

Master's Thesis Project 2013/2014

Designing & Measuring Behavior Change in an Enterprise Social Network

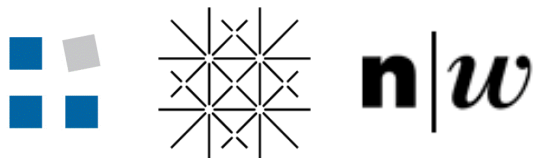
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MAS Human-Computer Interaction Design



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Abstract

This report describes a Master's Thesis project about designing & measuring behavior change in the enterprise social network Yammer.

The intention of designing behavior change in an enterprise social network is to increase user adoption and engagement in order to achieve the business value in terms of team collaboration, employee engagement, connected organization and business agility.

To support behavior change in a product, the role of the designer is not only to remove the friction from an experience, but also to increase the motivation of the user to go through an experience and to stay engaged. One way for the designer to do this, is to leverage insights from psychology in the form of persuasive design patterns. An example for such a pattern is scarcity. If something is promoted as scarce, people perceive it as more desirable. This effect is used by websites like Amazon to encourage the user to purchase something, i.e. by displaying "only 1 left in stock – order soon". A number of such patterns are described in the report.

To prove the value of applying persuasive design patterns in an enterprise social network, the goal of the project was not only to design behavior change, but also to measure behavior change. This has been achieved with a number of experiments (A/B tests) in Yammer according to the Lean Startup inspired Yammer development methodology. One experiment for example had the goal to build up the social graph by making people follow more coworkers using the set completion effect. Another one used the social proof effect to nudge people to post more work-related content on Yammer.

The results of the experiments described in this report have shown that leveraging persuasive design patterns can have a positive effect on user adoption and engagement, and should be taken into consideration when designing. The recommendation after finishing the project is to first use a behavior model to analyze why a certain behavior doesn't happen and then apply persuasive design patterns and measure the effect in a Minimum Viable Product with experiments.

Keywords: enterprise social networking, behavior, behavior change, psychology, persuasive design patterns, lean startup, experiments, a/b testing, metrics

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1 Overview

1.1 Project Goal & Context

This project is about **designing & measuring behavior change** in the **enterprise social network** Yammer¹.

Yammer brings together people, conversations, content, and business data in a single location to transform the way we work. It was launched in 2008 and acquired by Microsoft in 2012. It's currently used by approximately 8 million users in 200,000 organizations worldwide, including 85% of the Fortune 500 (Microsoft, 2013).

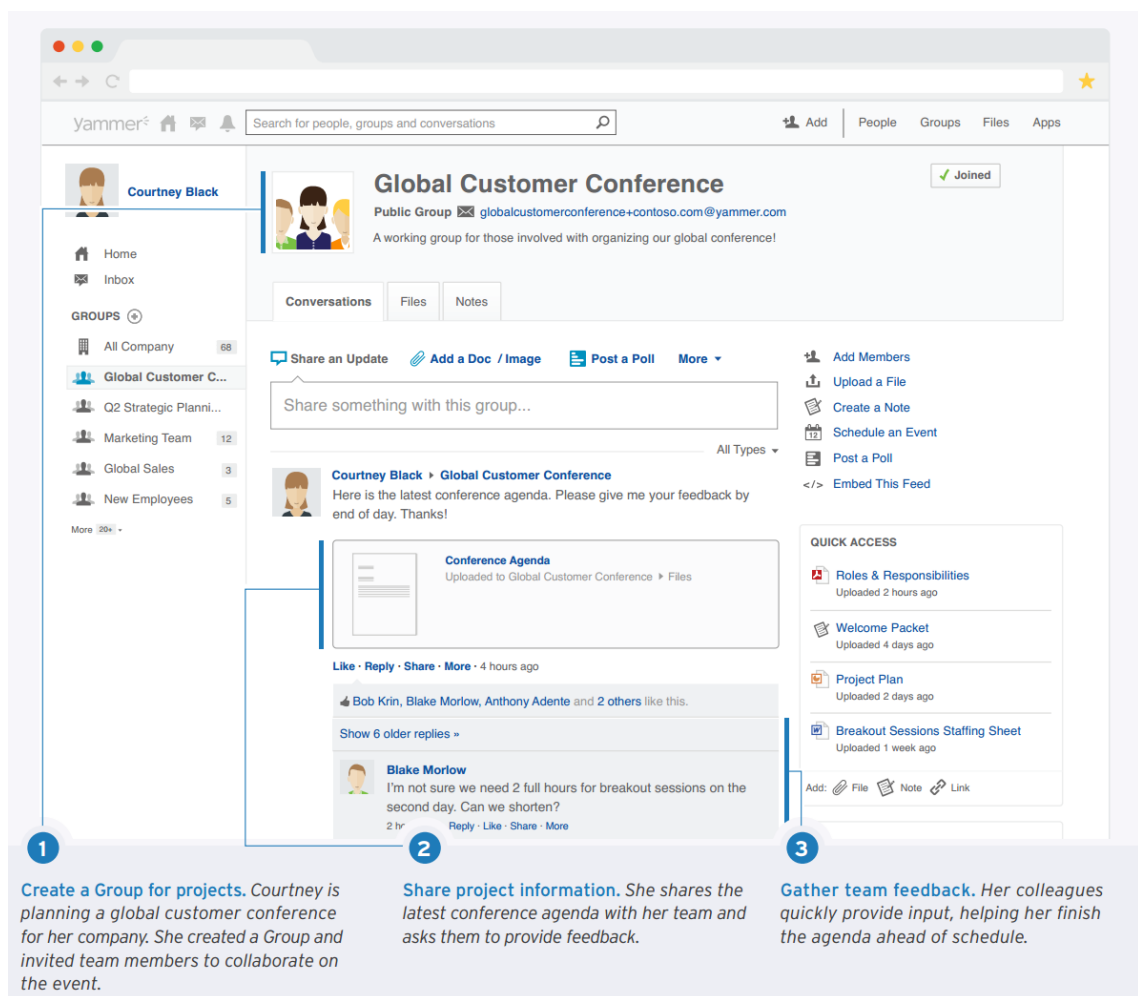


Image 1: Illustration of the Yammer user interface (Yammer, 2013a)

¹ <http://yammer.com>

The intention of designing behavior change is to **increase user adoption and engagement** in order to achieve the **business value** of such an enterprise social network in terms of solving challenges around team collaboration, employee engagement, connected organization and business agility (Yammer, 2013a).

- **Team collaboration:** "Improve team alignment on projects and events, break down silos, and connect remote workers."
- **Employee engagement:** "Increase employee engagement through two-way communication, improved onboarding, and recognition of top talent."
- **Connected organization:** "Bring traditional intranets to life, increase engagement with other systems by adding a social element."
- **Business agility:** "Accelerate innovation, adapt quickly to changes, and build a more unified company culture."

To support behavior change in such a product, the role of the designer is not only to **remove the friction** from an experience, but also to **increase the motivation** of the user to go through an experience and to stay engaged (see image 2). The goal of this project is to find out how to do this by leveraging insights from **psychology** in the form of **persuasive design patterns**.

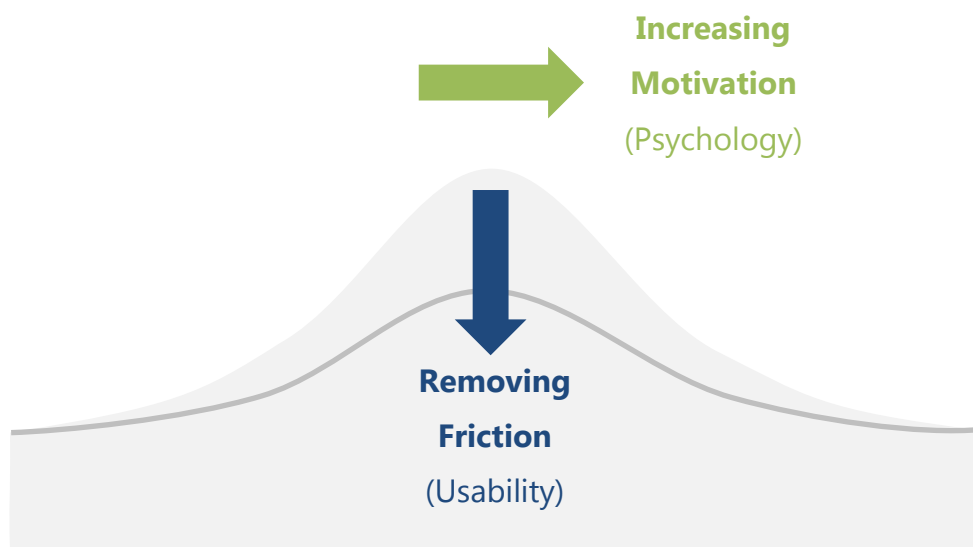


Image 2: Removing friction and increasing motivation (revised from Porter, 2009)

To prove the value of leveraging such persuasive design patterns, the goal is not only to design, but also to measure behavior change in a number of **experiments (A/B tests)** in Yammer, according to the **Lean Startup** inspired **Yammer development methodology**.

1.2 Project Report Structure

This project report contains six chapters. The first one gives an **overview** about the project goal and context. The second chapter contains information about a **behavior model** and **persuasive design patterns**. The behavior model explains behavior as a combination of the elements motivation, ability and triggers, and the persuasive design patterns are ways to influence those elements based on insights from psychology. The **Yammer development methodology** and its foundations are described in the third chapter. The fourth chapter is about the **experiments** that have been conducted in Yammer to design and measure behavior change. And the last chapter is the **conclusion and reflection**. The following image visualizes the structure.

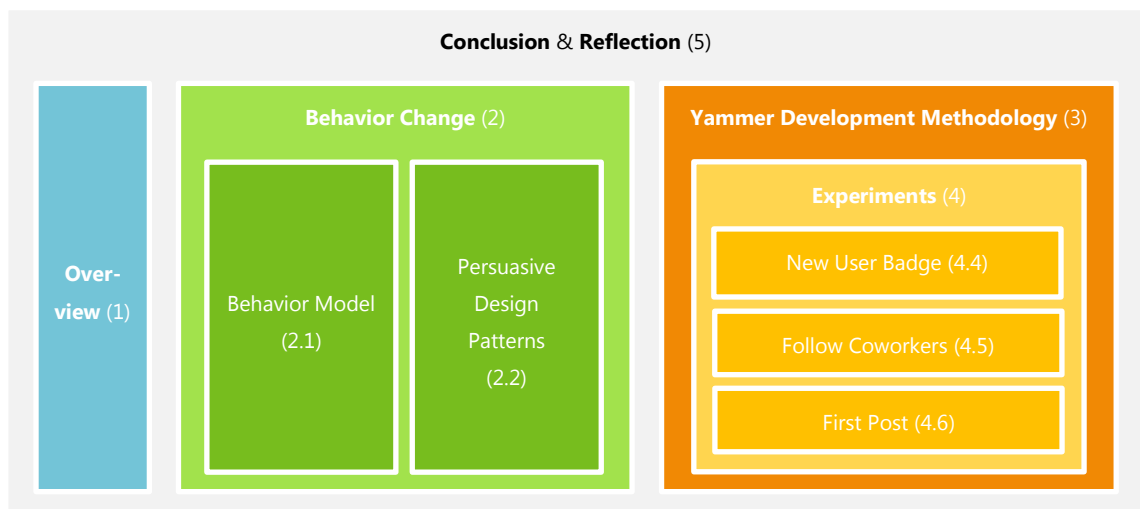


Image 3: Structure of the project report

2 Behavior Model & Persuasive Design Patterns

The first part of this chapter describes the theory behind behavior change with the **Fogg Behavior Model** (FBM). The second part is a compilation of sources for **persuasive design patterns** that leverage insights from psychology around behavior change.

2.1 Behavior Model

The FBM by BJ Fogg, a professor from the Stanford Persuasive Technology Lab, is a model for understanding human behavior. It states that behavior is the product of the three elements **motivation**, **ability** and **triggers**. All three elements must converge at the same time and only if there is enough motivation, enough ability and an effective trigger, the behavior will change (Fogg, 2009).

Image 4 illustrates the FBM. The y-axis is for motivation, ranging from “low motivation” to “high motivation”. The x-axis is for ability, and ranges from “low ability” to “high ability”. The curved line shows the **behavior activation threshold**. Triggers above the curved line succeed because there is sufficient motivation and ability, while triggers below the line fail (Fogg, 2009).

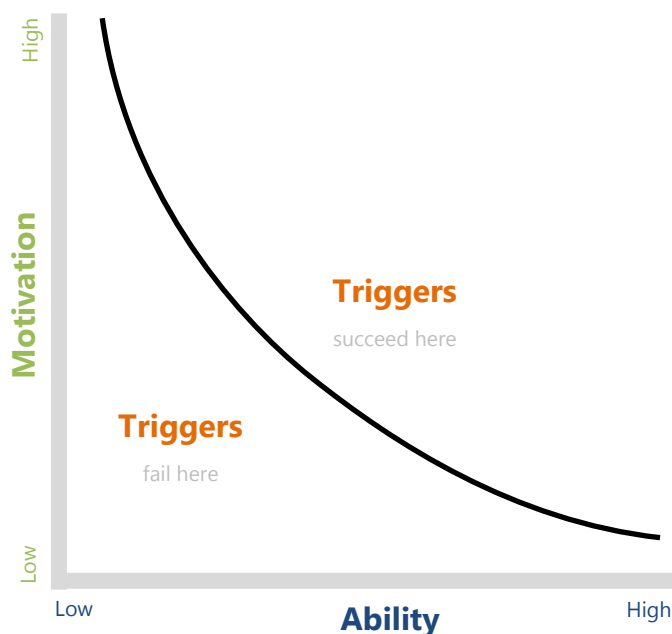


Image 4: The Fogg Behavior Model (revised from Fogg, 2009)

The author Nir Eyal describes a few situations to illustrate the FBM (Eyal, 2013):

The first situation is that your phone rings and there is an unknown number on the display. The ring tone is the audible trigger. The phone is right next to you, so the ability is high. But since you suspect that it's a marketing call because of the unknown number, you don't pick it up because you lack motivation to do that.

Another situation is that you're in the shower and the phone rings again. There is a trigger because you can hear the phone ring. You're also motivated to pick it up because you've been expecting the call. But the ability is low because you can't take the call while in the shower.

The last situation is that you get a phone call, but your phone is on silent. There is enough motivation and enough ability because the phone is in the same room. But since the phone is on silent there is no trigger present.

2.1.1 Motivation

Motivation is one of the thresholds for activating a behavior change. There are three types of motivation that the FBM defines: pleasure vs. pain, hope vs. fear and social acceptance vs. social rejection. They motivate people with either a positive feeling that people strive for or a negative feeling that people want to avoid (Fogg, 2009).

- **Pleasure / Pain:** People seek pleasure and avoid pain.
- **Hope / Fear:** This type of motivation is the anticipation of an outcome. People have a good anticipation in the case of hope, and a bad anticipation (i.e. loss) in the case of fear.
- **Social acceptance / Social rejection:** This type of motivation controls social behavior. People are motivated to do things to be socially accepted and to avoid being socially rejected.

In the situation with the unknown number on the display that Nir Eyal describes, you're trying to avoid the pain of a marketing call and therefore don't pick up the phone. Looking at other situations with the FBM, it turns out that behavior is often times not caused by only one type of motivation, but by a combination of different types of motivation. For example when a user isn't doing something in order to avoid social rejection, there is also fear about the anticipated bad outcome involved.

While the FBM is widely accepted in the industry, there is also critique around it, i.e. Sebastian Deterding calls Fogg's theory of motivation a "private theory out of sync with motivation research" (Deterding, 2012).

Daniel Pink for example differentiates in his motivation research between extrinsic motivation (from an external source) and intrinsic motivation (from within). In his book "Drive - The surprising truth about what really motivates us" he argues that while extrinsic motivation works well for algorithmic tasks where you follow a set of rules or a checklist to complete a task, (i.e. doing

taxes), intrinsic motivation is needed for heuristic tasks where you have to be creative to figure out the solution (i.e. writing a book). During his research Pink identified the three elements of intrinsic motivation as autonomy, mastery and purpose. He defines **autonomy** as the urge to direct our own lives, **mastery** as our desire to get better at something that matters, and **purpose** as our yearning to do what we do in the service of something larger than ourselves (Pink, 2009).

In his book "Loyalty 3.0", Rajat Paharia extends the three intrinsic motivators identified by Daniel Pink with progress and social interaction. He describes **progress** as our desire to see results in the direction of mastery and purpose, and **social interaction** as our need to belong and to be connected to and interact with others (Paharia, 2013).

2.1.2 Ability

Besides motivation, ability is the other threshold for behavior change. Fogg (2009) argues that because "most people resist learning new things", it's better to make a desired behavior easier to do.

Fogg (2009) describes six elements of simplicity that increase the ability to do the target behavior: Time, money, physical effort, brain cycles, social deviance, non-routine. They are all required to make a desired behavior easier to do. Fogg sees them as "links in a chain: If any single link breaks, then the chain fails". When this happens, simplicity is lost and there is no behavior change (Fogg, 2009).

- **Time:** No behavior change, if too much time is necessary.
- **Money:** No behavior change, if too much money is needed.
- **Physical effort:** No behavior change, if the physical effort to do something is too high.
- **Brain cycles:** No behavior change, if there is too much thinking required.
- **Social deviance:** No behavior change, if the social norm is broken.
- **Non-routine:** No behavior change, if something happens outside the routine.

In the situation described by Nir Eyal where the phone rings while you're in the shower you don't pick it up because there is too much time required. In order to pick up the phone, you would first need to turn off the water, jump out of the shower, find a towel and then pick up the phone. And by this time, the mailbox would probably already be activated.

The simplicity factors described above can not only be used to make something easier to do, but also the other way around, if the goal is to make an undesired behavior harder to do.

There is also critique around Fogg's theory of ability. Sebastian Deterdings argues that Fogg ignores self-efficacy, learning and understanding (Deterding, 2012).

2.1.3 Triggers

The third element of the FBM are triggers. A trigger is some type of cue, prompt, call to action or request that the user can act on. Even if the motivation and ability to do something are high, there is no behavior change without an effective trigger (Fogg, 2009).

The FBM describes three types of triggers (Fogg, 2009).

- **Facilitator:** Makes behavior easier when there is high motivation but low ability.
- **Spark:** Motivates behavior when ability is high but motivation is low.
- **Signal:** Indicates or reminds when motivation and ability are both high.

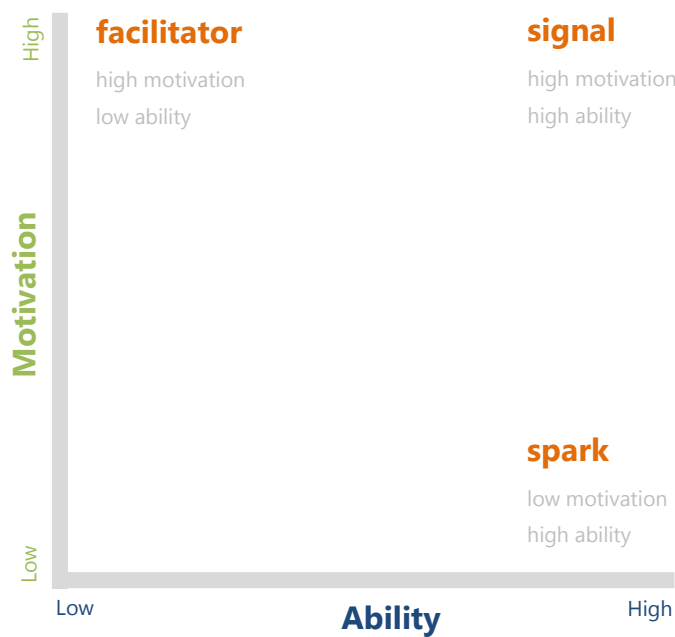


Image 5: Types of triggers in the Fogg Behavior Model (revised from Fogg, 2009)

Regarding triggers Sebastian Deterding mentions that Fogg ignores intention, goal-setting and mindfulness in his theory (Deterding, 2012).

2.2 Persuasive Design Patterns

The following chapter is a compilation of sources for persuasive design patterns. They can be applied to increase ability or motivation or provide a trigger according to the FBM.

2.2.1 Influence: The Psychology of Persuasion

"Influence: The Psychology of Persuasion" is a book by Robert Cialdini. It gives insights into how salespeople, recruiters, advertisers and others influence people. The author lists six principles of influence (Cialdini, 2006): Reciprocation, commitment and consistency, social proof, liking, authority, scarcity. Although the book has been written in 1984, the insights are still valid. However, the examples in the book are not related to interaction design.

- **Reciprocation:** People feel "obligated to the future repayment of favors, gifts, invitations, and the like" (Cialdini, 2006, S. 19).
- **Commitment and Consistency:** Once people "make a choice or take a stand, (they) will encounter personal and interpersonal pressures to behave consistently with that commitment. (...) We simply convince ourselves that we have made the right choice and, no doubt, feel better about our decision" (Cialdini, 2006, S. 52).
- **Social Proof:** People "view a behavior as correct in a given situation to the degree that (they) see others performing it" (Cialdini, 2006, S. 99).
- **Liking:** "People prefer to say yes to individuals they know and like" (Cialdini, 2006, S. 172).
- **Authority:** People feel a "strong pressure in our society for compliance with the requests of an authority" (Cialdini, 2006, S. 195).
- **Scarcity:** People "assign more value to opportunities when they are less available" (Cialdini, 2006, S. 225).

2.2.2 How to Get People to Do Stuff

"How to get people to do stuff" is a book by behavioral psychologist Susan Weinschenk (2013) about harnessing the power of psychology and brain science to motivate people to do the stuff you want them to do. The author describes the seven drives that motivate people, the research behind each drive and specific strategies to use (Weinschenk, 2013).

- **The Need to Belong:** Using the need to belong and the longing for connectedness.
- **The Power of Stories:** Communicating in a way that matches stories people tell themselves about who they are.
- **Carrots and Sticks:** Using rewards and reinforcements.
- **Instincts:** Tapping into instincts.
- **Habits:** Creating or changing habits.
- **The Desire for Mastery:** Setting up conditions that encourage the desire for mastery.

- **Tricks Of The Mind:** Using cognitive illusions / biases in how people think.

While the examples in the book are not related to interaction design, there are other books available from the author with wide variety of relevant examples, i.e. "100 Things Every Designer Needs to Know About People" (Weinschenk, 2011) and "Neuro Web Design" (Weinschenk, 2008).

2.2.3 Mental Notes

"Mental Notes" are a set of cards by Stephen Anderson (2012) that describe insights into human behavior and suggest ways to apply this in interaction design.

Table 1: Examples of "Mental Notes" persuasive design patterns (Anderson, 2012)

Design Pattern	Description	Application
Social Proof	We tend to follow the patterns of similar others in new or unfamiliar situations.	To put people at ease or guide a decision find creative ways to show social activity. This can be in the form of stats (favorited by, number of views, comments), good positive reviews/testimonials, or by providing visibility into the actions or outcomes of other users' behaviors.
Curiosity	When teased with a small bit of interesting information, people will want to know more!	When—and what—can you hold back? Reveal just enough to arouse interest, then tease someone into taking the next step. You can also arouse interest by doing something unusual and unexpected—people will stick around long enough to determine what's going on. Puzzles are similarly intriguing.
Scarcity	We infer value in something that has limited availability or is promoted as being scarce.	While scarcity is typically invoked to encourage purchasing behaviors, it can also be used to increase quality by giving people a limited resource—such as tokens—with which to vote up, purchase or upload items. This introduction of a limited resource encourages people to be more judicious with the actions they take.

While the set of cards is great for brainstorming sessions, the author also wrote a book called "Seductive Interaction Design" (Anderson, 2011) that contains most of the persuasive design patterns complemented with further explanations.

2.2.4 Persuasive-Patterns.com

"Persuasive Patterns²" is a persuasive design pattern library by Anders Toxboe (2013). Each design pattern is described with a problem summary, example, usage, solution, rationale and sources (example see table 2).

² <http://persuasive-patterns.com>

Table 2: Persuasive Design Pattern "Limited Duration" (Toxboe, 2013)

Name	Limited Duration
Problem summary	Use time limitations to push users to take action
Example	Groupon.com introduced online coupons with a strong use on scarcity effects. Atgroupon.com, the daily deal enforces time-based scarcity by letting deals be valid only for a certain amount of time.
Usage	<ul style="list-style-type: none"> • Use limited duration offers to push users to make a decision now rather than later • Use to force decision making to happen now rather than later • Use to force comparison of possible options, based on the facts known during the limited time rather than after
Solution	<p>Introduce time-constraints to enforce the feeling of a product, service, or item being scarce. Time-based scarcity invokes a feeling of urgency – that we better hurry up and make our decision to buy or use before the opportunity is over.</p> <p>The thought of a missed opportunity that we will not be able to obtain at a later time makes us act now. We would rather act now and not miss out on an opportunity – even though we are not totally sure if the decision will be of actual value. Time-based scarcity invoked effectively can make people make a decision that they might not have made if they had better time to evaluate alternatives.</p>
Rationale	We hate to loose the freedoms we already have. As opportunities become less available we tend to desire them significantly more. We put more value into the freedom of choice, which is why we react to time-based scarcity by making quick and sometimes uninformed decisions. We react against lost freedom of choice by wanting and trying to possess scarce items more than before.
Sources	Cialdini, R. (1993), Influence: Science and practice (3rd edn), New York: HarperCollins

2.2.5 Design with Intent

“Design with Intent” is a design pattern toolkit for environmental & social behavior change. It was created by Dan Lockton for his PhD research. Lockton groups the patterns into the following eight lenses. Each lense is another way to look at design and behavior (Lockton, 2013).

- **Architectural:** “draws on techniques used to influence user behaviour in architecture, urban planning and related disciplines such as traffic management and crime prevention through environmental design”
- **Errorproofing:** “treats deviations from the target behaviour as ‘errors’ which design can help avoid, either by making it easier for users to work without making errors, or by making errors impossible in the first place”.
- **Interaction:** “brings together some of the most common design elements of interfaces where users’ interactions with the system affect how their behaviour is influenced.” (Lockton, 2013)
- **Ludic:** “includes a number of techniques for influencing user behaviour that can be derived from games and other ‘playful’ interactions, ranging from basic social psychology

mechanisms such as goal-setting, to operant conditioning, to common game elements such as scores, levels and collections.” (Lockton, 2013)

- **Perceptual:** “combines ideas from product semantics, semiotics, ecological psychology and Gestalt psychology about how users perceive patterns and meanings as they interact with the systems around them.” (Lockton, 2013)
- **Cognitive:** “draws on research in behavioural economics and cognitive psychology looking at how people make decisions, and how this is affected by heuristics and biases.” (Lockton, 2013)
- **Machiavellian:** “comprises design patterns which, while diverse, all embody an ‘end justifies the means’ approach of the kind associated with Niccolò Machiavelli. These will often be considered unethical, but nevertheless are commonly used to control and influence consumers through advertising, pricing structures, planned obsolescence, lock-ins and so on, and central to much work by authors such as Vance Packard and Douglas Rushkoff revealing the ‘hidden’ structures which shape our everyday behaviour.” (Lockton, 2013)
- **Security:** “represents a ‘security’ worldview, i.e. that undesired user behaviour is something to deter and/or prevent through ‘countermeasures’ designed into products, systems and environments, both physically and online, with examples such as digital rights management.” (Lockton, 2013)

Of particular interest for this project were the interaction, ludic and cognitive lenses.

2.2.6 Evil by Design

“Evil by Design” is a collection of persuasive design patterns by Chris Nodder (2013). They are grouped under the seven deadly sins.

- **Pride:** “use social proof to position your product in line with your visitors’ values”.
- **Sloth:** “build a path of least resistance that leads users where you want them to go”.
- **Gluttony:** “escalate customers’ commitment and use loss aversion to keep them there”.
- **Anger:** “understand the power of metaphysical arguments and anonymity”.
- **Envy:** “create a culture of status around your product and feed aspirational desires”.
- **Lust:** “turn desire into commitment by using emotion to defeat rational behavior”.
- **Greed:** “keep customers engaged by reinforcing the behaviors you desire”.

All quotes above are by Chris Nodder (2013).

Table 3: Example “Loss Aversion” (Nodder, 2013).

Pattern	Prevent cancellations with doubt: If customers want to cancel, instill doubt by tapping into loss aversion.
Example	Once people start using a service they also create data and artifacts (photos, documents, contacts, and so on) that are tied to the service. Any time that customers attempt to cancel their membership can also reinforce just what they’ll lose. Even when companies such as Google offer migration

	of data so that there's less to lose, there's still a lot tied up in social capital (friends and colleagues with whom the data is shared) that can't necessarily be replicated elsewhere. Instilling doubt in these situations simply involves pointing out what people might lose by closing their account or migrating their data.
Principles	Tap in to the natural loss aversion that people will feel when they are reminded of what they have in their hands and what they'll lose as a result of their actions.
How to use	<p>Loss aversion is strongest when people have recently experienced the benefits of the product or service. If a customer is cancelling after a period of inactivity, find a way to convince them to use the product again (for instance by offering a free month of service, or access to a premium feature) so that they will feel the loss more keenly.</p> <p>At select points in your product, remind users of what they might lose by not choosing your preferred option. Be subtle, but remember to phrase in terms of loss.</p> <p>Save fear tactics for high-stakes interactions. People don't like being scared on a regular basis, and the effect is diminished with over-use.</p> <p>On cancellation forms, invoke loss aversion by asking "which of these features will you miss the most?" – this may be sufficient to pull customers back from the brink, and it's still useful information to know regardless of the outcome.</p>

2.2.7 Gamification

Gamification is another way to influence behavior. It's defined as "the use of game design elements in non-game contexts" (Deterding et al., 2011).

Taking inspiration from games is effective because games tap into **intrinsic motivation** (see chapter 2.2.1). When playing a game such as the Settlers of Catan, you have **autonomy** to make your own decisions, i.e. if you want to build a street. You want to get better at the game every time you play it, that's **mastery**. To win the game is your driving **purpose**. The game gives you a clear sense of **progress** by looking at the board. And last but not least there is **social interaction** with the other players, which is the primary reason many of us play games in the first place (Paharia, 2013).

Kevin Werbach and Dan Hunter (2012) structure **game design elements** into game dynamics, game mechanics, and game components:

- **Game dynamics:** "Dynamics are the big-picture aspects of the gamified system that you have to consider and manage but which you can never directly enter into the game." (Werbach and Hunter, 2012), i.e. constraints, emotions, narrative, progression, relationships.
- **Game mechanics:** "Mechanics are the basic processes that drive the action forward and generate player engagement." (Werbach and Hunter, 2012), i.e. challenges, chance, competition, cooperation, feedback, resource acquisition, rewards, transactions, turns, win states.

- **Game components:** “Components are more specific forms that mechanics or dynamics can take. Just as each mechanic ties to one or more dynamics, each component ties to one or more higher-level elements.” (Werbach and Hunter, 2012), i.e. achievements, avatars, badges, boss fights, collections, combat, content unlocking, gifting, leaderboards, levels, points, quests, social graphs, teams, virtual goods.

As seen above, there are numerous games design elements in the form of dynamics, mechanics and components. Rajat Paharia, the founder of Bunchball³, one of companies providing gamification solutions, defines the **top 10 game design elements** and how they map to intrinsic motivation (Paharia, 2013).

Table 4: Game design elements mapped to intrinsic motivators (Paharia, 2013)

Game Design Element	Description	Intrinsic Motivators
Community	Seeing what the community is doing; the community can see me	social interaction
Transparency	Seeing where everyone (including me) stands, quickly and easily (motivators: progress, social interaction)	progress, social interaction
Collaboration	Working with others to accomplish goals	purpose, social interaction
Fast Feedback	Getting immediate feedback or response to actions	mastery, progress
Goals	Having short and long term goals to achieve	purpose, progress, social interaction
Points	Seeing tangible, measurable evidence of my accomplishments	progress, social interaction
Badges	Displaying evidence of my accomplishments	mastery, progress, purpose, social interaction
Leveling Up	Achieving status within my community	mastery, progress, purpose, social interaction
Onboarding	Learning in an engaging, compelling way	mastery
Competition	Seeing how I'm doing against others	mastery, social interaction

Michael Wu (2011) describes how Gamification and the FBM fit together. According to Wu, **motivation** is provided by positive feedback through game design elements like points, badges, status. The perceived **ability** of the user is increased by making difficult tasks easier to do and more manageable. And game design elements place **triggers** “in the path of motivated users when they feel the greatest excess in their ability”, so just at the right moment. (Wu, 2011).

³ <http://bunchball.com>

There is a study by IBM researchers Jennifer Thom, David R. Millen, and Joan DiMicco around **gamification in an enterprise social network**. The team looked at the effect of removing an incentive system that awarded points to users for adding list, photos and comments. The removal of those extrinsic rewards led to a significant decrease in user activity, i.e. while the points-based incentive system was active, 4505 photos were uploaded – after the removal only 2926. However, during the study they also noticed that with the system in place, there were often concise comments like “Hi”, “Nice”. After the system was removed, those kind of comments subsided (Thom et al., 2011). So it’s questionable if those kind of extrinsic rewards meaningfully increase engagement.

3 Development Methodology at Yammer

This chapter introduces the **Yammer Development Methodology** for a better understanding of how the experiments (see chapter 4) have been conducted.

The following image illustrates the development methodology. It contains four steps: **Ideate**, **build (& iterate)**, **test & measure** and **launch**. Each step is described in more detail in chapters 3.1 to 3.4.

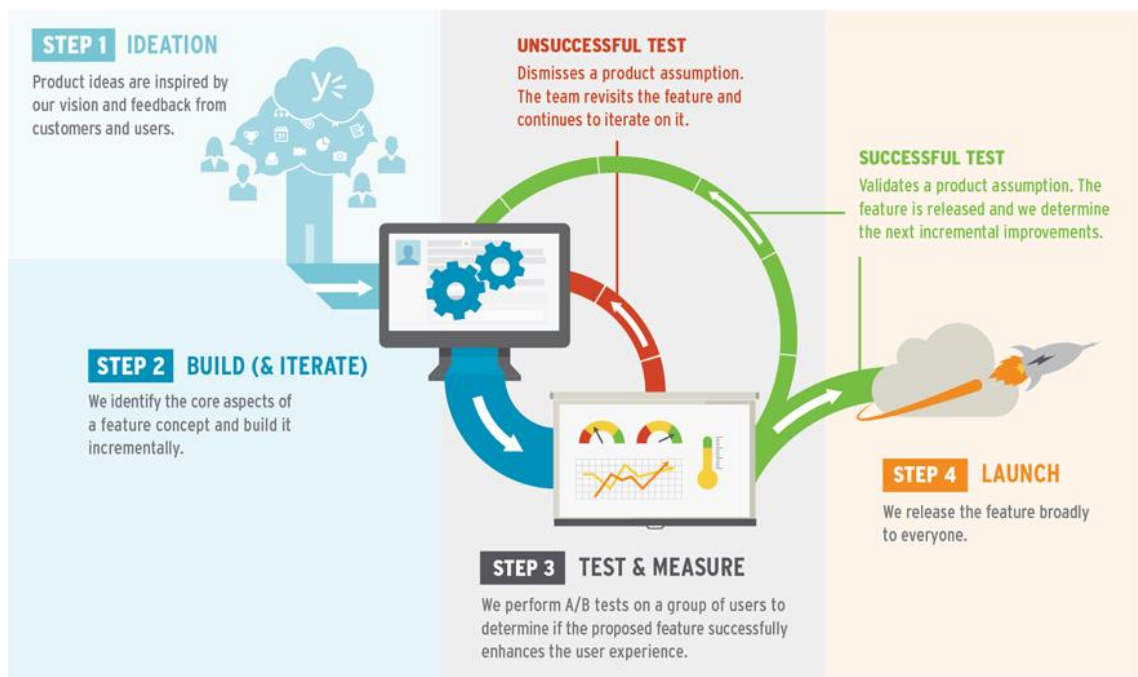


Image 6: Yammer Development Methodology (Yammer, 2013c)

The rapid, iterative, data-driven Yammer Development Methodology is inspired by the **Lean Startup** movement. Initiator of the movement is Eric Ries. In his book "The Lean Startup: How Constant Innovation Creates Radically Successful Businesses" he describes how to design and develop products that customers actually want (and pay for) by going through a **Build-Measure-Learn** feedback loop. **Build** is about turning ideas into products by building a Minimum Viable Product (MVP). Ries describes MVP as "that version of a new product which allows a team to collect the maximum amount of validated learning with the least effort". So an MVP contains only those features that are needed to test a specific set of hypothesis. Additional features are seen as waste. **Measure** is about running an experiment (i.e. A/B test) to see how customers respond. **Learn** is about figuring out whether to pivot or persevere. The key is to do everything to accelerate this feedback loop (Ries, 2011).

The role of the designer in such an approach is described in books about **Lean UX** by Jeff Gothelf (2012) and Laura Klein (2013). Gothelf sees Lean UX as the junction of Lean Startup and user experience design. For him, the lean principles help designers to remove waste from the design process (“we move away from heavily documented handoffs to a process that creates only the design artifacts we need to move the team’s learning forward”). They also help to bring non-designers into the design process by working in cross-functional teams together with developers, products managers and others. And most important for him is the mindset shift that is gained from adopting a model based on experimentation (“instead of relying on a hero designer to divine the best solution from a single point of view, we use rapid experimentation and measurement to learn quickly how well (or not) our ideas meet our goals”). He concludes that in such an approach the role of the designer evolves more towards design facilitation (Gothelf, 2012).

3.1 Step 1: Ideate

The first step of the Yammer Development Methodology is to ideate.

The Yammer team builds features with end users in mind. They analyze usage data, listen to their customers to identify problems and come up with ideas.

The product managers and designers translate the best ideas into a set of features that make up the product roadmap (Yammer, 2013c).

3.2 Step 2: Build (& Iterate)

The team doesn’t assume that their ideas are right. That’s why in the build and iterate step, the team comes up with a plan to build a MVP. This contains just the core aspects of a feature that can be delivered in a very short time, in order to validate assumptions early and incrementally, and course correct along the way if necessary.

Important to notice is that it’s not an MVP in the sense of The Lean Startup, where an MVP could be a button which leads to a non-existing page in order to validate if there is interest in such a feature. Instead of MVP, Yammer talks about **minimum viable experience** (MVE). Due to the high quality standards that are expected of an enterprise product, a feature in Yammer should never make the user feel that it’s only “half-baked” (Yammer, 2013c).

One example for this in Yammer is the notes functionality. In the first version it was very basic. But measuring that many people use the notes functionality validated the feature and it was subsequently completed with additional functionality.

After defining the MVP in a short product specification with illustrations, and without a lot of text, the team builds the feature.

Once a feature is ready to go, it's rolled out to Yammer users to test and measure the effect (Yammer, 2013c).

3.3 Step 3: Test & Measure

Now an experiment (A/B test) is performed to see if the feature actually adds value.

Yammer launches the feature or different variations of the feature to a subset of users (treatment group), and compares their experience with that of the group of users without the feature (control group).

The percentage of users in the experiment depends on the number of variations and how much risk there is that a feature could hurt new user retention.

Because Yammer is a single, standalone product rather than a highly customized solution, they're able to control all the variables in the test, ensuring that the data is clean and accurate.

After running the experiment long enough to get significant data (depending on the exposure of the feature), the results are analyzed. The question if users with the new feature get more out of Yammer than those without is answered by looking at feature-specific metrics and core metrics (retention, engagement and virality) that have been chosen by looking at historic data and identifying what made companies upgrade from the free version of Yammer to the paid version. The metrics are described in more detail below (chapter 3.3.1 and 3.3.2).

If the experiment was successful, the feature is launched to everybody (see chapter 3.4). In the other case, it's either discarded or taken back to the whiteboard to integrate the learning and start another experiment in the spirit of Build-Measure-Learn.

3.3.1 Core Metrics: Retention, Engagement, Virality

The goal of every new feature is to meaningfully increase **retention**, **engagement** or **virality** as described in the Yammer Metrics Manifesto (Yammer, 2013d).

Retention

1 Day retention: If a user returns to Yammer in the day after signup (in 24-48 hours).

7 Day retention: If a user returns to Yammer within one week following the first day after signup (in 24-168 hours).

Days engaged in the first week: How many days a user was engaged in the first week following the first day after signup (in 24-168 hours)

Engagement

Days engaged: How many days a user was engaged in a week

Files uploaded: How many files were uploaded

Files previewed: How many files were previewed

Net groups joined: How many groups a user joined

Posting (Threadstarters): How many threadstarters (message that begins a thread) were posted

Posts: How many posts (including threadstarters, replies, and other messages) were posted

Posts (Binary): How many people were posting

Number of replies to a threadstarter: How many non-threadstarters were posted

Virality

Invite emails: How many invite emails were sent

Invite emails (Binary): How many people sent invite emails

Viral conversions: Number of new viral users acquired through invitations that users sent out

Signup invites: How many invites were sent during the sign-up flow

3.3.2 Feature-specific Metrics

Besides the core metrics, there are feature-specific metrics which are defined in the product specification of the feature.

Examples of feature-specific metrics (Yammer, 2013d):

- Improvement to the number of users who complete the sign-up flow
- Higher proportion of users with complete profiles and photos uploaded
- Group membership isn't negatively impacted
- Invite conversion rate in sign-up flow should not decrease when the step of adding a photo is removed
- Number of desktop downloads amongst new users are not negatively impacted

3.4 Step 4: Launch

When the new feature raises the metrics in a meaningful way, it's rolled out to everyone.

From there, the feature is enhanced incrementally and tested and measured again.

4 Designing & Measuring Behavior Change in Yammer

Leveraging the behavior model (chapter 2.1), persuasive design patterns (chapter 2.2) and the Yammer development methodology (chapter 3), this chapter describes how behavior change was designed and measured in Yammer.

Based on the **personas** "Julia" and "George" which represent typical Yammer users and the **scenario** "New User Experience", three experiments (A/B tests) are described to validate that applying persuasive design patterns helps to drive user adoption and engagement. The following table gives an overview about the **goals** of the experiments and the applied **persuasive design patterns**.

Table 5: Goals of the experiments and applied persuasive design patterns

Experiment	Goal	Persuasive Design Pattern
New user badge	Make new users less afraid to make mistakes	Badge
Follow coworkers	Make new users follow more coworkers	Set completion
First post	Make new users post work-related content	Social proof

4.1 Personas

The following personas have been created by the Yammer UX team based on surveys and interviews (Yammer, 2013e).

4.1.1 Persona Julia

"One of my projects included a group of people who tend to only work in email. I tried to introduce other programs, such as SharePoint, and they did not like it."

Job details

HR associate at a large global company of 10,000 employees, but her team is in close proximity. Her company is somewhat open to employees and teams trying new tools but needs a convincing argument to adapt broadly. Because of the nature of her job, email is critical to day-to-day operations. She relies on email and phone calls to coordinate with employees, contact references, and handle vendor relations.

Tools

She's generally tech-savvy and can figure out Yammer features, but doesn't understand how it could be useful for her in her job because most conversations on Yammer are social or water-cooler.

Motivations

She's technically progressive and wants to try new things, potential evangelist.

Most important to Julia

- Maintaining confidentiality
- Staying extremely organized

Painpoints

- She works with employees from all over the company on a regular basis, and her inbox is flooded.
- In HR, many of their communications are confidential and need to be kept private.

4.1.2 Persona George

"I stumbled upon Yammer when I first started ... I was like, wow, this is kind of like a LinkedIn of sorts, and it seemed pretty cool so that's when we introduced it. We were all excited about it, but we're not sure how to utilize it. I get my water cooler every day, I like to read through it and some of it's not really applicable because there are people all over the country talking on it. It's been interesting, but I haven't been able to really use it yet because I'm not sure how."

Job details

QA manager at a large financial services company (1000+). A good portion of his day is spent in meetings. He manages 6 engineers, all based out of the same office, and sits near them. The company has many siloed teams.

Tools

He's unsure of how to use Yammer or what it's for, though the content on his Yammer network is mostly watercooler/unimportant. He skims through the highlights a few times per week. He uses relatively few tools to do his job, but the ones he does use are used heavily. Mostly relies on email and IM, but a lot of conversations are face to face. IM is used when he's in need of a quick, immediate response.

Motivations

He's willing to try new things for efficiency's sake, but needs a little help to figure out how to get started. He's always connected to his email and checks it from home in the morning and evening.

Most important to George

- Staying connected to his team and being available to answer their questions.
- Working as efficiently as possible. Cutting out meetings, reviewing processes, finding better ways of doing things.

Painpoints

- Discussions tend to be repeated because the result is not recorded.
- Interruptions during the day are bad for productivity.

4.2 Scenario New User Experience

All experiments are based on the scenario of **new users joining Yammer** since this is seen as a crucial moment for user adoption and engagement.

There are two ways for new users to join Yammer. One way is to go to the Yammer website and register with the company email address. If somebody from the same company has already registered, the new user will join the network of that company. If the user is the first one to register he creates a new network. The more common way to join Yammer is by being invited by a coworker who is already using Yammer. In this case the invited user receives an email that asks him to accept the invitation (see image 7).

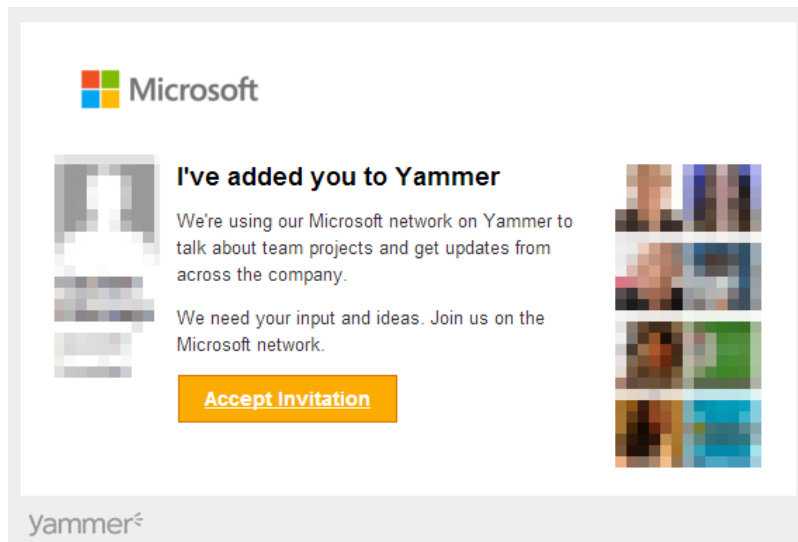


Image 7: Invitation email for the Microsoft Yammer network

4.3 Approach for the Experiments

The approach for the experiments is based on the Yammer development methodology (chapter 3), extended with the FBM (chapter 2.1) and persuasive design patterns (chapter 2.2).

The **first step** in each experiment was about learning why users behave in a certain way and defining the target behavior. Using the FBM, it was analyzed what is currently preventing the target behavior, so whether motivation, ability or a trigger is missing.

In the **second step**, the MVP with a persuasive design pattern was designed, with the goal to raise motivation or ability or provide a trigger.

In the **third step**, the MVP was implemented according to the Yammer Development Methodology as the smallest way to test in an experiment (A/B test) if the persuasive design pattern is successful. For this, certain metrics were tracked and later analyzed. Due to the limited timeframe for the Master’s thesis project, there were no additional iterations.

The following is an example of how a report of an experiment looks like for the metric of posts per user.

Table 6: Example of complete test results for the metric “Posts per User”

Treatment Group	Posts per User	Posts	Diff From Control	Lift	Count Diff From Control	Treated Users	Std Dev	Standard Error	tstat	pval
Copy A	0.7128	25,808	0.0184	0.0266	668	36,209	2.2451	0.0143	1.2906	0.197
Copy B	0.7263	26,399	0.032	0.046	1,162	36,349	2.2917	0.0145	2.2078	0.0272
Copy C	0.6982	25,458	0.0039	0.0057	144	36,460	2.1625	0.0139	0.2832	0.7794
Control	0.6943	50,606	0	0	0	72,887	2.1770	0.0114	0	1

The column **treatment group** contains the name of the group that is being tested in an experiment. In this case there are three different groups: **Copy A**, **Copy B** and **Copy C**. **Control** is the control group that the other three groups are being compared with.

The next two columns are the number of **posts per user** and in **total**. For example there are 0.7263 posts per user in group Copy B, whereas in the control group there are only 0.6943. This is a **difference** of 0.032 posts per user which means that the **lift** in this experiment is 4.6%.

The column **treated users** shows the number of users that have been exposed to this experiment. Here there are roughly 36,000 users per treatment group. The control group contains 72,000 users. If a risky feature is being tested, it won’t be exposed to more users than necessary, in order to avoid the risk of losing too many users because of an experiment. The last four columns are statistical values: standard deviation, standard error, t-statistic (tstat) and p-value (pval). An important value for judging the statistical significance of the experiment results is the p-value. It’s the probability that the difference that was observed is caused by something random or unrelated to the difference between the versions tested. It should be as low as possible. In the example, the p-Value for variation B is 0.0273, which is an acceptable value.

The metric “posts per user” is part of the engagement core metrics. The meaning of the other core metrics around engagement, retention and virality are described in chapter 3.3.1.

In the following experiments that are described, only the lift in percent is mentioned.

4.4 Experiment (A/B Test): New User Badge

This experiment has been conducted in Yammer before the project, but it's part of the project report for two reasons. First, it shows that even small changes can have a big effect on behavior. And second, it's a great example to learn from, because as Fogg writes: "as researchers and designers we can learn much about the techniques of persuasive technology by viewing successful examples through the FBM lens" (Fogg, 2009).

Understanding Behavior

Based on user research around new users joining Yammer, it was identified that new users hesitate to post something because they are afraid of making mistakes publically in front of all their coworkers.

Looking at this behavior through the FBM lens, it means that the **motivation** of new users is low due to fear of an anticipated bad outcome. While the motivation is low, the **ability** to post something is high due to the input box right above the news feed. And there is a sufficient **trigger** due to the text "What are you working on?" in the input box (see image 8).

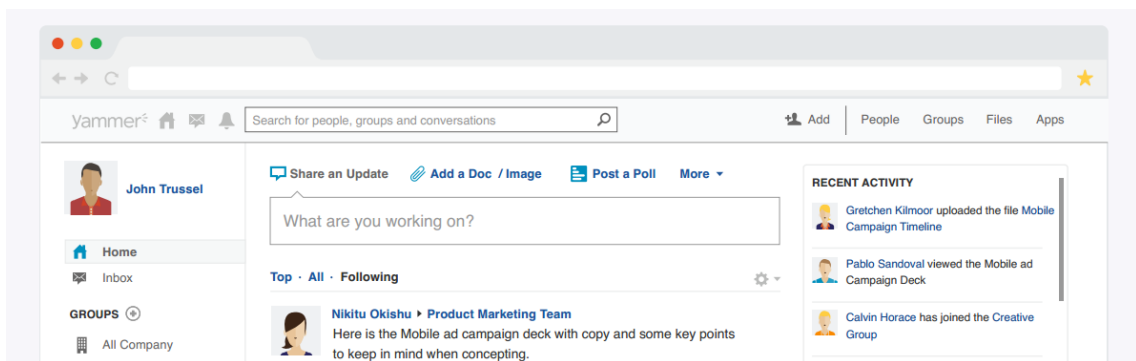


Image 8: Illustration of sharing an update in Yammer (Yammer, 2013a)

The target behavior of this experiment was to increase the motivation of new users to post something by turning their fear into hope.

Designing Behavior

The persuasive design pattern applied in this experiment is a **badge** with the caption “New” that is shown on every new user’s profile picture in the first two weeks after joining Yammer, as seen in image 9.

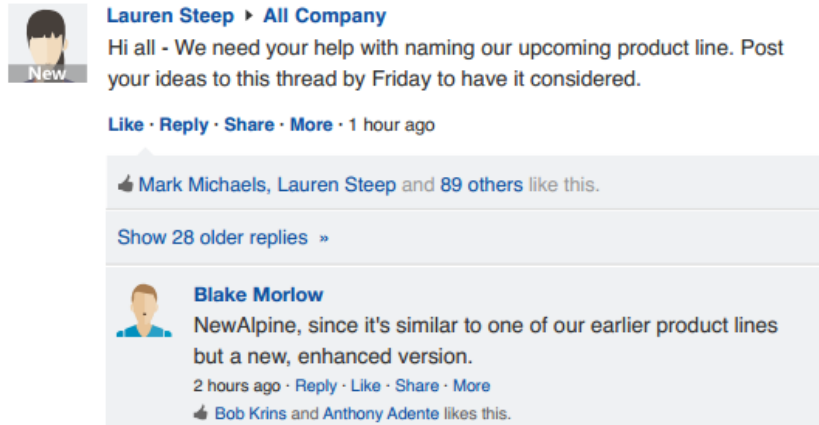


Image 9: Illustration of “New” badge in Yammer (Yammer, 2013a – modified)

A badge is a game design element that is used in many gamification efforts (see chapter 2.2.7). As in games, a badge gives the user a special status which has an effect on his behavior and also on the behavior of other users seeing the badge.

The goal of applying this persuasive design pattern was to turn the fear of users into hope. The hypothesis was that by clearly marking new users they would not be afraid of making mistakes because everyone would see that they are new and therefore be sympathetic that they as new users might not know yet how to best leverage Yammer. This was measured by the number of posts by new users.

Another assumption was that the “New” badge would make users interact more with new users, based on the social norm, i.e. when someone is new, you tend to help them out and answer their questions. Looking at this through the FBM lens, being marked with the “New” badge makes the ability to reach out and help a new user much easier (Fogg, 2013). This was measured by the number of replies to thread starters.

Interestingly, the inspiration for this feature came from the real world. New hires at Yammer used to get a name tag on a lanyard and are encouraged to wear it around the neck for the first week. This way, new hires are easy to recognize so that others can welcome them and find out what they’re going to be working on. It also makes new hires more comfortable to do the same, and introduce themselves (Yammer, 2013b).

Measuring Behavior

As already mentioned, the effect of this very small change was considerable.

Table 7: Test results for experiment “New User Badge” (lift in %)

Metric / Users	New Users	All Users
Posts	4.44	1.05
Posts (Binary)	2.54	1.67
Replies to thread starters	5.87	-1.49
Days engaged	3.85	1.20
Engagement (Binary)	2.00	0.51
1 day retention	2.51	*
7 day retention	0.05	*
Invites sent	7.33	6.51
Invites (Binary)	3.11	1.62

* metric does not apply to all users

The goal of increasing the number of posts and number of users who post was achieved. There was an increase of 4.44% in total posts by new users and 1.05% in total posts by all users. The number of people who posted increased by 2.54% for new users and by 1.67% for all users. That’s a big change considering the little effort needed to implement this feature.

The number of replies to thread starters also increased, but only for new users. They replied 5.87% more often than new users in the control group without the “New” badge. For all users, the number decreased by -1.49%. The reasons for the decrease are not easily comprehensible. An interpretation is that since there were more posts in total, users didn’t have enough time to reply to all of them. Also due to the increased share of new users who replied to thread starts, the new users were so active that existing users maybe didn’t see a need to reply to posts.

Due to the additional activity, the effect on the number of days engaged per week was an increase by 3.85%. The number of users who were engaged increased by 2% for new users and 0.51% for all users.

Also, users came back to Yammer more often. The retention after one day increased by 2.51%, while the retention after seven days stayed roughly the same. Also in this case, it’s not easy to interpret why more users returned to Yammer in the day after signup, but not that many in the week after signup.

The goal of the experiment was an increase in retention and engagement. But a surprising effect of this experiment was a massive increase in virality. The number of invites sent grew by 7.33% (invites sent by new users) and 6.51% (invites sent by all users). And the number of invites sent per user grew by 3.11% (new users) and 1.62% (all users). This has nothing to do with the origi-

nal assumption that the “New” badge helps new users to be less afraid to post content. But it can be explained with the FBM. The interpretation is that seeing the “New” badge was a trigger for new and existing users to notice that not all of their colleagues are part of the Yammer network yet and need to be invited.

Since the feature had a big impact on all important metrics, it was decided to launch it to all users.

4.5 Experiment (A/B Test): Follow Coworkers

A functionality of Yammer is to follow coworkers in order to receive more relevant content in the news feed.

It’s a similar concept than adding friends in Facebook or following in Twitter. It builds up a social graph and is therefore very important for a social network, also in the enterprise.

By looking at data, the Yammer analytics team found out that there is a correlation between following coworkers and engagement.

Understanding Behavior

It turns out that there are many users in Yammer who don’t follow any of their coworkers yet, despite that there are several ways in Yammer to do that. One way to follow coworkers is an always visible “Follow” button below each user’s profile image in the news feed. And there is also a “Follow” button and on each user’s profile. Looking at this through the FBM lens, the already existing features provide enough ability to follow a coworker, however it seems that enough motivation and a sufficient trigger is missing because there is no way for users to figure out why it’s important to follow their coworkers.

The target behavior that this experiment wanted to achieve is that new users follow more coworkers. The hypothesis is that they would then get more relevant content in the news feed and would stay more engaged.

Designing Behavior

The idea of this experiment was to introduce another way besides the already existing ones that gives people additional motivation, ability and a trigger to follow their coworkers.

This was measured in the experiment with the feature-specific metric of number of followers. And to judge the effect on the core metrics, engagement was measured as well.

To achieve the goal, the task “Follow your coworkers” was added to the getting started task list. The list contains suggested tasks that the user can do to get started in Yammer, i.e. getting the mobile app. This list was not designed specifically for this experiment, but existed already before. It leverages persuasive design patterns like set completion and enhances this effect with a progress bar (see image 10).

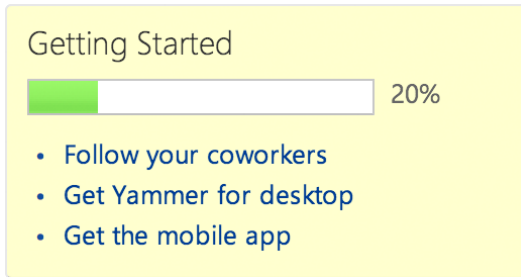


Image 10: Task "Follow your coworkers" in the getting started task list

When a user clicks on the task "Follow your coworkers", he can choose which coworkers to follow (see image 11).

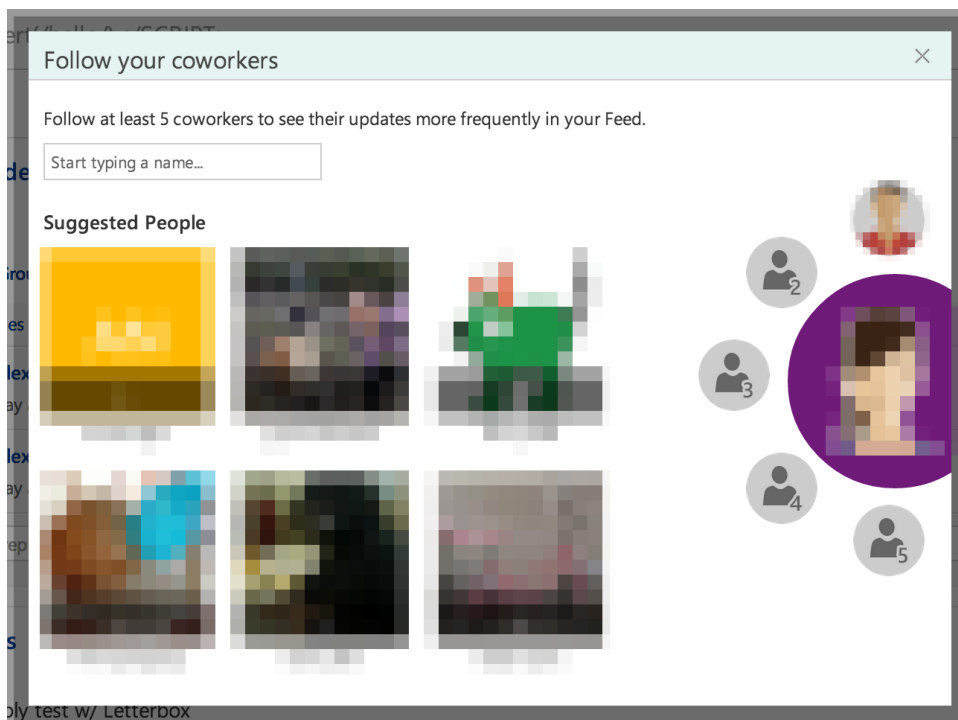


Image 11: Screenshot of the "Follow Coworkers" feature in Yammer

First of all, there is a text that gives people the reason why they should follow their coworkers ("to see their updates more frequently in your feed"), which leads to a higher motivation and provides a trigger. Then the user can enter a name of a coworker in the input box ("Start typing a name ...") which uses auto-complete to give suggestions. In FBM terminology this increases the ability to find a coworker by reducing the brain cycles needed, i.e. if you only know the first name of a coworker. Below the input box there are suggested coworkers determined with an algorithm. They can be followed with just one click.

The persuasive design pattern can be seen on the right side. There are five empty slots that the user can fill with coworkers he likes to follow. The number of slots was determined by looking at data. The analytics team found out that users who get most value out of Yammer tend to follow at least five coworkers.

Having the user fill the empty slots like in a sticker album is leveraging the effect of **set completion**. This taps into people's compulsion to be complete. This behavior can for example be observed with incomplete puzzles or pictures where we have a desire to see the whole image completed. People like the feeling of completeness that accompanies closure and puts them at ease (Nodder, 2013).

Measuring Behavior

The experiment was conducted with 35,000 users and compared with the behavior of 70,000 users in the control group.

Table 8: Test results for experiment "Follow Coworkers" (lift in %)

Metric / Users	New Users	All Users
Followed users	1,8	*
1 day retention	-0.4	*
Messages trim	0.5	0.5
Days engaged	0.5	-0.1
Posting (Binary)	-0.3	-0.2

* metric does not apply to all users

The main goal of the experiment to strengthen the social graph was achieved because the number of coworkers a user follows increased (feature-specific metric). The average number of coworkers followed per user was 2.73 in the control group and 2.78 in the experiment group, which is an increase of 1.8%.

As can be seen in the results this led to an increase in the number of days engaged per week by half a percent. Also, the number of messages increased by half a percent.

While the increase was expected to be higher, it was decided to launch this feature and iterate from there since building up the social graph is valuable for an enterprise social network.

In addition to the experiment in the form of an A/B test, it would have also been useful in this case to do a normal usability test. This way it could be observed how people get along with the user interface, i.e. when using the autocomplete functionality.

In the future the number of coworkers followed could be further improved by leveraging the **endowed progress effect**. This effect states that when people feel they have made some progress towards a goal, they will become more committed towards continued effort to achieve the goal. An experiment in a car wash showed the big effect this can have. The researchers handed out two variations of a bonus card for customers to receive a free car wash. The first variation had a total of 8 stamps to be collected and none of them were prefilled. The second variation had a total of 10 stamps and 2 of them were prefilled. So both cards require additional 8 stamps. However, the return rate of the first variation was 19%, while the return rate of the second variation was 34%. This shows that even the appearance of progress can have a strong ef-

fect on our behavior. As people get closer to a goal, their commitment is likely to deepen as they strive increasingly harder to achieve success (Nunes and Dreze, 2006). A possible way for Yammer to leverage this effect would be to let new users already follow another user automatically, i.e. the user who has invited the new user to join Yammer. This way, the new user would see that one of the five empty slots is already filled and might be more likely to fill the remaining four slots.

4.6 Experiment (A/B Test): First Post

As reflected in the personas (chapter 4.1), user research identified that some people see Yammer as an alternative for water cooler chats and often only follow-along without posting work-related conversations themselves.

Understanding Behavior

Looking at the behavior through the FBM lens, it means that the ability to post in Yammer is generally high, because there is an input box right above the news feed. But despite the text "What are you working on?" in the input box, it seems that there could be more motivation and a trigger for posting something work-related.

The desired behavior this experiment wanted to achieve is that people post more work-related content on Yammer and thereby setting a good example for their coworkers to also post work-related content.

Designing Behavior

The first step was to give people enough motivation, ability and a trigger to post something. Similar like in the other experiment this has been done by adding the task "Write your first post" to the getting started task list and therefore leveraging the set completion effect.

When a user clicks on the task, he sees the following screen (see image 12).

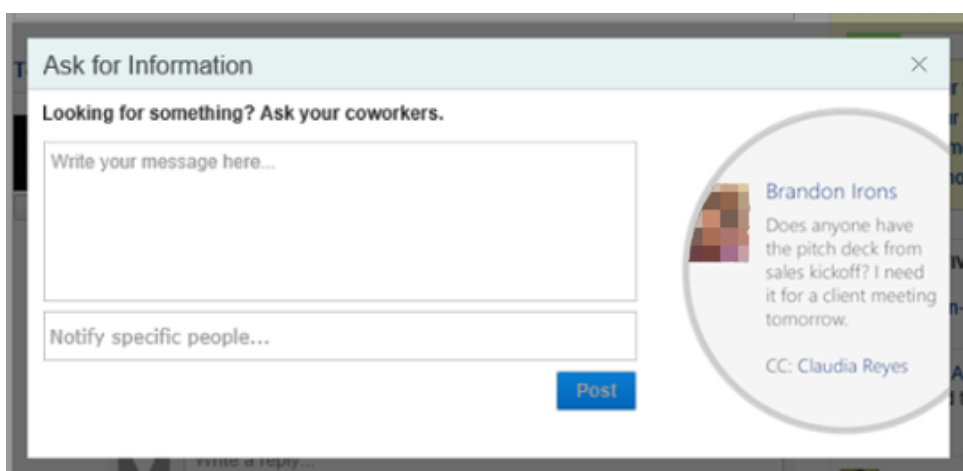


Image 12: Screenshot of the "First Post" feature in Yammer

This gives the user enough ability because the user can write something in the input box. Also this gives the user triggers like the call to action texts. And finally to increase the motivation of the user to post something work-related, an example of such a post is shown on the right side, which leverages the **social proof** persuasive design pattern.

Social proof is the influence that makes us think that when other people are doing something, it must be right. Examples from the real world are if we see a tip jar full of bills, we are more likely to tip or if we see a restaurant with a line outside, we're more likely to think it's a popular restaurant. It's also a fact that people rely on social proof even more when they are unsure what to do, which is the case for some new users in Yammer (Nodder, 2013).

As an input for this experiment, a survey was conducted. The 500 most engaged Yammer users were asked about their first post. What it was about, what they think makes a first post successful and what type of post they would suggest. 40 responses were received with the results shown below.

What was your first post about?

- 21% General sharing
- 12% Introduction of themselves
- 9% Giving someone praise / recognition
- 9% Asking a question

What makes a first post successful?

- 26% Gets comments / likes
- 19% Starts a conversation / discussion
- 15% Communicates
- 7% Adds value

What type of post would you suggest?

- Post a question
- Post an intro about yourself
- Post a link
- Post what you're working on
- Post the status of a project

Based on the type of posts that have been suggested by Yammer users, there were three variations in the experiment that differed only by the copy. The first variation asked users to **introduce themselves** (Copy A), the second variation to **share a project update** (Copy B) and the third variation to **ask a question** (Copy C).

Measuring Behavior

Each of the three variations in the experiment was exposed to around 23,000 users and compared with the behavior of 54,000 users in the control group.

Due to privacy reasons it was not possible to validate this experiment by checking what people have actually posted. But the assumption was that when more people look at the example and post similar relevant work-related conversations, then people will post more and will be more engaged.

Table 9: Test results for experiment "First Post" (lift in %)

Metric / Treatment Group	Copy A: Introduction	Copy B: Project Update	Copy C: Question
Posting (Thread Starts)	5.74	7.01	5.58
Posts	2.60	4.60	0.57
Posts (Binary)	0.86	1.68	0.69
Days engaged	-0.02	1.02	-1.03
Engagement	-0.37	-0.49	-0.96
1 day retention	-1,35	-0,08	-0,88
7 day retention	-0.07	-1.13	-0.96

By increasing the number of thread starts for all variations, the main goal of the experiment was achieved. The biggest increase with 7.01% was in variation B where users were asked to share a project update. This led to 1,27% more thread starts than in variation A (introduce yourself) and to 1,43% more thread starts than in variation C (ask a question).

Also the number of posts and the number users who posted increased for all variations. Variation B led to the best result, with 4.60% more posts and 1.68% more users who posted compared to the control group. Compared with variation B, there was a difference of 2% to variation A and 4,03% to variation C in the number of posts, and in the number of users who posted there was a difference of 0,82% to variation A and 0,99% to variation C.

Why variation B worked best for the metrics related to posting can possibly be explained with the FBM. The interpretation is that the variation to post a project update leads to a higher ability because less brain cycles are being needed than for the other two variations of introducing yourself (what should I write about myself?) or asking a question (what if I don't have a question right now?).

While the quantity of the posts increased as seen above, this doesn't say anything about the quality of the posts. However, by seeing an increase in the number of days engaged, the assumption is that the reason could be a higher quality of the posts. The number of days engaged stayed roughly the same for variation A, increased by 1,02% for variation B and decreased by 1,03% for variation C.

The reason for the increased days engaged in variation B is believed to be that when posting a project update, coworkers see this and also post their project updates. And also a project update might mention a coworker who would then comment on the post. The other two variations of posting an introduction or asking a question are something that a user posts only once. The reason for the decrease of 1.03% in variation C might be that users asked a question, but didn't get an answer and therefore didn't see much value in using Yammer.

As for retention the new feature didn't have a positive effect. All variations led to a slight decrease: One day retention decreased by 1,35% (variation A) / 0,08% (variation B) / 0,88% (variation C) and seven day retention by 0,07 (variation A) / 1,13% (variation B) / 0,96% (variation C). The guess why this happened is that while new users posted more, they maybe didn't get a response and therefore didn't come back so often.

Despite this slightly negative effect on retention, variation B was launched to all users. But the suggestion is to look at this in more detail and find ways to trigger more replies to thread starters.

Another suggestion to improve the effect of social proof even more is to replace the generic example post with a real example by one of the coworkers or the coworker that has invited the new user. This way the social proof effect is even bigger since people are more likely to do something if they see someone familiar to them do something (Weinschenk, 2013).

4.7 Ideas for Further Experiments

Due to the limited time frame of the project, it was not possible to conduct further experiments. But there are many further ideas for using insights from psychology to drive user adoption and engagement.

A feature in Yammer that promises a lot of potential for using such insights is to praise someone, i.e. to thank a coworker for helping out with something. The potential is obvious when comparing the usage of this functionality in the Microsoft Yammer network with the usage of the internal peer recognition service at Microsoft called Kudos. While Kudos is used for around 3,000 messages every week, only 100 messages for praises are sent in the Yammer network. Making this already existing feature more prominent in Yammer and leveraging persuasive design patterns could increase engagement. The most obvious applied persuasive design pattern is **reciprocity**, so if a user has been thanked by a coworker, the user will most likely also thank the coworker once an opportunity arises. Also experiments around applying **scarcity** could be conducted, i.e. Kudos limits the number of message that each user is allowed to send. The assumption is that this leads to more quality, but also stimulates the users to use up all of the messages because they expire.

Another feature that promises potential could be to add endorsements in Yammer, similar to LinkedIn where users can endorse other users for their skills. An enterprise social network would be great for this, since especially in big companies it's increasingly important to find specialists who have experience in a certain area. If somebody is endorsed by a coworker, he will most likely also endorse him due to the **reciprocity** effect. Similar like in LinkedIn this could also help to bring people back to Yammer by sending an email to users that they have been endorsed, but not letting them know for which skill. Due to the **curiosity** effect, people would want to know what they've been endorsed for and therefore come back to Yammer.

5 Conclusion & Reflection

The results of the experiments (A/B tests) that have been described show that the project goal has been achieved. By raising important metrics around engagement, retention and virality, the effect of leveraging persuasive design patterns was successfully determined. The suggested approach of extending the Yammer development methodology with the Fogg Behavior Model and applying persuasive design patterns worked well.

Despite the limited amount of time for this project, there were many learnings to reflect on.

The **Fogg Behavior Model** turned out to be a good way to better understand user behavior by analyzing motivation, ability and triggers. The model also helps designers to explain and pitch ideas to product managers and developers.

While **persuasive design patterns** are today widely applied on public websites, the project showed that these kinds of patterns can also be leveraged in an enterprise social network. It's recommended for any designer to evaluate the use of such patterns.

Without doubt, the biggest learnings of the project were around the **rapid, iterative, data-driven development methodology at Yammer** that is inspired by "**The Lean Startup**".

First of all it was great to experience that such an approach also works for enterprise software, with some adjustments like implementing a **minimum-viable experience** (MVE) instead of a minimum-viable product (MVP) to make sure that the high expectations of paying customers in the enterprise are met. And it's obvious that this kind of approach works best for out-of-the-box solutions with many users in the enterprise and not for custom-development solutions with only a small amount of users.

The key benefit of the approach is the **accelerated validated learning** by going through the **Build-Measure-Learn cycle** as quickly as possible. Compared with a traditional development model with releases every month or even every few years, this enables to validate assumptions much faster and quickly course correct along the way in order to build the right features that create real value for the user.

The iterative approach with only subtle enhancements with each release also helps users to adapt to new features slowly over time. This is a big difference to the often disruptive product changes of traditional enterprise software every two to three years, i.e. from Microsoft Office 2010 to Microsoft Office 2013 (Yammer, 2013c). However, there is also caution needed, i.e. when launching a feature in an experiment and then suddenly discontinuing it.

In general, working with data and A/B tests tremendously helps the designer. Not only can the designer start out informed, but he can also see the impact of the designs and use data and A/B tests to iterate to the best solution. Doing this is not easy, since it often happens that there are

ambiguous results, i.e. a new feature increases engagement but at the same time reduces virality. Weighing different metrics together is something that the designer has to do with the other team members.

Regardless of the positive attitude towards data-driven design, it should be noted that relying too much on data and experiments can lead the design into a **local maximum** (see image 13), where despite many small data-driven optimizations, it's unlikely to make a big leap to a much more innovative and better design (Porter, 2010). Relying only on data and experiments for "big, bold new strategies" won't work. They require vision and faith and a clear-headed strong decision making (Zhou, 2013).

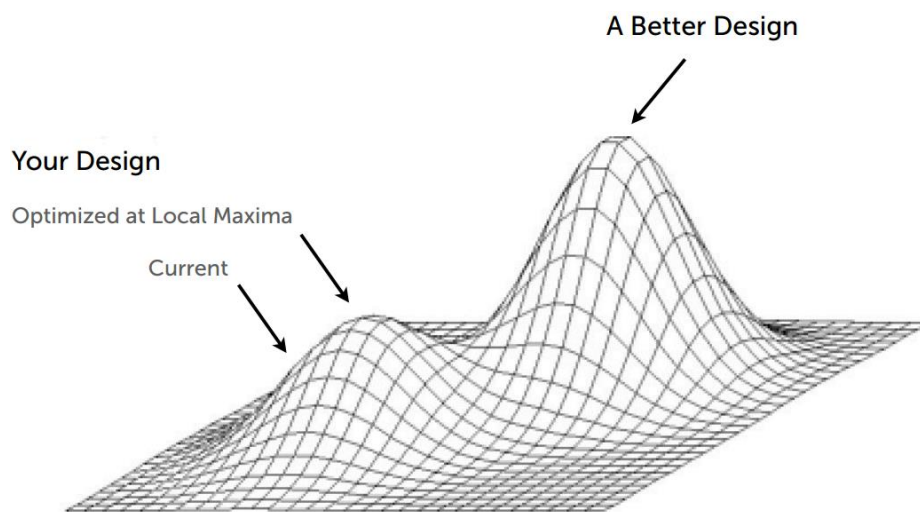


Image 13: Local maxima diagram (Porter, 2010)

Despite the advantages of data and A/B tests, it definitely makes sense to conduct normal **usability** tests as well. Paper or interactive prototypes enable to learn about certain things much easier and faster, especially in the initial design phase of fundamental new concepts. Also the qualitative insights from usability tests are valuable as ideas for new experiments. So in the end, a combination of both is recommended.

Last but not least, **Yammer and Skype** turned out to be valuable in the distributed project set-up. With a Yammer design team in the United States, a Yammer development team in the United Kingdom, a coach in Switzerland and myself partly in the United States and in Germany, the Microsoft tools enabled a better collaboration.

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