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Case Study: Cynergy Employs Developer-Designers To Harness The Power Of RIAs

Resolving The Conflict Between Development And Design

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EXECUTIVE SUMMARY

With the advent of rich Internet applications (RIAs), Cynergy Systems had to change from a traditional software development house into a service provider that fuses design-house graphical flare with the virtues of traditional software development processes. The resulting process is neither Agile nor traditional processes but a combination of the two, a hybrid approach that spans both design and development disciplines. This approach introduces three key roles: technical lead, user experience (UX) lead, and developer. The people filling these roles work on cross-functional teams that engage directly with the customer. The process follows two phases: a set of milestones focused on design followed by a more traditional Agile delivery phase. The resulting process gives Cynergy improved customer satisfaction and reduces the complexity and confusion often associated with development projects.

CLIENT DEMAND FOR RICH EXPERIENCES DROVE PROCESS CHANGE

The “arms race” among Cynergy’s clients to see who can generate the most business impact using richer user experiences necessitated that Cynergy change its processes to support this goal. These RIAs exploit new media types and fuse classical data screens with multimedia and a high-end look and feel.¹ But Cynergy faced a number of challenges in moving to a new way of building software to exploit RIA technology:

- **Teams had to describe data before screens generated a large amount of rework.** Traditional database modeling approaches focus on defining requirements in terms of the data and business rules, leaving screen design to the end. Combined with new, rich design options, using a traditional approach often means a large amount of rework, as designers uncover new ways of working when they apply different screen metaphors.
- **Blending design skills with traditional development teams is hard.** The discipline of software development encourages a focus on skills such as programming, analysis, testing, and management. The role of the graphic designer either tends to be outside most development organizations in different departments or outsourced to a classical design agency. However, there is great synergy between the practice of design and the development of the application; thus, Cynergy wanted to promote a close working relationship between the two disciplines.
- **Developer cubicles do not facilitate design collaboration.** As in most traditional development shops, Cynergy’s developers lived in Dilbert-like cubicles with high walls that created a feeling of

separation and allowed developers to hide behind the walls. Meeting rooms were always busy, making team activities difficult to organize.

Rich Internet Applications Brought A Change In Approach And Environment

New technology always tends to require changes in developer skills and in the associated supporting infrastructure such as servers and workstations, but the advent of RIA development brought other kinds of change as well. RIA development propelled Cynergy to:

- **Introduce a new way to engage with the customer.** The value and importance of design grows exponentially as the richness of the interface increases. Documenting the desires of the client becomes more and more complex as different graphical interaction models provide different ways of solving a particular problem or enabling a certain activity. The only way to explore these options is to work closely with the customer, experimenting with different interaction models and design options. Designers can best express concepts such as style and feel in direct presentations to the customer.
- **Change the office space to encourage collaboration and communication.** The user interface has far-reaching implications throughout the technology stack. As the design changes, other aspects of the system, such as the database and the business process, will also need to change. Cube farms encourage separation of responsibility and development in isolation. Getting rid of cubes does not necessarily encourage collaboration, but by “pulling down the cube walls,” leaders remove one of the impediments to collaboration.
- **Make design a primary role in the process.** In the past, unless developing a high-end application, software developers typically created the end-user graphical user interface for the applications they built. Some developers were very interested in delivering a high-quality look and feel, whereas others were just using the interface as a way to populate the data values of their business objects. Therefore, the quality of the user interface varied greatly, with too many interfaces being overly complex, difficult to navigate, and confusing. By hiring practitioners with the right mix of design and development skills, Cynergy ensures that its design agenda has clear ownership.

BEST PRACTICE: DEVELOPERS USE STORYBOARDS AND JOINT APPLICATION DEVELOPMENT

Agile development approaches advocate incremental delivery of working software. By working iteratively, developers incrementally discover, describe, and implement user requirements. There is no “requirements” phase with Agile; thus, systems evolve as prioritized by the customer. Design is a holistic activity: A good design must consider all possible usage scenarios, motivations, and goals. Designers tend to apply techniques such as task analysis, personas, and information architecture across the whole problem domain rather than incrementally. To meet the challenge of these differences between Agile development processes and the needs of design, Cynergy introduced a process in which teams:

- **Tell a story to help understanding.** Building out a storyboard with the customer helps provide a high-level understanding of the whole application without necessitating that developers or customers understand every detail. The storyboard concentrates on major flow, motivation, and goals. More-complex areas of the story may require more detail such as screen mockups or prototypes, but designers always present these in the context of the overall flow of the application.
- **Introduce formal information architecture offline and then review it.** Information architecture can be very structured and formal, conveyed with data models, business process models, personas, and wireframes.² Developers often use these documents as artifacts, asking the customer to sign off on them, but they are difficult for nontechnical people to understand, they can be very long, and reviewing them can be too time-consuming. Instead, Cynergy uses less-formal artifacts such as demonstration and presentation with the customer, leaving information architecture as an internal document used to drive development and testing.
- **Detail between 30% and 70% of the whole project prior to development.** In direct contradiction to most Agile methods, Cynergy encourages all project teams to have a good understanding of a project's scope and overall design before they start coding. Cynergy encourages experimentation and prototype development in support of this initial design work, but at this point in the process, developers do not develop any final code, as doing this before the design is stable could generate massive rework.

BEST PRACTICE: CYNERGY TREATS COLLABORATION AS CRUCIAL TO GOOD DESIGN

When talking about the value of collaboration, David Wolf, vice president of Cynergy, said, “It is hard to overstate the value of team collaboration.” But formally describing the processes for collaboration is difficult because collaborative events are hard to predict. Creating an environment that encourages and supports collaboration is crucial for effective design work. Cynergy has concentrated on three main areas to encourage and support collaboration:

- **Changing office space frequently to enable better communication.** Changing office space frequently requires a low-density office model that allows for change, but creating a situation in which a team moves frequently and has an environment that fosters eye contact and conversation greatly improves collaboration. To support the general seating plan, provide plenty of team spaces that allow for impromptu team discussions, brainstorming events, and reviews.
- **Using wikis to encourage collaboration.** Even for a design effort, rich project documentation is still important; however, traditional filing cabinet approaches often lead to complex documentation structures and materials that stakeholders seldom read and that quickly become out of date. Rather than having a complex file-storage approach, Cynergy's development teams make extensive use of wikis. Each project has a wiki that both the customer and the development team can see. Interested parties use wiki watches to ensure that the right people

receive notifications when new items become available. The team makes the wiki its central repository for all project documentation, avoiding the proliferation of artifacts that using email and other mediums creates. Allowing everyone access to this repository provides a transparency that ensures that everyone is kept up to date and also encourages collaboration and discussion.

- **Sharing a virtual workspace with the customer.** The wiki is just one part of a general transparent and shared customer workspace. In addition to using this repository, the team frequently delivers the testable system to some shared space. This shared space allows customers to see the latest build so that they can provide feedback and input. By regularly delivering to this space, the development team increases confidence — both its own and the customer’s — that the final release will deliver the value that both the development team and the customer seek.

BEST PRACTICE: CYNERGY DELIVERS FREQUENTLY TO PROVE SUCCESS AND BUILD TRUST

A fundamental tenet of the Agile Manifesto is to deliver working software frequently.³ Cynergy has taken this to heart: Its development teams frequently deliver working software throughout the build phase. As soon as the team delivers working software, the customer has access to it, which encourages a collaborative and open development approach with numerous opportunities for feedback and comment. Cynergy’s development teams take advantage of Agile methods by:

- **Never taking longer than a week to provide evidence of progress.** Traditionally, teams develop software in a sequential manner, with long periods between phases — for example, they might define all the requirements in one phase and do all the design in another. Breaking up the problem into smaller chunks allows teams to deliver more frequently. Throughout the build phase, Cynergy follows a rule of one week being the maximum amount of time that can pass before the development team must show its customer something new. This rule encourages a healthy delivery rhythm and culture.
- **Always practicing transparent communication.** Incremental delivery allows customers to comment and interject frequently during the development process. It also encourages the development team to be more honest, “airing the dirty laundry” in public rather than waiting until the last minute to disclose difficult and embarrassing information. This aspect of Agile development is known as avoiding the “Emperor’s new clothes” syndrome that can plague software projects, with all parties avoiding the difficult subjects because they want to please the others and avoid conflict.
- **Breaking long projects into smaller ones.** Cynergy has experienced many large projects but has consistently found that longer projects carry more risk. Cynergy found that by breaking large customer projects into smaller ones, it was able to please the customer faster while also reducing many of the project risks. Depending on the nature of the problem, project leaders may break down projects at the overall scope level, which spawns many projects, each with its own design phase, or within the build phase, which results in many releases spawned from one design.

BEST PRACTICE: CYNERGY FOCUSES ON PEOPLE BY CONCENTRATING ON THREE ROLES

Anyone involved in software development projects has always appreciated the value of great people. Traditional software development life cycles, with their specialization of labor and decomposition of tasks, tend to replace this focus on people with a focus on process, work products, and tasks. The Agile movement returned the emphasis to small, highly skilled teams that rely on tacit knowledge, personal relationships, and experience to deliver great software. These teams challenge the need for knowledge of long and complex processes and tools and favor business knowledge, technical skills, and experience. Cynergy has taken this emphasis on people further by concentrating on three roles and explicitly removing a fourth:

- **Designers have an unusual combination of artistic flair and a development background.**

By requiring designers to build mockups in implementation technologies such as Flex and Silverlight, Cynergy requires designers to complement design with technology skills.⁴ This improves the final deliverable by encouraging designers to exploit the technology platform, and it also constrains all designs to match that platform's capabilities. This has led to innovative yet practical designs that are less likely to be unrealistic or difficult to implement. Because they exploit technology earlier in the life cycle, designers are now equipped to be able to reuse design elements and share the implications of that use more explicitly with the customer.

For example, if a designer reuses a design element rather than building a completely new construct, this drives massive cost savings throughout the development process and speeds time-to-market. Allowing designers to have these discussions, with the customer making explicit decisions about important design trade-offs, not only makes for a great product; it also ensures that designs warrant the time and cost.

- **Technical leaders are internal hires who have grown into the role.** Technical leaders combine the skills of a great developer with the team-oriented skills of a great coach and leader. Two factors drive Cynergy's desire to hire internally: 1) Cynergy wants to provide a clear career direction for software engineers and 2) Cynergy accepts that the team will never document the majority of its working practices, technical architecture, and design approaches adequately enough to enable a new hire to provide value quickly.

- **Developers have a mixed bag of skills and experiences.** Following the Agile mantra of "cross-discipline, multiskilled" teams, Cynergy relies on developers undertaking a variety of tasks and supports them in that approach. Developers might be implementing Flex script one minute and building out a database schema the next. There are specialists who favor one technology; these specialists tend to be the people other developers call for support when they get stuck or need help. This generalist approach serves Cynergy well but is not for every developer, as some developers prefer a simpler, more focused environment that allows them to concentrate on one platform or language.

- **Others handle the duties of the business analyst or product owner.** Cynergy requires other roles — such as the designer, technical leader, or developer — to fulfill the business analyst's skills. By spreading the business analyst's responsibilities, Cynergy increases both the availability of those skills and the quality of the analysis by providing different perspectives and points of view.

RECOMMENDATIONS

GET THE RIGHT TEAM, UNDERSTAND THE PROBLEM, THEN ITERATE

Web development teams increasingly need to fuse design with traditional development skills. Cynergy has integrated many aspects of a design agency with the features of a traditional development organization. To use Cynergy's experience to reap benefits at your own company:

- **When designing rich applications, do not start coding too early.** A certain amount of design work must be done upfront, after which it is possible to move to an iterative, incremental approach. Exploiting prototyping and experimentation in the early phase reduces the risk of late-design breakage, ensuring that developers understand enough of the system prior to development. At Cynergy, the size of this initial design varies from 30% to 70% of the project's overall scope, with the exact size depending on the particular project's number of risks and uncertainties.
- **Hire artistic, design-oriented developers.** Employing developers who have a flair for art to design the whole experience improves outcomes. This combination of technical skill with artistic flair enables developers to deliver prototypes and designs that are realistic but that also exploit the implementation technology.
- **Hire designers who have a passion for technology.** Designers with backgrounds in industrial design, Web design, and print design are great resources who will add an interesting perspective to the development mix. If these same people have a passion for technology, teaching them the implementation tools is easy.
- **Build an office space that enables collaboration.** By challenging traditional cube-oriented work environments, organizations can create working environments that encourage collaboration and foster creativity. By moving teams and individuals, companies can build new social structures that can benefit the organization and projects.
- **Use the right form to document progress, but deliver to prove it.** Design-oriented applications do not remove the need for project or system documentation, but without demonstrations, it is impossible to really understand a project. By building prototypes and visual experiments and supporting them with simple lists and documents, developers can describe the system in a very actionable manner. The use of wikis and other collaborative technology encourages the appropriate level of detail and comment.

- **Keep projects small even if you have to break large projects down.** By following the simple mantra of “small projects are more likely to succeed,” it is possible to keep teams manageable and the problem space understandable. Cynergy does undertake very large projects, but it does so in the simplest form possible. This economy of motion increases the quality of the product and also the likelihood of project success, reducing complexity and bloat.

ENDNOTES

- ¹ Rich Internet applications is a term used to describe applications that are delivered over the Internet that have some characteristics of desktop applications. See the June 27, 2007, “[Rich Internet Apps Move Beyond The Browser](#)” report.
- ² There is much debate as to the use of the term information architecture. Some present the classical model of systems, processes, and data, while others use the term to describe Web and graphical architectures. The most comprehensive description and information source can be found at http://www.digital-web.com/topics/information_architecture/.
- ³ The Agile Manifesto can be found at <http://agilemanifesto.org/>.
- ⁴ Flex is a collection of technologies delivered by Adobe Systems for developing rich Internet applications for the Adobe Flash platform. For product details and documentation on Flex technology, go to <http://www.adobe.com/products/flex/>. Silverlight is a collection of technologies that Microsoft provides for developing rich Internet applications for the .NET platform. For more on Silverlight, go to official Silverlight site: <http://silverlight.net/>.