

# Science of Social blog

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## How to Create Actionable Analytics?

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Alright, now that you know my thoughts and feelings [about the Klout acquisition](#), it's time to get back to some serious business—big data.

In my [previous big data post](#), we discussed the minimum condition for any analytics to be actionable, which is summarized nicely by the actionability inequality—predictive window > reaction time. This condition is minimal in the sense that for any analytic to be actionable, it must at least satisfy this condition. It is a necessary but not a sufficient criterion for actionability. Therefore, to build truly actionable analytics, the actionability inequality alone is not sufficient. So what does it take to create actionable analytics? That will be the topics of our discussion today.

### The Levers of Actionability

Since actionable analytics must provide predictions that satisfy the actionability inequality (i.e. predictive window > reaction time), we can make an analytic more actionable by:

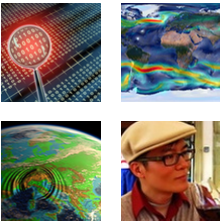
1. Decreasing the reaction time
2. Increasing the predictive window

Clearly the reaction time will depend on the nature of the action and one's ability to execute that action. [Simpler actions](#) will obviously have a shorter reaction time. Likewise, the reaction time will shorten as people improve their ability to execute. Although we can reduce the overall reaction time slightly by making meaningful comparisons and having fewer choice of action, these tactics can only help people decide faster on a course of action. They cannot actually affect the time needed to execute the action. Therefore, reaction time is largely out of our control.

On the other hand, the size of the prediction window is often under our control and is affected by three variables:

- Community Home
- Read Our Blogs
- Join the Discussion
- Knowledge & Support
- Developer Network
- Events Discussion
- Lithium Stars Program

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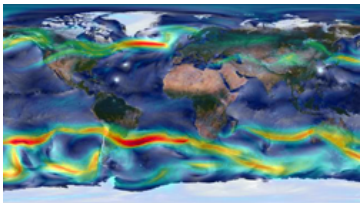
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2. *The input data for the model.* The predictive window will generally increase if we can provide the model with more data and/or better data (e.g. less noisy data, finer grains, etc.)
3. *The accuracy requirement of the prediction:* No prediction will ever be 100% accurate. By choosing an accuracy level that is acceptable, we would have inadvertently set the length of the predictive window for that level of accuracy. If we can live with more uncertainty, then we can lengthen the predictive window by reducing the model's accuracy requirement. However, these accuracy requirements are usually predetermined by business, industry, government, or standards, and we can't change it easily



Once we can make actionable predictions (i.e. predictive window > reaction time), then we can facilitate the execution of action by making use of meaningful comparisons and reducing the number of action choices. These tactics are useless without an actionable model.

Actionable and Non-Actionable Models

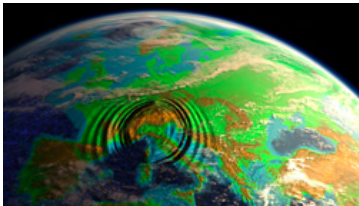


Let's look at some examples. We know that [weather predictions](#) are acceptably accurate up to about 5 days, so this is the length of the predictive window. Now what's the typical reaction time for people to act upon a weather prediction? It will probably take most people anywhere from few minutes to several hours. Whether the action is simply to remember to bring an umbrella,

or to change the course of the ship to avoid a storm, the reaction time for most weather prediction is typically less than 12 hours. Since the predictive window (~5 days) > reaction time (~12 hours), our weather models and weather predictions are actionable.

Now, what about [earthquake predictions](#)? Most seismic models can only moderately predict the probability of an earthquake few seconds in advance. If we try to look further into the future, the model's prediction becomes so unreliable and inaccurate that it's virtually useless. If we increase the accuracy requirement, the predictive window will be even shorter. However, most people will need at least a few minutes (up to few hours) to act upon an earthquake prediction (i.e. get themselves to safety). In this case, the predictive window (~1 second) is shorter than reaction time (~10 minutes). Consequently, earthquake models and their predictions are currently not actionable.

We can't reduce the accuracy requirement for earthquake predictions, because a wrong prediction would be too costly. Therefore, to make earthquake predictions more actionable, seismologists will need to collect more data, better data, and build more powerful models to lengthen the predictive window. Until that happens, we can only be more earthquake-prepared, so we can shorten our reaction time when we need to execute.



Conclusion

In order to build actionable analytics, we can either decreasing the reaction time or increasing the predictive window. Although reaction time is pretty much out of our control, the length of the predictive window depends on three factors that we can control:

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#GamificationGoals for Brands
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- Gamification Tenet #7: Knowing Your Players —Trigge...
- Gamification Tenet #6: Guide Your Users with Frequ...
- Gamification Tenet #5: Level Up in Baby Steps

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Once the model achieves “*actionability*,” we can further facilitate the execution of actions by making it simpler for people to decide on the course action. This can be accomplished by:

1. Making meaningful comparisons
2. Having few action choices

So that’s how we create actionable analytics. And don’t be fooled when someone claims their analytics are actionable. How do you build your actionable analytics?



Michael Wu, Ph.D. is Lithium's Chief Scientist. His research includes: deriving insights from [big data](#), understanding the behavioral economics of [gamification](#), engaging + finding true social media [influencers](#), developing [predictive + actionable social analytics](#) algorithms, [social CRM](#), and using [cyber anthropology](#) + social network analysis to unravel the [collective dynamics of communities](#) + [social networks](#).



Michael was voted a **2010 Influential Leader** by [CRM Magazine](#) for his work on predictive social analytics + its application to Social CRM. He's a blogger on Lithosphere, and you can follow him [@mich8elwu](#) or [Google+](#).

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