Improving the E-Commerce Search Experience

White Paper
December 2010

QuestFields® *the information wormhole*

QuestFields ProductFinder provides your customers with the fastest way to find and navigate all of the products on your e-commerce website through a single search field, at incredible speed, without ever reloading the web page.

Table of Contents

This white paper provides an overview of the QuestField-based search solution, ProductFinder, in an e–commerce environment.

1. Customer Needs

Customers who visit an e-commerce website have varying needs that are similar to customers who enter a physical store. E-commerce vendors strive to provide visitors with a friendly environment that enables customers to find what they are looking for, quickly and in a pleasant way that invites them to come back for their next purchases.

Over the past few years, the Internet has matured considerably, to a point where it is no longer the exclusive domain of computer savvy people. Popular sites like Google, iTunes, Amazon, and eBay have become part of our daily lives. Customers are becoming used to the friendly navigation and search features offered by these large vendors, most of which are now also available on mobile devices.

Ideally, an e-commerce website does not get into the way of the path that a visitor has planned to find a product. An e-commerce site should be intuitive and it should provide the same conveniences that customers have become used to elsewhere.

Browsing

Some customers are interested in "shopping around", in looking at special offers, and "browsing the isles". These customers look for an attractive and inviting layout and an easy way to navigate various sections of the store. In an e-commerce environment, these customers are likely to click on categories and advertisements, rather than immediately using a search field. HTML is quite well suited to this kind of navigation, where every user action reveals a new page with information related to the link clicked. This way of navigating an e-commerce site is typically referred to as "guided navigation": Users "drill down" to the appropriate section of a store.

A simple way to offer guided navigation is through categorization of products in "main categories" and "sub categories". This provides a hierarchical structure for navigating product collections. Although this is easy to implement, it is not always friendly to users who may not know or understand the categorization choices made. Customers are likely going to "give up" if they do not find the products they expected to find in a specific category. And if the number of "sub categories" or "sub sub categories" is larger than, say, 8, customers are bound to click on the wrong choices and lose their way.

It is clear that behind a friendly storefront with major product sections, customers expect additional aids to help them find what they need or want. Various software products exist that enhance guided navigation by enabling visitors to navigate through product sections in limitless ways, e.g. by using clickable keywords for product groups and brands across categories.

No matter how flexible the navigation path, a common problem with guided navigation remains that a customer is never quite sure whether a better product exists in a different section of the store. In short: for frequent shoppers, "browsing" is not enough.

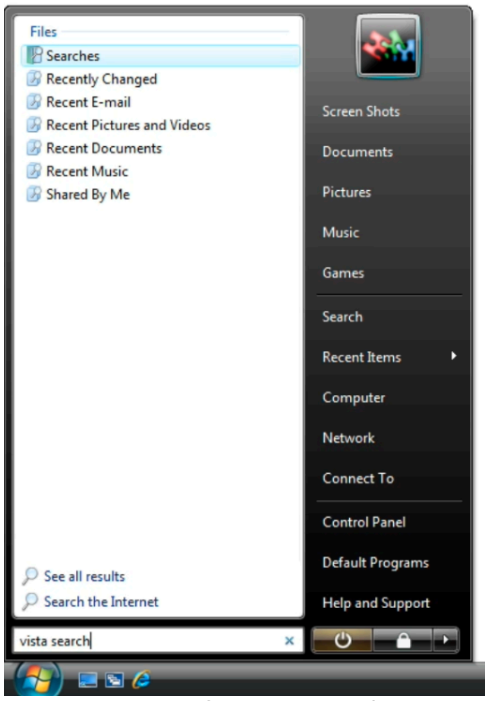
Searching

Returning customers and customers who already know what they need are likely to use a search field instead of guided navigation. From an e-commerce vendor's perspective, search comes with its own set of challenges. Most customers do not know which products exist in the catalog, so users have no idea whether clicking the "Search" button (or hitting "Enter") will give them valid results.

Also, from one e-commerce site to the next, the capabilities of databases and search engines vary greatly. Where users have come to expect consistent and reliable search results from Google, they literally have no idea what to expect from a query on an e-commerce store they never visited before. Ironically and sadly, even today, finding information is often easier through Google than by performing a search on an e-commerce store.

Although vendors can improve visitor rates by applying Search Engine Optimization techniques (SEO) that draw customers to their site, prospective customers are not likely to stay on a site for long if the site itself doesn't also provide a powerful product search that enables a customer to verify that the product they found is also the product they need. To achieve real conversion rate increases, it is essential that customers remain on a site once they land there.

Internet users have become accustomed to finding almost anything through a single search field: Google. Even on local computers, through technologies like Microsoft Instant Search (shown on the right) and Apple Spotlight, relevant information is found by typing into just one input field. Gone are the days of starting up a separate search application, specifying what files to look for, selecting disks and directories, entering a date range, and clicking "Find".



Microsoft Instant Search

Without additional input by the user, a search field must be capable of finding products on any relevant attributes. It is no longer necessary for users to first specify the attributes that they want to include in their search. In an e-commerce environment, customers may type a product name, but they are just as likely to type the name of a category, the brand, a product number, or any other word associated with the product.

With the new "single field search paradigm", it is becoming ever-more important that search results are ranked appropriately, i.e., that the most relevant products (best sellers, categories, special offers) appear at the top of the results list.

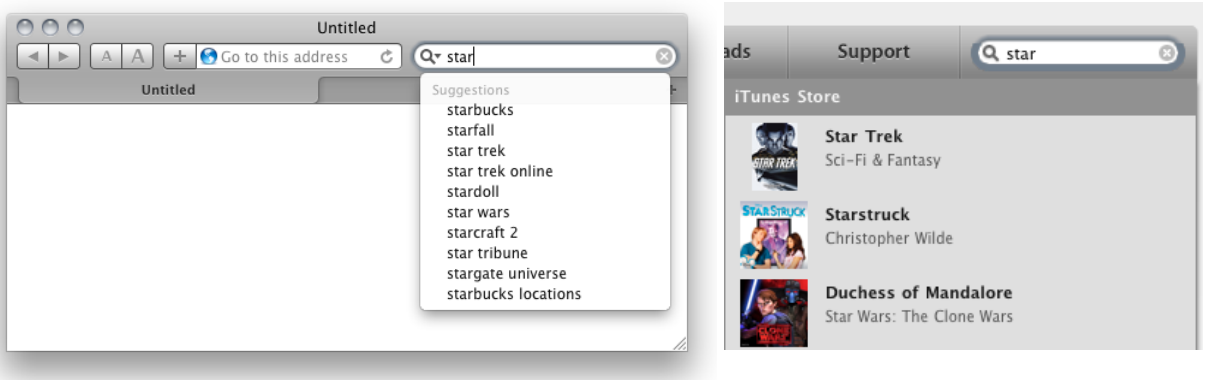
Interactive Searching

With thousands or even millions of products in a vendor's product catalogue, typing a query to find a particular product is almost "a shot in the dark": In a traditional Internet search field, the user only knows whether any matching products are available after clicking the Search button or hitting the Enter key and waiting for the results page to appear.

Modern AJAX technologies built into web browsers make it possible to provide feedback to users while they are formulating their Internet query, very similarly to the way that immediate search results are displayed while users type into an Instant Search or Spotlight search field on their local PC or Mac. QuestFields patented technology does this in a highly efficient way, displaying results from huge databases to many simultaneous users. The first "PeopleFinder QuestField" solution (shown on the right) was deployed on a worldwide corporate intranet in 2004. It performed over 100,000 corporate directory queries per day since.

PeopleFinder QuestField

In 2005 Google introduced its "Google Suggest" feature, providing search suggestions to users while they type their query. This feature has become very popular and is now built-in to most modern browsers. In 2006, Apple introduced a similar feature on its website, immediately displaying appropriate products or product groups while users type into the search field on Apple.com.



Google Suggest built into Safari (left); Search on Apple.com (right)

In 2007, Apple added a similar feature to its iTunes store, displaying immediate search results as users search for music or movies. Then in 2008, Amazon enhanced its suggest features to include categories, key words, and product groups. And, in September 2010, Google Instant was introduced and provides an auto-complete search field that initiates a query as soon as the user types a character.

iTunes Store Search (left); Search on Amazon.com (right)

The presence of auto-suggest and auto-complete functionality on these popular websites raises the bar on what users now expect with their e-commerce searches. While these companies, and various others, have implemented search solutions similar to QuestFields on their websites, their technology only works on their website and their data. QuestFields can work on nearly any website and data source.

With huge product databases available to users, the task of finding individual products through navigation is overwhelming. Instead, clicking on search suggestions and browsing through interactive search results is becoming the standard way of finding information on the Internet. Interactive search results are great in a desktop browser. But they are especially powerful on mobile devices with primitive and slow keyboards. Instead of loading a new web page after each query, users can find a product by just typing in a single field.

2. The ProductFinder QuestField Solution

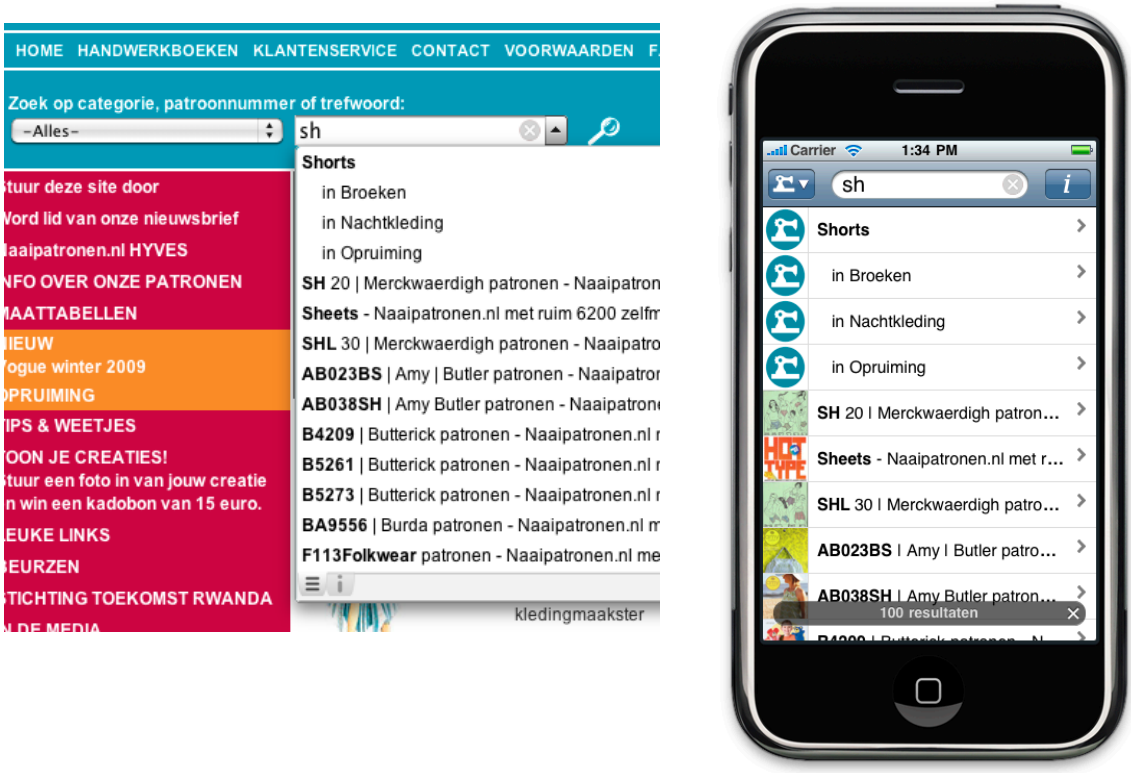
Like the examples mentioned above, QuestFields make it incredibly easy to find products, categories, special offers, product groups, suggestions, and any other data on e-commerce sites. Customers find all your content through a single interactive search field.

Unlike the one-off corporate examples above, however, QuestFields are a generic and customizable out-of-the-box solution that requires little or no additional development effort, that works in all desktop browsers, and that is also available for mobile devices.

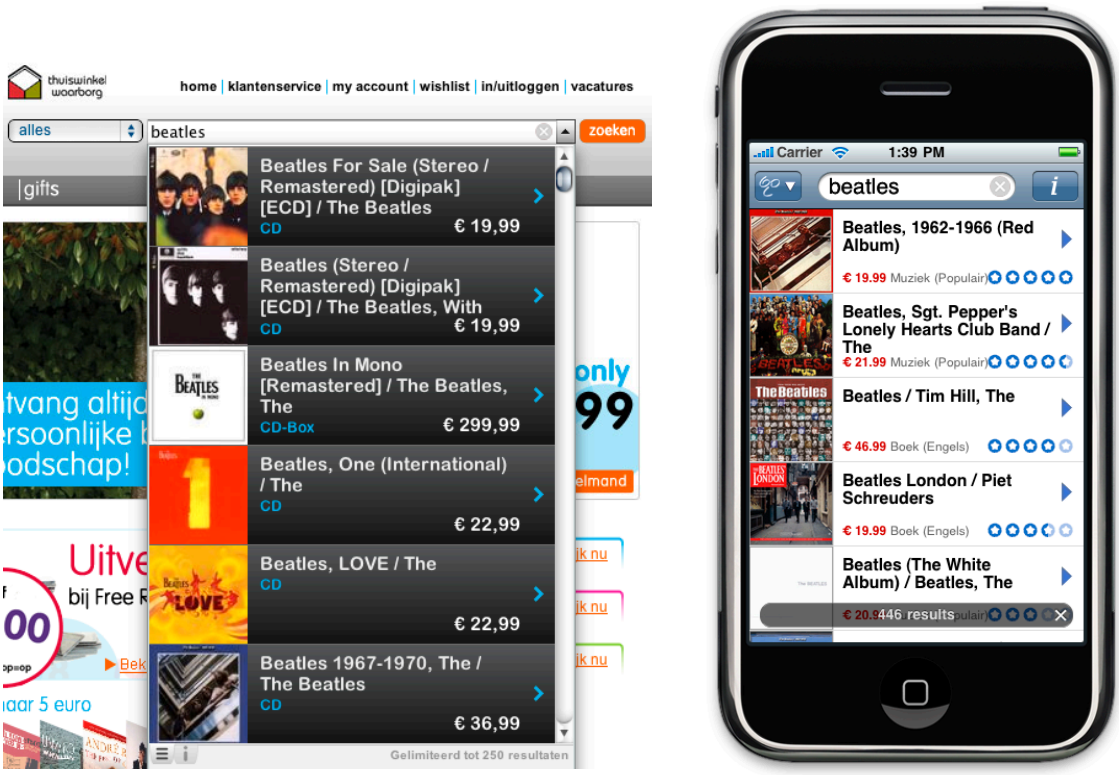
The QuestFields solution consists of small script and style sheet components that are loaded as part of the web page, an efficient XML-based Internet communications protocol, and powerful server software that manages queries from many simultaneous users, sends them to the underlying databases or search engines, and efficiently returns the results for immediate display in the browser. All modern browsers are supported; users do not need to install any software.

QuestFields can be embedded into any web page, where they typically replace the traditional search field.

On mobile devices, QuestFields run in "full-page mode", where they work as an optimized web application for the user's device. With a single web application and server configuration, you can thus serve a multitude of platforms. There is no need to develop separate applications for each device.



Embedded QuestField with combined suggestions and results (left); Full-page QuestField on the iPhone (right)



Embedded QuestField showing products in a custom layout (left); Full-page QuestField on the iPhone (right)

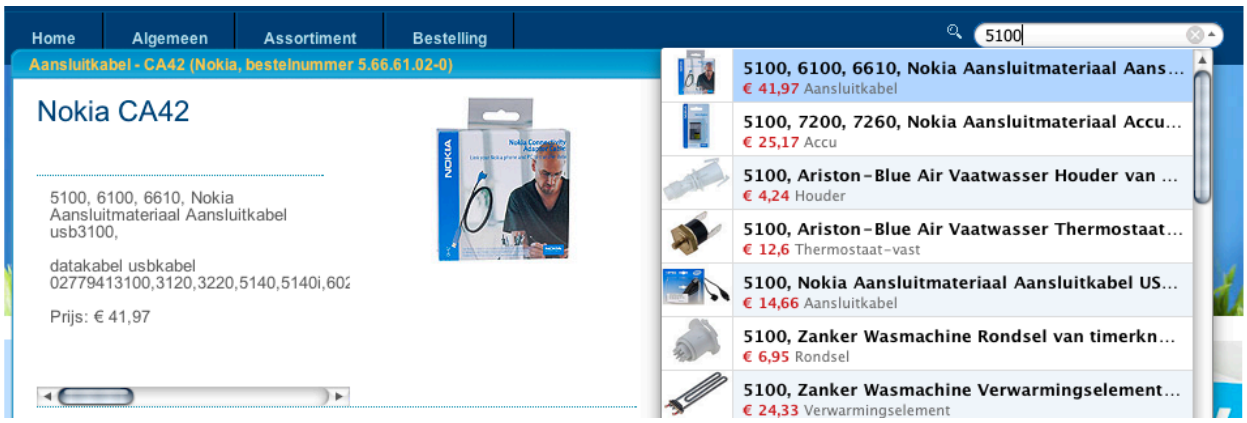
Full-page QuestField showing products on Google Android (left) and the same app on the iPad (right)

3. The QuestFields Client

E-commerce website designers can embed a QuestField in a web page by using only a few lines of JavaScript. To the end user, the QuestField looks and behaves similarly to a "combo box". Results drop down almost as fast as the user can type. The QuestField can easily be styled to fit into your website. You can either use a default "skin" that adopts itself to the platform of the user (e.g. Windows, Mac), or you can use custom skins, such as a rounded field against your own background color.

MasterObjects can create custom list layouts for you, or your own website designers can use their own CSS styles and HTML to format product information any way they like, based on the data that is received from the server by the QuestField.

As users select an item in the results list, additional information can be displayed immediately. This, again, is standard HTML and can thus be designed and maintained independently of the QuestField itself.



QuestFields Client 2.1 Feature List

The table below lists the features of QuestField version 2.1 with differences between DHTML (AJAX) and Flash technology.

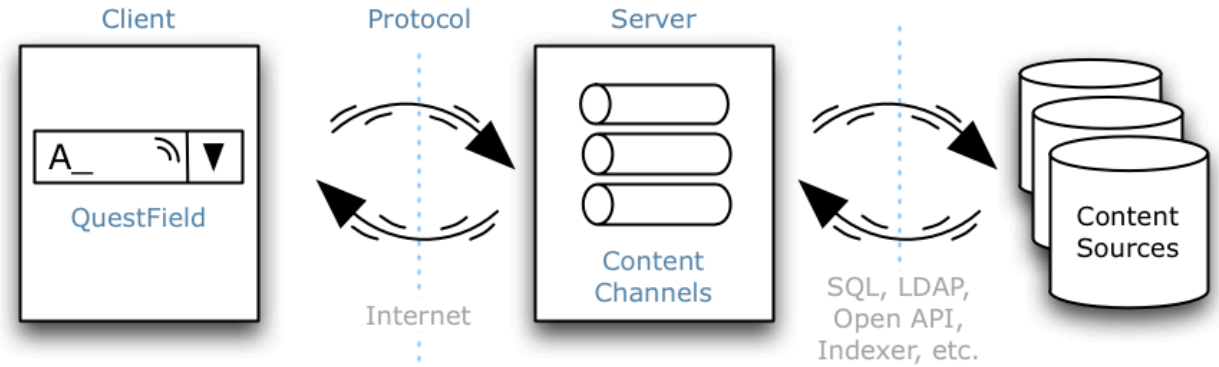
QuestFields Client Feature List	Version Info	Flash	DHTML
DHTML Client (AJAX)	New in 2.0	-	Y
Adobe Flash Client		Y	-
Mobile Client (fullpage)	New in 2.0	-	Y
Full Internet Explorer 5.5 Support		Y	-
Full Internet Explorer 6-7 Support		Y	Y
Full Internet Explorer 8 Support	New in 2.0	Y	Y
Full Google Chrome 1+ Support	New in 2.0	Y	Y
Full Safari 1-4 Support		Y	Y
Full Firefox 1-3 Support		Y	Y
Full Opera 8.65+ Support	New in 2.0	N	Y
Optimized iPhone/iPod Touch Client	New in 2.0	N	Y
Optimized iPad Client	New in 2.1	N	Y
Optimized Google Android Client	New in 2.1.3	N	Y
Optimized Windows Phone Client	Future	N	Y
Optimized Blackberry Client	Future	N	Y
Optimized Symbian Client	Future	N	Y
Optimized Palm Pre Client	Future	N	Y
MasterObjects Mobile Framework	New in 2.0	N	Y
QOP XML Protocol 1.x Support		Y	Y
QuestFields Server 1.x Support		Y	Y
QuestFields Server 2.x Support		Y	Y
AJAX Support	New in 2.0	N	Y
Third-party CMS Support (create as HTML)		Y	Y
Protected JavaScript Namespace	New in 2.0	Y	Y
Multiple Technologies	Optional	Y	Y
Automatic Technology Selection	Optional	Y	Y
Unlimited Result List Length		Y	Y
Automatic Unique Result Selection Option		Y	Y
External Custom List Layouts	New in 2.0	N	Y
Built-in Custom List Layouts	Optional	Y	N
Customizable Results Count Text		Y	Y
Custom PopUp Footer		Y	Y
Custom List Header, List Footer	New in 2.1	N	Y
Custom PopUp Sidebar	New in 2.1	Y	Y
Multiple-version Support		Y	Y
Browser Cache Version Control		Y	Y
Multiple Language Localization Support		Y	Y
Native Windows/Mac Combobox Skin	New in 2.0	Y	Y
Rounded Skin		Y	Y
Black Skin		N	Y
iPhone Skin		N	Y
CSS Namespaces	New in 2.0	Y	Y
Custom Skins		Y	Y
Customizable Input Text Colors		Y	Y
Customizable PopUp Color		Y	Y
Customizable Footer Color		Y	Y
Third-party JavaScript Framework Support	New in 2.0	Y	Y
Cross-Domain Support		Y	Through Proxy
Static Webserver Support		Y	Y
Automatic Browser Compatibility Detection		Y	Y
WebKit Animations	New in 2.0	N	Y
Internet Explorer Filters	New in 2.0	N	Y
JavaScript Animations	New in 2.0	N	Y
MO Framework (Mobile Tiling)	New in 2.0	N	Y
Mobile Slideshows with Clickable Ads	New in 2.0	N	Y
Automatic Default Query at Page Load		Y	Y
Scripted Queries and Qualifier Adjustment		Y	Y
Custom Metadata Handler		Y	Y
Custom PopUp Handler		Y	Y
Custom Error Handler		Y	Y
Standard HTML Form Support		Y	Y
Value Submitting		Y	Y
Key Submitting		Y	Y
Standard Onsubmit Handler		Y	Y
Fully validating XHTML	New in 2.0	Y	Y

QuestFields Client Feature List	Version Info	Flash	DHTML
HTML4 Compliance		Y	Y
HTML5 custom data element compliance	New in 2.0	Y	Y
Old HTML and doctype Support		Y	Y
Disabled When Network Interrupted		Y	Y
Automatic Query Throttling	New in 1.3	Y	Y
Query Accumulation		Y	Y
Auto-completion Option		Y	Y
Query Length Configuration		Y	Y
Automatic Pop-Up		Y	Y
PopUp to Left/Top Options		Y	Y
Disabled QuestField Option Checkbox		Y	N
Automatic Pop-Up Option Checkbox		Y	N
Customizable Help Link		Y	Y
In-field Result Availability Indicator		Y	Y
Automatic Latin Character Flattening		Y	Y
Custom Button Tooltips		Y	Y
Optional Built-in Submit Button		Y	Y

⇒ *Note: Interaction provided by QuestFields (like any other AJAX solution) requires the user to have JavaScript enabled in the browser. If they do not, the web page can display a traditional "static" input element to provide a traditional search interface.*

4. The QuestFields Server

The patented QuestFields solution provides highly efficient "content channels" between users and remote product databases. Each content channel is capable of simultaneously querying multiple sources. So a single search field may simultaneously provide suggestions (such as categories, product groups or synonyms) and results (such as special offers and products ordered by popularity or sales rank).



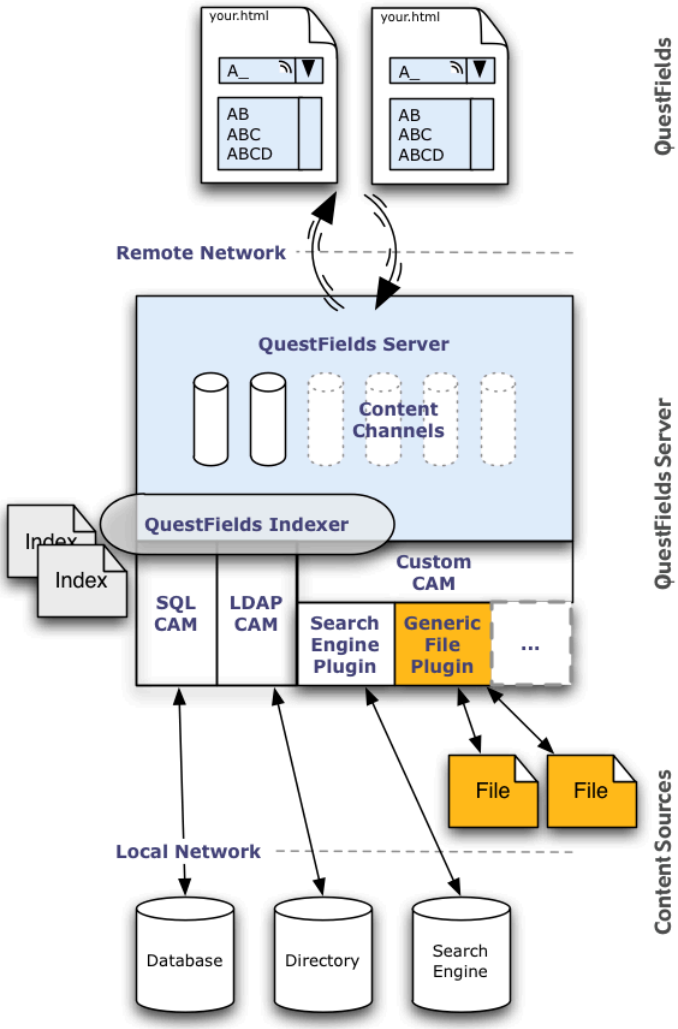
The QuestFields Server retrieves its content straight from an existing SQL database (using the search capabilities built into the database itself), from a third-party search engine (using the native capabilities of the search engine), or from flat files that are indexed by the "QuestFields Indexer" option, described below.

Product information is typically stored in a database. Customers find information through custom-built web applications, database applications, and/or search engines. Leveraging these technology investments, the QuestFields Server accesses existing content to allow users to find and retrieve information at groundbreaking speed.

The QuestFields Server communicates with virtually all databases and with third-party search engines through an easily programmable interface (API). The QuestFields Server can also read information from files and legacy systems. QuestFields manage the information retrieval process so that information appears faster than in any other application. To your customers, it almost feels as if the product database is already stored on their local computer or mobile device.

5. The QuestFields Indexer

MasterObjects provides a powerful indexing option that reads the product database and indexes it for blazingly fast retrieval by the QuestFields Server. There is typically no need to change anything in the database, apart from dumping the required information into flat files or XML. It is also possible to develop a custom interface that enables the QuestFields Indexer to retrieve its content straight from the database. So regardless of how your information is stored and regardless of the search capabilities of your database, with the QuestFields Indexer your customers will find your products in an instant.



The QuestFields Indexer prepares your information for retrieval through QuestFields. The indexer can index over 100,000 records a minute, and will do so in the background so that users experience 24/7 uptime. Once indexed, information is found at blazing speed. A single QuestFields server instance can handle hundreds of simultaneous requests (for many thousands of users). For small databases (e.g., 100,000 records), information appears instantly. But even out of 10 million records, the best matches are displayed at sub-second speeds.

Optimized for product data

The QuestFields Indexer comes with numerous options that allow you to fine tune the results displayed to the user. For example, in a products database, users can type:

What you type	What you get
Sony 310i	"Sony Ericsson K310i" and the "Sony Ericsson Z310i"
lcd 3070	"Sony KDL-20S3070 LCD Television"
play station	"PlayStation 2" and "PlayStation 3"
30a	"Lexmark X2470 multifunction" (which has part number 0030A0003)
xb	various "Xbox 360" types, but also a bunch of speakers that support the Xbox
22w view	various TFT-monitors, such as "Fujitsu Siemens ScaleoView Q22W" and "Fujitsu Siemens ScenicView E22W"
bmw 97628	various BMW 1-Series cars with product number BWMP97628

…or in a music database:

What you type	What you get
bb king	Finds music containing "BB King" and "B.B. King", showing "BB King" at the top of the list
b.b. king	Finds music containing "B.B. King" and "BB King", showing "B.B. King" at the top of the list
andre rieu	Finds music containing "Andre Rieu" but also "André Rieu"
jean michel oxigene	Finds music by "Jean Michel Jarre" but also "Jean-Michel Jarre"

Ranking

If certain products are on sale, you can display them at the top of the list. By applying weights to records, you ensure that your "special deals" or popular products always appear at the top. If a customer query is too broad, category and keyword suggestions can appear at the top of the list.

Categorization

You can optionally enable customers to select a (sub)category (or another qualifier), after which the QuestField will only find products from that category.

Query filtering

It is possible to add selected keywords to each QuestField query. Custom web applications can be built that display these keywords in various ways, e.g. using a breadcrumb interface (note that the user interface shown below is not part of the QuestField, but rather part of the web page).

6. More information

Extensive information, over 100 working demos, and contact details are available on the MasterObjects website, http://www.masterobjects.com

The QuestFields software comes with detailed documentation that enables website designers and application developers to configure, deploy and host QuestFields. MasterObjects and its partners also provide configuration, installation and hosting services.