VE2D

Van Ettinger Electronic Design / The Netherlands

Curriculum Vitae Norbert van Ettinger
Developer electronics hardware and software

English Version

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Index

1 Document data

1.1 Revision history

Version	*Date*	*Author*	*Remarks*
001	20-12-2011	Norbert van Ettinger	First version (Dutch)
002	28-01-2015	Norbert van Ettinger	Definitive (Dutch)
003	17-09-2015	Norbert van Ettinger	Modified (English)
004	22-10-2018	Norbert van Ettinger	Modified (English)

1.2 Document / website references

REF	**Description Source**	**Characteristic / website / doc**	**version**
001	Website Norbert van Ettinger	http://www.ve2d.nl	January 2015
002	Website Vialis Railway Ind.		
003	Website ARS T&TT		
004	Website NEDAP		
005	Website Mixtuur		
006	Website STN BV		
007	Website VDC		
008	Website Bosch (previous Philips Breda)	boschsecurity.com/	
009	Website RENA electonica BV		

1.3 List of Abbreviations

ANABEL	Adaptive Electronic Railway Crossing Bell
ASL	Ampco Sound LAB (firma)
CAD	Computer Added Design
CRS	Customer Requirement Specification
FMEA	Failure Mode and Effect Analysis
HLO	Hoger Laboratorium Onderwijs
HRS	Hardware Requirement Specification
MTBF	Mean Time Between Failure
RAMS	Reliability Availability Maintainability Safety
SRS	Software Requirement Specification
TPD	Technical Product Documentation
UU	University of Utrecht
VE2D	Van Ettinger Electronic Design

2 Global overview

2.1 Introduction

Schooled in technology I design now for almost 30 years electronics hardware and embedded software. First as pay roller and since 1999 as freelancer assist Clients with realizing their ideas and making them ready for production. Beside technical certificates I am also in possession of an academic Master degree in the Philosophy. This broad orientation in studies and work experiences is offering me a good technical insight, good communication skills and an extensive scope in the relation between humans, technology and society. With pleasure I put this work experience, knowledge and skills in service of a sustainable, and economical realisation of technical projects.

2.2 Personal Data

Name	: Ettinger van
Surname	: Norbert
Date of Birth	: 23-05-1960
Place of Birth	: Harderwijk (the Netherlands)
Nationality	: Dutch
Address	: De Ness 27
Zip code / place	: 3461GD Linschoten
Telephone	: +31 348453130
Mobile	: +31 623513405
Website	: http://www.ve2d.nl
Email	: nvettinger@hotmail.com

2.3 History

This curriculum aims to present an outlook on the services I can deliver, by explaining my expertise, competences and know-how by means of a short description of what I have realized in the past.

As a child I already had my predilection for technology. Always busy I crafted my first radio at an age of 11. After a study in chemistry (HLO) and electronics (HTS) I started 30 years ago as an electronics designer and software programmer first only in pay rolled functions but since 1999 also as freelancer on project basis. My career as developer began in 1990 at Ampco Sound Lab (ASL, the Netherlands) in a team of designers developing intercom equipment for the entertainment industries (theatre, radio and television broadcast studio's). First responsible for the development of embedded software later on I started also designing the hardware. At the end it encapsulated the whole trajectory of designing and drawing schematics, making the PCB layout, developing the software, building and testing prototypes and managing assembly for production. Those activities I continued at my subsequent employer, Philips CSS Breda Holland (nowadays Bosch Security Systems). There I was first lead designer of an analogue congress-system, later on a member of a team developing a Public Address System.

Philips Holland was a good teacher because of the many technical facilities and colleagues with a huge amount of experience from whom I learned a lot. This business unit of the Philips company had her own assembly line, anechoic rooms for audio- and for EMC testing where I did spent a lot of hours testing my designs. In these period I become also acquainted with a thoroughly structured design path with milestones and a solid method of documenting (in *HRS*, *CRS*, *TPD*, etc.) After four years of building experiences at Philips I received the opportunity to start for myself as freelances with a couple of orders to start with. From that moment of I realised for several clients a diversity of digital and analogue design projects (See 5.3). Examples are the hard- and software development for ICT purposes like Tracking and Tracing, roadside automatization and automotive applications. Beside that I designed audio equipment, power supplies, electro motor controllers, and LED drivers.

In all these projects I assisted the client with formulating functional and technical specifications, which has been worked out in operational prototypes, and subsequent assembly of smaller and larger production series in association with assembly companies. Schematics has been drawn in Altium, Ultiboard, ORCAD, Cadence, Layo, Mentor Graphics or Futurenet. Embedded software has been written in C and C++ for several micro controllers : (8051 derivatives of Intel, Siemens, Philips, Atmel, PIC processors, Rabbit, TI MSP430). Designs have been built, and/or simulated in SPICE. Reliability and lifetime (RAMS and MTBF) has been calculated, practical tested and documented. Required documents like CRS, SRS, HRS, TPD, BOM and assembly instructions and in some cases safety documents have been written. Accordingly experience has been gained during the last 30 years in all the activities needed to transform an idea into a ready to be manufactured design that full fills all the legal, functional and technical requirements.

Here after you will find a concise summary of my experiences and competences. At the end a list of realised projects is included.

3 Expertise and competences

I have extensive experience with designing analogue and digital electronics including embedded software.

3.1 Design of digital electronics and embedded software

Serious knowledge of Micro-controller systems and building hardware and writing software around a core of:

- 8051 family controllers
- PIC processoren
- SGS Thomson controllers
- Rabbit Controllers
- Z80 derivative
- TI MSP430 low power processors
- Atmel AT Mega and SAM controllers.

- Experience with applying hard- and software in Wireless applications using GSM, GPRS, GPS and Bluetooth!
- Knowledge of implementing communication protocols like I2C, SPI, RS232, USB
- Mastering Programming languages like: C++, en C , Java, Pascal, Basic, Cobol, HTML, PLM
- Experience with application of embedded systems in ICT, Telematics, Information technology, Tracking & Tracing and Automotive devices.
- Knowledge of very low Power applications, stand alone devices current supplied by means of electrical photovoltaic solar panels, or by means of an electrical generator driven by wind or human motion.
- Acquainted with object oriented programming; knowing how to work with Classes and structures in C++. Very familiar with Kernighan and Ritchie's "C handbook".

3.2 Design of analogue electronics

- Knowledge of application of semiconductors like Transistors, (power)Mosfets, IGBT's, Triac's, opamps, comparators etc.
- Broad experience with designing analogue electronic circuitry for application in audio, and optics.
- Acquainted with the meaning and application of concepts of acoustics like sound pressure level (dB SPL @1m), A weighted , Crest factor etc.
- Experience with sound measurements in anechoic rooms.
- Know how in designing analogue and switch mode power supplies like DC-DC and AC(mains)-DC flyback converters.
- Experience in application of LED's and LED driver electronics in signalization an illumination.
- Acquainted with optical measurements in light-streets.
- Experienced in designing electronics for controlling DC motors.
- Acquainted with design of electronics for harvesting electrical power from electrical generators.

3.3 Skills in CAD technologies

- Experience with drawing schematics, PCB layout and PCB routing in Altium, Ultiboard, Layo, and Orcad
- More than 100 schematics and PCB's designed.
- Since 2017 being an IPC certified hardware designer.

3.4 Hands on prototyping and assemblingon component level

- Familiar with procedures for ordering and buying components.
- Hands-on mentality. Not only the head but also the hands:
- Having the skills to built prototypes including the mechanical work.
- Good craftsmanship.
- Capable of Soldering (also of SMD).
- Capable of Milling, Drilling etc.

3.5 Simulation, testing and debugging

- Know how in structured testing and measuring the performance of electronic prototypes and comparing with requirement specifications.
- Familiar with computer simulation, spice programs (LT-spice), measuring devices like osciloscope, spectrum-meters, Fourier analyses, bode-diagrams, measuring step-responses for estimation of stability.

3.6 CE / EMC certification

- Being able to take care of the whole trajectory needed for EMC certification.
- Gained experience in practical measurements at Philips Breda and RENA elektronica BV
- Measured a lot of equipment at Philips Breda, test-house DARE and at RENA electronica BV

3.7 IECEE & UL certification

- Familiar with procedures required for IECEEE & UL certification of LED driver design

3.8 Life Cycle testing

- Being able to setup a lifecycle test program and to test a prototype in an (accelerated) life cycle test in order to determine the lifetime of the product (experiences gained at RENA Electronica BV)

3.9 Documentation and quality control

- Skilled in writing technical documentation (HRS, SRS, TPD, BOM, Test-reports, Assembly instructions)
- RAMS calculation and safety cases.
- Having the skills to set up and conducting FMEA audits

3.10 Experiences built up as freelancer

Autonomy

- Having learned to work independent on projects, I accept my job and carry it out through the whole trajectory without losing sight of the need for regular communication with clients and relevant team-members.

Innovative in Research and Development

- Having experience with designs requiring an innovative and creative approach.

Financial and logistics controll

- Experience with managing, controlling, budgeting and administering financial resources and logistic transaction to support the business.

3.11 Personal characteristics

- Autonomous / independent
- Creative (out of the box thinker)
- Analytical
- Good practical crafts and hand-skills
- Perseverance
- Good verbal and writing communication skills
- Eager to learn new things and applying new techniques
- Auto didactical

4 Education

4.1 Professional Education

Period	Education	Specialisation	Institute	Diploma
2013-2018	Philosophy	Academic Master	UU University of Utrecht	MA (Master of Arts) 2018
2002-2007	Philosophy	Common Major trajectory	UU University of Utrecht	BA (Bachelor of Arts) 2007
1988-1994	Technical High School (HTS)	Electronics (Technical Computer Science)	P.B.N.A.	Certificates 1988-1994
1981-1986	H.L.O.	Chemistry	Ghijsen Instituut	1986

4.2 Basic educations

Period	Education	Specialisation	Institute	Certificate
1978-1979	Pedagogische Academie	-	St Jozef P.A / Zeist	-
1979-1981	VWO	En, Sk, Bi	Bonifatius / Utrecht	Certificates 1981
1976-1978	HAVO	En, Sk, Bi, Nk, Wi,, En, Ne	De Breul / Zeist	1978
1972-1976	MAVO	En, Sk, Bi, Nk, Wi,, En, Ne	De Breul / Zeist	1976

4.3 Courses

Period	Education	Specialisation	Institute	Diploma
April 2017	IPC course	Certified IPC HW Designer	PIEK	Certficate April 2017
1987 mei-aug	Computer programmer	Structured programming in COBOL	Ordina	Certificates august 1987

4.4 Current studies / courses

Period	Education	Specialisation	Institute	Certificate
2018-	Self-education	Windturbine design	-	-

4.5 Explanation education career

1981 to 1986 :
Institute : Hogere Laboratoriumschool
During my study Chemistry I become acquainted with the computer and learn to program in Basic en Pascal. This arouses my interest for ICT.

1987 may- august:
Training: "Structured programming" ORDINA .

I follow a 4 month training structured programming in COBOL. The course program included the AMBI modules I1, I2, B1 and T2.

1988-1994:
Education : Hogere Technische School Elektronica, PBNA

In order to take my career into designing electronics and working with computer technologies I follow the study technical computer science at the PBNA Technical High School. Followed courses include: DC and AC electricity theory, mathematics, fourriertransformations, digital signal processing, semiconductor technology, electrical circuit theory, switch-phenomena, designing analogue and digital circuitry, microcomputer technology, programming the 68000 microprocessor, programming in assembly an C, compiler design, etc.

With a technical education and a technical profession I broadened my scoop further with a study philosophy (BA and MA) at the university of Utrecht.

2002-2007
Education : Bachelor Philosophy at UU (University of Utrecht)

2013-2018
Education : Academic Master Philosophy at UU (University of Utrecht)

5 Work experience

5.1 concise overview

Period	Employer	Function	Description
1999-2018	*Van Ettinger Electronic Design (VE2D).*	Entrepeneur & Electronics developer & programmer	• Hardware design of analogue and digital equipment. • Scheme and PCB lay-out design. • Assembly of PCB's, prototypes and small series . • (Deep) Embedded Software design
1998-1999	Philips CSS Breda	Electronics developer	HW development of Public Address system
1996-1998	Philips CSS Breda via Multec	Electronics- lead designer	Electronics lead designer of an analogue congress system
1990-1996	Ampco Sound Lab	Electronics designer programmer	Development of electronics, software and housing of professional intercom equipment.
1988-1990	TKM	Software / hardware support engineer	Installation and maintenance of computer hardware and software on client location.
1986-1987	Miscellaneous	Analyst working in Chemical labs	Survey in chemical composition of bottom ground samples
1979-1981	Uitzendbureau	Production worker	Simple production-work

5.2 Synopsis work experience in payroll function

Synopsis of work experience in designing ICT, Automotive and audio applications in pay-rolled functions during the period 1988-1999.

period	:	1988-1990
Employer	:	TKM: a company selling Computers, peripheral equipment and software and maintenance contracts.
Function	:	Support engineer, maintaining computers, peripheral equipments and SW at customers sites.

period	:	1990-1996
Employer	:	Ampco Sound lab (ASL): a company developing and producing professional intercom equipment for the entertainment industry like theatre, radio and television broadcasting.
Function	:	Electronics and software developer. Writing embedded software in Intel PLM, Assembler, C, for 8051, Thomson ST6 micro-controller systems.

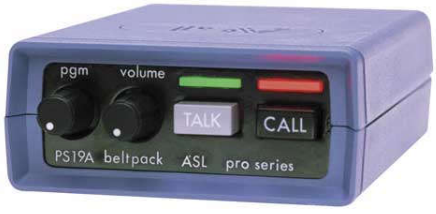


Fig 1: One channel Belt-pack developed for ASL

Fig 2: Two channels Belt-pack intercom module designed for ASL

period	:	1996
Employer	:	VDC; Voorhout Data Connection, Developer / manufacturer of Telecom equipment
Function	:	Designing hardware and software for a matrix main station unit for connecting handsets of Siemens Transceiver for the TRAXYS network.

period	:	1997
Client	:	VDC; Voorhout Data Connection
Project	:	As **Hardware designer** I developed an 80C552 i/o board. As **software programmer** I developed embedded software in C++, (on Kyle compiler) for Cable television-HF-converter-equipment

period	:	1996-1998
employer	:	Philips CSS Breda (now Bosch). Developer and manufacturer of congres- and P.A. systems
Function	:	**Lead designer** of analogue congress system. Applied electronics : Analogue and discrete digital electronic components though no programmable logic.

Fig 3: Delegate unit CCS800 congress system designed for Philips Breda

Fig 4: Chairman unit CCS800 congress system designed for Philips

Fig 5: Central Unit CCS800 congress system designed for Philips

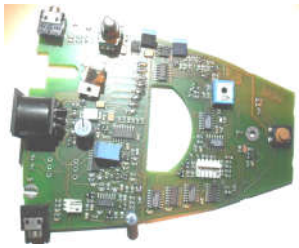
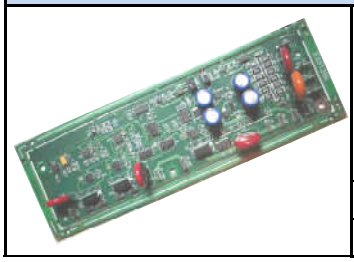


Fig 6: PCB Delegate unit

period	:	1998-1999
employer	:	Philips CSS Breda
function	:	Hardware designer Public Address system

5.3 Projects realised as freelancer

Since 1999 I am active as freelancer under the name Van Ettinger Electronic Design (VE2D). Below is a synopsis of the projects I realised in that capacity.

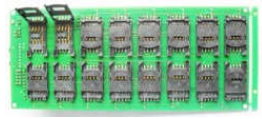
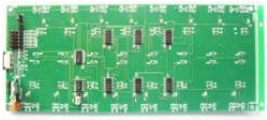
Development of inrush current limiter for ProRail track switcher		
	*project*	PCB design limits inrush current for motor of track-switch of rail-roads from rail-road company Prorail. Applied technology is analogue with IGBT as electronic switching component.
	period	2014
	Client	VRS Railway Industry BV (Houten) The Netherlands

Development of an (adaptive) electronic crossing bell for Vialis Railway Systems		
	*project*	Electronic crossing bell generating sound by replaying the sound-sample of a traditional mechanical bell stored in flash memory. The adaptive version delivers a sound pressure level which is automatically adapted to the level of the ambient sound. Work done for this project: • Formulating customer and technical requirement specification • Validation of design • EMC certification • Writing documentation / safety-case • Calculation MTBF • RAMS analysis • Writing assembly documentation • Utilizing anechoic sound chamber • Designing test-utility
	period	2012-2015
	Client	VRS Railway Industry BV (Houten) The Netherlands

Developing hardware and software for travel-time estimation with blue tooth		
	*project*	Development of Hard and software for device which uses Blue-tooth data (MAC address)of travellers for estimation of travel-time on highways • Applied processor : ATMEL ATmega1230 • Embedded software written in C++ • Blue-tooth devices : Blue Giga
	period	2012
	Client	ARS T&TT The Netherlands

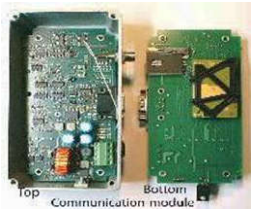
Upgrading military audio communication system		
	project	In a team working on analogue and digital design of a military audio communication system encapsulating the Hardware Design.
	period	February – July 2011
	Client	Thales Huizen (via Enter Technology (Son)), The Netherlands

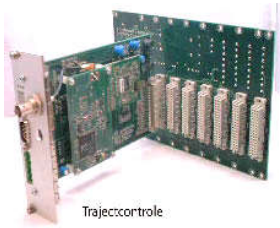
PCB Design for Mixtuur / virtual pipe Organ		
	project	Hardware design of a DSP board.
	period	2011-2012
	Client	Mixtuur / Nieuwegein, The Netherlands

Development SIM-card reader Multiplexer		
 	*project*	Development of test-device for testing performances of mobile telephone services. • Applied Processor : Arduino open source board (external) • Design of PCB with multiplexer and 16 SIM-card slots • Communication with processor-board : RS232 (TTL)
	period	2010-2011
	Client	Test2Date / Enschede, The Netherlands

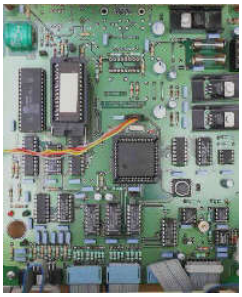
Development of Bus stop display		
	*Project*	Hard and software design for displaying information for travellers. Applied Processor AtMega 1280. Code written in C++.
	Period	2009-2010
	Client	ARS T&TT Leidschendam / Den Haag. (vervoersmaatschappij VEOLIA) The Netherlands

Hard and Software Development for new battery technology		
	*project*	**1.5 Volt Rechargeable battery based on 3.7 Volt Li-ion battery** Small scale / low power electronics for inside AA battery case converting internal Li-ion 3.7 volt to 1.5 volt on the outside Processor : MSP430 van Texas Instruments Software : code written in C++
	period	2007-2008
	Client	Ingenieursbureau NEDAP / Groenlo The Netherlands

GPRS communication module for traffic counter		
	*project*	• Applied processor: Atmel 8051 derivate with flash • Compiler platform : Kyle C • GPS : TC 65
	period	2006
	Client	ARS T&TT The Netherlands

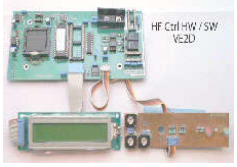
Timestamp-card for velocity measurement		
	*project*	Development of hard- and software • Applied Processor: Rabbit RCM3000 • Software written in C++ • GPS module: TC 65 • Embedded software developed on Dynamic C platform
	period	2004-2005
	Client	ARS T&TT Leidschendam / Den Haag. (Rijkswaterstaat)

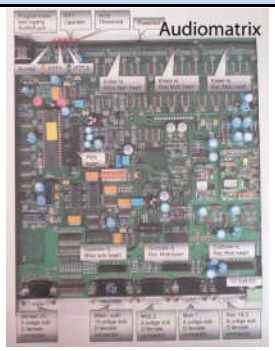
Trajectory control and dynamic maximum speed maintanance.		
	*project*	• Applied processor : Rabbit MC 3000 • Communication : Ethernet • Embedded Software written in Dynamic C
	period	2009
	Client	ARS traffic and Tracking&Tracing / Leidschendam

Programmable audio-pre-amplifier with limiter and compressor functions		
	*project*	• Applied processor: Philips 80C552 • Software developed with Kyle C compiler platform • on board Communication protocol : I^2C
	period	2002-2003
	Client	STN BV hulst / Casema, The Netherlands

Design of an on Board Tracking & tracing Device for Prorail		
	*project*	For application in locomotives of Dutch railway company (Nederlandse Spoorwegen) • Applied processor : PC104 card • I/O : glue IC's en Quad UART on AT bus • GPS module : uBlox
	period	2001-2002
	Client	ARS T&TT Leidschendam / Den Haag The Netherlands

GPS module for PC / Laptop		
	*project*	Hardware design
	period	2003
	Client	ARS T&TT Leidschendam / Den Haag The Netherlands

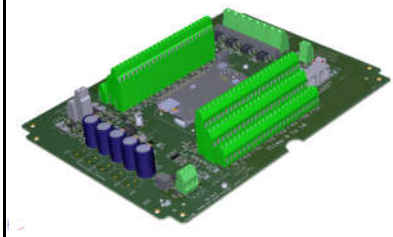
Hardware and software for HF cabel-tv-radio decoders		
	*project*	Applied processor : 80C552 Embedded software : written on Kyle platform (C++ compiler).
	period	2000-2001
	Client	STN BV, Hulst. Developer manufacturer of HF cable-TV converters. The Netherlands

PC controlled audio-matrix		
	*project*	Development of hardware and software of an 6 channel audio-matrix controllable by PC via an RS232 link.
	period	2000
	client	Voorhout Data Connection / Harmelen The Netherlands

Electro-motor control:		
	*project*	Development of PWM controller and driver for electro-motor of a small vehicle.

Development of several DC LED Drivers controllable by Bits over Power-lines		
	*project*	Several RGBW LED drivers designed with dim-control ability according the principle of Bits over two power-lines. • PWM modulated constant current driver, with individually controllable Red, Green, Blue and White LED's. • Utilizing Bits over power UART enabling control of RGBW LEDS by means of 2 wires (the 48 VDC power-lines). • Based on Atmel SAMD20 processor. • Including temperature control algorithm keeping the temperature of the LED's within safe range by means of de-rating.
	period	2016-2018
	Client	RENA electronic BV (Zundert, The Netherlands)

Development of dimmable 110-230 VAC mains to low DC voltage flyback drivers for LED luminaires		
	*project*	Work encapsulated designing schematic and PCB for LED making use of flyback principle, and making it production rife. • Driver had to be dimmable by means of phascutting on the AC power line (with phasecutdimmer) and by means of an 0-10 Volt Dim input. • Driver had to be protected against short-circuits and over-temperature. • Driver had to be proven to be reliable • Beside the design of the driver also a setup had to be designed for accelerated lifecycle testing of the driver. • Driver was further EMC pre-compliance tested • Driver was also made ready for ENEC & UL certification
	period	2016-2018
	Client	RENA electronic BV (Zundert, The Netherlands)

Development of Kinentic energy driven power supply for LED illuminated floor-tiles		
	*project*	Hardware of Kinetic Power-supply designed for a game facility consisting of tiles on the floor containing LED's. • Power-supply transforms the kinetic energy in tiles (when people are jumping on it) and transforms it into electric energy feeding the LED's built into the floor-tiles. • Kinetic tiles equipped with generator with permanent neodymium magnets. • Device controlled by an Atmel SAM processor. • Higher level control done by BEAGLE Bone Board.
	period	2018
	Client	RENA electronic BV (Zundert, The Netherlands)

Linschoten (NL), 22 October 2018

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