

The Fingerprint Metric

Effectiveness of Use

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1 Introduction

Today, analytics and data mining are exploding. Businesses have never had a more sophisticated understanding of their customers. This understanding has already changed how products are created and consumed. And the possibilities of the information era have barely been scratched.

2 The Metric

Over the past eight weeks, our team explored how software might be managed in the information era. One of the ideas we developed was the Fingerprint Metric. The Fingerprint Metric describes an individual's interactions with a piece of software. It is a way of understanding usage and productivity.

The value of the Fingerprint Metric comes from the idea of comparison. Humans are bad at understanding absolute quantities. However, we have an incredible, intuitive ability to make comparisons. We can even make meaningful comparisons between things that are totally different.

What is the volume of 50lbs of marshmallows? You probably have no idea. Now imagine I first showed you 25lbs of marshmallows. Extrapolating from your understanding

of the smaller quantity is simple.

Now consider the following:

"Juliette entered the room like a hurricane."

Juliette and hurricanes are dissimilar, but by comparing the two we derive a shared understanding. This type of subjective comparison across disparate domains is a big part of how we learn and develop ideas. [1]

The Fingerprint Metric combines information about an individual's objective usage and subjective productivity. It allows the comparison of individuals, products, and teams. But before explaining the metric's applications, it is helpful to understand how the metric is generated.

fingerprint

[billy] = [27, 600, 60, 210, 25, 18, 43, 3, 0.3, 64]

- 27 graphs generated
- 600mb data uploaded
- 60 hours logged
- 210 terms searched
- 25 clicks per minute
- 18 min average time in program
- 43 log ins
- 3 projects impacted
- 0.3 time spent on home screen
- 64 min spent reading documentation

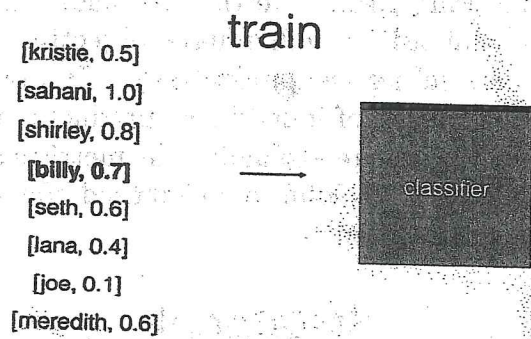
Let's look at Billy's Watson Analytics fingerprint. This fingerprint is composed of a

bunch of numbers which describe how Billy interacts with Watson Analytics. Some of these numbers may be more meaningful than others. It doesn't matter. Machine learning will uncover the patterns.

We propose giving Billy access to this raw fingerprint. In exchange for giving Billy his usage data, Billy is asked to self-assess his productivity. Billy's fingerprint is then combined with his productivity to complete his Watson Analytics Fingerprint Metric.

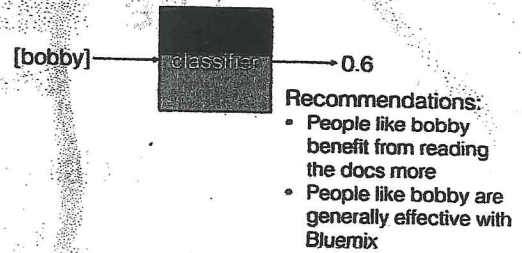
Billy, on a scale of 0 to 1, how productive were you with Watson Analytics?

Lots of Fingerprint Metrics from different people are then used to train a classifier.



Once trained, this classifier can associate new fingerprints with a productivity score. However, the classifier's output is not one-dimensional. People use software in different ways. This classifier can determine the difference between Bobby and similar yet more productive users. We can then expose this information in the form of actionable recommendations.

classify



When considered in relation to cost, the Fingerprint Metric allows managers to understand how effectively their team's software is being utilized. Managers are always interested in optimizing their spend. No one wants to pay for tools that don't provide value. However, simple usage data doesn't accurately describe whether a software entitlement is providing value. Some software, such as IBM AppScan, can be used just once and still generate thousands of dollars of value. Understanding Effectiveness of Use allows managers to objectively terminate wasteful software entitlements. Effectiveness of Use represents a personalized understanding of a product's value proposition.

$$\text{fingerprint} / \$ = \text{effectiveness of use}$$

Imagine being able to look up your favorite designer and learn what tools they use, and the order in which they typically use those tools. This is one example of the potential value of the Fingerprint Metric when the concept is extended across a software portfolio. By aggregating a user's fingerprints, we can gain an understanding of how different pieces of software are used in conjunction. Our research has shown that this type of understanding would be considered useful and appealing by all sorts of software users. Furthermore, having detailed usage profiles for

large groups of users would be invaluable to designers.

We developed the Fingerprint Metric to solve a specific problem. We wanted to tell managers how effective their purchases were. While developing this concept, we stumbled across a number of other interesting applications.

Simply put, there is clear value in better understanding customer behavior. Our consumers see value in actionable recommendations that increase their productivity. The Fingerprint Metric would be a differentiator in the market. The technical barriers to implementing a simple version of the Fingerprint Metric are low. However, the technical and political barriers to aggregating usage information across IBM's portfolio are high.

We believe that IBM's ability to be transparent and flexible will ultimately depend on the willingness of software product teams to work alongside IBM's Digital Commerce Team towards common goals. Implementing the Fingerprint Metric may be the common goal that aligns IBM's software division.

3 Conclusion

As our team ends the Maelstrom internship, we're hopeful that we've left our fingerprints on IBM's Digital Commerce Team. We've certainly learned a lot. So long, and thanks for all the fish!

References

- [1] Daniel Kahneman. *Thinking, Fast and Slow*. Farrar, Straus and Giroux, New York, NY, USA, 2011.