



## Step-up your Now Platform Testing with Automated Test Framework (ATF)

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# Step-up your Now Platform Testing with Automated Test Framework (ATF)

## What is ServiceNow ATF?

ServiceNow's ATF enables you to accelerate your digital transformation thus adding more value to your business. It enables you to complete your upgrades faster by automating the complex, slow-paced manual testing. Not only does it enable faster remediation of customization issues, but it also reduces the risk and provides instant visibility into test results.

This White Paper thoroughly explores ServiceNow's ATF and will serve as a guide to help you make informed decisions regarding the same.

## Breaking down the core features of ServiceNow ATF

It is best practice to perform testing and validation in any modern SDLC (Software Development Lifecycle). Although, the earliest versions of ServiceNow required manual performance of instance testing, ServiceNow added its own out-of-box ATF to help automate these processes in the Istanbul release, and continues to maintain and expand on it.

The core features of ServiceNow's ATF provide a wide range of coverage. On the client-side, ATF allows users to create and perform UI tests.

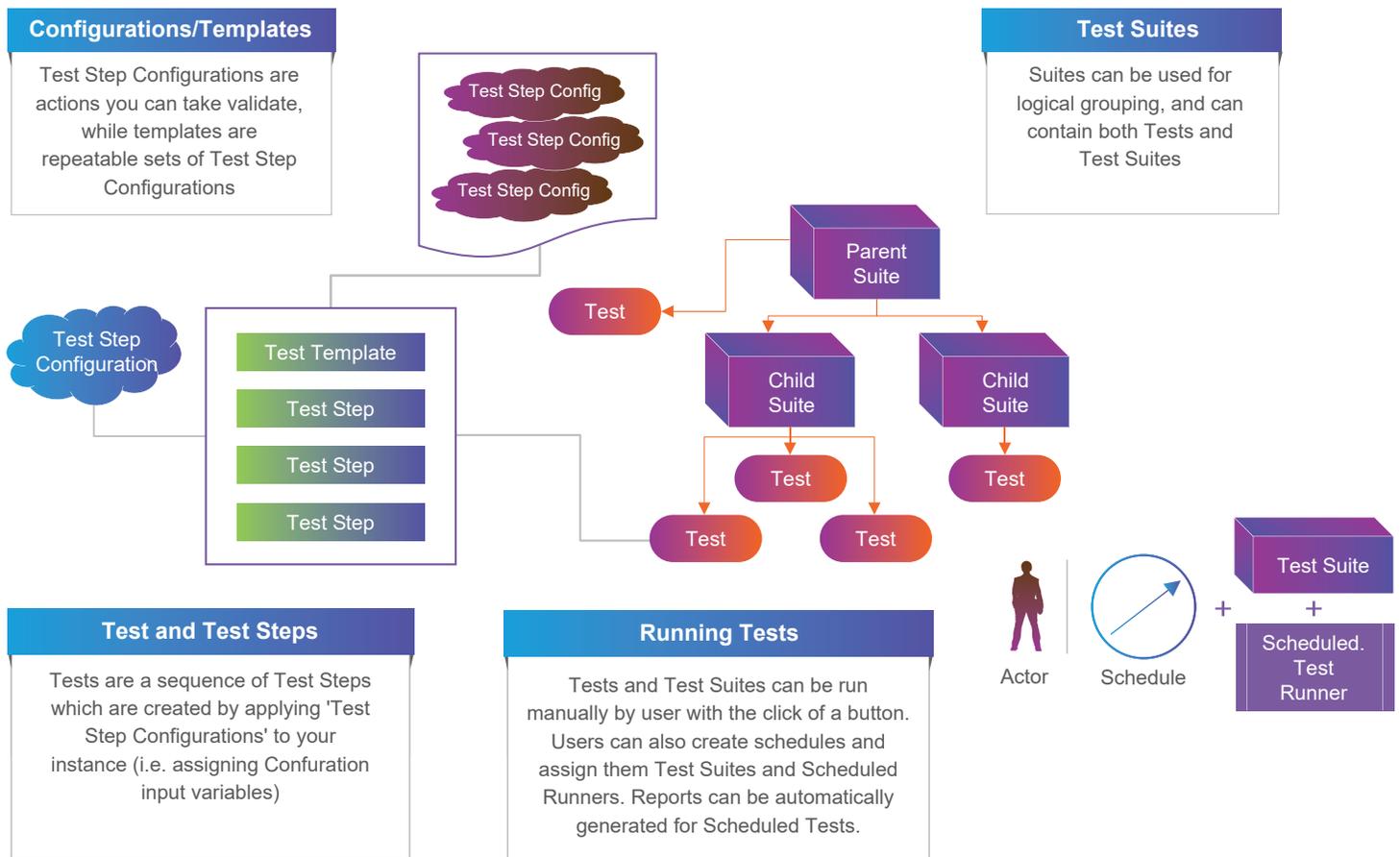
## Automated Test Framework Highlights

1. Leverage Parameterized Testing, Quick Start Testing, and Full Stack Testing
2. Create and customize tests through OOTB templates for any ServiceNow product
3. Test the UI of custom applications and portals
4. Reduce risks and accelerate upgrades with instant visibility into test results
5. ServiceNow offers ATF for free of cost

Such tests cover several metrics including: application navigator visibility, form validation and submission, and Service Portal ordering, which mimics real-time page interaction. On the server-side, it can be used to verify inbound REST requests, CRUD operations, Catalog Items, as well as create Custom Test Scripts and Test Step Configurations. Additionally, ATF is equipped with tools that enable logical test grouping using test suites as well as scheduled multi-browser testing and automated notifications and reports.

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## ServiceNow ATF Basic Architecture



Basic Architecture of ServiceNow ATF Core Features

## Critical evaluation of ServiceNow's ATF

Although the users reported high coverage using ServiceNow's ATF, it is not a complete solution by itself; there are a few persistent gaps in code coverage and one also must consider third-party testing solutions as well. Hence, there is an element of ambivalence which creates an indispensable need to critically evaluate ATF.

What kind and extent of value does ATF provide? As a potential adopter, is it worth it to adopt the out-of-box ATF as either by itself or as part of a more holistic testing solution? As a current ATF user, will an upgrade to Madrid help fill testing gaps or replace any supplemental frameworks already in use?

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## Features Available to New Users and Upgraders

It is important to comprehend what you can test irrespective of whether you are considering updating to Madrid or deciding whether to equip yourself with ATF. Since ATF's initial release, ServiceNow has been committed to expanding its coverage with each release. If you are new to using ATF and are going to wait until the Madrid release stabilizes before introducing it to your SDLC, you will still be able to wield the added functionality that is included in its predecessor's (see version release notes for details).

Specifically, if you are or will be upgrading to the London release, the following things will be available to you:

- UI testing and testing for the application navigator and Service Portal
- Negative assertions for server-side test steps allows failed operations to be successful
- The ability to whitelist client-side Javascript errors
- Additional performance and administration configuration such as screenshot settings



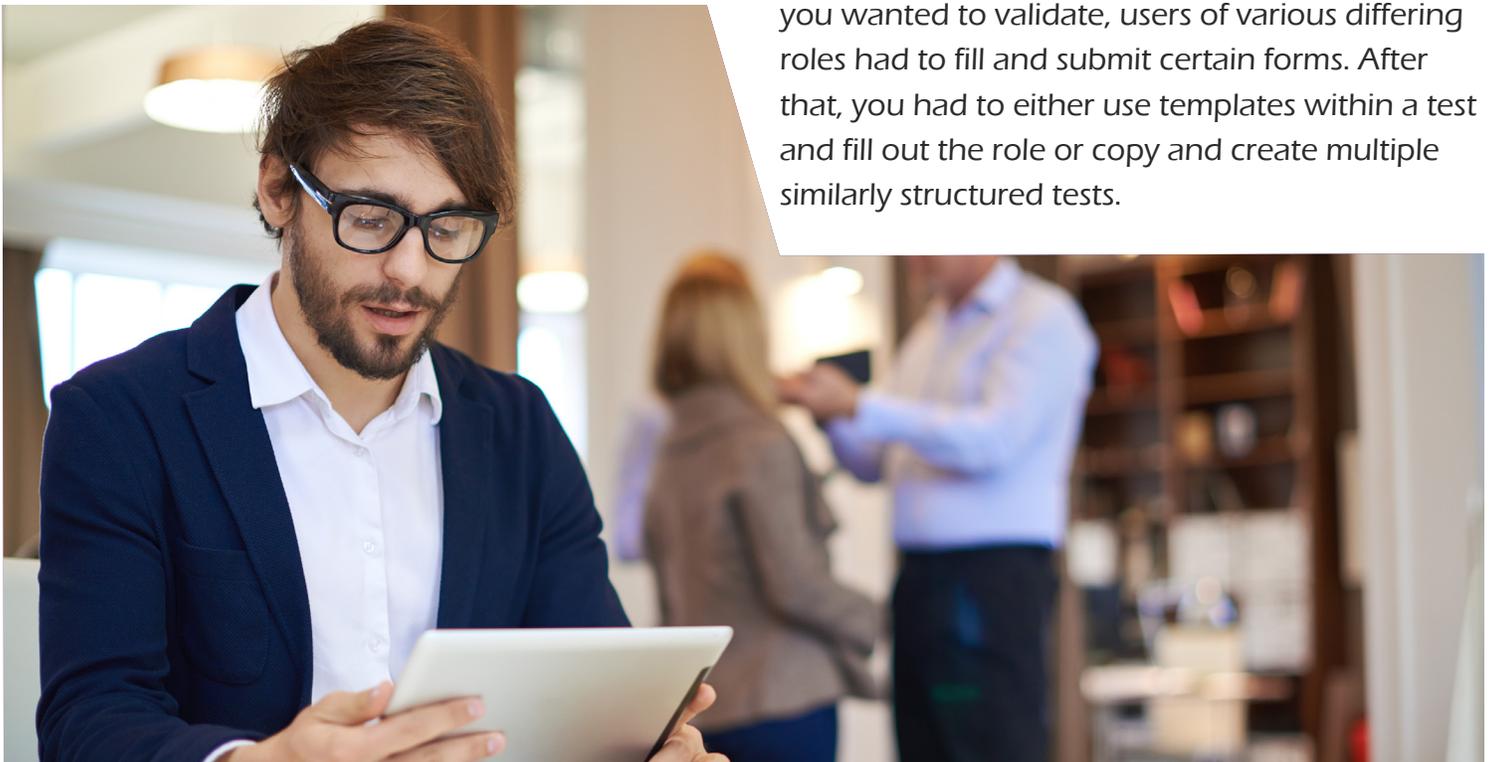
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## Features Available in Madrid

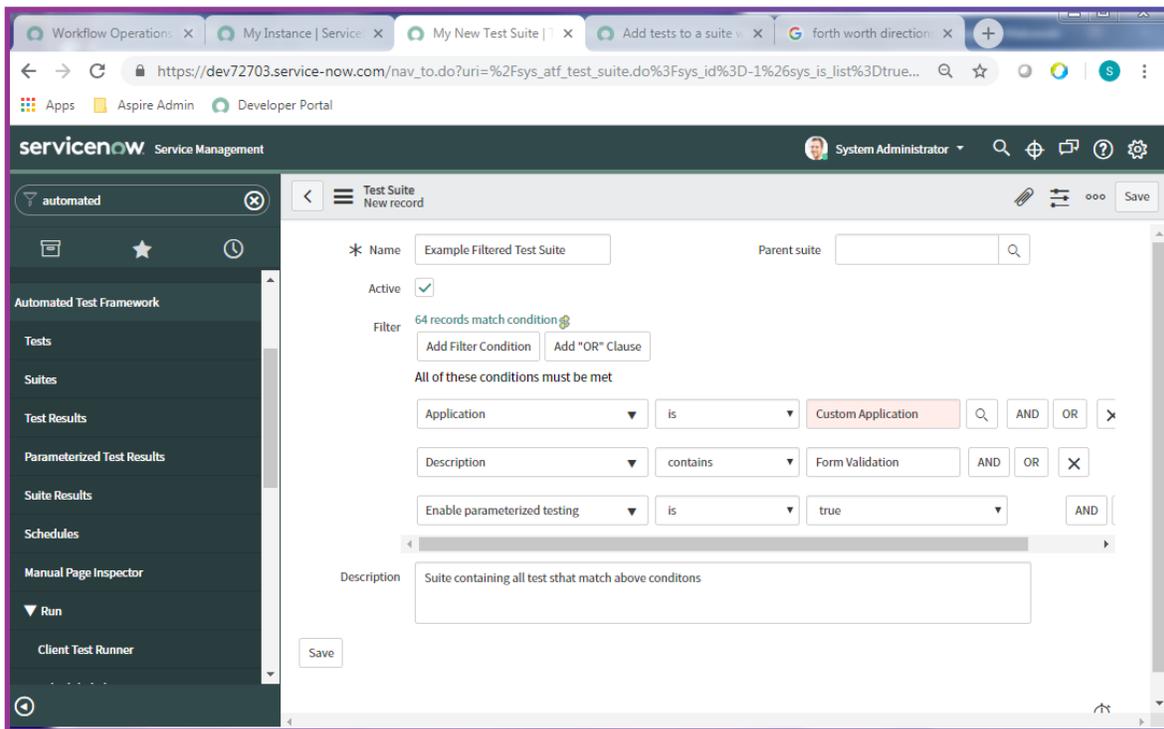
If you are thinking of upgrading to Madrid or are new to ATF as of Madrid, you will find many new features that will improve both coverage and the ease of test creation; For instance, ServiceNow has added the ability test custom UI pages and Macros; In order to achieve this, Madrid has added both the 'Page Inspector' and 'Custom UI' test steps. The user can activate Page Inspector via developer settings, and help the user in identifying components that 'Custom UI' test steps can validate. Components that one can test include any DOM components that can be clicked, filled, or otherwise manipulated using Javascript, components that can be accessed via the Inspector, and any other components that are already tested by other Test Step Configurations. Some examples include Buttons, Links, UI macros, Wizards, etc.

Once a component is identified and categorized by the Page Inspector, users will be provided with applicable test actions, such as: clicking on the component, viewing the components values, validating if it is enabled, etc. Although newly added, the coverage for UI testing is not always correct, as it might mislabel the type of individual components. In this case, Madrid has also included the ability to override test step components directly in the HTML using classes.

The Madrid release has also included several new features that facilitates easier tests creation, and greater coverage of use cases. For one, users can now add tests to the suits using a filter rather than add each one manually, which allows for greater ease in setting up and maintaining test suites. The addition of parameterized tests has reduced the number of hardcoding for tests. Previously, if you wanted to validate, users of various differing roles had to fill and submit certain forms. After that, you had to either use templates within a test and fill out the role or copy and create multiple similarly structured tests.

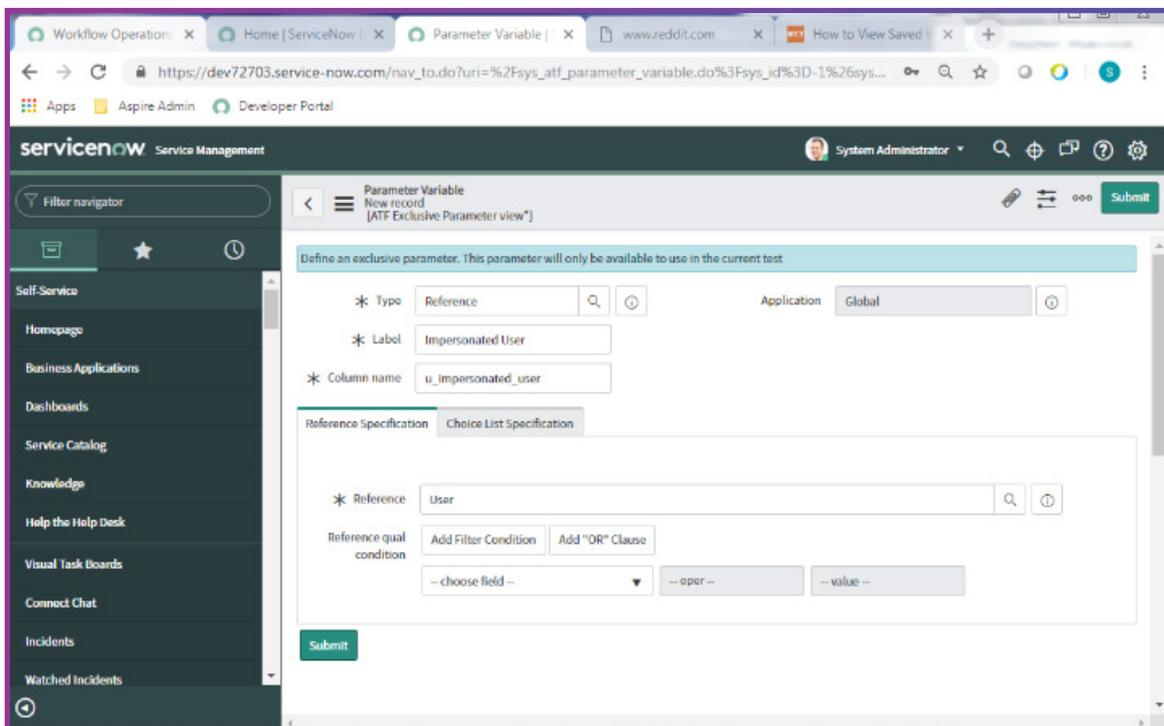


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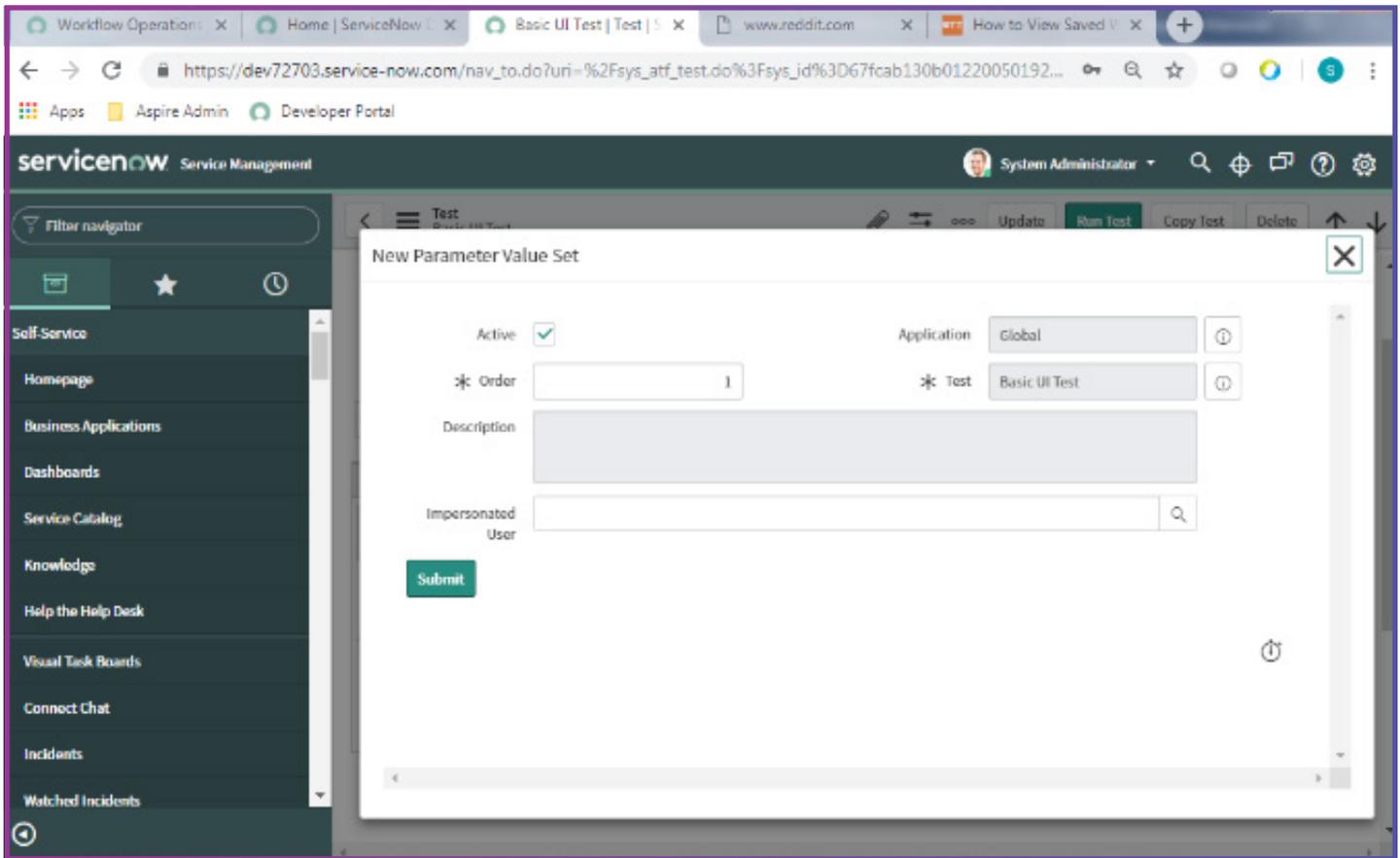
Filter which tests are in your suite using condition-builders

The ability to Parameterized Tests simplifies this process and allows you to set which aspects of your test are variable, and then use the same test switching out the parameter's value as needed. This will reduce clutter and duplicate tests.



Users can create exclusive or universal parameters variables

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Once a parametrized variable has been created, users can create data sets for that variable for their test steps

Additionally, there are also some other minor changes. They include additional test properties under the administration section, and the ability to opt-in to using Jasmine 3.1 in Server-side Script Configurations. Besides, ServiceNow has provided extra Quick-Start Tests in order to allow users to have a basis for testing OOTB features that they may have customized. Users can simply copy the tests, and configure the variables to ones in their instance.

Also, now addition of testing using explicit roles is also possible. While impersonation of a user with specific roles has always been an integral part of implementing ATF tests, impersonation always required the existence of a user who has those roles. In Madrid, however, you can impersonate a generic, non-existing user based on the roles alone.

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## Benefits of ServiceNow's ATF

In addition to the benefits from any other testing framework, ServiceNow's ATF brings in some more supplementary benefits to the table. This is true during both initial implementation and especially during instance updates, given ServiceNow's goal of adhering to a bi-annual (Q1 & Q3) version release schedule. The other benefits are as follows:

- ATF reduces the potential for human error during test runs and is easier to maintain
- Allows for user (Core feature), and role (as of Madrid) impersonation to cover various user types
- Scheduled testing allows for cross-browser and operating system testing
- Test and test suite creation is just like creating any other record in ServiceNow, making it easy to use for both technical and non-technical staff
- Technical staff can leverage Custom Server-Side Test Scripts and Test Step Configurations for more fine-tuned tests and to cover non-out-of-box testing on server-side
- Using ATF for Regression Testing is a part of ServiceNow's best upgrade practices
- ServiceNow itself maintains ATF and is free of cost and requires only little more than activation for it to function

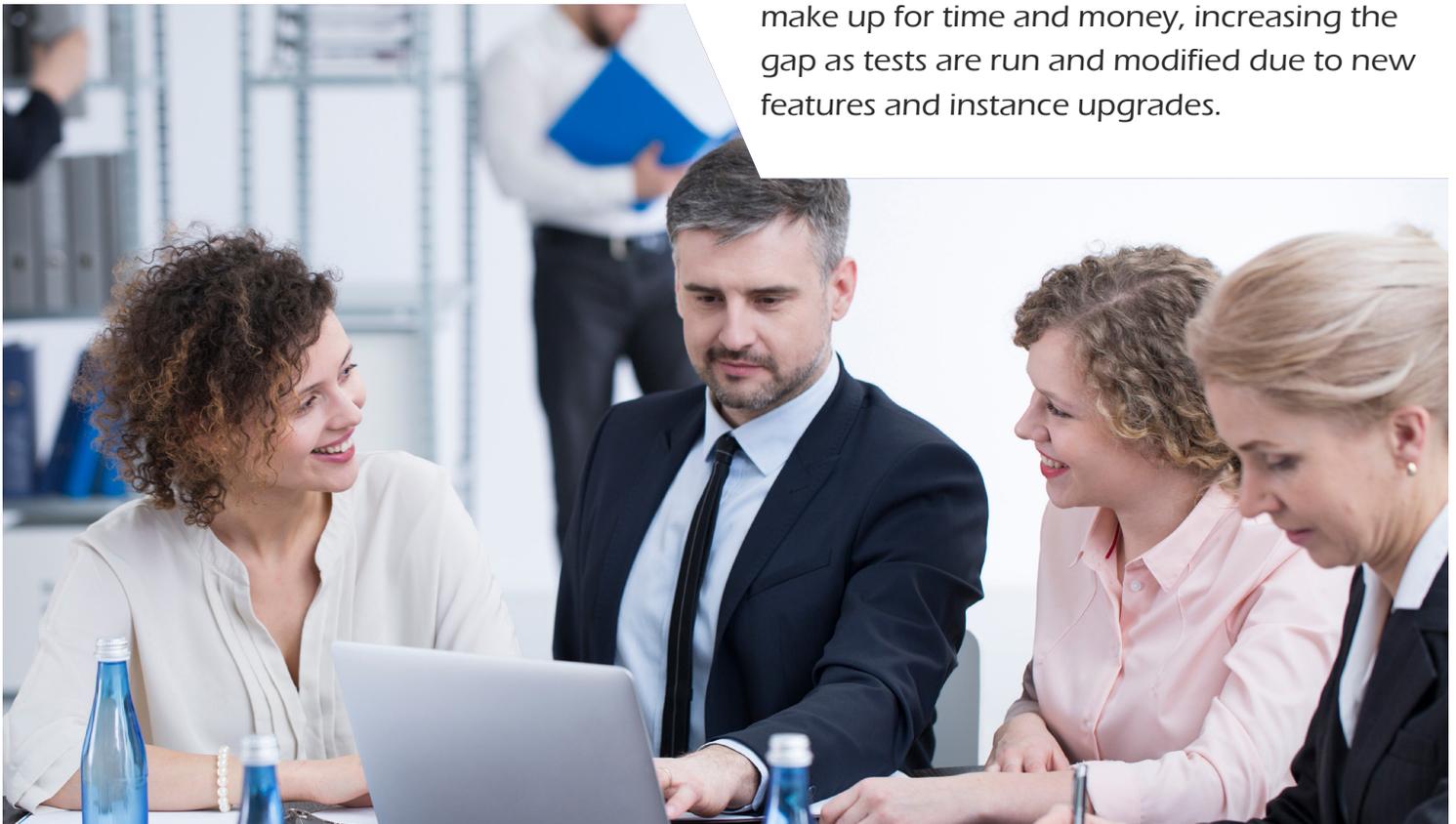


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## ROI Achieved Through ATF

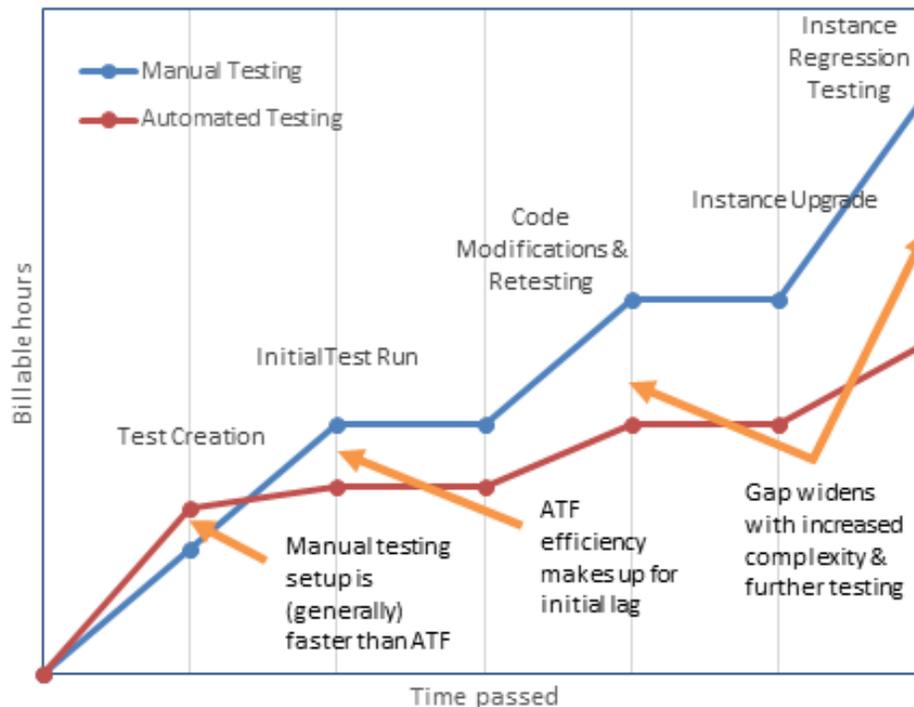
It is apparent that ATF can save time and money, but let us dive a little deeper into the how. Requirement of less man hours translates to less personnel and the ability for team members who would generally be doing manual testing to have extra time to focus on instance maintenance and feature implementation. One cannot achieve increased ROI immediately, as in the test planning and documentation phase, manual testing may take less time as it will only require documentation. On the other hand, using ATF will involve both documentation and configuration of tests at the same time –meaning a longer initial setup. However, one can realize its significant value in the long run.

When performing a manual test, a tester will have to perform whatever actions are required in the test documentation, refer back to documentation periodically to stay on track, and log all the results as well. That's three things that he/she has to do at minimum for each step in the test. However, in ATF, everything is preconfigured. So, for the most part, pressing the 'Run Test' button is all that is required. This means for over say, a seven-step test, 21 actions need to be performed manually, vs only 1 in using ATF. As the complexity of you customizations increases, actions and time required will generally increase exponentially, while in ATF it will increase only linearly. Thus, despite taking marginally longer to setup than manual testing, automated testing will quickly make up for time and money, increasing the gap as tests are run and modified due to new features and instance upgrades.



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Time savings of automated vs manual testing



Hours required over time for Manual vs ATF-based Testing

## Limitations of ServiceNow's ATF

Despite its extensive capabilities, ATF has its share of limitations. ServiceNow constantly strives to overcome them by adding additional features to improve the effectiveness and coverage of ATF. The availability of workarounds can also be of great help as one can use them until a new release is able to cover it. The following are a few limitations:

- There might not be a test step configuration available for use immediately. However, you can create your own server-side custom test scripts and Test Step Configurations (e.g. validating notifications). CAVEAT: This will require personnel with scripting knowledge.
- Validation of fields in tabbed sections are hidden on page load and not filled automatically. Although it must be done manually, you can actively click during test step execution to ensure access to tabbed fields.
- Rollback on tests is a challenge.
- Selenium and CapIO are third-party testing frameworks that allow to record and re-execute test actions to provide coverage for UI tests not covered by out-of-box ATF.

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## Other considerations

Thus, if you compare the benefits and limitations, the former outweighs the latter. However, there are some additional factors to consider that will impact decision-making. Some questions that you might want to ask yourself include:

- How large is my instance; does my instance have a lot of roles?
- Am I using only out-of-box features, or have I implemented extensive customizations?
- How often do I plan on updating my instance?
- Do I already have a third-party ATF in place?

If your instance is on the larger side, and contains multiple user types, then it would be a good idea to implement ATF to ensure that permissions are as they should be;

The same thing applies if there are a lot of customizations to consider. If you are only using out-of-box features without any further modifications, you may be in the clear. That's because ServiceNow conducts their own testing on the features that they release. Furthermore, being a frequent and regular upgrader may also bolster the need for using ATF for the aforementioned reasons.

Another thing that may also affect your decision to adopt ServiceNow's ATF as part of your testing process is whether or not you have any other ATF in place. If you have don't have one and you fit any of the above criteria, then ServiceNow's ATF is a great place to start as it is free. If not, it may help fill in the gaps or enhance your existing testing process.



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## Conclusion

Adopting an automated testing framework as part of your development and upgrade cycle can greatly add value to your business, and empower your developers with more freedom to focus on what matters. Although not yet a complete solution, it is still worth considering integrating or upgrading ServiceNow's out-of-the-box ATF. Taking into account its benefits and gradually disappearing limitations, it is a great place to start if it is not already a part of your current testing processes. Also, given the new test coverage

available for custom UI components, it is worth upgrading to Madrid if you are already using it. If you still haven't experienced it, ServiceNow has a great tutorial system which has built in sample-tests for every instance that you can run to see how it works live. Besides, you can now upgrade personal instances to Madrid if you are interested in experimenting with it. As always, the ServiceNow Community forums and documentation are great resources once you get started.



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## Resources for Further Exploration

- ServiceNow ATF Documentation (Madrid; can be changed via selection box):  
<https://docs.servicenow.com/bundle/london-application-development/page/administer/auto-test-framework/concept/atf-overview.html>
- ServiceNow ATF Training Modules (London):  
[https://developer.servicenow.com/app.do#!/lp/servicenow\\_application\\_developer/app\\_store\\_learnv2\\_atf\\_london\\_automated\\_test\\_framework\\_objectives?v=london](https://developer.servicenow.com/app.do#!/lp/servicenow_application_developer/app_store_learnv2_atf_london_automated_test_framework_objectives?v=london)
- ServiceNow ATF Use Case Examples (London):  
<https://docs.servicenow.com/bundle/london-application-development/page/administer/auto-test-framework/concept/atf-use-cases.html>
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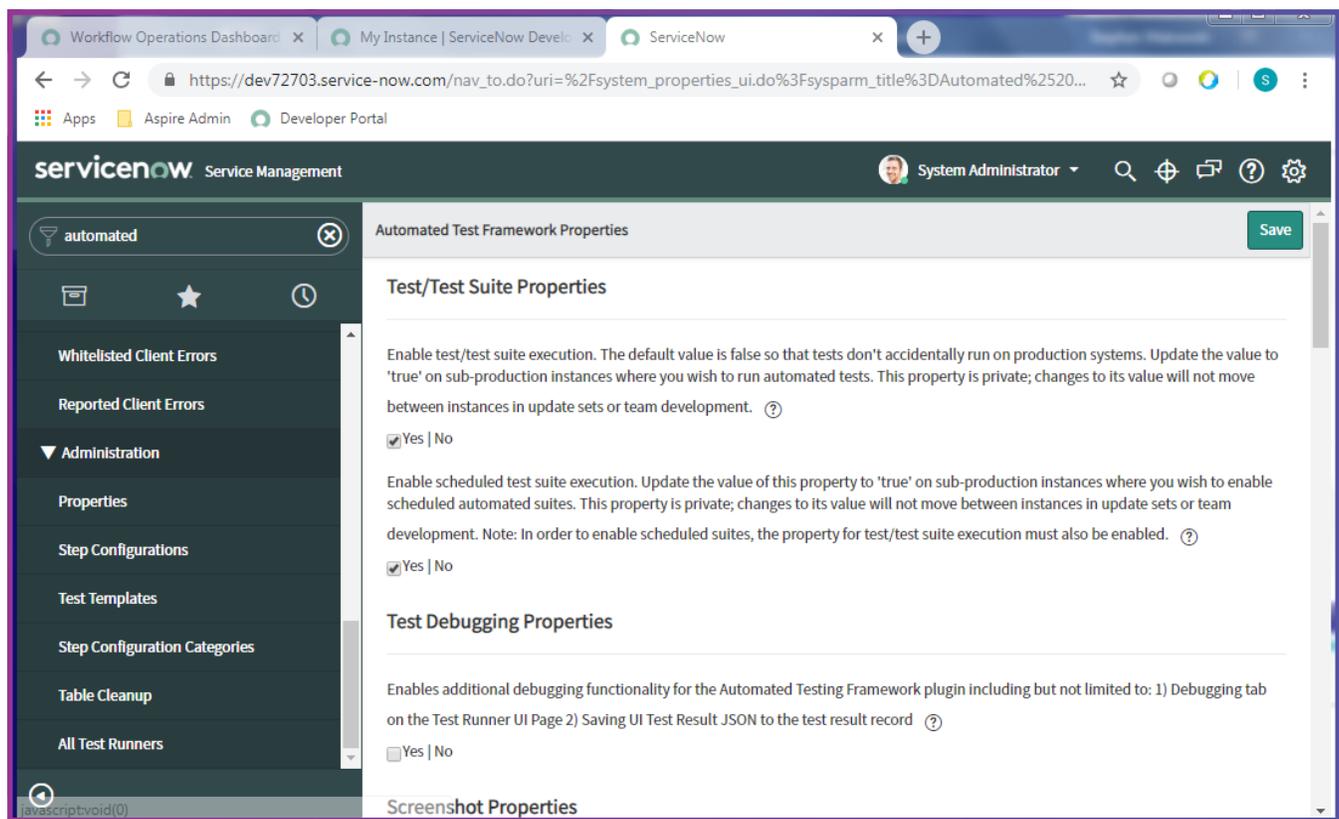


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## A Visual Overview Creating and Running Tests

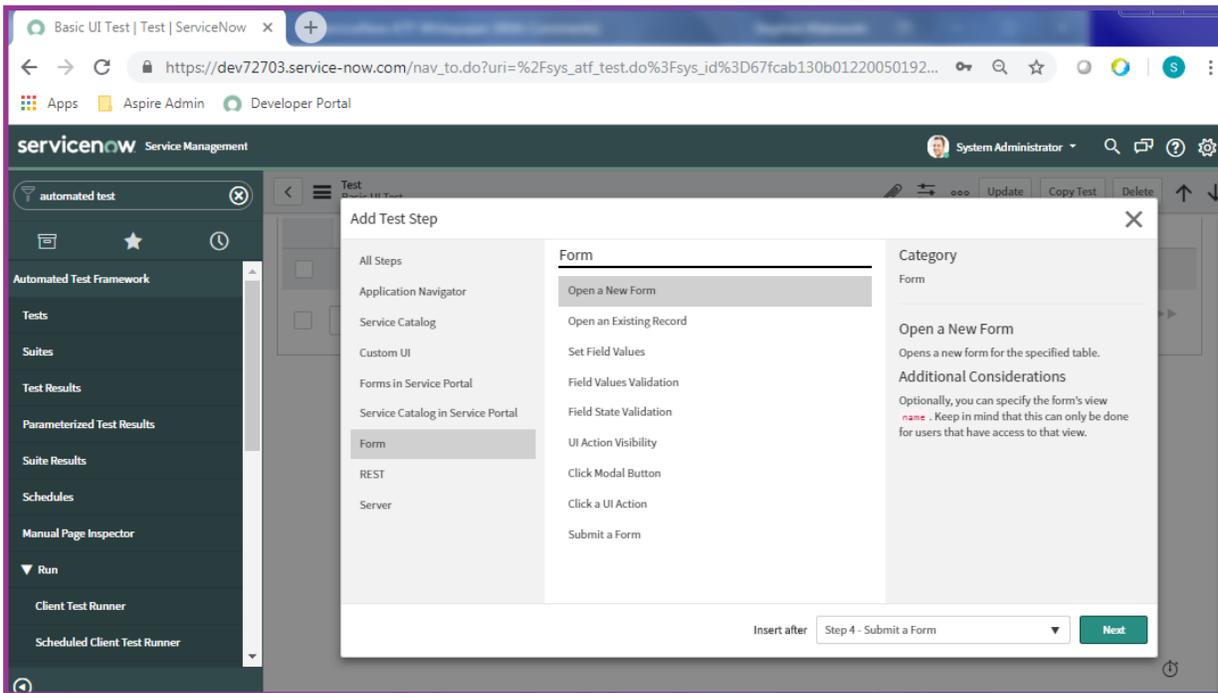
The following section serves as a visual overview of creating and running tests and test suites using ServiceNow's ATF.

1. ATF related modules are under the 'Automated Test Framework' Application Menu. ATF is free-to-use, and activation is as simple as clicking a check box under 'Administration Properties'.

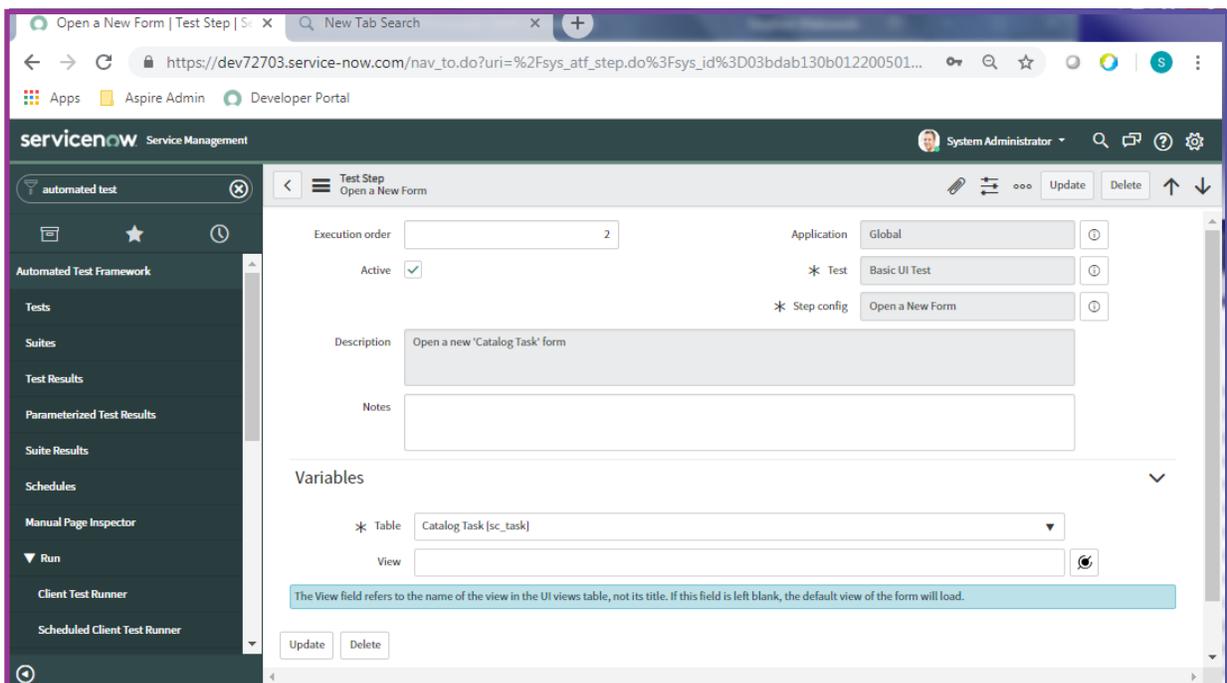


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2. Creating Tests and adding/configuring Test Steps: Creating a test is like creating any other record. Access the 'Test' Module and click the 'New' UI action. From there, you can add test steps from a variety of different categories. via the related list.



3. Configuring Test Steps: Once you have chose a Test Step Configuration to add, you can configure the step's variables. Test steps have both input and output variables, the latter which can be referenced in later steps for form fields that the 'bomb' icon.



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4. Completed Test Record with Test Step List and Descriptions. Users can run a test using the UI action.

The screenshot shows the 'Test Record' page for a test named 'My Test'. At the top, there is a warning: 'This record is in the sandbox application, but Global is the current application. To edit this record click here.' Below this, the test configuration is shown: Name 'My Test', Application 'sandbox', Package 'sandbox', and Active status checked. A description box contains a list of 8 steps to complete the test. Below the configuration are 'Run Test' and 'Copy Test' buttons. A 'Test Steps (5)' tab is active, showing a table with 2 steps:

Test Steps	Search	Execution order	Search	1	to 5 of 5
<input type="checkbox"/>	<a href="#">Impersonate</a>	Impersonate the user: Abraham Lincoln with user Id: abraham.lincoln		1	true
<input type="checkbox"/>	<a href="#">Open a New Form</a>	Open a new 'Incident' form	Incident [incident]	2	true

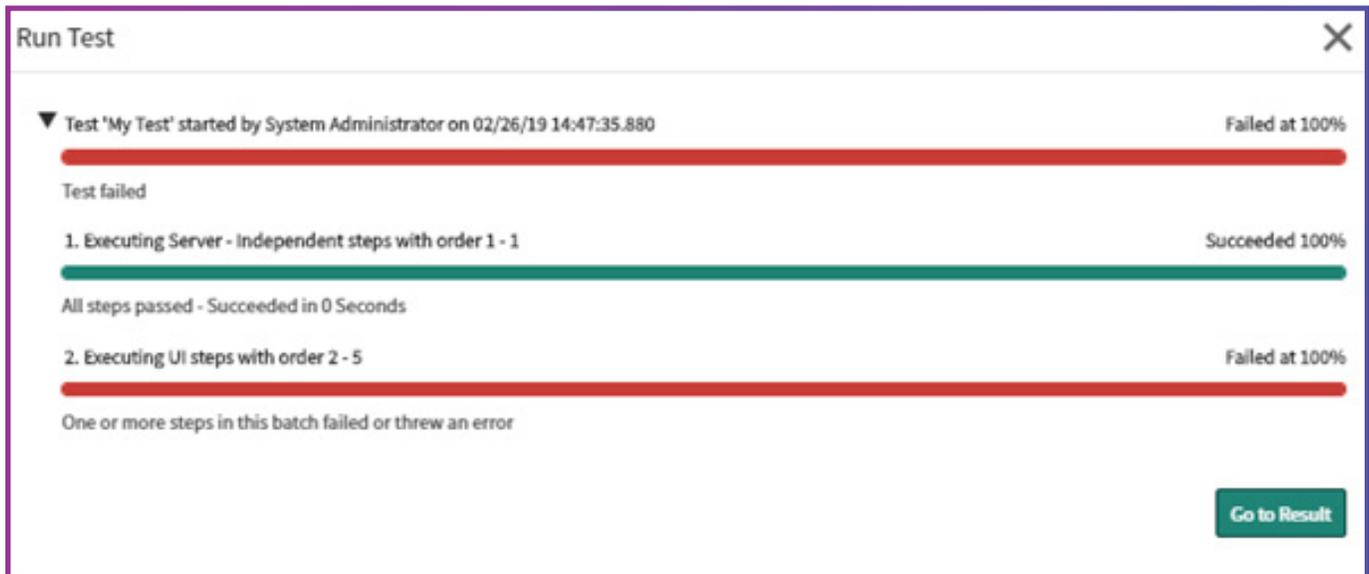
5. Client Test Runner – Test Runners are required for all Client-side Tests. Test Runners provide viewable run-time environment for tests as well as test step status. Note: Server-side test status will be shown, but steps will run in the background.

The 'Pick a Browser' dialog box contains the following text: 'The test you have selected includes client-side steps. Choose a browser to run this test. [Manage your test runners here](#)'. There is a radio button selected for 'Start a new test runner'. At the bottom right are 'Cancel' and 'Run Test' buttons.

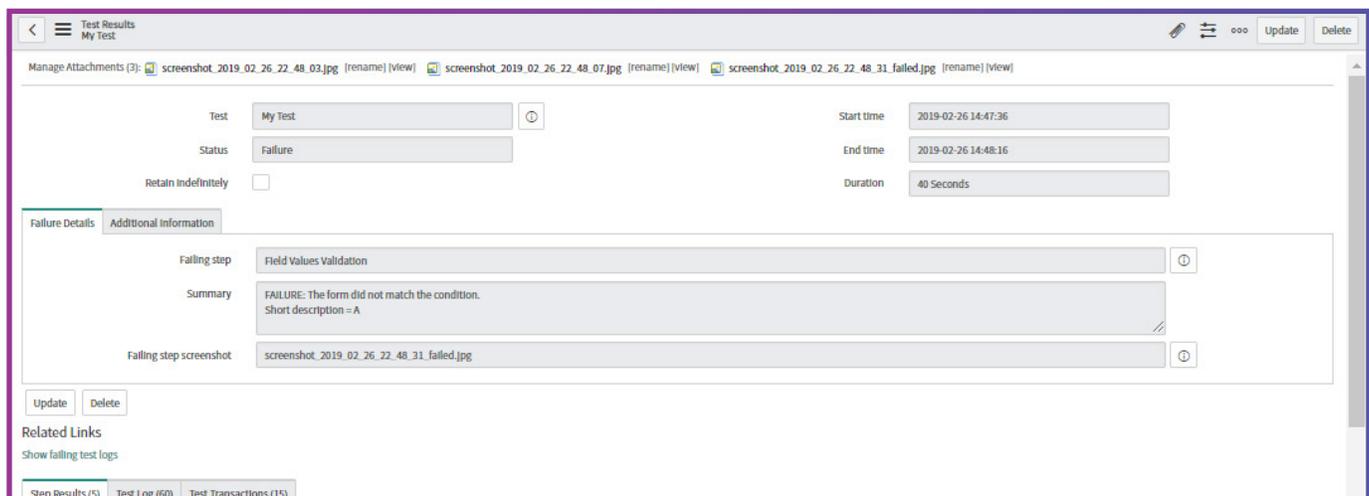
The screenshot shows the 'Running step 1 of 4 for My Test' interface. It features a progress bar and a 'Reporting step result' section. Below is the 'Execution Frame' for an 'Incident' record with ID 'INC0010006'. The form fields are: Number 'INC0010006', Caller 'Abraham Lincoln', Watch list, Short description, and related search results. On the right, there are fields for 'Opened' (2019-02-26 14:47:39), 'Closed', 'Urgency' (3 - Low), and 'State' (New). At the bottom, it says 'No results to display'.

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4. Test Status Window - Test status will be displayed during test run in the Test Record window. Once a test is complete, you can view the result by clicking on the UI action.

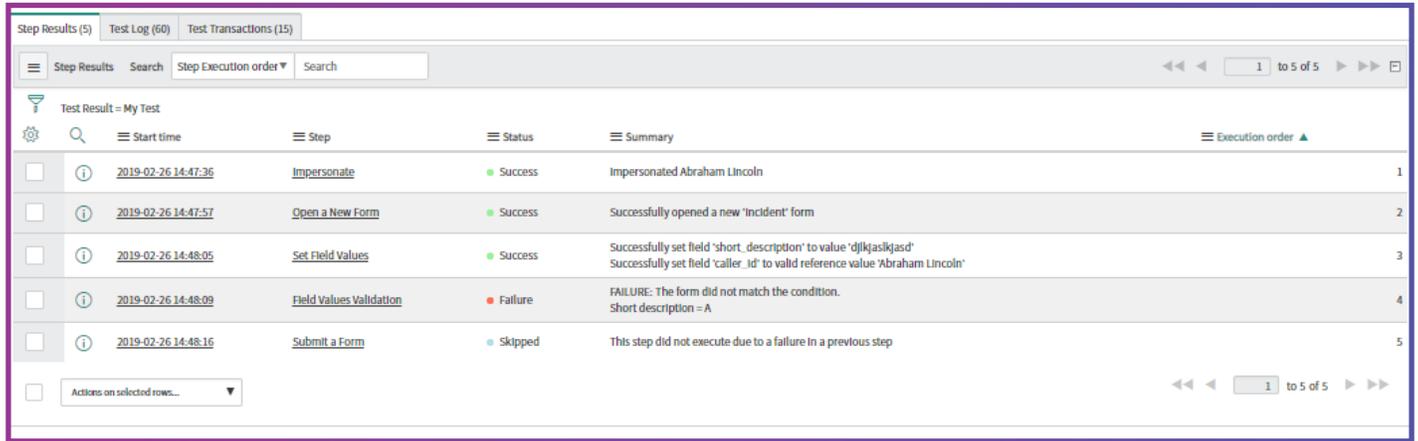


5. Test Results - Test results provide information about outputs, and pass/fail status. They also provide screenshots so, users can see the state of the UI during the test



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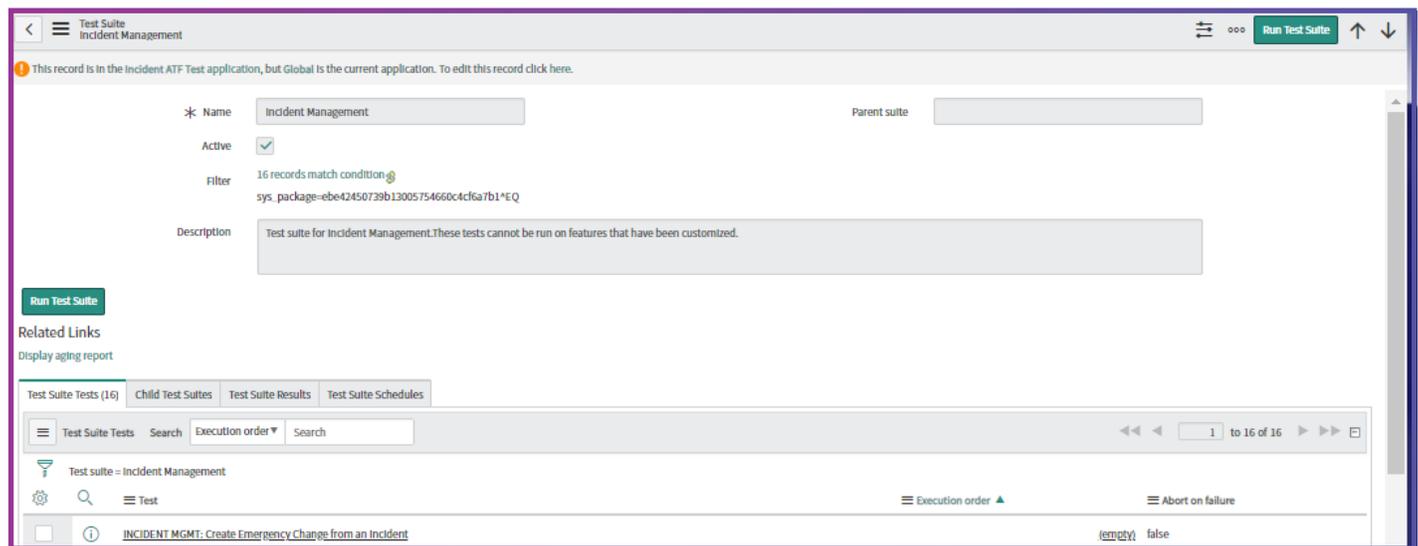
## 6. Individual Step results provide status and summary of test targets and outputs



The screenshot shows a table of test step results. The table has columns for Start time, Step, Status, Summary, and Execution order. The steps are as follows:

Start time	Step	Status	Summary	Execution order
2019-02-26 14:47:36	Impersonate	Success	Impersonated Abraham Lincoln	1
2019-02-26 14:47:57	Open a New Form	Success	Successfully opened a new 'Incident' form	2
2019-02-26 14:48:05	Set Field Values	Success	Successfully set field 'short_description' to value 'djkjaskjaskd' Successfully set field 'caller_id' to valid reference value 'Abraham Lincoln'	3
2019-02-26 14:48:09	Field Values Validation	Failure	FAILURE: The form did not match the condition. Short description = A	4
2019-02-26 14:48:16	Submit a Form	Skipped	This step did not execute due to a failure in a previous step	5

## 7. Suite Record - Users can use suites to create logical grouping. Tests can be added via 'related list'.



The screenshot shows the 'Test Suite Management' interface for 'Incident Management'. It includes a 'Name' field with the value 'Incident Management', an 'Active' checkbox that is checked, and a 'Filter' field with the value 'sys\_package=ebe42450739b13005754660c4c6a7b1^EQ'. Below this, there is a 'Description' field with the text 'Test suite for Incident Management. These tests cannot be run on features that have been customized.' A 'Run Test Suite' button is visible. Below the main form, there is a 'Related Links' section with a link to 'Display aging report'. At the bottom, there is a 'Test Suite Tests (16)' section with a table of test results.

Test Suite Tests	Search	Execution order	Search
INCIDENT MGMT: Create Emergency Change from an Incident		1	to 16 of 16



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