Analytics Quarterly Review

March 2014
AGENDA

Introduction (5 mins)
Follow up to Strategic Plan (10 mins)
Research & Data/Q&A (40 mins)
Break (5 mins)
Development/Q&A (35 mins)
Prioritization (15 mins)
Conclusions/General Q&A (10 mins)
Asks of Audience

Understand how Research & Data’s mission and operating model impacts you.

Understand how the opportunities and challenges of the development team drive prioritization.

Discuss prioritization for Development and Research & Data projects for the next 3 months.
Introduction
Group Structure

Development
Builds the infrastructure, tools and datasets that enable the organization and the community to easily access, process and act on our data in a way that is consistent with our values.

Research and Data
Supports the organization in making research-informed decisions, to better understand our editor community and projects, and to determine the impact of new programs and products that the Foundation is designing.
Follow Up to Strategic Plan
Reflection

Last Quarterly Review

“Everything I thought after 2 months was wrong”

Now

“I’m excited about what the team can accomplish (but there’s a lot to do)”
Values

**Transparency** - all of our stakeholders need to understand what we’re doing

**Strategic Alignment** - we need to do the right thing for the foundation

**Flexibility** - things change -- our Agile processes allow prioritization to change

**Collaborative** - our stakeholders participate in the prioritization process
# Turnaround Plan

<table>
<thead>
<tr>
<th>Stage</th>
<th>Main Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Change</td>
<td>Select turnaround agent</td>
</tr>
<tr>
<td>Situation Analysis</td>
<td>Develop preliminary action plan</td>
</tr>
<tr>
<td>Triage</td>
<td>Control and stabilize operations</td>
</tr>
<tr>
<td>Business Restructuring</td>
<td>Focus Business for increased growth and performance</td>
</tr>
<tr>
<td>Return to Normal</td>
<td>Resume normal, albeit, improved operations and integrate with Community</td>
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</table>

- **July**
- **October**
- **March**
Focus Areas Updates

Staffing
- Research & Data has critical mass (5 Researchers + 1 Open Req)
- Development Team staffing complete (Welcome Kevin!)

Scope
- Participation, Readership and Fundraising Analysis consolidated in Research & Data
- EventLogging support transitioning to Analytics

Execution
- Research and Data operating model established
- Development is making progress on sustainable, predictable Agile execution model

Updates on Projects in Development and R & D Sections
Looking Forward to Q4
How do we take our numerous projects and goals and combine them into a coherent purpose?
Focus and Balance

Finding a path through competing priorities, requirements and goals is our challenge

[1 https://www.flickr.com/photos/quinnanya/5893328472/]
Collaboration

How do Research & Data and Development work together?

- Teams are closely collaborating on high priority items for Q4
  - Editor Engagement Vital Signs
  - Mobile Metrics
- First team offsite in May in Zurich
  - Development and R & D together for 2.5
Community

How do we integrate better with the Community?

- We had our first community “incident” over lack of support for page views.
  - Bought some short term cover with a new server
  - Team members have more 1:1 integration
- R & D showcases and hack-a-thons are positive
- Opportunity for Improvement in Q4

High Priority Initiatives

● Erik’s asked us to work on two specific Epics
  ○ Editor Engagement Vital Signs
  ○ Mobile Metrics
● He’s also asked that we add some features to Limn and make the dashboards discoverable
● These will be discussed in each team’s section in more detail, but overview is here
● Will also be addressed in prioritization section
Editor Engagement Vital Signs

Summary
Discoverable, Daily Updated Dashboards to track key Editor metrics across all 800+ projects

Key Collaboration Points
1a. Research & Data defined Metrics
1b. Development built out infrastructure
2. Development/R & D integrates metrics
3. Development builds visualizations
Mobile Metrics

Summary
Adoption of mobile apps, tablet usage, browser share and other metrics

Key Collaboration Points
1. Technical Operations and Development builds out the data pipelines (Kafka) and the analysis infrastructure (Hadoop)
2. Research and Data works with Development to design and run the queries to provide the data
Research and Data

Q3 quarterly review
Q3

- Metrics standardization
- Focus areas
- Other projects
- Staffing
Standardized metrics for editor engagement

Metrics standardization

Dario Taraborelli  •  Aaron Halfaker

Wikimedia Research and Data showcase
March 2014
Goal: Vital Signs

key project-level metrics for user engagement, community and content growth

using consistent definitions

aggregated daily / monthly

generated for every Wikimedia project

https://www.mediawiki.org/wiki/Analytics/Epics/Editor_Engagement_Vital_Signs
Metrics standardization: definitions

Research: Productive new editor

Productive new editor is a standardized user class used to measure the number of first-time editors in a wiki project over time who make productive contributions. It's used as a proxy for editor productivity, and to a lesser extent, editor activation. A "productive new editor" is a new editor who saves revisions to content namespace pages that are not reverted.

Speciation

A productive new editor \((n,t)\) is a new editor who completes at least \(n\) productive edit(s) within \(t\) time since registration \((T)\).

WMF Standard

- \(n = 1\) productive edit
- \(t = 1\) day

Measures

- Editor productivity
- Productive newcomer

Related metrics

- Newly registered user
- New editor
- Productive edit

Status

completed

Excluding edits to deleted content

Spammers and other non-productive new editors tend to create articles that are non-productive and those articles tend to be deleted rather than the edits to the articles being reverted (and therefore excluding them from the productive edit criteria). Edits to articles that are deleted by the end of a new editor's first week since registration are not included in counts of productive edits.

The \(n\) productive edits threshold

Like choosing an \(n\) for any metric based on counts (e.g. new editor and active editor), choosing a threshold is somewhat arbitrary. Choosing a higher threshold will result in a
Metrics standardization: analysis

Spanish Wikipedia

Productive new editors per new editor. The proportion of productive new editors is plotted by registration month for two values of $t$.

French Wikipedia

Productive new editors per new editor. The proportion of productive new editors is plotted by registration month for two values of $t$.

Productive new editors per newly registered user. The proportion of productive new editors is plotted by registration month for two values of $t$.

https://meta.wikimedia.org/wiki/Research:Productive_new_editor
Metrics standardization: timeline

stage 1

New users
- Newly registered users
- New editors
- Productive new editors
- Surviving new editors

stage 2

Community
- Editors
- Active editors
- Very active editors
- IP editors
- Page creators
- Bots

stage 3

Content
- Edits
- Bot edits
- Uploads
- Pages

Curation
- Page deletions
- Reverts

2014-Q3  2014-Q4  2015-Q1

https://meta.wikimedia.org/wiki/Research:Metrics_standardization
Focus areas

Q1
- Growth
- VE

Q2
- Growth
- Mobile

Q3
- Growth
- Mobile
Focus areas

Ad hoc analysis of onboarding workflow (GettingStarted)

https://meta.wikimedia.org/wiki/Research:Onboarding_new_Wikipedians/Rollout
Focus areas

On the nature of Anonymous editors

Research results included!

Volume and productivity of anonymous contributors

https://meta.wikimedia.org/wiki/Research:Anonymous_editor_acquisition
Focus areas

Growth

Article creation (and deletion) trends

Focus areas

Mobile user acquisition: exploratory analysis and A/B testing

https://meta.wikimedia.org/wiki/Research:Mobile_editor_engagement
Focus areas

Analysis of mobile browsing sessions

https://meta.wikimedia.org/wiki/Research:Mobile_sessions
Other projects

2013 traffic trend analysis

Performance A/B tests
Platform

Privacy / data retention
Legal

Fundraising knowledge transfer
Fundraising

Ad hoc support for other teams + community requests
VE  Core Features  UX  Comm  Community
Staffing

Q1

Q2

Q3

New

Sahar
Team coordination

Task tracking on Trello  Weekly research group meetings

Semi-weekly standups  Public monthly showcase
Q3 retrospective

Delivered stage 1 metrics (analysis and requirements)

Supported key focus areas (growth & mobile)

Worked on other large unanticipated projects

Worked on team process / coordination
Q4

- Metrics standardization
- Topical research
- Focus areas
- Staffing
Metrics standardization: timeline

- **New users**
  - Newly registered users
  - New editors
  - Productive new editors
  - Surviving new editors

- **Community**
  - Editors
  - Active editors
  - Very active editors
  - IP editors
  - Page creators
  - Bots

- **Content**
  - Edits
  - Bot edits
  - Uploads
  - Pages

- **Curation**
  - Page deletions
  - Reverts

- 2014-Q3
- 2014-Q4
- Vital Signs MVP
- 2015-Q1

https://meta.wikimedia.org/wiki/Research:Metrics_standardization
Topical research

a. Understanding mobile users

b. Growth outside of enwiki

c. Editor retention and trajectories

d. Who are anonymous editors
Topical research

a. Understanding mobile users

How do mobile users access Wikimedia sites?
[ country · project · device · OS · source ]

In which countries / languages mobile editor growth is outperforming desktop growth?
Topical research

b. Growth outside of enwiki

Which projects are seeing growth/increased retention outside of enwiki?

Are editors active on multiple wikis / migrating towards other wikis?
Topical research

c. Editor trajectories and retention

What are the typical trajectories of an active or power editor?

What are the typical trajectories of a mobile vs desktop editor?

How do trajectories affect survival?
Topical research

d. Who are anonymous editors

How many individual users each IP editor?

How experienced are anonymous editors?

Does encouraging anons to register increase their engagement?
Focus areas

Q1
- Growth
- VE

Q2
- Growth
- Mobile

Q3
- Growth
- Mobile

Q4
- Growth
- Mobile
- Zero
- Fundraising
Ad hoc data analysis requests

Custom dashboard consolidation

Ad hoc research/data analysis support for other teams

(subject to available bandwidth)
Staffing

Q1

Q2

Q3

Q4

Sahar

FR req
Q4 goals

Deliver stage 2 metrics (analysis and requirements)

Topical research

Continue to provide support to focus areas (growth, mobile + zero)

Hiring (FR)
Development
Team

**Product Management**
Kevin Leduc (San Francisco, USA)

**Development**
Christian Aistleitner (Linz, Austria)
Dan Andreescu (Philadelphia, USA)
Stefan Petrea (Bucharest, Romania)
Nuria Ruiz (Madrid, Spain)
Charles Salvia (New York, USA)

**Technical Operations**
Andrew Otto (New York, USA)
Jeff Gage (50%) (San Francisco, USA)
Q3

- Metrics Standardization
- Wikipedia Zero Support
- Editor Engagement Vital Signs
  - Mobile Metrics
- Wikistats Developments
  - Kafka/Hadoop
Q3 Narrative

- We got a lot done!
  - Team worked on Epics prioritized after previous Quarterly Review
  - Integrated New Developers
- Velocity on larger projects wasn’t what we wanted
  - Context Switching costs and Cognitive Load were extremely high
- We sharpened focus and started to make more progress on fewer Epics
Epics we worked on

1. Production Issues
   b. Labs Migration (W0 Dashboards, Wikimetrics, Limn)

2. Metrics Standardization
   a. Presented work on MediaWiki PVs at Fosdem

3. Accurate Pageviews for Wikipedia Zero
   a. Added dashboards for new carriers as needed

4. Editor Engagement Vital Signs
   a. Major work on Wikimetrics

5. Metrics about Mobile Usage
   a. Browser share report delivered to Mobile

6. Simplify Limn Dashboard Deployment
   a. Usability enhancements

7. Pageview API
   a. Purchased new server for stats.grok.se
Other things we worked on

1. Page view decline investigation
2. ULSFO Latency Reports
3. User Agent Logging in Event Logging
4. Wikistats
5. Hadoop/Kafka Support
6. Privacy Policy
7. WMF Oauth Node Module
Understanding our Velocity

- Our continued work on our Agile process enabled us to understand our velocity
- We were spending less than ½ of our velocity on tasks we had committed to
- We’ve started to address this in Q3; more in Q4
Hadoop/Kafka Work

Summary
Tech-ops/Development collaboration on key infrastructure modernization project

Epics Supported
Mobile Metrics, Wikipedia Zero, Pageview API

Status

- All mobile logs delivered to Hadoop
  - Delivering value: Mobile browser and Session length reports
- Kafka currently handling mobile + bits traffic
  - 50k requests/second
  - Same order of magnitude as all of production
Hadoop/Kafka Original Architecture
Note: Currently assessing if we need Kafka Brokers in Caching data centers
Hadoop/Kafka Work II

Challenges

- Finding additional Tech-ops resourcing has been difficult
  - Andrew’s been doing it largely by himself
- Critical infrastructure elements have had to be built
  - Java deployment system (Archiva)
  - udp2log legacy interfaces (kafka-tee)
- Network Problems
  - Throughput issues with ESAMS are currently unsolved
Hadoop/Kafka Work III

Course Correction

- Can we parallelize infrastructure work with analysis?

Asks

- Continue to help with resourcing
- Desktop data (text varnishes?)
- Collaborate on ESAMS issues
- Capacity Planning/Hardware support
**Summary**
Extending interactive platform to perform scheduled queries and expose data for visualization

**Epics Supported**
Editor Engagement Vital Signs

**Status**
- Reporting updates should be finished this sprint
  - Recurrent, scheduled public reporting
Next Steps

- Integrate Metrics specified by Research and Data team
  - Newly Registered Users
  - New Editors
  - Productive New Users
  - Surviving New Users
- Specify MVP with Stakeholders
- Select and Integrate Graphing
Q4

- Editor Engagement Vital Signs
  - Mobile Metrics
- Wikistats Developments
  - Kafka/Hadoop
- Event Logging Support
Q4 Goals

- To specify and deliver on high priority Epics
  - Production Issues
  - Editor Engagement Vital Signs
  - Mobile Metrics
  - Dashboard/Limn Fixes
  - Event Logging Transfer
- Implement prioritized Wikistats features
  - Search (ready to deploy)
  - Primarily wikidata/dump related reports
- To work on additional Epics as schedule permits
- Respect the process
New Priorities

- Our Process involves a quarterly check-in on high-level priorities
- Erik has asked that we focus on some specific goals this quarter
- These processes will rise to the top of the prioritization stack
# Original Prioritization (Q3)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Epic</th>
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<tbody>
<tr>
<td>0</td>
<td>Production Issues</td>
</tr>
<tr>
<td>1</td>
<td>Metric Definition Standardization</td>
</tr>
<tr>
<td>2</td>
<td>Accurate Pageviews for Wikipedia Zero</td>
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<tr>
<td>3</td>
<td>Editor Engagement Vital Signs</td>
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## Proposed Prioritization (Q4)

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<tr>
<td>6</td>
<td>Metric Definition Standardization (Dev/Page Views)</td>
</tr>
<tr>
<td>7</td>
<td>Accurate Pageviews for Wikipedia Zero</td>
</tr>
<tr>
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Unprioritized Requests

- Geo Dashboards
- Private Wikipedia Zero Dashboards
Conclusions
Challenges

- Staying Focused and Delivering on our Commitments
- Community Engagement
- Development Transparency
Questions