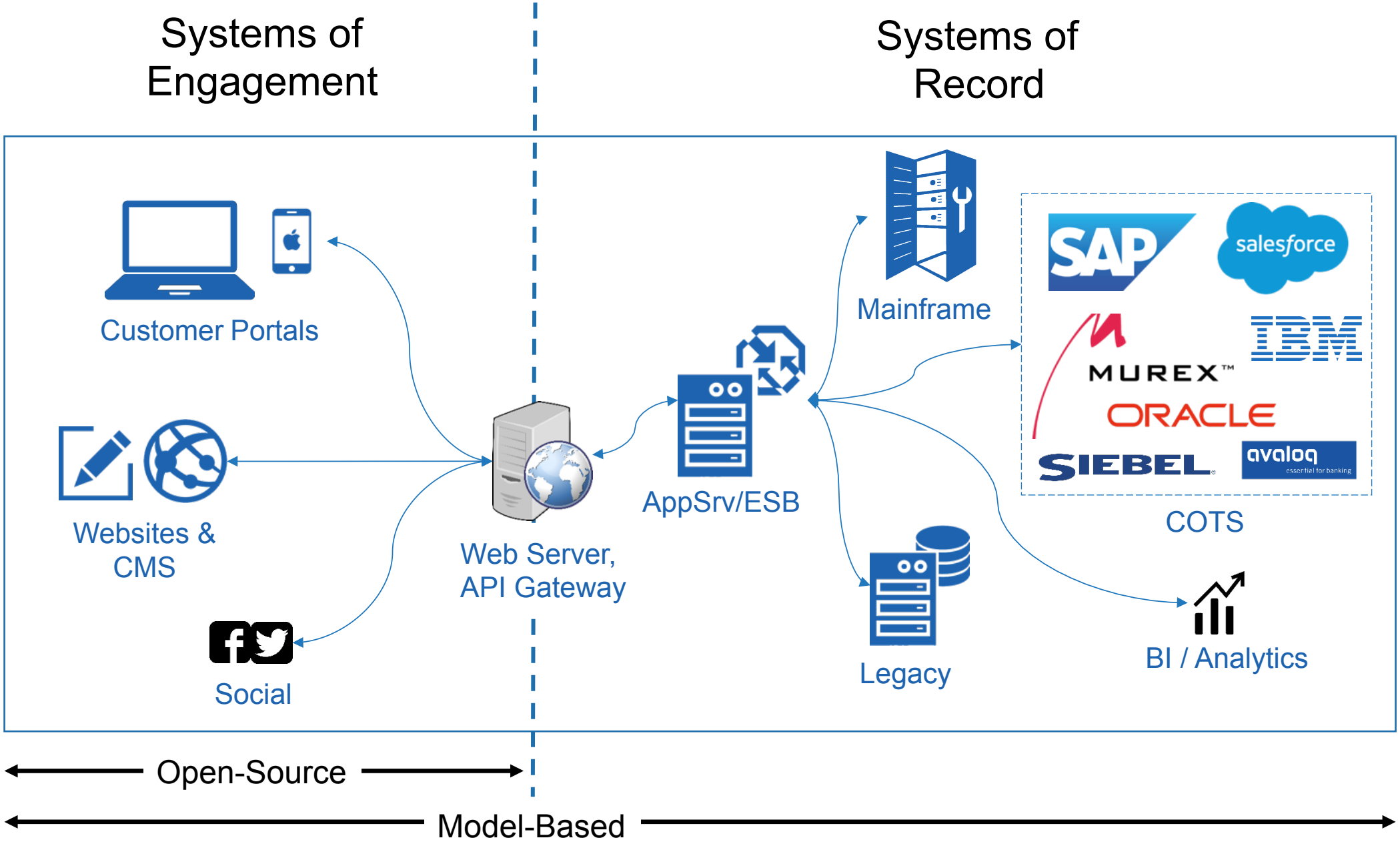

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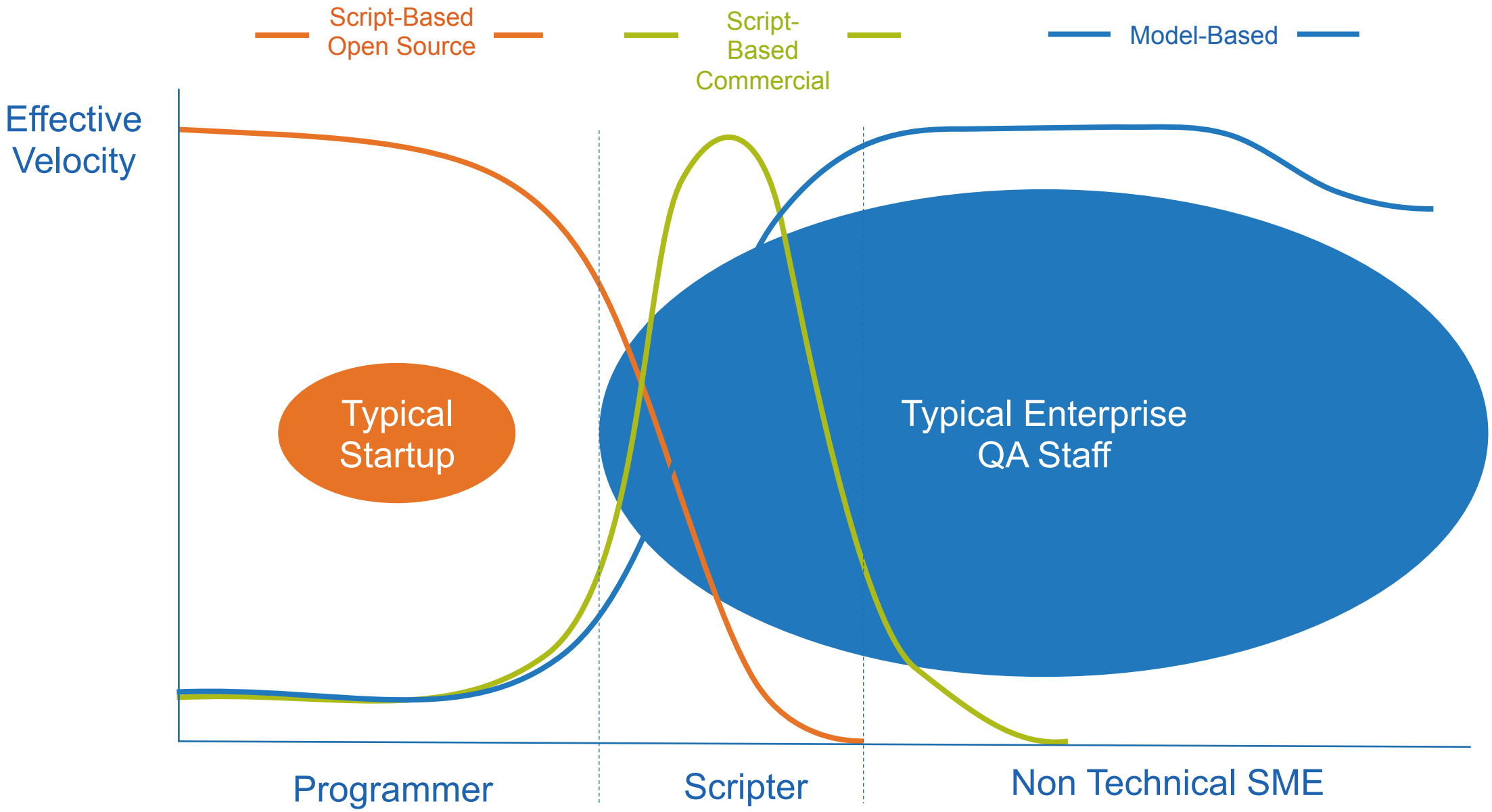

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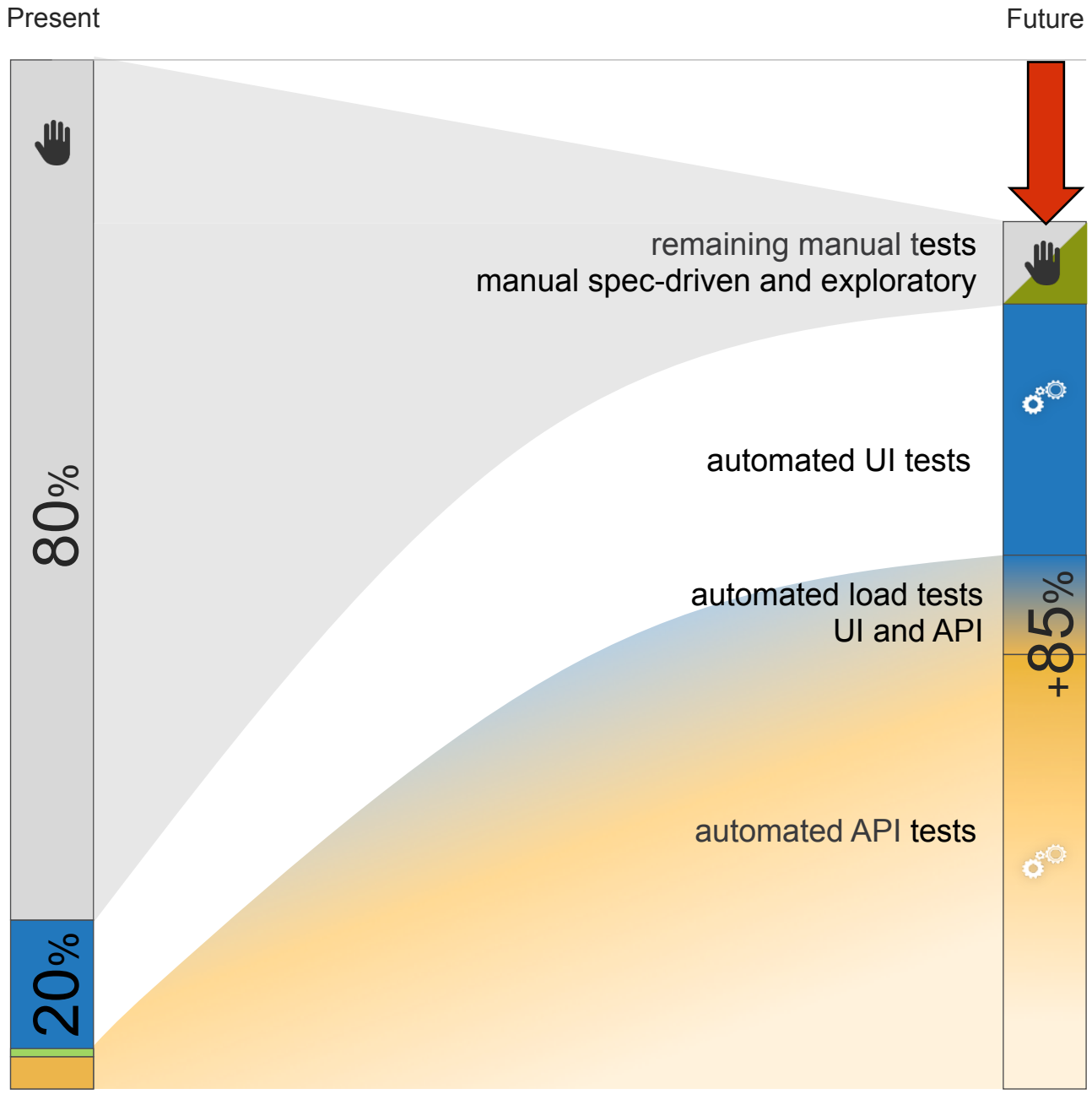

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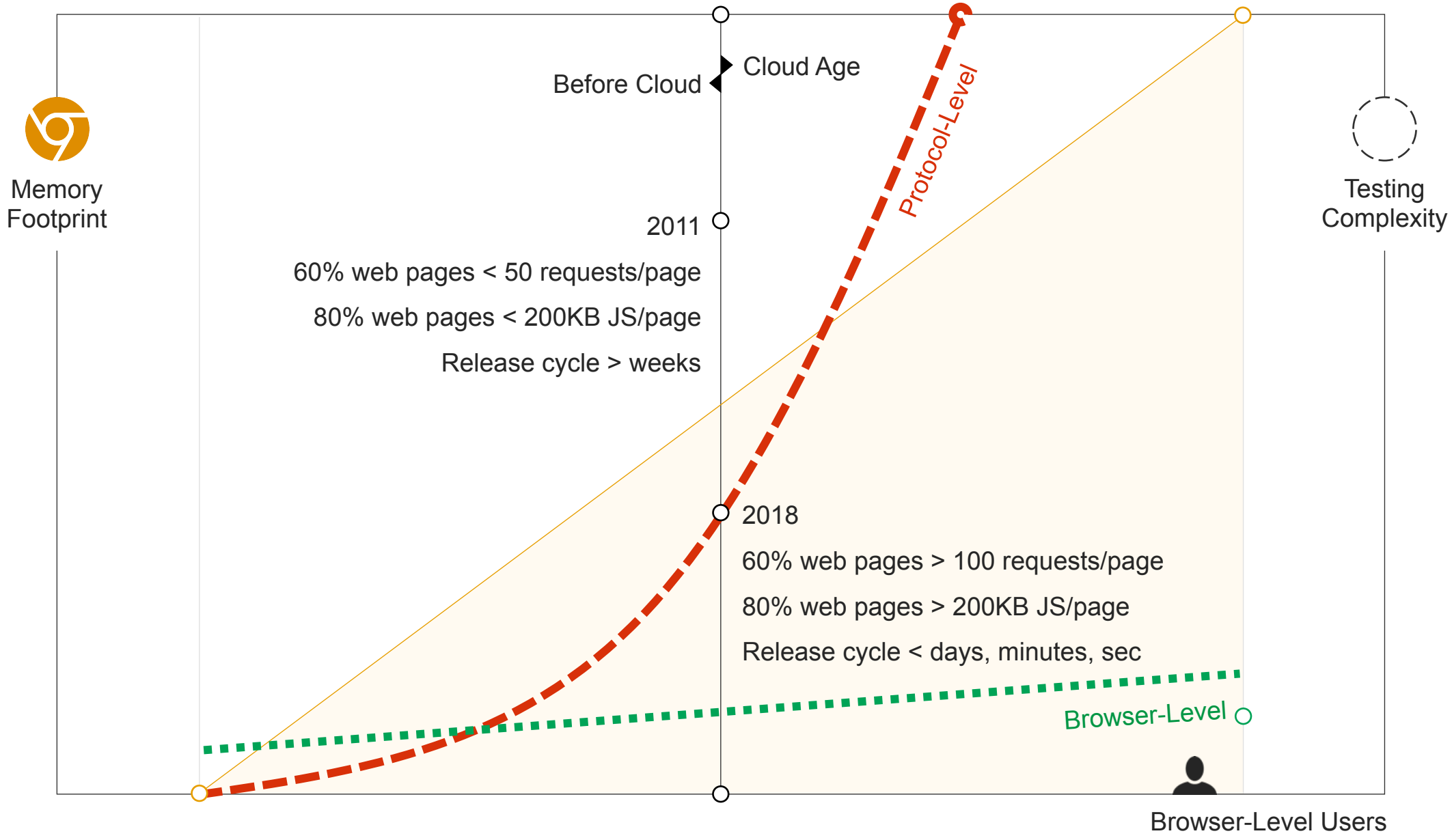

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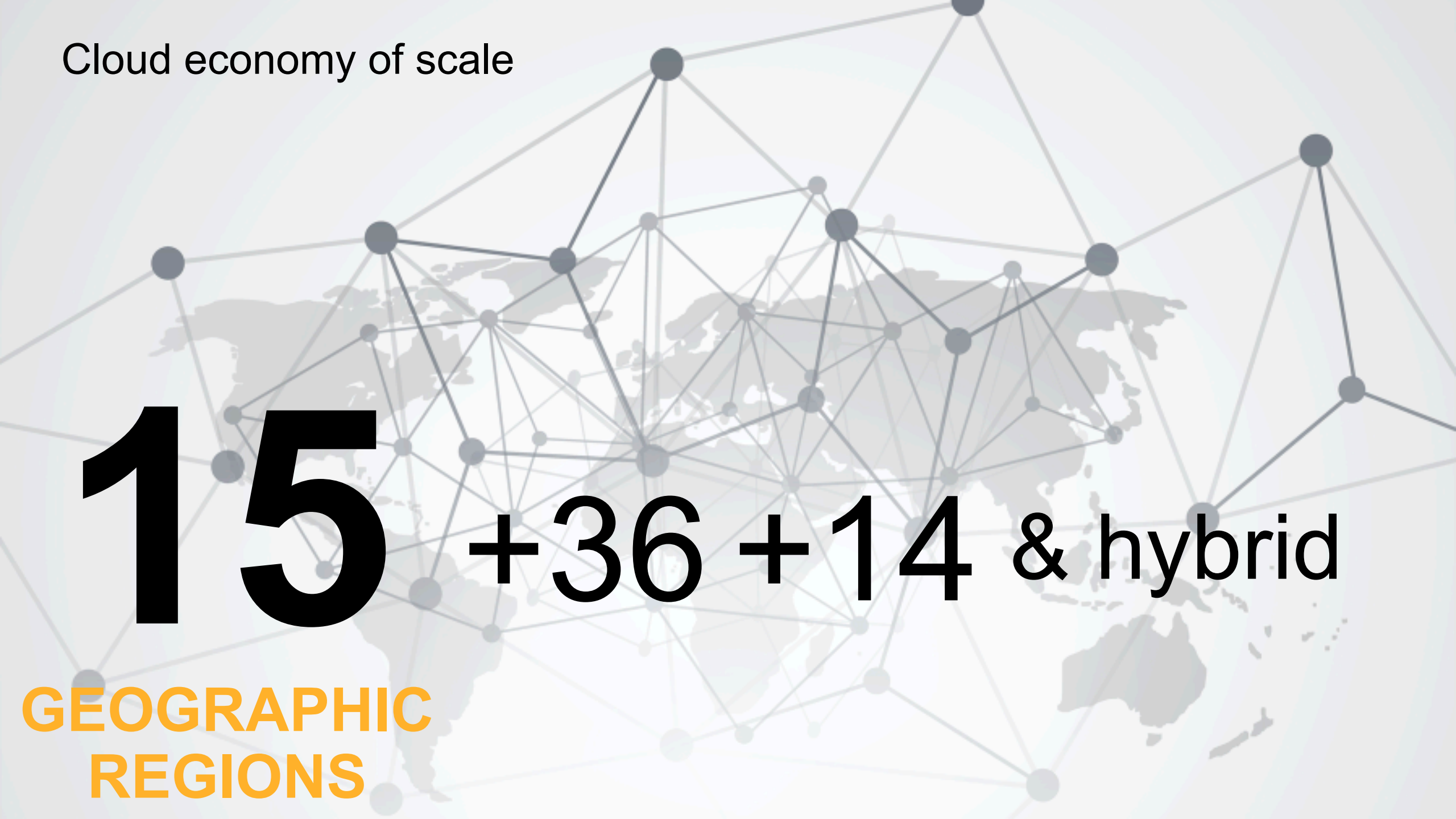
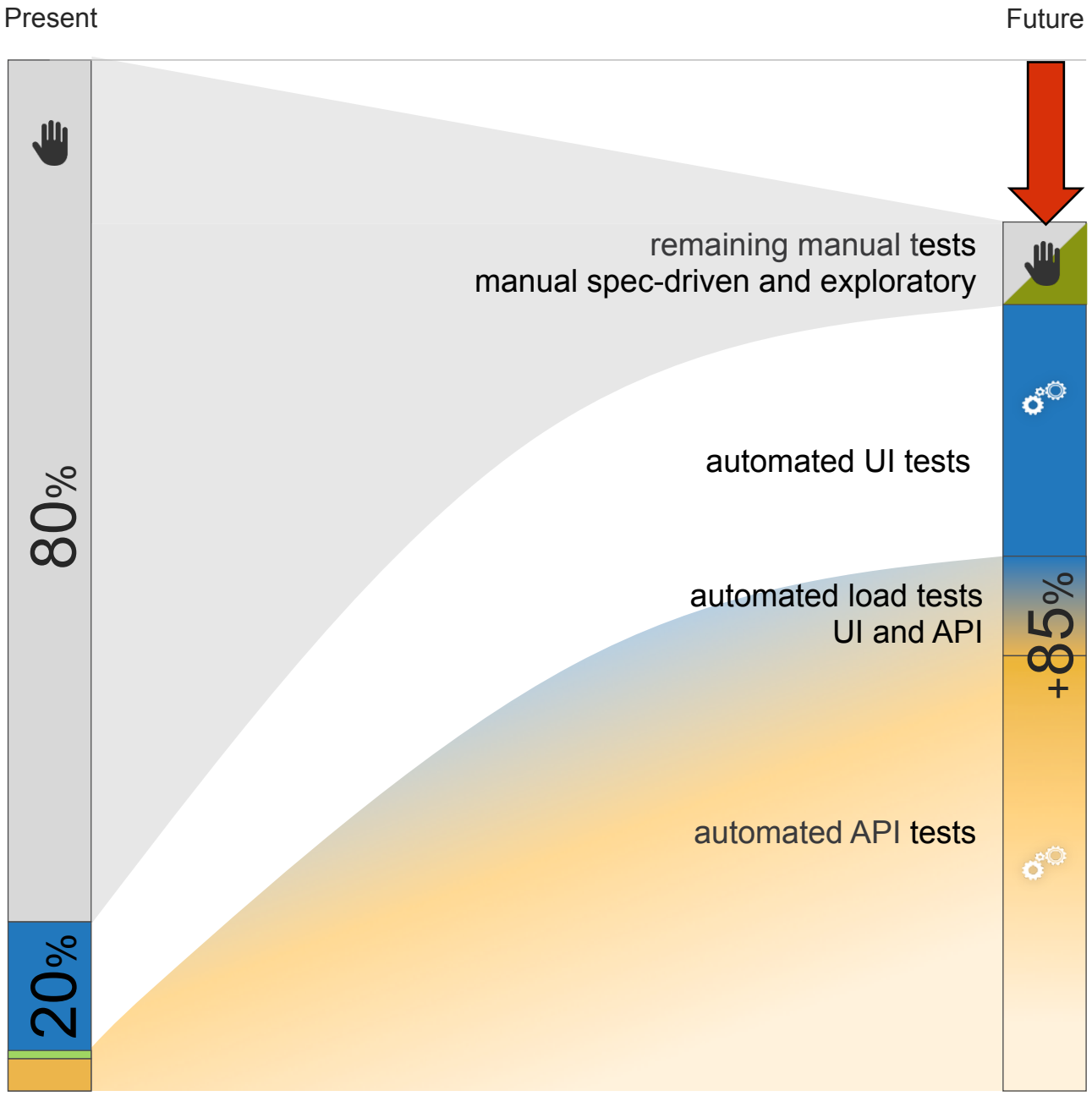
Cloud economy of scale



15 +36 +14 & hybrid

GEOGRAPHIC REGIONS



Manage

Increase the testing window.
Test-Driven Service Virtualization

Provide matching test data in time.
Stateful Test Data Management

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Testing
Present

18

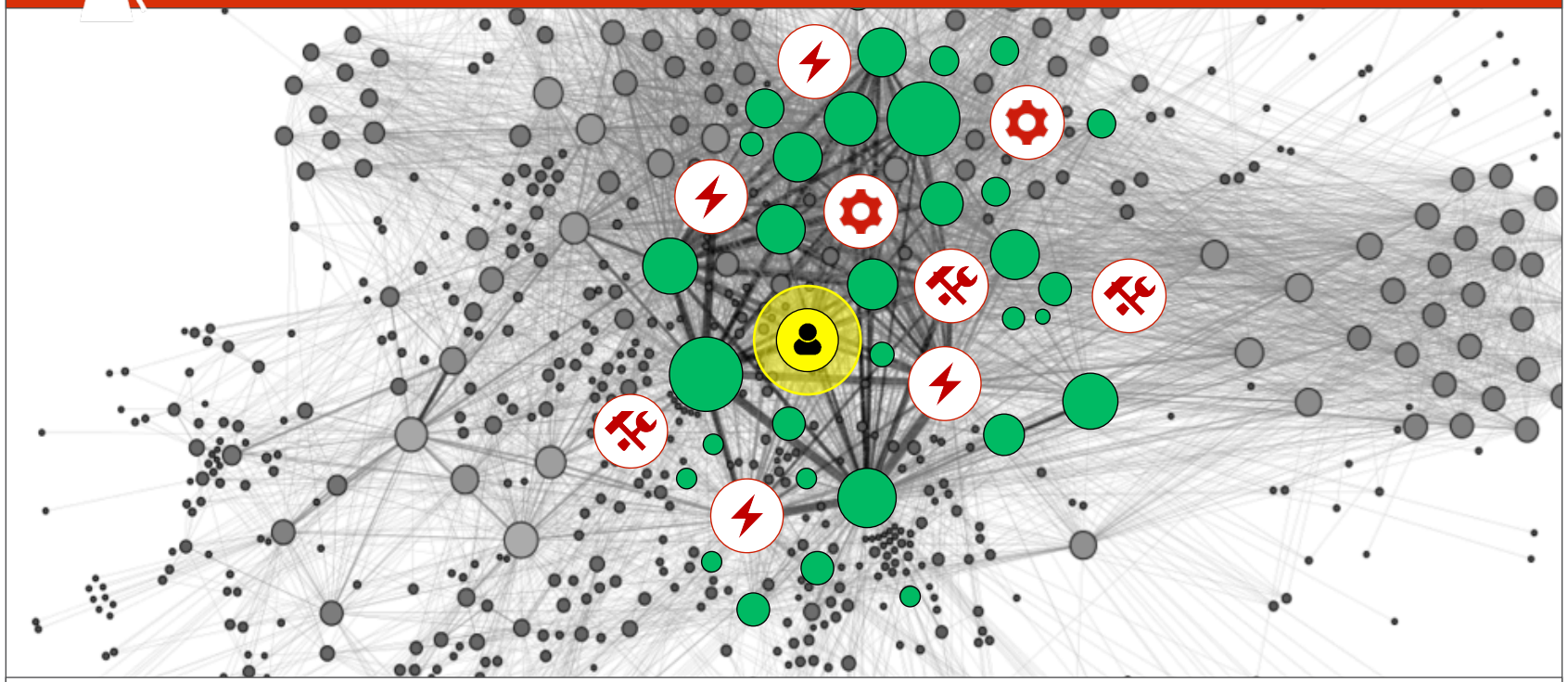
Average # of systems with unrestricted access

96

% of testers have restricted test lab access

On average, organizations require access to 33 systems for development or testing.

Welcome to the tester's hell.



Enterprise system landscapes are alike disease gene networks.

*voke, **market snapshot report** on service virtualization - 2012

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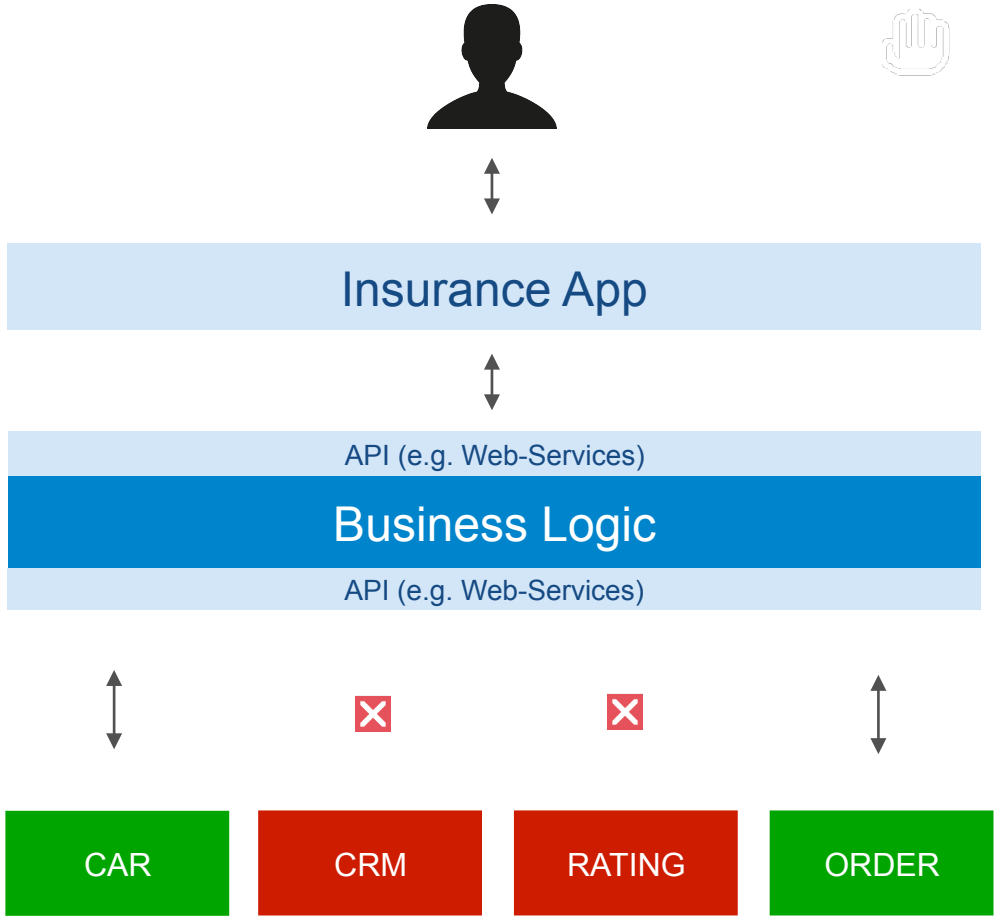

Instable or not available applications

Test Data search & preparation

(expensive) 3rd party or Cloud based services

Decoupled, outsourced Development & coordinated Deployment, multiple Vendors

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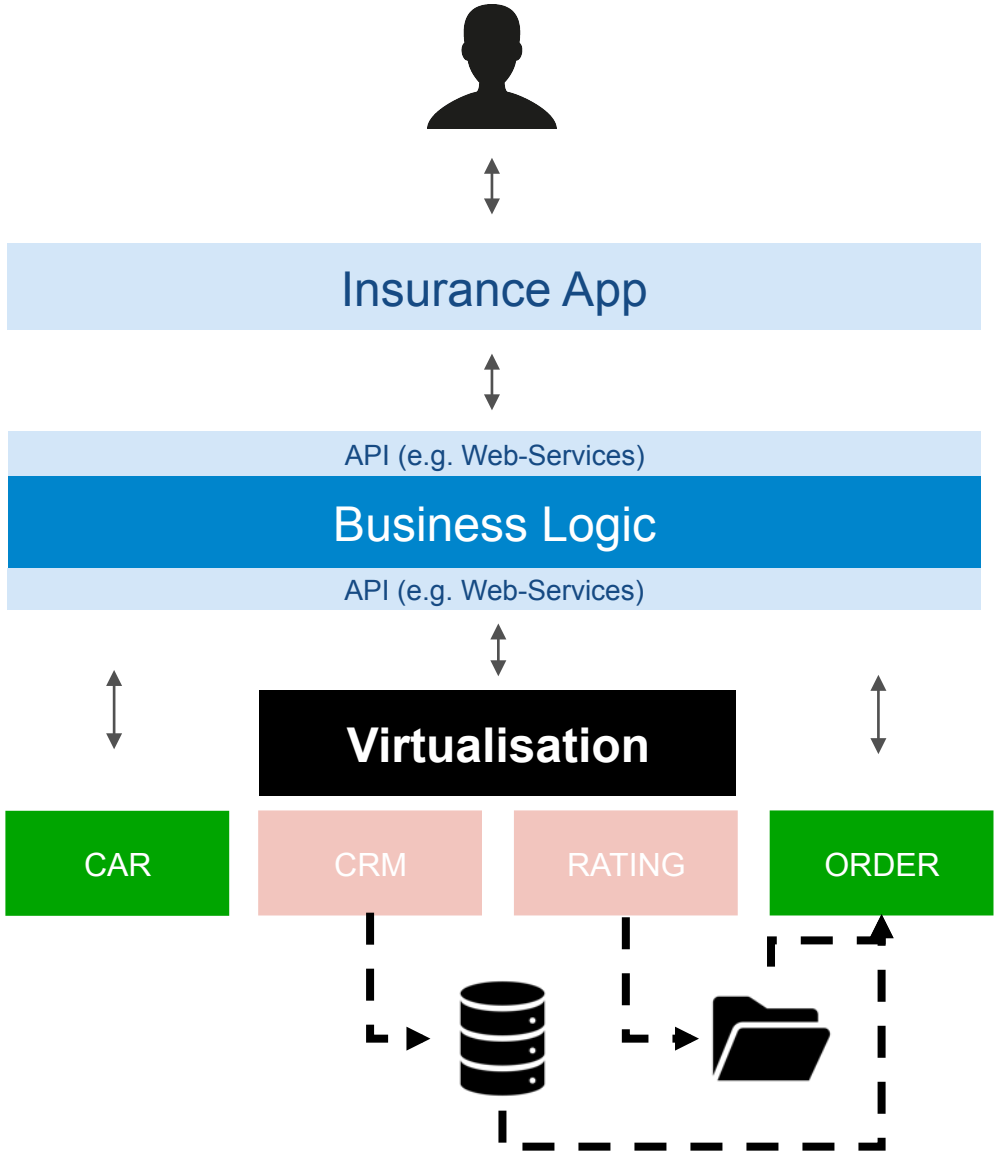

Virtualising systems
replicates
system complexity

Virtualising components
creates
inconsistencies

Virtualisation is not a fallback plan

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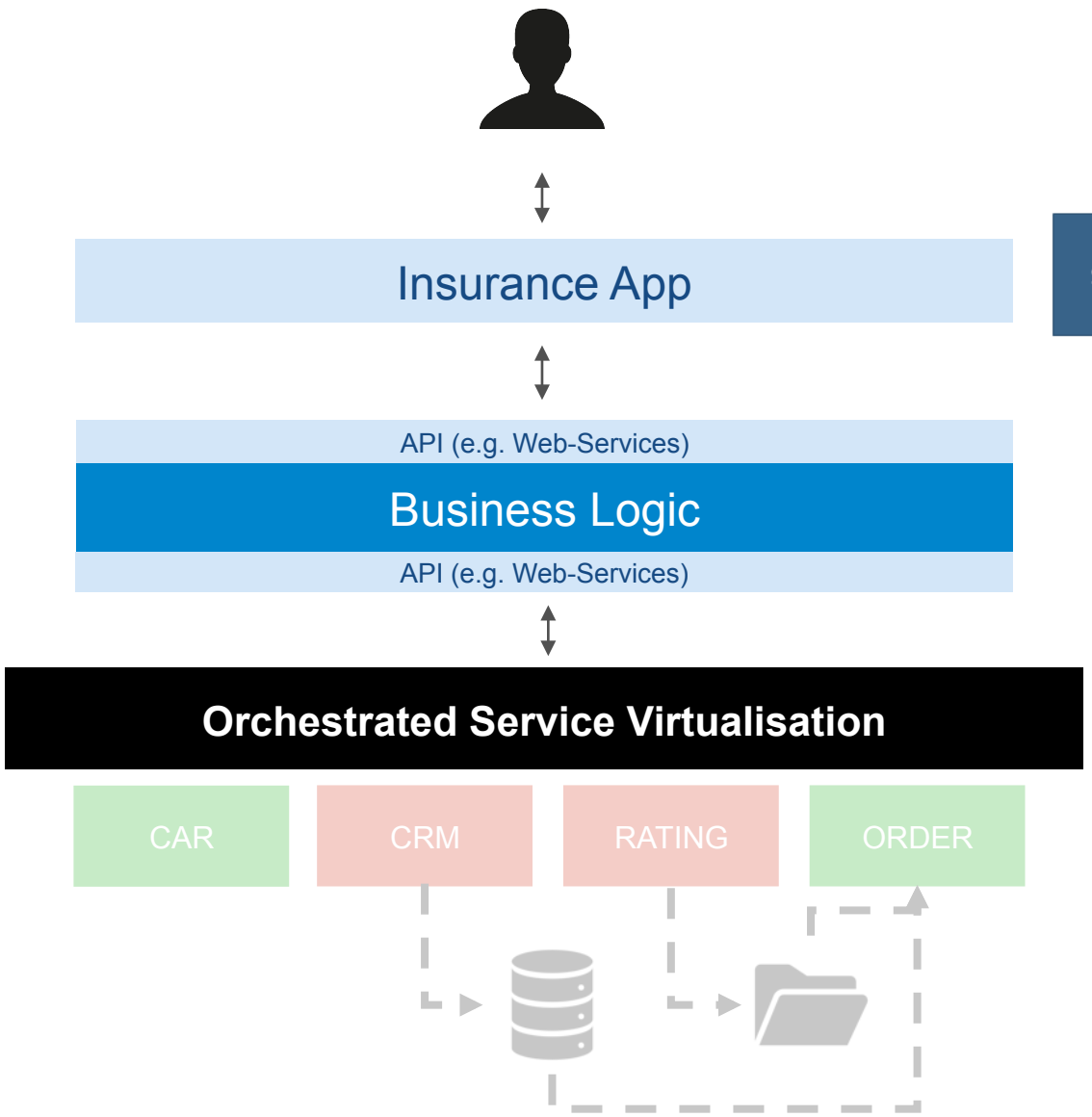

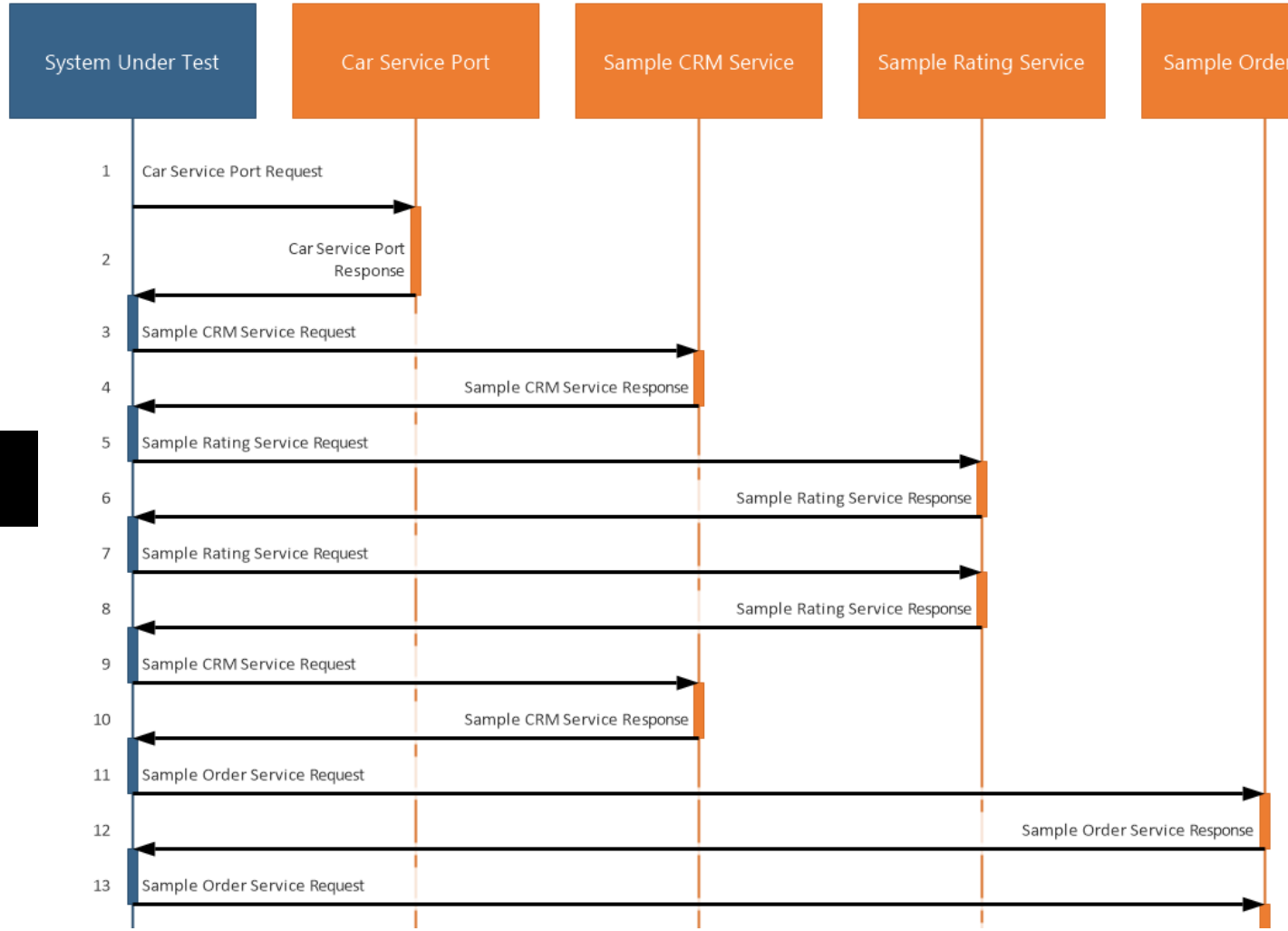

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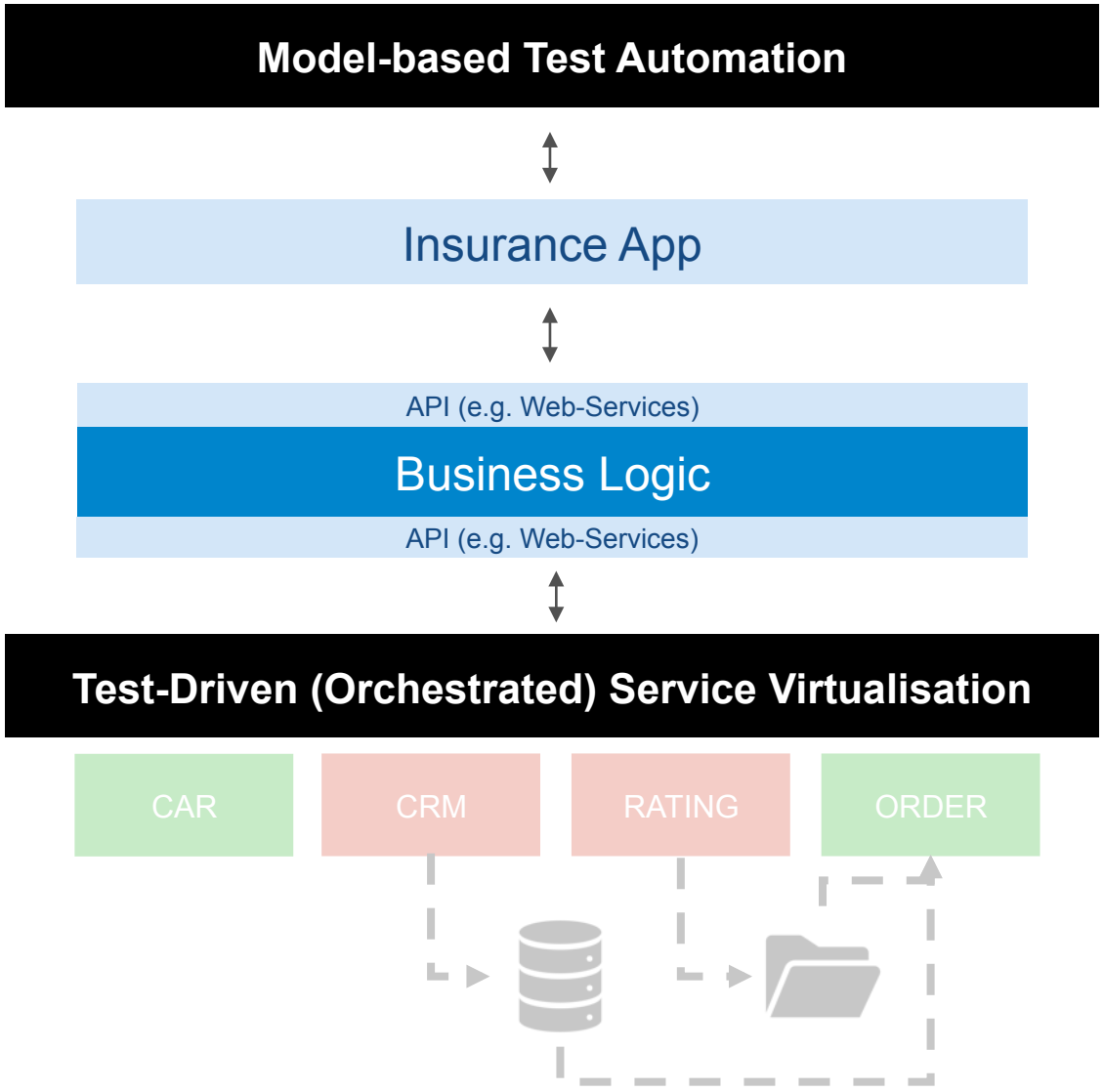

Virtualising for automated tests
eliminates
system complexity

Virtualising for automated tests
solves
inconsistencies

Virtualisation is not a fallback plan,

it's the first line of defence

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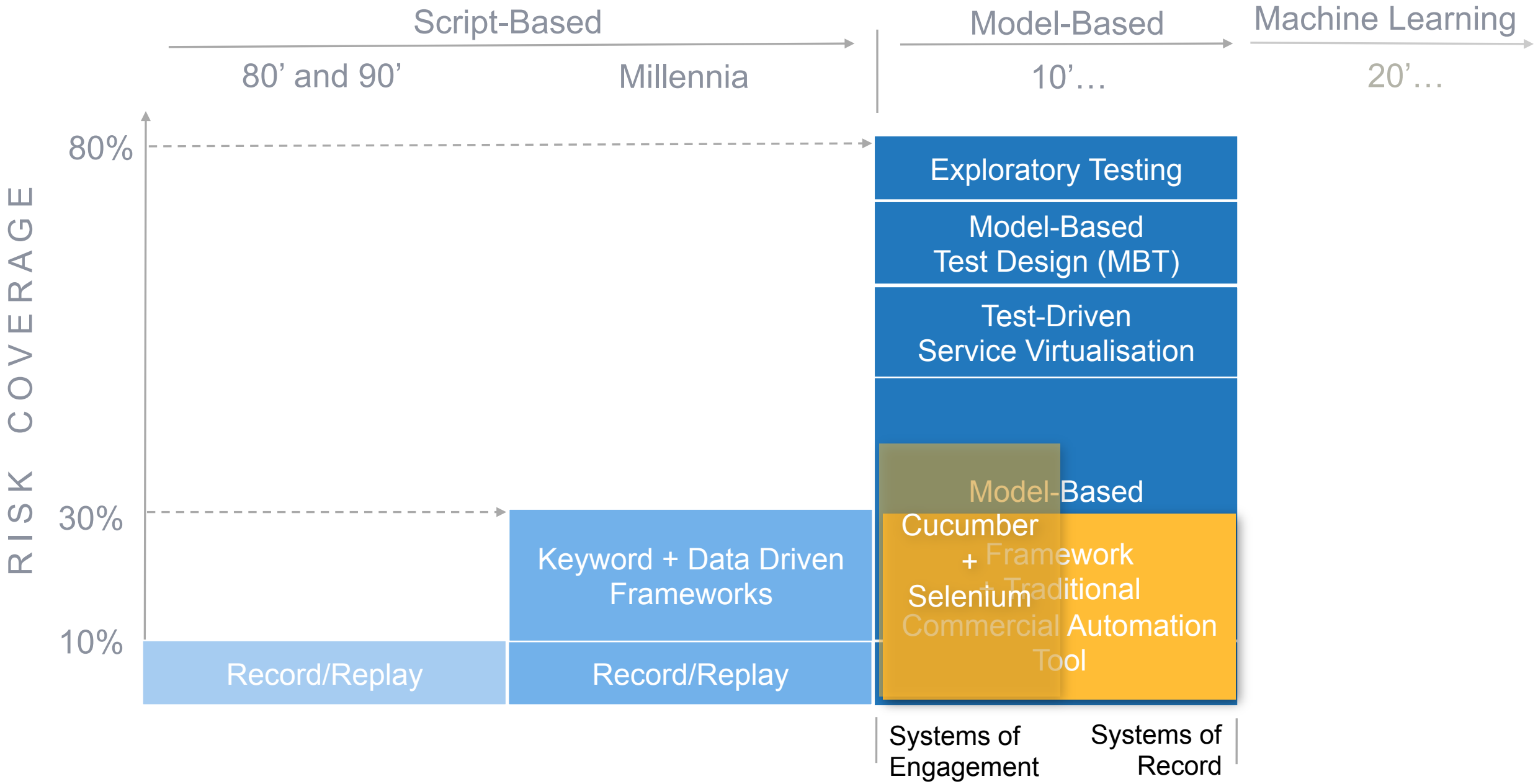

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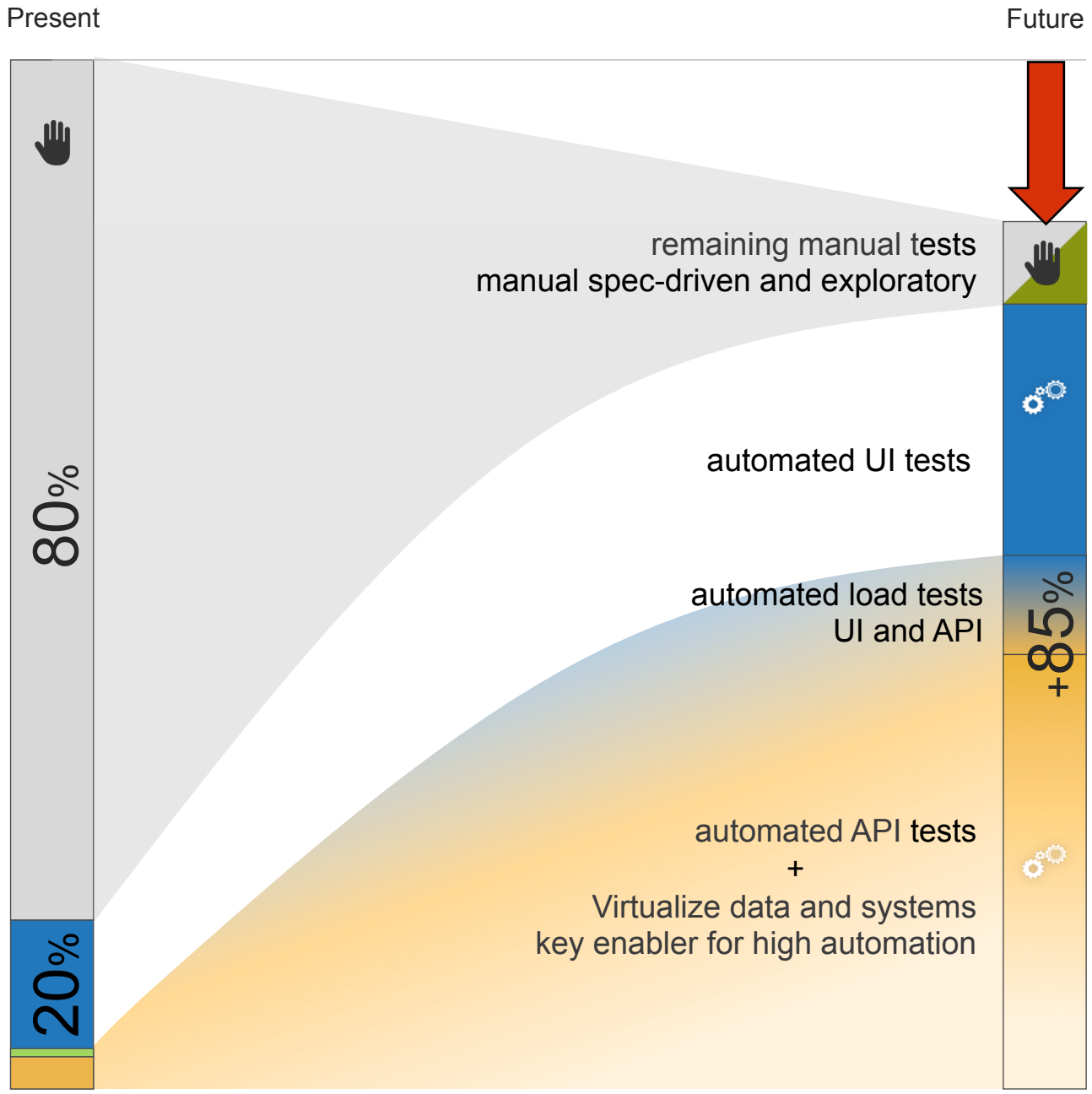

Optimize

Higher coverage. Fewer tests.
Model-based Test Coverage Design (MBT)

Explore

Test the unknown.
Session-Based Exploratory Testing

Automate

Automating the automation framework for UI and API.
Model-based Test Automation (MBTA)

Manage

Increase the testing window.
Test-Driven Service Virtualization

Provide matching test data in time.
Stateful Test Data Management

Integrate

Automate build to release process.
Continuous Integration/Testing/Delivery (CI, CT, CD)
Distributed Execution

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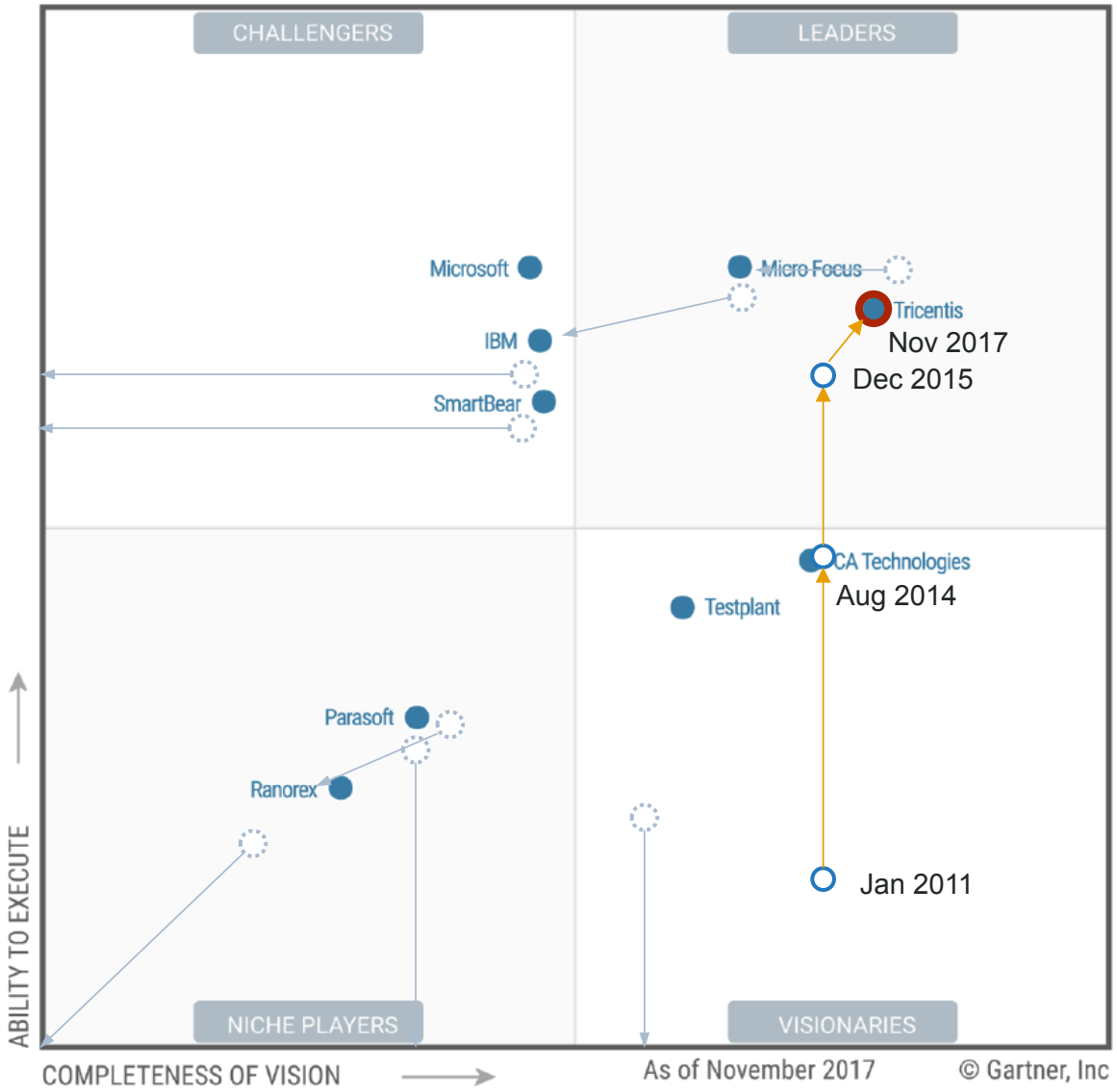
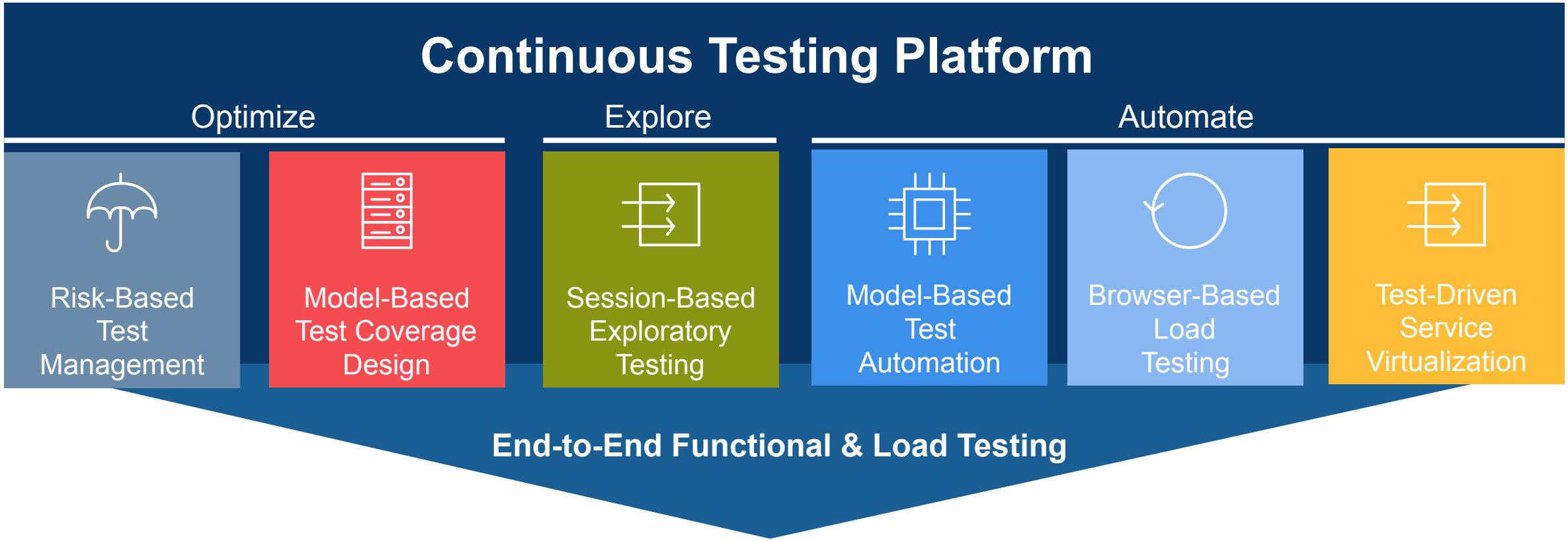
Gartner®



"It should be considered by enterprises that have struggled to make test automation work, and by those seeking to support agile continuous automation practices."

The Tricentis Tosca X-Factor



2X
Risk Coverage

2-3X
Release Speed

30-40%
Cost Reduction

10X
Compared to other testing tools.

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APAC fast-growing customer footprint

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CTMM

Continuous Testing Maturity Model

Most enterprise customers are on level M1 when they decide for Tosca.

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