

The Human Element

Why Usability Labs are Critical for Successful Application Development and Adoption

It is no secret that software applications, or apps, pervade nearly every facet of modern life and industry. The Federal Government is no exception, and agencies across the country have developed apps for a variety of uses, from manipulating databases to tracking mobile users' vital signs. While apps can vary widely in sophistication and purpose, all share a goal of improving productivity and simplifying the work experience of users. To best accomplish this objective, the government has invested heavily in the federal contractor base, leveraging best practices to create useful apps that maximize productivity gains.

So what constitutes successful app development? It's measured largely by rapidity of workflow adjustment, ease of use, and employee desire to actually use developed apps. In other words, an app that is valuable in theory will not succeed if users are unable or unwilling to navigate its menus.

In addition to poor user adoption, agencies are well aware that a poorly designed app can have serious financial repercussions. Reworking user interfaces and modifying requirements is time-consuming and expensive, and often, the reworked app fails to gain widespread acceptance by the user community. First impressions are paramount when introducing tools that employees are unfamiliar with, as many potentially exceptional users are resistant to change. Thus, it is essential to "get it right" the first time.



The best development efforts begin with involving end users in the design and development process. End users can help shape the product to their needs through structured feedback and early engagement with developers that goes beyond traditional collaborative communication.

This ethos of strong user involvement drove Attain to institute a usability lab (UL) for application development at the Web and Mobile Technology program management office within the Defense Health Agency's (DHA) Solution Delivery Division (SDD). To date, the UL has supported 24 open-market mobile apps that have been downloaded more than 5 million times to general consumer acclaim, receiving 3.9 and 4.0 ratings by users who downloaded the apps from Google Play and iTunes, respectively.

By design, Attain's UL functions efficiently using few resources—a single manager serves as an analyst, a UL specialist, and a graphic designer—and can be easily scaled to handle larger development efforts.

The concept of a usability lab was introduced to include potential app users at the onset of the development process and guide the design of the user interface and other key features. A UL's staff relies on statistical and probabilistic models to minimize the user sample required. Typically, five users selected using specific criteria can identify 85% of the usability issues for a particular app with an acceptable confidence interval.

While the concept of usability labs has gained widespread use, Attain's specific UL process and its execution and interaction with app developers govern its success. Attain has developed a unique approach that maximizes the interaction and feedback between the UL staff and app developers. Five phases take a mobile app from concept to product: 1) **Discover**, 2) **Define**, 3) **Design**, 4) **Develop**, and 5) **Deliver**. Attain's UL staff collaborates with software developers in all five phases, using proprietary "feedback loop" techniques to ensure that the usability lab findings help refine the requirements and improve the finished product.

During the **Discovery Phase**, Attain's UL staff identifies and gathers user requirements with the following methods:

1. Conduct one-on-one interviews to ask the end user about everyday pain points that the app will address
2. Interview SMEs and use their expertise to understand the preferences and customs of the end user
3. Conduct field studies to follow end users through a typical work day and observe when, why, and how they use an application under normal conditions
4. Perform heuristic evaluations of existing apps
5. Perform a competitive and comparative analysis on similar apps to discern where they set strong standards and where gaps exist that the app can fill

Attain's UL staff discusses the information gathered in the **Discovery Phase** with the app developers and together create the informational architecture in the **Definition Phase**. This phase includes persona development, journey mapping, content mapping, navigation, branding, content tone of voice, and user flow charts. In addition, a "paper prototype" usability test is performed, with five representative users testing a paper prototype in an observed environment. Participants are given app related tasks to complete, but are not helped or guided. Their behavior is observed and feedback is gathered to uncover potential issues. This feedback is reviewed with developers so needed changes are included in the **Design Phase**.



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During the **Design Phase**, UL staff focuses on the app interface to implement the user data and business requirements. Color, icons, and images are concentrated on and the "design studio" method is used where end users, design team, product owners, developers and SMEs help devise solutions to functional concerns, design questions and/or user flow of the app.

During the **Development Phase**, UL staff typically starts with testing a High Fidelity Prototype or Minimum Viable Product (MVP). This MVP mockup has the look and feel of the proposed application, but can be built in a matter of days based on initial requirements gathering. This approach means usability testing can be started earlier and results in less rework in later development phases. The app developers' work is then followed to assure the users' needs are addressed properly. An agile software development process is used, which means requirements are implemented in small increments, or sprints. The UL staff participates in reviewing the test results for each sprint to assure they meet the users' requirements.

In the **Delivery Phase** UL staff participates in acceptance testing and ensures that the intent and scope of the user requirements are met.

As an integral part of Attain's mobile app development for the DHA, the usability lab has yielded significant process improvement by minimizing rework and improving the end user experience. By helping keep the human element front and center in the process, the UL techniques developed and implemented for DHA's mobile apps can be leveraged to fuel success for other app development.

Attain's Usability lab at the Defense Health Agency:

24
OPEN-MARKET
MOBILE APPS

5+
MILLION
DOWNLOADS

3.9
GOOGLE PLAY
USER RATING

4.0
ITUNES
USER RATING



Attain trains its UL staff to follow an app design and development philosophy, which comprises the following principles:

1. Keep the design simple and eliminate unnecessary elements
2. Make the app easy to use and keep the interface commands consistent
3. Use intuitive elements and designs, like recognizable icons
4. Create a smooth user interface flow with a logical progression
5. Optimize for fast load and response times
6. Provide useful and easy to comprehend documentation and instructions

ABOUT ATTAIN

Based in McLean, Va., Attain is a leading management, technology, and strategy consulting firm comprised of innovative problem solvers who disrupt the status quo to change the world and improve the lives of those we touch.

From strategy and digital transformation—including user-centric design, agile development, DevOps, and continuous deployment—to cyber security, cloud services, business intelligence and analytics, infrastructure management, as well as industry-specific operational expertise, Attain brings proven performance and forward thinking to advance our clients' missions across the government, education, healthcare, and nonprofit landscapes.

For more information, please visit attain.com.

CONTACT US + LEARN MORE.

info@attain.com
703.857.2200



Attain, LLC
1600 Tysons Blvd,
Suite 1400
McLean, VA 22102