

Web Strategy Report

John Deere 'Pathways' Recommendations

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1. Executive Summary

“Pathways” (<http://mypathways.deere.com>) is an internal online portal site for John Deere equipment dealerships that provides them with information on products and promotions.

Our focus with this project is to improve the portal site to provide better information for John Deere’s dealerships. By understanding the needs of John Deere’s dealers, we plan to design an appropriate recommendation/collaborative filtering system - based on a dealer’s access pattern - to alert them to relevant content and thus, provide better information to dealers without overloading them with it.

Our team conducted an analysis of the information architecture of the portal site using contextual inquiry methods and website heuristic evaluation techniques. Overall, the analysis revealed a generally credible site with a rich set of information for the dealers. However, certain navigational and design elements detract from the goals of the site. These recommendations focus on addressing those aspects of the website to realign them with John Deere’s goal of keeping its dealers adequately informed. Specifically, this report provides explanations indicating how a recommender system will help to make the information on the portal more accessible and proposes minor visual enhancements to the portal pages which will also improve information access on the portal.

2. Analysis

For the purpose of this project, we adopted two methods to examine the existing Pathways portal from an information architecture and usability standpoint. These include a contextual inquiry to gain an understanding of the dealers and how they use the portal site and a heuristic evaluation of the website based on current industry measures.

2.1. Contextual Inquiry

Our analysis of John Deere's Pathways portal began with interviews to gain an understanding of the company's customer base in order to properly align our recommendations with customer needs and John Deere's goal of keeping them properly informed. We conducted four interviews – three onsite and one via phone – with dealers provided by John Deere. The participants represented different types of users of the portal site: they included, among others, a controller who mainly uses the administrative features of the site and a parts manager who regularly uses the site for technical information and warranty work. Due to the small number of participants and the limited geographic area represented (Michigan and Ohio), we recommend further user research with more participants to thoroughly understand how the dealers use the portal site. However, despite the relatively small number of participants, we garnered enough information to inform our recommendations.

2.2. Heuristic Evaluation

We employed Jakob Nielsen's widely accepted ten usability evaluation guidelines ('heuristics') to examine the usability of the site and judge its compliance with these established set of heuristics. As a result of our analysis, we found only three of the ten heuristics to be most applicable to improving the Pathways portal. The three are listed and furthered explained below:

1. **Match between system and the real world:** this means that Pathways should speak the users' language with words, phrases and concepts familiar to the user, rather than system-oriented terms; and follow real-world conventions, making information appear in a natural and logical order. The Pathways portal, in fact, adheres to this

guideline. However, from our interviews, it became clear that unlike users with significant experience (27-32 years) with the John Deere culture, some new to intermediate users have difficulty understanding some of the terms, especially acronyms in use on the portal (e.g. 'J.D. point'). This makes it difficult for these users to find the information they need (even when using the search feature) and one interview participant noted that on average, there is a six month minimum learning curve for new users since they cannot easily find or identify the information they need.

2. **Recognition rather than recall:** This guideline seeks to minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the site to another or from one login session to another. The Pathways portal provides a 'favorites' feature that makes it easy for users to keep track of regularly used links. From our interviews, we found that this is a heavily utilized feature – some users access various parts of the portal and keep track of often used links there and those who only use one or two parts of the site, use the 'favorites' feature to prevent having to re-find the links. Thus, although the 'favorite' feature goes a long way to accommodate this guideline, for the first type of users, the 'favorites' section itself becomes difficult to navigate after several links are bookmarked – defeating the initial purpose of the feature - and for the latter users, although it works well for them, their hesitation to re-find one or two links points to a problem with the initial listing, which we address in the next point.
3. **Aesthetic and minimalist design:** This principle refers to the presentation of information on the portal. It seeks to make available only information needed by the user and to make access to this information as simple as possible. We found that the portal's content is quite comprehensive. It provides users with a lot of good information about the products and services available. This is a positive feature of the site. However, the way the information is laid out to the user greatly affects its perceived value. Users we interviewed spoke about there being too many submenus under a main menu making it difficult to find links. Furthermore, although the portal has a minimalist design, a simple visual inspection shows that the information appears 'busy' and some users reported feeling 'overwhelmed.' One user mentioned the problem of "stale alerts" in which dated information is still visible on the portal front page. Overall, the current design adds to the difficulty of finding relevant information.

3. Findings and Recommendations

Our goal with this project is to design an appropriate recommendation system that would improve the information that John Deere's dealerships obtained from the Pathways portal. To inform the design of this recommendation system, we accessed the needs of the users of the portal through interviews and evaluated the portal based on standard industry measures. This section focuses on a summary of our findings and presents recommendations on how to address the problems raised in the findings.

3.1. Findings

Our findings range from issues that directly affect the design of the recommender system to system wide issues. We only make recommendations for the system wide issues where they influence the design of the recommender system.

3.1.2 Relevant issues

- The terms and vocabulary employed on the site are intuitive to experienced users, but pose a difficulty for new and intermediate users.
- Due in part to the vocabulary problem noted above, the search feature is deemed unhelpful by some users for finding information.
- Although the visual design of the portal is minimalistic, the layout of the information makes it difficult to find relevant information and results in information overload for users.

3.1.2 System wide issues

- Generally, the users expressed satisfaction with Pathways: one proclaimed, "we love it! How we got by without it, I don't know."

- Users liked the global login feature.
- Although users appreciated being able to handle admin functions in house, one user found the profile admin frustrating to use because it took too many keystrokes to accomplish a task. Also, actions took too long to accomplish resulting in too much waiting time. Lastly, the process of managing passwords is tedious and since this occurs often, a request was made to simplifying the process.
- Users found the training site easy to use and complete.
- Although the multiple location/dealer numbers cause confusion sometimes, the required separate logins is getting better.
- Users commented that too much information is required for the “machine down escalation” process: in some cases, the requested information is stored in different parts of the site and there is no direct “one-stop” access to the information, making the process take longer than necessary.

Overall, the vocabulary problem and the visual design of the site proved to be the main causes of the difficulty users experienced in finding relevant information. Improving the ability to find relevant information in a timely manner will in the least improve the experience of searching for information, an exercise that occurs often during the reported 2 to 7 hours of daily use of the Pathways portal.

3.2. Recommendations

Our initial plan to improve the information available to John Deere’s dealerships consists of designing a recommender system that would make relevant information available to users based on the dealer’s access pattern and improving upon the promotional/informational emails sent to the dealers. In the course of our analysis, we asked our interviewees questions regarding promotional emails and their perceived utility of an email tailored to their particular needs. Three of the users responded with ambivalence while one commented that the “less email, the better.” While the small number of respondents weakens the following conclusion, we decided to focus on designing a recommender system instead of improving the current email setup since the former promises a greater potential to improve the experience of the users when they seek out information. In addition to the design of the recommender system, we make recommendations for the visual structure of the site in order to make it easier to find information.

3.2.1 Design of Recommender system

Recommender systems provide information that may be of use to an information seeker based on certain characteristics of the user that are determined either explicitly (e.g. asking the user to provide preference information) or implicitly (e.g. eliciting user browsing behavior from server logs). Based on our findings, the focus of our design is a recommender system that will augment the searching interface using both explicit and implicit data obtained from the user. A description of how this will work follows.

As a user goes about their normal use of the portal, the recommender system keeps track of predefined attributes of the users' activities. These attributes will include implicit data like most visited page across various login sessions, and explicit data like a user's ranking of how relevant a search result is for a particular search term. These attributes, coupled with existing user information (e.g. location of user etc) is used to create a user profile that can be used for comparison with other users of the portal. Thus, as an example, the search results for a user searching for a given term can be improved by taking into consideration the user's previous browsing activities and the activities of users with similar profiles who have searched for a similar term. See figure 3 for a visual description.

3.2.2 Visual Design of a portal page

The visual redesign is aimed at enhancing with the current layout of the portal to allow for easy, unobtrusive access to required information. The enhancements address these three main issues: stale alerts, problems with acronyms and improving the process of information. The following images visualize the enhancements suggested above.

For stale alerts we recommend providing the user the ability to indicate that they have seen an alert. This can be achieved by either allowing them to set a preference on how long an alert can be shown or by giving them the option to remove the alert. Another option is to display alerts using the information garnered by the recommender system. In this scenario, non-critical alerts will be shown to a user only if elements of their profile fit the contents of the alert message.

The screenshot shows the John Deere Pathways website interface. At the top, there is a navigation bar with links: Feedback, Site Map, WebHelpR, Help, Dealer Menu, Sign On/Off, and Setup. Below this is the John Deere logo and the word "PATHWAYS". A secondary navigation bar includes: My Pathways, Sales, Service, Parts, Dealer Dev, Finance, Advertising, Support, and Safety.

The "Alerts" section contains two entries:

- Sep 25 Dealernet Access Issues** have been resolved. We apologize for any inconvenience this may have caused.
- Sep 24 Parts Invoice Problem** Duplicate parts invoices dated September 14th, click [here](#) for more information.

Below the alerts is the "All Favorites" section with a link: [Configure Product - Product Compatibility](#)

The "Announcements" section is dated Monday, October 01, 2007.

Parts **Best Buy 2007-2008 order programs** : are now visible on Pathways. The primary access link to these forms is "**Best Buy** Links/Ordering/Tracking under the Parts page. Most of these order programs are available 1 Nov 07 through 29 Feb 08. The unless otherwise noted.

Advertising **John Deere Dealer Sign Program** : Information regarding the 2008 John Deere Dealer Sign Program can be found by clicking John Deere Brand Center.

NEW! Parts & Service Dealer Direct Postcards : There are several new Service postcards and a Service Thank You postcard to <http://johndeereadexpress.deere.com> > select Create New Dealer Direct > Ready to Run > Postcard and "CCE Parts & topic for the Service Thank You postcard.

NEW! Service Appreciation Card on Dealer Direct : You can now print and bulk ship the Service Appreciation cards through <http://johndeereadexpress.deere.com> and select Create New Dealer Direct > Ready to Run > Service Card.

Parts **C&E New Parts Marketing Bulletins** :

- **Check Stock:**
- **Order programs:** Best Buy 2007 - 2008 order programs are now available on Pathways
- **Oil, lubricants and accessories:** Tote-A-Lube supplier-direct order form
- **Batteries and filling equipment:** Battery filling equipment and accessories (Canada Only) Best Buy Order Program
- **Batteries and filling equipment:** Battery filling equipment and accessories (U.S. Only) Best Buy Order Program

Initial/Recommended Stock Parts Website : The **Initial/Recommended Stock Parts Website** now has the following new Sprayer, 6430 Tractor and 748 Stripper Cotton

An option to remove alerts will help with stale alert

Figure 1

For acronyms we suggest using the ‘<acronym>’ and ‘<abbr>’ HTML tags (with title attributes) for acronyms and abbreviations respectively. This will allow users to quickly identify the meaning of the terms (and learn them) without having to expand the abbreviations or acronyms. In general using the ‘title’ attribute for all links improves the readability of the site.

The screenshot shows the John Deere Pathways website interface. At the top, there is a navigation bar with links: Feedback, Site Map, WebHelpR, Help, Dealer Menu, Sign On/Off, Setup, All, and Ag. Below this is the John Deere logo and the word "PATHWAYS". A secondary navigation bar includes: My Pathways, Sales, Service, Parts, Dealer Dev, Finance, Advertising, Support, Safety, Systems, and Trainin. The main content area is divided into several sections:

- All Service Favorites:** Contains links for "Service ADVISOR™ - Machine Warranty", "Information - AG Product Improvement Programs (PIP)", "Applications - Engine Product Support Bulletins", "Support - Ready To Mow", and "Applications - OEM Engine Registration".
- PIP Reports:** Includes "Management - Technical Manual Translation Status".
- Service Announcements:** Dated Friday, September 28, 2007, with a link for "CCE Service : What's New." and a section titled "Growing a Profitable Service/Parts Department : Product Support training for 2008 features a hand Training".
- All Service Links:** A list of links including "AG/Combo Service", "What's New?", "Assist Tools for Service ADVISOR™", "AG Field Installation Instructions", "CCE Field Installation Instructions", "DTAC for Parts & Service", "John Deere Custom Performance™ (Software Delivery System)", "Machine Configuration", "Machine PIP Information", "Machine Warranty", "New Model Qualific", "CF NMQ Informati", "CWP Bulletins", "CWP NMQ Informa", "Hitachi NMQ Inform", "TJ NMQ Informatio", "OEM Engine Applic", "Diesel Engine Guid", "Distribution Map Di", and "Engine Product Su".

An orange callout box with a pointer to the "Service Announcements" section contains the text: "Using <abbr> & <acronym> tags will help better define acronyms and abbreviations".

Figure 2

For improved access to information, we recommend making the search interface a more prominent part of the interface – this will encourage users to quickly find the information their need, instead of having to browse through a long list of options. We also present a layout option that integrates the workings of the recommender system.

The screenshot shows the John Deere Pathways website interface. At the top, there is a navigation bar with the John Deere logo and the word 'PATHWAYS'. Below this is a menu with categories like 'My Pathways', 'Sales', 'Service', 'Parts', 'Finance', 'Advertising', 'Support', 'Safety', 'Systems', 'Training', 'Signature Process', 'Field Focus', and 'Marketing'. A search bar is located at the top right, with the text 'Enter Keyword' and a 'Search' button. A callout box points to the search bar with the text: 'Place search at top of each page to provide a quick way to find information'. Below the search bar, there is a section for search results. The search term is 'parker holes dimensions'. The results are listed as follows:

- Parker Assemblies (5 stars)
- Hole fabrication guide (3 stars)
- 2007 Texas Crop Hail Rates (1 star)

A callout box points to the star ratings with the text: 'The stars represent ratings of the relevance of these results by users with similar profiles to the current user – the comparison is based on the information gathered by the recommender system.' To the right of the search results, there is a 'Favorites' sidebar with a 'Hide >>' button. The favorites list includes: 'AG Field Ins', 'CCE Field Int', 'Diesel Engine', 'Distribution', and 'CF NMQ Infor'. A callout box points to the favorites sidebar with the text: 'Place favorites in a slide-in/slide-out box to reduce screen clutter'. Below the search results, there are sections for 'Service Announcements' and 'All Service Links'. The 'Service Announcements' section includes a date 'Friday, September 28, 2007' and a link 'CCE Service : What's New.'. The 'All Service Links' section includes links for 'AG/Combo Service', 'Assist Tools for Service ADVISOR™', 'AG Field Installation Instructions', 'CCE Field Installation Instructions', 'DTAC for Parts & Service', 'John Deere Custom Performance™ (Software Delivery System)', 'Machine Configuration', 'Machine PIP Information', 'Machine Warranty', 'CWP Bulletins', 'CWP NMQ Information', 'Hitachi NMQ Information', 'TJ NMQ Information', 'OEM Engine Applications', 'Diesel Engine Guide', and 'Distribution Map Directory'.

Figure 3