UX Development Process

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1/49 UX Development Process

Hello! And welcome everyone to User Experience Design for DriveWorks!

This presentation is for anyone who wishes to learn more about how to make their DriveWorks implementation more user friendly and more user focused. Ultimately leading to a more successful implementation.

My name is Joseph Caswell, and I am a Technical Solutions Consultant at TPM, a DriveWorks reseller based in the southeast US. It is my job to consult with a variety of customers to guide them to a successful DriveWorks implementation, and in many cases I am directly involved in bringing their DriveWorks projects to life.

2/49 Overview

Don't worry if you have no idea what UX is, or what it entails, this presentation will go over just that. We are going to take a high level overview of the UX design process from cradle to grave.

We'll go over UX design, UI design, and accessibility. What they all are and why they are important.

Then we'll walk through the design process step by step and showcase some tools of the trade along the way.

So let's get started!

3/49 UX Design

What is User Experience Design?

UX Design the process of designing a product from the perspective of the user.

You may have heard of DFM, or Design for Manufacturing. That is the process of taking a look at your products and seeing how you can modify them to be better for manufacturing.

This isn't all that different: instead we are going to be looking to see how things can be improved for the user.

1 UX specifically, is focused on the entire journey, or experience of the user: not just the interface.

2 UX Design is the process of creating products that provide meaningful and relevant experiences to users.

3 It involves the designing with the intent to integrate aspects of branding, design, usability, and function.

4/49 Google UX Quote

UX designers help make technology easier to understand and more enjoyable to use.

5/49 UX Design

Let me bring this back to engineering:

Before you can design the door handles of a car, or the dashboard, or even the muffler, you need to know what, or rather, who the car is for.

1 Who will be driving it? In what regions? What weather conditions? What are their expectations? Price point?

2 What is the car supposed to make the driver/passenger feel?

A Ferrari supercar is going to be a very different experience from a chrysler minivan, and every aspect of the design should reflect that. Failing to consider this leads to a bad user experience which means unhappy customers.

6/49 UI Design

What about UI? What's the difference?

1 User Interface design is the process of designing the individual interfaces that make up the product.

2 In our case, this will be the forms and controls that make up the DriveWorks project. How big is your text input? What happens when you type in an invalid input? How are the different controls laid out on the screen? How about for a mobile device?

UX and UI are terms that are often used together, but they have disctinct meanings. A UI designer is focused on the specific design of the controls and layout of the product where UX focuses on higher level concepts then that.

3 Bringing it back to designing cars, this is the point where we are designing the door handles, the steering wheel, the dashboard: all the parts that the user interacts with.

Remember, with UX we were focused on the experience as a whole.

7/49 UX - Users

So why should we, as DriveWorks administrators care about user experience?

1 #1: User Adoption

You need people to actually use your configurator for it to be successful and ease of use is the best way to attract and retain users. Not hitting that mark is the number one reason for implementations to be unsuccessful.

Just about all of us, at some point in our life has built an automation tool we are really proud of, but no one ends up using it. It's frustrating.

Later we'll talk more about uncovering the needs of you users so you can focus your efforts on what they need.

8/49 UX - Planning

This ties directly into the next reason: planning.

Planning can save time, money, and effort, and will make future efforts smoother.

Working in DriveWorks, we can sink a lot of time into trying to get something to work just right. How often is that time ultimately wasted because we didn't have a clear understanding of what we were trying to accomplish?

Maybe you fought with the oddities of making an HTML email quote, but your customer is frustrated because it can never print out right? Should you have made a PDF instead and attached it to a simple email?

Maybe you stuck a ton of options into a single form, but your sales team or your customers could have told you that most of them are obsolete?

It may not feel as productive up front, but ultimately it's easier and quickier to integrate the user experience into your planning. Believe me, the dividends will pay off later

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9/49 UX - Training

Good designs leverage user intuition and past experiences. You can build on this by incorporating visuals such as images or DriveWorks 3D Preview.

1 Ultimately, good UX leads to having take less of your valuable time training new users, and less effort fixing things because users input invalid parameters.

2 You can save yourself from having to reject specifications by not allowing invalid combinations. Catch errors before they happen, and make it easy for the user to fix them

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10/49 UX - Sales

In some circumstances, a good UX can drive more sales as well.

DriveWorks Live allows us to have configurators open to the public, not just for internal use.

Doing so means our user base is larger, more diverse, and we have to compete with all the other sites out there.

You can drive initial interest by having an attractive UI, but, just like anything else, they won't come back unless they had a good experience.

1 If you have had a configurator for a while it's possible people have built up distrust or an ick factor. Introducing a new, better, more intuitive design is an opportunity for a marketing blast, and a chance to re-engage customers that may have been frustrated with the old design.

Hey everybody try out Configurator 2.0! It's so much easier to use!

11/49 UX - Review

To recap, you should care about the user experience because

a good UX attracts and retains users,

saves time, money, and effort and can lead to more sales.

All affecting your bottom line

12/49 Accessibility

Before we jump into how to get started desiging, I would like to take a moment to talk about something that is very near and dear to my heart - Accessibility

Accessibility is the term for making sure that everyone can use your product, regardless of their abilities.

We are not all perfect humans: Everyone has a different set of eyeballs, brain, hands, experience, etc

If your implementation is public facing, then folks will be accessing it from different browsers, devices, operating systems, and screen sizes.

During the research phase, which we'll cover later, you will uncover which of these to focus on, so you can accommodate those differences in your UI.

13/49 Accessibility 2

Everyone benefits from accessibility.

We are surrounded by technology or design descions that, while they may be required for people with certain limitations, they are helpful for everyone.

1 Take elevators for instance: Here in the US they are required by law by the Americans with Disability Act because that is the only way some folks can get from floor to floor.

2 Curb cuting is the term for sloping a sidewalk down to a crossing as seen here. This design decision shapes and guides you on where to cross the street. But it's also there to assist those confined to wheelchairs. Both elevators and curb cuts assist all of us with our luggage, strollers, bikes, or pulling a cart.

3 Having large print, and ensuring there is high contrast between text and it's background vastly improves readability for everyone.

14/49 Accessibility Quote

“When UX doesn’t consider ALL users, shouldn’t it be known as “SOME User Experience” or… SUX?”

15/49 Accessibility

Here are some key things you can do to make your DriveWorks implementation more accessible:

Use large, easy to read fonts and make sure there is enough contrast between the text and the background. Make sure there is enough space between elements so that they don't run together.

16/49 Accessibility

Don't rely on color alone to denote meaning.

A majority of us in mechanical and manufacturing engineering are male, and we are 17 times more likely to be color blind then women.

Let's take a look at this interface. It's a simple form with a few inputs with some user validation. If we rely on just the color of the border to determin valid input, not everyone may be able to tell if the input is valid or not.

17/49 Accessibility

Here we have modified it to include not only an icon, but also a text label telling the user what is wrong with the input.

18/49 Accessibility

If you have a color picker for paint, make sure to include the color name, not just the color.

19/49 Accessibility

We can consider making things accessible to those with dsylexia or ADHD by making sure there is ample space between elements, and grouping like items together.

Let's take a look at this interface from Microsoft Office:

We have 3 sections of controls, each related to each other: labeled, grouped, and spaced out.

Then, there is a live preview of the changes you have made.

There's too many controls to fit on a single page, so they have seperated them into tabs.

With this selection, one of the checkboxes is not available and they have made it obvious by graying it out.

This is an accessible, easy to follow design, and not difficult to implement.

20/49 The Design Process

We've learned about why UX and UI design are important, and what they are.

and we've discussed the importance of accessibility.

Now let's walk through the design process step by step.

21/49 Roadmap

The design process occurs in a series of phases, each building on the last.

We'll start by identifying, researching, and planning our project.

Then we'll move on to conceptual design, wireframing, and prototyping and we'll touch on some software that can help with that.

And once we have a design we are happy with, we'll move on to implementing it in DriveWorks.

Along the way we'll make sure to get feedback from stakeholders and users to make sure we are on the right track, and even once deployed, there's always room for improvement by collecting feedback.

22/49 1. Identify

The very first step of UX design is the same as the first step in any project: identifying and prioritizing your goals, specifying your audience, and identifying the resources you have available.

This will likely involve project managers or department heads, and is an exercise that you may have already done when you first started your DriveWorks implementation.

23/49 1.1 Identify Goals

First up is the goals.

Define, if you haven't already, what it is that you wish to accomplish with your implementation or redesign. Ask yourself, and your other stakeholders what are you trying to achieve? What are you trying to improve?

1 We just covered many reasons to put effort into making a good UX and many of them align with the reasons you got into DriveWorks in the first place. Probably to make your life easier, less reptitive: and ultimately to make your company more money.

2 But which of these specifically applies to your company and your implementation? Can you quantify or qualify the improvements you wish to make?

During this process you may identify several goals. So...

24/49 Priorities

... now it is time prioritize. We can't do everything at once no matter how much we wish we could.

Identify which goals may be the easiest to implement, or will have the biggest impact.

Does it make sense to roll changes out incrementally, or should you do a complete redesign?

Are these goals more important then what you or your team are currently working on?

25/49 Audience

Next, identify who would be using your implementation.

Will this be open to the general public or just your sales team?

Will this be used by internal designers or administrators?

Will you have anonymous users or will everyone have to login?

Does it make sense to have different implementations for different users?

Will you prioritize one group over another?

You will likely use the groups you identify here as the baiss for Teams in DriveWorks Security.

26/49 Resources

You can't begin to plan unless you know what resources you have available.

Who is going to be working on this project? Do they have the skills and time to do so?

Do you need to get other departments in your company involved?

Perhaps your marketing team has a graphic designer that can help with the design?

Maybe your IT department can help with setting up a server or web hosting?

Do you already know everything about the product, or do you need to get manufacturing or sales involved?

27/49 2. Research

We've finished identifying our goals, audience, and resources.

Our next step in the design journey is research.

We need to find out more about our users, our competitors, and what alternatives are out there.

28/49 Users

In a previous phase we, with our manegerial hat on, identified the groups we wish to target. Now it is time to put on our detective hat and find out what we can about them.

What are their motivations and goals in their role? What is their existing solution or workflow and what challenges do they face with it?

Based on this we can focus our efforts on what will make the biggest impact for them, which will go a long way towards their willingness to adopt, or keep up with the new system.

It may also be helpful to identify if they have any accessibility needs, what devices and browsers they are using, and what region, language, timezone, and currency they use.

You will, of course, wish to take note of the information you have gathered about your users.

In UX design, sometimes it's helpful to create cards that represent your users, or user personas. Nice term to keep in your pocket if you end up working with a graphic designer, however, any way you can capture this information is fine.

29/49 Users

Try and answer the question: Why should they use your configurator?

Your answer may be something like "It is an improvement over their existing solution because..." or "This will save them time/effort/money because..."

This should tie directly in with the goals you identified earlier, but this time from the perspective of the user.

30/49 Competitors / Alternatives

Every designer, mechanical UX, or otherwise, takes inspiration from what is already out there.

See if you can find out what your competitors are using, does it seem to work for them?

Take some screenshots, if you can, try them out. read up on reviews, or simply have a chat with someone who uses it.

While researching your users, you figured out what they were currently using. If they are using your existing implementation, what are they saying about it?

We don't want to throw them off their routine: rather we want to make it better: less effort, more accessible, less errors or frustration.

32/49 Planning

Are you going to make incremental changes, or a complete redesign? This likely depends on the goals you identified earlier, and if there are items that need to be addressed immediately.

1 You may have multiple people collaborating, Since only one person can have a single project open in Administrator at a time, you may opt to seperate the UI from the logic using specicification host controls.

Not only should you plan who on your team will be responsible for which parts, but you may bring in other departments such as marketing, graphic design, or IT, or even outsource some of the work.

2 And of course, no plan is complete with a timeline and budget.

33/49 4. Conceptual Design

We have identified our goals, audience, and resources, and have done our research.

Now it is time put it all together and start sketching up some ideas.

34/49 Pen and Paper

This is the time for pencil and paper, or a whiteboard, or even using scissor to cut up some screenshots you took.

We are all familiar with the "back of the napkin" phase of invention or design, and this is pretty much that.

Brainstorm is all about letting ideas flow quickly, not worrying about the details and not letting our anxiety about the final product get in the way.

Feel free to jump in and ideate or sketch on any ideas you have. Whether it be the process as a whole, the form layout, or even the controls themselves.

Spend a few minutes on each idea, and then move on to the next.

Once you are done, take a step back and see if any of the ideas stand out to you, or if you can combine them into something better.

35/49 Flow Diagrams

Now we focus on the flow of the user through the implementation.

1 Using technology you are comfortable with, make a high level structure of the configurator. How do different pages/forms interact with each other? What sources do they send or receive information from?

2 Remember, map their experience, not just the pages. This means documenting what caused them to decide to use it, what software might they be accessing the link from, what do they expect to get in return, and when.

If different user groups have very different journeys then you may wish to have different flow diagrams for each.

3 User flow and user states are not that different from specification flow and states. In fact, many of these states may be the same: submitted for approval, awaiting CAD generation, etc.

4 Make sure to include your other stakeholders in this process, and iterate on the design as needed.

36/49 Flow Diagram Software

Because of this need to collaborate and iterate you may wish to use a software tool to help you with this process.

There are many options out there and the importance is familiarity and stakeholder buy-in.

So, if you are using something already for diagramming your data flow or processes, use that.

Ask around your company and see what you might have licenses for. You may already know and own PowerPoint, and that can work. But for more purpose built tools take a look at FigJam or LucidChart: both of which have free tiers.

37/49 Flow Diagram - LucidChart

LucidChart is industry leader for flow diagrams and is used by many companies for their design process.

It has the most feature and templates of any of these software, and integrates with many professional services such as SalesForce and Microsoft Office.

Your company may already have a license for it, so it's worth checking out.

38/49 Flow Diagram - FigJam

Figma is a design software that we will take a look at later and it has a tool called FigJam that is meant for realtime collaboration and mindmapping.

If you are completely new to all of them it may be easier to learn Figma and FigJam then Figma and another software and the two integrate well together.

39/49 5. Wireframe

We have captured the user flow or user journey, now it is time to start visualizing the layout and functionality. We do this by making a wireframe.

40/49 Wireframe

A wireframe is a low fidelity mockup of the various pages and controls. It is meant to be quick and easy to iterate on. It is not meant to be a final product, rather a way to quickly and easily visualize the layout and functionality of the configurator.

Don't worry about colors, fonts, or even verbiage, rather focus on layout and functionality.

1 Start by designing the overall layout of the configurator. This could be the header, sidebar, main content, etc.

2 Then move on to the distinct pages or forms that the user will interact with. This could be the Login or account creation page, the main configurator page, the results page, etc. It's fine at this point to leave the main content area blank, or with a placeholder like an X.

3 Group controls into components, as seen here, or like we saw with the Microsoft Office example. Try different layouts and groupings, and get feedback from stakeholders

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41/49 Wireframe Draft

Capture this using whatever technology you are comfortable with.

Moving groups of controls around in software is trivial, but if you are hand drawing you may wish to cut them out and move them around.

Some people start with pen and paper to capture their thoughts, then move to a digital tool for more polished versions.

This is an example of a hand drawn wireframe draft of a single page...

42/49 Wireframe - Figma

... and here are a few pages mocked up in Figma.

This could also have been made other design software like Adobe XD, InDesign, Publisher, or even PowerPoint.

I gently advise against using raster software like Photoshop or Paint, but if that's what you are comfortable with, then go for it.

You can even use DriveWorks form designer if it's easier then learning a new software. Just remember we are focusing on make a low fidelity mockup, not a final product.

43/49 Figma

- Industry leading software for UI design
- Quickly iterate through ideas
- Focus on design while isolating from minutia of implementation
- Excels at collaboration
    - Can have multiple people work on it at once, unlike DriveWorks Project Form Designer
    - Can capture comments right on design
    - Use "Present" mode to create links to share with stakeholders earlier in process
    - Use "Dev" mode to easily identify spacing, position, styles
- Don't need to be Technical to design or modify
    - Can be handed off to graphic/web designer without DriveWorks license
    - Professional alignment, spacing, grouping without variables
    - GUI to quickly and easily design and have it write CSS for you
- Can create assets and reuse them (or modify them later)
    - Icons
    - Form Controls
    - Metadata tags
- Frames in Figma are meant to group items: encouraged to use same thought process with Frame Controls
- You can create a navigable website to test with users
- Component Guide can be made from "components" like master files in DriveWorks

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44/49 6. Prototype

Once we, and our stakeholders, are happy with the wireframe, it is time to make a high fidelity mockup of the various pages and controls.

Just like making a mechanical prototype, this is meant to be a representation of the final product to test out.

45/49 Prototype

A prototype is a high fidelity mockup of the various pages and controls. It is meant to be a representation of the final product, outside of DriveWorks. It is meant to be a way to quickly and easily visualize the layout and functionality of the configurator.

The flow diagram, wireframe, and even the user persona were meant to quickly ideate and iterate rather then needing to be polished. The prototype is meant to be polished and signed off by stakeholders.

This is similar to an engineering drawing: the full specification of the product, but not the product itself.

As such, using a purpose built tool is recommended. Figma and Adobe XD are industry leaders, but if needed, Indesign, Publisher, Photoshop, or even PowerPoint can be used.

1. Using your brand guidelines, start by setting the fonts, colors, logos, etc.
2. Start with the overall layout (header, sidebar, main content, etc.)
3. Design the controls and groupings - the component guide
    - DriveWorks gives several types of inputs, but you may have multiple label types for example (heading, validation, information, etc)
    - Make a master for each component, and use that master throughout the design
4. Make a prototype for each of your distinct pages / forms
    - You don't have to mockup each page, but you should mockup each distinct layout
    - Make additional prototypes for different screen sizes (if applicable)
        - mobile, laptop, half screen, etc
5. Get feedback from stakeholders
6. Iterate, iterate, iterate
7. Finally, save as a pdf and get it signed off by stakeholders

46/49 7. Implement

Use your component guide to make a form that has an example of each of the items (or groups) you need.

Use variables wherever possible to keep things consistent. If you set the standard width of a control via a variable you can edit it from anywhere as opposed to finding the original control and changing it.

You may wish to set your brand colors and fonts in either CSS variables or DriveWorks variables. This makes it easier for others to contribute and not have to train them on your brand guidelines.

If you are using DriveWorks 21+, you can use CSS to style your components. This allows for way more customization than DriveWorks alone, and can be used to match your brand guidelines. It can also allow advanced styling such as animations, shadows, on hover effects, etc.

Don't set the positions of the controls in CSS.

As a general rule, all of the functionality of the forms should work with CSS disabled. However, with CSS, you can make it a nicer (more modern) user experience.

If this is available via the web, make sure to test it on different devices and browsers. (Mostly applicable if you are using CSS)

Test it against a small group of users, and get feedback before rolling it out to everyone.

47/49 8. Feedback loop

Your job is never done: you can always take feedback and improve.

More objectively, the goal of this exercise was to make things better for your users, and how do you know if you have done that if you don't ask them?

If you had an existing configurator, maybe you decided to take baby steps and only change a few things. You can collect feedback and use it to decide what to change next and how, making sure you stay true to your objectives, priorities, and principles.

48/49 Design Process Recap

And that's our journey from cradle to grave.

1 we started by identifing our goals, audience, and priorities

2 we researched our users and competitors

3 we created a plan, and a timeline to follow

4 we brainstormed, and doodled up some ideas

5 then we wireframed the different pages and controls

6 Using software such as Figma, we made a prototype that would be the blueprint for our implementation

7 lastly, we implemented our design in DriveWorks. making use of variables and new features such as CSS

8 Now that it's out in the wild, we can collect feedback and never stop improving

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49/49 Thank you!

Thank you all for attending this virtual session at DriveWork!

I hope you learned a lot about accessibility, UX and UI design, why they are important, and how to get started.

Don't forget to check out the other sessions in the DriveWorks World event app!