



Substrate 入门

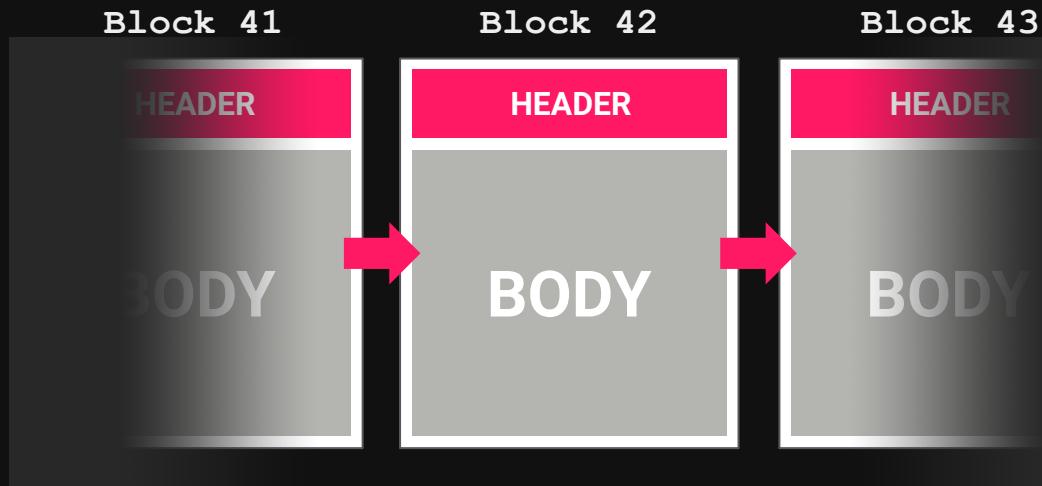
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区块链包含哪些组件

区块链节点需要:

- 加密算法
- 数据库
- 点对点网络
- 共识算法
- 交易处理
- 链上治理
- 状态转换函数(Runtime)
- ...

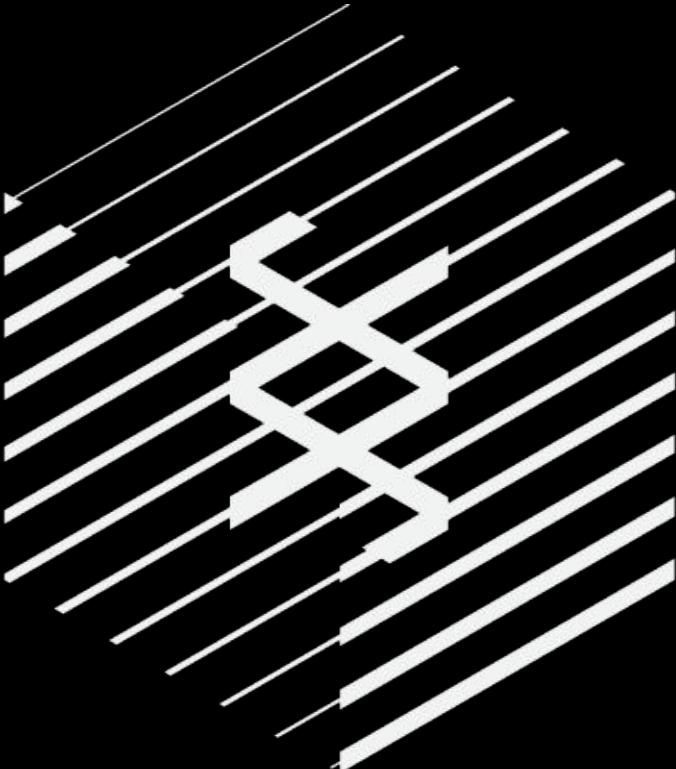


Substrate is a FRAMEWORK for
BUILDING BLOCKCHAINS

15分钟发链——区块链世界里的第一个轮子



Web3 Summit 2018

- 
- 可扩展性
 - 模块化
 - 开源
 - 自主可控

What is Substrate?

Substrate提供了构造区块链的核心组件

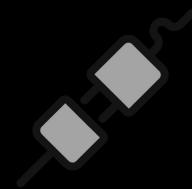
- 数据库层
- 网络层
- 交易队列
- 共识算法层
- 各种链上功能



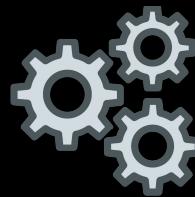
每一个都是可插拔、高度模块化的

借助 Substrate, 你可以同时拥有 **最大的掌控力和自由度** 构建出完美符合应用场景的区块链

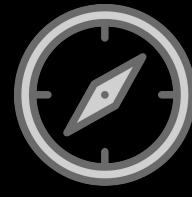
得益于高度可扩展性和模块化的特点, Substrate允许开发者完全自由地搭建定制化的区块链。从可自定义的共识和运行时逻辑, 到移动设备和IoT设备的集成支持, Substrate提供了更多的企业级功能, 来保证区块链的可靠性和高效率。



热插拔的共识



可随时升级的状态转换方法



优先为移动设备设计的轻节点



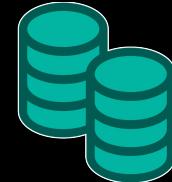
通过Polkadot进行的链间交互



使用Rust语言
保证了可靠性和速度



完全通用的、模块化的架构



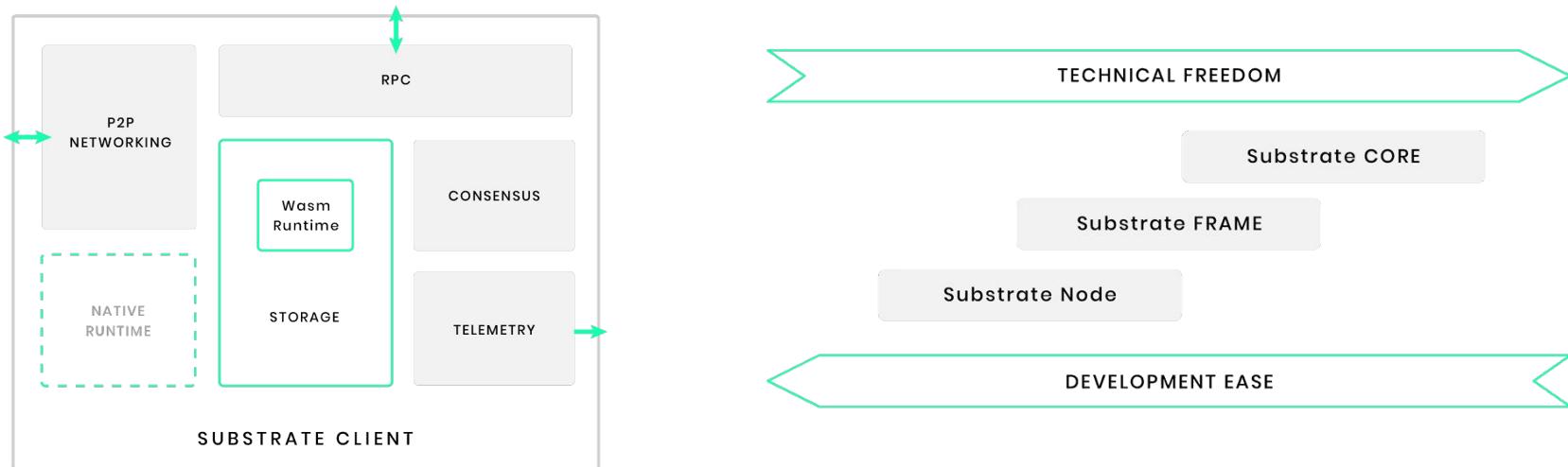
无缝链下集成



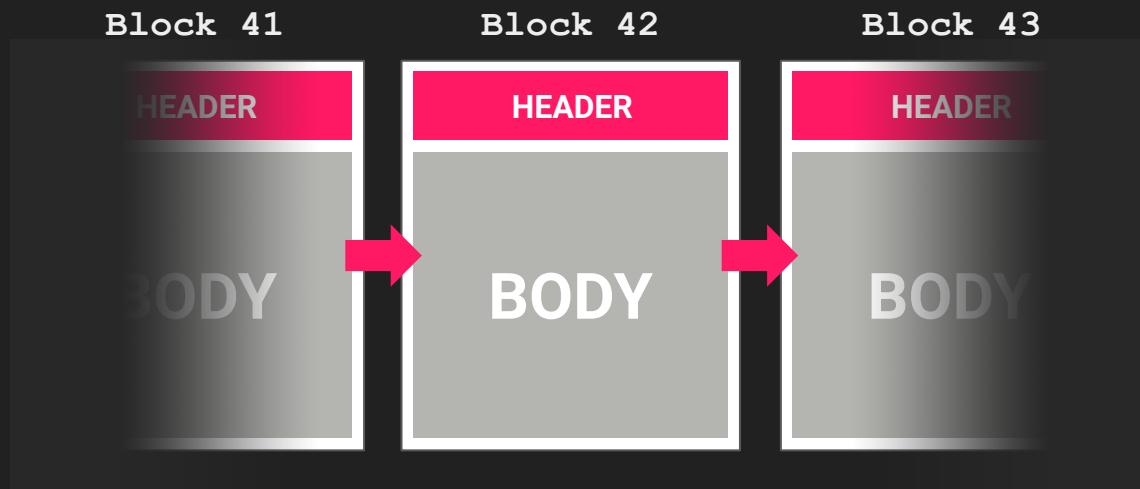
链上治理框架

Substrate 分层抽象

- Node: 可执行文件, chain spec配置
- Frame: runtime
- Core: 存储, 共识, 签名, 出块逻辑, 交易池...



什么是状态转换函数



The Substrate Runtime

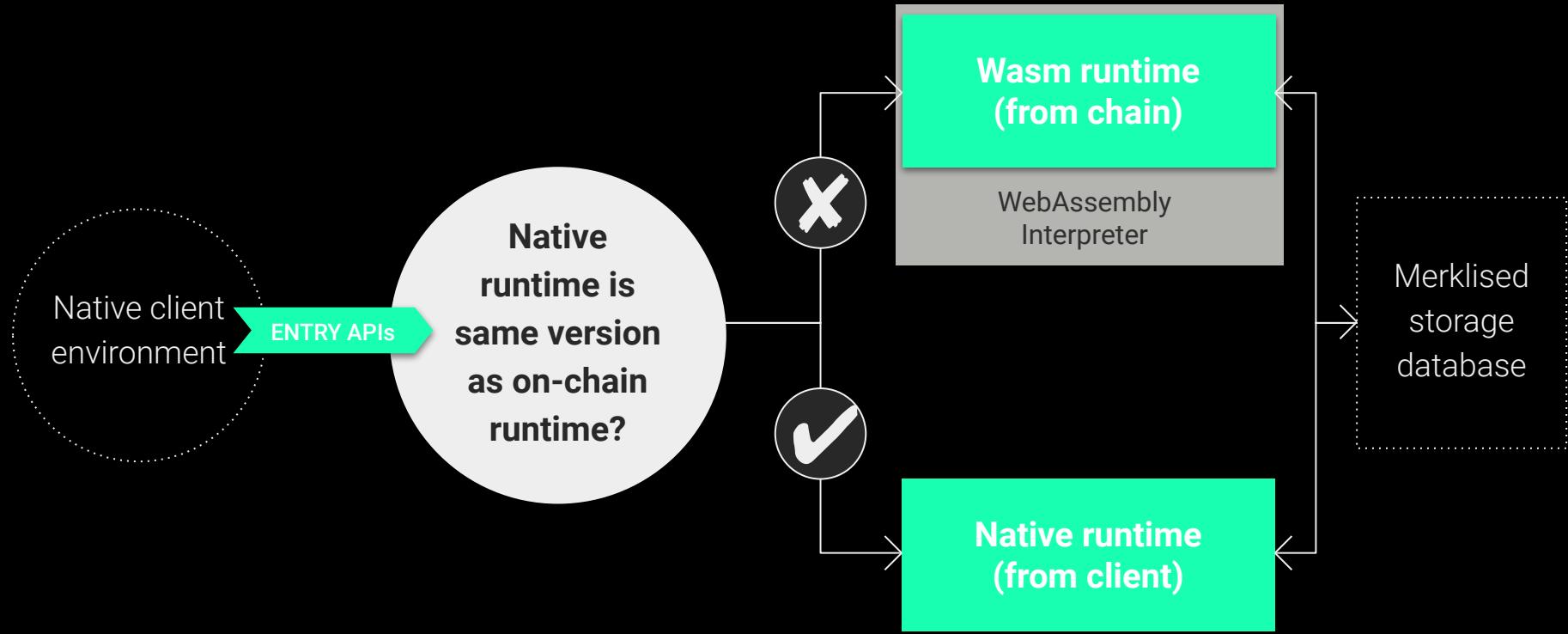
Runtime是区块链的链上运行逻辑的集合。也就是状态转换函数。



这就是Runtime的组件

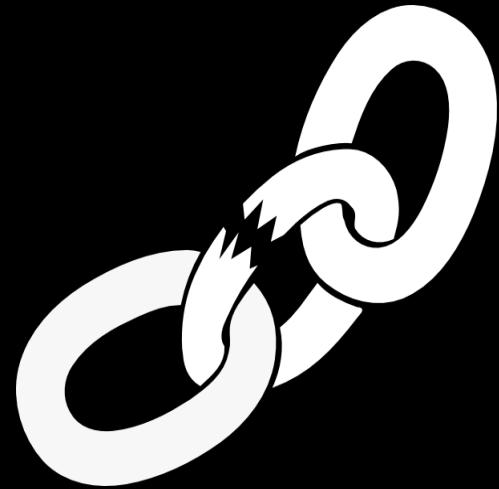
Substrate Runtime Module Library (SRML)			
资产	共识	余额	collective
合约	治理	选举	grandpa
账户	块确认	indices	会员
offences	session	抵押	超级权限
system	时间戳	国库	and more... parity

一键链上升级——永不分叉



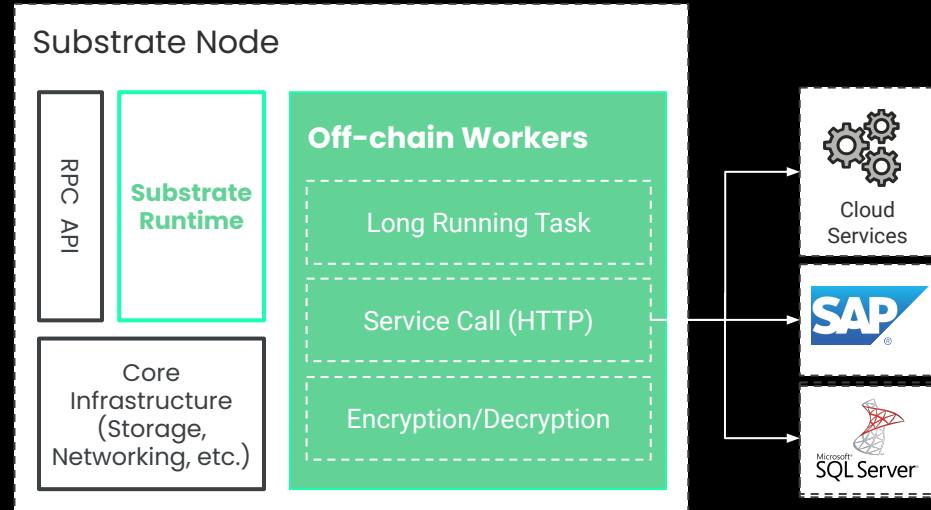
为什么需要链上升级

- 修复重要的安全漏洞
- 改变核心规则
- 添加新功能
- 修复链上状态
- 硬分叉需要的协作成本极高，且易升级失败
- 没有明确的治理策略和升级时间点



Substrate与企业系统无缝集成 使区块链成为解决方案的一部分

- 使用内置的链下工作机，提供与 **SAP, Oracle, SQL服务器** 以及更多其他企业系统的无缝集成支持
- 支持集成 **Trusted Execution Environments** (TEEs)。
- 内置与区块链预言机的双向集成
- 使用JSON-RPC代理的中间件集成



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Substrate

永远

开源、免费、自主可控

Substrate 是

公链技术、生态
和联盟链
之间的桥梁

通过**Substrate**
分享最先进的区块链技术成果

Substrate attracts and retains Builders

SUBSTRATE-BASED BLOCKCHAINS TODAY

105+ currently in development

60+ test networks running

7 main networks running

40+ planning to deploy on Polkadot

PLATFORM INFRASTRUCTURE, TOOLING & INTEGRATIONS

58+ products in development

18+ products launched

SUBSTRATE BUILDERS ARE UBIQUITOUS

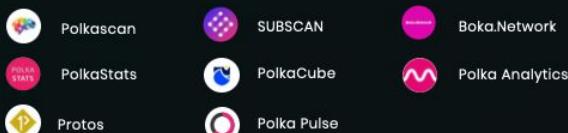


Overview of the Substrate Ecosystem

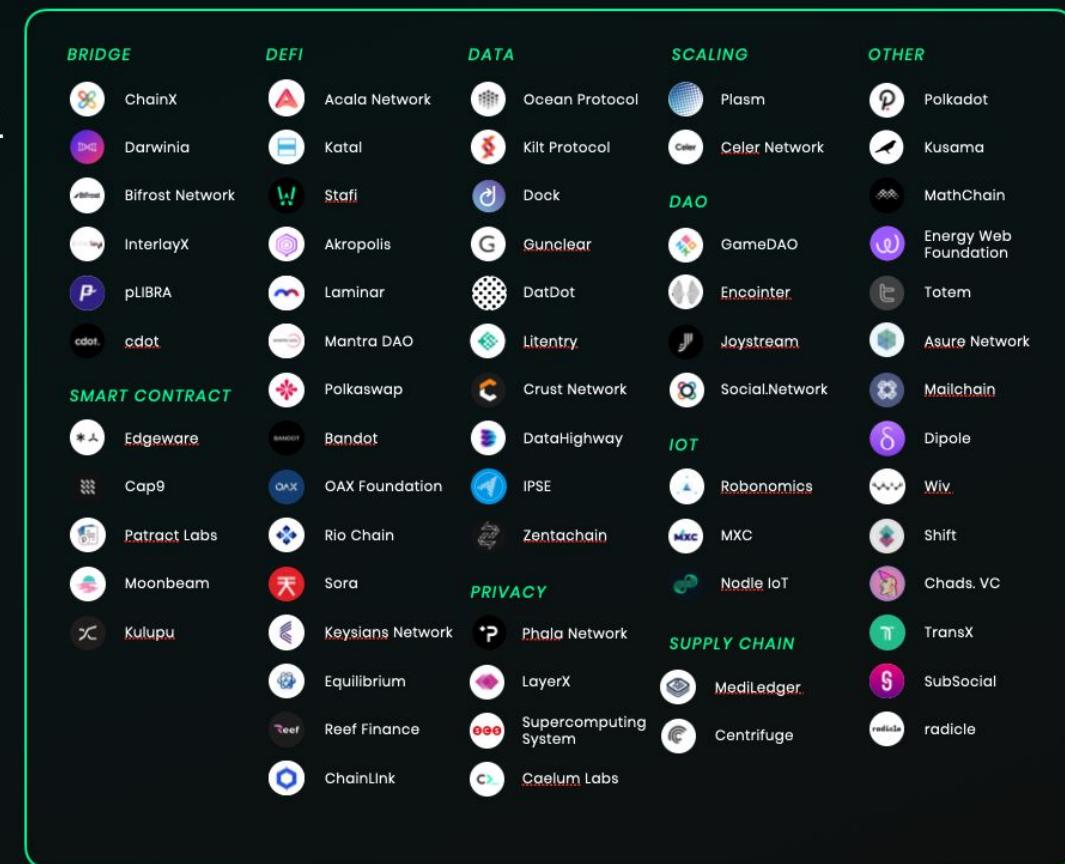
WALLETS

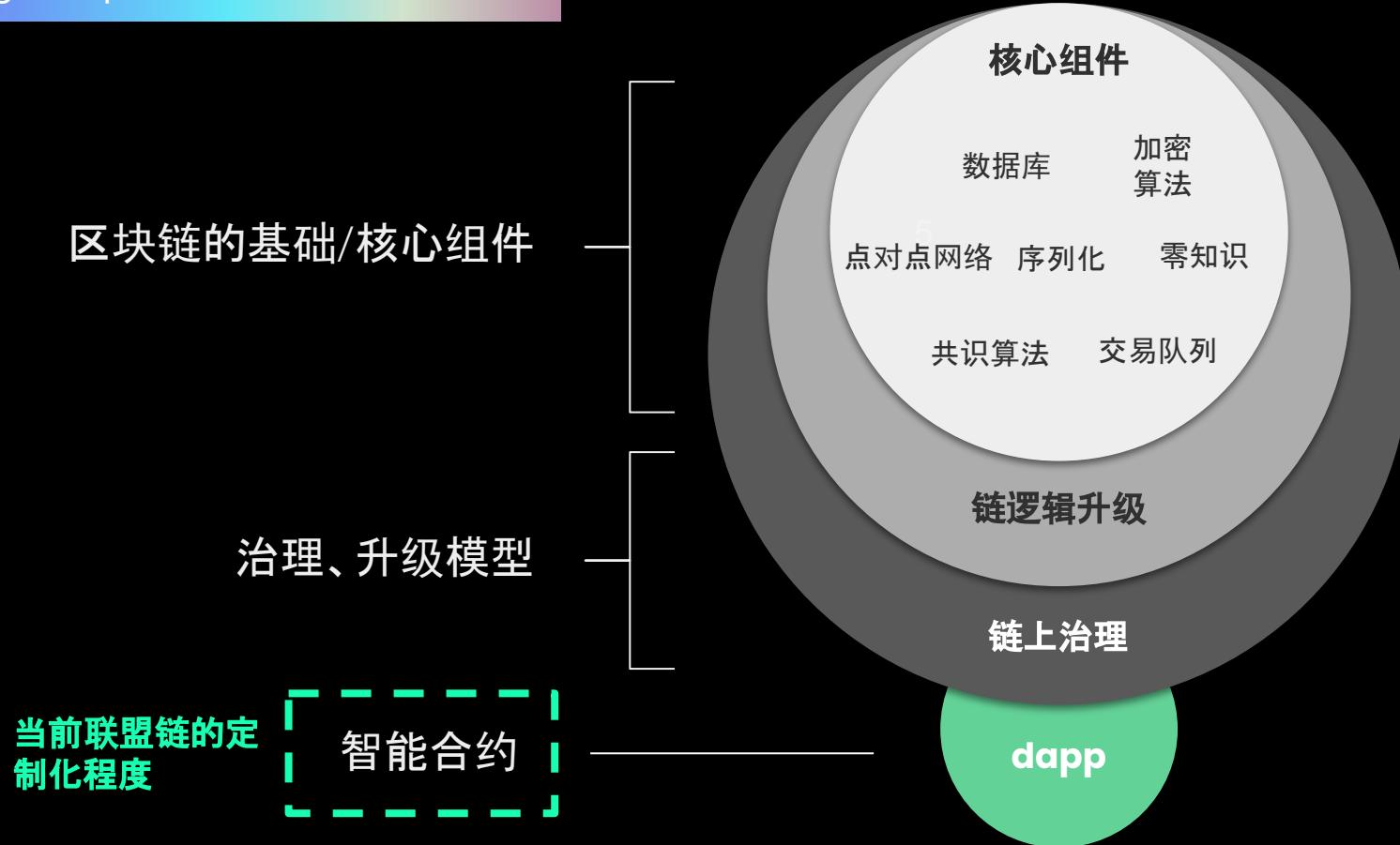


EXPLORERS

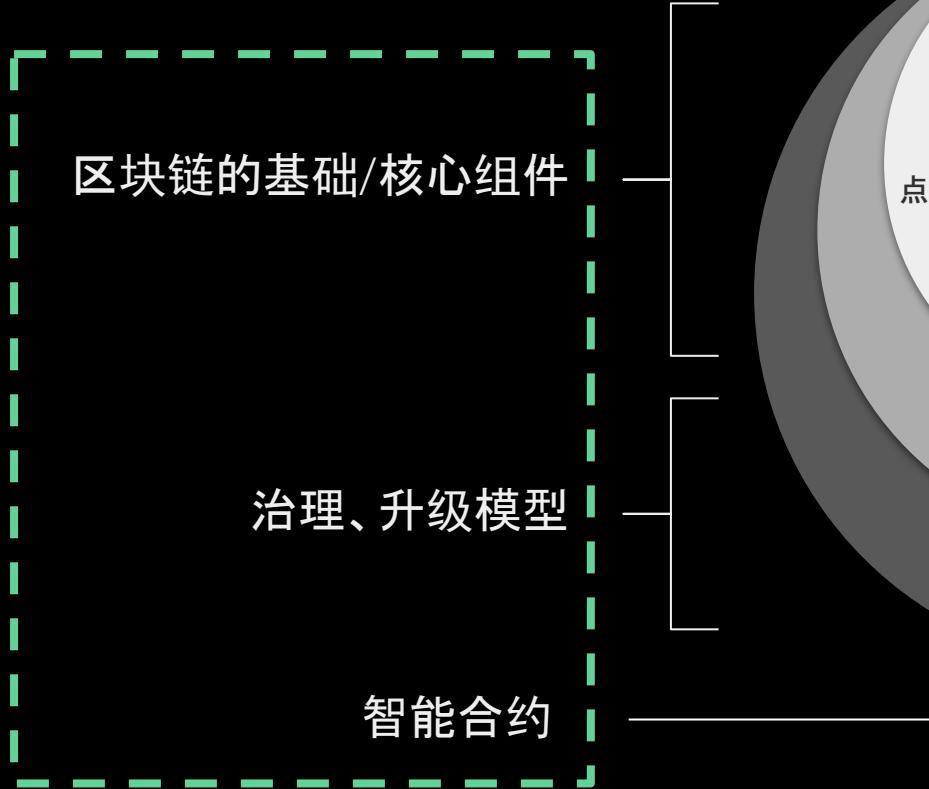


SUBSTRATE-BASED BLOCKCHAINS

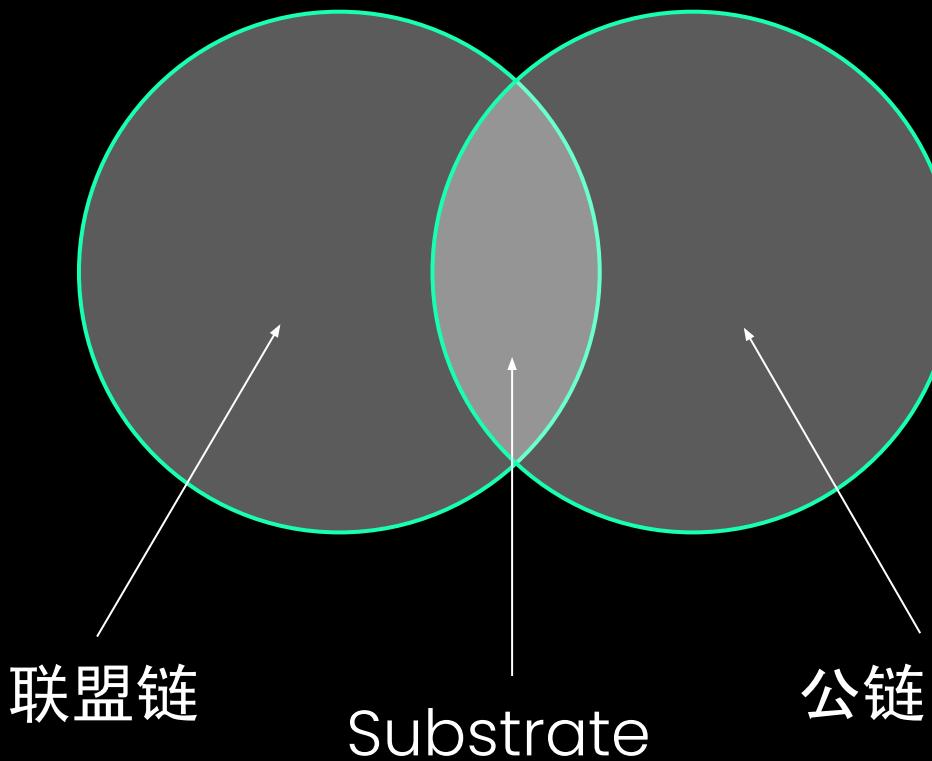




Substrate的定制化
自由度

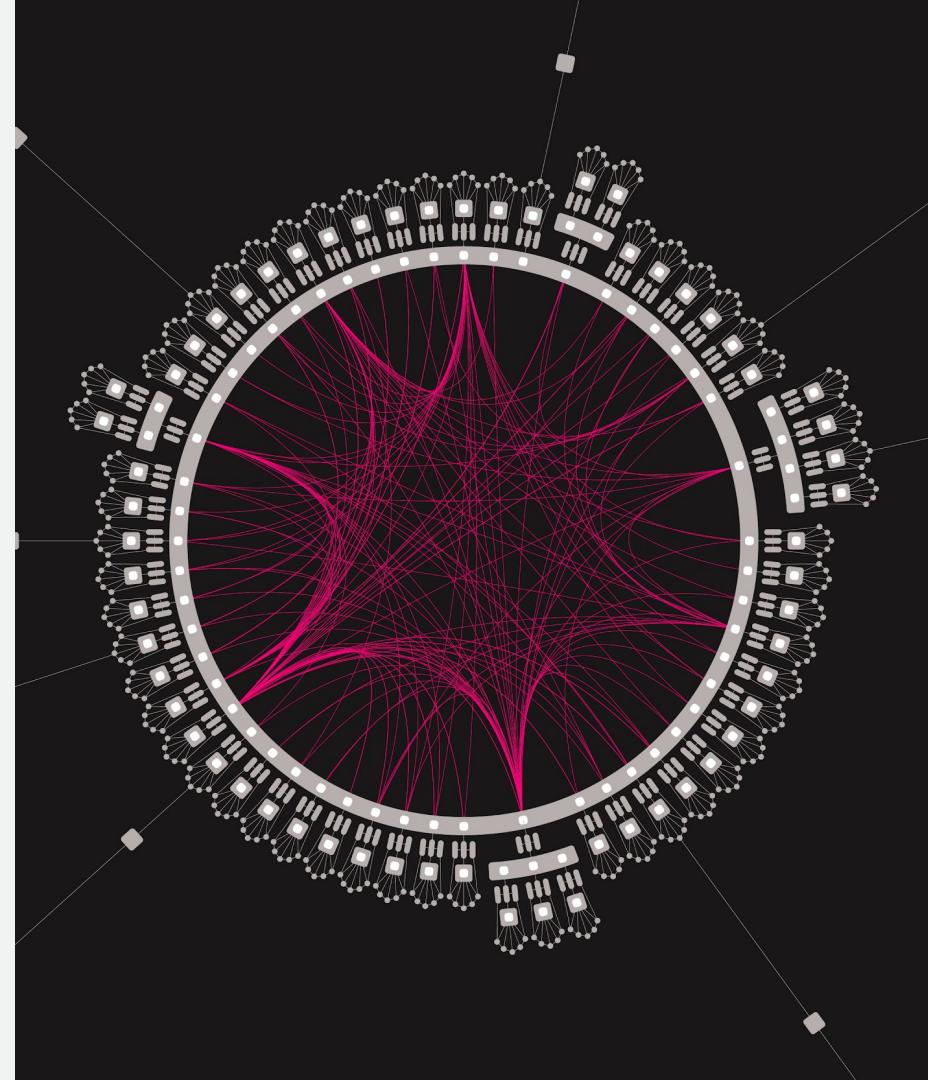


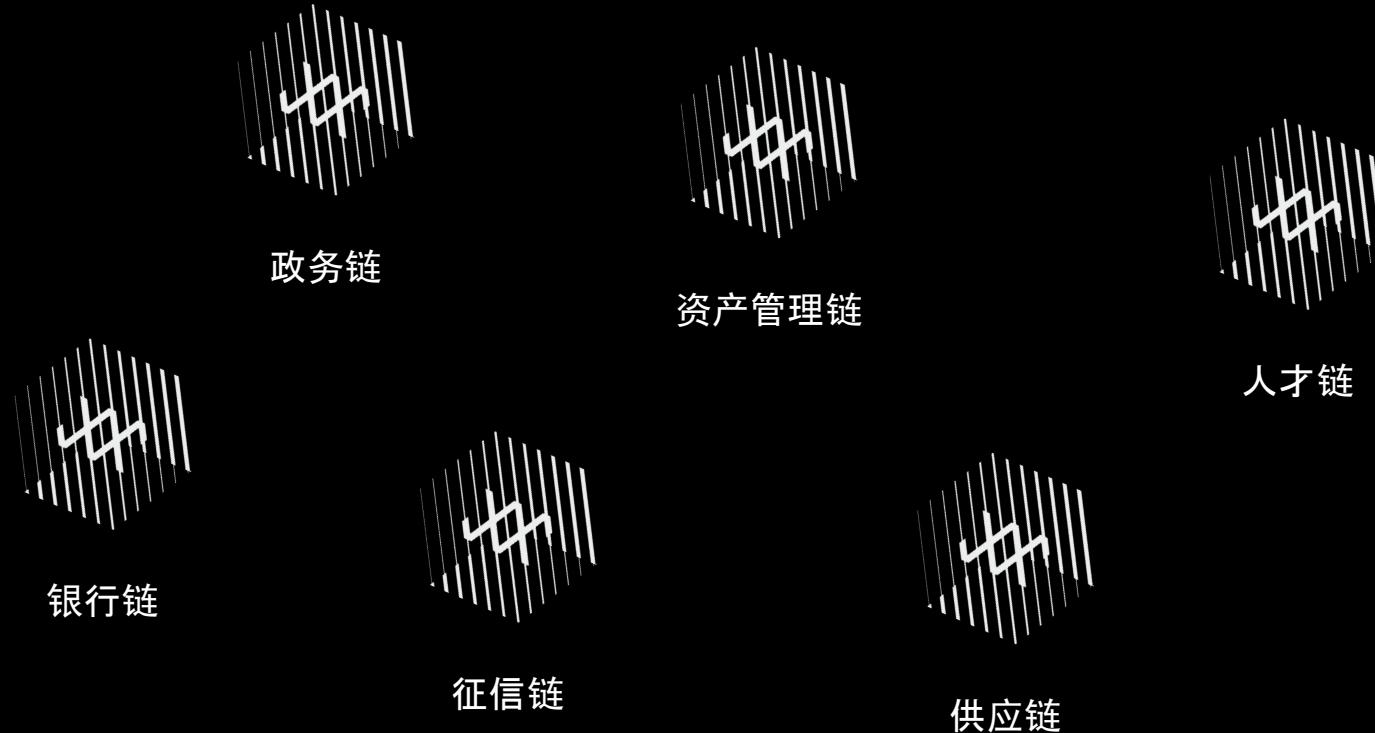
联盟链是趋势，公链是未来



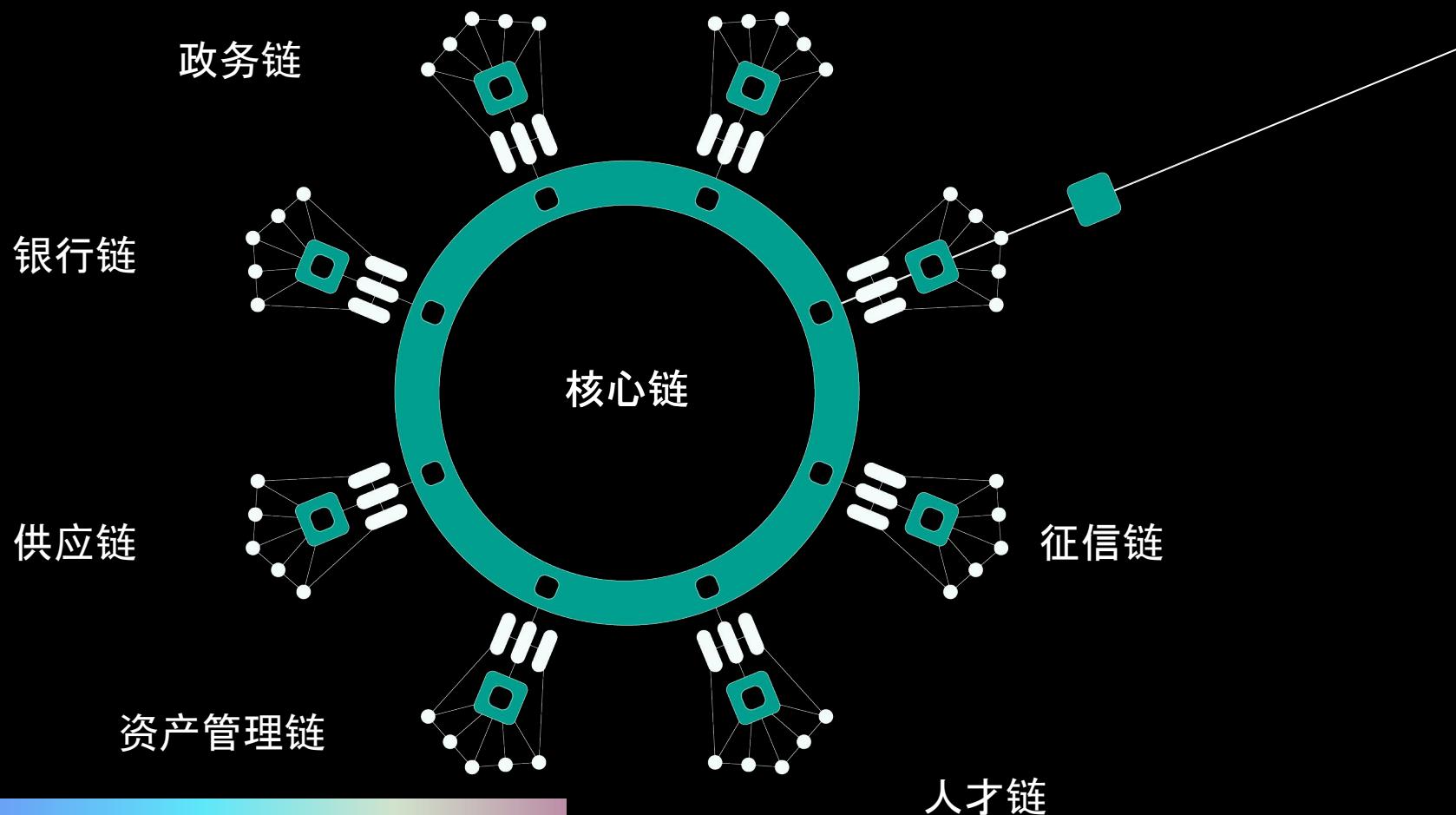
为什么跨链是未来

- **区块链**可以解决信任问题
- **专业化**可以解决可扩展问题
- **可交互**可以在可扩展的前提下，解决更广泛的信任问题，是一个更真实的世界。



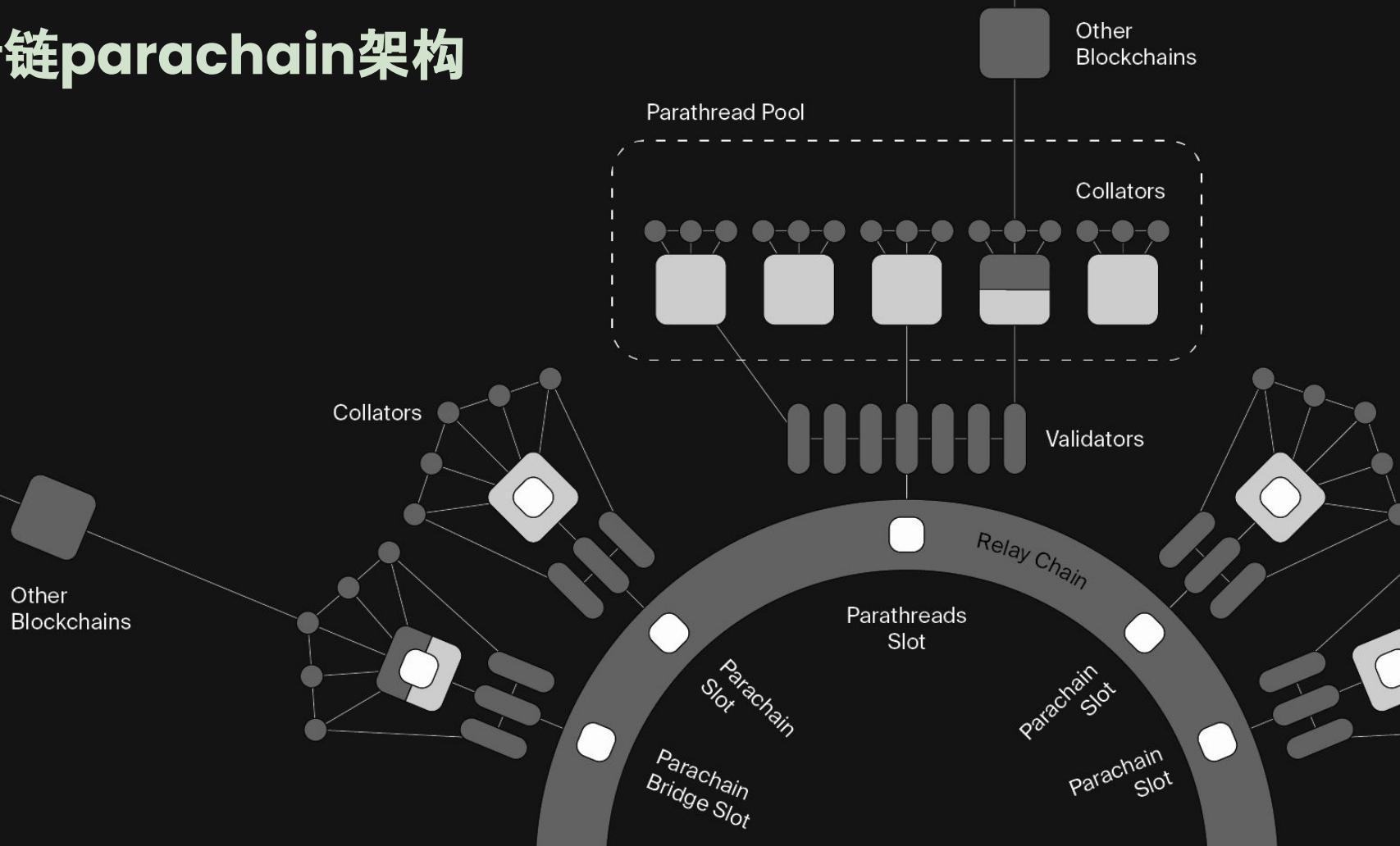


不可交互的传统联盟链——数据孤岛 局部信任



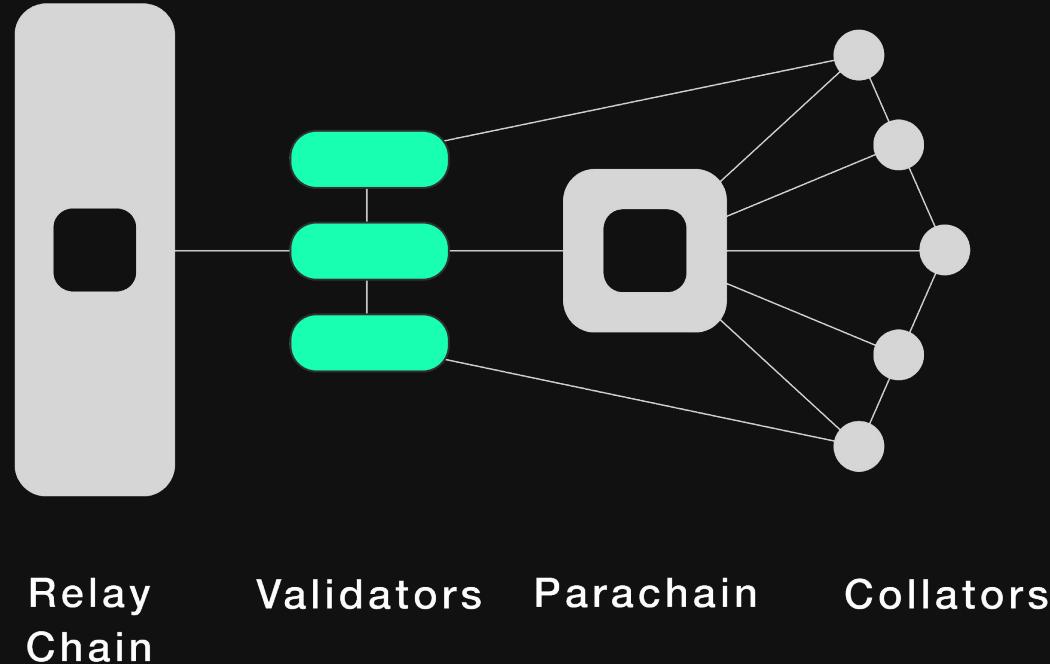
不可交互的传统联盟链——数据孤岛 局部信任

平行链parachain架构



平行链block构造逻辑

- Collators构造Proof of Validating blocks (PoVBlock)
- 每个平行链的validator(在 relaychain上)选择一个 PoVBlock并且做验证
- 验证的结果会在relaychain的所有 validator中广播
- Validator相互再验证其他平行链的结果
- 获得大多数validator许可的 PoVBlock会被包括在relaychain中
- 平局？掷硬币!



Relay
Chain

Validators

Parachain

Collators

今天开始建立你自己的区块链

<https://substrate.io>

Thanks!

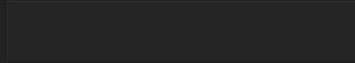
That's all folks. Stay tuned! Q&A?

maggie
@parity
Parity Technologies

[SUGGESTED COLOURS AND TYPOGRAPHY]



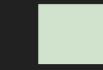
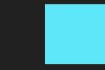
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#F5F5F5



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#6C98F5

#5EE7F9

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HEADER 2 - Poppins Medium 14 pt (ALL CAPS)

