

# Enabling Application Evolution

*A Story of Continuous Improvement*



2009



The Leader in Workplace Software for SharePoint®

*Proprietary Statements*

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CORASWORKS ENABLING APPLICATION EVOLUTION  
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## Note to the Reader

*This white paper is the fifth of a series on modular application development on SharePoint being written and published by CorasWorks. The previous three in the series were:*

- **White Paper No. 1 - The 7 Structural Barriers of SharePoint.** *This white paper describes the seven structural barriers encountered when attempting to build and integrate applications across the distributed environment of SharePoint and how CorasWorks' modular application development system is designed to help you overcome these structural barriers.*
- **White Paper No. 2 - Modular Application Design Patterns for SharePoint.** *This white paper introduces the concept of modular application design patterns for SharePoint and how they leverage the modular and distributed architecture of SharePoint. It provides background on the use of design patterns for modular development and presents 10 specific design patterns that can be applied to build literally hundreds of different collaborative applications.*
- **White Paper No. 3 - Building Composite Applications on SharePoint.** *This white paper focused on designing and building composite applications on SharePoint working with heterogeneous data sources (SharePoint data and/or external data). It introduced a new set of 11 composite application design patterns that leverage the modular, multi-tier architecture of the CorasWorks Data Integration Toolset. Each design pattern has a sample business application that can be worked with in our CorasWorks Breeze Demonstration Environment.*
- **White Paper No. 4 - CorasWorks Solution Quadrant for SharePoint in 2009.** *This white paper provides an overview of the state of the solution space on the SharePoint platform as we move into 2009. It introduces the Solution Quadrant which maps solution categories into the space based upon whether they are point solutions or environments and where the solutions are content-centric or activity centric. It then discusses in detail 13 different solution categories covering their state and where they are going.*

*These white papers are available for download at [www.corasworks.net](http://www.corasworks.net).*

# Introduction

Merriam-Webster's Dictionary defines evolution as "a process of continuous change from a lower, simpler, or worse to a higher, more complex, or better state." Typically applied in the world of science, we've come to accept the word in a more generic context as depicting a progression from one place or thing to another, usually getting better as you progress.

While we may not hear "evolution" much in the IT or SharePoint world, it is very appropriate to describe the process you can follow for applications on SharePoint... especially if you use CorasWorks software. Using CorasWorks' modular application development system on SharePoint, it is quick and easy to design, build, manage, **and evolve** your applications over time. Start with basic applications that address specific processes or procedures, then, evolve those applications over time to continually meet the needs of your users and the organization. This evolution takes place within a SharePoint environment which functions as your organizations' distributed work environment. Over time, you are evolving your entire work environment to be a more effective place to work.

This white paper describes the CorasWorks concept and process of "Application Evolution."

# Overview

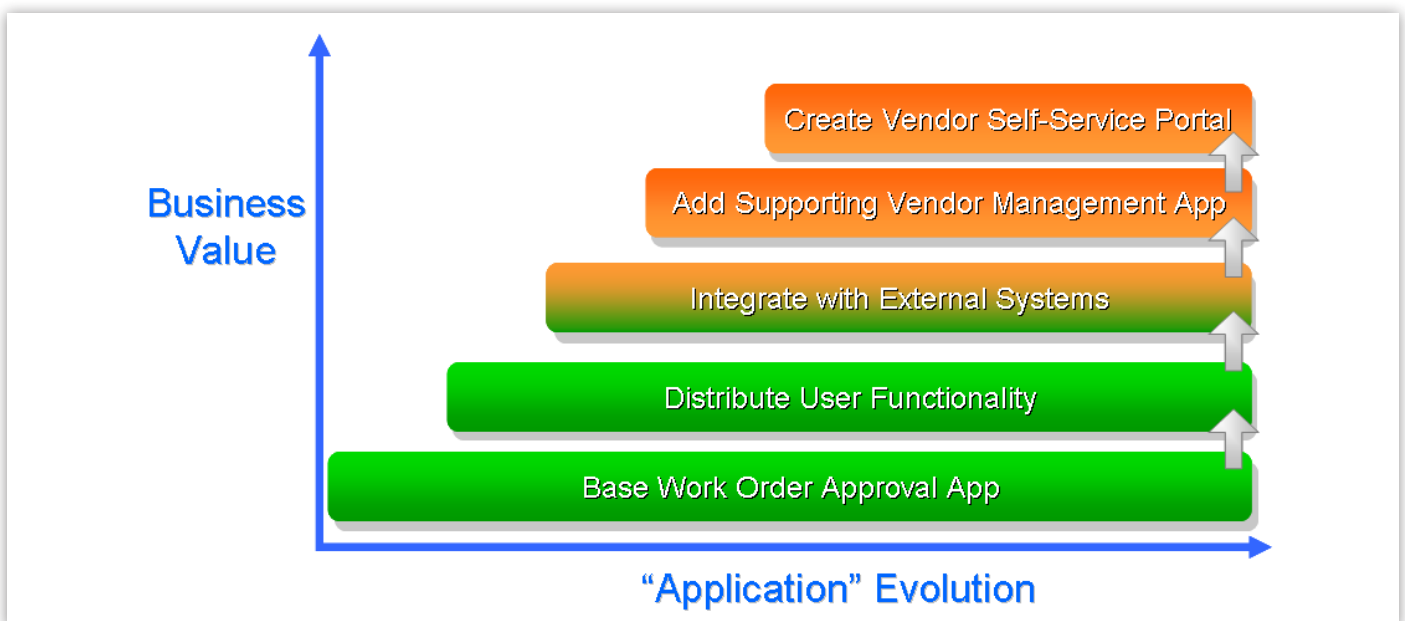
Through its involvement with literally hundreds of companies using CorasWorks on SharePoint, we have observed the process of how organizations tend to evolve applications and their work environments over time. Through this white paper, we'll tell the story of how a simple, point application for managing Vendor Work Order Approvals evolves through 5 Stages to become a distributed, multi-application system for Vendor Management.

This process of evolution is typically not pre-planned using some top down application objective based upon up front requirements. Rather, it is an organic process that occurs based upon two factors. First, people learn that their enabling software, CorasWorks on SharePoint, can be easily, rapidly, and cost effectively changed to adapt to new requirements. Second, people start to come up with ways that they can work better together by leveraging their software.

This process of evolution involves some "unlearning". People have historically had two options, to buy an off-the shelf application and change their ways to meet the capabilities of the application, or, to go through the long and costly process of custom building an application based upon a pre-determined set of requirements. Now, they have a third option, where their modular application software is designed to evolve to meet their changing needs. This option supports the idea of continuous improvement.

In this white paper, you'll get a glimpse into this process of evolution. Below is a graphic that shows the five generic stages that we'll cover in our story and the specific task as it relates to Vendor Management. Each stage increases business value by increasing business productivity, overall efficiency, and effectiveness.

The first three stages all address a base application, in this case Work Order Approval. Stages 4 and 5 introduce two additional related and integrated applications. Effectively, through this story, you'll learn how the two CorasWorks products work together as a system to allow organizations to evolve as their needs go from simple to more complex. The green coloring indicates where the CorasWorks Workplace Suite is used when building the base application and working with SharePoint data. The orange shading shows where the CorasWorks Data Integration Toolset is used to integrate external data sources.



## Greensleeves Solutions – Our Fictitious Company

To illustrate and give context to the application evolution process, we'll use a fictitious company named Greensleeves Solutions. Greensleeves Solutions is an 800-person provider of products and services in the Clean Energy business. It provides products such as solar panels and batteries and services to install and service its industrial and commercial customers. It does about \$140 million per year in revenue. It is primarily distributed across the United States with some foreign operations.

Greensleeves uses Microsoft SharePoint across the enterprise for basic collaboration and some project management. Most of the departments have their own site collections and site collection administrators.

# The Evolution of the “Application”

This section defines and describes the five main stages in the evolution of an “application” from a single application to an integrated, multi-application work environment. Each stage has three main sections where we discuss the business drivers, the needs, and how to get there using CorasWorks.

## Stage 1: Building the Base Application

### Business Driver

The Marketing Department within Greensleeves has a budget they track to quarterly. They use a lot of vendors to meet their needs. Yet, they don’t tend to produce a formal purchase order for each job. At the end of the month, the Finance Department gets invoices from the vendors. Inevitably, the following conversation occurs between the Marketing Manager and the Finance Manager.

- Finance says they need to know what marketing is “buying” so they can accurately project expenses. Finance can’t manage cash with an unknown influx of work. Finance also wants a heads-up on large commitments even if they are within budget and to a vendor under contract. They’d like to see an appropriate approval process based on levels of commitments.
- Marketing says they have a budget and manage to the quarterly number. They admit they don’t have a good way to track the informal work orders, but they don’t want to create a formal PO for every transaction and get approval for each. It takes too much time.

Both managers have valid points. They need a solution for this business problem.

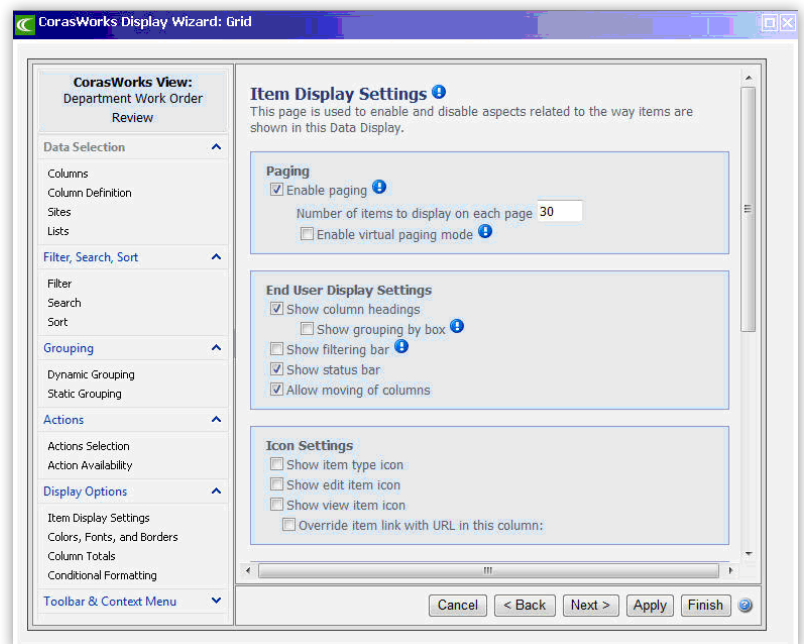
### What They Want

After discussions with Marketing staff, Finance, and IT, the agreed-upon solution is a Work Order Approval application. The application addresses the gap between formal purchase orders for vendors and the informal activity and “orders” that happen within the scope of existing contracts, purchase orders, and vendor relationships. Like many organizations, Greensleeves does not have formal process for these types of requests for services. The objective of the Work Order Approval app is to bring this work under better control and provide visibility to the organization so that it knows what financial commitments are being made and what decisions have been made or are about to be made.

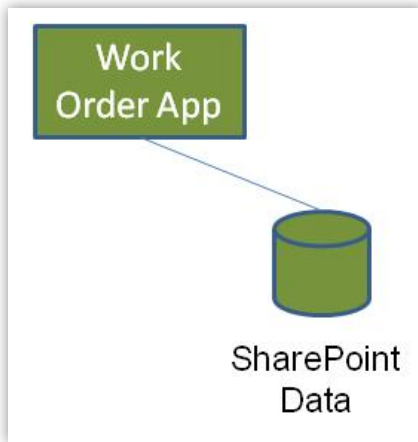
Since the organization is already using SharePoint and the Marketing and Finance users have their own sites and are already familiar with it, it is the logical choice for the application. Ideally, the Work Order Approval application will provide the ability to log work orders and provide visibility to Marketing management and Finance. The app also incorporates an approval process for work orders beyond a certain dollar amount. There are certain triggers built in for reviews by the Marketing Department manager, the Finance Department, and an Executive when the dollar amount exceeds a certain amount. In addition, the application includes email notifications of new work orders and specific notifications when approvals are required. There are several different reports included as part of the application.

### How to Get There With CorasWorks

With CorasWorks, designing and building an application like Work Order Approval on SharePoint is quick and easy. The CorasWorks Workplace Suite v10 provides a comprehensive set of features that allows “Builders” to build the application through a point and click, wizard-driven interface, as shown below. No custom code is required.



# Enabling Application Evolution

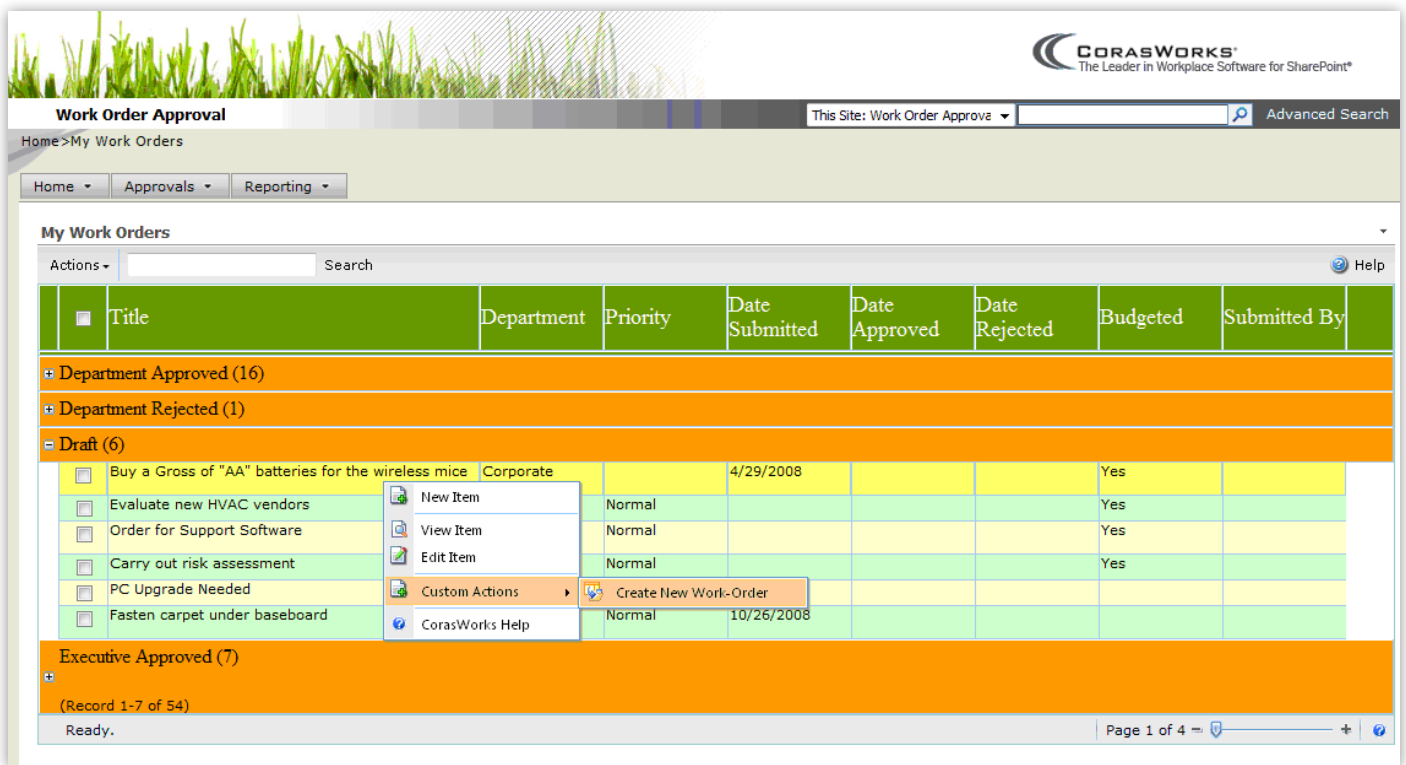


Within SharePoint, the Work Order Approval application is built and contained in a single site within the Marketing Department’s site collection. The site includes a list that captures all the information about the work orders. The diagram depicts the basic layout of the application.

Using CorasWorks, Greensleeves quickly begins adding a variety of views to the information contained in the list. Through these views, the users can:

- Quickly see and assess the status of all the work orders, including runtime grouping and filtering
- View, add, and edit the work orders through runtime forms and context-sensitive menus
- Build dashboards and reports with charts, graphs, and color-coding
- Automatically send emails in certain situations or when certain things happen.

Below is a screen shot of the base Work Order Approval application with the context-sensitive menu.



Once the application is completed, it is deployed to the Marketing Department. As they work, they tweak the forms, fields, business processes, and notifications to better meet their needs. For the first time, the Marketing Manager has a real-time grasp on work orders, the Finance manager can see what is coming down the pike, and there is now a business process for approvals of work orders in certain dollar ranges. There is peace and joy at Greensleeves—for now.

## Stage 2: Distributing End User Functionality

### Business Driver

The new application is working well. All the users are becoming familiar with it and using it for the defined purpose. However, Finance does start to see a few inefficiencies and approaches IT and Marketing about some changes. Primarily, Finance doesn't want to have to navigate to the application site over in Marketing. Since Finance has its own SharePoint sites already, they would like to be able to access the application through its sites.

In addition, the Marketing staff is managing several projects across several SharePoint sites. When they need to enter a work order for a project, they have to open a new window, navigate to the application, and complete the form. Is there a way they can enter work orders directly from all the different project sites?

## What They Want

The various teams are looking to “distribute” the functionality of the application. Currently, the application is contained in a single SharePoint site in the Marketing Department site collection and users have to navigate to that site to work in the application. Ideally, users could work in the application regardless of where they were and would not have to navigate to the application site.

## How to Get There With CorasWorks

One of the key features of CorasWorks software is its ability to work across sites, site collections, and even remote SharePoint servers. With CorasWorks, you can access, work with, and modify information regardless of where it resides. Because of this feature, Greensleeves is able to distribute the base Work Order Approval application across the various departments. For example, the Marketing department can place the functionality to view work orders and add and edit new ones in any of their project sites. When project managers need to add or edit any work orders, they do it from the specific project site and that information is then populated directly into the Work Order Approval application.

The same is true for the Finance department. Finance can have views of the information within their own department sites, so they don’t have to navigate anywhere. They can see and act on the information, such as approving or rejecting work orders, from within their own site(s).

This ability to distribute the application is possible using the concept of CorasWorks “Snaplets.”

Snaplets™ are basically functionality of the application that can be “snapped off” the base app and “snapped in” to any CorasWorks display within the SharePoint environment. Users can work through the Snaplets just as if they were in the application site. There are a couple of important features to CorasWorks Snaplets as follows:

- Snaplets have “Full Fidelity,” meaning you have the exact same functionality through the Snaplet as you would in the base application, including forms, workflow, or task automation. The difference with the Snaplet is that it can be anywhere within your SharePoint environment.
- In addition, Snaplets are centrally configurable. This means they are created and managed in the base application. They are just attached to displays in remote sites. When an application owner makes a change to their base application, say to add a new user task, all of the related Snaplets change without anyone having to touch any other items in the environment.
- Lastly, a single user display can now have Snaplets from many different applications and business processes. Accordingly, the Finance or Executive manager could have one display with all of their Approval processes across the environment.

## Summary

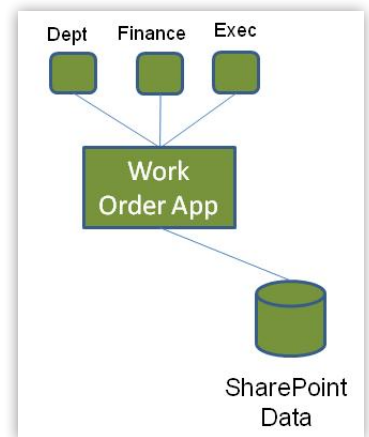
Now, people are happier. They have the functionality they need, at their fingertips, where they work, with full “fidelity.” They don’t have to navigate anywhere. They avoid page refreshes. They can create new information, act on information, and see real-time information without “leaving home.”

## Stage 3: Integrating with External Systems

### Business Driver

Greensleeves is happy with the application. However, another inefficiency is found. When creating a new work order, the field for Vendor is a simple text field. This has already created some confusion with similar Vendor names, different spellings, abbreviations, and more. As a result, reports aren’t entirely accurate and there has to be some manual combining of entries. In addition, some work orders are being issued to companies who are not official vendors with the company. What Greensleeves realizes is that it needs to integrate the base application so that the Vendor field in the forms is a “Lookup” to their official vendor database, which happens to be part of their ERP system.

Greensleeves could create a drop-down list of vendors in SharePoint to use with the application, but then there would be two different vendor lists. There is no reason to have two lists...you already have a single source of the truth within your ERP.



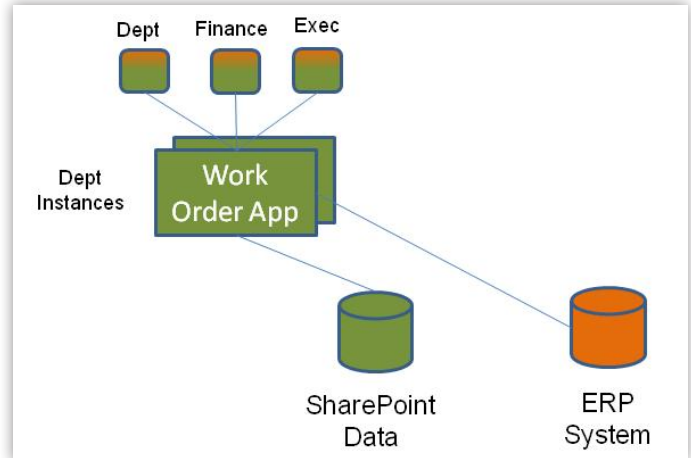
# Enabling Application Evolution

## What They Want

Greensleeves needs to be working with a single source of the truth. There is already a “blessed” list of vendors maintained in the ERP, so let’s tie in to that data. That way, each time a new work order is created, all can rest assured that it is the accurate name of the vendor and that the vendor is approved by the company and a part of the system.

## How to Get There With CorasWorks

Integration of this type is typically accomplished with custom code or with some other complex integration tool. However, Greensleeves decides to use the CorasWorks Data Integration Toolset. As shown in the diagram, the Toolset allows you to extend your SharePoint-based applications and work with data in external (i.e., non-SharePoint) systems. In this case, it is used to connect to the vendors table (or web service) in their ERP and integrate this into the Work Order Approval application.



With the CorasWorks Toolset, this is accomplished in just three steps:

- Greensleeves uses the CorasWorks External Data Provider and configures it to connect to their ERP and return their list of vendors. This is accomplished with less than 10 lines of code.
- They then add a Vendor lookup field to the Work Order list created as part of the base Work Order Approval application.
- Finally, they add the Vendor lookup field to the application forms, so that when users go to create new work orders, the approved list of vendors is accessible to them.

Below is a screenshot of a form for a work order with a drop down field lookup of Vendors coming from an ERP system.

The screenshot shows the 'Work Order Approval' application interface. On the left, there is a table titled 'All Work Orders' with columns for 'Title' and 'Date Submitted'. The table is grouped by department: Customer Service (3), Engineering (5), Executive Office (4), and Facilities (10). On the right, there is a 'CorasWorks Actions Form' for creating a new work order. The form includes a 'Vendor' dropdown menu, which is currently open, showing a list of vendors such as 'Ball Bearing Cams', 'Alberts Graphics', 'Anderson Framing', etc. The form also includes fields for 'Activity', 'Title', 'Description', 'Department', 'Budgeted', and 'Capital Number per budget'.

The CorasWorks Data Provider can connect to custom SQL Server databases via ADO.net, and other applications and systems via ADO.net, Web Services, and http. It also supports a broad range of authentication methods. The CorasWorks Lookups can show a field such as a Vendor name via a simple drop down or a Search interface. It can have concatenated displays to make it easier to select the correct vendor (for instance, showing fields for Vendor Name, Primary Contact, and City). You can also use a Parent-Child lookup that allows you to say select a City or Service Type and then select a vendor from a list. And/Or, you can have a multi-choice lookup, say to select multiple potential vendors. In addition, CorasWorks Toolset supports inline caching. This is important when you have a large list of vendors which could affect user performance. You set the cache refresh based upon time intervals.

## Summary

The Greensleeves Work Order Approval application is now integrated with the ERP, returning a list of vendors users can select for the work orders. There is no more confusion, duplication of vendors, bad spelling, or manual combining. All is well at Greensleeves.

## Stage 4: Creating a Supporting Database Application

### Business Driver

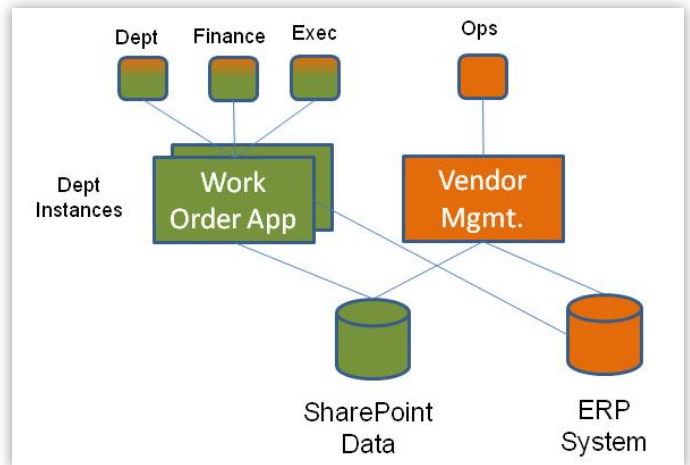
Users in Stage 3 are happy using the app. However, at this point, the “Couldn’t we just do X?” questions start to come. In addition to now selecting the vendors, users would like to be able to see the vendor contact details without having to go to the ERP system. They also need to create new vendors or change vendor information. Many of them don’t have access to the vendor portion of their ERP, and thus, have to email Operations to add new vendors or change information.

### What They Want

Greensleeves basically wants to extend the functionality of the Work Order Approval application to include some views and functionality around vendor management, without having to work through Operations to make changes to the ERP. Like earlier in the evolution, the users would like to be able to perform multiple tasks from the same place, instead of having to navigate to different applications, like the ERP.

### How to Get There With CorasWorks

As the diagram shows, the basic Work Order Approval application is now evolving into two separate applications. There is the basic Work Order Approval application and also a Vendor Management database application, also built in SharePoint. These two applications are integrated as part of the evolving Work Order Approval application.



Greensleeves starts by creating a stand-alone Vendor Management application. This is an application built using the CorasWorks Data Integration Toolset in SharePoint. It is deployed in a site in the Operations Department. There are various displays to this application that show work orders from across the departments for each of vendor. But the key piece of the application is the ability to add and modify data that resides in the ERP, straight from SharePoint without going into the ERP. The application includes read-write forms that allow the user to create and edit vendor information. One of these forms is shown to the left.

The screenshot shows a web form titled "Vendor Administration" with the following fields and values:

Vendor Name:	Scarborough Systems
Address 1:	222 Main
Address 2:	Suite 700
City:	Reston
State:	VA
Postal Code:	22222
Primary Contact:	George Peterson
Primary Email:	gpeterson@scabourough.com
Primary Phone:	(703)456-9000

At the bottom of the form is an "Update Vendor" button.

The second piece of this application is to distribute the read-write capability of the Vendor Management application to the Work Order Approval application. This is done by connecting the read-write forms for the ERP to the context sensitive menus in the Work Order Approval application. Since Operations managed the ERP and the Vendor Management app, it is up to them to determine what rights the users have to edit vendor information or

to add new vendors. This is controlled through the application. However, at a minimum, all users can now see the vendor contact information through the Work Order Approval application.

## Summary

Greensleeves now has two separate, but definitely connected, applications. This is just the beginning of their integrated, multi-application work environment.

## Stage 5: Creating a Self-Service Portal

### Business Driver

The application has evolved considerably as have the people at Greensleeves. Along the way they have been increasing their productivity by making it easier and more effective to do their work. Eventually, someone comes up with the idea of having the vendors do some of the work themselves. Vendors often have to change their base information or their contacts, which becomes a burden on Greensleeves personnel. In addition, the Vendors could see their work orders and accept them and note when they are completed. The idea is to expose this work to the vendors so they can do it online.

### What They Want

Greensleeves wants an extranet application that serves as a self-service portal for their vendors. Step 1 is to expose information from their ERP to vendors so the vendors can update their own information. The second step is to expose the work orders to vendors. By doing this, Greensleeves is addressing a number of issues. One is the unproductive way they are currently updating vendor information. The second is the back-and-forth emails about the status of work orders.

### How to Get There With CorasWorks

The diagram shows the full, integrated, multi-application system after they have added the vendor self-service portal.

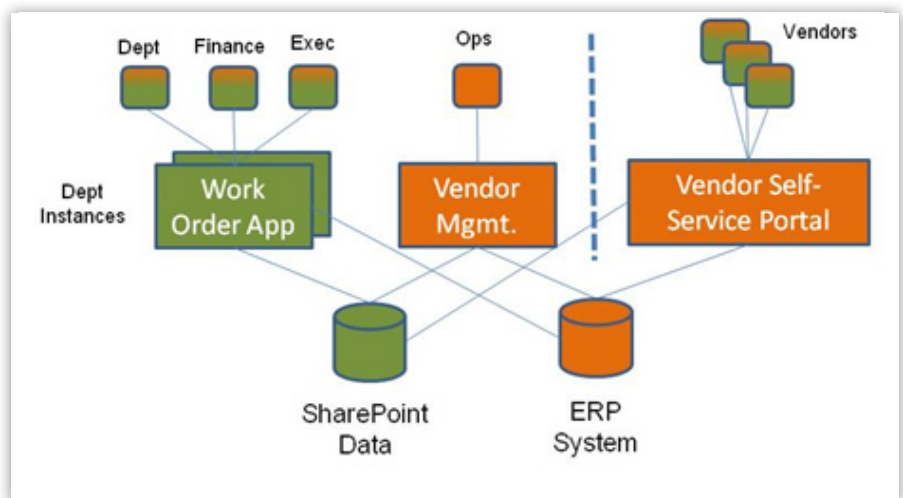
The portal is a SharePoint site with a CorasWorks interface. It also has a back-end configuration site containing published data and configuration. It may run inside the firewall or outside the firewall (CorasWorks Toolset capabilities support this cross domain capabilities using its XML API).

Creating the self-service portal interface is very similar to creating the internal Vendor Management application. There are user forms, connected to data providers and to the back-end ERP system. The difference is that they separate the application into two tiers, one with the UI and no data, and a second containing some supporting data and application configuration. When vendors first come to the site, they log in to the system. They then have access to their personalized information, which they can view or edit. They can also create new contacts. In addition, they also want the Vendors to have access to the work order information and to update their status.

There are a number of ways to implement this using CorasWorks. In the case of Greensleeves they decide to use the CorasWorks Data Synchronization capability of the Toolset to publish work order information from the various internal work order applications out to their extranet portal. From there, the vendors can edit the work order to update the status with appropriate notifications back to the various internal managers of the work order. Note that security is set so vendors can only see those work orders related to them.

## Summary

Greensleeves now has a very productive application environment. Vendors are now integrated into the process and pick up some of the work load. In addition, they have a better way of actually tracking the work orders.



## Review of Greensleeves' Application Environment

Through the course of the five stages above, Greensleeves has evolved their base Work Order Approval application into an integrated, multi-application system within their SharePoint environment. This system involves multiple departments and, a self-service vendor portal. A few of the business benefits from this system are:

- Better able to track vendor work orders in the Marketing department (and soon to be other departments, see next section below)
- Visibility into the work orders across departments
- Proper approvals of work orders based on certain criteria
- Ability to distribute the application so it can be easily accessed and used, increasing the likelihood of user adoption
- Ability to maintain and leverage a "single source of the Truth" by not duplicating data
- Passing some of the data maintenance off to the vendors.

## CorasWorks System Enabling Application Evolution

In this section, we take our story one step further to show an important next step in application evolution. Then, we discuss specifically the level of effort and skill level required to build out this application environment. Finally, we briefly review the core features of CorasWorks that would commonly be used in getting the job done.

### Reusing the Application for Other Departments

Often, in this new world, an application that is good for one department or use can be reused across an organization. Greensleeves now has a core Work Order Approval application in the Marketing Department. However, other departments operate the old way and need to be exposed to the new system.

In Greensleeves' case they have an issue with Legal who tends to outsource to outside counsel without any notification to finance. They also need it in the Services department, because Services work with many vendors to set up product training sessions at local sites. And, the IT department is constantly outsourcing to services vendors for change requests and new apps with some surprising invoices showing up at the end of the month.

They could go forward and create a single instance of this application in a central location that would be used by multiple departments. This is the usual way of thinking about deploying an organization-wide application. It would work fine, to the degree that such cross-departmental monolithic applications typically work for users.

However, there is a better way. In real life, each department could definitely benefit by having a few extra fields of information that apply to their specific work. Legal may want to note the Matter ID, the attorney doing the work, and the jurisdiction. IT will want project ID's and maybe an external department cost number. Services will want the product, the site, and the date for the training session. In a typical centralized application, you'd have to start adding all of these fields to the single application or create some rather messy text fields.

The solution is to deploy the same basic application, for slightly customized use in each department, yet, still have a fully integrated system.

With CorasWorks, this is rather straightforward to do. You start by templating the base Work Order Approval application. Then, you install it in each department and add the fields that you want to each instance. None of the integration points, such as the vendor integration with your ERP system and forms or the publishing to the vendor portal, need to be changed.

Now, you have three more instances of the application in IT, Services, and Legal. The users in Finance and Executive departments need views to these, also. Leveraging the ability to distribute application functionality, you can easily attach the new views to the department dashboards, and the Finance and Executive work consoles. Thus, these users will continue to use the same display they were using for the Marketing application, but, it will now also have views for each of the three new departments.

This 6th extra evolution stage demonstrates an important aspect of CorasWorks which is the ability to reuse complete applications as part of an integrated application environment. Because of the modular architecture, this can all be done without programming or having to dramatically redesign your applications and environments when needs change. This flexibility at low cost is a key enabler of innovation, evolution and continuous improvement.

## Level of Effort and Skills

The application evolution story at Greensleeves sounds like a wonderful story. Now, let's review the level of effort required to accomplish these results and the technical skill level required.

Stage	Level of Effort	Technical Skill
<b>1 - Basic Application</b>	3 days to design and get input, 2 days to build and redesign, and 2 days to customize with user feedback	Basic CorasWorks "builder" skills to use the CW Point & Click Builder Wizards
<b>2- Distribute App UI</b>	An hour at most per app; in reality just a few minutes	Use of Display Wizard to attach Central Views
<b>3 - Integrate with ERP</b>	Depends on "readiness" of ERP system. Generally, about a day to connect to the ERP and an hour to customize the form. If the ERP uses web services, it depends on whether the service exposes the appropriate data. If it is custom SQL Server or database, it is even easier.	The form connection requires "builder" point and click skills. The configuration of the external data provider is an IT role requiring knowledge of the back end system. The CW knowledge is just XML configuration – no coding.
<b>4 - Vendor Management System</b>	About a day, assuming you already have the basic connections in place above. You'll also be adding Write capabilities so the back end needs to support this.	Knowledge of HTML, XLST, and XML. This knowledge is used to customize read-write forms. No coding.
<b>5 - Vendor Self-Service Portal</b>	About 4 days. Two days to work out the back-end system and security framework. One day to build the UI and make connections. One day to implement and test the work order publishing feature.	The front end UI uses HTML, XLST, and XML to customize forms. The back-end integration requires knowledge of the back end systems and organization security policies and systems. No coding.
<b>6 (the extra) - Creating Work Order App in Other Departments</b>	A couple of hours per app per department to customize the fields and any specific views or end user actions to meet their local needs.	Basic SharePoint list and library and CorasWorks Builder Wizards.

## Features of the CorasWorks System Used in this Application Scenario

This application scenario covered quite a bit of ground. In this section, we'll briefly describe the key CorasWorks System features that would be used in this scenario.

### **Overall System Features**

**Modular Architecture** – CorasWorks has a modular, component-base architecture that leverages the web part framework of SharePoint. Our system includes web parts, but the core functionality of views, data connections, forms, end-user task automation, and system event triggers and scheduled activities are all individually configurable components in the form of XML resource files. This modularity makes it easy to build using Builder Wizards, easy to change and upgrade, and easy to reuse. In addition, this modular architecture supports the ability to distribute functionality as we did with the Work Order Approval application.

**Comprehensive, Multi-tier** – The CorasWorks system is comprehensive in that it addresses all layers of the application stack—the UI, business and data tiers, and management. A key part of the design is that these layers (or tiers) are all separate from one another and can be used separately and in different places. Thus, a user can be working with data in one sight that comes from another site, or working in a dashboard that contains views, processes, and data from many sites. The displays, logic, and data are all handled separately and can be snapped together to create functionality.

**Integrated** – Through our System design all of the elements of your application can be easily connected. It is basically a services-oriented architecture for your front-end work environment. A key aspect to the system is the ability to centrally configure applications and components. This will be discussed in more detail in the One-Touch System section below.

**Leverages Microsoft SharePoint** – There are a couple core features of the Microsoft SharePoint platform used in the above application scenario. The first is the UI modularity, which is supported by the Web Part Framework of SharePoint. The second is the use of lists and libraries, which are easy ways to make changes to data. The third is the Security framework, which provides the users with the ability to control permissions at the Site, List or Item level of the data. All CorasWorks displays security trim the information so users only see the information they have rights to see.

### **Specific Features**

**Dashboards, Reporting, Displays** – At the core of the applications above is the use of many different display types. Principally, CorasWorks provides standard displays, such as grids, calendars, and charts and graphs. These displays are Ajax-enabled to speed up response times and make work more convenient. They are also highly end-user configurable, allowing users to modify their user experience and manipulate data on the fly. In addition, each CorasWorks display can have any number of views. They can be “local” views that are customized, or, Central Views, which are common views used by multiple displays. Each view carries with it the display configuration, data connections, forms, and end-user actions for which it was designed. This is the enabling capability of the Snaplets used in this scenario.

**Forms** – Any time you connect a view to SharePoint data you automatically get a runtime form through which you can view, add, or edit information. These are Ajax-enabled pop-up forms so the user doesn't have to navigate to the actual SharePoint list or library. In addition, you can create custom New forms to show a select groups of fields. You can also create custom run time forms for end user tasks such as approving work orders, modifying them, sending emails, publishing items, etc. These “builder” tasks are all done using web-based Builder Wizards.

**Builder Wizards** – CorasWorks comes with a set of 7 web-based Builder Wizards that make point and click development possible. The most commonly used are the Display Wizard to customize displays, the Action Wizard to create custom forms and end-user actions for task automation, and the Central Views Wizard to create centrally configured views that connect data, forms, and actions. In addition, we provide Builder Wizards for creating conditional Event Triggers and Scheduled Activities to drive automated business processes. We also provide you with two management wizards to modify Master Pages and to manage Global Links (see One Touch System below).

**Workflow/Task Automation** – The use of our custom actions to automate business processes was mentioned throughout this document. These are very powerful because they can be built easily using our Builder Wizards and cover three scenarios: end-user driven activity, event triggered activity, and scheduled activities. Thus, through the combination of things that people do with things that the system does, you have a broad range of capabilities to meet the needs of your applications.

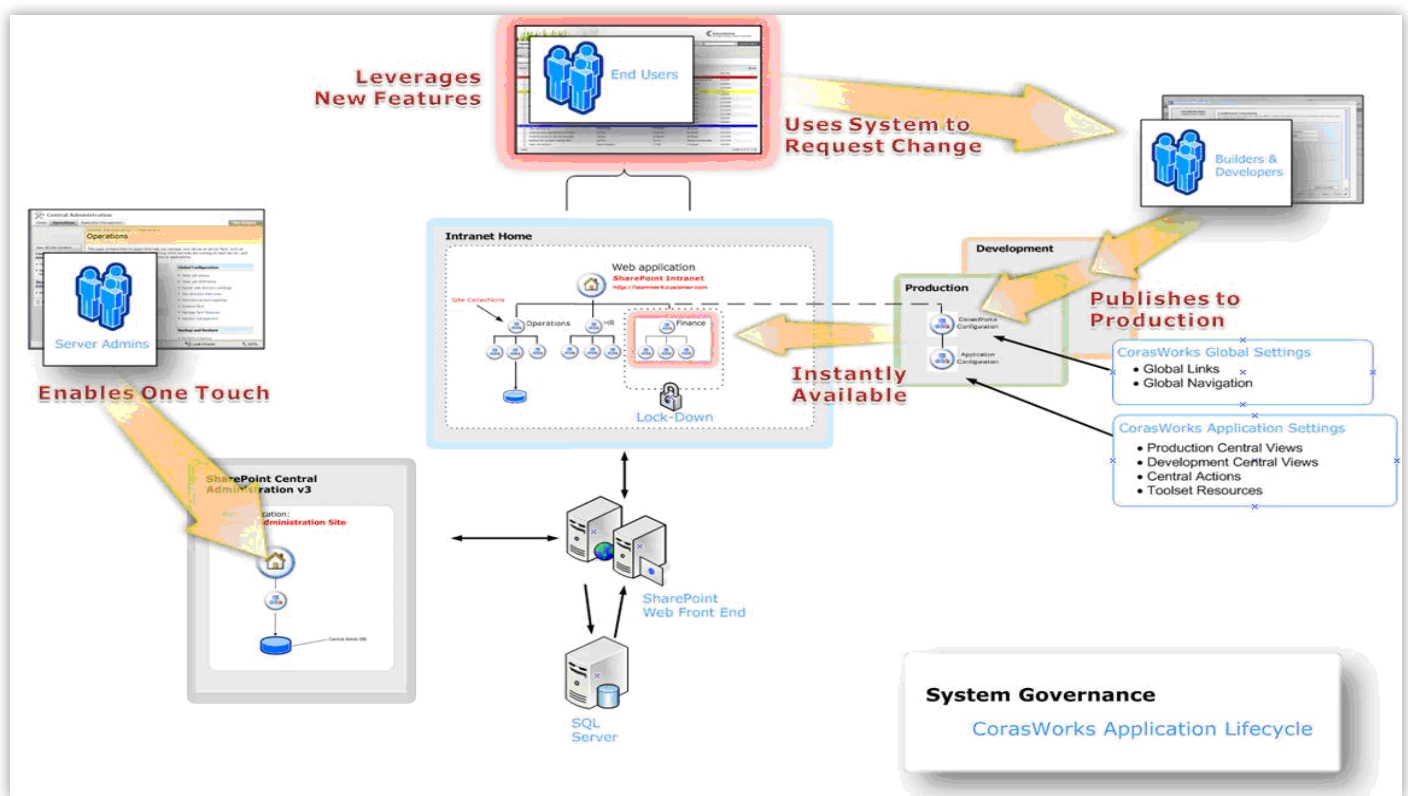
# Enabling Application Evolution

**Data Integration** – There are actually two types of data integration within the Greensleeves solution. The native SharePoint capabilities of CorasWorks allow them to centrally configure connections to distributed information. Thus, a display can connect to multiple distributed data sources. In addition, particularly in Stages 3-5, we leveraged the External Data Providers of the Toolset to connect to external data and to mash-up data from SharePoint and External data in composite displays and forms.

**Environment Design Tools** – If you build out the applications in the above scenario, you could get a number of siloed, yet, functionally integrated applications. They would be siloed from a user look and feel and navigation perspective. Typically, an organization would also use CorasWorks to create an overall UI that would have global navigation that ties together the full environment. Using CorasWorks the environment can be centrally configured, so that you make one change such as adding an application and it appears on all navigation. They would also use application navigation such as Tabs and Pages to structure the application interface.

**One-Touch Management System** – There are a number of features of the CorasWorks System that come to bear to make the ongoing costs of further change and maintenance lower and that give administrators control over the system. The ability to manage the life cycle of applications, at low costs, is a key part of application evolution and continuous improvement. If the costs of change are too high or it is too complex, then, it doesn't happen and progress stalls. The following describes the key features of what we call the One Touch System™ of CorasWorks v10.

The following diagram shows the basic elements of the One Touch System and how they come together to support the application environment in the middle of the screen.



The basic elements of the One Touch System are as follows:

- **Central View Configuration** – used in building each of the Views of this application
- **Central Forms and Action Configuration** – allowing you to centrally configure and reuse forms and actions
- **Attach Views to Displays** – the ability to easily attach a centrally configured view to a display without having to drag and drop a new web part on a page
- **Centrally Configured External Data Providers** – configured once and reused
- **Global Links** – allowing you to use a variable name for an application instance/site vs. a hard-wired URL which makes changes One Touch and makes applications portable

- **Master Data Management** – the ability to centrally store master SharePoint data used throughout the environment and/or to centrally store external data connections
- **Application Configuration** – you can centrally configure all parts of an application
- **Application Life Cycle Management** – because of the other elements you can easily upgrade the applications after you build them. This process can be managed through development, test, and production with the ability to automate the process of upgrades without having to touch runtime UI components (i.e., web parts).
- **Global Navigation** – the ability to centrally configure and manage environment navigation
- **Lock Down** – allowing you to centrally lock down your applications once they are deployed, meaning that users can not modify the functionality.

## Conclusion

As shown throughout this white paper, the concept of “application evolution” is very possible—and practical—with the CorasWorks modular application development system. The integrated feature set of the system enables organizations to gain maximum business value from their SharePoint investments by providing the ability to easily and cost effectively develop applications and evolve those applications over time to meet specific user needs.

### About CorasWorks

*With 1,000 customers and more than 1 million deployed users worldwide, CorasWorks is a leading provider of modular application development software for Microsoft SharePoint. Our products are used by customers to build the types of solutions referenced in this document. Our modular, multi-tier, centrally manageable design makes it easier to design, build, and manage the applications of integrated work environments, without requiring the time and expense of custom development. We provide products to support solutions that work with SharePoint data and that support composite applications working with external data, applications, and web services.*

*For more information and online demos and downloads, please visit the CorasWorks web site at [www.corasworks.net](http://www.corasworks.net) and the CorasWorks Community at <http://community.corasworks.net>.*