Scalable and interoperable blockchain for rice

TRACING RICE AND VALORIZING SIDE STREAMS ALONG MEDITERRANEAN BLOCKCHAIN

28.10.2024

TRACE-RICE with Grant n° 1934 (call 2019, section 1 Agrofood) is part of the PRIMA Programme supported under Horizon 2020, the European Union's Framework Programme for Research and Innovation

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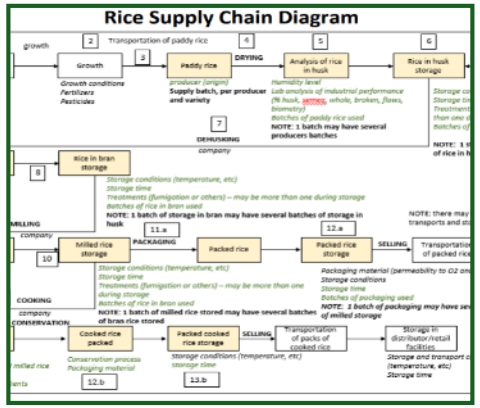
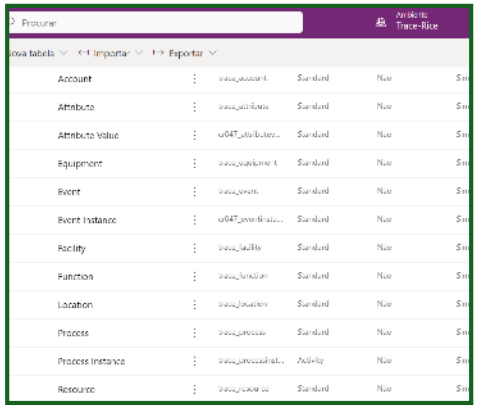
Challenge 1: map the rice value chain

1.1 Experts



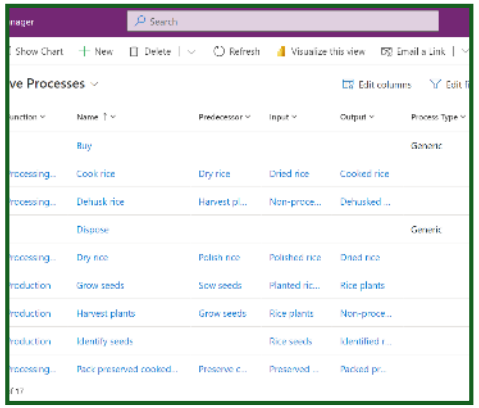
Conceptual model of the rice value chain, developed with experts

1.2 Abstraction



Generalization of the conceptual model to support “any” value chain

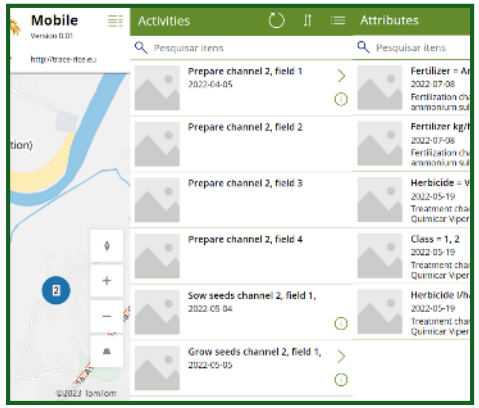
1.3 Configuration



Representation of the rice value chain in the generic data model

Verification against the conceptual model

1.4 Validation



Upload of a test data set from a pilot production of 2022 (by EM)

Validation of the value chain representation

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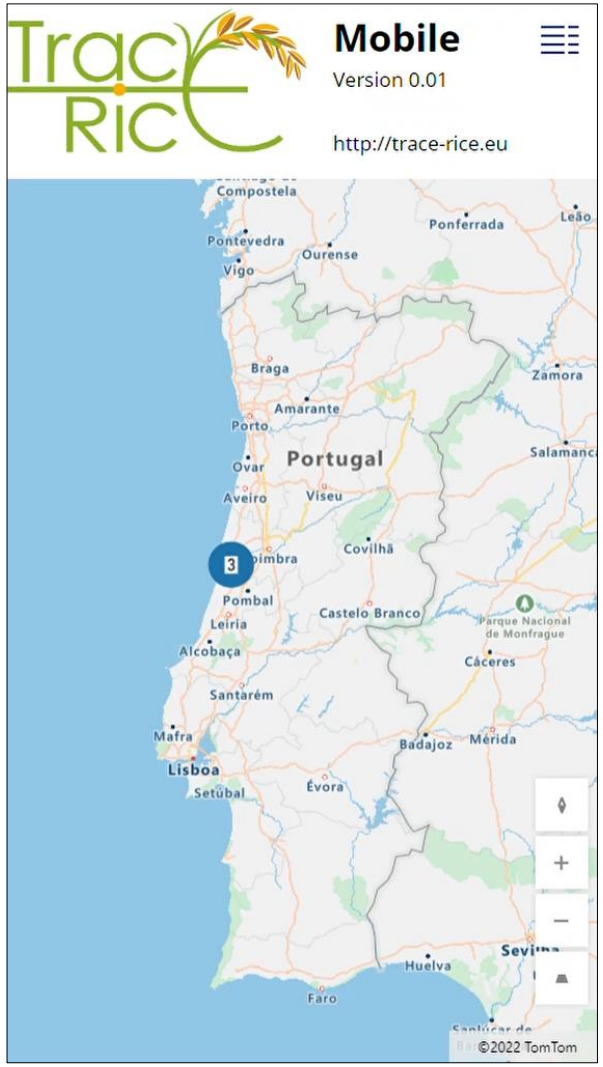
Challenge 2: data and its uses

- The data model can store “all” relevant attributes
  - However, actual data provided is limited
- Consumers have limited attention span
  - Price, price, price
  - Origin (“from”)
  - Variety (“best for”)
  - Shelf life (“best before”)
  - Other: organic, aged, …
- Operators reluctant to share data
  - % of broken rice is a key indicator

Name	Attribute Type	Mandatory
Additive	Text	Sim
Biometry	Text	Sim
Broken rice %	Number	Não
Class	Text	Sim
Humidity %	Number	Sim
Ingredients	Text	Sim
Other %	Number	Não
Packaging material	Text	Sim
Processing method	Text	Sim
Processing outcome	Text	Não
Quantity	Number	Sim
Seed origin	Text	Sim
Temperature °C	Number	Sim
Transportation from	Text	Sim
Transportation to	Text	Sim
Variety	Text	Sim
Whole rice %	Number	Sim

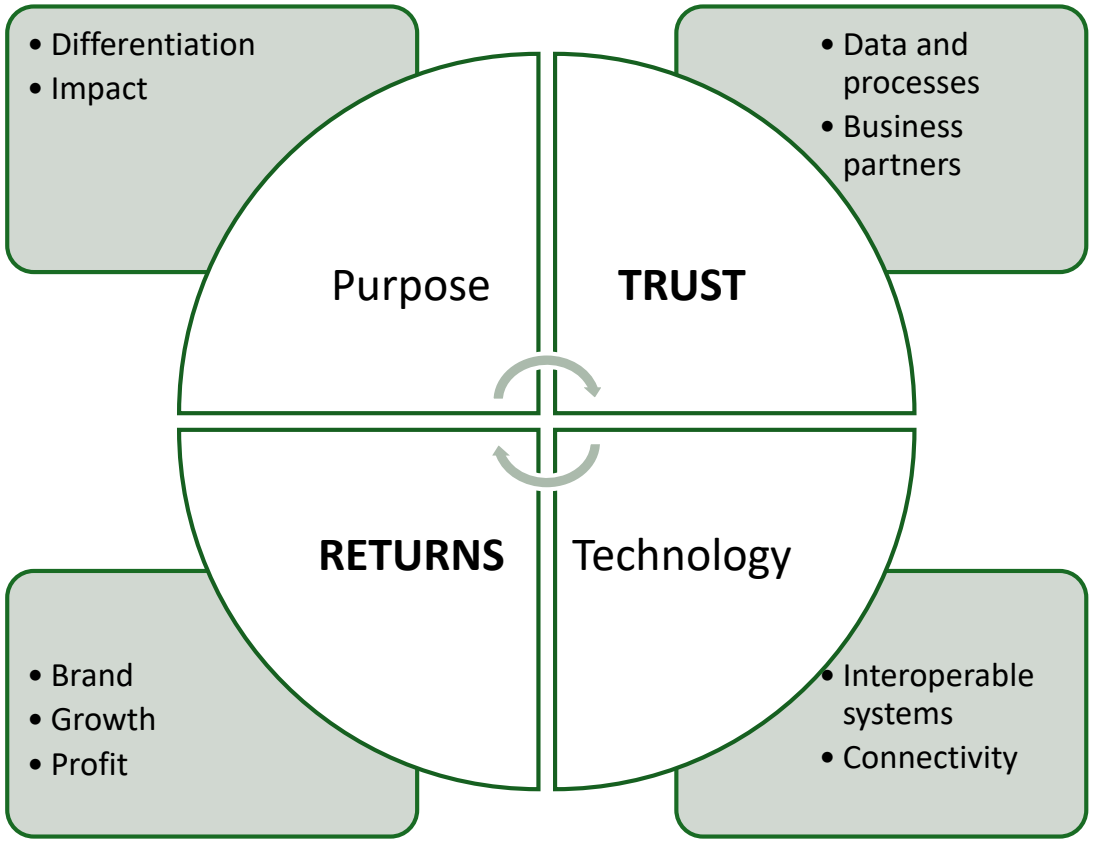
Pilot in Portugal: Uniarroz field records

- Mobile app to navigate field records
  - Select location (map)
  - View activities
  - View activity attributes
  - View activity events
  - View event attributes
  - Navigate back to map level
- Data sample captured by Uniarroz using the ESRI ArcGIS Survey123 mobile app provided by INIAV



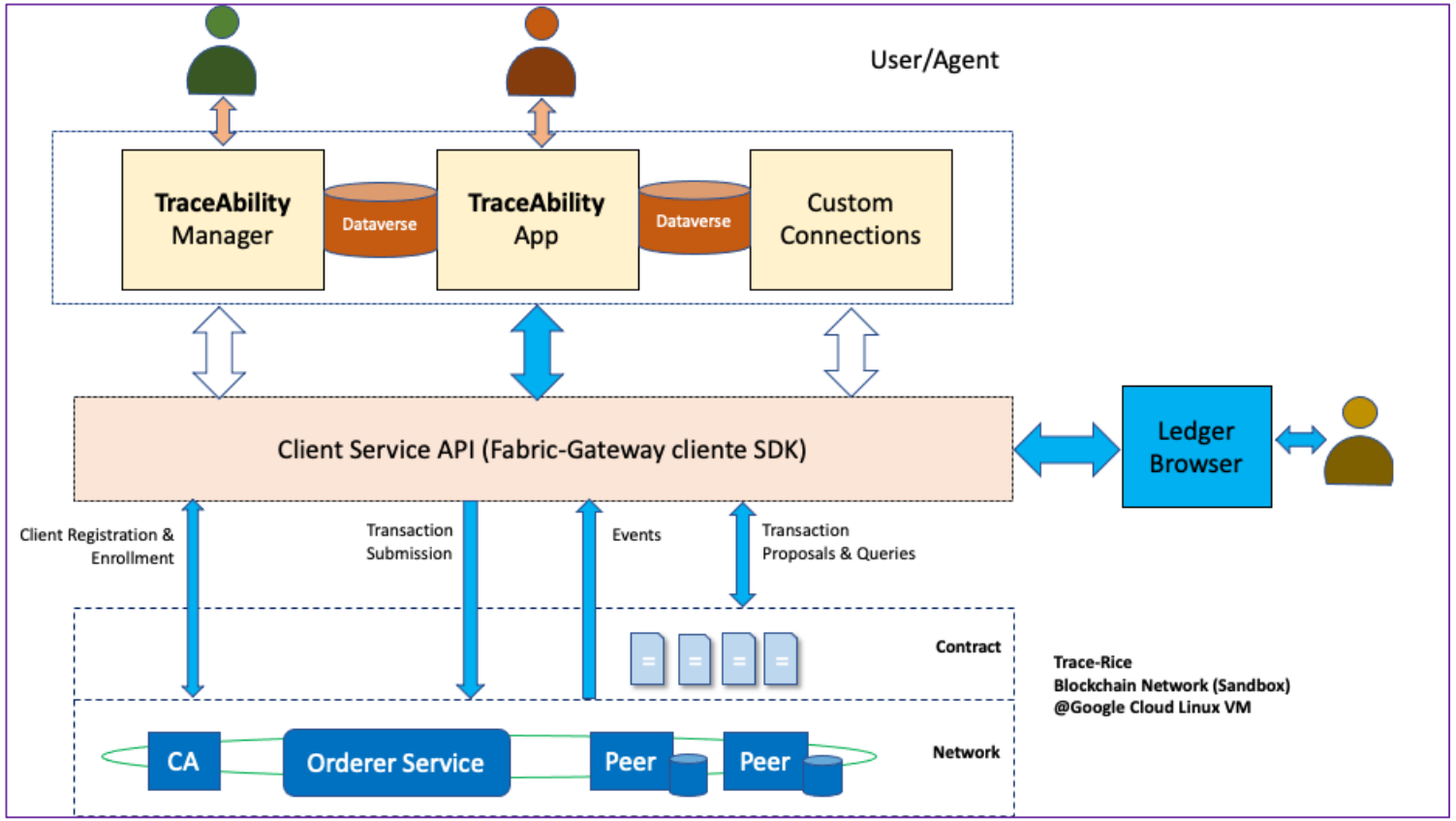
Challenge 3: effective adoption

- Sharing data requires TRUST
  - Data and process quality (internal, between business partners)
  - Security and access control, decentralized platform, immutable records
  - Technology helps
- Continuing requires RETURNS
  - Consumer empowerment
  - Links to purpose ("why")



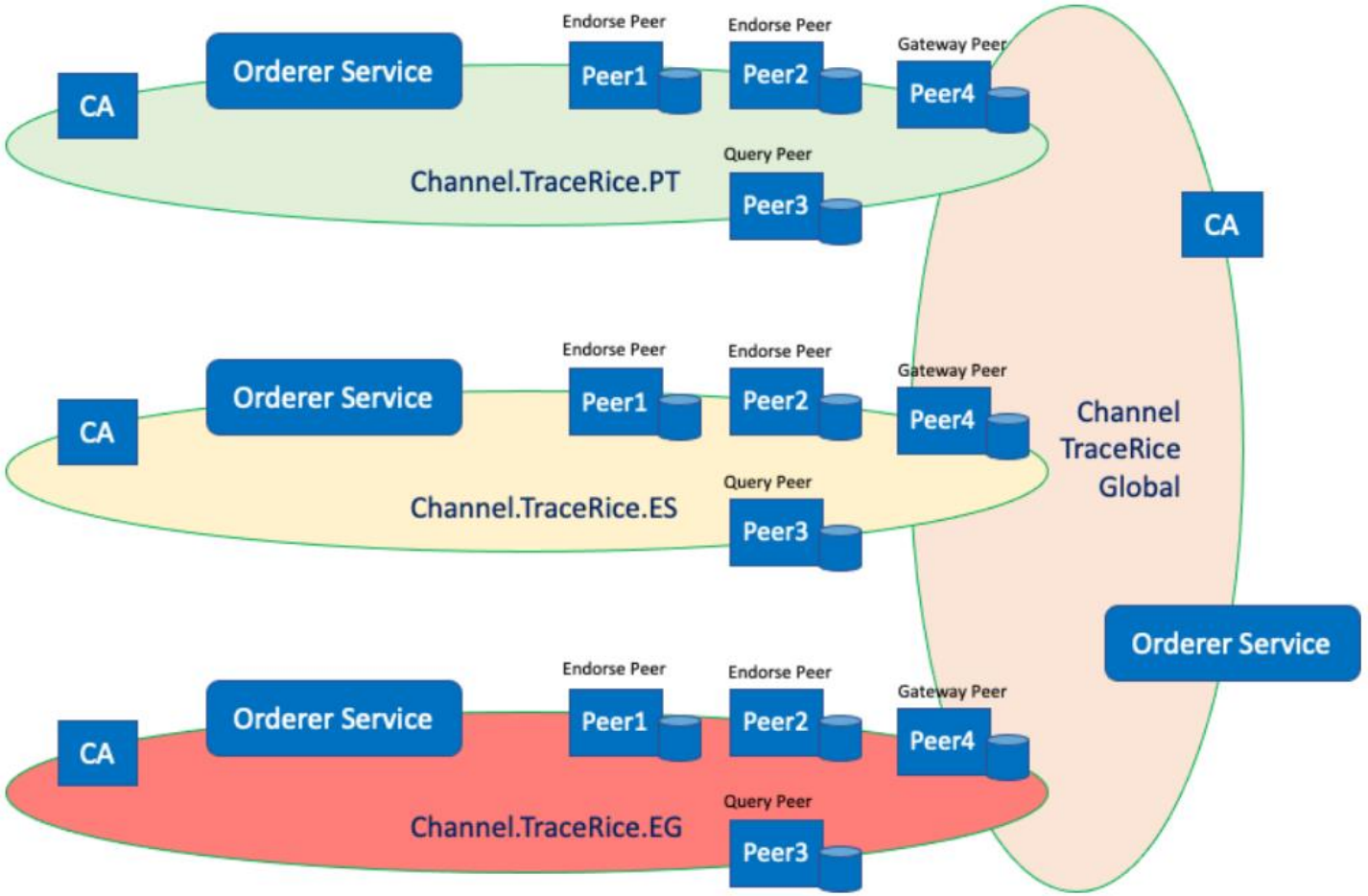
Why blockchain

- Distributed ledger
- Shared data
- Validation
- Transparency
- Trust



Multi-country blockchain architecture

- Interconnected blockchains
- Country-specific definitions
- Actors may have their own node or use a shared one
- Open source software (Hyperledger Fabric)



Exploitation: digital innovation hubs and test beds

- Engage new actors in the rice value chain, expand/adapt to other crops
- Support de validation of new digital services, promote effective adoption

SFT-EDIH

Sustainable Foods
Innovate. Sustain. Thrive.

Nuno Serra

thank you!