

MiniApp and Mobile Web in AI Era

State, Future and Challenges

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Introduction from technical & ecosystem perspectives

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State of MiniApp

Multiple Platforms

Introduction

Multiple Platforms

Write Once, Run on Different ...

OS



iOS



Android



Harmony

...

Super Apps

Ecosystem

WeChat, QQ, WeCom, ...

Alipay, Taobao, AMap, DingTalk, ...

ByteDance, Douyin, ...

Extension

IoT / Smart Speaker



In-vehicle System



Introduction

Mobile Technology

Mobile Web, Hybrid

React Native (Facebook) ,
Flutter (Google) ,
Lynx (Bytedance) ,
Kuikly(Tencent), Cube
(Alipay), ...

MiniApp

Web based Tech

a domain-specific
language (**DSL**)
based on Web

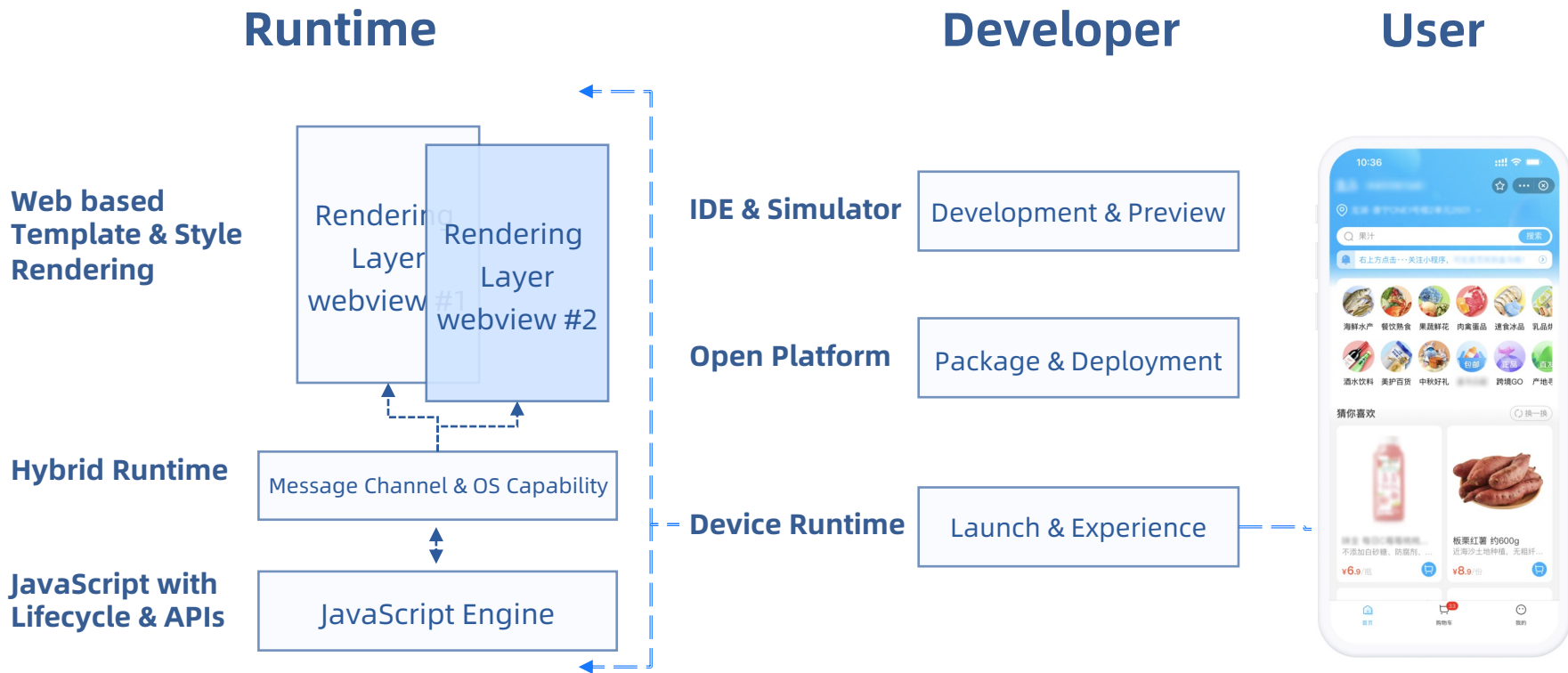
templates, styles,
lifecycles, and APIs.

For developers

toolchain, cloud
platform, packaging,
deployment,
permissions, privacy,
and policy

...

MiniApp



About Web Standards

Runtime *How to optimize rendering/logic layer execution?*

Can web workers interoperate with the DOM?

Do the rendering/logic layers use multiple threads?

Develop *Can template syntax behavior and parser implementations be standardized?*

Can partial open-source implementations facilitate end-to-end testing workflows?

AI *Are NN/GPU/WebAssembly supported?*

Is chunked/streaming transfer available?

/02

Future of Mobile Web in AI Era

Key technical challenges

1 Overview: Usage in Web and Mobile

2 Challenge in Chatting and Operating

3 Privacy & Security

Overview: Usage in Web and Mobile

For Developer

Coding

AI Agent



For User

Web as Rendering Env

Web as Content Provider

Web as Execution Env

Pro-Code

Claude Code

Code Completion

Debug / Fix

Explain

Low/No-Code

Design to Code

Purpose to Code

(Vibe Coding)

Chatting

Streaming Text & Markdown

Custom Cards & Interaction

Generative UI & Logics

and Operating

Browser Use

Perception/Recognize

Planning

Execution

Challenge in Chatting

Input

Text

Multi-modal
Speech to Text

Rich Text
Markdown with <tag>



streaming

Output

Cards

DSL / Schema
Developer Ecosystem

Generative

Infinite Flexibility
Raw/Subset Web



standards

Challenge in Operating

Perception/Recognize

Content Extract / Path
Side Effect

Planning

Reason-Act Loop
Control flow

Execution

Simulated Interaction
Multi-Page Navigation

Agent Accessibility / Agentic Web Interface

Structured Content Format for LLM

High Level actions

Web LLM / Edge Computing



More Extracted Info: Loop/Branch State Declaration

Security & Privacy

Permission

Device Sensor

Camera

Location

Microphone

Privacy

User Info

Identifier

Healthy

Financial

Security

Injection Attack / XSS

Unauthorized Interaction

Auto Completion

Payment

File Uploading