Chapter 9. Model Two: Software as a Service (SaaS)

A SaaS company offers software on an on-demand basis, usually delivered through a website it operates. Salesforce, Gmail, Basecamp, and Asana are all examples of popular SaaS products. If you're running a SaaS business, here's what you need to know about metrics.

Most SaaS providers generate revenue from a monthly (or yearly) subscription that users pay. Some charge on a consumption basis—for storage, for bandwidth, or for compute cycles—although this is largely confined to Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) cloud computing companies today.

Many SaaS providers offer a tiered model of their service, where the monthly fee varies depending on some dimension of the application. This might be the number of projects in a project management tool, or the number of customers in a customer relationship management application. Finding the best mix of these tiers and prices is a constant challenge, and SaaS companies invest considerable effort in finding ways to upsell a user to higher, more lucrative tiers.

Because the incremental cost of adding another customer to a SaaS service is negligible—think of how little it costs Skype to add a new user—many SaaS providers use a freemium model of customer acquisition.[29] Customers can start using a free version of the service that's constrained, in the hopes that they'll consume all the free capacity and pay for more. Dropbox, for example, gives subscribers a few gigabytes of storage for free, then does everything it can—including encouraging sharing and photo uploads—to make sure users consume that capacity.

Consider a project management startup that lets users try its product, but charges for more than three concurrent projects. It offers four tiers: free, 10 projects, 100 projects, and unlimited. It runs ads on several platforms to attract users to its site, and each time a user invites someone else to join a project, that person becomes

a user.

The company cares about the following key metrics:

Attention

How effectively the business attracts visitors.

Enrollment

How many visitors become free or trial users, if you're relying on one of these models to market the service.

Stickiness

How much the customers use the product.

Conversion

How many of the users become paying customers, and how many of those switch to a higher-paying tier.

Revenue per customer

How much money a customer brings in within a given time period.

Customer acquisition cost

How much it costs to get a paying user.

Virality

How likely customers are to invite others and spread the word, and how long it takes them to do so.

Upselling

What makes customers increase their spending, and how often that happens.

Uptime and reliability

How many complaints, problem escalations, or outages the company has.

Churn

How many users and customers leave in a given time period.

Lifetime value

How much customers are worth from cradle to grave.

These metrics follow a natural, logical order. Consider the customer's lifecycle: the company acquires a user through viral or paid marketing. Hopefully, that user continues to use the service, and eventually pays for a subscription. The user invites others, and perhaps upgrades to a higher tier. As a customer, she may have issues. In the end, she stops using the service—at which point, we know how much revenue she contributed to the business.

Describing a customer lifecycle in this way is a good method for understanding the key metrics that drive your business. This is where Lean Startup helps. You need to know *which aspects of your business are too risky* and then work to improve the metric that represents that risk.

Unfortunately, that's not always possible. There's no way to measure conversion rates if there are no users to convert. You can't quantify virality if no paid customers are inviting new users. And you probably can't measure stickiness for just a few people if the service requires a critical mass of users to be useful. This means you have to *know where the risk is*, but focus, in the right order, on *just enough optimization to get the business to a place where that risk can be quantified and understood*.

Let's say that the company in our example is concerned about whether the product is good enough to make people use it consistently. This is usually the right place to focus for SaaS companies, because they seldom get a second chance to make a first impression, and need users to keep coming back. In other words, they care about stickiness.

The company will, of course, need some amount of conversion (and therefore some amount of attention), but *only enough to test stickiness*. Those initial users could be acquired by word of mouth, or by direct selling, or by engaging with users on social networks. There's probably no need for a full-blown, automated marketing campaign at this stage.

Backupify's Customer Lifecycle Learning

Backupify is a leading backup provider for cloud-based data. The company was founded in 2008 by Robert May and Vik Chadha, and has gone on to raise $19.5M in several rounds of financing.

Backupify was good at focusing on a specific metric at a specific stage, in order to grow the company. "Initially, we focused on site visitors, because we just wanted to get people to our site," said CEO and co-founder Robert May. "Then we focused on trials, because we needed people testing out our product."

Once Backupify had people trialing the product in sufficient numbers, Robert focused on signups (conversions from free trial to paying customer). Now, the primary focus is *monthly recurring revenue* (MRR).

The cloud storage industry has matured a lot in a handful of years, but back in 2008 it was a nascent market. At the time, the company was focused on consumers and realized that, while revenue was going up, the customer acquisition cost (CAC) was too high. "In early 2010 we were paying $243 to acquire a customer, who only paid us $39 per year," explained Robert. "Those are horrible economics. Most consumer apps get around the high acquisition costs with some sort of virality, but backup isn't viral. So we had to pivot [from consumer sales] to go after businesses."

The pivot for Backupify was a success. The company is growing successfully. For now, it remains focused on MRR, but it also tracks how much a customer is worth in the entirety of his relationship with the company—the customer lifetime value (CLV). CLV and CAC are the two essential metrics for a subscription business.

In Backupify's case, the ratio of CLV to CAC is 5–6x, meaning that for every dollar the company invests in finding a customer, it makes back $5 to $6. This is excellent, and it's partly due to its low churn. As it turns out, lock-in is high for cloud storage, which gives the company plenty of time to make back its acquisition costs in the form of revenues. We'll look at the CAC/CLV ratio in more detail later in the book.

"MRR growth will probably be our top metric until we hit $10M in annual recurring revenue," said Robert. "I watch churn, but I'm more focused on customer acquisition payback in months, which is how quickly I make my

money back on each customer.” Robert’s target for that metric is 12 months or less for any given channel. Customer acquisition payback is a great example of a single number that encompasses many things, since it rolls up marketing efficiency, customer revenue, cash flow, and churn rate.

Summary

- Before focusing on sophisticated financial metrics, start with revenue. But don’t ignore costs, because profitability is the real key to growth.
- You know it’s time to scale when your paid engine is humming along nicely, which happens when the CAC is a small fraction of the CLV—a sure sign you’re getting a good return on your investment.
- Most SaaS businesses thrive on monthly recurring revenue—customers continue to pay month after month—which is a great foundation on which to build a business.

Analytics Lessons Learned

There’s a natural progression of metrics that matter for a business that change over time as the business evolves. The metrics start by tracking questions like “Does anyone care about this at all?” and then get more sophisticated, asking questions like “Can this business actually scale?” As you start to look at more sophisticated metrics, you may realize your business model is fundamentally flawed and unsustainable. Don’t just start from scratch: sometimes what you need is a new market, not a new product, and that market may be closer than you think.

Measuring Engagement

The ultimate metric for engagement is daily use. How many of your customers use your product on a daily basis? If your product isn’t a daily use app, establishing a minimum baseline of engagement takes longer, and the time it takes to iterate through a cycle of learning is longer. It’s also hard to demonstrate enough value, quickly enough, to keep people from churning. Habits are hard to form—and with any new product, you’re creating new habits, which you want to do as quickly and intensely as possible.

Evernote is an example of a daily use application (at least, its creators would like you to use it on a daily basis!). The people who pay for Evernote are most likely those who use it daily. Evernote has reported that only 1% of users convert into paid customers,[30] but for CEO Phil Libin that's OK—after all, the company has over 40 million users, and this year it's focused further on engagement, which is why it's acquiring companies like Skitch and adding image upload features.

After years of operation, the company has also learned that users take months or even years to become paying customers. Investors likely agree with the company's focus on engagement, since they're giving the company deep cash reserves to keep growing. In other words, conversion isn't Evernote's main concern right now, although once it improves engagement that's absolutely what it will concentrate on.[31]

Consider two other applications we use heavily but don't consider daily use applications: Expensify for expense reporting, and Balsamiq for wireframing. Just because *we* don't use them every day doesn't mean that a travelling sales rep, or a UI designer, isn't a daily user.

That's an important lesson around business models and Lean Startup—you bring an early version of your product to the market, test its usage, and look for where it's got the highest engagement among your customers. If there's a subsection of users who are hooked on your product—your early adopters—figure out what's common to them, refocus on their needs, and grow from there. Claim your beachhead. It will allow you to iterate much more quickly on a highly engaged segment of the market.

Some applications—such as a wedding gift registry, a reservation tool for a visit to the dentist, or a tax preparation site—simply aren't meant to be used on a daily basis. But you still need to set a high bar for engagement and measure against it. It's critical that you understand customers' behavior, and draw lines in the sand appropriate to that. Perhaps the goal is weekly or monthly use.

If you're building something genuinely disruptive, you need to consider the technology adoption lifecycle, from early to mainstream. Hybrid cars, Linux servers, home stereos, and microwaves were first adopted by a small segment of their markets, but took years of evangelism and millions of marketing dollars to be considered conventional.

In the first stages of your company, you typically have a small, devoted,

unreasonably passionate following. This happens because new products initially appeal only to early adopters comfortable with change, or to that segment of the market so desperate for your solution that it's willing to tolerate something that's still rough around the edges. Those early adopters will be vocal, but beware. Their needs might not reflect those of the bigger, more lucrative mainstream. Google Wave attracted a flurry of early attention, but failed to achieve mainstream interest despite its powerful, flexible feature set.

You hope your first users are reflective of the mainstream, so you can reach a bigger market—something Geoffrey Moore famously referred to as "crossing the chasm." This isn't always the case. You also won't have the same volume of metrics on which to base your decisions.

When measuring engagement, don't just look at a coarse metric like visit frequency. Look for usage patterns throughout your application. For example, it's interesting to know that people log in three times per week, but what are they actually doing inside your application? What if they're only spending a few minutes each time? Is that good or bad? Are there specific features they're using versus others? Is there one feature that they always use, and are there others they never touch? Did they return of their own accord, or in response to an email?

Finding these engagement patterns means analyzing data in two ways:

- To find ways you might improve things, segment users who do what you want from those who don't, and identify ways in which they're different. Do the engaged users all live in the same city? Do all users who eventually become loyal contributors learn about you from one social network? Are the users who successfully invite friends all under 30 years old? If you find a concentration of desirable behavior in one segment, you can then target it.

- To decide whether a change worked, test the change on a subset of your users and compare that subset's results to others. If you put in a new reporting feature, reveal it to half of your users, and see if more of them stick around for several months. If you can't test features in this way without fallout—the customers who *didn't* get the new feature might get angry—then at the very least, compare the cohort of users who joined after the feature was added to those who came before.

A data-driven approach to measuring engagement should show you not only *how*

sticky your product or service is, but also *who stuck and whether your efforts are paying off*.

Churn

Churn is the percentage of people who abandon your service over time. This can be measured weekly, monthly, quarterly, etc., but you should pick a timespan for all your metrics and stick to it in order to make comparing them easier. In a freemium or free-trial business model, you have both users (not paid) and customers (paid), and you should track churn for both groups separately. While churn might seem like a simple metric, there are a number of complications that can make it misleading, particularly for companies that have a highly variable growth rate.

Unpaid users "churn" by cancelling their accounts or simply not coming back; paid users churn by cancelling their accounts, stopping their payments, or reverting to an unpaid version. We recommend defining an inactive user as someone who hasn't logged in within 90 days (or less). At that point, they've churned out; in an always-connected world, 90 days is an eternity.

Remember, however, that you may still be able to invite them back to the service later if you have significant feature upgrades—as Path did when it redesigned its application—or if you've found a way to reach them with daily content, as Memolane did when it sent users memories from past years.

As Shopify data scientist Steven H. Noble[32] explains in a detailed blog post,[33] the simple formula for churn is:

$$\frac{\text{(Number of churns during period)}}{\text{(\# customers at beginning of period)}}$$

Table 9-1 shows a simple example of a freemium SaaS company's churn calculations.

Table 9-1. Example of churn calculations

	Jan	Feb	Mar	Apr	May	Jun
Users						
Starting with	50,000	53,000	56,300	59,930	63,923	68,315

Newly acquired	3,000	3,600	4,320	5,184	6,221	7,465
Total	53,000	56,600	60,920	66,104	72,325	79,790
Active users						
Starting with	14,151	15,000	15,900	16,980	18,276	19,831
Newly active	849	900	1080	1,296	1,555	1,866
Total	15,000	15,900	16,980	18,276	19,831	21,697
Paying users						
Starting with	1,000	1,035	1,035	1049	1,079	1,128
Newly acquired	60	72	86	104	124	149
Lost	(25)	(26)	(27)	(29)	(30)	(33)
Total	1,035	1,081	1,140	1,216	1,310	1,426

Table 9-1 shows users, active users, and paying users. Active users are those who have logged in at least once in the month after signing up. New users are growing at 20% a month, 30% use the service at least once (in the month after signing up), and 2% convert into paid customers.

Here's the churn calculation for February:

$$\frac{\text{26 users lost during the period}}{\text{1035 paying users at the start of the period}} \times 100$$

If 2.5% of customers churn every month, it means that the average customer stays around for 40 months (100/2.5). This is how you can start to calculate the lifetime value of a customer (40 months × average monthly revenue per user).

Churn Complications

Noble explains that because the number of churns in a particular period is affected by the entire period, but the number of customers at the beginning of a period is a moment-in-time snapshot, calculating churn in this simple manner can give misleading results in startups where growth is varied or unusually fast. In other words, churn isn't normalized for behavior and size—you can get different churn rates for the same kind of user behavior if you're not careful

different churn rates for the same kind of user behavior if you're not careful.

To fix this, you need to calculate churn in a less simple, but more accurate, way: average out the number of customers in the period you're analyzing, so you're not just looking at how many you had at the beginning:

$$\frac{\text{(Number of churns during period)}}{[\text{(\# customers at beginning of period)}+\text{(\# customers at end of period)}]/\,2}$$

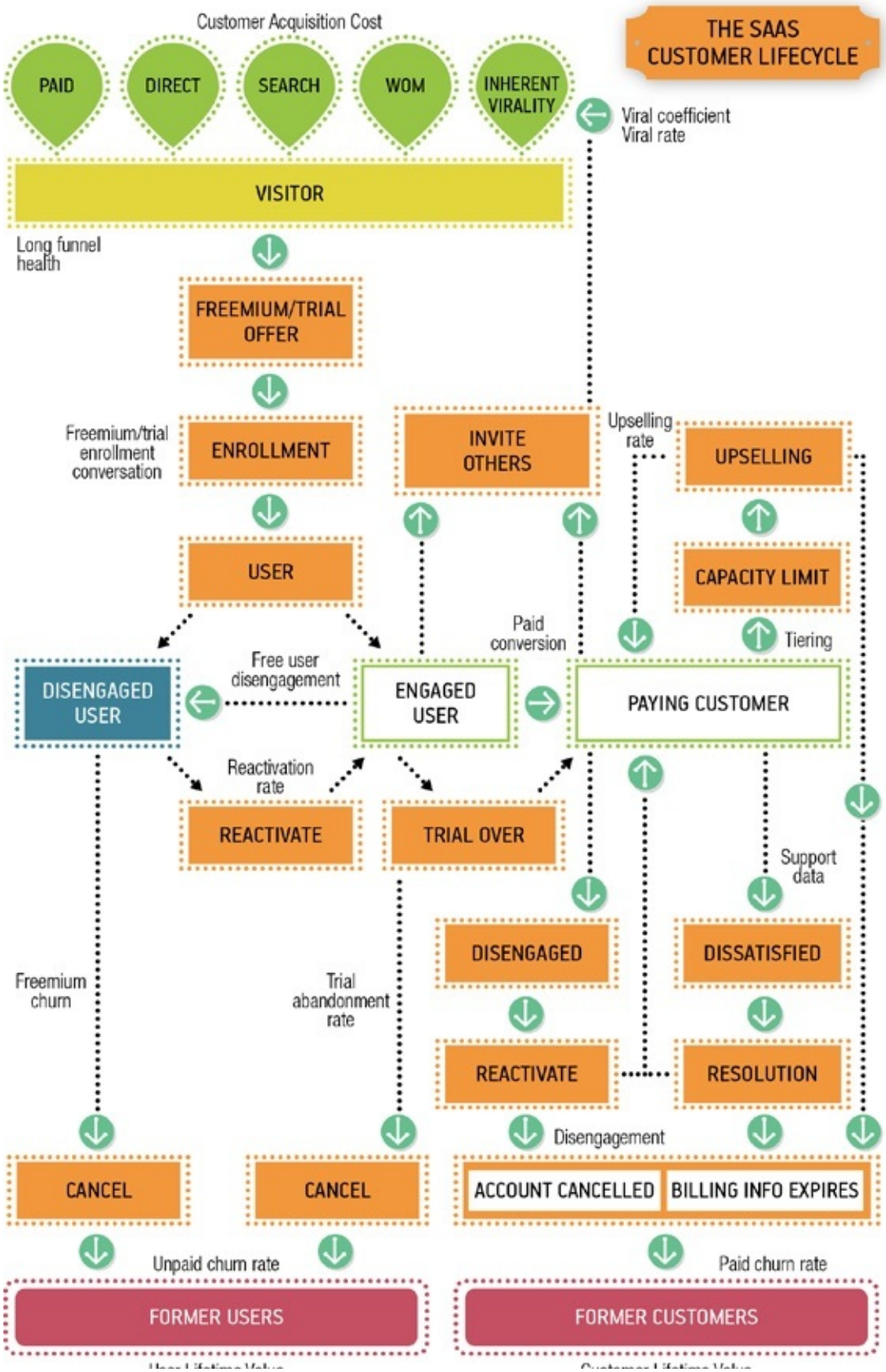
This spreads out the total number of customers across the period, which is better, but it still presents a problem if things are growing quickly. If you have 100 customers at the start of the month, and 10,000 at the end, this formula assumes you have 5,050 customers in the middle of the month—which you don't, if you're on a hockey stick. Most of your new customers come in the later part of the month, so an average won't work. What's more, most of your churns will, too.

Worse: if you're counting churns as "someone who hasn't come back in 30 days," then you're comparing last month's losses to this month's gains, which is even more dangerous, because you're looking at a lagging indicator (last month's bad news). So by the time you find out something is wrong, it'll be next month.

Ultimately, the math gets really complex. There are two ways to simplify it. The first is to measure churn *by cohort*, so you're comparing new to churned users based on when they first became users. The second way is really, really simple, which is why we like it: measure churn each day. The shorter the time period you measure, the less that changes during that specific period will distort things.

Visualizing the SaaS Business

Figure 9-1 represents a user's flow through a SaaS business, along with the key metrics at each stage.


THE SAAS CUSTOMER LIFECYCLE
Customer Acquisition Cost
PAID
DIRECT
SEARCH
WOM
INHERENT VIRALITY
Viral coefficient
Viral rate
VISITOR
Long funnel health
FREEMIUM/TRIAL OFFER
Freemium/trial enrollment conversation
ENROLLMENT
INVITE OTHERS
Upselling rate
UPSELLING
USER
CAPACITY LIMIT
Paid conversion
Tiering
DISENGAGED USER
Free user disengagement
ENGAGED USER
PAYING CUSTOMER
Reactivation rate
REACTIVATE
TRIAL OVER
Support data
DISENGAGED
DISSATISFIED
Freemium churn
Trial abandonment rate
REACTIVATE
RESOLUTION
Disengagement
CANCEL
CANCEL
ACCOUNT CANCELLED
BILLING INFO EXPIRES
Unpaid churn rate
Paid churn rate
FORMER USERS
FORMER CUSTOMERS

User Lifetime Value Customer Lifetime Value

Figure 9-1. Visitors, users, customers: the life of a SaaS company

ClearFit Abandons Monthly Subscriptions for 10x Growth

ClearFit is a SaaS provider of recruitment software aimed at helping small businesses find job candidates and predict their success. When they started, founders Ben Baldwin and Jamie Schneiderman offered a $99/month (per job posting) package. “We kept hearing over and over that monthly subscriptions were the key to growing a successful SaaS business,” says Ben. “So that’s the direction we took, but it didn’t work as planned.”

Two things confused ClearFit’s customers: the price point and the monthly subscription. Ben and Jamie wanted to price ClearFit below what customers paid for job boards (typically more than $300 per job posting), but customers were so used to that price point that they were skeptical of ClearFit’s value at $99/month. Ben says, “We don’t compete with job boards, we partner with them, but at the time it seemed reasonable to have a lower price point to garner attention.” Customers didn’t understand why they would pay a subscription fee for something that they would most likely use sporadically. “When a company needs to hire, they want to do it fast and they’re willing to invest at that moment in time,” says Ben. “Our customers are too small to have dedicated HR staff or recruiters that are constantly looking for talent, and their hiring needs go up and down frequently.”

Ben and Jamie decided to abandon their low monthly subscription and switch to a model that their customers understood: a per-job fee. ClearFit launched its new price point at $350 for a single job (for 30 days) and almost immediately saw three times the sales. The increase in volume and the higher price point improved revenue tenfold. “When we increased the price,” Ben says, “it was an important signal to our customers. They understood the model and could more easily compare the value against other solutions they use. Even though what we do is different than a job board, we wanted our customers to feel comfortable with purchasing from us, and we wanted to fit into how they budget for recruiting.”

In ClearFit's case, innovating on the business model didn't make sense. Ben says, "People don't do subscriptions for haircuts, hamburgers, and hiring. You have to understand your customer, who they are, how and why they buy, and how they value your product or service."

ClearFit's switch to a per-job-posting model may go against the popular grain of subscription-based SaaS businesses, but the company continues to see great success with 30% month-over-month revenue growth.

Summary

- ClearFit initially focused on a subscription model for revenue, but customers misinterpreted its low pricing as a sign of a weak offering.
- The company switched to a paid listing model, and tripled sales while improving revenue tenfold.
- The problem wasn't the business model—it was the pricing and the messages it sent to prospects.

Analytics Lessons Learned

Just because SaaS is a recurring service doesn't mean it needs to be priced that way. If your product is ephemeral—like a transient job posting—it might be better to offer more transactional pricing. Pricing is a tricky beast. You need to test different price points qualitatively (by getting feedback from customers) and quantitatively. Don't assume a low price is the answer; customers might not attribute enough value to your offering. And remember that everything, including price, makes up the "product" you're offering.

Wrinkles: Freemium, Tiers, and Other Pricing Models

In a SaaS model, most of the complexity comes from two things: the promotional approach you choose, and pricing tiers.

As we've seen, some SaaS companies use a freemium model to convince people to use the service, and then make money when those users exceed some kind of cap. A second approach is a free trial, which converts to a paid subscription if the customer doesn't explicitly cancel after a certain time. A third approach is

the customer doesn't explicitly cancel after a certain time. A third approach is paid-only. There are others. Each has its benefits and drawbacks—paid-only controls cost, is more predictable, and gives you an immediate idea of whether your offering is valuable; freemium allows you to learn how people are using your service and builds goodwill. The difference between these user groups can complicate analysis.

The second wrinkle comes from how you tier pricing. Since different customers have different levels of consumption, the price they pay may change over time. This means you're constantly trying to upsell users to bigger tiers, and predicting growth adds to the dimensions of a model, making it harder to predict and explain your business.

For the most part, we've talked about SaaS as a service provided to customers on a monthly subscription. But there are other revenue models that can work as well. While a subscription model lends itself to more predictive financial planning and less volatile revenue numbers, it doesn't always fit the value proposition, or how customers expect to pay.

Key Takeaways

- While freemium gets a lot of visibility, it's actually a sales tactic, and one you need to use carefully.
- In SaaS, churn is everything. If you can build a group of loyal users faster than they erode, you'll thrive.
- You need to measure user engagement long before the users become customers, and measure customer activity long before they vanish, to stay ahead of the game.
- Many people equate SaaS models with subscription, but you can monetize on-demand software in many other ways, sometimes to great effect.

SaaS businesses share much with mobile applications. Both business models care about customer churn, recurring revenue, and creating enough user engagement to convince users to pay for the product. You can read Chapter 10 to learn more, or you can skip to Chapter 14 to understand how your current stage

affects the metrics you should watch.

---

[29] There are many ways to approach freemium, from free trials to crippled products to discount coupons, which we'll look at in more detail when we tackle revenue optimization.

[30] *http://econsultancy.com/ca/blog/10599-10-tips-for-b2b-freemiums*

[31] *http://gigaom.com/2012/08/27/evernote-ceo-phil-libin/*

[32] *http://blog.noblemail.ca/*

[33] *http://www.shopify.com/technology/4018382-defining-churn-rate-no-really-this-actually-requires-an-entire-blog-post*