Innovation Portfolio - Daniel Arnaud

For over 20 years, I have been building, designing, and leading innovative digital projects — often ahead of their time. Creating the first mobile email service in Europe, optimizing energy use in the railway industry, or exploring NFTs as new revenue streams for artists, my goal has always been to build something useful or valuable for the users. Innovation for me is not just about technology. It's about solving real problems. This portfolio of bold experiments and lesson learned, reflects my mindset: hands-on, cross-disciplinary and purpose driven.

What I can do for you:

Imagine / Listen:	Understand needs, surface ideas, and propose useful, achievable concepts.
Design:	Translate a vision into a clear, robust, and coherent technical solution
Build:	Develop the product myself or lead a team, with hands-on technical depth.
Deliver:	See it through: ship a stable, usable, and market-ready tool.
Support funding:	Help secure early funding through my connection with MIIF

On going projects:

As a consultant, I am currently involved in several Blockhain project

Role: Designing and experimenting
Year: 2025 – ongoing

Humanitarian relief package tracker and proving

A tracking and proving system for humanitarian help. The systems should provide an unchallengeable and un-temperable proof of delivery and usage. The solution relies on IPFS storage and requires the development of a Rust library embedded into the Swift application. Prototyping phase.

Photojournalism monetization

Personal project with the goal of providing a mobile application empowering the witness of any event to mint an NFT from a photo in one click, and broadcast it on various channels (X, Instagram, etc). The concept is to bet on the event and the photo to become viral to auction the photo at a high price.

Crypto Lombard Credit

Project initiated by a group of Kaspa evangelist. It should provide a credit card relying on a crypto asset as collateral. In charge of the evaluating and testing of the lending protocols (AAVE, Morpho).

Completed projects:

Energy Saving App for Railways (2014 - 2023)

Role: CTO on project mission
Customer: TTG/SNCF/RENFE
Year: 2014

In 2014, TTG, a small Australian company specialized in scientific algorithms, won a major energy optimization tender from SNCF, outperforming larger competitors like Siemens. However, the collaboration was at risk: while TTG had the best algorithmic engine, the project was lacking in delivery, management, and integration capabilities.

I was brought in as interim CTO for the project. I combined my expertise in **scientific computing** and **iOS development** to lead both the integration of the core algorithm and the development of the onboard system for iPad. I also coordinated with the University of Adelaide, which was responsible for the algorithm's evolution.

On the technical side, I developed the interface between C/C++ scientific code to Objective C and Swift, designing the APIs for the SNCF developers group. I also adapted the power hungry optimisation algorithms to the very ressource restricted embedded devices used on the Bombardier/RENFE trains. It allowed to use the algorithms without having to go through the several years long certification process required by any changes on the Bombarder embedded automatic driving systems.

On the management side, a major challenge was the internal resistance within SNCF. Thanks to a combination of technical leadership and soft skills, I managed to rebuild trust with key stakeholders, realign the teams, and bring the project back on track.

The POC deployed on the Paris–Marseille line achieved the targeted **10% energy savings**. Nine months after my arrival, TTG signed a €1 million license agreement with SNCF, opening the door to a **7-year collaboration**.

Key strengths: Scientific computing, mobile integration, energy optimization, team leadership, project recovery

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React.to — Interactive Second Screen App (2012)

Role: Co-founder & CTO
Year: 2012

In 2012, I co-founded React.to, a startup focused on “second screen” interaction during cultural or sports events. The concept was to enable TV viewers to respond to live events — by shouting, clapping, shaking their phones — as naturally as if they were present in the stadium or concert hall.

Using mobile sensors (microphones, accelerometers), the app gathered audience reactions in real time, analyzed engagement levels, and shared them with the broadcaster. The project introduced the “Virtual Stadium” and “Virtual Concert Hall” concepts.

I also designed a dynamic multiplayer feature called **“Game in the Game”**: supporters of each team could challenge each other in real-time games, where the rules adjusted based on the level of support their team was receiving live. It was an early form of gamified fan engagement.

Although the market wasn't ready in 2012, with today's blockchain and gaming tools, the concept is far more feasible and relevant.

Key strengths: Product innovation, mobile sensors, real-time data, gamification, entrepreneurship

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Multimodal Route Planner on iOS (2008)

Role: Innovation Consultant
Year: 2008

Just a few months after Apple released its first iPhone SDK, I was approached by a startup spun off from INRIA (a leading French research lab) to build one of Europe's first **multimodal itinerary apps** on iOS. The project involved integrating complex routing logic (public transit, walking, car) into a user-friendly mobile interface.

Despite tight deadlines, the app was delivered on time and received a prize at the 3GSM World Congress in Barcelona in February 2009.

Unfortunately, the startup team, while highly skilled in research, lacked the business and commercial know-how to maintain its first-mover advantage. The project was overtaken by competition shortly after launch.

Key strengths: Rapid prototyping and development, scientific computing, iOS development, innovation consulting

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First Mobile Video Sharing App (2006)

Role: Innovation Consultant
Client: Dailymotion (via software agency)
Year: 2006

Before YouTube launched its mobile app, I led the development of the **first video sharing mobile application in Europe** for Dailymotion. The app was implemented as a Java Midlet and pre-installed on selected handsets distributed by the French mobile operator SFR.

Due to the technical limitations of the time (640 KB maximum upload size), I designed a custom upload protocol to divide and reassemble video chunks on the Dailymotion servers. Alongside this, I led the user interface development team, ensuring compatibility across devices.

The application was successfully deployed on several Sony Ericsson handsets and marked an early step in the evolution of mobile video content.

Key strengths: Protocol design, mobile network constraints, Java Midlet development, technical leadership

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Bluetooth-Based Guidance System for the Visually Impaired (2005)

Role: Innovation Consultant
Year: 2005

A Paris-based startup approached me to develop a prototype for an indoor navigation system for visually impaired users in the metro system. Without GPS signal underground, the system relied on **Bluetooth beacons** embedded in walls to determine position.

The application detected beacon IDs, retrieved corresponding coordinates from a database, and played audio instructions tailored to the user's destination. However, field tests revealed that **air humidity degraded Bluetooth signal strength**, especially during peak hours — precisely when the app was needed most.

The prototype was ultimately discontinued, but the project delivered valuable insights into the limitations of early mobile-based navigation systems.

Key strengths: Assistive tech, location-based services, Bluetooth signal analysis, prototyping

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Enhanced Awareness Mobile Apps (2003)

Role: CTO & Product Designer
Year: 2003

As smartphones gained capabilities, I envisioned a new category of applications: **"Enhanced Awareness" mobile apps**, which would collect and share environmental data to help users avoid danger.

Two prototypes were developed:

- A **collision avoidance system** for small yachts and large commercial ships
- A **proximity warning system** for cyclists and drivers in low visibility

The challenge was to detect risk situations in real time using a GIS system that analyzed user trajectories. This led to a collaboration with a lab at the State University of Saint Petersburg to build a prototype of a **"Smart GIS"**.

The concept was technically viable but ahead of its time: mobile networks were not yet fast or reliable enough to support the data flows required.

Key strengths: Concept design, GIS collaboration, safety-focused innovation, academic partnerships

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First Mobile Email Application in Europe (2001)

Role: Acting CTO
Year: 2001

In the early days of mobile internet, as Nokia released its WAP 1.0 platform, I was hired by a French startup to develop a **market-leading product**. After assessing the limitations of the technical ecosystem (devices, gateways, networks), I designed and implemented the **WAPplication Server**, a session-resilient middleware that maintained the user state across network disconnections.

Building on that foundation, I led the development of **the first mobile email client in Europe**, which was deployed by two ISPs. I also managed the deployment of the **first end-to-end digital mobile connection** in France for those operators.

Key strengths: Early-stage innovation, session management architecture, telecom systems integration, technical leadership