

NEUROTECH

Deliverable D1.1: Specification of the NEUROTECH Webportal

- Project: NEUROTECH, Grant number 824103
- Report dissemination level: public
- Report target delivery date (updated version): project month 12 = October 2019

Summary

The purpose of the NEUROTECH Webportal is to make publicly available informational resources which:

- 1) form the identity of the NCT (Neuromorphic Computing Technology) Community in Europe by providing a definition and cartography of the NCT research in Europe, and proposing a Roadmap for NCT development;
- 2) of use for the NCT community and motivate researchers and technology developers to visit the Portal and contribute to the community development (e.g. educational resources, upcoming and past events, lists of related labs and companies);
- 3) Promote NCT outside the core neuromorphic communities, to both potential users and suppliers of the technology;
- 4) Formulate and disseminate the view of the NEUROTECH community on ethical issues related to NCT.

Introduction: Current state of the Portal

The NEUROTECH Webportal is currently published at neurotechai.eu. The first version of the portal aims to create a web presence for the project that can be used to make both the NCT community and potential partners outside the core community aware of the project and its plans. This version also provides information about upcoming events – both organized and supported by the project and other relevant events world wide.

The main developer of the Portal is Gleb Galkin, IT Consulting & Development – a small web-design company based in Germany who provides end-to-end web design and development service with a flexible task-setting approach. This allows us to adapt the portal development plan (presented below) to project development in an agile way.

Some parts of the Portal (currently, the Main page) are open for editing to the NEUROTECH Coordinator (and leader of Task 1.1 NEUROTECH Portal). Over the project development, more pages will be created that Consortium members can edit (e.g., Educational resources, Previous events, Roadmap, Work Groups: Industry, Science, Bridges, Ethics).

The Portal in the current version features a Blog, which can be edited by the Coordinator and HERTS partner (responsible for Task 3.1 Newsblog). Blog is used as the main means to disseminate news and informational material, e.g. Fellowship and Prize announcements or reports about events. All new blog posts are highlighted in the media, associated with the NEUROTECH Project:

- Facebook page (neurotechai)
- Twitter
- LinkedIn Group

The first version of the portal includes the following pages:

■ **Main page**

Provides an overview of the goals of the NEUROTECH Project. The sections of this page are:

- Create and promote NCT community in Europe,
- Develop bridges between Academia and Industry,
- Promote Educational Resources,

Currently, the first three sections have a relevant place-holder text. In the second year of the project they will lead to respective pages on the portal.

- Fellowships and Prizes

The links lead to blog posts about the Telluride and Capo Caccia Fellowships (Tasks 4.3 and 4.4) and the NEUROTECH Prize (Task 3.4).

- List of upcoming events

A list of upcoming events related to NEUROTECH (moved to a separate page).

All sections on the main page can be edited by the Coordinator / WP1 leader in a CMS.

■ **About**

Provides a brief description of the NEUROTECH Project and NCT research field.

Includes quotes from NEUROTECH PIs answering the question “What is Neuromorphic Computing Technology?”

■ **Partners**

List of the NEUROTECH Partner institutions

■ **Team**

List of NEUROTECH PIs

■ **Contacts**

Contains the contact of the project Coordinator

■ **Blog**

List of all NEUROTECH Blog posts.

Further Development Plan

The informational content displayed on the NEUROTECH Portal will be developed in the course of the project. The nature of this content -- text, pictures, diagrams, videos, interactive illustrations or datasets -- determines the technical solutions that need to be selected accordingly. Thus, in the project we will follow the agile development paradigm: in 1-3 month long iterations we will determine the chunks of work that need to be accomplished to achieve project goals and form the deliverables on time.

The next foreseen iterations include the following:

- Previous events

Currently, future events are displayed on the Main page of the Portal. In this iteration, the events whose date is in the past will be automatically transferred to the "Previous events" page and organized there for later reference. We will include basic information about the event (dates and place) and a link to the external event webpage. These pages often contain generally useful information: names and affiliations of speakers, talk titles and abstracts, sometimes video recordings of the presentations. A collection of these links will be a useful resource for the community (planned end date: October 2019)

- Educational resources page

On this page, we will display the currently available educational resources, related to NEUROTECH. In task 4.1, a list of these resources has been compiled (to be submitted as Deliverable D4.3). This list includes a number of off-line University courses and a number of videos: most are talks for related events, some are more tutorial material. This material will be graphically arranged and thematically organized on the webpage (planned end date: January 2020)

- NEUROTECH Work Groups pages

In task 5.3, four Work Groups are organized to work on different NEUROTECH project outputs: Industry, Science, Bridges (to other communities), and Ethics. For each workgroup, a space in the CMS will be created that can be edited and structured by the respective Work Group leaders. The WG pages will present the goals and work plan of the Work Groups, hold their membership list and organize main outcomes (some of which will be published as blog posts, other ones will be static material) (planned end date: February 2020)

■ NEUROTECH Blog structured

Currently, the NEUROTECH Blogs are chronologically organized, showing the latest blog first. In this iteration, the blogs will be organized according to their nature: Event reports, New educational resources, Prize announcements and awards, Fellowships information and reports, White papers and statements (planned end date: March 2020)

■ NEUROTECH Cartography

In the task 1.2 Cartography of the NCT and its Deliverable D1.2, a list of labs and projects, involved in NCT development in Europe will be created and published in a Blog. In this iteration, this list will be transferred to a dedicated webpage, where different groups will be represented and organized graphically. Project partners will have the possibility to extend this list (planned end date: March 2020)

■ NEUROTECH Roadmap

According to task 2.3 and associated deliverable D2.2, a first draft of the Roadmap for NCT technology will be finalized during the NEUROTECH Forum I in Leuven (Nov. 4) and published as a Blog post. This Roadmap draft will be used to graphically represent the proposed Roadmap on a dedicated page on the Portal (planned end date: April 2020).

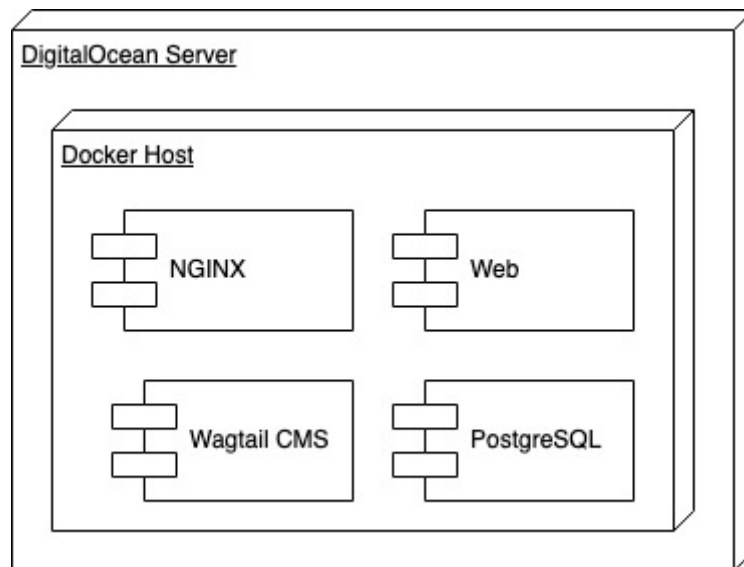
Technical specifications of the Webportal

Architecture

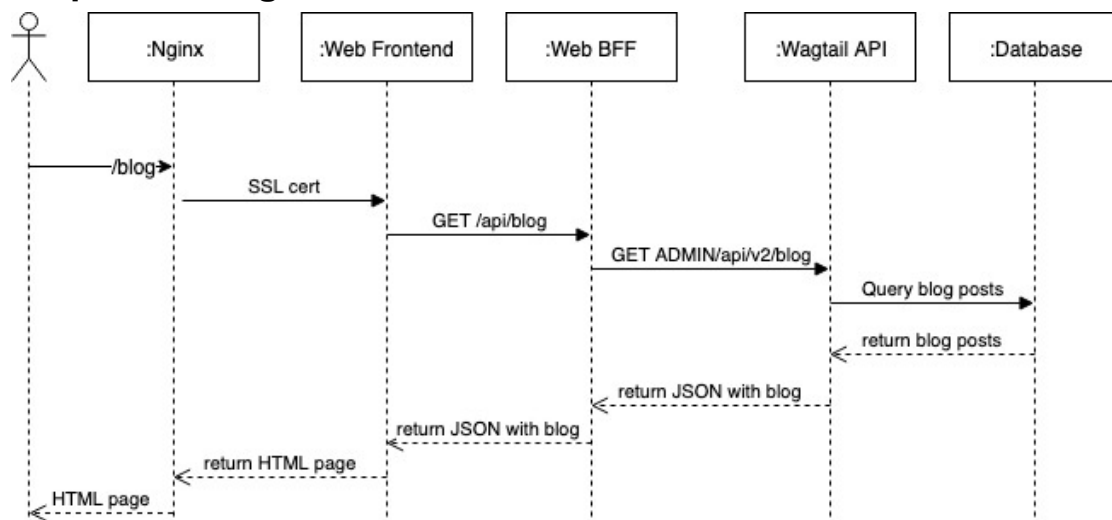
Neurotech portal is split into the following parts:

1. **Web** – a React application driven by Next.js, so it is easy to have Server side rendering out of the box. We use custom Semantic UI theme and CSS-in-JS approach to define custom styles. We use Backend for frontend approach. We strive to give our users the best user experience by constantly monitoring web application performance that can be improved:
- First Contentful Paint – 3.1 s - Speed Index – 3.3 s - Time to Interactive – 4.6 s - First Meaningful Paint – 4.1 s - First CPU Idle – 4.5 s - Estimated Input Latency – 20 ms
2. **Admin / Wagtail CMS** – an admin panel that is used for content creation only! We use Wagtail API to get all data in Web and render it with React.
3. **Nginx** – a reverse proxy to apply SSL certificate for all requests.
4. **PostgreSQL** – a database for Wagtail CMS.

Deployment Diagram



Sequence Diagram



Wagtail CMS / Admin Panel

We use [Wagtail CMS](#) as CMS system to create a content for Neurotech Web.

Neurotech Web

Web Application for Neurotech project.

Requirements

- Node.js 10
- NPM 6
- Docker

Languages & Frameworks

Neurotech Web Application is built using the following:

- TypeScript & LESS
- [Next.js](#) as a React framework with a bunch of plugins to simplify SSR, code splitting, images optimization, and SEO
- [Semantic UI React](#) with custom theme as Design System and building blocks for UI
- [Express.js](#) as a web framework to run server side code