King Uses Looker to Make Games More Fun

How to Win in the Mobile Gaming Market

Although mobile gaming has been around for twenty years, this now billion-dollar industry continues to experience explosive growth, with about 800,000 games currently offered through app stores. Candy Crush, produced by King, a leading interactive entertainment company, is one of the leading game franchises in this crowded field. Other popular King properties include Farm Heroes, Pet Rescue, and Bubble Witch.

The company currently offers more than 200 titles and games that are played around the world, with 314 million monthly active users as of Q2 2017. Their flagship games are designed to be "bite-sized" — meaning that you can play for a short time, and then pick up the game later — and they're synchronized across platforms, so you can play anywhere, anytime and from any device.

In this fast-paced, competitive market, the key to success is making games that are consistently fun to play. If a game is too easy, players will get bored; if it's too hard, they'll become frustrated. From the very beginning, King has relied on analytics to help developers create the perfect balance between simplicity and difficulty.

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Faster Insights. More Efficiently.

Millions of game players generate an enormous amount of data, and King has the largest production EXASOL cluster in the World along with more than 10 petabytes on disk for its Hadoop cluster. As a data-driven company, King has always been able to manage large-scale analytics, but they wanted to improve their ability to deliver the right insights to the right people at the right time.

King's hub-and-spoke model is based on a centralized organization that provides data warehouse and business intelligence support to autonomous game studios. The studios each have their own data scientists for the statistical modeling, projections, and finer-grained analysis used by the Business Performance Managers (BPMs), who are like product managers for specific games and who help shape the games to produce the best possible player experience.

Before Looker, a jumble of tools used by individual studios mixed imperfectly with centralized BI services, so queries could produce inconsistent results. At a point where time was of the essence, BI complexity could make modifying an existing query a sluggish process. The teams at King realized it was time to begin searching for a BI solution to better suit their needs.

According to Jonathan Palmer, Business Intelligence Lead at King, "There were two key questions at the top of our list of needs: How can we free up data scientists to concentrate on the thing they can do that others can't? And how can we put more power in the hands of the BPMs and other business users?"

"We have to do everything from tracking the number of installs or players in a single day to creating statistical models of in-game player behavior."

Hand both complex and simple data modeling workflows

"It's essential to define broad truths in a common layer and stop the fragmentation of definitions."

Semantic layer

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Choosing Looker: From PoC to Enthusiastic Adoption

As King began the search for a new solution, they identified a need for two different products. Palmer explains, "We were looking for a semantic layer that would give us a single source of truth and a common layer for interpreting the data. And we were looking for a more agile exploration tool." Once the team discovered Looker, they realized that they had found both products in a single solution, with features that met all their criteria.

The first step was a two-day Proof of Concept trial in the Barcelona studio, with one data scientist and one BPM. After the successful PoC, they moved onto a 20-license pilot and quickly expanded from there to 70 licenses. The company continues to roll out Looker to its employees on a regular basis.

"We do a little evangelizing and then get a lot of 'organic installs' through word of mouth. We try to get one key person in each department or studio to engage with Looker. Then it takes off quickly," Palmer explains. He estimates that there are 150 to 200 highly engaged users who have built over 280 dashboards to date, along with 100 scheduling setups that automatically send out dashboards or Looks via email.

Palmer's team has also been encouraging business users to embed Looker content in pages they create in their Confluence collaboration software, which allows the benefits of Looker to extend well beyond the group of active users.

Data-Driven Gains for a Data-Driven Company

It's hard to overestimate the impact of a powerful self-service tool in a company that relies on analytics for every part of its operations. Looker has produced significant gains for King in a number of key areas.

> "We needed Git integration and a decent API, so that our BI layer can be in line with our development practices."

21st Century Features

> "Our stack is constantly evolving, so our BI solution has to be flexible enough to change as the stack changes. It has to integrate with EXASOL, Hadoop, MySQL, and the rest of our infrastructure."

Integrate with our stack, our infrastructure, and other tools

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Empowered Business Users

The King BI team expected Looker to help the game studio data scientists and BPMs, but the value of Looker has become evident to a wide range of groups across the company. "The breadth of adoption has really surprised us," comments Palmer.

All the major studios now use Looker, but it's no longer the BPMs and data scientists who are the sole users. Game developers, UI/UX designers, and producers have their own dashboards so they don't have to wait for reports to be handed down before fine-tuning their work.

In addition, the performance marketing team has jumped on board, and the HR department has recently asked for access. Previously, King executives didn't use BI tools directly, but the VP of Performance Marketing has been enthusiastically building his own Looker-powered dashboards and creating schedules ever since the pilot phase.

A Return to Strategic Focus for Data Scientists

Because the studio teams embracing Looker get the analytics they need instantly through self-service dashboards, studio data scientists are less likely to be called on to write routine queries and instead can focus on the high-value work that only they can do.

- 258 Monthly Active Users

- 65,000 Minutes Spent in Looker

- 130,000 Queries Run a Month in Looker

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Increased Efficiency for Centralized Engineering

The centralized data teams are still very busy, but now they focus on the accuracy, integrity, and quality of their data pipelines and data models written in LookML, Looker's modeling language. And the workflow has changed to a collaborative model. Previously, a Data Warehouse Engineer would build the query and ETL pipeline, and then a BI engineer would take over to build a front-end report. Now everyone works together on a single, centralized data model that can then be shared with the entire organization for self-service analysis.

Palmer estimates that because of this new self-service model, as well as Looker's built-in functionality for end users, years of effort have been condensed into the first seven months using the tool. "For example, the hundreds of reports users have built and scheduled themselves would have taken our centralized teams a year or more to make for them."

More Agile Game Development

Looker's flexible approach to analytics has boosted the efficiency of game development. Test games require quick insight into how players interact with the game, as the test may run for only a few days. The centralized teams push out a common definition for KPIs, such as the number of players, then each team's data scientists plug bits into the model that differentiate the game, focusing on economy balancing or measuring the first-time-user experience. This has greatly reduced the time to insight, and fewer players are lost during the play test because the games are more likely to be fun.

At the same time, the centralized teams get insight into how the studios are using the model, which lets them either validate it or improve it as needed. The same feedback also informs the data warehouse vdevelopment process.

"Having a single source of truth means all teams share consistent answers."

"Having a good experience with a tool is as important as the quality of that tool itself."

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A Single Source of Truth

Whether a team is using R, a custom interface through the Looker API or the Looker layer, having a single source of truth means that they'll all share consistent answers.

"They're not scared of the tools. What they're scared of is when they get two different answers to the same question from two different sources. With Looker, they're excited about getting consistent, reliable answers, in addition to the look-and-feel of it and how easy they find it to use."

The LookML modeling language provides the semantic layer that makes this possible. According to Palmer, "We concentrate our engineering effort on getting those models right so that people interpret data in the way we want them to interpret it, within the constraints that combine flexibility and truth."

A Winning User Experience

Palmer attributes the success of Looker at King, in part, to the centralized team's ability to monitor and adjust the way it's used. "Being able to make sure that people are having a good experience with a tool is as important as the quality of that tool itself," he explains. Looker makes that easy, because Palmer's team can use the Looker back end to see average query times; see if a model is becoming too slow or if people are getting too many errors; and monitor how many dashboards, reports, and schedules are being created, as well as how much time people are spending using the tools.

"This is packaged nicely and neatly within the same UI you're already using," he says, "and it makes it easy to make the argument that you need to scale because you can say 'This is what the engagement looks like. This is where the differentiators are.'" The centralized teams also evaluate how people are thinking about the data in conjunction with the story they're trying to tell, so they can either refine the data model or provide suggestions to users for how to structure their questions.

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Looker Today and Into the Future

How do you make data even more valuable in a data-driven company? One key indicator that Looker has helped make analytics widespread throughout King is the fact that people take it for granted as an integral part of their business workday. Palmer comments, "In the past four years, I've never walked past a meeting room and seen someone with one of our BI tools on the screen."

So what's next? As adoption of Looker continues to spread across the company, Palmer expects to see a bi-directional flow of LookML elements as studio data scientists create models that can be pushed upstream to share with other groups. He also predicts increased use of the API. But most importantly, King will use Looker to achieve even more efficiencies across the organization so it can continue to win in the tough mobile gaming market.