**Revision:** 9

**Revision history**

Describe the changes made and the reason for the change between the revisions.

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision** | **Date** | **Description of changes** | **Author** |
| P1.0-1 | 2016-05-31 | Created draft version | Hariharan |
| P1.0-2 | 2016-06-09 | Refined after the meeting with Solution owner Tim & other stake holders | Hariharan |
| P1.0-3 | 2016-06-20 | Updated the NFR requirements | Hariharan |
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| P1.0-5 | 2016-07-15 | Updated solution outline section | Sivarajan Chitraikani |
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| P1.0-8 | 2016-08-15 | Updated the document based on Nha-Tien review comments | Sivarajan Chitraikani |
| P1.0-9 | 2016-08-23 | Updated the document based on Tim Ellmers review comments | Sivarajan Chitraikani |

|  |  |
| --- | --- |
| **Reviewed/Approved** | **Name** |
| Yes/No |  |

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# Introduction

The objective of this solution is to redesign the current job search tool and develop one global solution that would work seamlessly on the following platforms.

1. IRW (FS)
2. IRW (MW)
3. New Web Platform (NWP)
4. IKEA Inside
5. ICO Worker.

This document describes the high level solution design approach of the Job Search tool.

# Business current state / Solution

Today in IRW the IKEA Jobs search page uses a custom solution to present dropdown options for searching all IKEA jobs, globally. The current functionality is difficult to maintain or change.

* Sub Issue 1: Current job search selection functionality is not available for internal candidates (IKEA Inside).
* Sub issue 2: Lack of interface between Kenexa and Job Search module. High manual maintenance effort on IRW, NWP and IBM.
* Sub issue 3: Job search functionality has language as first selection criteria and that needs to be changed to country as first selection criteria to allow a satisfying candidate experience. Moreover a suggestive search result in dropdown lists and a display of search results are requested enhancements.
* Sub issue 4: Not all countries are connected to the Job Search Tool on IKEA.com (for example, Russia) due to failure to integrate newly created Russian TG with a Job Search Tool.
* Sub issue 5: The current job search tool does not allow to switch on the WCAG technology for the responsive design candidate experience within Kenexa Brassring. This is preventing solution enhancement.

## Capability description

User Stories

Business Rules

Workflows

Capability

**Customer Benefits**

* Reduced Efforts – No efforts required on individual platforms. As the solution is generic, changes implement in microsite will reflect in all platforms.
* Better availability and usability of job search functionality for internal and external candidates.
* Easy maintenance of Job Search Tool values using API technology from ATS to the Job Search tool.
* Accessibility via mobile devices without losing core functionality.
* Better candidate experience.
* Better control on Look & Feel - Since we are extracting the kenexa response and we have the flexibility to control on Look & Feel.

## Feature description

The global solution will implement the following features:

1. Redesign how these dropdown values are served and update the IKEA Jobs search to use a Brassring API instead of a custom IRW solution.
2. Update all the dropdown values to be fetched from Brassring API.
   1. Change the display & order of the search criteria. ie Display the filter criteria of the search (candidate can always change the filter criteria) (Example from Benteler careerpage)
   2. Real time automatic synchronization of jobs and all search criteria (language, location, org unit, etc.) between ATS and new Job Search tool.
   3. Possibility to limit search filter values depending on a previous filter selected (for example, when a country is selected, availability of values in other filters would be limited to options for that country)
   4. Possibility to have specified filters available on a Job Search Tool and in the following order of display:
      * Country
      * Location
      * Work area
      * Part time/full time
      * Language
   5. Implement keyword search.
   6. All filters can be selected separately without following an order.
   7. Display number of found jobs per selection once a criteria was selected
   8. Reset filter in different sub categories (see picture F10)
   9. After clicking 'show jobs' candidates will be directed into Kenexa Brassring. Source tracking is needed. Job search results shall be shown in Kenexa Brassring within the IKEA webpage.
   10. Advance search option will be provided in microsite. Click on advance search link will open kenexa Advance search page.
   11. Possibility to have a suggestive search (when a candidate starts typing a combination of letters possible suggestions appear).
   12. Possibility to get results in the keyword field regardless the language of query
   13. key word and filter search will be combined and keyword search results will be filtered using the filter criteria selected by the user
3. Other Links stay the same on pages e.g. Advance Search, Log in, Job Description and action pages opened on click of action buttons will be on same page Brassring page decides the next step for Russian users. So for Russia users Log in link will not be provided. Advance link for Russia provides only locations in Russia so advance link for Russia users will not be shown
4. Need to have job search tool translated for labels and dropdown values in thefollowing languages:
   1. Chinese
   2. Croatian
   3. Czech
   4. Danish
   5. Dutch
   6. English
   7. Finnish
   8. French
   9. German
   10. Hungarian
   11. Italian
   12. Japanese
   13. Korean
   14. Norwegian
   15. Polish
   16. Portuguese
   17. Romanian
   18. Russian
   19. Serbian
   20. Slovak
   21. Slovenian
   22. Spanish
   23. Swedish
5. New header & footer will be developed.
6. Russia will have little deviation from normal flow. ie If the user is Russian, he/she will be redirected to Avent system where his/her profile will be registered. Avnet redirection will be handled by Brassring pages. JobSearchTool will redirect to Brassring pages for job description. While visiting the job description of jobs in Russia gateway, if the user clicks on apply button then user will be redirected to Avnet by Brassring.
7. Advance Search in Brassring for Russia shows only locations in Russia. So it was decided to hide advance link for Russia. Changes to breadcrumbs are required to avoid user going to advance search while viewing the job description.

## References

[1] BSGF\_IKEA Jobs search tool Requirements Doc –

<https://service.projectplace.com/pp/pp.cgi/0/1231561036?direct=1231410099#/tab_>

[2] IBM Kenexa API Reference -

<https://service.projectplace.com/pp/pp.cgi/0/1197196474?direct=1231569121#/tab_>

[3]. Site Extension guideline reference

<https://service.projectplace.com/pp/pp.cgi/0/1231563340?direct=1253275997#/tab_>

## Open Issues

### Response Time

Expecting Response Time values for the below table from Business:

|  |  |
| --- | --- |
| Use Case | Response Time in Milli Seconds |
| Search page loading with all dropdown values |  |
| Update Total Job count in search page when criteria changes |  |
| Search Jobs without any filter criteria. |  |
| Search Jobs with Multiple filter criteria. |  |
| Keyword search. |  |
|  |  |
| Clicking Next page in Job Results. |  |
|  |  |

### Response time is from end user perspective. Performance tests will be performed using load runner. Average response times for various actions and maximum number of users that Job Search Tool can handle will be bench marked

## Tech Stack

* + Java – 1.8 Version
  + Front Tier – Java script, Jquery, JSP, HTML & CSS. Ajax calls will be used for populating drop downs.
  + Integration Tier – Spring framework 4.0 , Spring MVC, Spring IOC, Kenexa webservice will be consumed in Spring Batch Programs.
  + Data Access Tier – Spring JDBC, Brass ring Kenexa API.
  + MySQL DB
  + IDE – Eclipse Mars 4.5.0.
  + Code Repository – Clear case
  + Development Web server – Apache Tomcat 8
  + Production Server – Tomcat on Linux server
  + Build tool - Jenkins

## Landing to Microsite:

All the platform’s current Job search tool link will be replaced with new microsite url. Parameters will be passed from source platform to microsite to identify the source platform & locale in the microsite. Based on the parameters passed, microsite will display the page in the appropriate language.

secure.ikea.com requires PCI DSS compliance. JST doesn’t process/store any data which requires PCI DSS compliance. Later we can migrate to www.ikea.com from ww8.ikea.com, when https is enabled in ikea.com domain.

Microsite URL format for external

<https://ww8..ikea.com/ext/job/search/external/[COUNTRY_CODE]/[LANG_CODE]/home>

Microsite URL format for IKEA Inside Jobs (internal)

<https:// ww8.ikea.com/ext/job/search/internal/[COUNTRY_CODE]/[LANG_CODE]/home>

The following two parameters has to be passed from source platform

COUNTRY\_CODE – ISO code for country

LANG\_CODE – ISO code for language

## Content management Tools for Multilingual data

There won’t be a need to add to have a content management system handling multilingual data. Instead internationalization property file will be implemented. All translated data will be available in a property file, from where it will read and written to the JSP. Internationalization property files will have key value pairs. Keys are used in Job Search Tool as reference and values contains language specific text those needs to be shown to user. Internationalization property files will be stored in server file system and that will be referenced by Job Search Application. Clear case will be used for version control of properties files.

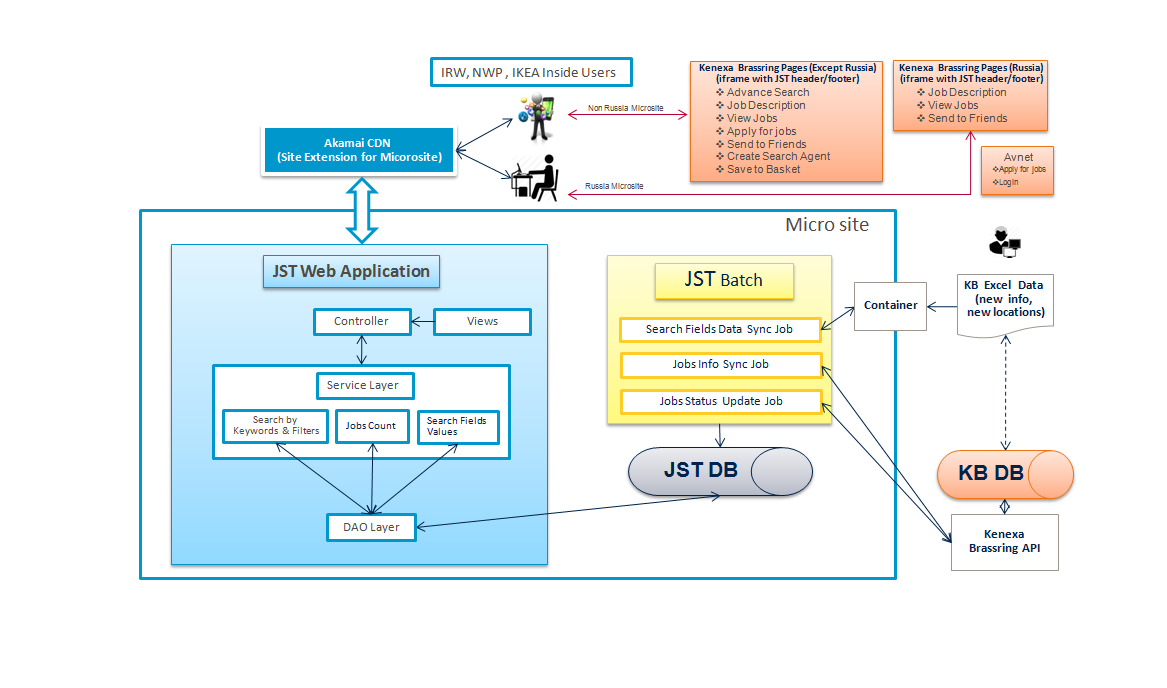
Excel sheet containing the translated texts are placed in <https://service.projectplace.com/pp/pp.cgi/0/1267349738>. Property files will be generated based on excel sheet placed in this folder.

Property files have to be copied to the file system of Server containing the production JST Application.

# Solution Outline

The existing Job Search tool will be redesigned in to new Global solution. The new Global solution will have its own header, banner, footer, menu as per Ikea Look and feel guidelines. The back end kenexa brassring api will be reused as it is. Current Job search tool will be replaced with the url of this Global solution.

## High Level Solution Design:



### Akamai CDN

Akamai CDN will provide DNS service for linking ww-8.ikea.com domain with Amaazon Web Services Hosting. Akamai is not used for hosting any pages and caching.

### Amazon Cloud

The following products from Amazon are used for hosting Job Search Tool Microsite

AWS Beanstalk – Tomcat 8.0 (JST Web Application)

AWS RDS – MySql 5.7

AWS S3 – Brassring Excel Files hosting

AWS Beanstalk (Worker Environment) – JST Batch Application

The user access to AWS environments are controlled by Amazon CDT Team.

### Components Built by Capgemini

JST Web Application component is built by Capgemini to provide response UI for Job Search Page and to link the existing IRW, NWP and IKEA Inside pages

JST Batch Application component is built to provide the Job Synchronization using Brassring API and Search Fields Values Synchronization using Brassring provided data

#### JST Web Application

The following functionalities are covered as part of JST Web application implementations

1. IKEA specific Header and Footer in all pages
2. Job Search – Using keyword and predefined fields like Country, Location, Work Area, Job Type & Language together.Cached Jobs Information in JST Database will be used for searching.
3. Search fields values are stored in JST database and accessed by JST Web Application
4. Restrictions on keyword
   1. Special characters like ~()><@+- cannot be used as part of keyword
   2. Setting keyword size less than 3 characters will lead to performance issues in MySql so we will limit the minimum size for key word as 3
   3. The asterisk serves as the truncation (or wildcard) operator. Words match if they begin with the word preceding the \* operator

|  |
| --- |
| Keywords are case insensitive. Keyword Search will be performed using the logic provided belowScenario 1:  Keyword entered by User = *manager*  The jobs satisfying any one of the following conditions will be returned   * Job title with ***manager*** * Job description with ***manager*** * Country with ***manager*** * Location with ***manager*** * Language with ***manager*** * Work Area with ***manager*** * Job Type with ***manager***   Scenario 2:  Keyword entered by User = *manager Helsingborg Sweden*   1. The jobs satisfying any one of the following conditions will be returned  * Job title with ***manager*** *or* ***Helsingborg*** *or* ***Sweden*** * Job description with ***manager*** *or* ***Helsingborg*** *or* ***Sweden*** * Country with ***manager*** *or* ***Helsingborg*** *or* ***Sweden*** * Location with ***manager*** *or* ***Helsingborg*** *or* ***Sweden*** * Language with ***manager*** *or* ***Helsingborg*** *or* ***Sweden*** * Work Area with ***manager*** *or* ***Helsingborg*** *or* ***Sweden*** * job Type with ***manager*** *or* ***Helsingborg*** *or* ***Sweden***   Scenario 3:  A phrase that is enclosed within double quote (“"”) characters matches only rows that contain the phrase literally, as it was typed  For Example, Keyword entered by User = “system developer”. Jobs that contain the exact phrase “system developer” will be returned  Note :  Other filters (like Country, Location, WorkArea, Language, Job Type) will be applied on Jobs returned by Keyword Search Logic |

1. Job Search Result count display on selecting the search fields
2. Job Search Result Pagination (server side)
3. Job Search Result Sorting (server side)
4. Implementation of Action Buttons like Apply Job(s), View Job(s), Send to Friends, Create Search Agent, Save to basket (Brassring UI will be linked using iframe). Still discussion is going on and action buttons implementation are not finalized.
5. Advance Job Search Page (Brassring UI will be linked using iframe)
6. Login Page (Brassring UI will be linked using iframe)
7. Changes specific to Russia users while displaying login and apply jobs
8. Html5 local storage will be used for storing the job search selections and job results. If Html 5 local storage is not available then Cookies will be used for storing the job search selections and ajax calls will be used for reloading the job result page, when the user clicks on back to Search button

### JST Batch Application

The following functionalities are covered as part of JST Batch application implementations

1. Search fields values update from Kenexa Brassring
   1. Amazon S3 will be used as container and excel files listed below needs to be uploaded
      1. BR\_CONFIG.xlsx contains the Brassring configuration information like url, site ids etc
      2. BR\_JST\_FIELDS\_VALUES.xlsx contains the values for search fields like country, location, workarea, job type and language
   2. Job will download BR\_CONFIG.xlsx and BR\_JST\_FIELDS\_VALUES.xlsx
   3. If the files are available in S3 then the following steps will be processed otherwise job execution will be stopped at this stage
   4. Information in BR\_CONFIG.xlsx will be used to populate/update JST\_CONFIG table
   5. Information in BR\_JST\_FIELDS\_VALUES.xlsx will be used to populate/update the below tables
      1. COUNTRY & COUNTRY\_VALUES
      2. LOCATION & LOCATION\_VALUES
      3. JOB\_TYPE & JOB\_TYPE\_VALUES
      4. LANGUAGE & LANGUAGE\_VALUES
      5. WORKAREA & WORKAREA\_VALUES
   6. After successful populate/update of data, the excel sheet will be renamed as BR\_CONFIG\_Processed\_{TimeStamp}.xlsx & BR\_JST\_FIELDS\_VALUES\_Processed\_{TimeStamp}.xlsx in S3 folder

Note: Only authorized people can upload files to Amazon S3 and it will be similar to uploading the file in website. User can do it using their browser.

Excel files are placed in <https://service.projectplace.com/pp/pp.cgi/0/1240910216> for reference

1. Jobs Info Caching using Kenexa Brassring API
   1. Brassring API will be called according to language list in JST\_CONFIG table information for Global and Russian TG. Only jobs posted after last update of information will be requested
2. Jobs information will be stored/updated in JOB\_INFO and Job description will be stored in JOB\_INFO\_DESC tableJobs Info status update using Kenexa Brassring API
   1. Brassring API will be called according to language list in JST\_CONFIG table information for Global and Russian TG.
   2. Unposted Jobs will be marked as INACTIVE in JOB\_INFO

## Open Source Libraries

The following open source libraries will be used for developing Job Search Tool

1. Java Development Kit 1.8.0\_91
2. Spring MVC Framework 4.2.6.RELEASE
3. Spring Batch Framework 2.1.7.RELEASE
4. Apache POI 3.14

## 

## Software Requirements

The following softwares are required for deploying Job Search Tool

1. Apache Http Server 2.4.23
2. Apache Tomcat 8.0.36
3. MySql Server 5.5

Note: 64 bits version of softwares will be used

## Hardware Requirements

Hardware used should have following specifications

1. RAM - 8GB
2. Hard Disk - 512 GB
3. Operating system - Linux/Windows with 64 bit OS

## Business Requirements



Business requirements Document (BRS\_for\_sign\_off.docx) is available in project place https://service.projectplace.com/pp/pp.cgi/r1231410099.

# Platform rules

*This section describes platform specific rules that should be considered in the design and implementation of the requirements. If IT-requirement exists for the solution, the Rules can be found in the IT-requirement.*

### IRW.RULE.TRACEABLE

Clear case will be used to version control (lifecycle) this change.

### IRW.RULE.ENABLEDISABLE

NA.

# Non functional requirements

## Responsive web design

Pages will be developed using HTML 5 and Bootstrap framework to support responsive web design. Pages developed in Microsite are aimed at allowing desktop webpages to be viewed in response to the size of the device one is viewing with.

## Adaptability

* Integration layer (Java layer) integrates with Kenexa API through request/response xml messages.  Based on front end form parameters, request xml is formed in Integration layer. The xml structure is defined by Kenexa.
* The interfaces will be designed in a more abstract / generic way that will allow for easy extension to other ATS. i.e. Integration tier is  kept loosely coupled with Kenexa which will give flexibility for adding any another ATS in the future.
* **Switching to different ATS** - Code changes required in Integration layer in order to form the request message as per  New ATS tool standards. The amount of rework depends on new ATS’s request/response format i.e. XML or JSON or any other structure.

## Maintainability

Since all the platforms use a Global solution it will be easy to maintain. i.e. Changes implemented in Global solution will reflect in all platforms.

## Scalability

Capacity of the servers will be increased based on the load to production systems. Architecture will support hosting the application in clusters

## Accessibility

Web Content Accessibility Guidelines (WCAG 2.0) is a stable, referenceable technical standard. It has 12 guidelines that are organized under 4 principles: perceivable, operable, understandable, and robust.

For each guideline, there are testable success criteria, which are at three levels: A, AA, and AAA. JST solution accessibility will be **‘AA’** compliant.

## Performance Considerations

Job information will be fetched from Brassring and stored in JST Database. This will be done using batch process separate from JST Web application. JST Web application will not invoke brass ring for fetching the data. This will improve the performance of JST application. JST database will act caching layer for job information.

## Browser Support

1. Global browsers with fast update pace. - Firefox 47.0 & 46.0 , Chrome 51.0.2704 & 50.0.2661
2. Global browsers with slow update pace. - Safari 5, 4 & 3, IE 11, 10 & 9 and Edge 25, 23 & 21.
3. Local/regional browsers those are very common in a specific market - Yandex 16 & 15. (Russia)

## Security Considerations

SSL enabled and within ikea.com domain. Solution will be tested for standard ikea security tests such as SQL injection, Cross-site scripting & hacking.

## Opportunities

NA

## SEO

Solution follows the SEO guidelines such as Editable page title, metadata, URL, headings and page content should be part of new solution. Ikea DNS naming standards will be followed. To get better ranking in search engine, Microsite will be hosted with in ikea.com as sub domain using Site Extensions. For eg [www.ikea.com/ext/JobSearchTool](http://www.ikea.com/ext/JobSearchTool).

URL is not part of the SEO as url will not be language specific.

### Implementations for SEO

Added the following meta tags to support SEO

keywords

title

description

All contents displayed in jst pages are coming from language specific property file. So content is editable and search engine can index the content.

## Multi-lingual Support

* Job search tool will support the following languages i.e . labels and dropdown values will be translated in the following languages:
  + Chinese
  + Croatian
  + Czech
  + Danish
  + Dutch
  + English
  + Finnish
  + French
  + German
  + Hungarian
  + Italian
  + Japanese
  + Korean
  + Norwegian
  + Polish
  + Portuguese
  + Romanian
  + Russian
  + Serbian
  + Slovak
  + Slovenian
  + Spanish
  + Swedish

## Web Analytics

Standard web analytics measurements will be done ie Number of users visiting the Job Search page & Job results page will be tracked. Solutions will be developed as per the web analytics guidelines from Ikea.

## External Dependencies

NA

# Out of Scope

1. Global rollout to all markets.
2. Removing the Existing Job search tool from all platforms and linking to microsite is out of scope of this project. i.e removing the current page & updating the page with microsite url.
3. Any modifications to Kenexa api .
4. Making kenexa pages responsive is out of scope for this development.
5. Once the application navigates to kenexa portal, it is not under the scope of Microsite.