0077 Net2Html5 (aka Silver Lining)

Statement of Work (SOW)

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**Project Signatures**

By placing your signature below, you indicate your approval and acceptance of this Statement of Work to be complete and accurate portrayal of the project objectives.

|  |  |  |  |
| --- | --- | --- | --- |
| Name |  |  |  |
| Title  Division | Signature |  | Date |
| Name |  |  |  |
| Title  Division | Signature |  | Date |
| Name |  |  |  |
| Title  Division | Signature |  | Date |

# Executive Summary

The purpose of this project will be to provide a framework for converting .NET applications written in C# to TypeScript/Javascript and HTML5. The ultimate goal (later scope) is to convert the Hydra application, with the intermediate result of providing a framework that will be promoted as an open source, extensible platform for commercial use. The platform will be extensible for allowing any type of .NET application to be converted, i.e. Windows Forms, Classic WebForms, WPF applications, etc., but the initial offerings within the scope of this project will only include conversion of Silverlight/XAML and Console apps. This will include a TypeScript based engine to replace System.Console as well as the Silverlight XAML composition and rendering engine. The technology will allow continued support in C# by enabling browser debugger support for C# code (.cs files) through the use of source maps.

# Project Background

Due to the emphasis away from browser plugins and dropped support for them from major browser vendors, Mind Chemistry has made the decision to move away from Silverlight and convert all existing code for the Hydra application to TypeScript and HTML 5. This is expected to take some time and effort but considered vital to leverage the vast code base already established for Hydra. This will also eliminate the ongoing issues with supporting the Silverlight platform such as build errors, project dependency complexities, and the limitations of Silverlight. It will also increase market share for the wide adoption of HTML5 and Javascript across browsers, operating systems, and devices.

# Project Definition

## Goals/Objectives

1. Create a framework for converting C# projects to TypeScript 2.0 (with Experimental features), Html5, and ES7 (ECMAScript 7.0)
2. Convert Hydra (formerly described) with minimized need to apply fixes to the resulting code.
3. Stay ahead of the technology curve by using TypeScript whose goal is to provide features of future planned versions of JavaScript. TypeScript features will become the new version of JavaScript.
4. Provide the conversion technology as an open-sourced platform to get the product market exposure and possibly community support.
5. Provide a rich user interface with little distinction between the new version and current version of Hydra.
6. Support a component driven model (pre-packaged) similar to the Windows model.
7. Support the latest and greatest features of newer technology such as ReactJs, JQuery, JQuery UI, JSON, and Restful Web Services.
8. Create a JSON based version of WPF/XAML called JAML.
9. Enable the ability to pre-package code as components with functionality cannot be easily viewed from a code perspective, decompiled, or stolen. The goal does not eliminate the possibility, just make it as difficult as with .NET compiled code.
10. Re-establish the UI control market industry since the days of drag and drop controls as packaged software.

## Scope

1. Create a Visual Studio Extension to convert Console applications and Silverlight applications to HTML5/Typescript.
2. Allow for the conversion of the majority of code for Hydra with minimal fix up.
3. Allow for the conversion of the majority of the library (.NET runtime) and third-party components with minimal fixup.

See: <https://github.com/Microsoft/referencesource>

1. Finish the Hydra Presentation Framework as a replacement for the Silverlight composition and presentation layer used by Hydra.

See: $/RazorViewsDesigner/Binaries/DivElements/IL/SandDockClient

1. Replace System.Xaml with Hydra.Jaml including the conversion from XAML to the JSON-based JAML

See: $/RazorViewsDesigner/Binaries/DivElements/IL/SandDockClient/System.Xaml

1. Replace AgCore with Hydra.Core.Internal

See: $/RazorViewsDesigner/Binaries/DivElements/IL/SandDockClient/agcore

1. Provides many of the same code libraries as the Silverlight Runtime with focus on what used by Hydra only.

See the following:

* + $/RazorViewsDesigner/Binaries/DivElements/IL/SandDockClient/System.Windows
  + $/RazorViewsDesigner/Binaries/DivElements/IL/SandDockClient/System.Windows.Toolkit
  + Includes:
  + Mscorlib
  + System
  + System.Core
  + Others as needed

1. Provide enough of a Console Runtime Environment to assist with debugging and testing.
2. Enhance the TestTransformer project to automate the same functionality as the VS Extension, with mocked up VS functionality.
3. Cleanly convert Divelements.SandDockSL
   * 1. See: $/RazorViewsDesigner/Binaries/DivElements/IL/SandDockClient/SandDockSL

## Scope Exclusions

1. Full conversion of Hydra. This will likely require manual fix ups. It is not expected to be a perfectly clean conversion.

## Approach

The project approach will include the following:

1. Using the Mind Chemistry Methodology (Combination of elements from CMMI as well as Scrum)
2. Use TFS Work Items for all work. Items for each WBS work package, action items added by team members for those not included in WBS. All work will tie to a work item.

Project location for Work Items:

* $/0077 Silver Lining

Code project:

* $/RazorViewsDesigner

1. Report against work items for time worked in QuickBooks Timesheets. All time tied to work item.
2. Utilize Impediments for work stoppage or overages. Should be communicated to whole team via email at time of identification.
3. Tie all work items to a deliverable (Product Backlog Item)
4. Utilize the Scrum Dashboard
   1. <http://scrum.mindchemistry.com>
5. Managing the project work in MS Project.
6. Daily updates in Work Items. Add to History tab.
7. Add notes to all TFS Check Ins.
8. Weekly status reports and accomplishments posted to SharePoint (due by end of day Saturday – all team members)
9. Do formal risk management.
10. Have a weekly status meeting with notes posted to SharePoint using the Status meeting Word Template

## Deliverables

| Project Deliverable | Estimated  Start Date | Estimated  End Date |
| --- | --- | --- |
| Business Requirement Statement (BR) | 12/03/2016 | 12/24/2016 |
| Functional Specification | 12/08/2016 | 1/7/2017 |
| Technical Specification | 12/16/2016 | 2/14/2017 |
| Development & Unit Tests | 1/1/2017 | 10/1/2017 |
| QA Tests & Problems Fixed | 10/1/2017 | 12/31/2017 |
| Implementation | 12/31/2017 | 1/30/2018 |
| Post-Implementation Review (PIR) | 1/30/2018 | 1/30/2018 |

## Constraints

1. Functionality: Conversion of Hydra by 70% without rewrite (to be defined more clearly)
2. Lack of resources
   * Current resources include
     1. 2 project manager (shared, part time)
     2. 2 scrum masters (shared, part time)
     3. 2 developers
3. Time: One year however believed achievable, is still aggressive.

## Dependencies/Interfaces

1. TypeScript - As TypeScript is evolving, this project will rely on changes by the TypeScript community and Microsoft. There may be decisions made to adopt new features of the language as introduced to stay ahead of the curve.
2. ECMA Script 7 – ES7 is still in the proposal stage. Experimental features supported by TypeScript may change, be dropped, or added.
3. ReactJS – Not expected to be a dependency

## Assumptions

* The Statement of Work and Business Requirement Statement must be signed off on by [mm/dd/yyyy] to provide enough programming time to meet the [mm/dd/yyyy] deadline.
* The customer/users have the appropriate hardware equipment and software required to use the application.
* The customer will use the application in the manor intended.
* Hardware (servers and workstations) will be available as needed for implementation of this system.
* Additional Server storage will be available as required.
* An Internet Browser will be available on each workstation.
* Key project documents will be reviewed by appropriate management personnel and approved or disapproved within five (5) workdays of receipt.
* Key personnel will be available for brief meetings, to speed up the process of demonstrating prototype screens and reports.
* The application will have Web Based User Interface Screens.
* The system will be continuously available with the exception of scheduled maintenance time.
* All information will be housed in a centralized database with daily system backups and capacity monitoring.

# Project Organization

## Project Organization Chart



## Estimated Work Effort

The total estimated effort hours to complete this project are 5,000 based on the following:

* Project Hours: 4,000
* Contingency – Unidentified Tasks 1,000
* Contingency – Budget
* Estimated Total Effort Hours 5,000

The milestone and effort hours for the project are a preliminary estimate. The team will continually identify opportunities to lower cost and improve time to market, these estimates will be updated as the project progresses through the life cycle.

## Resource Requirements

The following types of resources are needed to complete this project effort:

| Resource Type | No. of Resources |
| --- | --- |
| Project Sponsor | 1 |
| Customer Manager | 1 |
| Project Manager/Scrum Master | 2 (shared) |
| QA Analysts (Documentation, Testing & Training) | TBD |
| Developers/Programmers | 2 |
| DBA | Shared |

## Roles & Responsibilities

The following resources have been specifically identified as being included as a member the project team:

| Name | Department | Title/Role | Responsibilities |
| --- | --- | --- | --- |
| Ken Netherland |  | Project Sponsor(s) | Champion of the project providing the project team with leadership and direction, provides funding for the project, and participates in the review and approval process and performs deliverable sign-off. |
| Ken Netherland  Mike Pearl |  | Project Manager/ Project Leader | Responsible for the activities of the project team, technical team, along with coordination, communication, issue tracking/resolution, scope management, change management, status reporting, quality assurance and auditing deliverables and is ultimately responsible for leading the project to a successful conclusion. |
| TBD |  | Customer Manager | Responsible for the activities of the business team, along with coordination, communication, issue tracking/ resolution, scope management, change management, status reporting, quality assurance and auditing deliverables and also, responsible for training, assisting the end-user community with modifications to policies, procedures, legislation, tracking customer expenditures and facilitating UAT. Acts as a backup for Project Manager/Leader. |
| TBD |  | QA Analyst(s) | Responsible for assisting in the documenting of the Project Objectives Document (when assigned), Detailed Business Requirements Statement, “As Is” and ‘To Be’ process diagrams, user acceptance testing. Also, provides business expertise and facilitates focus groups, meetings, and JAR and JAD sessions. |
| Ken Netherland  Mike Pearl |  | Technical Architect | Assess, document and develops the technical architecture / platform to be utilized by the project. |
| Ken Netherland  Mike Pearl |  | Developer(s)/ Programmer(s) | Responsible as the technical expert to design and construct the business solution. |
| TBD |  | Customer(s)/  End-User(s) | Provides critical detailed subject matter and assists in requirement gathering / definition. |
| TBD |  | QA Analyst(s) | Ensures solution meets business requirements and specifications along with testing activities. |
| Ken Netherland  Mike Pearl |  | Database Administrator (DBA) | Designs, creates, and implements the databases to be used, imports data and ensures the software and databases function as specified. Performs performance testing of the databases. |
| TBD |  | QA Analyst(s) | Develops training and reference materials and conducts training session for end users.. |

# Project Controls

## Project Success

The project recipients have identified the following items as the most important measures of project success:

* 70% conversion of Hydra without rewrite by 12/31/2017 (measured by calling class, method)
* Full conversion of SandDock by 10/31/2017
* Conversion of required .NET Runtime classes by 6/30/2017

In terms of relative importance to the project, rank the following three items from most important to least important:

1. Performance/Scope
2. Cost
3. Schedule/Time

## Risk Management Plan

The purpose of the following risk management plan is to identify acceptable risk thresholds; document how risks will be identified, qualified, quantified, and prioritized; describe how risk responses will be developed; and how risks will be monitored and controlled.

**Risk Management Roles and Responsibilities**

| Role | Responsibilities |
| --- | --- |
| Project manager | Developing risk management plan  Identifying, qualifying, quantifying, and prioritizing risks  Monitoring risks  Escalating risk events |
| Project team | Developing risk management plan  Identifying, qualifying, quantifying, and prioritizing risks  Monitoring risks  Escalating risk events |
| Sponsors | Approving risk thresholds  Approving risk management plan |

**Risk Identification**

The project team will continually assess risk throughout the life of the project by continually evaluating the health of the project.

**Risk Qualification**

Risks will be qualified through reviews and consultation with the project team and subject matter experts. They will be evaluated based on impact, negative or positive, to the project.

**Risk Quantification**

Risks will be quantified using the scoring mechanism outlined in the following table.

| Score | Probability | Impact |
| --- | --- | --- |
| 4 | Highly likely/probable  (76%-100%) | **Critical:** Threatens the viability of the business or represents failure of the project |
| 3 | Likely  (51%-75%) | **Severe:** Threatens the achievement of business vision or severely reduces project benefits |
| 2 | Somewhat likely  (26%-50%) | **Moderate:** May delay achievement of the vision or reduce project benefits |
| 1 | Unlikely/improbable  (0%-25%) | **Minimal/minor:** No impact on business vision, but may increase project costs and timescales |

**Risk Prioritization**

Risks will be prioritized based on impact to the following project components in the following order.

1. Scope
2. Quality
3. Deliverables
4. Time

**Risk Monitoring and Control**

Risks will be tracked in a risk log to be saved with all other project documentation on the Shared drive. This log will be reviewed at regular project team meetings and status of mitigation strategies discussed.

Additional risk management strategies and contingency plans have been established to address risks throughout the project:

* Identification of the project recipients and internal partners.
* Gain the commitment of technical and subject matter experts (SME).
* Ensure full understanding and buy in of the project scope and direction from ***all*** project partners.
* Receive the commitment for support and funding from the Project Sponsor, Management and Senior Leaders.
* Follow a rigorous change control process to control project scope.
* Closely track the project schedule to eliminate critical path slippage.
* Conduct regular status meetings and distribute meeting minutes.
* Establish an effective contingency plan for the project.

**Project Risks**

The top **high-level** risk items have been identified as potential impact to the success of the project:

* [Insert risk items]

The following detailed risk table provides clear and distinct influences these and other risks have on the project. The list below is merely and excerpt of the complete and working risk log managed separately from this document. Please refer to the risk log itself for complete risk information.

[Items contained in table are examples, please replace with risks associated to this project]

| Risk # | Risk Name | Risk Description | Assumptions | Probability Score |
| --- | --- | --- | --- | --- |
| 1 | Hardware | For integrated systems/data, the network must be responsive to calls for large amounts of data. | No matter how | 3-Likely |
| 2 | Planning | Insufficient time allocated/allowed for planning, requirements gathering, | Project failure can almost always be traced to lack of a concrete, well thought-out plan and design. For a large organization proper planning can take 6 months to a year. | 4-Highly Likely |
| 3 | Team Skills | Unskilled, untrained technicians, data modelers, and team leads can lead to an inefficient application. | Without proper training and the time to correctly take the knowledge and apply it, we may be creating an unworkable and/or inefficient GIS application. Data modeling can make a substantial difference in responsiveness. | 4-Highly Likely |
| 4 | Project Funding | Without needed funding critical tools, services and project resources cannot be acquired. | Project cannot complete the Planning / Design phase or proceed to subsequent phases. | 4-Highly Likely |

## Issue Management

Project related issues would be tracked, prioritized, assigned, resolved, and communicated as follows:

* A problem/Issue Log will be established and maintained. All problems will be assigned a severity level, and owner and a resolution date. Added as tasks/bugs in TFS.
* Critical issues will be included in a weekly status report. Any problems/issues that have the potential to influence the project scope, budget, and/or schedule will forward to the Project Manager and/or Project Sponsor for resolution.

## Change Control

All changes to the project scope, budget, or schedule will be documented and then approved or disapproved by the Project Manager and the Project Sponsor.

## Communication Plan

This section must outline the strategies to promote effective communication throughout the project.

* Contents of the Project Status Report will include milestones, process made to date, next steps, issues/concerns, and overall project schedule.
* All project team members will provide weekly status reports to the Project Manager.
* Project team meetings will be held on a weekly basis. Minutes of the meetings will be documented and published to all of the project team.
* The project team will review the project scope, budget, and schedule at the end of each project phase. At the end of each project phase, the project team will have the opportunity to re-estimate these areas based on any updated project information.
* At the end of the project, a post-implementation review meeting will be conducted. The results of the meeting will be documented and distributed to the project team.

| Communication Item | Description | Owner | Frequency | Format/Media | Audience |
| --- | --- | --- | --- | --- | --- |
| **Project Progress/Performance Information** | | | | | |
| Status Report | Status of the project, issues, deliverables | PM | Bi-Weekly | Written | Sponsors |
| Project Plan | Progress updates | PM | Bi-Weekly | Written | Sponsors |
| Team Member Status Report | Status of each assigned deliverable, issues, etc. | Team Members | Weekly | Verbal/Written | Team |
| Team Meetings | Brief team meetings will be held to review status of the project. | QA | Weekly | In Person | Team |
| Post Implementation Review Meeting | At the end of the project a review of the implementation is performed | PM | Once | Written PIR | Sponsors / Team |
| **Project Administrative Information** | | | | | |
| Action Log | List of actions assigned to team members to be reviewed at each team meeting to obtain status | QA | As-needed | Written | Sponsors / Team |
| Issues Log | List of project issues | QA | As-needed | Written | Sponsors / Team |
| Change Log | List of pending and approved changes | QA | As-needed | Written | Sponsors / Team |
| Meeting Notes | Action items and notes from meetings | QA | After Each Meeting | Written | Meeting Participants & Action Item Owners |