



Mobile for Development Impact

Mobile User Analytics Tool Case Study

Mobile Agriculture: Taking full advantage of your
usage data

Adam Wills
May 2014



**The MasterCard
Foundation**



OMIDYAR NETWORK™

Challenge

We want to know more about users of mobile services targeting underserved segments. How can we better understand existing users' experience with the service?

Opportunity

Mobile delivery channels that involve user interaction afford us new opportunities to capture usage data. How can we use this responsibly to improve the services?

This deck presents *real usage data* from an anonymised mobile agriculture service to highlight the opportunity

Why do we care about this?

In the last few years, we have seen a significant number of products and services around the world aiming to serve underserved populations (**1,600** as of May 2014 in our own [product and service tracker](#)). Because these are delivered through a mobile platform, many of these services are generating valuable data that could be used to identify areas for service improvement.

GSMA's Mobile for Development Impact team are in a unique position to explore this topic, acting as a trusted partner for service providers to help unlock the value of potentially sensitive data. We wanted to understand the viability and utility of supporting services in this area, and the role we might be able to play in providing best practice and tools on this relatively nascent topic for a wide range of players offering mobile solutions to underserved customers across all sectors.

What we're sharing now

To begin, we considered a method to identify bottlenecks in customers' journeys toward regular use of a service – already successfully applied in the case of a mobile money deployment (see Mobile Money for the Unbanked study of this [here](#)).

In the following, we demonstrate how this method can add value for a content delivery service in mobile agriculture. We used real historical usage data to inform the case study.

Top line findings

We got very positive feedback from the service provider in terms of helping them to answer:

- Where users were 'stuck' on a journey toward regular use - **59%** stuck at registration, while **28%** stuck at trial
- A way of understanding what this means in terms of loss of value - 'regular use' **5 times** revenue value of 'trial'
- Insights about the value of different marketing techniques for generating an active customer base - **countrywide events** campaign **not performing better** than easier and cheaper blast SMS techniques
- Interest in building internal capacity to run this kind of analysis - wanted to **conduct this analysis themselves** in future (using our basic approach)

Case Study - xAgri Info

The service and their questions

Answering questions using customer usage data

What do I need in order to do this myself?

The data in the following presentation is subtly (though not significantly) adapted from **over 1 year of real historical data** from an anonymous mobile agriculture deployment, **xAgri Info**.

xAgri Info



An **MNO led service**

delivered over a **USSD platform**

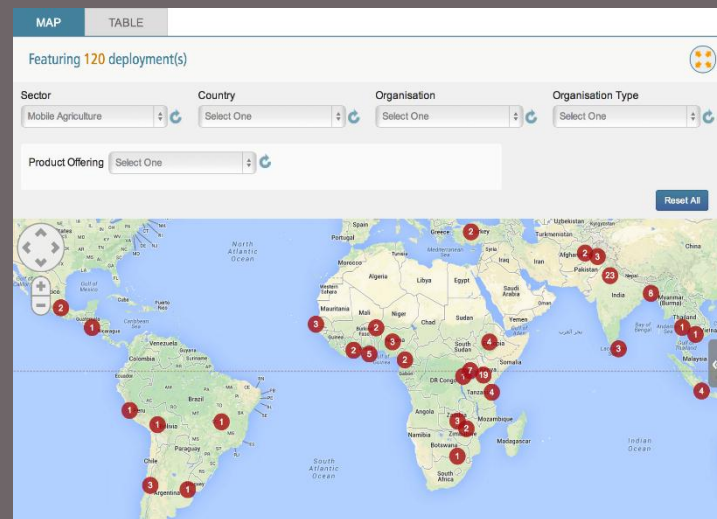
Over **100,000 registered users**

Service offers information services in the areas of:

- ✓ **Market prices**
- ✓ **Agronomy information**
- ✓ **Weather**

The service has been **live for over one year**

More On The mAgri Sector



120 mobile agriculture services currently tracked by GSMA M4D. See our tracker [here](#).

The service provider's questions

Some of the questions the service provider had about their service are below:

How does the customer journey tell me where I'm losing value?

How many people are stuck in the journey toward regular use of my service?

How can I better understand which marketing campaigns work and which don't?

Where should I focus resources to see improvements in usage?

With these questions in mind, what can we do with **usage data alone** and a **customer journey methodology** to provide answers?

Case Study - xAgri Info

The service and their questions

Answering questions using customer usage data

What do I need in order to do this myself?

The service provider's questions



How does the customer journey tell me where I'm losing value?

How many people are stuck in the journey toward regular use of my service?

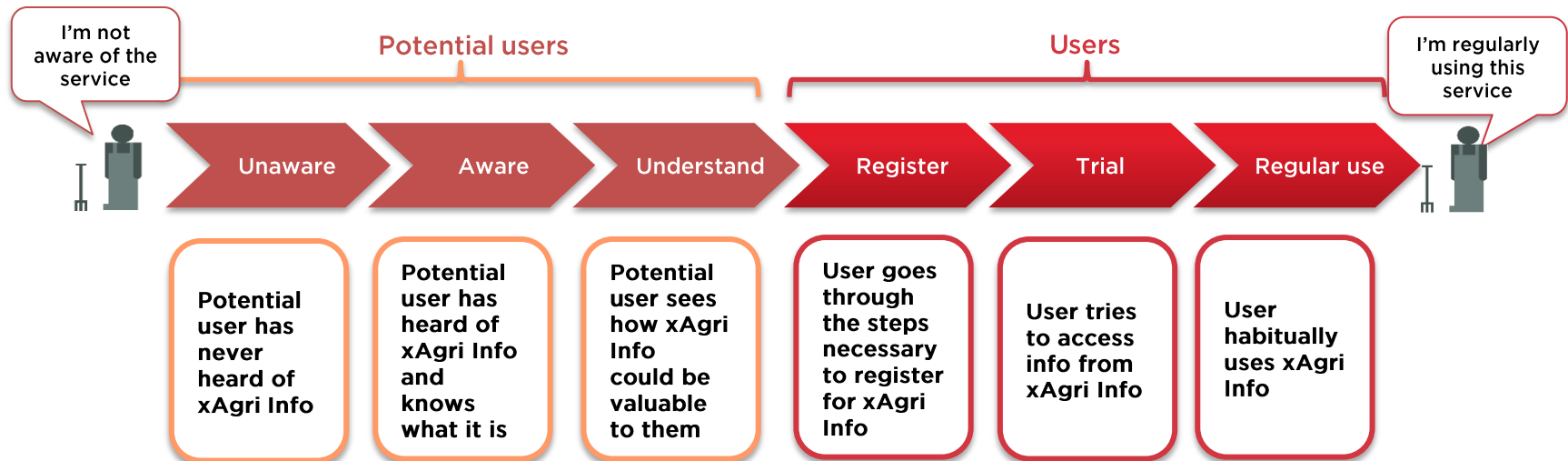
How can I better understand which marketing campaigns work and which don't?

Where should I focus resources to see improvements in usage?

Taking Users on a Journey

First things first – what’s a customer journey?

This is a framework we will use to underpin our method. It’s a way of illustrating how an unaware potential user of a mobile service can move to a state of ‘ideal use’.*



A customer journey for a mobile agriculture information service**

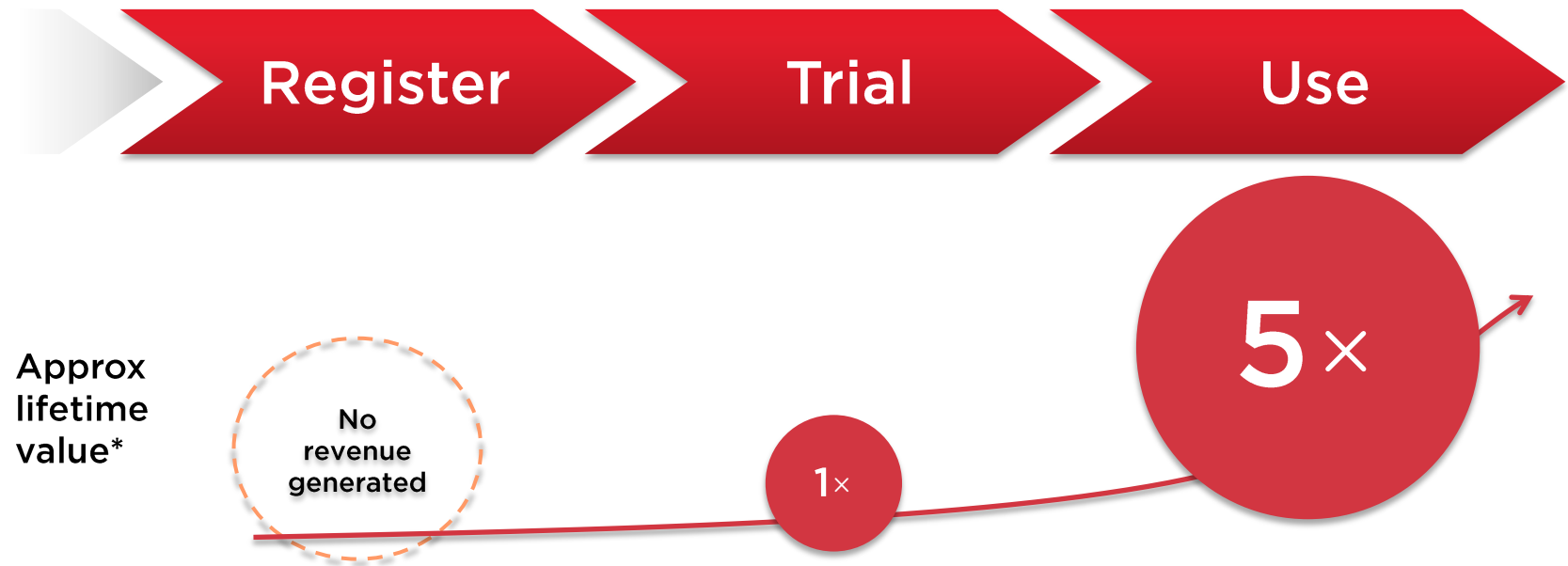
In the diagram above we illustrate what this might look like for a generic mobile agriculture service that delivers information to farmers.

*The notion of ‘ideal use’ can vary, but quite often ‘ideal’ equates with some notion of regular use (e.g., a customer uses the service at least once per month)

** Note this customer journey adapted from a version by GSMA’s MMU, see [Driving Customer Usage of Mobile Money for the Unbanked](#)

Where is the value?

We see significant rises in customer value as we move along the journey towards regular use.



Approx
lifetime
value*

For xAgri Info, those who 'use' the service are **5 times more valuable** than 'trial' users in terms of revenue

*segment value calculated by looking at the average number of months active x average monthly ARPU for segment. This gives a conservative estimate of how much value customers in the segment will generate over a longer period

The service provider's questions



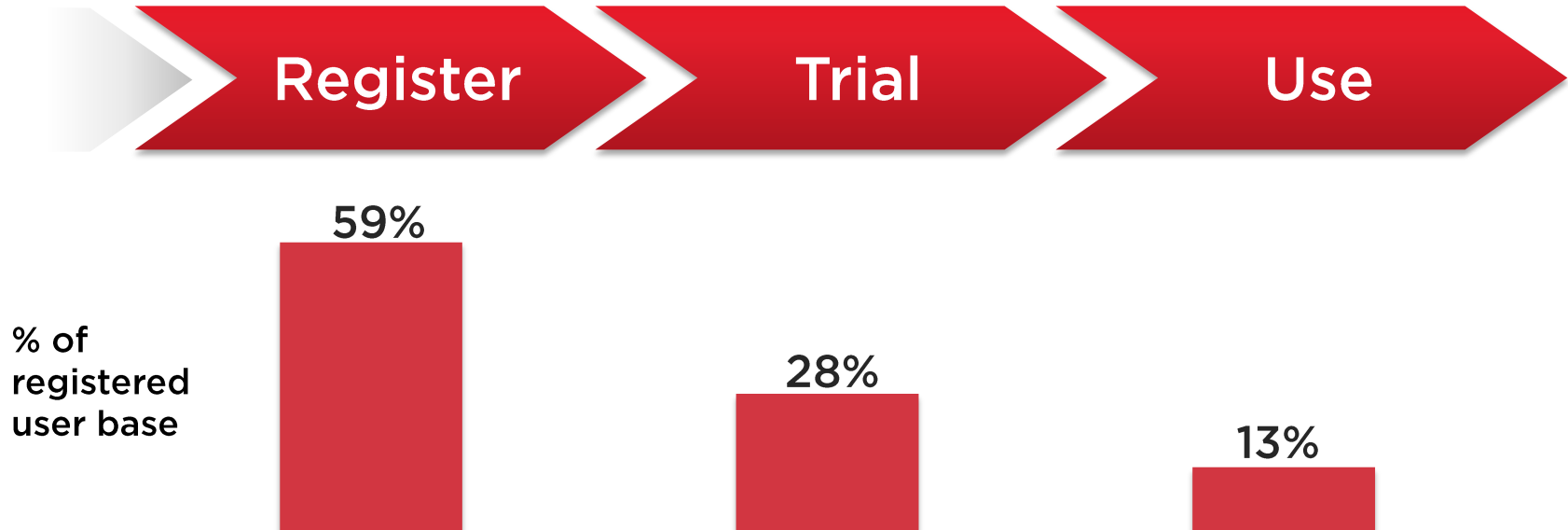
How does the customer journey tell me where I'm losing value?

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Where are users stuck?



- **More than half** of all xAgri info registered users have never actually accessed the service
- **Over a quarter** are still at a trial stage, having mostly used the service just once or twice
- And **less than 15%** are regularly using the service*

The clear **bottlenecks are around registration and trial**,
87% of customers are stuck at these stages

* 'Use' defined as using the service once on a monthly basis for at least two months

The service provider's questions



How does the customer journey tell me where I'm losing value?

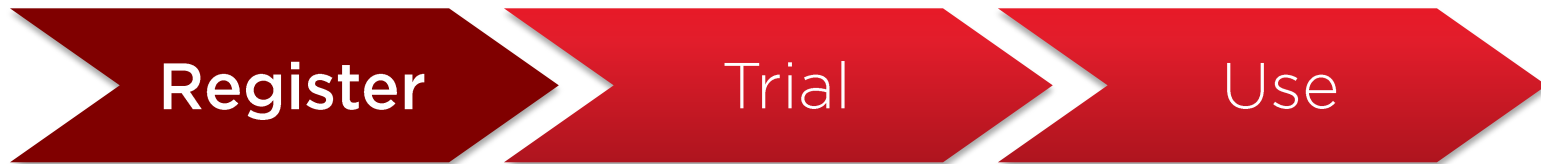
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Let's describe customers better

We understood customer segments using the descriptions below*



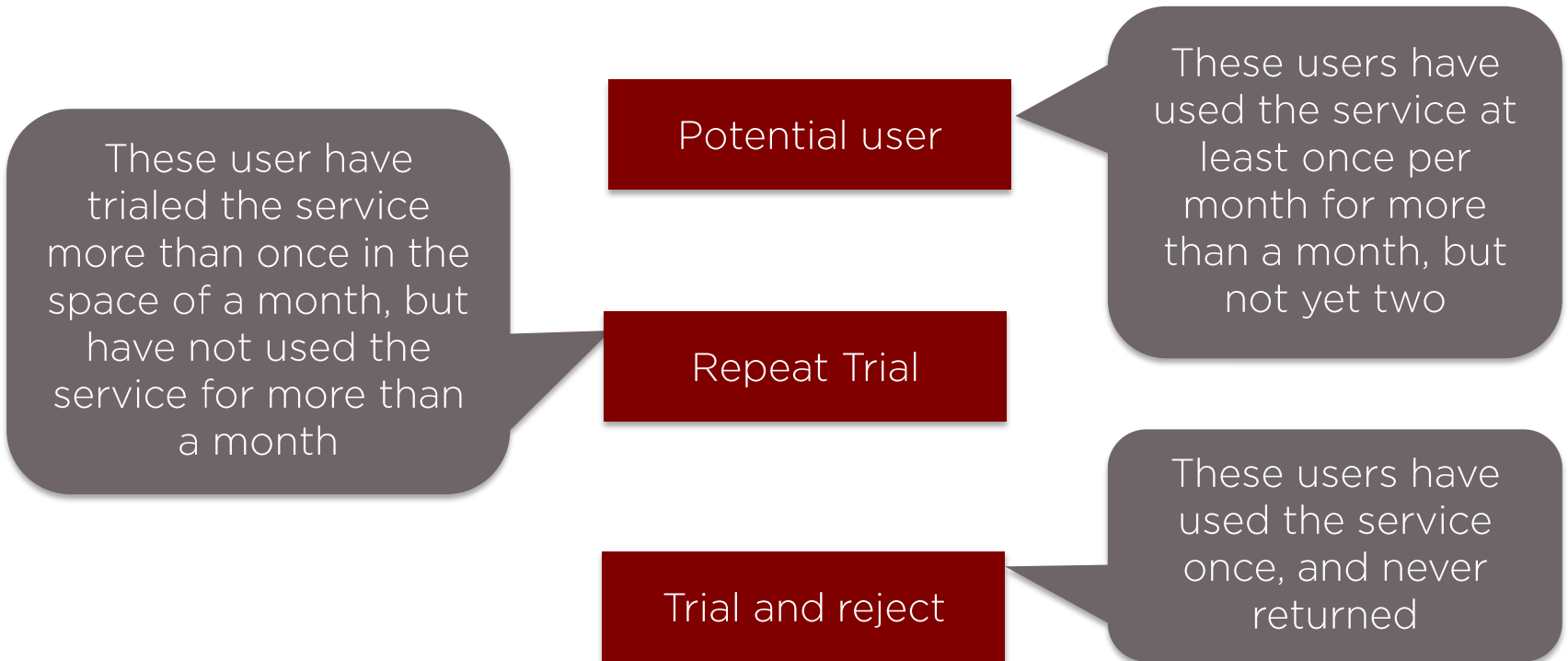
Registered non
user

These users have
signed up, but have
never used the
service

Key question: How to convince “registered non users” to move to trial stage?

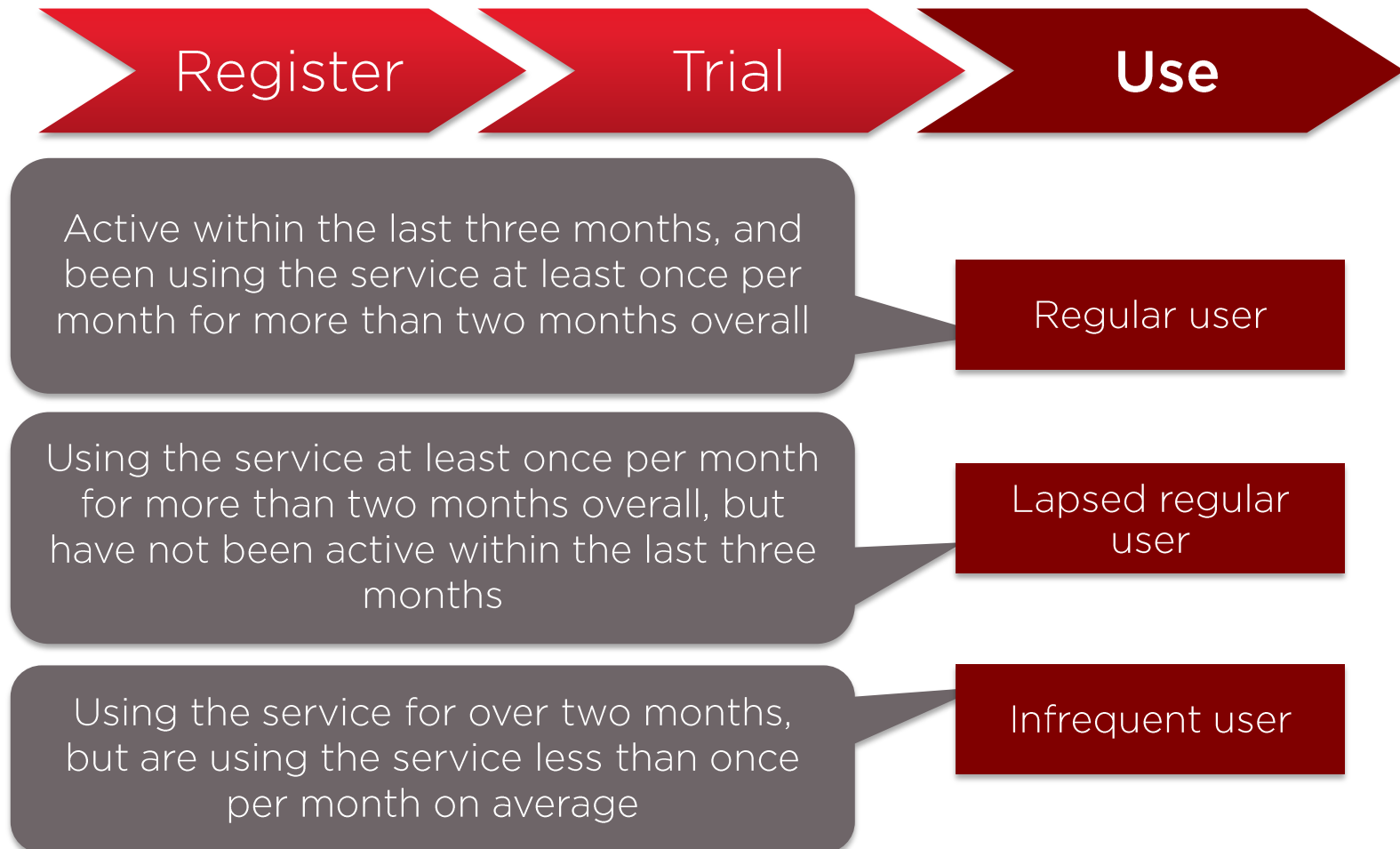
* You may want to define segments a bit differently, e.g., if you don't have a registration step, then skip straight to considering those users who have used the service once but never returned. Here customer segments are defined on the basis of use, making them easily applicable across a range of deployments

Let's describe customers better



Key question: How can 'trial and reject' and 'repeat trial' users be encouraged to toward 'transition trial' use, then use?

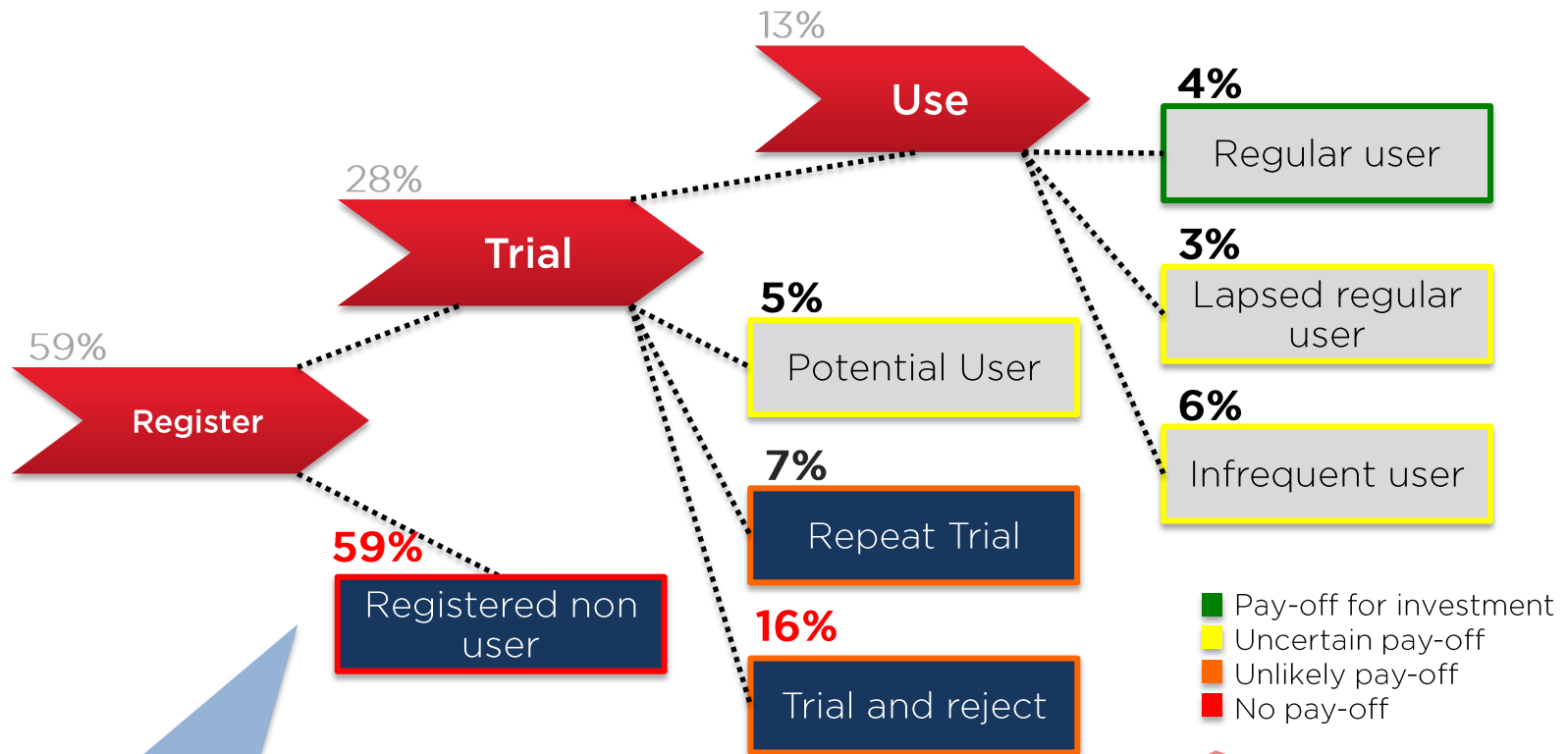
Let's describe customers better



Key question: How can those who are using the service 'infrequently', or those who have 'lapsed' be encouraged toward regular use?

A more detailed view

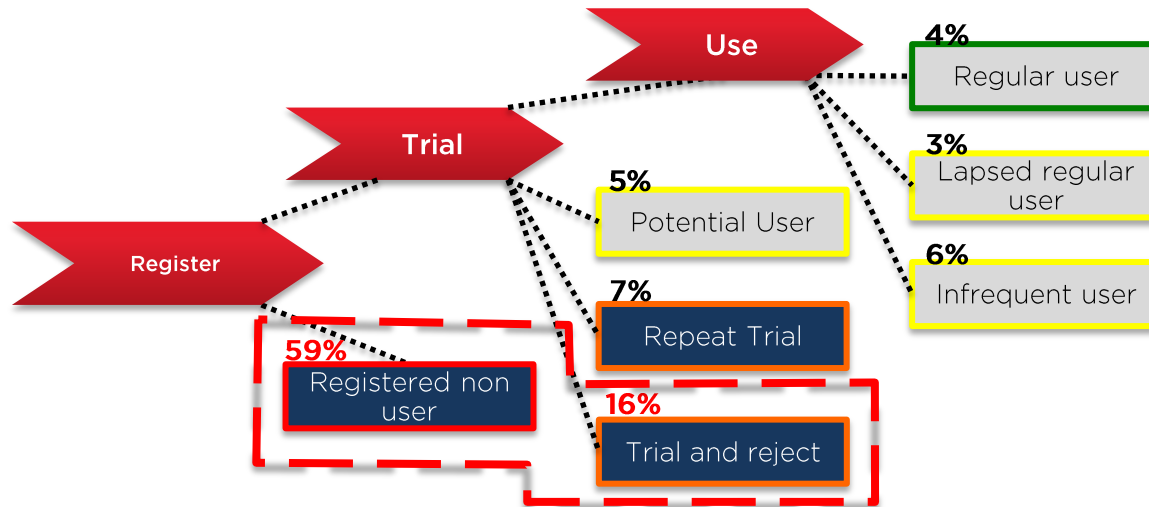
By breaking down the user base into specific segments we get a better view of where the problems may be.



Looking at the % of customers in a given segment is an easy way to determine bottlenecks in the journey

It's also useful to examine segments by considering the potential value (likely pay off in investment) that segment will bring to the service in the long term

Where should I focus resources?



For xAgri info the service provider wanted to increase usage.

In this case, two high impact bottlenecks to resolve are outlined in red above. Together they represent **75% of the user base**. *Understanding and solving problems focused around these segments would have a dramatic effect on the quality of the user base.*

We suggest focusing resources to investigate

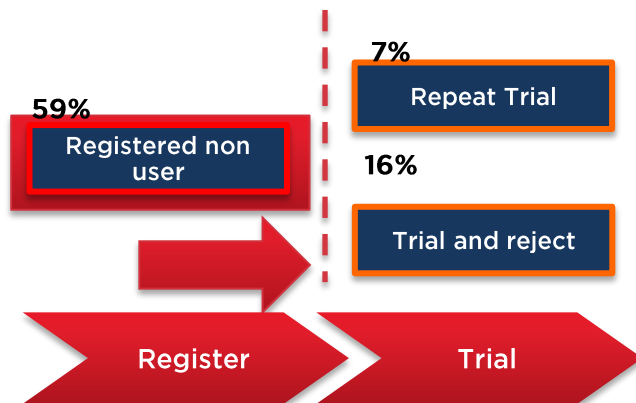
59%

**Registered non
user**

Why focus resources on the **59% Registered non user** segment?

59%

1. It's the **biggest bottleneck**. By starting with issues here you address problems that likely have the biggest impact on the user base as a whole.
2. It's a **gateway in terms of value**, since registered non-users create no value for the service, every conversion of one of these users will create value for the service immediately. (This will also be quickly discernable in the data)



Ideas for “registered non-users”



59%

Registered non
user

These users have signed up, but have never used the service

Idea 1: try to convert straight after registration

- Why do so many users fall off at this stage? If they register for the service there is evidence of demand to use the service which looks to be going unfulfilled
- *Once users register for the service send a follow up message which provides clear instructions on how to access the service for the first time*

Idea 2: Make the service nature clear in marketing

- The high rate of drop off might indicate that users are expecting messages to be sent to them, and don't understand that the service is 'pull' in nature.
- *Make the distinction clear in marketing and all other channels to the customer that they must dial the short code to get content. Make this free initially, and make this clear to the user, to ensure users are not put off by potential airtime shocks*

Hypothesis testing: work out the biggest challenge for the segment

- These users **have never tried** the service so the issues aren't to do with quality of service or quality of content. Users might:
 - Not understand service nature (push/pull)
 - Not see/understand value to them
 - Be put off by price
 - Have been put off by registration
- *Run a phone survey on a small sample of recent registered non-users, and test which of the above is the biggest barrier*

Ideas for “Trial and reject” users

16%

Trial and reject

These users have used the service once, and never returned

Idea 1:

Give an extra ‘personalized push’

- Many users may still be unclear about the service’s value to them
- *Provide multiple targeted messages to the user based upon their content selection. (e.g., if user selects weather, then send a message after one day suggesting the value to them of this weather info in a practical scenario, send a message to them the day afterwards offering free weather information)*

Idea 2:

Understand the value of ‘personal follow up’

- Users could be encountering a range of issues here, and first time use offers an excellent opportunity to conduct a personal follow up call
- *Use a call center resource to run explorative follow up calls with a sample of users to document their first-time experience (see hypothesis testing on right). Advise the user on any questions they have about the service. How much impact does this have on customer usage? While this will be high cost it would be good to understand it’s effects.*

Hypothesis testing:

work out the biggest challenge for the segment

- These users **have** tried the service so there are a few leading hypotheses about why they didn’t come back. Users might:
 - Not see/understand value to them
 - Be put off by quality of service delivery
 - Not have received what they expected
 - Have found the service too hard to use
- *Run a phone survey on a small sample of trial and reject users, and test which of the above is the biggest barrier to further use, is there another reason?*

The service provider's questions



How does the customer journey tell me where I'm losing value?

How many people are stuck in the journey toward regular use of my service?

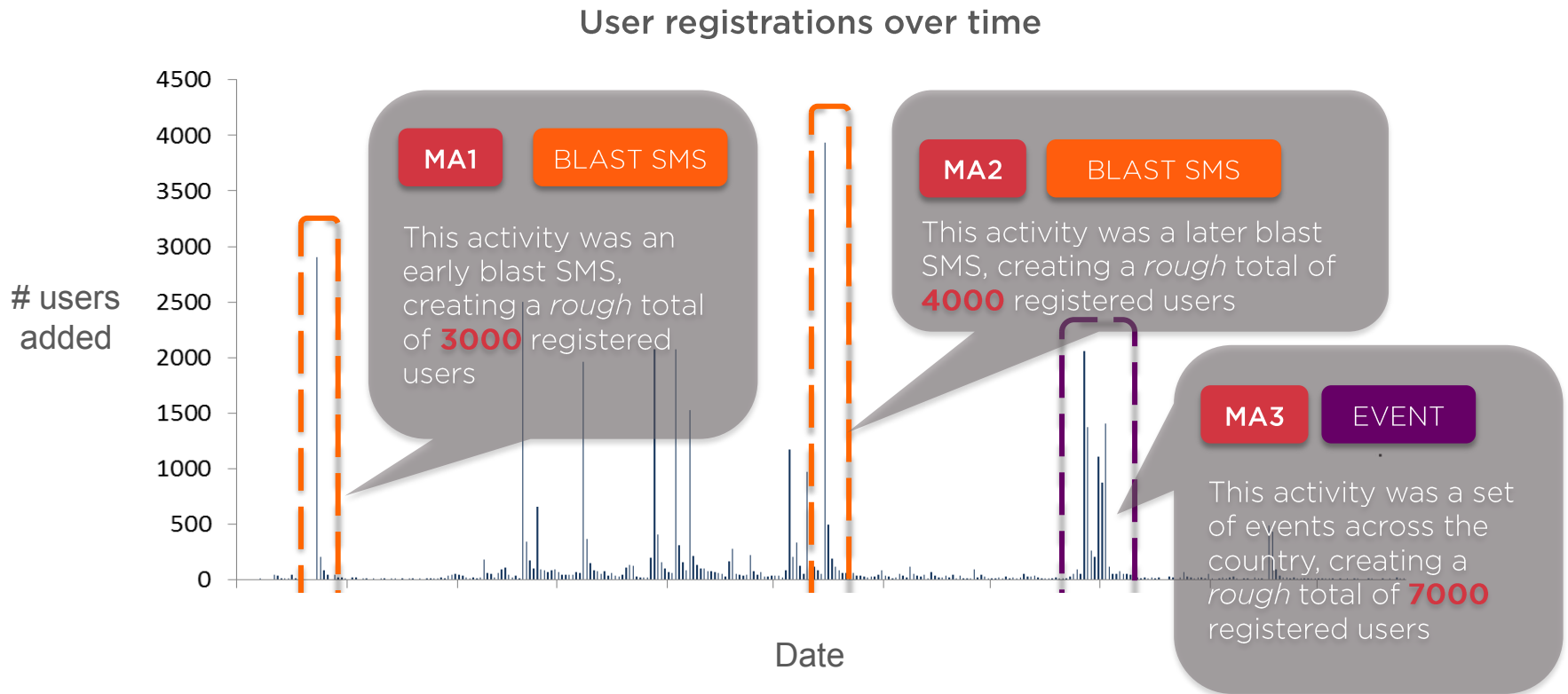
How can I better understand which marketing campaigns work and which don't?

Where should I focus resources to see improvements in usage?

Isolating marketing activities

First we need to isolate different kinds of marketing activity to evaluate. A good place to start is by looking at the user additions to the service over time. Large spikes are often indicators, and can be linked to specific marketing activities.

We isolate **3 distinct spike sets** below, and confirmed with the service provider what activities these corresponded to.*

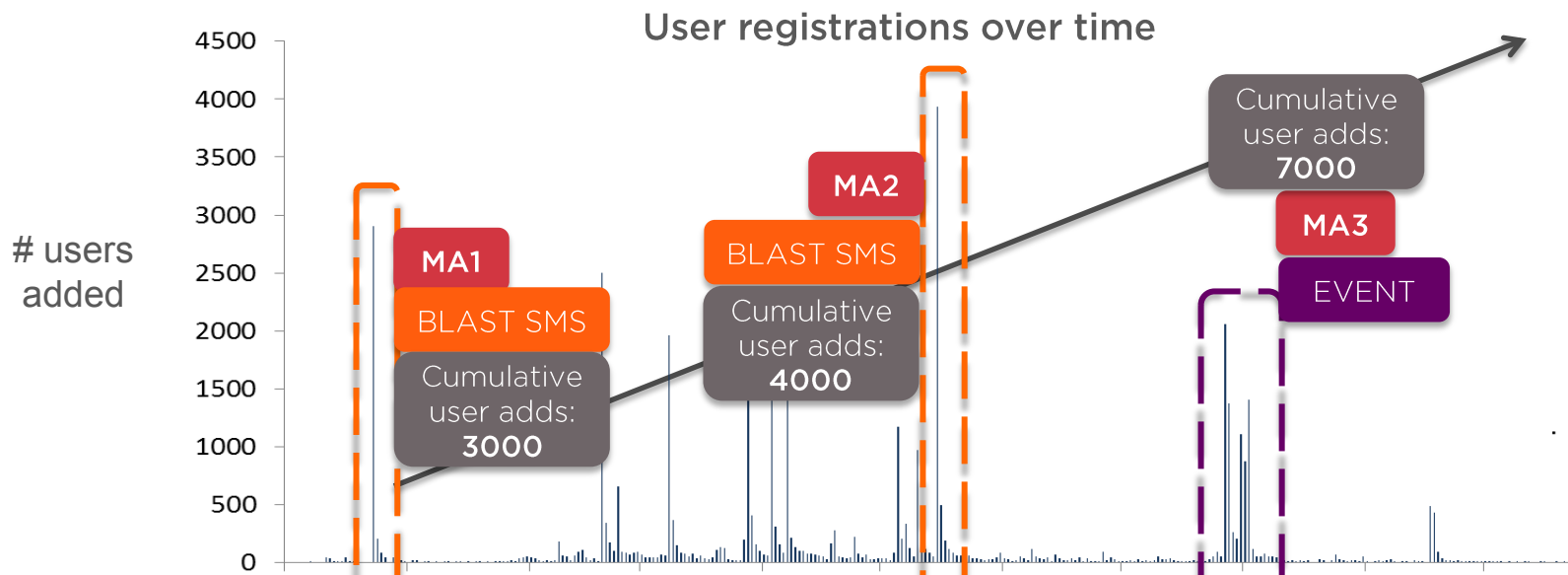


*Note: other peaks in the chart can be linked to other marketing activities – mostly blast SMS – we simply choose 3 events to showcase an approach here.

Basic user additions as success

Often success of marketing campaigns is understood in terms of the **number of users added to the service** (i.e., registrations).

On this model, the **cumulative addition of users** below would indicate the success of various campaigns



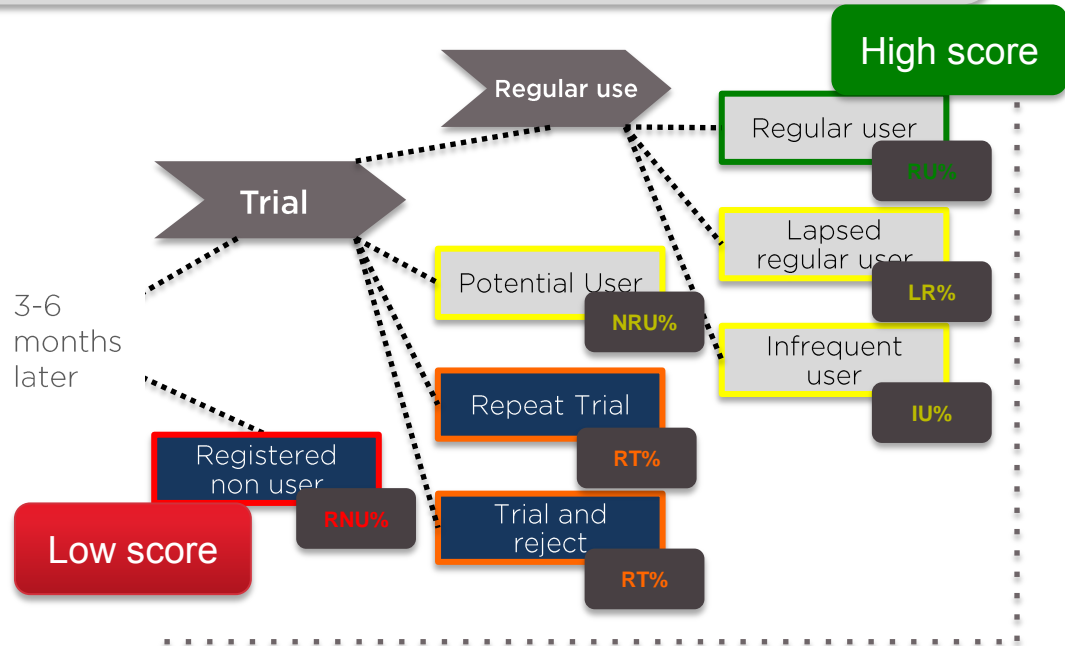
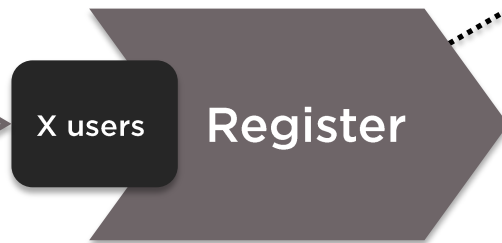
On this simple view **marketing activity 3**, **MA3**, would be the most successful, and **marketing activity 2**, **MA2**, would be the next most successful, and stronger of the blast SMS campaigns*

* Note: this basic analysis doesn't factor in cost of campaign, which would provide a figure for cost per registered user. Blast SMS campaigns are generally much cheaper than physical events

A different understanding of success

Can we provide a more robust evaluation of the quality of these marketing activities in terms of the **value of users** they generate?

If we consider the **number of users** generated by a marketing activity, we can then look at what happens to these users later in their customer journey




Given X users created by the activity, we can **score** the quality of **users based on what segment they land in** (higher score means greater usage)

$$\text{SCORE} = 0 \cdot \text{RNU} + 0.2 \cdot (\text{T\&R} + \text{RT}) + 0.5 \cdot (\text{NRU} + \text{IU} + \text{LRU}) + \text{RU}$$

See calculated composite scores on next slide

Which activity produced highest quality users?

A more in depth summary of marketing activities is captured in the table below



Marketing activity code	Activity type	Composite score	Most demanded content	higher than composite score for base?	Average time to first access	s.d time to first access	number of users generated	% going on to access	COST PER SUB REACHED
MA1	Blast SMS	0.11	Market prices	Yes	31 days	58 days	2907	41%	LOW
MA2	Blast SMS	0.07	Weather	No	10 days	29 days	3937	31%	LOW
MA3	Set of events	0.09	Weather	Almost equal	1.4 days	9 days	7042	33%	HIGH

From the perspective of quality of users alone, **MA1** turns out to be the most successful since it

- Produced the best quality users in terms of **composite score**
- Was the only activity to produce higher quality users compared with the whole user base

More findings of interest for xAgri Info



Marketing activity code	Activity type	Composite score	Most demanded content	higher than composite score for base?	Average time to first access	s.d time to first access	number of users generated	% going on to access	COST PER HEAD REACHED
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- Users typically take much **longer to react to Blast SMS campaigns than events** (average time to first use is 10 and 31 days, compared to the events which were 1.4 days, deviation from average also very high for SMS approach)
- Further data analysis (not shown here) suggested that users registering in response to one blast SMS message were **not using the service until prompted by a later later blast message** (may account for wide deviation).
- Despite much higher cost per head reached, the **events did not produce notably higher quality users** implying **ROI on events comparatively low**

Note: isolating these events is realistic up to a point, and should provide the foundation for further analysis and investigation. However, the reasons certain marketing campaigns were more successful than others will depend on many factors, including effects of other marketing, as well as significant events effecting the target user (e.g., timing in crop calendar year)

Further thoughts for xAgri Info

A set of final thoughts for xAgri Info below*

Thought 1: The value of viral

- Marketing works up to a point to drive usage, but there is huge potential in users influencing others to use the service, i.e., somehow interacting with each other over a mobile channel
- *What is the simplest modification you could make that would encourage users to share or recommend content to each other over the mobile channel? How might this work, and how could you test it?*

Thought 2: Who's the champion?

- The role of the agent in mobile money services (for example) is critical. These individuals can act as champions (or hindrances) to service uptake locally. It is not clear that xAgri Info has similar champions who will encourage local uptake
- Who can play this role for the service? How could they be incentivized to be a champion? And how could their performance be measured? Consider all the possible ideas here, and see where there may be missed opportunities.

IMPORTANT Principle 1: Use the data to test

- Many ideas presented here represent hypotheses that would have expected positive impacts on service usage. Not only should these hypotheses be examined and verified, but when implemented, subsequent data analyses should be conducted to determine whether changes had the expected positive impact.
- *The information in this presentation shows how you can use customer data to determine the impact of certain actions – **you should use the approach to test***

* More recommendations were provided to xAgri Info than are highlighted in this deck, but are removed for the purposes of anonymity

Case Study - xAgri Info

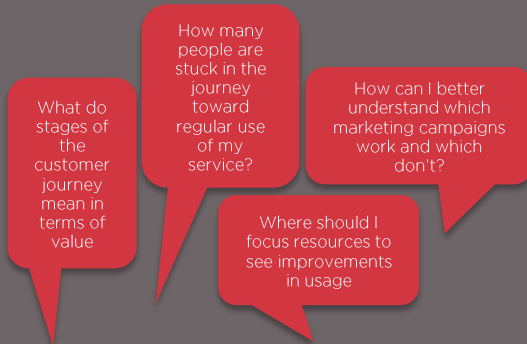
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Answering questions using customer usage data

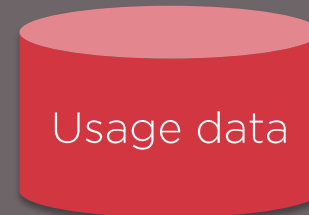
What do I need in order to do this myself?

What you'll need...

A clear set of questions for a business intelligence/ impact team to answer



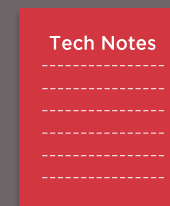
Raw customer usage data from the mobile platform – at least 1 year's worth



1 analyst with 1 laptop computer trained in database analysis (e.g., SQL)



A set of technical notes to implement, and create the report*



For case of xAgri Info, GSMA M4D Impact team supplied both of these

* M4D Impact team can provide a set of technical notes to replicate the analysis in this presentation, for further info please email mdi@gsma.com, a similar set of technical notes are available in relation to [MMU's work for Mobile Money deployments](mailto:mmu@gsma.com) mail mmu@gsma.com for the mobile money customer segmentation

Notes on Privacy

This analysis was conducted without any knowledge necessary of personal data, it is best practice to shield personal data wherever possible to avoid the risk of revealing customer identities. Any “raw customer usage data” was used in ways to respect individual privacy and prevent the possible re-identification of the user by anyone processing that data. In general, it is not hard to comply with data protection and privacy laws in conducting this kind of analysis.

Further Industry Guidelines

The GSMA has proposed a set of [Privacy Design Guidelines for Mobile Application Development](#) (including illustrative examples).

Also see the [GSMA's mobile privacy principles](#) for further information

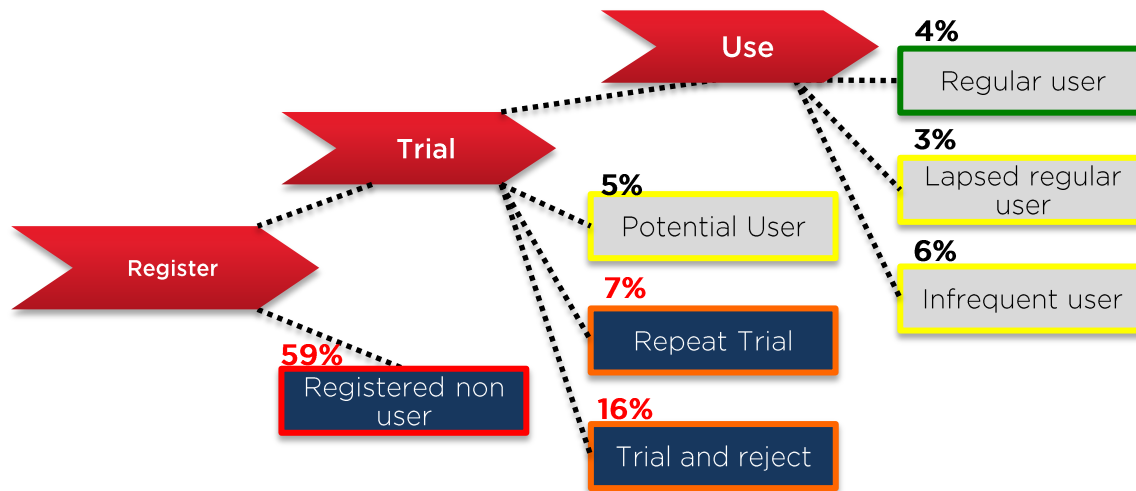
Data Security

Also ensure that databases with customers' personal data are securely updated, stored, and properly disposed of if no longer necessary

Final Thoughts

Broader industry takeaways

1. Customer journey view as dashboard



Who is this most relevant for?

- ✓ Managers of M4D products/services
- ✓ Business intelligence teams/ M&E teams for M4D projects

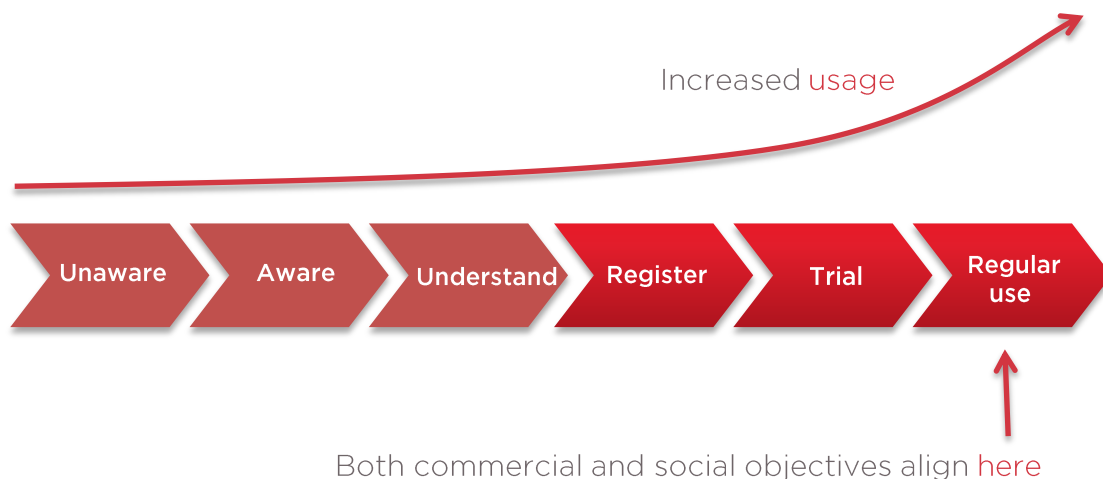
What could I do?

If you are capturing customer usage data as part of your service delivery platform and you can come up with a model of the customer journey for your service, then you can use the picture of the customer journey as a dashboard for the whole team.

Why should I do that?

Because it gives you a picture of progress, and will remind teams what they are working towards. The biggest value gained as part of the customer journey approach is as a robust means of evaluating progress over time (not simply 'one off' insights). The picture both crystallizes where problems are, and whether they have been overcome in future evaluations of the product/service. Most importantly, you may own this data already, so why not use it rather than asking a research firm to figure out the same thing?

2. Use & Social/Commercial impact



Who is this most relevant for?

- ✓ Managers of M4D products/services
- ✓ Business intelligence teams/ M&E teams for M4D projects
- ✓ Investors and Donors

What could I do?

You can talk about primitive targets and objectives, not in terms of revenue or social impact, but first in terms of use.

Why should I do that?

Usage is pretty much always a pre-condition for generating either revenue or social impact. If you don't understand the picture of use then, by implication, you won't likely understand your service's social or revenue making potential. Interestingly, use is also a common term that both those from development focused and commercially focused backgrounds can agree upon as a common goal.

3. Analyse attempts to reach the user

Marketing activity code	Activity type	Composite score
MA1	Blast SMS	0.11
MA2	Blast SMS	0.07
MA3	Set of events	0.09

Who is this most relevant for?

- ✓ Marketing teams

What could I do?

Keep a record of the approaches to marketing (classically one of the hardest areas to get right in M4D services when at the point of expected scale). Taking a more systematic approach will put you in a better position to quickly understand what works and why.

Why should I do that?

Because this gives you more evidence to present about which marketing techniques are really working, and how to gain advantages in this key area. Moreover, teams need all the help they can get marketing to customers (like farmers) about which very little is known in terms of what 'an effective marketing campaign' amounts to.

4. Blend methods of service evaluation

Assessment approach	advantages of method	disadvantages of method
log data analysis	<ul style="list-style-type: none">• can see patterns in existing customer usage/ behavior• best visibility of service in entirety• can compare evolution of results over time	<ul style="list-style-type: none">• cannot 'ask' users anything• can see patterns in behavior but may be hard to find reasons for them• risk of loss of value by changing method between investigations
phone survey	<ul style="list-style-type: none">• can ask specific questions on a need-to-know basis• can target specific existing users based upon characteristics	<ul style="list-style-type: none">• not good for explorative investigation• requires good questionnaire design and clear hypotheses to test• may be hard to make representative of entire target population
case study – in depth interviews/ focus groups	<ul style="list-style-type: none">• Good to understand needs more broadly/ refine value proposition in depth insights/chance to collect very granular information	<ul style="list-style-type: none">• hard to make general claims about population from these results alone• Danger of bias with strong focus on small sample

Who is this most relevant for?

- ✓ Managers of M4D products/services
- ✓ Business intelligence teams/ M&E teams for M4D projects

What could I do?

Don't stop at data analysis, this will generate more questions than answers. Use other techniques like phone surveys, in-depth user interviews, and focus groups to test hypotheses.

Why should I do that?

Because different intelligence gathering methods have pros and cons. Used together, they create a powerful picture of the service user landscape, and will enable you to make the best informed decisions about how to develop and grow the product/service to address needs.

We'd like to hear more from you

This case study demonstrates how a method using customer usage data can add value for a content delivery service in mobile agriculture. However, we think this sort of approach has value for a wide range of players offering mobile solutions to underserved customers in developing countries.

Is this a topic of discussion you would like to explore further?

“I want more info on how to implement this kind of analysis in my org, or I want M4D Impact to come and support me in this”

“I want to start or get involved in a conversation that explores this topic further”

“I have ideas or best practices that I'd like to present in this area to showcase our organization's work”

If any apply to you then please mail mdi@gsma.com outlining your interests

Mobile for Development Impact supports the digital empowerment of people in emerging markets through a central platform of data, analysis and insight used to inform investment and design decisions for mobile services. Our work is freely accessible through support from Omidyar Network and in partnership with The MasterCard Foundation at www.gsmainelligence.com/M4D

