UNIVERSIDADE DE COIMBRA
FACULDADE DE CIÊNCIAS E TECNOLOGIA
Departamento de Engenharia Informática

Exame de Processos de Gestão e Inovação

2017/2018 – 1º Semestre
LEI - Licenciatura em Engenharia Informática

10/01/18 – 2 h 00m

***Nota Importante**: A fraude denota uma grave falta de ética e constitui um comportamento não admissível num estudante do ensino superior e futuro profissional licenciado. Qualquer tentativa de fraude leva a anulação da prova tanto do facilitador como do prevaricador.*

Antes de iniciar o seu teste, leia atentamente o enunciado **BOA SORTE!**

Grupo I (5 valores)

1. Partindo do texto seguinte, explique o que é escola da "Gestão Científica", quais os seus princípios e como estão a ser usados e adaptados nas empresas de IT de hoje. (2,5 valores).

"Digital Taylorism - A modern version of "scientific management" threatens to dehumanise the workplace", The Economist, Sep 10th 2015
(Fonte: https://www.economist.com/news/business/21664190-modern-version-scientific-management-threatens-dehumanise-workplace-digital)

FREDERICK TAYLOR was the most influential management guru of the early 20th century. His "Principles of Scientific Management" was the first management blockbuster. His fans included Henry Ford, who applied many of his ideas in his giant River Rouge car plant, (...) . Taylor's appeal lay in his promise that management could be made into a science, and workers into cogs in an industrial machine. The best way to boost productivity, he argued, was to embrace three rules: break complex jobs down into simple ones; measure everything that workers do; and link pay to performance, giving bonuses to high-achievers and sacking sluggards.
Scientific management provoked a backlash (...). A rival school of managers argued that workers are more productive if you treat them as human beings. But a recent article about Amazon in the New York Times suggests that Taylorism is thriving. The article claimed that the internet retailer uses classic Taylorist techniques to achieve efficiency: workers are constantly measured and those who fail to hit the numbers are ruthlessly eliminated, personal tragedies notwithstanding. Amazon's boss, Jeff Bezos, insisted that he did not recognise the company portrayed in the piece. (...) Far from being an outlier, it would seem that Amazon is the embodiment of a new trend, digital Taylorism. As stopwatch management continues to conquer new territory, so too does pay for performance. The more firms depend on the brainpower of their employees, the more they are seeking to reward their finest minds with high salaries and stock options. "A great machine operator commands several times the wage of an average machine operator," Bill Gates points out, "but a great writer of software code is worth 10,000 times the price of an average software writer."
(...) digital Taylorism looks set to be a more powerful force than its analogue predecessor. The prominent technology firms that set the tone for much of the business world are embracing it. Google, which hires a few thousand people a year from up to 3m applicants, constantly ranks its employees on a five-point scale. Investors seem to like Taylorism: Amazon's share price ticked upwards after the Times's exposé. The onward march of technology is producing ever more sophisticated ways of measuring and monitoring human resources. And Amazon's "Amabots", as they call themselves, seem happy to put up with micromanagement if they get a nice bonus at the end of the year. The most basic axiom of management is "what gets measured gets managed". So the more the technology of measurement advances, the more we hand power to Frederick Taylor's successors.

2. Relacionando o texto acima apresentado com este outro excerto do mesmo texto, indique exemplos de medidas de gestão baseadas na escola das "Relações Humanas" que poderiam ser aplicadas em empresas de IT. Use na sua reposta as características e concepções dessa escola (2,5 valores).

***The meatware fights back:** The march of technology can cut both ways. The rise of smart machines may make Taylorism irrelevant in the long term: why turn workers into machines when machines can do ever more? The proliferation of websites such as Glassdoor, which let employees review their workplaces, may mean that firms which treat their workers as mere "meatware" lose the war for the sort of talent that cannot be mechanised. Alex Pentland of the Massachusetts Institute of Technology has invented a "sociometric" badge, worn around the neck, that measures such things as your tone of voice, gestures and propensity to talk or listen. But Mr Pentland's sociometric badges have produced some counter-intuitive results: for example, in a study of 80 employees in a Bank of America call centre, he found that the most successful teams were the ones that spent more time doing what their managers presumably didn't want them to do: chatting with each other*

Grupo II (5 valores)

1. O Manual de OSLO, da OCDE (Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition) refere quatros tipos diferentes de inovação (produto, processo, marketing e organização). Para uma empresa tecnológica, dê um exemplo de inovação para cada um desses tipos de inovação, justificando na sua reposta o porquê de ter escolhido esse exemplo com o conceito de inovação associado. (2,5 valores).

2. O conceito *"Ten Types of Innovation: The Discipline of Building Breakthroughs"*, agrupa os dez tipos de inovação em três blocos. Indique um tipo de inovação de cada um desses blocos (*configuration, offering, experience*) que *poderia* ser aplicada à ***Tesla***, justificando essa sua escolha (2,5 valores).

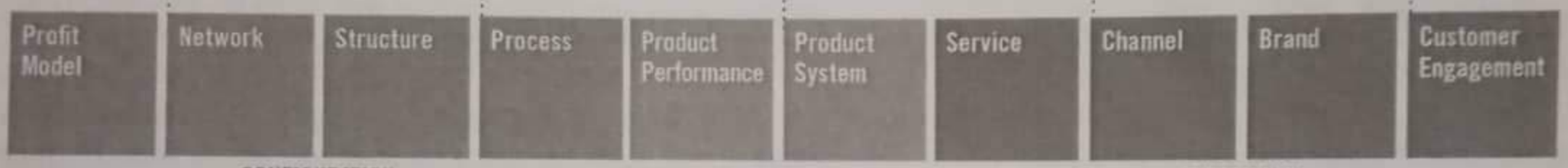
Network
Connections with others to create value

Process
Signature or superior methods for doing your work outside of operations

Product System
Innovating the product system (E.g. production or innovative use of byproducts)

Channel
How you interact with stakeholders and access or create new markets

Customer Engagement
Distinctive interactions you foster, including joint ventures



Profit Model
The way in which you make money

Structure
Alignment of your talent and assets

Product Performance
Optimize extracting core products more effectively, to higher quality

Service
Support and enhancements that surround your core operations

Brand
Representation of your business and how you create trust in your brand

Tesla's mission is to accelerate the world's transition to sustainable energy.

Tesla was founded in 2003 by a group of engineers who wanted to prove that people didn't need to compromise to drive electric – that electric vehicles can be better, quicker and more fun to drive than gasoline cars. Today, Tesla builds not only all-electric vehicles but also infinitely scalable clean energy generation and storage products. Tesla believes the faster the world stops relying on fossil fuels and moves towards a zero-emission future, the better.

Launched in 2008, the Roadster unveiled Tesla's cutting-edge battery technology and electric powertrain. From there, Tesla designed the world's first ever premium all-electric sedan from the ground up – Model S – which has become the best car in its class in every category. Combining safety, performance, and efficiency, Model S has reset the world's expectations for the car of the 21st century with the longest range of any electric vehicle, over-the-air software updates that make it better over time, and a record 0-60 mph acceleration time of 2.28 seconds as measured by Motor Trend. In 2015, Tesla expanded its product line with Model X, the safest, quickest and most capable sport utility vehicle in history that holds 5-star safety ratings across every category from the National Highway Traffic Safety Administration. And to complete CEO Elon Musk's "Secret Master Plan," in 2016, Tesla announced Model 3, a low-priced, high-volume electric vehicle that began production in 2017.

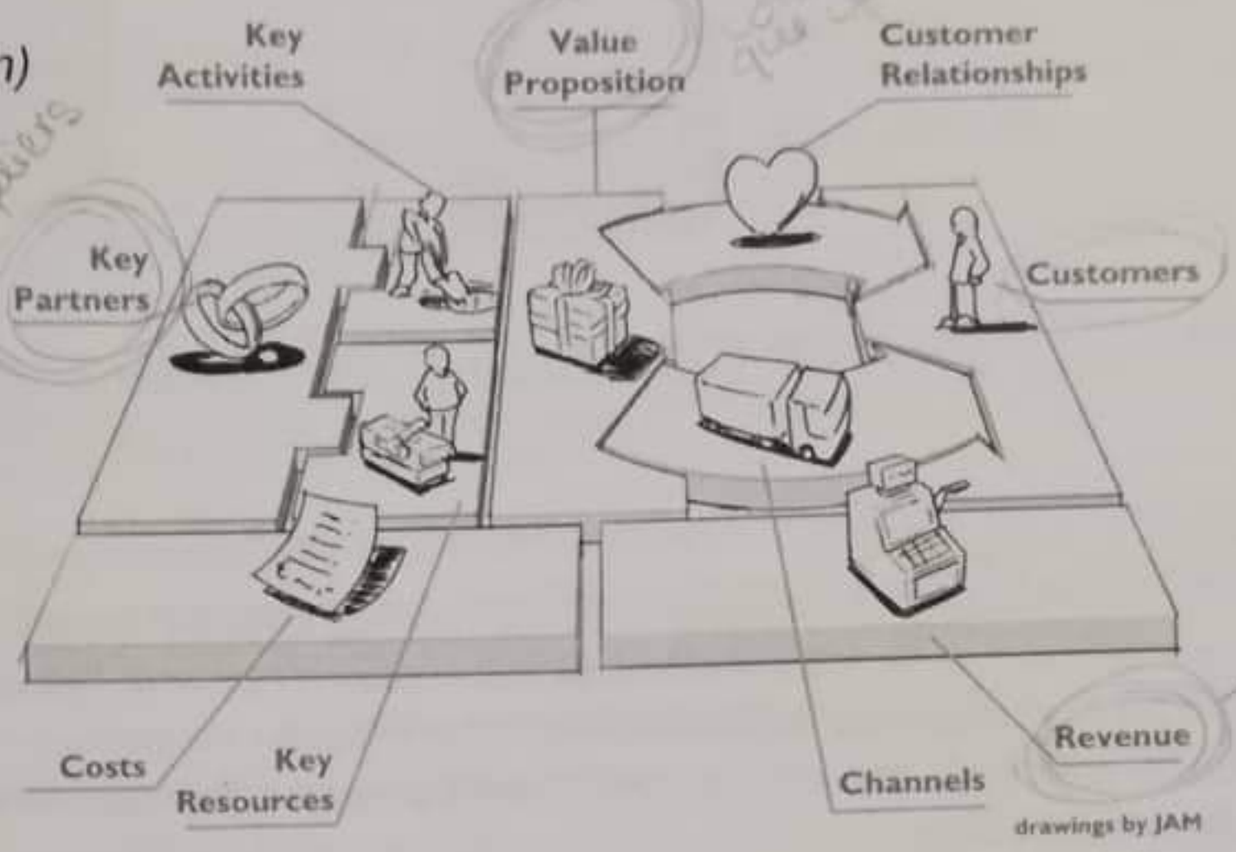
Tesla's vehicles are produced at its Fremont factory in California, where the vast majority of the vehicle's components are also made. As Tesla continues to expand its product line, Tesla's production plan is also set to increase to a rate of 500,000 vehicles a year by 2018.

To create an entire sustainable energy ecosystem, Tesla also designed a unique set of energy solutions, Powerwall, Powerpack and Solar Roof, enabling homeowners, businesses, and utilities to manage renewable energy generation, storage, and consumption. Supporting Tesla's automotive and energy products is the Gigafactory – a facility designed to significantly reduce battery cell costs and, by 2018, produce more lithium-ion batteries annually than were produced worldwide in 2013. By bringing cell production in-house, Tesla manufactures batteries at the volumes required to meet production goals, while creating thousands of jobs. Fonte: https://www.tesla.com/about

Grupo III (5 valores)

1. O *Business Model Canvas* é uma ferramenta de gestão estratégica, desenvolvida por Alexander Osterwalder, que permite desenvolver modelos de negócio novos ou existentes.
Considerando o seu ***projecto de PGI como um negócio***, o que colocaria nos seguintes blocos?

- *Proposta de valor (value proposition)*
- *Clientes (customers)*
- *Key partners (parceiros)*
- *Proveitos (revenue).*



Nota: pode e deve indicar actividades e sugestões, que não estando atualmente implantadas, o poderiam ser neste contexto.
(2,5 valores)

2. Explique como esta startup pode ter usado o conceito de *"customer development"* no desenvolvimento do seu produto (2,5 valores).

I ran into a small startup at Stanford who wants to fly Unmanned Aerial Vehicles (drones) with a Hyper-spectral camera over farm fields to collect hyper-spectral images. These images would be able to tell farmers how healthy their plants were, whether there were diseases or bugs, whether there was enough fertilizer, and enough water. (The camera has enough resolution to see individual plants.) Knowing this means farms can make better forecasts of how much their fields will produce, whether they should treat specific areas for pests, and put fertilizer and water only where it was needed. All of this information would help farmers increase yields (making more money) and reduce costs by using less water and fertilizer/chemicals but only applying where it was needed.

They showed me their goals and budget for their next step. What they wanted was a happy early customer who recognized the value of their data and is willing to be an evangelist. They concluded that the only way to get a delighted early customer was to build a minimum viable product (MVP). They believed that the MVP needed to, 1) demonstrate a drone flight, 2) make sure their software could stitch together all the images of a field, and then 3) present the data to the farmer in a way he could use it.

And they logically concluded that the way to do this was to buy a drone, buy a hyper-spectral camera, buy the software for image processing, spend months of engineering time integrating the camera, platform and software together, etc. They showed me their barebones budget for doing all this. Logical …And wrong. The team confused the goal of the MVP, (seeing if they could find a delighted farmer who would pay for the data) with the process of getting to the goal. They had the right goal but the wrong MVP to test it. The teams' hypothesis was that they could deliver actionable data that farmers would pay for. Period. Since the startup defined itself as a data services company, at the end of the day, the farmer couldn't care less whether the data came from satellites, airplanes, drones, or magic as long as they had timely information. That meant that all the work about buying a drone, a camera, software and time integrating it all was wasted time and effort – now. They did not need to test any of that yet. (There's plenty of existence proofs that low cost drones can be equipped to carry cameras.) They had defined the wrong MVP to test first. What they needed to spend their time is first testing is whether farmers cared about the data.

So I asked, "Would it be cheaper to rent a camera and plane or helicopter, and fly over the farmers field, hand process the data and see if that's the information farmers would pay for? Couldn't you do that in a day or two, for a tenth of the money you're looking for?" Oh…

They thought about it for a while and laughed and said, "We're engineers and we wanted to test all the cool technology, but you want us to test whether we first have a product that customers care about and whether it's a business. We can do that."

Fonte: https://steveblank.com/2013/07/22/an-mvp-is-not-a-cheaper-product-its-about-smart-learning/

Grupo IV (5 valores)

1. De acordo com o texto apresentado, descreva uma possível estratégia de Marketing para uma startup preste a lançar uma *app* na Google Play ou App Store da Apple (2,5 valores).

App Store

Google play

The Ultimate Guide to Startup Marketing

Starting a business is exhilarating. Unfortunately, the "build it and they will come" theory doesn't hold much weight and those overnight success stories you hear about are often the result of behind the scenes years of hard work. Simply put, startup marketing is a unique challenge often times because of the limited resources, whether it's time, money or talent.

You have to be sure every effort, no matter how small, is well-planned and flawlessly executed. And to make it even more difficult, the traditional marketing strategies don't always work.

Startup marketing is a whole different science. How so? The secret is properly combining the right channels: Content Marketing and PR.

Fonte: https://blog.kissmetrics.com/ultimate-guide-startup-marketing/

2. Com base no seguinte artigo, explique como a SAP colabora com *startups* em uma estratégia de *"open innovation"* para desenvolver novos produtos para os seus clientes. Complete a sua resposta com uma explicação do conceito de "*open innovation*" e respectivos princípios. (2,5 valores).

SAP SE today announced that it now counts more than 5,500 early stage companies as members of the SAP Startup Focus program. These companies have expressed a strong interest in working with SAP and in building enterprise solutions on SAP technology, including the SAP HANA platform and SAP Cloud Platform.

Since the program's inception in 2012, more than 260 solutions have been validated by SAP and are now available for sale to its global customer base.

"We founded SAP Startup Focus with the intention of enabling entrepreneurs to easily join our innovation ecosystem and create value-driven offerings for a broad spectrum of industries," said Manju Bansal, vice president and global head of SAP Startup Focus. "The program has been a tremendous success, and today we're marking the milestone of 260 validated solutions available to our customers. With members from over 60 countries, we are delighted to work with entrepreneurs who are committed to using our technology to change the way business gets done both in their home countries and globally."

The program connects innovative startups with established enterprise players who are looking for disruptive innovation to power their own businesses. Members of the startup program have built solutions for more than 20 industries across a wide range of technologies, including real-time simulations and pattern recognition, sense-and-respond cycles, personalized analytics, machine learning, augmented and virtual reality, and Internet of Things (IoT) solutions. With these new offerings built on the trusted foundation of SAP HANA or SAP Cloud Platform, customers can be confident that SAP-certified solutions are built to deliver innovation at an enterprise scale.

Fonte: https://news.sap.com/sap-startup-focus-drives-enterprise-innovation-exceeds-5500-startup-members/

SAP SE is one of the largest vendors of enterprise resource planning (ERP) software and related enterprise applications. The company's ERP system enables its customers to run their business processes, including accounting, sales, production, human resources and finance, in an integrated environment. According to its 2016 corporate fact sheet, SAP serves more than 335,000 customers in 190 countries. It's estimated that 75% of all global business transactions come in contact with an SAP system. The company offers on-premises, cloud and hybrid deployment models, with cloud computing options being the focus for the company's future. On the Forbes 2016 list of "The World's Biggest Public Companies," SAP was ranked the third-largest software and programming company, behind Microsoft (1) and Oracle (2) and is currently headquartered in Walldorf, Germany.