UNIVERSITY OF AMSTERDAM

Component overview for the Bluebird Data Physicalization Prototype

The Bluebird project entails the creation of a tangible data visualization for the Lab42 building, utilizing environmental IAQ sensor data to facilitate Human Building-Interaction. Part of the Thesis and Graduation project for the Master of Science (MSc) in Information Studies (Information Systems track), created by part-time student Danny de Vries at the University of Amsterdam.

This document offers an outline of the expenses incurred for hardware components necessary for the prototype's development. Additionally, it presents an inventory of components already possessed by the researcher, intended for a transparent declaration of these costs within the budget allocated by the Digital Interactions Lab.

The invoices of all these components are included at the bottom of the document after the cost breakdown. All other hardware components and tools that are not part of this document were already in possession of the researcher.

The paper itself with impressions and photographs of the prototype and the models and firmware used for the physicalization can be found on GitHub under the Viszlab organization: https://github.com/viszlab.

Thesis Project

Name: BSc Danny de Vries (14495643)

Email: danny.de.vries@student.uva.nl

Project: Master Thesis (IS)

University: University of Amsterdam (UvA)

Master: Information Studies Information Systems (track)

Institute: Informatics Institute

Faculty: Faculty of Science (FNWI)

Research Group: Digital Interactions Lab (DIL)

Supervisor(s): Dr. H. (Hamed) Seiied Alavi PhD & Shruti Rao Ph.D. Candidate

Cost Breakdown

Total incurred costs for this project for declaration: *€64.99*

Total costs:

- Costs for electronics: **€27.26**
- Costs for hardware: **€37.73**

Costs for the Electronics

User for creation of the controller device and string pull up/down mechanism.

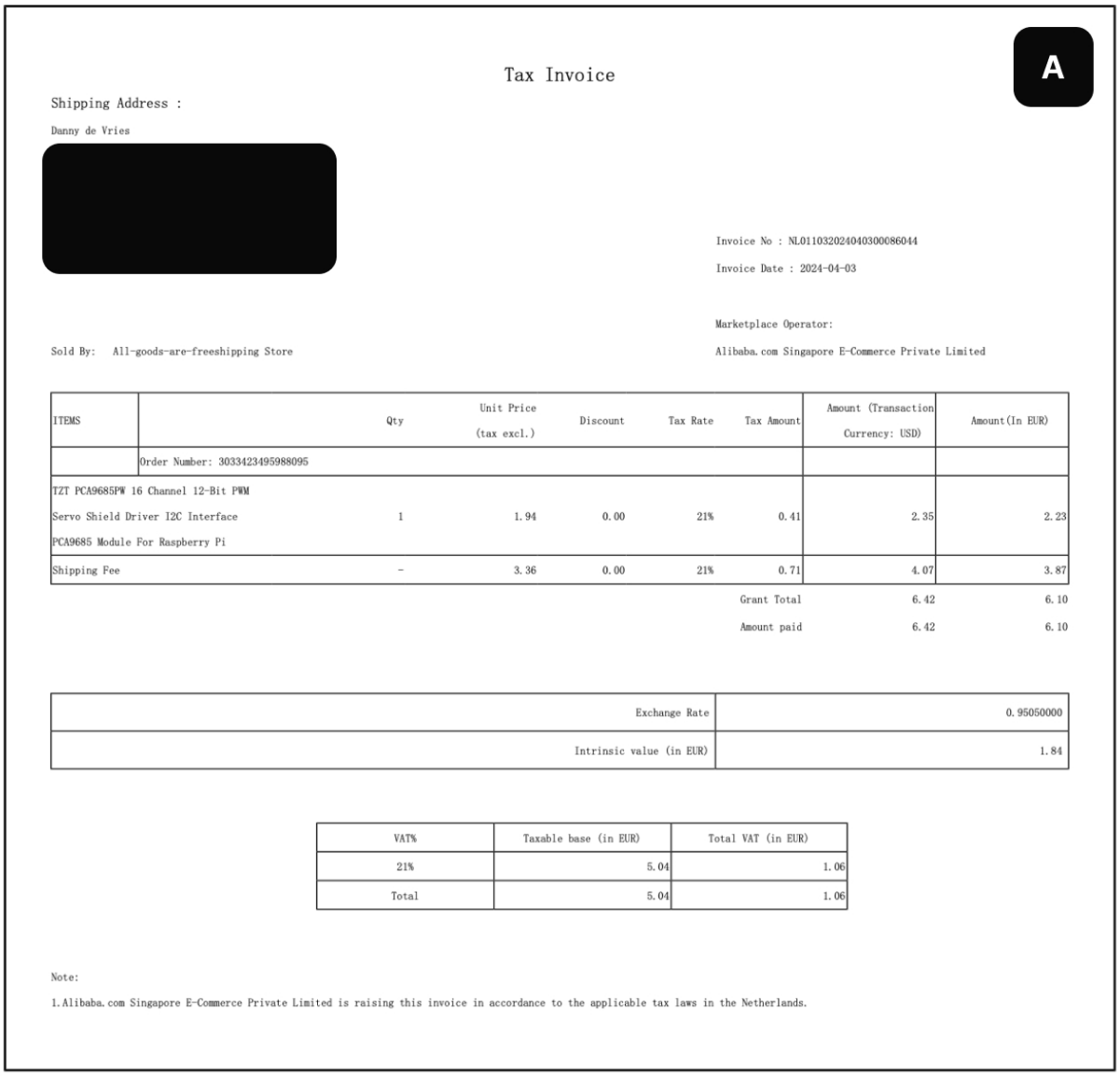
- 1x (A) 16-channel I2C PWM-Servo Controller (PCA9685) *€6.10 (A)*
- 7x Mini Servo (MG90S) Digital (360 continuous degrees) *€17.57 (B)*
- 10x 500mm servo extension cables *€3.59 (C)*

Costs for Manufacturing

The filament was used for mounting plates, and pulleys, and attached to the wooden MDF board.

- 1x PLA spool filament yellow/green gradient: *€24.99 (D)*
- 1x Dark green paracord 4mm: *€1.49 (E)*
- 1x Light green paracord 3mm: *€1.38 (E)*
- 1x Woven jute rope 3mm: *€0.99 (E)*
- 1x 122x61cm Wooden MDF board (cut to length) *€6.29 (F)*
- 1x Mounting Kit white 290ml *€2.59 (F)*

Invoices



A

Tax Invoice

Shipping Address :

Danny de Vries

[redacted]

Invoice No : NL01103202404030086044

Invoice Date : 2024-04-03

Marketplace Operator:

Alibaba.com Singapore E-Commerce Private Limited

Sold By: All-goods-are-freeshipping Store

ITEMS		Qty	Unit Price (tax excl.)	Discount	Tax Rate	Tax Amount	Amount (Transaction Currency: USD)	Amount(In EUR)
	Order Number: 3033423495988095							
TZT PCA9685PW 16 Channel 12-Bit PWM Servo Shield Driver I2C Interface PCA9685 Module For Raspberry Pi		1	1.94	0.00	21%	0.41	2.35	2.23
Shipping Fee		-	3.36	0.00	21%	0.71	4.07	3.87
						Grant Total	6.42	6.10
						Amount paid	6.42	6.10

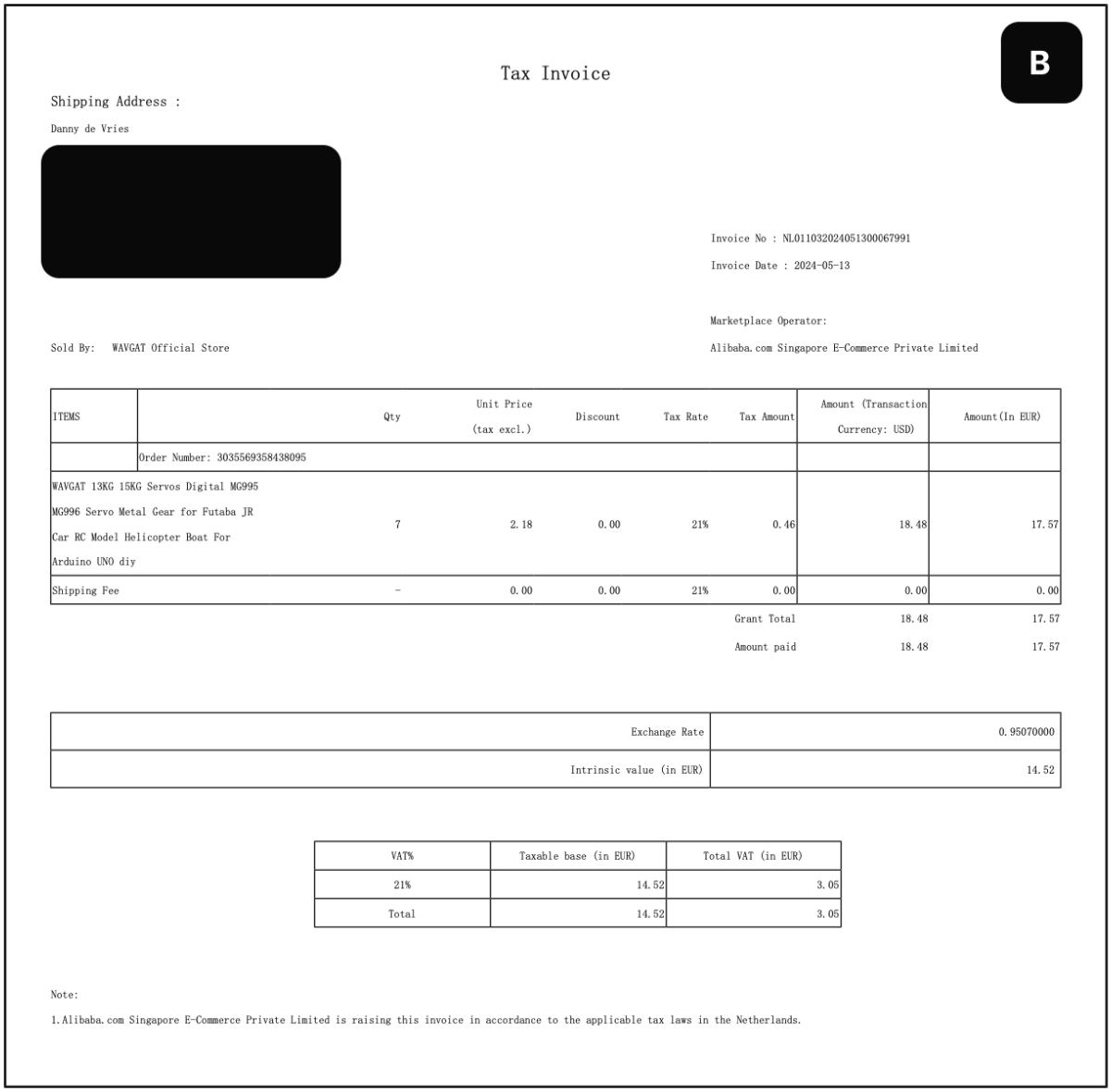
Exchange Rate	0.95050000
Intrinsic value (in EUR)	1.84

VAT%	Taxable base (in EUR)	Total VAT (in EUR)
21%	5.04	1.06
Total	5.04	1.06

Note:

1.Alibaba.com Singapore E-Commerce Private Limited is raising this invoice in accordance to the applicable tax laws in the Netherlands.

Figure 1: A) Invoice from Alibaba for the PWM shield



B

Tax Invoice

Shipping Address :

Danny de Vries

[redacted]

Invoice No : NL01103202405130006799 1

Invoice Date : 2024-05-13

Marketplace Operator:

Sold By: WAVGAT Official Store

Alibaba.com Singapore E-Commerce Private Limited

ITEMS		Qty	Unit Price (tax excl.)	Discount	Tax Rate	Tax Amount	Amount (Transaction Currency: USD)	Amount(In EUR)
	Order Number: 3035569358438095							
WAVGAT 13KG 15KG Servos Digital MG995 MG996 Servo Metal Gear for Futaba JR Car RC Model Helicopter Boat For Arduino UNO diy		7	2.18	0.00	21%	0.46	18.48	17.57
Shipping Fee		-	0.00	0.00	21%	0.00	0.00	0.00
						Grant Total	18.48	17.57
						Amount paid	18.48	17.57

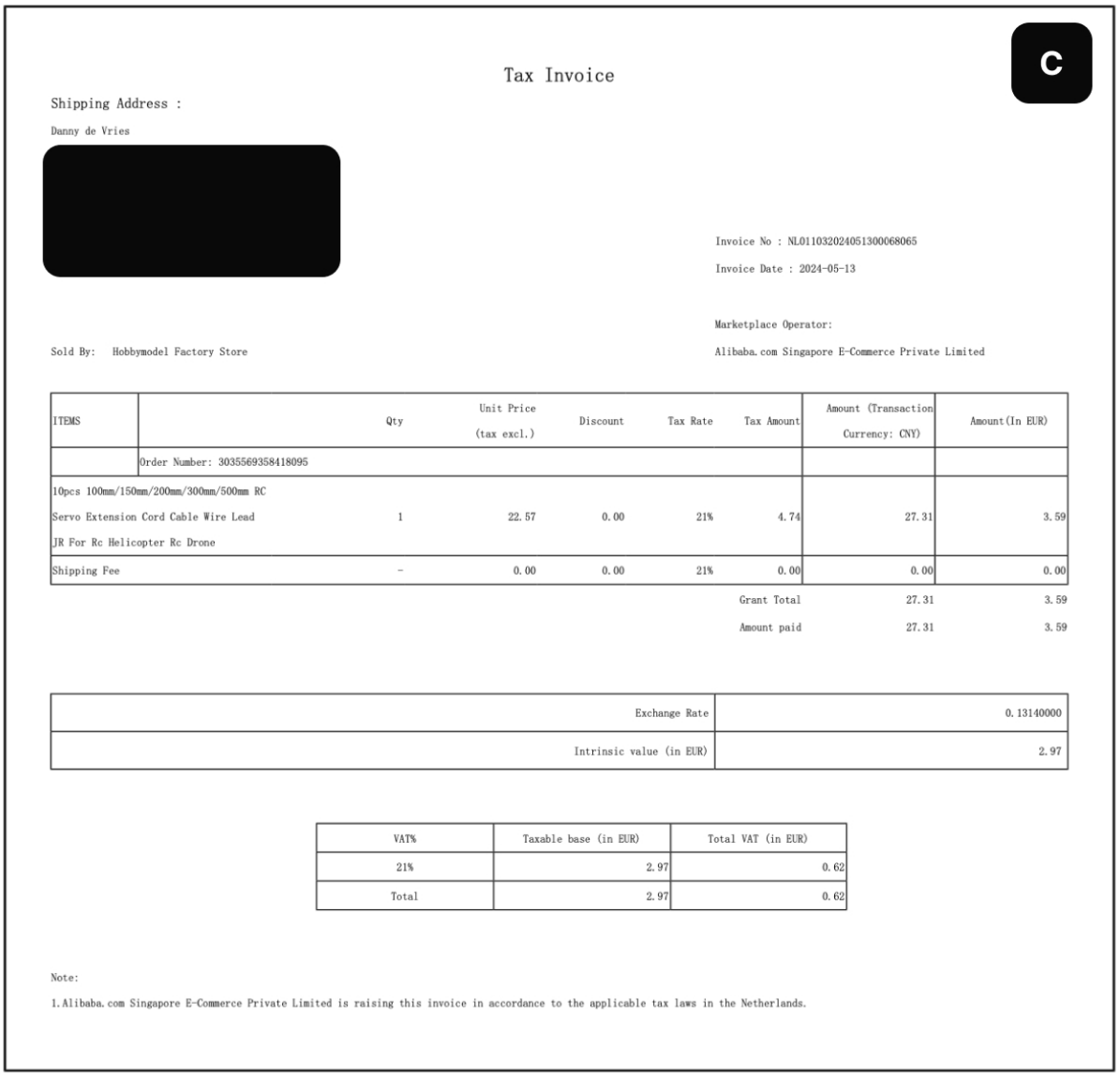
Exchange Rate	0.95070000
Intrinsic value (in EUR)	14.52

VAT%	Taxable base (in EUR)	Total VAT (in EUR)
21%	14.52	3.05
Total	14.52	3.05

Note:

1.Alibaba.com Singapore E-Commerce Private Limited is raising this invoice in accordance to the applicable tax laws in the Netherlands.

Figure 2: B) Invoice from Alibaba for the Servo Motors



C

Tax Invoice

Shipping Address :

Danny de Vries

[redacted]

Invoice No : NL01103202405130006806 5

Invoice Date : 2024-05-13

Marketplace Operator:

Alibaba.com Singapore E-Commerce Private Limited

Sold By: Hobbymodel Factory Store

ITEMS		Qty	Unit Price (tax excl.)	Discount	Tax Rate	Tax Amount	Amount (Transaction Currency: CNY)	Amount(In EUR)
	Order Number: 3035569358418095							
10pcs 100mm/150mm/200mm/300mm/500mm RC Servo Extension Cord Cable Wire Lead JR For Rc Helicopter Rc Drone		1	22.57	0.00	21%	4.74	27.31	3.59
Shipping Fee		-	0.00	0.00	21%	0.00	0.00	0.00
						Grant Total	27.31	3.59
						Amount paid	27.31	3.59

Exchange Rate	0.13140000
Intrinsic value (in EUR)	2.97

VAT%	Taxable base (in EUR)	Total VAT (in EUR)
21%	2.97	0.62
Total	2.97	0.62

Note:

1.Alibaba.com Singapore E-Commerce Private Limited is raising this invoice in accordance to the applicable tax laws in the Netherlands.

Figure 3: C) Invoice from Alibaba for the Servo Motor extension cables

Factuur

D

DANNY DE VRIES

[redacted]

Betaald

Referentie-ID betaling 11111113mcwdhnrokdvnzlwtj8817euk
Verkocht door ERYONE TECHNOLOGY (HK) LIMITED

Factuurdatum	20.05.2024
Factuurnummer	DS-ASE-INV-NL-2024-4694349
Totaal te betalen	€ 24,99

Btw afgedragen door	Amazon Services Europe S.a.r.L.
Btw-nummer	LU19647148

Voor vragen over je bestelling: www.amazon.nl/contact-us

Factuuradres
Danny de Vries
[redacted]

Bezorgadres
Danny de Vries
[redacted]

Verkocht door
ERYONE TECHNOLOGY (HK) LIMITED
FLAT/RM 02 7/F SPA CENTRE NO 53-55
LOCKHART WAN CHAI
Hong Kong, China
HK

Bestelgegevens

Besteldatum	18.05.2024
Bestelnummer	407-2230649-5282716

Factuurgegevens

Beschrijving	Aantal	Prijs per eenheid (excl. btw)	Btw-tarief	Prijs per eenheid (incl. btw)	Subtotaal item (incl. btw)
Eryone Dual tweekleurig PLA-filament 1,75 mm, 3D-printerfilament, 1 kg spoel +/- 0,02 mm, zijde geel en groen | B09X2PSDBV ASIN: B09X2PSDBV	1	€ 20,65	21%	€ 24,99	€ 24,99
Verzendkosten		€ 0,00		€ 0,00	€ 0,00

Totaal factuur € 24,99

	Btw-tarief	Subtotaal item (excl. btw)	Subtotaal btw
	21%	€ 20,65	€ 4,34
Totaal		€ 20,65	€ 4,34

LU-BIO-04

Amazon Services Europe S.à r.l., 38 avenue John F. Kennedy, L-1855, Luxembourg
R.C.S. Luxembourg: B 93815; Business license number: 100416 VAT number LU19647148

Btw afgedragen door Amazon in het land van levering

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Figure 4: D) Invoice from Amazon for the 3D Printing PLA filament

Figure 5: E) Receipt from Action for the rope strings

Figure 6: F) Receipt from Gamma for the wooden board and mounting kit