

PLATFORM FOR DEVELOPING AND SHARING FREE SOFTWARE TO COLLECT DATA ONLINE



Survey™ Project N-tier WAP Architecture & Solution

Survey™ Project Technical Documentation

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Introduction

This document applies to the Survey™ Project v. 2.4 web application and solution. It is written for *architects and developers* interested in the technical background and architecture of the SP™ solution.

Survey™ Project is a free, open source webapplication to create, publish and administer surveys and webforms in an easy-to-use way without any restrictions or limitations on useage or features.

The SP™ v2.4 webapplication is not designed to be used on mobile devices or tablets/ I pads: questionnaires and webforms can best be created on a PC or laptop. To answer and submit a survey created with SP™ other devices (mobile, tablet, pc etc) are supported as well.

General Requirements for running SP™

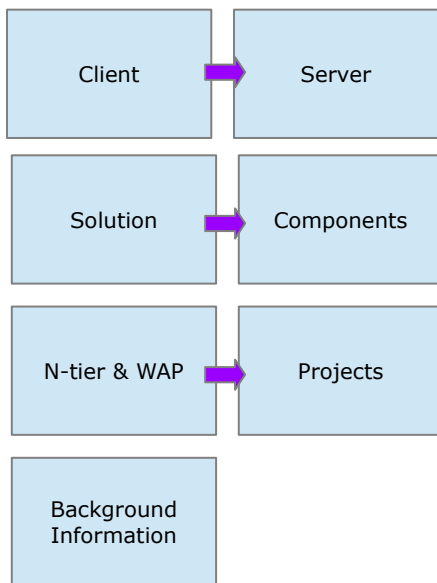
- 1- Windows OS, .NET 4.5, IIS webserver 7.5, Mssql Database 2012 or 2014, SMTP account
- 2- ASP Full Trust Level required in case of third party hosting
- 3- Administrator privilages needed

How to read this document

- o **Actions** are written in the texboxes with a **BLUE** lining.
- o **Screenprints** from SP™ v.2.4 are added to illustrate the intended action and result.
- o **Numbered yellow** stars are added and referenced in the **Action** text to direct to the correct location.
- o **Notes** indicating additional advise or warnings are written in separate (pastel) textboxes
- o **General information** and comments are written as regular text in **black**.

FLOWCHART

1. Hardware & Software Requirements
2. Solution & Components
3. Architectural Structure & Project Description
4. General Readings



1. Hardware & Software Requirements

The Survey™ Project webapplication is build on a web and windows based Client – Server (network) architecture.

Note: More information on the Client/ Server model can be found at https://en.wikipedia.org/wiki/Client%E2%80%93server_model.

Client

- PC, laptop, tablet or phone running a web browser (IE, Chrome, Firefox etc.)

Server

- Webserver to run the SP™ webapplication on MS IIS 7.* (+)
- Database server to run the SP™ database on MS Sqlserver 2012 (+)
- SMTP mailserver or smtp mail account to make use of SP mailing features

Technical requirements (Server):

- MS Windows .NET 4.5 (+) Framework
- ASP full trust level

Programming & Scripting Languages used to build SP™:

Front End

- HTML 5.0
- ASP.NET
- CSS (3.0) (cascading style sheets)
- JavaScript/ JQuery

Back End

- C# 4.*
- XML
- (T-)SQL

Note: More information on

- * C# - <https://docs.microsoft.com/en-us/dotnet/csharp/>
- * ASP.NET - <https://www.asp.net/>
- * .NET Framework - <https://docs.microsoft.com/en-us/dotnet/framework/>

Tooling used for programming purposes:

- MS Visual Studio Community 2017 + Nuget package manager
- MS Sqlserver Management Studio 2016 (+) and Mssqlserver 2012 or 2014 (+)

Note: Free downloads available at:

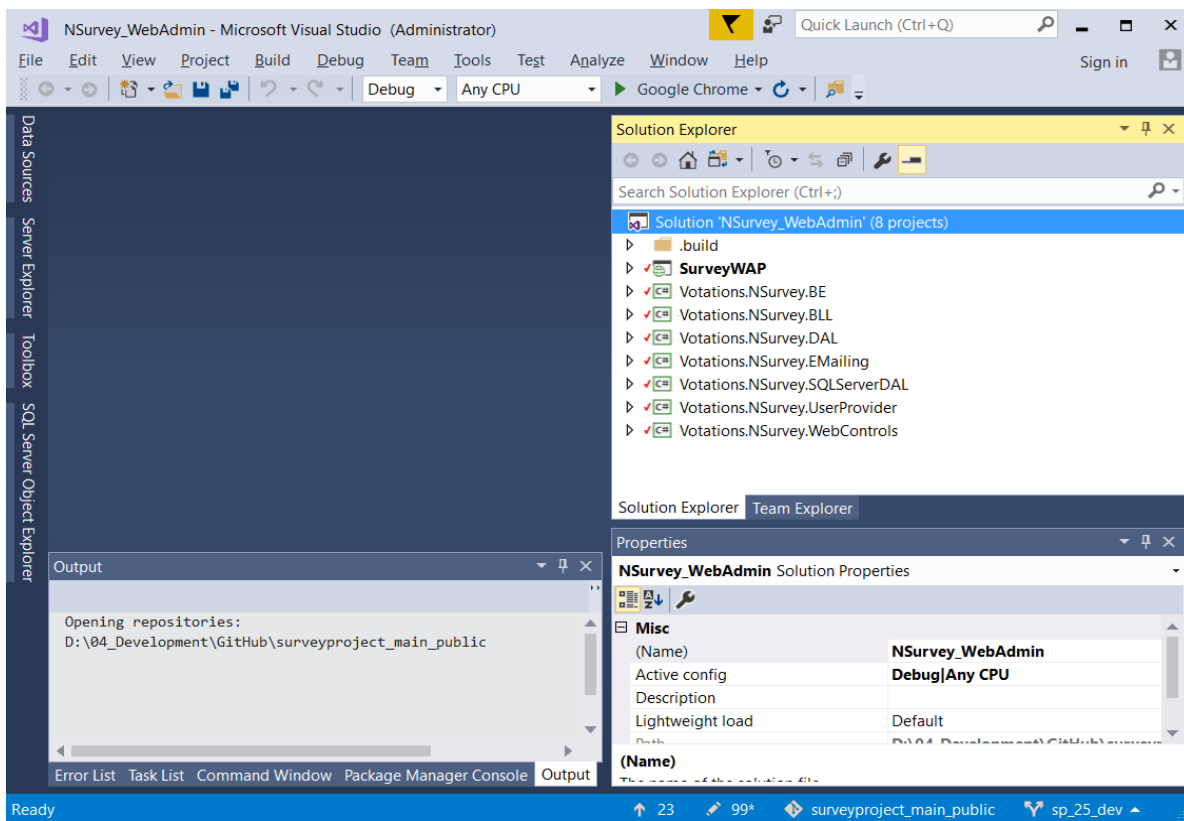
- * <https://www.visualstudio.com/downloads/>
- * <https://www.microsoft.com/en-us/sql-server/sql-server-downloads>

2. Survey™ Project Solution & Components

SP™ is a webforms based (web)application that is setup as a Web Application Project (WAP) model in Visual Studio. Besides the main webapplication project there are [7] other project that are part of the overall solution.

Note: More information on the WAP model can be found at <http://webproject.scottgu.com/CSharp/Default.aspx> .

- Solution file: Nsurvey_Webadmin (.sln)



- [8] Projects (.csproj):
 - o Votations.NSurvey.WebAdmin (**SurveyWAP**)
 - o Votations.NSurvey.BE
 - o Votations.NSurvey.BLL
 - o Votations.NSurvey.DAL
 - o Votations.NSurvey.EMailing
 - o Votations.NSurvey.SQLServerDAL
 - o Votations.NSurvey.UserProvider
 - o Votations.NSurvey.WebControls

SP™ makes use of several components that are build and maintained by other projects or organisations (Third Parties). Most components are available throught the (Nuget) Package Manager of Visual Studio.

Permissions to use and distribute these components as part of the SP™ solution are based on licenses or explicit agreements that can be found in the Instructions directories of the SP™ installation files.

If you find any of the licenses missing or suspect violation of any agreement please let us know and contact us at mail@surveyproject.org.

- Thirdparty components (not part of the Nuget Packages)

- o CKEditor ASP.NET DLL (since SP™ v. 2.2) - <http://www.ckeditor.com>
- Text/Html editor

- o CKEditor Skins
- Moono color
- Kama

- o Filemanager - <http://github.com/simogeo/Filemanager.git>
- Filemanager used with the CKEditor







- o Topsy - <https://github.com/jaz303/topsy/tree/master>
- Facebook-style tooltip plugin for jQuery











- o Custom login form styling - <http://tympanus.net/codrops/2012/10/16/custom-login-form-styling/>
- Styling used on SP frontpage login form

- o Metabuilders.WebControls: <http://metabuildersweb.codeplex.com/releases/view/7234>
- Files [*SurveyWAP/Code*]
- GlobalRadioButton.cs
- RowSelectorColumn.cs / RowSelectorColumnScript.js

- (Nuget) Packages

- o 16 (Nuget) packages are part of the SP™ solution. They can be downloaded and added to the solution through the Visual Studio Package Manager.

	ASTreeView by JIN Weijie Full functional treeview control for ASP.Net supports drag and drop, dynamic loading, context menu, tri-state checkbox, selection, xml import/export, themes, add/editing/deleting nodes with ajax, right to left display.	v1.6.0.4
	bootstrap by Twitter, Inc. Bootstrap framework in CSS. Includes fonts and JavaScript	v3.3.7
	ckeditor-full by CKEditor Automated Nuget package of the full build, version : 4.6.2 of ckeditor.	v4.7.3
	EnterpriseLibrary.Common by Microsoft The Enterprise Library Common assembly contains elements that are shared among multiple application blocks.	v6.0.1304
	EnterpriseLibrary.Data by Microsoft The Enterprise Library Data Access Application Block simplifies the development of tasks that implement common data access functionality.	v6.0.1304
	FontAwesome by Dave Gandy Font Awesome for Twitter Bootstrap - http://fontawesome.io	v4.7.0

	html5-shiv by Alexander Farkas, Jonathan Neal, Paul Irish The HTML5 Shiv enables use of HTML5 sectioning elements in legacy Internet Explorer and provides basic HTML5 styling for Internet Explorer 6-9, Safari 4.x (and iPhone 3.x), and Firefox 3.x.	v3.7.3
	iTextSharp by Bruno Lowagie, Paulo Soares, et al. iTextSharp is a port of the iText open source java library for PDF generation written entirely in C# for the .NET platform. iText 7 Community: https://www.nuget.org/packages/itext7/	v5.5.12
	itextsharp.xtra by Bruno Lowagie, Paulo Soares, et al. Extra functionality for iTextSharp, a free port of the iText open source java library for PDF generation written entirely in C# for the .NET platform.	v5.5.12
	jQuery by jQuery Foundation, Inc. jQuery is a new kind of JavaScript Library. jQuery is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax intera...	v3.2.1
	jQuery.UI.Combined by jQuery UI Team The full jQuery UI library as a single combined file. Includes the base theme.	v1.12.1
	jQuery.UI.i18n by jQuery UI Team Internationalization and localization file for jQuery UI.	v1.10.2
	Modernizr by Faruk Ateş, Paul Irish, Alex Sexton Modernizr is a small and simple JavaScript library that helps you take advantage of emerging web technologies (CSS3, HTML 5) while still maintaining a fine level of control over older browsers that may not yet support these new technologies.	v2.8.3
	MSBuildTasks by LoreSoft The MSBuild Community Tasks project is a collection of open source tasks for MSBuild.	v1.5.0.235
	NuGet.CommandLine by Microsoft NuGet Command Line Tool	v4.3.0
	Respond by Scott Jehl, Paul Irish, Nicholas Zakas A fast & lightweight polyfill for min/max-width CSS3 Media Queries (for IE 6-8, and more)	v1.4.2

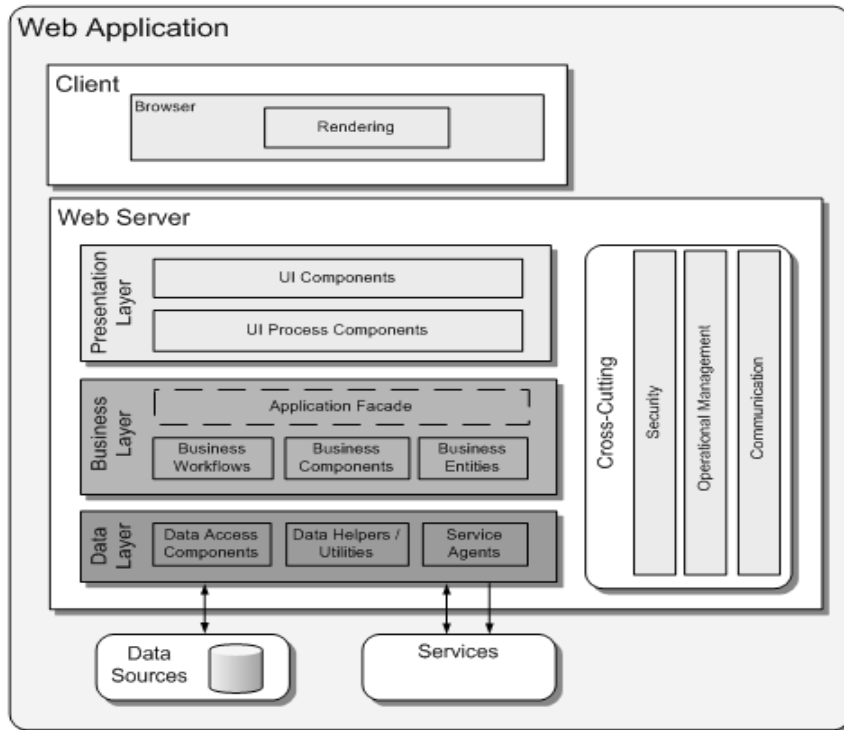
- Web API

Strictly speaking no API's are part of SP™. However the 'client side' surveyform custom (ASP.) usercontrol can be considered as such.

It can be integrated into other webapplications including MVC solutions. Separate documentation on the subject can be found at the SP™ Community site.

Note: More information on the Web API's can be found at: https://en.wikipedia.org/wiki/Web_API

3. Architectural Structure & Project Description



General Structure

- A. Presentation Layer
- B. Business Layer
- C. Data Layer
- D. Cross Cutting (Security/ Operational management/ Communication)

The use and purpose of the different Projects of SP™ closely follow the overall n-tier model of the webapplication and solution.

A. Presentation Layer

Project 1. Votations.NSurvey.WebAdmin: WebAdmin Assembly (.dll)

Description

- Survey™ Project Website (front-end): a. administration tool ; b. survey form
- Web pages and controls (usercontrols/ servercontrols)

NameSpaces

- Metabuilders.WebControls
- Votations.NSurvey.WebAdmin

Project 2. Votations.NSurvey.WebControls: WebControls Assembly (.dll)

Description

- ASP.NET Web server controls are objects on ASP.NET Web pages that run when the page is requested and render markup to a browser.

Namespaces

- Votations.NSurvey
- Votations.NSurvey.Data
- Votations.NSurvey.Designer
- Votations.NSurvey.Helpers
- Votations.NSurvey.Reporting
- Votations.NSurvey.Resources
- Votations.NSurvey.Security

- Votations.NSurvey.Web
- Votations.NSurvey.WebControls
- Votations.NSurvey.WebControlsFactories

- GlobalConfig Class

Note: More information on ASP.NET Web Server Controls can be found at <http://msdn.microsoft.com/en-us/library/bs302eat%28v=vs.80%29.aspx>

B. Business Layer

Project 3. Votations.NSurvey.BLL: BLL Assembly (.dll)

Description

- Business Logic Layer (BLL)
- Business logic components

- a. Nsurvey: exceptions (errorhandling)
- b. Business Rules: business rules used
- c. DataAccess: methods to access database data

NameSpaces

- Votations.NSurvey
- Votations.NSurvey.BusinessRules
- Votations.NSurvey.DataAccess

Working of the BLL:

- > calls DALFactory
- > loads SqSserverDAL
- > implements IDAL Iproduct (interface)
- > returns BLL

Project 4. Votations.NSurvey.BE: BE Assembly (.dll)

Description

- Business Entities (BE)
- Thin data classes or business entities

Note: More information on Business Entities can be found at <https://msdn.microsoft.com/en-us/library/ee658106.aspx>

- 2a. Enums: lists of related and fixed numbers or Constants used throughout the application
- 2b. Data: XML serialisation of Business Entities (store object to xml, transport it and reuse - deserialize)

Note: More information on can be found at

- <http://www.codeproject.com/KB/XML/XmlToClassAndBack.aspx>
- <http://www.developer.com/net/csharp/article.php/3110371/SerializationDeserialization-in-NET.htm>

NameSpaces

- Votations.NSurvey.Data
- Votations.NSurvey.Enums

C. Data Layer

Project 5. Votations.NSurvey.DAL: DAL Assembly

Description

- Data Access Layer (DAL)

4a. DAL Factory

Classes used to determine which database access assembly to load.

4b. IDAL

Set of interfaces (I) which need to be implemented by each DAL implementation.

Abstraction used to implement loose coupling between layers

Project 6. Votations.NSurvey.SQLServerDAL: SQLServerDAL Assembly

Description

- Classes to access the Sql server Database tables (insert, update, delete, create)

NameSpaces

- Microsoft.Practices.EnterpriseLibrary.Common
- Microsoft.Practices.EnterpriseLibrary.Data
- Votations.NSurvey.SQLServerDAL

Note: More information on the Enterprise Library DAAB can be found at

- <https://msdn.microsoft.com/en-us/library/dn169621.aspx>

D. Cross Cutting (Security/ Operational management/ Communication)

Project 7. Votations.NSurvey.UserProvider: UserProvider Assembly

Description

- Userprovider classes: login, authentication, new users
- Websecurity classes: user- and admin authorisations

NameSpaces

- Votations.NSurvey.UserProvider
- Votations.NSurvey.Web.Security

Project 8. Votations.NSurvey.EMailing: EMailng Assembly*Description*

- Classes used to send survey email messages

NameSpaces

- Votations.NSurvey.EMailing

4. General Readings

Additional information and readings on the architectural concepts and models used for SP™ can be found at:

- Microsoft Application Architecture Guide, 2nd Edition

Url: <http://msdn.microsoft.com/en-us/library/ff650706.aspx>

- Patterns & practices: App Arch Guide 2.0 Knowledge Base

Url: <http://apparch.codeplex.com/wikipage?title=App%20Pattern%20-%20Three-Tier%20Web%20Application%20Scenario%20%28Domain%20Entity%29&referringTitle=Application%20Patterns>

- WSP versus WAP:

<http://webproject.scottgu.com/CSharp/migration2/migration2.aspx>

<http://gurustop.net/blog/2008/08/03/convertng-vs-2008-website-to-web-application/>

- WAP versus MVC

[https://msdn.microsoft.com/en-us/library/dd381619\(v=vs.100\).aspx](https://msdn.microsoft.com/en-us/library/dd381619(v=vs.100).aspx)

<https://msdn.microsoft.com/en-us/magazine/jj991978.aspx>

Further Reading & Links

Available Help Sources

End User Information

The first integrated helpfiles were added to version 2.0 of the Survey™ Project webapplication:

- o An index of helpfiles is available at menu Help/ Helpfiles.
- o Tooltip helptexts can be found on several webpages of the SP tool.

- Some of these Helpfiles have been published on the Survey Wiki of the Community website also.

- Through the Articles Menu of the Survey™ Project Community site additional articles can be found based on specific Survey related issues and themes

<http://www.surveyproject.org/Support/Helpfiles/Articles/tabid/194/Default.aspx>

- At the Survey™ Project YouTube Channel subtitled movies can be found with basic instructions on several subjects: <https://www.youtube.com/user/TheSurveyProject>

Developers Information

- Technical information can be found at

o the former Survey Sourcecode website at <http://survey.codeplex.com>

o the development and downloads site at <https://www.github.com/surveyproject>

- Visit the Forums section of the Community website to ask any questions

<http://www.surveyproject.org/Forums/tabid/107/Default.aspx>

Contributions to the projects documentation and helpfiles are most welcome. If you have any experience in this field or if you feel like joining the team please let us know: mail@surveyproject.org

Survey™ Project

<http://www.surveyproject.org/> - SP™ Community site & Forums

<http://www.surveyproject.biz> – SP™ Business Services

<http://www.surveyproject.net/> - SP™ Test & Demo site

<https://www.github.com/surveyproject/> - Downloads, Releases, Sources, Development

SurveyBox DNN® module

<https://github.com/surveyproject/surveybox> – Downloads, Releases, Sources, Development