Node.js at Alibaba

Joyee Cheung, Alibaba Cloud, 2017.11.25

About Me

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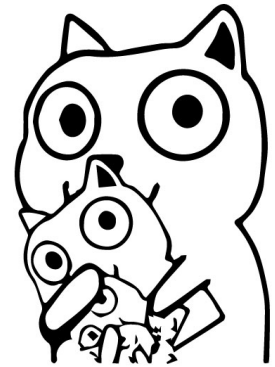


Node.js at Alibaba

- At least 500+ Node.js devs
  - Frontend devs, fullstack devs
  - Node.js backend devs, Java devs turned Node.js devs…
  - Infrastructure devs
- Over 1000+ Node.js applications
- It’s a large group, so the numbers can not be accurate

A Brief History of Node.js at Alibaba

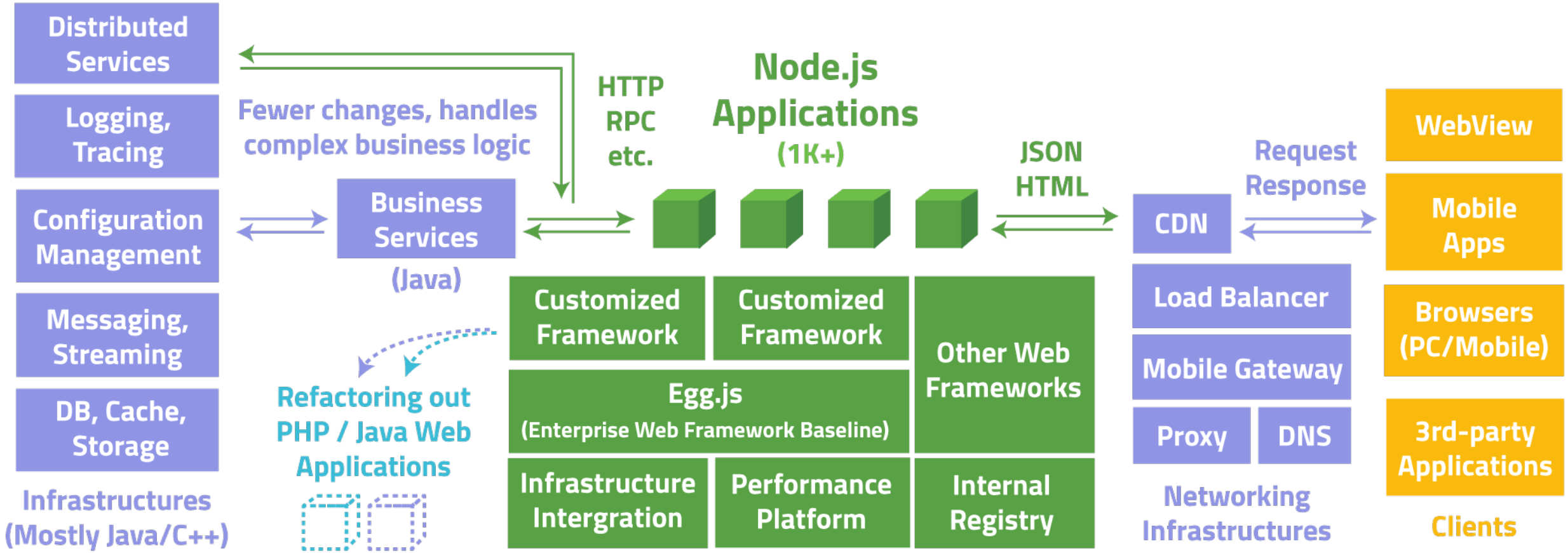
2011 First Node.js application in production

2014 Public CNPM & Internal npm registry

2015 Node.js Performance Platform (alinode)

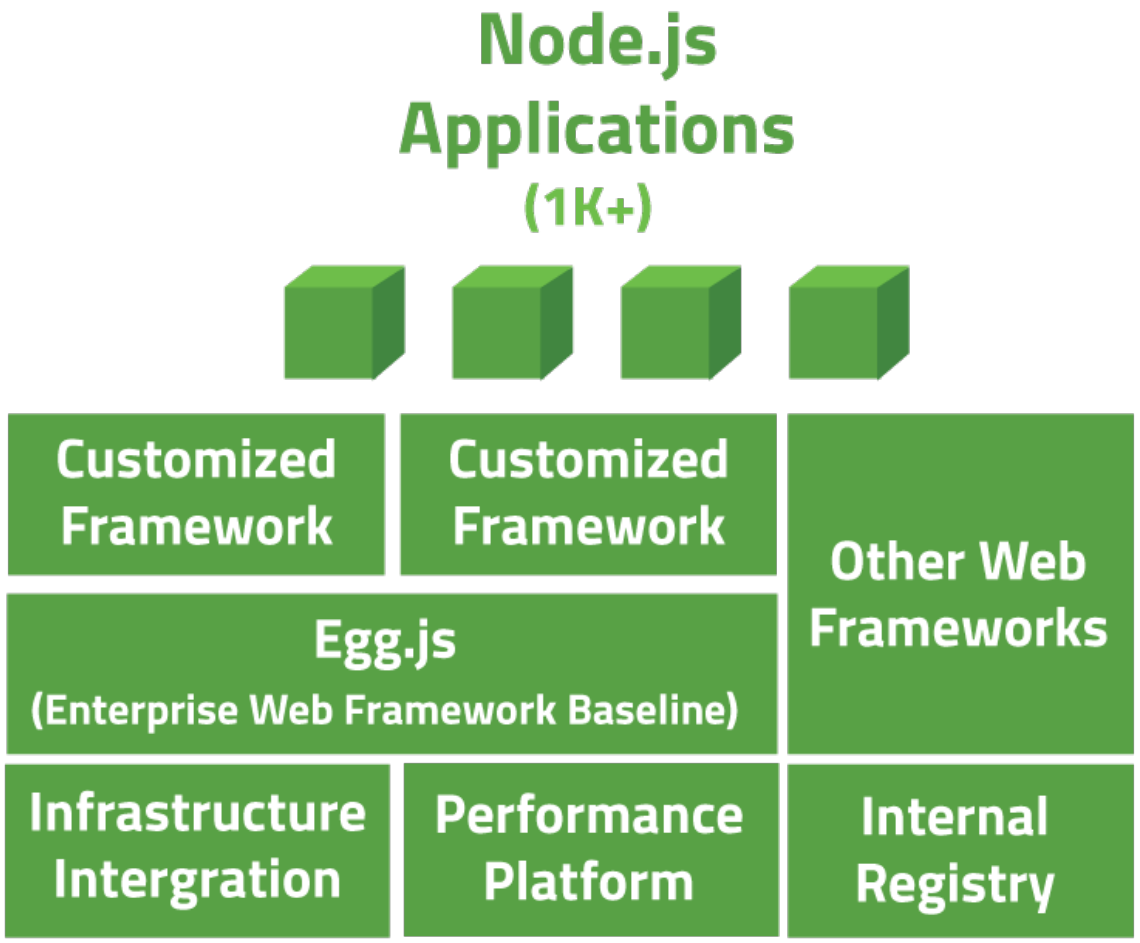
2016 Egg.js distilled from internal frameworks and open sourced

The Whole Picture

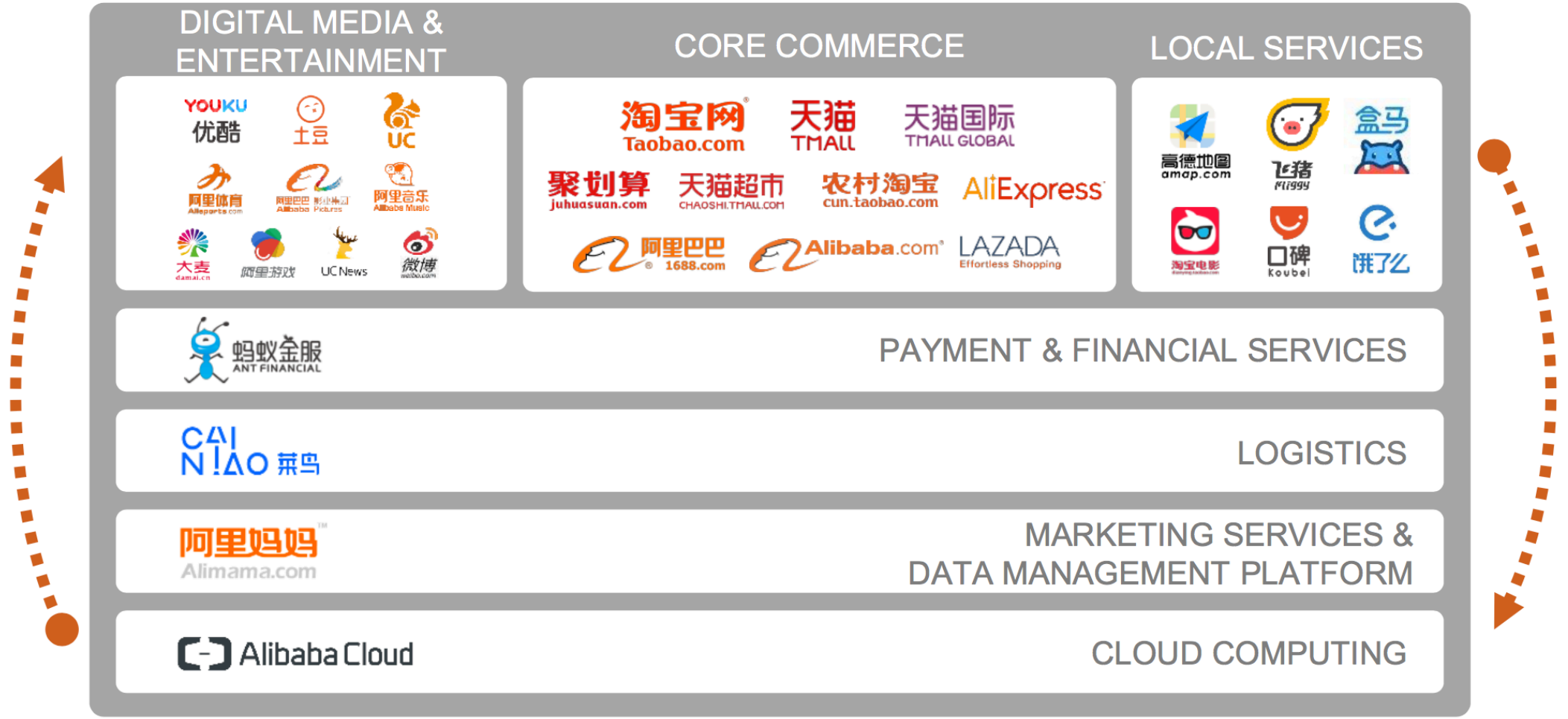


Node.js Tech Stack

- **Development**
  - Web Frameworks
  - Internal Registry
  - Infrastructure Integration
- **Deployment**
- **Performance Platform**
  - Monitoring
  - Diagnostics
  - Profiling



The Alibaba Ecosystem



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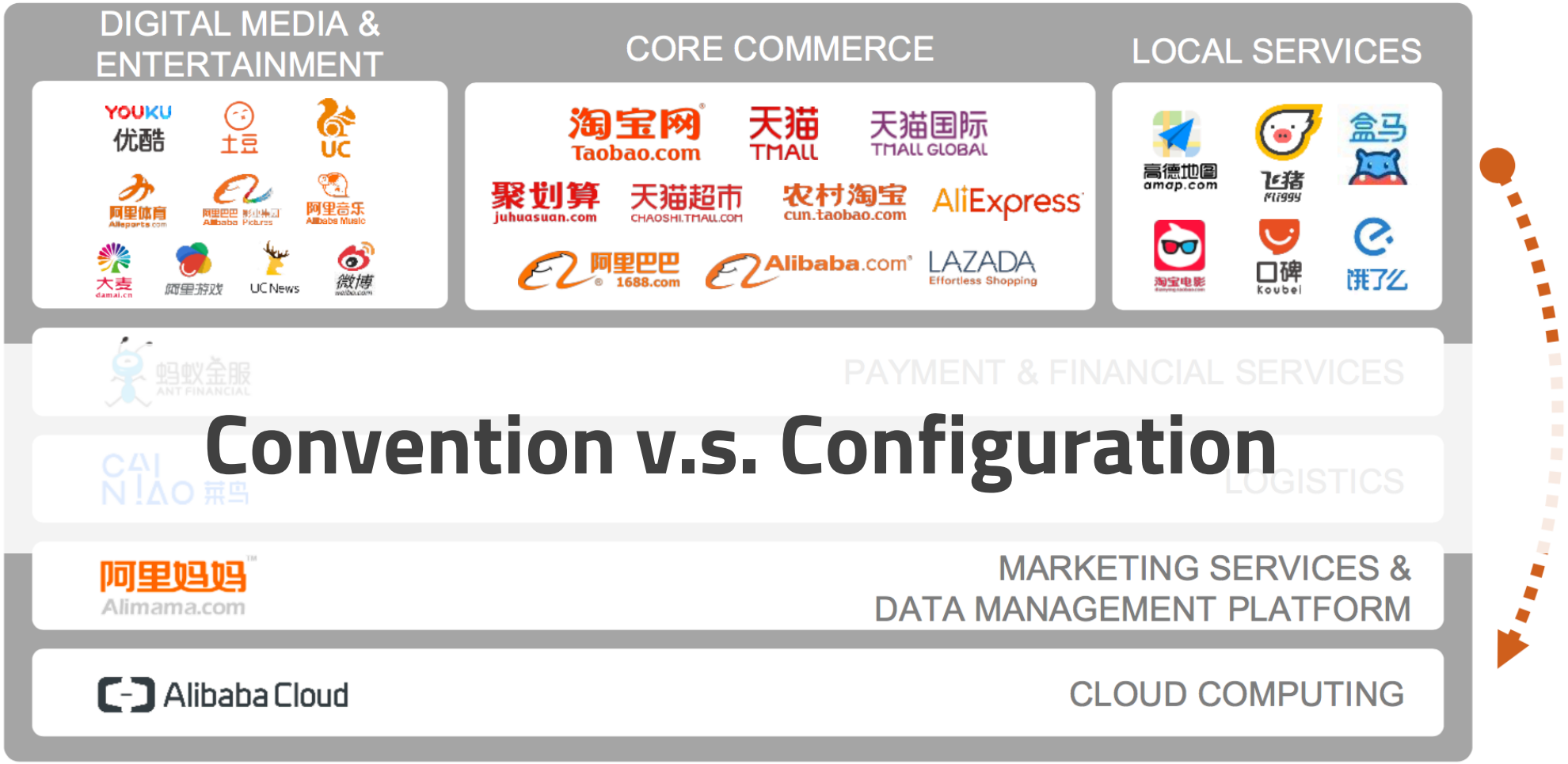
The Alibaba Ecosystem



Convention v.s. Configuration

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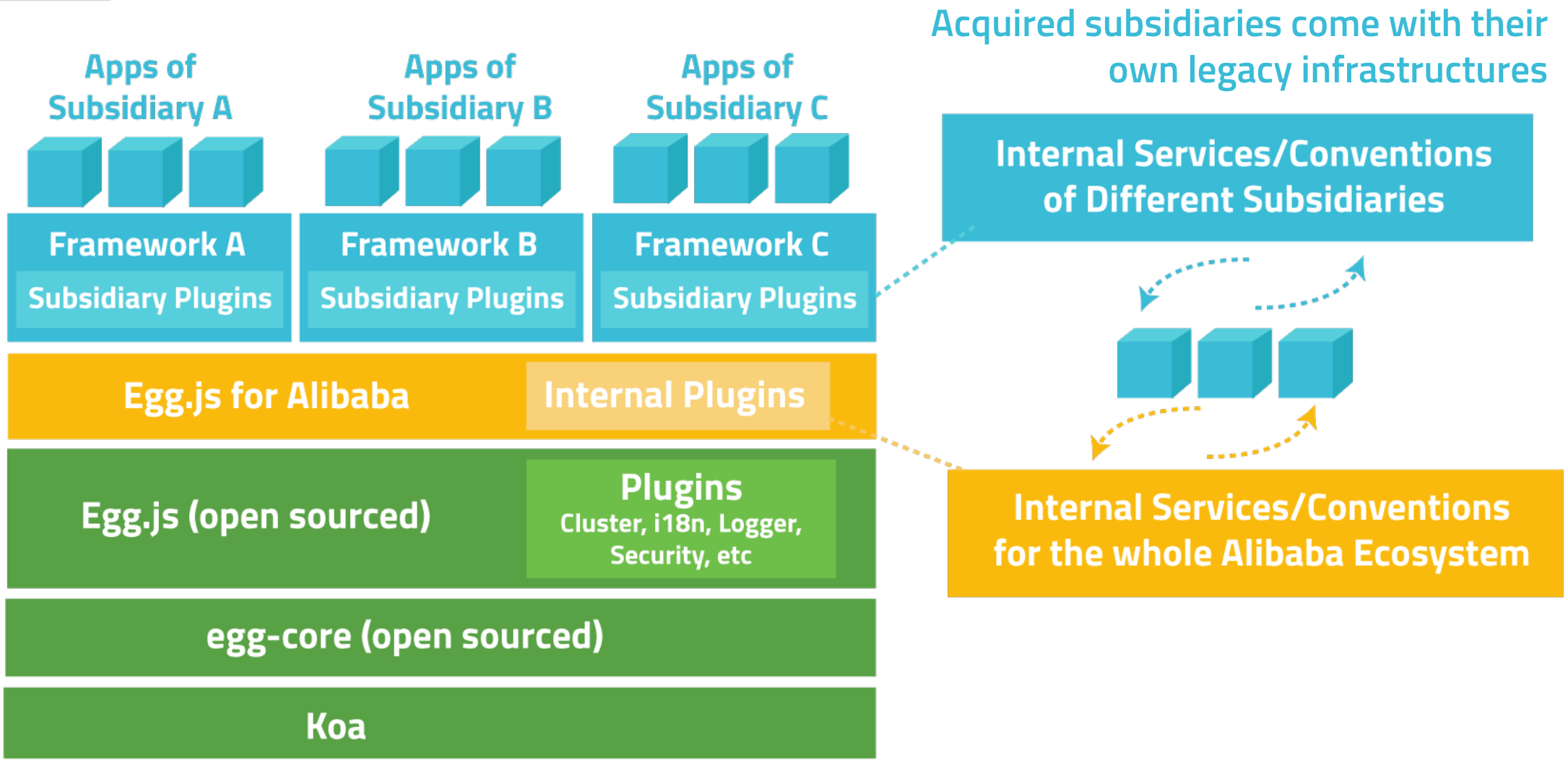
Web Frameworks

Egg.js

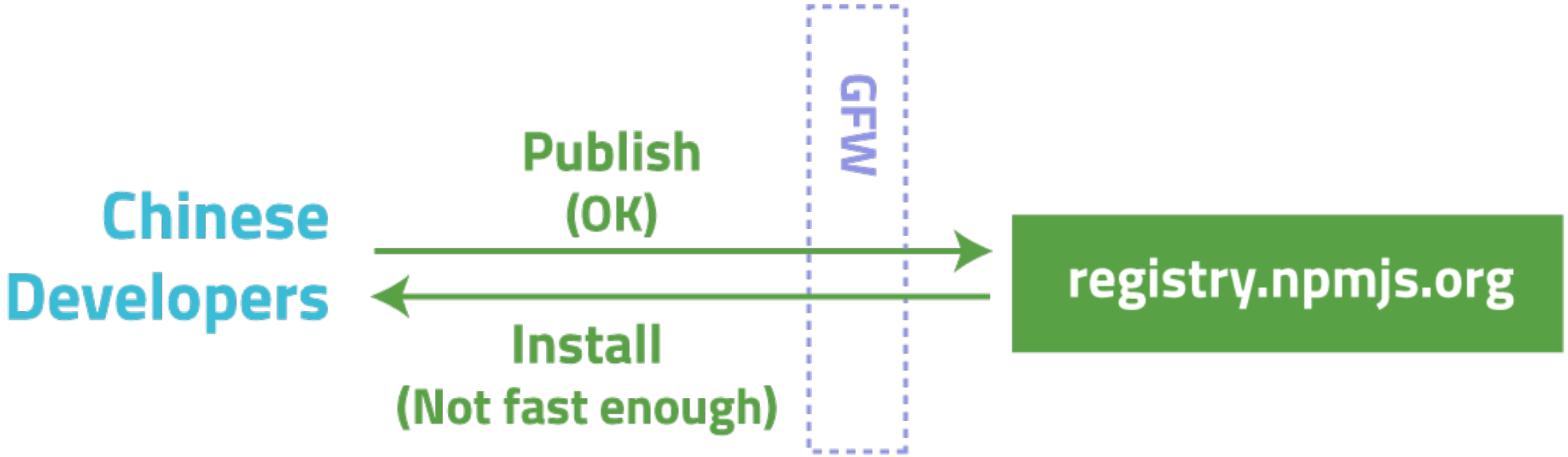
Born to build better enterprise frameworks and apps with Node.js & Koa

- Generators on v6.x and before, async/await on v8.x and later
- Batteries included: dev tools, test frameworks & mocks, .etc
- https://github.com/eggjs
- https://eggjs.org/en/intro/index.html

Web Frameworks



Packages


Chinese
Developers
Publish
(OK)
Install
(Not fast enough)
GFW
registry.npmjs.org

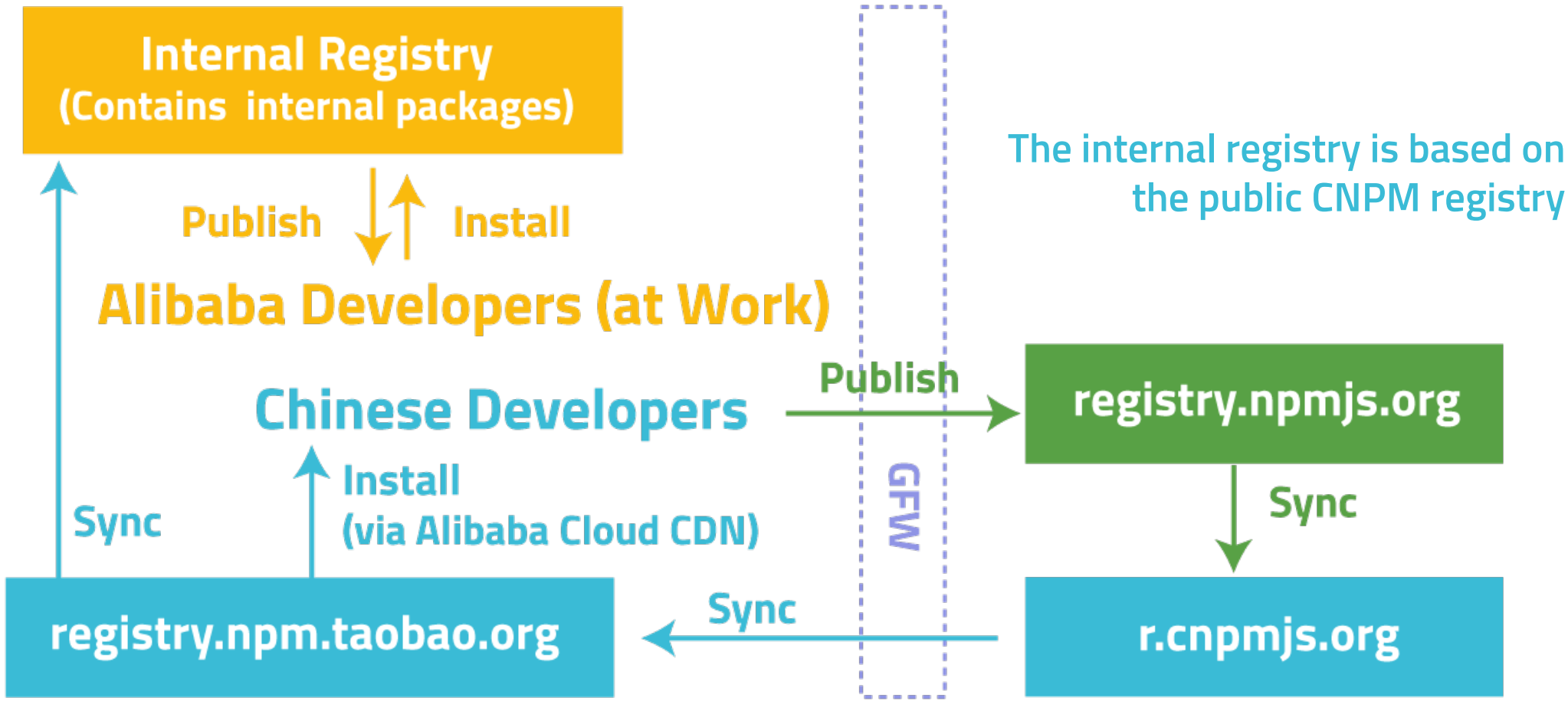
Packages

CNPM

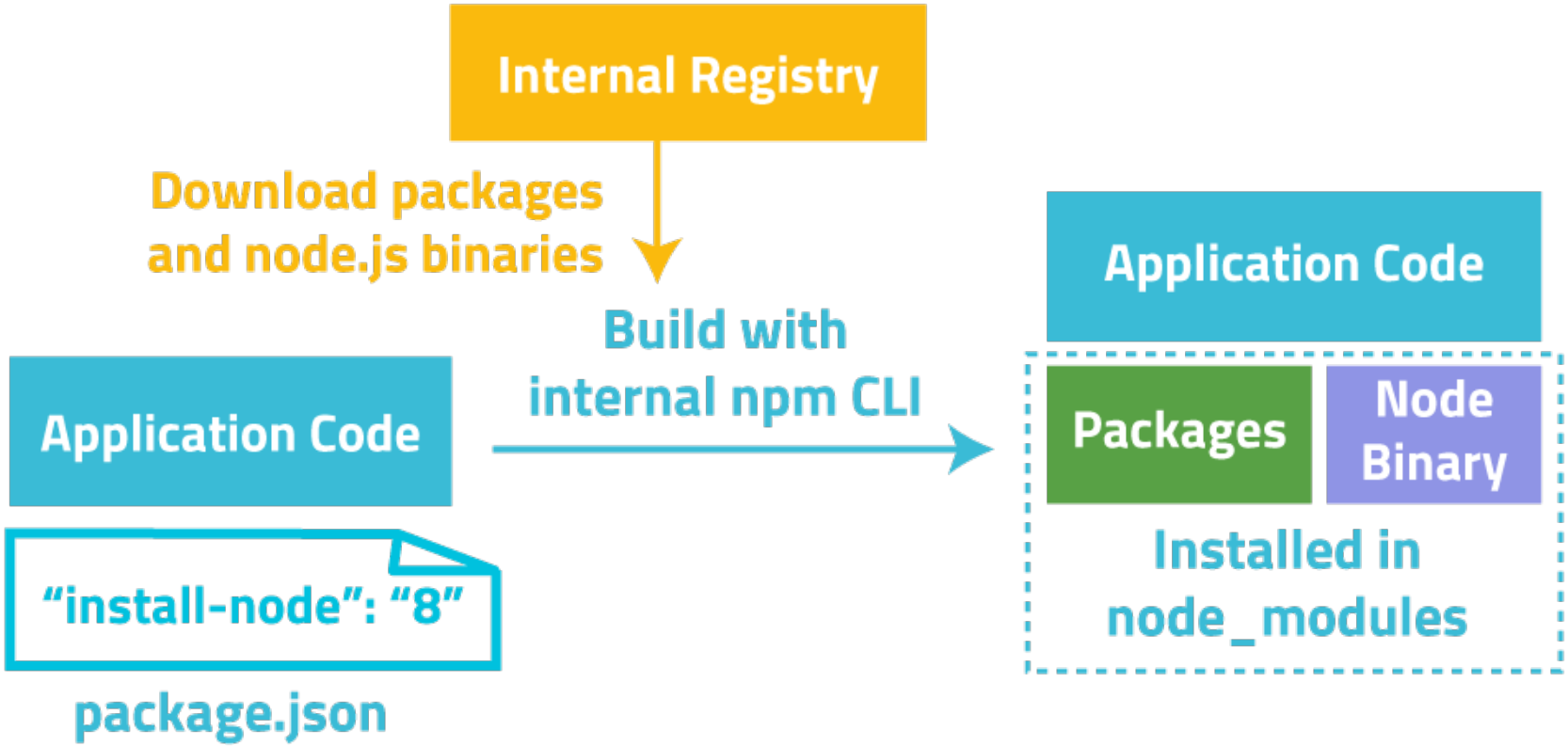
Private npm registry for the enterprise

- (Consider China an enterprise with its own firewall)
- Solution: https://github.com/cnpm
- Public mirror: https://npm.taobao.org/
  - Electron releases, Node.js binaries & headers, Node.js API docs, selenium releases, ...
- Public registry: http://registry.npm.taobao.org
  - 1M+ downloads/day, funded by Alibaba Cloud
- Client: https://www.npmjs.com/package/cnpm

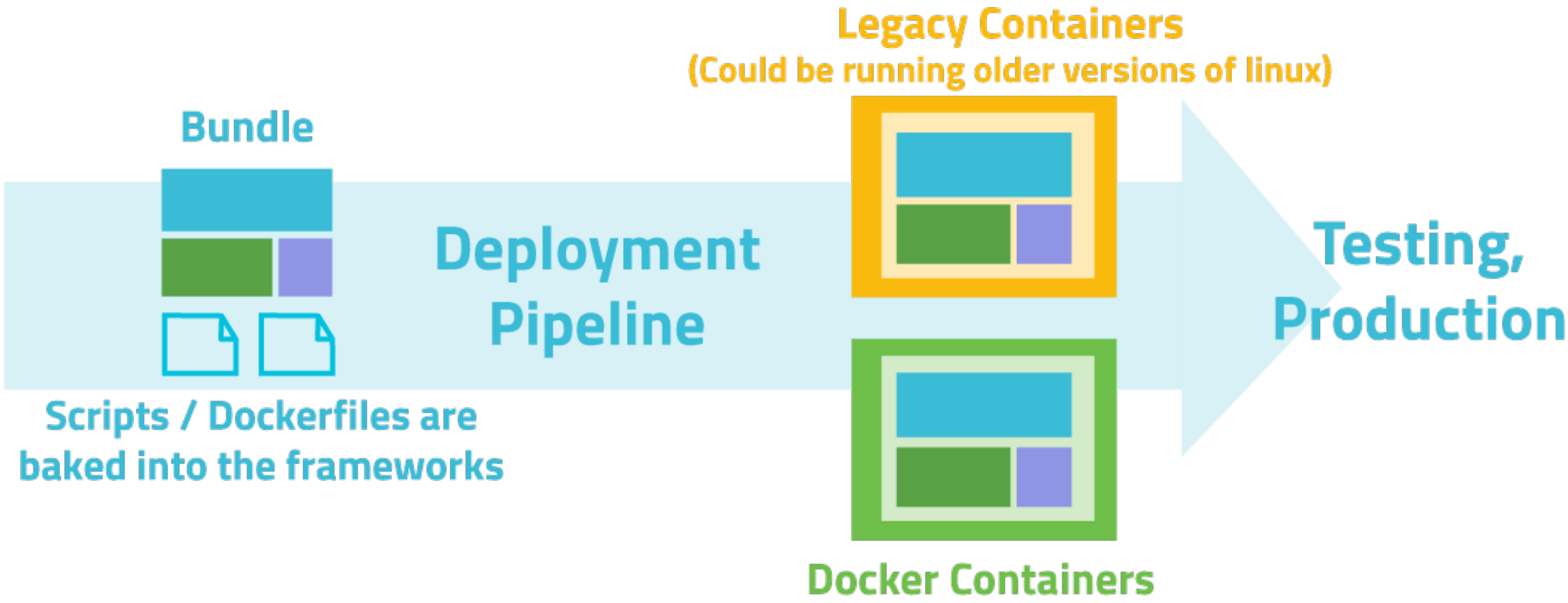
Packages


Internal Registry
(Contains internal packages)
Publish
Install
Alibaba Developers (at Work)
Chinese Developers
Install
(via Alibaba Cloud CDN)
Sync
registry.npm.taobao.org
Publish
GFW
registry.npmjs.org
Sync
r.cnpmjs.org
Sync
The internal registry is based on
the public CNPM registry

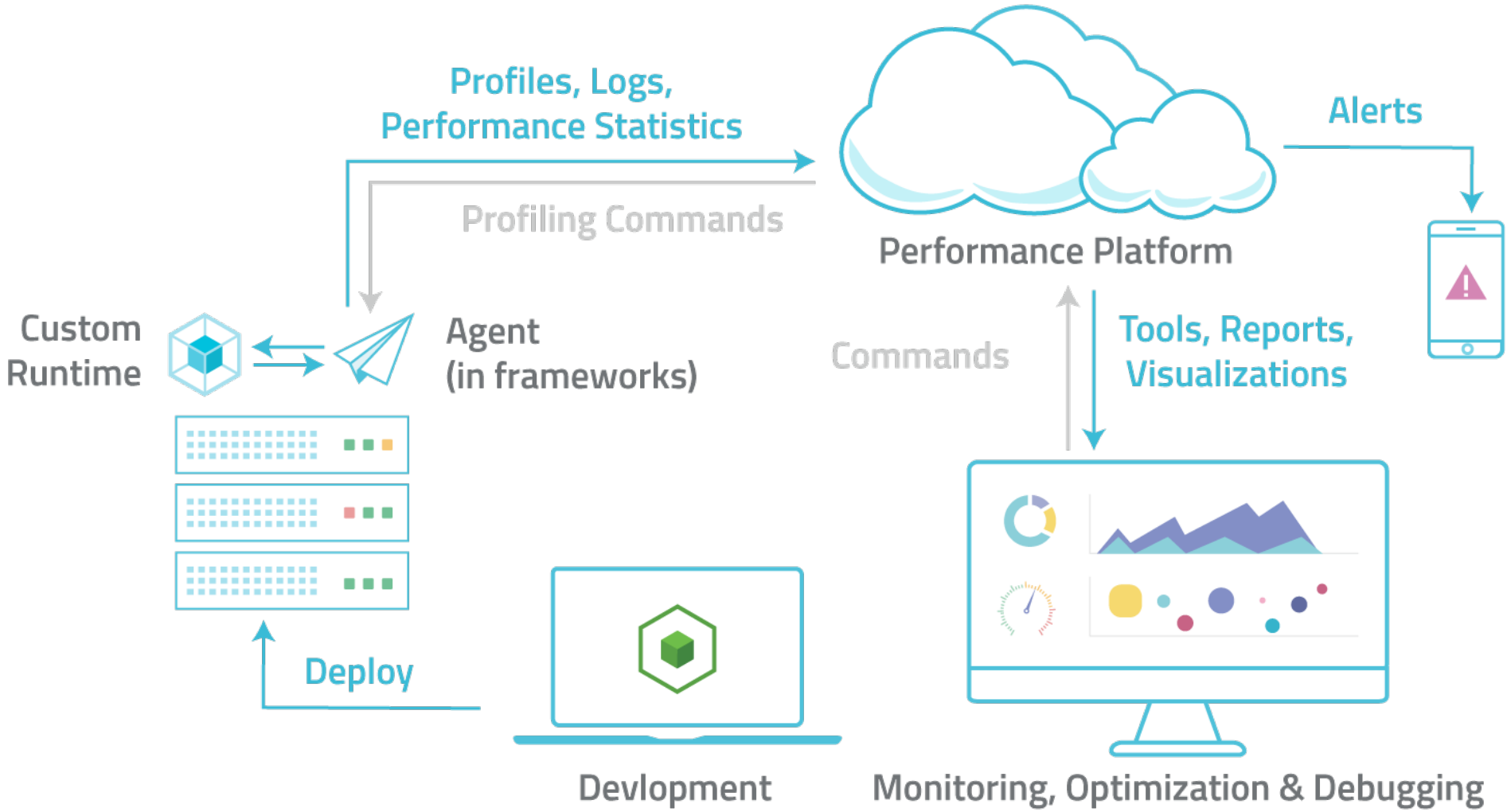
Deployment


Internal Registry
Download packages
and node.js binaries
Application Code
Build with
internal npm CLI
"install-node": "8"
package.json
Application Code
Packages
Node
Binary
Installed in
node_modules

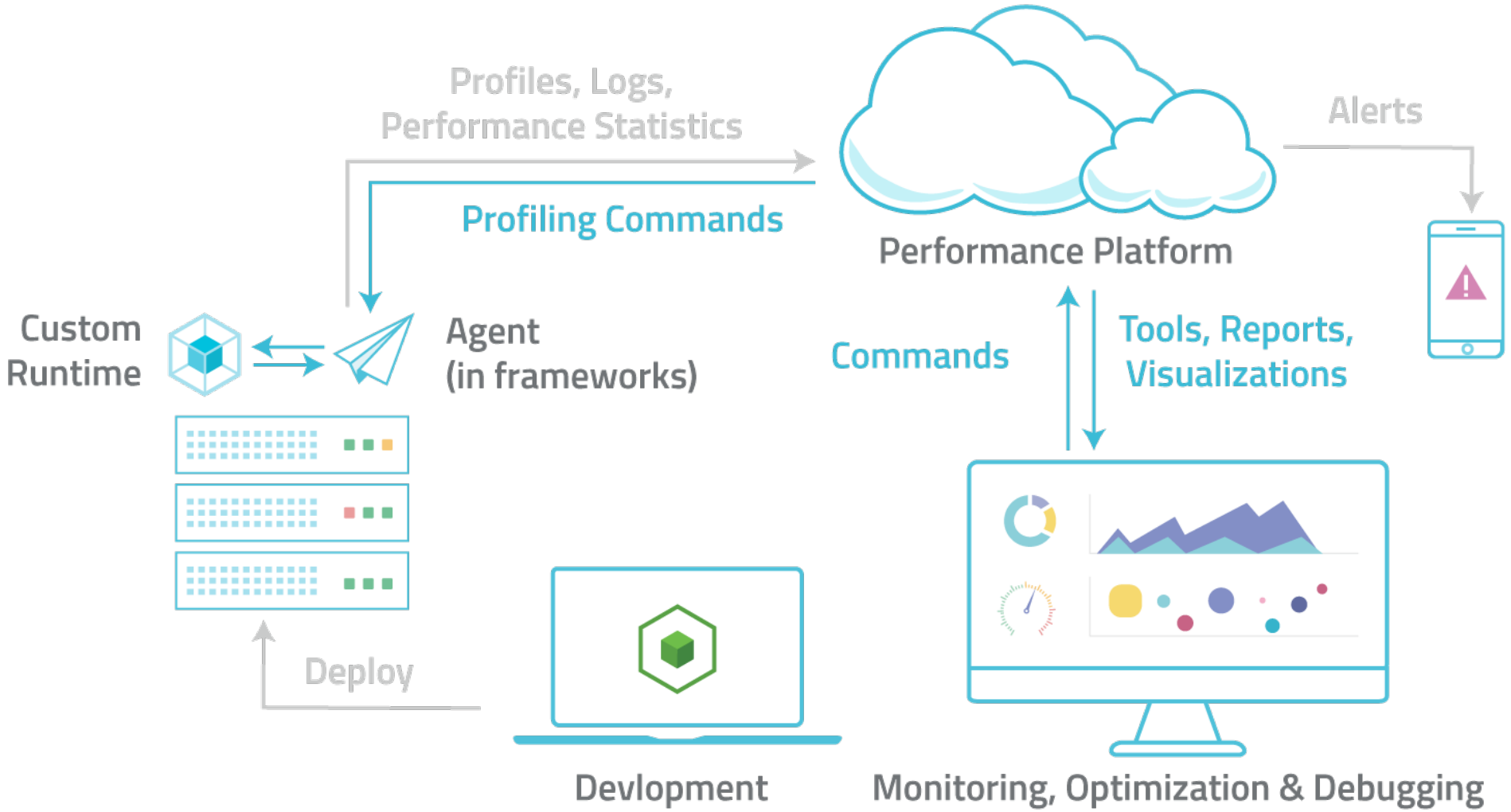
Deployment


Legacy Containers
(Could be running older versions of linux)
Bundle
Deployment Pipeline
Testing, Production
Scripts / Dockerfiles are baked into the frameworks
Docker Containers

Node.js Performance Platform



Node.js Performance Platform



Profiling

Coming soon: Sampling Heap Profile

+ Timers, libuv Handles, .etc

GC Overhead

CPU Utilization

Heap Statistics & RSS

GC Logs

CPU Profile

Heap Snapshot

Core Dump

Custom Visualizations

Devtools Flame Chart

Extended MAT & Devtools

Ilnode

Statistics Compared with Latency & Throughput

Generated during Load Testing or in Production

Profiling

https://github.com/aliyun-node/v8-gc-log-parser

Custom Visualizations

https://github.com/ChromeDevTools/devtools-frontend

https://github.com/brendangregg/FlameGraph

Devtools Flame Chart

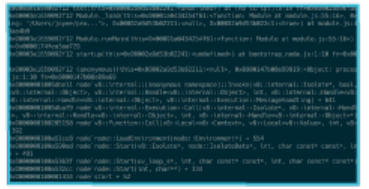
https://www.eclipse.org/mat/

Parser extended to consume V8 heap snapshots

Extended MAT & Devtools

https://github.com/nodejs/llnode

JavaScript API Work in Progress

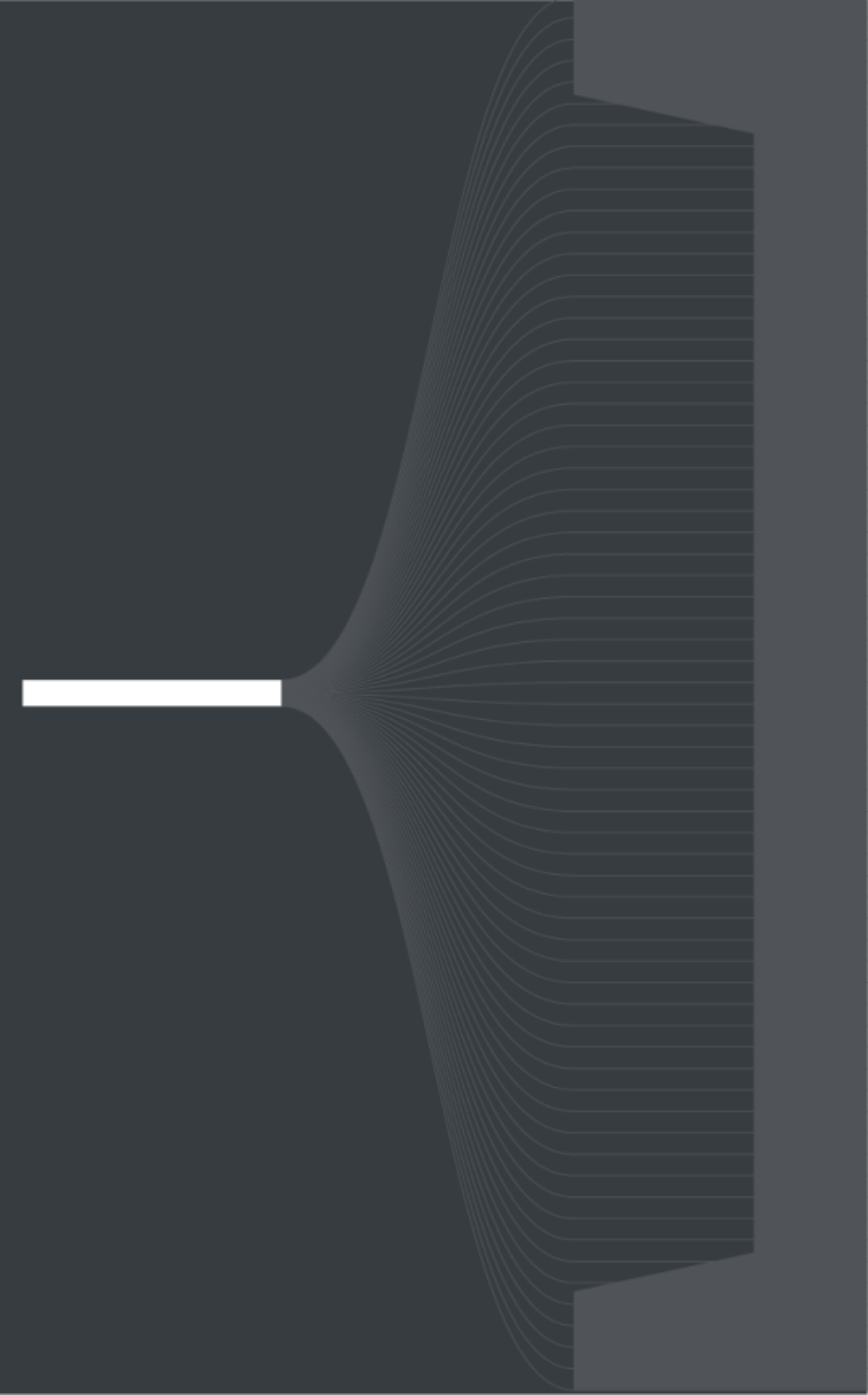


llnode

Future

Serverless

Alibaba Cloud Function Compute

- WIP: Integration with the Serverless framework
  - https://github.com/serverless/serverless/pull/4314
- https://github.com/aliyun/serverless-aliyun-function-compute
- https://serverless.aliyun.com/

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