

# KPMG's Distributed Ledger Services meet Luxembourg

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In a remarkably short span of time, *blockchain* has become a key concern within many industries across the world. KPMG is working at the forefront of this promising technology and offers **Distributed Ledger Services (DLS)** to help you realise blockchain's full potential.

## The technology is here in Luxembourg

Here is our vision of **Distributed Ledger Technology's (DLT)** rise and so its impact on our region.

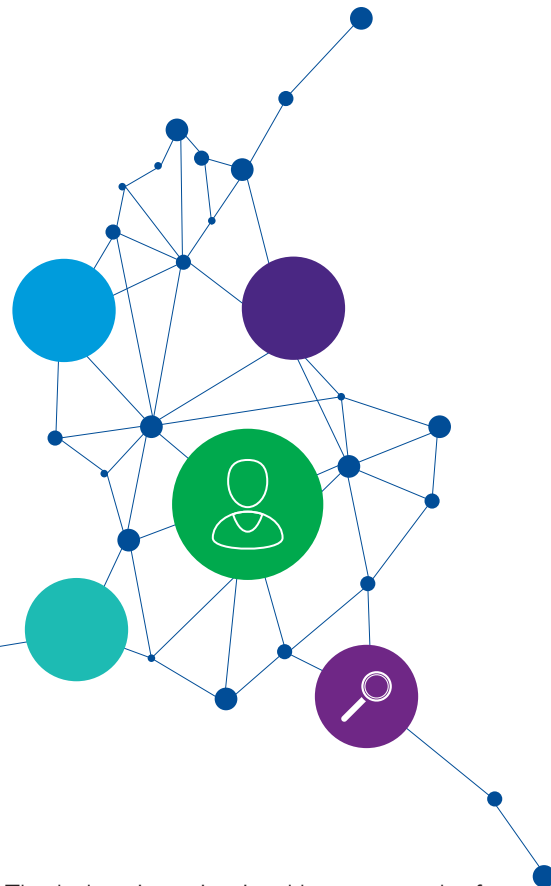
### An ecosystem involving many actors

The three main categories of actors involved in distributed ledgers are:

- Institutions (public or private)
- Regulators/auditors (depending the industry)
- End users (individuals)

### A 'user-centric' technology

If DLT is beneficial internally for the organisation where it is implemented, it will have a significant, positive, and experience-improving impact on the end user.



### KPMG's definition of DLT

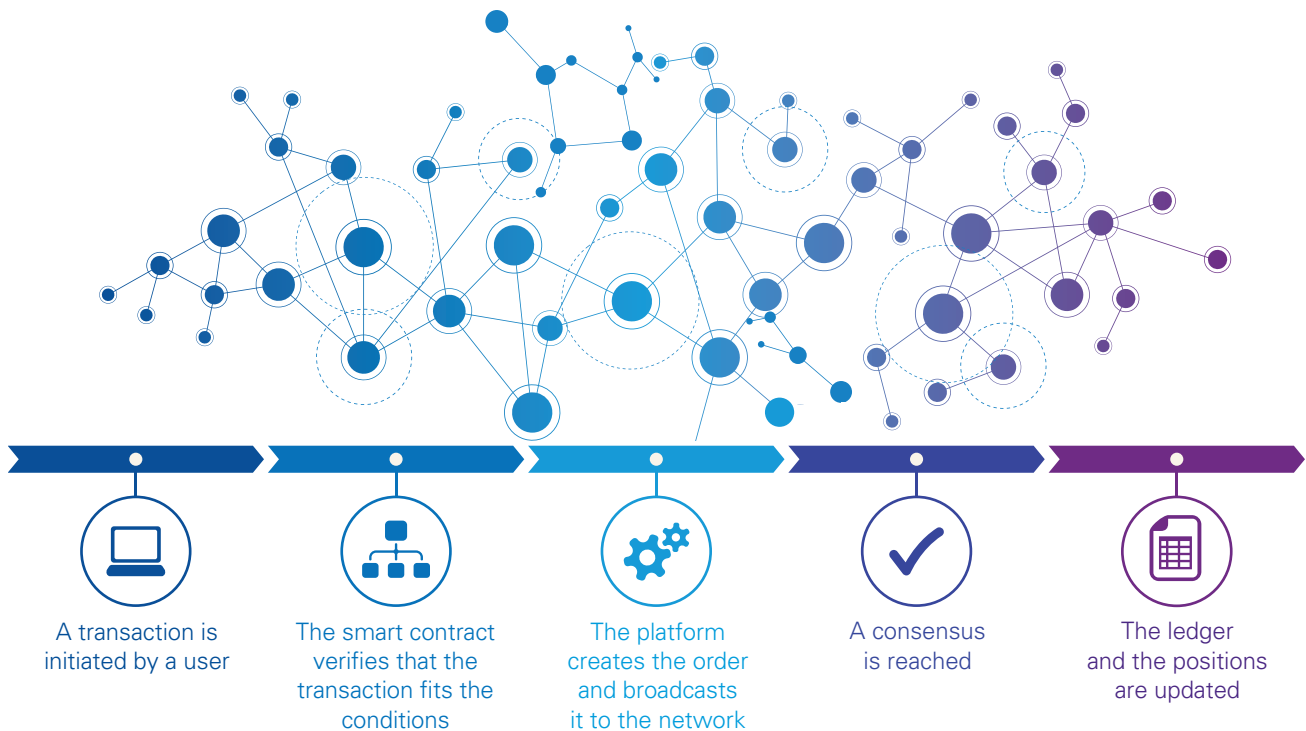
A digital record of ownership that differs from traditional database technology, since there is no central administrator or central data storage; instead, the ledger is replicated among many different nodes in a peer-to-peer network, and each transaction is uniquely signed with a private key.

The ledger is maintained by a network of decentralised computers that verify transactions.

The decentralised nature of the system protects it from hackers, suggesting that it is more trustworthy than any other platform. DLT allows a cryptographic audit trail that is secure and searchable.

# How do distributed ledgers process transactions?

Distributed ledgers allow a cryptographic audit trail that is secure and searchable. The smart contract is one of DLT's most promising applications because it makes the system programmable thanks to contractual logic. This means that any contract can be executed by an automated process.



## Six key aspects of DLT



### Programmable

DLT smart contracts can be programmed to follow business logic



### Immutable

Any validated records are irreversible and cannot



### Secure

All records are individually encrypted



### Distributed

All network participants have a full copy of the ledger for full transparency



### Time-stamped

Transaction time-stamps are recorded in a block



### Unanimous

All network participants agree to the validity of each of the records

## KPMG's vision for DLT

In the upcoming years, we believe that interest in distributed ledgers will continue to grow around the globe.

In Luxembourg, attention on the technology has surged in recent months, with digital players involved in DLT being increasingly attracted to Luxembourg.

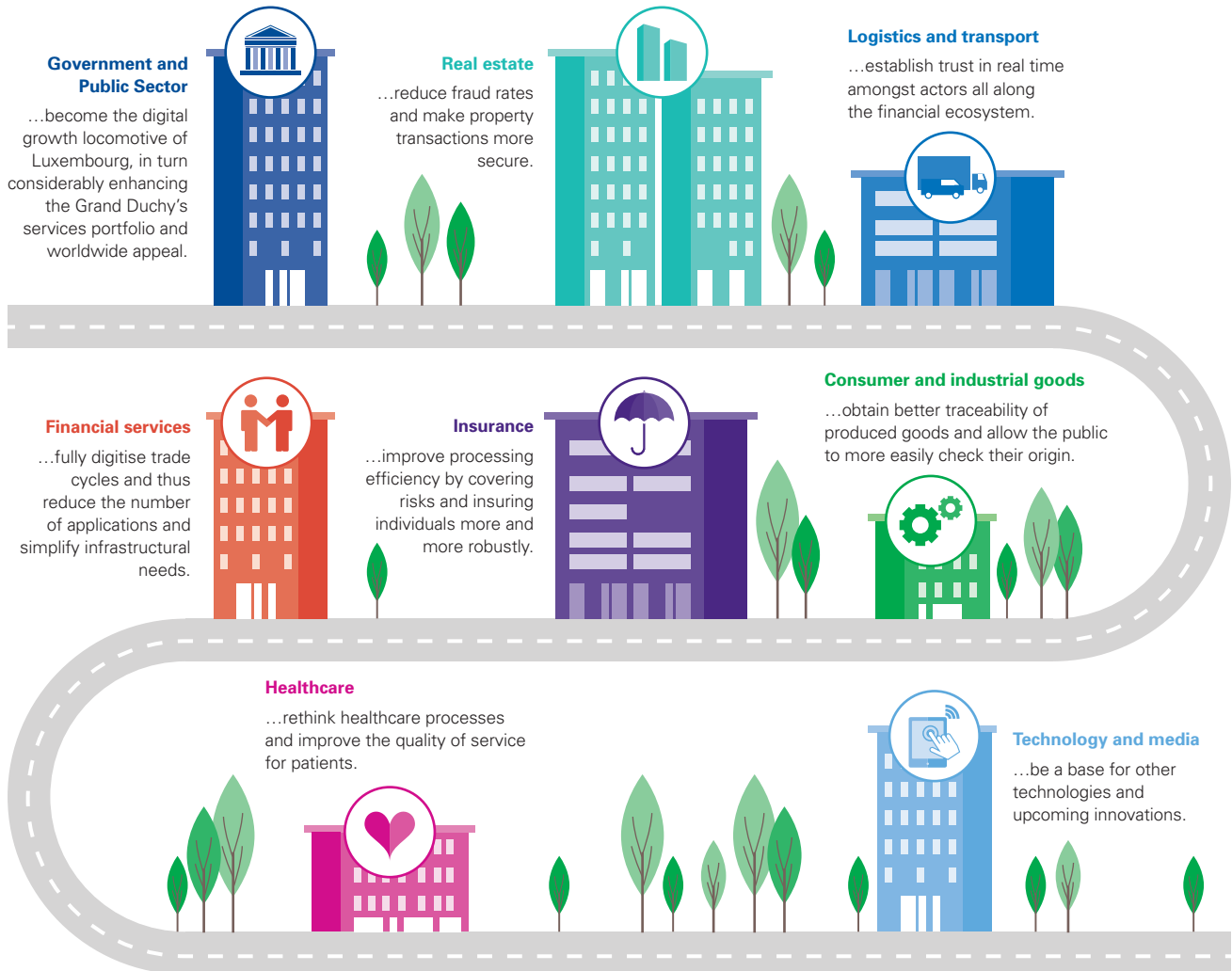
All industries combined, public institutions and private companies alike, are **shifting together** towards automating their internal and external processes. This phenomenon is triggering a digital convergence between market participants and will bring new opportunities for collaboration.

New modes of transactions and user interactions for current products and services are emerging. We believe that industries should now internally improve their skills and competencies in order to be ready when the technology will reach its full maturity.

With distributed ledger technology, a whole new range of opportunities to engage with customers is upcoming.

# Distributed ledgers across industries

Sectors and industries are interdependent, and we as people find ourselves at the intersection of all of them. Below is an overview of the different benefits that could be generated by **distributed ledger technology** in the main industries of Luxembourg. For each one, distributed ledgers offer an opportunity to...



| TRANSVERSAL ADVANTAGES   | EXAMPLES OF USE CASES  |
|--|--|
| Boost in interaction among governmental agencies, and extended to citizens, meaning more transparency and enhanced services.                 | Registries and records (e.g. education, vehicles, land, property titles, court), digital identity management, voting.          |
| Acceleration of the buying/selling process, reduced risk, and improved transparency.   | Use of smart contracts for sales contracts, ownership transfers, transactions record.  |
| Better control of operational costs and a better view over assets and goods. Concrete movement towards a shared/circular economy.            | Business transaction and accounting records, delivery records, governance, ongoing management.                                 |
| Meeting the needs of businesses and the creation of more trust for customers.  | Review verification, loyalty programmes, supply chains, record keeping, origin tracking.                                       |
| Considerably increased customer satisfaction following improvement of internal processes thanks to DLT but also big data and the IoT.        | Use of smart contracts for claims processing, proofs of insurance, fuss-free insurance (e.g. car, travel).                     |
| Increased efficiency, trust, and transparency for actors in the Luxembourg and international financial ecosystems.                           | Ownership certification, transaction clearing and settlement, cross-border payments, trade finance, syndicated loans, AML/KYC. |
| Reinforced sensitive data privacy and access to records, as well as creation of a community (patients/public and private healthcare actors). | Patient health records, medical records (semi-public), secure digital assets, medical procedure billing and ordering services. |
| Reduction in data security risk. Creation of the possibility for a reliable infrastructure to manage intellectual property.                  | IoT applications, intellectual property, digital rights management.  |

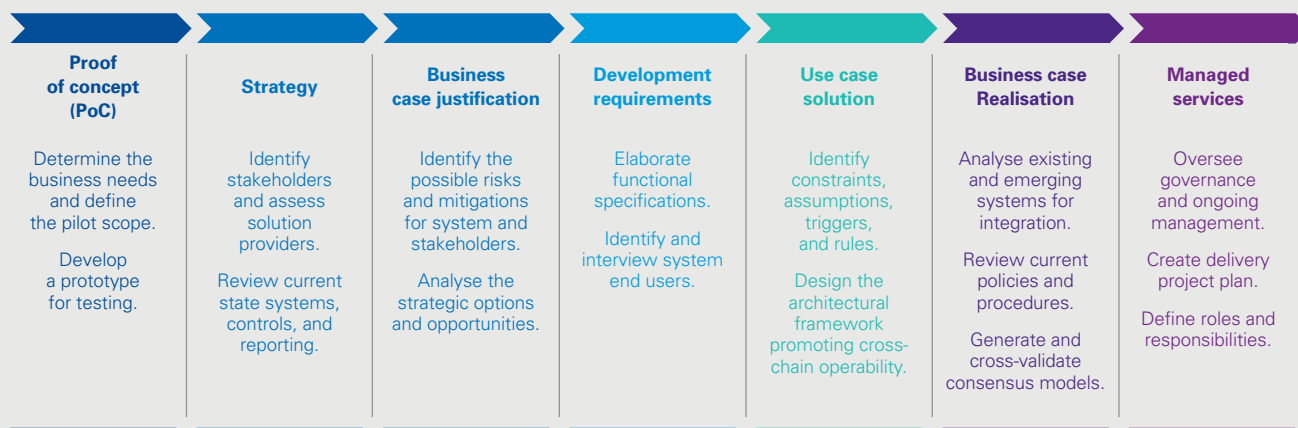
# How KPMG can help you get there

KPMG believes that DLT represents a huge opportunity for Luxembourg. Seeing DLT merely as a technological improvement would be half-sighted, in our opinion: we foresee a real change of paradigm.

Public and private players should start embracing the change with concrete applications.

In the long term, KPMG can help you assess DLT's impact on your business by conducting an in-depth analysis. In the short term, KPMG can help you improve your operational processes before the technology is fully adopted by the industry, with our own Center of Excellence capable of implementing use cases of DLT.

## KPMG believes that DLT represents a huge opportunity



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