Marketing Measurement

A Fundraiser's Guide

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A changing model of fundraising

Many charities built highly successful individual giving programmes through significant, long-term investment in traditional direct marketing approaches. In recent years, a difficult fundraising environment has challenged the sustainability of this model and charities have responded by innovating their marketing strategies and diversifying their channel expenditure. Some key trends have included:

- Increased investment in digital marketing
- Increased investment in broadcast media
- Increased investment in brand building campaigns
- A rise in 'integrated' multi-channel campaigns
- A rise in multi-phase 'engagement-first' campaigns

Standalone direct marketing campaigns are very simple to measure, as the response mechanism enables outcomes to be matched directly back to the marketing. However, as the sophistication and complexity of fundraising campaigns increases, so must the approaches to measuring them.

A recent Charity Benchmarks report (2019) highlights how the changing model of fundraising is making it more difficult to evidence the case for investment:

> *"While the digital/social environment offers vast opportunities, charities have clearly found it difficult to navigate a world of multi-platform marketing, non-linear journeys, complex attribution and new models of data ownership. Without the certainties of simple, transactional models, it's hard to demonstrate ROI and make a case for investment"*

The measurement challenge

A well-known quote from John Wanamaker neatly distills the challenge faced by all marketers:

> *"Half the money I spend on advertising is wasted; the trouble is, I don't know which half."*

Common measurement challenges include:

- **Broadcast media**: broadcast channels do not always offer a mechanism for direct response, and if they do many supporters may choose to respond in a different way
- **Brand advertising**: campaigns that are intended to drive awareness / consideration are unlikely to have an immediate call to action
- **Integrated multi-channel campaigns**: supporters may have seen / interacted with marketing across multiple channels before deciding to donate
- **Multi-phase campaigns**: for campaigns with a multi-phase conversion cycle individuals may have seen / interacted with different touchpoints before responding
- **Non marketing effects**: quantifying responses that are due to non-marketing effects such as seasonality, news coverage and PR
- **Incrementality**: determining which donations are an incremental outcome of marketing and which would have been received anyway
- **Halo effects**: understanding whether synergies exist between channels creating a combined contribution greater than the sum of the individual parts

Specific measurement challenges faced by charities include:

- **Emergency response**: for emergency response organisations, donations can spike hugely after an appeal is launched and it can be difficult to unpick how much of this is a product of marketing support and how much is down to increased news coverage and a greater perceived need amongst supporters
- **Annual seasonality**: many charities spend a significant proportion of their marketing budget in the lead up to Christmas, which is when most might also expect a seasonal peak in donations.

Advanced measurement approaches can help address these questions.

Measurement approaches

'Marketing attribution' is the use of data to understand the impact of marketing activities on campaign goals.

There are broadly 2 types of approach to marketing attribution:
- **User level**: approaches to marketing measurement that use individual-level data
- **Aggregate level**: approaches to marketing measurement that use aggregate-level data

	Aggregate-level (MMM)	User-level (Digital)
Data type	Aggregate data	User-level data
Analysis type	Top down analysis	Bottom up analysis
Media type (best suited to)	Broadcast / mass media	Targeted / addressable media
Model type	Statistical model	Rules-based / data-driven
Data granularity	Days / weeks	Seconds
Frequency of refresh	3-6 monthly	Daily
Path to purchase	No visibility	Complete purchase path
Offline channels	Yes	No (but can integrate offline addressable)
Volume of data required	2/3+ years of historic data	High volume of daily media impressions
Incremental measurement	Yes	No
Type of insight	Strategic – optimise allocation of media budget	Tactical – optimise journeys, creative, audience etc

The imminent death of the 3rd party cookie will fundamentally change the measurement landscape and have a huge impact on digital media measurement, conversion tracking and the ability to stitch interactions together to build a 'path to conversion'.
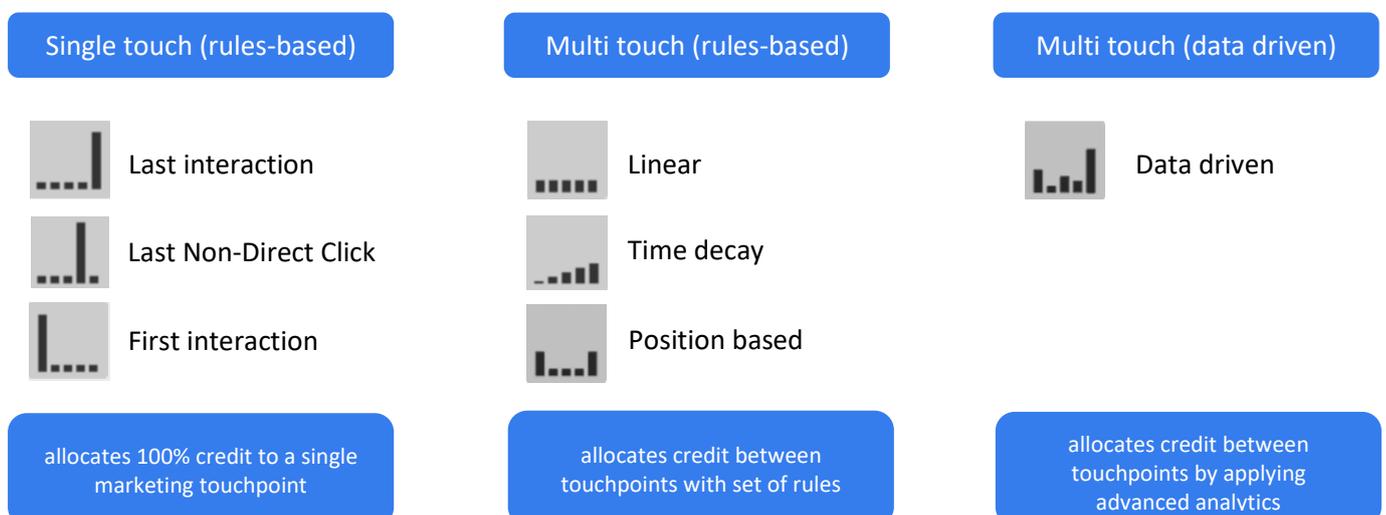
A new set of digital measurement best practices are still forming, but to understand the impact of different channels in the new world, it could be that marketers need to adopt an incremental testing approach and adapt aggregate-level measurement techniques to better incorporate digital channels.

User-level models (digital attribution)

A digital attribution model is a set of rules that determine how conversion credit should be assigned to different marketing touchpoints. It is a bottom-up approach to marketing attribution that makes use of-user level data (e.g exposures, clicks, conversions).

These models originated in eCommerce and tend to focus on digital advertising where data can be analysed in real-time. Although these approaches are being phased out as we move towards a cookie-less future (expected in 2023), they can still be applied at this time and may offer a valuable bridge to the future state.

There are many different types of attribution models, with some of the most common shown below:

Single touch (rules-based)	Multi touch (rules-based)	Multi touch (data driven)
Last interaction	Linear	Data driven
Last Non-Direct Click	Time decay	
First interaction	Position based	
allocates 100% credit to a single marketing touchpoint	allocates credit between touchpoints with set of rules	allocates credit between touchpoints by applying advanced analytics

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Single-touch attribution models allocate 100% credit to a single marketing touchpoint. They are easy to implement due to their low level of complexity and can be effective when there is a short and simple donation funnel and minimal cross-channel marketing taking place.

Multi-touch attribution is a broad discipline that includes multiple methods and models. It leverages user-level data across addressable channels to assign fractional credit to the touchpoints that influenced a decision to donate. MTA models are effective when there is a longer more complex donation funnel, or there are multiple channels being used to drive donations.

When implementing user-level models, consideration should be given to:
- **Lookback windows**: the timeframe after an ad interaction that a donation can still be attributed to it
- **Interaction types**: which interaction types are included in the attribution model e.g 'views', 'clicks'

Click-through attribution offers a strong link between a marketing activity and a donation. A click on an ad is a tangible indication of engagement with that marketing touchpoint and provides a reasonable degree of confidence that it played a role in the subsequent decision to donate.

View-through attribution can be helpful if you are looking to quantify the value of brand activity, particularly for channels at an earlier stage of the funnel. It enables marketers to determine if channels such as display have 'moved the dial' even if they have not driven a high volume of clicks. The key caveat here is that just because someone saw an ad in the past it doesn't necessarily mean it influenced the decision to donate. Lookback windows are crucial and should be set to realistic timeframes so as not to overstate the value of marketing.

While user-level attribution is primarily used for digital fundraising campaigns, it can also be extended to include addressable offline activities. For example, website donations in response to warm mailings can be integrated into a user-level measurement approach by matching supporter approaches to donations.

Data governance is a crucial pre-requisite for successful user-level measurement. An agreed taxonomy for the classification of campaign marketing information and a clear and consistent process for the setup of tracking can ensure that measurement insights are meaningful.

Aggregate-level models (MMM)

Marketing mix modelling refers to a set of statistical analysis techniques that can be used to measure the impact of marketing activities on a dependent variable e.g 'donations'. They were developed by econometricians and first applied to marketing measurement in the retail sector in the 1960's.

They provide a top-down approach to attribution using aggregate, rather than user-level data. It is a holistic way to measure the impact of historical media activity on responses (typically using linear regression). It can provide high-level strategic insights over a longer period of time (2/3+ yrs) and is able to evaluate both traditional and digital channels. Aggregate models are updated far less frequently than user-level models, typically on a quarterly basis rather than in near real-time. Aggregate models can also look at the impact of factors such as seasonality, competitor media, PR, events and brand measures. We can think of MMM as 'unbaking the cake', using time series data to unpick the different media (and other) effects.
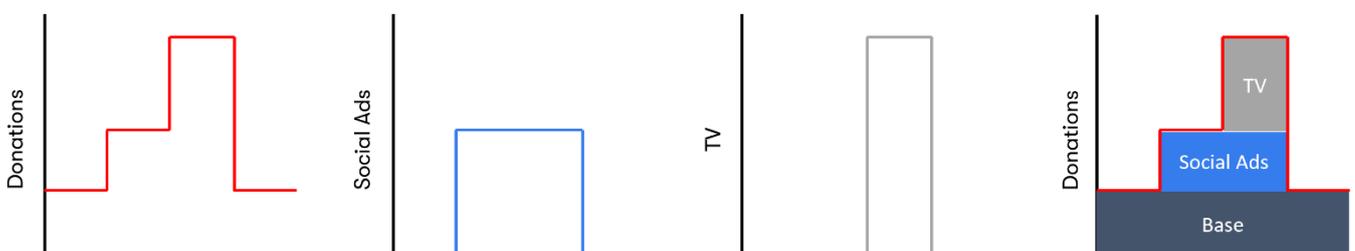
A marketing mix modelling project will typically include the following steps:
1. Agree aims
2. Data collection
3. Data exploration
4. Data transformation
5. Model development and validation
6. Model decomposition
7. Post-modelling applications

1. agreeing aims

An important first step in any marketing measurement project, is to agree the core objectives and how these should be prioritised. This isn't always as easy as it sounds, as there will often be a broad set of interested stakeholders (e.g Fundraising, Comms, Finance, Digital and Analytics) each with a different perspective about the primary project goals.

Stakeholder mapping can help to ensure you have the right people engaged with the measurement initiative from the outset. This works best if the initial stakeholder group is kept as lean as possible, to ensure the project scope remains focussed and manageable. A requirements gathering exercise with each stakeholder can help to build a picture of context, pain points and objectives and the outputs from this can be brought together and played back to the group in the form of a measurement proposal.

Marketing mix modelling approaches can produce many different types of insights and outputs about campaign performance, but the more granular you try to go, the bigger and more involved the project can become. While it is possible to start with a limited scope and to build additional complexity iteratively, scope changes can lead to considerable re-work if the technical implementation of the model needs to change. Some areas for consideration before embarking on the model development phase include:

Dependent variable definition
- Donation volume or value
  - Decision: whether to model on donation volumes or value
  - Value: allows for a more direct estimation of fundraising revenue
  - Volume: can make it easier to incorporate outputs into lifetime value modelling
  - Whichever approach is chosen, assumptions can be used to estimate one from the other
- Donation attribution type
  - Decision: whether to include all donations or only those not directly attributable to marketing
  - All donations: consistent measurement approach but will contradict other reporting / analysis
  - Unattributed only: mixed measurement approach but aligns with other reporting / analysis
  - The most appropriate approach will depend on how the model outputs will be applied
- Donation giving type
  - Decision: whether to model one-off donations and pledges together or separately
  - Together: fewer models to develop but may limit depth of insight for smaller donation types
  - Separately: more models to develop but with deeper insight on each donation type
- Fund restriction
  - Decision: whether to model general and emergency donations together or separately
  - Together: fewer models but may limit depth of insight for general funds campaigns
  - Separately: more models to develop but with deeper insight for general funds campaigns

Daily or weekly frequency
- Decision: whether to model at a daily or weekly level of detail
- Weekly: usually preferable if there lots of historic data as it removes the noise from day of week effect
- Daily: preferable when there is limited data (e.g emergencies) or marketing spend is very concentrated

Marketing channel breakdowns
- Decision: the level of granularity at which to collect the marketing data
- The first 3-4 are likely the most useful, with insights on the others perhaps coming from other analyses:
  - Channel
  - Call to action
  - Campaign
  - Fund restriction
  - Creative
  - Audience
  - Placement
  - Format
  - Station / Publication / Site
- From a modelling perspective, the degrees of freedom in the data may also be a factor in this decision

2. data collection

Data will need to be collected in time series format and it's generally best to do this at a daily frequency, with the option to aggregate this to a weekly level for the modelling.

The table below gives an overview of data to consider collecting and where you might gather it from:

Type of Data	Data Collected	Data Sources (examples)	Measures (examples)
Media	Online Marketing – Social Ads	Facebook Ads, Twitter Ads, TikTok Ads	Impressions, Costs, Clicks
Media	Online Marketing – Paid Search	Google Ads, Microsoft Ads	Impressions, Costs, Clicks
Media	Online Marketing – Digital Display	Ad Management Platform	Impressions, Costs, Clicks
Media	Online Marketing - VOD	Ad Management Platform	Impressions, Costs, Clicks
Media	Offline Marketing – TV	Media Agency	Equ Impacts, Spots, Costs
Media	Offline Marketing – Door Drop, PAM	CRM / Media Plans	Approaches, Costs
Media	Offline Marketing – Inserts, Press Ads	CRM / Media Plans	Circulation, Costs
Media	Offline Marketing – Radio	CRM / Media Plans	GRP's, Costs
Media	Offline Marketing – OOH	CRM / Media Plans	Sheets, Costs
Media	Warm Approaches - Cash and Raffle Mailings	CRM	Approaches, Costs
Media	Warm Approaches - Outbound Emails	CRM	Approaches, Costs
Media	Warm Approaches - Outbound SMS	CRM	Approaches, Costs
Direct Attribution	Direct Attribution - Website	Website Data / Google Analytics / CRM	Volumes, Values
Direct Attribution	Direct Attribution - SMS	Instagiv, CRM	Volumes, Values
Direct Attribution	Direct Attribution - Postal & Phone	CRM	Volumes, Values
Other	Fundraising Events	CRM	Significant Dates
Other	Landing Page Visits	Google Analytics	Landing Page Visits
Other	Regular Giving pledges	CRM	Recruitment Volumes
Other	External Environment	Google Trends, Google Ads	Index, Imp Share, Total Imps
Other	Annual Seasonality	Website Data / Google Analytics / CRM	Calculated
Other	Weekly Seasonality	N/A	DOW Flags, Week # Flags
Other	Special Events	Gov.uk	Bank Hols, Special Events
Other	PR & News	Cision	Circulation, % Favourable
Other	Competitor Data	Nielsen	Spend
Other	Website Changes	I&DT / Digital Teams	Website Update Dates
Other	Brand Measures	Yougov	Brand KPI's
Other	Macro-Economic Data	ONS	Consumer Confidence
Other	Weather Data	Met Office	Rainfall, Temp

Data collection can be a significant project in its own right, requiring connections to many data sources, coding to transform the data into the desired format and testing to validate it. This process can be streamlined significantly through:

- effective data management (inc. campaign setup, use of metadata, consistency of definitions)
- the creation of automated data extraction pipelines
- automation of column creation using dynamic coding
- consistent use of naming conventions
- automation of code to aggregate daily dataset to weekly dataset
- an over-arching process to run each stage of the dataset build

3. data exploration

Once the modelling dataset has been generated it is worth spending some time exploring the data before jumping straight into model development. This might include plotting potential explanatory variables against the dependent variable and identifying correlations within the data.

Testing for correlations within the marketing data is particularly important, as charities tend to concentrate a large proportion of their marketing spend on big campaign moments (e.g lead up to Christmas). If the timing of marketing channel spend is strongly correlated, it can lead to issues of multi-collinearity. If these issues are not addressed during model development (e.g through creation of weighted composite variables) it can cause inaccuracies in coefficient estimation and invalidate your return on investment analysis.

It is also worth considering the potential for endogeneity. Endogeneity in marketing mix modelling is where an explanatory variable is correlated with the error term. Consider an example where a charity increases the prompt amount values shown on their website donation page at times of emergency appeals when donations are higher. For a model built on website donation volumes, it would appear that increasing the ask amount listed on the website, results in a higher volume of donations. In reality, the direction of causality is the other way around i.e prompt amounts are increased in response to higher website donation volumes.

4. data transformation

There are a range of transformations that can be applied to raw marketing data to help it better fit the pattern of response observed in the donation data:

- **lags**: there could be a lag between marketing exposure and response (e.g postal responses)
- **adstocks / carryovers**: marketing memory may still influence donation decision in subsequent periods
- **diminishing returns**: the relationship between exposures and outcomes is not always linear

It can help to have a good understanding of how organisational income is processed for different response types when considering appropriate transformations. Check you know what the 'date received' date stamp in your CRM actually means and whether it is used consistently across different channels, campaigns and time periods.

Transformations applied to different channels can look very different depending on their typical mix of response methods. Website, phone and SMS responses might appear in the donation data immediately after a marketing exposure and have a short response curve (days), whereas postal responses might not show up right away and have a far longer response curve (months). If you have data available for directly attributed donations by response mechanism and marketing channel, it can be helpful to plot this against the marketing data itself to give a sense of how it might need to be transformed to better fit the pattern of response.

While it is a cleaner approach to model using the (transformed) marketing data itself, some charities may have gaps in their data or concerns about how consistently responses to their marketing have been date stamped. In these cases there could be an option instead to use directly attributed donation volumes from these marketing activities as alternative explanatory variables in the modelling. This can help represent the contributions of these marketing activities in your model, though it does have limitations when it comes to marketing optimisation recommendations.

There are different approaches to applying diminishing returns curves to marketing data which have different underlying assumptions. Some assume that the first pound spent for a given channel in a given period is the most effective and the incremental income generated from each additional pound spent diminishes from there. Others assume that the effectiveness of a pound spent for a given channel in a given period increases initially, before reaching a switch point and then starting to diminish. There is no 'right' and 'wrong' approach, but it is worth bearing in mind that they can lead to different optimisation recommendations. Curves that diminish from the first pound spent are more likely to recommend a lower-level 'always-on' fundraising approach, whereas curves with increasing and then diminishing returns are more likely to recommend big campaign 'moments' with stronger weekly weights. There may be operational considerations in terms of what is feasible around campaign planning and execution.

5. model development and validation

Modelling datasets often include huge numbers of potential explanatory variables. To guide the process of variable selection it can be useful to create a macro / loop that ranks prospective attributes by their statistical significance if they were added next to the model. While some automation like this is helpful, model development should still very much be a human-led process. A fully automated model development approach is not recommended, as statistical significance is only one consideration when selecting the variables for your model. A solid understanding of the business context is also important to ensure that model outputs are meaningful and are answering the right questions.

In addition to testing for individual channel contributions, you may want to test for halo effects between them. You could for example, have an integrated multi-channel campaign where social ads are being supported by TV, and want to understand whether a synergy between channels is delivering an incremental contribution over and above the individual contributions. This can be tested by creating a combined variable (e.g the product of the two individual variables) and adding it to your model alongside the individual variables. It is important to be wary of what this does to the estimated coefficients and statistical significance of the individual variables, as multi-collinearity can be a problem here. It is generally a good idea to limit the testing of synergies to cases where there is significant spend across both channels and a strong theoretical basis to expect one might exist.

Model development is a very iterative process, with lots of looping through steps 5-6 before a final model is settled upon. Check that the variables included in the model meet a minimum level of statistical significance and that the signs of the coefficients are what you would expect (i.e you wouldn't generally expect media activity to have a negative impact on donations). Review the overall model diagnostics too before drawing any conclusions from the model output. This can include checking for multicollinearity between explanatory variables and checking for autocorrelation in the residuals. You can use data visualisation to plot the residuals over time and to compare the modelled series to the actual series. This can help identify where your model needs further work.

If you plan to use the model to forecast future donations as well as attribute past donations, you will need to be particularly careful to avoid over-fitting your model. There can be a temptation to add more and more explanatory variables to your model to push up the adjusted R-squared statistic (the proportion of the observed variation in donations is accounted for by the model). However, the danger is that the model can end up fitting the training data really well, but failing to fit new data or reliably predict future observations. One way to avoid this is to use a holdback sample of observations to help validate the model.

6. model decomposition

When you are happy with your model, you can export the time series data and estimated coefficients for the explanatory variables and combine them together to attribute past donations. Alongside this, collect all of the fundraising expenditure from the modelled period and group this up to mirror how the marketing data has been split in the modelling (e.g by channel, campaign etc).

It can be useful to check whether your model has detected a contribution from each element of marketing spend in the period analysed. It is unlikely that absolutely everything will be in there, but if you are missing contributions from major areas of fundraising expenditure it might be worth returning to these variables again. It could be that adding this marketing activity improves the fit of the model, or that existing variables are already explaining an uplift at that time.

When reviewing the decomposition outputs, it is crucial to check that the volume and value of donations attributed to different drivers appear sensible and realistic. This is particularly true for donations attributed to marketing, as these estimations can play an important role in determining future investment decisions. The combination of modelled contributions and expenditure data enables the calculation of (short-term) marketing return on investment. There are several ways to validate the returns calculated:

- Check return on investment outputs
- Share results with a member of the fundraising team and seek their perspective
- Compare modelled outputs to historic benchmarks
- Compare modelled outputs to directly attributed donations

The key learnings and insights from the modelling can then be written up and presented back to the stakeholder group, along with recommendations for how to improve future campaigns. An important point to remember is that the marketing return on investment calculated from the model will only be a short-term view and won't include the value from subsequent giving (or indeed subsequent costs).

7. post-modelling applications

The model decomposition gives an attribution of past donations, but can also be extended for other use cases:

- **Forecasting / scenario planning**: to forecast future donations and campaign results
- **Optimisation**: to recommend fundraising investment levels, channel mix and campaign laydowns
- **Lifetime value**: to broaden channel LTV analysis to include income beyond what is measured directly
- **Business casing**: to help make a more compelling case for investment in marketing

Each of these can potentially form a significant piece of work in their own right and could benefit from their own requirements gathering and objective setting exercise.

Setting up for success

This final section includes some tips for giving your measurement project the best chance of success.

Early and ongoing engagement

Marketing measurement projects can be complex and run over several months. The earlier you can involve key budget holders and decision-makers, the more likely they are to buy into the approach and align around an agreed set of measurement objectives. Regular communication during the project can help maintain stakeholder engagement and ensure that the project remains on the track.

Expectation setting

Even with advanced modelling techniques, measurement alone may not be able to answer every stakeholder question. If there is limited volume or variety in the data collected, or strong multicollinearity between channels, backwards-looking measurement may not provide all the answers. In these instances a test and learn framework might help to address knowledge gaps.

Context is key

Make sure that whoever is leading the model development has an in-depth understanding of organisational context. This includes a knowledge of the marketing strategy, recent fundraising campaigns and income processing processes. If an external analytics agency has been engaged to deliver the models, it can add a lot of value to have a nominated point of contact in the internal data team (and possibly fundraising team) who can provide any context the agency might be missing.

Data governance and management

Strong data governance and effective data management can greatly reduce the time needed to identify and fix issues with your marketing data and increase confidence in the project outputs. Poor data quality and low trust in the data can act as a major barrier to stakeholders accepting the learnings and recommendations from the modelling.

Process automation

In most cases, the need to measure marketing effectiveness will extend beyond the delivery of the original project. Introducing automation to your data collection and modelling and making the whole process as repeatable as possible can help generate significant efficiencies when models need to be refreshed or re-built.

We can help

Powered By Data have experience delivering marketing measurement projects in many industries including the charity sector, and are here to help if your organisation is facing any of the challenges outlined in this paper.

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