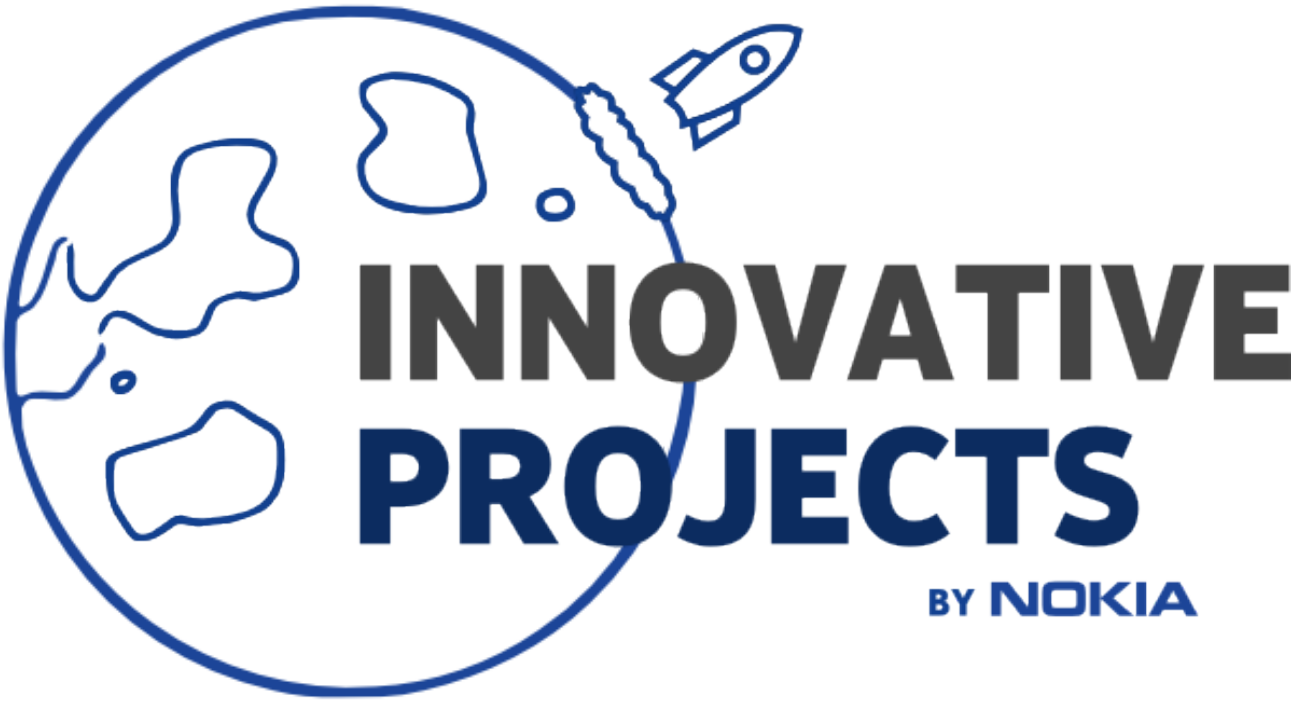
Innovative Projects

Summer 2020

contact: innovative.projects@nokia.com



Innovative Projects
Summer 2020

contact: innovative.projects@nokia.com

List of projects

contact: innovative.projects@nokia.com

#1	Multiplayer Action race game
Project goals	Create a 2D multiplayer action game where players race through a platformer-style "city" map, trying to get on top of highest buildings and installing BTS-es/Antennas for their team. General rules/ideas: • A crossover between Icy Tower and Mirror's Edge 2D • Players try to climb up the highest points, but there are difficulties on the way that can cause them to fall down (see Getting Over It with Bennet Foddy) • Players can interrupt others / knock them down on the way • Possible game types: Race to the top, Capture the BTS, Install as many BTSes in a given time
Scope definition	• Multiplayer Game engine that allows players to move across a 2D side scroller map, interact with each others and complete objectives • Preferably the game should be runnable in browser • Optional: Map Editor
Requirements	• Basic knowledge about game development • Basic knowledge about transfering data over network (TCP/UDP) • Familiarity with some game frameworks e.q. Phaser.js, Unity is very welcome
Author	Michał Porzycki
Team size	2-4

contact: innovative.projects@nokia.com

#2	Training Planner
Project goals	The goal of the project is to create platform to complex managing webinars. Application will simplify the whole process: booking slots for trainings in calendar, sending notification to different group of people, creating invitations, adding materials and collecting statistics after the session.
Scope definition	• Integration with calendar (e.g. Google Calendar) • Mail notifications • Creating templates of mail invitations • Collecting statistics after the webinar session
Requirements	• Advanced frontend and medium backend knowledge and skills • Familiarity with React is very welcome • Only for Computer Science students (requires some experience in programming)
Author	Renata Parzonka, Maciej Solarek
Team size	3-4

contact: innovative.projects@nokia.com

#3	Django package to import and correlate data from external sources
Project goals	Information society relies on the processes of retrieving, storing and correlating data from various sources. These processes are part of everyday work of a developer in a technical company such as Nokia. Yet, the business component of this process is changing constantly, which requires continues changes to the code. The purpose of this package is to create an abstraction layer for business logic related to fetching data from various sources (API, CSV, Excel), storing it and creating relations between tables/data sources.
Scope definition	Creating reusable Django app that: • Allows to manage (through config files or later API) data sources • Automatically create and maintain models • Let the user define relations between data sources • Provide API using Django Rest Framework
Requirements	• Solid knowledge of Python • Basic knowledge of the Django framework
Author	Borys Szefczyk
Team size	2-3

contact: innovative.projects@nokia.com

#4	Photographer's portfolio
Project goals	Content Management System (CMS) crafted for a professional photographer. The application should have a UI that allows the user to add their own content, i.e. create galleries, custom pages, carousels, contact forms, links to other pages.
Scope definition	Requirements: • The user should have a toolbox with components that can customized and freely be arranged on a page. • Responsive web design. • CMS should be packed in a container for portability and ease of deployment. • Audited using the Google Lighthouse tool for performance, accessibility, and SEO. Other proposed features: • CMS should generate the final website as a set of static pages that can be hosted on a CDN or the website should be server-side rendered (SSR). • Page previews. • Built-in image resizing and compression. • Managing multilangual content.
Requirements	Recommended stack: • React • Go or Python • Postgres or an embedded database
Author	Michał Polański
Team size	5

#5	Noticrawl - a web scraper and notifier
Project goals	An app that mimics user's behavior to crawl into webpage, extract desired content, and notify if it changes. A browser extension records what the user does on a page to get into desired content. Then it sends the instruction to a server that replays those steps in user-defined interval and notifies the user if there is a change.
Scope definition	• The server application should use a headless browser so it is always up to date with ever-changing web standards. • Secure data upload from the web extension. • User-defined schedules. • The notfication should optionally provide a screenshot. • Should be able to manage multiple users. • Pluggable notification modules (e.g. mail, IRC, slack - depending on the size of the group)
Requirements	Recommended stack: • Chromium Headless • WebExtension APIs • Python, Javascript, Go
Author	Michał Polański
Team size	4-5

contact: innovative.projects@nokia.com

#6	Check room
Project goals	The application allowing to obtain the status of the availability of rooms in the company after scanning the QR code on a mobile device.
Scope definition	• A scanning application that allows you to connect to the room calendar • Connection to the e-mail client application for booking rooms • Customer interface showing the room availability screen • Display of available rooms nearby • Integration with Google Calendar
Requirements	• Frontend knowledge (React)
Author	Olga Bogucka
Team size	2-3

contact: innovative.projects@nokia.com

#7	Is my computer locked?
Project goals	The project consists of two simple applications in the server-client architecture. The client notifies the server in real-time whether the computer is locked or unlocked. The server provides a web-view of the current status with a button that blocks the computer.
Scope definition	Requirements: • The application must be served through HTTPS on port 443 to be allowed by a corporate firewall. • The client must be properly authenticated by the server. • Gnome-shell integration and an alternative that just executes user-defined shell commands. • Simple registration that allows multiple clients to be connected simultaneously. • The registration can be disabled and client access rights can be set manually in a configuration file. Extra points: • KDE integration. • The client can register custom actions that can be triggered by the server. This is defined in client's configuration file. • The server throttles the connection if the client seems rogue.
Requirements	Recommended stack: • Go or Python • gRPC
Author	Michał Polański
Team size	2

#8	eFEmetrics - timers and logging for frontend apps
Project goals	Solution for metrics and events reporting from any web application.
Scope definition	• Backend to validate and accept the metrics and log messages • Database for storing them • Application of available Open Source applications to view those • Set of simple libraries to integrate any existing frontend application with created system (React, Angular, Vue)
Requirements	• Some high performance asynchronous web framework • Some time series database • Some logs-collection specialized database • Devops with docker
Author	Mateusz Wroński
Team size	3-4

#9	Quick Forms
Project goals	The goal of this project is to create an application that allows for quick data entry into forms using a QR link. It will improve flexibility and reduce time in any kind of office.
Scope definition	• Backend to validate input data. • Database to store input data. • API to serve input data in standarized form. • RWD Frontend interface (should work on mobile devices).
Requirements	• Frontend knowledge (React) • Python/NodeJS • RestAPI
Author	Tomasz Michałowski
Team size	3

#10	Car Android Bluetooth controller
Project goals	The goal of the project is to create a Bluetooth Android controller like those used in modern cars. It is required to setup HW and SWs project which will give the possibility to control Android applications via dedicated controller, via Bluetooth interface. Such solution should give the possibility e.g. to send the SMS , open media, manage contacts without using mobile phone screen.
Scope definition	• Prepare dedicated SW ”signaling broker” to manage signals translation between controller and Android apps. • Setup HW Bluetooth interface to communicate with dedicated “signaling broker”. • Give the possibility to control Android Phone via Bluetooth and dedicated controller.
Requirements	• Knowledge about Mobile Phone systems – Android • Knowledge about Bluetooth communications aspects for Mobile Phones • Possibility to setup simple HW with SW to manage communications between external device and Android system
Author	Michał Pomykała
Team size	3-4