Maxim Van de Wynckel

Date of birth: 10/03/1995 | **Nationality:** Belgian | **Gender:** Male | **Phone number:**

(+32) 489861848 (Home) | **Email address:** 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, researcher and project manager with a passion for interoperable (information) systems. My main expertise lies in linked open data, data spaces, sensor processing & RTLS. With my business skills and knowledge, I am capable of integrating innovation in existing business processes.

WORK EXPERIENCE

⊞ VRIJE UNIVERSITEIT BRUSSEL – ELSENE, BELGIUM

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

Email maxim.van.de.wynckel@vub.be | **Website** https://vub.be

ACADEMIC AND TEACHING STAFF – 01/10/2019 – CURRENT

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.

⊞ MVDW-SOFTWARE – OUDERGEM, BELGIUM

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

Email maxim@mvdw-software.com | **Website** https://mvdw-software.com

SOFTWARE ENGINEERING CONSULTANT – 01/07/2019 – CURRENT

Freelance software development and consultancy. Projects spanning from web development to IoT and AI integration into existing business processes. Project lead with external partners.

⊞ CHEMSTREAM BV. – EDEGEM, BELGIUM

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

SOFTWARE ENGINEER – 01/07/2018 – 31/07/2018

(Student contract) Development of chemical database software.

⊞ CHEMSTREAM BV. – EDEGEM, BELGIUM

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

SOFTWARE ENGINEER – 01/03/2016 – 30/04/2016

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

⊞ CHEMSTREAM BV. – EDEGEM, BELGIUM

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

SOFTWARE ENGINEER – 01/09/2015 – 30/09/2015

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

🏢 **CHEMSTREAM BV.** – EDEGEM, BELGIUM
Address Drie Eikenstraat 661, 2650, Edegem, Belgium | **Website** https://chemstream.be

SOFTWARE ENGINEER – 01/04/2015 – 30/04/2015

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

🏢 **CHEMSTREAM BV.** – EDEGEM, BELGIUM
Address Drie Eikenstraat 661, 2650, Edegem, Belgium | **Website** https://chemstream.be

SOFTWARE ENGINEER – 01/08/2014 – 31/08/2014

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

🏢 **UZ BRUSSEL** – JETTE, BELGIUM
Address Laarbeeklaan 101, 1090, Jette, Belgium | **Website** https://uzbrussel.be/

SOFTWARE DEVELOPER INTERNSHIP – 01/02/2016 – 31/05/2016

(Student contract) Development of QR-code based appointment system. Optimising the printing of appointments via Zebra printers. Google Fit integration for patients. Healthcare software development.

🏢 **BITPOWER BV.** – EVERGEM, BELGIUM
Address 9940, Evergem, Belgium | **Website** https://www.nieuwsblad.be/cnt/dmf20150604_01714431

SOFTWARE DEVELOPER INTERNSHIP – 01/10/2015 – 31/12/2015

(Student contract) eID cloud authentication thesis preparatory training. Security testing and protocol analysis.

🏢 **BITPOWER BV.** – EVERGEM, BELGIUM
Address 9940, Evergem, Belgium | **Website** https://www.nieuwsblad.be/cnt/dmf20150604_01714431

SOFTWARE DEVELOPER – 01/08/2015 – 30/09/2015

(Student contract) Security penetration testing of eID cloud authentication in C++.

🏢 **VDW-CONSULTING BV.** – HUMBEEK, BELGIUM
Address Dijkstraat 17, 1851, Humbeek, Belgium | **Website** https://vdw-consulting.com/

SOFTWARE DEVELOPER – 01/07/2014 – 31/07/2014

(Student contract) Web UI for print management software.

🏢 **VDW-CONSULTING BV.** – HUMBEEK, BELGIUM
Address Dijkstraat 17, 1851, Humbeek, Belgium | **Website** https://vdw-consulting.com/

SOFTWARE DEVELOPER – 01/07/2013 – 31/08/2013

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

EDUCATION AND TRAINING

01/10/2019 – 01/09/2025 Elsene, Belgium
DOCTOR OF SCIENCE (PHD), COMPUTER SCIENCE Vrije Universiteit Brussel

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.

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

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

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

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

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

Mother tongue(s): **DUTCH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1+
FRENCH	B1	B1	B1	B1	B1

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

SKILLS

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#

Semantic Web Stack

RDF, OWL, SHACL | SPARQL | JSON-LD | Solid | Linked Data Fragments | Linked Data Notifications | SEMIC toolkit | Linked Data Event Streams | Specification design

PUBLICATIONS

2025
OpenHPS: A Modular Framework to Facilitate the Development of FAIR Positioning Systems

Positioning systems determine the location of people and objects using various technologies and algorithms. While GPS dominates outdoor positioning, indoor and smaller-scale systems often require alternative technologies for lower latency, higher accuracy, or greater efficiency. These systems are frequently developed as single-use prototypes with no standard data format, hindering reusability and expansion. OpenHPS addresses these challenges by providing a modular, graph-based framework for creating versatile positioning systems on multiple platforms. It supports a wide range of algorithms and enables extensibility through custom nodes for sensor fusion and algorithm integration.

Van de Wynckel, M., & Signer, B. (2025). OpenHPS: A Modular Framework to Facilitate the Development of FAIR Positioning Systems. Journal of Open Source Software, 10(110), 8113. https://doi.org/10.21105/joss.08113

Link https://maximvdw.be/publications/2025/vandewynckel2025joss/

2025
Survey on the Privacy and Transparency of Location Data

Pseudonymised survey results of our 2025 survey on the privacy and transparency of location data

Van de Wynckel, M., & Signer, B. (2025). Survey on the Privacy and Transparency of Location Data. https://doi.org/10.5281/zenodo.15564050

Link https://maximvdw.be/publications/2025/vandewynckel2025survey/

2025
Jong Talent: Maxim Van de Wynckel (30) zoekt oplossingen om gebruikers meer controle te geven over hun locatiegegevens

'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

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

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

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

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

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

Links https://videolectures.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

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 Managemement frames from a public location

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 Managemement 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

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

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

Links https://openhps.org/publications/2022/5b3-Van de Wynckel-Video-MQ.mp4 | https://maximvdw.be/publications/2022/iswc2022/

2022
A Solid-based Architecture for Decentralised Interoperable Location Data

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://maximvdw.be/publications/2022/ipin2022/

2021
Indoor Positioning Using the OpenHPS Framework

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

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

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://maximvdw.be/publications/2020/openhps2020/

2019
Master thesis: Indoor Navigation by Centralized Tracking

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

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

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

01/02/2025 – 02/02/2025 Brussels, Belgium
Presentation at FOSDEM 2025

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

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://maximvdw.be/presentations/2024/eswc2024/

02/05/2024 – 03/05/2024 Leuven, Belgium
Poster presentation at SoSy 2024

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

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

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

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

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://maximvdw.be/presentations/2022/ipin2022/

05/02/2022 – 06/02/2022 Brussels, Belgium
Presentation at FOSDEM 2022

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

Links https://archive.fosdem.org/2022/schedule/event/lt_openhps/ | 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

Paper presentation titled 'Indoor Positioning Using the OpenHPS Framework'

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

- **PROJECTS**

01/01/2014 – CURRENT
ChemStream Intranet

Development of an intranet database for storing and searching chemicals and other data.

01/10/2019 – CURRENT
OpenHPS: An Open-Source Hybrid Positioning System

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

01/04/2022 – CURRENT
POSO: Positioning System Ontology

The positioning system ontology is a vocabulary for describing positioning systems and the techniques these systems use to determine a position. With POSO we aim to provide semantic meaning on how a positioning system is deployed and how results are calculated.

Link https://poso.openhps.org

01/10/2022 – CURRENT
SemBeacon

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

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

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

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

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/

01/08/2012 – 30/06/2013
WisaReg

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

Scuba diving

3* (Bachelor) diver at the VUB Diving Center

Link https://www.vubdivingcenter.be

Scuba diving

2* CMAS diver

Link https://www.nelos.be