



Technical University of Cluj-Napoca  
Faculty of Automation and Computer Science  
Computer Science Department

# Financial Efficiency Boosting System For Consumer-Grade Products

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# ⚠ The problem

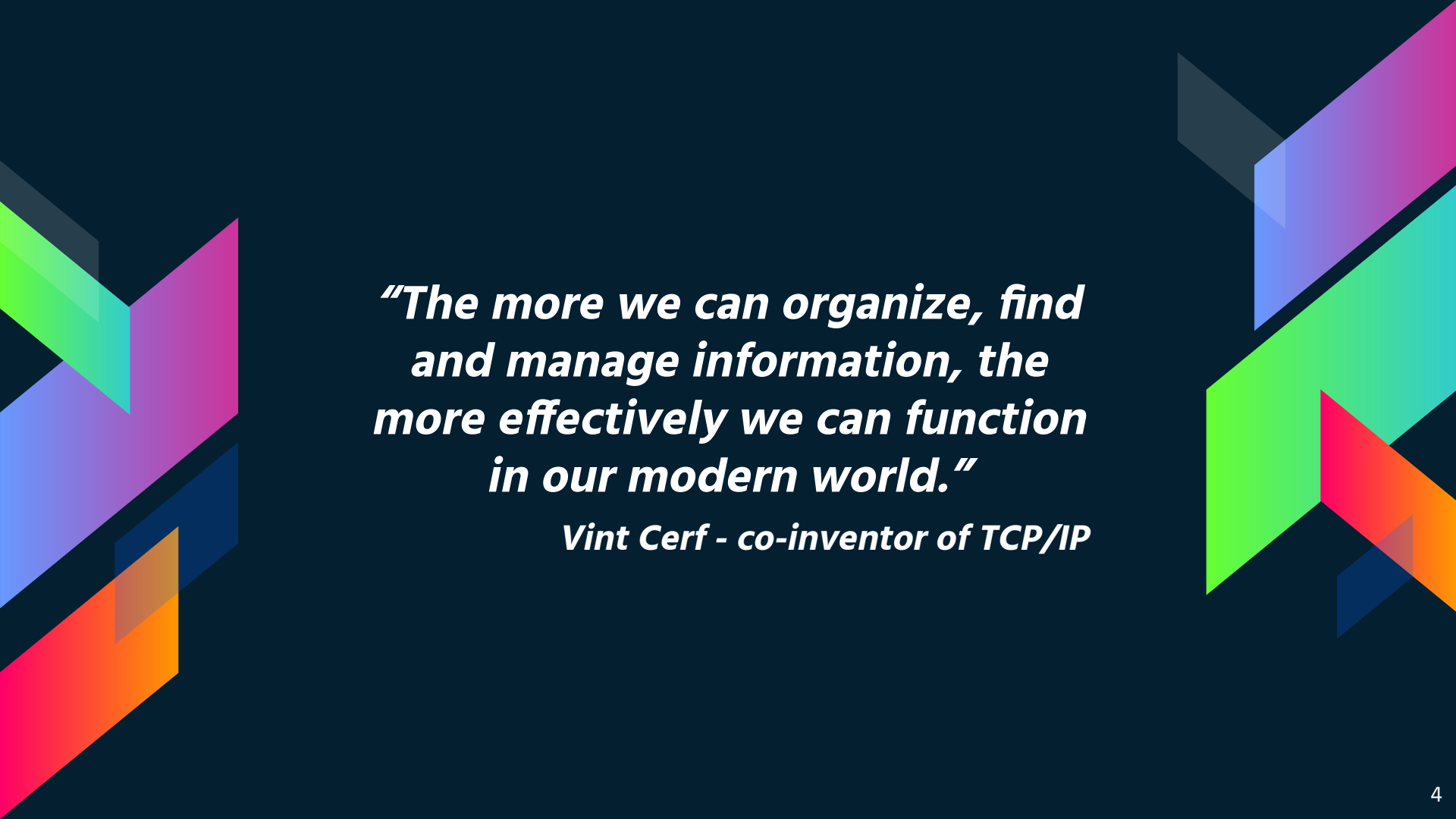
- › People focus on efficiency, especially financially
- › The popularization of the internet has brought along ecommerce
- › Being able to make money online presented an opportunity to companies
- › The ecommerce market is flooded with web shops

## ✓ The solution

An application needs to be created that centralizes the options across the ecommerce market

The application needs to have the qualities:

- › Very accessible
- › Easy to use
- › Can track prices of multiple web sites
- › Easily extensible

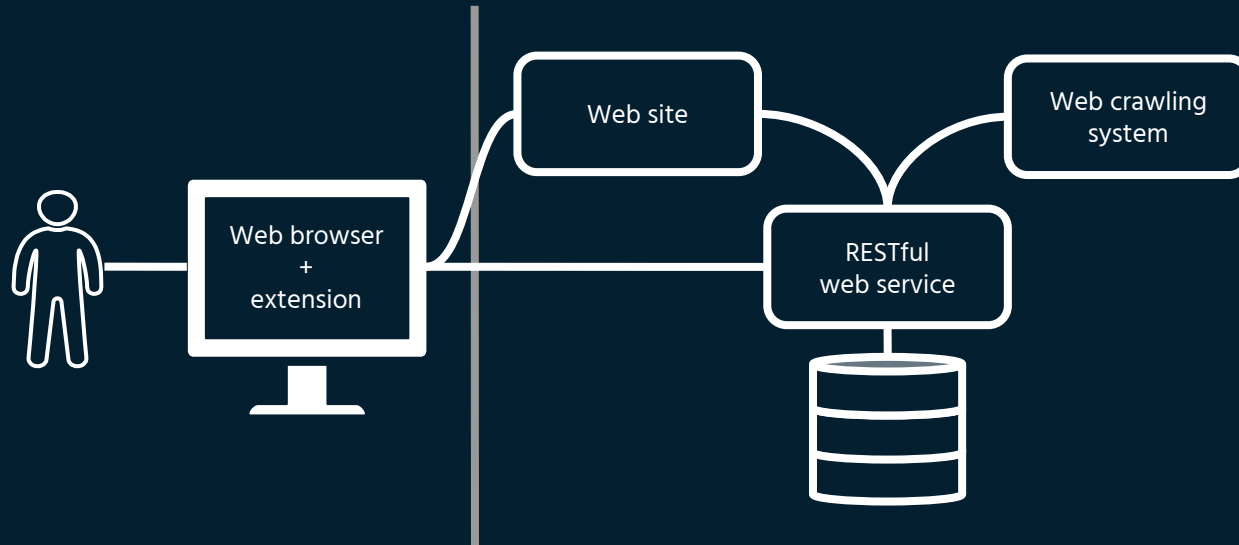


***“The more we can organize, find  
and manage information, the  
more effectively we can function  
in our modern world.”***

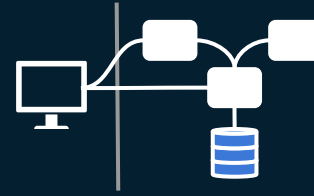
***Vint Cerf - co-inventor of TCP/IP***

# The plan

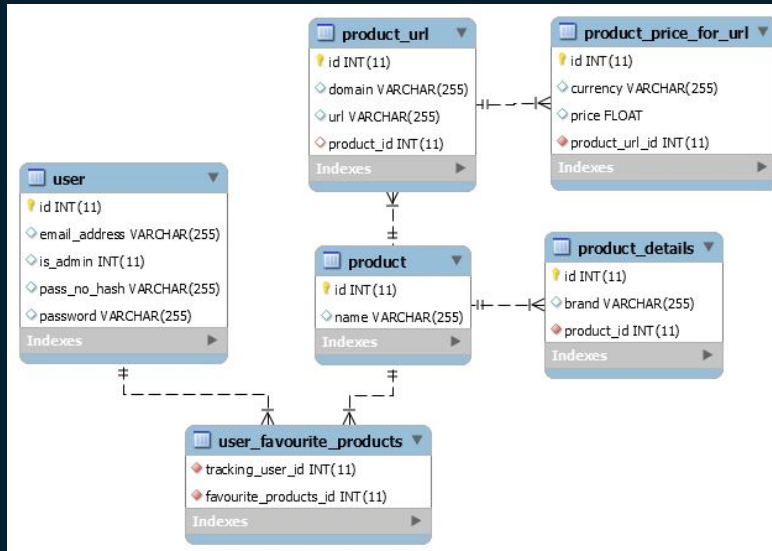
Create a system with a modular architecture



# The database

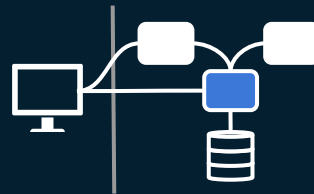


MySQL was chosen as the database management system for this application due to the fact that I need to store the product data in a structured manner





# The RESTful web service

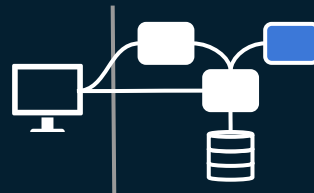


The RESTful web service is created using the Spring framework for Java 8

It acts as a uniform interface connecting the modules of the application

It is split into a DAL and a BLL

# ❧ The crawling system



The crawling system was build using Python3 and Scrapy

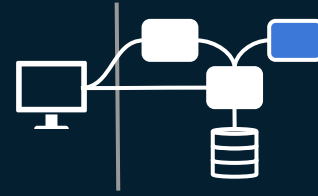
It is the key element of this application

The development of this module consisted of:

- › Creating a script that starts the crawling process based on a simple command
- › Creating the necessary spiders
- › Creating an Item pipeline section to persist the extracted data



# ⚙️ The crawler caller



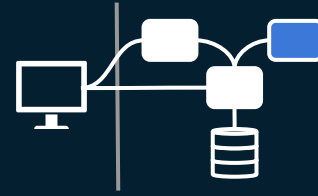
The crawler caller is the script I've created for starting the process

It works as follows:

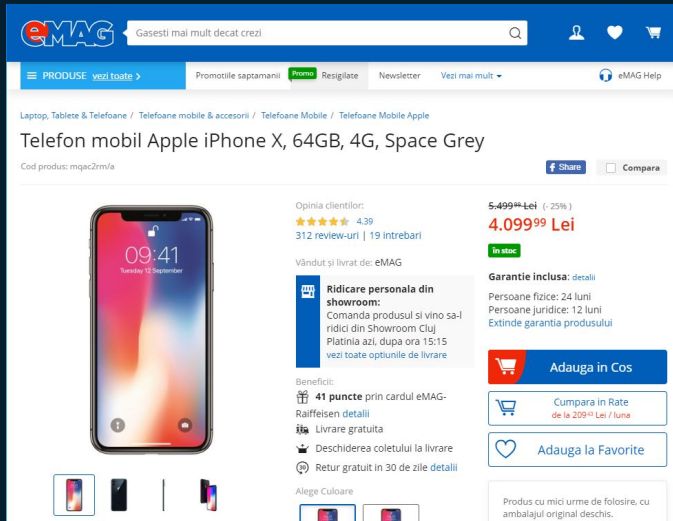
- › It requests the URLs of products belonging to the given domain
- › It sets the received URLs as starting URLs for the spider
- › It starts a crawling process with the previously mentioned URLs and the spider that has the name that has been given to it

The crawling system

# 🕸 The spiders

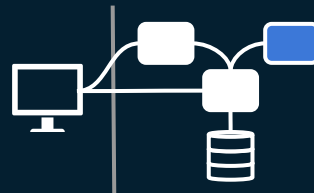


Spiders are scripts for Scrapy, which extract data from a fetched web page



`{'brand': 'Apple',  
'crawled_name': 'Telefon mobil  
Apple iPhone X, 64GB, 4G, Silver',  
'currency': 'RON',  
'domain': 'emag',  
'price': 4099.99,  
'productId': 1}`

# ⚙️ The Item pipeline



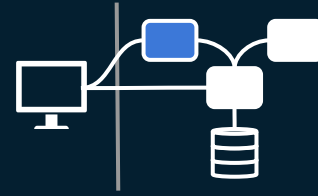
The Item pipeline is the post-processing element for extracted data

It is composed of multiple small-scale scripts, which perform some action with the data they receive

Its components are activated and sorted in the project's settings



# The web site



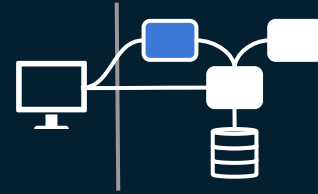
The web site of the application was built with the AngularJS framework

It represents the largest part of the application's front-end

It can act as a kind of centralized web shop interface

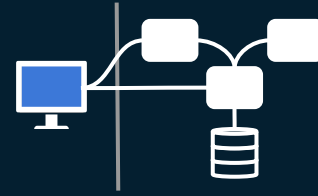
The web site

# User permissions



Operation	Guest	User	Admin
Login			
Register			
Search for a product			
See the details of a product			
Logout			
Add a product to favourites			
Remove a product from favs			
View their favourites list			
View the full list of products			
Add a new product			
Update a product			
View the list of a product's URLs			
Add a new URL			
Update a URL			

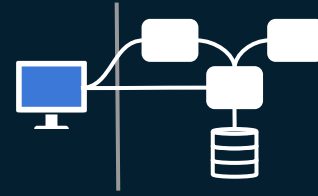
# The Chrome extension



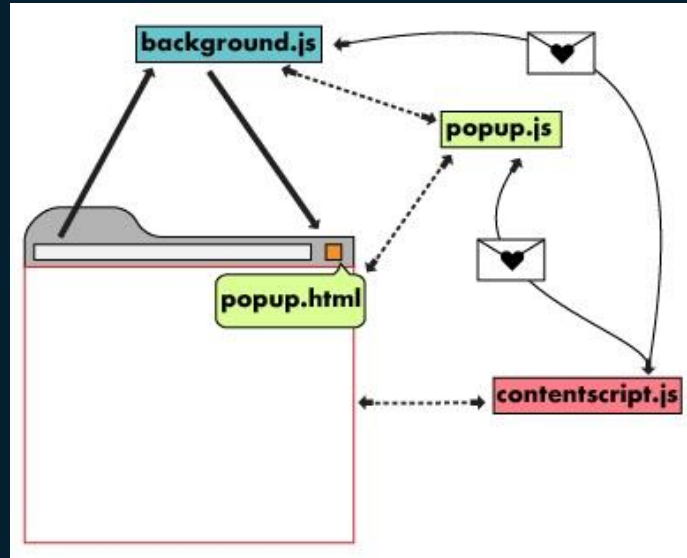
The Google Chrome browser extension is the most important element of the application's front-end

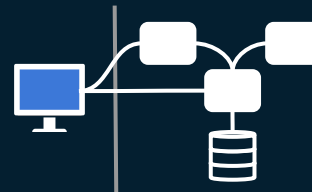
It is the 'one-click-away' accessible solution for the presented problem

# Under the hood



A Chrome extension has a simplistic, but powerful composition





Telefon mobil x Apple iPhone x Telefoane Mo x Smartphone x Telefon Mobi x Iphone X - C x +

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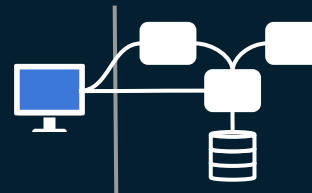
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Livrare standard

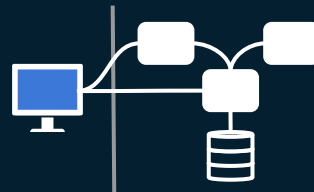
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# The Chrome extension Effect



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# Results

- ❖ Modular, extensible application
- 🔄 Up to date database of products
- 📺 Easy to use interface
- 👉 One-click-away tool for saving money

# 🔧 Future development

- 🔌 Support more domains & products
- 🖥️ Make a prettier user interface
- 🕒 Automate the crawling process
- 🔗 Port the extension to other browsers
- 🛡️ Implement stronger security measures



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YOUR ATTENTION!**