In 1988, when the digital world was still in the distant future, two young students of cybernetics - Märt Saarepera and Ahto Buldas - met at the Tallinn University of Technology. Some years later, Saarepera travelled to Tokyo as an exchange student and dived into the world of applied information security and cryptography, publishing in various scientific journals. At the same time, Buldas stayed in Tallinn, working on digital signatures, the latest rage all around the world.

At the Tokyo Institute of Technology, Saarepera met two people who later became the key figures behind Guardtime. First he struck up a friendship with his course-mate Mike Gault, who was studying quantum transistors. He then found common ground with the well-known Japanese venture capitalist, technology guru, DJ and writer Joichi Ito. Ito, the founder of the first ever Japanese website, invited Saarepera to work in his business incubator, Neoteny Labs.

In the second half of the 1990s, Saarepera and Buldas made big plans. They discussed the nitty-gritty of the global information security system. They looked for development funds. They attracted the interest of the Estonians who had founded Skype and, together with some partners, Skype invested over 15 million Estonian kroons (about 560,000 euros) in the enterprise.

In autumn 2007, Ito visited Tallinn in order to formalise his personal investment in Guardtime. He visited the Skype team led by Toivo Annus, and in his subsequent blog post he had only good things to say about Estonians and the free wifi network of Tallinn. The quality of the latter supposedly surpassed the wifi of Frankfurt Airport but not that of Ito’s own Tokyo office. Guardtime received a new impetus. Ito became an important person in setting the direction of the company. On the magic date of 07.07.07 the clock of the servers was started and the history of Guardtime began. Now it was possible to check and issue signatures.
a lie detector; afterwards you can prove the data was created by a particular entity, when it was created and that it hasn’t been changed. The signature can be verified independently, without human involvement, as it is based on mathematics, which is the core innovation. So verification doesn’t rely on trusting people. We operate an infrastructure and, in every country we operate, we work with local partners to allow them to distribute signatures in their jurisdiction. Typically those partners are telcos, such as China Telecom and, in Estonia, Levira. They are the distributors of the signatures.

In 2010, Guardtime received a much-awaited financial infusion. A group of investors invested eight million dollars in the company. Besides the founders, Joichi Ito and the Skype guys, the owners of Guardtime also include Li-Ka-shing’s Horizon Capital, the national investment company of Singapore, Infocomm Investments, and FitOne Capital, which is owned by the Japanese venture capitalist Yukihiro Kayama.

Let’s begin with the cooperation between Guardtime and China. What sort of milestone is this for the whole company?

It is a very important milestone, but let me put it in context. Two years ago we received money from the venture capital fund of Mr Li Ka-Shing, a Hong Kong financier. One of his companies operates Skype in China, which is why they became aware of Guardtime and our technology. They invested in our company and made introductions for us in China. We are involved in several projects in China. The biggest one is still to be announced, but it is with the Chinese government. We’ve been building a solution for them for the last two years.

Are you working directly with the Chinese government?

Correct. Our company recently received an award from the government of China in the amount of 350,000 dollars, or two million Chinese RMB. That came with a five-year tax break and free office space. We are the only foreign company to ever have received such an award, which puts us in a unique position in China, with both local investors and government support. Last week we also announced our partnership with China Telecom, which will be a distributor of our technology in China.

What has been your biggest challenge in China?

Technology standards are completely different there. People do business by text messaging, which is very different to how we do business in the West. E-mail is not as popular as texting. That’s obviously quite a different approach to business. They have this concept of guanxi, which is about long term personal relationships, and those are more important for business than say contracts, as in the US. Guardtime’s technology helps to remove the need for trust by providing an independent record of everything that has happened on electronic networks. For example, we are building a solution for SMS so you can have proof that you sent an SMS by having its authentic content.

The fact that you have established your company in the Chinese market — what does that mean financially, in the long term?

Firstly, we hope to list the company within the next few years in China. In terms of revenue, a single project or a single customer can mean millions of dollars a year and we have customers in the Philippines, Japan and Europe who are using our service. The business model is that those partners will generate the revenue and customers, and they will give us a percentage of their revenue. If you consider how much electronic data there is and how much people care about it, you realise that the potential size of our business is huge.

Do you have different projects in the pipeline simultaneously for different customers?

That’s right. A few years ago everybody laughed at us. Who are those crazy guys and what are they trying to do? That is always the case when you bring a new technology to the market. At first people ignore you because you are too small and then they ridicule you because they see you as a threat. That’s the cycle we are going through. Now, for example, we have about 17-18 projects ongoing with the government of the Philippines. The Philippines have electronic elections, slightly different to the elections in Estonia. Guardtime is involved in putting a tag on every single vote so that afterwards everybody can verify the integrity of the election.
Can you give some more interesting examples?

Another example is the digitisation of physical paper: we call it dematerialisation. In the Philippines, the central land registry authority has 25 million land titles, which are currently stored in paper form. They want to digitise it all. If you convert from paper to electronic, it is very easy to change electronic data. When you scan paper, it is a pdf, but anyone can change a pdf. You just change it, copy it or produce a new one: there is no way to prove what’s happened. So Guardtime goes in with a stamp on every land title to verify later that it is indeed an authentic land title.

Let’s talk about the years when you didn’t really have the business... you were trying to validate your products.

How long did it take, how much money was spent and was there ever a time when you hesitated seriously?

I never personally had any doubts. When you have a vision for how the world can be a better place, then as long as you believe in that vision, no matter how many people tell you you’re an idiot (and it was everyone), your conviction can remain strong. Take, for example, VMware. They have 350,000 customers, a 30 billion dollar company that invented the modern version of virtualisation. They started in 1998 and everybody back then said “who wants to virtualise a server?” It was the same way with Guardtime: people said “who wants to sign data?” Almost all big innovations are ridiculed initially, then something gets triggered and all of a sudden it is completely commonplace and everybody accepts it.

During these difficult years how many changes in directions have there been?

We are running out of mistakes to make so we are having to make the same mistakes twice. One of the biggest mistakes was to believe if we built the technology it would sell itself. Fortunately, in the last few years more of a science has developed around bringing a new technology to the market, so you can basically study those techniques and then apply them to your own situation.

Has luck played a significant role?

You want to be exposed to as much randomness as possible. If luck is just a random event with a positive outcome, then the more exposure you have to random events, the more chances you have of being lucky. That means getting out there and meeting as many people as you can. So, two years ago I gave up my apartment and I’ve been on the road since then.

You’re not a family guy?

Not yet. Right now I have no home and everything I own fits into one suitcase. It’s not a lifestyle for everyone, but with no ties you have complete freedom – and nothing to lose.

What is the main motivator for you personally to travel around living out of your suitcase? What’s in it for you?

The exciting thing about Guardtime and the reason I think that people stay in the company is because they believe in a vision of the world where electronic data is more reliable than physical data. So it is the vision that drives people. For me personally, it is succeeding in this incredibly difficult challenge and getting the recognition for that as an entrepreneur.

How do you evaluate Estonia as an environment for incubating companies with such sophisticated technology?

Estonia has the potential to be the innovation hub of Europe. It has brilliant engineers and inventors who are always coming up with new ideas. If they can continue and build an ecosystem of inventors, entrepreneurs, investors and innovators in government and business, it would be tremendous for the country. I’ve been fortunate enough to experience how innovation is done all around the world – from the Silicon Valley to China to the Philippines, Singapore, India, the Middle East and Europe – and the one thing that I have noticed is that innovation is done by individuals, not by organisations and certainly not by committees. The US is the strongest precisely because it is the culture of the individual. Giving freedom to individuals in the public and private sectors to experiment and fail is by far the best recipe for long-term success. The more the bureaucracy tries to lead or legislate, the less likely it is to come up with something original.

You are now working with the Estonian government?

Yes we are. Estonia is respected as one of the most advanced e-government societies. We are working with the government registries that are currently deploying Guardtime. It is an incredible case study for us to take to governments around the world. So, if you can get a case-study from the e-government in Estonia, you can take it anywhere. If you present your company as an Estonian company that builds e-government solutions it gets instant credibility overseas, ironically more credibility than in Estonia itself.

But is the development still here?

We have a development centre now in the Philippines because we couldn’t fill the positions in Estonia. It is very difficult to find talented developers in Estonia for obvious reasons: Skype, Microsoft etc.

Still, are you planning to maintain the status quo in the sense that the headquarters will stay here?

Our corporate headquarters is outside Estonia but the core research and development is all done here. We have invested about two million euros a year in the team in Estonia. We will do our best to hire more people in Estonia.

What sort of challenges are you facing in the future?

Guardtime started off as an international organisation. Originally we had markets in Japan and the engineering was in Estonia. Now we have offices in Manila, Singapore, Beijing, Tokyo and California. All around the world, communication is always a challenge. But we have an education session for people who join the company on the Estonian “long silence”. When they have a conference call with Estonians and the Estonians don’t answer, it is not because they’re not paying attention but because they are thinking.

Do you have a specific message for the government of Estonia, and the innovators of Estonia?

Estonia has historically led in technology innovation. That’s because in 1991, when you started the country, you had no legacy systems, so you’re bound to be pretty innovative.
The question is how to keep up that innovation, because twenty years later Estonia has its own legacy systems and vested interests. How do you keep innovating? Otherwise, you will slowly see Estonia slip down the ranks of e-government. One way to stay ahead is to create a culture of openness and allow people to take risks and fail freely. If everything gets decided by a committee in a closed room, it is very hard to innovate. So, allow start-ups to try different ideas and allow individuals in the government and private sector to try out those ideas and see if they work. My advice would be to give people the freedom to experiment and see what works.

Recently, President Ilves was invited to chair the Steering Board of the new European Cloud Partnership, which aims to develop cross-border digital public services in the public and private sectors. What does cloud computing mean for Estonia?

Cloud computing is the biggest paradigm shift in computing since the PC. Historically, people have stored their data in-house and run applications on that data using their own computing resources. Now they are starting to store their data in the cloud and run applications on it there. The challenges, of course, of doing that relate to data security: how do you know you can access the data (Availability), how do you know the data has not been modified (Integrity) and how do you know that the data has not been accessed (Confidentiality)? Estonia has a great track record in data security and it is there also that Estonian inventors and entrepreneurs can thrive, helping solidify Estonia’s reputation as a technology hub.

I wonder if a shift in economic power globally will influence Guardtime.

I am really excited about all these markets. I am excited about Europe, as this technology was born in Europe. The EU is now starting to seriously think about cloud computing. Estonia is a leader in e-government, so there is a new technology – cloud computing – and Guardtime fits perfectly into that. In Asia – in emerging economies – they don’t have the legacy systems that the US has, so the competition is very different. There are fewer vested interests. In the US, it is about changing the status quo. So each market represents very different challenges for us, but the end result is the same.

A question about the intellectual property of the company – how many patents have you registered?

We have an incredible IP portfolio: our IP attorney did all the early patent work for VM-Ware and successfully defended them from Microsoft when they sued the company. We are creating a culture in which when engineers come up with a new idea, they automatically start to think about patenting.

Do you have developers as shareholders?

Yes, not just developers, but everyone in the company. We believe that everyone in the company should have a stake in the company’s success.

How much do you pay people on average, monthly salaries of senior developers for example.

I used to work for Credit Suisse Financial Products, the derivatives arm of Credit Suisse, and at one point they had the highest paid workforce in the world; it would be nice to reach that level.