Curriculum Vitae: Liezl van Dyk

I am an Industrial Engineer who thrives on challenges that require process and systems thinking. I am goal driven and can hold a long term focus, whilst executing each step of the process. I firmly believe that, given sufficient resources, I can achieve any goal. I have an exceptional ability to recognize and leverage the strengths and talents of others, resulting in optimizing their potential whilst pursuing the end goal.

Nationality:	South African
Current positions:	Director: Unit for Engineering Research
	Associate Professor and Programme Manager: Industrial Engineering

Work telephone number:	+27 (0)18 299 1524
Mobile number:	+27 (0)82 450 7988
E-mail address:	Liezl.vandyk@nwu.ac.za
Work physical address:	Room G13
	Building G15
	Potchefstroom Campus
Skype:	liezlvandyk
LinkedIn:	http://za.linkedin.com/in/liezlvandyk

Research Focus:

Technology-enabled Optimization of Service Systems.

My early research outputs (2001 - 2008) focused on the Technology-enabled Optimization of Learning Management Systems. Research outputs related to this theme include 5 peer reviewed journal articles (2 international, 5 local ISI-listed and 1 local non-ISI-listed), as well as 5 peer reviewed publications in proceedings of international conferences.

In 2009 I became involved with the South African Medical Research Council (MRC)'s telemedicine research projects. Telemedicine is the delivery of health care services (-medicine) over a distance (tele-), enabled by technology. I eventually developed a Telemedicine Service Maturity Model for purposes of my PhD. GSMA (Groupe Speciale Mobile Association) Health Directorate adopted this model for their "mHealth Service Maturity Tracking System".

I was member of the organizing committee, responsible for the academic programme of the 1st (2010), 2nd (2011) and 3rd (2012) South African Telemedicine Conferences and the 16th Conference of the International Society for Telemedicine and eHealth (2012) as well as peer reviewer for three different international conferences related to Telemedicine, namely (1) the International Conference on eHealth, Telemedicine, and Social Medicine; (2) the International eHealth, Telemedicine and Health ICT Conference and (3) 3rd International Conference on Global Telehealth.

Under my supervision and with my co-authorship, my students produced a total of 14 peer reviewed research outputs, including 1 international journal paper, 1 local ISI-listed journal paper, 1 book chapter, 5 papers in international and 6 in local conference proceedings. While busy with her PhD-research, I spent 4 months in Europe where she established networks and published a joint international conference paper.

I also – in collaboration with the Medical Research Council - developed and presented post-academic courses on telemedicine and ehealth to healthcare professionals from seven of the nine Provincial Departments of Health of South Africa.

Quantitative Summary

Qualifications		PhD (Engineering), Stellenbosch University	2013
		Post Graduate Diploma (Higher Education Teaching Practice), University of Pretoria	2002
		MSc (Systems Engineering), University of Warwick, UK	2001
		MEng (Industrial), University of Pretoria	2000
		BEng (Industrial), University of Pretoria	1997
Work experience	Academic experience	Associate Professor and Director of Research Unit of Energy and Technology Systems	1 year
		Senior Lecturer	5 years
		Lecturer	6 years
		Post Graduate Teaching Assistant	2 years
	Professional Registration	Professional Engineer (Engineering Council of South Africa)	Since 2011
	Industry experience	ICT system integration (learning management systems, Stellenbosch University)	3 years
		Productivity consultant and project manager (part-time)	9 years
Professional Academic Activities	NRF Rating	C2, Established Researcher	Since 2016
	Membership	Member of Southern African Institute for Industrial Engineering (SAIIE)	Since 1999
		Member of National Council of SAIIE	2015-2016
		Chair of Organizing Committee: Annual SAIIE Conference	2015-2016
		Member of IEEE	Since 2010
	Journal/ Grant Reviewer	Southern African Journal of Industrial Engineering (since 2003)	Since 2003
		Reviewer for NRF / MRC Grant Programmes (since 2014)	Since 2013
		International Conference on eHealth, Telemedicine, and Social Medicine (2011-2014)	2
		International eHealth, Telemedicine and Health ICT Conference (since 2014)	~3/year
		3rd International Conference on Global Telehealth	3
	Examiner	Final year BEng(Industrial) projects	~20
		MEng (2010-2015)	17
		PhD	2
	Conference Reviewer / Chair	Reviewer/ Chair at national and international conferences	12 conf
		Member of organizing committee at national conferences	4 conf
Supervision	BEng students	Supervisor of BEng capstone projects	~ 60
	MEng students	MEng supervisor - 9 completed (4 current)	9+(4)
	PhD students	Promoter (3 current)	(3)
Research outputs	Publications	Articles in ISI-listed Journals	7
		Articles in peer reviewed international journals	4
		Articles in peer reviewed local journals	7
		Chapters in peer reviewed international books	2
		Full-length peer reviewed papers in international conference proceedings	12
		Full-length peer reviewed papers in local conference proceedings	9
	Authorship	Of the 34 publications listed above, authorship is distributed as follows:	
		Full authorship (sole author)	8
		Co-author together with colleagues/ co-workers / promoter	9
		Primary author on PhD-related publications together with promoter	4
		Secondary author on publications together with students under supervision	13

Qualitative Summary

Associate Professor in Industrial Engineering, North West University

1993 - 2000	Dr. ir. Liezl van Dyk graduated as Industrial Engineer from the University of Pretoria, South Africa, in 1997 (BEng). In 2000 she completed an MEng degree in Industrial Engineering, also from the University of Pretoria. She was then awarded a Commonwealth Academic Scholarship, which enabled her to complete an MSc (Systems Engineering) degree in 2001, from the University of Warwick, United Kingdom, with distinction.
2000 - 2005	From 2000 to 2005 she was employed as Lecturer in the Department of Industrial and Systems Engineering at the University of Pretoria, where she taught undergraduate courses in *Innovation Management* as well as *Productivity*, whilst supervising several BEng capstone projects as well as MEng theses. She was also involved in industry based consultation projects.
	During this period she also completed a post graduate diploma in Higher Education Practice.
2006 – 2008	From 2006 – 2008, she was involved in the operational, tactical and strategic management of the Learning Management System (WebCT Vista) of Stellenbosch University in the capacity of e-Learning Manager. This required interaction with ICT-technicians, policy makers as well as lecturers and students from Stellenbosch University. Many of these activities and projects required leadership and coordination on a high level not only within Stellenbosch University, but also across institutions of higher education.
	Being an industrial engineer, she was well-equipped for this role. Even though this was a non-academic position, her research interest in ICT-enabled Service Systems, resulted in several academic articles and conference contributions related to Learning Management Systems, Academic Analytics and other e-Learning processes.
2009 - 2013	In 2009 she was appointed as Senior Lecturer in Industrial Engineering by Stellenbosch University's Department of Industrial Engineering, where she taught undergraduate BEng courses in *Operations Research* (both deterministic and stochastic techniques), as well as post graduate courses in *Quantitative Management* and *Systems Engineering*. During this period she also supervised several BEng capstone projects and several MEng theses.
	The Engineering profession of South Africa is regulated by the Engineering Council of South Africa (ECSA), similar to countries like the United States and Canada. In 2011 an ECSA committee evaluated and benchmarked her work portfolio and she received professional ECSA membership, indicating adequate, appropriate and internationally accepted industry-based professional work experience.
	She was awarded a PhD qualification in Industrial Engineering by Stellenbosch University in 2013, with a thesis entitled *The Development of a Telemedicine Service Maturity Model*.
2013 – 2015	In July 2013 she joined the Faculty of Engineering of the North-West University as Associate Professor. She is responsible for establishing a School for Industrial Engineering, which will be official by Jan 2017. Before 2015, the North-West University only offered Mechanical, Chemical, Electric, Electronic and Computer Engineering degrees. During 2013 and 2014 she compiled the educational programme, drawing on existing courses from the Engineering Faculty as well as the Economic and Management Faculty and Programmes in Mathematical Modelling and Decision Making. Apart from this, she conceptually designed another 12 new Industrial Engineering specific courses.
	The first group of Industrial Engineering students registered in Jan 2015. She manages the complete roll-out of this programme, including the recruitment of staff and preparation of curricula and infrastructure for the ECSA (similar to ABET in the USA) accreditation visit, scheduled for September 2016, to ensure international recognition of the programme per Washington Accord.
	In Feb 2015 Liezl van Dyk was appointed as the Research Director of the Faculty of Engineering, in addition to her responsibilities mentioned above. In this capacity she serves as member of the executive management committee of the Faculty, together with the Dean and four other School/ Innovation Support Directors. She coordinates 14 research focus groups, comprising 72 academic staff members / post doc members, about 100 PhD students and 260 MEng students.

Research Profile

Liezl van Dyk's research focus is on Technology-enabled Optimization of Service Systems.

Her early research outputs (2001 - 2008) focused on the Technology-enabled Optimization of Learning Management Systems. Research outputs related to this theme include 5 peer reviewed journal articles (2 international, 5 local ISI-listed and 1 local non-ISI-listed), as well as 5 peer reviewed publications in proceedings of international conferences.

In 2009 she became involved with the South African Medical Research Council (MRC)'s telemedicine research projects. Telemedicine is the delivery of health care services (-medicine) over a distance (tele-), enabled by technology. In 2010 she registered for a PhD with the purpose of developing a Telemedicine Service Maturity Model, which she completed in 2013. GSMA (Groupe Speciale Mobile Association) Health Directorate adopted this model for their "mHealth Service Maturity Tracking System".

Summary of PhD Thesis:

> *Telemedicine is the delivery of healthcare services over a distance and can potentially contribute to the quality, accessibility, utilization, efficiency and effectiveness of healthcare services. Despite this potential, the success rate of telemedicine services disappoints. This study, which spans several academic and professional disciplines, responds to this problem through the development, application and validation of a maturity model for telemedicine services. This model describes patterns in the development of organizational capabilities of telemedicine services to facilitate the assessment and provide guidelines for the optimization of telemedicine services in a consistent, systematic and systemic way.*

She was member of the organizing committee, responsible for the academic programme of the 1st (2010), 2nd (2011) and 3rd (2012) South African Telemedicine Conferences and the 16th Conference of the International Society for Telemedicine and eHealth (2012) as well as peer reviewer for three different international conferences related to Telemedicine, namely (1) the International Conference on eHealth, Telemedicine, and Social Medicine; (2) the International eHealth, Telemedicine and Health ICT Conference and (3) 3rd International Conference on Global Telehealth.

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Liezl van Dyk also – in collaboration with the Medical Research Council - developed and presented post-academic courses on telemedicine and ehealth to healthcare professionals from seven of the nine Provincial Departments of Health of South Africa.

Awards

Dec 2013:	Altech-ISIS prize for the best post graduate student in Industrial Engineering
2003-2005 & 2011-2013:	NRF researcher-in-training support as part of the Thuthuka programme
Sept 2002:	Chancellor's award for Education Innovation (University of Pretoria)
Sept 1999:	Academic Staff Scholarship from the Association of Commonwealth Universities

Peer reviewed journal articles and book chapters

Articles in international peer reviewed journals	Snyders, F., **Van Dyk, L.** (2014). Developing Business Models for Using Mobile Phones to Strengthen Preventative Healthcare in South Africa *Journal of the International Society for Telemedicine and eHealth*, 2(1), 12-18.
	Van Dyk, L. (2014). A Review of Frameworks for Telehealthcare Implementation, *International Journal for Environmental Research and Public Health*[ISI-listed], Special edition on Telehealthcare. (11) pp. 1279-1298;
	Van Dyk. L. (2008). A Data Warehouse Model for Micro Level Decision Making in Higher Education, *Electronic Journal for E-Learning*, ISSN: 1479-4403.
	Van Dyk, L., Conradie, P.J. (2007). Creating Business Intelligence from Course Management Systems. *Campus-Wide Information Systems*, 24(2). pp. 120 – 133.
Articles in local peer reviewed journals	Treurnicht, M.J., **Van Dyk, L.** (2014), A Decision Support Framework for Equipment Allocation in a Telemedicine Referral Network, *South African Journal of Industrial Engineering*[ISI-listed], 25.1 (2014): 29-38.
	Van Dyk, L., Schutte, C.S.L. (2012), Development of a Maturity Model for Telemedicine, *South African Journal of Industrial Engineering*[ISI-listed], July 2012, Vol 23 (2): pp 61-72
	Van Dyk, T.J., **Van Dyk, L.**, Blanckenberg, H.C., Blanckenberg, J. (2007). Van "vreemdetaal" tot tuiste in eie taal: 'n e-leerloodsprojek in akademiese geletterdheid. *Ensovoort,* ISSN: l, pp. 156-174.
	Van Dyk, L. (2003). Learning Management Systems: Engineering the Education Industry to Educate the Industrial Engineer. *South African Journal of Industrial Engineering*[ISI-listed], 14(1), 139-150.
	Van Dyk, L. (2003). Assessment through learning management systems. *Perspectives in Education*[ISI-listed], 21(1), 155-164.
	Van Dyk, L., and C. Van Schoor. (2001) Realising the potential of manufacturing execution systems. *South African Journal of Industrial Engineering*[ISI-listed], 12.1: 1-14.
	Van Dyk, L. (2001). The philosophy-tool continuum. *South African Journal of Industrial Engineering*[ISI-listed], 12.1: 102-118.
Chapters in international peer reviewed books	Treurnicht, M.J., **Van Dyk., L.**, (2012). *Chapter 18: Clinical-Pull Approach to Telemedicine Implementation Policies, using health Informatics, in the Developing World*. In: Rodrigues, I., De la Torre, D. & Sainz de Abajo, B., Telemedicine and E-Health Services,Policies and Applications: Advancements and Developments, edited by Joel Rodrigues, Isabel de la Torre Diez and Beatrix Sainz de Abajo, IGI Global.
	Van Dyk, L., Schutte, C.S.L. (2013). *Chapter: The Telemedicine Maturity Model: A generic for the measurement and improvement of telemedicine services*, In: Madhavan, R. (eds.). Telemedicine, Intech Publishing. ISBN 980-953-307-714-2

Full length publications in peer reviewed conference proceedings

Full length publications in international conference proceedings	Steyn, N., Kloppers, H., Coetzee, SK., **Van Dyk, L**. (2015). Nurse Scheduling Decision Support System adoption in public South-African hospitals. *Proceedings of the 2015 Industrial and Systems Engineering Research Conference*, Nashville, USA, May 2015.
	Hartmann, A., **Van Dyk, L.** (2014). The utilization of Mobile Devices for Telemedicine Services in a South African Public Healthcare System. *3rd International Conference on Global Telehealth - GT2014*, Nov 2014.
	Van Dyk, L., Van Gemert-Pijnen, J.E.W.C., Wentzel, J., Van Limburg, M., Schutte, C.S.L. (2012). Business Models for Sustained eHealth Implementation: Lessons from Two Continents, *Proceedings of the 42nd International Conference on Computers & Industrial Engineering*, 16-18 July 2012.
	Friedrich, S.S., **Van Dyk, L.** (2012). A Decision Support System for Nurse Scheduling at a Public Hospital in South Africa, *Proceedings of the 42nd International Conference on Computers & Industrial engineering*, Cape Town, South Africa, 16-18 July 2012.
	Van Dyk, L., Triegaardt, M. (2012). Yardsticks and Dashboards for Telemedicine Maturity: A Teleradiology Case Study, *Proceedings of the International eHealth, Telemedicine and Health ICT Conference*, Luxembourg, April 2012.
	Van Dyk, L., Schutte, C.S.L., Fortuin, J.B. (2012). A Maturity Model for Telemedicine, *eTELEMED 2012, The Fourth*

International Conference on eHealth, Telemedicine, and Social Medicine, Valencia Spain, 30 Jan – 3 Feb 2012.

Haumann, C., **Van Dyk, L.,** Fortuin, J.B. (2011). A Framework for the Assessment of Teleradiology in South Africa: An Eastern Cape Case Study, *Proceedings of the International eHealth, Telemedicine and Health ICT Conference*, Luxembourg, April 2011.

Van Dyk. L., Groenewald, M.F. & Fortuin, J. (2010). Towards a Regional Innovation System for Telemedicine in South Africa. *Proceedings of the Second International Conference on eHealth, Telemedicine, and Social Medicine, 2010*. IEEE Xplore, 10.1109/eTELEMED.2010.8, pp. 1-4.

Van Dyk. L. , Van der Merwe, A.D., (2008). Integrating a Wide Variety of Student Information Sources to Support Institutional e-Learning Decisions: A Stellenbosch University Case Study, *Proceedings of the 3rd International Conference on e-Learning*. ISBN 978-1-906638-05-4, pp. 491 – 498.

Brown, C., Thomas, H., Van der Merwe, A.D. & **Van Dyk. L.** (2008). Landscaping ICT in Higher Education in South Africa. *Proceedings of the 3rd International Conference on e-Learning*, ISBN 978-1-906638-05-4, pp. 69 – 76.

Van Dyk, L., Horak, E., Maharaj, S., Liebenberg, L. & Barlow, L. (2006). Project based learning: Lessons learned from Innovation 110, *Proceedings of the 3rd African Regional Conference on Engineering Education.* p. 205-214

Van Dyk, L., Conradie, P.J. (2004). Warehousing and Mining of Higher Education Data by Means of Statistical Process Control. *International Conference for Enterprize Information Systems ICEIS* (2) 2004: 110-115

Van Dyk, L, (2002). Engineering the Education Industry to Educate the Industrial Engineering, *Proceedings of the Annual Conference of Society for Engineering Education Annual Conference*, Montreal, session 3557.

Full length publications in local conference proceedings, since 2010:	**Van Dyk, L,** (2014) A Census of Industrial Engineers in South Africa, based on LinkedIn-data, *Proceedings of the 26th Annual Conference of the South African Institute for Industrial Engineering*, Magaliesburg, July 2014.

Snyders, F., **Van Dyk, L,** (2013). Assessing the Technology Acceptance of Cell Phones within the Context of the Primary Health Care System of South Africa, *Proceedings of the 25th Annual Conference of the South African Institute for Industrial Engineering*, Stellenbosch, July 2013.

Hartmann, A.F., **Van Dyk, L**., (2013). An Assessment of the Maturity of Teleradiology Services within the Western Cape Public Healthcare System, *Proceedings of the 25th Annual Conference of the South African Institute for Industrial Engineering*, Stellenbosch, July 2013.

Steyn, N., **Van Dyk, L**., (2013). Nurse Scheduling Decision Support Systems as a Workforce Management Technology Solution in Public Healthcare, *Proceedings of the 25th Annual Conference of the South African Institute for Industrial Engineering*, Stellenbosch, July 2013.

Treurnicht, M.J**., Van Dyk, L**., Lane-Visser, T.E., Friedrich, S.S. (2011). A nurse rostering algorithm for a district hospital in South Africa, *Proceedings of the 2011 Operations Research Society of South Africa Annual Conference,* September 2011, pp. 93- 102.

Van Zyl, A.J., **Van Dyk, L.,** (2011). Operations Research in Telemedicine, *Proceedings of the 2011 Operations Research Society of South Africa Annual Conference,* September 2011, pp. 103-110.

Van Zyl, I., **Van Dyk, L**., Lane-Visser, T.E. (2011). Paving the way for the use of prediction modelling in a hospital environment, *Proceedings of the 2011 Operations Research Society of South Africa Annual Conference,* September 2011, pp. 111-124.

Van Dyk, L., Schutte, C.S.L., Fortuin, J.B. (2011). A Systems Engineering Approach to Telemedicine Implementation in South Africa, *Proceedings of the International Conference for Industrial Engineering, Systems Engineering and Engineering Management*, Spier, September 2011.

Van Dyk, L. (2010). Telemedicine – Leveraging competitive advantage of the 2010 ICT infrastructure investments, *Proceedings of the 22nd Annual Conference of the South African Institute for Industrial Engineering*, Muldersdrift, Oct 2010.

Local conference proceedings before 2010	Full peer reviewed publications = 3 Abstract-reviewed presentations = 12