
Vision/Scope Document



**VHS-AM Project
Vision/Scope Document
Version 1.2**

Document History

Date	Version	Description	Author
03/12/2003	0.1	Document creation	André Furtado
04/12/2003	0.2	Definition of roles and macro schedule	André Furtado
11/12/2003	1.0	Adjustments, definition of stakeholders and trade-off matrix.	André Furtado
12/12/2003	1.1	Final adjustments towards homologation	André Furtado
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1. Introduction

This document intends to describe the conceived vision for the project “Integrating Haskell with Visual Studio .NET and Assignment Manager”, therefore denominated **VHS-AM** (Visual Haskell Studio – Assignment Manager). This project has an important intersection with the original VHS project, which also intends to integrate Haskell with VS.NET but does not necessarily take Assignment Manager into account. Efforts arising from both projects will be combined and synchronized in order to ensure productive development processes and satisfied goals for the parts involved.

VHS-AM project vision, which consists of an unbounded view of the final product (also called *solution*), is also exposed against time and resource constraints, resulting in the project scope. This scope is specified in this document through the description of solution requirements and will be useful to assess project quality and status. The project will be conducted by undergraduate students of the Informatics Center (CIn) at Federal University of Pernambuco (UFPE), oriented by PhD lecturers with qualified experience in Software Engineering, Compilers and Programming Languages.

In the following sections, it will be presented the main concerns that motivated this work, its major requirements, a preliminary team structure model and a macro schedule for the project.

2. Motivation

In areas that employ functional programming paradigm, the Haskell functional language has become one of the most used programming languages, chiefly in academy and research areas in general. However, it is known that the use and application of Haskell are somewhat limited by a series of constraints, which causes its potential to be under-explored.

One of the major limitations that avoid the dissemination of Haskell is the lack of an integrated development environment to support and stimulate productivity around programmers. In other words, implementation tasks of Haskell-based projects are not benefited by mechanisms intended to enhance the usability of the interfaces operated by programmers. Hence, current Haskell implementation processes are carried out through an *ad hoc* fashion and, therefore, are more error-prone.

Since most popular software development platforms and programming languages (such as .NET, Java, C/C++ and Visual Basic) inherently present sophisticated integrated development environments support, this project aims to make available such important tool to Haskell programmers, in order to suppress one of the most concrete language constraints. The proposed approach consists of extending Visual Studio .NET environment, using its own extensibility model (specifically VSIP¹), to support Haskell. The extended environment, then, will be integrated with Assignment Manager (AM²), a Microsoft academic tool, in order to validate the solution.

¹ The Visual Studio Industry Partner (VSIP) program is designed for Independent Software Vendors (ISV's), Systems Integrators (SI's), academic institutions, corporations and developers interested in integrating tools, components, and languages into the Visual Studio .NET IDE [1].

² AM is a component of VS .NET 2003 Academic edition that enables faculty to simplify course management through secure assignment submission, assignment tracking, automatic student project building, student notification of grades and message transmission [2].

3. Vision Statement

“To support a productive use of Haskell through VS.NET extension and AM integration, spreading around the utilization of the language and expanding its application boundaries.”

4. Solution Scope

In this section, the major solution requirements are listed for the first version of the solution, according to the following classification:

Essential: All essential requirements must be satisfied in order for a solution to be released. Such requirements are indispensable; therefore, they must be implemented.

Important: The lack of an important requirement in a solution will not block its release. However, the application will not be classified as completely satisfactory.

Desirable: This kind of requirement does not compromise solutions features, i.e., a solution can be deployed satisfactorily without desirable requirements. These are the first requirements to be postponed to next versions when the project runs out of time or resources.

Requirements	Classification
1. Editor support (syntax highlighting, IntelliSense, etc.).	Essential
2. Project template: “Haskell Console Application”	Essential
3. Assignment Manager integration	Essential
4. “Add new module” template	Essential
5. Static/dynamic analysis of code on the fly	Essential
6. Module viewer	Essential
7. GHC lexer/parser integration	Important
8. Linking of error messages to code	Important
9. Jump to binding site of an identifier (“go to definition”)	Important
10. Navigation bar	Desirable
11. Interactive query to the program through GHCi	Desirable

Obs: if the first version is released ahead of time, a new list of requirements will be created, aiming at the release of a second version.

4.1 Major deliverables

1. Set of VS.NET extensibility packages (VSPackages) covering the above requirements;
2. Installation Guide;
3. Knowledge base containing helpful information about VS.NET extensibility model and Assignment Manager integration.

5. Stakeholders

The stakeholders affected by this solution are:

- **Haskell Programmers:** final users of the application. They will be directly benefited by the solution, since they will dispose of a new mechanism to enhance their productivity in implementation process.
- **Microsoft Corporation:** VHS-AM project sponsor. Through Microsoft Academic Developer Marketing's Request for Proposals program, Microsoft is investing resources in the project and is expecting a final product consistent with the submitted proposal.
- **Parallel development teams:** individuals externally related to the project (Simon Marlow, Krasimir Angelov, etc.) sharing common goals with VHS-AM project. There must be a real integration and coordination among teams, in order to increase the feature set of the solution.
- **Assignment Manager users and academic community in general:** teachers and students that will be benefited by the existence of a new framework designed to improve the learning of the Haskell functional language.
- **VSIP, VS.NET and Assignment Manager developers:** individuals who will be benefited by the knowledge base (lessons learned, guides, etc.) created after the completion of this project.

6. Solution Constraints

- It is out of the scope of the solution to develop a new Haskell .NET language.
- According to Simon Marlow's tarball (released in October/2003) and to the CVS repository created for the VHS project, this solution will be development under COM technology and will use the VS.NET extensibility interfaces provided by Babel.
- The solution must be compatible with VS.NET 2003. However, there is no obligation for the solution to comply with VS.NET 2002.
- New versions of VSIP must be analyzed, in order to assure that the project is using, as most as possible, state-of-the-art technologies regarding VS.NET extensibility.
- The VHS-AM team must constantly interact with Simon Marlow and other external teams, verifying the possibility to parallelize tasks and, eventually, increased the proposed scope for the first version of the solution.

The solution trade-off matrix is presented below. It is very important in helping the team to carry out change requests, since it specifies the importance of each project variable. The VHS-AM trade-off matrix states that given fixed project resources (people, founding, etc.), a schedule will be chosen and the solution scope will be adjusted as necessary.

	Fixed	Chosen	Adjustable
Resources	✘		
Schedule		✘	
Scope			✘

7. Roles and Responsibilities

Name	Role	Contact Info
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8. Macro Schedule

This section presents a preliminary project schedule, emphasizing the most important project milestones and when they will be delivered.

Phase	Deliverables	Date of conclusion
<i>Envisioning</i>	Vision/Scope Document	12/12/2003
<i>Planning</i>	Functional Specifications Master Project Plan	16/01/2003
<i>Developing</i>	Scope implemented	16/04/2004
<i>Stabilizing</i>	Scope completely tested with all issues addressed	28/04/2004
<i>Deploying</i>	VHS-AM site updated Application sent to MS for homologation	30/04/2004

9. References

[1] Microsoft MSDN, *VSIP Program Overview*, <http://www.vsiipartners.com/programoverview.aspx>

[2] Microsoft PressPass, *Microsoft Selects Five Universities To Enhance VS .NET 2003 Academic*, <http://www.microsoft.com/presspass/press/2003/nov03/11-04UniversitiesVSTOPR.asp>