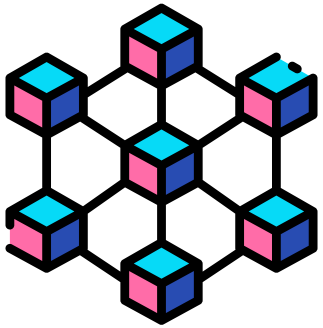
Fin-tech HO2020

A Financial supervision and Technology compliance programme

WP4: Blockchain Research



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Outline

- Outline of tasks, deliverables and milestones under WP4 – Blockchain Research

- Detailed overview of ZHAW's activities
  - *Monitoring the research progress*
  - *Repository*
  - *Use case collection*
    - *FRM Financial Risk Meter*
  - *Validation workshop*

- Concluding remarks

WP4 – Blockchain Research (GA)

- **Task 2.1. Technical coordination (ZHAW).** ZHAW is responsible for monitoring the progress of the research efforts of individual partners within the consortium. Each partner will be required to share new research (papers and use cases), related to risk management models related to the application of the blockchain in finance, to ZHAW, which will launch and maintain paper repositories accessible by all.

- **Task 2.2. Technical validation (ZHAW).** ZHAW will organise a research validation workshop where the finally developed risk management models in Blockchain will be shared with all partners and advisory board members. Specifically, ZHAW is responsible for: choosing the research contents of the workshop, choosing and funding the location of the workshop and associated services (rental and catering); inviting all partners and external advisors. UNIPV is responsible of approving the agenda and chairing the workshop.

WP4 – Blockchain Research (GA)

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D4.1	Repository of research consortium papers (BC)	10 - UP1 ZHAW	Websites, patents filling, etc.	Public	30

Schedule of relevant Milestones

Milestone number[18]	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS76	Completion of final workshop	2 - UBER	30	Completion of final workshop
MS79	Completion of Research workshop on BC model validation	3 - ZHAW	27	Completion of Research workshop on BC model validation

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ZHAW's Activities – I

- For this purpose, ZHAW has organized **variety of meeting with partners** within the network that work on Blockchain so to individually discuss the topic as well as the specific use cases we should focus on:
    - Bilateral discussions on topics
    - Survey on the planned activities

Quite **positive** feedback from partners

Do you have any thoughts or input how the Blockchain WP should look like over the next 12 months?
What would it take for you that:

1. You are actively involved?
2. What kind of activities would you like to see?
3. What could and/or would you like to contribute?
4. What do we need to do that there is more cooperation across the entire network?

Initial thoughts are:

1. Sharing of material across the entire network
2. Bi-weekly/monthly seminars (online)
3. Special Issue in Frontiers in Blockchain

ZHAW's Activities – I

Internal Workshop on Blockchain Research

- When: **29th September 2020**
- Who: entire network
- Topics:
    - Discuss the current activities
    - Collect feedback and recommendations
    - Partners' **contributions to the package**

Contributions (up to now):

- Use cases: 8 partners (**BUES, UNIPV, UP1, UCL, UW, UR, Inesc-Tec, UBER**)
- Talks at research seminars: 4 partners (**UW, UCM, Panteion, UBER**)
- Editors of the Special Issue - 2 partners in the lead: **UCM, KTU**

ZHAW's Activities – II

- **ZHAW will organizes monthly research webinars** at which academics, Fintechs and regulators, both internal and external to our network, present their working papers on the financial applications of the blockchain technology.

Recordings are available so to enhance dissemination efforts

Research Seminars: end of 2020

- 30th September 2020 → Dr. Veni Arakelian: Blockchain for finance: Bond issuance and asset trading

- 29th October 2020 → Dr. Simon Trimborn: Investing with Cryptocurrencies - On the Informative Effects of Experts Sentiment

- November 2020 → Xinwen Ni: A Machine Learning Based Regulatory Risk Index for Cryptocurrencies

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ZHAW's Activities – III

- The initial repository was already completed (May 2020).
- We will conduct periodic updates on the repository
- Insights → 3 main topic identified among research:
  1) **Cryptocurrency markets** (trading and arbitrage, price prediction, tail risk etc.)
  2) **Blockchain technology** (emergence of blockchain, its feasibility for electronic transfer payments, high level overview of technology)
  3) **Regulation/governance** (what are the main regulatory issues; how should we regulate it; classification issues – cryptocurrencies, coins/stable coins, etc.)

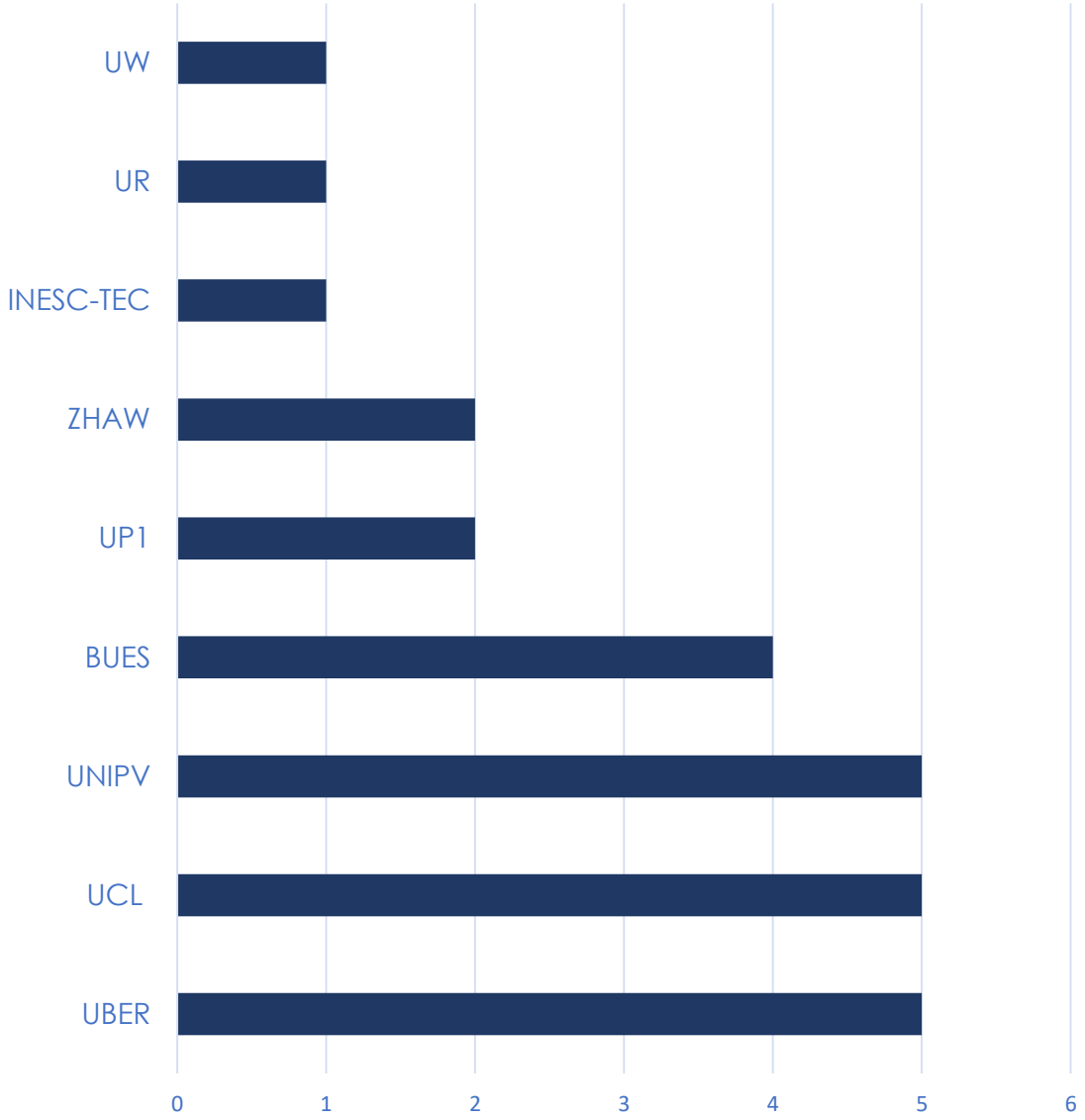
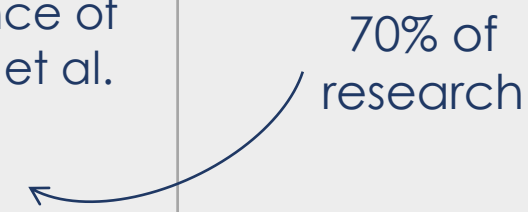


Figure 1. Partners' participation in the research repository

Cryptocurrency markets	Blockchain	Regulatory/governance
- Lead Behaviour in Bitcoin Markets (Ying et al. 2020) - A Statistical Classification of Cryptocurrencies (Pele et al. 2020) - VCRIX - A Volatility Index for Crypto-Currencies (Kim et al. 2019) - Momentum and contrarian effects on the cryptocurrency market (Kosc et al. 2019) - Using High-Frequency Entropy to Forecast Bitcoin's Daily Value at Risk (Pele and Pele, 2019) - Phenotypic convergence of cryptocurrencies (Pele et al. 2020)	- A Decentralised Digital Identity Architecture (Goodell and Aste, 2019) - The other side of the coin: Risks of the Libra blockchain	- A probative value for authentication use case blockchain (Guegan et al. 2019) - Can Cryptocurrencies Preserve Privacy and Comply with Regulations? (Goodell and Aste, 2019)



Bibliometric Analysis of Papers

TITLE	AUTHOR	PARTNER	DOWNLOADS/ ACCESS
Editorial on Special Issue on Cryptocurrencies	Osterrieder, J & Barletta, A.	ZHAW	7,901
Can Cryptocurrencies Preserve Privacy and Comply with Regulations?	Goodell, G. & Aste, T.	UCL	6,659
Analysing Social Media Forums to Discover Potential Causes of Phasic Shifts in Cryptocurrency Price Series.	Burnie, A., Yilmaz, E., & Aste, T	UCL	3,333

Figure 2. Most downloaded papers from the network

TITLE	AUTHOR	PARTNER	CITATIONS
Cryptocurrency Options: The Case of Bitcoin and CRIX	Hou et al.	UBER	18
Crypto Price Discovery through Correlation Networks	Giudici, P. & Polinesi, G.	UNIPV	8
Using High-Frequency Entropy to Forecast Bitcoin's Daily Value at Risk. Entropy	Pele, D.T. & Pele, M.M.	BUES	7

Figure 3. Most cited papers from the network

PARTNER	DOWNLOADS	ABSTRACT VIEWS	CITATIONS
BUES	1,341	1,516	11
UBER	1,306	6,565	22
UCL	12,666	865	11
UNIPV	3,877	2,194	14
UP1	1,353	1,377	4
UR	13	106	-
UW	31	-	3
ZHAW	9,089	1,023	1
TOTAL	**29,676**	**13,646**	**66**

Figure 4. Summary view: Downloads, abstract views and citations per partner

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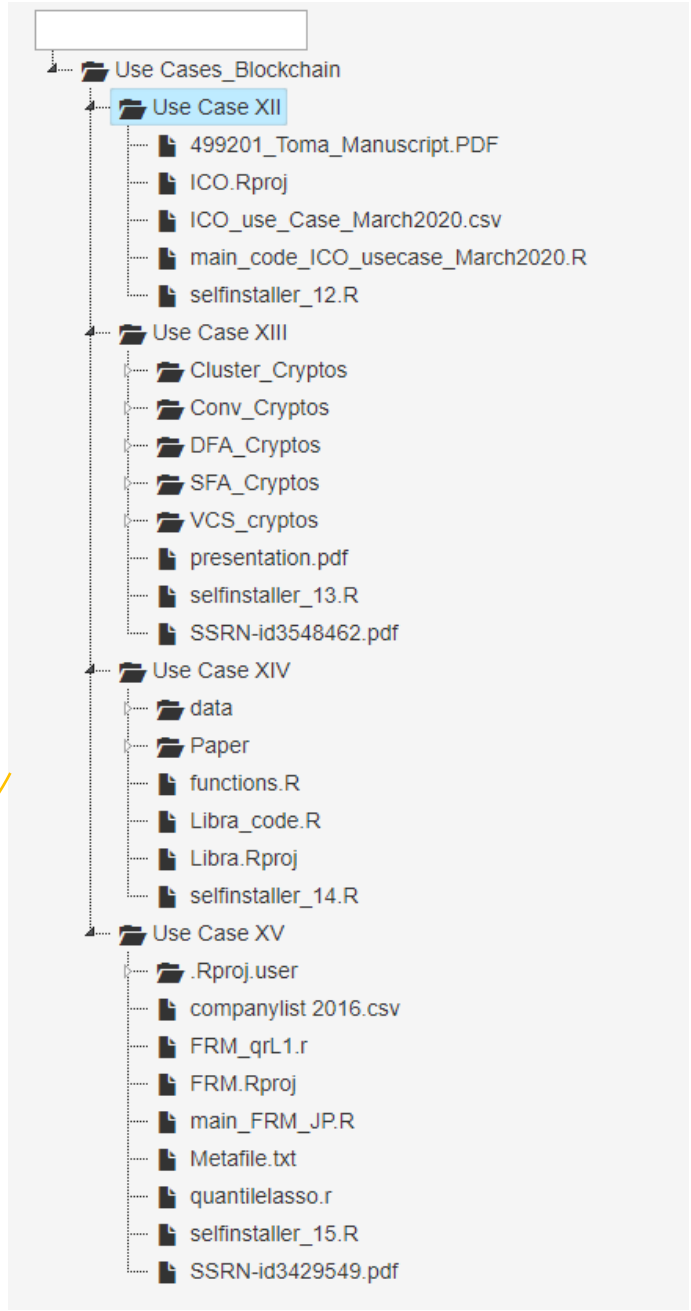
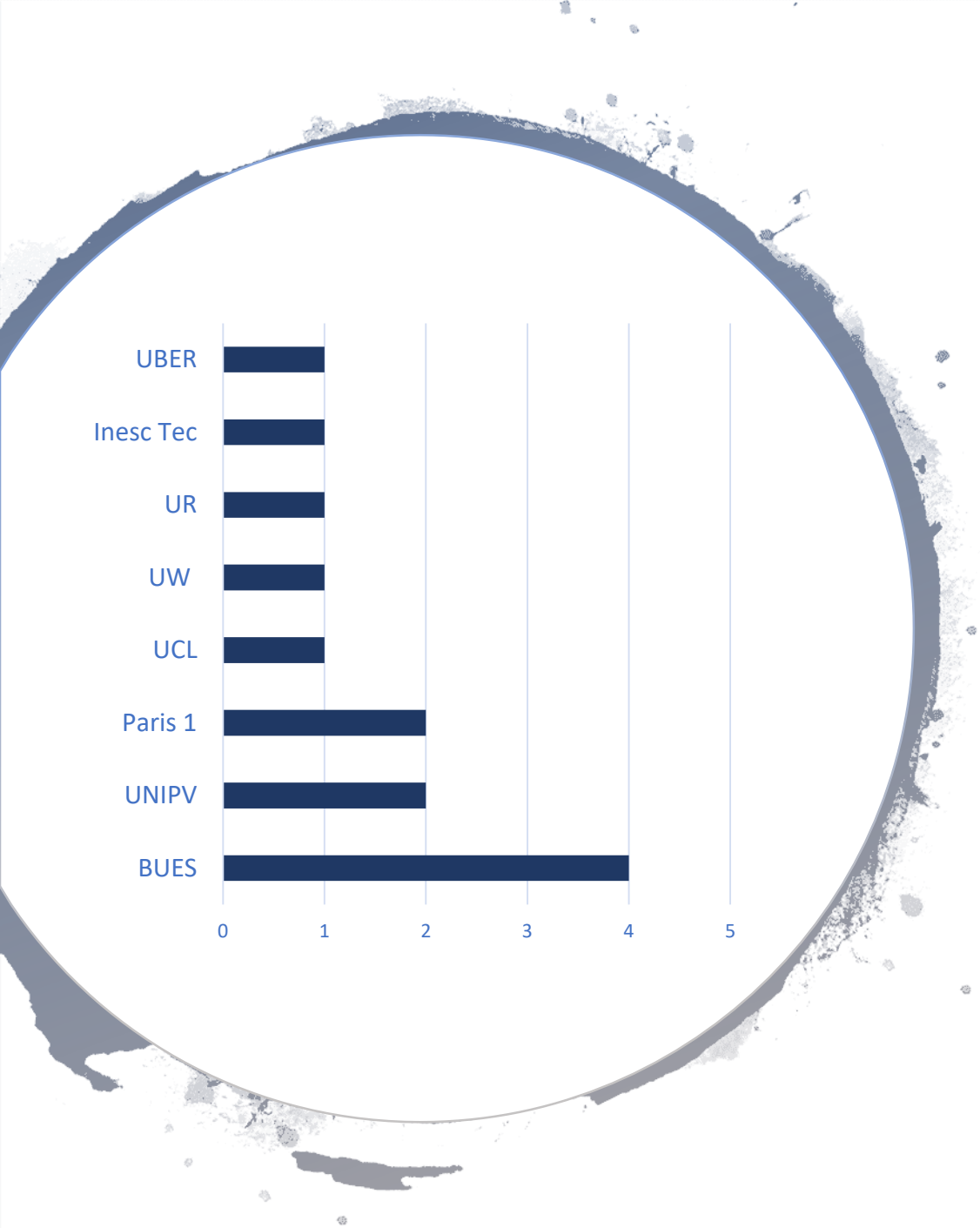
ZHAW's Activities – IV

Together with the global coordinator, selecting a sub-section of use cases coming from the FinTech-ho2020 network

- We have published a call for papers within the fintech-ho2020 network (November 2019);
- We have **collected 13 proposed use cases** from the network;
- **Four use cases** are already available on the platform.
- ZHAW, UCM and KTU are in the process of establishing a collaboration with **Frontiers in Blockchain** for a Special Issues on Blockchain in Finance which in turn will result in an e-book.

frontiers in Blockchain





Use Cases Collection

1) A Decentralised Digital Identity Architecture (Goodell and Aste, 2019)
2) A Probative Value for Authentication Use Case Blockchain (Guegan, 2019)
3) Fostering consumer bargaining and e-procurement through a decentralized marketplace on the blockchain (Amorim et al. 2019)
4) **Initial Coin Offerings: risk or opportunity? (Toma and Cerchiello, 2019)**
5) Metcalfe's law and log-period power laws in the cryptocurrencies market (Pele and Pele, 2019)
6) Momentum and contrarian effects on the cryptocurrency market (Kosc et al. 2019)
7) Phenotypic convergence of cryptocurrencies (Pele et al. 2019)
8) The other side of the Coin: Risks of the Libra Blockchain (Abraham and Guegan, 2019)
9) Using High-Frequency Entropy to Forecast Bitcoin's Daily Value at Risk (Pele and Pele, 2019)
10) Benefits of sectoral cryptocurrency portfolio optimization (Culjak et al. 2020)
11) **A Statistical Classification of Cryptocurrencies (Pele et al. 2020)**
12) **Libra or Librae? Basket based stablecoins to mitigate foreign exchange volatility spillovers (Giudici et al. 2020)**
13) **FRM Financial Risk Meter (Mihoci et al. 2019)**

Blockchain Use Cases

Use Case I - Initial Coin Offerings: risk or opportunity? I Toma, A. and Cerchiello, P. (UNIPV)

- In this use case, the authors employ statistical approaches to detect what characteristics of ICOs are significantly related to fraudulent behaviour.

Use Case II - A Statistical Classification of Cryptocurrencies I Pele et al. (BUES/UBER)

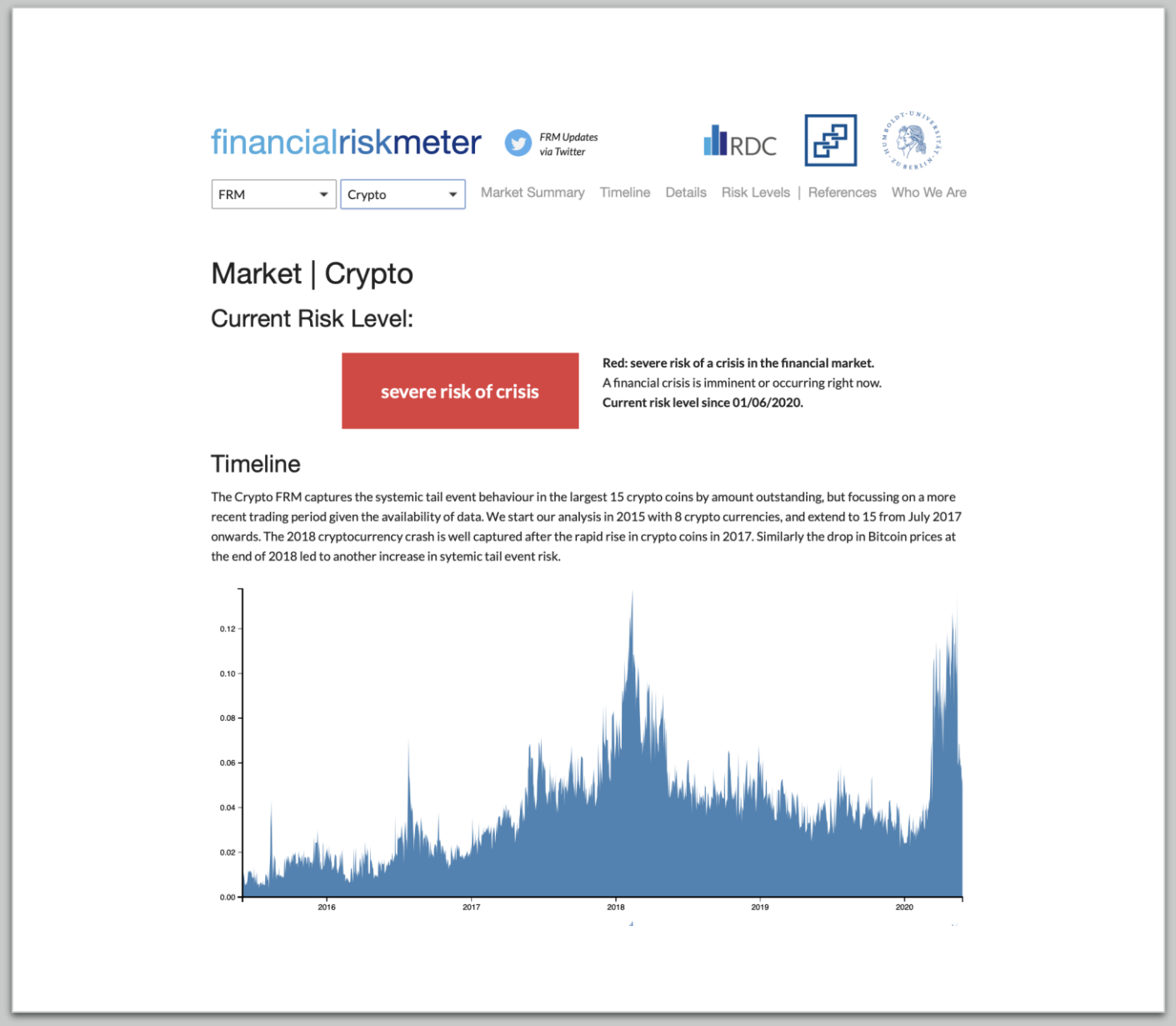
- In this use case, the authors derive the main factors that separates cryptocurrencies from the classical assets, by using various classification techniques applied to the daily time series of log-returns.

Use Case III - Libra or Librae? Basket based stablecoins to mitigate foreign exchange volatility spillovers I Giudici et al. (UNIPV)

- In this use case, the authors aim to assess the advantages of a stablecoin whose value is derived from a basket of underlying currencies, against a stablecoin which is pegged to the value of one major currency, such as the dollar.

Blockchain Use Cases

- **Use Case IV – FRM Financial Risk Meter** | Milhoci et al. (UBER)



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ZHAW's Activities – V

ZHAW will organize the **3rd validation and research workshop** on Blockchain and Risk Management **in Winterthur on 25th of March 2021**

Draft Agenda
8.30 – 9.10 Registration and Welcome Address
9.15 – 9.30 Project Overview: FinTech-ho2020
9.30 – 11.00 Industry Perspective
11.00 – 11.30 Coffee break
11.30 – 13.00 Regulatory Perspective
13.00 – 14.00 Lunch
14.00 – 16.00 Academic Use Cases
16.00 – 16.30 Closing remarks
16.30 – 17.30 Management board meeting

Concluding Remarks

Progress on work plan and deliverables

- The deliverable associated with WP4 is due at month **30.**

List of deliverables

Deliverable Number[14]	Deliverable Title	Lead beneficiary	Type[15]	Dissemination level[16]	Due Date (in months)[17]
D4.1	Repository of research consortium papers (BC)	10 - UP1 ZHAW	Websites, patents filling, etc.	Public	30

- Irrespective of this, the repository is already launched. The same repository will be periodically updated so to reflect the changing state of art concerning the topic.

Are the objectives still relevant?

- *"Governments should encourage innovation while protecting the interests of consumers and citizens. This requires communication and collaboration between all stakeholders, particularly with regard to regulation"*

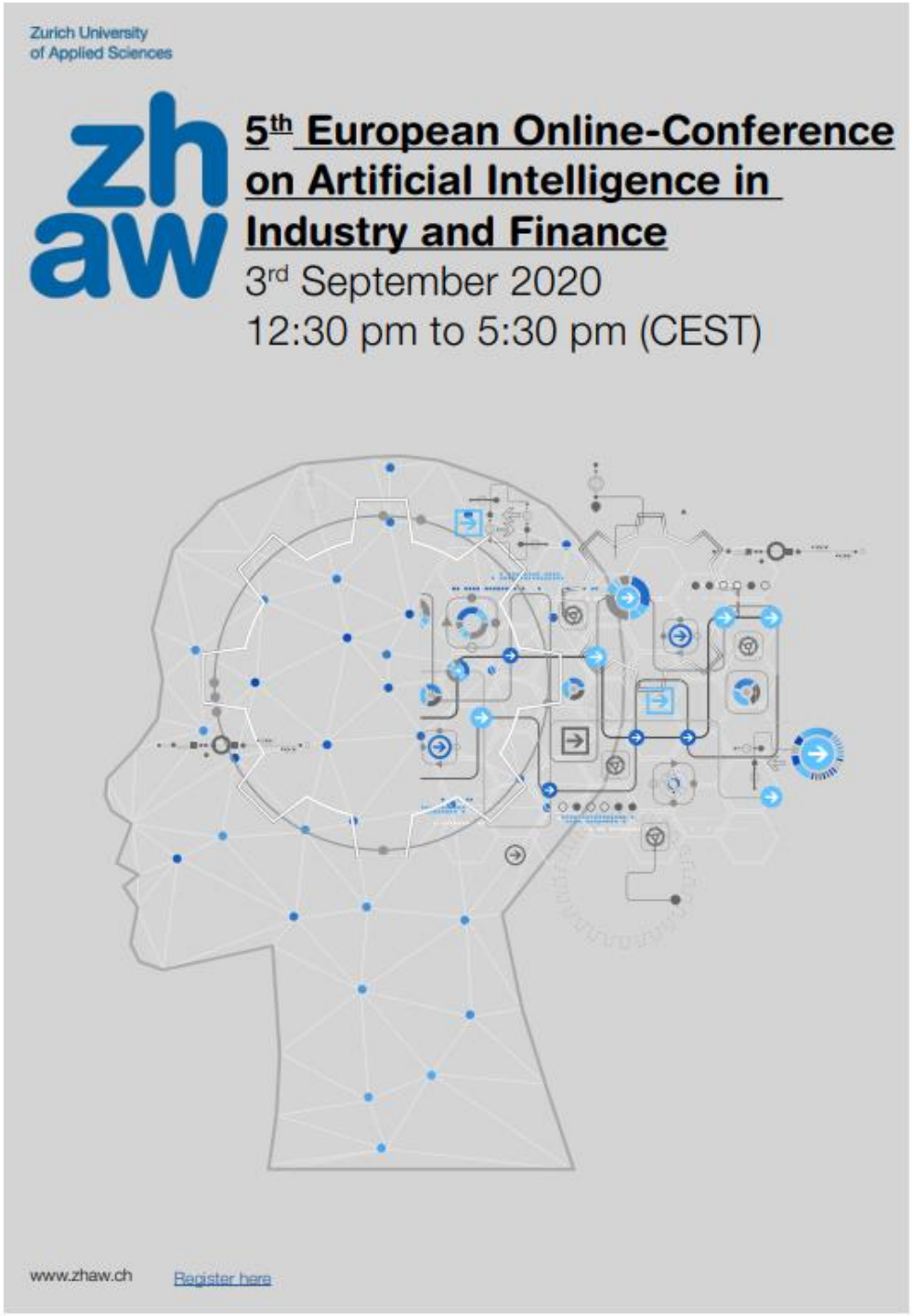
  The Policy Environment for Blockchain Innovation and Adoption OECD, 2019

- *"Crypto-assets have raised concerns with regard to money laundering, market integrity and consumer protection – among other things – as well as possible implications for financial stability.*

  Crypto-Assets, ECB (2019)

- *"To implement embedded supervision, regulators would also be required to acquire substantial technological know-how and the willingness to adjust their operational approach to the technology that is being developed by the financial sector."*

  Embedded supervision: BIS Working Papers No.811, 2019



Expected Impact

- **Scientific and technological** → novel risk management tools for blockchain applications;
- **Economic, competitive and social**→ the adoption of blockchain by the financial sector promises increased efficiency and effectiveness of various processes. DLT can lead to lower cost of financial transaction and enable SMEs to source funds;
- **Dissemination** → organizing many event + participating in large conferences and industry focused workshops to present the use cases and the project's activities.

Management procedure

- ✓ All partners are invited to contribute a use case;
- ✓ 8 partners responded to ZHAW's call with one or several proposed paper;
- ✓ Based on the stated criteria (open source paper/availability of data and code), four use cases were uploaded on the platform;
- ✓ Use cases are the foundation of the training materials that are consecutively shared at various events around Europe (suptech, regtech and research workshops).

Consistent approach across all research WPs

Blockchain Use Cases

- **Use Case IV – FRM Financial Risk Meter** | Milhoci et al. (UBER)

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