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Data-driven Information Communication - Short Distance from Research to Farmers, the Danish Way.

Abstract:

The distance between research findings and the Danish farmers is short which among other things is due to efficient communication of the findings via the portal "landmand.dk" (farmer.dk). More than 20,000 farmers use this portal, corresponding to 83 % of all Danish farmers. The reason for this high percentage is the heavy individualisation of the contents which focus on each individual farm.

This article describes both the basic vision and the actual setup – in such a way that it is transferable to similar solutions.

Description:

When a farmer logs in to the portal, he sees an overview of his *business relations*, *key figures*, *prognoses* and *agricultural news*.

Business relations are typically slaughterhouse, dairy plant and feed traders – companies he is doing business with. They already have online services but the portal gives the farmer one unique login and only one password to all solutions.

The *key figures* on the portal originate from huge databases. SEGES prepares financial statements for 25,000 Danish farmers, is in charge of the national Danish livestock register, and is responsible for preparing all applications for HEKTARSTØTTE for 2,2 million hectares out of a total of 2,6 million hectares. On the basis of all this information it is possible to prepare a huge number of key figures for the benefit of the farmer and they are used actively for benchmarking. Business Intelligence is available to the farmer in dynamic dashboards.

The *prognoses* on landmand.dk are also based on the key figures relating to the farmer. The first step is filtering – by way of example the prognosis for brassica pod midges is only available to farmers who grow rapeseed. Warnings are moreover geographical so that e.g. a farmer in Northern Jutland does not get warnings concerning potato blight before the disease has been observed in his region.

News typically covers results from variety testing or research activities. It is a new feature that the farmer has access to this kind of information but as the farms get bigger and more specialised, the farmers employ agronomists and economists. By using meta tags and linking information and key figures the documents are directed to the employees working in a specific area.

Fertilizer application map for winter rape

An example of the short distance from advisory services to practical implementation is a service allowing the farmers to download an application map for fertilizing in winter rape crops.

SEGES cooperates with the Slovenian company Senergiese which supplies satellite maps with information about biomass. Together with the University of Aarhus SEGES has developed algorithms for allocation of fertilizer to winter rape crops and by means of these algorithms application maps are developed. Graduated

application is not recommended for all fields and this is easily seen by the farmer on the portal as all fields are shown in a 10 x10 m grid.

SEGES has prepared application maps for 7,500 fields, and 2,890 farmers have downloaded field maps to their fertilizer spreaders. A high proportion compared to the number of farmers who have access to graduated fertilizing.

The engine of the portal

The core of the portal is a rules engine used by all services. This ensures that only relevant information is available to the farmer and this increases the farmers' satisfaction with the portal.

In actual fact, it is simple to build a portal by systematically collecting knowledge about the users through different data sources. When a farmer surfs the SEGES web, he leaves footprints revealing his agricultural interests. These footprints are stored. The farmer's relations to different companies are known as well and several production databases as well as public databases store knowledge about the farmer.

The rules engine is constructed in such a way that the news, calendar and alert modules of the portal can request data – and the data is updated only in one single unit.

The portal offers a wide range of services:

Single Sign On (SSO)

The portal links to the farmer's collaborators, and a security module creates the connections behind it all in order that farmer does not have to log in again. Even in 2017 this is emphasized by the farmers as the most important strength of landmand.dk. The SSO feature is installed in 87 different solutions.

Calendar

The users of the portal are free to enter events on the portal. Each event is tagged in order that they can be targeted via the rules engine to the users who might be interested in participating.

Notifications

In a notification centre the portal collects notifications from all data sources – for instance that a contract will soon expire and has to be renegotiated. The archive function then notifies the farmer that the document is expiring and gives an alert with a link to the document. If a prognosis notifies about risk of mildew in wheat crops, the notification centre gives an alert and a link to the field map. This service is causing the heaviest traffic on this site.

Contents maps

The portal has a range of maps displaying text, images, videos, and graphics. All these maps can be personalized, thus only showing data to particular users and the contents can be adapted to the individual user based on data in the root databases.

Responsive

The portal is used by farmers and farmers seldom spend all day at the office. Therefore it is vital for the portal that data is available at exactly the spot where the farmer is. The portal therefore responsively adapts to the device the farmer is using – no matter whether it is smartphone, tablet or desktop.

General Data Protection Regulation (GDPR)

The passing of the General Data Protection Regulation is of course important when it comes to securing compliance in relation to the many data integrations of the portal. SEGES has chosen a very simple approach by getting the farmer's acceptance to use the data. In connection with the first login the farmer sees a page with contract terms. These terms allow SEGES to collect, store and use data for calculations. Lawyers have accepted that the formulations used are sufficient for the portal to meet the rules of the GDPR.

Finance

A portal of this size is far from being free to run and therefore a business model has been worked out for financing. The basic portal is free for the farmer. The companies on the portal carry the costs. Each company pays an amount per user. SEGES actively uses the portal as a platform for testing new services and spreading agricultural information. In this situation it is an extra plus to run a portal with a market share of over 80 percent of all Danish farmers.