**Project Title : Open platform and faIrness Olive-Oil suppLy chain for MEDiterranean small farmers**

**Acronym: OIL4MED**

# Contexte

Les produits à base d'olives comptent parmi les ingrédients et aliments méditerranéens les plus connus. La production est essentiellement limitée aux pays situés le long des rives nord et sud (Espagne : 2 500 000 ha, ventes moyennes d'huile d'olive de 1 400 000 tonnes par an, Portugal : les oliveraies occupent 360 000 ha, la production d'huile d'olive est estimée à 125 000 tonnes en 2019 , Tunisie : 82 millions d'oliviers couvrant 1 835 000 ha et 157 000 tonnes d'huile d'olive produites par an). L'huile d'olive est un produit stratégique tant pour les marchés locaux que nationaux pour tous ces pays. Il est considéré comme le plus dynamique du système agroalimentaire méditerranéen et agit comme un moteur clé de l'économie de divers pays.



# Objectifs du projet

L'objectif principal d'OIL4MED est d'aider les petites exploitations agricoles à travers une plateforme collaborative intelligente utilisant des technologies innovantes et des modèles commerciaux adaptés (vente avant culture, vente directe aux consommateurs, vente collective, exportation) afin d'améliorer la rentabilité et d'assurer la confiance et la transparence pour commercialiser leurs produits de manière efficace et rentable. Ces technologies garantiront la qualité et la sécurité de l'huile d'olive du point de vue de la gestion de la chaîne d'approvisionnement, et le problème clé est de construire un système d'information décentralisé pour l'ensemble de la chaîne d'approvisionnement alimentaire. En utilisant des solutions basées sur les TIC (IoT, Blockchain, plate-forme basée sur le cloud), ce nouveau système d'information décentralisé sera une innovation de rupture qui fournira une plate-forme de connaissances partagées pour tous les membres de la chaîne d'approvisionnement (y compris les ministères et les régulateurs tiers) basée sur l'équité, l'ouverture, la transparence, la neutralité, la fiabilité et la sécurité. OIL4MED établira un système de traçabilité de la chaîne d'approvisionnement en huile d'olive pour le traçage de l'huile en temps réel. Il mettra également en place un système de contrôle de la sécurité en intégrant les données aux méthodes générales de gestion des risques de la chaîne d'approvisionnement, et améliorera considérablement les performances des petits agriculteurs.



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# La plateforme Oil4MED

A/Principaux objectifs de la plateforme O4M:

-Aider les petits agriculteurs méditerranéens à vendre leurs olives directement aux consommateurs finaux.

-permettre la traçabilité du produit final

B/ Les utilisateurs de la plateforme sont :

Les agriculteurs, les propriétaires des presses d'huile d'olive, les acheteurs d'olives, les distribiteur d’huile d’olive, les consommateurs d’huile d’olive

C/Les principaux services assurés par la plateforme O4M:

- Gestion de la production

-Gestion de la trituration

-achat/vente des olives

-achat/vente de l’huile d’olive

- suivi des conditions de stockage de l’huile

-Traçabilité

-Outil d'analyse en Intelligence artificielle

D/ Les différents composants informatiques à développer :

1. La plateforme web centrale qui offre les services de gestion et de traçabilité
2. Les interfaces front-end permettant aux utilisateurs de communiquer avec la plateforme centrale à travers un navigateur web
3. Les interfaces mobiles permettant aux utilisateurs de communiquer avec la plateforme centrale à travers les téléphones mobiles
4. Le système IoT qui permettant de transmettre des données temps réel à la plateforme.
5. Le système block-chain qui veille à la sécurité des transactions
6. Un module d'intelligence artificielle pour l'analyse

# The actors :

* Administrator of the platform
* Farmers,
* Mill managers
* intermediate olive buyers and oil buyers
* final consumers of Olive oil.

# The flow of the main activity:

Olive harvesting

Transport harvest to mill

Sell harvest to thirdparty

Oil extraction

sell harvest to mill

sell produced oil to a consumer

store oil

sell oil to a thirdparty

sell produced oil to mill manager or to a thirdparty

sell oil to a consumer

The two products to be managed by the blockhain: the harvests and the produced oil by the mill

The main tasks performed by actors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Administrator** | **Farmer** | **Mill manager** |  | **Olive oil consumer** |
| Add/delete/update an olive region | Add/delete/update a grove | Add/delete/update mill equipments |  |  |
| Add/delete/update a zone | 1/Add (update) a harvest |  |  |  |
| Add/update actors: farmers, mill managers, distributors | 2/Transport a harvest (or part of it) to the mill |  |  |  |
|  |  | 3/Start processing a set of harvests |  |  |
|  |  | 4/Producing oil |  |  |
|  | 5/Sell oil before stocking it        7/Ship oil | 6/Purchase oil from farmer |  | 6/ Purchase oil from farmer    Purchase oil from mill manager |
|  | 5/ Stock oil | 8/Stock oil |  |  |
|  | sell stocked oil | sell stocked oil |  | Purchase oil from a stock |
|  |  |  |  | Check the traçability of an olive oil |
|  | sell a harvest (or a part of it)    ship olive | Purchase olive |  |  |
|  | Set intention to sell olive in future |  |  |  |
|  | Set intentions to sell oil in future |  |  |  |
|  |  |  |  |  |
| Manage the blochchain addresses of actors |  |  |  |  |

Identification of the main entities

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|  |  |  |  |
| --- | --- | --- | --- |
| **Entity** | **Identificator** | **Other informations** | **Observation** |
| An olive Producer (Farmer) | producerID=  CountryCode+RegionCode+GroupementCode +XXX |  |  |
| A grove | groveID= producerID+YYY | * Address and location of the field, * Nature of ownership: private, public domain, ... * tree age * Total area of the olive grove * Density (Number of trees/Ha) * type of soil * variety of olive trees * Irrigated or rained * fertilization products used * variety * photos of the field * Pesticide sprays YES/NO   Conventional OR Organic |  |
| A harvest | harvestID= groveID +JJMMAA | * harvesting date * Mechanical or manual harvesting * Degree of maturity of the olives according to their colors: Green olives, Olives in veraison (goes from green to purple), Olives at full maturity (totally black), you can attach a photo of the olives * Production per Hectare * production per tree per year * average storage time before transport to the oil mill * Means of packaging: fabric bags (jute), plastic bags, plastic box, ... * frequency of the production * Separation of olive varieties or not * Harvest for sell or not : true/false * Price if yes * Block\_chain adress of the current owner (farmer, mill manager, * State: not transported yet to the mill, waiting for extraction, extracted * extractionID (once extracted) |  |
| An olive supply for extraction (un jet) | supplyID= harvestID+TransportID+JJMMAA | * Weight * Extraction done : yes/no * extractionID |  |
| An extraction | extractionID= millAgrementID+MachineID+HHMMJJMMAA |  | several olive-supplies can be extracted together at the same time on the same machine |
| A production Batch | productionID=  millAgrementID + TankID+fillingNumber | * List of extractionID; * Analysis results * Production for sell (yes/no) * Price if yes * Avalable Oil quantity * List of performed purchased from this patch (purchase quantity, id of buyer) * Owner of the parch * Purchase date * strorage of the oil : yes/no * If yes: storageID * Storage date | A production batch may contain the products of several extractions; and the product of one extraction can be distributed over several production batches if the quantity is large  . The final consumer can buy part of a production batch |
| Storage area | storageID =  OwerID+xxx | * The list of production patchs stored in the same area and condition * Storage conditions (type de local, type des réservoirs, temp, humidité, …) * Owner of the storage area | The stock owner can be a farmer, a mill manager or a distributor |
|  |  |  |  |

The code used for olive oil traceability is : productionID+ storageID

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| The other entities | | | | | | | |
| **General data on the olive grove** | **Information related to olive harvesting** | **Information related to the transport of olives to the oil mill** | **General information on the oil mill** | **Information specific to the current olive mill** | **Information on the quality of the oil** | **Bottling stage** | **information on the distribution chain until the consumer** |
| Address and location of the field, | harvesting date | Storage period between harvest and transport (in hours) | Address of the oil mill | storage time before grinding (in hours), | Class of the oil: extra-virgin, virgin, etc. | Factory adress | The chain of distributor-carriers: compagny, departure address, arrival address, means of transport, date of arrival, date of departure, storage condition, etc. |
| Nature of ownership: private, public domain, ... | Mechanical or manual harvesting | transport date | year of creation | Processing date | The types and results of physico-chemical analyzes carried out: type A (quality analyses), type B (purity analyses) and type C (contaminant analyses) | bottling technics |  |
| tree age | Degree of maturity of the olives according to their colors: Green olives, Olives in veraison (goes from green to purple), Olives at full maturity (totally black), you can attach a photo of the olives | tranportation mean: truck, tractor, ... | Milling capacity (Tons of olives per day) | production |  | Bottling date |  |
| Total area of the olive grove | Production per Hectare | Distance (in kms) between farm and oli mill | Means of storing olives in the oil mill (on the ground, plastic box, bags, ...) | storage time after grinding (in hours), |  | batch number |  |
| Density (Number of trees/Ha) | production per tree per year | cost of processing per kg |  | storage conditions (T° and  humidity) |  |  |  |
| type of soil | average storage time before transport to the oil mill |  | types of containers used for the storage of oil in the oil mill | separating olive varieties |  |  |  |
| variety of olive trees | Means of packaging: fabric bags (jute), plastic bags, plastic box, ... |  | laminating and washing technique |  |  |  |  |
| Irrigated or rained | frequency of the production |  | grinding technique |  |  |  |  |
| fertilization products used | Separation of olive varieties or not |  | centrifugation technique: Decanter/Tricanter centrifuge |  |  |  |  |
| variety |  |  | Number of phases (2 phases/3 phases) |  |  |  |  |
| photos of the field |  |  | number of grinders |  |  |  |  |
| other? |  |  | number of centrifuges |  |  |  |  |
| Pesticide sprays YES/NO |  |  | Average crushing time for one ton of olives |  |  |  |  |
| Conventional OR Organic |  |  | Amount of water added per 100kg of olive |  |  |  |  |
|  |  |  | Average mixing time for a ton of olives |  |  |  |  |
|  |  |  | press temperature |  |  |  |  |
|  |  |  | traceability system used |  |  |  |  |
|  |  |  | maintenance techniques |  |  |  |  |
|  |  |  | Filtration (yes or no) |  |  |  |  |
|  |  |  | cleaning/disinfection products |  |  |  |  |