

Market Requirements Document

Feature Name: **Language Integrated Query (LINQ) Support**

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Description of the Problem

Background

“The [LINQ Project](#) is a codename for a set of extensions to the .NET Framework that encompass language-integrated query, set, and transform operations. It extends C# and Visual Basic with native language syntax for queries and provides class libraries to take advantage of these capabilities.” – Microsoft Corporation.

Problem

LINQ is rapidly becoming the standard database query language for C#. The Objectivity .Net for C# product will be incomplete without support for LINQ. Furthermore, the ODMG has decided to approach the Java Community to launch a Java Specification Request (JSR) for a Java LINQ extension.

Description of the Requested Feature

1. Objectivity/LINQ for C#.
2. Objectivity/LINQ for Java (later, subject to the JSR mentioned above).

Part of an existing feature or does it require another feature, if so, which one?

1. Objectivity/LINQ for C# needs the .Net for C# API.
2. Objectivity/LINQ for Java will need the Objectivity for Java API.

How is this problem being solved now, and why isn't that acceptable?

1. Users would have to write their own LINQ libraries.
2. Our competitors and ODMG partners, db4objects and Versant are implementing LINQ.

What languages must support this capability?

- .Net for C# and Java.

Which platforms must be supported?

- Objectivity/LINQ for C# should be implemented on Windows XP and Vista.
- Objectivity/LINQ for Java should be implemented on Tier 1 Linux and Unix platforms.

Do any competitors already have this feature?

- db4objects formally announced LINQ for C# on Windows in May 2008.
- Versant is about to release LINQ for C# on Windows.
- MySQL, PostgreSQL and Oracle all have LINQ extensions.

Customers who require this feature

- C# and Java users.

Revenue at risk, or which could be won

- We are at risk of losing C# business to Versant and db4objects if we do not implement LINQ.

When is this required?

- Post Release 10.

Additional Notes

We will also need:

- Marketing collateral, including promotional material and a special area on our web site.
- Technical Publications.
- New QA material to prove that the API works and is interoperable with other platform and language combinations.
- Licensing costs are to be determined.

Notes

1. Official LINQ site – [The LINQ Project](#).
2. Wikipedia Article - [Language Integrated Query](#) .
3. “LINQ also defines another interface, IQueryable<T>, which defines the same interfaces to the Standard Query Operators as IEnumerable<T>. However, the concrete implementation of the interface, instead of evaluating the query, converts the query expression, with all the operators and predicates, into an [expression tree](#). The Expression tree preserves the high level structure of the query and can be examined at runtime.” – Wikipedia.
4. Some of the LINQ operators may be able to use code from SQL++ or Enhanced Object Query equivalents, e.g. :
 - Select / SelectMany
 - Where
 - Join / GroupJoin
 - OfType
 - OrderBy / ThenBy
 - Count
 - Sum / Min / Max / Average / Aggregate

Others may be able to leverage the capabilities of scaleable collections, e.g.:

- Take / TakeWhile
- Skip / SkipWhile
- Concat
- Reverse
- GroupBy
- Distinct
- Union / Intersect / Except
- EqualAll
- First / FirstOrDefault / Last / LastOrDefault
- Single
- ElementAt
- Any / All / Contains