REMOTE™
BY DESIGN

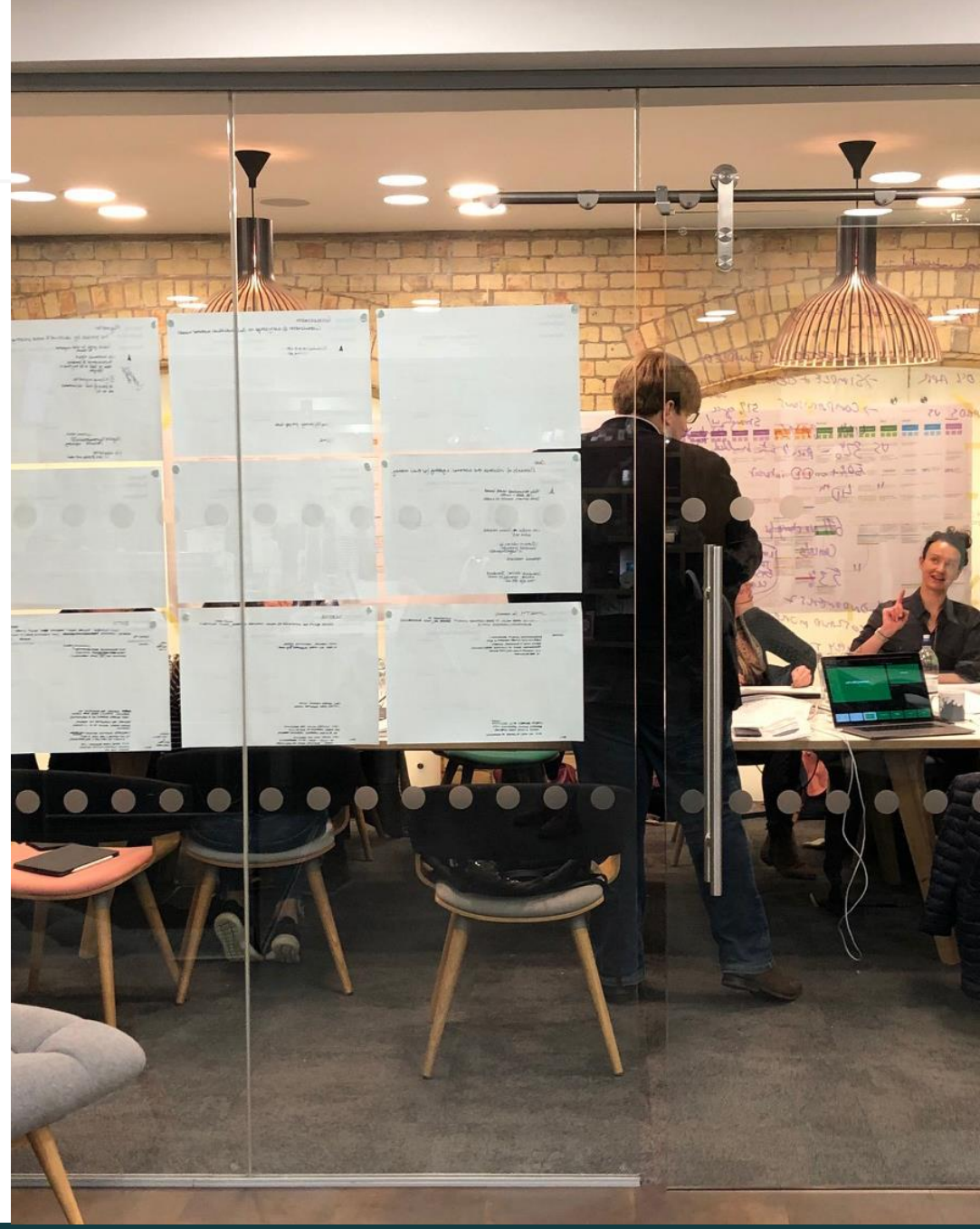
Testing as a Service

May 2020

<epam>

Testing As a Services: Agenda

1	OVERVIEW & BENEFITS
2	APPROACH, KPI'S & DELIVERABLES
3	TEAMS & TIMELINES
4	ASSUMPTIONS AND NEXT STEPS
5	APPENDIX – SUCCESS STORIES & PRACTICE OVERVIEW



Testing as a Service: Flexible Staffing, Fast Execution, Competitive Pricing

Testing-as-a-Service allows you to buy flexible capacity for executing manual test cases or writing test automation scripts

- Rather than contracting for full-time project resources, you purchase execution capacity
  - Use capacity as required over the course of a month, and pay only for what you use (minimums apply)
  - Testers work in parallel, speeding execution times
  - Significant rate savings over contracted resources
- A testing manager is included with testing-as-a-service fees
  - Your EPAM testing manager is the single point of interface with the project and manages all staffing and output
- Testing-as-a-Service complements your existing testing efforts, providing extra capacity when you need it most
  - At release time or the end of a sprint
  - To reduce your automation backlog
  - During UAT phases

Testing as a Service at EPAM: An Overview

FLEX TESTERS

EPAM EMPLOYEE TESTERS

- Badged, secure EPAM employee testers
- Focused on test case execution & Automation scripting
- Contract for capacity, with up to 2x spikes
- Pay for what you use

PROJECT MANAGEMENT

DEDICATED TEST MANAGER

- Interfaces with project, ensures staffing, and manages testers' output
- Fractional time based on project size

OPTIONAL CORE TEAM

TEST MANAGER | **QA ARCHITECT** | **AUTOMATION LEAD** | **FUNCTIONAL TESTER** | **AUTOMATION ENGINEERS**

For new projects or projects with limited testing capabilities, we offer dedicated team members as needed.

Testing-as-a-Service: Scope & Benefit

- Reduce **defects in production** – improve end-customer user experience
- Decrease reliance on manual tests by automating portions of the testing program
- Utilizing EPAM's agile approach, meet **regression testing phases** augmenting testing capacity
- Improve & speed up **UAT phase** results & meet delivery timelines
- Help reduce testing **costs**

APPROACH, KPIs, AND DELIVERABLES

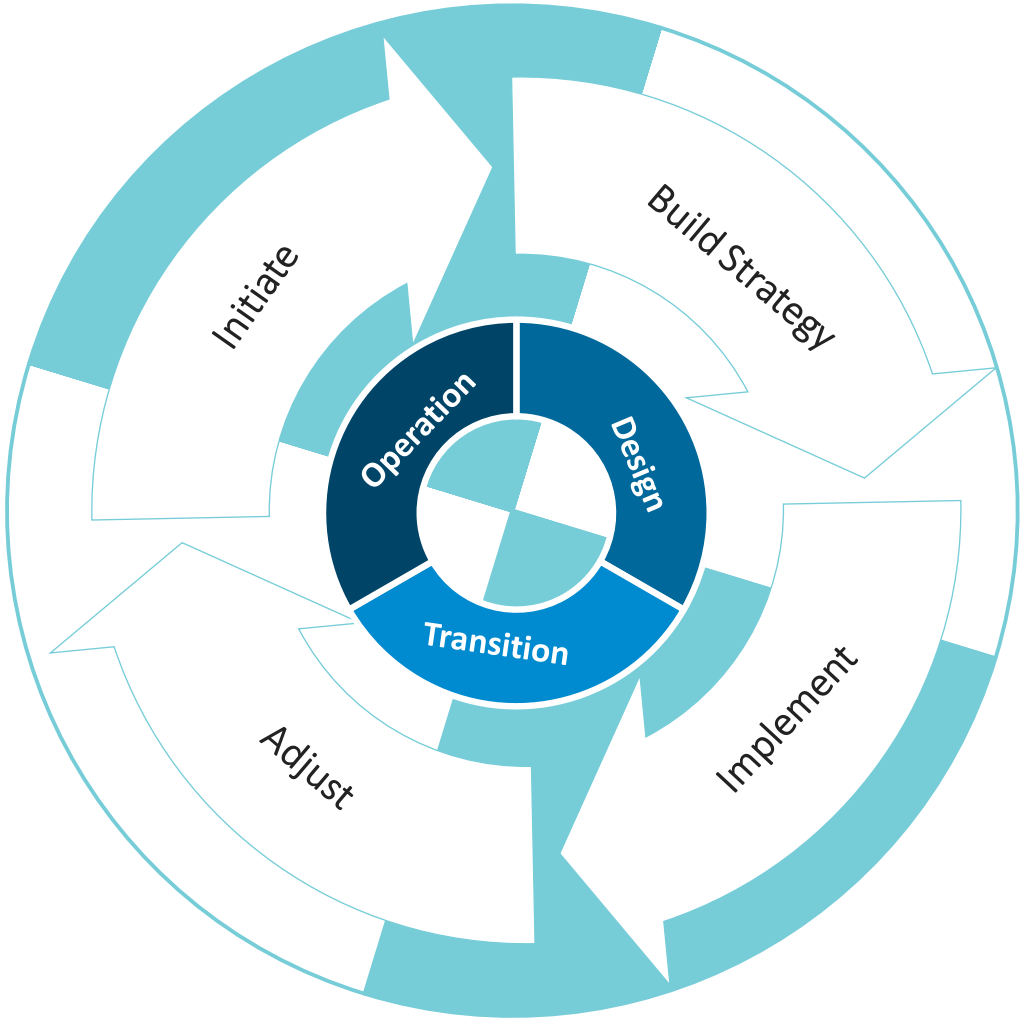
Managed Testing Services: Approach

STEP 1

- Set Business Objectives
- Assess Current State
- Prioritize tests to be covered

STEP 2

- Define Metrics & KPI's
- Establish RACI & Governance structure
- Create testing plan & timeline



STEP 4

- Analyze trends, targets, SLAs and benchmarks
- Gather & analyze feedback from development & testing teams
- Adjust the Improvement Plan

STEP 3

- Implement Improvements based on priority
- Control adoption process
- Measure, report, and communicate the progress
- Implement integration with existing workflow tools

Managed Testing Services: Sample KPI & Metrics Driven Results

	MEASURING	DEFINITION	TARGET	MEASUREMENT WINDOW
GENERAL	Throughput (TPUT) / Productivity	Count of the number of stories delivered by the team per period	TBD	To understand and control team velocity & capacity
	Defect containment	Shows % of issues found internally before release vs number of issues found during UAT or during certain period after go-live. Must be calculated per Application.	>95%	Release testing phases and certain period test done. Shows effectiveness of the whole QA team Manual and Automation.
TESTING EFFECIENCY	Decline Rate	Quantity of “correctly” declined bugs (that means that bugs that were declined mistakenly mustn’t be taken into account) versus number of bugs “processed” by test engineers.	<15%	Release testing phases or monthly/be-weekly
	Test coverage	% of test scenarios covered by testing	TBD	Ongoing
	Test execution velocity	Number of test execution the team can perform per story point	TBD	Per selected period
TEST AUTOMATION EFFICIENCY	% of analyzed test results	% of test failed automation executed tests which were analyzed after the execution	100%	Per Test Automation run
	Automated tests stability	Represents the ratio of Test failed due to Automation framework instability.	<10%	Per Test Automation run
	Test Coverage	Shows the amount of tests automated vs target coverage.	>95%	Each Release/phase or monthly/be-weekly
CUSTOMER	Backlog Ready for Implementation Index (BRII)	Sum of story points for test cases ready for development / Average Velocity for last 2 sprints	>1.5	Avoid team idle time. Control backlog size vs team capacity
	Response time for impediments	Time spent between e-mail to client management and receiving acknowledgement.	1bday	Minimize team idle time due to impediments
	Time to resolve critical blockers	Number of business days between reporting critical issues and resolving them	3-5bday	Minimize team idle time due to critical blockers
	Requirements Stability Index (RSI)	Total number of requirements modified or added or deleted per [project;iteration;sprint])/ (Total number of requirements signed off after requirements gathering per [project;iteration;sprint]	>80%	Baseline requirements that remain unchanged in comparison to the final requirements

TEAMS AND TIMELINES

Team Composition for Pilot Core-Flex Project

- Executives
- Program Manager(s)
- Product Owners & SMEs
- Architects
- Project Managers
- Tech Leads
- Dev & QA Teams

Account Manager

DISCOVERY

- Test Manager
- Quality Architect
- Test Automation Lead

IMPLEMENTATION

CORE TEAM

- Quality Architect
- Test Manager
- Test Automation Lead
- Test Engineers (1 per app)

TESTING SERVICE TEAMS (FLEX CAPACITY)

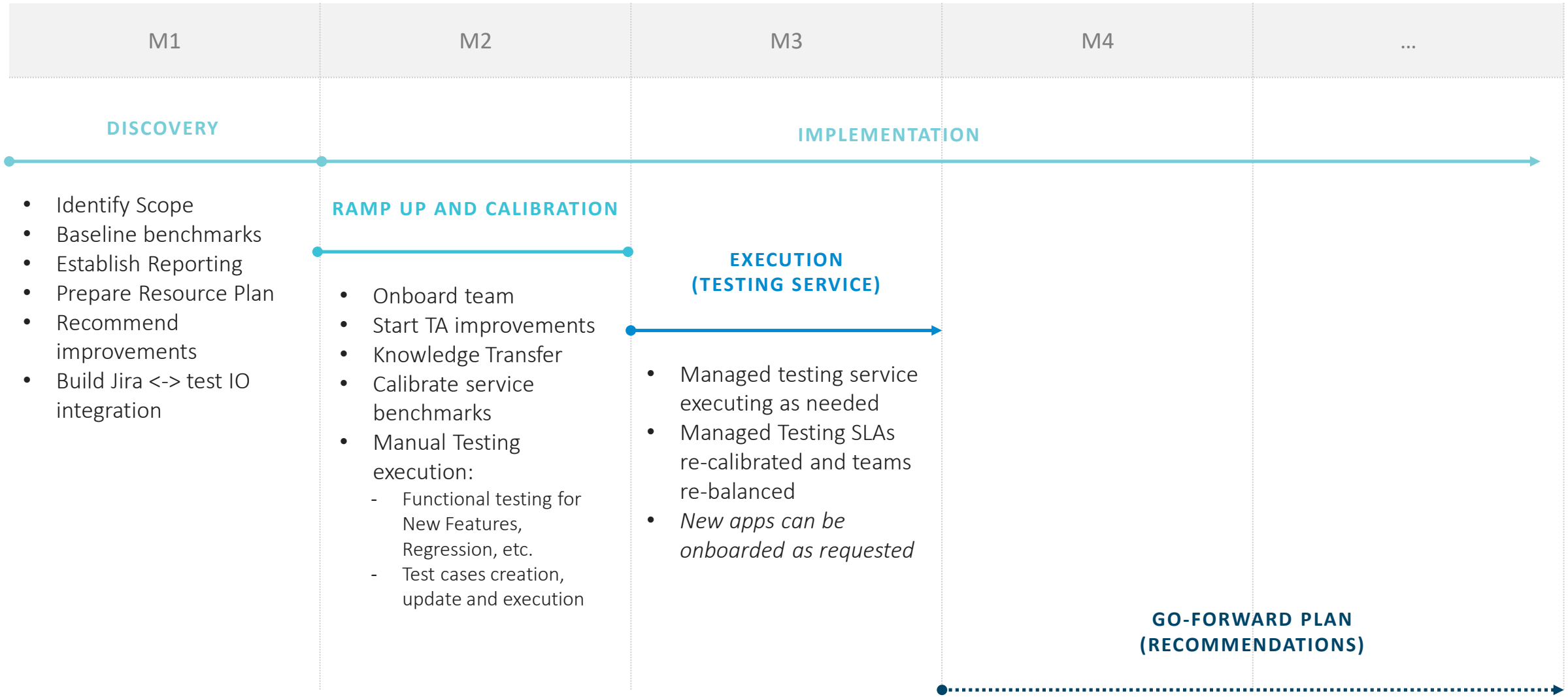
Test Engineers (manual and automation)

NOT ONLY RESOURCES BUT ESTABLISHED PROCESSES AND PRACTICES

Governance by EPAM Competency centers | KPIs | Best Practices Standards | EPAM Accelerators

- Travels (if no travel ban)

Timeline for Pilot Core-Flex Project



SAMPLE WORKING MODEL, ASSUMPTIONS NEXT STEPS

For Core-Flex Model: Discovery, Scoping, Planning

2 MONTH DISCOVERY AND RAMP-UP:

Test manager

QA Architect

Functional tester

DELIVERABLES

Number of FTEs recommended for internal crowd

Manual testing plan with gaps identified that require assistance of senior resources

Some number of tests loaded into the platform and ready to go

TEST MANAGER WORKS WITH PROJECT TEAM TO:

- Understand testing needs
- Assess state of documentation and plans
- Create additional documentation, training materials, and plans as necessary for internal crowd execution
- Scope number of FTEs required to meet business goals
- Work with test IO platform to ensure documentation and instructions are available for crowd
- Work with project team and test IO team to scope system integration requirements (test case tool, issue tracking tool)
- Run initial tests using flex testers to tune
- Validate plans in business review meeting with client and project team

PLUS 1 MONTH of EXECUTION OF TESTING AS A SERVICE WITH 1,000 POINTS OF CAPACITY

Fixed fee for 2-month Discovery Phase and 1 month of testing

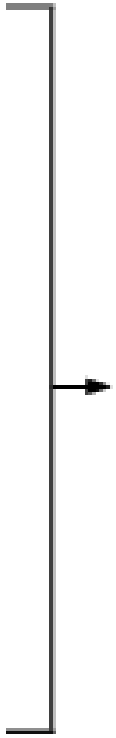
If we already have EPAM testers on the project or a deep knowledge of the product, this can be shortened or removed

Assumptions

1. The results of the Discovery phase will largely dictate the priorities of next steps.
2. Maintaining test data, test environments and test execution system (CI and test execution infrastructure) are out of scope.
3. Client will provide resources for knowledge transfer during the Discovery and Ramp-up phases.
4. Client will provide access to project-related infrastructure and artifacts during the Discovery phase.
5. Client will make available key technical and business stakeholders to take timely decisions during the project.
6. There are no restrictions in access to client's infrastructure from offshore locations.
7. Client will assign a single point of contact for EPAM for day-to-day interaction and resolving operational aspects and facilitate and coordinate discussions with other Team/s or Groups with whom Provider team has to work / get information. Client will provide timely feedback to calibrate work.
8. Core Team composition may change as per the results of the Discovery phase
9. Non-functional testing services delivery is out of scope of the proposal, but can be onboarded separately

Testing As a Service: Next Steps

Introduce Testing as a Service to Your Organization



- Understand your testing journey and automation roadmap
- Create tailored proposal for your needs
- Kick off onboarding & discovery period to demonstrate results within weeks
- Review program & agree on next level engagement

SUCCESS STORIES

EPAM Decreases Defects in Production by Automation and Crowdsourced Testing

CHALLENGES:

- Multiple agile sprints, followed by a regression testing and release readiness activities
- High priority regression scenarios were automated, but no automation in sprint
- Team missed defects in sprint and leak them to production

PRIVATE CROWD BENEFITS

Skilled EPAM employees

Managed Capacity – easy to ramp-up

Easy in-team communication

SOLUTION

- EPAM test crowd for manual in-sprint testing: flexible capacity allows to add additional resources on-demand
- Dedicated Test Automation Engineer in team for in-sprint automation focused on high-priority scenarios. All automated scenarios are to be added to regression pack
- Increased on-demand test team capacity allows to test more scenarios and leak less defects to production

RESULTS

- Release cycle decreased on **15%** due to crowd power
- **100%** of critical test scenarios are in-sprint covered by test automation
- Defect Containment Efficiency increased to **93%**
- Cost efficiency due to manual testing service and not having dedicated manual testers

Output-based Engagement Model for Test Automation

Leading healthcare company for wholesale medical supplies & equipment

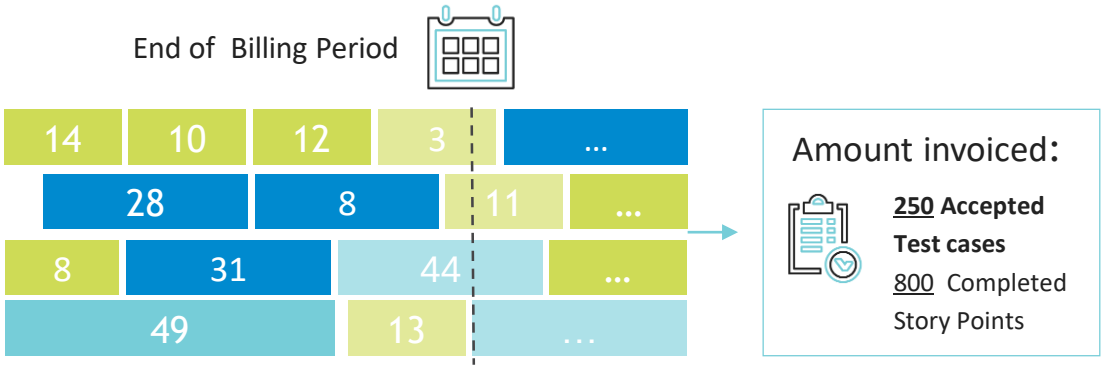
SUMMARY:

EPAM is supporting Customer in the area of test automation for EMR applications. The client wanted to switch the engagement from T&M to an output-based model. The output and basis of payment is measured in Story points reflecting the effort and complexity of test automation work. EPAM agreed to deliver a fixed total amount of Story Points per month.

PROJECT DRIVERS:

CLIENT: Predictable delivery and predictable spending

EPAM: Shift the focus from discussing man-hours and the performance of individuals towards the business value that EPAM contributes



HIGHLIGHTS

- Reliable delivery of agreed SLA for automation, execution and maintenance of Test Cases equivalent to 800 story points per cal. month
  - Rewards for over-delivery of total story points
  - Penalties for under-delivery of total story points, reopened Test Automation Cases and failed Test Cases
- Introduced a transparent model to evaluate # of story points per each backlog item based on two complexity factors:
  - F1: Involved number of test steps (e.g. if < 15 = 1 SP, 15 - 20 = 2 SP,...)
  - F2: API availability for automation (e.g. >95% = 1 SP, 81%-95% = 2 SP,...)
  - Final Test Case Story Points = Average of F1 & F2 rounded up to the next Fibonacci sequence number
- Defect Fixing /Triaging - Story Points are given depending on the complexity (e.g. Fix a single simple test not impacting any other tests = 1 SP, Task that can be done in a half day = 2 SP, etc.)

BENEFITS

CLIENT

- Cost predictability
- Flexible framework with the ability to add, delete, or modify service levels due to the outputs transparency

EPAM

- Bonus for overperforming
- Client-independent resources management
- Pro-active team size control

EPAM saved $100k Per Year by Introducing Mix of Test Automation and Crowdtesting

CHALLENGES:

- Variations in the types of products to test every release
- High priority regression scenarios were automated, but no automation in sprint
- Team missed defects in sprint and leak them to production

Flex Team On-demand Manual Test Engineers (crowd)	• Pay only as you use • Ideal for precise staffing/skill adjustments that match the unique needs of individual releases • Rapidly transform from manual to automation
Core Team Test Automation Engineers	• Stable well-played team • Dedicated to in-sprint automation • Capacity to cover major test scenarios

SOLUTION

- EPAM flex test crowd for manual in-sprint testing covers the variety of applications under tests
- Dedicated Test Automation Engineer in team for in-sprint automation focused on high-priority scenarios. All automated scenarios are to be added to regression pack
- Increased on-demand test team capacity allows to test more scenarios and leak less defects to production

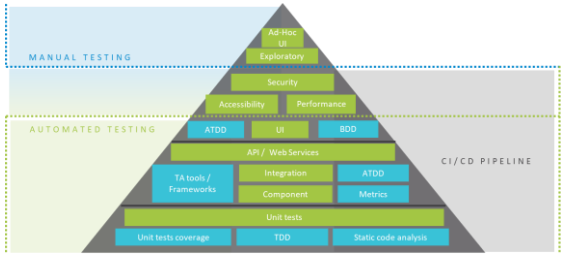
RESULTS

- Release cycle decreased on **15%** due to crowd power saving **$100k**
- **100%** of critical test scenarios are in-sprint covered by test automation
- Defect Containment Efficiency increased to **93%**
- True agile: flexing up / down is **3x faster** compared to traditional models

APPENDIX
PRACTICE OVERVIEW

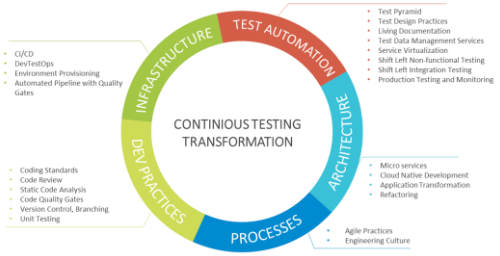
EPAM’s Testing Philosophy: Continuous Testing

TESTING PYRAMID



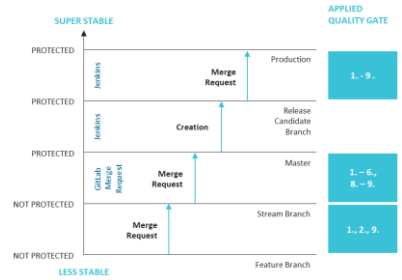
Clear vision of the target state and production-proven experience

CONTINUOUS TESTING



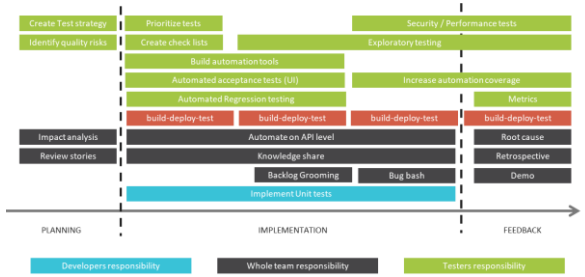
Holistic delivery transformation incl. infrastructure and architecture

SHIFT LEFT



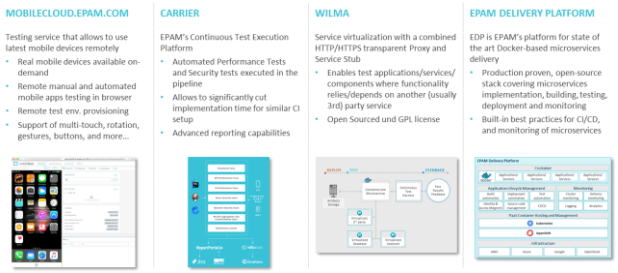
(Automated) quality gates to drive quality in earlier development phases

IN-SPRINT TEST AUTOMATION



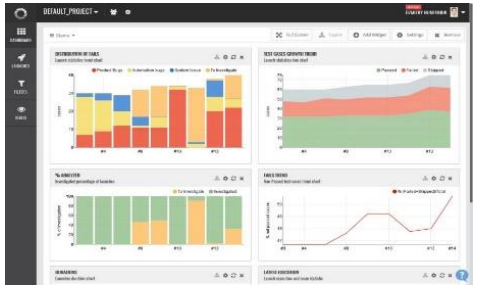
Automation of various test types within the iteration

TOOLS & ACCELERATORS



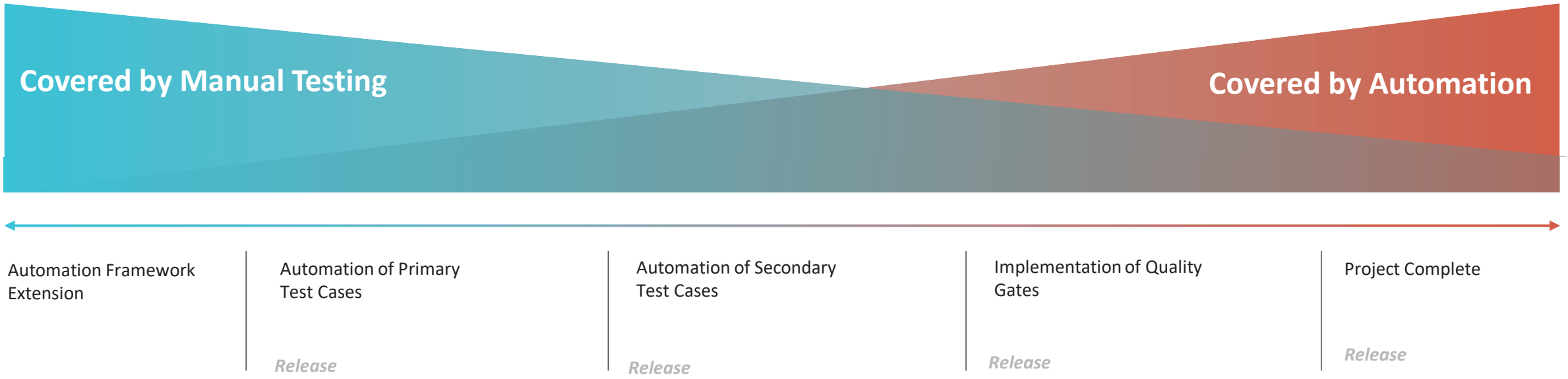
EPAM custom tools and accelerators covering the full test pyramid scope

METRIC-BASED CONTROL



Continuous automated measuring and improvement of QA metrics

Over Time, We Will Decrease Manual Testing, Create Leveraged Assets



As automation coverage increases, the number of test cases needed to be run manual decreases.

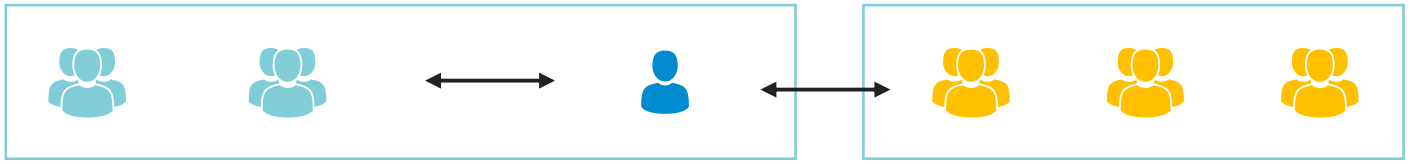
DETAILS

With EPAM Employee Testers, There are Two Models…. 1) FAST FLEX

EXISTING PROJECT TEAM

Testers | Test Manager | Flex Team (EPAM FTEs)

EXISTING PROJECT TEAM **SPIKE NEED**

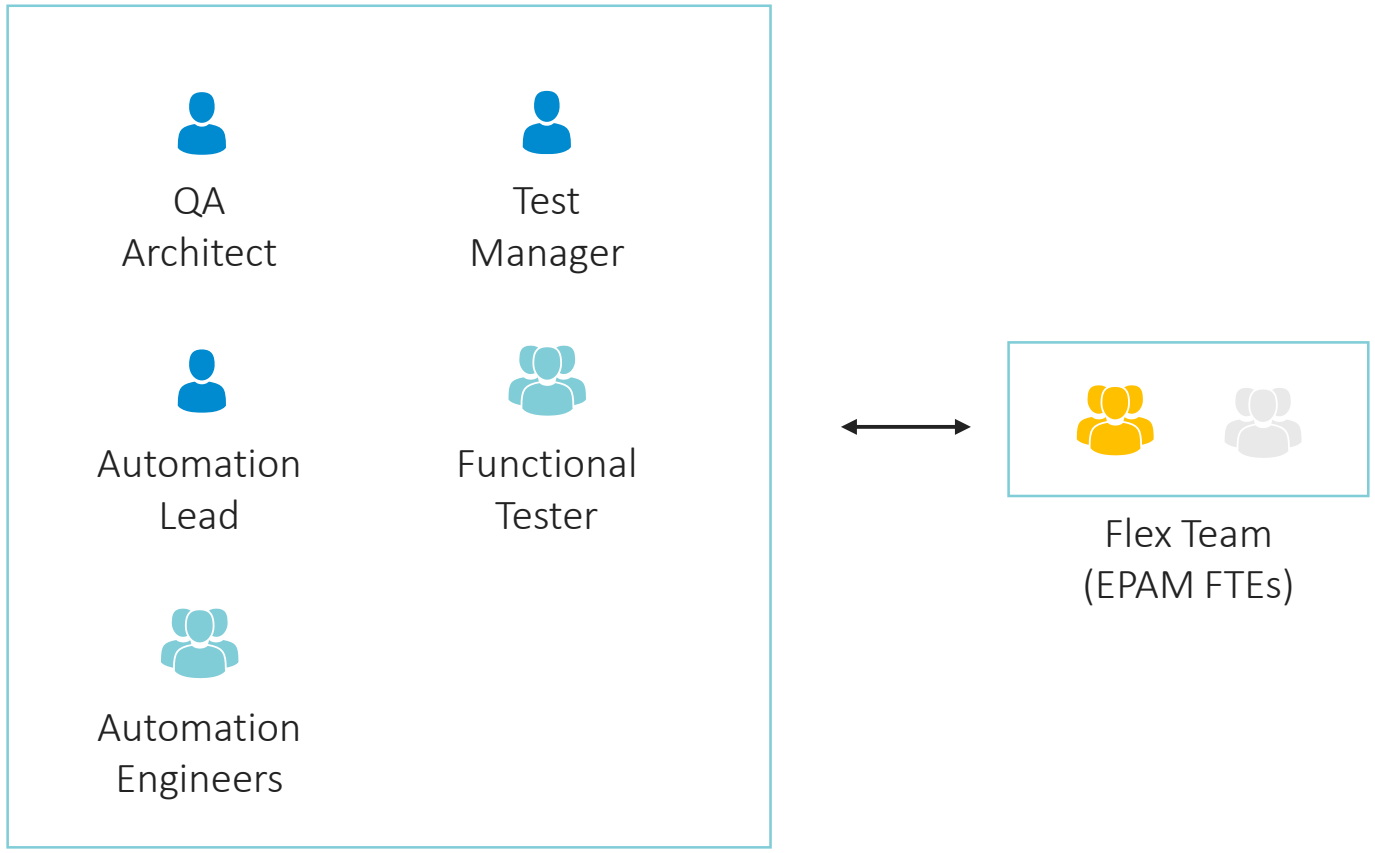


Testers | Test Manager | Flex Team (EPAM FTEs)

- Add test execution & automation scripting capabilities to a project team that has testers but needs more ”hands”
- FTE’s paid for work performed
- Contract for capacity
  - Pay only for tests executed or scripted
  - You can spike to 2x capacity for a month without increasing commitment
- Flex capacity managed through the Test Manager
- Project does not need to manage staffing

And 2) Core-Flex

CORE TEAM (EXAMPLE)



- Ideal for:
  - Running automation projects while owning release quality
- Core Team provides named, senior resources for direction, framework development, automation
- Flex team provides test case execution and scripting capabilities, with spike capacity for testing of product releases
- Core team is standard T&M, Flex Team is contracted for a capacity, paid for work performed
- Project does not need to manage flex staffing

THANK YOU