

## Web NFC Report

Near Field Communication (NFC) technology is used for short range wireless communication between devices. Web NFC is a new web standard that enables web applications to interact with NFC tags and NFC capable devices. This technology has various potential in different applications, including, but not limited to, ticketing, payments, and ID verification. In this report, we will discuss the implementation of web NFC for our university portfolio app and the different technologies required to develop this app.

### Implementation of Web NFC in a University Portfolio App

The university portfolio app is an application that allows students to showcase their academic achievements, work experiences, and other relevant information to others. Web NFC can be used to make this process more seamless by allowing students to share their portfolios with students, staff, and many others, using their university (NFC enabled) identification card.

To implement Web NFC in the university portfolio app, we need to create NFC tags with student information. Thankfully, these tags are already embedded and coded in most university students ID cards already, so, they can already be used to initiate the NFC communication process; otherwise, the first step to implementing this would be to create an NDEF (NFC Data Exchange Format) message and write it to the NFC tag - Since the ID cards are already coded, we can use them to identify each student uniquely and retrieve their information using the Web NFC API. Then, we would implement the web NFC API in the app to receive the NDEF message when the user taps their ID card on a device. We can achieve this by using the 'NDEFReader' object to read messages from the NFC tags. Next, after parsing the NDEF message to extract the student's information, we can display the user's portfolio in the app. The NDEF message contains the information in a specific format, and so, we need to use JavaScript to extract the information. Finally, once we have parsed the information and extracted the information, we can display it in the app. Additionally, since we are not rewriting any NDEF messages on any ID cards, ID cards will still retain original functionality such as opening doors and performing other functions.

### Technologies Required

To implement Web NFC in the university portfolio app, we need to use server technologies, including:

1. Web NFC API: The Web NFC API is a web standard that allows web applications to read and write from ID cards and devices, accordingly, providing a seamless and secure way for users to interact with NFC enabled devices and tags. With its set of JavaScript functions for reading and writing data, detecting and handling NFC events, and its events system to trigger applications in the web app, the API offers an efficient way to transfer data. – The API is rapidly gaining support in various browsers but is currently only available in the latest versions of Chromium based browsers.
2. Web development frameworks: To store the student's portfolio information, we need to use a web development framework such as React to build the front-end of the application. This framework enables us to create user-friendly interfaces and build responsive web applications that work across different devices and screen sizes.
3. Database technologies: In order to store the student's portfolio information, we need to use a database technology such as Postgres. This database enables us to store and retrieve data efficiently and securely.
4. Server-side technologies: we would need to use a server-side technology such as Node.js to build the back end of the university portfolio app. These technologies enable us to handle HTTP requests and responses, manage session data, and perform other server-sided tasks.

In conclusion, Web NFC is a promising technology that has many potential applications, including the university portfolio app. By using Web NFC, we can create a seamless, innovative, and secure way for students to share their portfolios with other students, staff members, and even employers. To implement Web NFC in the university portfolio app, we need to use several technologies, including the Web NFC API, web development frameworks, database technologies, and server-sided technologies.