eBay Experimentation Platform for Paid Search Ads

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Presenter Profile

- Company: eBay, since 2012
- Domain: Traffic, Internet Marketing, Ads, Global Growth
- Role: Development Manager & Architect
- Products: Experimentation Platform, Model Engine
- Technology: A/B testing, Big Data, ML Model

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Agenda

- Growth Hacking and A/B testing
- Challenges of the A/B testing in the Paid Search Ads
- A/B testing with Big Data and Machine Learning/AI
- eBay Marketing EP Architecture

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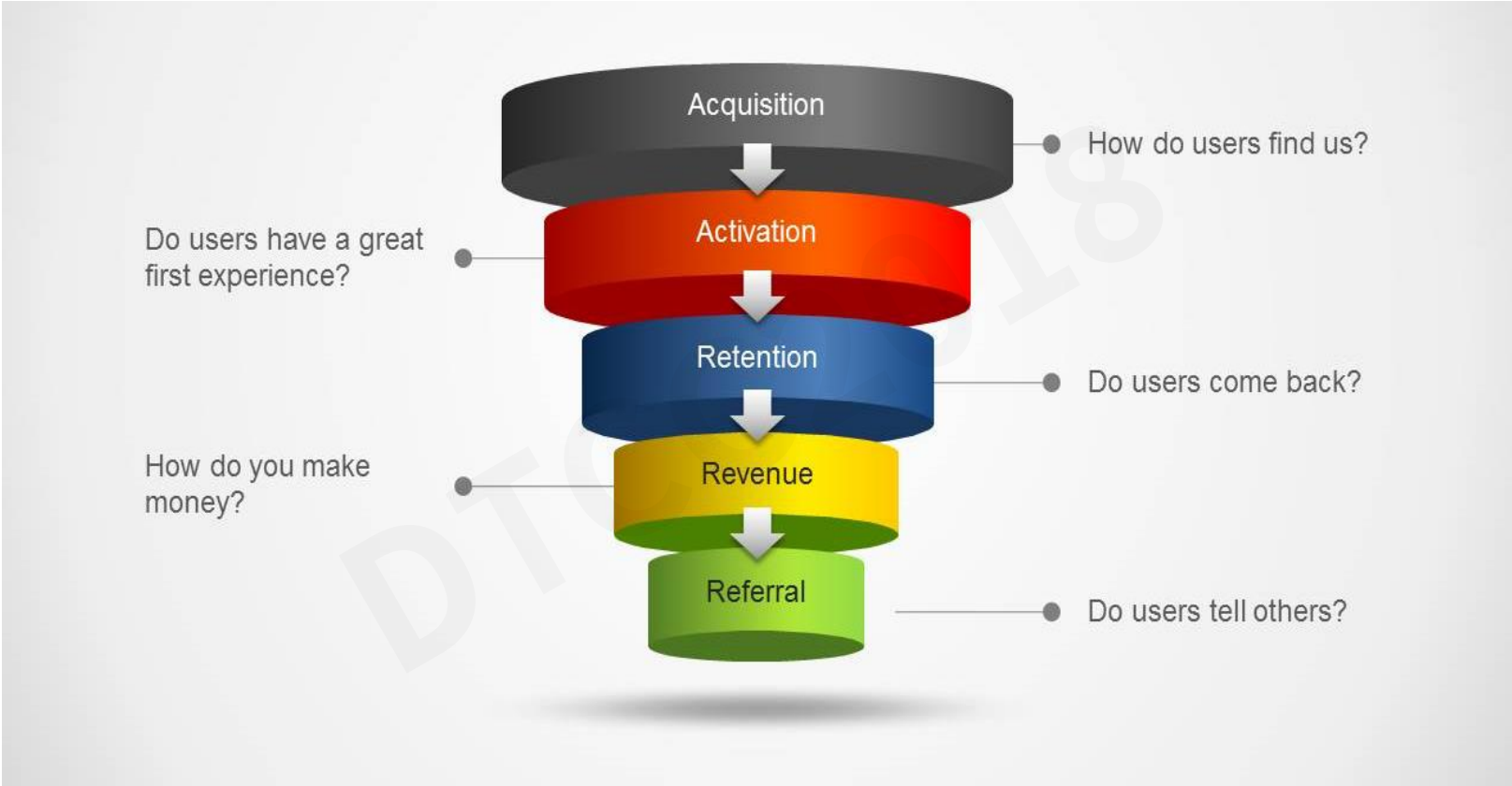
AARRR Funnel



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Growth Hacking

“Growth hackers are a hybrid of marketer and coder, one who looks at the traditional question of ‘How do I get customers for my product?’ and answers with A/B tests, landing pages, viral factor, email deliverability, and Open Graph. On top of this, they layer the discipline of direct marketing, with its emphasis on quantitative measurement, scenario modeling via spreadsheets, and a lot of database queries. If a startup is pre-product/market fit, growth hackers can make sure virality is embedded at the core of a product. After product/market fit, they can help run up the score on what’s already working.”

- 《Growth Hacker is the new VP Marketing》, Andrew Chen

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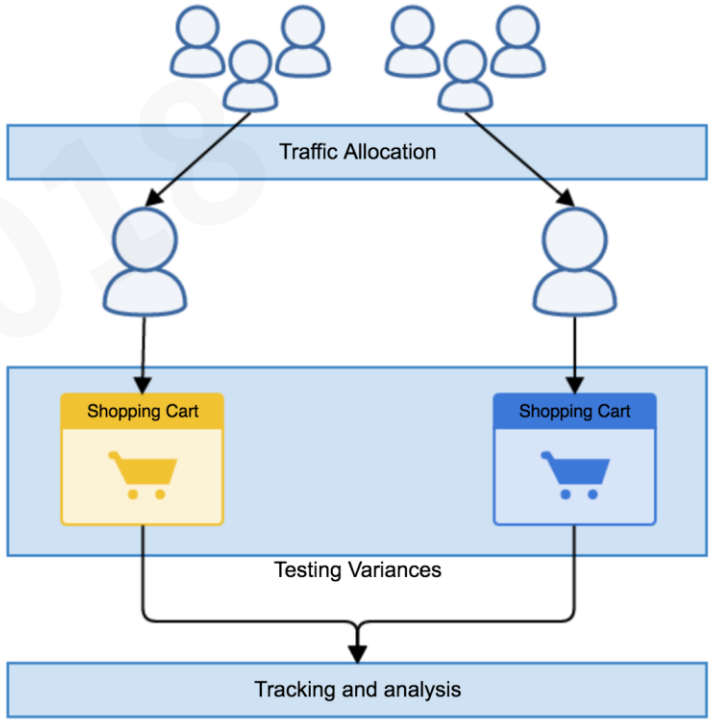
A/B Testing

- Statistical hypothesis testing
- Essential of sampling - Traffic
- Benefits
  - Quick fail!
  - Customer vs. expertise
  - Early adoption in the marketing
  - Continue delivery and integration
  - Data driven decision



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Growth Hacking & Marketing

- “Poor distribution — not product — is the number one cause of failure” – Peter Thiel, 《Zero to One》
- Distribution Channels (《Growth Hacking 是运气还是科学？》)
  - Viral marketing + Social Network
  - Advertising (digital/internet marketing)
  - UGC + SEO
  - Email
  - Affiliate Net
- What’s the most challenge of A/B testing in Marketing?

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Challenges of A/B testing in the Paid Search Ads

- Traffic Allocation/Sampling
  - No control on the user/visiting
  - Could not sample based on the user
  - Alternative sampling: skewed data
- Test Setup
  - Communicate to third partner / ads platform
  - Testing objects are limited
- Tracking
  - External data loop

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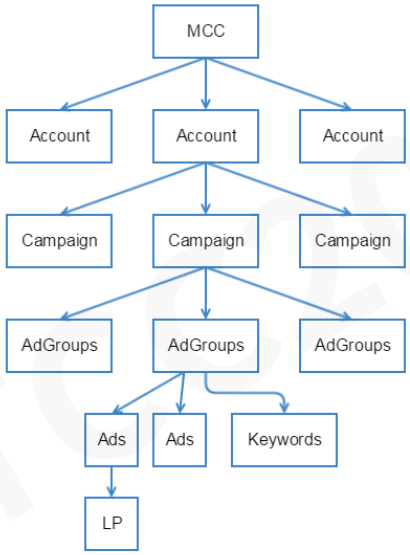
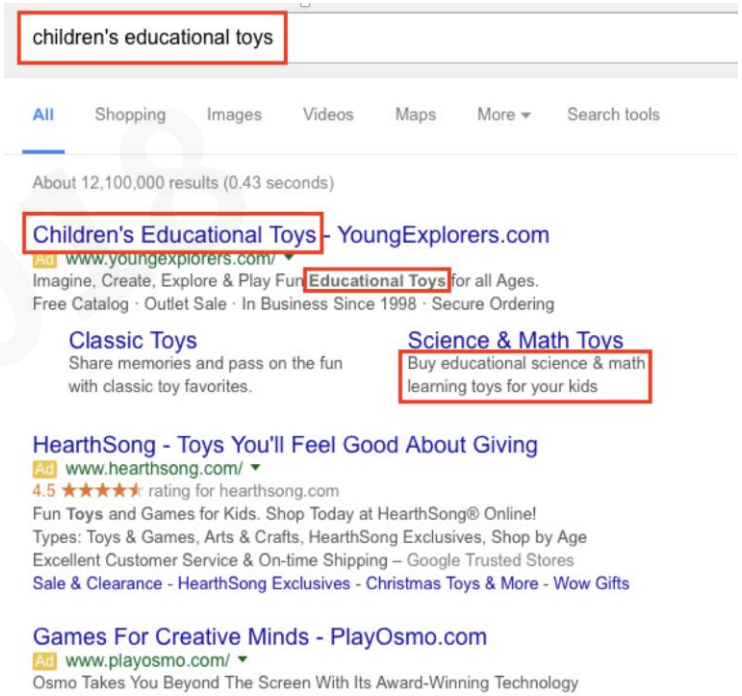
Google Text Ads

- Google Ads, CPC
- Content
  - Headline
  - Display URL
  - Description
- SRP + Search Network
- Exact vs. Broad match
- Campaign Structure





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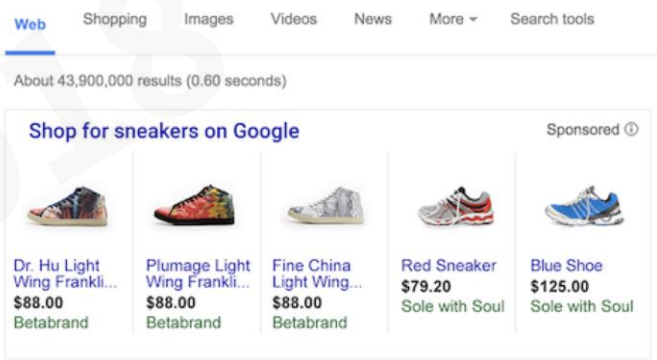
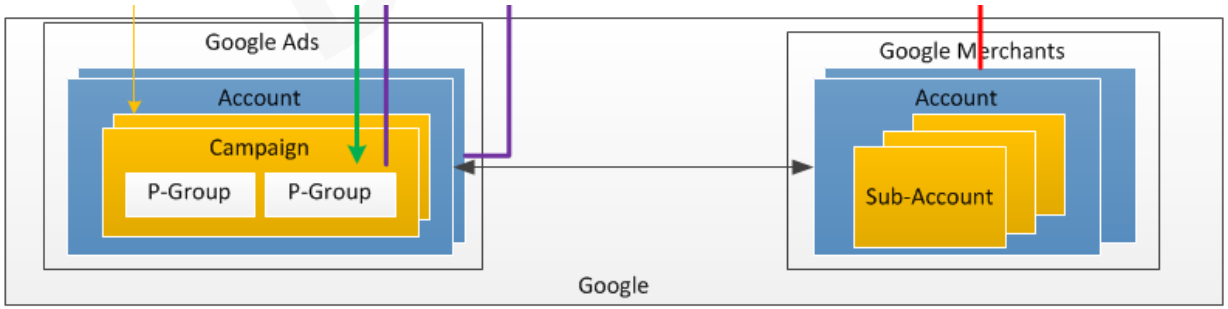
Google Product Listing Ads (PLA)

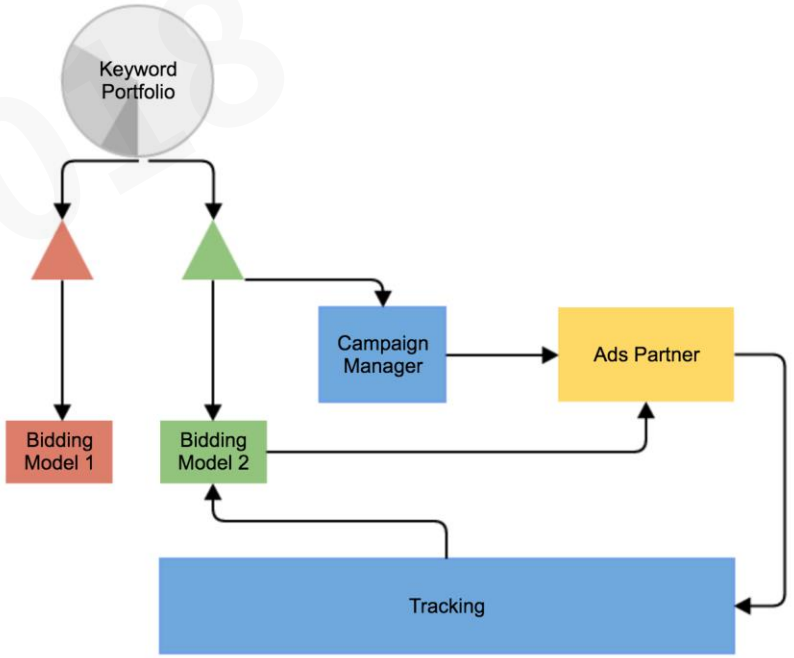
- More info (price/picture) more qualified traffic
- Catch more eyeballs
- Product/Brand match
- Higher barrier, less competition
- Backend structure





A/B Testing Solution in the Text Ads

- Sampling
  - Based on the keywords
  - Stratified sampling for skewed data
- Test Setup
  - Campaign structure management
  - Test object: bidding models
- Tracking
  - Insides + outsides tracking
  - Data loop for the model



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A/B testing with Big Data

- High data volume
  - Heterogeneous data-source
  - On- and Off-line data
  - Fault tolerance
  - Value assessment
- Imbalance issue in the A/A
- Tracking with quality
  - Result assessment
  - Model input

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Machine Learning Model Testing

- Inconsistence between model development, testing and running
- No standard way to define, deploy and run the model
- Manual integration and heavily rely on personal experience
- Low efficiency in the model development due to lack of the production data
- Lack of model tracking and debugging

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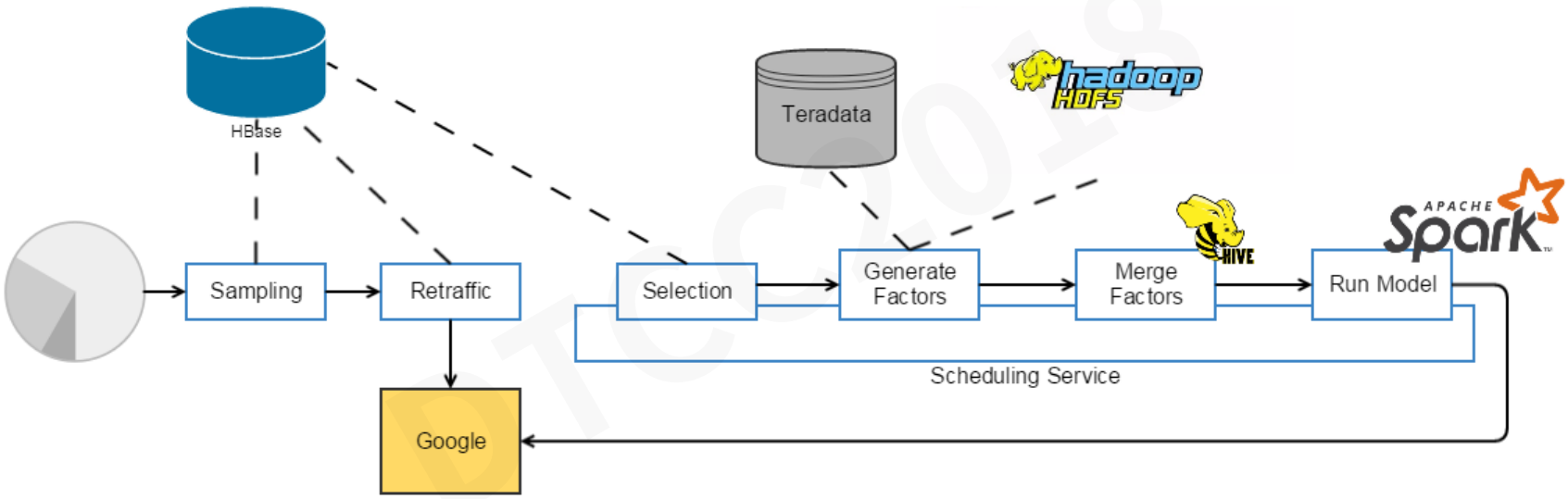
The Data Processing Workflow Example



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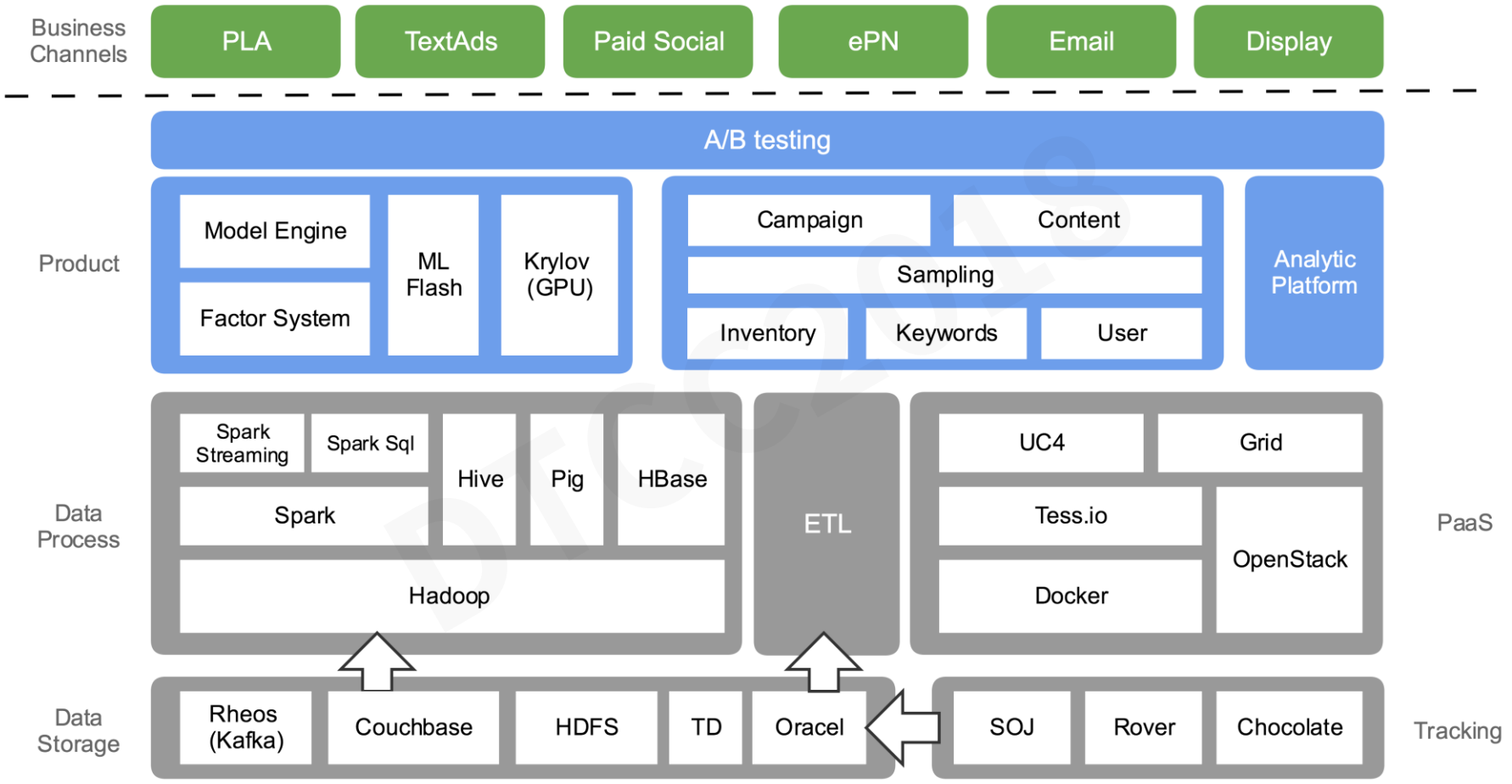
eBay Marketing EP Architecture



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