

**ϕdigital**

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## Architectural Document

### PCTO 2021/22

## About us

### Informations about us

IP digital is born as a firm in the field of the production and selling of high quality filing systems distinguished by the assembling of components produced with recycled materials and by the tested and verified durability. Our catalogue, by now, is addressed to the necessities concerned with the business world and offers USB devices that put perfectly together reliability and a characteristic minimal yet modern design. The devices are available in the sizes of 64GB, 128GB and 256GB

The production is realised by the company through the assembly of components sent from trusted and certified external suppliers. The selling process is meant to interface with the only enterprise reality and the delivery is entrusted to an express courier, granting the possibility of tracing the service of delivery.

### What are the fundamentals of our company?

#### Our USB pen drivers

- They're made with premium recycled materials
- Mainly oriented to the business world
- They're long-lasting
- They're fast in data transferring operations
- Their design is minimal and modern
- They're safe
- They use the latest technology

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## Roles

### The business' coordination

- **Azemi Kevin**
  - Coordinamento del team
  - Storyboard: brainstorming
  - Storyboard: realisation
  - Development: Frontend
  - Development: Backend
  - Setup: Server/Services
- **Cadore Alessio**
  - Documents: review
  - Storyboard: project
  - Documents: consultation for the technical parts
  - Setup: Server/Services
- **Candian Michele**
  - Documents: review
  - Storyboard: brainstorming
- **EI Ikhbari Ilia**
  - Storyboard: brainstorming
  - Website programming: advice
  - Development: API
- **Falasco Giosuè**
  - Documents: review
  - Storyboard: brainstorming
- **Pellizzon Erik**
  - Documents: very first writing
  - Documents: realisation of the projecting document
  - Storyboard: brainstorming
  - Storyboard: correction
  - Development: API
- **Rubin Francesca**
  - Documents: correction and translation
  - Storyboard: brainstorming

## Storyboard

The screenshot shows a web browser window with the title "Sign in - ipDigital". The URL in the address bar is "ipdigital.ga/auth/sign-in.php". The page features a light gray background with a central white login form. At the top of the form is the "ipdigital" logo. Below it, the text "Login to your account" is displayed. The form contains fields for "Email address" (with placeholder "Enter email") and "Password" (with placeholder "Password" and a visibility icon). There is also a "Remember me on this device" checkbox and a "sign in" button. At the bottom of the form, a link "Don't have account yet? Sign up" is visible.

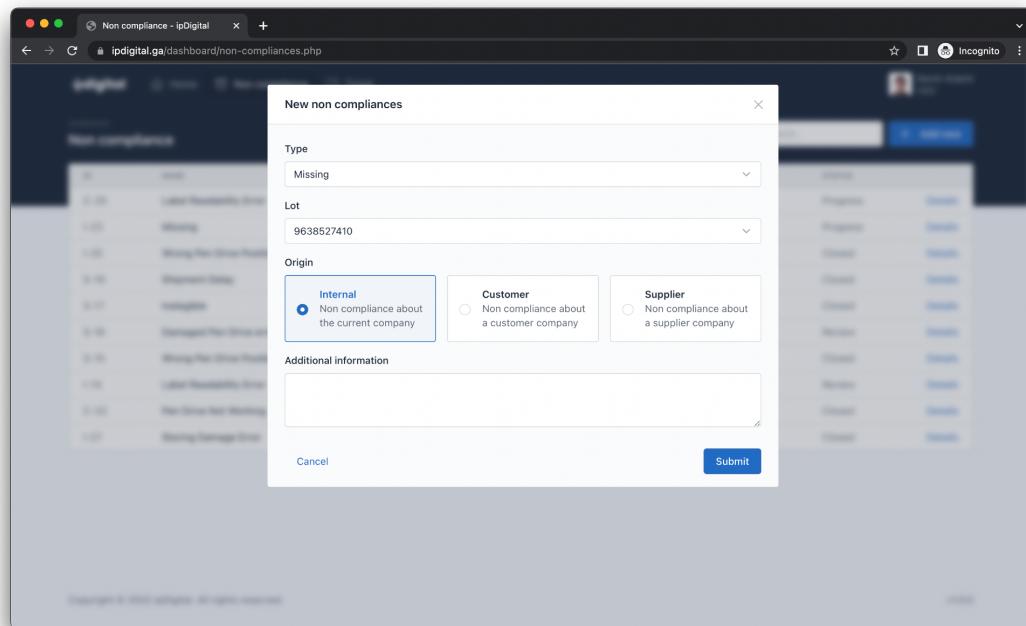
The screenshot shows a web browser window with the title "Sign up - ipDigital". The URL in the address bar is "ipdigital.ga/auth/sign-up.php". The page has a light gray background with a central white sign-up form. At the top is the "ipdigital" logo. Below it, the text "Create new account" is shown. The form includes fields for "Firstname" (placeholder "Enter firstname"), "Lastname" (placeholder "Enter lastname"), "Fiscal Code" (placeholder "Enter fiscal code"), "Email address" (placeholder "Enter email"), and "Password" (placeholder "Password" with a visibility icon). A checkbox labeled "Agree the terms and policy." is present, followed by a "Create new account" button. At the bottom of the form, a link "Already have account? Sign in" is provided.

The screenshot shows the ipDigital dashboard interface. At the top, there are four status boxes: '2 New' (2 today), '4 In progress' (3 today), '3 Review' (3 today), and '8 Closed' (6 today). Below these are two charts: 'Non compliance summary' (a bar chart showing a sharp increase in non-compliance starting around May 1st) and 'Ticket activity' (a line chart showing a significant spike in ticket volume on May 1st). The bottom of the screen displays copyright information ('Copyright © 2022 ipDigital. All rights reserved.') and a version number ('v1.0.0').

The screenshot shows the 'Non compliance' page. It features a search bar and a 'Add new' button. Below is a table listing various non-compliance items:

ID	NAME	MANAGER	DATE	STATUS	Details
C-25	Label Readability Error	rosinisimone@gmail.com	2022-05-05	Progress	<a href="#">Details</a>
I-23	Missing	rosinisimone@gmail.com	2022-05-05	Progress	<a href="#">Details</a>
I-20	Wrong Pen Drive Position	rosinisimone@gmail.com	2022-05-05	Closed	<a href="#">Details</a>
S-19	Shipment Delay	rosinisimone@gmail.com	2022-05-05	Closed	<a href="#">Details</a>
S-17	Inelegible	rosinisimone@gmail.com	2022-05-05	Closed	<a href="#">Details</a>
S-16	Damaged Pen Drive error	rosinisimone@gmail.com	2022-05-05	Review	<a href="#">Details</a>
S-15	Wrong Pen Drive Position	rosinisimone@gmail.com	2022-05-05	Closed	<a href="#">Details</a>
I-14	Label Readability Error	rosinisimone@gmail.com	2022-05-05	Review	<a href="#">Details</a>
C-33	Optical Inspection Error	<a href="#">Unassigned Manager</a>	2022-05-05	New	<a href="#">Details</a>
I-27	Storing Damage Error	giosue.falasco@gmail.com	2022-05-05	Closed	<a href="#">Details</a>

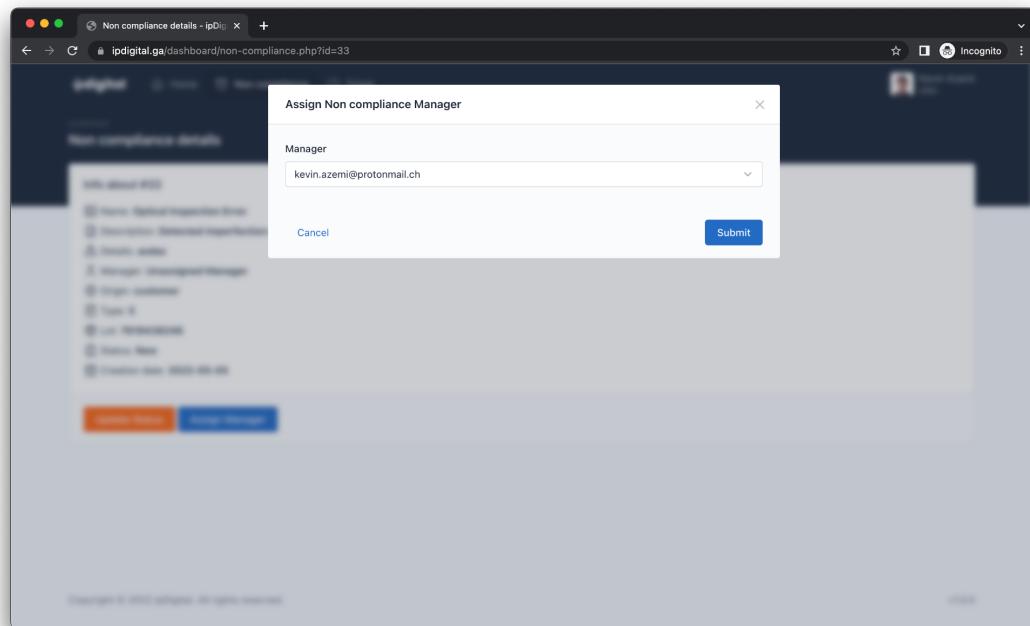
At the bottom, it says 'Copyright © 2022 ipDigital. All rights reserved.' and 'v1.0.0'.



The screenshot shows a detailed view of a non-compliance entry. The title is "Non compliance details". The entry is identified as "#33" and has the following details:

- Name: Optical Inspection Error
- Description: Detected imperfection or error during optical inspection.
- Details: asdas
- Manager: Unassigned Manager
- Origin: customer
- Type: 5
- Lot: 7619438246
- Status: New
- Creation date: 2022-05-05

At the bottom are "Update Status" and "Assign Manager" buttons. The footer includes copyright information and a version number: "Copyright © 2022 ipDigital. All rights reserved." and "v1.0.0".



The screenshot shows the "Tickets" dashboard of the ipDigital web application. The page title is "Tickets - ipDigital". The dashboard includes a header with the ipDigital logo, navigation links for Home, Non compliance, and Ticket, and a user profile for "Kevin Azemi CEO". Below the header is a table titled "OVERVIEW Tickets" with columns: ID, SHIPPING CODE, DESCRIPTION, CUSTOMER, and STATUS. The table lists eight ticket entries:

ID	SHIPPING CODE	DESCRIPTION	CUSTOMER	STATUS
JP654123987-16	8462597310	test3	Bandai Namco Entertainment	new
JP654621397-15	8462597310	jhgjhv	Nintendo	closed
US473829175-15	1346792468	biji	Alphabet	closed
IT788945231-12	0258463971	asd	Comma	closed
JP854621397-12	0258463971	asdasd	Nintendo	progress
US102938475-13	7946138520	sdsadsad	Bethesda Softworks	closed
US473829175-11	1346792468	sdasdasdcx	Alphabet	closed

At the bottom of the page, there is a copyright notice "Copyright © 2022 ipDigital. All rights reserved." and a version number "v1.0.0".



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A screenshot of a web browser window titled "Ticket details - ipDigital". The URL is "ipdigital.ga/dashboard/ticket.php?vatNum=JP654123987&nonComplianceCode=16". The page shows a "Ticket details" section with the following information:

- Description: test3
- Customer Company: Bandai Namco Entertainment
- Customer Company Address: 5 Chome-Shiba, Minato City, Tokyo 108-0014, Japan
- Shipping: 8462597310
- Product Quantity: 20
- Status: new

At the bottom of the modal are two buttons: "Answer" (blue) and "Close" (red).

At the bottom of the browser window, it says "Copyright © 2022 ipDigital. All rights reserved." and "v1.0.0".

A screenshot of a web browser window titled "Account - ipDigital". The URL is "ipdigital.ga/dashboard/account.php". The page shows a user profile for "Kevin Azemi" with the following details:

- Avatar: A cartoon character with brown hair and a brown cap.
- Name: Kevin Azemi
- Title: developer
- Role: CEO

Below the profile, there are two tabs: "Account" and "Work".

At the bottom of the browser window, it says "Copyright © 2022 ipDigital. All rights reserved." and "v1.0.0".

A screenshot of a web browser showing the 'Account Details' form. The URL in the address bar is `ipdigital.ga/dashboard/account.php`. The form contains the following fields:

- Firstname & Lastname:** Kevin Azemi
- Fiscal Code:** SDTEYFTHUTY56789
- Email:** kevin.azemi@protonmail.ch
- Password:** [REDACTED]

A screenshot of a web browser showing the 'Work Details' form. The URL in the address bar is `ipdigital.ga/dashboard/account.php`. The form contains the following fields:

- Job:** developer
- Role:** CEO
- Company:** IT895623147

At the bottom right of the form are two buttons: 'Cancel' and 'Save'.

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## Usability

The graphic interface of the website will be characterised by a minimal and user-friendly even towards non expert users, in order to permit a smooth navigation and to limit the contacts to the assistance support concerned with the less clear sections of the application. The application presents a diversification using the criteria of different areas to grant to managers the use of the privileges assigned to them: for instance the possibility of assigning a non-compliance to a subject of them.

### Employee Account

The Employee Account permits the one logging in the contemporary vision and managing of the different reports of competence through a simple and intuitive dashboard.

### Manager Account

The main difference from this kind of account and the Employee account is the permission to manage every report and to assign the responsibility to the employees using a researching menu.

## Interface's sections

### Login

Allows access to the platform.

### Dashboard

Main page where you can find a summary of the opened, closed or in progress reports

### Non-compliance list (manager/employee account)

The list contains all of the non-compliances; in the case of a Manager account it will gather all of the non-compliances of the system, where an Employee account will be only able to see the ones to verify or the ones it's charged for.

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## Non-compliance management (manager/employee account)

This function allows the logging user the visualisation of the different details of a non-compliance with the possibility of managing the different possible results of the verifications.

## Employees administration (manager account)

This function permits the possibility of editing or deleting employees' accounts, by the use of a form worth the addition.

## Clients and suppliers administration (manager account)

This section contains the list of all of the suppliers with related certification adding a page where they can be edited or inserted.

## Orders management (employee/manager account)

It contains the list of all the orders with the datas of the people requesting them.

## Products management (manager/employee account)

Entry form for finished and semi-finished products.

## Process management (manager account)

It allows you to insert and edit the process concerned to a product.

## Supported platforms

The web application must ensure a correct functioning on the major browsers used by enterprises and employees, focusing on: Google Chrome, Mozilla Firefox and Safari.

## Server-side application placement

The installation process of the application will be executed on a dedicated server rented by a company in the field of hosting on its data centre. Due to the fact the server is dedicated, resources (CPU, RAM, Disc, network card) are dedicated only to the application. The server owns a public static IP that allows the user-side access at every moment. The web server we're using is Apache.

## Service functioning's responsibility

It is necessary to appoint an employee in the hierarchy of the company that will become the expert in the configuration and maintenance of the software. The physical servers are managed by the company that installed them, because of the fact they're rented by it. In the event of downtime, the responsibility falls on the first specified company, with the obligation to restore the service. In the case of hardware components damaging the specified company must work on the substitution, without retaliating on ipDigital.

## Scalability

In the case the registered users become more than the limit the server supports, MYSQL can be moved onto another machine, in order to increase the product's performance. It's possible to use a load balancer in order to deviate the users' requests to other servers having a PHP installation.

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## Content Delivery Network

A Content Delivery Network is a proxy that's distributed on multiple servers all around the world and that's used as a cache memory for the usual uploaded files from the users, for instance: images. The CDN is interposed from client and server in order to reduce the work the server has to do. When the static file is requested multiple times, it is saved on the nearest CDN server in order to reduce the reply time of the successive requests. The CDN ipDigital uses is Cloudflare, a leader company in this field, that offers flexible and scalable plans, including a free one.

## Password's hash

Due to the possible attacks to the database, we avoid to save unencrypted passwords on it, to avoid the hackers having the access to the DB to trace the users' passwords. For this reason we use hash functions that make impossible the tracing of the initial password from the output of the function. In order to strengthen the password and avoid two different passwords from generating the same hash code we use SALT: a random string that is concatenated to the password before the calculation of the hash. When a user logs in, the hash will be calculated and confronted with the one saved in the database. We chose to use the function Argon2, due to the fact it's open source and it's meant to treat in particular passwords, ensuring this way the cyber security.

## Backup and recovery

We set a daily automatic backup of the datas contained in the server. They're kept for at least 30 days. Backups are saved on different physical supports in order to keep the safe in case of malfunctioning. We chose to save them on:

- magnetic tapes, with a memory of dozens of TB, conserved in an archive.
- A server in another datacenter used just for saving backups
- Cloud server

The recovery must be executed manually by the incarcerated expert, only in emergency cases such as hacker attack, data loss due to a malfunctioning or a wrong deleting of a part of the DB by the employees.

## Languages

the website will be entirely in English in order to allow the use of the application to worldwide users. Other languages will be available in the future.

## Integration with existing services

The possibility of integration of the product with application meant to the field of the management of the calendars is open, offering the chance to bring all of the scheduled plans and the non-compliances assigned to the employees. The interactions between users is made through the use of a messaging application similar to WhatsApp, in order to contact the employees directly.

## Software

### Test Driven Development

The software will be developed by following a TDD method, focusing on the tests that are fundamental in order to check the correct functioning process of the application developed by the programmers.

### Frontend

The frontend interface is realised with HTML, CSS and Javascript programming languages, interacting with the backend in order to get all the data which is necessary to ensure the correct functioning process. The graphics are implemented with the use of already existing technologies, for instance Bootstrap in an effort to guarantee great results in less time.

### Backend

The backend will work using a machine using Linux as a kernel: in this case we chose Debian. A lot of different micro-services written in PHP will be available internally with the purpose of inter-communication in order to exchange information. These messages are exchanged using a messaging broker, developed for this specific purpose, for example Apache Kafka.

