Mode Analytics Case Study: -
Investigating a Drop in User Engagement

The problem statement: -

Yammer works like an internal social network for a company's employee where they can share and collaborate their work, ideas and feedback. The dashboard chart which shows the number of users who logged at least one engagement event during the week starting on a given date is showing a decline for last week.

Initial symptoms and Hypothesis test.

Based on past experience and recent product development I come up with following possible scenarios.

Step 1 –
To check the user table to find out how many new users signed up during last week and week prior to it. We need to investigate whether there was a drop in new user signup during the last week. If yes then that could be one of the reason.

Step 2-
To check the user logs in the event table. This way we can find how many users were active during a time period and how active were each of them. A decrease in user activities during the above time period could be a analyzed further by below queries.

1. What are the most common device type seeing decline this week compared to last week?

   SELECT week(occurred_at), device, count(*)
    FROM tutorial.yammer_events
    where occurred_at <= '2014-08-05' and occurred_at >= '2014-07-21'
    group by week(occurred_at), device

2. What are the most common event type or event name seeing decline this week compared to last week?

   SELECT week(occurred_at), event_type, count(*)
    FROM tutorial.yammer_events
    where occurred_at <= '2014-08-05' and occurred_at >= '2014-07-21'
    group by week(occurred_at), event_type

   SELECT week(occurred_at), event_name, count(*)
    FROM tutorial.yammer_events

```
where occurred_at <= '2014-08-05' and occurred_at >= '2014-07-21'
group by week(occurred_at), event_name
```

3. what are the most common user location seeing the decline this week compared to last week?

```
SELECT week(occurred_at), location, count(*)
 FROM tutorial.yammer_events
 where occurred_at <= '2014-08-05' and occurred_at >= '2014-07-21'
 group by week(occurred_at), location
 order by occurred_at
```

Step 3-
To check the email event logs in the email event table. This way we can find if there was any change in email even triggered which may cause decline in user actives. to check what is the role of the email related event in the user engagement decline we can use below query

```
SELECT week(occurred_at), action, count(*)
 FROM tutorial.yammer_emails
 where occurred_at <= '2014-08-05' and occurred_at >= '2014-07-21'
 group by week(occurred_at), action
 order by occurred_at
```

based on these queries' data we discovered that the new user signup was declined significantly and this decline was distributed across the global location but mainly related to signup activity on mobile.
We also discovered that the email events were as usual and there was no decline in email sent to users during last week compared to earlier weeks.

Step 4-
This give us an indication that there is some issue with the new user's first time login on mobile device.
Based on my experience with this product I know that the most common method for new signup was to click on the link in email and signup on mobile. So we further instructed our technical team to check the links of the email sent to many sample users over last week.

Resolution: - it was discovered that the new user invite email sent last week for signup had a technical issue with the signup link and was causing a failure in user signup.