

ProductFinder: A Location Aware Product Information Display for Retail Environments

Abstract

Orientating oneself and finding products in retail stores is a well-known problem. Common modern retail stores have up to 10,000 square meters and they offer not fewer than 100,000 products. At the same time, situated public displays and digital signage more and more find their way into such stores.

We introduce the ProductFinder, an intelligent product information system for situated interactive public displays in retail environments.

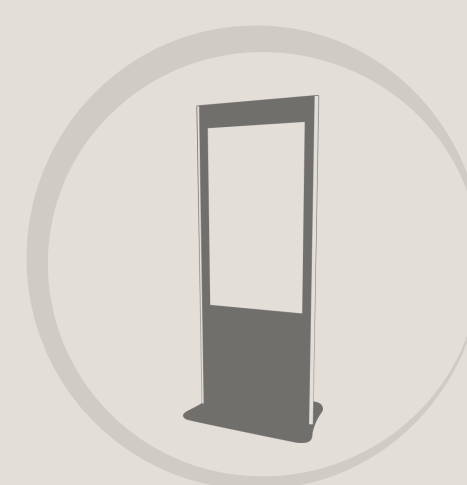
Connecting to the store's product database as well as to a market layout service, the ProductFinder forms a new digital connection between the physical store and its digital backend. Our system allows customers to lookup the placement of products in the store while providing filters for ingredients and allergens.

We report on the results of a long term in-the-wild study on how customers interact with the ProductFinder and what they are searching for.



Concept

We deployed a prototype of the ProductFinder at **three** locations in a local retail store with more than **100,000** products, **224** shelves and **35** departments on an area of more than **15,000** square meters across **two** floors, serving about **40,000** customers per week.



46-inch touch-enabled display



smart virtual keyboard including auto-complete and suggestions



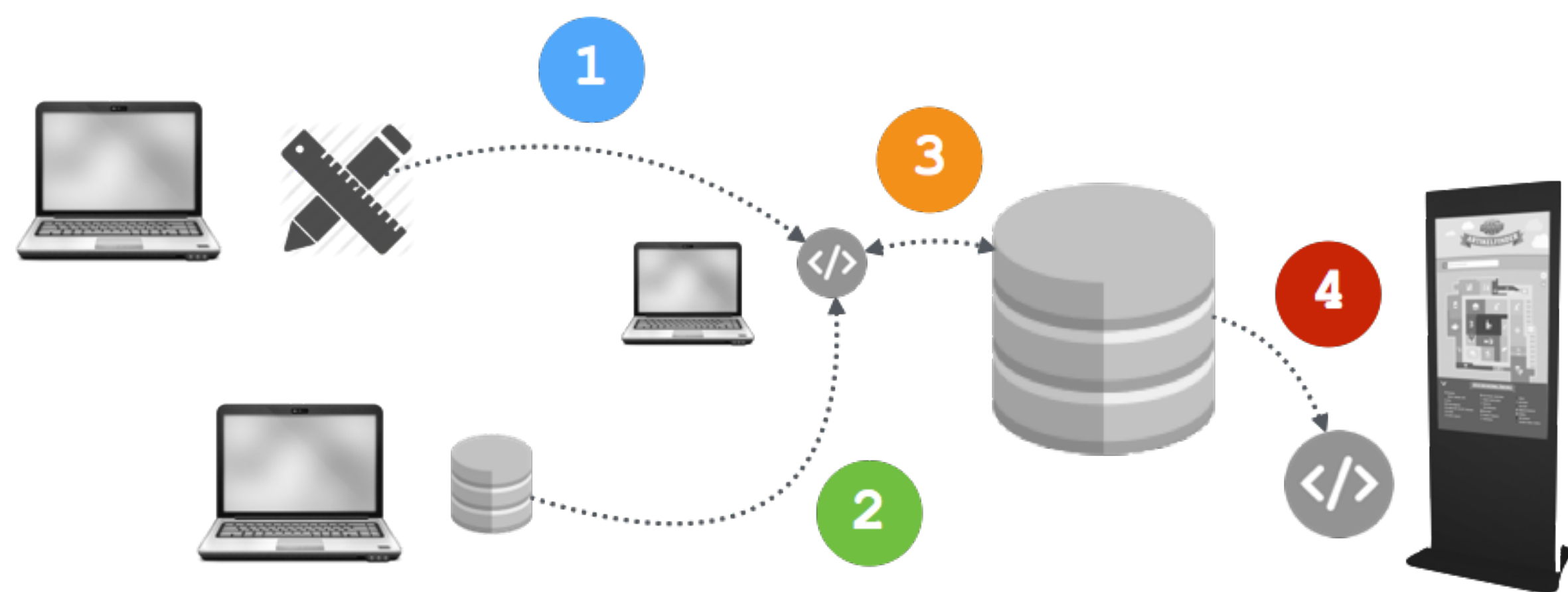
interactive map of the market



support for wheelchair users, children and smaller users



filter search results for special features (e.g., allergens and organics)



The architecture of our concept and the connection between the several application parts:

- 1 A floor-planning toolkit is used to model the market layout and export the spatial information, strongly according to a self-defined JSON grammar.
- 2 The product data is provided by the market's inventory control system.
- 3 Here, the spatial and the product data are coupled and imported into a database.
- 4 Finally, the application can request all data from its local database.

Next Steps

- Long time deployment
- Optimize data quality
- Optimize categories using alternative layouts
- Development & Concept of a mobile version
- Extend our app for other types of stores (e.g. furniture, electronics, clothes)

Analysis of Log Data

We gathered data over **300,000** database queries and **1,200,000** touches. All data is anonymous. We observed altogether **30,453** sessions, lasting between **18** and **71** seconds (50% of data; M=55.79, SD=62.64). We assumed a break of 60 seconds between two touches to the screen of a device as a new session. On average **1.76** (SD=1.34) unique search terms were entered per session, and **41,078** search terms at all.

* 1,530 sessions (5%) consisted of one touch to the screen

* 50% consisted of 9-30 touches

* Most user interaction on weekend (Fr - Sa) and in the evening (5 - 8pm)

most searched products		most searched departments		most searched shelves	
chips	1,83 %	for the food cupboard	32,42 %	mayo / mustard	4,87 %
mustard	0,83 %	breakfast	9,19 %	country selection	4,18 %
milk	0,77 %	wine & spirits	7,06 %	baking ingredients	3,39 %
salt	0,71 %	spices	6,49 %	spices	2,48 %
oil	0,54 %	dairy products	4,99 %	tea / spreads	2,23 %
spices	0,48 %	household goods	4,97 %	butter / margarine	2,21 %
noodles	0,42 %	crisps	4,18 %	soups / fund	2,08 %
eggs	0,41 %	confectionery	3,80 %	sugar / flour	2,01 %
bread	0,41 %	cosmetics & toiletries	3,39 %	dried fruit / condensed milk	1,97 %
ketchup	0,39 %	fresh ready-meals	3,35 %	spirits	1,86 %

