

G Suite

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Collaborative Challenge

The core model was (re)written by a team of 10+ business and financial analysts, based on a proprietary syntax we developed, and reviewed and augmented by our team of developers, on a very large collaborative **Google Sheet**. The ability to work collaboratively on this **Google Sheet** was key to the success of this project, allowing both the business and developer sides to communicate, review, share, and improve the model in a highly agile way.

Remote and Online Collaboration

Remotely working developers in various parts of France, graphic designers in London, together with Canaccord's Business analysts and IT teams collaborating via **Google Hangout**, was the key element making the flow of information and exchange of ideas possible. Screen sharing via **Google Hangout** helped resolve misunderstandings much faster than any chain of mails. Fast chats for shorter conversations.

The complexity of the model was extremely challenging: 7000+ rules using non trivial mathematical / numerical procedures, and complex business rules. Business analysts were held back by the difficulty in expressing correctly their needs in terms of the business model (logic). Interaction within this model using comments in the **Google Sheet** proved to be perfectly

adapted to the needs of a continuous Q&A resolution cycle. Just like a developer bug tracking software.

The fact that we could share remarks via the comment feature of **Google Sheet** was also key: building a conventional backend application to support the input of such a model would have been way too costly. Worse, it would have diverted our focus to technicalities, rather than the creation of business value.

Our usage of **Google Sheet** helped us focus solely on a flowing and flawless implementation of business rules.

A critical component of building such a complex model is the validation process: being able to connect **Google Sheets** to our backend API, and easily show clear graphs and tables to the Business Analyst (BA) team, helped us efficiently discover errors and discrepancies.

G Suite Tools

There were 3 teams, two from Canaccord in different locations (one technical, one business) and SenTai's technical team. All our communication went through a variety of Google Tools and Services:

- G Suite (formerly Google Apps for Business, aka GA4B – Gmail / Docs / Storage), using custom groups, filters
 - Google Sheets (model, graphs, validation, tools, reports)
 - Google Calendar (meeting, availability, holidays)
 - Google Hangout (meeting, discussion, screensharing, pairing)
 - Google Doc (root model, architecture, drawings, documentation)
 - Google Groups (to keep track of developer email discussion)
- Google Chrome (we all use Chrome, with sync, as our web dev platform tool)

- Google Keep (for simple note sharing)

Google Sheet at the core of the Quest Model

The Canaccord Quest application is based on a production cycle involving:

- Core Valuation Model: a core tree-like computational model represented in a vast **Google Sheet** with 200+ stages both at the company level as well as the Aggregate level (Industry & Geographical region).
- Data Import: Raw Financial Accounting Data from S&P
- Data Integrity, validation, correction, filling, restatements and approximations
- **Google Sheets**: expression of the 7000+ business rules in custom languages and rules used by a team of 10+ business analysts working on the same model (possibly simultaneously).
- Engine: A Java engine parsing the model rules from **Google Sheet** and dynamically compiling to raw bytecode for maximum performance
- Data Storage Optimization: for multi-dimensional data storage and high performance access.
- Web: 300+ dashboards, charts and dynamic searching within the billions of results done with AngularJS and CoffeeScript.
- Dynamic **Google Sheet**: dynamic representation of pre and post calculation data using our API.