

# Get Organized At Work! A Look Inside the Game Design Process of Valve and Linden Lab

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Shenja van der Graaf<sup>1</sup>

## Abstract

This article considers the configuration of modular and temporary organization designs. By drawing on two prominent developer firms, namely, Valve Inc. and Linden Lab, respectively, “cabals” and “studios” are explored. The results of interviews conducted with employees of these firms are used as evidence. The article demonstrates that, to various extents, these organization designs organize, facilitate, and maintain how work is accomplished and coordinated within the boundaries of a permanent firm. It extends our understanding of how these designs provide a structure to how tasks are constituted in conjunction with the nature of the product.

## Keywords

organization design, design process, games, virtual world, modularity, coordination, cabal, studio

## Introduction

Ken is a fine-artist who taught himself how to program. As a modeler/ animator/ environment worker/ programmer, he worked on the tentacle for the *Half-Life* series involving level edits, model and code changes. In this capacity, he was able to develop a plural approach to understand and tackle problems. Robin was the project lead on *Half-Life: Episode 1* and *Episode 3*. But,

[*Episode 3*] got about a month in before it was clear that *Episode 2* needed a bunch of help so we broke the *Episode 3* team up and most, I think almost everyone but me, went on to help *Episode 2* and I came onto this team [*Team Fortress 2*]. Two teams [are] producing the sequel to the game that we built years ago [*Team Fortress*] and so I’ve been working on that and I’m just programming which is a really nice change from doing animation . . . (August 23, 2006, p. 4).

Welcome at Valve Inc., one of the most renowned, innovative, and successful game developer firms worldwide. Ken and Robin exemplify a kind of “autonomous,” highly skilled developers who seem to decide for themselves what their role should be at any given time in the game design process, which at Valve, is thought to enable them to quickly solve problems and accomplish design-related tasks. In the management literature captured by terms such as *self-organizing*, *democratic*, and *swarming*, such a practice calls into question the mechanisms of work coordination, and which arguably, is associated

with organizing work on a (seemingly) temporary basis, thereby highlighting the nature of the product life cycle.

A temporary organizational work system is a reconceptualization of a project-based or management perspective that tends to treat projects as tools or goal-fulfilling subsystems underpinned by a rather mechanistic, rational outlook (Lundin & Söderholm, 1995). A temporary organization design has been shown to be flexible, discontinuous, and ephemeral, and is interwoven with a social context rather than lines of authority and which provides key resources of “expertise, reputation, and legitimization” (Grabher, 2004, p. 1492; Benkler, 2006; Lave & Wenger, 1991). Such a “coordinate and cultivate” management perspective (rather than a command and control approach) draws attention to the question on what grounds work(ers) can be (get) organized efficiently and at minimum cost (Bechky, 2006; Malone, 2004). Little empirical knowledge, however, exists about the dynamics of how work is accomplished and organized in firms with (seemingly) minimal hierarchy or formal structures, and with what implications for the workers themselves.

Moreover, a central feature of information and communication technology-related firms in general, and game—used here inclusive to refer to computer games, virtual worlds, and so on (cf. Kerr, 2006)—developer firms in particular, is

<sup>1</sup>Vrije Universiteit Brussel, Brussels, Belgium

## Corresponding Author:

Shenja van der Graaf, iMinds-SMIT, Vrije Universiteit Brussel, Pleinlaan 9, 1050 Brussels, Belgium  
Email: shenja.vandergraaf@iminds.be

their increasing complexity yet openness associated with the platform, and the division of labor and knowledge, drawing attention to modularity (Langlois, 2003; von Hippel, 2005). In this view, the platform is considered to be a structuring element within a development and product architecture (Evans, Hagi, & Schmalensee, 2005; Gawer, 2009). And whose boundaries can be seen to be in constant flux, which is not only associated with a particular within-firm organization design but also across firm boundaries such as with third-party-supplied component developer firms and user-generated contributions (Parker & Van Alstyne, 2008; van der Graaf, 2012).

Against this backdrop, the wider games literature has produced useful, albeit often practical insight into game or virtual world design, there is little empirical evidence available about how work is actually achieved in organizations that may be characterized by both a modular and temporal character. The scope of this article, therefore, is to enhance our understanding of how developer firms practice their design process. For this purpose, the organization designs of Linden Lab (*Second Life*) and Valve Inc. (e.g., *Half-Life*, *Team Fortress 2*) are considered by examining so-called “studios” (Linden Lab) and “cabals” (Valve).

By drawing on the results of interviews conducted with employees of these firms, the article demonstrates how both forms, albeit to different extents, are guided by certain structures but whose makeup can be negotiated and renegotiated throughout the design process, leveraged as a core process in product innovation. It offers a more rounded understanding of the constituents and maintenance that affect the organization of product development, possibly benefiting the firm’s ability to innovate and compete.

The structure of this article is as follows: The first section yields a perspective on the role of modularity and transience in organization design. This is followed by an overview of the methodology. The third section explores several organizational elements involved in the dynamics of game design at Valve and Linden Lab. The article concludes with a discussion of the findings demonstrating how work is accomplished within the boundaries of a permanent firm.

## Organizational Dynamics at Play

At the inception of computer gaming (*Spacewar!* in 1962), programming consisted of tens of lines of code that, roughly 50 years later, has evolved into a social significant and high risk, technologically advanced, capital-intensive, proprietary practice and billion dollar industry. Millions of people worldwide regularly play games on various platforms, that is, consoles (e.g., Wii, PSP), PC games (installed and played on the computer), game portals (online game platforms, including social networks), massively multiplayer online games and virtual worlds (e.g., *World of Warcraft*),<sup>1</sup> and mobile (cf. Kerr, 2006). Many, if not all, of contemporary devices offer online services allowing customers to, for

example, upgrade their products, play with others online, and download content such as game demos.

In this setting, the relationship between modular (technical) design and modular market structures has become apparent (cf. “mirroring hypothesis”; Colfer & Baldwin, 2010; Langlois, 2003). Game technology (hardware and software) is key to game design. One such important technology is the game engine, used, for example, in PC-based *First Person Shooters* (FPS). It consists of several components and includes a graphics rendering system, modules for artificial intelligence, physics, scripting, networking, and other features (Moore & Sward, 2007). The game engine is the developer firm’s intellectual property, or proprietary technology. Nowadays, game engines just like their products, that is, games, have an ongoing development cycle that involves constant updating.

The development of the technology is a high-risk and costly affair, and hence, it often serves as development platform for multiple games. For example, Valve’s Source engine is, since its inception (2004), the vanguard for all its games. In addition, the technology can be licensed to third-party developers; for example, the Unreal Engine 3 was used by 2K Games to develop *Bioshock* and the U.S. Army used it for *America’s Army 3.0*. These practices are facilitated by the modular design, which allows that parts of the technology can be upgraded without “breaking the code” per module or throughout the product life cycle, it eases the task of coordination and downplays unexpected interactions, and it reduces production costs and time because, for example, different modules can be simultaneously developed, and tapping into local knowledge (cf. “collective intelligence” in Lévy, 1997; Nieborg and van der Graaf, 2008). Such a modular work system seems then to assist developers involved in the design process like designers focusing on game play, programmers, and content developers such as artists and animators, but increasingly sound designers and writers as well to achieve work (cf. Tschang, 2010).

For developer firms, the modular design is increasingly also a “canvas” that enables and facilitates user contributions by opening up (parts of) their technology to customers. This can occur at different stages of product life. Generally speaking, this tends to occur after the original game has been released to the public (and which is the case for Valve), but, especially in the context of a virtual world like *Second Life*, users are invited to co-create the in-world content, which would otherwise be rather empty. In many cases, “user developers” tend to get access to (parts of the) code and a firm-designed toolkit, such as graphics editors and 3D modeling software, that allows them to customize and design essential parts of the (original) product world—for example, contribute new content, change its gameplay, such as altered maps or skins, “add-ons” such as interface or server tools, and total conversion modifications.<sup>2</sup>

Following this modular perspective, sources of organizing work can be internal to the firm, acquired by firms in the

market, or co-developed with developer communities and users. And, while research has brought forward insight into different elements associated with the logic of modular (and migratory or cross-boundary) practices,<sup>3</sup> there is little empirical evidence that links these aspects to the dynamics of how work that can be characterized by an *ex ante* defined period of time of interaction between workers, or developers (often with different agendas) underpinned by the product life cycle, is actually achieved.

More specifically, the design process typically takes the form of a project with a team of developers, and depending on the kind of product, it can include among others, game designers, content specialists (artists) and programmers. Moreover, from initial (or “follow-up” such as patches, spin-offs, and sequels) idea or design to public release, the process involves a certain amount of time (and which can be anywhere from several months to approximately 2 years; Moore & Sward, 2007). As a result, the boundaries of product design seem to be in constant flux making the project-based or management perspective less useful as it has taken a rather mechanistic, rational stance underpinned by a linear process (which is less suitable for multiple knowledge sources) of problem solving in product development (Lehtonen, 2007). In this view, the notion “project” has been repositioned as a form of temporary organization highlighting “the importance of the linkages between the temporary organizational form and its permanent environment,” and which includes the social context of reputation, legitimization, and so forth (Bakker, 2010, p. 468; Lundin & Söderholm, 1995).

In the literature on temporary organizations, the main focus has been on the flexibility such an organization form can provide for firms and industry. In particular, flexibility has been related to capacity and experience levels of workers that enable them to excel in short-lived work environments and in alignment with this “expert migration” of workers between projects, and so on, costs can be reduced and risks controlled while providing career opportunities (Arthur, DeFillippi, & Jones, 2001). Furthermore, flexibility has tended to be approached in terms of uncertainty (regarding employment) and without much, if any, formal structure underlining its short-lived nature, but which has been contested by, for example, findings that have pointed to “structures of career progression” (Barley & Kunda, 2001; Jones & Lichtenstein, 2008; Meyerson, Weick, & Kramer, 1996).

In this context, particular attention has been given to role structures so as to yield insight into emergent practices that underpin coordination processes of transient work conditions. For example, Bechky (2006) has provided a processual understanding of the interplay between role structure and role enactment as a continuous and negotiated way to coordinate the work in film projects. She yields an understanding of interorganizational career progression and film projects as temporary total institutions.

Examining the relationship between role structure and practice can also yield insight into the way heterogeneous

knowledge sources operating as gatekeepers of information and value flows between the different stakeholders can coordinate work (D’Adderio, 2002; cf. “multi-sided market strategy” and “platform leadership”; Ballon & Van Heesvelde, 2011; Foray, 2004; Gawer, 2009). This view has also put forward an understanding of the ways more experienced workers teach new workers (preferred) ways of working, reframing their ways of thinking, interests, shared practices, identities, and so on (cf. “communities of practices” in Lave & Wenger, 1991).

While roles are important in the coordination of temporary work systems, this article illustrates how modular aspects associated with the nature of the product/technology also coordinate work practices. The focal unit of interest in the present article is, therefore, the firm level of two developer firms (of games and virtual world) in which the temporary system is, to a more or lesser extent, embedded underpinned by the product context. And, while studies have reported on some of these aspects individually, there is little empirical evidence available that provides a more rounded understanding of the dynamics of work by linking modular and temporary work practices.

### Valve Inc. and Linden Lab

This article draws on two prominent instances where developer firms, Valve Inc. and Linden Lab, can be seen to have put forward a seemingly migratory and transient organization design within and across firm boundaries. Whereas Valve is using the cabal form and Linden Lab the studio form in support of the work involved in, respectively, game and virtual world design, both firms invite their user base to engage and participate—albeit at different stages—in development practices guided by purposefully designed technology (van der Graaf, 2012).

Valve Inc., founded in 1996, is one of the most renowned and successful entertainment, software, and platform developer worldwide. Valve is noted for its strong support of mod communities (by providing, typically with the release of a new product, tools, manuals, etc.)<sup>4</sup> and for its interest in purchasing third-party games/mods for development into full games. In fact, by (also) tapping into the heart of the gaming community, Valve incorporated those passionate and skilled gamers to make only the best of the best such as *Half-Life* (1998). The franchise was expanded with a sequel and *Half-Life 2 Episodes 1* and *2*. Other titles include *Counter-Strike*, *Left 4 Dead*, *Team Fortress 1* and *2*, and *Portal*. Valve also offers a social entertainment platform called “Steam,” which is the world’s largest online and multilingual gaming platform.

Linden Lab, founded in 1999, is the developer of virtual world technology for *Second Life*. And, rather than forging an objective-driven and gaming orientation, *Second Life* (2003) is a collaborative, immersive, and open-ended empty 3D environment that is being inhabited, designed, and developed, gratis or for a subscription fee, by its so-called “residents” who own the intellectual property right over these

contributions. Thus, without user-generated content there would not be much to do or see. And, it is also a highly social and communicative service platform. Linden Lab provides users with an Internet-based interface (or viewer) with a built-in toolkit that can be used to build, script, and texture the content of the platform, and by accessing the source code the viewer can also be modified.<sup>5</sup>

In the study that is reported in this article, a mixture of quantitative and qualitative data and methods were used. Semistructured interviews were conducted with 13 Linden Lab and 15 Valve employees in 2006 and 2007.<sup>6</sup> The interviews highlighted aspects of, among others, the role of each employee in the game development process, how performance is measured, and their level of interaction with customers. The interview data were used to “tell the story” of game developers, highlighting the context of, and (latent) structures underlying, the explanations and interpretations of work involved in processes of game design within and across firm boundaries (Fereday & Muir-Cochrane, 2006). And thus, it sought to yield insight into how the developers “organize and forge connections between events and the sense they make of those connections” with other stakeholders (Bryman, 2004, p. 412).

Next, the findings are presented that yield insight into the organization designs of Valve and Linden Lab. It gives particular attention to several aspects of the cabal and studio in the context of hiring, mentorship, and performance measurement practices.

## The Making of Valve and Linden Lab

### *The Cabal as Organization Form*

In 1996, two former Microsoft employees, Gabe Newell and Mike Harrington, established Valve Inc. and acquired the Quake engine license from id Software to commence work, which since 2004 has been heavily modified into the Source engine (a mixture of licensed [modified] middleware like Havok Physics and MP3 playback and in-house-developed code). It hired two game teams to work on the game that came to be known as the FPS *Half-Life* (1998) and *Prospero* (which was shelved). It must be noted that Valve is an independent developer firm working on its own ideas and own its intellectual property, this in contrast to so-called first-party developer firms that are owned by a publishing firm or second-party developer firms that are contracted to develop games based on publisher-developed concepts (cf. Kerr, 2006).

In hindsight, the work on *Half-Life* laid out the framework for a type of temporary role-based coordination among developers, that is, the cabal.<sup>7</sup> At that time, Valve was looking to follow a “designer-as-dominant-creator” approach and which, typically, means that one person draws out a codified (design) document serving as a reference (or “bible”) for the team members to work on and implement (Tschang, 2010).

Throughout the first 11 months [. . .] we searched for an official “game designer,”—someone who could show up and make it all come together. [. . .] no one we looked at had enough of the qualities we wanted for us to seriously consider them the overall godlike “game designer” that we were told we needed. In the end, we came to the conclusion that this ideal person didn’t actually exist. Instead, we would create our own ideal by combining the strengths of a cross section of the company putting them together in a group we called the “cabal.”<sup>8</sup>

In conjunction with looking for a game designer, it became clear that what had been developed so far between the different developers was of an inferior quality—for example, levels did not tie together—suggesting, arguably, a lack in a structured vision and task coordination, which the cabal helped create (rather than perhaps mere offering an alternative approach as Valve was newly established; cf. Tschang, 2010). As a result, a small group of people, that is, without any formal job titles, three engineers, a level designer, a writer, and an animator (but no lead designer), worked together to collate all the bits of the game that were “liked,” such as cool features (e.g., monsters) and were in a “workable state” in a single prototype level. Each member was responsible and capable of (doing) the work involved in the design he or she specified. For one month, this prototype level was toyed and tinkered with and then tested with those who had not worked on it: “It was great. It was *Die Hard* meets *Evil Dead*. It was the vision. It was going to be our game.”<sup>9</sup>

The cabal meetings—at that time, about four per week of each 6 hours (for 5 months and after, when needed till it was shipped; after 18 months)—tend to single out a certain area or topic of the game. The purpose is to each time draw up the design in words and visuals, and which is followed by a discussion of what ideas work and do not work, and the ones that do are put in a narrative accompanied by geometrics including key events and so forth. The goal is to collaboratively come to a codified design document (yet, without relying on “visionaries” or lead designers). When, in the early Valve days, people felt confident about the initial cabal process “mini cabals” were erected to tackle particular design problems. These mini cabals seat people who are “most effected by the decision and those who don’t so to keep a fresh perspective” (Robin, August 23, 2006, p. 12). Also, membership of the “initial” cabal is flexible in that on a, more or less, monthly basis, some members stay and some new ones, based on a cross-section of Valve, come in so as to make sure everyone has the same understanding and experience in deploying the cabal’s outcomes in the game design process.

For current projects, the cabal format tends to represent the major technically development groups and consists of 8 to 12 people that self-organize. Depending on where they are in the design process the cabal members may seat in the

same office, meet once a week, or, for example, when a proposed idea requires more people to work on they get temporarily explored in a mini cabal.

It's sort of a joint decision when we meet and work on splitting up the game and deciding what is going to be in the entire game, it's like, who wants to take what, like OK, I'll take that, or this is left over, who would be best at that. (Jeff, August 24, 2006, p. 7)

In this view, in the cabal members are banded together based on their skills at the time that they are required.

We've got a cabal basically for each product or for each discipline, and depending on what skill-set is needed, people will move with that skill-set into and out of cabals, so you may be working on *Episode 1* one day and you may be working on *Team Fortress* the next day. It's funny, everybody has a box in their office with their stuff in it because at any time you may need to move, desks with wheels help as well. (John, August 23, 2006, p. 8)

Now how does the cabal coordinate work? One major driver is the design document. The cabal is responsible for generating a complete, detailed overview of the game design, particularly, all the game levels and their content such as monster interactions, special effects, plot devices, and design standards. Such a coordinating design document also details the timeline of all introduced items, what skills gamers need to have and how such skills can be acquired. Another means are the frequent cabal and mini cabal meetings and associated reporting mechanisms supported by tools such as Scrum. Furthermore, a company-wide "check-in" software system supports the coordination of work warranting transparency and reducing risks such as task overlap.

Last but not least, is that someone will "emerge as the 'lead' but not as a traditional manager, no they are a clearing-house of information. The whole project is in their head so that others can use them as a resource to check decisions against. The leads serve the team" (Robin, August 23, 2006, p. 23). The coordination and prioritization of work is based on self-selection, which means that "you are hired to be looking around for the most valuable work you could be doing" (Jeff, August 24, 2006, p. 9). People decide what to work on; "Employees vote on projects with their feet (or desk wheels). Strong projects are ones in which people can see demonstrated value; they staff up easily. This means there are any number of internal recruiting efforts constantly under way."<sup>10</sup> Also, play-tests by noncabal members and external testers. For example, the development of *Episode 1* took about 14 months, and after the first 2 months play-tests were organized on a weekly basis. During a test, the cabal observes the tester and takes notes, and which may result in

hundreds of action items that need to be changed, deleted, fixed, and so on, driven by group consensus.

Thus, the cabal's task is fairly straightforward, that is, it is responsible for the (further) development of a game. And, within this space it is autonomous; this means that the cabal has the power to design the game, and eventually has the means to execute on it. Workers outside the cabal can have input into that process by, for instance, providing feedback (which has to get listened to), but ultimately, however, the cabal has the final say. As a result, the game design process (as is the nature of the product) is in constant flux and modular and temporary in nature. The downside of this process is that it is labor intensive. Also, Valve has admitted that it can do far better in disseminating information internally as well as in making long(er)-term predicting in development.

### *The Studio as Organization Form*

*Second Life* (2003) is the result of a series of course changes. In 1999, Linden Lab began working on a hardware feedback device ("haptics") that would enable users to fully immerse in virtual reality. In order to demonstrate this device, a virtual environment called "Linden World," with task-based games was built. Linden Lab abandoned the device when it figured that Linden World had more potential. In retrospect, it can be said that Linden World was the first version of *Second Life*. The format of the 3D world-to-be was set during a board meeting in 2001, when a number of employees started building their own digital content such as snowmen. Those inputs marked what was going to be the most compelling aspect of *Second Life*: having people build and contribute their own creations in real time. So, rather than forging an objective-driven and gaming orientation, Linden Lab shifted its goals toward an user-created and community-driven platform, encouraging ten Linden Lab employees or so to work on transforming the Linden product into an avatar-based platform that allowed users to engage in building, and eventually, scripting activities (van der Graaf, 2009).<sup>11</sup>

So from that point onwards, the whole of Linden Lab is very aware of the debt we owe to the people who are actually making stuff. I mean seriously, the platform is, you know, a fairly adequate piece of software that allows people to make all this cool stuff. (Jim, January 12, 2007, p. 2)

Linden Lab's mission statement, referred to as "Tao of Linden," describes the principles underlying the attitude and approach toward being employed at the developer firm. This goes back to the firm's early days when it was still a small startup. At that time, Linden Lab consisted of a handful of developers and an office manager. Some had already worked at other companies and, based on those encounters with corporate culture, they sought to avoid particular negative

experiences. One of the upsides of being a small-sized company was that the hierarchy could be (relatively) flat, allowing input and decision making from all Lindens. Internally, discussions could be held about what kind of attributes of the “Linden culture to be” would be desirable. At the same time, they had to take into account whether these “work ways” could be sustained over time and, for example, could be applied to a firm that would increase in size. Linden Lab came up with four goals that were to seed Linden Lab’s culture: a flat hierarchy, a fun place to work, refrain from ideas of code ownership, and no (or only a few) meetings.

Since those early days, Linden Lab has prided itself in its effort to give all employees the chance to opt-in by their choice to commit to and execute outstanding job tasks. The practice of opting-in is based on volitional commitment. Linden Lab has developed a near 100% commitment to having employees (“Lindens”) choose what to work on. This practice means that “Lindens” are held responsible for carefully selecting work out of outstanding job tasks according to their own skills and task preferences, and they are held accountable for successfully accomplishing a chosen task.

The development tasks for the *Second Life* product are organized in studios.<sup>12</sup> Each studio tends to have certain specialties. For example, Studio Blacklight concentrates on high priority bugs and issues that affect the service. In addition, in order to acclimatize and familiarize oneself with *Second Life* and the tasks ahead, a new worker generally spends her or his first few weeks in Studio Blacklight. Since this studio’s main focus is solving bugs rather than being project oriented, it tends to be, for newcomers, an insightful way to become accustomed to the inner workings of Linden Lab. After a while, some may become inspired by other parts of the *Second Life* product and move to another studio, and which is in line with the “Tao of Linden.”

How is work coordinated? The software package JIRA supports and coordinates this practice allowing people every day to submit and retrieve tasks, bugs, and so forth. It is also a mechanism to prioritize work as, once a week issues that are considered worth doing, are ranked by votes cast by other Lindens. Another practice is “Achievements and Objectives” (As & Os). This is a weekly e-mail sent to everybody in the company, containing what people are working on and what their goals are for that week. Lindens, however, have an opinion about what is “most important.” In this light, a studio director may need to step in as he or she needs to manage multiple tasks (and not people) for that particular studio. Thus, Lindens are not attached to a particular studio and, therefore, the director fulfills a kind of guidance and awareness role concerning task and resource management.

I currently have three active projects in my studio, each with two to four developers and a few other resources shared among the projects (two program managers, a designer, and of course myself). I ensure that the projects have enough resources and approve

which projects have resources available to be worked on within my studio. Then I help to make sure that those projects succeed. [. . .] So part of my job is to help make the “hard decisions” when deciding between projects. (Steve, November 7, 2007, p. 2)

*Second Life* itself is also regarded as an important tool that effectively deals with geographical and organizational constraints allowing (dispersed) Lindens to collaborate and communicate. More specifically, Linden Lab employs its own product platform to build and maintain its culture among its various (and dispersed) teams. The central role of within-firm deployment of *Second Life*, however, may not be obvious to a new Linden. It would not be the first time that a new hire mistakenly assumes that sharing the same office equals a physical meeting rather than logging onto *Second Life*. The platform provides open and certain closed areas for Lindens which are frequently used for, among other things, meetings, presentations, and job interviews.

So Linden Lab not only develops *Second Life* but also inhabits its product or design space for various firm-related tasks. In this view, Lindens often (albeit, at times, in different vicinities) rub shoulders with its user base.

### Inside Job

Working at Valve or Linden Lab is not for just anybody. It is hard to attract people with exceptional skills and/or a really good resume and who fits the firm’s social profile. Valve aims to hire people who it would never want to fire, who are fairly senior, fairly self-governing, self-directed, are able to communicate well, and are okay not having a job title (preventing boxes). Linden Lab is looking for smart, creative, energetic, and passionate people. For both organizations, it is not unheard of that applicants are interviewed 8 to 10 times. And, similar to other developer firms, applicants have to undergo a “programming test” focusing on algorithmically complex problems as part of the hiring process. The point of these tests is not so much about having applicants come up with the right solutions, but rather a means to detect people that find such complexities “irresistible” and are capable to justify choices made and program languages chosen.

Furthermore, for a newcomer in any company it may be unclear what the preferred means of work are, yet starting in a company where the choice of work is yours, it seems even more difficult. At Linden Lab, therefore, everyone is expected to choose a mentor and to have regular meetings. Even seniors, because “everyone needs to hear about how they’re doing, managing their work, their social interactions, etc. Also, we’re encouraged to find someone who wants to teach us if we don’t know how to do something” (Q, November 7, 2007, p. 3). Valve strives after less management and more self-sufficiency following a pull-model, thereby focusing on making oneself useful to others, to be open to other people’s questions. Valve does not have a

mentorship structure in place, as the firm believes that it makes workers less responsible for choosing what to work on, and so forth.

I said, go to him when you want some help, you know, I think that's a much more efficient method. It's tough for some people to not feel a little bit overwhelmed by that [...] but it's important to have a little bit of humility and just to understand you're always going to be learning from this pool of people and to become more and more self-sufficient. (Robin, August 23, 2006, p. 15)

How is performance measured in these organizations? Valve used to do regular performance reviews based on the founder's experience at Microsoft. Nowadays, workers get "stack graded" following set criteria. For example, a programmer is evaluated by how technical he or she is and the degree of individual contributions made, within and across cabals. A scale is then developed where everybody is listed and four or five categories are employed to get a more robust cross-section of where people are, where they should be, and a ranking that ultimately turns into compensation. Furthermore, after a new game has shipped, the cabal meets to assess each other, "we'll sit down and say, you're really good or, you know, you were good at this thing but we now work on this other thing or, you know, I'll never work with you again" (Greg, August 24, 2006, p. 5).

Linden Lab organizes each quarter a review day for which JIRA-based accomplishments are collected from previous set "As & Os" and the "Love Machine." JIRA provides general metrics such as what tasks have been accomplished and yields a postanalysis of how things were executed, while the Love Machine is a more qualitative means of assessment; on a daily basis Lindens give and receive "love" from their colleagues such as getting help writing code, which at the end of each quarter, results in a pink envelope with money in it, as every "love note" received translates into US\$ 1. Lindens also get peer reviewed by a number of coworkers. Reviews and "love" scores are published internally on a wiki for everyone to read.

## Discussion and Conclusion

This article has offered a look inside the design process of Valve and Linden Lab, respectively, characterized by the cabal and studio forms.

The cabal can be erected for multiple purposes such as per game (throughout the product life cycle or per shipment in case of episodes, etc.), per discipline, and per "problem," suggesting a modular approach as the elements of the design process are tackled in different cabals (a main cabal and mini cabals; the cabal approach seems to involve more coordination in comparison to the studio system), and recombined in the game product guided by the design document and afforded by the (modular) game technology. The cabal's

temporary character can be illustrated by the tendency to dissolve in the short (or longer) term when the purpose has been served, or the product shipped.

The number of cabals fluctuates over time as well such as from one to several. People can be attached to one or several cabals at once, and move in and out of them. Cabals provide a structure where elements of design are collaboratively discussed, and decisions made yet advice and feedback from nonmembers (including play-testers) is taken into account. In the cabal (temporary) members choose what to work on, based on what that they deem most relevant, and which may or may not depend on one's skill-set—learning more skills, which is associated with the lack of job titles/roles, is strongly encouraged, or better, expected. A team leader, the design document, and company-wide "check-ins" assist in coordinating the design process within and across cabals. The cabal may, at any given time, be represented by members sharing an office, be (virtual) meeting based, and so on; however, the nature of the cabal seems to favor physicality (in contrast to Linden Lab's heavy reliance on virtual coordination mechanisms). Cabal members review each other's work and their overall contribution to the cabal. The cabal can, therefore, be characterized by its temporary nature; an effective means to quickly self-organize, address issues, reduce risks, and ultimately, to innovate and compete with other developer firms.

The studio system has, in principle, a fixed number of studios each covering a particular domain in support of the main product platform. The main tasks tend to occur directly "in" the platform (while, at the same time, it is also "open for business"; or, a beta Viewer is used but that is also accessible for users). People are not attached to a studio, and can move in and out of studios with the exception of the studio director. The studio is also a fixed entity. Furthermore, people can choose what to work on and are held accountable for it. Such an entrepreneurial outlook on work may discourage the development of multiple skills and highlight one's (expert) role. However, a mentor system is in place to guide not only newcomers but also seniors in their career progression and personal development. Choosing what to work on is also supported and coordinated by company-wide information and communication technology—voting mechanisms and yet, when needed, ultimately, a studio director is responsible for resource and task management. The same software is used for quantitative and qualitative performance reviews, while peers also get a say in the process. While the studio can also be appreciated for its fluidity, it is far less temporary than the cabal form; cabals will dissolve when a project gets shipped, whereas the studios have designated and returning set tasks and, hence, are of a more permanent character.

When considering the type of people working in these organizations, they should be able to cope with taking initiative and responsibility, and be communicative. While both organizations stress, to different degrees, self-direction and minimal hierarchy, lines of authority are acknowledged such as at times of performance reviews, particularly, for the studio

system. The investigation of the dynamics of latent power structures and the workings of meritocracy in these organization designs would benefit from further research. Moreover, the organization of work seems to be constantly negotiated and renegotiated as people need to balance their skills and interests with the cabal or studio-related tasks and needs which draws attention to their operation as gatekeepers of information and value flows between the different stakeholders, and which possibly limits the extent of self-direction.

Also, the product character underpinned by the platform can be appreciated for its modular and temporary character. Here, within-firm means that people can work on all the various tasks, upgrade per module or throughout the product life cycle (e.g. episodic games) involved in the design process. Across firm boundaries, it can mean that different stakeholders such as licensees and users, can develop content, updates, variants, or completely new product versions to the original product and possibly, the hard/software, raising questions about issues such as the conditions of value alternation and amplification. In fact, valuable ideas and skills can stem from changing firm (or cabal/studio) and platform boundaries, and inflows and outflows of knowledge and development can find their way to the marketplace from either side of these (cf. “platform ambiguity” in Ballon & Van Heesvelde, 2011; “proprietary extension” in Nieborg & van der Graaf, 2008). In this context, longitudinal research could further examine the conditions under which such organization designs associated with embeddedness are better suited to perform, innovate and compete. Perhaps it can also assist in fixing a reoccurring bug in the business model of “one price fits all” to an optimal pricing service consistent with its modular and transient character.

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### Notes

1. Note that, often, MMORPGs (massively multiplayer online role-playing games) and virtual worlds appear to be less game-like, or not games at all. Here, user experiences arise mostly from user-generated content rather than from the more structured experiences associated with many PC games.

2. Providing toolkits is a means of systematically outsourcing certain design and innovation tasks to, for example, third-party developers and end-users, assisting them in improving and developing products and services (von Hippel, 2005).
3. Such as market structures (Kerr, 2006; Nieborg, 2011), game-workers (Deuze, Martin, & Allen, 2007; Wimmer & Sitnikova, 2011), and modders (Behr, 2007; Postigo, 2010).
4. Valve prohibits modders to access the Source code for the renderer, networking, physics, and sound system. It has, however, equipped its Source Development Kit with first-party tools such as Faceposer, Valve Hammer editor, Model Viewer, and third-party tool Softimage|XSI EXP, which was also used internally to develop *Half-Life 2*. In addition, for some tools (part of) the source code is available such as for the Model Viewer enabling users to mod the Viewer toolkit itself as well.
5. *Second Life* is arranged through a client-server system architecture, constituting the so-called Viewer that connects to Web servers (“the grid”) and renders 3D content on the user’s screen. It also allows them to interact with others. *Second Life* has also a built-in toolkit, that is, the “browser” and “tool” functionalities are integrated, allowing users to build, script, and texture. Certain graphics, animations, and sounds can also be externally created such as with third-party animation editors and uploaded into the platform.
6. Note that follow-up interviews are planned in 2013.
7. Other developer firms that fit the cabal process include Bungie and Epic Games.
8. See [http://www.gamasutra.com/view/feature/3408/the\\_cabal\\_valves\\_design\\_process\\_php](http://www.gamasutra.com/view/feature/3408/the_cabal_valves_design_process_php)
9. See Note 8.
10. Valve, *Handbook for New Employees*, 2012, p. 8.
11. Overtime, important means to draw users in included granting them intellectual property rights over the things they created; introduction of the Linden Dollar that can be exchanged for U.S. dollars; and, open sourcing the *Second Life* Viewer.
12. Studios have a long-term outlook, though the number can fluctuate (such as at the time of planning to open source the Viewer); there tend to be about five such on infrastructure and resident experience.

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## Bio

**Shenja van der Graaf** (PhD, London School of Economics and Political Science) is a senior researcher at iMinds-SMIT (Vrije Universiteit Brussel), Visiting Senior Fellow at the Department of Media and Communications (London School of Economics), and Honorary Fellow at ID3. Her research focuses on the management of technological innovation in firms and communities, organization design, and software/code markets.