EDGE COMPUTING AND THE WEB

Use Cases, Stakeholders, and Requirements

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Example Public Use Cases

Retail

Store customer searching for item in store inventory based on an image

City

City visitor accessing air quality data and using that to plan jogging route

- These use cases might also benefit from persistent background execution, e.g. to generate notifications upon certain events.

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Example Private Use Cases

Home

Home resident (1) Playing game and video chatting while exercising (2) Offload of video analytics for robot navigation (VSLAM)

Office

Office worker accessing business and engineering data through a CAD system to fulfill customer order

- These use cases require or can benefit from privacy (or confidentiality), although this also depends on the edge deployment model.
- In private use cases the user may also be the owner of the edge computer, although other models are possible (e.g. edge computer provided by ISP to home users w/ contractual privacy guarantees).

Business Models

Category	Abbv	Business Model
Browser Vendor	BWSR	Free but supported by other business (e.g. CSP, ads/search)
Cloud Service Provider	CSP	Usage or subscription, account based (service provider pays)
Content Distribution Network	CDN	Usage or subscription, account based (service provider pays)
Internet Service Provider	ISP	Subscription/rental; HW sales in some cases
Hardware Vendor	HW	Sale or rental
Mobile Network Provider	NET	Usage or subscription, account based (user pays)
Operating System Vendor	OS	Sale or subscriptions to OS licenses; HW co-sales
Application Developer	APPL	Sale or subscription to software licenses (or in some cases, ad supported)
Web Service (API) Provider	SVC	Usage or subscription, account based (user pays)

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Pain Points and Opportunities

Abbv	Pain Points	Opportunities
BWSR	Poor user experience due to limited client performance Web apps developed to least common denominator client	Enable high-performance web applications not limited by client performance
CSP	High latency to cloud	Provide and monetize edge services Improve user experience by lowering latency
CDN	Developer access	Provide and monetize edge services Simplify/automate developer access and usage
ISP	High bandwidth usage for cloud services	Provide and monetize edge services Replace bandwidth usage with local compute usage
HW	Poor user experience due to limited client performance Declining demand for externally-powered computers	Use externally powered computers for edge services
NET	High bandwidth usage for cloud services	Provide and monetize edge services Replace bandwidth usage with local compute usage
OS	Declining demand for externally-powered computers	Use externally powered computers for edge services
APPL	Poor user experience due to limited client performance High latency to cloud	Use lower-latency edge services and improve user experience by lowering latency
SVC	High latency to cloud	Use lower-latency edge services and improve user experience by lowering latency

Possible Requirements/Choices

Packaging:

- JS/WASM

- Container images (note: OIC standard includes js/wasm, multiple platforms, etc.)

Migration:

- Moving live workloads

- Latency management

- Application vs. automatic

Persistence:

- Background execution when client is not active

Discovery:

- Dynamic vs. static; performance and capability metadata

Security and Privacy:
- Keys and identities
- Origin requirements
- Permissions
- Quotas
- Fingerprinting
- Data storage and state management
- Isolation and sandboxing

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