

Global Development Challenges

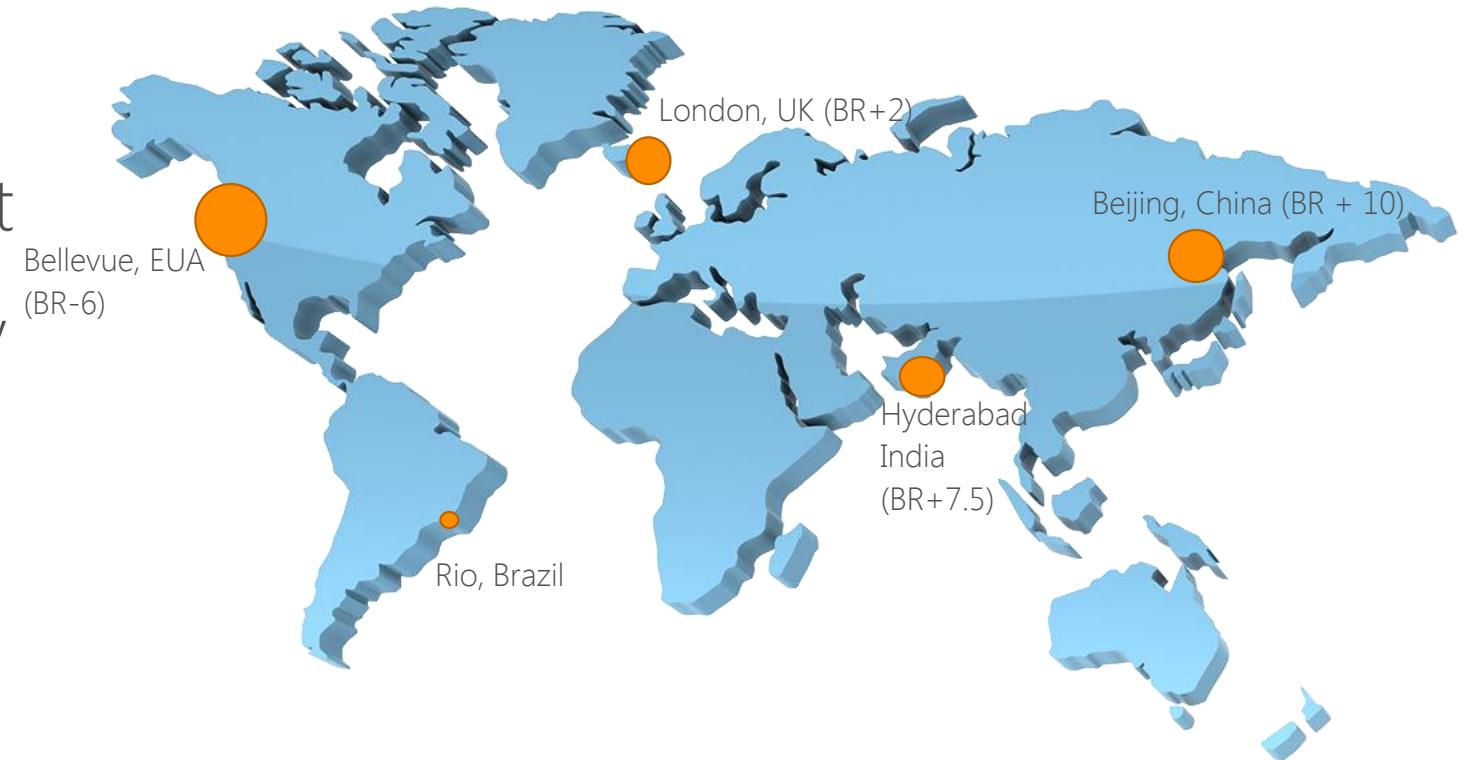
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SEIF Workshop 2013
Lúcio Tinoco, Raúl Rentería

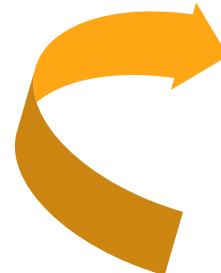
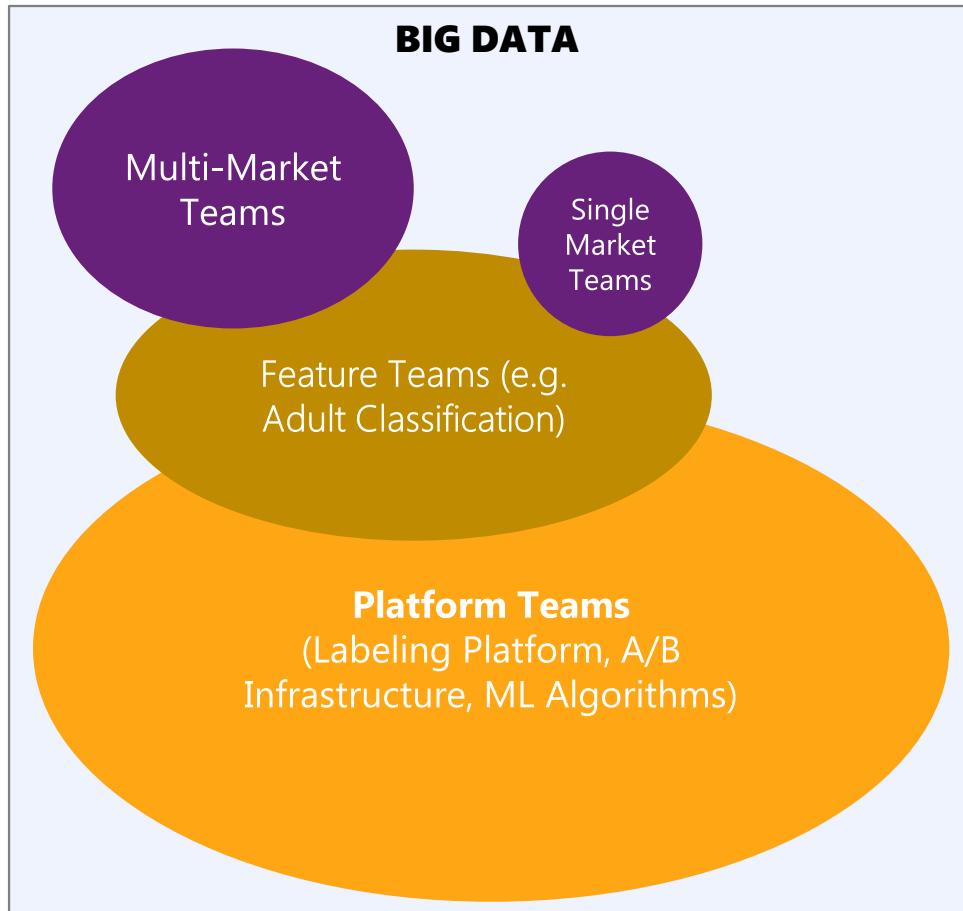
Bing "Brazil" Context

- Five Search Technology Centers (STC) deliver components to our market
- STC-B is the smallest team, with approximately 20 people
- Our charter:



1. Accelerate *core* feature development ← reason for not leaving
2. Create *relevant* features for Brazil ← reason for sticking around
3. Create *differentiated* experiences for Brazil ← reason for not picking the other guy

Global Feature Scale-out Model



Market Teams

- Select Features for ML models
- Train and Validate Model
- Flight in Production (A/B testing)
- Deploy Model in Production
- ...Repeat Until Target is Reached!

Feature Teams

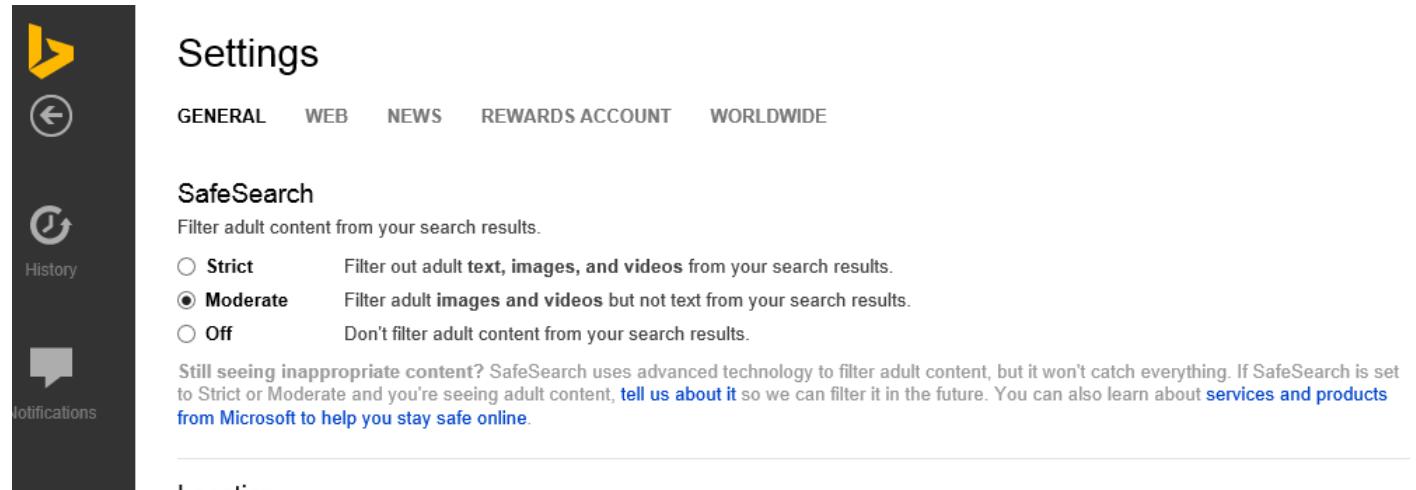
- Define Metrics
- Define Global Targets (w/ Market Teams)
- Choose Better-Suited ML Library
- Select and Design Initial Features

Platform Teams

- Design Machine Learning Algorithm
- Develop Training Tools
- Create Validation/Testing Environment
- Maintain Production Environment

Case: Train and deploy a classifier for adult pages on the web (for Brazilian users)

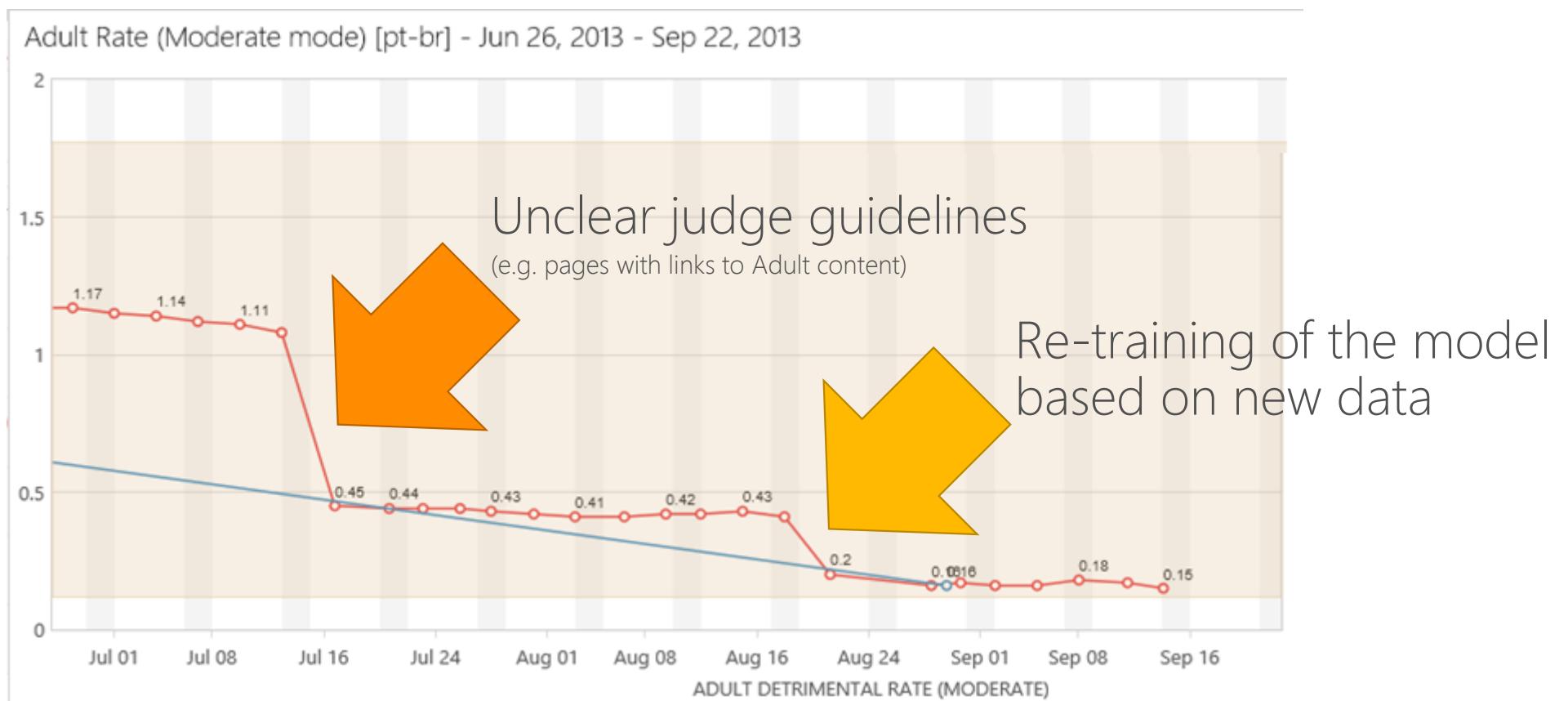
1. Filter out adult search results when *user intent* is not adult
2. Query Understanding – QU
 1. “Garota safada” (name of a forró band but also “naughty girl”)
 2. “Urso peludo” (hairy bear)
3. Document Understanding – DU
 1. Revista gratis
 2. Leakage in celebrity news
 - Carolina Diekmann
 - Scarlet Johansson



Adult Leakage Rate

Metric Definition

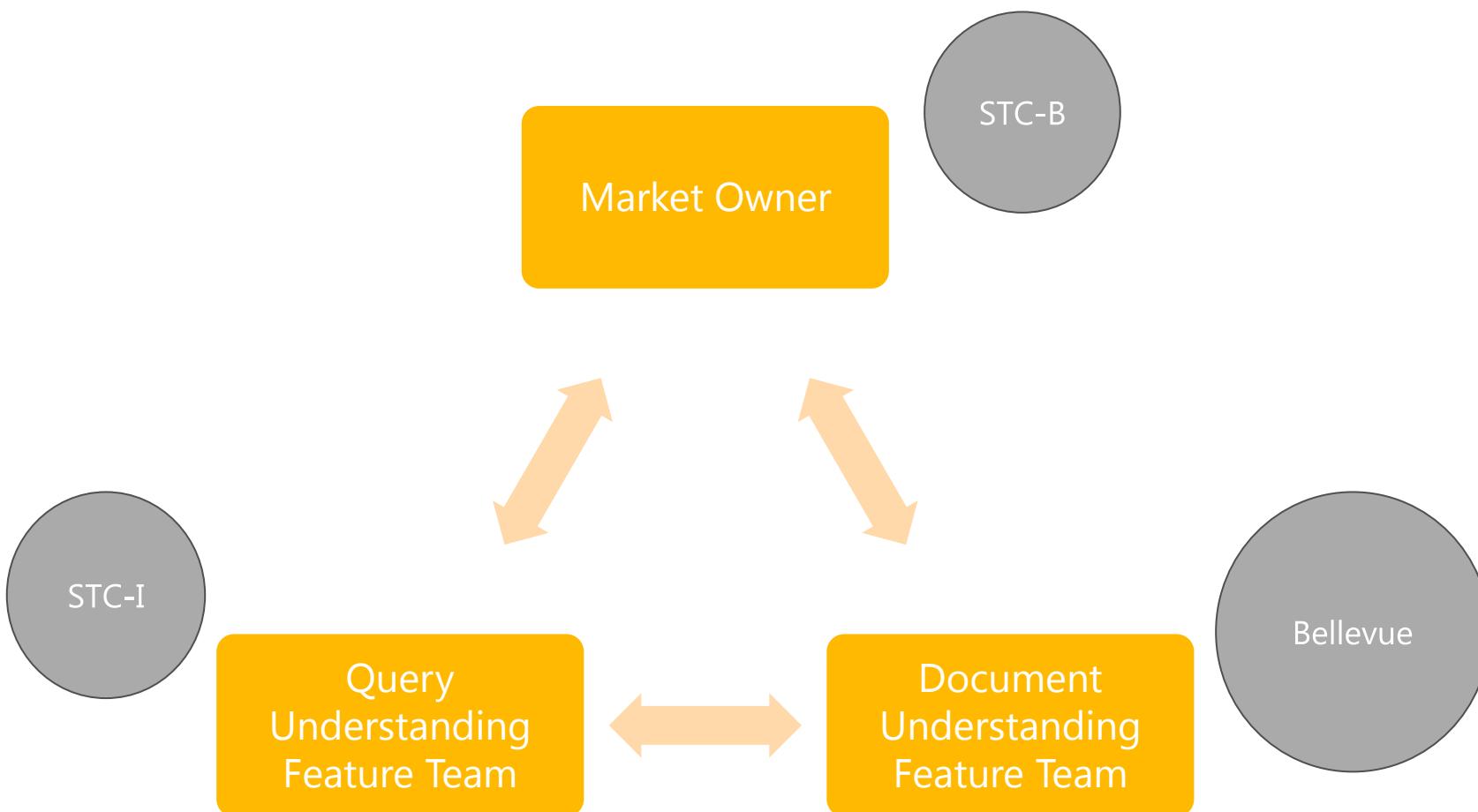
On representative queries with non-adult intent, the rate of adult documents in the result set



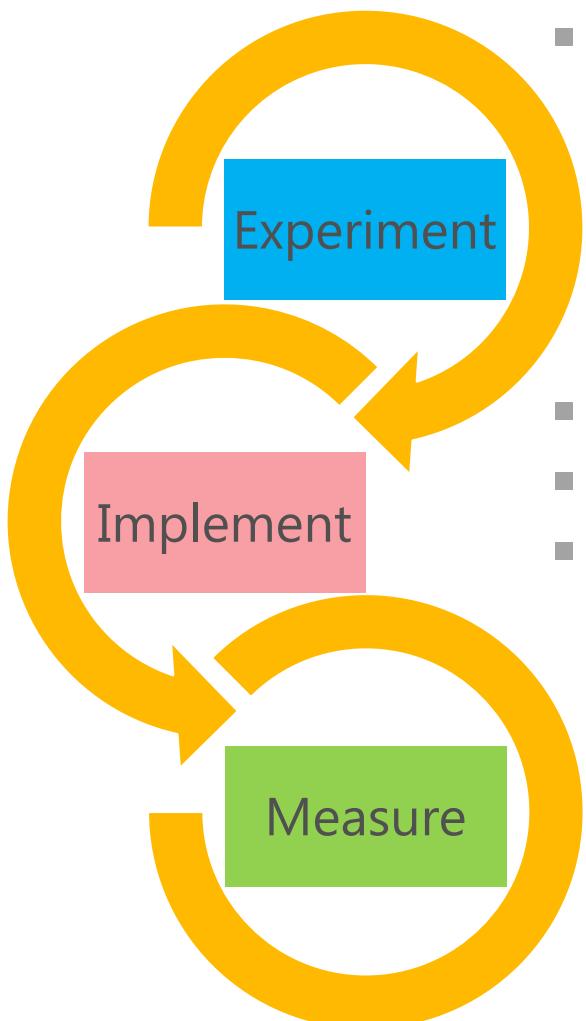
What is the main reason behind these improvements?

Engineering teams responsibilities

- Different teams across the globe with different roles and commitments

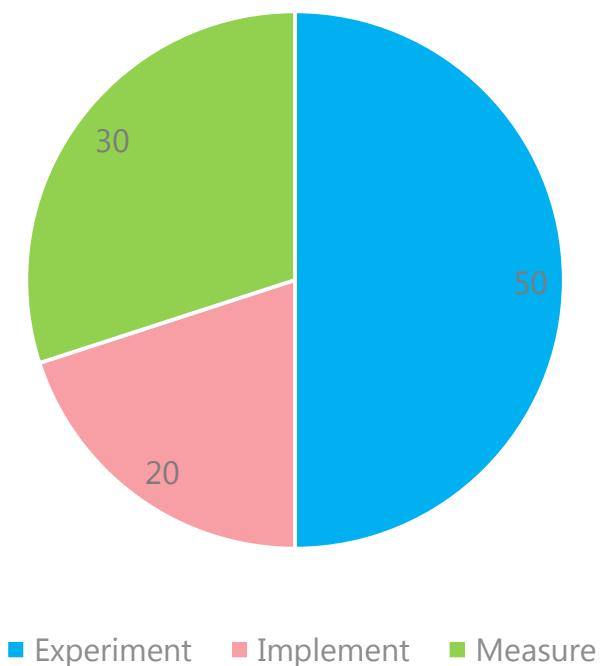


Market Team – Typical Development cycle



- Analysis of False Positives and False Negatives
- Feature Analysis
- Corpus size
- Actual Coding
- Model Training
- Model Validation
- Precision/Recall Curves
- Leakage, NDCG
- Performance

Dev Effort Distribution



Competencies and Challenges

- Analytical, technical and data driven skills
 - “Are you able to step back (or sometimes hold back) and objectively challenge your metrics when they go against intuition?”
 - Ship-first culture
- Ability to develop a deep understanding of search technology
 - “Are you able to design a search architecture that takes into consideration the complexity to scale-out globally?”
 - Measurement accuracy and scalability
- Collaboration across teams
 - “Are you able to influence the prioritization of other teams by defending and negotiating your goals in a broader context?”
 - “Are you able to unblock yourself when there’s no documentation and no clear code/process ownership?”

