Introdução à Engenharia Física

Empreendedorismo de base tecnológica

Questões chave

Por que?

Para que?

A vida pode ser compreendida olhando para trás

Mas só pode ser vivida olhando para frente

As nossas crenças se transformam em pensamentos
Nossos pensamentos se transformam em palavras
Nossas palavras se tornam ações
Nossas ações se tornam hábitos
Nossos hábitos se tornam valores
E os nossos valores revelam nosso destino

Mahatma Ghandi

“Cientistas investigam o que já é; engenheiros criam o que nunca foi.”

Albert Einstein

“Cientistas sonham em fazer grandes coisas. Engenheiros fazem-nas.”

James A. Michener

Para pensar e conhecer

Física: a ciência do século XX
Engenharia Eletrônica: a tecnologia do século XX

Biologia: a ciência do século XXI
Engenharia Biotecnológica: a tecnologia do século XXI

Empreender

O que todo o profissional do século XXI deve considerar para os próximos 10 anos, em especial os engenheiros

Marcos revolucionários

Revolução científica: século XVI

Revolução industrial: século XVIII

Revolução da tecnologia: século XX

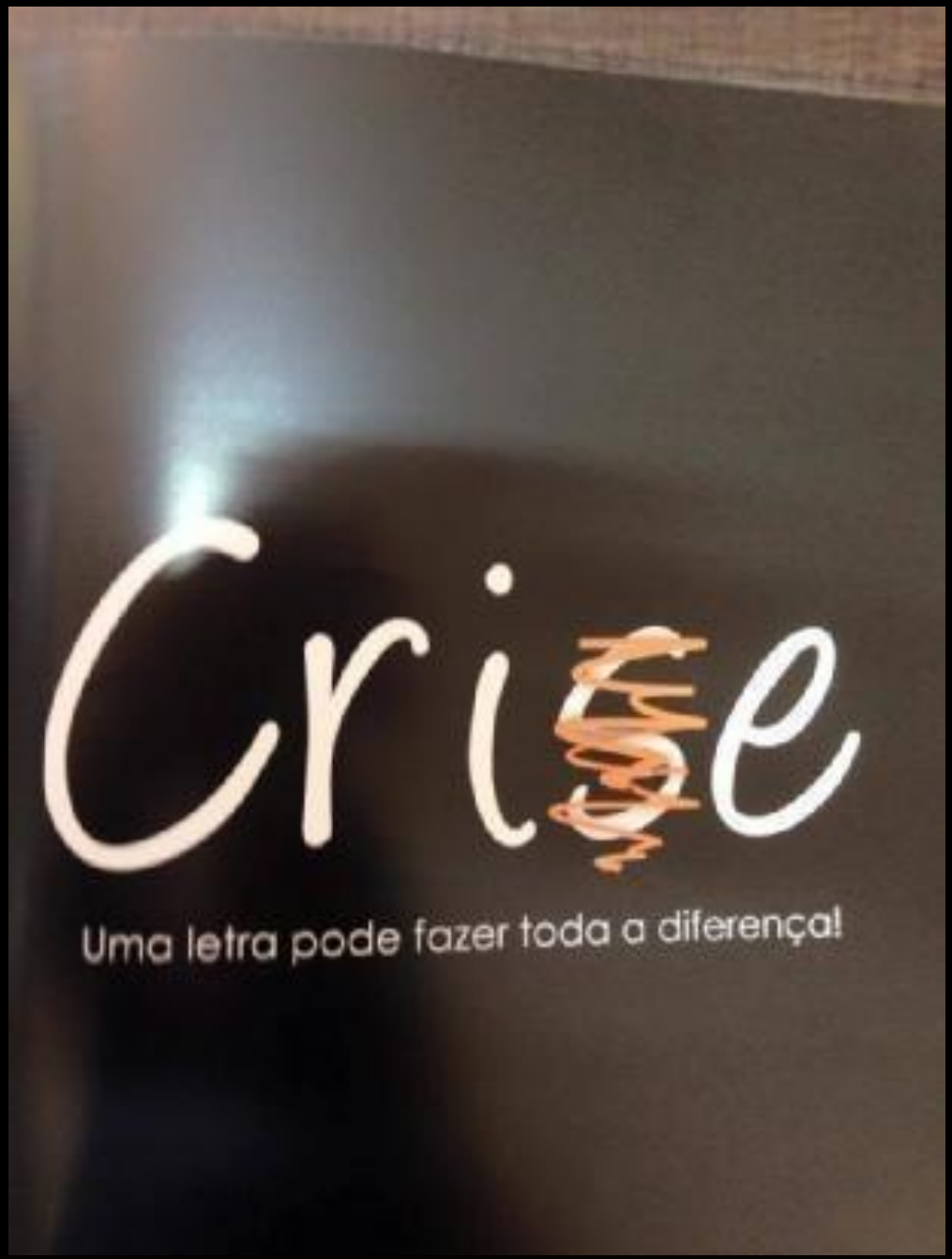
Revolução do empreendedorismo: séc. XXI

Revolução do Empreendedorismo

Mudança na forma de negócios, visando sustentabilidade econômico, ambiental e na qualidade de vida

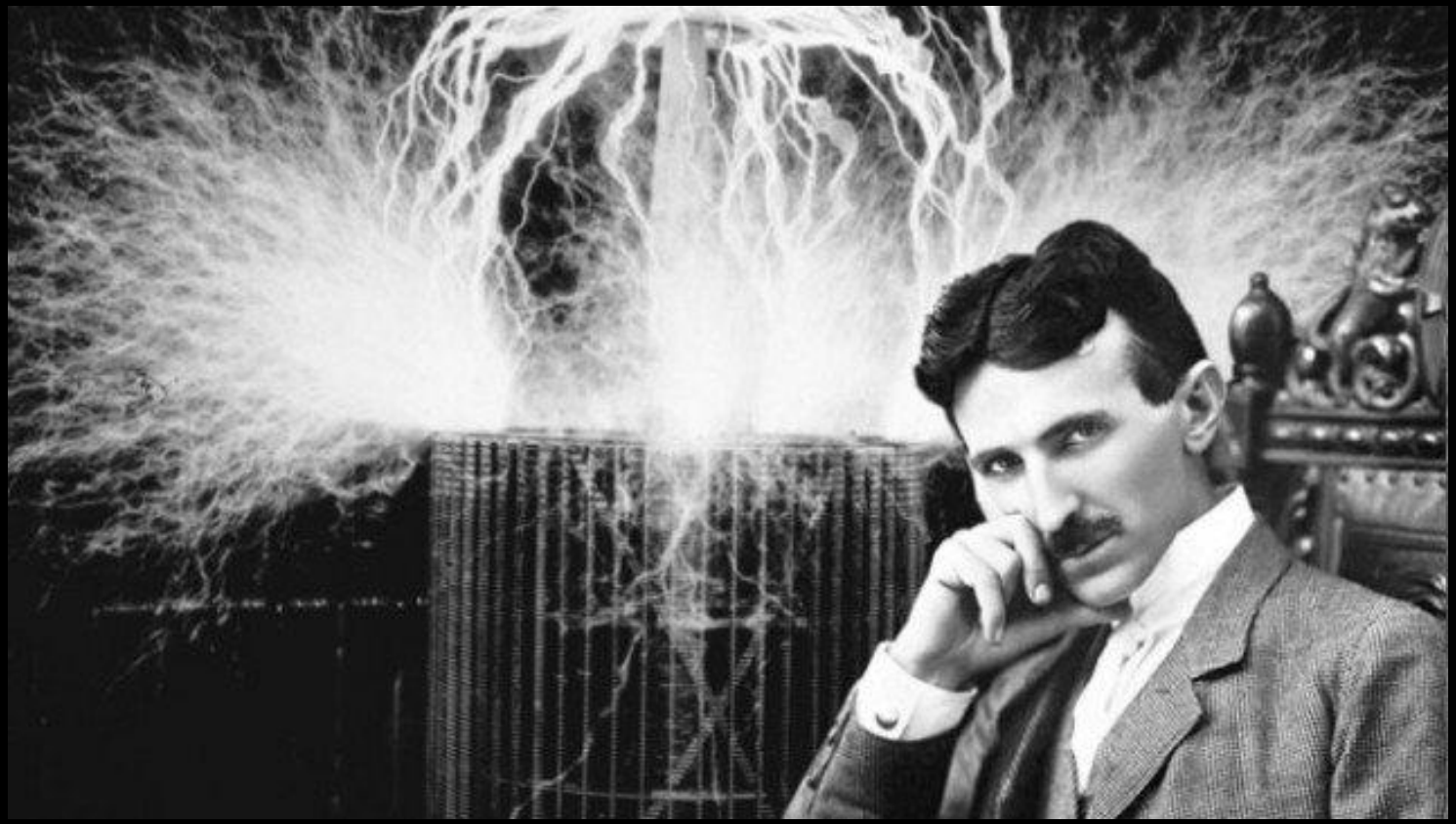
Empreendedorismo

Sair da zona de conforto!


Crise
Uma letra pode fazer toda a diferença!

Perigo + oportunidade = crise (kiki)

Nikola Tesla, inventor e engenheiro (1856-1943)



Inventor: Nikola Tesla

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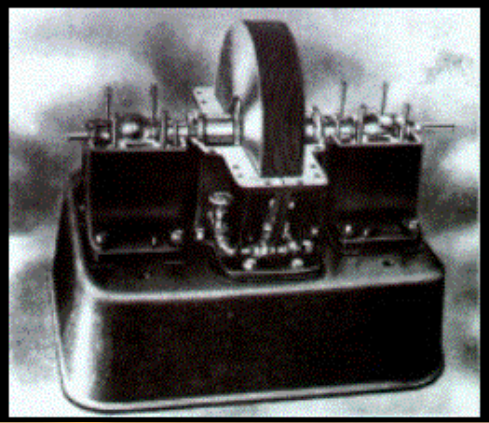
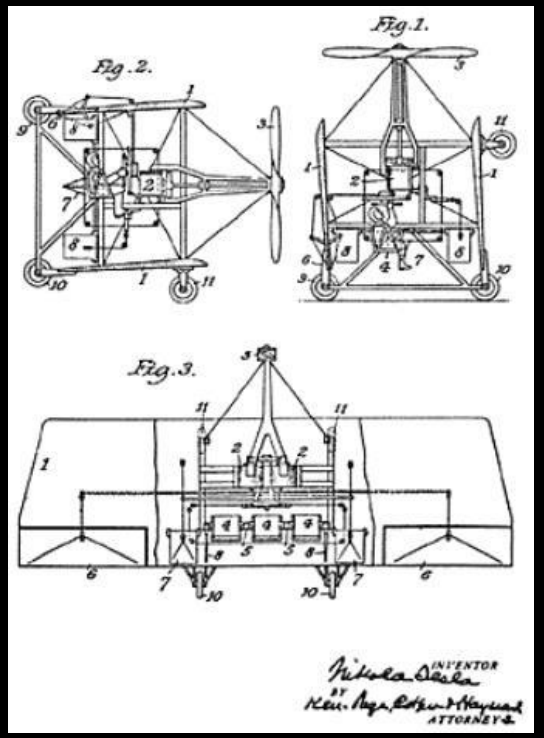
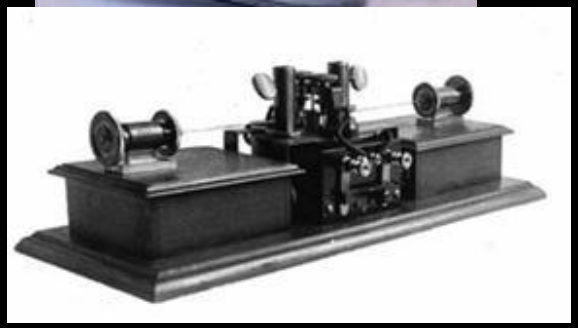
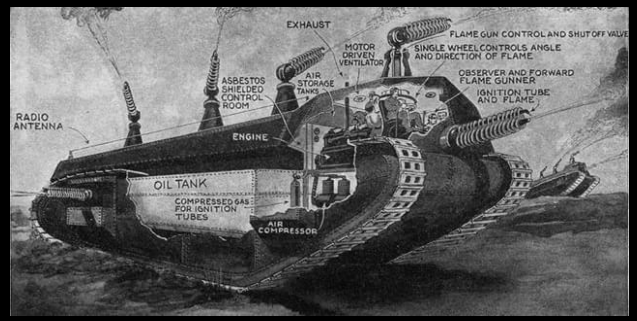


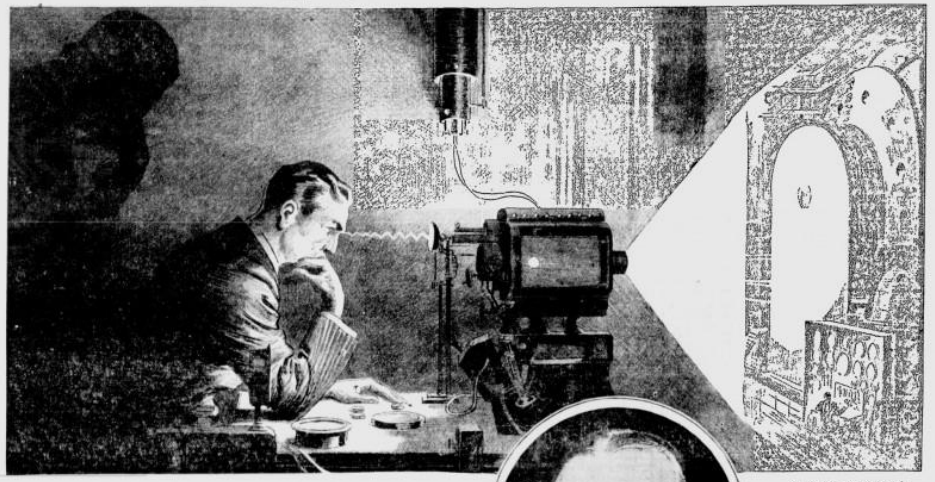






Inventor: Nikola Tesla

Tremendous NEW POWER soon to be unleashed



Nikola Tesla, Starting His 78th Year, Works on Revolutionary Power Project and Also Is Completing Process for Photographing Thought

By Carol Bird

PROVING his theory that a man's efficiency and accomplishments should increase and not diminish with mellow age, Nikola Tesla, inventor, physicist and one of the world's leading electrical technicians, enters his 78th year busily engaged on three or four great scientific projects.

Several of these inventions or discoveries will be looked upon as "miracles" by many people, for Mr. Tesla has long been a scientist years ahead of his time, one whose advanced theories have alternately stamped him a "madman" and a wizard.

Just as people ridiculed Copernicus' theory of the planetary system, the unenlightened jeered Tesla's pronouncements, years ago, regarding cosmic rays. The pathfinder and the pioneer—and Mr. Tesla is both—are always condemned by the masses.

NIKOLA TESLA, tall, lean, with the face of an ascetic and deep-set eyes, whose expression denotes concentration on a canvas of work too big for most people's comprehension, partially described a new and inexhaustible source of power he has discovered after years of research, revolutionizing modern physical science. At the same time he touched on his own reservoir of energy which makes such monumental discoveries possible at his advanced age.

How does he tap both these deep wells? What is the secret of fine health, keen mind, unusual vitality and mental force at 77, the time of life when most men are sitting in the sun with shawls over their knees or, aloof lying beneath the sod?

Mr. Tesla is the father of the alternating system of power transmission and radio, the induction motor and Tesla coil.

Asked about his startling new scientific discoveries, one of which concerns the "photographing of thought," which will, he maintains, bring about a tremendous social revolution, he said:

"My first and most important discovery concerns the harnessing of a new source of power, hitherto unavailable, to be developed through fundamentally novel machines of my invention.

"I am not yet prepared to dwell on the details of the project, for they must be checked before my findings can be formally announced. I have worked on the development of the underlying principles for many years. From the practical points of view of the engineer engaged in power development, the first investment will be relatively very great, but once a machine is installed it may be depended on to function indefinitely, and the cost of operation will be next to nothing.

"My power generator will be of the simplest kind—just a big mass of steel, copper and aluminum, comprising a stationary and rotating part, peculiarly assembled. I am planning to develop electricity and transmit it to a distance by my all-reating system new universally established. The direct-current system could also be employed if the heretofore insuperable difficulties of insulating the transmission lines can be overcome.

"Such a source of power obtainable everywhere will solve many problems with which the human race is confronted. My alternating system has been the means of harnessing 20,000,000 horsepower of waterpower, and there are projects now going on all over the world which will eventually double that amount. But, unfortunately, there is not enough waterpower to satisfy present needs, and everywhere inventors and engineers are endeavoring to unlock some additional store of energy.

WILL the smashing of the atom lead to this new power energy? Let Mr. Tesla answer:

"The public is ....orally led to expect a great revolution through the harnessing of atomic power, but that is not in fact so. Atomic energy is not available for work. I operated many years ago apparatus of a capacity of 5000 horsepower and tension of 10,000,000 volts with which trillions of atoms were smashed in a fraction of a second. I generated all sorts of intense and destructive rays, but found no trace of any energy which should have been liberated through the shattering of atomic structures, according to theory. For the last thirty years I have warned my fellow scientists that there is nothing to be expected in this field except some specific effects due to changes in the atomic structure which may have more or less value."

Beyond adding that the new form of energy which he has been investigating many years would be available at any place in the world in unlimited quantities, and that the machinery for harnessing it would last more than 5000 years, Mr. Tesla would say little more on the subject. Just when the power will become available for practical purposes he could not predict with any degree of precision. In a few years, perhaps, he ventured to say.

Mr. Tesla then talked of several other projects on which he has been working by way of relief from too much concentration on the main piece of work. He described one of his other interests, one highly dramatic which aims the imagination and which, doubtless, will sound the revolutionary to most people. But it must not be forgotten, as Mr. Tesla points out, that the ideas of television and radio and airplane were scoffed at in their infancy.

"I expect to photograph thoughts," announced Mr. Tesla calmly, in the same tone of voice that a person occupied with some trivial things in the scheme of life might announce that it was going to rain.

Continued Mr. Tesla: "In 1883, while engaged in certain investigations, I became convinced that a definite image formed in thought must, by reflex action, produce a corresponding image on the retina, which might possibly be read by suitable apparatus. This brought me to my system of television, which I announced at that time.

"My idea was to employ an artificial retina receiving the image of the object seen, an 'optic nerve' and another such retina at the place of reproduction. There two retinas were to be constructed somewhat after the fashion of a checkerboard, with many separate little sections, and the so-called optic nerve was nothing more than a part of the earth.

"An invention of mine enables me to transmit simultaneously, and without any interference whatsoever, hundreds of thousands of distinct impulses through the ground just as though I had so many separate wires. I did not contemplate using any moving part—a scanning apparatus or a cathode ray, which is a sort of moving device, the use of which I suggested in one of my lectures of that period.

"Now it is true that a thought reflects an image on the retina, it is a mere question of illuminating the scene properly and taking photographs, and then using the ordinary methods which are available to project the image on a screen.

"If this can be done successfully, then the objects imagined by a person would be clearly reflected on the screen as they are formed, and in this way every thought of the individual could be read. Our minds would then, indeed, be like open books."

BESIDES his discoveries concerning the harnessing of the new energy, television and thought photography, Mr. Tesla is working to produce a type of radio transmitter which will insure the strictest privacy in wireless communication regardless of the number of eavesdroppers, and he is developing some important discoveries in molecular physics which will revolutionize the science of metallurgy and greatly improve metals.

After a discussion of his new scientific findings, Mr. Tesla turned to the subject of his personal source of energy and what he considers the real values of life.

"One of the most fundamental and also one of the saddest facts in human life is well brought out in a French proverb which, freely translated, means: 'If Youth had the knowledge and Age the power of doing,'" said Mr. Tesla. "Our condition of body and mind in old age is merely a certificate of how we have spent our youth. The secret of our own strength and vitality lasts is that in my youth I led what you might call a virtuous life.

"I have never dissipated. When I was a young man I understood well the significance of that old French proverb, although I doubt that I had even heard it then. But I seemed to have a clear understanding with still young that I must control my passions and appetites if I wanted to make some of my dreams come true.

"So with this in view, quite early in life I set about disciplining myself, planning out a program of living for what I considered the sane and worthwhile life.

"Since I love my work above all things, it is only natural that I should wish to continue it until I die. I want no vacation—no surcease from my labors. If people would select a life work compatible with their temperaments, the sum total of happiness would be immeasurably increased in the world.

"Many are saddened and distressed by the brevity of life. 'What is the use of attempting to accomplish anything?' they say. 'Life is so short. We may never live to see the completion of the task.' Well, people could prolong their lives considerably if they would but make the effort. Human beings accomplish so many things that pave the way to an early grave.

"First of all, we eat too much; but this we have all heard said often before. And we eat the wrong kinds of foods and drink the wrong kind of liquids. Most of the harm is done by overeating and undereexercising, which bring about toxic conditions in the body and make it impossible for the system to throw off the accumulated poisons.

"My regime for the good life and no diet? Well, for one thing, I drink plenty of milk and water.

"Why overburden the bodies that serve us? I eat but two meals a day, and I avoid all acid-producing foods. Almost everybody eats too many peas and beans and other foods containing uric acid and other poisons. I partake liberally of fresh vegetables, fish or meat sparingly, and rarely. Fish is reputed as fine brain food, but has a very strong acid reaction, as it contains a great deal of phosphorus. Acidity is so far the worst enemy to fight off in old age.

"Potatoes are splendid, and should be eaten at least once a day. They contain valuable mineral salts and are neutralizing.

"I believe in plenty of exercise. I walk eight or ten miles every day, and never take a cab or other conveyance when I have the time to use legpower. I also exercise in my bath daily, for I think this is of great importance. I take a warm bath, followed by a prolonged cold shower.

"Sleep? I scarcely ever sleep. I come of a long-lived family, but it is rested for its good sleepers. I expect to smash the records of my ancestors and live to be at least 160.

"MY SLEEPLESSNESS does not worry me. Sometimes I sleep for an hour or so. Occasionally, however once in a few months, I may sleep for four or five hours. Then I awaken vitally charged with energy, like a battery. Nothing can stop me after such a night. I feel great strength then. There is no doubt about it but that sleep is a restorer, a vitalizer, that it increases energy. But on the other hand, I do not think it is essential to one's well-being, particularly if one is habitually a poor sleeper.

"Today, at 77, as a result of well-regulated life, sleeplessness notwithstanding, I have an excellent certificate of health. I never felt better in my life. I am energetic, strong, in full possession of all my mental faculties. In my prime I did not possess the energy I have today. And what is more, in solving my problems I use but a small part of the energy I possess, for I have learned how to conserve it. Because of my experience and knowledge gained through the years, my tasks are much lighter. Contrary to general belief work comes easier for older people if they are in good health, because they have learned through years of practice how to arrive at a given place by the shortest path."

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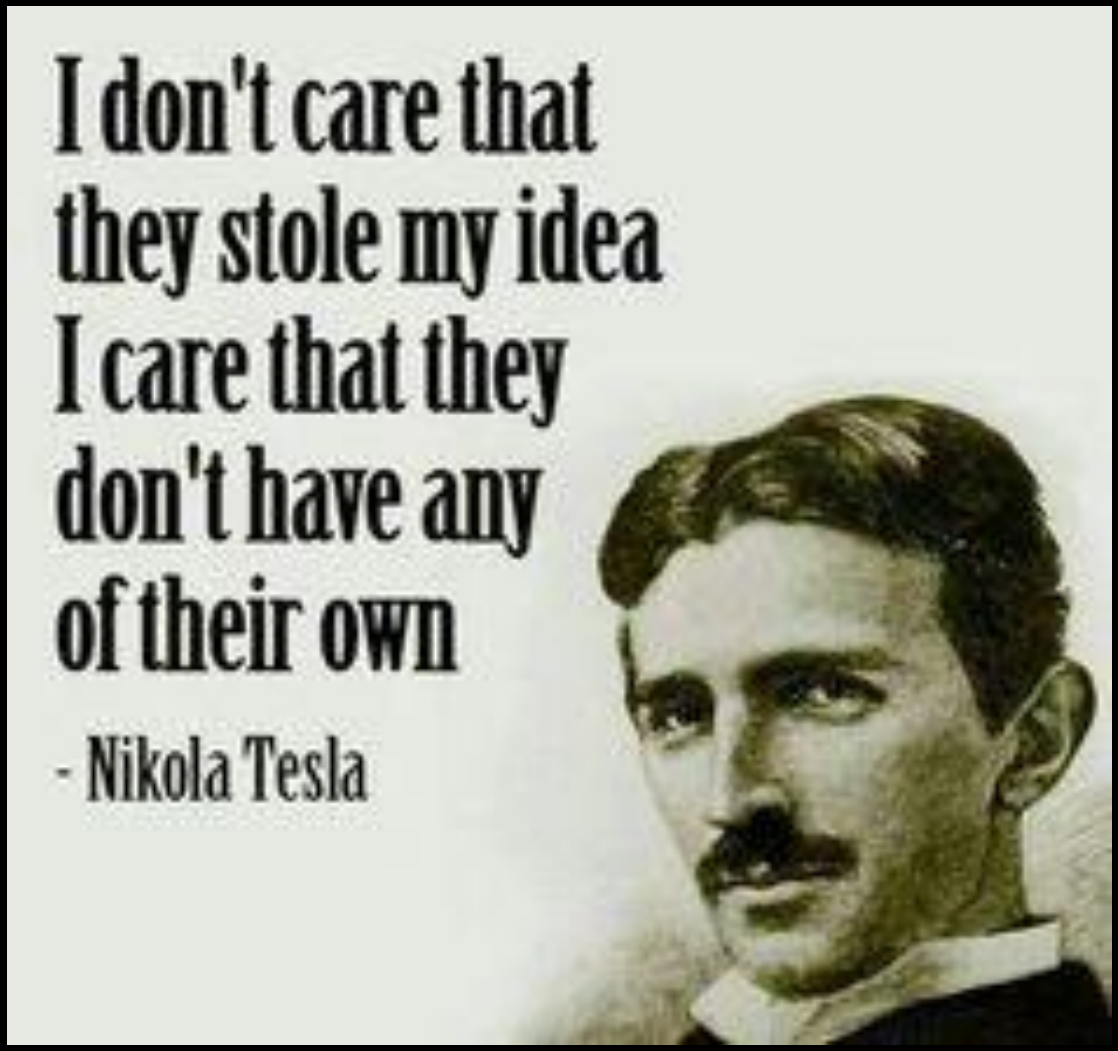
Nikola Tesla, dean of American inventors, with numerous triumphs in electrical engineering behind him, as he looked on his 77th birthday, which he recently celebrated

"I expect to photograph thoughts," says Mr. Tesla. "If this can be done successfully, then the objects imagined by a person would be clearly reflected on the screen as they are formed. Our minds would then, indeed, be like open books"

Frases de Nikola Tesla



Caso Hewlett-Packard (HP)

Dois jovens empreendedores, William Hewlett e David Packard, aceitando o convite do pró-reitor da Universidade Stanford, Frederick Terman, estabeleceram em 1936 a primeira empresa de base tecnológica no que é hoje o “Vale do Silício”.

Início: laboratório de garagem

Primeiro produto: oscilador de áudio

Sede em Palo Alto, Califórnia

HEWLETT-PACKARD CO.

David Packard e William “Bill” Hewlett

Regras da “garagem”

- Acredite que possa transformar o Mundo
- Trabalhe duro e com perseverança
- Saiba quando trabalhar sozinho e quando trabalhar em grupo
- Compartilhe ferramentas, ideias e resultados. Acredite nos seus colegas
- Não faça politicagem. Simplifique os processos.

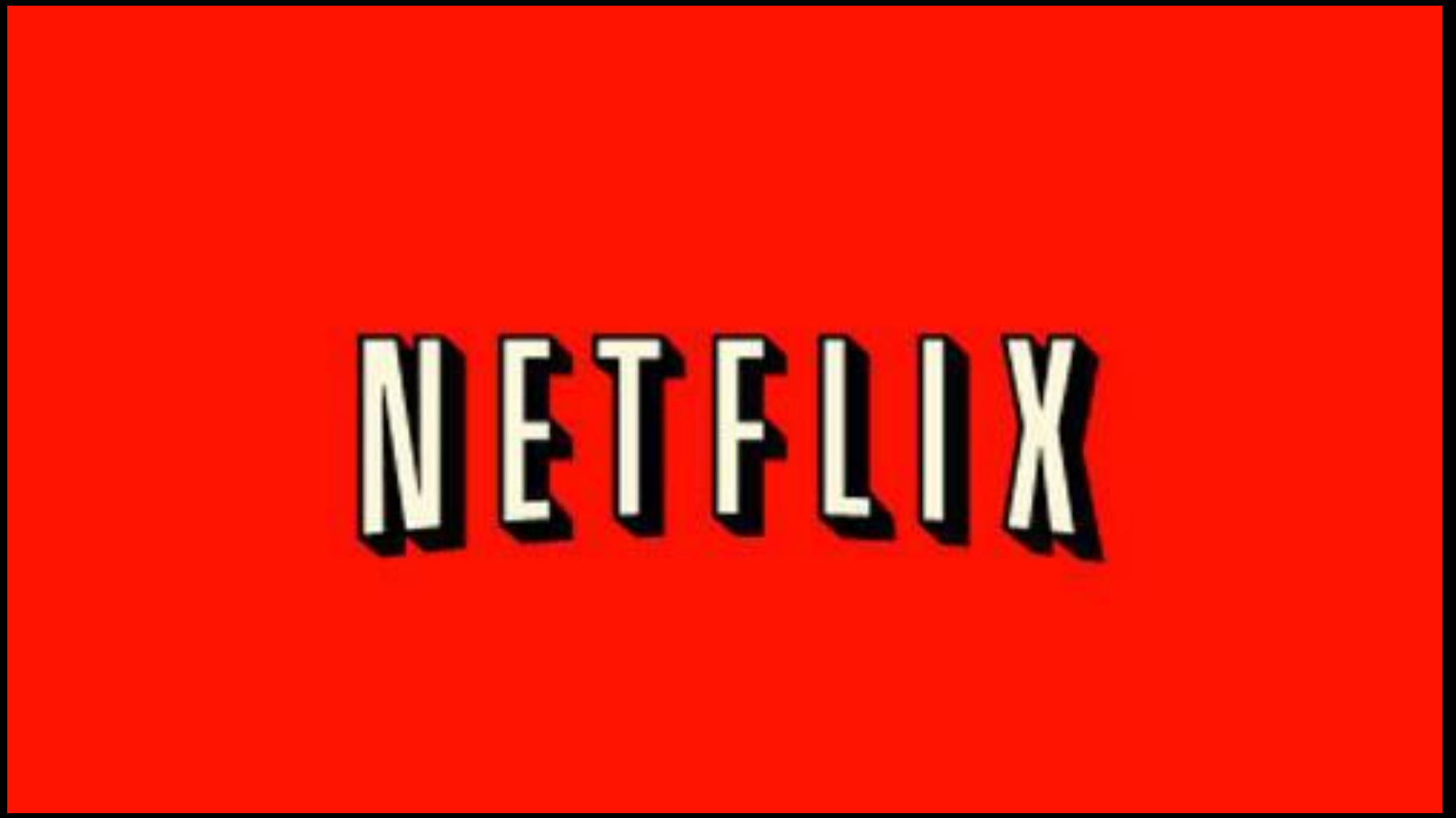
Regras da “garagem”

- Invente formas diferentes de trabalho
- Pense diferente (*think different*): pensamento “fora da caixa”
- Faça uma contribuição todo dia: em busca da perfeição (melhoria contínua = *kaizen*)
- É melhor o bom hoje do que o perfeito amanhã
- Acredite que juntos podemos fazer qualquer coisa

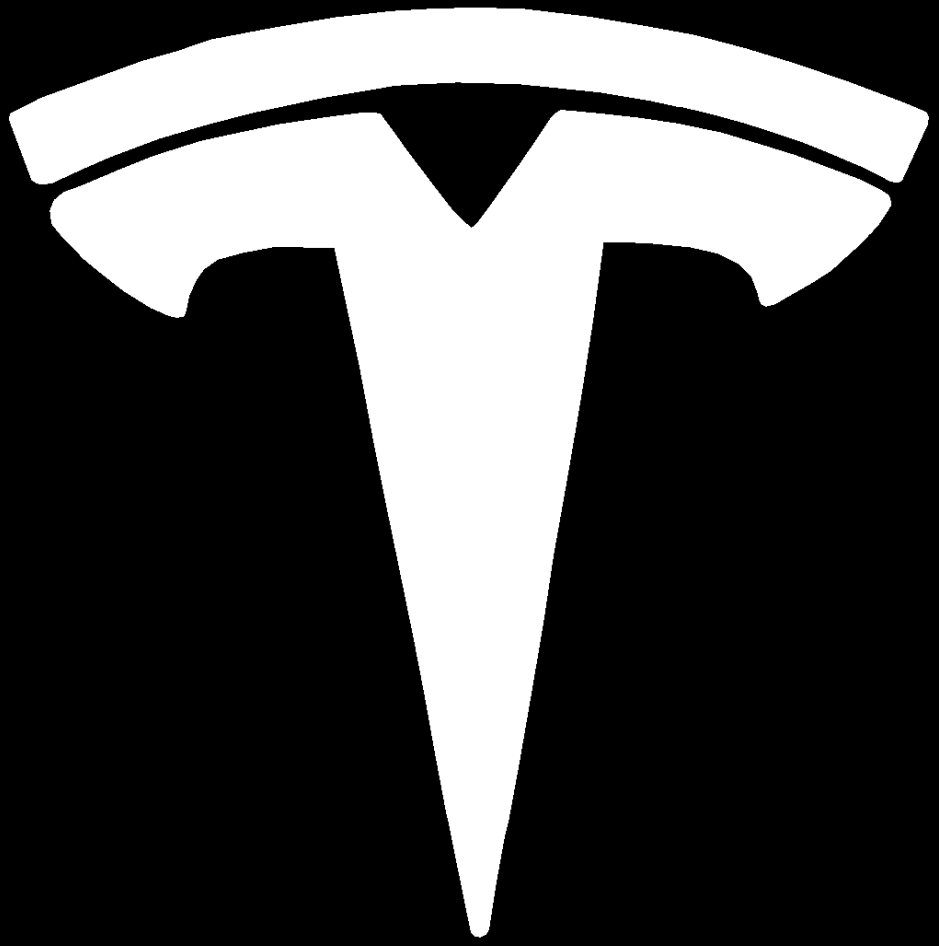
Cultura do Vale do Silício

- Cultura do risco: sair da zona de conforto
- Integridade e colaboração+confiança: ganha-ganha
- Acessibilidade: *networking*
- *Feedback* construtivo: círculo virtuoso
- Emponderamento: todos podem contribuir
- Divisão da riqueza: pagamento equitativo

Google
Cisco Systems
SONY
FAIRCHILD
SEMICONDUCTOR
PayPal
sun
microsystems
amazon.com
ORACLE
hp
ebay
ATARI
intel
NOKIA
Microsoft
MOTOROLA
SAMSUNG
Texas Instruments
Nintendo


NETFLIX

airbnb



TESLA
100% ELEKTRISCH

Yo!
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Global trade starts here.™
Jack Ma
Founder of Alibaba.com

Empreendedorismo Maker

The Maker Movement

MANIFESTO

Mark Hatch

JOIN THE REVOLUTION!

Radicalize!

TOOLS are at the CHEAPEST of Industrial Revolution

MAKERS ARE CHANGING...

WE CAN CHANGE THE WORLD!

Make is Foundamental.

Make something For Christmas!

Share

Participate

Give away small pieces of yourself.

Support

Learn

Tool up

embrace Change

Industrial Arts
Artists
Chemistry "Magic"
Hands-on Science
Engineering
Makers
Musicians
we are all
MAKERS
DIY
Green Tech
Recycling
Tinkerers
S.T.E.A.M.
Alternative Energy
Young Makers
Robotics
Digi-tech
Crafts

Inventor: Espaço “Maker”

Inspiração para as meninas: “Lady Ada”

Limor Fried

(born approximately 1980)

Electrical engineer and inventor

Limor Fried, known widely as “ladyada,” is founder and chief executive of Adafruit Industries, developers of open-source hardware. The company aim is to get more people involved in technology, science, and engineering by making the necessary tools cheap and readily available. Adafruit is named in honor of Lady Ada Lovelace.

Inspiração para as meninas: Limor Fried

Empresa de Limor Fried: Adafruit

E você?

Quais serão as suas atitudes para desenvolver as competências pessoais e profissionais?