

파이썬으로 광고 효과 측정하기

오 재 혁 (Jacob)

오재혁



오재혁



PYCON (2014 -)



PYCON (2014 -)



Hyper**connect**

Azar



Azar

- More than **50 million** downloads
- More than **7 billion** Discovery Matches
- **Featured** worldwide in Google Play in more than **130 countries**
- Officially supporting **19 languages** in Azar
- **No.1** mobile application in Taiwan / Vietnam / Middle eastern countries

Azar

Data Engineer

Hyperconnect

Product Manager

Server/Client Engineer

Data Engineer

Data Scientist



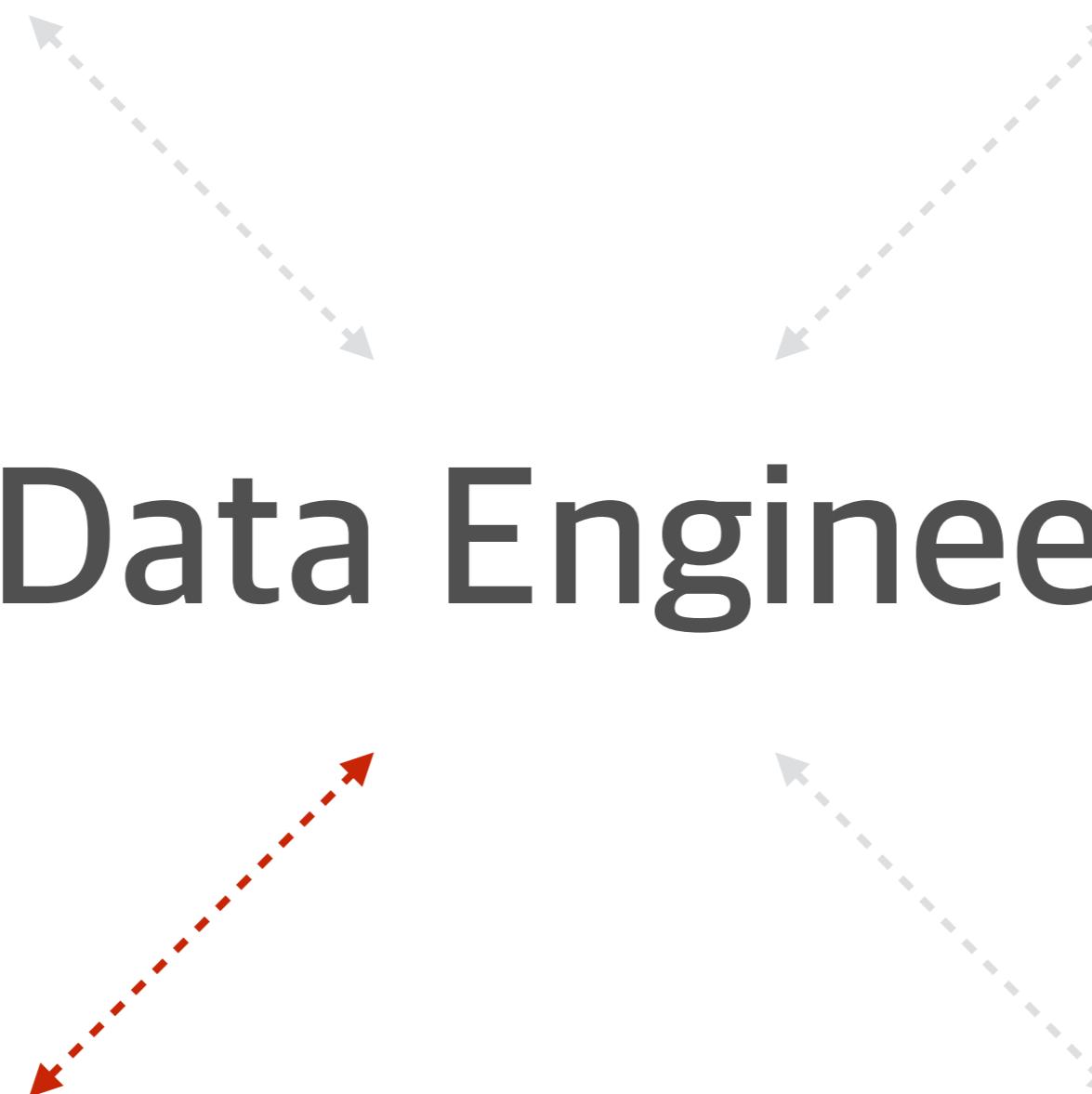
Product Manager

Server/Client Engineer

Data Engineer

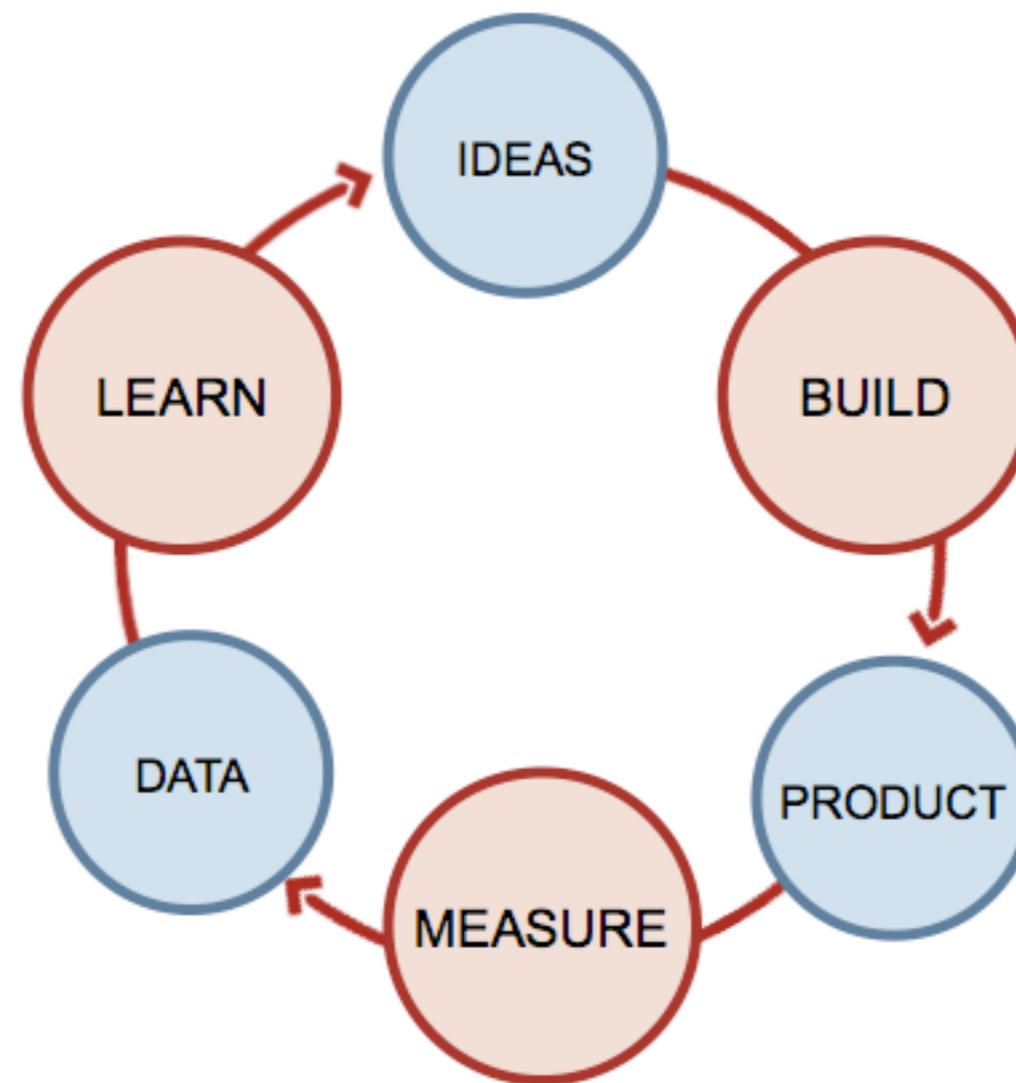
C-Level

Data Scientist

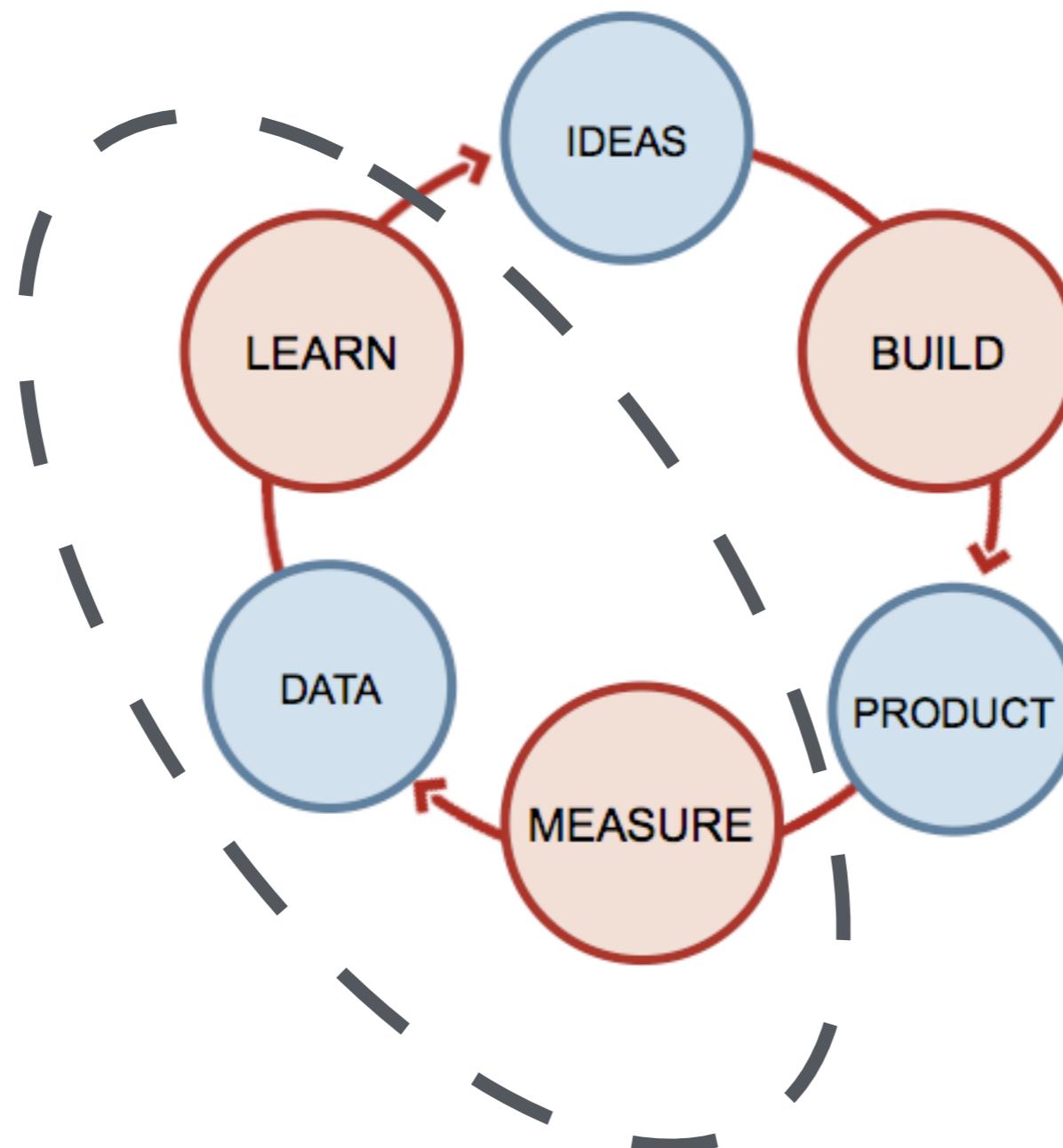


Data Pipeline

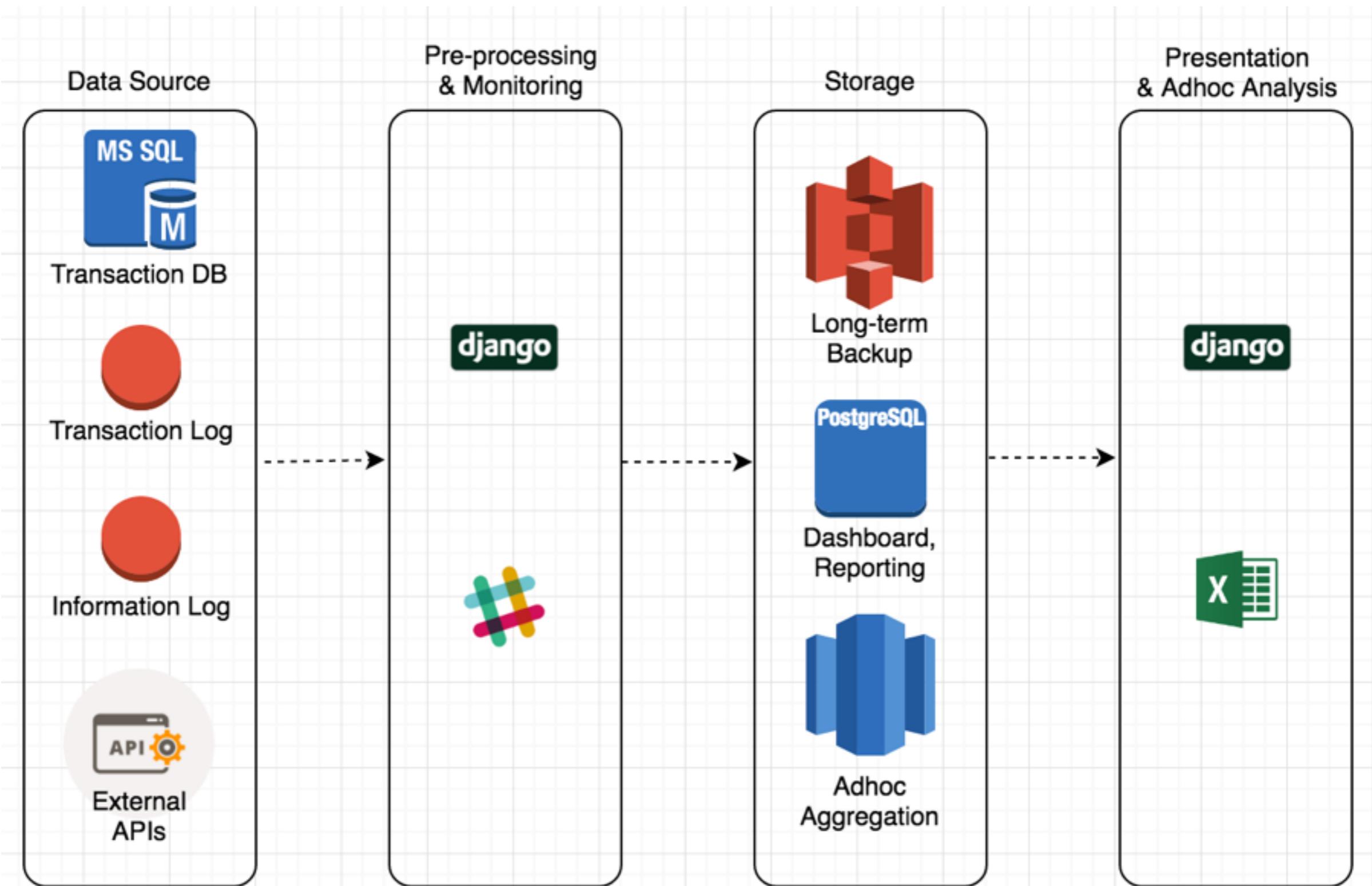
Data Pipeline



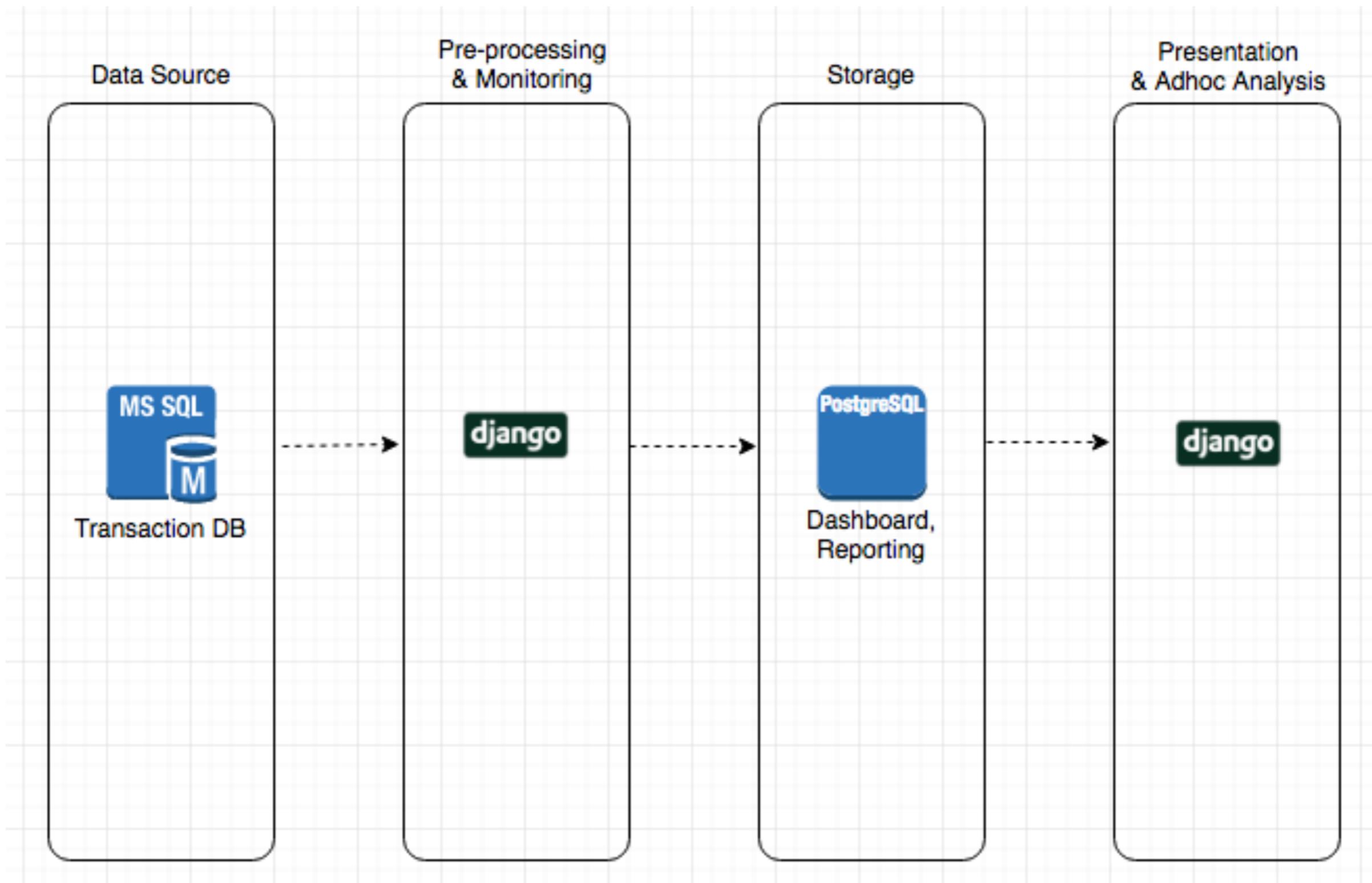
Data Pipeline



Data Pipeline, As-is

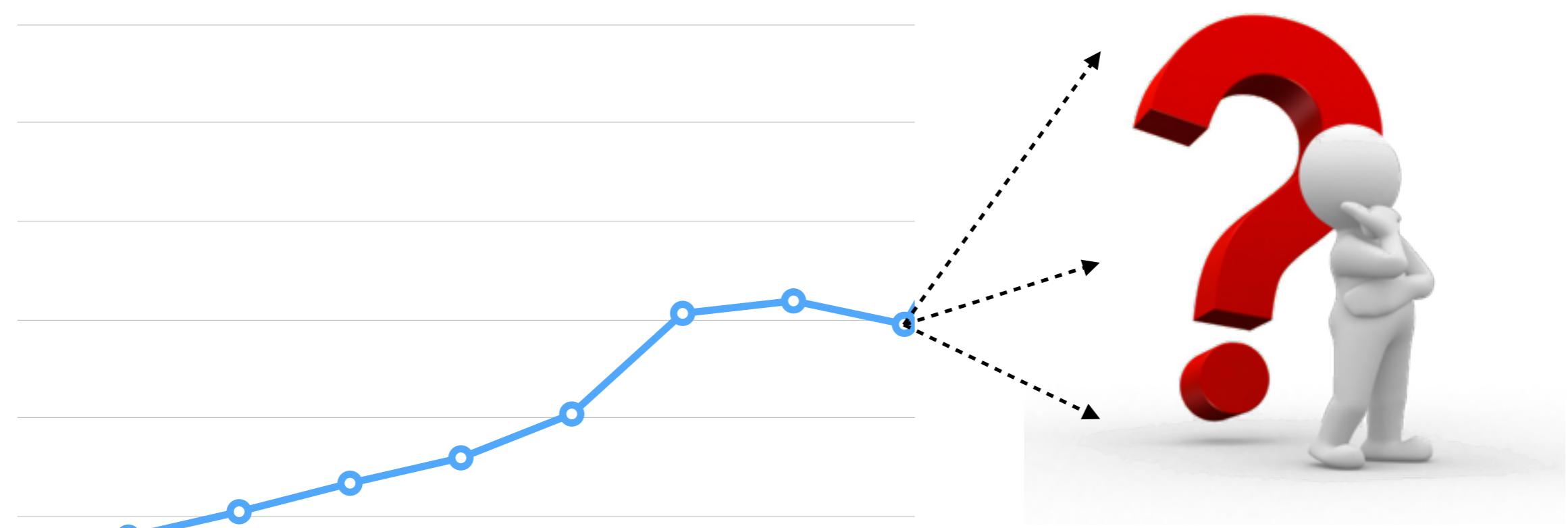


Data Pipeline (2016, Feb)



Needs (2016 Feb)

Needs



‘더’ ‘효과적’인 광고 집행

측정

광고 플랫폼이 제공하는 Report

Facebook Ads Manager (Cost / Results)

Campaign Name	Delivery	Results	Reach	Cost	Amount Spent	Ends
TH - 160428- W - CPM - swipe	Active	31,556 Mobile App Installs	3,882,980	\$0.80 Per Mobile App Install	\$25,177.70	Ongoing
TR - 160217 - M - CPM - MAE	Active	2,524,828 Mobile App Actions	1,500,185	\$0.01 Per Mobile App Action	\$20,600.60	Ongoing
EU - M - 1855 - CPA - 160721 - F - 1min_ver- Profit ALL (Android)	Active	13,432 Mobile App Installs	2,340,565	\$1.39 Per Mobile App Install	\$18,619.92	Ongoing
Europe - 160630 - W - CPA - howto1 - 17-55 - profit_countries -	Active	8,841 Mobile App Installs	1,702,110	\$1.70 Per Mobile App Install	\$15,061.35	Ongoing
EU - M - 2250 - CPA - 160728 - F - swipe - Profit ALL (Android)	Active	7,642 Mobile App Installs	1,471,352	\$1.60 Per Mobile App Install	\$12,214.21	Ongoing

Google Adwords (Cost / Interactions)

Campaign	Budget	Status	Impr.	Interactions	Interaction rate	Avg. cost	Cost
Total - all campaigns	\$8,855.00/day		51,407,410	475,798	0.93%	\$0.08	\$37,581.61
TR - 160428 - M - CPA	\$40.00/day	Eligible	5,672	52 clicks	0.92% CTR	\$0.04 per click	\$1.86
US - 160510 - A - CPA	\$30.00/day	Eligible	8,623	14 clicks	0.16% CTR	\$0.22 per click	\$3.03
US - 160511 - W - CPA - Ver2	\$70.00/day	Eligible	2,229	366 views	16.42% view rate	\$0.03 per view	\$11.83
FR - A - CPA - 160511 - UAC - EU -	\$400.00/day	Eligible	2,655,491	19,027 clicks	0.72% CTR	\$0.11 per click	\$2,133.94
GB - M - 1845 - CPA - 160511 - UAC - EU -	\$250.00/day	Eligible	771,084	5,388 clicks	0.70% CTR	\$0.23 per click	\$1,219.56

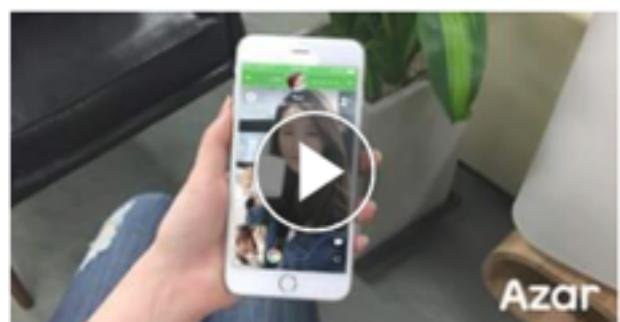
Unmeasurable Loss

Suggested App



เพลิดเพลินกับแอพวิดีโอแชทที่นิยมมากที่สุดในโลกที่
มีคนใช้กว่า 50 ล้านคน!

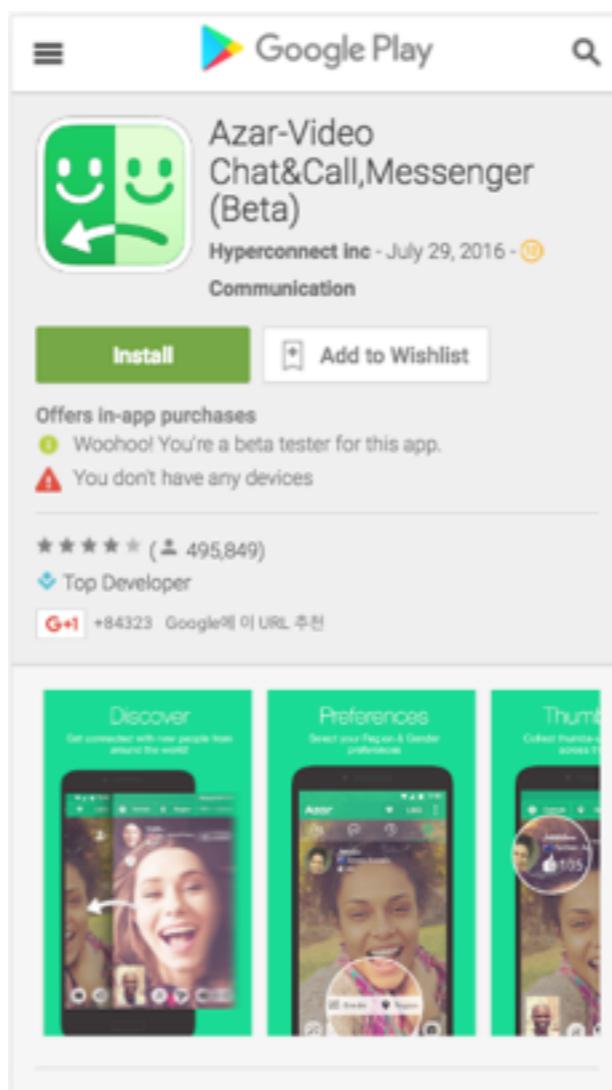
See Translation



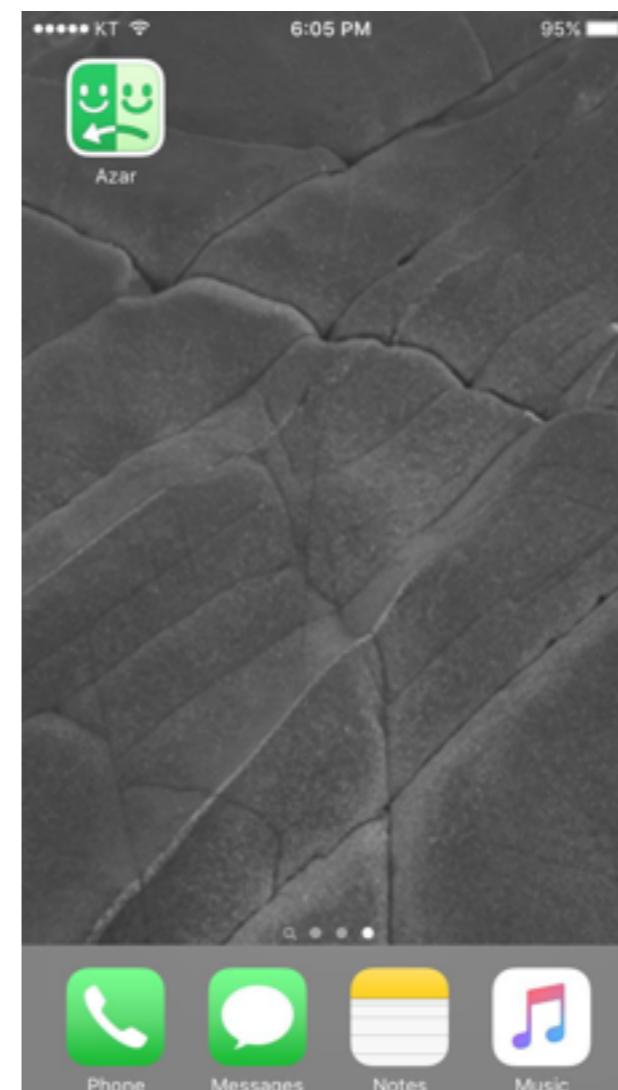
พบกันในการสนทนาร่วมวิดีโอ
Over 6 million people use this

129K 519 Comments 762 Shares

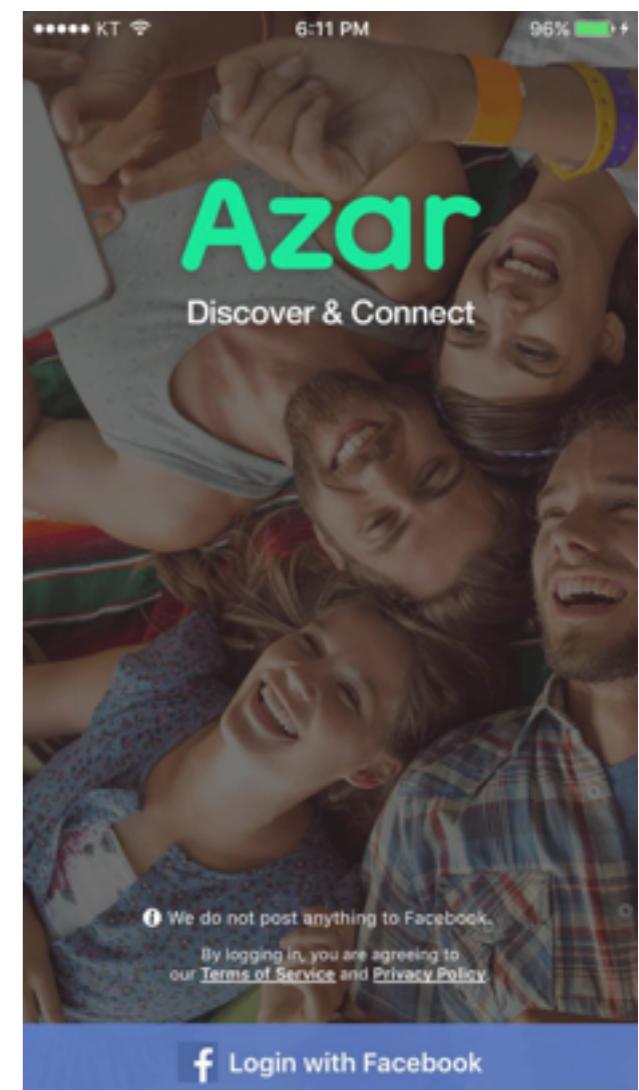
Like Comment Share



To AppStore
Loss



To Install
Loss



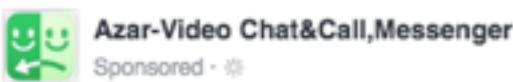
To Run Azar
Loss

Hyperconnect

Unmeasurable Loss

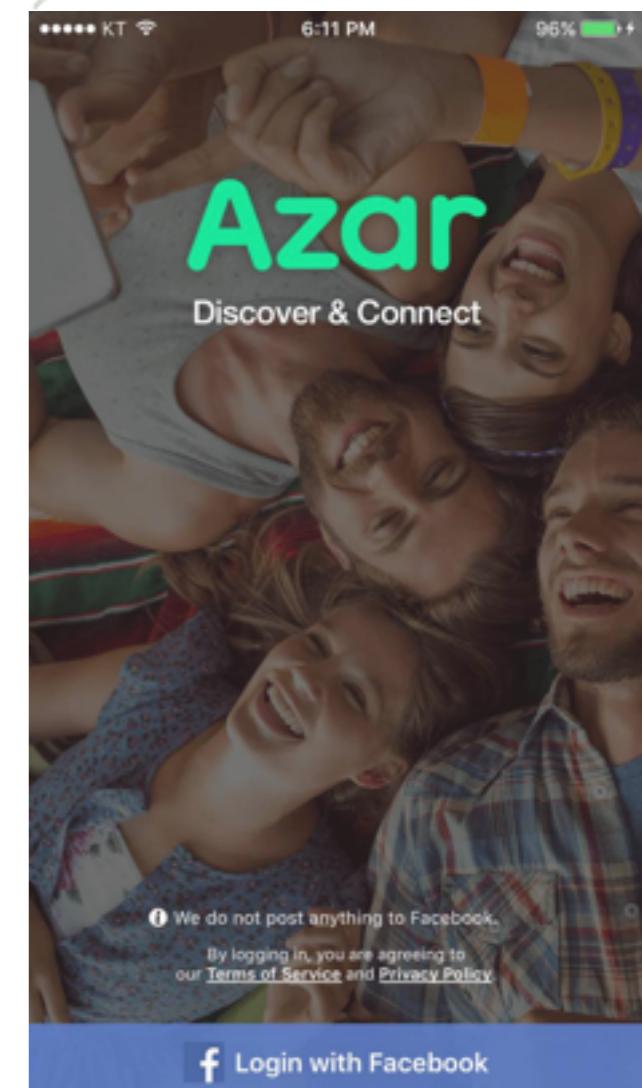
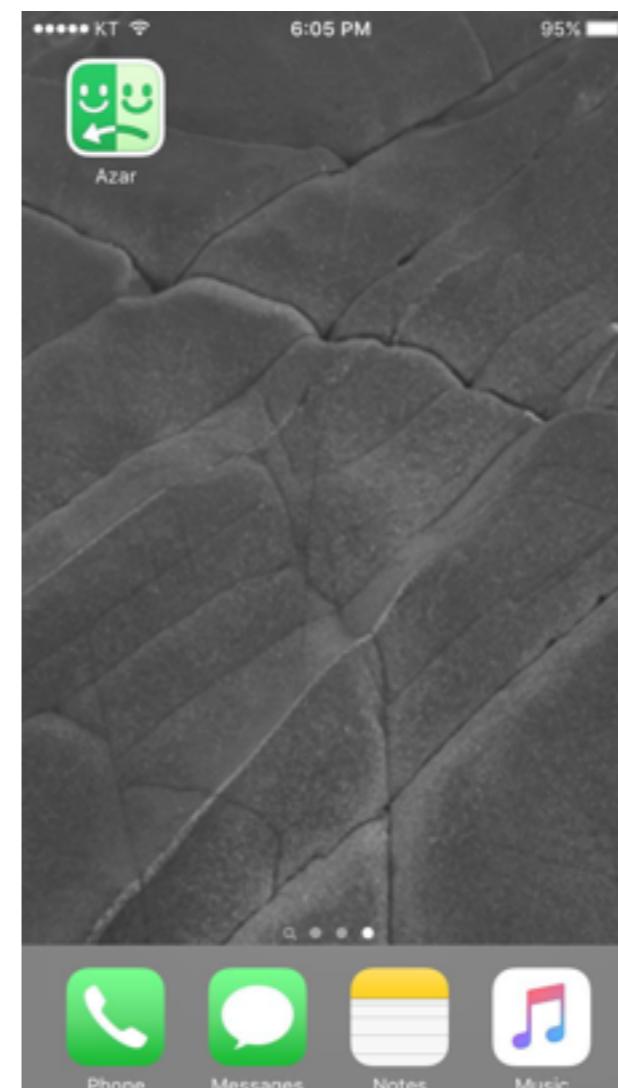
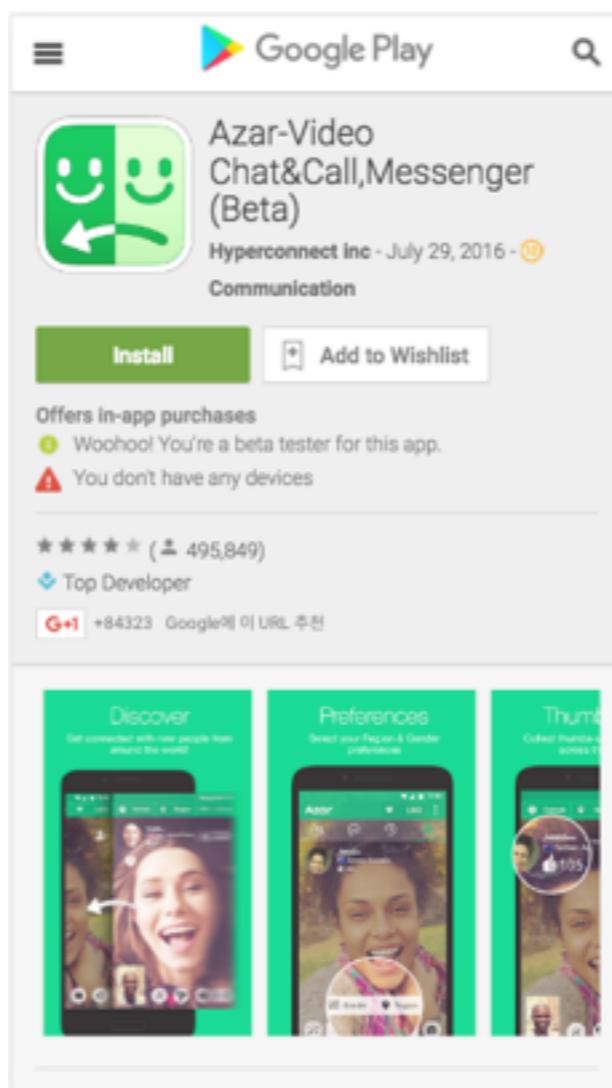
Probe for
Checking Referrer

Suggested App



เพลิดเพลินกับแอพวิดีโอแชทที่นิยมมากที่สุดในโลกที่
มีคนใช้กว่า 50 ล้านคน!

See Translation



To AppStore
Loss



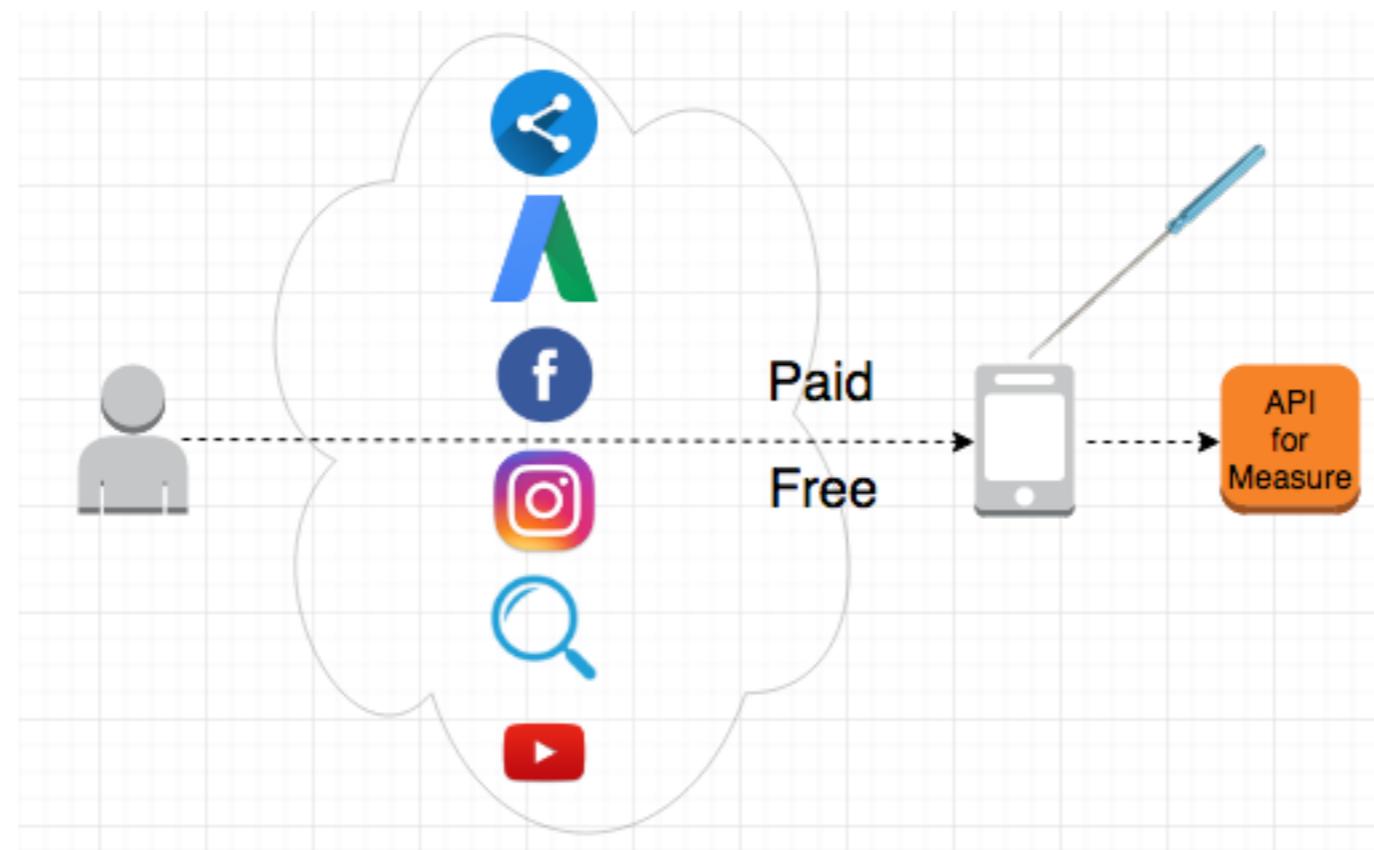
To Install
Loss



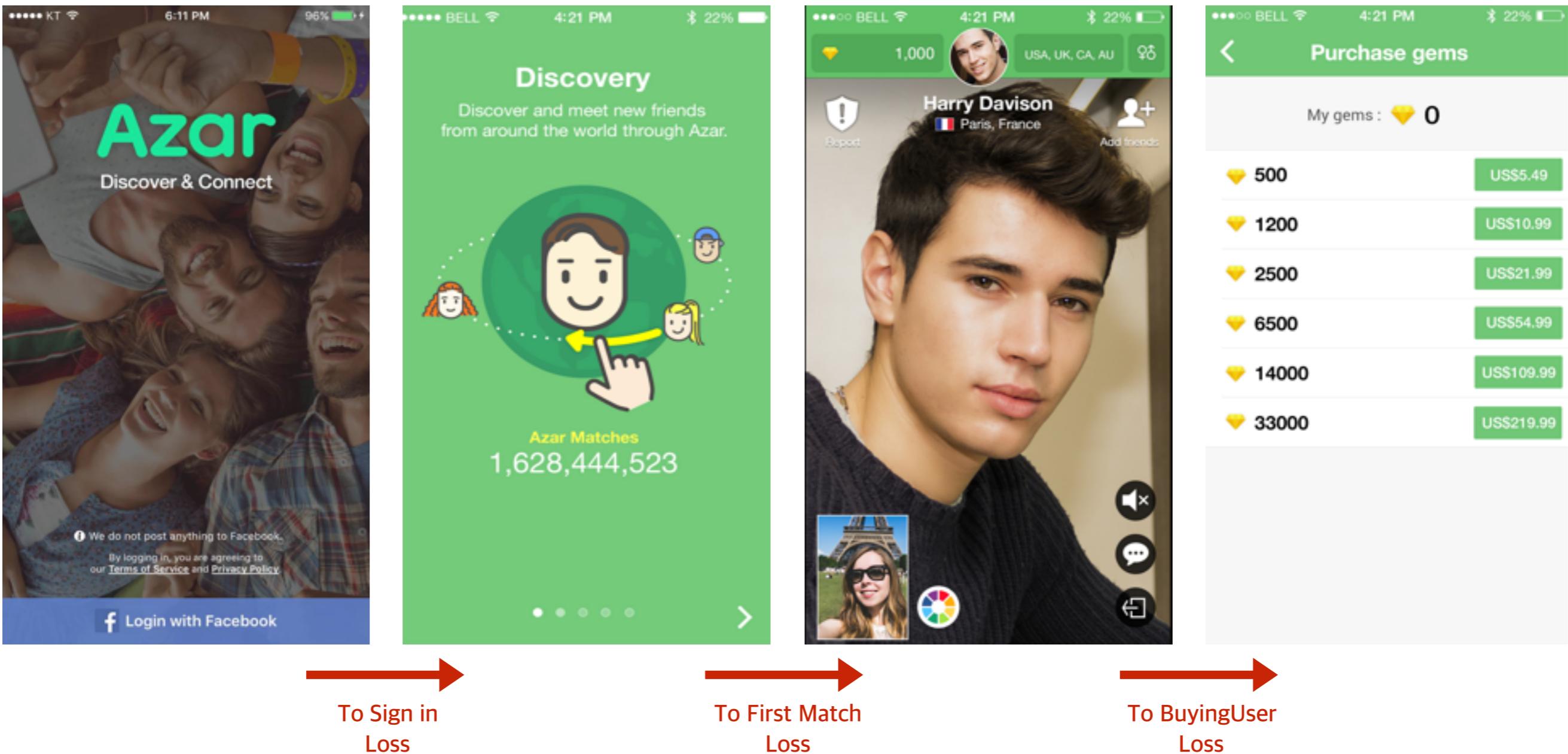
To Run Azar
Loss

Hyperconnect

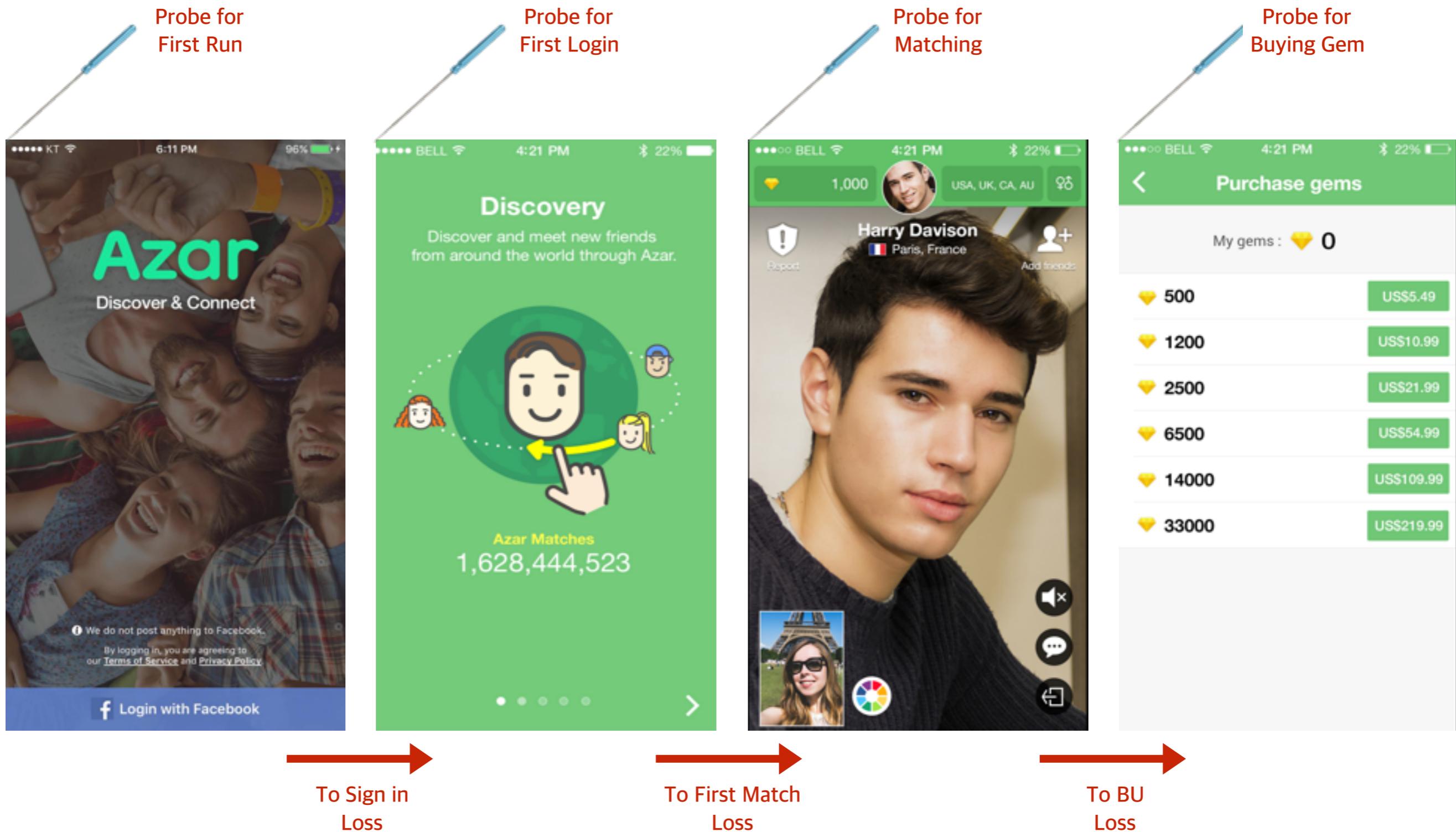
Probe for Measuring (Checking Referrer)



Measurable Loss



Probe for Measuring



Measuring Result (Install to Signup)

Django administration

Home

Dimensions:

- platform
- countrycode
- clientmodel
- versioncode

Start Date: 2016. 08. 12.

Request

Aug. 11, 2016				Thursday				Aug. 10, 2016				Wednesday				Aug. 9, 2016				Tuesday				Aug. 8, 2016				Monday				Aug. 7, 2016				Sunday				Aug. 6, 2016			
COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION	COUNTRYCODE	INSTALL	LOGIN	CONVERSION								
TOTAL																																											
US																																											
SA																																											
VN																																											
TR																																											
TH																																											
AE																																											
GB																																											
KR																																											
FR																																											
KW																																											
TW																																											
BR																																											
EG																																											
ID																																											
IQ																																											
DE																																											
ES																																											
RU																																											

Measuring Result (Install to Signup)

- platform
- countrycode
- clientmodel
- versioncode

Start Date: 2016. 08. 12.

Request

Aug. 11, 2016 Thursday

COUNTRYCODE	INSTALL	LOGIN	CONVERSION
TOTAL			0.93
US			0.92
SA			0.94
VN			0.93
TR			0.94
TH			0.96
AE			0.95
GB			0.93
KR			0.99
FR			0.91
KW			0.96
TW			0.97
BR			0.93
EG			0.94
ID			0.91
IQ			0.95
DE			0.95
ES			0.86
RU			0.81

Measuring Result (Login Retention)

Django administration

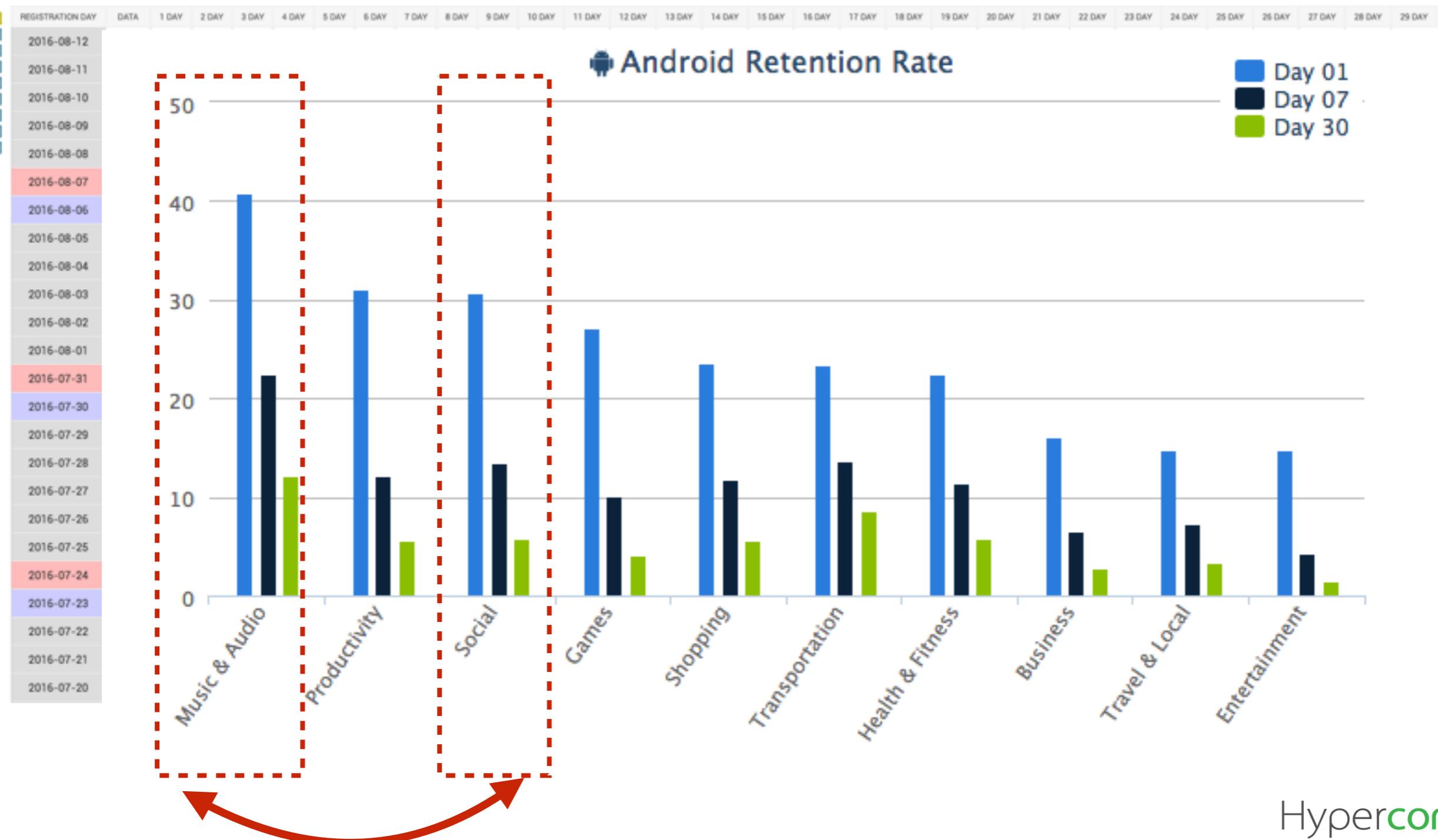
Home

	REGISTRATION DAY	DATA	1 DAY	2 DAY	3 DAY	4 DAY	5 DAY	6 DAY	7 DAY	8 DAY	9 DAY	10 DAY	11 DAY	12 DAY	13 DAY	14 DAY	15 DAY	16 DAY	17 DAY	18 DAY	19 DAY	20 DAY	21 DAY	22 DAY	23 DAY	24 DAY	25 DAY	26 DAY	27 DAY	28 DAY	29 DAY
[0]																															
[1]		2016-08-12																													
[2]																															
[3]			2016-08-11																												
[4]																															
[5]				2016-08-10																											
[6]					2016-08-09																										
[7]						2016-08-08																									
[8]							2016-08-07																								
								2016-08-06																							
									2016-08-05																						
										2016-08-04																					
											2016-08-03																				
												2016-08-02																			
													2016-08-01																		
														2016-07-31																	
															2016-07-30																
																2016-07-29															
																	2016-07-28														
																		2016-07-27													
																			2016-07-26												
																				2016-07-25											
																					2016-07-24										
																						2016-07-23									
																							2016-07-22								
																								2016-07-21							
																									2016-07-20						

Measuring Result (Login Retention)

Django administration

Home



Referrer tracking

Referrer Tracking

Ad Platform	Purpose	Client	Methods
Google Adwords	Install	Android	코드 없는 안드로이드 앱 설치 추적 (x) Use Branch Link as Final URL
		iOS	Use Branch Link as Final URL
	Engagement	Android	Deep Link or Use Branch Link as Final URL
		iOS	N/A
Facebook Ads	Install	Android	Deferred Deep Linking
		iOS	Deferred Deep Linking
	Engagement	Android	Deferred Deep Linking
		iOS	Deferred Deep Linking
ETC (Blog/Twit Post, Description in Youtube, ...)	Install/Engagement	Android/iOS	Use Branch Link as Final URL

https://appstore.com/?utm_source=google-play&utm_medium=organic



[https://appstore.com/
?utm_source=google-play
&utm_medium=organic](https://appstore.com/?utm_source=google-play&utm_medium=organic)

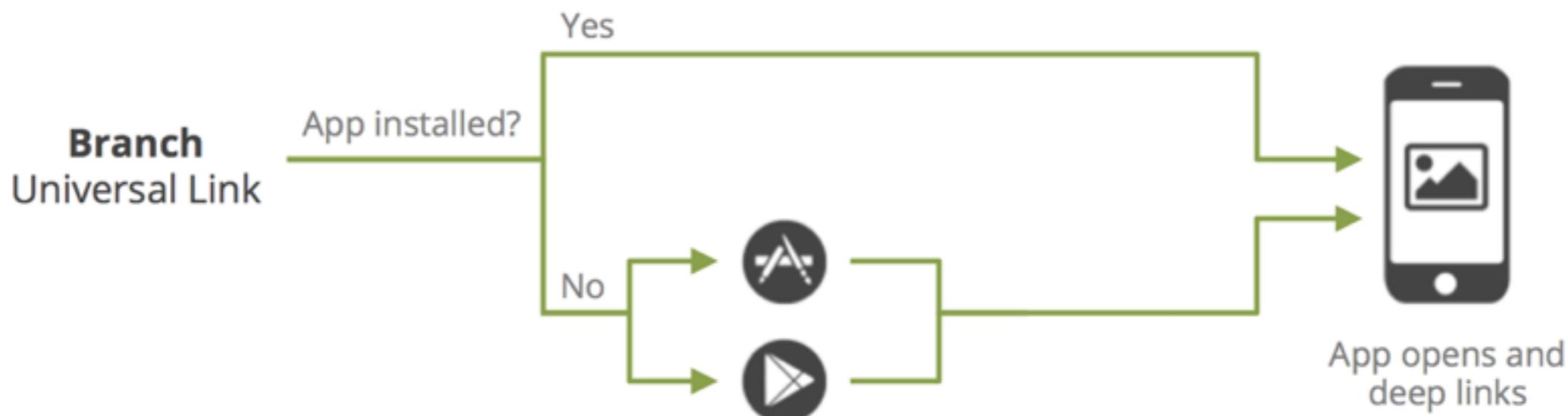
Campaign 정보



https://appstore.com/?network=g&creative=121686409148&campaignid=462818468&keyword=azar&matchtype=b&loc_physical_ms=21097

...





Device preference Mobile

Landing page Final URL (Recommended) Destination URL

Enter the final web page someone sees. Specify redirects (if any) in the Ad URL options. [Learn more](#).

<http://> ▾

www.example.com/store/redshoes

Branch Link as Final URL

Marketing Title
INSTALL|ADWORDS|BH - 160809 - A - SEARCH

▼ Tags
These are used to help segment your users in the summary tab

Channel ADWORDS
E.g. Facebook, Twitter, Email, etc.

Campaign BH - 160809 - A - SEARCH

Tags
For advanced use only

▶ Custom Link Label

▶ Custom Redirects

▶ Social Media Description

▼ Deep Link Data (Advanced)
Add custom information to pass with your link.

Key	:	Value
_action	:	attribution
campaign_id	:	BH - 160809 - A - SEARCH
channel	:	ADWORDS
feature	:	INSTALL

+ Add more data

Campaign 정보

Next Branch



Deferred Deep Linking (입력 방법)

What text and links do you want to use?

Help: Editing Ads

Connect Facebook Page
Choose a Facebook Page so you can run ads on Facebook. Your app's icon and title will link to the app store you selected.

Branch Metrics

Headline 3
Branch Monster Factory

Text 36
Create a Branchster of your own and share with friends

Deep Link (optional)
Enter the deep link URL

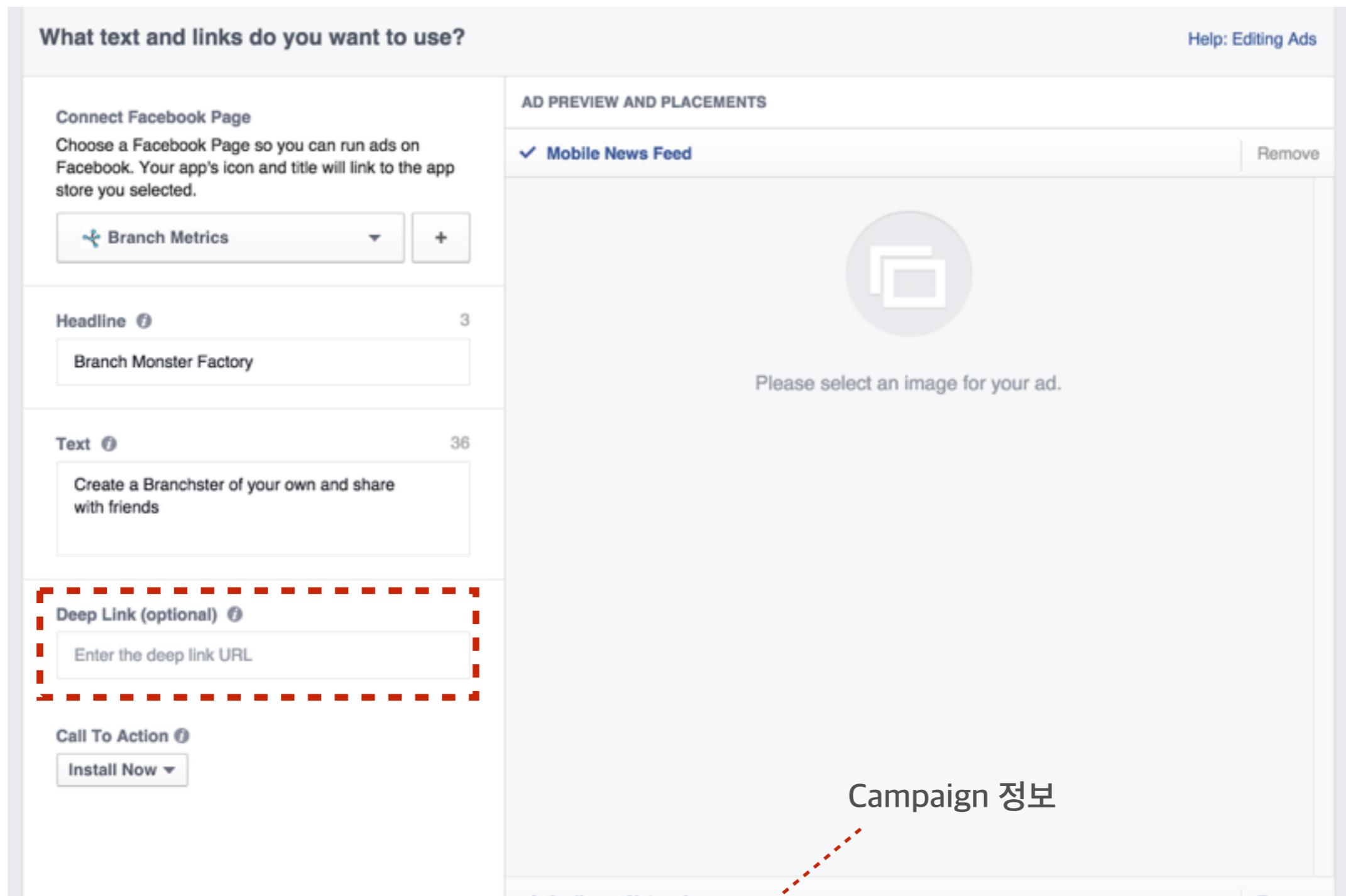
Call To Action
Install Now

AD PREVIEW AND PLACEMENTS

✓ Mobile News Feed Remove

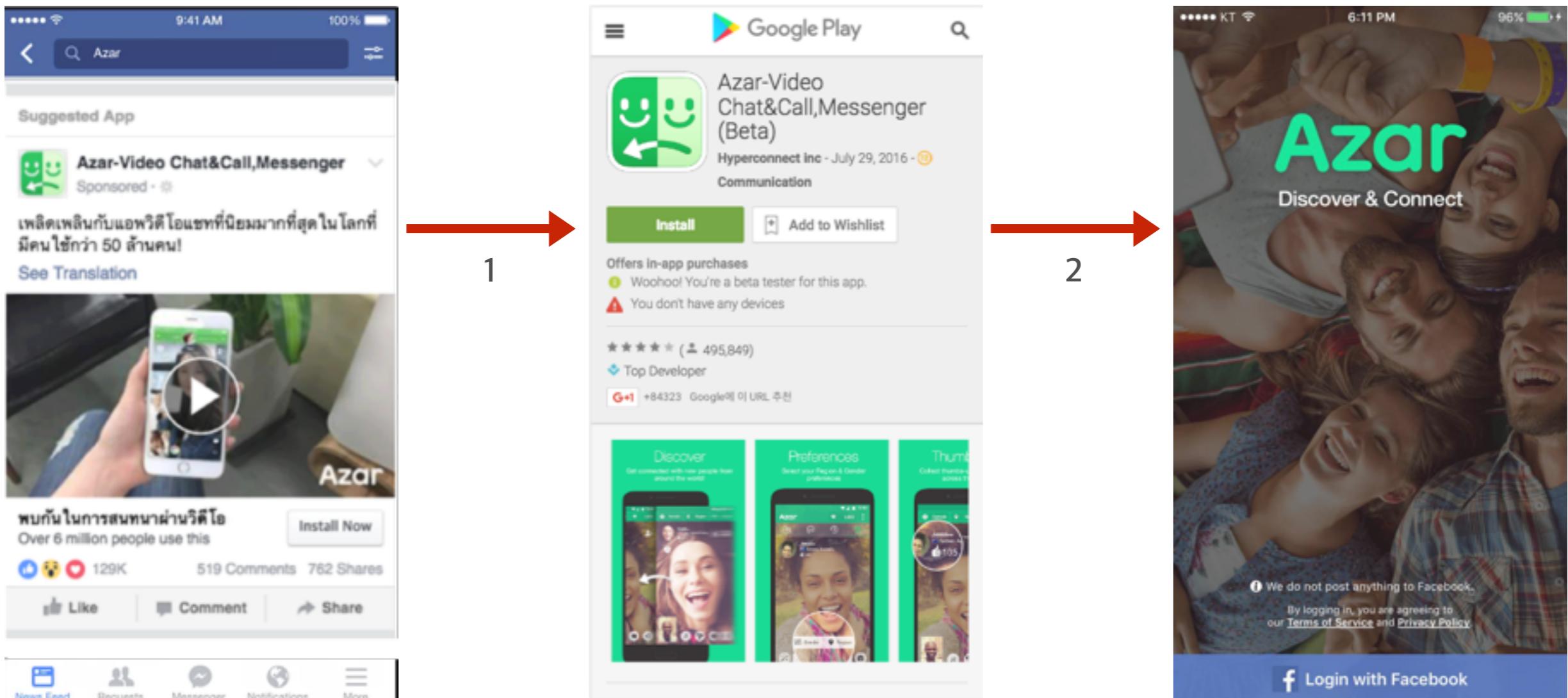
Please select an image for your ad.

Campaign 정보



URI Scheme : {URI}://{Path}?{Parameters}

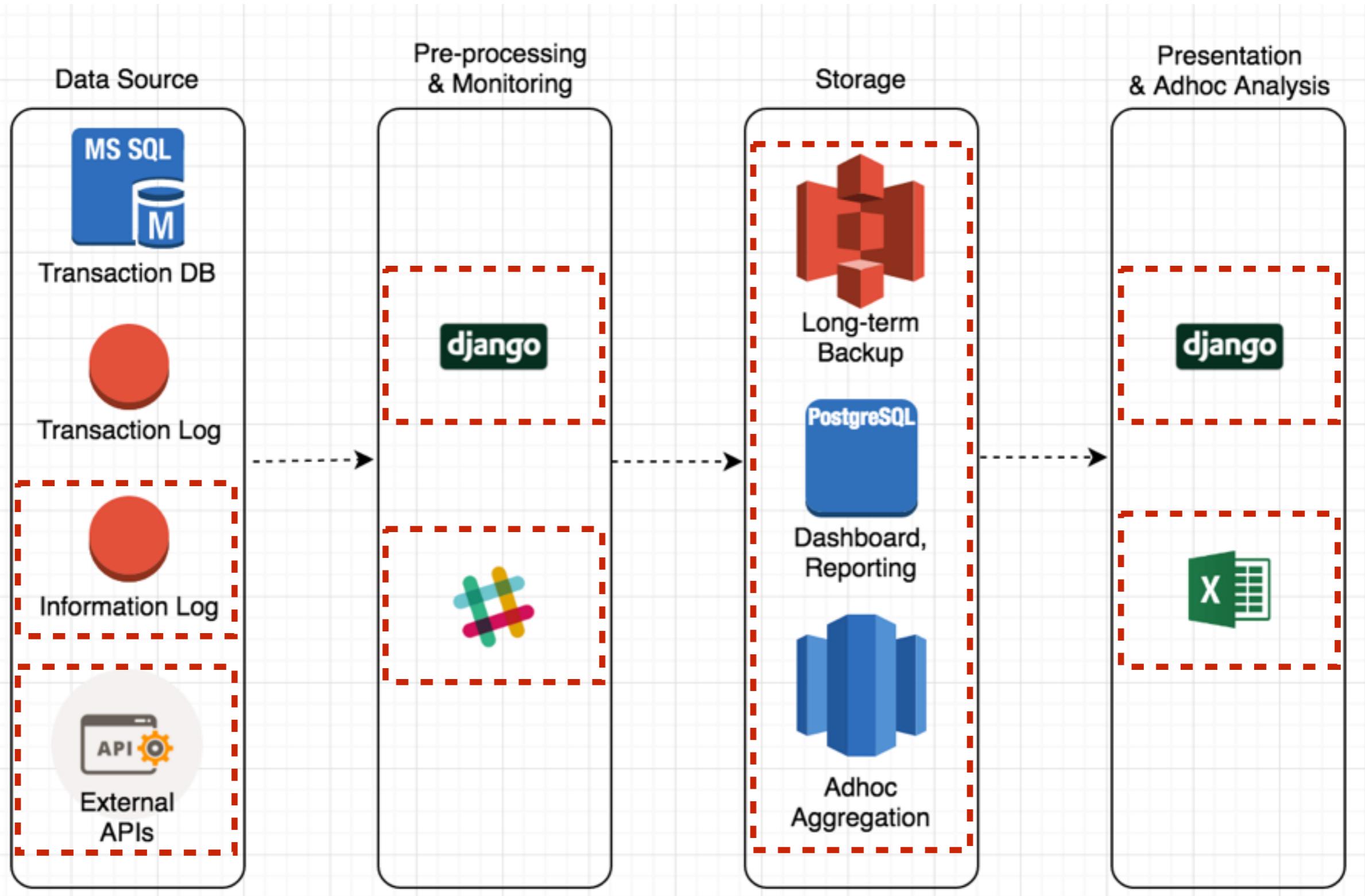
Deferred Deep Linking (동작 순서)



3. {URI}://{Path}?{Parameters}

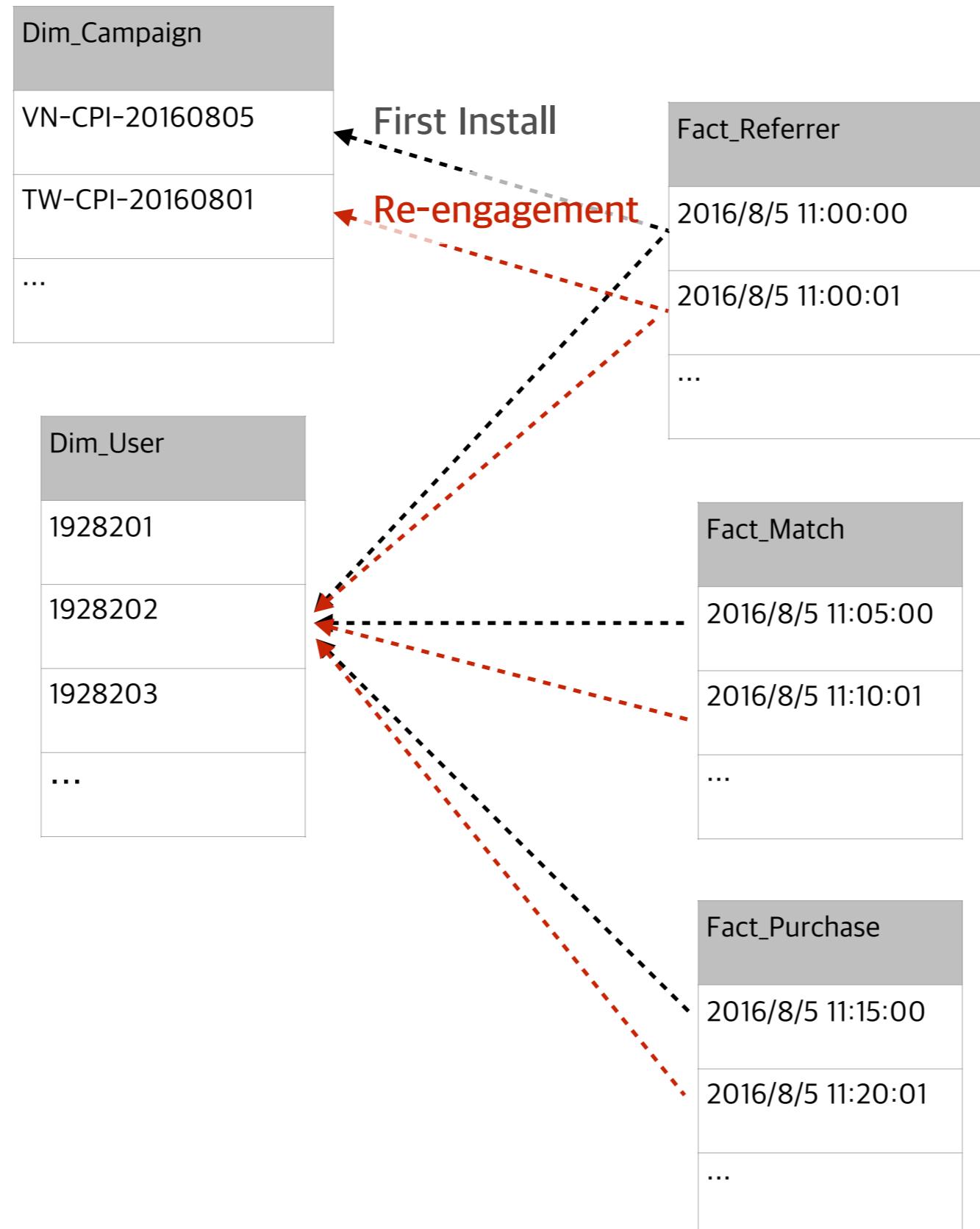
수집 및 처리

Collect and Process



InApp Behavior,
Referrer,
AdPerformance,
...

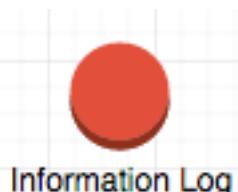
Tables



Redshift Table and dumping JSON

redshift.ddl

```
CREATE TABLE fact_referrer {
    user_id BIGINT NOT NULL,
    campaign_id BIGINT NOT NULL,
    datehour_id BIGINT NOT NULL,
    date_created TIMESTAMP,
    UNIQUE (user_id, campaign_id),
    PRIMARY KEY (user_id, campaign_id)
}
SORTKEY(user_id, campaign_id, datehour_id);
```



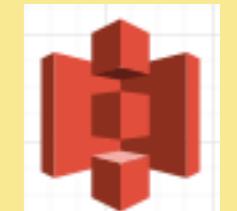
Information Log

django

manage.py preprocess_datalog

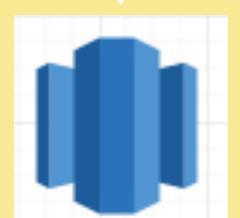
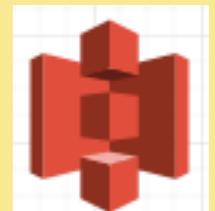
s3://datalog/fact_referrer_2016080122.json.gz

```
{"user_id": "43604829", "campaign_id": "143", "datehour_id": "2016080122", "date_created": "2016-08-01 22:00:00.373000"}
{"user_id": "44413013", "campaign_id": "145", "datehour_id": "2016080122", "date_created": "2016-08-01 22:00:00.378000"}
{"user_id": "38046509", "campaign_id": "124", "datehour_id": "2016080122", "date_created": "2016-08-01 22:00:00.490000"}
{"user_id": "11667075", "campaign_id": "163", "datehour_id": "2016080122", "date_created": "2016-08-01 22:00:00.529000"}
{"user_id": "42812776", "campaign_id": "189", "datehour_id": "2016080122", "date_created": "2016-08-01 22:00:00.547000"}  
...
```



Redshift Table and dumping JSON

```
DATA BASES['azar_redshift'] = {  
    'ENGINE': 'django.db.backends.postgresql_psycopg2',  
    'NAME': '...',  
    'USER': '...',  
    'PASSWORD': '...',  
    'HOST': '...',  
    'PORT': '5439'  
}  
  
connection = connections['azar_redshift']  
  
with connection.cursor() as cursor:  
    table_name = 'fact_referrer'  
    key_path = 's3://datalog/fact_referrer_2016080122.json.gz'  
  
    query = '''  
        copy {table_name} from '{key_path}' json 'auto'  
        credentials 'aws_access_key_id={access_key_id};aws_secret_access_key={secret_access_key}'  
        gzip  
        NULL as ''  
        dateformat as 'auto'  
        timeformat as 'auto'  
        TRUNCATECOLUMNS  
        region '{bucket_region}'  
    '''.format(**locals())  
    try:  
        cursor.execute(query)  
    except Exception as e:  
        send_to_slack(message='dump_to_redshift 중에 오류가 발생했습니다 {}'.format(e), channel="#dev_routine_result")
```



Aggregate and Generate reports (누적 집계)

Django administration

WELCOME, JACOB_OH. VIEW SITE / CHANGE PASSWORD / LOG OUT

Home › Kpiapp › Marketing campaigns

Select marketing campaign to change

ADD MARKETING CAMPAIGN +

Q Search 1766 results (35995 total)

1 2 3 4 ... 17 18 1766 marketing campaigns

Action: Go 0 of 100 selected

FILTER

By channel

All

FACEBOOK

INSTAGRAM

ADWORDS

ID	CHANNEL	FEATURE	KEY AD NAME	ACCOUNT ID	ACCOUNT NAME	CAMPAGN ID	CAMPAGN NAME	ASSET ID	ASSET NAME	DEEPLINK URL	총설치수	총로그인수	SUBMITTED
35941	FACEBOOK	INSTALL									25	134	chuny
35940	FACEBOOK	INSTALL									-	-	chuny
35939	FACEBOOK	INSTALL									0	1	chuny
35937	FACEBOOK	INSTALL									0	3	chuny
35936	FACEBOOK	INSTALL									-	-	jane
35935	FACEBOOK	INSTALL									-	-	jane
35681	FACEBOOK	INSTALL									5	16	chuny
35679	FACEBOOK	INSTALL									5	66	chuny
35678	FACEBOOK	INSTALL									1	2	katie
35676	FACEBOOK	INSTALL									-	-	katie
35675	FACEBOOK	INSTALL									-	-	chuny
35672	FACEBOOK	INSTALL									-	-	katie
35671	FACEBOOK	INSTALL									15	84	katie

Aggregate and Generate reports (기간 설정)

Django administration

Home

Campaign

Marketing channel: FACEBOOK

Key Ad Name:

Ad Objective: ALL

Ad Account: ALL

Gender: ALL

Country: ALL

Start Date: 2016. 07. 28.

End Date: 2016. 08. 04.

Time span: 7D

Submit

Segment Range (2016-07-28 ~ 2016-08-04), Measuring Window Size: 7																		
KEYAD	SPENDING	REGISTRATION	LOGINFREQUENCY	BUYINGUSER	BUYINGFREQUENCY	BUCONVERSION(%)	2000EM	3000EM	5000EM	12000EM	25000EM	65000EM	140000EM	330000EM	REVENUE	ARPU	ARPU	
TOTAL	80708.54	98067	288678	456	1012	0.48	0	19	527	311	137	12	4	2	1184900	12	2543	
EU - M - 2250 - CPA - 160728 - F - swipe - Profit ALL (Android)	6975.05	3051	6794	14	21	0.46	0	1	16	3	0	1	0	0	18400	5	3114	
EU - M - 2250 - CPA - 160729 - F - swipe_Aisan - Profit ALL (IOS)	6050.18	19	73	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
TR - M - 2040 - CPM - 160217 - MAE	4129.64	9941	25469	204	527	2.05	0	6	229	187	93	8	3	1	700200	70	3432	
TH - W - 1734 - CPM - 160428 - swipe	4024.9	3800	14827	4	5	0.11	0	0	3	2	0	0	0	0	3900	1	975	
EU - M - 1855 - CPA - 160721 - F - ver1 - MediumCPA (Android)	2892.23	1215	2584	12	23	0.99	0	0	16	4	3	0	0	0	20300	17	1692	
EU - M - 1855 - CPA - 160721 - F - ver1_ver - LowCPA (Android)	2349.88	1892	4275	15	36	0.79	0	1	20	7	1	0	0	0	42700	23	2847	
EU - M - 1855 - CPA - 160721 - F - ver1_HighCPA (IOS)	1959.48	4	10	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
TR - M - 2046 - CPM - 160205	1826.25	239	593	1	3	0.42	0	0	1	2	0	0	0	0	2900	12	2900	
VN - W - 1734 - CPM - 160420 - swipe	1795.73	2088	7940	4	4	0.19	0	0	4	0	0	0	0	0	2000	1	500	
Europe - 160630 - W - CPA - howto1 - 17-55 - profit_countries -	1730.28	9	13	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
EU - M - 1855 - CPA - 160721 - F - Timin_ver - MediumCPA (Android)	1576.52	707	1609	9	15	1.27	0	0	12	2	1	0	0	0	10900	15	1211	
Latam - W - 1838 - CPA - 160415 - F - swipe - sports	1501.4	3484	10581	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
PH - W - 1834 - CPM - 160527 - ACT	1448.79	1500	4268	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
Latam - W - 1838 - CPA - 160506 - F - top1	1317.49	1750	3224	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
EU - M - 1855 - CPA - 160721 - F - 1min_ver - MediumCPA (IOS) -	1278.14	6	11	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
TR - M - 1937 - CPA - 150908	1224.96	636	1329	2	2	0.31	0	0	1	1	0	0	0	0	1700	3	850	
VN - W - 1734 - CPM - 160401	1193.5	1141	3803	1	1	0.09	0	0	1	0	0	0	0	0	500	0	500	
EU - M - 1855 - CPA - 160721 - F - ver1 - MediumCPA (IOS) -	1151.93	2	1	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
BR - W - 1834 - CPA - 160603 - F - swipe	1071.13	2092	5966	1	2	0.05	0	0	1	0	0	1	0	0	7000	3	7000	
ID - W - 1834 - CPA - 160616 - F - PVC - swipe2	994.01	1084	3507	1	1	0.09	0	0	1	0	0	0	0	0	500	0	500	
ID - W - 1834 - CPA - 160616 - F - PVC	987.39	638	1646	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
PH - W - 1834 - CPM - 160518 - F - swipe	946.19	1236	5110	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
TR - M - 2031 - CPM - 151111	834.98	707	1653	5	16	0.71	0	0	6	9	1	0	0	0	16300	23	3250	
ID - W - 1834 - CPA - 160719 - F - ACT3	831.41	2	17	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
TR - M - 1928 - CPA - 160420 - F - swipe(2)	824.97	839	1741	5	10	0.60	0	0	2	3	5	0	0	0	17100	20	3420	
EU - M - 2250 - CPA - 160728 - F - swipe_Aisan_RED - Profit ALL (Android)	751.8	618	1565	1	1	0.16	0	0	1	0	0	0	0	0	500	1	500	
Latam - W - 1838 - CPA - 160421 - F - swipe - top1	657.86	1123	2819	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
TR - M - 2251 - CPA - 160203	657.77	1411	3257	21	31	1.49	0	3	18	9	1	0	0	0	23200	16	1105	
EU - W - 1755 - CPA - 160422 - F -- swipe1 - Balkan, Android	657.54	342	917	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
ID - W - 1736 - CPA - 160729 - swipe2	600.91	1025	2848	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
MY - M - 1833 - CPA - 160421	595.77	811	2766	2	2	0.25	0	1	1	0	0	0	0	0	800	1	400	
MX - W - 1834 - CPA - 160603 - F - swipe2	586.8	1252	3905	1	1	0.08	0	0	1	0	0	0	0	0	500	0	500	
EU - M - 1855 - CPA - 160721 - F - 1min_ver - HighCPA (IOS)	548.76	3	14	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
IN - M - 2036 - CPA - 160629 - F - swipe - spec	528.46	2130	5855	4	4	0.19	0	0	4	0	0	0	0	0	2000	1	500	
PH - W - 1833 - CPM - 160420 - swipe	516.36	668	2132	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	
TR - M - 2141 - CPA - 160419 - F - swipe(1)	483.68	906	2107	6	14	0.66	0	0	9	2	2	0	0	1	44900	50	7483	
MY - W - 1834 - CPA - 160603 - F - swipe2	459.68	457	1316	1	1	0.22	0	0	1	0	0	0	0	0	500	1	500	
TR - M - 2148 - CPM - ver1 - 160210	454.74	678	1620	6	11	0.88	0	0	5	4	1	1	0	0	16300	24	2717	
TR - M - 1825 - CPA - 160522 - F - swipeA	431.28	3	5	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	

Aggregate and Generate reports (Segment 단위 Cohort)

	A	B	C	F	G	J	K	N	O	R	S	V	W	Z	AA	AD	AE	AH
1		Country	Ad spending - Total		Install - Total		CPA - Total		Ad spending - FB		Install - FB		CPA - FB		Ad spending - Adwords		Install - Adwords	
2	Total		Total		Total		Total		Total		Total		Total		Total		Total	
3			<Android>															
4	05/23 - 05/29																	
5																		
6																		
7	05/30 - 06/05																	
8																		
9																		
10	06/06 - 06/12																	
11																		
12																		
13	06/13 - 06/19																	
14																		
15																		
16	06/20 - 06/26																	
17																		
18																		
19	06/27 - 07/03																	
20																		
21																		
22	07/04 - 07/10																	
23																		
24																		
25	07/11 - 07/17																	
26																		
27																		
28	07/18 - 07/24																	
29																		
30																		
31	07/25 - 07/31																	
32																		
33																		
34																		
35	05/23 - 05/29																	
36																		
37																		
38	05/30 - 06/05																	
39																		
40																		
41	06/06 - 06/12																	
42																		
43																		
44																		

Monitoring

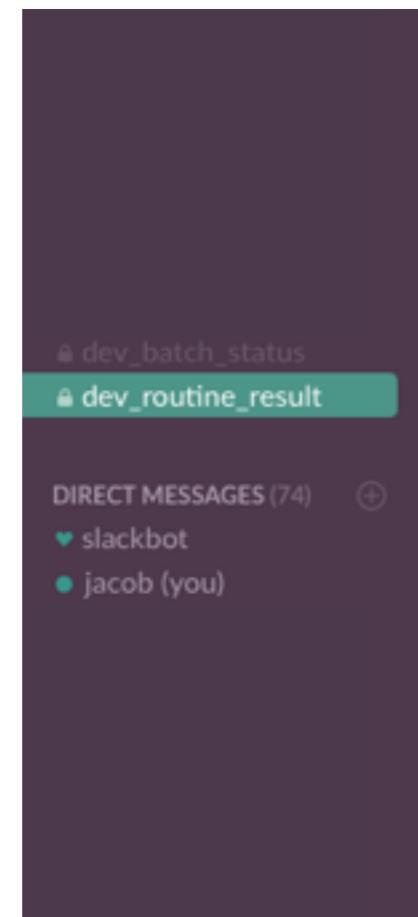
```
def routine_job(command_name):
    def decorator(func):
        @wraps(func)
    def wrapper(*args, **kwargs):
        send_to_slack(message=start_message) # 작업 시작 알림

        try:
            ret = func(*args, **kwargs)
        except Exception as e:
            send_to_slack(message=exception_message, attachments=attach) # 문제 알림 (w/o traceback)
        else:
            send_to_slack(message=end_message, attachments=attach) # 정상 종료 알림

        return ret

    return wrapper

return decorator
```



Batch Admin BOT 7:17 AM
preprocess_datalog : Start command - 2016-08-07 07:20:03

Batch Admin BOT 7:30 AM
check_session : Start command - 2016-08-07 07:30:06

Admin Alert BOT 7:30 AM
check_session Not Completed

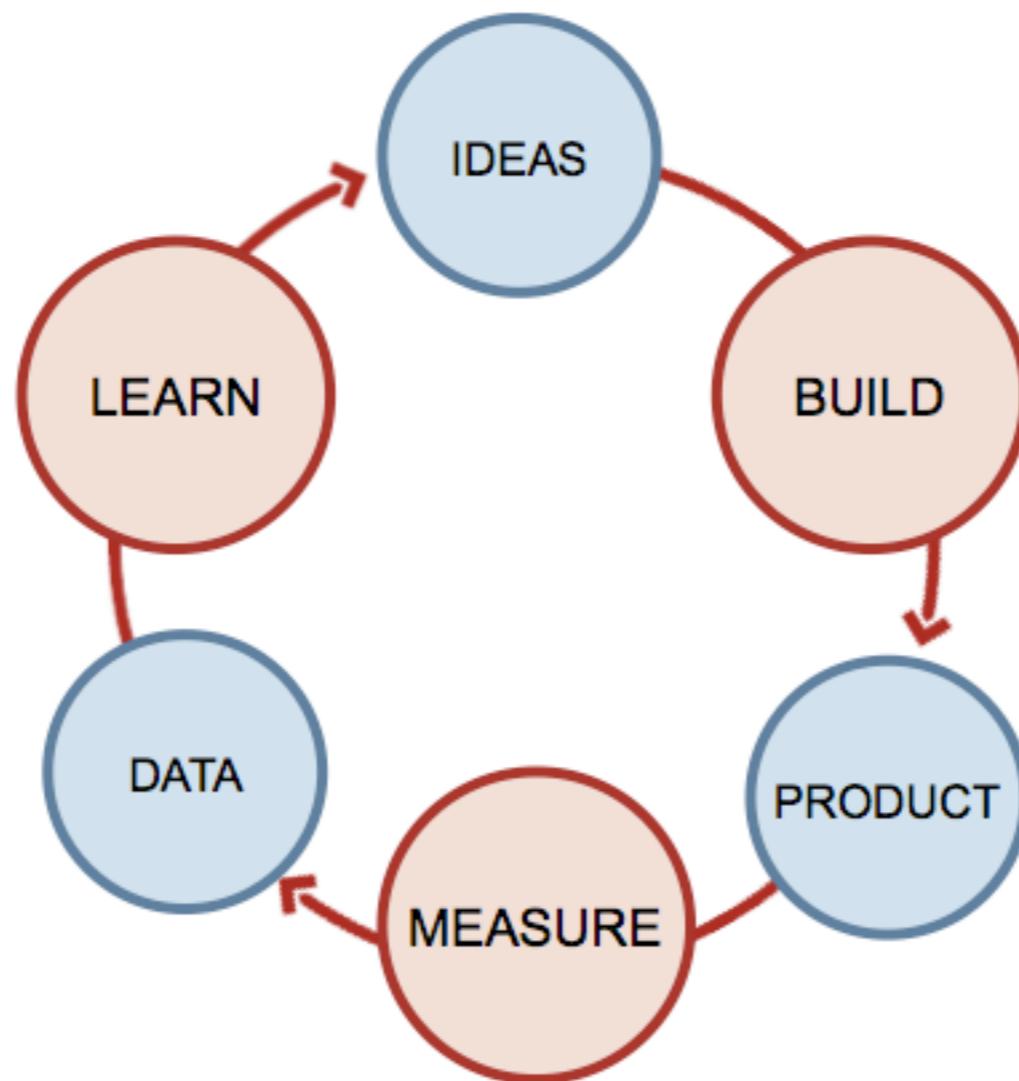
Exception 집계된 세션에 0이 포함되어 있습니다. GA 집계가 지연되고 있을 가능성이 있습니다.

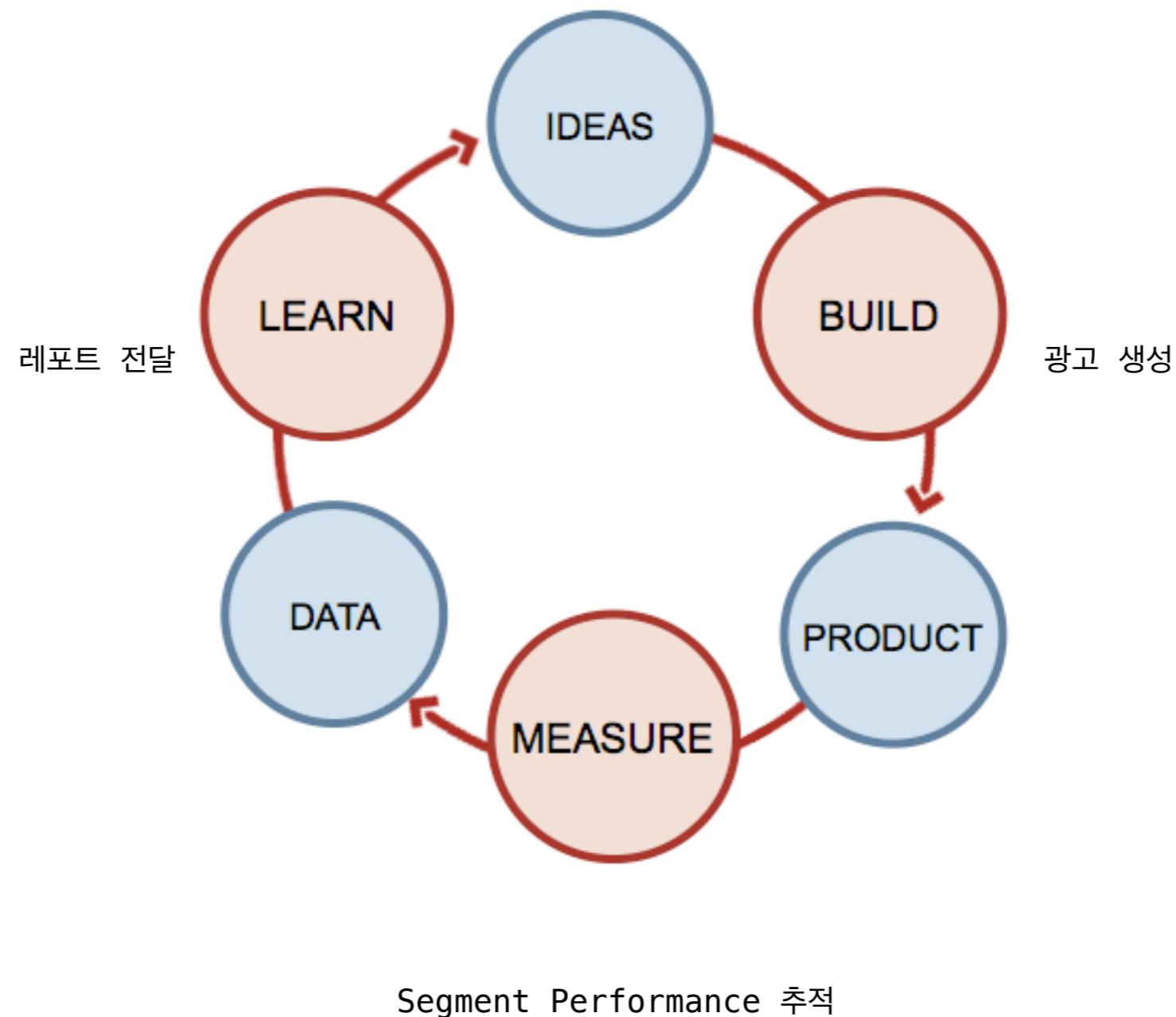
KPI Agent BOT 7:59 AM
이 처리되지 않았습니다

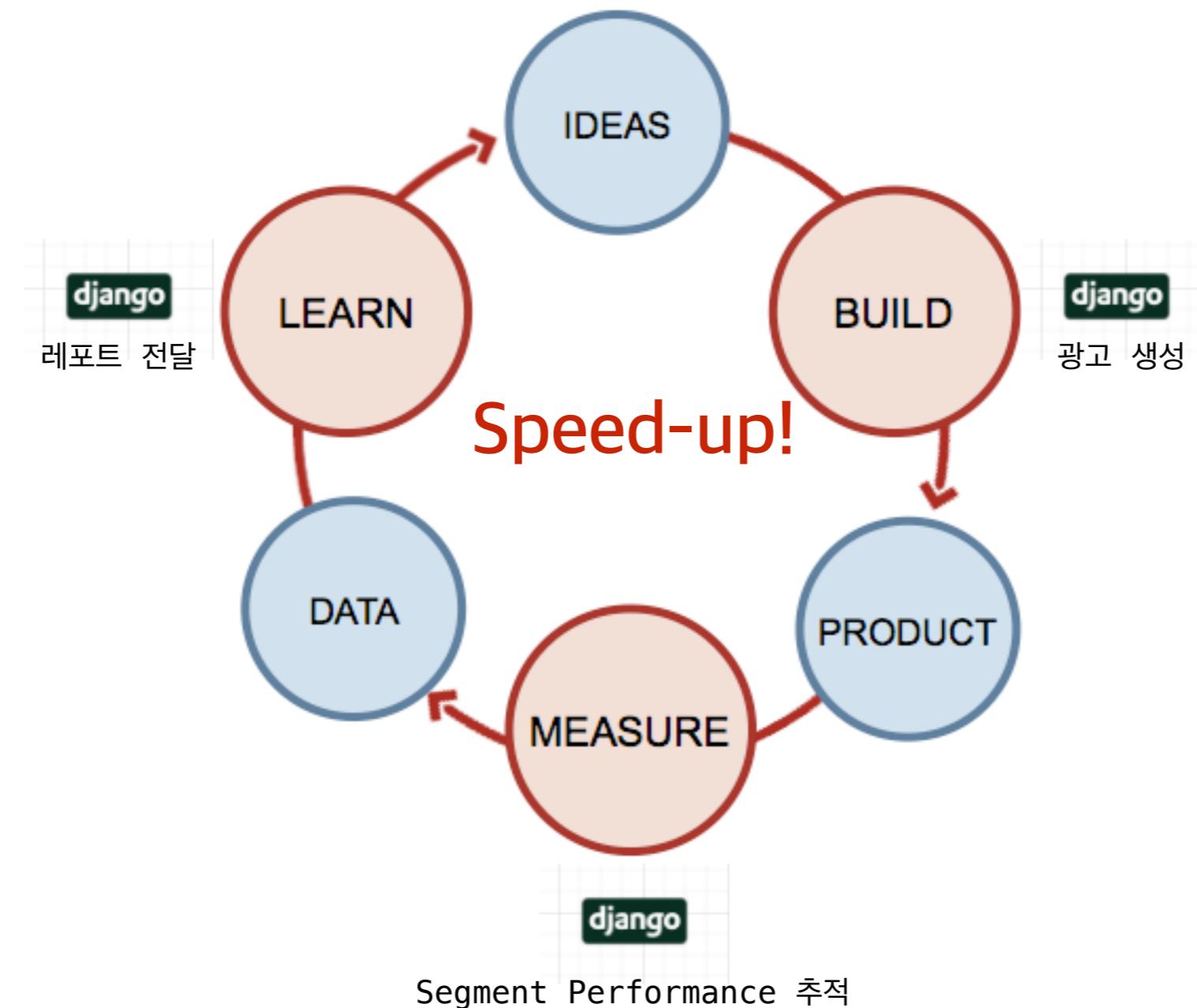
Batch Admin BOT 7:59 AM
preprocess_datalog : Command Completed

end time : 2016-08-07 08:02:36 total time = 2553.71394

Profit!







Results



We're hiring

c�行@hpcnt.com

지금 지원하기

Q & A!