# John Businge

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Contact Information
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I am hardworking, results-driven, customer-focused, articulate and analytical Software Engineer/researcher. I have extensive experience in large scale data analysis that I gained while analyzing software ecosystems. I consider myself a fast learner and a team player. I believe that I can make a contribution in the evolution and maintenance of any software ecosystem. I also can make a contribution in any organization involved in managing large scale amounts of data by managing and analyzing this data to help in decision making. I gained my data management and analysis expertise through carrying out a number empirical studies on very large data sets in software engineering. I also consider my self an expert in statistics. I guided the statistics expertise while carrying out the empirical studies in software engineering where I employed a range of statistical methods.

## EDUCATION

**Eindhoven University of Technology, Eindhoven, The Netherlands** May 2009–July 2013
PhD in Software Engineering, July 2013
*Research Interests: Empirical software engineering, Open Source Software communities, Software Evolution, Mining Software Repositories, Software Maintainable, Software Metrics*
*Thesis Title*: The Co-evolution of the Eclipse Framework and its Third-party Plug-ins.

**UNIMORE University of Modena Reggio Emilia, Modena, Italy** July 8–21 2012
Erasmus Intensive Programme
*Course:* Multimedia and the Future Internet: Moving Social and Mobile

**University of Groningen, Groningen, The Netherlands** Sept 2004–Aug 2006
M.Sc. Computing Science, Software Engineering (Major)
*Thesis Title:* Estimating Values of Complex Dependencies in COVAMOF
(Configuration of Industrial Product Families Variability Modeling Framework)

**Makerere University, Kampala, Uganda** Sept 1998–April 2002
Bachelor in Computer Science (Major) Statistics (Minor)
*Project Title:* Library Information System

## WORK EXPERIENCE

**Data Migration, Ministry of Health, Kampala, Uganda** April 2013–Present

Since April 2013 I was contracted World Health Organization (WHO) to migrate data from two legacy software systems to a new software system. The data to be migrated is health-care data for the whole country–Uganda, that has been collected since the year 2000 to the year 2012. The data on the legacy system is located on two different systems: access-based Epi Info and MySQL web-based database. This data will be migrated to a new software system called the District Health Information System 2 (DHIS 2). The work is estimated to last for four months.

**LEDMSS, Ministry of Health, Kampala, Uganda** April 2013–Present

Since April 2013 I was contracted by the Ministry of Health, Uganda (MoHU), to develop an electronic software system for managing data for the Long Lasting Insecticide-treated Nets (LLIN) distribution exercise (LEDMSS) for the whole country, Uganda. LEDMSS is supposed to help on among other things the validation, analysis, presentation of aggregate and transactional data. The project is estimated to be completed in about 10 months.

**Mbarara University of Science and Technology, Mbarara** Feb 2007–Dec 2008
**Institute of Computer Science**, Head Software Development Team

With my proficiency in software development and solid understanding of relational databases, I lead the software development team of four in the institute of Computer Science in developing different client server Information Systems for the University. We identify customer problems, analyze possible solutions and determine best course of action to meet objectives. We have so far developed the Transcript generating system for the students, library information system and also redesigned the University website (www.must.ac.ug). We intend to develop all information systems for the university to help quicken work processes. Technologies we use in developing these systems include PHP, PHPMyAdmin, HTML, and Paint shop Pro.

**University of Groningen, Groningen** Feb 2005–Aug 2005
**Software Engineering Group**

During my internship with the Software Engineering Group, I and my colleague Tuheirwe Doreen researched about LEGO MINDSTORMS Robots in the Computer Science perspective. We managed to write MAZE solver, Line follower with obstacle avoidance, Euler tour traversal algorithms for LEGO MINDSTORMS Robots. We also managed to find out the capabilities of the RCX (brain of the Robot), in solving some of the real life computer science problems. The different technologies we used include: LeJOS, NQC, pbFORTH, ROBOLAB, LegOS and UML.

## RESEARCH EXPERIENCE

**Eindhoven University of Technology, Eindhoven** May 2009–July 2013
**Model Driven Software Engineering (MDSE) Group**

My research was in the area evolution of software eco-systems. Software ecosystems are collections of software systems, developed and co-evolving in the same environment. The environment can be organizational (a company) or social (an open-source community). My work was based on the social ecosystems. In the social ecosystem, users (active or passive), contribute content, knowledge, products, solutions, services, connections or behavior to the community. Specifically, since the beginning of my PhD, I have been researching on the co-evolution of the Eclipse framework and its third-party plug-ins. I have studied the impact of the changes in the interfaces that the framework provides to the third-party plug-ins, during the frameworks evolution, on the compatibility of the plug-ins in forthcoming framework releases.

**University of Groningen, Groningen** Jan 2006–Aug 2006
**Software Engineering Group**

Designed and implemented an algorithm for estimating values of complex dependencies in COVAMOF (Configuration of Industrial Modeling Framework), using advanced Mathematics of Interpolation and Extrapolation. The framework was work of two PhD students in their fourth year of their research working with an industry partner. It was concerned with deriving individual software products that are built under one architecture. My research specifically focused on how we can increase performance and reduce the development time of the framework in deriving these individual software products. Technologies used in this algorithm include C, Matlab and C#.

## TEACHING EXPERIENCE

**Mbarara University of Science and Technology, Mbarara** Aug 2006–April 2009
**Institute of Computer Science, Lecturer**

During the two and a half years after my masters degree, I went back to Mbarara University and started teaching and supervising undergraduates in their final course project. The subjects I taught include: Databases, Automata, complexity and computability, Object oriented programming with Java.

**Mbarara University of Science and Technology, Mbarara** Oct 2002–Aug 2004
**Institute of Computer Science, Assistant Lecturer**

After My bachelors degree in Makerere University, Kampala, I was offered a teaching job at Mbarara University, Mbarara. I taught undergraduate students and also supervised final year students in their research projects. The courses I taught include: Probability theory, Sampling theory, Automata, complexity and computability, C programming, Object Oriented programming with Java, Databases, Information system management.

**PUBLICATIONS**

## PEER REVIEWED PUBLICATIONS

The work that is presented in the following publications is a series of empirical studies. The work is based on 11 versions of the Eclipse framework that has been evolving for over a decade since the inception of the framework in 2001. We analysed 513 different Eclipse third party plug-ins (all together having a total of 1,873 versions), that have been co-evolving with the Eclipse framework over the years. The aim of the empirical studies was to quantify/qualify some of the challenges faced by the plug-in developers in co-evolving their plug-ins with the Eclipse framework. Furthermore, we offered solutions to the both the developers of the framework and the developers of the plug-ins so aid the development of the Eclipse framework ecosystem. Detailed information about the publications can be found online or on my website http://www.win.tue.nl/∼jbusinge/

7. John Businge, Alexander Serebrenik, Mark van den Brand, **Eclipse API usage: The good and The Bad**, Software Quality Journal, 2013, *Accepted*.
6. John Businge, **Co-evolution of the Eclipse SDK Framework and its Third-party Plug-ins**, In Proceedings of the IEEE 17th European Conference on Software Maintenance and Reengineering (CSMR 2013), pp. 427–430, March 58, 2013, Genova, Italy.
5. John Businge, Alexander Serebrenik, Mark van den Brand, **Analyzing the Eclipse API Usage: Putting the Developer in the Loop**, In Proceedings of the IEEE 17th European Conference on Software Maintenance and Reengineering (CSMR 2013), pp. 37–46, March 58, 2013, Genova, Italy.
4. John Businge, Alexander Serebrenik, Mark van den Brand, **Compatibility Prediction of Eclipse Third-Party Plug-ins in New Eclipse Releases**, In Proceedings of the IEEE 12th International Working Conference on Source Code Analysis and Manipulation (SCAM 2012), 23-24 September 2012 - Riva del Garda, Trento, Italy.
3. John Businge, Alexander Serebrenik, Mark van den Brand, **Survival of Eclipse Third-party Plug-ins**, In Proceedings of the IEEE 28th International Conference on Software Maintenance (ICSM 2012), 23-30 September 2012 - Riva del Garda, Trento, Italy.
2. Businge J, Serebrenik A and van den Brand M. G. J (2012), **Eclipse API usage: The Good and The Bad**, In Proceedings of the 6th International Workshop on Software Quality and Maintainability, March 27-30, 2012, Szeged, Hungary, pp. 54-62.
1. John Businge, Alexander Serebrenik, Mark van den Brand, **An empirical study of the evolution of Eclipse third-party plug-ins**, IWPSE-EVOL '10 In Proceedings of the Joint ERCIM Workshop on Software Evolution (EVOL) and International Workshop on Principles of Software Evolution (IWPSE), 2010, pp. 63-72

## TECHNICAL REPORTS

2. John Businge, Alexander Serebrenik, Mark van den Brand, *Survival of Eclipse third-party plug-ins*, Computer Science Report, No. 12-11. Eindhoven: Technische Universiteit Eindhoven, 10 pp., 2012
1. John Businge, Alexander Serebrenik, Mark van den Brand, *Eclipse API usage: The good and The Bad*, Computer Science Reports, No. 11-15). Eindhoven: Technische Universiteit Eindhoven, 10 pp, 2011.

## INVITED TALKS

9. **Co-evolution of the Eclipse Framework and its Third-party Plug-ins**, PhD Defense, Eindhoven Univeristy of Technology, Eindhoven, The Netherlands.
8. **Co-evolution of the Eclipse SDK Framework and its Third-party Plug-ins**, 17th European Conference on Software Maintenance and Reengineering (CSMR 2013),IEEE Computer Society Press, March 5-8, 2013, Genova, Italy.
7. **Analyzing the Eclipse API Usage: Putting the Developer in the Loop**, 17th European Conference on Software Maintenance and Reengineering (CSMR 2013),IEEE Computer Society Press, March 5-8, 2013, Genova, Italy.
6. **Compatibility Prediction of Eclipse Third-Party Plug-ins in New Eclipse Releases**, 12th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM'12), IEEE Computer Society Press, 2012, Riva del Garda, Trento, Italy.
5. **Survival of Eclipse Third-party Plug-ins**, 28th IEEE International Conference on Software Maintenance (ICSM'12), IEEE Computer Society Press, 2012, Riva del Garda, Trento, Italy.
4. **Eclipse API usage: The Good and The Bad**, Sixth International Workshop on Software Quality and Maintainability, March 27-30, 2012 in University of Szeged, Szeged, Hungary.
3. **Co-Evolution of Eclipse Plug-in Architecture and its Third-party Plug-ins**, Seminar on Open Source Evolution, Brussels, Belgium, 2012.
2. **Co-Evolution of Eclipse Plug-in Architecture and its Third-party Plug-ins**, Seminar Series on Advanced Techniques & Tools for Software Evolution, Koblenz, Germany, 2011.
1. **An empirical study of the evolution of Eclipse third-party plug-ins**, Joint ERCIM Workshop on Software Evolution (EVOL) and International Workshop on Principles of Software Evolution (IWPSE). 20-21 September, 2010, Antwerp, Belgium.

## HONORS AND AWARDS

Received a scholarship from the Netherlands Government to study my PhD degree from May 2009–present.

Received a scholarship from the Netherlands Government to study my Masters degree in the Netherlands for a period of two years (2004–2006)

Received a Scholarship for my Bachelors degree from the government of Uganda to cover my tuition, medical and living expenses in 1998–2001

## REFERENCES

**Professor Mark van den Brand**
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Eindhoven University of Technology
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