

境外央行数字货币（CBDC）最新进展状况

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2020年11月

1- CBDC: 主要项目纵览



新加坡金管局 – Ubin项目

2020-11-18

战略目标	多币种、基于区块链的 RTGS支付系统，简化资金转账
用途	完全数字化的新加坡元，用于跨境转账
相关参与方	新加坡金管局和淡马锡 [牵头] 摩根大通, Consensys [Quorum 平台开发者] 埃森哲 [提供用例]
技术特点	利用 Quorum平台技术： <ul style="list-style-type: none">在Quorum开源平台上建立银行间网络用摩根大通的JPM币来支付
规划	始于2016年11月： <ul style="list-style-type: none">阶段1-2: 打造国内支付网络技术能力阶段 3-4: 建立互操作能力以支持券款对付和同步支付阶段 5: 增加多币种结算

进展	状态 PoC & 试验
近况	可能是除了中国央行DC/EP外进展最快的CBDC项目： ⇒ 2020年7月，40多家成员企业共同参与的多币种结算PoC成功 ⇒ 有124个广泛分布的用例
用途变更情况	⇒ 用例拓展到纯粹的金融服务业外

泰国银行– Inthanon项目– 批发型CBDC (1/2)



2020-11-18

战略目标

基于分布式账本技术（DLT），为泰国的银行间支付系统搭建去中心化的 RTGS 系统

用途

建立一个现金管理、债券和其他流动性资产的 RTGS系统

相关参与方

8家参与银行: 曼谷银行/泰京银行/ 暹罗商业银行/ 汇丰银行/ 渣打银行/ 大城银行/泰华农民银行/ 泰纳昌银行

合作伙伴: R3

技术特点

基于Corda平台

规划

2018年8月启动:

- 阶段 1: 围绕现金管理、债券和流动性准备金的数字化建立PoC
- 阶段 2: 债券生命周期管理、银行间回购和交易、数据合规和隐私

进展

状态

PoC & 上线



近况

已完成:

⇒ 阶段 1 & 2 的 PoC 已经按时完成

⇒ 2020年9月: 启动政府储蓄债券平台搭建

下一步:

⇒ 2020年7月: 启动大公司之间的资金转账 PoC项目

⇒ 将用途拓展到政府债券（零售和批发）

用途变更情况

⇒ Inthanon-LionRock 项目 [批发型]*

- 利用Inthanon项目的里程碑成果与跟中国香港金管局合作
- 目标: 提高中国香港和泰国之间的跨境结算效率.

⇒ 目前还不清楚 Inthanon项目将如何进展，因为泰国银行和 ConsenSys 在2020年9月开始了新的合作

泰国银行- 数字泰铢(2/2)



2020-11-18

战略目标	泰国最新公布了零售型CBDC项目 “数字泰铢”
用途	用于个人和小微企业的零售型 CBDC
相关参与方	牵头方: 泰国银行 参与银行: 未披露 合作伙伴: Consensys, 暹罗水泥集团/Digital Ventures (DV) 公司/Atato (泰国区块链公司)
技术特点	技术 (ConsenSys): Quorum平台, ERC20智能合约, 客户端用HyperLedger Besu. 由Atato开发 平台 (DV): 在DV/埃森哲联合开发的B2B采购平台上测试 钱包 (ConsenSys): MetaMask 加密钱包
规划	尚未披露

进展	状态	新方向
近况	<div><div></div><div></div><div></div></div>	下一步: 当工作组更成熟之后, 会增加监管
用途变更情况		<ul style="list-style-type: none">大的战略变动: 暹罗水泥和泰国银行在2020年Q2开始开发一个基于Corda平台的零售型CBDC项目ConsenSys 从摩根大通手中收购Quorum之后, 加快了进入亚太的速度。它们跟中国香港金管局 (HKMA) 的近期合作、跟新加坡Ubin项目的长期合作都会让它更加明晰在2021年的亚洲战略*。

*Inthanon-LionRock项目 – 见后面

Inthanon-LionRock* 项目

战略目标	为泰国和中国香港之间搭建一条基于分布式账本技术的跨境支付通道	
	阶段 1	阶段 2
用途	阶段 1 (原用途): 中国香港和泰国之间的公司跨境结算	阶段 2 (2020年9月): 用于中国香港和泰国之间的跨境支付
相关参与方	牵头方: 中国香港金管局 & 泰国银行 2个中国香港银行(汇丰银行/众安银行) + 8个泰国银行 合作伙伴: R3 / CryptoBLK	牵头方: 中国香港金管局 & 泰国银行 未披露参与银行 合作伙伴: ConsenSys / 普华永道 / 四方精创
技术特点	- Corda 平台 (R3), CryptoBLK开发	ConsenSys的Quorum平台, 四方精创具体支持开发, 普华永道可能会撰写报告
规划	在2019年底完成了PoC	待定

进展	状态
	PoC   
近况	<p>已完成:</p> <p>⇒ 阶段 1: 完成PoC和报告, 报告了实时跨境结算测验与合规能力</p> <p>下一步:</p> <p>⇒ 阶段 1: 批发型跨境支付产品在2020年Q4上线</p> <p>⇒ 阶段 2: 在年底开第一次研讨会</p>
用途变更情况	<p>⇒ 中国香港金管局 / ConsenSys 的最近合作可能会改变战略</p> <p>⇒ 不清楚阶段1的工作是否会由 ConsenSys重写</p>

* **LionRock** 项目: 细节不明, 主要是批发型CBDC的研究。该项目启动于中国香港金管局与泰国银行合作



瑞典国家银行- 数字克朗

2020-11-18

战略目标

- 开发用户友好型的CBDC，即使老人和残疾人也能用
- 基于 DLT的 RTGS 系统，以私人部门为中介的中心化模型：
 - 瑞典央行只授权发行和赎回数字克朗，在联盟链上添加成
 - 私营支付服务商来处理日常交易

用途

- 必须覆盖大部分金融需求（存取款、转账、贷款）
- 多终端触达(手机App、智能手表、信用卡、各种离线方案)

相关参与方

- 埃森哲: 负责多终端数字钱包，央行系统的API和技术架构
- R3: Corda的私有化 DLT
- 商业银行一起参与PoC

技术特点

使用了Corda平台，增加公证节点系统来避免“双花”

规划

- 2020年2月与埃森哲启动了一年期的试验项目:
- 技术: 建立数字克朗项目 (R3) 和多终端用户界面(埃森哲)
 - 范围: 第1阶段聚焦存款和转账

进展

状态

PoC



近况

- ⇒ 2020年2月启动试验项目:
 - 验证主要项目和用户体验
 - 保证安全(AML/KYC)
 - 验证性能
- ⇒ 2020年6月发布一个详细报告，披露了成熟的方法
- ⇒ 跨境转账不是 PoC 第一阶段的焦点，不过瑞典很关注互操作性问题。

用途变更情况

- ⇒ 瑞典央行开始分析其他创新项目，包括未来完全采纳 CBDC后的存款和贷款系统



加拿大银行- CBDC项目

2020-11-18

战略目标	零售型 CBDC
用途	用于私人之间、C2B的交易 普遍适用、免费、高度隐私保护、有可能实现离线转账
相关参与方	加拿大银行，同时会与国际清算组织 BIS 分享观点
技术特点	基于DLT（技术不明确）
规划	2020年夏天正式启动，成立一个工作组完成一个概念和实验项目(3年)

进展	状态	项目启动
近况	⇒ 加拿大银行希望能积极参加全球工作组，特别害怕被其他CBDC超越，其他CBDC可能会干扰加拿大的货币系统	
用途变更情况	⇒ 无	

* See Appendix for summary of 1st BIS Report on CBDC

日本银行 – 数字日元

2020-11-18

战略目标

提高交易效率和日元竞争力

用途

基金转账、支付、私人数字货币和其他国家CBDC之间的互操作

相关参与方

日本银行，其他未披露

技术特点

尚处于早期工作组

规划

无

进展

状态

工作组



近况

- ⇒ 2020年1月: 日本银行跟欧盟、加拿大、英国、瑞典、瑞士等国组成工作组，来解决 CBDC 的互操作和隐私问题
- ⇒ 2020年10月，公布下阶段计划:
 - 2021年4月开展基础测试（发行和分销）
 - 偏好于通过商业银行作为一个间接的分销渠道，而不是央行直接分销

用途变更情况

- ⇒ 日本银行在2019年12月释放出反面消息，好像对 CBDC 不大感兴趣，但随着中国央行数字货币的推出，日本也加快了脚步



美联储- 数字美元

2020-11-18

战略目标

捍卫美元的国际地位

用途

- 政府福利费支付、私人转账支付

相关参与方

- 美联储各个分支组成工作组
- 埃森哲/数字美元基金会(DDF): 起草白皮书

技术特点

很可能是基于代币 (token-based) 的, 由美联储主导的联盟链

规划

- 没有清晰的时间表, 必须由国会批准白皮书才能启动实际行动
- 考虑到美元的特殊地位, 工作组建议有一个5-10年的时间图

进展

状态

早期



近况

- ⇒ 国会对CBDC的必要性有质疑, 导致进程缓慢
- ⇒ ...但是有几个平行工作:
 - 2020年 6月: DDF白皮书出版后, 推动CBDC启动
 - 2020年 8月: 纽约联储和BIS启动合作, 加速试验; 波士顿联储和麻省理工学院合作, 评估最先进的技术解决方案)
- ⇒ 2020年10月: 鲍威尔主席表示“会发行CBDC, 但过程并不急”

用途变更情况

- ⇒ 2020年9月: 正在研究给没有银行账户的美国公民直接发行CBDC的可能性



欧洲央行- 数字欧元

2020-11-18

进展

状态

进展缓慢



近况

- ⇒ 2020年5月: 启动工作组分析 CBDC
- ⇒ 同时, 法国央行启动自己工作组分析加密资产互操作性问题
- ⇒ 2020年10月: ConsenSys 加入工作组

用途变更情况

2020年9月: 欧央行貌似同意聚焦在批发型 CBDC 上, 因为区块链不一定适合于欧元区, 欧元区已经有很成熟高效安全的系统

2020年11月: 欧央行宣布明年1月将发布一本报告, 讨论零售型数字欧元的潜力 (2-4年的实施周期)

战略目标

不确定

用途

- 倾向于批发型 CBDC, 因为欧元区内早已有一个有效率的支付系统, 再增加零售 CBDC 的意义不大

相关参与方

欧盟各国央行

技术特点

不确定

规划

不确定



英格兰银行- CBDC 项目

战略目标	提供新的支付手段
用途	尚不清晰
相关参与方	英格兰银行和其他央行组成工作组，包括一些私营企业
技术特点	不确定
规划	不确定

2020-11-18

进展	状态	很晚启动	<div><div></div><div></div><div></div></div>
近况	截至2020年10月尚未确定是否发行 CBDC，工作组正在讨论战略，英格兰银行希望跟上别人的脚步		
用途变更情况	无		

2- 其他 CBDC 项目& 稳定币

其他值得关注的项目

2020-11-18

巴哈马央行

“沙元”：用于支付的零售型 CBDC:

- 跟法币保持1:1 兑换，法币钉牢美元
- 离线支付能力
- 不付息，国内使用

进展

2020年10月 启动，世界上第一个在用的零售型 CBDC



柬埔寨央行

柬埔寨 CBDC: “数字钱包”

- 商业银行存款的代币化
- 目标: 1- 普惠金融 (移动支付) 2- 降低对美元的依赖 3- 建立新的 RTGS 系统
- 合作伙伴: Soramitsu 区块链公司, 超级账本做平台
- 每个数字钱包都与商业银行管理, 通过扫二维码或发手机号码来支付

进展

2020年10月底启动，试验期.



韩国银行

启动了工作组，但还没决定是否发行 CBDC

进展

2020年3月启动 => 2021底
2020年10月: 宣布与 本国金融科技公司 Klaytn 合作



菲律宾央行

2023年前可能都不会有实施

进展

2020年7月启动了工作组，但进展非常慢



乌拉圭央行- 数字比索

2020-11-17

战略目标

解决币值稳定性问题，提高金融普惠程度

用途

个人或公司都能用，在线、离线都能用

相关参与方

Antel (国家电信公司): 运营商
Giori: 数字比索创建和管理
InSwitch: 为用户开发钱包
RedPagos: 交易和资金转账

技术特点

并不基于区块链，不是加密货币形式，目标只是促进离线支付，提高金融普惠程度

规划

6个月试验期 [2017年11月-2018年4月]:
• 启动PoC 测试开户和转账

进展

状态

On-hold



近况

⇒ 2018年底以来再无新消息

用途变更情况

⇒ CBDC 工作组可能建议乌拉圭央行采用分布式账本技术

摩根大通- JPM币

2020-11-18

战略目标

用美元支持的数字资产完成交易实时结算

用途

银行的企业客户间批发型代币（第1阶段）

相关参与方

摩根大通
Consensys (技术和商业伙伴)

技术特点

Quorum上的联盟链架构

规划

2019年2月启动
⇒ 第1阶段: PoC, 用JPM跟欧美日的客户进行证券、商品和债券交易

进展

状态

上线



近况

JPM Coin 进展:

- ⇒ 2020年10月: 开始使用JPM Coin执行大企业支付流程
- ⇒ 下一步: 可能启动区块链支票

Quorum 发展:

- ⇒ INN(银行间信息网络, 344家金融机构) 已于2020年10月更名为Liink, 用于支付验证协议
- ⇒ 2020年8月: Consensys 正式从摩根大通手中收购 Quorum

用途变更情况

- 利用“Consensys Quorum”平台开发区块链金融服务:
- ⇒ 提供多样化金融应用
 - ⇒ Quorum 进入到多国 CBDC 项目)

Facebook – LIBRA

战略目标

利用Facebook的强大客户基础，建立世界性的支付生态系统

用途

- 主要用于跨境支付
- 后期将拓展到其他金融应用

相关参与方

由位于瑞士的Libra基金会主导运营

技术特点*

- Libra是由实际资产支持的稳定币
- 有数字钱包 Calibra 来存放 Libra和个人数据 (Facebook 提供技术)
- FastPay 支付协议 (Facebook 技术)

规划

具体时间表有待确定

进展

状态

不明



近况

最近发展:

- ⇒ 参与方变动较大
- ⇒ 2020上半年: 有影响力的伙伴离开系统(Ebay, Stripe, Visa, Mastercard, etc.)
- ⇒ 钱包的独立性遭遇质疑

用途变更情况

- ⇒ 由于治理因素、监管障碍等，项目目标缩减
- ⇒ 随着更多国家 CBDC 的进展，Libra未来不确定
- ⇒ 可能FastPay支付协议可以用于其他稳定币

Overview of CBDC initiatives

*Insights on leading projects & progress status**

Geoffrey Maene

Nov 2020

**Regular updates - Mainland China DC/EP excluded*

1- CBDC: Overview of main initiatives*

**Excluding Mainland China*

MAS – Project Ubin

2020-11-18

Updates

Status

PoC & Pilots



Strategy

Multi-currency Blockchain-based RTGS payment system to simplify fund transfers

Scope

Full digitization of SGD & Cross-Border transfers

Stakeholders

Monetary Authority of Singapore & Temasek [Lead]
JPMorgan then Consensys from Aug. 2020 [Quorum Platform & technical developments]
Accenture [Use Cases]

Technical specificities

- Leverage on Quorum Tech capacities:
- Use of Quorum Open-Source Platform - based on Ethereum Protocol – to develop the Interbank Network
 - Use of JPM Coin for payment technology (JP Morgan)

Planning

- Started in November 2016:
- Phases 1-2: Build technical capabilities for Domestic Payment Network
 - Phases 3-4: Build interoperability to enable DvP & PVP
 - Phase 5: Multi-currency settlements

Progress

Probably one of the most advanced & ambitious CBDC project apart from China's DC/EP:

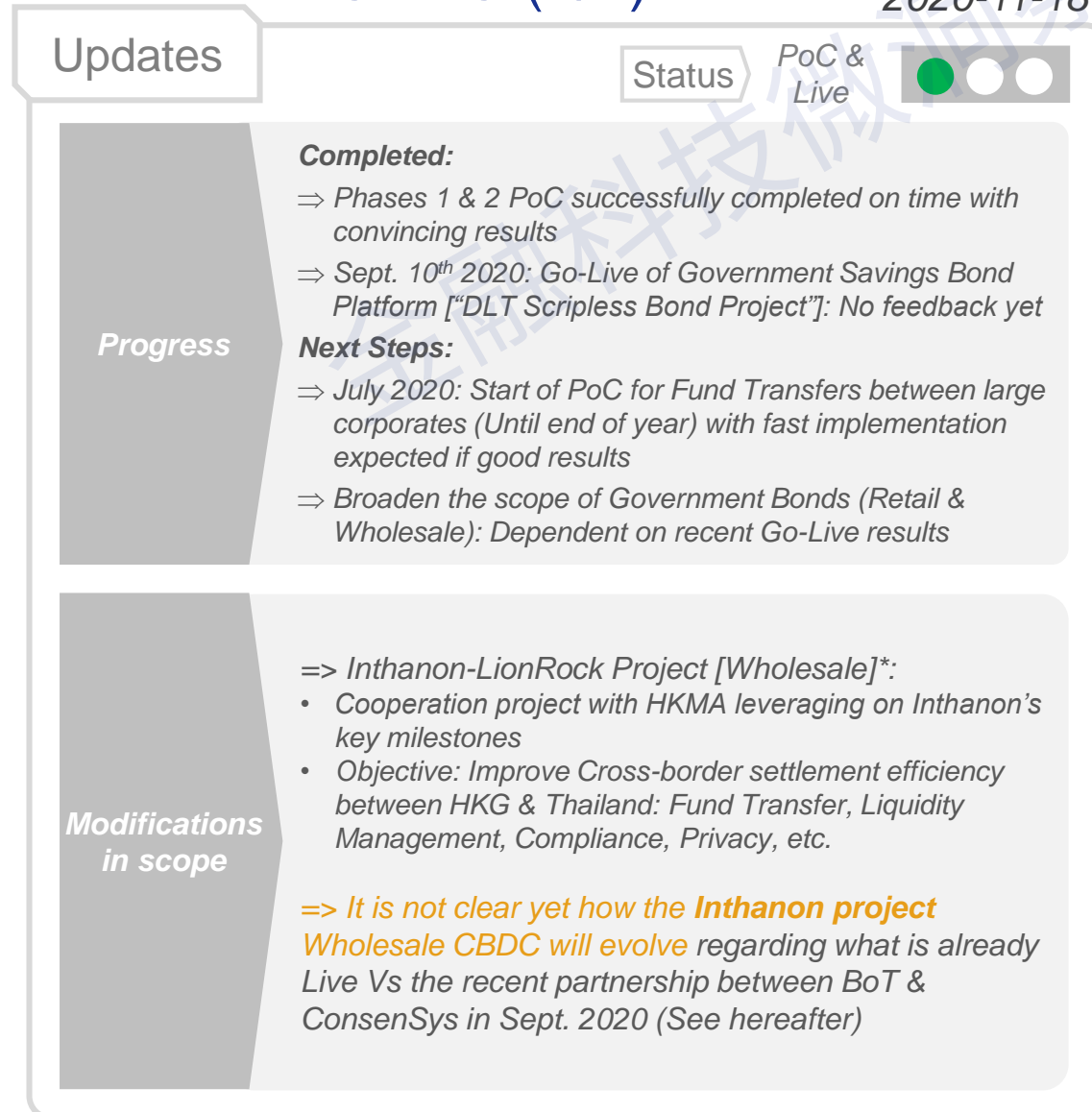
- ⇒ July 2020: Multi-currency settlements PoC successfully completed with 40 participant companies (FIs & non-FIs)
- ⇒ Ready for diversification with 124 Use Cases identified by Accenture in the Financial Industry & beyond (No news since July 2020)

Modifications in scope

- ⇒ Diversification of Use Cases outside Financial Services: Provide services in exchange for value (Media & Advertising), salary payments, account receivables, etc.

Bank of Thailand (BoT) – Inthanon Project – Wholesale CBDC (1/2)

2020-11-18



Bank of Thailand (BoT) – Digital Baht (2/2)



2020-11-18

Updates

Status

New direction



Progress

Next Steps: To be monitored when Working Groups are more mature

Modifications in scope

- **Major strategy shift:** Siam Cement & BoT were already working on a retail CBDC leveraging Corda's platform since Q2 2020
- **ConsenSys** seems to be taking on APAC since the purchase of Quorum from JP Morgan. The recent partnership with HKMA & long-standing project UBIN with the MAS in Singapore will further push their positioning in Asia in 2021*

Strategy

Thailand's newly announced **Retail CBDC project** to complement the Inthanon Project (Wholesale CBDC)

Scope

Retail CBDC for Individuals & SMEs [Digital Baht]

Stakeholders

Leader: Bank of Thailand (BoT)

Participating Banks: Not yet disclosed

Partnership: Consensys, Siam Cement Group/Digital Ventures (DV), Atato (Thai Blockchain Fintech)

Technical specificities

Technology (ConsenSys): Quorum (ETH-based permissioned Blockchain), ERC-20 Smart Contracts, HyperLedger Besu (Software). Implementation with Atato

Platform (DV): Tests to be performed on B2P platform initially developed by DV/Accenture (Procurement solution)

Wallet (ConsenSys): MetaMask Crypto Wallet

Planning

No planning disclosed yet

Inthanon-LionRock* Project

Strategy	DLT-based corridor for cross-border payments between two Hong Kong & Thailand	
Scope	Phase 1 Phase 1 (Original scope): Wholesale CBDC for Corporates Cross-border settlements between HK & Thailand **	Phase 2 Phase 2 (From Sept. 2020): Work on a PoC for Cross-Border payments using CBDC between HK & Thailand (No details yet)
Stakeholders	Leaders: HKMA & BoT 2 HK Banks (HSBC / ZA) + 8 Thai Banks Partners: R3 / CryptoBLK	Leaders: HKMA & BoT Participating banks not disclosed yet Partnership: ConsenSys / PwC / Forms HK
Technical specifics	- Corda platform (R3) implemented with CryptoBLK - Report (CH&Co)	ConsenSys's Quorum Forms HK to support Implementation PwC to probably write report
Planning	Complete PoC by end of 2019 (Report in January 2020)	TBD

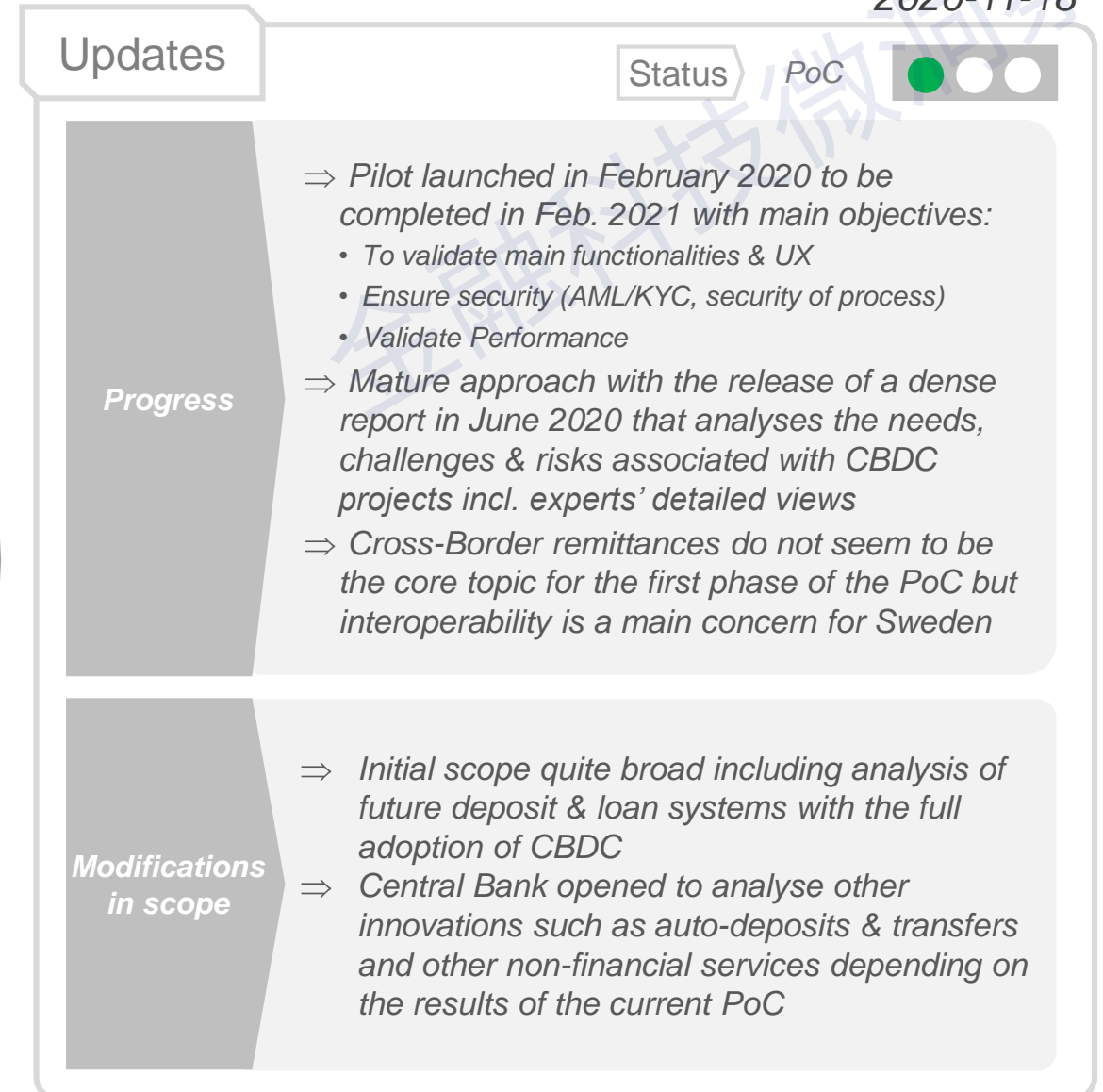
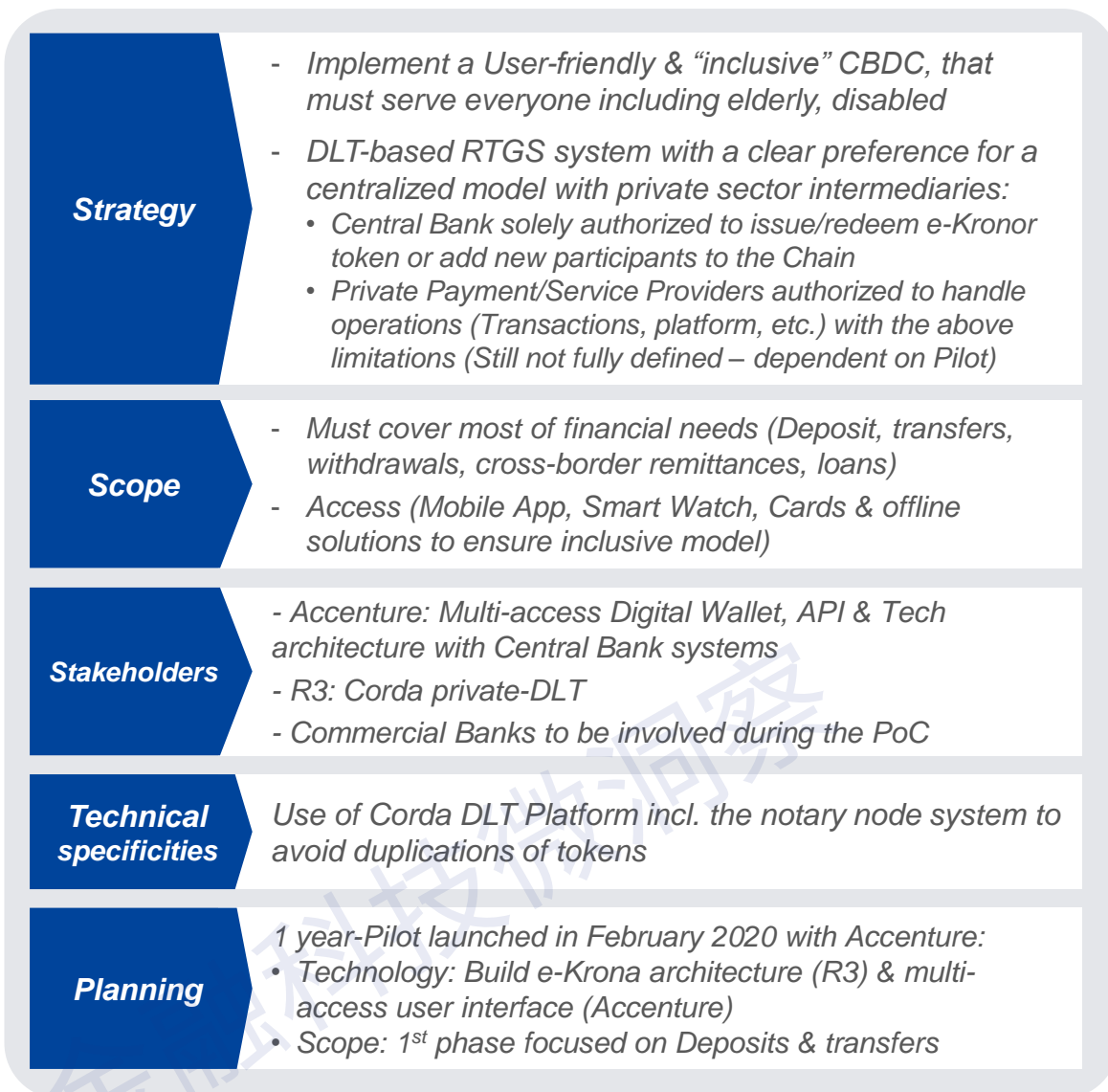
Updates	Status	PoC
		<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
Progress	Completed: ⇒ Phase 1: Completion of PoC & report in January 2020 covering Real-Time Cross-Border Settlement tests & Compliance capabilities Next Steps: ⇒ Phase 1: Go-Live of Wholesale Cross-Border Payments by Q4 2020 => TBC? ⇒ Phase 2: First workshops to start by end of year (No precisions yet)	
Modifications in scope	⇒ Strategy shift with the recent partnership HKMA / ConsenSys meaning switching everything from platform to Blockchain solution ⇒ Not clear if the scope of work of phase 1 with R3 will be completed or overwritten by Consensys in the project strategy	

* **LionRock Project:** Not detailed here as it was limited to a study on Wholesale CBDC issuance. The initiative took off only when HKMA joined the BoT initiative

** **Phase 1 Report** main takeaways available in Appendix 2)

Sveriges Riksbank Sweden – e-Krona

2020-11-18

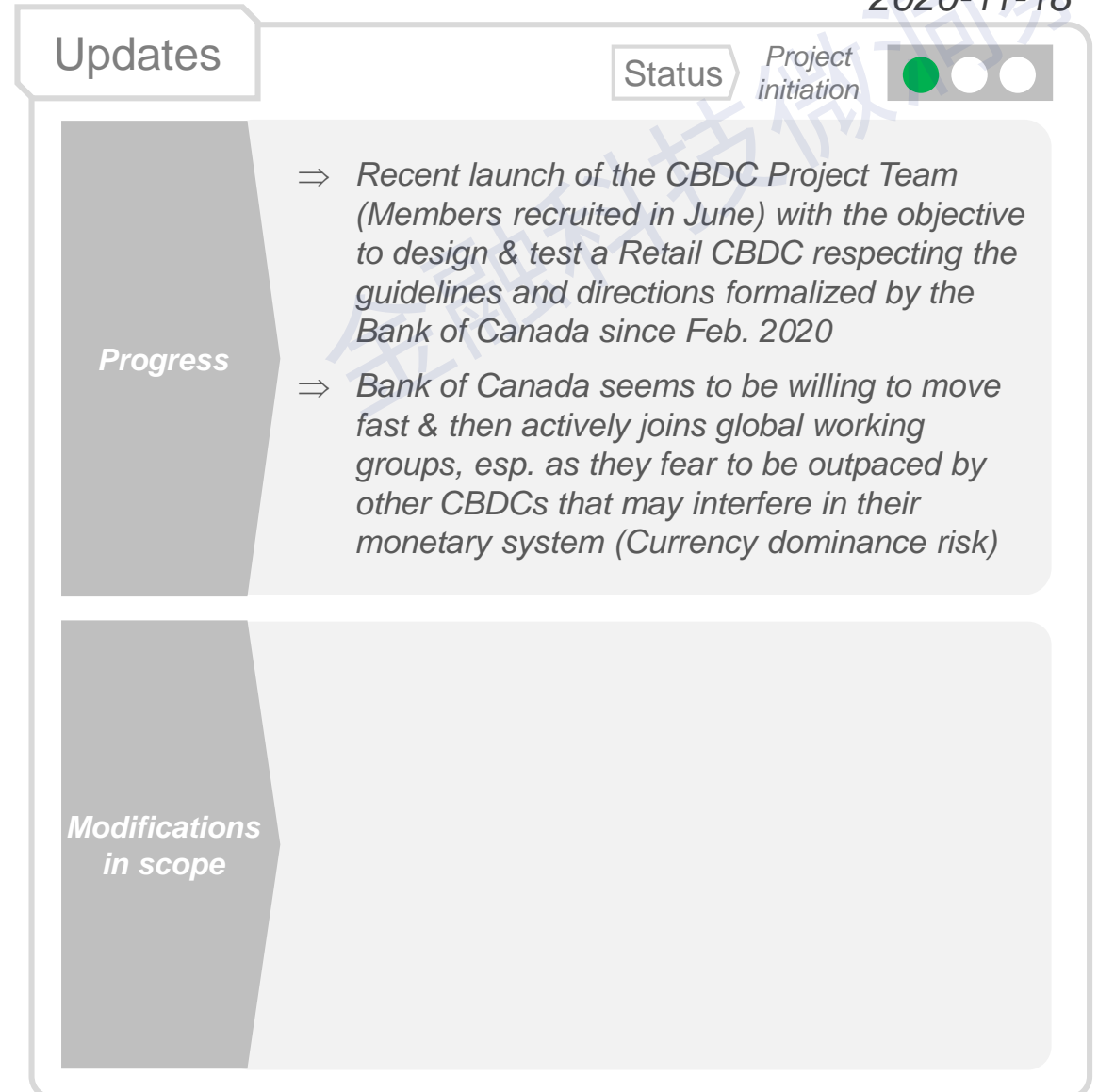




Bank of Canada – CBDC Initiative



2020-11-18



* See Appendix for summary of 1st BIS Report on CBDC

Bank of Japan [BoJ] – Digital Yen

Strategy

Improve efficiency of transactions & competitiveness of the Japanese Yen

Scope

Fund transfers, P2P payments, Interoperability with Private Digital Currencies & other nations' CBDCs

Stakeholders

Bank of Japan
[Working Group Participants not disclosed, but probably major FIs of the country]

Technical specificities

Early stage Working Groups

Planning

No planning to launch a CBDC

Updates

Status

Working group



2020-11-18

Progress

- ⇒ July 2020: Announcement that the BoJ is boosting its CBDC Working Group efforts and wishes to perform tests, without giving further details on implementation timeline
- ⇒ January 2020: BoJ joined Working Group with the EU, Canada, UK, Sweden, Switzerland to cooperate on interoperability of CBDCs & Privacy/Compliance issues*
- ⇒ Oct. 2020: Announcements on next steps:
 - Basic tests (Issuance / Distribution) will be performed from April 2021
 - Preference for an indirect distribution model via commercial banks instead of direct BoJ distribution of Digital Yen

Modifications in scope

- ⇒ Contradictory messages from the BoJ that showed little interest for CBDC re. Japanese economy in Dec. 2019, then now rushes efforts probably due to the fast progress of other nations, esp. China's Digital Yuan

* See Appendix for summary of 1st BIS Report on CBDC



Fed USA – Digital Dollar

2020-11-18

Updates

Status

Early stage



Progress

- ⇒ Slow process with Congress representatives quite skeptical about the necessity to issue CBDC
- ⇒ ...But ongoing local working groups in parallel:
 - June 2020: Publication of Whitepaper urging for a move on CBDC implementation (DDF)
 - August 2020: Announcement of cooperation program between the Fed NY & the Bank of International Settlements (BIS) "Innovation Center Lab" to accelerate the launch of a pilot
 - August 2020: Cooperation between Fed Boston & the MIT to assess the best technical solutions for a CBDC (Most advanced research work)
- ⇒ Oct. 2020: J. Powell clarified the FED view: "Issue a CBDC but not hurry the process"

Modifications in scope

- ⇒ Sept. 2020: Currently actively analyzing the possibility of direct distribution of Digital \$ to US citizens w/o commercial banks intermediation (Not defined though)

Strategy

Establish a Retail CBDC strategy to protect the position of the US Dollar regarding International competition from other Central Banks, Financial Institutions & Tech actors

Scope

- Domestic, cross-border & Government benefits payments
- P2P payments

Stakeholders

- Fed: Different branches of the Fed have organized working groups to analyse Use cases to push
- Accenture/Digital Dollar foundation (DDF): Whitepaper of guidelines for the Digital USD

Technical specifics

Probably Token-based Private DLT handled by Fed [Nothing defined yet: Propositions will have to be validated by the Congress]*

Planning

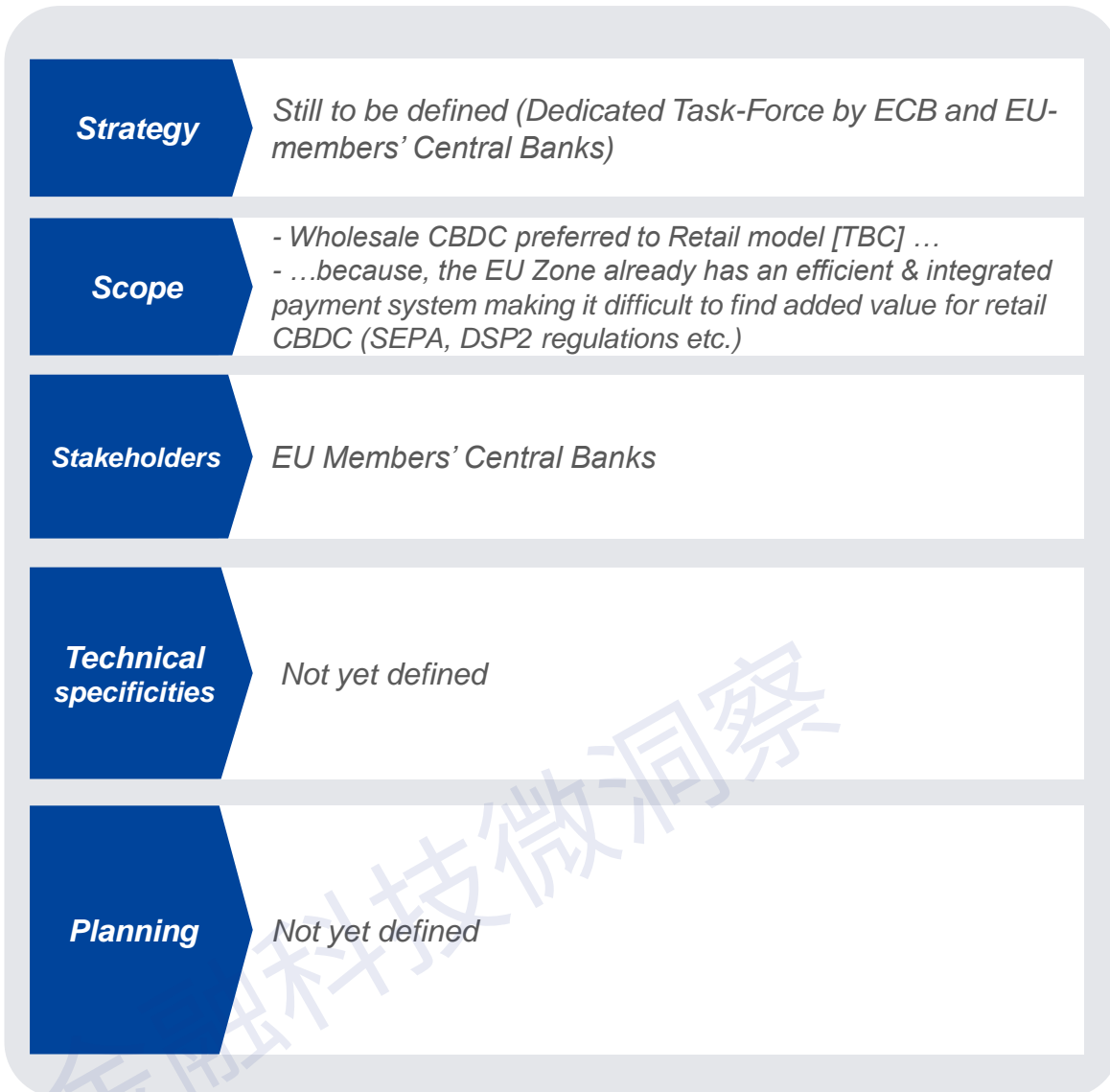
- No clear timeline defined: Congress approval of Whitepaper necessary before starting operational implementation (Painful process)
- Stakeholders of Working Groups suggest 5-10 year timeline for implementation regarding the sensitive role of the USD in international trade & financial system

* As opposed to Account-based approach



European Central Bank [ECB] - Digital EUR

2020-11-18



Updates

Status

Slow progress



Progress

- ⇒ May 2020: Launch of working Groups between ECB & EU members' Central Banks to analyse Retail CBDC's concerns (Risks/Compliance/Legal)
- ⇒ In parallel, Working Group Program by French Central Bank [April 2020] to brainstorm on CBDC applications with a focus on 3 areas:
 1. Payments against other CBDCs
 2. Payments against Digital Assets
 3. Payments against Financial Instruments
- ⇒ Oct. 2020: ConsenSys joins Working Group with SG Forge among others

Modifications in scope

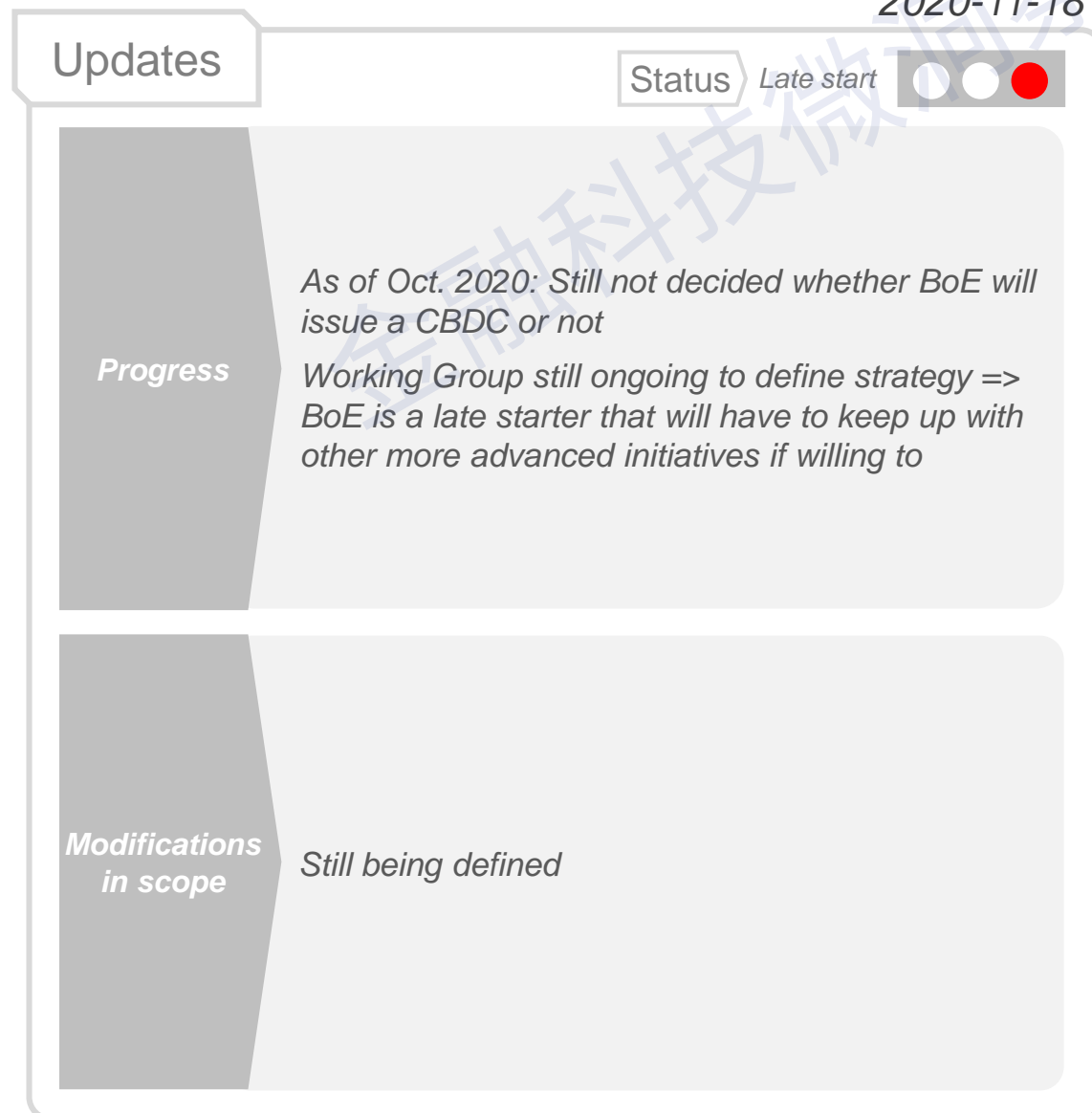
Sept. 2020: ECB Seems to confirm the focus on a Wholesale CBDC arguing that Blockchain technology may not be necessary for retail exchanges as the Euro Zone already has a mature, efficient & secured system

Nov. 2020: ECB announces the publication of report in January 2021 with potential shift to a Retail Digital EUR (2-4 years implementation timeline) - **TBC**



Bank of England [BoE] – CBDC project






2020-11-18



2- Other CBDC initiatives & StableCoins

Other initiatives to be monitored

2020-11-18

Central Bank of the Bahamas	<p><i>"Sand Dollar" retail CBDC to allow universal access to payments with below main features:</i></p> <ul style="list-style-type: none"> - 1:1 with BSD which is pegged to the USD - Offline Capabilities (allow users to make a pre-set dollar value of payments when communications access to the Sand Dollar Network are disrupted) - Does not pay interest & domestic-only use 	Progress	Launched on Oct. 20th becoming de facto the 1 st live retail CBDC in the world	
Bakong	<p><i>Bank of Cambodia CBDC project: "Digital Wallet"</i></p> <ul style="list-style-type: none"> - Tokenisation of Commercial Banks' deposits (Riel / USD) - Objectives: 1- Financial inclusion (Mobile-based, easy access) 2- Progressively decrease use of USD 3- Adopt a RTGS DLT-based system that did not exist yet - Partnerships: Soramitsu Blockchain firm, HyperLedger for tech platform - Each wallet linked to Commercial Banks. Users send money via QR Code or Phone Number 	Progress	Launched on Oct. 28th for a trial period. Will be issued by Partner institutions in Cambodia	
Bank of Korea	CBDC working groups launched quite late (Not yet decided on whether or not to issue a CBDC)	Progress	Getting started in March 2020 => End of 2021 Oct. 2020: announcement of partnership with Klaytn (Korean Fintech)	
BSP Philippines	Also late actor (Potentially no implementation before 2023 minimum: Prudent approach)	Progress	Working Group set in July (Slow progress) Probably no outcome before next year	
xxx	xx	Progress	xxx	

Central Bank of Uruguay – e-Peso

2020-11-17

Updates

Status

On-hold



Progress

⇒ As of today: although Uruguay was among the first movers, no official announcement has been made since the end of the pilot in 2018

Modifications in scope

⇒ Delay due to strategy shift ? The progress of CBDC working groups may have influenced Uruguay central bank to adopt DLT-approach

Strategy

Digital Currency Project to address currency stability issues in the region & improve financial inclusion

Scope

Individuals & Corporates
Online/Offline with possibility for P2P transactions

Stakeholders

Antel (State-Owned Telecom): Operator
Giori: e-Peso creation & management
InSwitch: MTS e-wallet for end-users
RedPagos: Transactions, fund transfers

Technical specificities

“Digital” Money more than Cryptocurrency as it is not based on Blockchain protocol, which was on purpose originally to enable easy offline access and then enhance inclusiveness

Planning

6-month pilot [Nov. 2017-Apr. 2018]:
• Launch of a PoC with Individuals & Corporates to test account opening & transfers

JP Morgan – JPM Coin

2020-11-18

Updates

Status

JPM Coin Live

Quorum applications thriving



Strategy

Enable Real-Time settlements of irrevocable transactions using a Digital Asset backed by USD

Scope

Wholesale CBDC for Corporate Clients of the bank (1st step)

Stakeholders

JP Morgan (Owner)
Consensys (Tech & Business Partner)

Technical specifics*

Architecture: Permissioned Blockchain built on Quorum (now owned by Consensys) using Go-Ethereum Protocol

Planning

Project officially launched in Feb. 2019
⇒ 1st phase: PoC using JPM Coin for securities, commodities & bond exchanges with some large corporate clients in Europe, US & Japan

Progress

JPM Coin Progress:

- ⇒ Discreet Live with 1st Big Corporate clients [Oct. 2020]
- ⇒ Creation of Onyx BU dedicated to Blockchain projects
- ⇒ Next steps: No plan to widen to retail clients so far, but project to digitize paper checks using Blockchain

Quorum developments:

- ⇒ INN (Interbank Information Network - with 344 financial participating institutions) renamed Liink (Oct. 2020) and ready to be used as part of payment validation protocol
- ⇒ Aug. 2020: Consensys officially completes acquisition of Quorum with JP Morgan taking an important stake in Consensys [Cross-strategy announcement expected in Q4 2020]: JPM Coin still based on Quorum

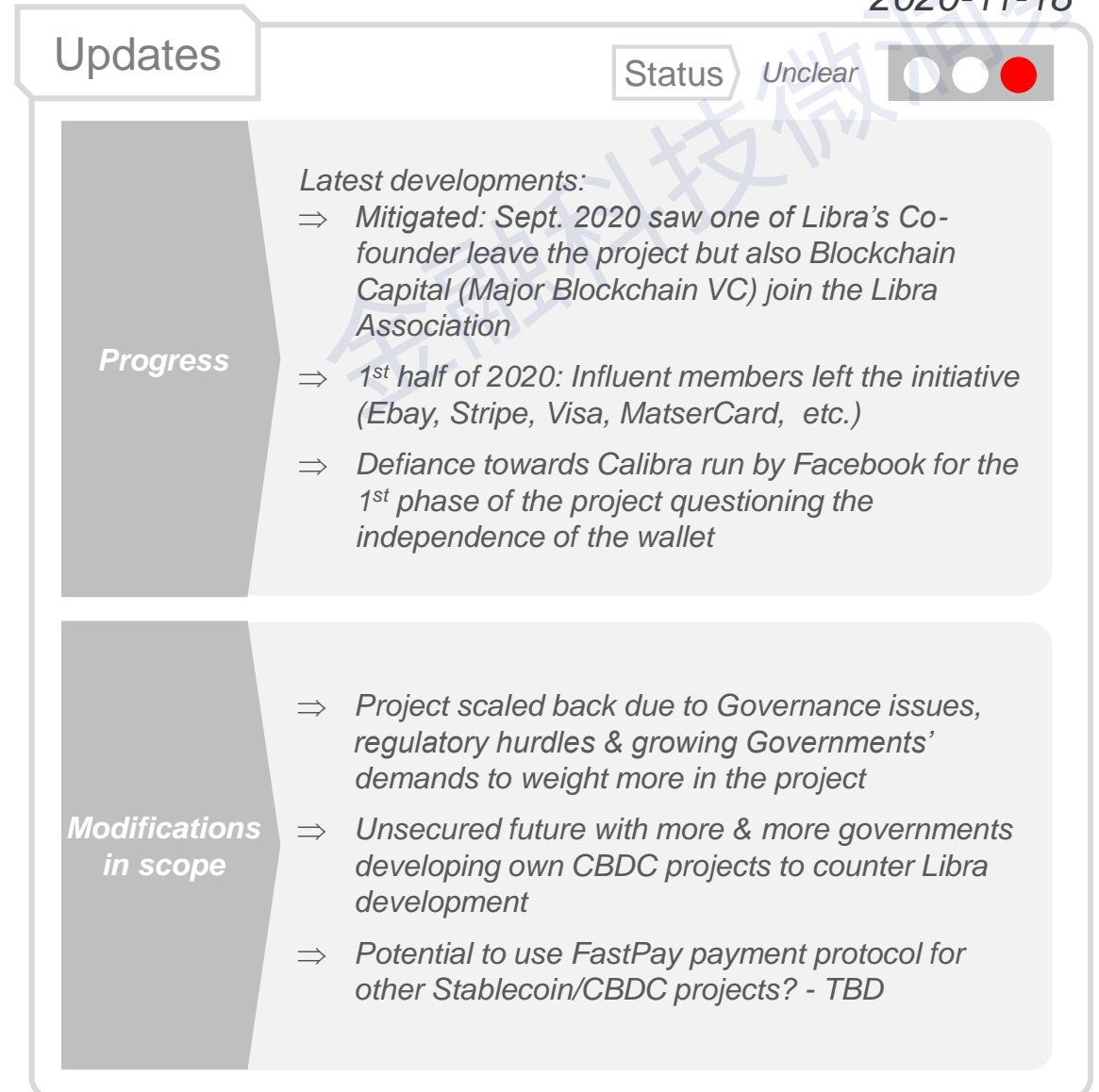
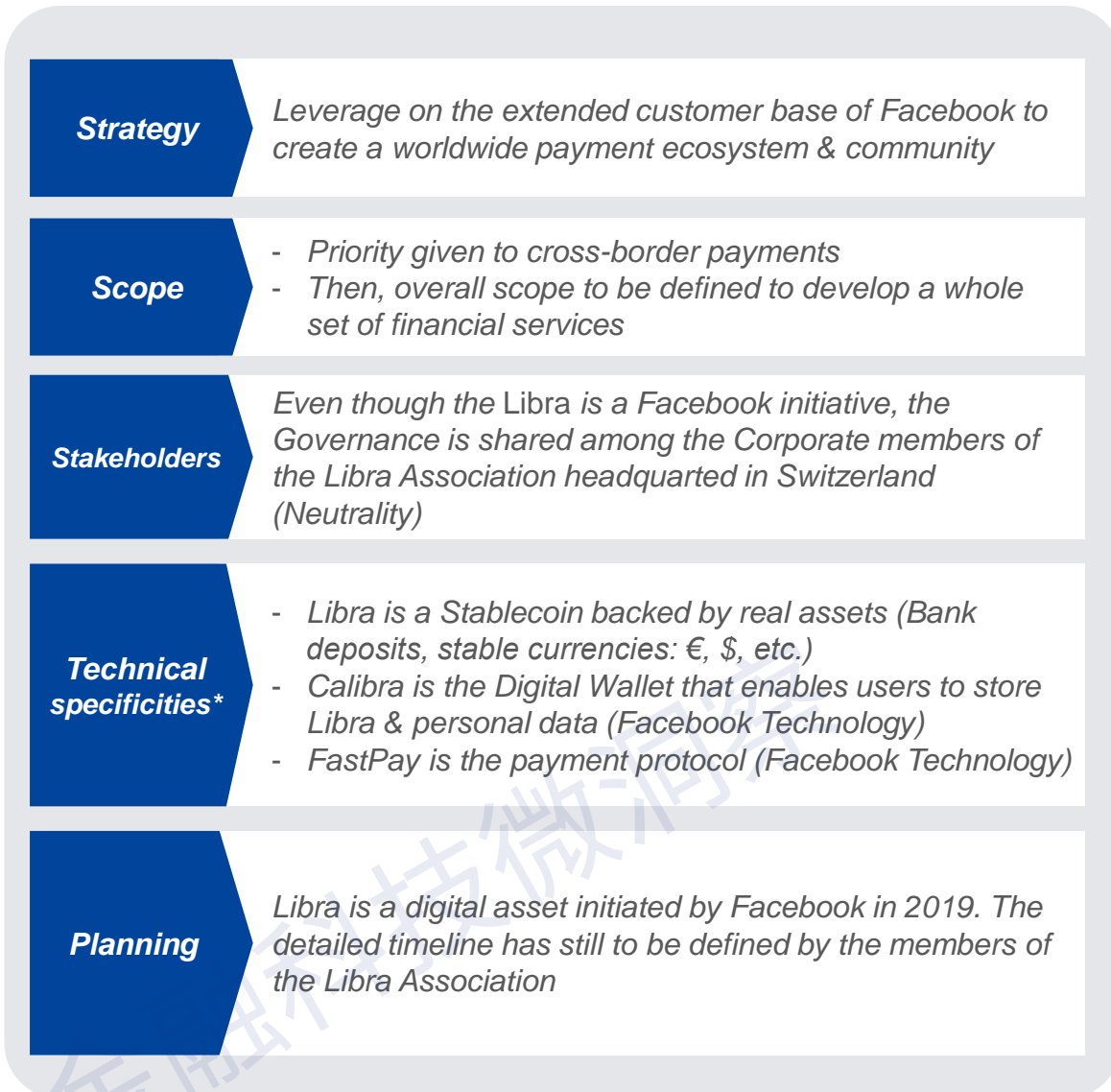
Modifications in scope

Leverage on “Consensys Quorum” platform to develop blockchain-based financial services:

- ⇒ Offer technical capabilities to various financial institutions (banks & even beyond FIs)
- ⇒ Furthermore, Consensys Quorum is already involved in CBDC initiatives: Ubin (SGP), Inthanon-LionRock (HKG/Thailand), Khokha (South Africa)

Facebook – LIBRA*

2020-11-18



3- Appendix

1. Key takeaways from BIS first CBDC Report – Oct. 2020
2. Inthanon-LionRock Wholesale CBDC – Project Report Summary
3. Libra high-level Model
4. JPM Coin description

1- Key takeaways from BIS 1st CBDC Report – Oct. 2020 (1/2)

Objective

Define Key Principles, Main Risks & core features of a CBDC

Scope

Retail CBDC (Domestic & Cross-Border)
Methodology: Working Groups

Stakeholders

- Central Banks: Bank of Canada / ECB / BoJ / Sveriges Riksbank / Swiss National Bank / BoE / Board of Governors of FEDs
- Bank of International Settlements (BIS)

Summary

None of the above Central Banks have decided whether or not to issue a CBDC, but they have already defined 3 core principles for a CBDC:

- 1- Should not endanger financial stability
- 2- Co-exist with other forms of money
- 3- Promote innovation & efficiency

Planning

- 1st report of a series of regular reports and views
- Part of G20 working group preparation

Identified motivations & Risks for payment functionalities*

Continuity

Continuous access (Anywhere / Anytime)

Resilience

- Easy to distribute in remote or disaster areas
- Offline capability should be a basic feature
- Cybersecurity Risk (Counterfeiting a CBDC will spread faster & impact higher volume than cash)

Payment Diversity

Interoperability with other forms of money

Financial Inclusion

Accessible for all (offline, illiterate, etc.)

Cross-Border payments

- Interoperability of CBDCs is a priority
- The report points some models (from use of national CBDC to full system interoperability)
- The priority may be to reinforce international standards (ISO-20022) for CBDC context

Data Privacy

Full anonymity is not an option for obvious AML/CFT reasons, however data access must be controlled strictly (Who, what circumstances, etc.)

Fiscal transfers

CBDC linked to Digital Identity to facilitate Gvt support to Business (Covid, disasters, etc.)

*Analysis also of Monetary Policies, sovereignty and Financial Stability problematics but reflexion not yet finalized

1- Key takeaways from BIS first CBDC Report – Oct. 2020 (2/2)

Instrument Features	Convertible	To maintain singleness of the currency a CBDC should exchange at par with cash and private money.
	Convenient	CBDC payments should be as easy as using cash, tapping with a card or scanning a mobile phone to encourage adoption and accessibility.
	Accepted and available	A CBDC should be usable in many of the same types of transactions as cash, including point of sale and person-to-person. This will include some ability to make offline transactions (possibly for limited periods and up to predetermined thresholds).
	Low Cost	CBDC payments should be at very low or no cost to end users, who should also face minimal requirements for technological investment.
System Features	Secure	Both the infrastructure and participants of a CBDC system should be extremely resistant to cyber attacks and other threats. This should also include ensuring effective protection from counterfeiting.
	Instant	Instant or near-instant final settlement should be available to end users of the system.
	Resilient	A CBDC system should be extremely resilient to operational failure and disruptions, natural disasters, electrical outages and other issues. There should be some ability for end users to make offline payments if network connections are unavailable.
	Available	End users of the system should be able to make payments 24/7/365.
	Throughput	The system should be able to process a very high number of transactions.
	Scalable	To accommodate the potential for large future volumes, a CBDC system should be able to expand.
	Interoperable	The system needs to offer sufficient interaction mechanisms with private sector digital payment systems and arrangements to allow easy flow of funds between systems.
	Flexible & adaptable	A CBDC system should be flexible and adaptable to changing conditions and policy imperatives.
Institutional features	Robust Legal Framework	A central bank should have clear authority underpinning its issuance of a CBDC.
	Standards	A CBDC system (infrastructure and participating entities) will need to conform to the appropriate regulatory standards (eg entities offering transfer, storage or custody of CBDC should be held to equivalent regulatory and prudential standards as firms offering similar services for traditional digital money)

2- Inthanon-LionRock Wholesale CBDC – Phase 2 (1/3)

- **HKMA** (Hong Kong Monetary Authority) & **BOT** (Bank of Thailand) have worked together to leverage on DLT to increase efficiency of cross-border transactions between both jurisdictions

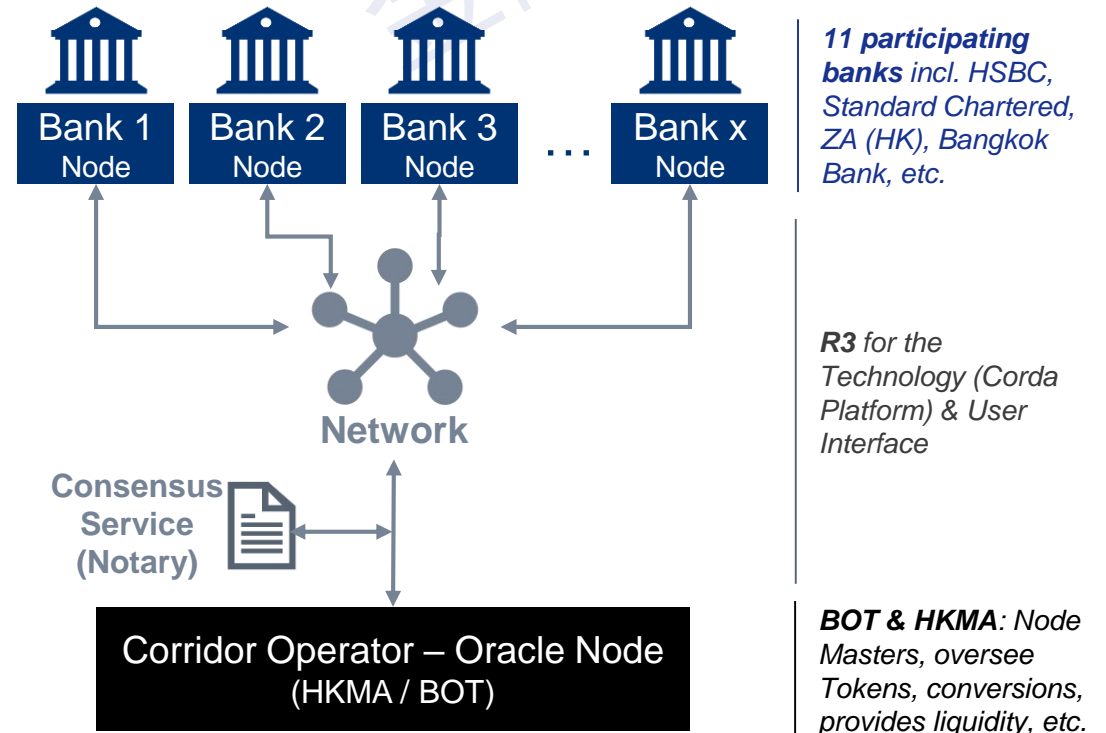
Objectives

- 1- Implement Real-Time Cross-Border Settlements
- 2- Simplify Liquidity Management
- 3- Provide Real-Time Compliance reports to improve traceability for the regulator's oversight

Methodolog

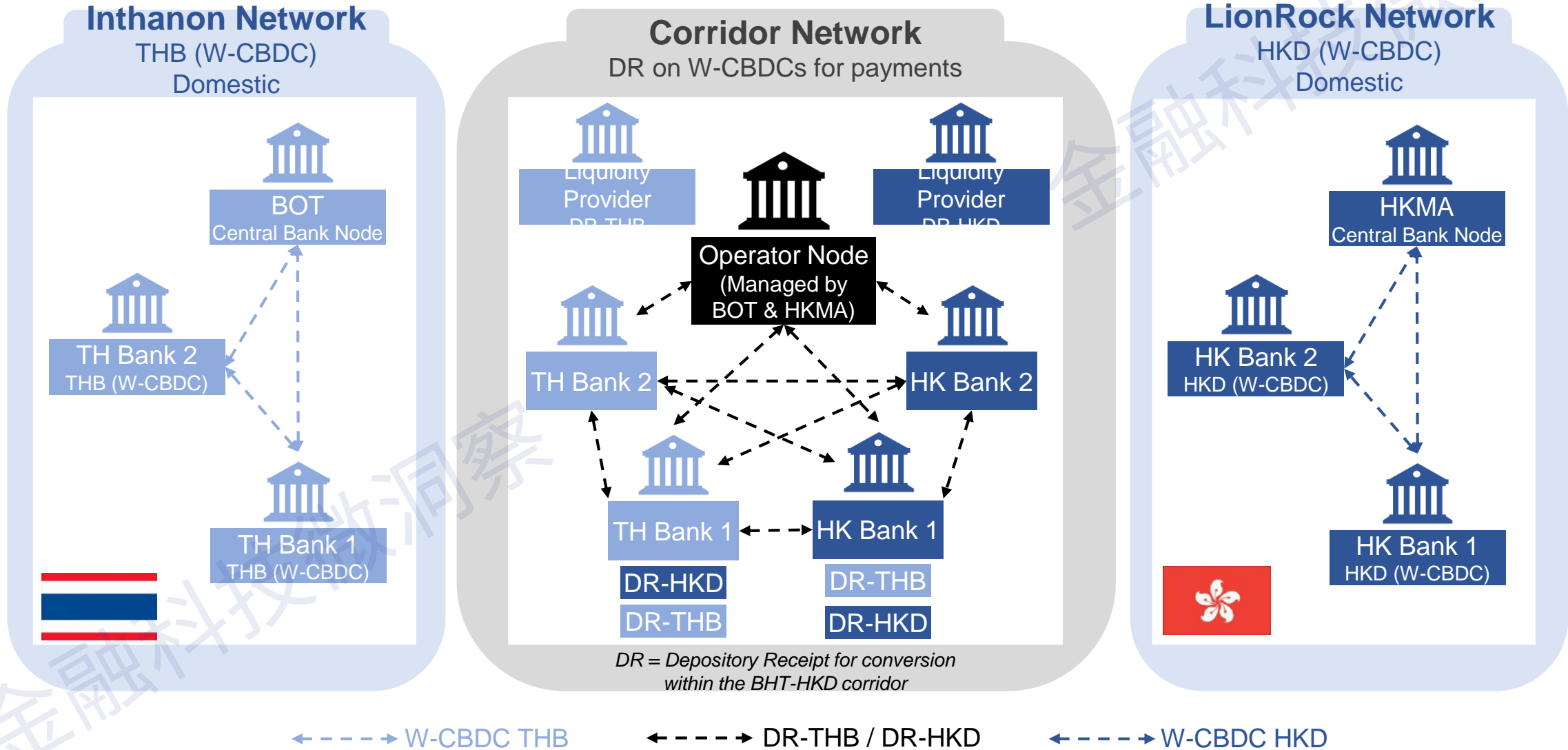
- **Corridor network Model:** Dedicated Cross-Border transactions' corridor separated from domestic settlement system
- Creation of a **W-CBDC** [Wholesale-CBDC]

Model implemented for the PoC*



2- Inthanon-LionRock Wholesale CBDC – Phase 2 (2/3)

■ *Operating Model of the Corridor Network**:



2- Inthanon-LionRock Wholesale CBDC – Phase 2 (3/3)

▪ **Key principles of the Inthanon-LionRock Corridor Network*:**

DR Conversion

- On-demand process with banks requesting a number of tokens to be converted from W-CBDC to DR in the corridor network by the Central Bank (Control the amount of DR)

Cross-Border Fund Transfer

- As payments in both DR-LCY (Local Currency) and DR-FCY (Foreign Currency) are allowed in the corridor network, banks are able to transfer DR tokens to other banks in 3 possible scenarios: 1- Send DR-LCY funds to foreign bank, 2- Send DR-FCY to another local Bank, 3- Send DR-FCY funds to a foreign bank

Fund Transfer with embedded FX Execution

- FX conversions are performed on the platform, then FX transaction & fund transfer are executed simultaneously on the Corridor once the rate is known

Liquidity Management

- Netting solution: Queueing mechanism & transfer between participants in case of gridlock in the corridor network => when a bank doesn't have sufficient DR-xxx for the transaction
- Just-in-Time liquidity: To resolve a deadlock (no netting solution)

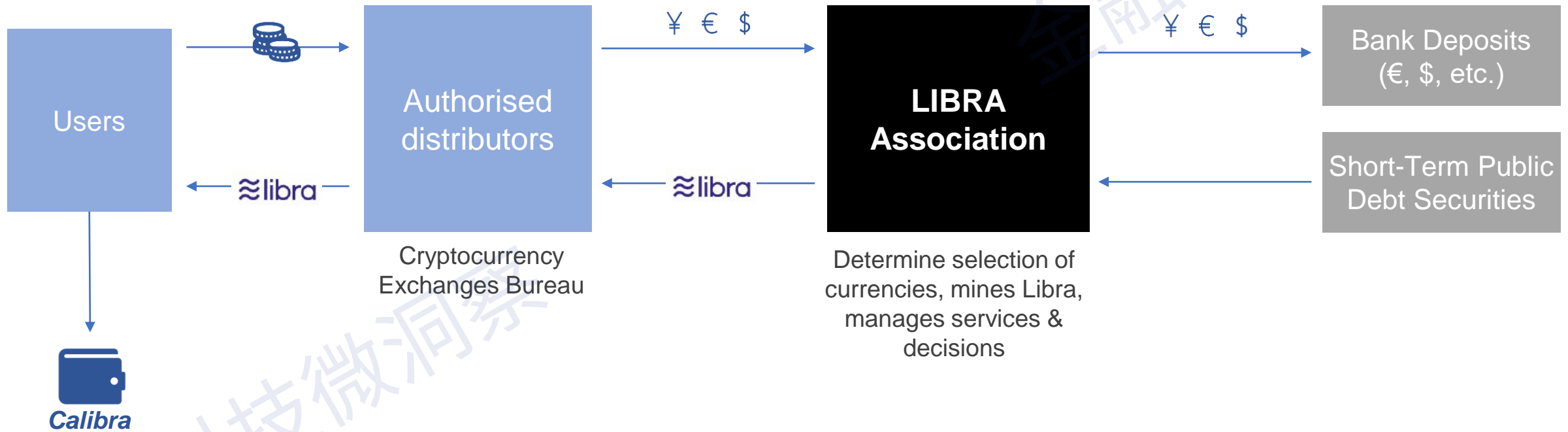
Regulatory Compliance

- Real-Time monitoring: View on the whole process & reporting at any time (Of local & Corridor RTGS) for all kinds of transactions
- Compliance with Local Regulation (Tracking of off-corridor arrangements, daily limits, etc.)

3- Facebook – Libra Model



- *High-Level Model of Facebook Libra*

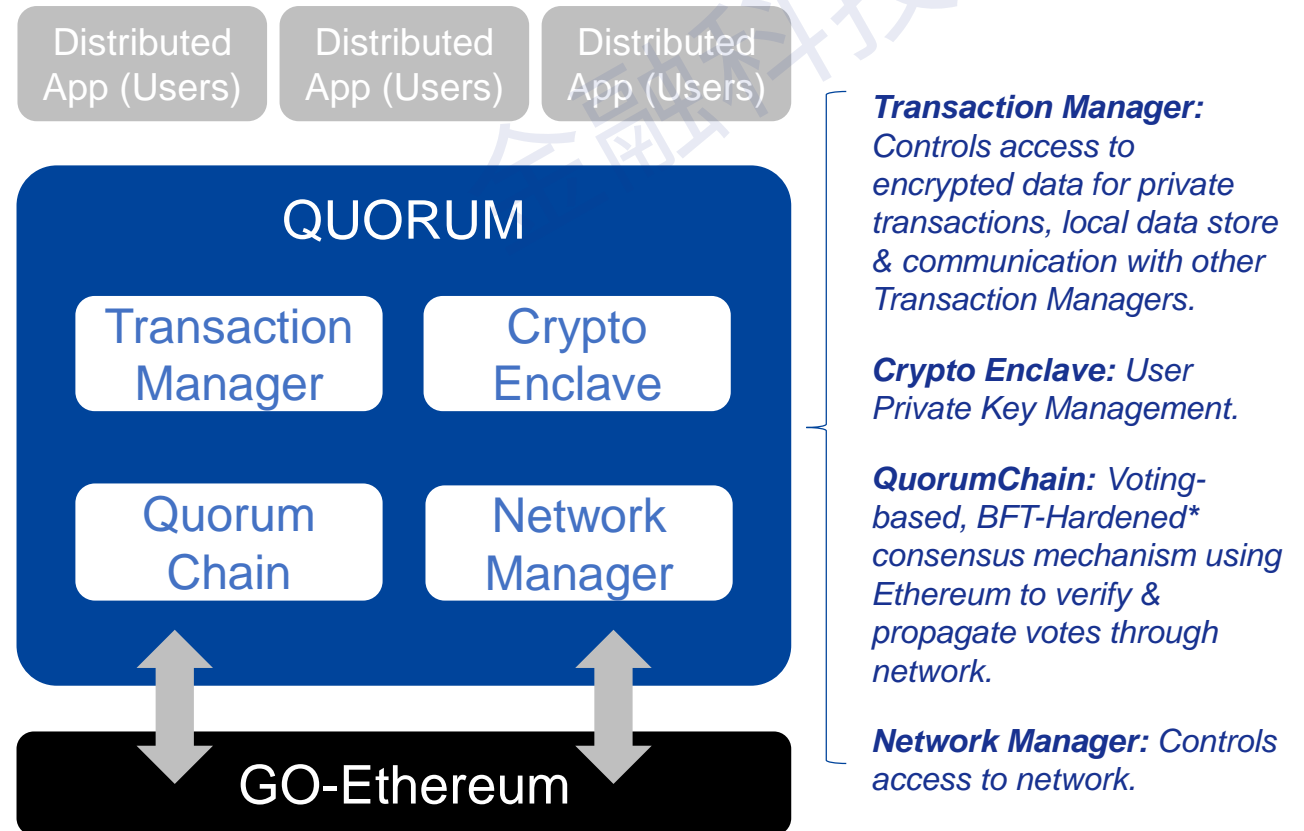


4- JPM Coin basic concept (1/5)

Foreword on JPM Coin

- **Stablecoin** which value is backed by USD (1 JPM = 1 USD)
- **Objective:** Enable Real-Time settlements of irrevocable transactions (Speed & security)
- **Architecture:** Permissioned Blockchain built on Quorum (Internal tool) using Ethereum Protocol
- **Target:** Large corporates (1st phase)
- **Launch:** 2020 (Still on development phase as of April 2020)

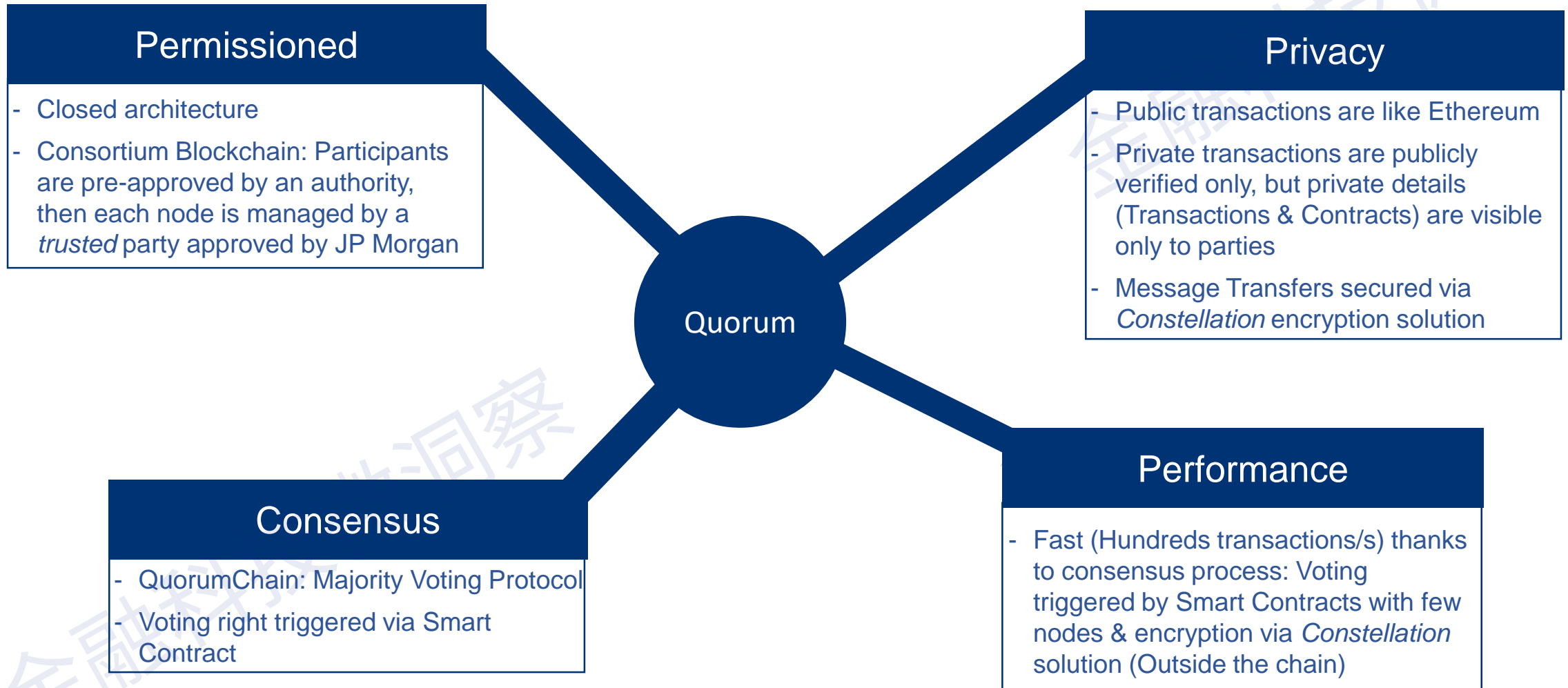
Quorum Architecture



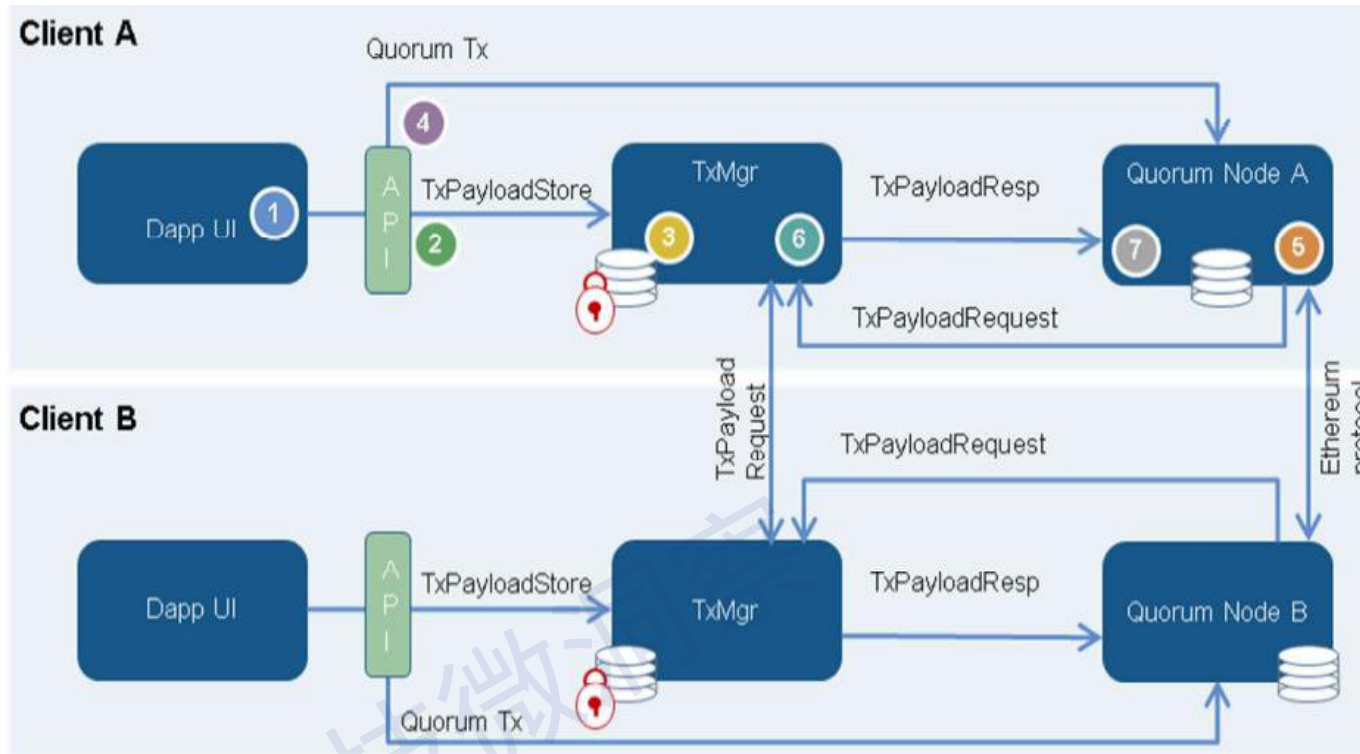
*BFT (Byzantine Fault Tolerant) consensus mechanism highlights traitor nodes. The traitor (which is a flaky or malicious node) sends conflicting messages, leading to an incorrect result of the calculation that the distributed system is trying to perform

4- Go-Ethereum Protocol (2/5)

- ***Quorum is built on Ethereum Protocol with four main distinctions:***

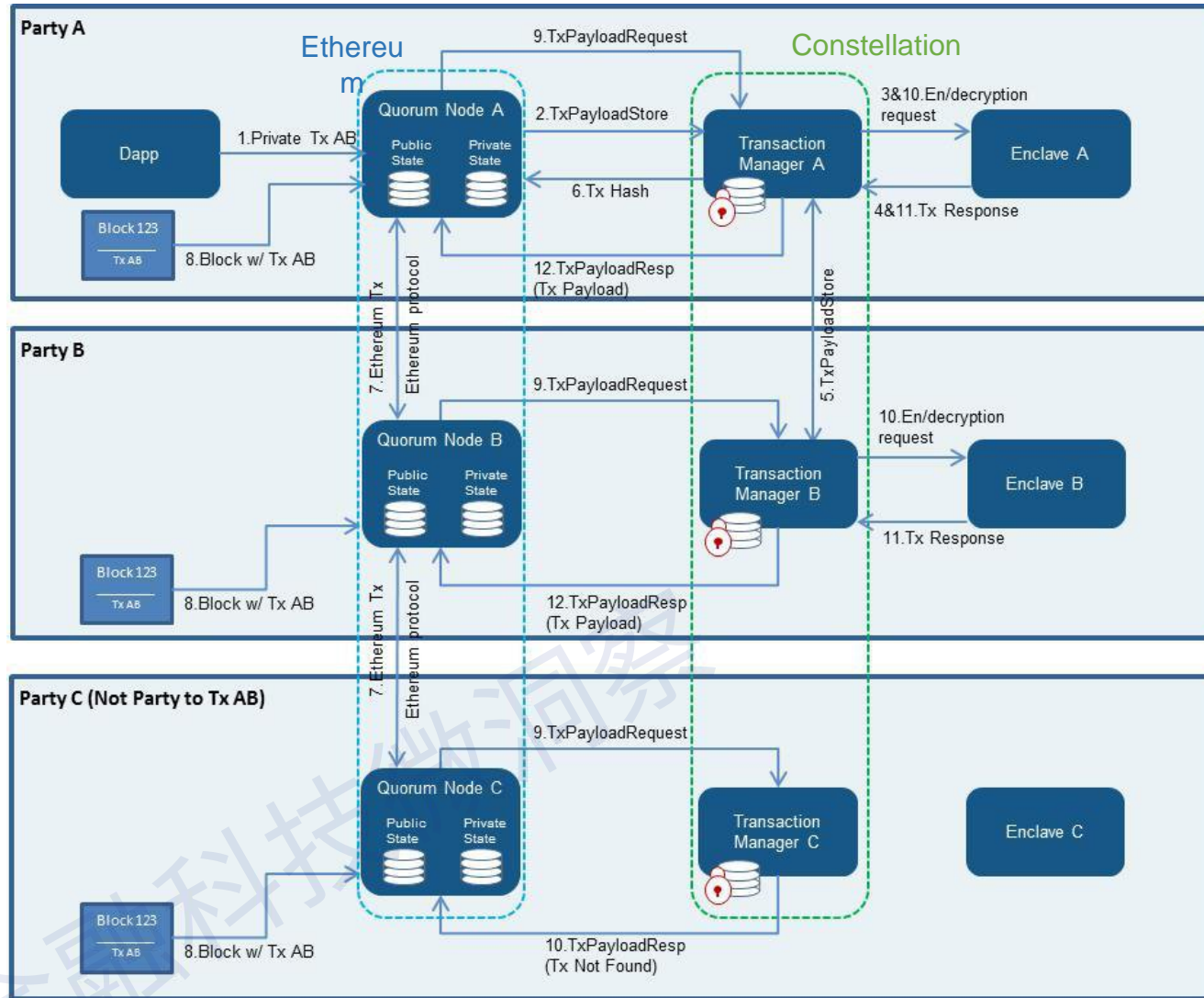


4- Smart Contract illustration* (3/5)



- 1 User sends transaction to Quorum Node specifying recipient & transaction payload
- 2 Preparation of transaction Payload Record by generating a symmetric key to encrypt the payload, then links it to the Transactions' parties Public Keys, and finally sends it to the Transaction Manager for storage
- 3 Transaction Manager validates & stores the Transaction payload message
- 4 Transaction sent to Quorum Node with only the hash of the encrypted payload (Generated Step 2)
- 5 Quorum Node receives a new block for validation, then requests the payload data from Transaction Manager
- 6 Transaction Manager validates signature, looks at the transaction hash, checks if the requester is a party to the Tx, then returns encrypted payload & the Symmetric Key
- 7 Quorum Node decrypts the Symmetric Key, the transaction payload, then sends it for execution of the contract

4- Quorum's Transaction Process* (4/5)



The nodes of the **parties A & B** (Involved in the transaction) get all the necessary information to complete the transaction

The **Party C** is not part of the transaction, and then is only part of the voting-based consensus

4- JPM Coin – Stablecoin analysis (5/5)

- ***JPM Coin offers great benefits for domestic & cross-border payments, however as it is still at a project phase, financial institutions will have to closely follow its operational implementation***

Pros

- + Meet most of Banks' requirements for Privacy, security, audit & controls (Financial institutions are still less willing to join public blockchains)
- + Fast protocol
- + Stablecoin backed by USD and a global bank compliant with global regulations
- + Easy plug-in to Quorum Blockchain
- + Evolutive platform based on Ethereum

Cons

- Efficiency relying strongly on the closed loop protocols potentially difficult to maintain with a wider group of users
 - Need to diversify assets backing the JPM Coin (Not a blocking point as the platform is asset-agnostic, USD was the preferred choice for the 1st phase of the project)
 - Questions about the need for a Blockchain technology to ensure Real-Time Settlements
- Currently targeting only big corporates

THANKS



WeInsights