

# QWORUM

Low-code Application Development  
through Micro Frontends, Web APIs, Payments,  
User Authentication

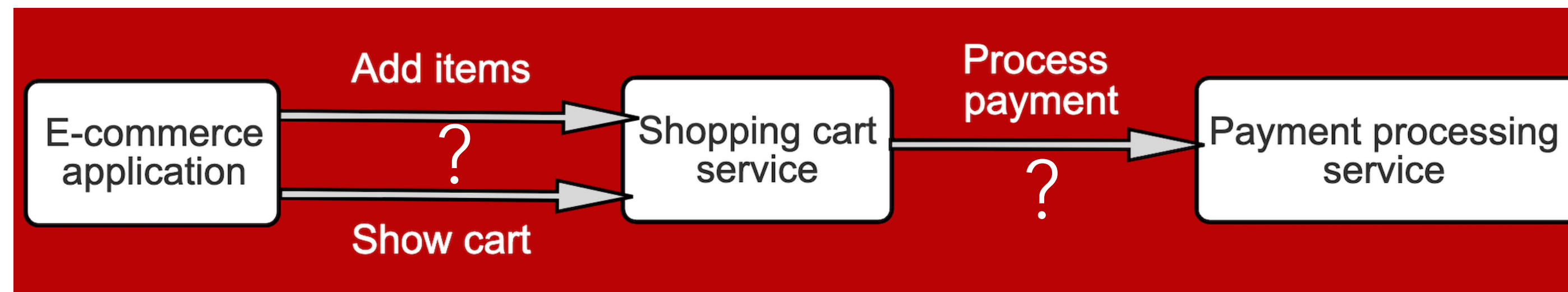
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# Problem & Opportunity

- The Web currently does not support Web applications as well as it could. This is because the Web was initially conceived as a medium for documents, not software.
- In particular, **there is no module system for Web applications!** For instance, an e-commerce site cannot use a third-party shopping cart service, it must implement the shopping cart functionality by itself.

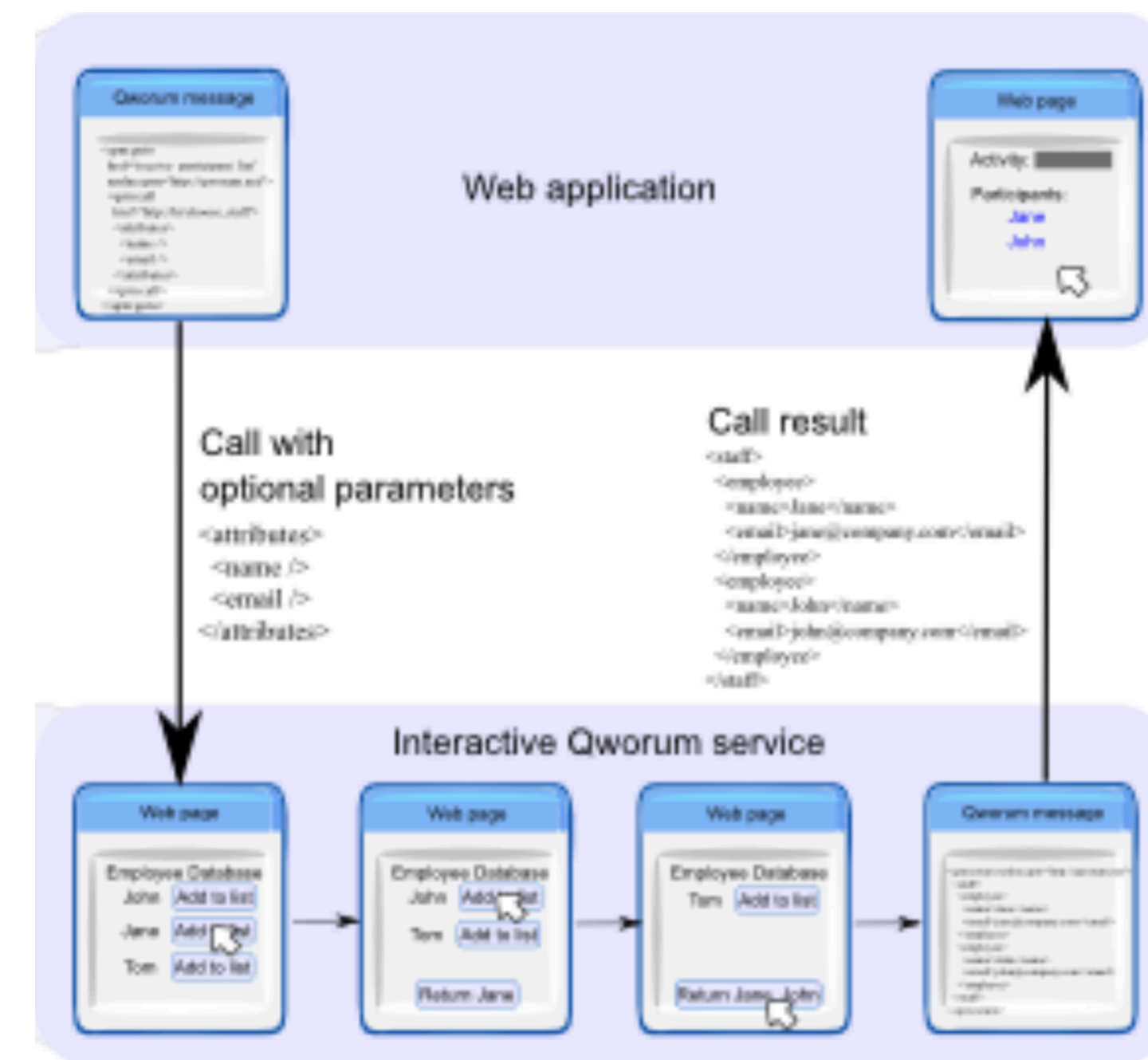


- More generally, the problem we are trying to solve is: **how to enhance developer productivity for Web, mobile and desktop applications through low-code solutions, including easy payments?**
- Market size: \$53B.



# Value Proposition

- Qworum improves developer productivity.
- It offers a **module system for Web applications**, and sells its own and also 3rd party modules.
- Additional planned **low-code features** for Web, mobile and desktop applications:
  - Facilitate fiat and crypto transactions between end-users and applications.
  - Facilitate calls to public Web APIs that are available on API Layer and other API marketplaces.
  - User authentication and user data.





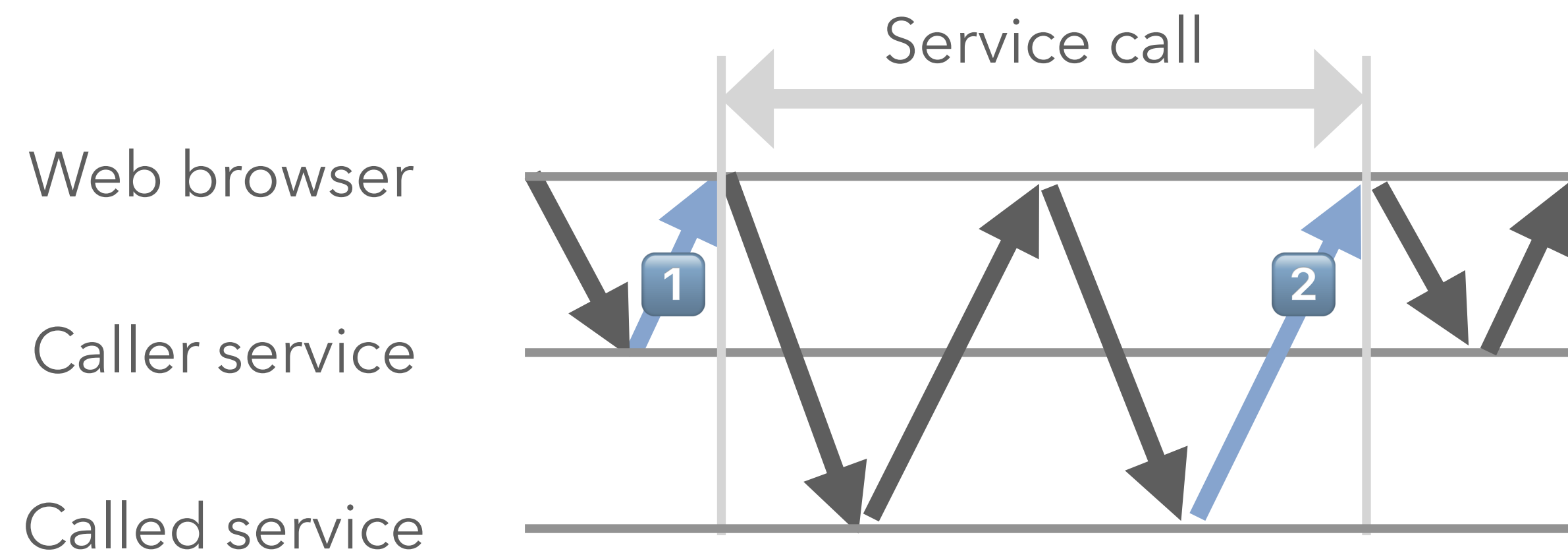
# The Invention (1)

- Module system for Web applications:
  - ▶ Qworum's browser extension enables Internet-scale **distributed Web applications** that are composed of interactive modules that are available anywhere on the Internet.
  - ▶ Qworum attaches a **call stack** to each browser tab.
  - ▶ The call stack is a new type of client-side storage that is independent from localStorage, sessionStorage, IndexedDB, cookies.
  - ▶ Browsers execute **Qworum scripts** (XML) received from Web servers. This updates the call stack and redirects the user to a new URL.
  - ▶ Browsers must know how to handle Qworum scripts in addition to HTML pages. Currently this happens through our browser extension, but browsers could support Qworum modules natively as well.



# The Invention (2)

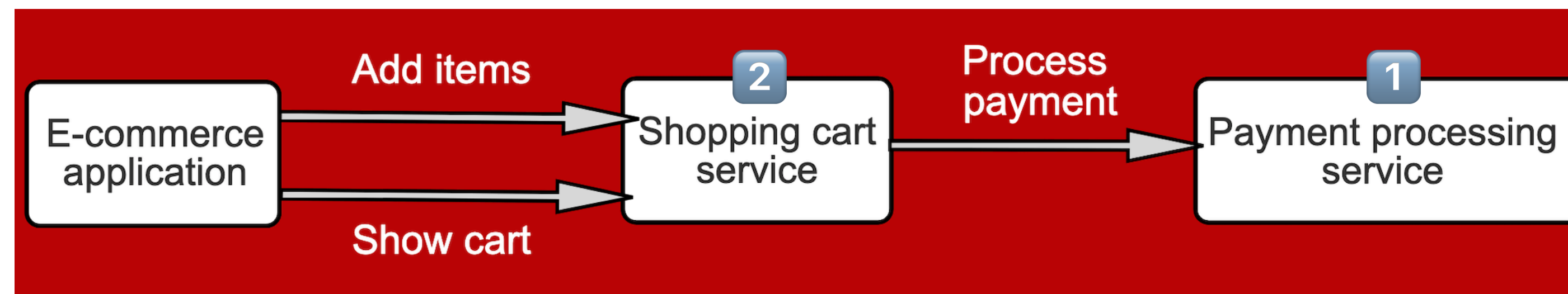
- How a Qworum service or application calls another Qworum service (see [US patent US8266632B2](#)):
  - ▶ The caller service sends a Qworum script to the browser instead of an HTML page (1).
  - ▶ The browser interprets the Qworum script, and redirects the user to the called service.
  - ▶ When the callee wishes to return a result, it in turn sends a Qworum script that returns the result to the caller (2).





# The Invention (3)

- US patent US8266632B2 has since expired. It only covers cases such as **1** where the called services don't need to share their state between several incoming calls from the same caller. This is for instance the case for a payment processing or user authentication service.
- A second (probably patentable) innovation now allows Qworum to also support more complex services such as shopping carts where the called service must share its state between several incoming calls **2**. For example, a shopping cart must remember all items that have been added to it, not only the last ones.





# Business Model

## ○ Customers:

- ▶ The owners of Web-based applications and services (1 sell subscriptions for providing access to public Web APIs, 2 execute financial transactions on commission, 3 sell our own Qworum services in our marketplace).
- ▶ Qworum services vendors (operate a service marketplace on commission).

## ○ Suppliers:

- ▶ Payment processors.
- ▶ Cloud hosting providers.
- ▶ Patent offices & patent lawyers (possible patent renewal fees).
- ▶ Browser vendors (they will be compensated for bundling Qworum with their browsers).



# Go-to-market plan

- Efficient marketing & sales:
  - ▶ Provide add-ons for website hosting providers (Netlify Build Plugins...).
  - ▶ Enter bundling agreements with browser vendors.
  - ▶ Integrate with low-code Website development tools (Webflow, Wix,...).
  - ▶ Integrate our marketplace with other API marketplaces (APILayer...).
  - ▶ Presentations at developer & business expos & conferences.
  - ▶ Browser innovation may interest the technology press.
  - ▶ Direct sales to SaaS & web service vendors.



# Competitive Analysis

- No direct competitor for Web modules: **Qworum can become the de-facto Web standard for distributed applications.**
- Indirect competitors:
  - ▶ API marketplaces (RapidAPI, APILayer...). **1** They can't offer interactive services (but our marketplace could integrate with theirs in the future, they could act as a distribution channel). **2** Applications may prefer to pass through us, because we provide easier access.
  - ▶ Low-code Website building tools (Wix, Webflow ...). **1** Qworum services can offer more functionality than their ready-to-use widgets. **2** They can act as our distribution channels.
  - ▶ Payment processors (Stripe...). Applications may prefer to pass through us, because we provide easier access.
  - ▶ Identity providers (Firebase Auth...). Applications may prefer to pass through us, because we provide easier access.



# Team



Doğa Armangil  
Solo founder, CEO, CTO.

- ▶ EPFL software engineer.
- ▶ Patent author.
- ▶ Project manager.
- ▶ Browser extension developer.
- ▶ Mobile, desktop, web developer.
- ▶ Software designer & architect.

Future hires:



Developer team



Sales & marketing



# Financials & Metrics

“The most reliable way to predict the future is to create it.”  
— A. Lincoln

	Year 1	Year 2	Year 3
Sales [CHF]	100K	2M	3.5M
Cost [CHF]	280K	560K	1.4M
Earnings [CHF]	(180K)	1.4M	2.1M
FTE	4	8	20
Applications using payment services through us	1K	15K	50K
Applications using Web APIs through us	500	7K	15K
Qworum service buyers	200	3K	8K



# Status & Timeline

## Accomplishments:

- ▶ US patent US8266632B2 (expired):  
"Method and a system for the composition of services".
- ▶ 2nd innovation, probably also patentable.
- ▶ Draft of the Qworum module system specification.
- ▶ Pre-beta implementations of deliverables: browser extension, developer libraries, developer tools, demo (Qworum application & 2 Qworum services). Marketplace not yet implemented.

## Next steps:

