**Headstrong**

Greenfield

**Test Design Specification Document**

**Slice2 (Benchmark Universe and Fund Holdings)**

Version 1.0

Date: 03/13/2012

Contributors: QA Team

**Document History**

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|  |  |  |  |  |  |

**Distribution List**

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| **Details** |
| All the members of #Greenfield\_EMM will be able to access to this document.  Mode of distribution will be through HQ. https://hq.headstrong.com/ |

**Reference Documents**

|  |
| --- |
| **Document Name** |
| Sow-AshmoreEMM Greenfield Development Finaldraft\_v10 (2)1 |
| EMM\_Greenfield\_Look\_And\_Feel\_BRD |
| Changed-Look and feel |
| Test\_Plan\_Greenfield\_V0.2 |
| EMM\_Slice\_3\_Benchmark\_Universe\_SRD |
| EMM\_Slice\_3\_Benchmark\_Universe\_BRD |
| EMM\_Slice\_7\_DCF\_Fund\_Holdings\_BRD |
| EMM\_Slice\_7\_DCF\_Fund\_Holdings\_SRD |

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1. Purpose of document

The purpose of this Test-Design specification document is to provide an intermediate level view of the testing process for Greenfield system, subsystem in terms of slices, or component features or attributes.

This Test Design document will cover all the testing requirements that are needed for Benchmark Universe and Fund Holdings (Slice 2). This document defines the testing features to be tested, test design specifications, their severity and priority benchmarks. Additionally, this document also defines the Entry and Exit criteria of testing, constraints and dependencies, Stop, suspension and resumption criteria for the Slice1 of the Greenfield. It must include the functionalities that the BRDs’ and SRDs’ have to build the Greenfield application.

We have defined a set of requirements from AshmoreEMM and the developed Greenfield application must meet those requirements by assuring the quality. QA team will prepare the Test Design document which covers all the features to be tested, Test goal, Test execution strategy, Risks and dependencies. Apart from the Test design document, a Test Scenario/ Cases sheet will be prepared to cover the business requirement. If client comes back with further requests or change request, testing phase will be revived from the beginning to ensure nothing has been affected with a new change. . Those requests will be handled as change requests and implemented on a schedule we work out with the client. Testing will be done based on the feature specifications.

1. Test design specification

|  |  |
| --- | --- |
| Project | Greenfield |
| Author | QA team |
| Date | 03/13/2012 |
| Version | 1.0 |
| Product areas | Detailed description of product is covered by test design specification. |

1. Overview
   1. System Objective

The current implementation (Work pad) was developed years ago using Foxpro. Foxpro is a data-centric development platform that has gone into end of life with Microsoft, back in 2007. As such, Work pad has become difficult to maintain and enhance.

Headstrong has done an assessment of the EMM legacy application to identify key challenges with the current system and built a business case for re-engineering the System with new generation technologies and an open and flexible architecture.

The Greenfield application has re-architected the current Work pad product in a flexible, layered methodology using new generation technologies improving usability, security, scalability and maintainability.

The overall system objective of Greenfield is to build a comprehensive research application that will manage internal and external research analytics, portfolio allocations (targeting) and fund/security performance monitoring. Greenfield provides a seamless integration of market data, prices, financials, consensus earnings estimates, research reports and analysis tools, along with a customizable user interface, to provide portfolio management, stock research, targeting and holding analysis functionality to the users.

The Intent is to deliver a system meeting all the requirements of Ashmore EMM with high level of satisfaction and quality assured.

# Functional Overview

The following is the main functionality that is provided by Slice 1:

* UI components that display Morning snapshot of Benchmark, Top 10 constituents held in the selected benchmark, the relative performance component which compares the security performance with the assigned benchmark.
* A multi-line charting component that plots the returns for the selected benchmark and associated country index with the functionality to add additional indices associated with the country.
* Holding percentage pie chart displaying the holding (%) per sector, or region for a benchmark for a particular effective date.
* Index constituent Export component which displays a grid of the constituents in a selected benchmark including weight information.

1. Features to be tested

The following product features are included within the scope of this document.

* Feature 1: Morning Snapshot Benchmark User Interface
* Feature 2: Top 10 Constituents in Benchmark User Interface
* Feature 3: Relative Performance UI component
* Feature 4: Multi-Line Benchmark (Returns) Chart
* Feature 5: Holdings (%) Pie Chart
* Feature 6: Multiline Benchmark and Security Chart
* Feature 7: Index Constituents Export User Interface
* Feature 8: Portfolio (Composite/Fund) Selector component
* Feature 9: Top 10 Holdings UI component
* Feature 10: Region Breakdown UI component
* Feature 11: Sector Breakdown UI component
* Feature 12: Asset Allocation UI component
* Feature 13: Risk/Return UI component
* Feature 14: Market Capitalization UI component
* Feature 15: Portfolio Details User Interface
* Feature 16: Extension to Slice 1 Chart

# Feature 1 - Morning Snapshot Benchmark User Interface:

* The user will be provided with a combo box drop down menu to select the benchmark in the container.
* The selected benchmark should be communicated to these components and they redraw themselves using the data surfaced for the selected benchmark.
* The user should be allowed to edit the screen to configure the groups and the benchmarks within the groups.
* Once the user edits the screen, the changes should persist for each user.
* The groups can be collapsed to expanded by clicking the – or + at the beginning of each row.
* The user can add, delete groups to the first column in the screen by right clicking on the screen.
* The user should be allowed to add and delete benchmarks to any of the groups by right clicking on the screen. The dropdown of benchmark should allow user to search and find the benchmark they want added to the view by right clicking on the screen.
* When adding a benchmark the user should be allowed to select the type of return to display (Gross, Net or Price). If the user selects Net or Price then (Net Return) or (Price Return) is appended to the benchmark name to indicate that the default price return is not being displayed.

# Feature 2: Top 10 constituents in a Benchmark UI component

* This component is required to show the top 10 constituent holdings (By Issuer) within a chosen benchmark and will be based on the user selecting a country and index.
* The component should show the following data elements:

1. Name
2. Issuer Weight % within Overall (Based on market value)
3. MTD Returns (Based on gross return series)
4. QTD Returns (Based on gross return series)
5. YTD Returns (Based on gross return series)
6. Prior Year Returns (Based on gross return series)
7. 2nd Prior Year Returns (Based on gross return series)
8. 3rd Prior Year Returns (Based on gross return series)
9. Total Weight % of the Top 10 at the bottom of the Grid

# Feature 3: Relative Performance UI component

* This component should display the relative performance for the selected security, selected benchmark and the country and sector indices in the selected benchmark, if available.
* The fields to be displayed will be for periods; QTD, YTD and 1 Year (previous 12 months).
* The following data elements are required.

1. Security
2. Benchmark
3. Benchmark Country
4. Benchmark Country Industry

# Feature 4: Multi Line Benchmark UI component

* This component will contain a line chart displaying the returns for the selected benchmark and associated country index.

1. Overall Benchmark
2. Country Benchmark

* There will be a functionality to add additional indices associated with the country. The benchmark and indices to chart should be communicated to this component and the component then displays the returns for that list.
* The chart should always display gross returns.
* A second box will be needed below the multi-line graph that displays benchmark return data.
* The following data elements will be needed:

1. Benchmark Name
2. MTD Returns (Based on gross price)
3. QTD Returns (Based on gross price)
4. YTD Returns (Based on gross price)
5. Prior Year Returns (Based on gross price)
6. 2nd Prior Year Returns (Based on gross price)
7. 3rd Prior Year Returns (Based on gross price)
   1. Holding (%) Pie Chart UI Component

* A pie chart is needed which will show either a fund or benchmark holdings (%) in a particular sector, industry or region for a particular point in time (effective date).
* This component may show the following data elements (depending on the filter selected):

1. Sector name
2. Industry name
3. Region Name
4. % of holdings (by market value) in a fund – placeholder for now, will be referenced in the slice 7 BRD
5. % of holdings (by market value) in a benchmark

* The holding % for the bench follows the slice name (sector or region). The holding % for the same sector region for the fund is parenthesis.
  1. **Feature 6: Multiline Benchmark and Security Chart**
* The data elements below will be added to the security price graph in slice 1 and thus will now become a comparison graph between security, a benchmark and the relevant country benchmark.

1. Overall Benchmark
2. Country Benchmark
   1. Index constituent Export

* The component will contain a grid displaying the constituents in a selected benchmark included including weight information.
* The user will be allowed to sort based on any column in the grid.
* The benchmark will be communicated to this component and the component then displays the information for that benchmark.
* The user will allow the user to export the contents of the grid to Excel.
* The following benchmark Data Elements will be needed for this export:

1. Constituent Name
2. Country
3. Region
4. Sector
5. Industry
6. Sub-Industry
7. Weight
8. Weight/Country
9. Weight/Industry
10. Ticker
11. Shares
12. Price
13. Price Currency
14. F/X (Price Currency)
15. Foreign Inclusion Factor (free float factor) – MSCI only
16. Daily Return in USD (Price, Gross, Net)
    1. Feature 8: Portfolio (Composite/Fund) Selector Component

* This will allow users to select a portfolio (fund/composite) that is used as the source of the UI components/gadgets.
* The user will be allowed to choose an effective date that will be used in conjunction with the selected portfolio to determine the holdings at that point in time. The effective date will be default to the previous business day.
* Calendar control will be provided to select an effective date.
* The dropdown menu separates composites from accounts/funds.
  1. Feature 9: Top 10 holdings UI Component
* This component will display a view of the top 10 holdings in a fund/composite based on market value.
* It will also show the weight of the security in the portfolio and the weight of the security in the benchmark and display the difference between the two.
* A totals row should appear on the display that totals Portfolio %, Benchmark % & Bet.
* There will be a link/button in this component that allows the user to display in greater detail the entire holdings of a fund/composite in a report format.
* The following data fields will be needed for the top 10 holdings view:

1. Ticker
2. Security Description
3. Market Value
4. Portfolio % (Weight % of Portfolio)
5. Benchmark % (Weight % in Benchmark)
6. Bet (Weight % of Portfolio – Weight % in Benchmark)
   1. Feature 10: Region Breakdown UI Component

* This component will display the details of the portfolio by regions. The weights of the region in both the portfolio and the benchmark will be displayed, as well as the bet (difference between weight in the portfolio and the weight in the benchmark).
* The user will be allowed to expand the regions by clicking the + before each region name. The grid will expand to display the countries contained in the expanded region.
* Similarly the region level rows, the weights of the country in both the portfolio and the benchmark are displayed, as well as the bet (difference between weight in the portfolio and the weight in the benchmark).
* To collapse the region, the user clicks the – (note that the + and – toggle based on whether the region is expanded or collapsed).
* The user can continue to drill down and expand countries by clicking the + before each country name.
* A pie chart representing the portfolio % for each region in the portfolio will be displayed.
* The following data fields will be needed for this component:

1. Region
2. Countries
3. Portfolio % (Weight % of Portfolio)
4. Benchmark % (Weight % in Benchmark)
5. Bet (Weight % of Portfolio – Weight % in Benchmark
   1. Feature 11: Sector Breakdown UI Component

* This component will display details of the portfolio by sectors. The weights of the sector in both the portfolio and the benchmark are displayed, as well as the bet (difference between weight in the portfolio and the weight in the benchmark).
* The user can expand the sectors by clicking the + before each sector name. The grid expands to display the industries contained in the expanded sector.
* Similarly the sector level rows, the weights of the industry in both the portfolio and the benchmark are displayed, as well as the bet (difference between weight in the portfolio and the weight in the benchmark).
* To collapse the sector the user clicks the **–** (note that the **+** and **–** toggle based on whether the sector is expanded or collapsed).
* The user can continue to drill down and expand industries by clicking the **+** before each industry name.
* A pie chart representing the portfolio % for each sector in the portfolio is displayed.
* The following data fields will be needed for this component:

1. Sector
2. Industry
3. Portfolio % (Weight % of Portfolio)
4. Benchmark % (Weight % in Benchmark)
5. Bet (Weight % of Portfolio – Weight % in Benchmark
   1. Feature 12: Asset Allocation UI Component

* This component will display actual weight of the country in the selected portfolio (Portfolio %), the weight of the country in the associated benchmark (Benchmark %) and the AshmoreEMM target (Model %) is displayed for each country for the selected portfolio.
* The bet (Bet (Model)), which is the difference between Model % and Benchmark % will be displayed for each country.
* The user should be allowed to sort the Bet (Model) column in descending order.
* The following data fields will be needed for this component:

1. Country
2. Portfolio % (Weight % in Portfolio)
3. Model % Target
4. Benchmark % (Weight % in Benchmark)
5. Bet (Model % Target – Weight % in Benchmark
   1. Feature 13: Risk/Return UI Component

* This component displays risk and return data points for both the selected portfolio and the associated benchmark.
* The following fields are displayed in the grid:

1. Expected Return
2. Alpha
3. Beta
4. Standard Deviation
5. Sharpe Ratio
6. Information Ratio
7. Turnover Ratio
   1. Feature 14: Market Capitalization UI Component

* This component will buckets the securities based on the size within the selected portfolio and associated benchmark and displays the Market capitalization of the buckets.
* The weighted average and median will also be displayed for both the portfolio and benchmark.
* There will be five segments to bucket the securities and these should be configurable by system admin.

1. Mega - >100 billion
2. Large - 10 billion – 100 billion
3. Medium - 2 billion – 10 billion
4. Small – 250 million – 2 billion
5. Micro - < 250 million
   1. Feature 15: Portfolio Details UI Component

* This UI page will provide both a portfolio report as well as supporting AshmoreEMM active analysis functionality.
* When the user moves to this page, the currently selected portfolio in Greenfield is the basis for the available information.
* By default this page initially displays all securities held in the selected portfolio on the currently selected effective date.
* The general fields are fixed in the first four columns.
* The additional fields will be displayed with a horizontal scrollbar to allow the user to view all remaining data points.
* The user will be allowed to select a benchmark from the Benchmark dropdown box on the screen.
* The benchmark associated with the selected portfolio will be displayed as the top entry in the list. All other benchmarks are displayed below the associated benchmark.
* When the user selects a benchmark, the securities will include in the results on the page.
* The user can also remove the benchmark by selecting the empty item from the Benchmark dropdown.
* The Grouping and filtering will be part of Telerik grid controls. However, smoke testing will be done to ensure the filtering needs.
* The following columns will be calculated based on the filtered results:

1. Target %
2. Portfolio %
3. Benchmark %
4. Bet %

* The user can specify a grouping for the results. Choosing a grouping will reformat the grid to allow collapsing and expanding of the securities within a group.
* The following fields are displayed in this UI component:

1. Ticker
2. Name
3. Type
4. Country
5. Shares
6. Price
7. Currency
8. Value
9. Target %
10. Portfolio %
11. Benchmark %
12. Bet %
13. Upside
14. YTD Return
15. Market Cap
16. P/E (FWD)
17. P/E (Fair)
18. P/BV (FWD)
19. P/BV (Fair)
20. EV/EBITDA (FWD)
21. EV/EBITDA (Fair)
22. Sales Growth 2011
23. Sales Growth 2012
24. Net Income Growth 2011
25. net Income Growth 2012
26. ROE 2011
27. Net Debt/Equity 2011
28. Free Cash Flow Margin 2011

* The user should be allowed to save the spreadsheet to an Excel workbook, PDF file or sent the results to a printer using the buttons
  1. Feature 16: Extension to slice 1 chart
* The chart defined in Slice 1 will be extended to include the purchase and sales value ($ in Millions) bars.
* The right axis should display the volume of the purchases/sales and the bar is displayed on date of the purchase/sale.

1. Severity and Priority

# Critical (Severity 1)

Critical defects are the defects which could affect all users including system unavailability and data integrity issues with no solution available.

* Service crashes or hangs indefinitely causing unacceptable or indefinite delays for resources or response.
* Data corrupted or lost and must restore from backup.
* A critical documented feature / function is not available.

Severity 1 issues identified by the customer not related to a service interruption require the customer to have dedicated resources available to work on the issue on an ongoing basis, during contractual hours, as required.

# Major (Severity 2)

Major functionality is impacted or significant performance degradation is experienced. Issue is persistent and affects many users or major functionality of Greenfield and there is no reasonable workaround available.

* Service is operational but highly degraded performance and impacting the business of AshmoreEMM.(more specific details are TBD )
* Important features of the Software as a Service offering are unavailable (Either because of Dev. Team’s ignorance or some service glitch) with no acceptable workaround.

### Minor (Severity 3)

System performance issue or bug affecting some but not all users comes in this category. Short-term solution or workaround is available, but not scalable and will be addressed.

* Service is operational but partially degraded for some and an acceptable workaround or solution exists.
* Service is operational with alternative features available but not as per the documented requirement. Reasonable workaround is available and will be worked further.

### Priority:

Priority will be based not only on how severe the problem is, but the customer's importance, business needs, etc. Many bugs cause crashes (High severity mentioned above), but aren't fixed because the crash is very infrequent or on a version/platform/feature low on the vendor's support list. It will be partially based on the severity of the defect but would also depend on the factors such as the frequency of the defect occurrence.

Priority will be classified as follows:

* High: Defects will be given urgent attention for which further testing cannot be done until the defect has been fixed.
* Medium: Defects will be fixed in the normal course of development. It can wait until next release of the build.
* Low: This category involves the defects which needs improvement to existing code, e.g. performance enhancement, or problems with an easy workaround but could be deferred.

1. Testing Environment

Client will provide QA environment.

### 

1. Entry and Exit Criteria

### Entry Criteria

The criteria that must be met before testing of specific elements may begin.

* All developed code must be unit tested. Unit testing must be completed and signed off by development team as per the schedule.
* The onsite QA environment should be set up in its place.
* Required test data for each slice will be available in the data model testing for those slices that require data from the data model.
* The test cases should be reviewed and signed off by Project Manager, QA Lead and eventually by AshmoreEMM.
* All the hardware and software requirements mentioned must be present at the time of commencement of Testing Phase.

### Exit Criteria

* All the Test Cases are executed, and their results are logged.
* All High Priority/Critical Defects in Greenfield application must be fixed and Re-tested for assured quality of the application.
* All deliverables must be signed off by the Project Manager, QA Lead and eventually by AshmoreEMM.
* The final product must meet all the requirements as per the SRD.

1. Deliverables

|  |  |  |
| --- | --- | --- |
| **No.** | **Deliverables** | **Responsibility** |
| 1 | Documents   * Test Design | Offshore QA Team |
| 2 | Test Case/Bug Write-ups   * Test Scenario/Case/Results * Bug Report | Offshore QA Team |
| 3 | Reports   * Test Report | Offshore QA Team |

1. Test Schedule

The following Schedule to be followed to cover the below mentioned activities:

**Build 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Activities** | **Start Date** | **End Date** | **Responsibility** |
| 1 | Preparation of Test Design |  |  | Offshore QA Team |
| 2 | Creation of Test Scenario |  |  | Offshore QA Team |
| 3 | Creation of Test Cases |  |  | Offshore QA Team |
| 4 | Approval of Test Scenario/Cases |  |  | AshmoreEMM |
| 5 | Test Execution |  |  | Offshore QA Team |
| 6 | Preparation of Bug Report |  |  | Offshore QA Team |
| 7 | Preparation of Test Report |  |  | Offshore QA Team |
| 8 | Test Sign off |  |  | Offshore QA Team |

1. Roles and Responsibilities

The table below lists all the activities to be performed by the Testing Team and the roles, responsibilities corresponding to each task.

|  |  |
| --- | --- |
| Test Activity | Roles |
| Preparation of the Test Design | Offshore QA Team |
| Review of the Test Design | Project Manager/QA Lead, AshmoreEMM |
| Test Scenario/Case Design | Offshore QA Team |
| Review of Test Cases | Project Manager/QA Lead, AshmoreEMM |
| Ensuring Entrance criteria achieved prior to System Test start | Offshore QA Team |
| Test Execution | Offshore QA Team |
| Documentation of Test Results | Offshore QA Team |
| Defect Logging and Re-testing | Offshore QA Team |
| Suspension decision | Project Manager/Other Stakeholders |
| Defect analysis, fixing and closing | Offshore Development Team |
| Ensuring exit criteria achieved prior to System Test signoff | Offshore QA Team, Project Manager |

1. Test Life Cycle
2. Constraints & Dependencies

* No prior benchmarks of application response times.
* The test machines need to be available during normal working hours. Any downtime will affect the test schedule.
* Delay in the release of build from Offshore Development Team for Testing.
* Non availability of the test data to QA Team while testing.
* Interface to other applications might limit the testing.

1. Stop, Suspension Criteria and Resumption Requirements

**Suspension Criteria**

* Hardware/software (QA environment) is not available at the times indicated in the project Test schedule
* Application under test contains one or more critical defects, which seriously prevents or limits testing progress.
* Assigned test resources are not available when needed by the test team.
* When 10% of test steps fail, an investigation will be initiated.

**Resumption criteria:**

* If testing is suspended, resumption will only occur when the problem(s) that caused the suspension was resolved or stakeholders agree upon the problem to continue.

**Stopping Criteria:**

* It states the successful completion of all test cases, meeting the requirements of the Greenfield application as per the business needs of AshmoreEMM.

1. Regression and Retest Criteria

Retesting on the Greenfield application will be performed if the bugs found in the first Test Lifecycle will be fixed and are declared non producible. If the stability of the code is in question and bugs raised once can be reproduced then the Retesting will only be performed after checking the quality of the code with Project Manager and the scope of changes made on application. Regression Testing will be performed only if it is required.

### 

1. Risk Management

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Risks** | **Mitigation Strategy** | **Impact** |
| 1 | Delays in delivering required documents from Development would impact test deadlines. | Development team will be advised to adjust release of documents on time, to allow the test activities to be performed in time. | Medium |
| 2 | Delays in fixing critical bugs, which would require re-testing, could have an impact on the project deadlines. | Development must ensure bugs are fixed and available for re-testing in the scheduled time. | High |
| 3 | Delay in the release of the build to the Client. | Revise Schedule plans like Negotiate deadlines of high-risk tasks to accommodate potential slippages or Schedule tasks later in the project, which can be postponed or cancelled if necessary. | High |

1. Testing approach for features

Following are the steps that will define the way to proceed:

* Understanding System requirements
* Planning Testing schedule
* Preparing Test scenarios and Test Cases
* Approval from AshmoreEMM
* Execution of Test Cases
* Test Result Loggings
* Reviews and Approvals
* Deciding on Stop, Suspension and resumption criteria

1. Template History

|  |  |  |  |  |  |
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