Foundation Form Creation with Adobe LiveCycle Designer ES

Cheridan Smith

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ISBN-13 (pbk): 978-1-4302-1003-0

ISBN-13 (electronic): 978-1-4302-1004-7

Printed and bound in the United States of America 9 8 7 6 5 4 3 2 1

Distributed to the book trade worldwide by Springer-Verlag New York, Inc., 233 Spring Street, 6th Floor, New York, NY 10013. Phone 1-800-SPRINGER, fax 201-348-4505, e-mail orders-ny@springer-sbm.com, or visit www.springeronline.com.

For information on translations, please contact Apress directly at 2855 Telegraph Avenue, Suite 600, Berkeley, CA 94705. Phone 510-549-5930, fax 510-549-5939, e-mail info@apress.com, or visit www.apress.com.

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To my wonderful parents, Les and Sandra Smith.
For all that you are and all that you made me.
I love you always.

And for Michael Thomas (Askew).
For the truly amazing person you were and for the glimpses of the exceptional man you were about to become.
You are always with us.
RIP 1990–2008.

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ABOUT THE AUTHOR

Cheridan Smith has been involved in web development and design since 1997 when she began working on a research team for the Y2K millennium bug. It was then that she learned about the Internet and promptly fell in love with the medium. In her career she has been responsible for websites in the early 2000s such as Weight Watchers Australia and Quicken (`http://quicken.com.au`), and she has worked as the creative services manager of Yahoo! in Australia with clients such as Toyota, 20th Century Fox, and Ford. Currently she is the senior digital interactive project manager for a boutique Australian agency.

ABOUT THE TECHNICAL REVIEWER

Kelly Wardrop has been developing, writing, and teaching web technologies for more than a decade and currently has several books published about the industry. Kelly has taught JavaScript at the University of Miami, she has taught various web development courses for Miami-Dade Community College, and she developed the first online course for Craven Community College in North Carolina. Kelly is a regular freelancer for ICVM Group (`www.icvmgroup.com`), the president of Visionary Labs, and a consultant for vTribes.com.

ABOUT THE COVER IMAGE DESIGNER

Corné van Dooren designed the front cover image for this book. Having been given a brief by friends of ED to create a new design for the Foundation series, he was inspired to create this new setup combining technology and organic forms.

With a colorful background as an avid cartoonist, Corné discovered the infinite world of multimedia at the age of 17—a journey of discovery that hasn't stopped since. His mantra has always been "The only limit to multimedia is the imagination," a mantra that is keeping him moving forward constantly.

After enjoying success after success over the past years—working for many international clients, as well as being featured in multimedia magazines, testing software, and working on many other friends of ED books—Corné decided it was time to take another step in his career by launching his own company, Project 79, in March 2005.

You can see more of his work and contact him through `www.cornevandooren.com` or `www.project79.com`.

If you like his work, be sure to check out his chapter in *New Masters of Photoshop: Volume 2*, also by friends of ED (ISBN: 1590593154).

ACKNOWLEDGMENTS

Until I undertook this project I had no idea of the number of talented people who are behind the production of a book such as this one. I would like to list them in no particular order here, but my deepest thanks and gratitude to you all.

To Kelly Wardrop without whose encouragement, debate, and discussion over the years I would not have had the opportunity to undertake this. Kelly, you are an amazing technical editor and an even better friend. Thanks for your support and your belief in me.

Clay Andres, you are a most patient and gentle editor. Thanks for all your directions and suggestion and for the massive amount of encouragement you have given me throughout this first book of mine. You are an absolute champion. Thank you.

Kylie Johnston, you are an absolute legend! Not only have you shown an unbelievable amount of patience and a Zen-like understanding of the deadline pressures we have been under, you have demonstrated what a huge difference a good project manager makes to a project.

To the fabulous Kim Wimpsett, copy editor extraordinaire, thanks for your patience and expertise in converting my efforts into something that reads fabulously. And thanks also to Katie Stence who took the stained manuscript pages and turned them into something wonderful and "booklike."

And last, but definitely not least, to my wonderful husband David Kerr. For all the dinners cooked and washing done while I have had a laptop glued to my knee writing like a whirling dervish. For all the debate and discussion and for always being around to bounce ideas off and provide reality checks when they were needed. For being the last person at night I see when I go to sleep and the first person I see in the morning. For this and more I thank you, and I love you.

INTRODUCTION

Information. It's the currency of today's busy world. With technology making ever-increasing leaps and bounds, the time things take to be done is now decreasing at a rapid pace. More than ever companies and individuals are finding themselves in the middle of information overload. For many years forms have been the conduit between customers and businesses. You fill out forms every time a company wants information from you, from registering your car at the DMV to filling out an application when applying for a job to filling out payment and credit card details to purchasing goods online.

Adobe LiveCycle Designer ES is an intuitive and easy-to-use point-and-click tool that empowers you to create static, dynamic, and interactive Portable Document Format (PDF) forms. With a logical design interface, you are able to quickly create forms and templates, define the logic behind them, and preview them as they are built, which enables fast and simple trouble-shooting.

LiveCycle Designer forms possess a hierarchical structure that enables them to be converted into Extensible Markup Language (XML). They can also derive their structure from XML schemas and XML documents. They can be saved as PDF or XML Data Package (XPD) documents. In addition, the forms can have JavaScript or FormCalc, which is a simple language that anyone familiar with spreadsheet calculations can easily understand, embedded into them, and they can also communicate with data sources such as OLEDB. When using LiveCycle Designer, you also have the ability to import existing forms built in applications such as Microsoft Word and Microsoft Excel.

Foundation Form Creation with Adobe LiveCycle Designer ES covers all aspects of the form creation process, including the structured thinking that needs to be behind the successful implementation of any form. In this book, you'll create static, interactive, and dynamic forms, as well as see real-life examples of each.

Who This Book Is For

Anyone who is involved in obtaining data from people via forms will benefit greatly from the contents of this book and Adobe LiveCycle Designer ES; however, there are some professionals in particular who will find this book very helpful.

Data architects will find this book useful because they will work with real-life examples to integrate existing data and schemas into forms, as well as define data processes and structures.

Graphic designers will find it easy to translate design methodology into creating forms in Adobe LiveCycle Designer ES. Chapter 2 in particular focuses on the design flow of the form, including

the translation of the concept into the layout, the considerations of the hierarchy of information, and the principles of form design.

Web designers and developers will benefit from this book because they will learn how to create forms and documents free from CSS and HTML limitations. They will learn how to further combine the principles of interactivity and design by moving beyond these limitations but still creating powerful and accessible PDF forms.

How This Book Is Structured

Foundation Form Creation with Adobe LiveCycle Designer ES covers all aspects of form design and creation with Adobe LiveCycle Designer ES. It is broken into logical chapters, beginning with a fundamental overview in Chapter 1 and working steadily through each chapter, covering form design methodology and all aspects of form creation and data capture.

- *Chapter 1, "Introducing LiveCycle Designer"*: The first chapter of this book introduces you to the fundamentals of Adobe LiveCycle Designer ES. It introduces you to the stage on which you will build your static, dynamic, and interactive PDF forms and takes you through a overview of what the program can actually do, including a complete summary of the kinds of files you will be working with as you create your forms. It then moves on to give a comprehensive definition of the different kinds of forms LiveCycle Designer can create and which industries will find the program useful. The chapter concludes with an exercise that will demonstrate how to create your first form.
- *Chapter 2, "Understanding Forms and Design"*: This is the chapter where you will learn about the principles of form design. The way your form looks and feels influences the way users will interact with your forms. This chapter offers a comprehensive overview of design considerations that will help make your form a success.
- *Chapter 3, "Understanding the Elements of Form Style: Components, Templates, and Masters"*: Chapter 3 is where you move beyond the basic information and really delve into the working innards of LiveCycle Designer. This is where you will learn about the components that are required to build a form in LiveCycle Designer.
- *Chapter 4, "Learning the Fundamentals of Designing Forms"*: This is the chapter where you begin to really get your hands dirty and learn about creating and opening forms. You will learn all about creating master and body pages and manipulating the fundamental building blocks of your form objects. You will discover how using templates and the Template Manager will help make your form-building process more efficient.
- *Chapter 5, "Understanding Interactive Forms"*: This chapter deals specifically with interactive forms. This is where you will apply your first calculations and scripts to your form, create interactive buttons, and process information that will lead to your users having a richer and more rewarding experience with your interactive form.
- *Chapter 6, "Getting into Advanced Form Design"*: Adobe LiveCycle Designer ES enables you to build intuitive and dynamic forms. In this chapter, you will learn about data display, user input, and sophisticated forms of validation. You will also learn how to localize your forms for different countries and find out how scripting in forms can contribute to creating a successful form.

- *Chapter 7, "Using External Files in Your Form"*: Chapter 7 shows you how using external files and services in your forms can display and validate data and send it to databases. You will create a real-life example using an existing WSDL data connection and move your forms beyond the flat static user experience to a truly rich and compelling experience.
- *Chapter 8, "Performing Advanced Form Scripting"*: This chapter will show you how to move beyond the basic scripting of Chapter 5 and add layers of extra interactivity to your forms using the JavaScript and FormCalc languages. You will learn about Script objects, and using preexisting forms, you will see some real-life scenarios to learn how to use the Script Editor to write your calculations and scripts.
- *Chapter 9, "Completing Your Forms with Data Submission"*: A form's success relies on the quantity and quality of the data that is submitted. This final chapter shows you how to create buttons on your forms that enable the user to submit data.

Layout conventions

To keep this book as clear and easy to follow as possible, the following text conventions are used throughout.

Important words or concepts are normally highlighted on the first appearance in **bold type**.

Code is presented in `fixed-width font`.

Menu commands are written in the form Menu ➤ Submenu ➤ Submenu.

Where I want to draw your attention to something, I've highlighted it like this:

> *Ahem, don't say I didn't warn you.*

Prerequisites

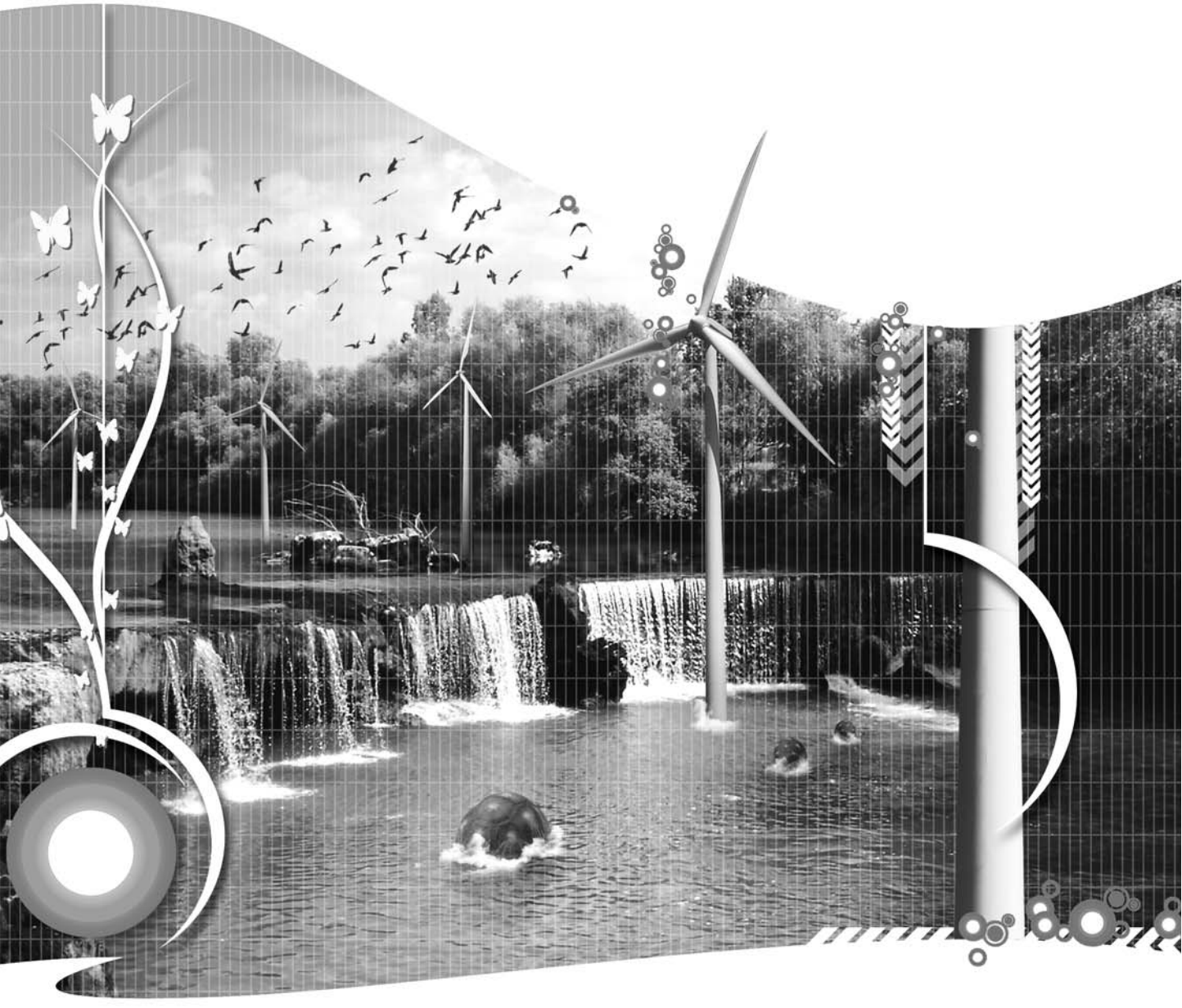
To follow along with the step-by-step examples in this book, you'll need Adobe LiveCycle Designer ES (8.1) and Adobe Acrobat Reader 7 or later.

Downloading the Code

The source code for this book is available to readers at `www.friendsofed.com` in the Downloads section of this book's home page. Please feel free to visit the friends of ED website and download all the code there. You can also check for errata and find related titles from friends of ED and Apress.

Contacting the author

You can contact the author at `cheridan.smith@gmail.com`.



Chapter 1

INTRODUCING LIVECYCLE DESIGNER

Forms are utilized everywhere—from paper-based forms that we manually fill out to fully interactive data-driven forms submitted online to a database. Forms are an essential part of our information-based world.

Adobe LiveCycle Designer ES enables you to create Portable Document Format (PDF) forms using a point-and-click graphical interface better known as a What You See Is What You Get (WYSIWYG) editor. PDF documents are the most versatile format for creating and managing cross-platform forms while maintaining document integrity. PDF is a two-dimensional replication of a document that includes the exact layout, images, fonts, and graphics that make up the document. It can be viewed using a PDF reader, such as Adobe Reader, on any computer, regardless of operating system. Most web browsers also support PDF documents via an Adobe plug-in, which allows the browser to display the PDF document.

Adobe LiveCycle Designer ES allows form designers to move beyond static PDF forms and create dynamic and interactive forms that are rendered as PDF documents and, when developed in conjunction with Adobe LiveCycle ES forms, can be rendered as SWF or HTML files. You can integrate PDF forms into a variety of technologies such as XML schemas; enterprise applications including SAP, Microsoft, and Oracle; databases such as MySQL and Access; and standard web services.

You can do many things with Adobe LiveCycle Designer ES including the following:

- Design and create visually enhanced forms using form objects, graphics, and fonts.
- Work with multiple file formats by importing existing forms from Adobe Acrobat, Microsoft InfoPath, and Microsoft Word.
- Integrate forms with other applications using data and XML schema binding. Binding is the process of connecting objects on a form such as a drop-down menu to data sources and schemas.
- Handle data security using digital signatures and encryption.
- Capture form data from printed forms using bar codes. Bar codes are widely used by businesses for such purposes as inventory control and product identification. Adobe LiveCycle Designer ES supports both hardware and software bar codes. Hardware bar codes are used when the form is printed on paper from the server. They are not displayed in the form onscreen but are visible once the form is printed. In contrast, software bar codes are visible at all times.
- Comply with universal accessibility, meeting Section 508 requirements that mandate electronic information be equally accessible to users with disabilities.

*An **XML schema** describes an XML document's structure. The XML language is referred to as an **XML Schema definition**. A schema's purpose is to define the basic structure of the XML document, including the elements and attributes that can appear in a document, and it specifies the child elements of that document, including their order and number. It also defines whether an element contains text or is empty, and it defines their data types.*

Overview of form types

As technology advances, the Internet becomes a more reliable and convenient method of conducting business and sharing information. This convenience and reliability demands a more effective means of collecting and distributing data. Adobe LiveCycle Designer ES provides designers with the ability to easily create static, interactive, and dynamic forms using an intuitive application.

Static forms

The term **static** means there is no interactivity between the form and the user like there is when submitting it through e-mail or to a database. Static PDF forms consist of two types: fillable and nonfillable. A **fillable** form opens into a PDF viewer (such as Adobe Acrobat) and allows you to type text into fields that you can then choose to print. **Nonfillable** or print and fill forms allow you only to view and print the form—once printed, you will need to manually fill in the information. Figure 1-1 shows an example of a static form.

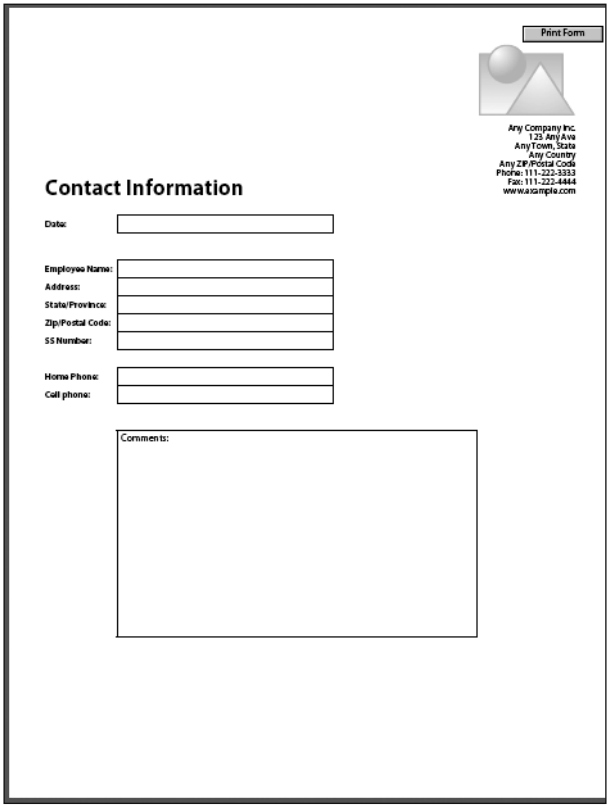
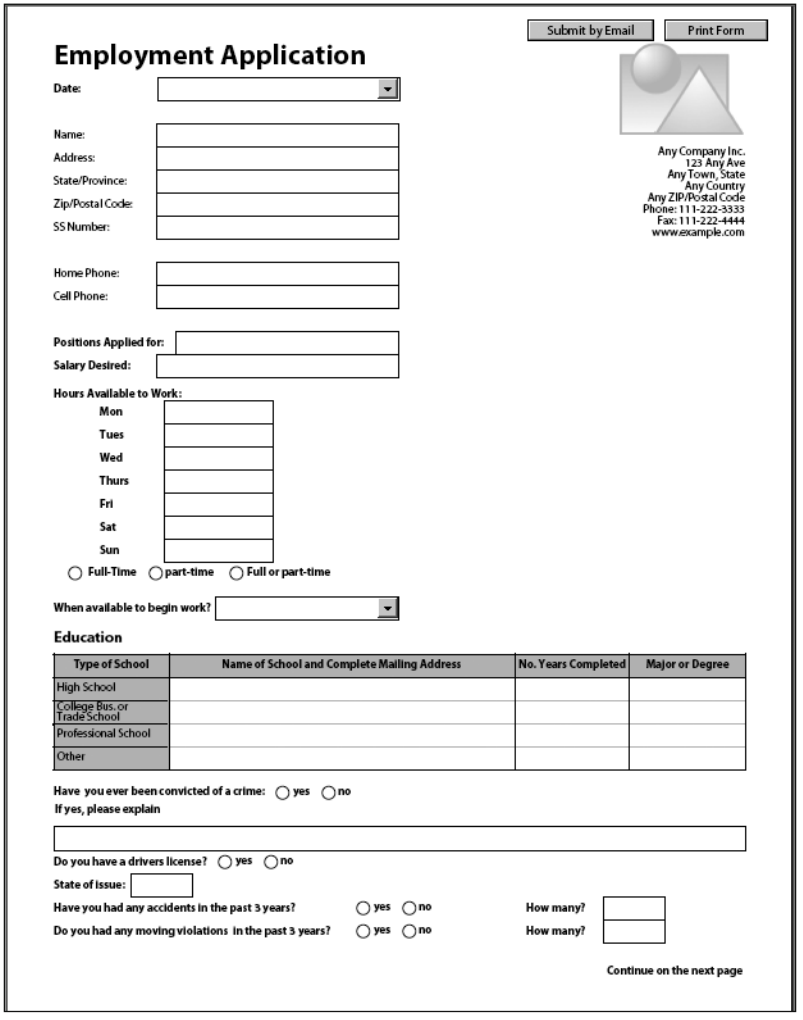


Figure 1-1. A static PDF contact form

Interactive forms

The advantage of interactive PDF forms is that they can be submitted electronically through e-mail or other web services. This is possible because of XML technology. The XML technology captures data and sends it directly to web applications, which improves data accuracy and streamlines form processing. Using the Adobe LiveCycle ES drag-and-drop interface, you create links between form fields and existing XML schemas without knowing how to code in XML or other programming languages. Figure 1-2 shows an example of an interactive form.



Submit by Email Print Form

Employment Application

Date:

Name:
Address:
State/Province:
Zip/Postal Code:
SS Number:

Any Company Inc.
123 Any Ave
Any Town, State
Any Country
Any ZIP/Postal Code
Phone: 111-222-3333
Fax: 111-222-4444
www.example.com

Home Phone:
Cell Phone:

Positions Applied for:
Salary Desired:

Hours Available to Work:

Mon
Tues
Wed
Thurs
Fri
Sat
Sun

◯ Full-Time ◯ part-time ◯ Full or part-time

When available to begin work?

Education

Type of School	Name of School and Complete Mailing Address	No. Years Completed	Major or Degree
High School			
College Bus. or Trade School			
Professional School			
Other			

Have you ever been convicted of a crime: ◯ yes ◯ no
If yes, please explain

Do you have a drivers license? ◯ yes ◯ no
State of issue:
Have you had any accidents in the past 3 years? ◯ yes ◯ no How many?
Do you had any moving violations in the past 3 years? ◯ yes ◯ no How many?

Continue on the next page

Figure 1-2. An example of an interactive form that can be submitted via e-mail

Dynamic forms

Dynamic PDF forms are interactive and use the Acrobat XML Data Package (XDP) technology created in Adobe LiveCycle Designer that dynamically adjusts to data and user events. This means form fields can change based on user input—eliminating excessive form fields and narrowing down the type of information collected as required. In Figure 1-3, you can see a simple form asking for a first name, last name, and favorite flavor. In Figure 1-4, you can see the form updated with new options based on the user's input. This update takes place on the fly as the user inputs information.

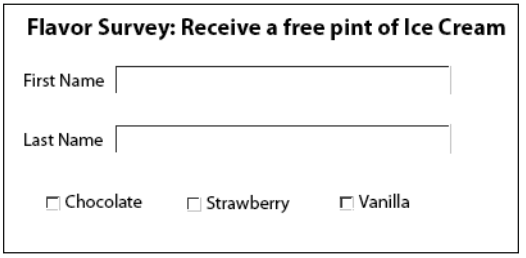


Figure 1-3. A form prompting for basic information

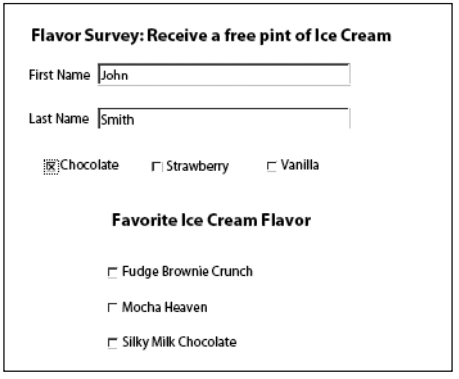


Figure 1-4. The same form from Figure 1-3 updated dynamically after the user selects a flavor option

Industry uses

LiveCycle Designer lends itself well to several professional fields. Form designers, data architects, web professionals, and programmers can all benefit from using Adobe LiveCycle Designer ES. One of the advantages of LiveCycle Designer is its flexibility with a variety of different professional approaches. Different professionals have different needs and goals, and LiveCycle Designer is diverse enough to meet all of those goals.

Graphic designers

A graphic designer's primary job is to design graphics using images, photographs, art, and typography for print or electronic publications. Well-planned and executed graphic design can greatly influence the effectiveness of user interactivity with forms. Images, fonts, and other logically placed elements can be instrumental in how the user engages a form. LiveCycle Designer does not require any programming knowledge and offers a familiar drag-and-drop environment that graphic professionals are used to working in. Graphic professionals can use LiveCycle Designer to lay out their pages much in the same way they use other Adobe products with other types of projects. LiveCycle Designer handles creating the XML schema and document structure, which results in a well-formed XML.

Web designers/developers

The objective of a web designer involves both interaction and design. Web designers are likely to benefit the most from LiveCycle Designer in terms of these goals. Typically, web designers create basic forms using HTML/XHTML for structure and Cascading Style Sheets (CSS) for formatting. Current web standards such as CSS and HTML impose limitations upon the design of a web page because they are limited in typography, layout, positioning, and formatting choices. Adobe LiveCycle Designer ES abolishes these limitations. Web designers can enjoy the freedom of design without forgoing electronic form submission and without conflicting with current web standards or accessibility.

Data architects

Adobe LiveCycle Designer ES gives data architects the ability to enforce various data schemas and structures. Part of a data architect's job is to discover and define an application's precise data structures and processes. Adobe LiveCycle Designer ES enables data architects to quickly and easily specify data validation, formatting, and binding via the Object palette.

Understanding the PDF and XDP formats

The most popular technology that allows interactive and dynamic forms to process via the Web is called XML Forms Architecture (XFA). Adobe LiveCycle Designer ES creates forms using the XFA architecture, which is based on Extensible Markup Language (XML).

To understand how PDFs work in the XFA environment, it's important to understand the PDF and XPD file formats.

> *The XFA specification was first submitted to the World Wide Web Consortium (W3C) in 1999. The XFA is an open standard used to create form-based applications.*

The PDF format

Adobe developed PDF in 1993. With the Internet boom in the early 1990s, there was an unprecedented increase in the dispensation of information, and a need for a standard way of viewing electronic documents was required. PDF was created to meet this requirement.

It is a two-dimensional, fixed document format that can be opened and viewed regardless of the application software or operating system, provided you have PDF reader software such as Adobe Reader. A PDF file preserves the original document's layout, typography, graphics, and images. It consistently displays and prints the document the same every time.

A PDF document can be viewed via Adobe Acrobat Professional, Adobe Acrobat Reader, Adobe Creative Suite, iTunes, iPhoto, and a host of alternative downloadable readers.

A PDF form is typically used to create paper-based forms. It is converted from third-party application documents, such as Microsoft Word, via a PDF converter, such as Adobe Reader. For example, when you are creating a PDF from Microsoft Word, you select Print and then choose the option Print to PDF.

Adobe LiveCycle Designer ES renders PDF forms in a structurally different way than traditional PDF files because they are based on Adobe's XFA.

For more information, visit `http://en.wikipedia.org/wiki/Pdf`.

> *The TDS format is the Adobe LiveCycle Designer Template format. This format enables you to save a form as a template from which to create new forms. Templates are covered later in this book.*

The XDP format

Within Adobe LiveCycle Designer ES, documents can be created and processed as the static PDF document, or they can be packaged into an XDP and processed as XML. XDP files contain the form data, templates, PDF documents, and other XML information.

The XDP format is the XML container that packages the PDF content and enables it to be transferred online via e-mail to a database or to other web services. It is compliant with standard XML tools, system interfaces, and standard web services.

An XML file is comprised of five distinct units of information:

- *XML form data*: This is the user data that is encoded to an XML database schema. This scheme is set up at the time of form creation.
- *XML form template*: This contains a map of the data to the PDF form and all of the form's intelligence such as calculations and data validation.
- *XML configuration information*: The form template uses this as a reference for web and database services and SOAP connections.
- *Other XML information*: This contains custom XML information such as scheme files to facilitate validation, XML digital signatures, content metadata to facilitate archiving, and information used by custom digital applications.
- *PDF document*: XPD files maintain the original document's layout, typography, and images.

Use a PDF when file size is important and the document has lots of graphics and images, and use XDP when you require interactivity or when the form data needs to be manipulated scripting or XML tools. For example, when you are creating a form that is to be printed and filled in by hand, you should save the form design as a static PDF document. When the intention of your form is to be completed electronically and features scripts and calculations, you should opt to save your form in the XPD format.

The LiveCycle Designer ES interface

Adobe LiveCycle Designer ES offers an intuitive and multifaceted interface that is configurable to accommodate multiple types of users. The first thing when LiveCycle Designer launches is the Welcome to Adobe LiveCycle Designer dialog box, as shown in Figure 1-5.

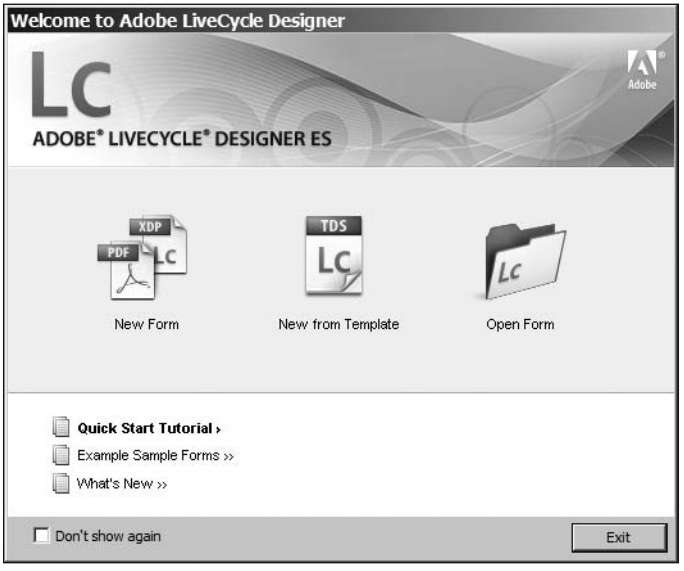


Figure 1-5. The Welcome to Adobe LiveCycle Designer dialog box

The Welcome to Adobe LiveCycle Designer dialog box provides three simple ways to get started creating and customizing forms. To create a blank form, you can click the first option, the New Form icon. This opens the New Form Assistant dialog box, which prompts you to select a method to create a form (see Figure 1-6). Some of the options are using a blank form, a template, a spreadsheet, a PDF form, and a Word file.

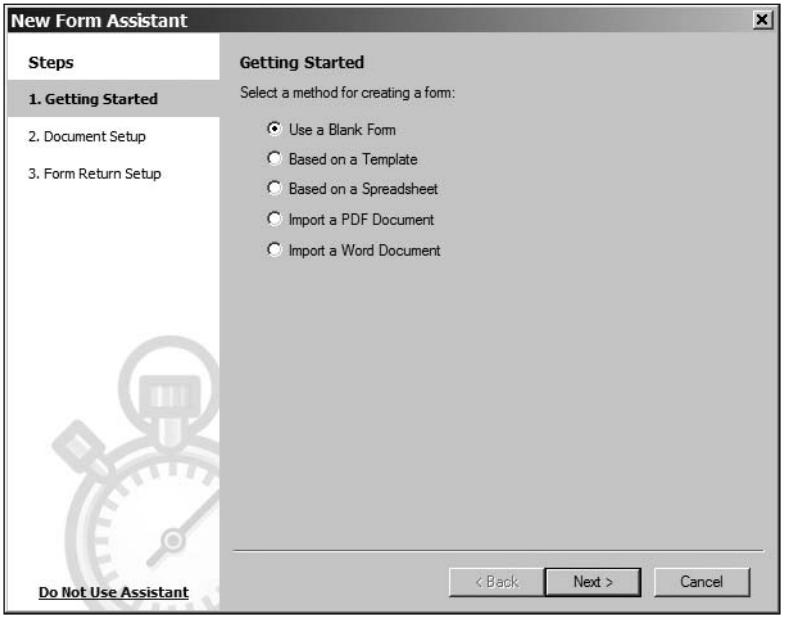


Figure 1-6. New Form Assistant dialog box

You can also create a form from a predesigned template by clicking the New from Template icon. This also launches the New Form Assistant dialog box and presents a list of predesigned templates from which to choose (see Figure 1-7).

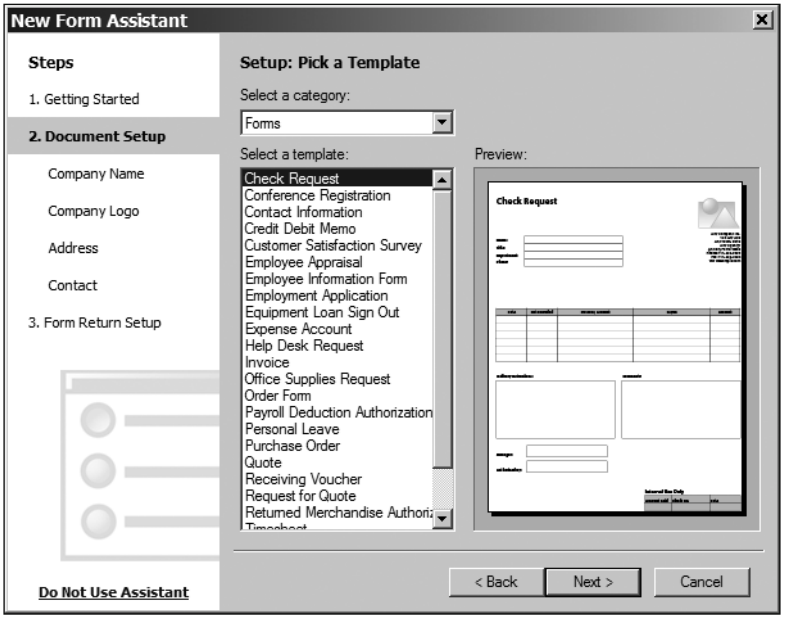


Figure 1-7. The New Form Assistant dialog box for choosing a predesigned template

If you want to modify an existing form, you can open the file by clicking the Open Form icon. The Open dialog box displays, as shown in Figure 1-8, allowing you to navigate to an area on your hard drive where the form resides. You will learn more about the types of file formats you can work with throughout the following chapters.

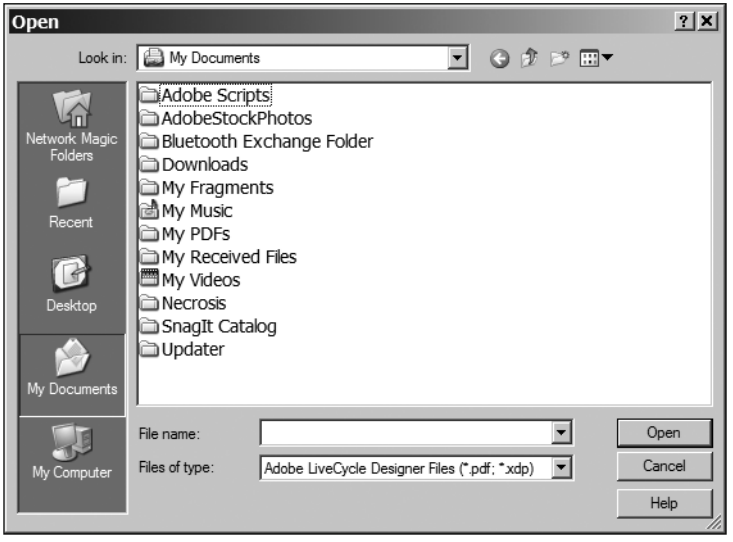


Figure 1-8. The Open dialog box

The options presented in the Welcome to Adobe LiveCycle Designer dialog box are also available in the application window's menu and toolbars. Clicking the Exit button in the Welcome to Adobe LiveCycle Designer dialog box displays the LiveCycle Designer workspace, as shown in Figure 1-9.