Hyperledger Mentorship Project Presentation

November 2021

The Use of NLP and DLT to Enable the Digitalization of Telecom Roaming Agreements

› **Introduction**

  › **Name**: Santiago Figueroa-Lorenzo

  › **Location:** Donostia-San Sebastian, Spain

  › **University:** University of Navarra, Spain

  › **Mentor(s):** Ahmad Sghaier Omar, Mohamed Elshrif, Noureddin Sadawi

  › **Hyperledger Project**: The Use of NLP and DLT to Enable the Digitalization of Telecom Roaming Agreements

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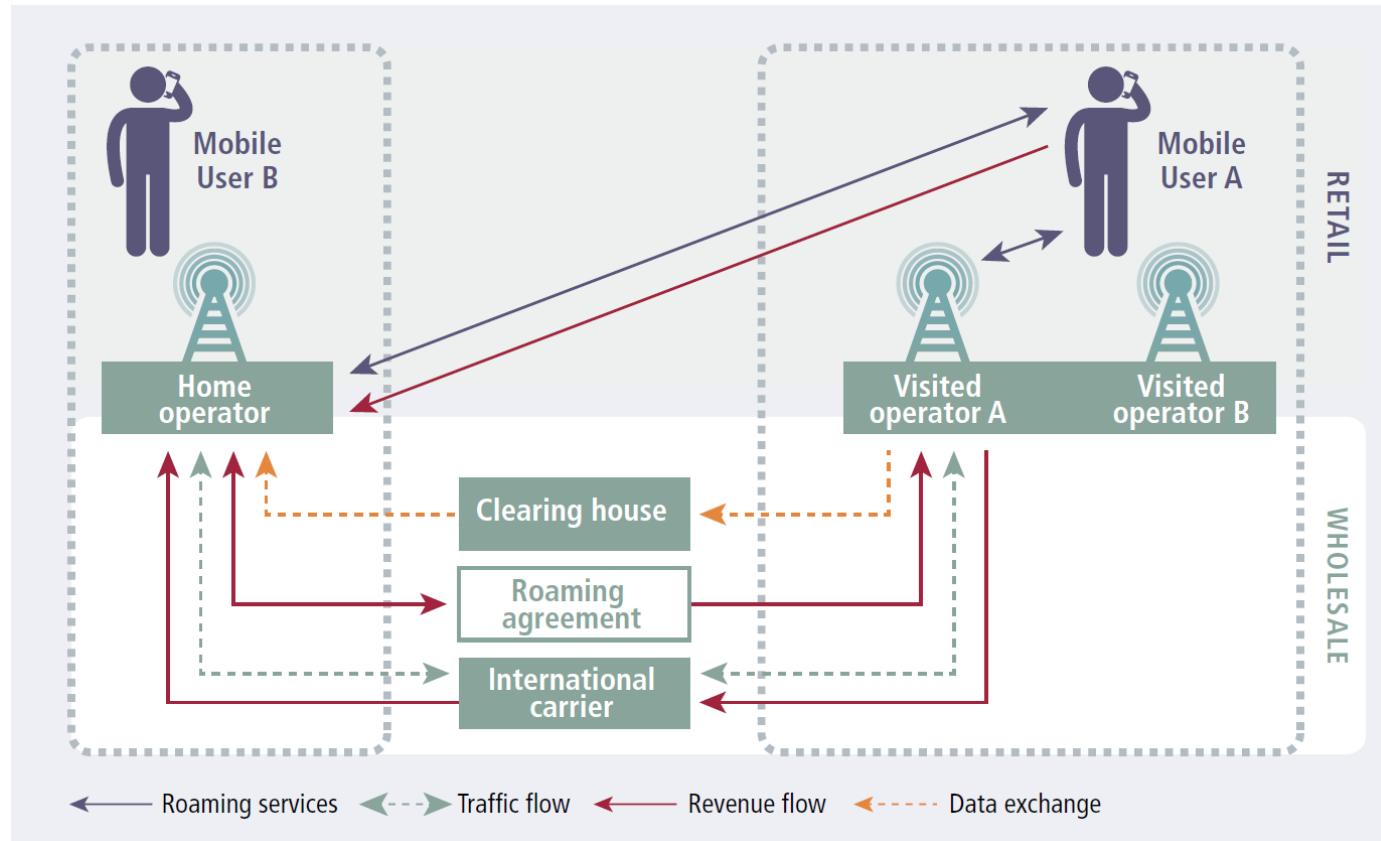
Impact on:
- Customer services
- New technologies:
  - IoT
  - IIoT
  - 5G

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› **The Problem: Methods and mechanisms currently available for drafting and negotiating Roaming Agreements.**

› The process of drafting Roaming Agreements as a *manual, slow and untrustworthy*.

› The GSMA approach for Wholesale Roaming Initiative is *generalist* in in terms of negotiation and drafting of the Roaming Agreement.

› **There is a need to establish a framework that provides capabilities such as:**

1. Provide a fine-grained methodology that digitizes the Roaming agreement drafting process.
2. Promote a transparent negotiation process between MNOs.
3. Ensure traceability in the Roaming Agreement drafting process.

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› **Project Objectives**:

    › **Objective 1**: Build a library that will capture the different variations and variables that constructs a telecom roaming agreement.

    › **Objective 2**: Build a PoC based on a set of smart contracts that will automate the process of drafting and negotiation.
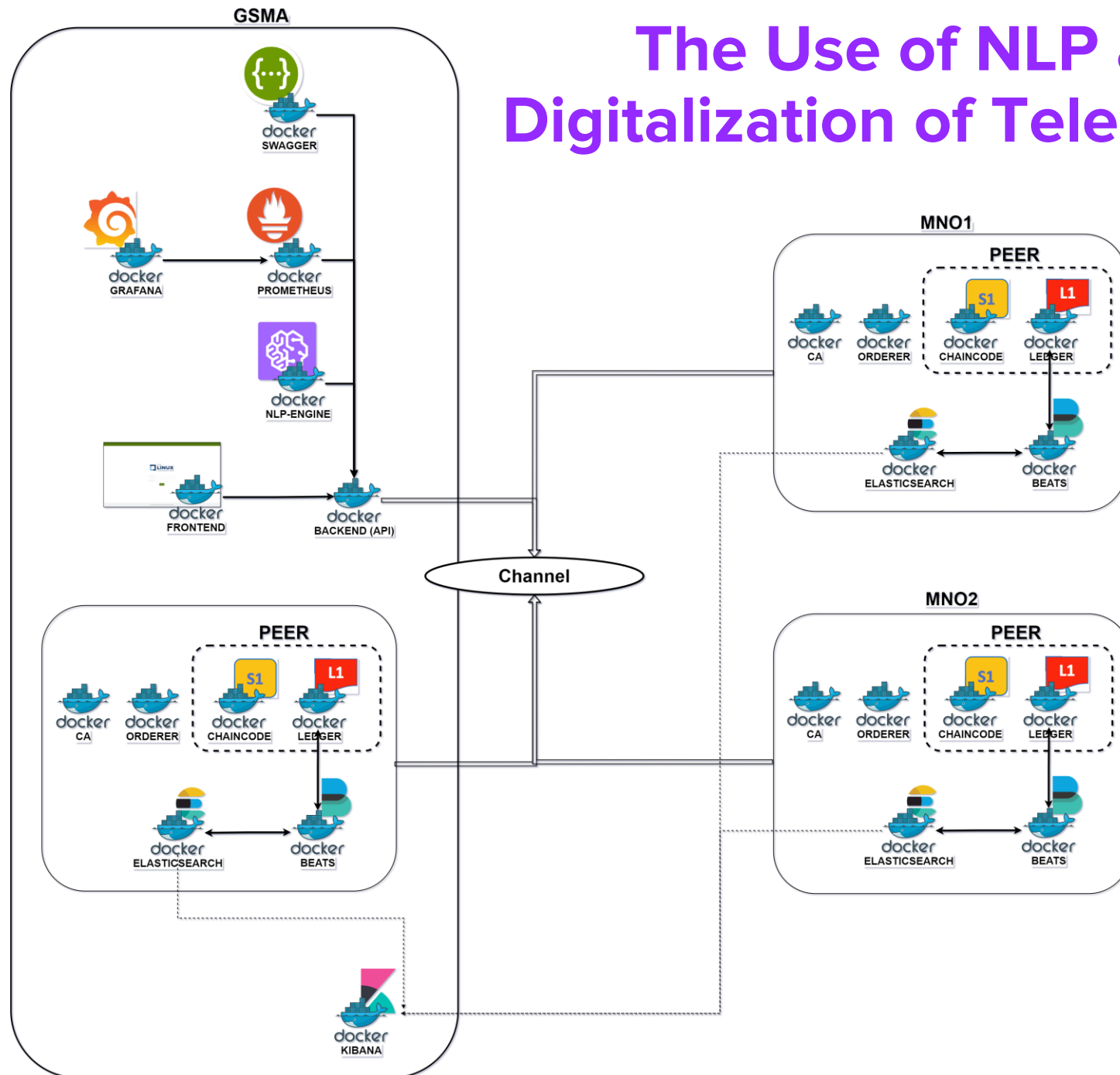
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Reference Architecture
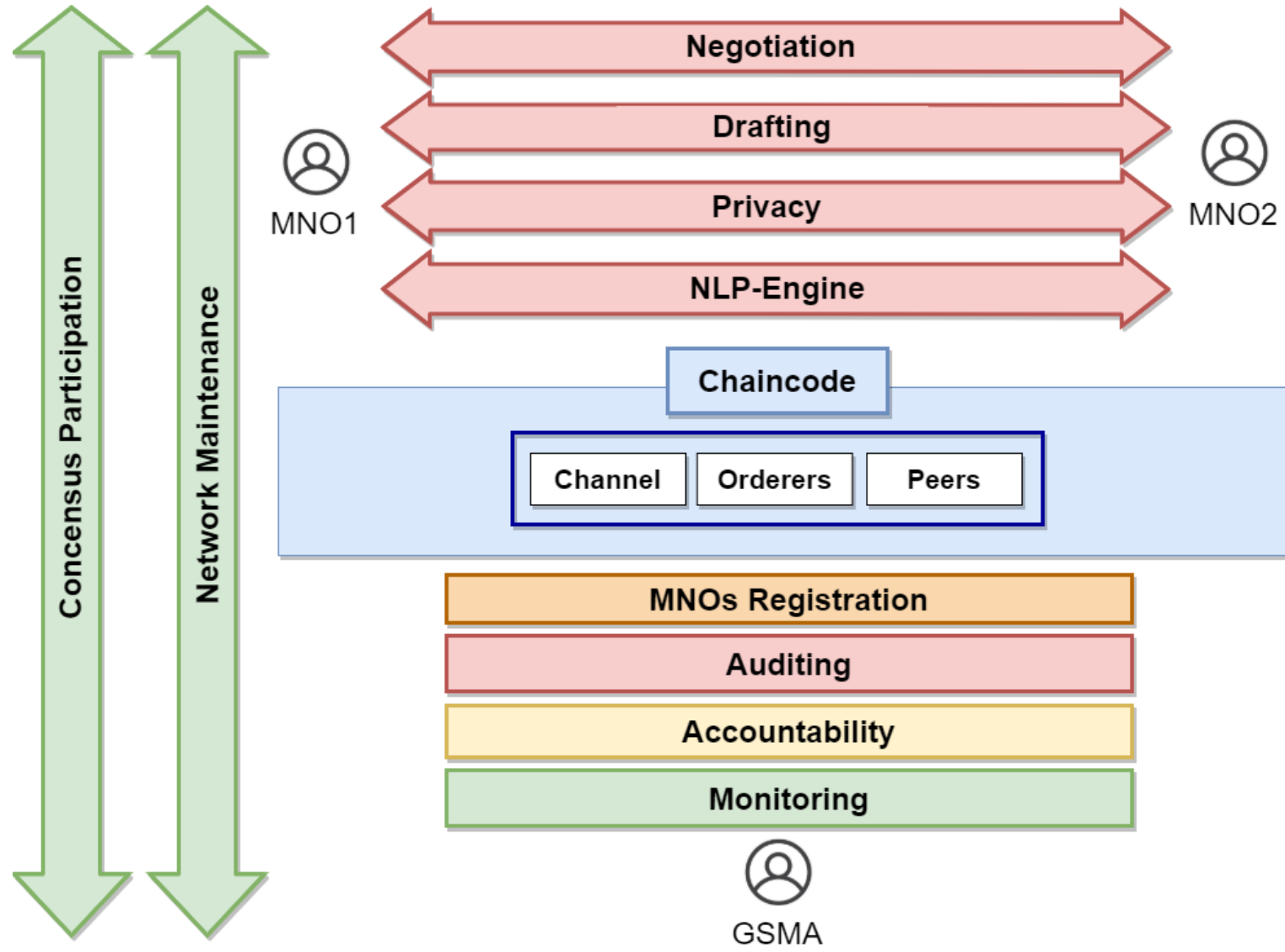
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› **Implemented architecture based on microservices.**

› 2 MNOs.
› 1 GSMA: Administrator and Service Maintainer.
› Integration with Hyperledger Mentoring program.

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› **Project Deliverables:**

> › **Deliverable 1**: A series of medium articles explaining the main project vision, main concepts, and the proposed design approach.
>
> › **Deliverable 2**: NLP model that extracts the main features of the Telecom Agreements Templates as set of variations and variables.
>
> › **Deliverable 3**: A Chaincode that automates and maps the business processes of agreements drafting and negotiation.
>
> › **Deliverable 4:** Architectural design document of the system.
>
> › **Deliverable 5**: A simple UI as PoC that will show the steps of agreement drafting.
>
> › **Deliverable 6**: Publish an academic conference/journal paper with the main findings of the project.

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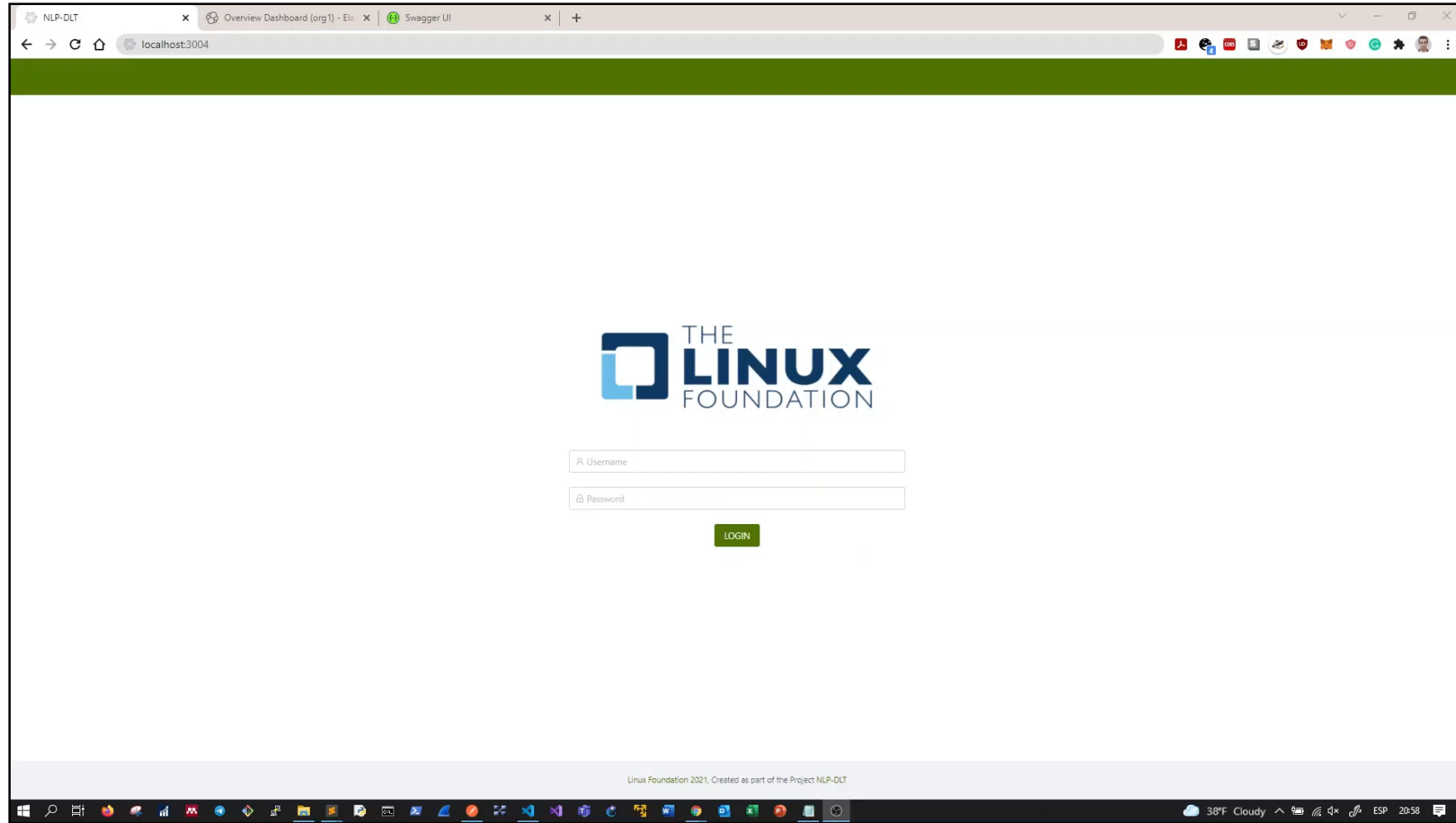
› **Project Execution & Accomplishments:**

- ☑ A series of medium articles explaining the main project vision, main concepts, and the proposed design approach.
    - ☑ Article 1 https://medium.com/@sfl0r3nz05/blockchain-based-digitization-of-the-roaming-agreement-drafting-process-dec003923521
    - ☑ Article 2 https://medium.com/analytics-vidhya/nlp-engine-to-detect-variables-standard-clauses-variations-and-customized-texts-893ff9f903e5
    - ☑ Article 3 https://medium.com/@sfl0r3nz05/chaincode-design-for-managing-the-drafting-of-roaming-agreements-73d3ed1b3645
    - ☑ Article 4 https://medium.com/@sfl0r3nz05/chaincode-implementation-for-managing-the-drafting-of-roaming-agreements-d4ec7363a3d0
- ☑ NLP model that extracts the main features of the Telecom Agreements Templates as set of variations and variables.
    - ☑ Github Repo https://github.com/sfl0r3nz05/NLP-DLT
- ☐ A drafting library in JavaScript, packaged and published as an NPM package.
- ☑ A Chaincode that automates and maps the business processes of agreements drafting and negotiation.
- ☑ Architectural design document of the system.
- ☑ A simple UI as PoC that will show the steps of agreement drafting.
- ☑ A comprehensive solution document for the project implementation details.
- ☑ Publish an academic conference/journal paper the main findings of the project.

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› **Recommendations for future works:**

1. The Natural Language Processing phase has been carried out from the construction of a NLP engine, so a future line of work is to build a Model based on open-source libraries such as Spacy.
2. A drafting library in JavaScript, packaged and published as a NPM package.
3. Full API monitoring with Prometheus and Grafana.
4. Contextualization of the traceability of the Roaming Agreement negotiation between two MNOs through the visualization tool.
5. Definition and establishment of an audit and accountability layer for the system.
6. Ensure information privacy between MNOs through Private Data Collections.

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Demonstration on YouTube: https://www.youtube.com/watch?v=5Oas8EMk0lw

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› **Insights Gained:**

1. Roaming agreement principles
2. Knowledge in a new field as NLP.
3. Improving my ability as researcher.
4. Ability to write properly Medium articles.
5. Ability to integrate different programming languages, technologies and paradigms: Docker, Golang, NodeJS, Python, ReactJS, NLP, HFB, Prometheus, Grafana, ELK, CI/CD.
6. Working according to tight schedules.
7. Integration of other Hyperledger Mentoring program "Analyzing Hyperledger Fabric Ledger, Transactions, and Logs using Elasticsearch and Kibana".

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THANK YOU!