

Name:

Mart Noorma

Job title:

Science and Development Director & Associate Professor in Optical Metrology at the University of Tartu (Institute of Physics)

Career:

I started my physics studies at the University of Tartu in 1991. My first job was a construction worker at the construction site and I worked there for about a week. Soon after that experience, I got to work through my supervisor at Tartu standardization and metrology centre, which later joined with Metrosert AS (equivalent to a National Metrology Institute) in Estonia. I got the opportunity to go to the Helsinki University of Technology, in 2000. At the University of Helsinki, I firstly completed my master's thesis (with two years), but the same time I also worked parallel with my research project. Therefore, I acquired both master and doctoral degree with 4.5 years. To summarize, since 2008, I have been a leader rather than researcher. Since 2017, I have been science and development director in AS Milrem, where I work on the same principles as a university's laboratory.

Essential skills in my job:

- How to influence people
- Leaders job is to understand people
- Link theoretical models with life experience
- Management skills
- Communication skills
- Self-development
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What I need to know in my job:

- Astrophysics
- "Skills can't exist without knowledge"
- Didactics



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Science and Development Director & Associate Professor, Mart Noorma, Optical Metrology at the University of Tartu (Institute of Physics)

Starting from the beginning – during school time (Soviet times) I wanted to become a ship captain, and from the start, I knew that it was necessary to go to the St. Petersburg Naval Institute (oldest Russian Navy's naval officer commissioning school). That is also why I studied English at the very beginning of my school level. During my school years, I was consciously working towards this area. In addition, when I graduated high school (in 1991) then I did not have no longer the feeling of going to go there. Now I was in the middle of two goals:

- to get quickly rich or
- want to do great things in life

I had a different image from the previous career preference and I thought that if I want to become quickly rich, I should go to study economics and if I want to do great things then science field would be suitable for that. My both parents were mathematicians, and my father often said that he wanted to study physics, but did not get in. Therefore, next logical step and the choice for me was to study physics. I started my physics studies at the University of Tartu in 1991.

My first job was a construction worker at the construction site and I worked there for about a week. Soon after that experience, I got to work through my supervisor at Tartu standardization and metrology centre, which later joined with Metrosert AS (equivalent to a National Metrology Institute) in Estonia. AS Metrosert performs the calibration and verification of measuring instruments, certification of products and management systems. I worked there for 6 years in parallel with the university studies. To get my bachelor's degree, it took 9 years, but when I graduated I had already 2 children and 6 years of working experience. In addition, I also learned economics and I had the opportunity to integrate science and economics. In the field of economics, I also took the subjects of management and leadership, all of which I needed in my future life.

I got the opportunity to go to the Helsinki University of Technology, in 2000. At the University of Helsinki, I firstly completed my master's thesis (with two years), but the same time I also worked parallel with my research project. Therefore, I acquired both master and doctoral degree with 4.5 years. From there I attended one conference where randomly I was invited to the US National Institute of Standards and Technology (NIST) as a visiting scientist. There I worked 1.5 years until we returned with mine family back to Estonia, where together with my colleagues I put together a space program at the University of Tartu and Tartu Observatory. At the same time, I also studied didactics of higher education. It also became more interesting to me, because in character I am more like a scholar than a scientist. From 2008, I was part timely an associate professor in optical metrology and head of center for teaching and learning and senior researcher in space technology. I quit several careers and became the UT Vice Rector for Academic Affairs in 2015. To summarize previous, since 2008, I have been a leader rather than researcher. From 2017, I am science and development director in AS Milrem, where I work on the same principles as a university's laboratory. In addition, I am a judge of science popularizing television program "Rakett69" (Rocket69), what goal is to find future researchers among young Estonian people. In addition, I attend actively conferences (as participant and performer) and perform in schools. My so far best achievement as a researcher is to build and complete the student satellite program at

ESTCube-1. Therefore, the first Estonian satellite was orbited in 2013. In addition, as an achievement I mean the integrated whole, in which students actively worked, and who developed during satellite program. One of the student is currently working in NASA, many of them working as managers in technology companies and many of them are currently doing their masters and doctoral thesis. This satellite program inspired hundreds of young people. My biggest achievements as a human being are my loving wife and three children.

Essential skills in my job and what I need to know in my job:

I rather talk an illustrative story, which I have spoken to students in different schools. For that I lend a definition about magic art (from Cristopher Paolini book "Eragon"), were in order to influence the things and people surrounding you, it is needed to use energy that surround you. To influence things or people, you need to know its true name and for that, you need absolutely feel their nature. Therefore, if this romantic fairy tale is put into a realistic language, then these things are the physical and chemical properties of substances. For example, the energy to influence comes from the electrical plug. And from psychology and leadership comes how to influence people. And leader's job is to understand people. It is important to link theoretical models with life experience. Accordingly, to the definition about magician and magic, you always work on how good wizard you are. An important skill is to use this surrounding energy to influence things and develop yourself as a wizard to influence things and people. Finally, to check if you are a good or bad wizard, there is a simple control questions:

- Do you influence people around you for your own benefit? or
- For the benefit of this person and society?

All that we learn at the school is mostly brain training that is important for to understand how whole world is functioning. Also important are management skills, communication skills and self-development. However, it is needed to develop yourself continuously and you cannot just stand in one place. Skills cannot exist without knowledge. Knowledge is like a foundation were to bound different skills. When reading a book, it is necessary to add also skills to knowledge, and then you can be a good wizard. Being a wizard means to have a very good picture creation and understanding.