Let's Fix the Internet

Martin Bähr

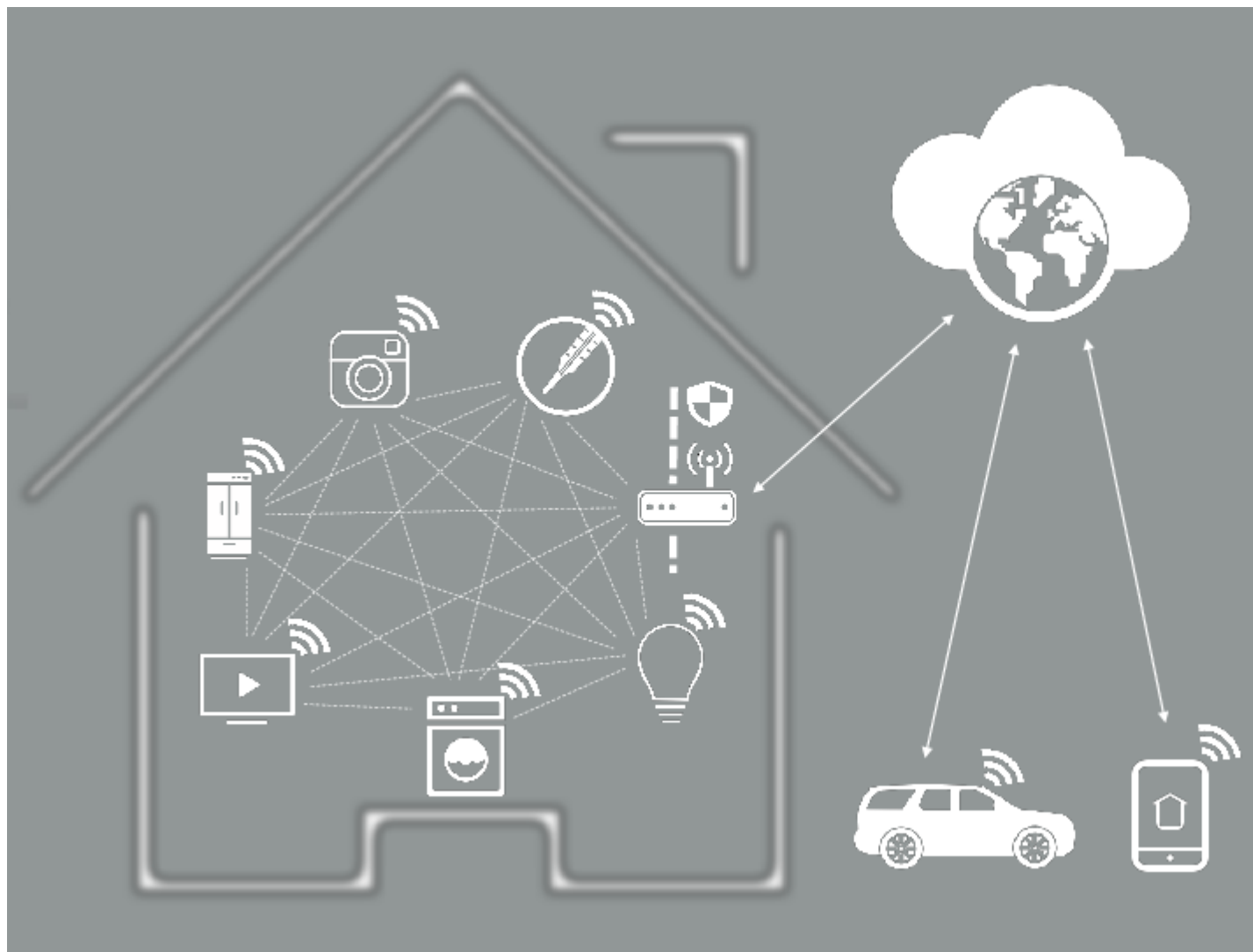### Elastos Development Community Manager

State of the network

History of the internet

- Internet was built on trust

- Can't keep rogue actors out

- SPAM

- DOS attacks

- Cookies are bad

- EU made laws against cookies

IoT made it worse

- IoT devices are hopelessly insecure
  -> Block IoT Devices from the internet

IoT Challenges

1. Security and Safety
2. Embedded and Real-time
3. Distributed and Decentralized
4. Main Stream Programming
5. User Content Monetization

Smartweb Powered by Blockchain

so how do we get out of this mess?

- we like to make changes in small steps

BUT

- Costly incremental improvements are slow to adapt: IPv6

- cheap disruptive improvements are adapted quickly:
  twitter, facebook, web

Elastos is disruptive

BUT

Getting Elastos is as easy as getting a webbrowser

What is Elastos?

1. complete set of C/C++ APIs and frameworks

2. a distributed OS runtime with end-to-end security accross a P2P network

3. Elastos runtime, designed for containers/virtual-machines

4. uses blockchains for authentication

1. C/C++ APIs and frameworks

-> Sandbox apps at C level

- C++ runtime introspection system (CAR)
  -> allow distributed apps to talk to each other

- Elastos rewrote the complete android stack in C++

ELASTOS

REWROTE

THE COMPLETE

ANDROID STACK

IN C++

WHY?

- performance and footprint

- write android style apps in c/c++

- port apps from Android to Elastos

2. distributed OS runtime

- P2P connections between nodes

- end-to-end security and integrity across the internet

- prohibit apps from sending/receiving network packets directly

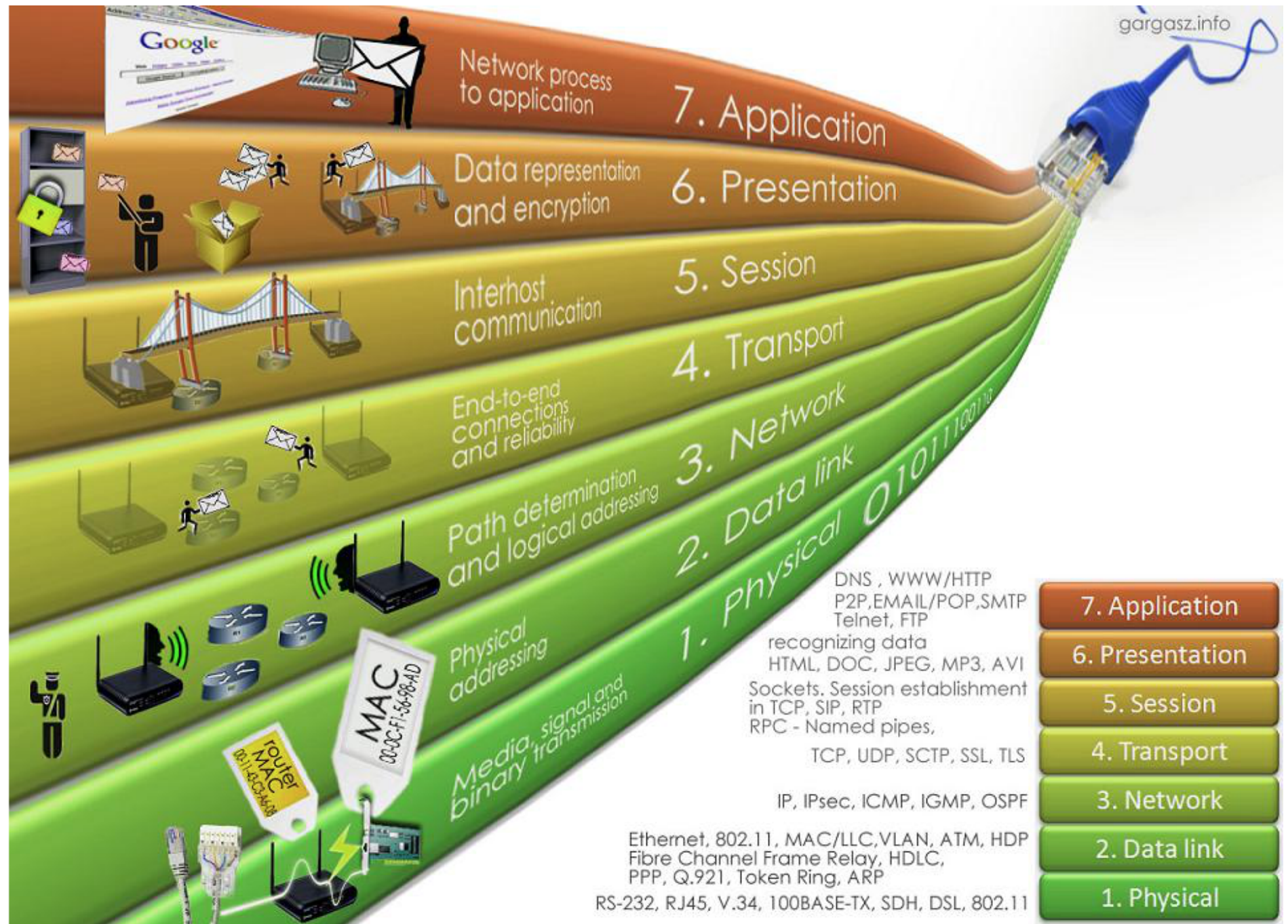- every network connection is controlled and sanctioned by the OS

Elastos prevents apps from making their own network connections.

End User Identification

APPLICATIONS

KERNEL

HARDWARE

gargasz.info

Network process to application — 7. Application

Data representation and encryption — 6. Presentation

Interhost communication — 5. Session

End-to-end connections and reliability — 4. Transport

Path determination and logical addressing — 3. Network

Physical addressing — 2. Data link

Media, signal and binary transmission — 1. Physical

DNS, WWW/HTTP
P2P, EMAIL/POP, SMTP
Telnet, FTP
recognizing data
HTML, DOC, JPEG, MP3, AVI
Sockets. Session establishment in TCP, SIP, RTP
RPC - Named pipes,
TCP, UDP, SCTP, SSL, TLS
IP, IPsec, ICMP, IGMP, OSPF
Ethernet, 802.11, MAC/LLC, VLAN, ATM, HDP
Fibre Channel Frame Relay, HDLC,
PPP, Q.921, Token Ring, ARP
RS-232, RJ45, V.34, 100BASE-TX, SDH, DSL, 802.11

7. Application
6. Presentation
5. Session
4. Transport
3. Network
2. Data link
1. Physical

Smartweb Powered by Blockchain

- Identification happens in the application layer

- Every application is responsible for its own user identification
  -> Spam comes from missing user identification
  -> Denial Of Service attacks happen at the network/transport layer before user identification
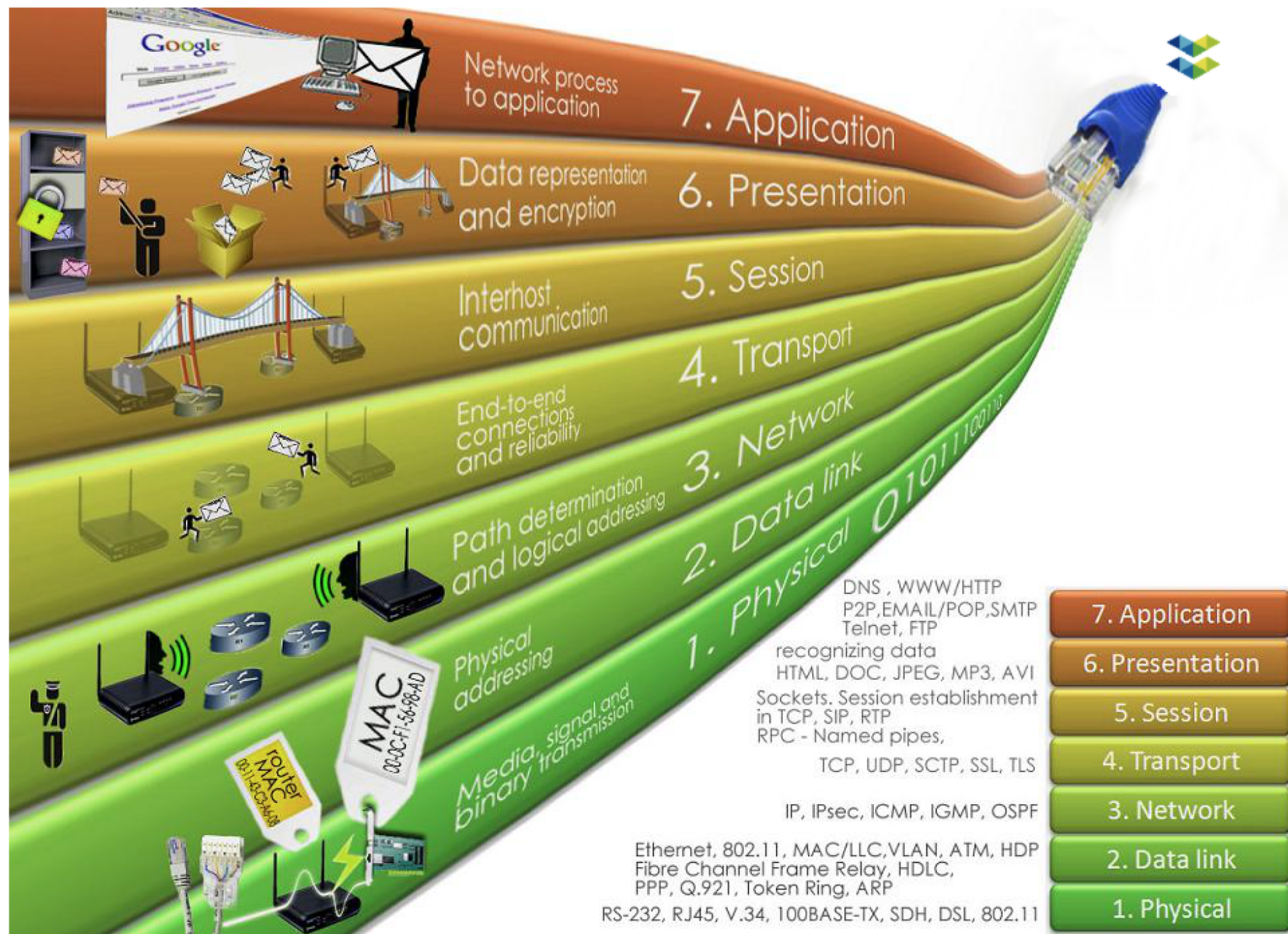
APPLICATIONS

ELASTOS RUNTIME

User Identification

P2P Networking

KERNEL

HARDWARE

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1. Physical

Smartweb Powered by Blockchain

Elastos moves user identification away from the application layer.

- prevents SPAM, Denial of Service attacks, worms and viruses.

- identities on the app level are replaced with global identities at the OS level.

- a P2P network is used to find the location of identities

3. Elastos runtime is designed for containers/virtual-machines

- CppVM (like JavaVM but for C/C++)

- no need for JNI to write native code

- no need to break out of the sandbox
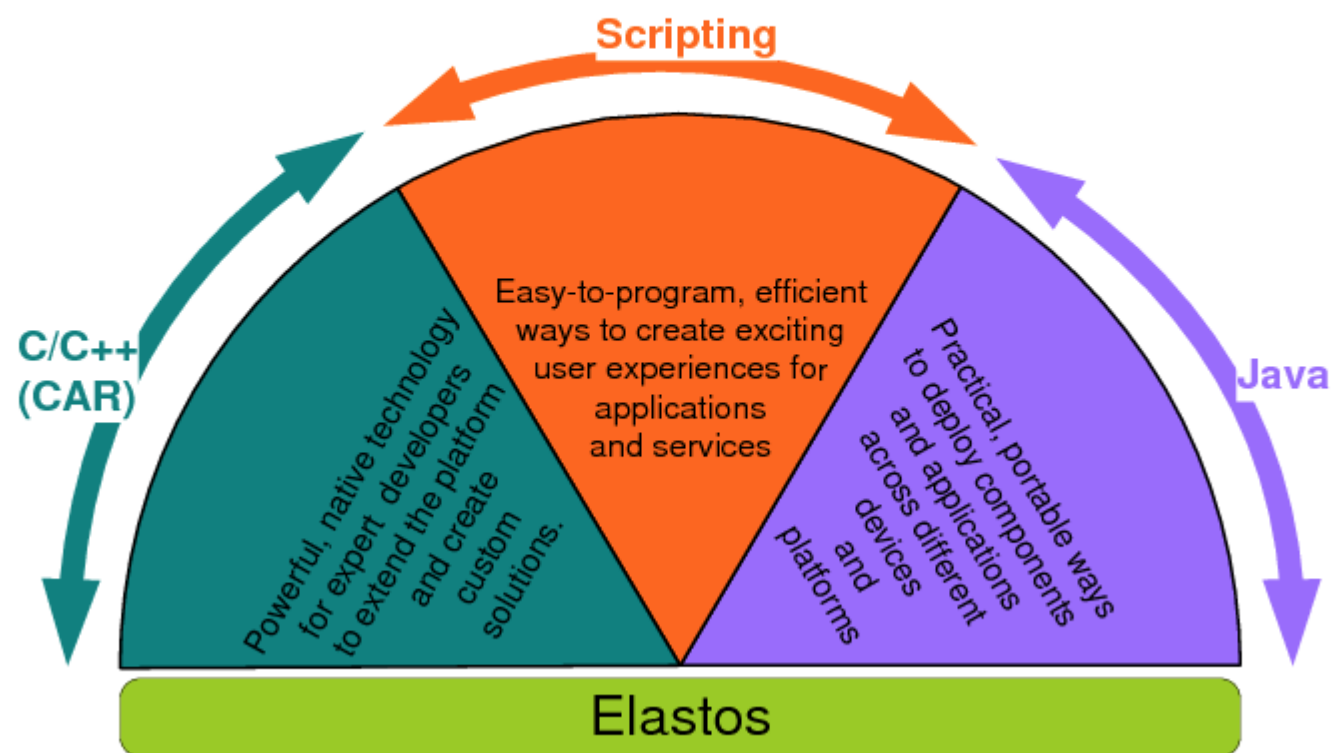
Android-Like Programming in JS, Java & C/C++

Launcher Settings Pinyin IME Calculator Dialer Browser

Files Calendar Contacts Messages Music

4. Blockchain

- authenticate user IDs, application IDs, as well as machine IDs

- implement apps that use blockchains

  -> digital asset management

- Elastos coins to enable trading of apps and digital assets

(What are Digital Assets?)

Types of Digital Content Today:

- free to share (GNU, Creative Commons)

- leased, thightly controlled by Distributors

Digital Assets

- Track ownership through the blockchain

- allow reselling of content (enables secondary market)

- Take away control from Distributors to Consumers

Elastos History

- Started in 2000 to build a smartphone OS

  -> lost the race against Android and IOS

- Restart in 2012 adding IoT focus

  -> $30mil funding by Foxcon

  -> reached beta status

Elastos 2015

Elastos on Banana Pi

Elastos Smart-Router

Elastos 2016

Elastos Smart-Phone XT1085

Elastos on Raspberry Pi 3

2017

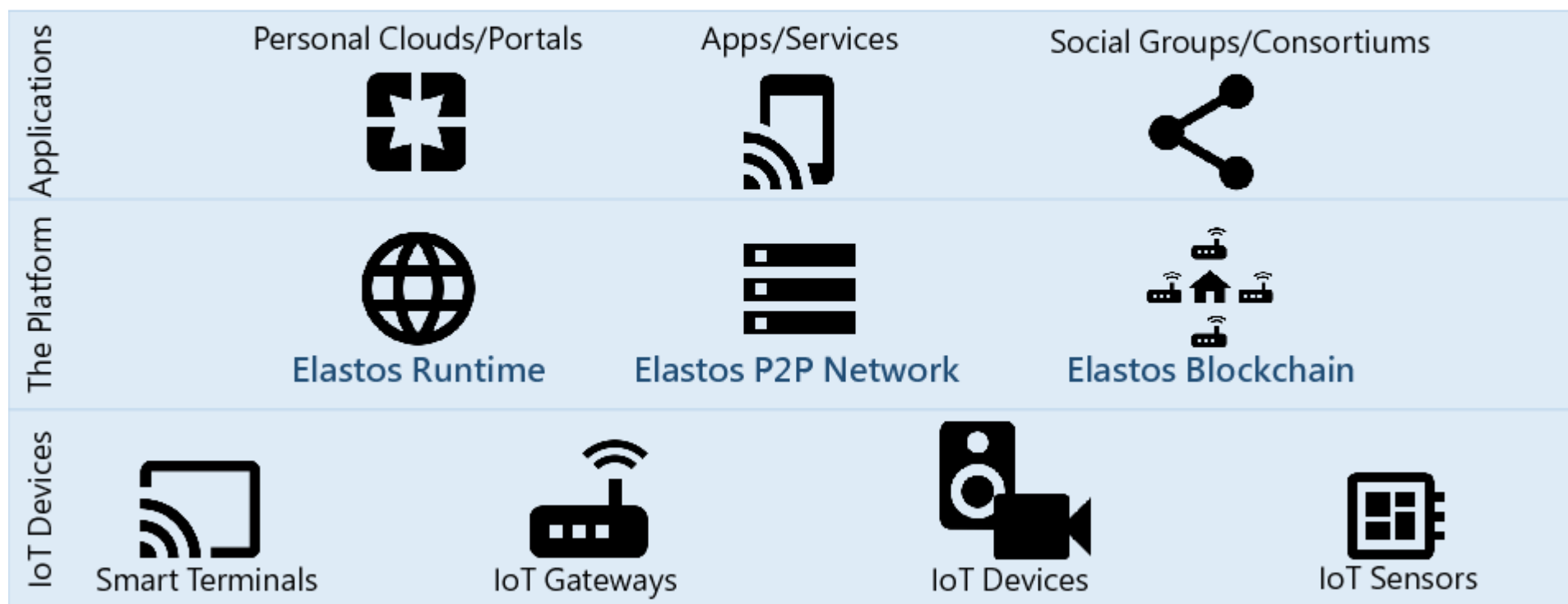- Start blockchain development
- 4K Bitcoins funding

2018

- (*January*) ICO (*2.5K Bitcoins*)

Roadmap

- (*Spring*) Develop P2P Network
- (*Spring*) Work with Development Partners to build Apps
- (*Summer*) Sidechains for Blockchain Applications
- (*Summer*) Framework for Webapplications
- (*December*) Public Mining of ELA Tokens

Three Open Source Projects of Elastos

	Personal Clouds/Portals	Apps/Services	Social Groups/Consortiums
Applications			
The Platform	Elastos Runtime	Elastos P2P Network	Elastos Blockchain
IoT Devices	Smart Terminals	IoT Gateways	IoT Devices / IoT Sensors

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