



## Maxim Van de Wynckel

**Date of birth:** 10/03/1995 | **Nationality:** Belgian | **Gender:** Male | **Phone number:** (+32) 489861848 (Home) | **Email address:** [me@maximvdw.be](mailto:me@maximvdw.be) | **Website:** <https://maximvdw.be> | **Bluesky:** <https://bsky.app/profile/maximvdw.be> | **ORCID:** <https://orcid.org/0000-0003-0314-7107> | **LinkedIn:** <https://linkedin.com/in/maximvdw> | **Google Scholar:** <https://scholar.google.com/citations?user=NB6760YAAAAJ> | **GitHub:** <https://github.com/Maximvdw> | **Mastodon:** <https://mas.to/@maximvdw> | **Address:** Invalidenlaan 178/5, 1160, Oudergem, Belgium (Home)

### ABOUT ME

I am a software engineer and researcher with a passion for interoperable and privacy-aware (information) systems. My main research interests include linked open data, personal data vaults, sensor fusion and positioning systems.

### WORK EXPERIENCE

01/10/2019 – CURRENT Elsene, Belgium

#### UNIVERSITY TEACHING ASSISTANT AND RESEARCHER VRIJE UNIVERSITEIT BRUSSEL

Teaching assistant for various Bachelor and Master courses such as: Databases, Open Information Systems, Web Technologies, Information Visualisation, Next Generation User Interfaces, Advanced Topics in Big Data. Researcher at the Web & Information Systems Engineering Lab on interoperability, linked data, internet of things, augmented reality, human-computer interaction and applied artificial intelligence.

**Business or Sector** Education | **Department** Department of Computer Science | **Address** Pleinlaan 2, 1050, Elsene, Belgium |

**Email** [maxim.van.de.wynckel@vub.be](mailto:maxim.van.de.wynckel@vub.be) | **Website** <https://vub.be>

01/07/2019 – CURRENT Oudergem, Belgium

#### SOFTWARE ENGINEERING CONSULTANT MVDW-SOFTWARE

Freelance software development and consultancy. Projects spanning from web development to IoT and AI implementation in business processes.

**Business or Sector** Information and communication | **Address** Invalidenlaan 178/5, 1160, Oudergem, Belgium |

**Email** [maxim@mvdw-software.com](mailto:maxim@mvdw-software.com) | **Website** <https://mvdw-software.com>

01/07/2018 – 31/07/2018 Edegem, Belgium

#### SOFTWARE ENGINEER CHEMSTREAM BV.

(Student contract) Development of chemical database software.

**Address** Drie Eikenstraat 661, 2650, Edegem, Belgium | **Website** <https://chemstream.be>

01/03/2016 – 30/04/2016 Edegem, Belgium

#### SOFTWARE ENGINEER CHEMSTREAM BV.

(Student contract) Maintenance of chemical database search by substructures.

**Address** Drie Eikenstraat 661, 2650, Edegem, Belgium | **Website** <https://chemstream.be>

01/09/2015 – 30/09/2015 Edegem, Belgium

#### SOFTWARE ENGINEER CHEMSTREAM BV.

(Student contract) Development and maintenance of chemical database software.

**Address** Drie Eikenstraat 661, 2650, Edegem, Belgium | **Website** <https://chemstream.be>

01/04/2015 – 30/04/2015 Edegem, Belgium

**SOFTWARE ENGINEER** CHEMSTREAM BV.

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(Student contract) Migration from Access database to Web-based chemical database software.

**Address** Drie Eikenstraat 661, 2650, Edegem, Belgium | **Website** <https://chemstream.be>

01/08/2014 – 31/08/2014 Edegem, Belgium

**SOFTWARE ENGINEER** CHEMSTREAM BV.

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(Student contract) Development of PHP and MySQL based chemical database software.

**Address** Drie Eikenstraat 661, 2650, Edegem, Belgium | **Website** <https://chemstream.be>

01/02/2016 – 31/05/2016 Jette, Belgium

**SOFTWARE DEVELOPER INTERNSHIP** UZ BRUSSEL

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(Student contract) Development of QR-code based appointment system. Google Fit integration for patients. Healthcare software development.

**Address** Laarbeeklaan 101, 1090, Jette, Belgium | **Website** <https://uzbrussel.be/>

01/10/2015 – 31/12/2015 Evergem, Belgium

**SOFTWARE DEVELOPER INTERNSHIP** BITPOWER BV.

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(Student contract) eID cloud authentication Bachelor thesis preparatory training.

**Address** 9940, Evergem, Belgium | **Website** [https://www.nieuwsblad.be/cnt/dmf20150604\\_01714431](https://www.nieuwsblad.be/cnt/dmf20150604_01714431)

01/08/2015 – 30/09/2015 Evergem, Belgium

**SOFTWARE DEVELOPER** BITPOWER BV.

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(Student contract) eID cloud authentication and security penetration testing.

**Address** 9940, Evergem, Belgium | **Website** [https://www.nieuwsblad.be/cnt/dmf20150604\\_01714431](https://www.nieuwsblad.be/cnt/dmf20150604_01714431)

01/07/2014 – 31/07/2014 Humbeek, Belgium

**SOFTWARE DEVELOPER** VDW-CONSULTING BV.

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(Student contract) Web UI for print management software.

**Address** Dijkstraat 17, 1851, Humbeek, Belgium | **Website** <https://vdw-consulting.com/>

01/07/2013 – 31/08/2013 Humbeek, Belgium

**SOFTWARE DEVELOPER** VDW-CONSULTING BV.

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(Student contract) File server deployment and print job submitting in C#.

**Address** Dijkstraat 17, 1851, Humbeek, Belgium | **Website** <https://vdw-consulting.com/>

## ● EDUCATION AND TRAINING

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01/10/2019 – 01/09/2025 Elsene, Belgium

**DOCTOR OF SCIENCE (PHD), COMPUTER SCIENCE** Vrije Universiteit Brussel

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Researching hybrid- and indoor positioning systems, interoperability of location data and discoverability of services using linked data and Solid. Further research on Augmented Reality, Virtual Reality, Artificial Intelligence, deep sensor fusion and internet of things. Internal defence: 12th of May, 2025.

**Address** Pleinlaan 2, 1050, Elsene, Belgium | **Website** <https://www.vub.be/en> | **Level in EQF** EQF level 8 | **Type of credits** ECTS |

**Number of credits** 285 | **Thesis** Interoperable and Discoverable Indoor Positioning Systems

01/10/2018 – 01/07/2019 Elsene, Belgium

## MASTER OF SCIENCE (MSC), APPLIED COMPUTER SCIENCE Vrije Universiteit Brussel

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Parallelism, distributed systems, multicore programming, software security and indoor navigation master thesis.

**Address** Pleinlaan 2, 1050, Elsene, Belgium | **Website** <https://www.vub.be/en> | **Final grade** magna cum laude |

**Level in EQF** EQF level 7 | **Type of credits** ECTS | **Number of credits** 60 | **Thesis** Indoor Navigation by Centralized Tracking

01/10/2016 – 13/09/2018 Elsene, Belgium

## BRIDGING PROGRAMME, COMPUTER SCIENCE Vrije Universiteit Brussel

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Bridging programme from professional bachelor (Ba) to academic bachelor (BSc).

**Address** Pleinlaan 2, 1050, Elsene, Belgium | **Website** <https://www.vub.be/en> | **Type of credits** ECTS | **Number of credits** 60

01/10/2013 – 01/07/2016 Anderlecht, Belgium

## BACHELOR (BA), APPLIED COMPUTER SCIENCE Erasmushogeschool Brussel

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Software Security, Software Development, Agile development, business management skills. Received an award for best final work (thesis).

**Address** Nijverheidskaai 170, 1070, Anderlecht, Belgium | **Website** <https://www.erasmushogeschool.be/en> |

**Final grade** magna cum laude | **Level in EQF** EQF level 6 | **Type of credits** ECTS | **Number of credits** 180 |

**Thesis** eID IO - Applicatie Besturing

30/06/2013 Hoboken, Belgium

## INDUSTRIAL ICT Don Bosco Hoboken

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Electrical engineering, networking, hardware, software development. Received an award for best final work.

**Address** Salesianenlaan 1, 2660, Hoboken, Belgium | **Website** <https://www.donboscohoboken.be/>

## LANGUAGE SKILLS

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Mother tongue(s): **DUTCH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C1	C1	C1	C1	C1
<b>FRENCH</b>	B1	B1	B1	B1	B1

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## SKILLS

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### Research

Semantic interoperability | Semantic Web and Linked Data | Indoor robot navigation | Localisation and Positioning

### Technical

Distributed systems | Software architecture | Full stack development | Software security | Software development | Database management and design

### DevOps

Docker | AWS | Cybersecurity | CI/CD | Git

### Programming

TypeScript | JavaScript | Java | Python | C#

## ● PUBLICATIONS

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2025

### **[Jong Talent: Maxim Van de Wynckel \(30\) zoekt oplossingen om gebruikers meer controle te geven over hun locatiegegevens](#)**

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'Locatiegegevens zijn big business', zegt doctoraatsonderzoeker Maxim Van de Wynckel. Zulke data worden door een hele rist aan applicaties en andere diensten opgeslagen. 'Denk aan navigatie- en fitnessapps, maar ook aan wifi- en bluetooth-signalen. Gebruikers zijn zich vaak niet bewust van die onzichtbare vormen van dataverzameling'. Recente gebeurtenissen tonen aan hoe kwetsbaar locatiegegevens zijn.

(Press article)

**Link** <https://www.knack.be/nieuws/technologie/jong-talent-maxim-van-de-wynckel-30-zoekt-oplossingen-om-gebruikers-meer-controle-te-geven-over-hun-locatiegegevens/>

2025

### **[Sphero Dead Reckoning and CV Tracking Dataset](#)**

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Computer vision tracking and dead reckoning sensor fusion of a Sphero robot

Van de Wynckel, M., & Signer, B. (2025). Sphero Dead Reckoning and CV Tracking Dataset. Kaggle. <https://doi.org/10.34740/KAGGLE/DS/6760212>

**Link** <https://maximvdw.be/publications/2025/vandewynckel2025sphero/>

2025

### **[Garage Positioning Dataset](#)**

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A fingerprinting dataset consisting of WLAN, BLE and IMU data in a garage

Van de Wynckel, M. (2025). Garage Positioning Dataset. Kaggle. <https://doi.org/10.34740/KAGGLE/DS/6654647>

**Link** <https://maximvdw.be/publications/2025/vandewynckel2025kaggle/>

2024

### **[Towards Distributed Intelligent Tutoring Systems Based on User-owned Progress and Performance Data](#)**

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This paper proposes a decentralised approach to intelligent tutoring systems by storing learning progress and performance data in user-owned Solid Pods, enhancing learner autonomy and privacy.

Malaise, Y., Van de Wynckel, M., & Signer, B. (2024). Towards Distributed Intelligent Tutoring Systems Based on User-owned Progress and Performance Data. Proceedings of the 2nd Solid Symposium (SoSy'24), 3947. <https://ceur-ws.org/Vol-3947/short3.pdf>

**Link** <https://maximvdw.be/publications/2024/sosy2024yoshi/>

2024

### **[Discoverable and Interoperable Augmented Reality Environments Through Solid Pods](#)**

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In this paper, we propose a novel solution to store 3D manipulations in AR spaces within a Solid pod. Using this solution, multiple users can work together in the same environment while also ensuring interoperability between AR applications.

Van de Wynckel, M., & Signer, B. (2024). Discoverable and Interoperable Augmented Reality Environments Through Solid Pods. Proceedings of SoSy 2024 (Poster), 2nd Solid Symposium, Leuven, Belgium, May 2024, 3947.

**Link** <https://maximvdw.be/publications/2024/sosy2024maxim/>

2024

## **FidMark: A Fiducial Marker Ontology for Semantically Describing Visual Markers**

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In this publication, we propose an ontology called FidMark for semantically describing fiducial markers. This ontology is useful for AR and robotics applications to ensure interoperability between systems.

Van de Wynckel, M., Valadez, I., & Signer, B. (2024). FidMark: A Fiducial Marker Ontology for Semantically Describing Visual Markers. Proceedings of The Semantic Web (ESWC 2024), 235–250. [https://doi.org/10.1007/978-3-031-60635-9\\_14](https://doi.org/10.1007/978-3-031-60635-9_14)

**Links** [https://videlectures.net/videos/eswc2024\\_van\\_de\\_wynckel](https://videlectures.net/videos/eswc2024_van_de_wynckel) | <https://maximvdw.be/publications/2024/eswc2024/>

2023

## **SemBeacon: A Semantic Proximity Beacon Solution for Discovering and Detecting the Position of Physical Things**

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In this publication we propose the SemBeacon specification, which is a semantic beacon solution to discover and detect the position of physical things such as IoT devices, environments or services.

Van de Wynckel, M., & Signer, B. (2023). SemBeacon: A Semantic Proximity Beacon Solution for Discovering and Detecting the Position of Physical Things. Proceedings of the 13th International Conference on the Internet of Things, 9–16.

**Link** <https://maximvdw.be/publications/2023/iot2023/>

2023

## **802.11 Management frames from a public location**

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In this dataset, two separate datasets were recorded in a Belgian train station to collect 802.11 wireless management frames. The datasets were anonymised and contain data on the SSIDs, signal strengths and MAC addresses.

Vermunicht, B., Van de Wynckel, M., & Signer, B. (2023). 802.11 Management frames from a public location. <https://doi.org/10.5281/zenodo.8003771>

**Link** <https://maximvdw.be/publications/2023/vermunicht2023/>

2023

## **Object Tracking on a Monopoly Game Board**

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In this dataset, a Monopoly game was recorded from a first person perspective. The aim of this dataset is to conduct pawn and object tracking using computer vision algorithms.

Hoebeke, N., Van de Wynckel, M., & Signer, B. (2023). Object Tracking on a Monopoly Game Board. <https://doi.org/10.5281/zenodo.7990434>

**Link** <https://maximvdw.be/publications/2023/hoebeke2023/>

2022

## **POSO: A Generic Positioning System Ontology**

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In this publication we propose the POSO ontology, which is a positioning system ontology to semantically describe positioning systems, the data they produce and the environments in which these systems are deployed.

Van de Wynckel, M., & Signer, B. (2022). POSO: A Generic Positioning System Ontology. The Semantic Web – ISWC 2022, 231–247. [https://doi.org/10.1007/978-3-031-19433-7\\_14](https://doi.org/10.1007/978-3-031-19433-7_14)

**Links** [https://openhps.org/publications/2022/5b3-Van de Wynckel-Video-MQ.mp4](https://openhps.org/publications/2022/5b3-Van%20de%20Wynckel-Video-MQ.mp4) | <https://maximvdw.be/publications/2022/iswc2022/>

2022

## **A Solid-based Architecture for Decentralised Interoperable Location Data**

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In this publication we propose a solution to decentralise location data and positioning systems in Solid pods using linked data.

Van de Wynckel, M., & Signer, B. (2022). A Solid-based Architecture for Decentralised Interoperable Location Data. Proceedings of the 12th International Conference on Indoor Positioning and Indoor Navigation (IPIN'22), CEUR Workshop Proceedings,

**Links** [https://openhps.org/publications/2022/WiP65\\_MaximVandeWynckel.mp4](https://openhps.org/publications/2022/WiP65_MaximVandeWynckel.mp4) | <https://maximvdw.be/publications/2022/ipin2022/>

2021

## **Indoor Positioning Using the OpenHPS Framework**

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In this publication, we propose OpenHPS, an open source hybrid positioning system. We demonstrate how OpenHPS can be used to create indoor positioning systems.

Van de Wynckel, M., & Signer, B. (2021). Indoor Positioning Using the OpenHPS Framework. 2021 International Conference on Indoor Positioning and Indoor Navigation (IPIN), 1–8. <https://doi.org/10.1109/IPIN51156.2021.9662569>

**Link** <https://maximvdw.be/publications/2021/ipin2021/>

2021

## **OpenHPS: Single Floor Fingerprinting and Trajectory Dataset**

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In this dataset, we collected fingerprints of Wi-Fi access points and BLE beacons in a building. The fingerprints are collected in four directions and cover an entire floor.

Van de Wynckel, M., & Signer, B. (2021). OpenHPS: Single Floor Fingerprinting and Trajectory Dataset. <https://doi.org/10.5281/zenodo.4744380>

**Link** <https://maximvdw.be/publications/2021/dataset/>

2020

## **OpenHPS: An Open Source Hybrid Positioning System**

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In this technical report, we provide a technical overview of the OpenHPS framework. OpenHPS is a framework to design a wide range of hybrid positioning systems using TypeScript.

Van de Wynckel, M., & Signer, B. (2020). OpenHPS: An Open Source Hybrid Positioning System (WISE-2020-01). Vrije Universiteit Brussel. <https://doi.org/10.48550/ARXIV.2101.05198>

**Links** [https://video.fosdem.org/2022/L.lightningtalks/lt\\_openhps.webm](https://video.fosdem.org/2022/L.lightningtalks/lt_openhps.webm) | <https://maximvdw.be/publications/2020/openhps2020/>

2019

## **Master thesis: Indoor Navigation by Centralized Tracking**

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The goal of my Master thesis was to design an indoor navigation system that guides patients and visitors inside a hospital. The solution was designed to require minimal setup and interaction by both the hospital and users.

Van de Wynckel, M. (2019). Indoor Navigation by Centralized Tracking [Master's thesis, Vrije Universiteit Brussel]. <https://researchportal.vub.be/en/studentTheses/indoor-navigation-by-centralized-tracking>

**Links** <https://youtu.be/fMFZu4Z49SU> | <https://maximvdw.be/publications/2019/thesis/>

2016

## **Bachelor thesis: eID IO - Applicatie besturing**

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My bachelor thesis was designed for the company BITPOWER. Using the European Identity card (eID), remote authorisation access could be granted via a mobile application.

My bachelor thesis was to provide remote actions for eID authentication. It was awarded the best thesis of the class of 2016.

**Link** <https://maximvdw.be/publications/2016/thesis/>

2013

## **Final work: WisaReg**

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My final work during the last year of my highschool was a database migration tool for migrating the Flemish student database to other platforms used by students.

WisaReg is an application that provides newly registered students from the Wisa database with accounts for various services. It was awarded the best final work of 2013.

Link <https://maximvdw.be/publications/2013/gip/>

## ● CONFERENCES AND SEMINARS

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01/02/2025 – 02/02/2025 Brussels, Belgium

### Presentation at FOSDEM 2025

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Presentation titled 'Discovering Indoor Environments and Positioning Systems'

Links <https://fosdem.org/2025/schedule/event/fosdem-2025-4526-discovering-indoor-environments-and-positioning-systems/> | <https://video.fosdem.org/2025/aw1120/fosdem-2025-4526-discovering-indoor-environments-and-positioning-systems.av1.webm> | <https://maximvdw.be/presentations/2025/fosdem2025/>

26/05/2024 – 30/05/2024 Hersonissos, Crete, Greece

### Conference presentation at ESWC 2024

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Paper presentation titled 'FidMark: A Fiducial Marker Ontology for Semantically Describing Visual Markers'

Links <https://2024.eswc-conferences.org/accepted-papers/> | [https://videolectures.net/embed/videos/eswc2024\\_van\\_de\\_wynckel](https://videolectures.net/embed/videos/eswc2024_van_de_wynckel) | <https://maximvdw.be/presentations/2024/eswc2024/>

02/05/2024 – 03/05/2024 Leuven, Belgium

### Poster presentation at SoSy 2024

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Poster presentation titled 'Discoverable and Interoperable Augmented Reality Environments Through Solid Pods'

Links <https://events.vito.be/sosy2024> | <https://maximvdw.be/presentations/2024/sosy2024/>

07/11/2023 – 10/11/2023 Nagoya, Japan

### Conference presentation at IoT 2023

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Paper presentation titled 'SemBeacon: A Semantic Proximity Beacon Solution for Discovering and Detecting the Position of Physical Things'

Links <https://iot-conference.org/iot2023/> | <https://maximvdw.be/presentations/2023/iot2023/>

12/05/2023 – 12/05/2023 Brussels, Belgium

### Poster presentation at BeJS conf 2023

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Poster presentation of the OpenHPS framework

Links <https://www.react.brussels/conferences/bejs-conf-2023> | <https://maximvdw.be/presentations/2023/bejsconf/>

23/09/2022 – 27/09/2022 Hangzhou, China

### Conference presentation at ISWC 2022

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Paper presentation titled 'POSO: A Generic Positioning System Ontology'

Links <https://iswc2022.semanticweb.org/index.php/accepted-papers/index.html> | <https://openhps.org/publications/2022/5b3-Van-de-Wynckel-Video-MQ.mp4> | <https://maximvdw.be/presentations/2022/iswc2022/>

05/09/2022 – 07/09/2022 Beijing, China

### Conference presentation at IPIN 2022

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Paper presentation titled 'A Solid-based Architecture for Decentralised Interoperable Location Data'

Links <https://ipin-conference.org/2022/> | [https://openhps.org/publications/2022/WiP65\\_MaximVandeWynckel.mp4](https://openhps.org/publications/2022/WiP65_MaximVandeWynckel.mp4) | <https://maximvdw.be/presentations/2022/ipin2022/>



05/02/2022 – 06/02/2022 Brussels, Belgium

## Presentation at FOSDEM 2022

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Presentation titled 'Rapid Prototyping of a Positioning System Using the OpenHPS Framework'

**Links** [https://archive.fosdem.org/2022/schedule/event/lt\\_openhps/](https://archive.fosdem.org/2022/schedule/event/lt_openhps/) | [https://video.fosdem.org/2022/L.lightningtalks/lt\\_openhps.webm](https://video.fosdem.org/2022/L.lightningtalks/lt_openhps.webm) | <https://maximvdw.be/presentations/2022/fosdem/>

29/11/2021 – 02/12/2021 Lloret de Mar, Spain

## Conference presentation at IPIN 2021

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Paper presentation titled 'Indoor Positioning Using the OpenHPS Framework'

**Links** <https://ipin-conference.org/2021/> | <https://maximvdw.be/presentations/2021/ipin2021/>

## PROJECTS

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01/10/2019 – CURRENT

### OpenHPS

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OpenHPS is an open source hybrid positioning system to help developers fuse various positioning technologies and algorithms. The system offers a modular data processing framework with each modules ranging from computer vision to common algorithms such as fingerprinting or data persistence of sampled data.

**Link** <https://openhps.org>

01/10/2022 – CURRENT

### SemBeacon

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SemBeacon is an ongoing project for the development of a semantic Bluetooth Low Energy beacon specification that helps to describe the beacon itself, its deployment and the positioning system used within.

**Link** <https://sembeacon.org>

01/07/2013 – CURRENT

### SpigotMC Plugins

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I am an active member of the SpigotMC.org developer community. Having developed software that has been sold to more than 20,000 users since 2014

**Link** <https://www.spigotmc.org/members/maximvdw.6687/>

01/09/2015 – 01/07/2018

### EhB Rooster

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EhBRooster.be was a project aimed at improving the usability of timetables for Erasmushogeschool Brussel, gaining significant interest from students and staff. Developed in Java and PHP, the website influenced the adoption of a new timetable system before its discontinuation in 2018.

**Link** <https://web.archive.org/web/20180812082356/https://ehbrooster.be/>

01/08/2015 – 01/07/2016

### eIDIO Cloud Authentication

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eIDIO was a platform developed by BITPOWER to provide secure eID access to buildings. I was tasked to expand this platform with cloud authentication.

01/04/2009 – 01/07/2013

### Shutti

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Shutti was a set of software tools developed for Windows that enabled users to optimize, schedule and automate their computer's power management settings.

**Link** <https://web.archive.org/web/20130831040157/http://www.shutti.co.nr:80/>



## WisaReg

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My final work at my highschool was a project called WisaReg. WisaReg is a database migration tool to convert data from the Wisa database to other internal databases. The tool aimed to help the ICT administrators to automatically create new user accounts in LDAP, Chamilio, Smartschool and other internal databases.

## ● HOBBIES AND INTERESTS

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### Scuba diving

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3\* (Bachelor) diver at the VUB Diving Center

Link <https://www.vubdivingcenter.be>

### Scuba diving

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2\* CMAS diver

Link <https://www.nelos.be>