

CURRICULUM VITAE – Jouni Partanen

Summary

- Experienced high technology industry leader (15 years) in product development, advanced research, production and product management. 12 years of key technology and business leadership in the world leading 3D-Printing company 3D Systems.
- Currently more than 50 patents issued internationally in the main high technology markets worldwide.
- Professor of Mechanical Engineering in Advanced Production Technologies.
- Academic and administrative leader of a large multidisciplinary research institution (about 250 researchers).
- Academic scientist with publications in highly ranked journals belonging to many different fields including physics, manufacturing technology, health sciences, and chemistry. The top journals include Nature and Physical Review Letters.

1 Full name and date

- Partanen, Jouni Pekka
- male
- CV written on September 25, 2017

2 Date and place of birth, nationality, current residence

- born September 27, 1957 in Kaavi, Finland
- citizenship: Finland and USA
- address: Aarnivalkeantie 10 A, 02100 Espoo, Finland

3 Education and degrees awarded

- Helsinki University of Technology, Finland, 1987, Ph.D. in Technical Physics.
- Helsinki University of Technology, Finland, 1982, M.Sc. in Technical Physics.

5 Languages

- Mother tongue: Finnish
- Other languages: English - 25 years of professional and everyday usage
Swedish - good reading and listening skills, limited proficiency in speaking
German - limited proficiency

6 Current position

- 2009 – present, Aalto University, Espoo, Finland, Professor, Director, Principal Scientist
 - 2016/1 – present, Head of Department of Mechanical Engineering (about 30 professors and total of about 250 researchers).
 - 2013/10 – present, Professor of Mechanical Engineering conducting research in advanced production technologies, like Additive Manufacturing (3D-Printing) and modern laser processing and micromachining.

- 2011- 2013/9, Director of BIT Research Centre, in charge of an academic research organization (about 130 researchers) that does mostly applied research in Industrial Management and Organizational Leadership.
- Developing new organizational culture inside BIT where more emphasis is put on academic publishing as measured with citations and finishing of PhD theses swiftly. A key requirement for the new organizational culture is to maintain the excellent societal impact that the center has been evaluated to have in the Aalto University 2009 RAE reports.

7 Previous work experience

- 2006 – 2009, DPSS Lasers, Santa Clara, CA, USA, Vice President of RND
 - Developed Samurai Ultraviolet Laser Marking and Micro Machining system with applications in a wide range of industries. I was heavily involved in sales and marketing effort of this new business. It grew to about \$1M annually while I was there.
 - Working with many clients I developed ultraviolet laser marking technology for airplane wiring that uses Diode Pumped Solid State (DPSS) lasers. The airplane wire marking industry is about \$5M annually and the DPSS laser marking is fast growing to cover most of it.
 - Developed Javelin, Diode Pumped Solid State laser product line, with offerings at infrared, green, and ultraviolet wavelengths.

- 1994 - 2006 3D Systems, Valencia, CA, USA, Engineering Manager
 - During the last 5 years of my employment I was responsible for the advanced technology development in the \$100M/year high technology company.
 - Developed a superior laser vector scanning technology that utilizes digitized feedback and feedforward with digital signal processing (DSP).
 - Initiated and managed development project for advanced thermal control in laser sintering utilizing patented black body calibration technique. This engineering effort has created business for last year beyond \$10M.
 - Continued development of advanced laser beam shaping techniques for spot size and waist manipulation and astigmatism correction. These techniques use mechanical and electrical actuators capable for remote and automatic software control.
 - In co-operation with product marketing, I developed a business model and business justification for one of the company's most successful products. The novel technical solutions covering the range high to standard resolution operational modes were analyzed in terms of technical capabilities and market potential.
 - Through my career at 3D Systems I have also been involved in the development of how the laser exposure and other processes are optimized for best accuracy of parts and best material properties.
 - Since joining the company I was responsible for the optical design and operation of the company's main product lines (Stereolithography and Laser Sintering).

- 1988 – 1994, University Southern California, Los Angeles, CA, USA, Research Assistant Professor
 - Developer of a phase conjugate four-wave-mixing experimental arrangement for studying optical nonlinearities in the picosecond and nanosecond timescales. This is a very versatile set-up that was used to study a large number of material parameters and materials, suitable for optical signal processing.
 - Member of a development team demonstrating that free atoms have very strong optical nonlinearities and are very efficient for optical signal processing. We demonstrated a highly sensitive image correlator using a thin layer of Cesium vapor.
 - Developer of an interferometric technique for characterization of cw-laser- induced dielectric gratings (like photorefractive gratings).

- 1987–1988, 1981-1984, Technical Research Centre Helsinki, Finland, Research Scientist
 - Developed models for the spreading of radioactivity in atmosphere and their health and economical consequences, after accidental releases or as a result of releases during normal operation from nuclear power stations.
 - Analyzed thermal radiation hazards from LPG explosions.

- 1984 – 1987, Rutherford Appleton Laboratory, Oxford, UK, Research Associate
 - Member of the team developing high power KrF lasers for inertial confinement fusion research.
 - Specialized to the theory and experiments demonstrating stimulated Raman optical amplifiers for high power laser beam combination and clean-up.
 - Developed the first single mode KrF laser cavity.
 - Demonstrated many new cavity configurations for line narrowing of excimer lasers.

- 1977 – 1981, Helsinki Univ. of Technology, Espoo, Finland, Teaching Assistant, Research Assistant
 - During MSc studies

8 Research funding, leadership and supervision

- Principal Investigator (PI) in many current and recent Horizon 2020, EU FP 7, and national funding agency applications.
- PI for Mech Eng for 3D-BioMat project, 2017 - 2020, Academy of Finland, 370 000 €
- Co-PI for CRAMAX project, 2017 - 2019, TEKES, 300 000 €
- Co-PI for Finn 3D project, 2016 - 2018, TEKES, 300 000 €
- PI for 3D Surprise project, 2016 - 2018, TEKES, 130 000 €
- PI for DiVa project, 2015 - 2017, TEKES, 450 000 €
- PI for DDShape project, 2015 - 2016, TEKES, 347 000 €
- PI for AdManI project, 2015 - 2016, TEKES, 285 000 €
- Aalto PI for EIT ICT High Impact initiative - Industry 4.0 powering Europe, 2015, 192 000 €

- Aalto PI for Particle Releases from 3D-Printers, 2015 – 2016, Finnish Work Environment Fund, 53 000 €
- Aalto SCI PI for ArtiVasc 3D project, 2011 – 2015, EU FP 7, 123 000 €
- PI for BioScaf project, 2011 – 2014, TEKES FiDiPro, 700 000 €
- PI for Dighiro project, 2010 – 2014, EU Marie Curie funding, 100 000 €
- Technical and administrative leadership of 3D Manufacturing research team of about 10 researchers and scientist with multidisciplinary backgrounds
- Technical and administrative leadership of Aalto Digital Design Laboratory, ADDLAB. ADDLAB facilitates multidisciplinary research that combines artistic and engineering design having co-working teams from many different Schools of Aalto University

9 Merits in teaching and pedagogical competence

- Member of Doctoral Committee in Aalto University School of Engineering (2014 – 2016). The committee develops engineering doctoral education that is both academic and relevant for Finnish industries and society.
- Instructor for Ph.D. students in Physics and Engineering with the University of Southern California, Los Angeles: Pascale Nouchi (1992), Ping Xia (1993), and Nansheng Tang (1994).
- Completed supervision of 2 Ph.D. students, currently 7 Ph.D. students
- Completed supervision of 15 M.Sc. students, currently 8 M.Sc. students
- Involved in teaching for many courses at all levels and many disciplines in Aalto University often using a modern teaching methods

10 Awards, prizes and honours

- 3D Systems' 2003 Innovation of the year "Advanced Thermal Control in Laser Sintering"
- Osk. Huttusen säätiö 1985 – 1987, 3 year grant for PhD work
- Heikki ja Hilma Honkasen Säätiö, 1984 grant for PhD work

11 Other scientific or academic merits

- Examiner and opponent for doctoral theses and reviewer for other academic positions in universities internationally
- Evaluator for applications for universities to receive Endowed Professorship in "Production of the Future" from the Austrian Research Promotion Agency, 2014
- Reviewer in many scientific journals, including Applied Physics Letters, Optics Letters, *etc.*

12 Societal impact of research

- Currently more than 50 patents issued internationally in the main high technology markets worldwide.
- Member of Advisory Board for 3D Online (www.launzer.com), member of the board 3D Bear (<http://3dbear.io/> , fast growing start-up company)
- Frequent interviews in national and international television about modern production methods
- Frequent interviews in newspapers, popular and professional magazines about modern production methods