Well beyond bring-your-own-device (BYOD) policies and permissioning, the ubiquity and consumerization of technology has effected a fundamental if subtle change in values for builders of financial platforms. Our redefined relationship with technology, one that is ever more personal, demands a new quality of interface, with “experience” defined not only by expanded mobile access, but greater elegance of design within the tools that traders and portfolio managers use most frequently, even when sitting still.

From specialized research and development (R&D) teams borrowing strategies from other industries to a culture of usability being built across firms’ wider operations, gone are the days when function heavily outweighed form. And with that pursuit of user experience (UX) has come a flurry of new roles and spaces, significant investment, and debates about what should come next.

Great Expectations
Esteban Souto is global UX design director at Thomson Reuters, but his previous posts at consumer electronics makers Samsung and Bang & Olufsen, and luxury car manufacturer Bentley, are very telling. Indeed, giants of financial information—which, figuratively speak-

User Experience

The UX Factor

Financial applications once eschewed Marshall McLuhan’s famous argument—that the “medium is the message”—by prioritizing function and cost over the beauty of the interface. No longer, experts say. Tim Bourgaize Murray reports on a design revolution that’s started, first of all, by rapidly catching up.
ing, once built incredibly powerful engines with only a couple of axles underneath—are now seeking to offer a vehicle that steers gracefully and with precision.

“Expectations haven’t changed 20 or 30 percent, but 1,000 percent,” Souto says. “People see enterprise products from a consumer perspective, and a lot of those consumer experiences today are free. If you call yourself a premium proposition, as Thomson Reuters’ desktop data terminal Eikon does, you need to demonstrate why that is. There is an instant gratification factor, too, which is extremely difficult to meet on an enterprise level, but this is where we need to deliver.”

The new normal—with quicker releases and updates—has upended assumptions about fears of design disruption, as well, explains Jonathan York, chief development officer at S&P Capital IQ. “It’s a mistaken belief that you can hold on to a competitive position by making a product esoteric now—it works for a while, but not in an environment where the underlying fabric is changing so rapidly,” he says. “It is good to have people know your keyboard shortcuts, but when people stop using keyboards, that's no longer an advantage.”

Then there is Bloomberg, maker of the original financial market portal—the terminal—as well as more recent innovations like the B-Unit biometric user-authentication device. Just recently completing a phased 10–month rollout of its vaunted $100 million Bloomberg Next user interface (UI) design project, Shawn Edwards, the vendor’s CTO, says Next was about meeting the real management demands, a meticulous process with prototyping, personnel, and dedicated physical space for evaluation, must mature into a UX design cycle.

“Ten years ago, an equity trader wouldn’t be following Greek debt on a daily basis. That’s very different today. People are moving across functions, learning new functionalities in the process, and Next was about helping users identify market trends, by making data easily discoverable and streamlining workflow. Before, to source information on a bond price, you would have to run four or five different functions, and keep those data points in your head for comparison. Next gives users a comprehensive market view on a single screen, along with the ability to drill-down for more details, if needed,” he says.

Those details can vary widely according to the user, whether tracking micro-movements in pricing or digesting multiple portfolio companies’ earnings reports at once. “It allows the user to easily traverse through the European government bond market, not just looking at switches but specific markets in detail, at the slopes and barbells,” says Peter Chatwell, a interest rate strategist at Credit Agricole CIB in London. As if to reinforce the priority of visualization, a Barbell strategy—simultaneously investing in long- and short-duration bonds—is named for how the strategy’s performance charts over time.

Patterns
Of course, giant leaps in design require more than a bit of genius or a cadre of developers. To understand and then shape user behavior, as well as react more nimbly to internal product management demands, a meticulous process with prototyping, personnel, and dedicated physical space for evaluation, must mature into a UX design cycle.

Scott Weiss, UX director at buy-side technology provider Misys, says it is initially down to translating control into speed through modularity. “We keep a constantly improving library of user-interface patterns, and we are moving to instrument the patterns by providing code as well as design guidance, so that our products become more modular. This strategy has the added benefits of increased speed to market and software quality by relying on reusable components,” he explains, noting that Misys’ Core Banking offering will be the first on a new single web-based UX platform, set to be released early this year.

But how can the “right” pattern be determined? It isn’t always the one that appears “simplest” or easiest to use. Start-up vendors are now thinking seriously about their front-end interface early on, even on the back of napkins, and hiring consultancies like Brooklyn-based Alchemy50 to help. (For a comparison of two interfaces in the corporate bonds space, see page 4)

Thomson Reuters and Bloomberg, meanwhile, have opened up a UX arms race, with each building custom lab environments in the past three years to evaluate new interfaces, and hone them faster in the hope of forging what Thomson Reuters’ Souto calls “constant evolution” of design.

The difference, and seven-figure investment, is immense. “Our team of design and UI experts use the lab to scientifically assess how you respond, if you are stressed, and even self-perception while using the system. It’s not something you buy in a catalog; we are using similar tools to those used by companies like Google, with technical power to measure eye tracking, how your heart beats and body reacts to interfaces, and to measure performance in real time. It is also fully integrated into the product development organi-
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zation, which can see and react to the test live. It makes the design process truly scalable.”

‘The User Isn’t Me’
At Bloomberg’s usability lab, centrally tucked away in the vendor’s Manhattan headquarters, Fahd Arshad, head of UX design for financial products at Bloomberg, says that how those tools fit together in a cycle is “part science, but also part art.”

Eye tracking, for example, uses infrared technology to triangulate the pupils’ movements, seeking to understand what a user is paying attention to, consciously and unconsciously. “From the raw data you can do segment analysis of parts of the screen, or heat mapping. There is a field in human-computer interaction (HCI), interoperability, where this is indispensable for determining whether user failure is at a perception level—never seeing a pop-up message, for example—or at a cognitive level, where it was seen but the user ran right through it. Users don’t recognize the fact that things happen at an obvious memory level—often, it’s further back somewhere.”

Among the six high-definition (HD) cameras in the lab, up to four of them recording at any given time, two positioned overhead help Arshad’s team go beyond simple “click counts,” showing whether users hover near different keys or experience confusion as they go through a proposed workflow. The evaluation, at every step, is all about extracting as much detail as possible, and to that end, the lab is often introduced early in the development process, sometimes when the interface is just a paper prototype, before any digital artifacts exist at all.

Just as early on comes the art, when potential users’ “personas” are created by combining internal knowledge from subject matter experts with “contextual inquiry” interviewing techniques taken from ethnography that help to deconstruct practices that users will often internalize. Bloomberg’s UX design team has a staff of 35, including interaction designers doing field research, visual designers, usability specialists who plan and oversee the evaluations, traditional technologists and prototype designers. Souto’s personnel similarly run the gamut from specialists in behavioral science, physiologists, and psychologists, to former political operatives.

“A great professor of mine would tell us over and over again, ‘The user isn’t me,’” Bloomberg’s Arshad explains. “Designers aren’t gods—we can’t figure everything out, and that’s why the lab is here. Tracking user behavior tells us what we got right, and what we got wrong.”

Visual Design
With fresh emphasis on UX design capacity, diverse theories and ideas can be experimented with, prototyped, and iterated, often rendering elegant results. One of those comes from the work of Edward Tufte, a professor emeritus at Yale, who, after decades of work in data visualization, remains highly influential, sources say. New applications of his “visual design” theory, or optimizing visualization based on what the user is trying to achieve—e.g., showing causation versus comparison—are abundant.

“In Tufte’s work on micro-visualization, he is a big proponent of sparklines, or small versions of line graphs,” Arshad says. “We incorporated them during the Bloomberg Next project, despite the real technical challenges to putting that many historical data pieces on the same screen. Those are some of the biggest visual hints now across Bloomberg functions, so again, it’s design having an effect at the software infrastructure level. Sparklines are about comparative visualization. So for example, we introduced another micro-visualization, range bars, which are about understanding how far a bond’s...
SALIENT POINTS

• Financial firms of all sizes are looking far more closely at user experience (UX) and interface design as societal expectations about technological elegance have shifted. Their design cues are taken from the automotive, gaming, and consumer electronics industries, among others.

• The largest vendors, like Bloomberg and Thomson Reuters, have taken the additional step of building out design evaluation labs, equipped with sizable teams that leverage expertise from traditionally non-finance disciplines like behavioral science and physiology.

• A more robust UX design cycle allows firms to test and incorporate long-established theories such as Edward Tufte’s visual design, gameification, and game theory-inspired collaboration within their product design.

historical spread is from its benchmark,” he says. “If the slider is left-leaning, you just kind of look at it, and inherently know it’s cheaper. We similarly presented a two-day price chart for equity indices using a sparkline right out of Tufte’s work. This provides an at-a-glance overview of market trends.”

Bob Coppola, CTO for McGraw-Hill Financial, of which Capital IQ is part, says click-through transparency down to the public filing level is yet another enduring area of the professor’s influence. “Tufte argued for not filtering data until the user wants to. In financial services, everyone wants the quick answer, but sometimes you create your own ‘black swan’ event doing that, in part by honing visualization that steers toward a specific set of answers,” he explains, offering Value-at-Risk (VaR) as one prominent example of a model that, without context, reduces the multi-dimensionality of the information at hand, before it is visualized.

Next Layer?

Another strategy, gameification, has been around in HCI since at least 2005, and could be the next logical layer on top of Tufte’s visualization, by designing in more social interaction. Emphasis on finance UX has seen gameification gain some currency, though with it comes active debate over the term’s definition.

On one hand, Arshad says gameification is all about incorporating built-in incentives to entice users to explore a product, and it was incorporated in only a limited way during the redesign. “It’s a good principle, but it’s down to how you use it, and we found that in most cases, for what we wanted to do with Bloomberg Next, it just didn’t fit,” he says, explaining that clients’ intrinsic goals on the platform make such incentives superfluous.

Weiss at Misys, on the other hand, says intuitive dashboard-style interfaces from video gaming that use “progressive disclosure and contextual animation” have a lot to give to financial platforms. And UX designers could also incorporate separate ideas from game theory, including collaboration and competition, into financial applications to enable different approaches to problem-solving.

“Human intuition and pattern identification is really valuable, and we should use advanced visualizations—like network graphs or trees—to help uncover them, and investigating those relationships is very difficult to do with a piece of math alone,” says S&P’s York, whose own background is in theoretical physics. “Another thing taken from game theory is collaboration: New problems are being collectively solved like protein folding, or the Defense Advanced Research Projects Agency (Darpa) Network Challenge, where hot-air balloons were hidden in the countryside, and the group from the Massachusetts Institute of Technology that won got loads of people to search small areas very quickly, in a strategy called wide-area collaboration. These should be looked at now as tools on a par with quantitative analysis, and considered in terms of design.”

Pervasive

Just how deeply embedded UX becomes for finance, sources say, will evolve as its effects continue to be proven. S&P is stitching together three UX-centric acquisitions from 2012. Arshad says Bloomberg Next has hit many of the vendor’s targets as better usability increases clients’ productivity, and there is potential enough to warrant Bloomberg sponsoring UX graduate scholarships and working closely with Carnegie Mellon University in Pittsburgh, Pa. Initiatives like that, S&P’s Coppola predicts, will see UX become much more pervasive.

“We’ll wake up one day and realize it’s happened. There are external forces pushing in this direction, so at some time down the road, we’ll look back and see a major evolution. Today, we’re into this with eyes wide open—honestly, the biggest challenge is deciding what not to do. You must be comfortable in the little bit of chaos that needs to get created by it, but market efficiency teaches that chaos isn’t always a bad thing.”

Done right, it can even be beautiful. W