Show me the RIGHT numbers!

Are our users happy?

Perry Statham and Niclas Wretström
run queue times - avg

Hourly, Last 7 Days  Property Average

run queue times - histogram

Daily, Last 7 Days  Property Histogram

All Users
Outside-In SRE

- As Reliability Engineers, we should develop and operate our services always with the user’s perspective in mind – from the outside-in.

- We should engineer our services to help our users reliably achieve their goals with the best possible experience.
Service Levels

- Service Level: how well we are able to help our users achieve their goals – In other words, how satisfied – or happy – we can make our users.

- Service Level Indicators (SLI): “a carefully defined quantitative measure of some aspect of the level of service that is provided”

- Service Level Objectives (SLO): “a target value or range of values for a service level that is measured by an SLI”

- Service Level Agreements (SLA): “an explicit or implicit contract with your users that includes consequences of meeting (or missing) the SLOs they contain”
Outside-In Tools

- **Persona**: A model of a user or other kind of stakeholder
  - Includes the user’s skills, roles, goals, and authority
  - Often includes personal attributes such as age, sex, and culture.
  - Often given proper names

- **Scenario**: The steps performed to achieve a goal
  - Often told as stories
What can we measure to reflect happiness?
Metric: Time

- How responsive is the user interface?
  - Does it feel snappy?
  - Are we showing a lot of system busy icons?

- How quickly do our users achieve their goals?
  - Do back-end transactions complete quickly?
  - Are there too many steps?
  - Is there too much time between steps?
Metric: Scenario Divergence

- How much has the user diverged from an expected scenario?
  - Have they started down a scenario path, then given up?
  - Have they done a lot of extra interactions to achieve their goal?
    - Interacting with help
    - Consecutively clicking the same button or field more than once
How do we know if our users are happy?
We Can Infer from Interaction

- Are they getting warnings or errors?
  - Bad password
  - Wrong input
  - Too many transactions

- Are they repeating the same interactions with the same inputs?
  - Submitting a form more than once

- Are they following the interaction scenarios that we expect?
We Can Look for Anomalies in the SLIs

- Automated algorithms such as:
  - Percentiles and other quantiles
  - Seasonal-Trend Decomposition Procedure Based on Loess (STL)
  - Autoregressive Integrated Moving Average (ARIMA)
  - Decision Tree Learning
    - Classification and Regression Trees (CART)
    - Conditional Inference Trees (CIT)
    - ...
  - Many more...
We Can Ask Our Users

- Passive buttons for thumbs up/down, like/dislike, happy/sad, 1-N stars, etc.
- Interactively
  - during interaction: 'How is your experience?'
  - post interaction: 'How was your experience?'
- Semi-interactively
  - Like/Dislike tooltip that shows on screen refresh, then fades out:
    - "Having a good experience? Let us know by clicking the like button."
- Surveys such as Net Promoter Score (NPS)
  - NPS: "How likely is it that you would recommend [brand] to a friend or colleague?"
We Can Ask a Representative

- Anyone that regularly interacts with our users:
  - Product Managers, Sales People, Support People, User Experience Designers, etc.

- While all can give us a sense of our users satisfaction:
  - The sample period can be quite long (such as a release cycle)
  - Can be difficult to filter out biases
We Can Ask Social Media

- Automatically analyze social media such as:
  - Twitter, Reddit, Stack Overflow, Quora, Facebook, etc.
  - Brand specific forums
  - Any place where people express themselves

- Leverage tools such as:
  - Watson Sentiment Analysis
  - Watson Tone Analyzer
Combine and Focus

- We can also combine methods.
  - Use one more more methods to roughly identify problems, then other methods to drill into details

- Focus on specific personas and scenarios, or on some aspect of a persona such as:
  - Users in a specific geography
  - Inexperienced users

- Focus on suspected problem areas such as:
  - Does the UI slow down when back-end systems are being backed up?
Caveats

- Beware the skew!
  - Understand when and why someone might comment on their experience
    - Unhappy users tend to provide more unsolicited comments

- Aggregate carefully!
  - Using the mean (average) tends to hide anomalies

- Not all users are the same. Even in the same persona, there can be variations in things like:
  - Experience, Culture, Personality, Location
Thank you!

@PerryStatham

pstatham@us.ibm.com