Smart-Web Powered by Blockchain

Elastos Runtime

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loT Challenges

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



Creating Scarcity of Digital Contents

- □ Amazon does NOT sell eBooks, it sells a life time lease, instead;
- Blockchain solves the scarcity problem, but piracy remains a threat;
- Authors mandate business model via smart-contracts;
- □ Sharing apps via social networks heralds a new era of possibilities.
 - Media players used to be intermediaries that control profits;
 - ✓ An unified runtime VM is the key for digital content execution.



Smart Terminals and Smart Peripherals



- □ Same app for all smart terminals;
- □ Cloud storage for all apps;
- □ IoT devices as peripherals (no Internet);
- □ Apps access IoT devices via Web services;
- □ Languages inter-operate automatically;
- □ No OS runtime fragmentations.

End-to-End Solution for a Safer Cyberspace



- □ Apps run inside virtual machines;
- □ Metadata driven programming paradigm;
- Linux kernel is merely a modern BIOS;
- □ Apps, Services and IoT devices are prohibited

from access the Internet directly;

Drivers, Demons and Sockets are deprecated.

What is a Blockchain?



Duplicated Computing

(the computation power is less than a single node)

□ A blockchain is really a blockchain computer;

- The peer-to-peer network of a blockchain is merely an internal bus;
- Apps of a blockchain are called smart-contracts or DApps;
- A single computer CAN NOT scale to a network of computers.

The TrustZone of a Smart Phone



- Fingerprint information are NOT stored on the harddrive to guard from viruses;
- □ There is a special purpose computer called TrustZone;
- The TrustZone has its own kernel, storage and apps;
- □ The app ecosystem are build on top the main CPU.



Building a Decentralized Smart-Web Platform



The Public Blockchain is the TrustZone

You Own Your Own Data

What if I can replace a file-path wit URL?

C:/Programs/elastos.org/local-app.exe E:/Programs/tangle-app.exe X:/Programs/network-app.exe

elastos.org://foo.eco utube.com://vedio.eco university.edu://paper.eco

Software Defined Computer Consists of:

Multi-CPU,
 Multi-Screen,

Multi-Storage,Multi-Compute

You Own Your Own Data (Blockstack)



Blockstack.org

Decentralized Apps Planned on Blockstack:

□ Voting

- □ Marketplaces
- □ Identity verification
- □ Crowdfunding
- □ Messaging
- □ File sharing
- Document signing
- □ Video sharing
- Decentralized Reddit

Decentralized Twitter

Smart-Web of Elastos Computers



- A Van Neumann machine, with cloud mass storage and local HD as cache, is an Elastos computer;
- An Elastos carrier consists of a peer-to-peer network of Elastos computers ;
- Apps execute inside VMs on an Elastos computer of an Elastos carrier.
- Industrial IoT and Smart homes require a P2P Network that facilitates video streaming, text messaging, and P2P file sharing protocols.

Three Open Source Projects of Elastos



Elastos 2015





Elastos on Banana Pi



Elastos Smart-Router





Elastos on Raspberry Pi 3

Elastos Smart-Phone XT1085

Elastos Hybrid Programming Model



Android-Like Programming in JS, Java & C/C++



Elastos Code Snippets

```
var eventHandler = {
```

OnEvent:function(i) {
var s = 'call OnEvent, i: ' + i;
elastos.log(s);

};

var module = elastos.require('Demo.eco'); var demoObj = module.createObject('CDemo'); demoObj.addEventHandler(eventHandler); demoObj.doTask();

JavaScript

Module

Demo.eco

interface IEventListener {
 OnEvent(
 [in] Int32 id);

```
}
```

interface IDemo {
 AddEventHandler(
 [in] IEventListener* listener);

DoTask();

}

class CDemo { interface IDemo;

Demo.car

ECode CDemo::AddEventHandler(/* [in] */ IEventListener* listener) { mListener = listener; return NOERROR; }

ECode CDemo::DoTask()

...

...

mListener->OnEvent(9); return NOERROR;

CDemo.cpp

Elastos Block Diagram



Elastos Value Propositions



Vision: Turning Digits into Assets

- To build a digital economy for both centralized apps and decentralized apps;
- □ To issue a crypto token, i.e., ELA, for the digital economy;
- To sustain growth of the market value of all digital goods and services.



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