Data 101:
How to use your data science team:
Becoming a data-driven organization

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Strata CONFERENCE

Every organization, every product, every decision

data driven, or at least data informed.

To create a data driven organization

1. **Consciously map how you use data in each phase of the product lifecycle**

2. **Treat data as a first class citizen**

3. **Create a culture which expects decisions are informed by data**

This talk will be a success if we:

1. Review the steps of data driven product innovation

2. Understand what is needed to best enable fostering of
   (or transformation into) a data-driven organization: culture, process, and tools.

Product Lifecycle

Data driven product innovation framework:

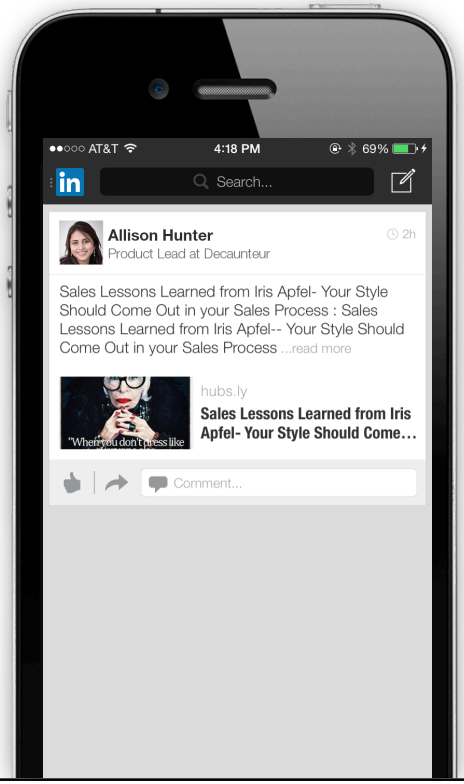
Use data to measure, understand, and improve the product:

If data scientist is not involved until this stage, it may be too late.

Build	Measure	Track	Ship	Tweak
Actionable insights lead to product feature	**Success Metric Definition**	**Tracking Instrumentation spec**	**Experimentation Setup and Analysis**	**Post-Launch Analysis**

Well-connected.
Get relevance right.

Few connections.
Give them inventory.



1. Opportunity sizing: how big or important is the problem?

2. Use data to predict successful product initiatives:

- Show news articles
- Suggest new connections
- Suggest following active content creators

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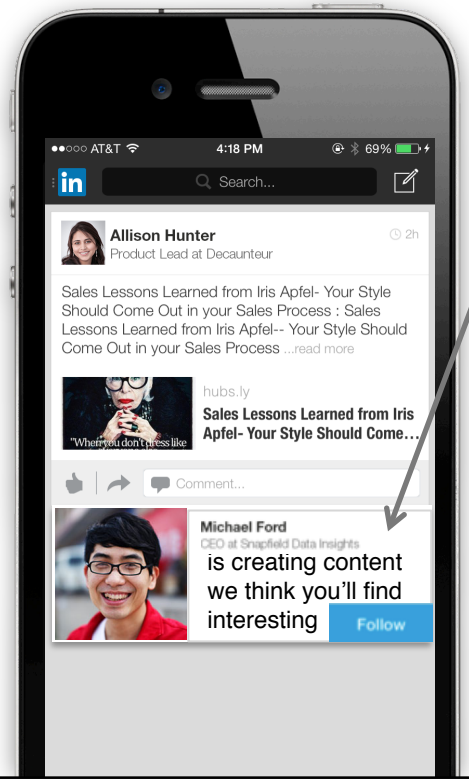
Invest in developing the right success metric.



Hypothesis: Following active sources leads to improved user experience with LinkedIn Feed

Success Metric – progression of definition:

- Total clicks on Follow
- # clicks / #impressions of Follow suggestions
- % Feed Inventory created by new followees
- Downstream sustained engagement with items created by these followees
  - What is engaging? # of clicks? Time spent? # Shares? Combo?

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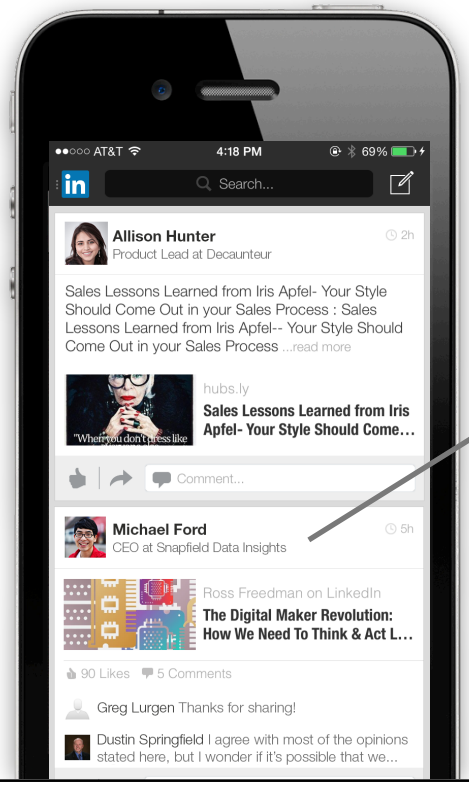
Need accurate reliable standardized data logging to enable metric computation.



Metric = Downstream engagement with items created by these followees

Must enable attributing future clicks on feed items to that campaign as a source for the Follow.

```
FeedActivityClick
{
        memberID = 77777
        actor = 55555
        feed = article
}

FollowSources
{
        memberID = 77777
        followeeID = 55555
        followCampaign666
}
```

Build	Measure	Track	Ship	Tweak
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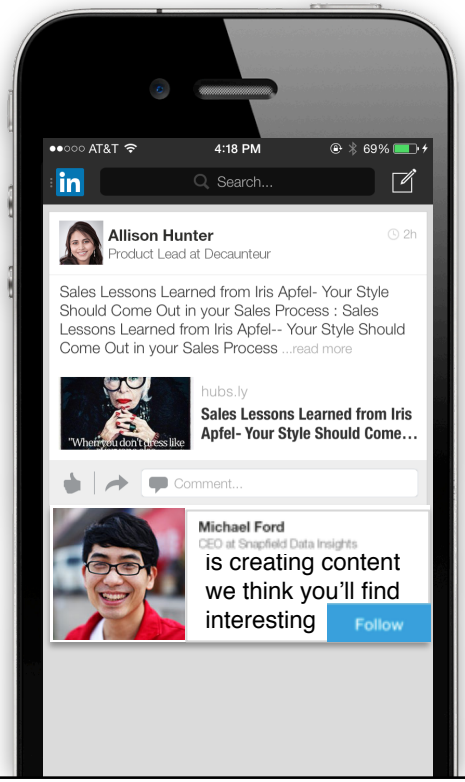
Rigorously set up, then identify whether the feature increased the success metric.



Design: How long to run experiment, on whom?

Implement: properly randomizing to ensure no bias

Analyze: Go or no-go? monitor success metric, ideally automated on company-wide platform for holistic view of impacts

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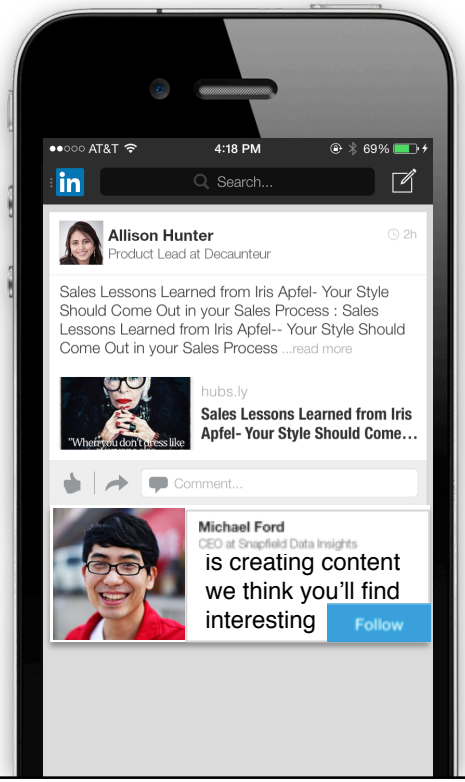
Iterate. How can we revise? How can we tweak to optimize?



Reporting, monitoring, ad hoc analysis

Long term measures of engagement/success

Analysis to inform revision of design

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Invest in foundations.

Culture Process Tools

Culture

Data scientist as a partner, not a service – give context and ownership

Process

Strong bias to actionable impactful insights, speed of iteration & feedback

Tools

- Data Foundations: governed datasets, consistent shared datasets and metrics
- Data Democratization: self serve data exploration platform
- Enable innovation: environment supports speedy ad-hoc analysis

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Democratize data – self served data exploration platform

Enable people in your organization (execs, product managers, designers) to have data at their fingertips – to ask and answer questions

Culture

- Invest in creating the right metrics
- user centric mindset; optimize for user value not team success

Process

all stakeholders agree upon success metrics prior to launching the feature test

Tools

- Platform of shared tiered metrics visible to entire company
- a metrics pipeline that enables easy implementation of metrics (and not manual one-offs)

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Culture

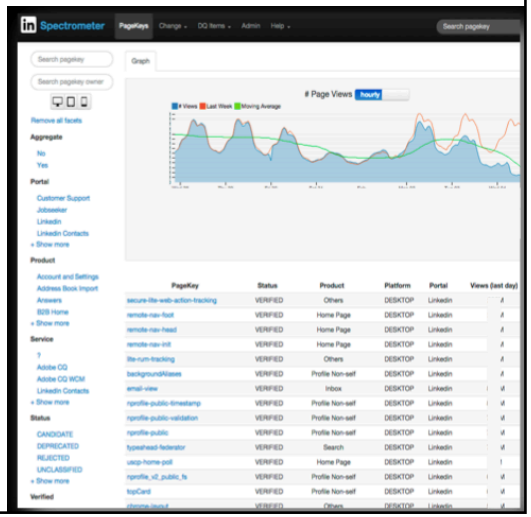
- Data as a first class citizen. Feature excellence for users, data excellence for employees.
- Data tracking bugs as a launch blocker

Process

- Proactive joint definition of data requirements and contract (schemas) by producers and consumers
- Data Model Review Committee

Tools

- Data spec tool for source of truth
- Data Quality Monitoring tool to ensure data contract is met
- Automated testing of tracking



Culture

- Belief in proactive controlled experiment as decision making tool
- Incentives to innovate via experimentation and move key metrics

Process

- Efficient and principled lifecycle, from inception to decision
  - Before: Review experiment design and implementation
  - After: Experiment review meeting: stakeholders discuss impacts and implications

Tools

- Company-wide platform for experimentation, with tiered key metrics
- Automated metric reporting & analysis capability; limit ad-hocs

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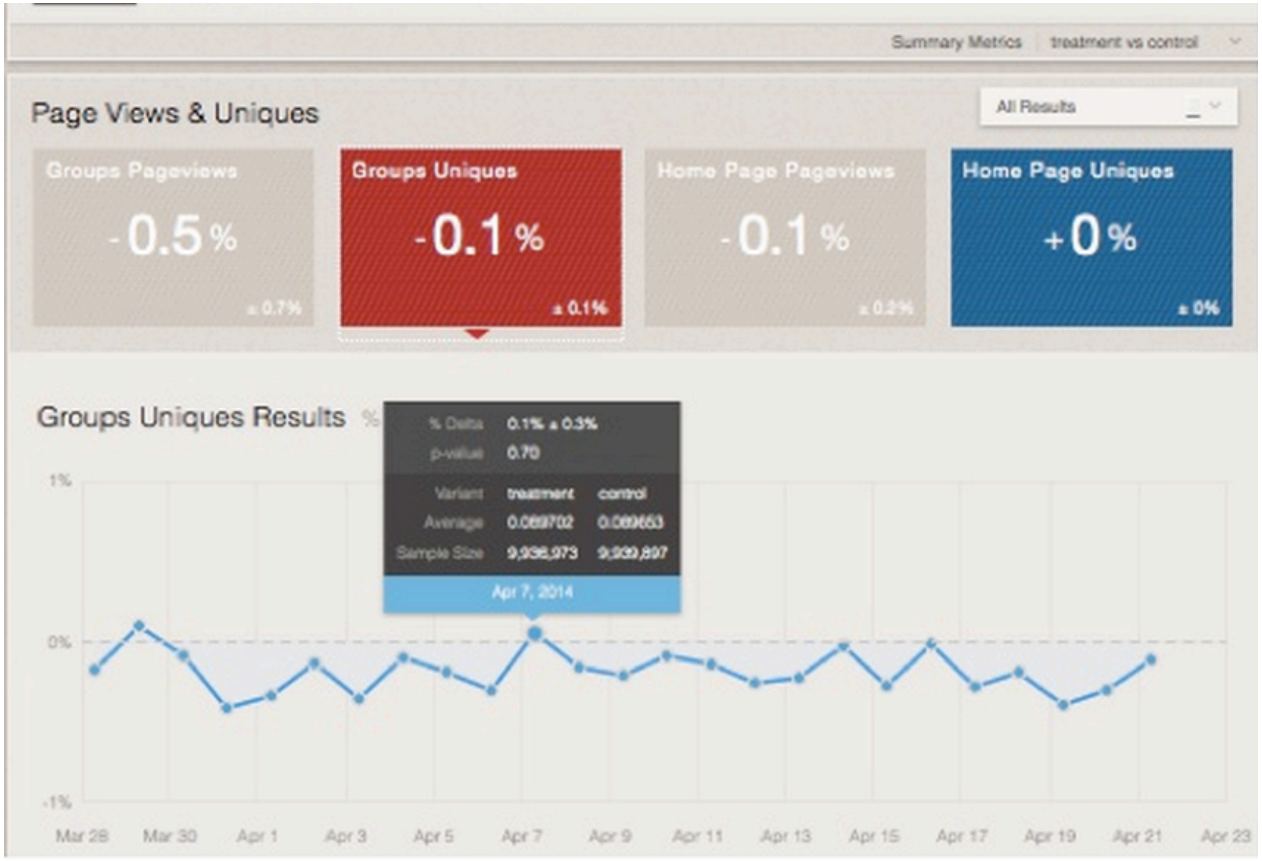

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Culture

Iteration and innovation

Process

Metrics meeting: weekly to understand performance and product value

Tools

Long term hold-out groups for monitoring impacts

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