

# The Fundamentals of Building Better Data Products

BY [CHRISTOPH TEMPICH](#) ON FEBRUARY 13, 2018

Data is the world's most valuable resource, according to The Economist, and the companies that primarily deal in data – Google, Amazon, Facebook and the like – are among the most valuable in the world. Data and data products have been part of my professional career for a long time – from advising telco providers on how to use data to create new business some 10 years ago to my present-day role as chief data economist at digital transformation specialist Inovex, helping clients to discover and implement data products.

## Data Moves to the Centre of the Value Proposition

At a local, project-based level we're seeing that data is moving from being the source of reports to the centre of a product's value proposition. The examples below stem from my current work advising and coordinating clients on this new role for data.

- **Increased click-through rates:** we increased click-through rates by 60% at the online vehicle marketplace mobile.de by improving the vehicle recommendation algorithm. Our data engineers and scientists also created a price predictor for used cars – providing buyers with improved guidance on how good an offer is, given the age, equipment and usage of a car (for more details see mobile.de [case study](#)).
- **Integration into the Internet of Things:** we took a brand of industrial ovens for canteens and restaurants online and made them part of the Internet of Things. Chefs are now able to keep better track of the food they prepare, update oven instructions, offer customers better food and reduce maintenance cost.

So how can product managers build new and/or better data products? It's worth remembering that data products are like any other product. As such, and just as you would with any other product, you should validate early and often – and don't over-engineer. We're just not yet used to doing this with data.

With this in mind, let's look at how you can overcome common challenges like defining the problem related to a customer job in a data product, integrate data science into the process, and touch on what you should watch out for in the value proposition.

## Three Types of Data Products

As I see it there are three types of data products: data as a service, data-enhanced products, and data as insight.



## Data as a Service

All data products that create direct revenue fall into this category. Companies offering this type of data product provide data for specific interests such as to-the-second accurate stock-market data or location-specific weather data.

## Data-Enhanced Products

Data products which enhance a physical or virtual product fall into this second category. The value of such a product is reflected in the change in revenue (price or quantity) of the enhanced product. Most recommenders fall in this category, as they improve the sales of products.

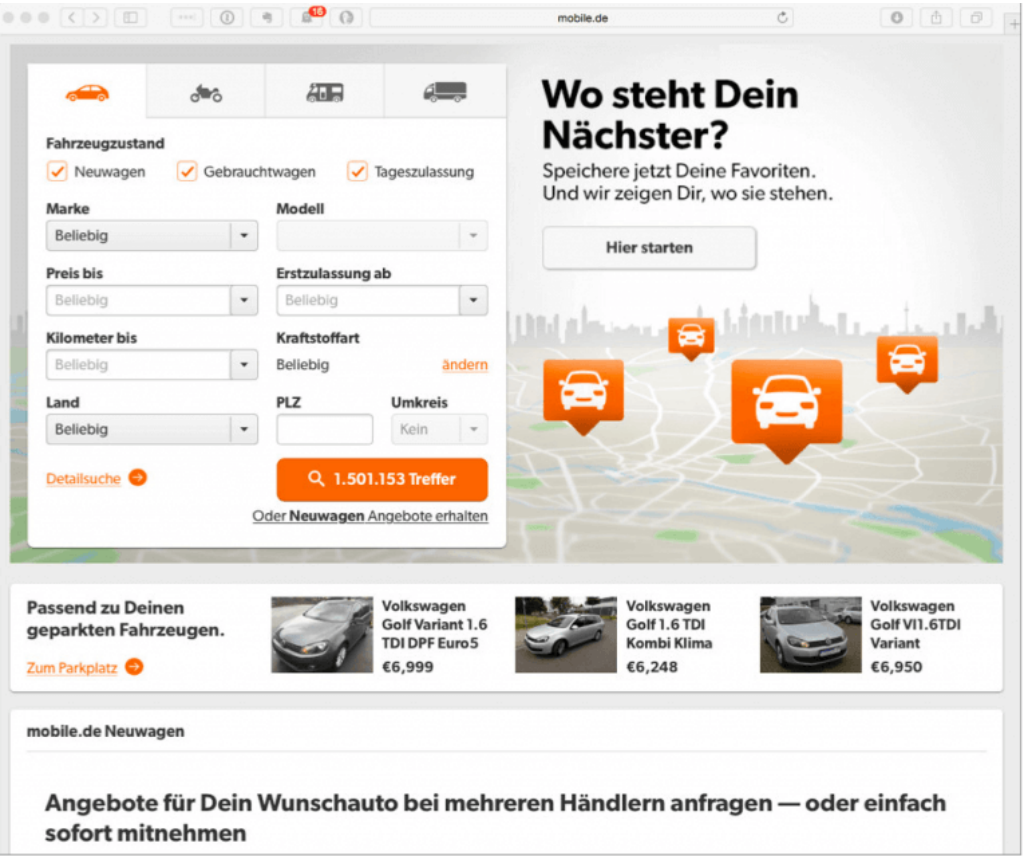
## Data as Insights

This category covers all types of data usage that analyse data in order to improve, for example, the sales or quality of a product without exposing the data to the end customer. The customer of the data product is thus an internal customer and the data product itself does not generate revenue.

## Identifying Data Products in the Customer Journey

Analysis of the customer journey is an established way of uncovering the potential for new services. We can identify where in the customer journey a promising data product might be hidden by first writing down the customer journey and identifying the customers' initial considerations, what follows next and when their goal is achieved.

Then, we should look at the potential results of the each of the steps and remember that information generates value by supporting decision-making. For each step on the journey we should look at the best and worst possible outcome.



In our example of selling cars on an online marketplace the customer journey is comprised of steps like, "Deciding to sell car", "Setting price", "Creating awareness of offer". For the "Setting price" step the best and worst cases were:

- **Best case:** "Setting a good price for the used car"
- **Worst case:** "Setting a price far below market value"

Any information that supports the user in achieving this best-case scenario is highly valuable. The information value is the difference between the worst case and best case.

You can estimate the value of a data product supporting a particular step in the customer journey by multiplying the difference between best and worst case with the number of times users perform this step.

Comparing the values for the different steps results in a prioritization of the various hypotheses for data products.

This initial task shows us which step in the customer journey could be improved by which information – hypothetically.

## Data Product Value Propositions

In the next step, we design the data product to solve the need for information we just identified. Data products can offer two types of value propositions, in my experience.

- **Purely rational**, such as a price comparison to buy at the lowest price, or
- **Social**, satisfying curiosity or providing social interaction and entertainment.

Sometimes you might need two data products which support each other to solve a particular problem. A data product with a social value proposition could nudge users into providing information while the analysis of the information results in a data product to support decision-making. For example, the used car platform could offer the data product "Estimating price of used car" to support the decision "Setting a selling price". However, the platform could also offer the data product to attract users who want to satisfy their curiosity about the current value of their car.

We can identify the potential for data products based on analysis of the value chain. You can start by identifying what kind of data would support your customer's journey in a way that generates additional value for your business. From there work backwards to identify where you could source that data from, or how you could go about generating it in a way that perhaps supports another aspect of your customer's journey, or contributes to another element of the value chain. The different value propositions will help you to design the data product.

Product managers can also design data products which support users to look

- to the past: reviews are a good example for this case.

- at the present
- at the future, as a prediction based on past events.

## Starting your Data Product

Designing a data product based on a complex algorithm is hard, because complex algorithms tend to be difficult to optimize and often require lots of data preparation (see also [Josh Clark's comments](#) on this). Try to validate the value of solving a user problem first, with, for example, a simple algorithm or a heuristic. Instead of recommending a specifically calculated item, you can randomly select one. This will give you a baseline for acceptance of your data product. Switching to the algorithm if you have good indicators of a validated problem-solution fit is much easier than finding a problem for a very good algorithm.

We have seen many data products die on the way from algorithmic optimization to the website. If you establish your problem-solution fit on your platform early, it is much easier to deploy new algorithms later on.

## Include a Feedback Loop for a Long-Term Value Proposition

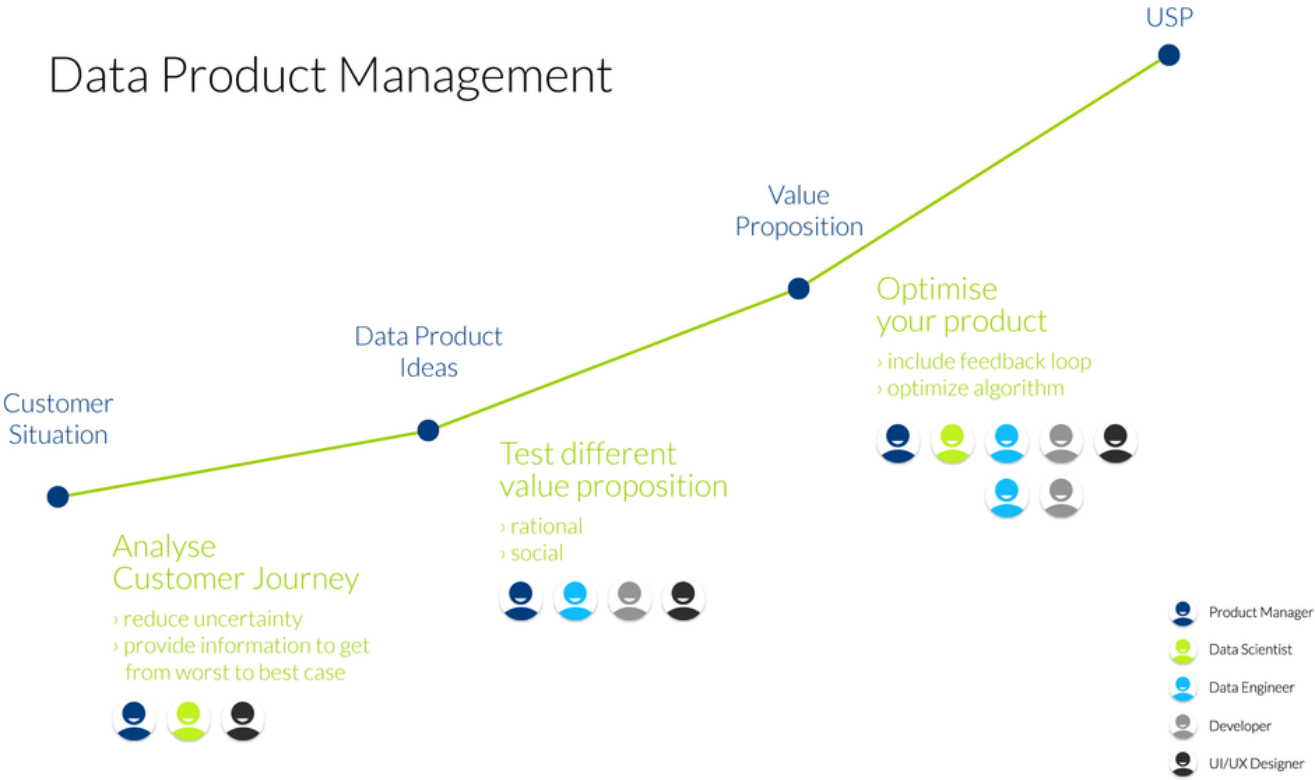
Data does not wear out. Instead, the value of your data increases the more that people use it. Each time a user interacts with the data, you create more data that you can feed back into your algorithm in order to improve it. While your competitors can copy your algorithms, user interfaces or business logic, they cannot copy the data you obtain through user interaction.

Time spent in designing a feedback loop for your product is therefore well invested. Ideally, user interaction should immediately lead to some improvement so that users keep on providing feedback, or in the words of DJ Patil: "[Give data back to the user to create additional value](#)".

## Setting up Your Data Product Team


Often data products are part of a larger service platform with many different product managers responsible for various services. In the case of the vehicle marketplace we worked on there are product managers for listings, favorites, search and many more. In these situations the data product manager requires data, which is generated in diverse features within the platform. This sometimes leads to an organization where data scientists are separated into something like a competence center.

Instead of providing a centralized data science service to product managers at Inovex we recommend the establishment of a dedicated team for each data product with direct access to the customer. In the best case, the data product team includes a product manager, data engineer, data scientist, UX expert, and a front-end and back-end developer. The product manager can thus obtain direct feedback from customers. And the product manager can take an end-to-end perspective to the product including data generation, integration, analytics and closing the feedback loop. This helps to improve the target KPIs and make the product better with each iteration.








## Conclusion

Many good algorithmic ideas never make it to market, because they don't solve a significant customer problem. Starting with the value of information to prioritize your data product ideas can reduce that risk. From there a baseline data product with a very simple algorithm can be defined and prototyped. Once you have validated the problem-solution-fit, then optimization of the algorithm can kick-in. The feedback loop will help you generate enough data to improve your algorithm and hence the user experience.



### 5 data-driven tactics to improve your product experience



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About

### Christoph Tempich

Dr Christoph Tempich works as chief data economist at Inovex GmbH, an innovative service provider for digital transformation projects. He watches over the economic aspects of digital transformation and takes a strategic view on data economics. Furthermore, he supports companies in defining data products and improving their digital business models. Customers include mobile.de, 1&1, Robert Bosch, Deutsche Telekom, Allianz. He is an invited speaker for the success factors of data products, for applying machine learning and deep learning and for managing change in digital transformation initiatives.



He received his PhD from the University of Karlsruhe in 2006, where he carried out research on applications of artificial intelligence. Follow updates on Twitter @ctempich.



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### 3 thoughts on “The Fundamentals of Building Better Data Products”

1. **Deep** says:

[March 03 2022 at 08:15](#)

Hi, Christoph!

Here are 2 examples:

  - 1) List of company employees offered as a service by HR department to other corporate departments
  - 2) Application authorization logs sent to IT Security department

Are these examples of data products? What type of data product they are?

[Reply](#)
2. Pingback: [The most effective channels to gain customer feedbackThe most effective channels to gain customer feedback: Part 2 – Mind the Product](#)
3. **David** says:

[February 02 2018 at 02:46](#)

Really good good article – surprised no one has commented on it yet!

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