



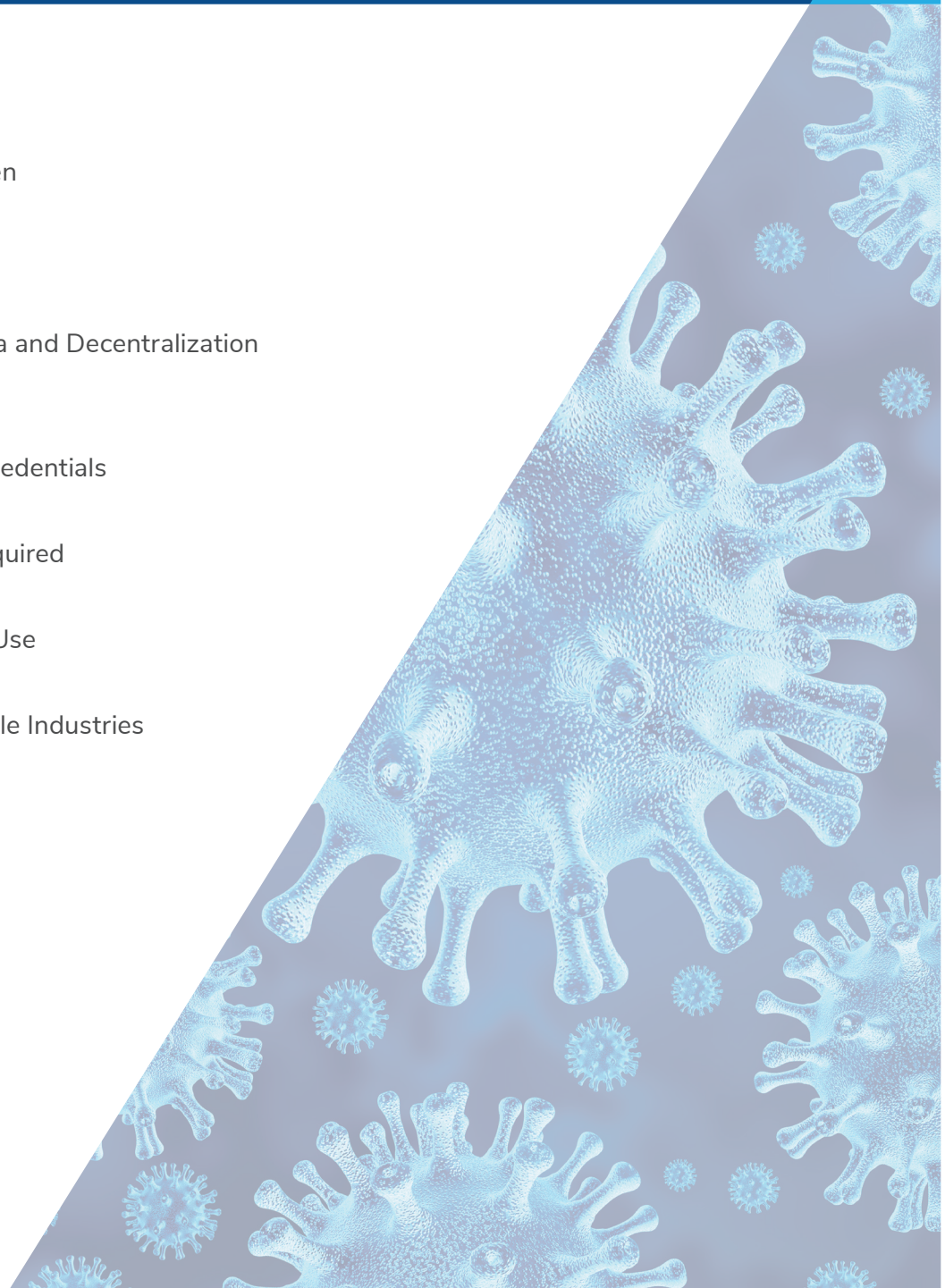
## **DIGITAL HEALTH CREDENTIALS FOR COVID-19 AND BEYOND:**

*How digital credentials are helping us safely and effectively re-open today, and why they're here to stay*

FROST & SULLIVAN VISUAL WHITEPAPER

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# Entering the Next Phase: Re-opening and Staying Open

Just as We See the Light at the End of the Tunnel, the Tunnel Gets Longer

There is a pressing need to re-open all areas of the economy. Early in the crisis, organizations struggled to adapt to strict lock-down measures since public health policy makers had few tools in their toolbox to control the spread of the virus. Now vaccines are rolling out, which was the expected indicator of the light at the end of the tunnel.

The challenge for businesses in this next phase is not just a matter of how to re-open safely, but also how to STAY open safely.

Instead of top-down policies imposed from above, we expect to see a more nuanced negotiation between commercial enterprises and government agencies that balances economics and public health, based on data, trust and proof.

Given the uncertainties of the virus today, we will be contending with these issues through 2022 and possibly beyond.

## ECONOMIC LOSSES HAVE BEEN HIGH

Travel & tourism industry revenues were **\$316 billion** lower than expected in 2020



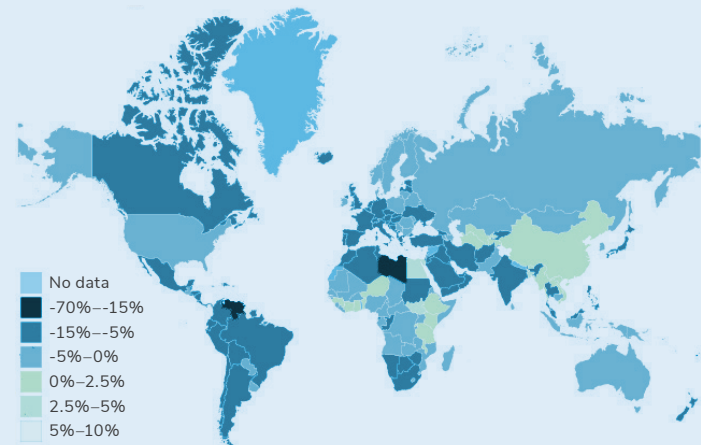
Professional sports revenues were **\$56 billion less than expected in 2020** due to COVID-19 limitations

US Live Events industry survey indicated a **loss of more than 75% of revenues** (72% of respondents) with many predicting they would **not go back to 100% of revenues until 2023**



## MAJORITY OF COUNTRIES IN RECESSION

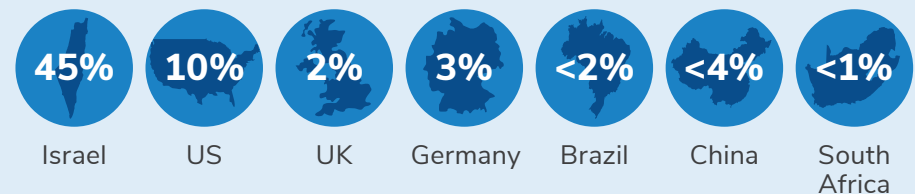
Real GOP Growth (2020 data from IMF, updated January 2021)



The economic risk to the global economy remains high with the resurgence of COVID-19 in many regions, the uneven vaccine rollout, and the spread of new, highly contagious variants of the virus.

## FULLY VACCINATED PERCENTAGE OF POPULATION

(By March 10, 2021)



Global herd immunity may take until summer 2022

## Challenges to Re-opening and Staying Open

### Defining, Negotiating and Proving What Safe Is

Health and safety protocols are no longer concerns just for public officials. These are increasingly concerns for business managers, factory managers, venue directors, airline executives, and individuals all have a stake in the return to normal. All organizations must prepare for this next phase, engaging with public health policy more proactively to prevent further economically crippling lock-downs.

### **ORGANIZATIONS MUST MAKE DECISIONS AS GUARDIANS OF THEIR EMPLOYEES, CUSTOMERS AND ENVIRONMENTS**

#### External vs Internal Policy? Burden of proof? Ensuring Compliance?

Challenges for enterprises to address include:

- Certification of testing and vaccination from trusted sources
- Verifying authenticity in order to detect forgeries
- Adherence to evolving official health guidelines
- Compliance to consumer privacy laws
- Training for staff to implement safe and effective policies

Organizations must also recognize that there are impacts related to brand perception and the specific needs of their employees and customers. As a result, these policies will be unique to each organization.



Source: Frost & Sullivan.

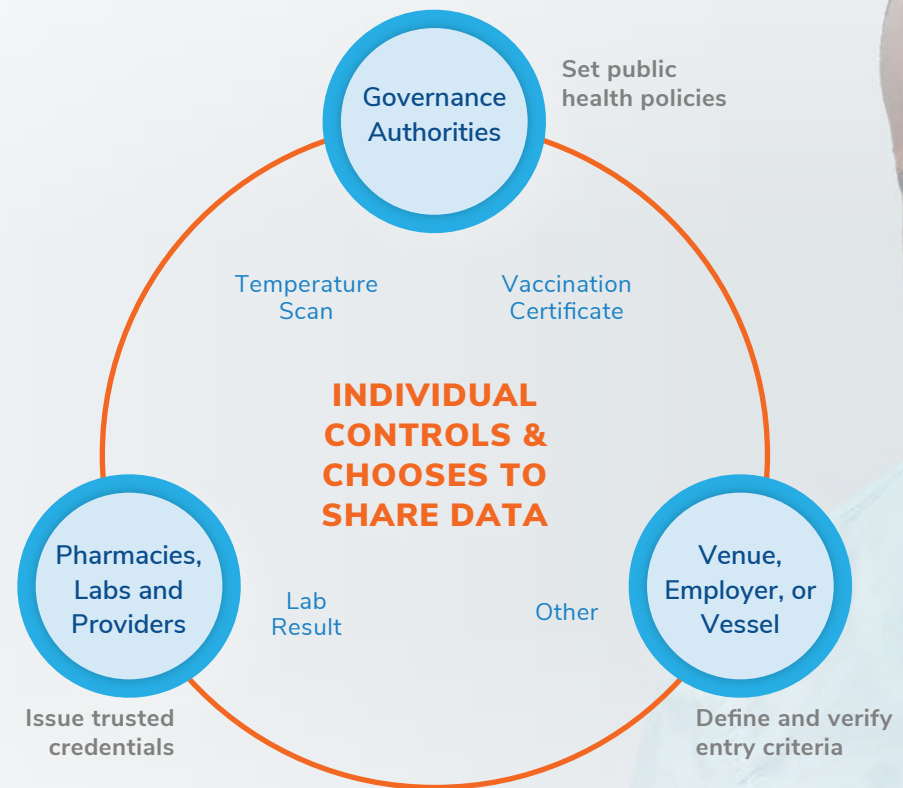
## Digital Health Credentials Built on User Control of Data and Decentralization are Key to the Future of all Digital Ecosystems

Health credentials document a person's COVID-19 testing and vaccination status, enabling businesses to validate an individual's entry criteria against their own unique policies while allowing the flexibility to adapt quickly to changes in regulation. Though this is the most pressing use of digital credentials, this is only one of many applications of a decentralized, user controlled data model.

### THE BENEFITS OF A BLOCKCHAIN-BASED MODEL

Though many digital credentialing applications may appear the same on the surface, there are fundamental differences in HOW blockchain services are designed, governed and how they traverse open ecosystems that make them an ideal solution for the current crisis and beyond.

- True self-sovereign **user control**, empowering individuals to be active participants
- Intelligence can be used to **automate processes**, based on transparent rules
- **Decentralization** across the network, eliminating the need for a central repository
- **Immutable records** that cannot be changed or tampered with
- Data exchange based on **open standards**, supporting interoperability with other systems.



### Equitably serving all stakeholders

The use of digital certificates does not preclude using paper certificates, but complements them by enabling many functions that are required to modernize and improve the digital experience for consumers.

# Control of Personal Data is Central to Digital Health Credentials

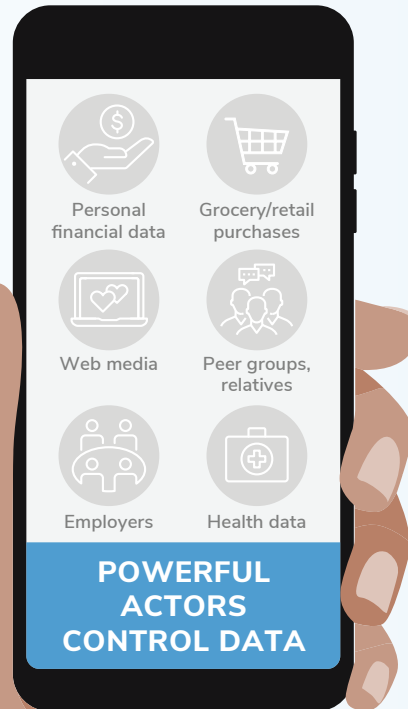
## Recent Events have Shifted the Conversation in Global Consumer Protection

The current structure of data management used by some consumer applications has led to unintended consequences that have eroded consumer rights, protections and confidence over time. Digital health credentials built on individual control of data align with consumer and regulatory demands.

- ▶ **Privacy:** There is a wholesale re-think of the best practices that should govern our digital lives. Protecting privacy, identity and data are the foundations of an even wider conversation about digital ethics.
- ▶ **Consumer Control:** The seven pillars of privacy protection in European regulations (GDPR), assumes that corporations are the guardians of user data. This is a policy expression of the architecture of current application environments that concentrates power in the hands of large companies.
- ▶ In contrast, the architecture of blockchain enables consumers to pursue more equitable relationships that are more responsive to their needs.

### OLD ORDER CENTRALIZES CONTROL IN HANDS OF FEW POWERFUL ACTORS

Unintended (negative) consequences of the recent Internet age



### NEW ORDER REDEFINES OWNERSHIP, CONTROL AND EVEN MONETIZATION

Resolves many of the consequences while opening up new possibilities



# Solutions Based on Interoperability and Standards Required

## Best Practices in Innovation: Interoperability, Governance and Adherence to Standards

Different vendor solutions will be deployed as digital health credentials—to make solutions viable for consumers, interoperability is a must, based on alignment to standards and open source technology.

### BEST PRACTICES IN GOVERNANCE AND TECHNOLOGY

- The blockchain industry was founded on consortia-building; collaborating within and between ecosystems to pioneer new modes of governance.

### CONTINUOUS INNOVATION IN TECHNOLOGY

- Blockchain technology was built from within the open-source movement and is an integral part of the integration of future advances in technology.

### INTEROPERABILITY THROUGH STANDARDIZATION

- Adherence to standards will be the foundational link that ties technology and good governance to the ever-expanding world of open and interconnected ecosystems.

### EQUITY

- Enable those who don't have smart phones by also supporting print-enabled digital credentials.



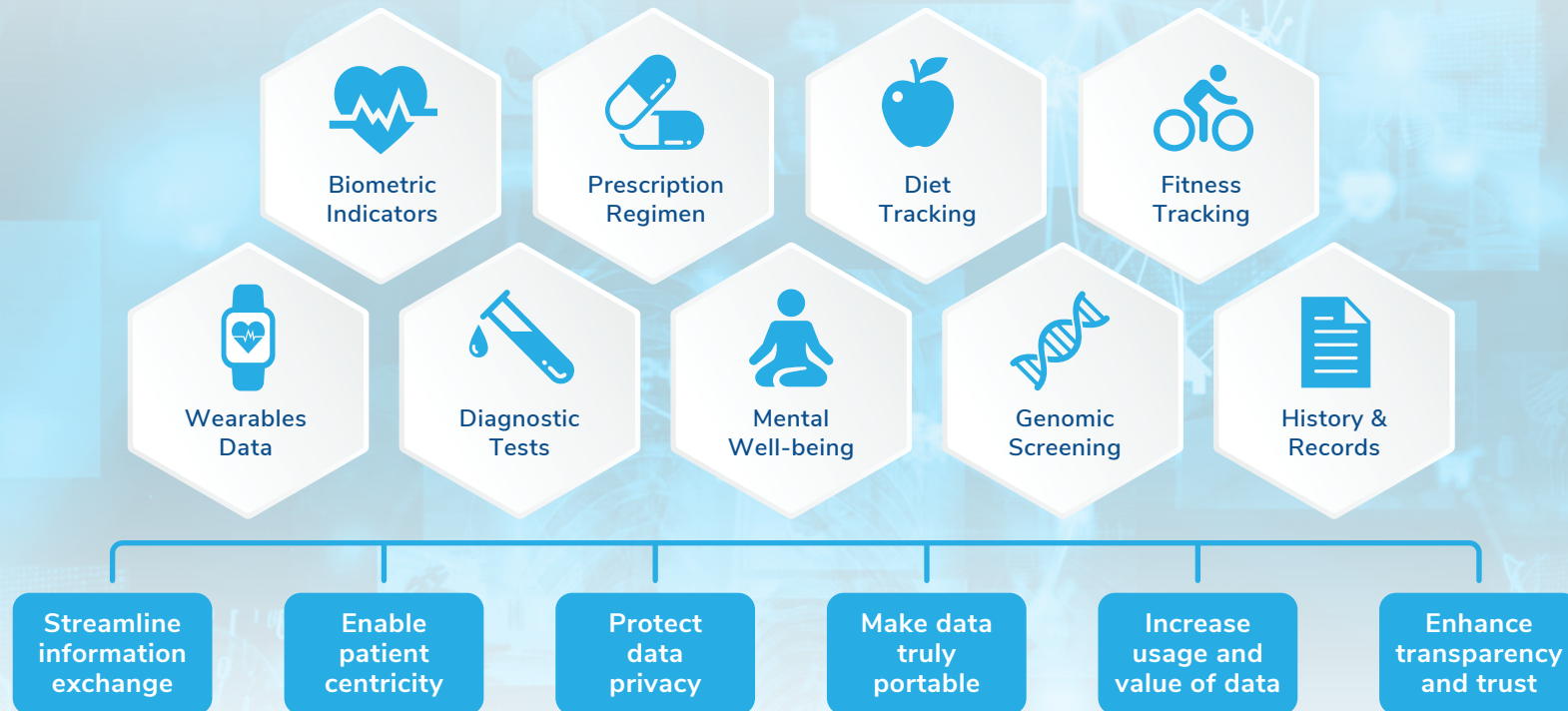
Source: Frost & Sullivan.

## Digital Health Credentials Will Continue to Expand in Use

### Giving Individuals Control of Who Gets Access to What Information in Their Health Record Becoming the Norm

In the US, HHS rules will enable an individual to share any part of their health record with anyone they choose, regardless of the clinical record repository or holder of the information.\* A person's "comprehensive health record," will include data from various healthcare providers, labs, personal health devices, genomic data, etc., in various formats, not all of which will be captured in a single proprietary electronic medical record structure. To enable use of this data for a variety of purposes, the individual may choose to share portions of their information with clinicians, pharma, employers, governments, & businesses.

#### USER CONTROL OF THE MANY TYPES OF HEALTH DATA WILL LEAD TO MANY BENEFITS



Particularly in healthcare, **BLOCKCHAIN ENABLES GREATER TRANSPARENCY** between healthcare professionals sharing data, and it **EMPOWERS PATIENTS** with control of their data.\*\*

\*Department of Health & Human Services, through rules issued from ONC and CMS

\*\*Sater, Stan, *Blockchain Transforming Healthcare Data Flows* (April 30, 2018).



**TRADE, LOGISTICS & SUPPLY CHAIN ECOSYSTEMS**

- TradeLens was the first and is the largest blockchain ecosystem in the world, coordinating and transacting 700 million events a year.
- The addition of track & trace capabilities has enabled both logistical supply chain services and fraud detection.
- System is used in major supply chains such as food, automotive, pharmaceutical and luxury goods, making connections all the way down to the smallest farmer and local manufacturer.

TRADE+LENS

**CURRENCIES, PAYMENTS AND FINANCIAL SERVICE ECOSYSTEMS**

- Decentralized finance will advance even further in 2021.
- In 2020 cryptocurrencies gained acceptance with mainstream investors as China becomes the first to implement the digital Yuan as a consumer payment system.
- The blockchain-based Interbank Information networks (IBN) is now transacting financial settlements in 150 countries while Lygon is poised to revolutionize the bank guarantee process that underlies every financial agreement from trade to business financing.

LYGON

**DIGITAL CITIZENSHIP E-ESTONIA**

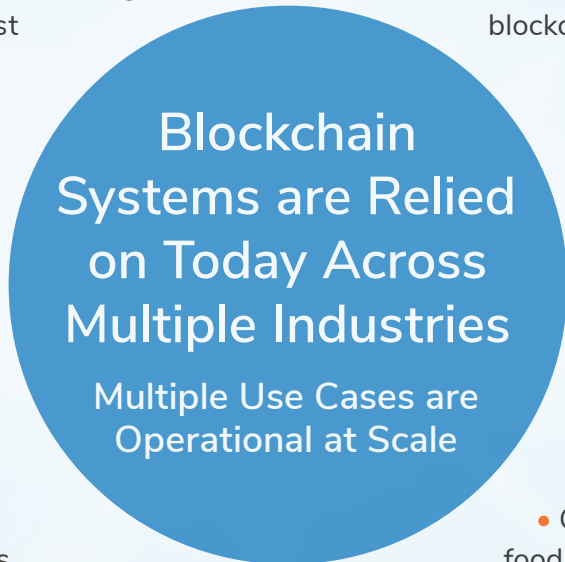
- In 2008, Estonia became the first country to migrate citizen IDs to a blockchain.
- Their user-controlled IDs are now the primary means for citizens to interact with dozens of public services including: Healthcare, Voting, Legal, Registries, Education, Business and Finance.
  - While all systems are not blockchain based, they ride on blockchain rails.

estonia

**TRACK AND TRACE FOR FOOD SAFETY, VERIFIED ORIGIN, ETC.**

- Traces food products from farm or sea to the end user
- Creates savings in reduced waste and reduces food & beverage company exposure to risk by validating food sources, tracking cold chains, etc.
- Enables tracking source of contaminated products
- Efficiently solves issue of errors in paper records, systems that don't connect along the supply chain, gaps in data.

IBM Food Trust™



# Digital Health Credentials are Needed as a Foundation for Engagement

## Addressing COVID-19 Today and Winning Consumers Hearts and Minds

**THE FUTURE OF MANAGING  
HEALTHCARE DATA IS HERE,  
AND IT'S AS EASY AS  
DOWNLOADING AN APP!**

- ▶ Many organizations continue to be negatively impacted by COVID-19, and need to act now to ensure their ability to stay open and stabilize their business.
- ▶ Competitive advantage will be gained by those who establish a safe environment for employees and customers.
- ▶ Building this solution on market-ready blockchain technology used in many critical applications will extend the life of the platform in the modern digital ecosystem:
  - Maximize **interoperability**
  - Maintain **privacy**
  - Meet **unified standards and regulatory requirements**
  - Establish **trust in verified data**, with a tamper-proof audit trail
  - Meet consumer and government expectations for **individual control over personal data**
  - **Easily embed the solution** into a company's existing branded consumer-facing apps
- ▶ Distributed data models used in blockchain are the foundation for future engagement platforms being demanded by societies and governments looking to address the negative outcomes of aggregator data models. **Giving individuals control over their data will solidify customer loyalty and trust.**
- ▶ **Technology has advanced so quickly that access to these services requires simply downloading an application onto your mobile phone.** The complexity in connecting systems and partners to enable new services can be built on trusted, flexible and currently available blockchain infrastructure.



**THESE SERVICES ARE ROLLING OUT TO MANY MARKETS AROUND THE WORLD.  
CONTACT US TO FIND OUT MORE.**



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