

Media Kit



About Elear Solutions

Elear Solutions Tech Private Limited is a technology products company that is committed to bringing visionary connected experiences that empower businesses and enrich people's lives through its innovative hardware, software and internet offerings.

Elear Solutions is operational since 2017. Two years from inception Elear Solutions has been perfecting COCO – an Internet of Everything (IoE) platform that enables app developers and device makers to safeguard users' right to data privacy by circumventing the fundamental flaw of the centralized approach of streaming to the cloud in most connectivity architectures today.

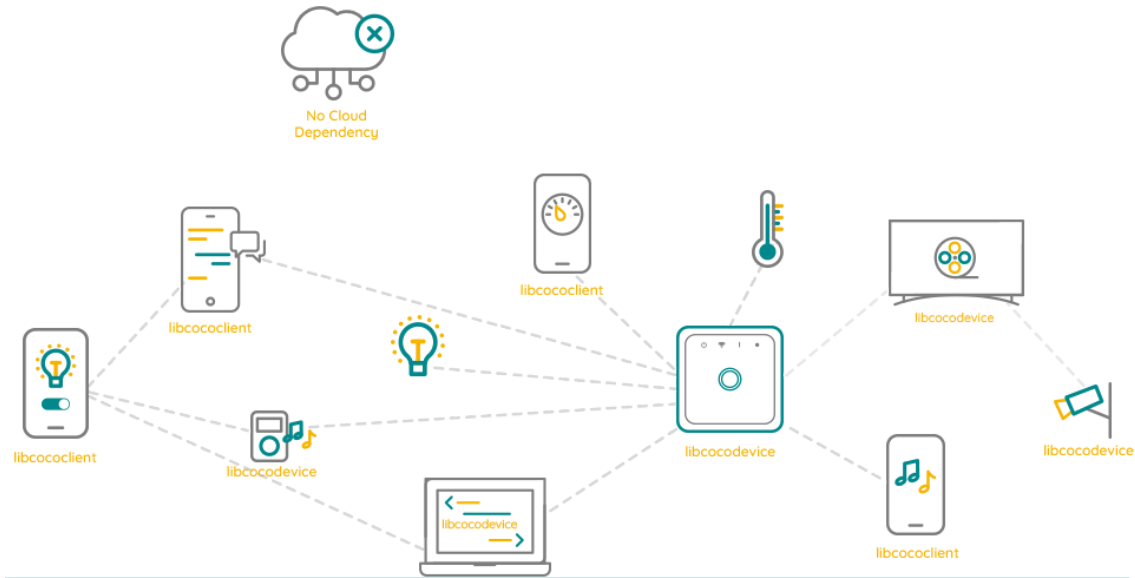
Elear Solutions is one of the top ten finalists announced by Qualcomm for the 'Design for India' challenge 2019.



About COCO

COCO is a decentralized communication platform built using a hybrid peer-to-peer (P2P) network architecture that is designed-for-privacy with offline and remote connectivity, interoperability, and real-time communication.

The platform is driven by COCO's ecosystem of IoT consumers, application developers, system engineers, device manufacturers, OEMs and businesses. COCO is built on the tenets of: Data Privacy, Data Security, Interoperability, and Ease of Use.



Why COCO?

With more than one episode much like ‘Cambridge Analytica’ and the diminishing trust towards large tech giants that use the cloud to store and manage private user data, it is time to look for more secure and empowering technology solutions.

IDC estimates that 41.6 billion IoT devices will be generating 79.4 zettabytes of data in 2025. The promising proliferation also brings ‘data security and privacy’ under siege. This explosion indicates more than one way that could have an adverse impact on data privacy and compromise identity of those users who are adopting new ways of communication relying on the cloud technology.

Future technologies emerging out of IoT, Healthcare, Telecom, ADAS, Manufacturing, Hospitality, Facilities management and every other industrial sectors thrive on data — the new oil of this age. And, data stored in the hands of third party service providers is always vulnerable to security breaches. Forecasting such vulnerability of internet users to data breaches and to give back the power of ownership to the true data users, Elear Solutions created COCO.

Over the years, increasing computing power, device storage capacity, and internet bandwidth has led to a trend of exponential growth in Edge Computing. These growing times prove to be the right time for the adoption of P2P/ decentralized architectures that are inherently designed-for-privacy.

COCO's Technology

COCO is built using a decentralized communication network architecture that transfers data between distributed nodes of users, devices, and application. The network that we call the 'COCONET' organizes the device and application nodes into an overlay network and clusters them into a mesh topology. The mesh topology eliminates a central point of failure and spreads the data storage across user devices.

The platform enables security via the use of ECDH for key exchange, ECDSA for message signing, and ChaChaPoly-1305 for the encryption algorithm. All of this security management is handled by the platform. This security stack coupled with a decentralization architecture, helps reduce risks of security breaches and data theft that can attract large fines via new data privacy legislatures like GDPR and CCPA.

COCO has designed a custom peer-to-peer protocol with integrated VPN functionality using both TCP and UDP over IP for security and integrated pub-sub mechanisms for IoT devices and applications. The company has named this customized protocol the Cluster Protocol (CP). The CP is currently being used in all of COCO's various product SKUs: [1] The COCO Client Application SDK [2] The COCO Device SDK and [3] The COCO App and Browser-based User Management Portal. The COCO product suite exploits on-device edge computing and storage along with the secure P2P networking and pub-sub capabilities included in CP for IoT connectivity.

Founders & Management Team



Ashish Bajaj

Co-Founder, Chief Executive Officer (CEO)

Ashish has been a hands-on leader with expertise in various Systems Engineering roles with Qualcomm. Throughout his 15 year career at Qualcomm, he has built high performing engineering teams in areas such as Video and Camera DSP Firmware, Low Power Chipset SoC Architectures, 2G/3G/4G Wireless Networking Power Optimizations, and Machine Learning Software Frameworks.

He left his career at Qualcomm to create Elear Solutions, with a vision to build a world class consumer electronics company focussing on connectivity and communication in the smart home space.

Ashish has a Masters in Electrical & Computer Engineering from Georgia Institute of Technology, and a Bachelors in Computer Engineering from Georgia Institute of Technology. Ashish has 8 granted patents in the US.



Manav Mehta

Co-Founder, Chief Technology Officer (CTO)

Manav has over 20 years of professional experience as a Software Business Analyst, Architect, Technical Lead and Developer, including 18 years at Infosys. His areas of expertise include Software Requirements Definition and Software Architecture. He is passionate about software, enjoys writing code and engages in both the functional and technical design of complex software systems. Manav holds an M.Sc.(Tech.) in Information Systems from Birla Institute of Technology and Science, Pilani, India. Manav has 2 patents pending in the US.

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Advisory Member



Johnny John

Product Management

Johnny joins Elear Solutions after a successful career spanning across 25 years with Qualcomm, where he worked in the DSP Firmware and Chipset Power Engineering Organizations. Most recently, he led Qualcomm's Product Management roles in Power and Thermal, for its entire Chipset roadmap.

He is passionate about building teams from scratch, bringing diverse teams together to accomplish common goals. He has a proven track record of establishing entire projects or focus groups from inception.

Johnny holds a Masters in Electrical Engineering from The University of Michigan. Johnny has 10 granted patents in the US.



Divya Reddy

Brand and Strategic Advisor

Divya has over 18 cumulative years of experience in various capacities, including 8 years at Qualcomm. Her areas of expertise are business strategy & process, people management, and information management. She currently manages self-owned businesses across multiple industry segments in Hyderabad.

Divya holds an MBA from Case Western Reserve University.



Factsheet

Company	Elear Solutions Tech Private Limited
Incorporated in	March 2017
Address	San Diego, California, USA Hyderabad, Telangana, India
Services	COCO Developer Platform COCO Chat App COCO Lighting App
Products	COCO Developer Edition (Home Automation Kit) 2018 <ul style="list-style-type: none">● Two Versions: For USA, For Europe and India● Interoperable with 2000 + Zigbee, Zwave, Bluetooth and other devices.
Founders	Ashish Bajaj (CEO), Manav Mehta (CTO), Johnny John (CPO).
Incubated at	Qualcomm 'Design in India' Challenge 2019, Bangalore
Pending Patents	62/828,005: Method And System For Creating And Managing A Secure IP-Based Mesh Overlay Peer-ToPeer Network 62/828,003: Method And System For Managing A Decentralized Access To A Resource In A Peer-ToPeer Network

Frequently Asked Questions

Q: What is the meaning of P2P architecture?

P2P stands for Peer to Peer. This refers to a network architecture where apps or devices may communicate with each other directly, without going through a central server. This provides benefits such as data privacy, low-latency, offline access, and many more. etc. which are at the core of what the COCO stack brings to market.

Q: How is P2P communication different from the Cloud?

Peer-toPeer (P2P) or decentralized communication enables applications or devices to communicate with each other directly, without requiring a central server to facilitate communication. Data transfer and communication is kept private, secure, in real-time with low latency, and can be accessed offline too.

Q: What is the difference between decentralized communication using COCO vs Blockchain?

COCO is a low level Peer-to-Peer middleware that enables decentralized communication over both TCP and UDP networks. For making it easy to develop on top of this P2P middleware, COCO provides 4 popular semantics that cover a plethora of use cases:

1. Pub-Sub: popular for IoT based devices and applications
2. Messaging: popular for any Application to Application communication, e.g. chat apps, dating apps
3. Streaming: popular for multimedia content delivery application
4. Tunneling: popular for using existing protocols like HTTP, RTSP, MQTT, over a P2P network

Blockchain is an application that relies on P2P communication over TCP. So a developer could use COCO to implement his own blockchain. He will have to implement the layer that implements an open and distributed ledger that can record transactions in a verifiable and permanent manner. To effectively implement the distributed ledger, he will need to create a protocol that validates new blocks using the messaging interface of COCO.

Q: Why does COCO encourage a P2P Network?

As the ARPANET transitioned to the public internet, the client-server architecture became prominent. This was driven by various technological limitations of the early 1990's: high cost of computing made the thin-client fat-server architecture inevitable high cost of memory and storage promoted centralization, i.e. clients were consumers of information, while servers were storage houses bandwidth being a very limited resource, and given the client-server architecture, ISPs provide asymmetric bandwidths that have better DL (downlink) speeds compared to UL (uplink) speeds.

Further as scaling the internet continued to increase the addressable range of the IPv4, NAT units were introduced into the internet architecture and have since taken prominence, they are included in every Access Point (AP) in every home. Introduction of NATs made it virtually impossible to form P2P networks between machines that were behind different NATs - the only way to achieve this is to take help from central control servers using protocols like STUN and TURN [read more about the Control Plane].

Fast forward from the early days of the internet and it's clear that the technological landscape has changed tremendously over the last 25 years. In just the last decade of cell phones (comparing typical phones from 2009 to 2019): There is an over 30x compute performance improvement on client side processing. We officially have cell phones with storage of 1.5TB. There is a 700% increase in average UL bandwidth.

We believe we are at a point of inflexion in technology that can disrupt the existing client-server architecture. While the client-server architecture works very well for Internet browsing, it severely limits use cases that require low latency and high bandwidth communication, e.g cases like Video, AR, VR, etc. Further for cases like IoT, the value of IoT is only derived when you have a network of things interconnected to each other in a secure and private ad-hoc networks. For all these use cases, a P2P network architecture is the right technology option rather than using a client-server architecture.

The goal of the COCO platform is to simplify decentralized communication and help create a developer community that can solve various cases using P2P network topologies. The mechanism used by COCO to perform NAT traversal and P2P cloudless data transfer is via using a technique known as UDP hole punching. The COCO platform provides developers both options of TCP and UDP semantics over the decentralized IP network.



Q: How does it solve the problem of Data Privacy?

COCO solves the problem of Data Privacy for apps and devices being installed in the network owned by the user. This is achieved by two ways:

1. Decentralizing the connectivity, so data doesn't have to reside on any servers (not even COCO servers)
2. Anonymizing the data traffic while sending it over to the application layer, so any application that aggregates data from its users, doesn't have any user identifiable information.

Users must note that there is no privacy guarantee in networks owned by developers as data anonymization is not possible in such networks.

For further queries contact: coco.mail@elear.solutions