

Designing personalized, dynamic Web applications with ATG

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Audience: potential and existing ATG customers – Web application project managers, UI/user experience design team leads.

Goal: Provide guidelines for designing the user experience and presentation-layer of an ATG site.

Introduction

ATG sites have the technical capability to serve personalized, dynamic content. However, the definition and classification of users, content, pages and rules for display – essential to dynamic application design – is not well understood. In addition, organizational structures often aren't set up to support the cross-functional nature of this work. This paper outlines the processes we use and recommend to design and build personalized, dynamic application user interfaces with ATG products.

First steps – viable, desirable, possible

Personalized applications can increase site use through the delivery of relevant content. In other words, personalization technology helps companies realize business goals by reaching users with meaningful content. Personalization projects are more likely to be successful when they realize and balance three priorities – viability, desirability, and possibility. This paper focuses on the essential practices that define and enable the "user experience" or "desirability" and presentation aspects an ATG site. Work in this area affects, overlaps and is informed by the other areas. For this reason, team members who represent these priorities (business management, design, and engineering, respectively) should participate in the work outlined in this document throughout the project.

As a team, define and document high-level goals in the these areas:

Viable: define or refine business goals

State the business objectives for the initiative. What does the business hope will come of this effort?

Desirable: define or refine user needs

List the people that this site will serve. State the benefits of use for each set of end users from their perspective.

Possible: document technical capabilities

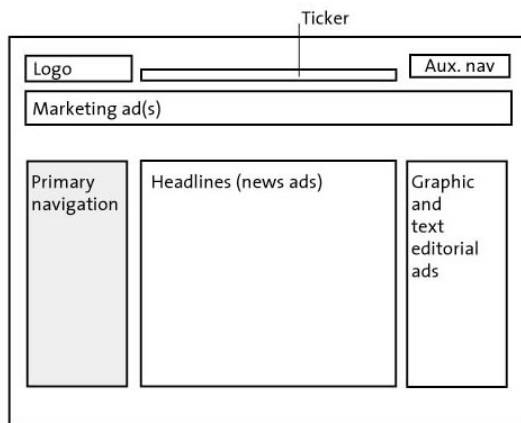
Think about the technology you will be using. Know the technical capabilities and constraints (of existing systems) and what ATG products enable.

Objectives in these areas are a framework for the decisions that need to be made throughout the project. Identifying high-level goals in these areas at the outset will

help keep the team and project focused, as well as providing baselines from which to measure success.

Dynamic applications – who, what, where, when, why and how

Static sites have separate pages for every page of content. Dynamic sites, on the other hand, serve content generated “on the fly” via a limited set of templates. Templates drive the creation of site pages by combining several smaller page fragments into a page template. Page fragments, in turn, are populated with dynamic content pulled from a content repository (e.g., database, ATG Repository, content management system). What content is displayed is determined by business rules that tell the page templates what fragments to display and the page fragments what content to display, when to display it, and to whom. For example, a single page on a template-driven ATG site is actually a collection of smaller page fragments assembled according to the layout of the page template. This assemblage of parts determined by display rules is the basis of personalization, serving different content to different users. Rules are based on explicit information (i.e., user profile) or implicit information (i.e., user behaviors) and categorization of content (i.e., meta tagging).



ATG.com Home

Figure 1 – Page Fragments

Each of the boxes in the layout above represents a page fragment, or a chunk of functionality or content called into a template.

ATG page templates and rules enable complex and varied user interactions via personalization and dynamic content display. For example, the BMG Music Web site shows different music and promotions to members of its music clubs, and each club has a different look that can be changed as often as desirable.

Defining page and content types and the templates that serve them is essential to designing a personalized, dynamic site. In addition to enabling dynamic content display, they provide the structure that makes the site consistent, scalable and maintainable. Many think that templates limit site design. This does not have to be the case. They provide structure, flexibility and consistency to the overall site. If page templates are well defined they can be a designer's best friend – enabling a variety of designs. This is similar to a newspaper having sections and an underlying grid. Sections are based on content types. The business section has daily business stories, stock listings and weekly features: profiles, reviews, etc. These sophisticated grid structures allow editors to lay out a variety of information quickly. Grids work

because they are designed to accommodate types of content. Each type of content has different properties – type size, formatting, photos and associated rules for display. Because all the types of content for the section (and the newspaper as a whole) have been defined, even though the content changes, the layout is consistent, unique and readable day after day.

An ATG application uses “targeters” and ATG Scenario PersonalizationSM to display personalized content. Targeters contain “rules” that can show or hide content in a page template depending on whether a user’s profile matches certain criteria, and does it at a set time and under certain conditions. A targeter encapsulates the business rule used to determine what content should be presented to a user. The targeting rule is executed dynamically, typically by a page request, or in an ATG Scenario execution. In the case of a page request, a targeter could return different content each time the page is requested depending on the nature of the rule. The rule can include references to dynamic user or global data, such as what page a user is currently on, user’s profile attributes, the current date, or more static references, such as content meta tags.

For example, a targeter can display the latest press release in a certain location in a page template. It can also be more complicated, checking to see if it is Tuesday, and the user is a “gold” customer who has bought a major appliance in the last 6 months, and then displaying the most recent promotion for the service plan.

An ATG Scenario is a pre-programmed set of system interactions created by business managers to track the user actions and respond appropriately by, for example, tailoring the content of the site, offering price promotions, or sending targeted e-mail messages. Scenarios are like targeters, but are more powerful because they can be event-driven or time based (e.g., showing a certain promotion when a user adds a certain item to the shopping cart or sending an email to a user at a certain time). ATG Scenarios can give you more control over the timing of those actions. For example, you can write an ATG Scenario stating, for the month of June, send an email coupon to “gold” customers who have bought a major appliance but did not revisit the site within 60 days of their purchase.

All of these possibilities, multiplied by two or three user groups, become complex quickly. If you plan to have a dynamic, personalized application, it is essential to know what you want to serve to whom, under what conditions and to what effect. It sounds simple, but this crucial step is often overlooked, and you can’t serve personalized or dynamic content without defining this information in detail.

Who and what – defining user groups and what they want

Users of an ATG application behave or experience the application differently from one another. The key to delivering personalized content is defining groups and characteristics of users and “chunking” information into types with characteristics. In order to maximize your efforts, it is important to understand what users are interested in so that they value the content you serve. In a commerce application, you might classify users by buying habits, and structure promotion display based on those defined habits. In a portal, user groups and interactions may be more complex. You might have organizational groups who will see a certain community (such as Human Resources) and then have roles (such as managers) who might see different Portlets within the HR community page. Additionally users can identify themselves implicitly through their behavior, and fall into groups like “is interested in guitars.” Most common are explicit groupings – users who edit their profiles to say

what they are interested in. Either way, explicit or implicit, characteristics of what is shown to whom needs to be defined in advance of developing or refining page templates to present the content to users.

Key steps

The goal of these steps is to define user groups and their interests in order to have a plan for what to show to whom, and the desired outcome.

- Capture how you classify customers or users currently, and why – what information informs that classification – demographics, role, etc. If you do not have a way to classify users into groups, list all user types and how they use the system or what their information needs are. Look for overlap – different users who use the site the same way or who need the same types of information. You may be able to combine these users in same group.
- Capture group attributes – not just demographics – the situation for use, characteristics, preferences, goals, needs, wants. Define sample users based on what you know. These are user personas – fictionalized composites of your users, based on facts.
- Develop or capture a story (user scenario) of how and why each user group or persona uses the site – their situation and goals.
- If you already have user groups, affirm or adjust them based on the above steps.
- Document user groups, personas and scenarios for the team to refer to throughout the project.
- Document what kind of information each group (or persona) is interested in – what they need or want from the site.

There are many methods you can use to get a deep understanding of what is meaningful to your application users. Defining user scenarios and personas are two simple methods that rely on educated guesses. Practices like contextual inquiry, observation, paper prototyping and card-sorting exercises can provide more in-depth information about what users value.

Define or refine your content

Once user groups and user scenarios are defined (the "stories" that describe how each user group or "persona" will interact with the site) you need to define the content that the site will serve. Content needs to be classified into types in order to be served dynamically. Content types enable the system to publish content under defined conditions. An inventory will help keep track of the content you will serve. The inventory should include both static – hard coded – and dynamic – pulled from a database – content. It is important to make this differentiation, since you need targeting rules and/or ATG Scenarios to serve dynamic content and slots in page templates to display it.

The content inventory should initially capture the name of the content element and whether it is static or dynamic. As the project continues, the inventory can keep track of what user groups will be able to see/access the content.

Key steps

If you don't have an inventory already, develop a listing of the content to be displayed on the site.

- Identify and classify types of dynamic content in the inventory. Examples of content types are news item, press release, promotion, upsell, form, price, product description, product image, feature image, etc.
- Look for similarities based on purpose (like "promotions" or "news") and quantity/frequency of publication.
- Look for opportunities for personalization or dynamic publishing. Content that is published fairly regularly or appears on several pages may be able to be served dynamically. For example, press releases may be static on your current site, but are a candidate for publishing automatically to a slot in a page template. Further, they could be targeted to users who have expressed preferences about the type of information they are interested in, so that known users could see press releases or news items about the topics they have expressed an interest in at the top of the company "News" page.

You may realize that you need new content to achieve personalization goals, and/or may need to add page types or slots to serve the content as part of this process.

Where and How – Page Types, Prototypes and Templates

Once the content types are generally defined, you can look at your page layouts to see how to display the different types of content on the site. Again, this involves classifying the display into page types and fragments. ATG technology enables a targeting rule or a Scenario Personalization to pull a piece of content (fragment) into a page or page template and display it. One ATG page can pull in none, one, or many fragments, but you need to design the page as a whole so that the page makes sense when all possible fragment combinations are displayed. Remember – each slot may display different content every hour, week or day to different users!

Key steps – Page Type Identification

- Define the page types needed to present the content listed in the inventory on the site. Examples of page types are: category page, product page, shopping cart page, etc.
- If a page type can be identified, and an area of the page that serves common content (even specific to that page) can be identified, it is possible to automate the display process and enable personalized content delivery. Look for patterns of repeatable content and instances where the display is the same.
- Sketch a schematic view of each page type. Define the areas of the page. This creates a rough roadmap for how fragments on a page relate to each other, and how a group of page types work together. These sketches suggest how a page is put together but does not dictate the actual layout of the visual design. You will get a better idea of where fragments repeat and where they are different through this exercise.
- Look for opportunities for personalization on the page types. Look at your list of personas and what would be meaningful to users. See if there is an opportunity to add personalized content on pages.

- Identify page fragments – chunks of functionality or repeating content – like the header and primary navigation. These elements can be made into separate files and called into relevant pages. This way, only one page needs to be changed in order to change all instances of display.
- Document your results.

ATG.com
Page types & page structures

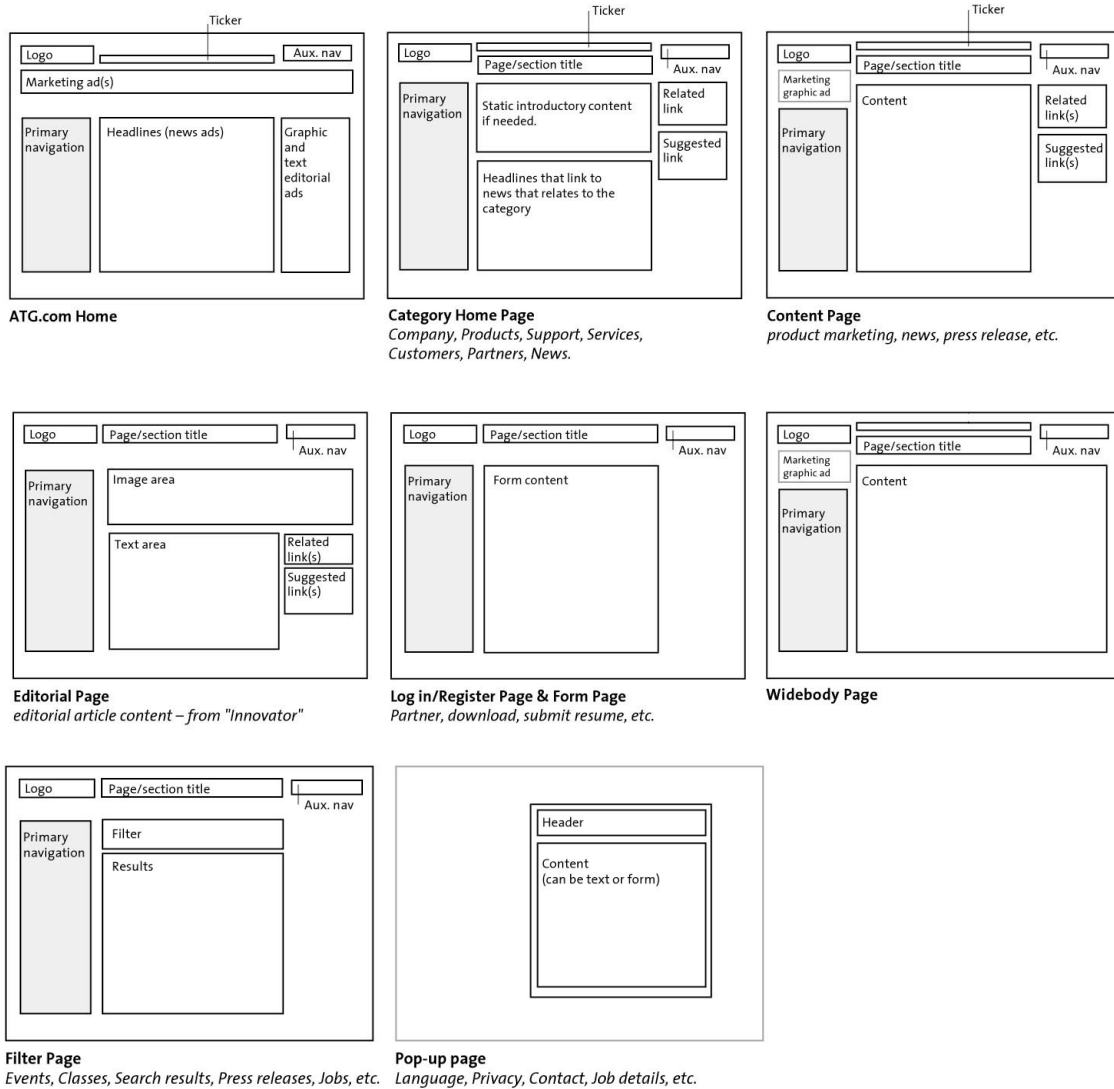


Figure 2 – ATG.com pagetypes

These page types and page layouts were designed specifically for atg.com. ATG Commerce and B2B Products support any page types and page layout designs. Instances of the atg.com page types are listed under each page type title. Identified areas of the pages show some high-level content types, which are fragments that are called into the page.

Prototypes and Templates

When the team has a good understanding of the content and page types coding may begin. Our preferred sequence of working is to have the presentation code lead the functional code development. HTML, JHTML or JSP is developed or existing code is adjusted to define the display. Presentation code is commented with descriptions of functionality that need to be added by engineers. Comments indicate where and what to make functional. Sequential (linked) sets of pages are developed to communicate page flow from the design to the engineering team. These prototype pages become the final pages on the site. After the engineers add functional code to the pages, presentation code specialists go back into the functional application build, add the graphics and "tweak" the display code to make sure that the display matches the visual design.

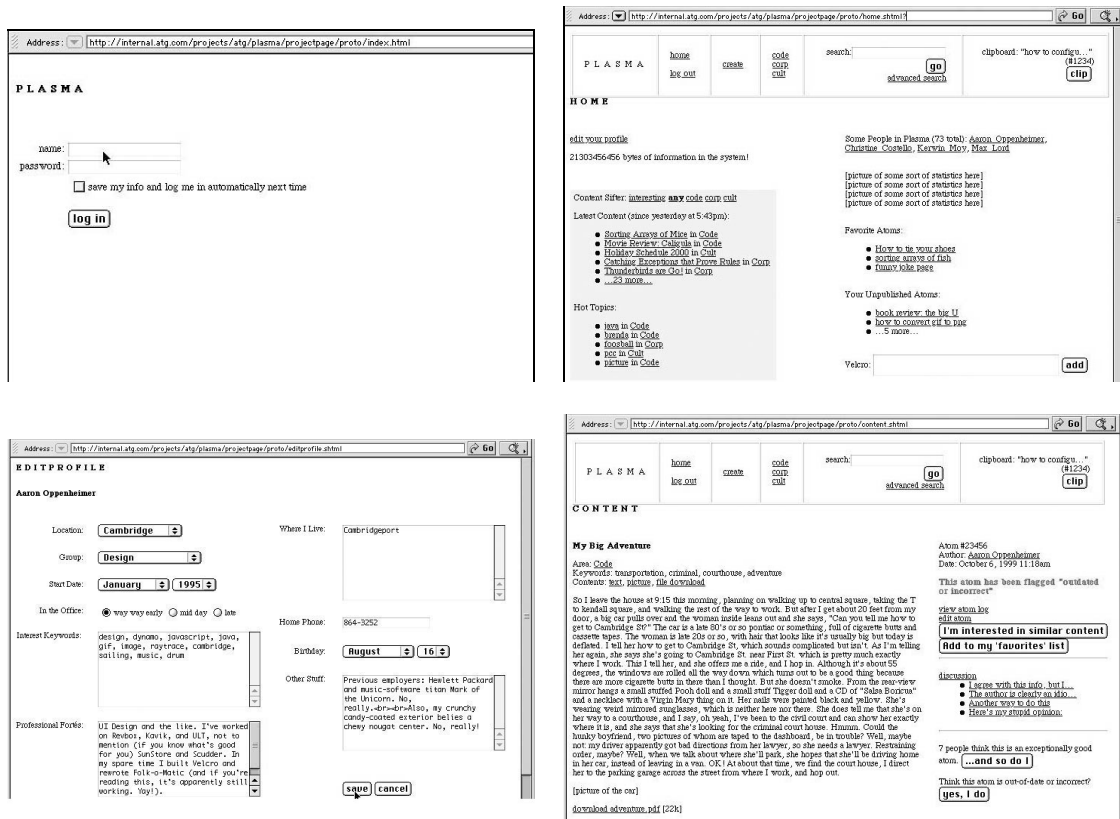


Figure 3 – Prototype pages

Sequential (linked) pages illustrate use cases and communicate page flow as well as schematic layout from the design to the engineering team. Pages get "cut up" to create templates and fragments.

Key Steps

- Review user scenarios and define or review use cases. A list of use cases spell out all the functionality that needs to be developed on the site. For example, "user logs in, browses the catalog, adds items to cart, and goes through checkout process," or, "user changes shipping address during checkout." Walk through each process, including error messages. Add new page types, fragments and/or content types if necessary.
- Develop page templates and fragments based on the schematic page type sketches and the visual design. Templates are JHTML or JSP pages structures

that have sample content displayed and have comments in the code that describe when and how dynamic content is displayed. A different template is needed for each page type if the targeting display rules are different.

Graphic Design and Display

Once the content and page types have been addressed, the specific work of designing the pages (and writing or acquiring the content) can be addressed. This is done concurrently with prototype and schematic page development described in the previous section. Again, the key with visual design is to classify! If you can define one file as the header for many pages, you only have to maintain one header file. That header can have code in it that tells it what to display. The result? One file to update and replace instead of 50! This work can be and often is done with an existing site. Simple adjustments can be made to the user interface and visual design to enable dynamic content display.

Look for graphics and text formatting that repeat on page after page. Chances are good that if you have an element that shows up on several pages, you can have a fragment that calls that element in a template. The template may end up rendering 10, 50 or 1,000 pages with different content, but there is only one layout design and a handful of files to maintain. Common uses of ATG technology are to define the visual display for the header, footer, primary and secondary navigation and then to save these files as fragments to be called into page templates over and over again. This practice will keep your site clear and consistent, like a newspaper, but still allow for specially designed "features."

Dynamic pages can display slightly different layouts on a page depending on a predefined rule (e.g., the display of extra information is "turned" on or off depending on the user profile). For example, an Administrator might see an extra column of information on a user profile than a regular customer, or he might have an extra set of form buttons on the pending order page that allow him to change or cancel the order. Within an ATG Portal, a page can change from a 2-column layout to a 3-column layout, or a column from "wide" to "narrow" by passing the same page content through a different template. Templates and visual designs therefore need to be flexible. The key is to anticipate the different "views" a page type might have, and design a versatile layout that can accommodate them.

Document your classifications in a style guide to provide parameters for appropriate growth and maintenance of the site.

Glossary

- Page types
The different pages needed to display site content. For example, "home page," "shopping cart," "product list page," "product detail page," "shopping cart page." If a portal, you will likely have "full view" and "shared view" pages.
- Page templates
Coded versions of page types and fragments that display content. Templates are both a model for several pages of the same type as well as a sample for developers to use.
- Fragments
Chunks of functionality or content that are called into a page type. Fragments can have targeting rules in them. For example, "top navigation" and "product description" are fragments that get called into a "Product page." Fragments may have single or multiple instances in one or several page templates.

Having a small number of page types and fragments that are modular and flexible will make your site easier to maintain.

- Slot
An area of a page that is a placeholder for personalized content. Slots display content items that are specified by ATG Scenarios or are populated with a Targeter.
- Targeter
A business rule on a page that determines which content to select to populate a slot.
- ATG Scenario PersonalizationSM
Sequences of events and conditions triggered by an activity such as displaying content in a slot or sending email, etc.
- User scenarios
Sequential stories of how different users (or personas) will use the site, including goals, situation, and actions taken.
- Use cases
Specific instances of all user interaction with the application. For example, "user logs in, browses the catalog, adds items to cart, and goes through checkout process," list a list of sequential use cases.
- Prototype
Schematic layout of sequential HTML, JSP or JHTML (template) pages. Graphics are not included, however, sample text is included. Pages are commented with descriptions of dynamic page behavior.

Further Reading

For a recommended general model of Web user experience design, see Adaptive Path's site and materials: <http://www.adaptivepath.com/workshops/complete/>.

About personas:

http://www.cooper.com/newsletters/2001_07/perfecting_your_personas.htm.

Acknowledgements

Thanks to Xuan Tang, Anne Chequer, Debby Levinson, Joyce Wang, Jeremy Lang and Jim Fecteau for their input to this paper.