

PSI 3465 - Inovação em Engenharia



# Economia Digital

Por que tudo está mudando?



24 de Outubro de 2019



Prof. Leopoldo Yoshioka



# Quantum supremacy using a programmable superconducting processor

<https://doi.org/10.1038/s41586-019-1666-5>

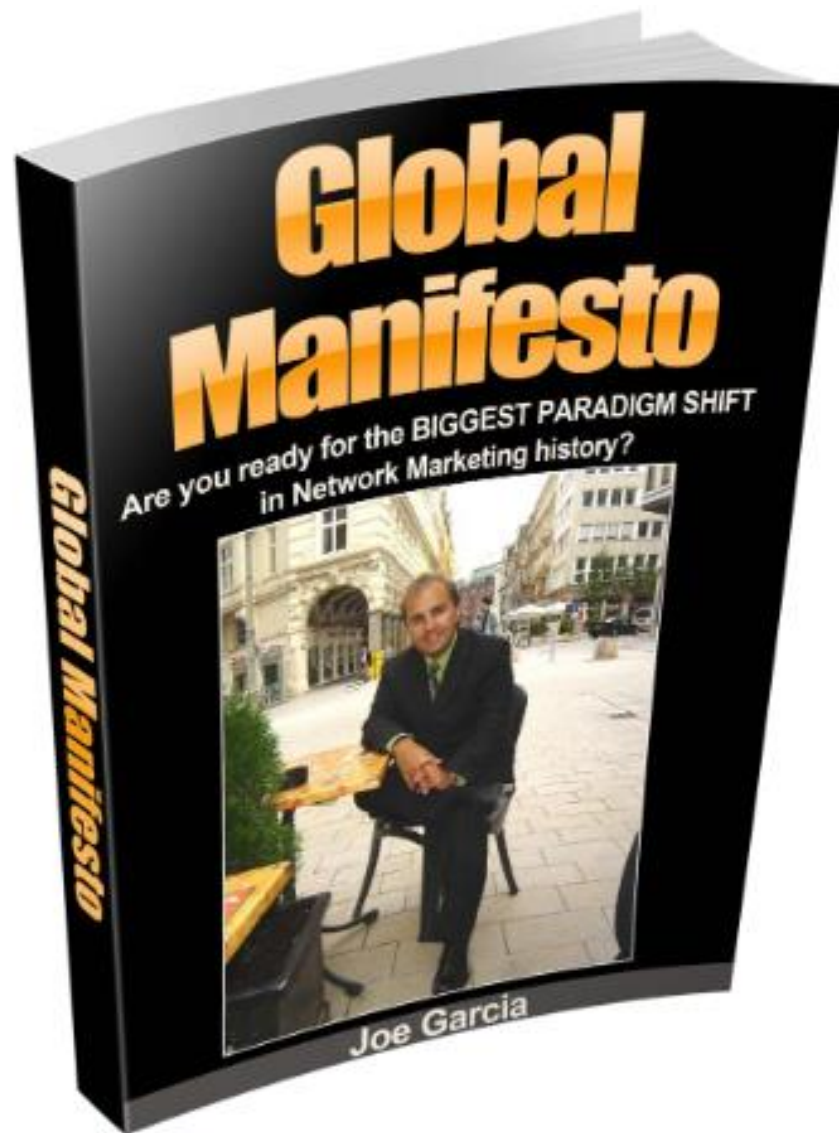
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The promise of quantum computers is that certain computational tasks might be executed exponentially faster on a quantum processor than on a classical processor<sup>1</sup>. A fundamental challenge is to build a high-fidelity processor capable of running quantum algorithms in an exponentially large computational space. Here we report the use of a processor with programmable superconducting qubits<sup>2–7</sup> to create quantum states on 53 qubits, corresponding to a computational state-space of dimension  $2^{53}$  (about  $10^{16}$ ). Measurements from repeated experiments sample the resulting probability distribution, which we verify using classical simulations. Our Sycamore processor takes about 200 seconds to sample one instance of a quantum circuit a million times—our benchmarks currently indicate that the equivalent task for a state-of-the-art classical supercomputer would take approximately 10,000 years. This dramatic increase in speed compared to all known classical algorithms is an experimental realization of quantum supremacy<sup>8–14</sup> for this specific computational task, heralding a much-anticipated computing paradigm.



70% TO 80% OF  
JOBS WILL  
DISAPPEAR IN  
THE NEXT 20  
YEARS

Obs.: Não somente os empregos, mas também muitas indústrias de hoje não existirão no futuro

*In **1998**, Kodak had **170,000 employees** and sold **85%** of all **photo paper** worldwide. Within just a few years, their business model disappeared and they were bankrupt. What happened to **Kodak** will happen in a lot of industries in the **next 10 years** – and most people don't see it coming. Did you think in 1998 that **3 years later** you would **never take** pictures on **paper film** again? Yet **digital cameras** were invented in **1975**.*

**Artificial Intelligence:** Computers become exponentially better in understanding the world. This year, a **computer beat the best Go player** in the world, **10 years earlier than expected**. In the US, **young lawyers** already don't get jobs. Because of **IBM Watson**, you can get legal advice, (so far for more or less basic stuff), within seconds. With **90% accuracy**, compared with **70% accuracy** when done **by humans**. So if you are studying law, stop immediately. There will be 90% fewer generalist lawyers **in the future**; only **specialists** will be needed.

***Watson' already helps nurses diagnose cancer, four times more accurately than doctors.***

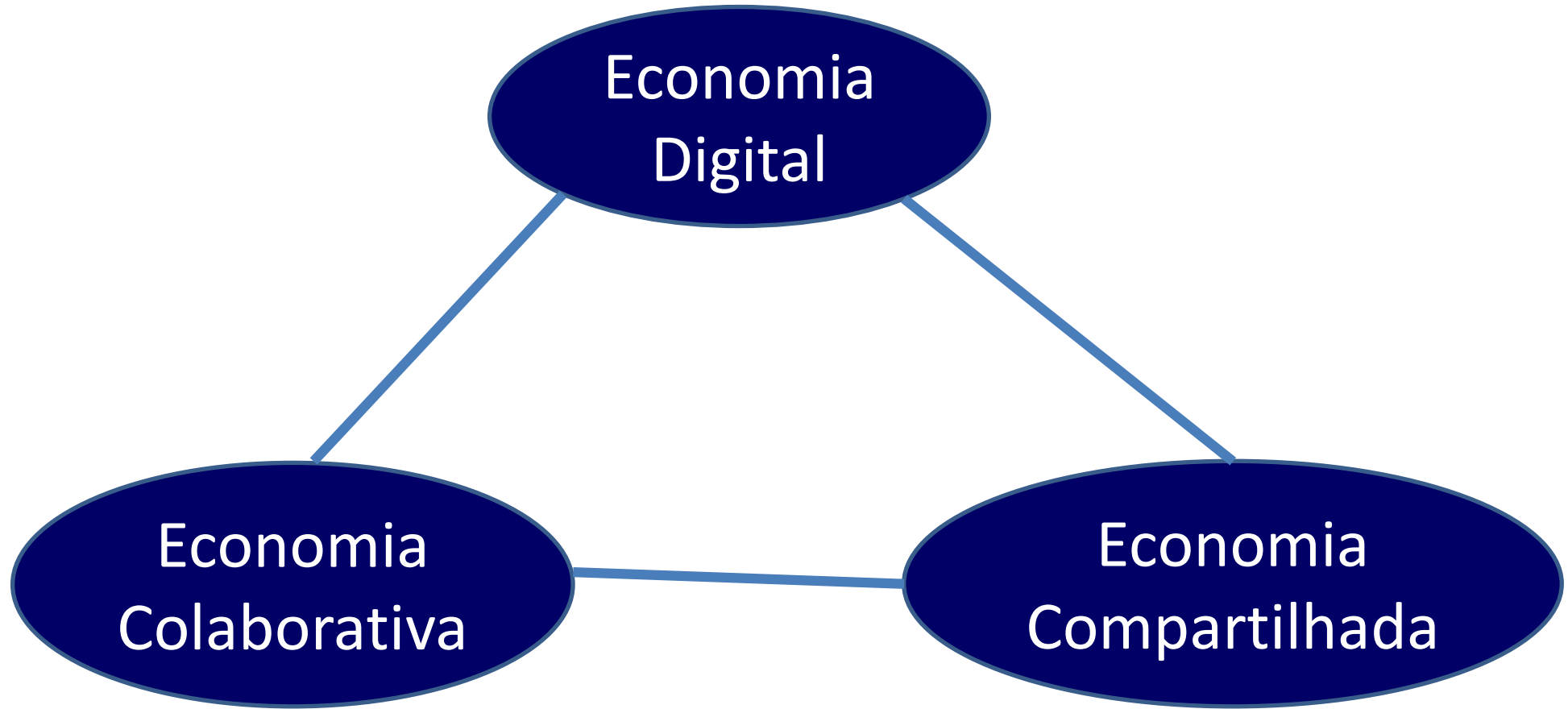
***Facebook now has pattern recognition software that can recognize faces better than humans. By 2030, computers will have become 'more intelligent' than humans.***

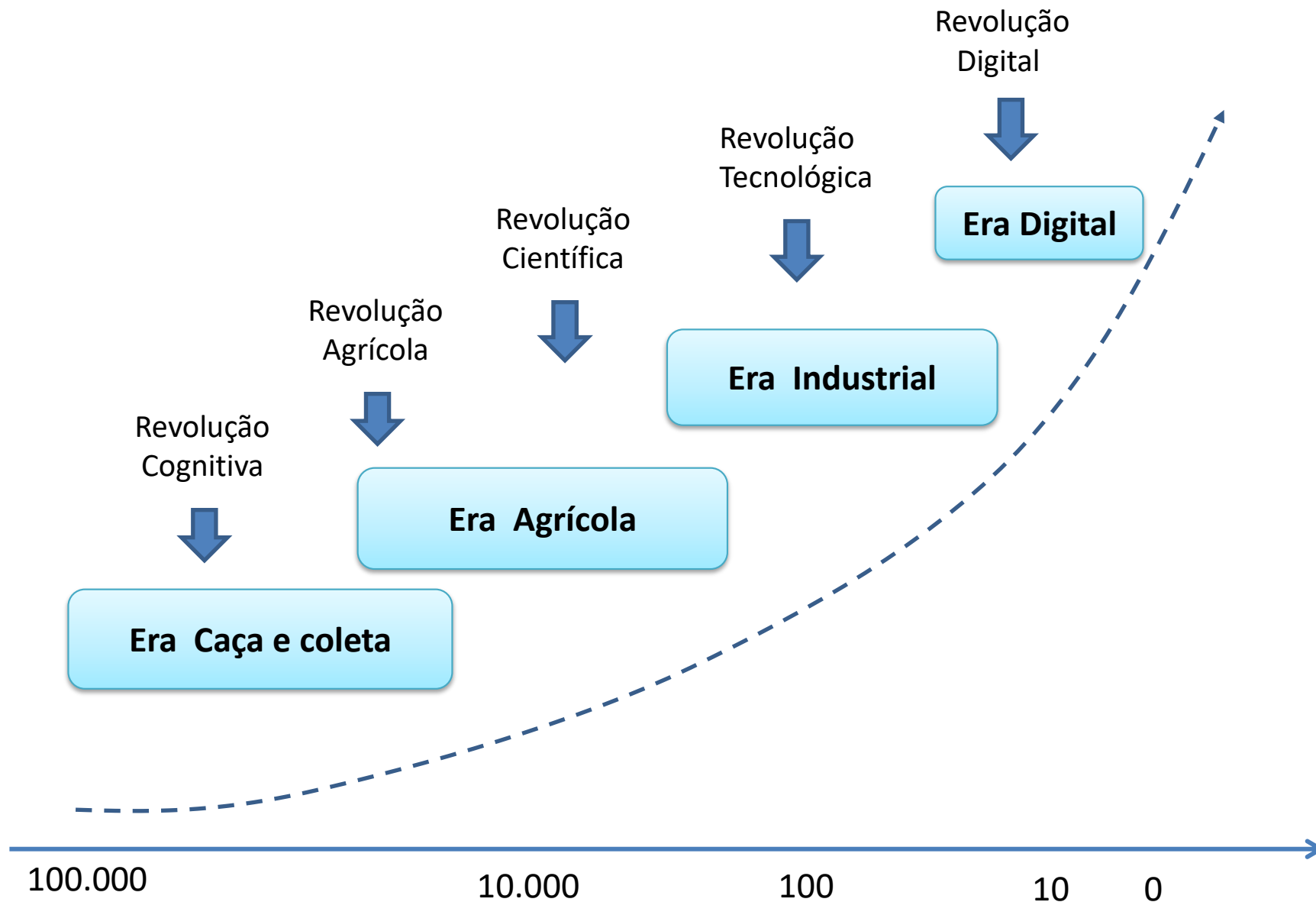
**Education:** *The cheapest smartphones already sell at \$10 in Africa and Asia. By 2020, 70% of all humans will own a smartphone. That means **everyone** will have much the same **access to world class education**. Every child can use Khan Academy for everything he needs to learn at schools in First World countries. Further afield, the software has been launched in Indonesia and will be released it in Arabic, Swahili and Chinese this summer. The **English app** will be offered free, so that children in Africa can become **fluent in English within half a year**.*

***Insurance** companies will have massive trouble, because without **accidents** (due to technology of **self driving cars** etc.), the insurance will become **100 times cheaper**. Their car insurance business model will disappear.*



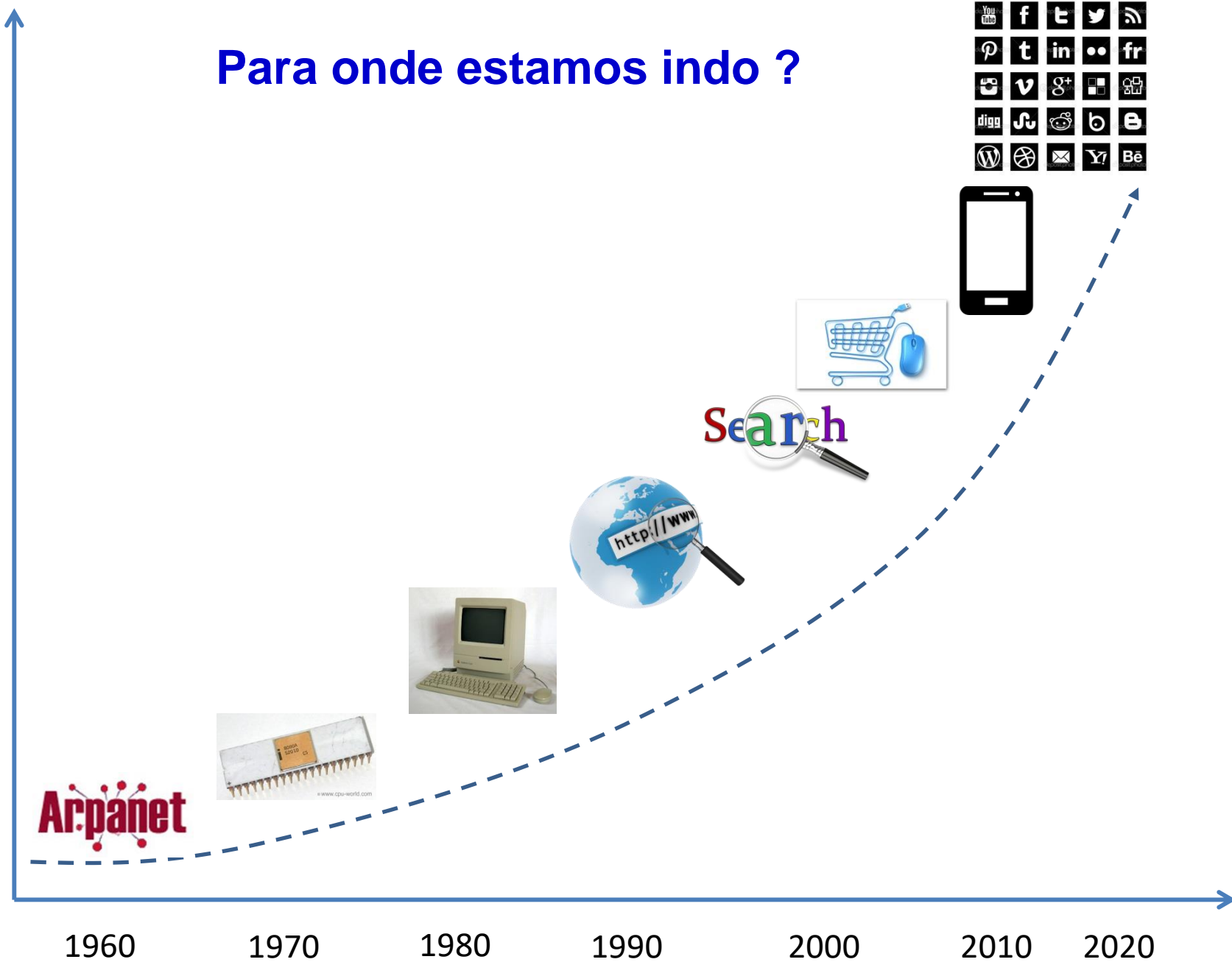
***Business opportunities:*** *If you think of a niche you want to enter, ask yourself: "in the **future**, do you think **we will have that?**" And if the answer is **yes**, then work on how you can make that happen sooner. If it **doesn't work** via your **phone**, **forget the idea**. And any **idea** that was designed for **success** in the **20th century** is probably doomed to **fail** in the **21st century**.*

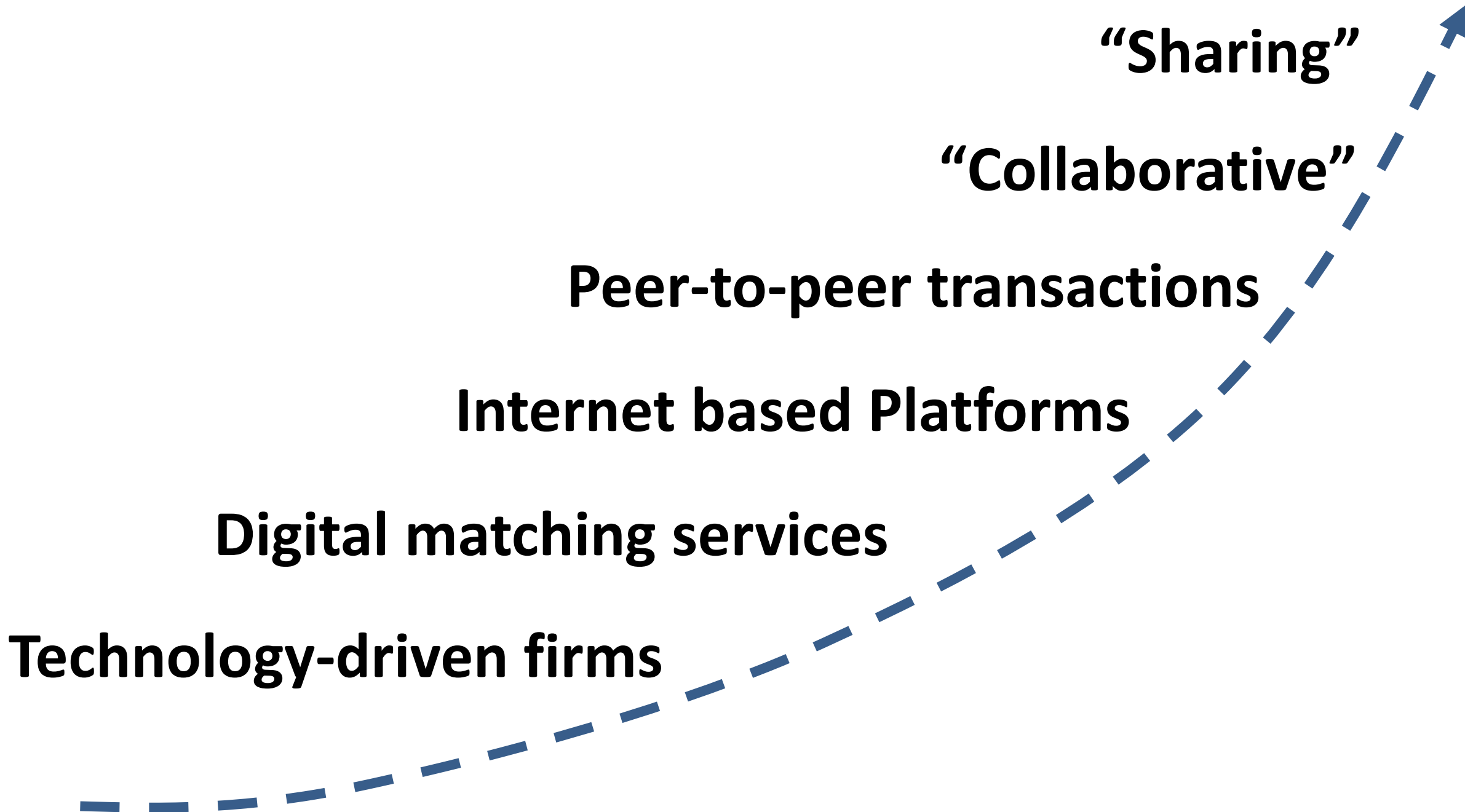




# Para onde estamos indo ?

EVOLUÇÃO TECNOLÓGICA





**Travis Kalanick**



**Elon Musk**



**Luis von Ahn**

**Robin Chase**



**Joe Gebbia**



**Uri Levine**



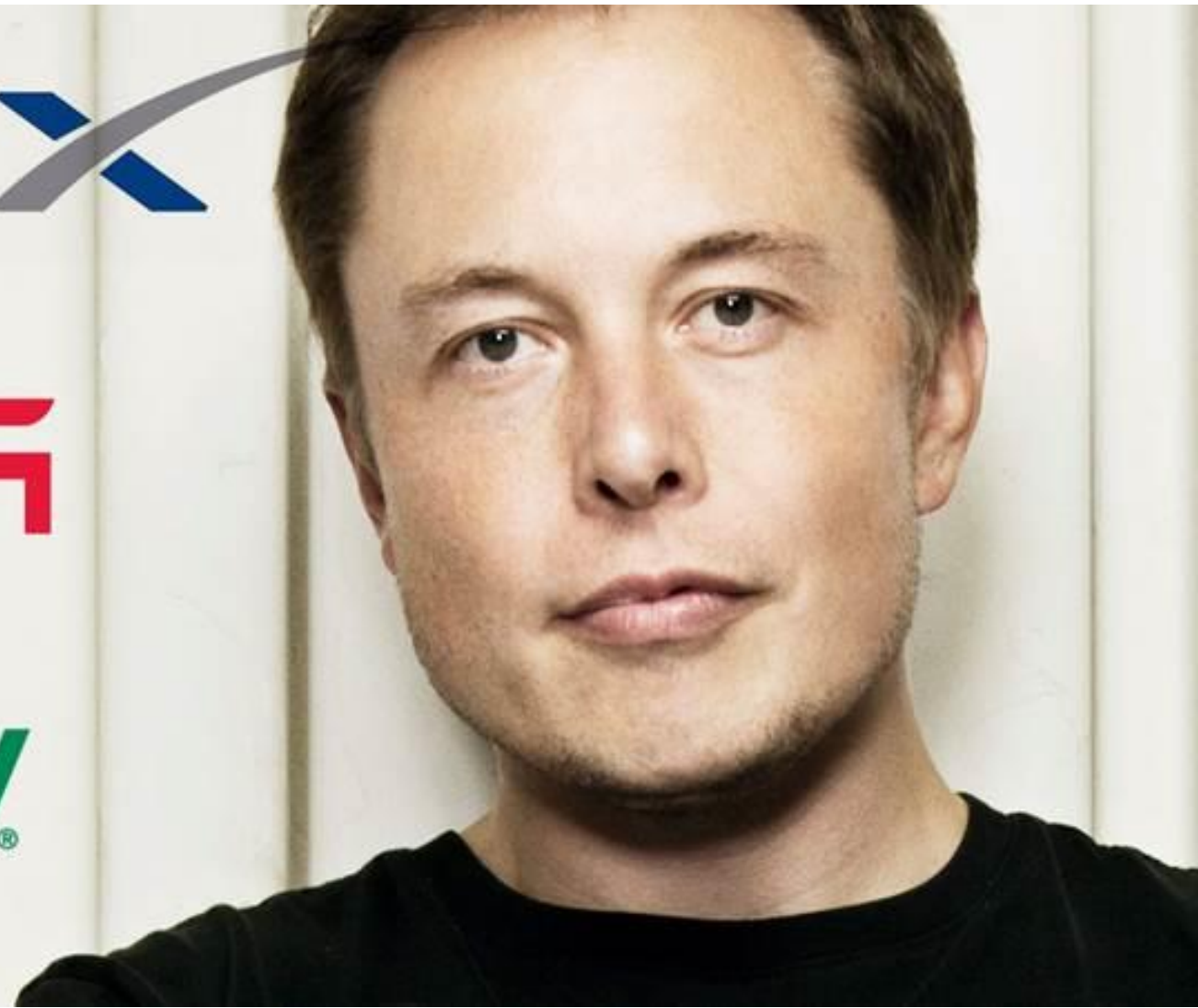
**Brian Acton**



SPACEX

TESLA

 SolarCity®



**Africa do Sul → Canadá → America**

**He focus on three things:**

**Space colonization**

**Renewable energy**

**Expanding the Internet**



## Zip2

Em 1999 vendeu por \$307 milhões

## Pay Pal

Em 2002 vendeu por \$1,5 bilhões para eBay

|               |   |            |               |
|---------------|---|------------|---------------|
| \$180 milhões |   |            |               |
| \$100 milhões | ➔ | SpaceX     | \$12 bilhões  |
| \$70 milhões  | ➔ | Tesla      | \$30 bilhões  |
| \$10 milhões  | ➔ | Solar City | \$1,5 bilhões |

# Master Plan – Part One

Elon Musk

- 1. Create** a low volume car, which would necessarily be expensive
- 2. Use** that money to develop a medium volume car at a lower price
- 3. Use *that*** money to create an affordable, high volume car, *and*
- 4. Provide** solar power.

**TESLA**



**Tesla model S**



**Tesla Autonomous Semi Truck**



Bring me sunshineJ. EMILIO FLORES/The New York Ti / eye vine



**Tesla Powerwall**



**Tesla Solar Plant – Nevada desert  
(150 gigawatt hour per year = 1.5 million Model 3s)**

# Master Plan – Part Deux

Elon Musk

- **Create** stunning solar roofs with seamlessly integrated battery storage
- **Expand** the electric vehicle product line to address all major segments
- **Develop** a self-driving capability that is 10X safer than manual via massive fleet learning
- **Enable** your car to make money for you when you aren't using it

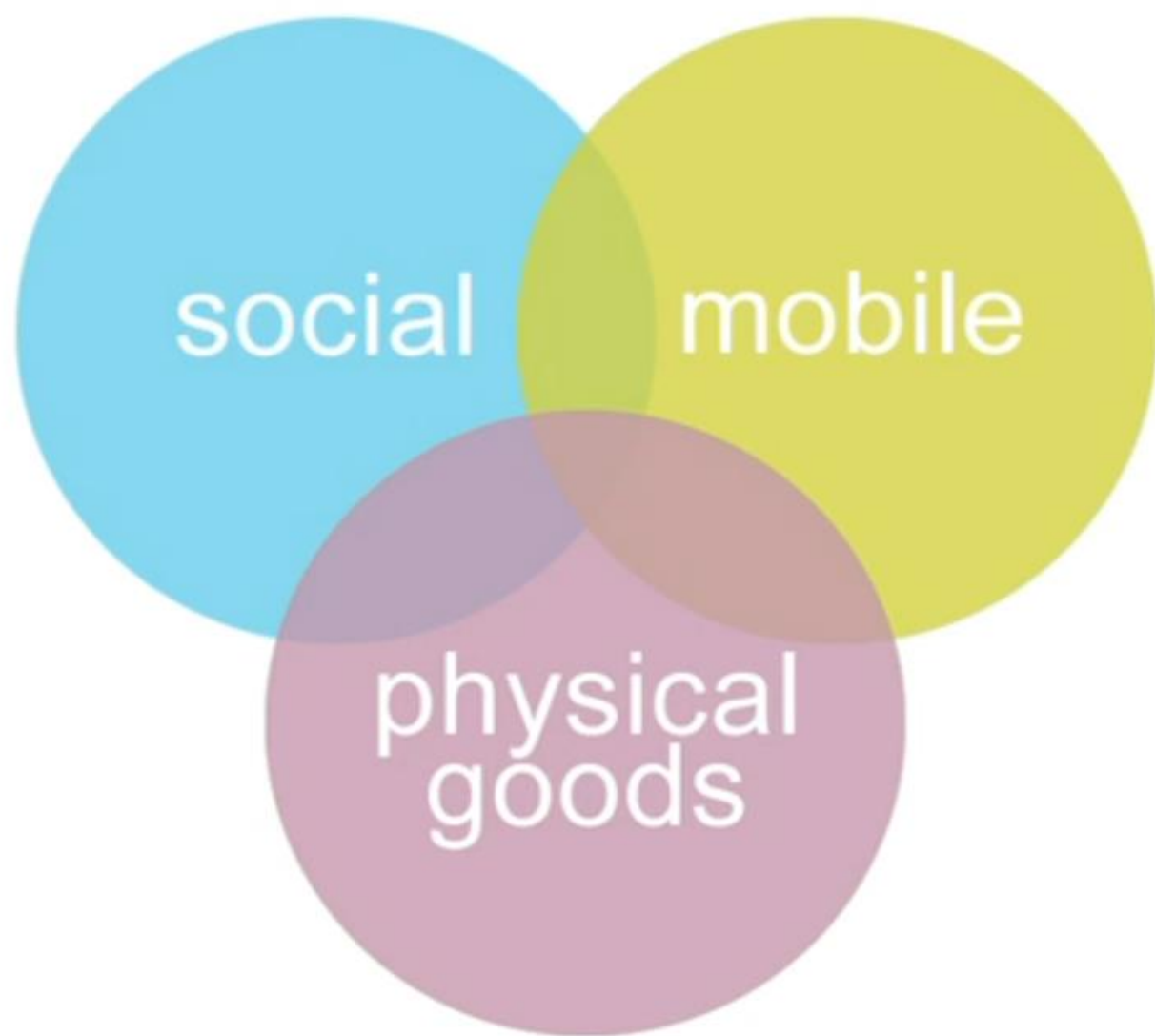


Brian Chesky  
CEO

- 2007 – aluguel de \$1150 (São Francisco)
- International Design Convention
- 3 Airbed
- “Airbed and Breakfast”
  
- 250 mil quartos, 30 mil cidades, 192 países
- 70 milhões de hospedes



# key ingredients



# Help make New York better

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**Intro**

[FAQs](#)

[Meetup](#)

[Contact](#)

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Open data



More apps



Better transit

# PEERS INC

Como Pessoas e Plataformas estão  
Inventando a Economia Colaborativa e  
Reinventando o Capitalismo?





# PEERS INC



How People and Platforms are  
Inventing the Collaborative Economy  
*and* Reinventing Capitalism

ROBIN CHASE  
*cofounder of* ZIPCAR

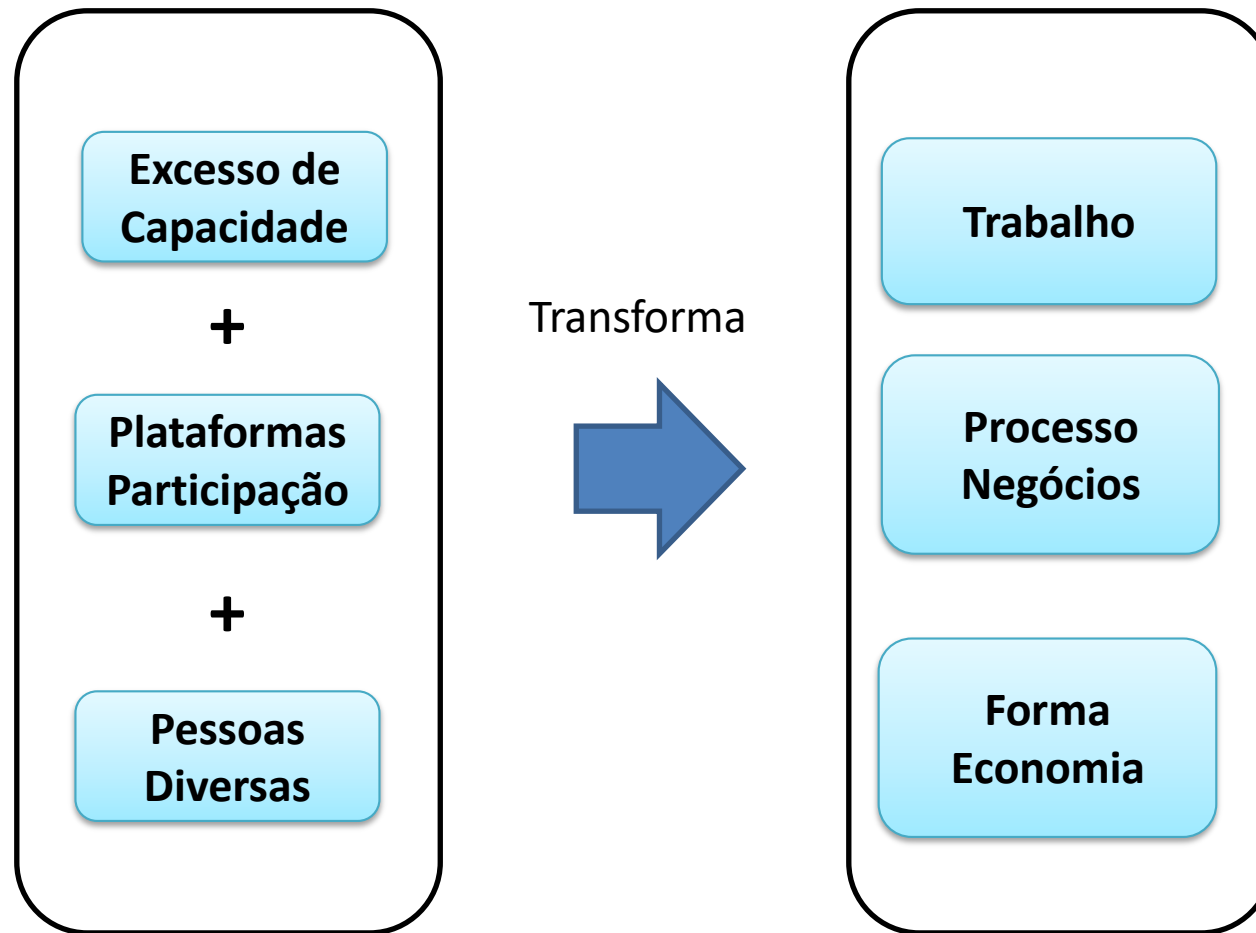
**Excesso de  
Capacidade**

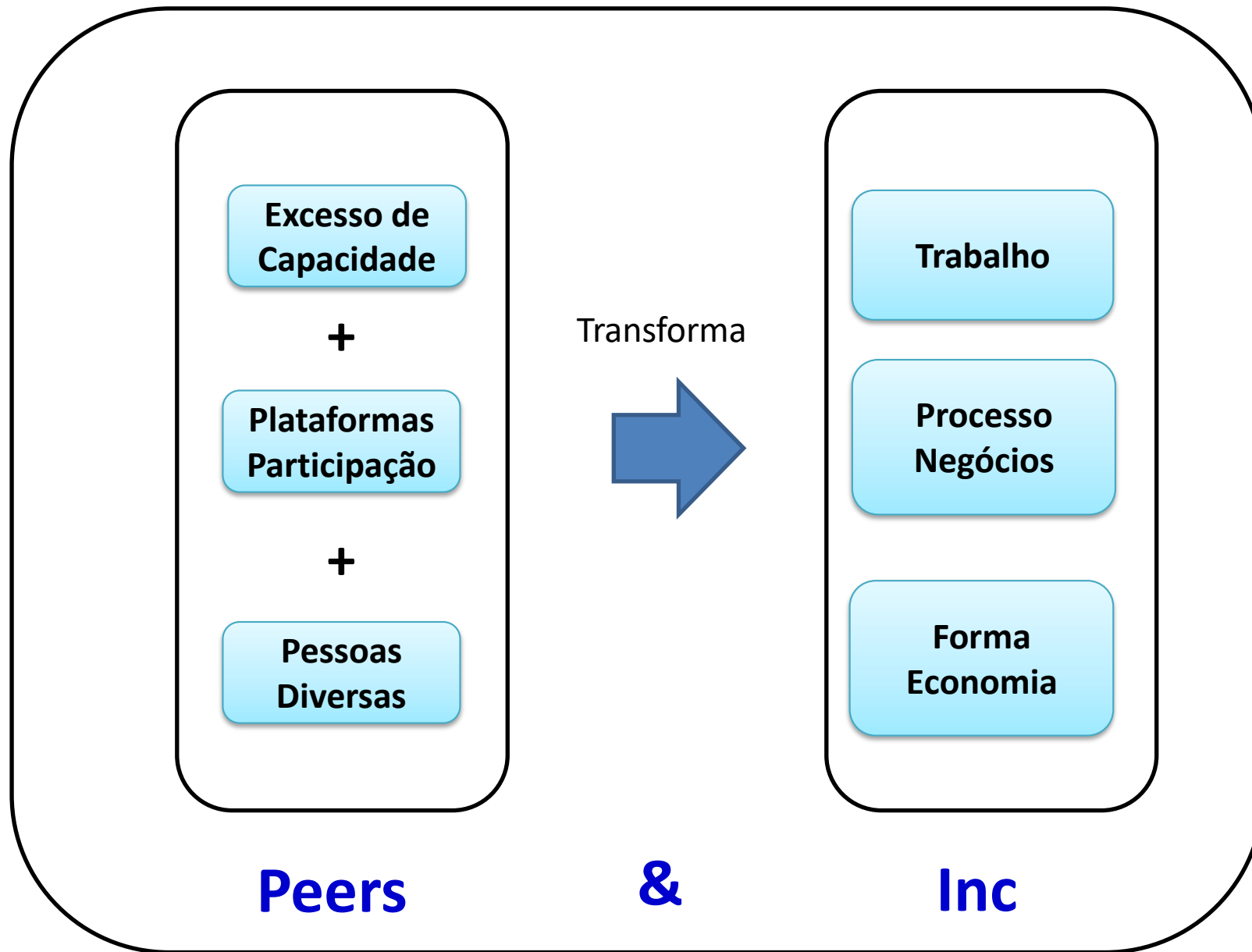
**+**

**Plataformas  
Participação**

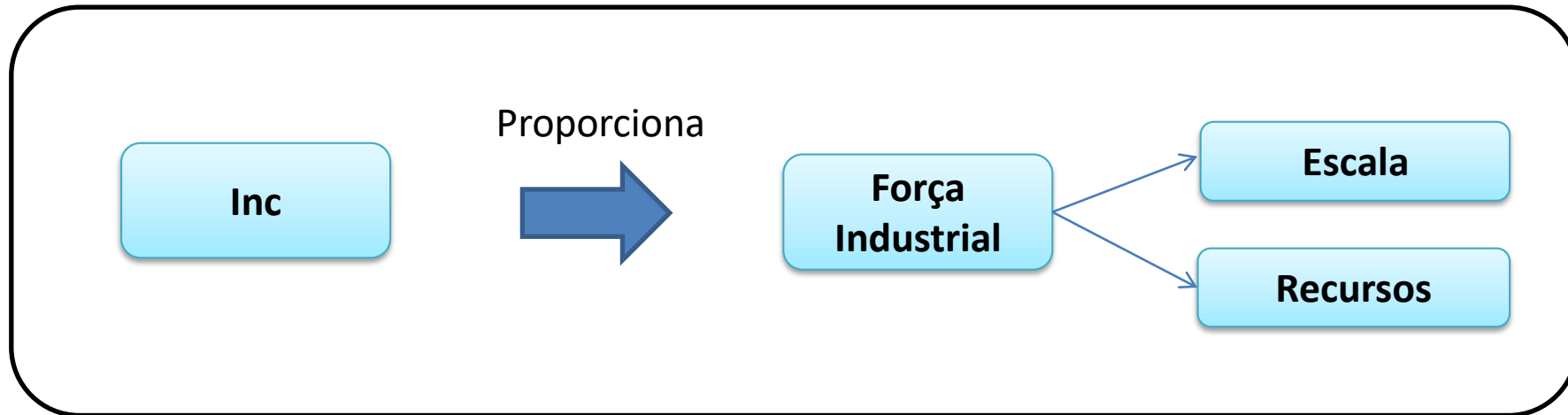
**+**

**Pessoas  
Diversas**



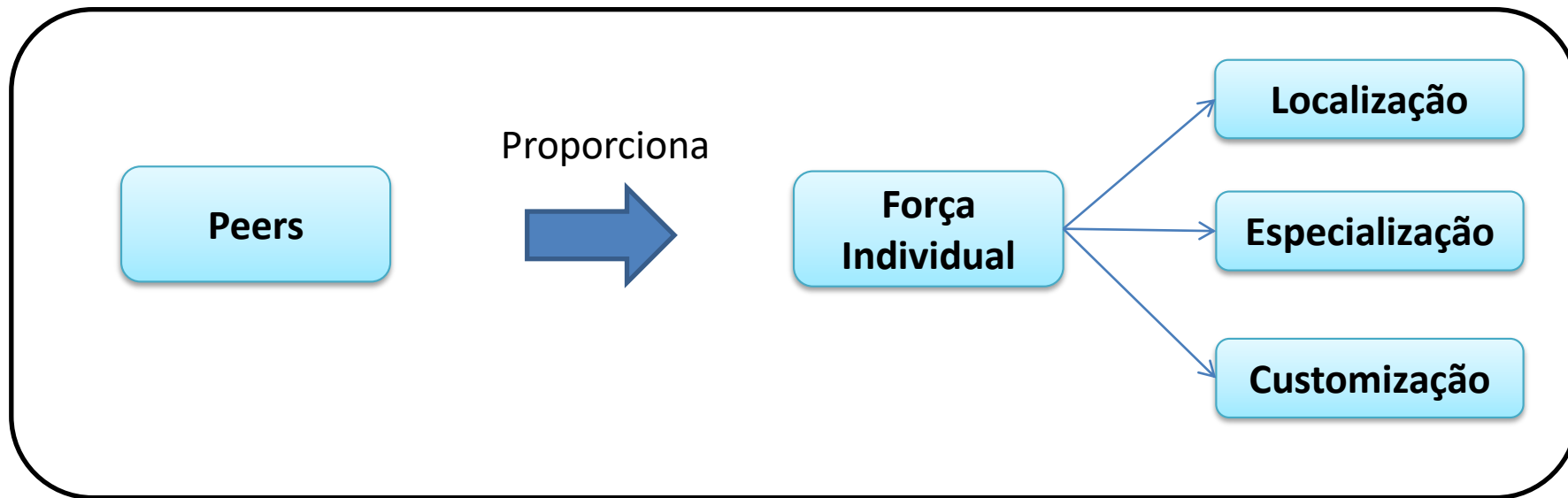


Peers Inc combina a melhor capacidade das pessoas com a melhor capacidades das corporações

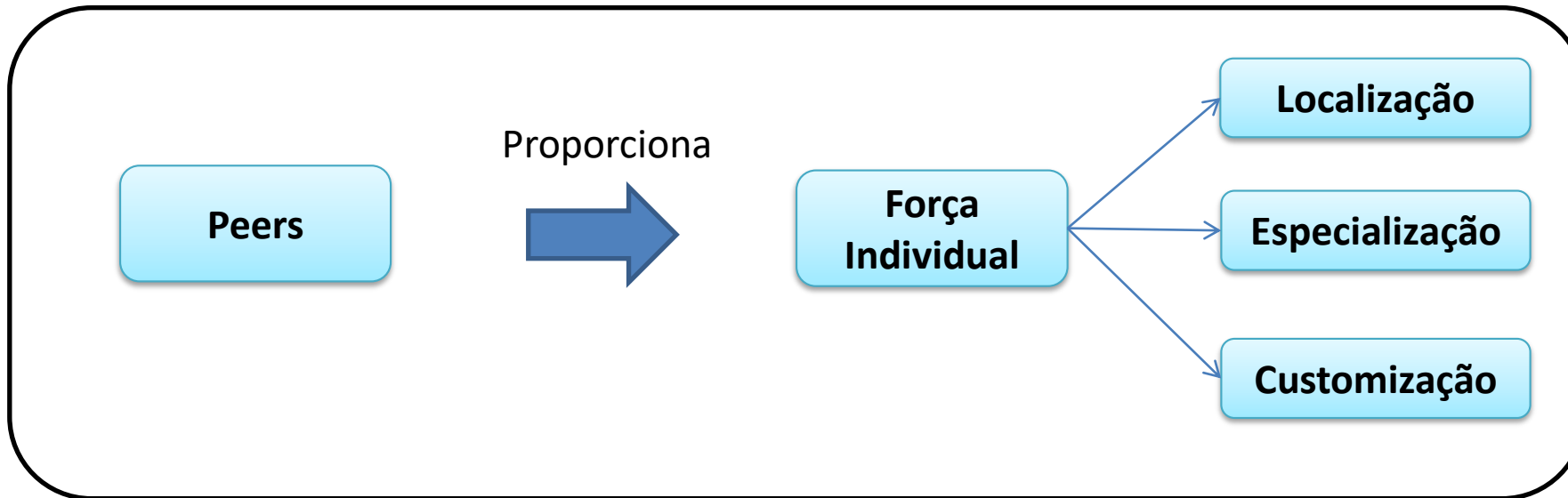
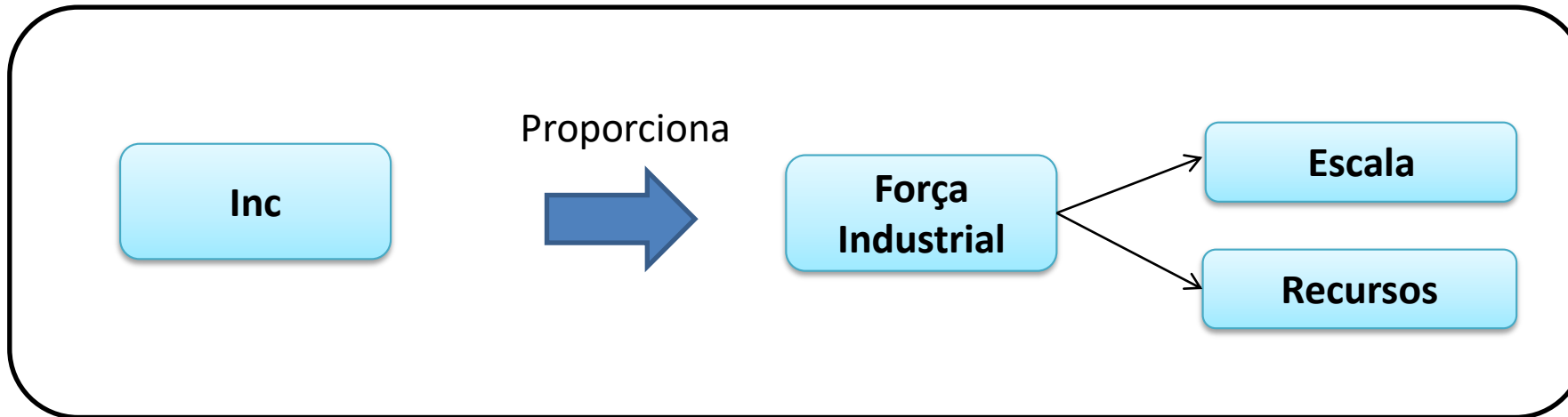


Quando Inc e Peers focam apenas onde cada um pode fazer melhor, cada um realiza o que é difícil para outro, resultando numa colaboração sem precedentes.

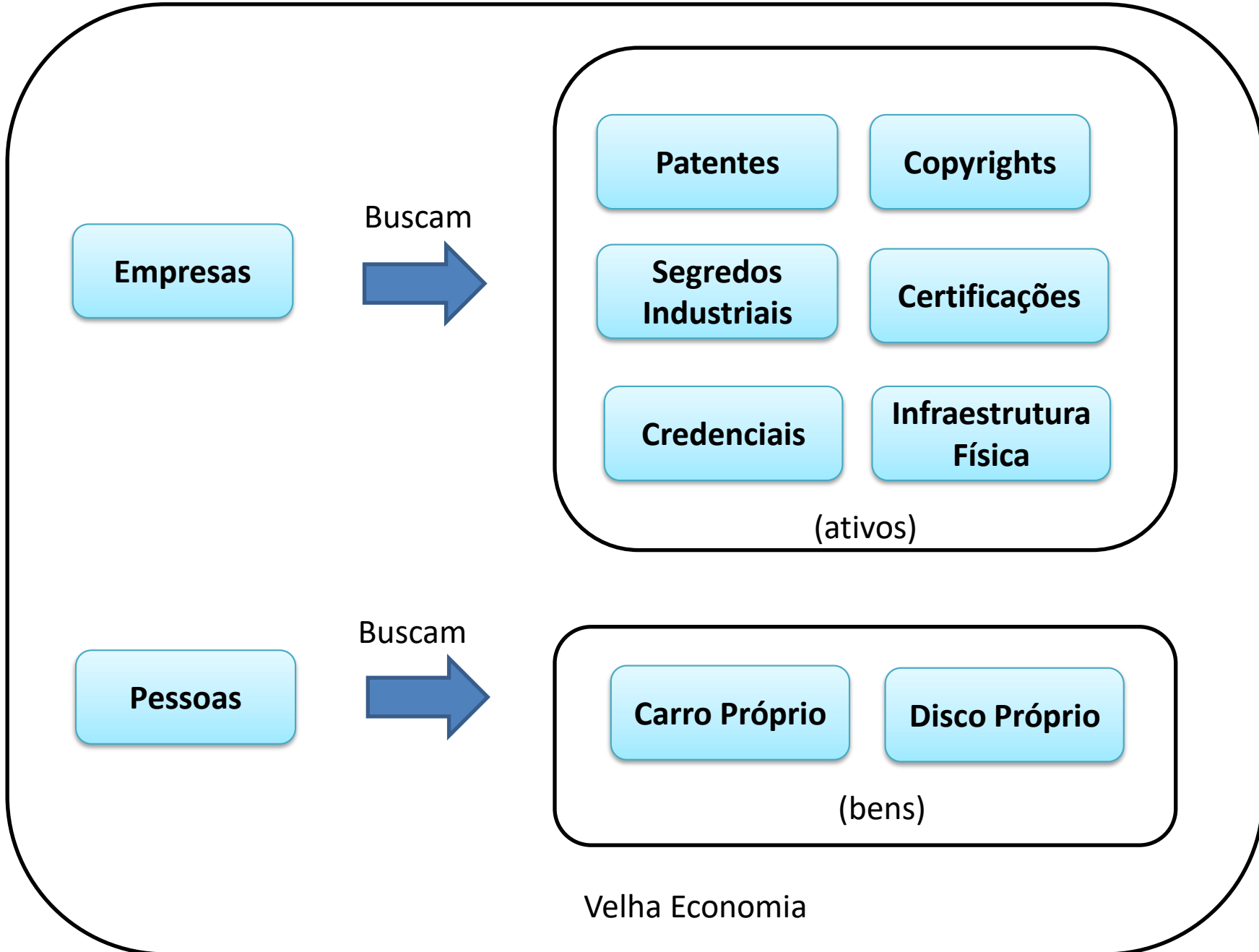




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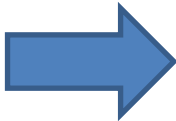


Quando Inc e Peers focam apenas onde cada um pode fazer melhor, cada um realiza o que é difícil para outro, resultando numa colaboração sem precedentes.



**Empresas**

Buscam



**Patentes**

**Copyrights**

**Segredos Industriais**

**Certificações**

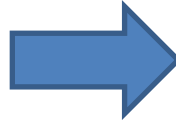
**Credenciais**

**Infraestrutura Física**

(ativos)

**Pessoas**

Buscam

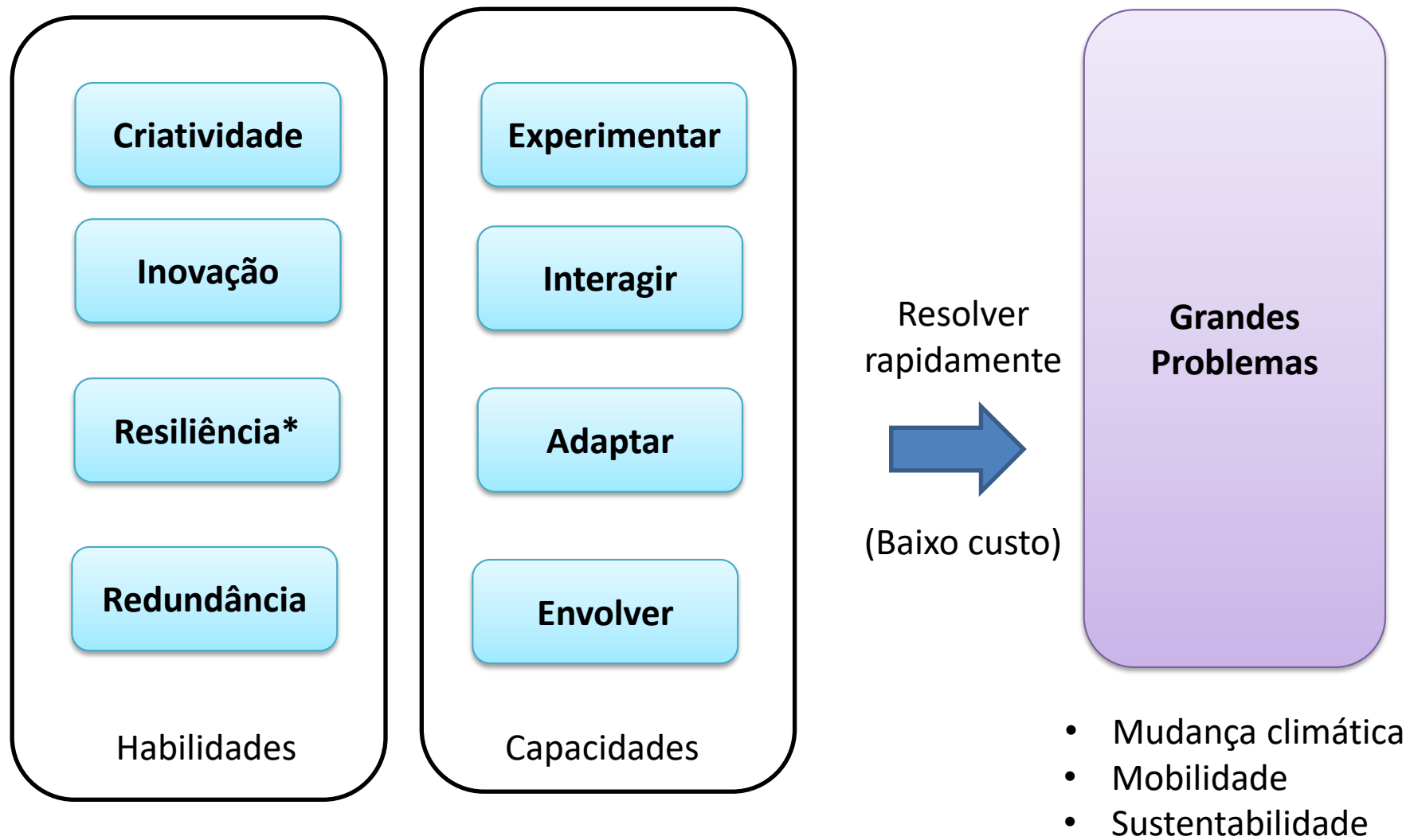


**Carro Próprio**

**Disco Próprio**

(bens)

Velha Economia



(\* ) Adaptação a adversidades, lidar com problemas, superar obstáculos, resistir à pressão.



## Zipcar

- Robin Chase é filha de diplomata americano, viveu em 7 países, estudou em 13 escolas diferentes antes de completar o ensino médio em Alexandria, Egito. Adora experimentar todos os modais possíveis de transporte. Morou por 20 anos em Cambridge, Massachusetts.
- Criou a Zipcar em 1999
- U\$ 50 mil investidor Anjo – construir Website para cadastro de membros, reserva de carro, pagamentos e banco de dados.
- Começou com 4 carros – estacionados próximo às estações de Cambridge e Boston.





- O carro pode ser alugado a partir de **uma hora.**
- Numa locadora o período mínimo é **24 horas.** Por que ?
- Como a Zipcar viabilizou ?



## **Locadora:**

- Tempo para liberação do carro:  
**20 ~ 30 minutos**
- Custo da transação : **R\$ 30 ~ 40**



## Zipcar:

- Tempo para liberação do carro:  
**5 minutos**
- Custo da transação : **Zero** (quase)





## Tecnologias aplicadas:

- **App** : reservar, pagar e gerenciar a conta
- **Back office**: gerenciar usuários, carros e estacionamentos
- **Hardware embarcado**: leitora de cartão, destravamento de portas, módulo de comunicação com central,



1. join



2. reserve



3. unlock



4. drive



### Gas, insurance & daily mileage are on us

We throw in all the fixins: gas, comprehensive insurance, and up to 180 miles/day (Of course if you go antiquing, that armoire is on you.)



### Your very own Zipcard

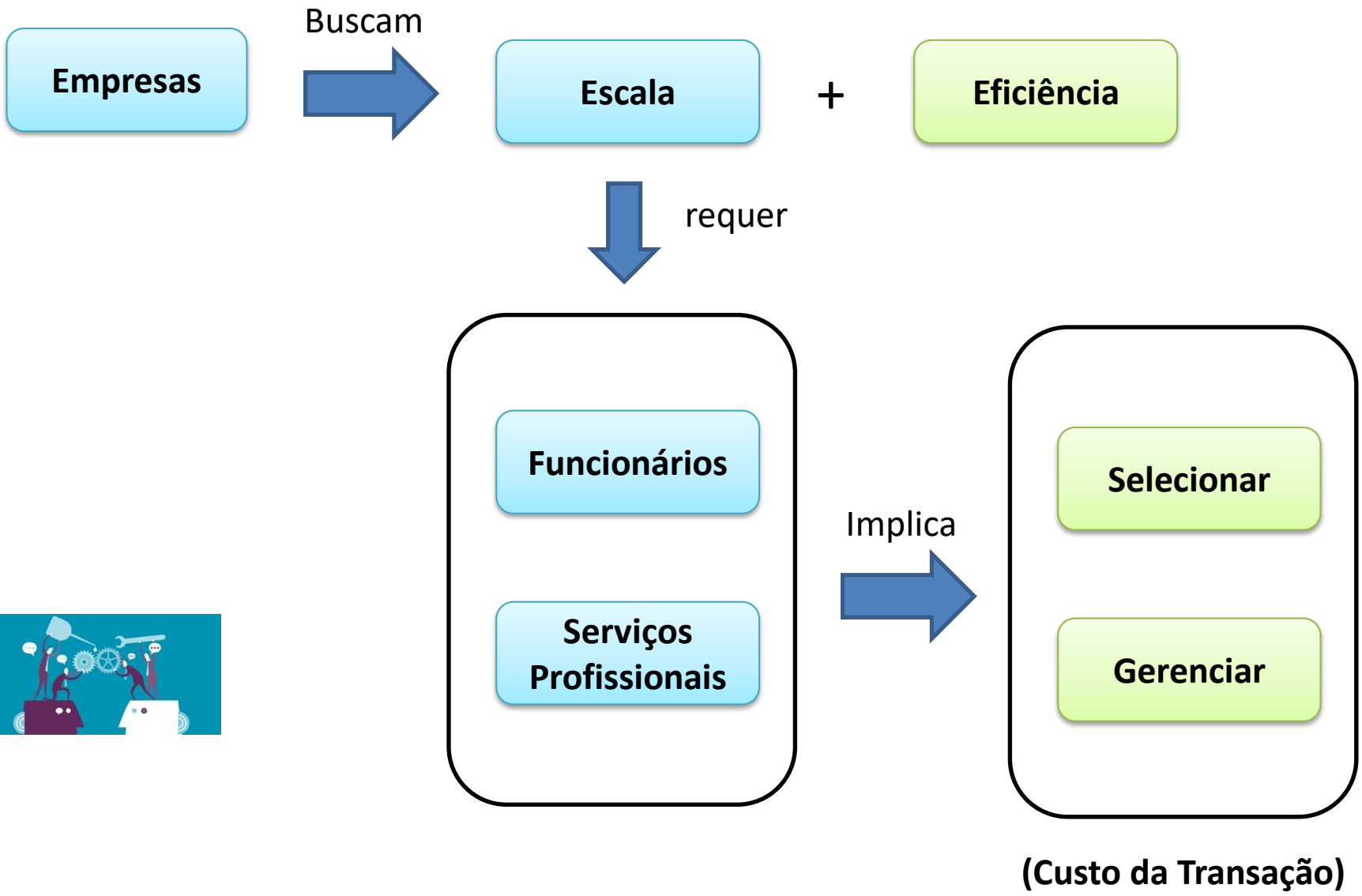
Be a card-carrying Zipster. This magical card unlocks thousands of cars (and **exclusive deals**) in cities around the world.



### The mobile app that makes you mobile

You can find, book, unlock and even honk a car with our mobile app. We've come a long way from carrier pigeons.







**Indivíduos e  
Pequenas Empresas**

**Empresas  
Inovadoras**

**Governos  
Inovadores**

**Colaboração**

**Expertise**

**Ativos**

**Recursos  
Externos**

**Marcas  
Globais**

**Produtos e  
Serviços  
Únicos**



Recursos e capital.  
aspectos complexos,  
padrões, consistência.

**Empresas  
Inovadoras**

**Governos  
Inovadores**

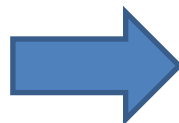
**Indivíduos e  
Pequenas Empresas**

Local, pequena  
escala, customizado,  
esforço especializado

Engajam



Facilitam



**Colaboração**

**Expertise**

**Ativos**

**Recursos  
Externos**



**Marcas  
Globais**

**Produtos e  
Serviços  
Únicos**

Recursos e capital.  
aspectos complexos,  
padrões, consistência.

**Empresas  
Inovadoras**

**Governos  
Inovadores**



**Indivíduos e  
Pequenas Empresas**

Local, pequena  
escala, customizado,  
esforço especializado

Engajam

**Colaboração**

Facilitam

Alavancam

**Expertise**

**Ativos**

**Recursos  
Externos**

(fora de seu  
controle)

Criam

**Marcas  
Globais**

**Produtos e  
Serviços  
Únicos**







**Luis von Ahn**

morning overlooks

Type the two words:



reCAPTCHA™

stop spam.  
read books.



# duolingo

- **60 milhões de usuários**



### Leia, Ouça, Fale

Cada lição inclui diversas questões de conversação, compreensão, tradução e desafios de múltipla escolha.



### Correção na hora

Saiba imediatamente se suas respostas estão certas. Se você errar, mostramos rapidinho como melhorar.



### Contagem de ofensivas

O Duolingo motiva você contando os dias consecutivos que você passa estudando um idioma.



### Corações

Poupe corações para continuar no jogo! Você perde um deles a cada resposta errada. Se eles acabarem, recomece e tente de novo.



[IKEAhackers.net](http://IKEAhackers.net)



Jules Yap (Malaysia)



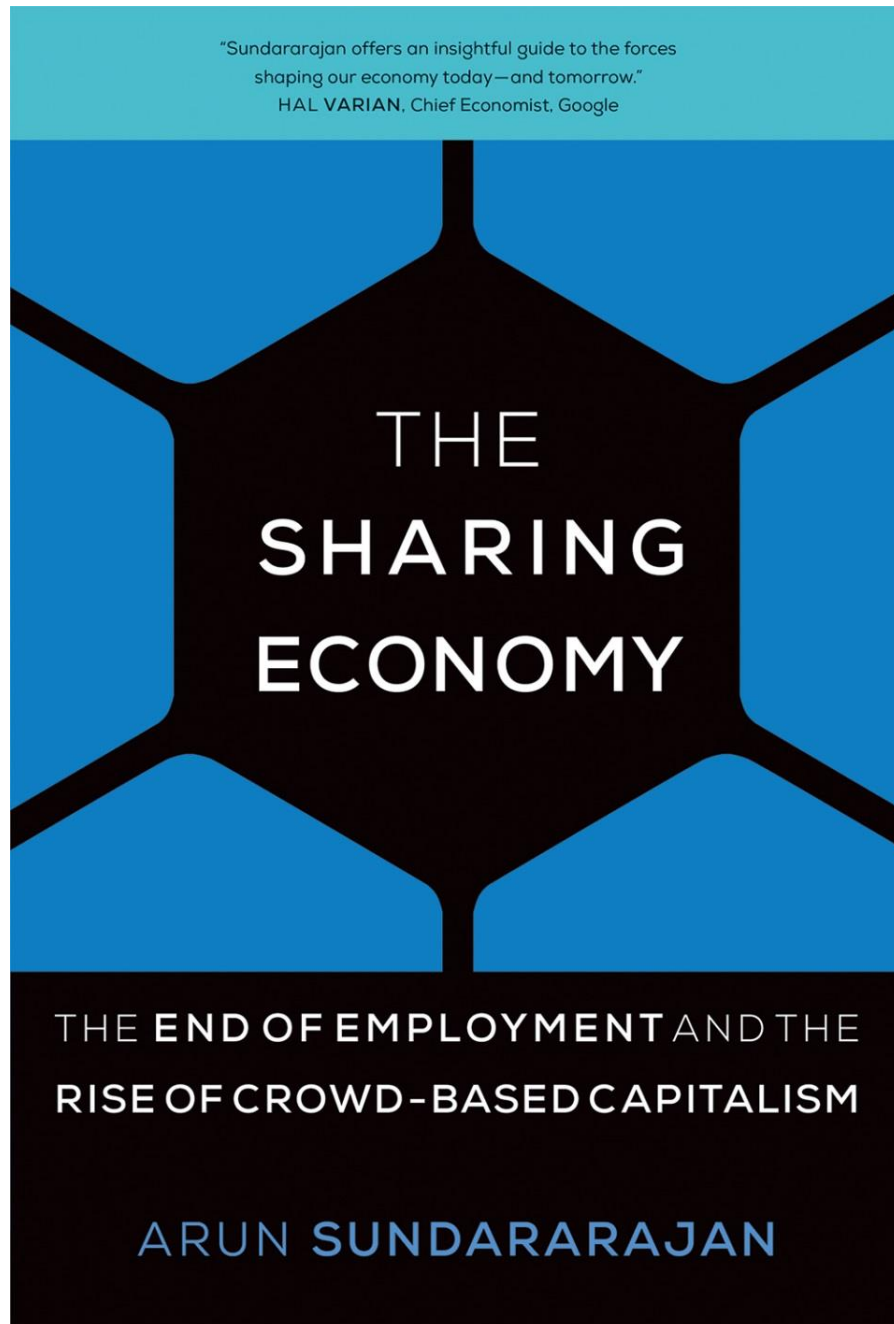
**MINDSTORMS**



Open Brand API



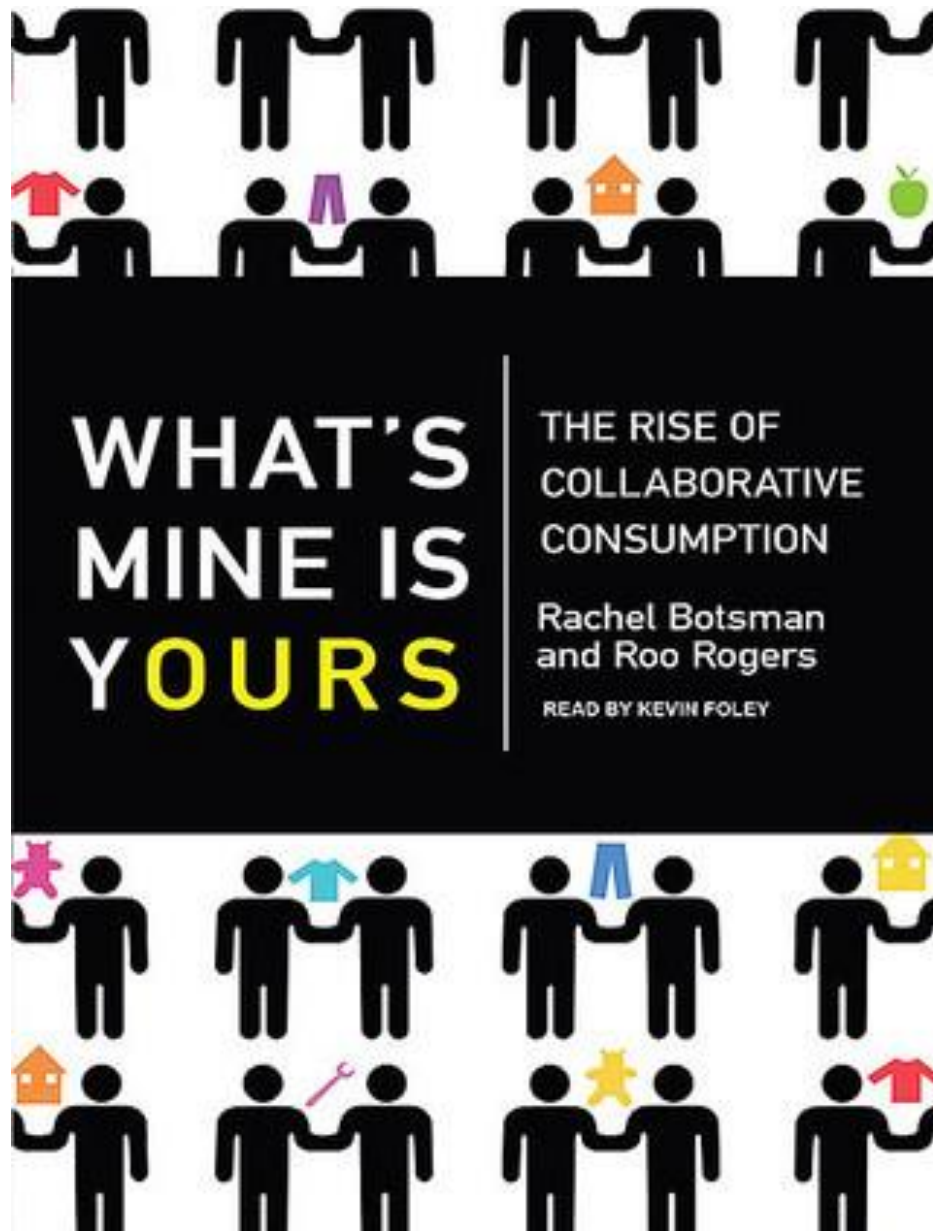
Shapeway - 3D Printing



Prof. Arun  
Sundararaja

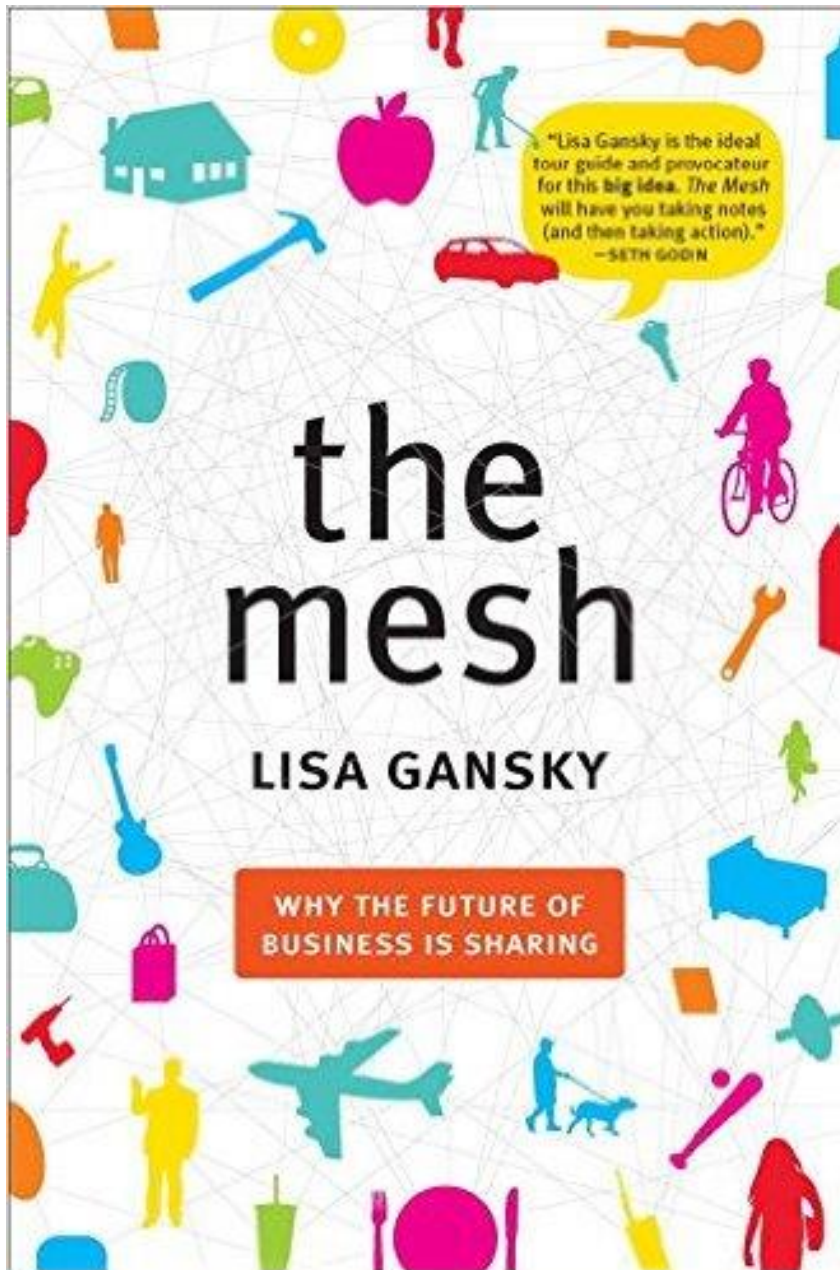
New York University





Rachel Botsman

University of Oxford



Lisa Gansky

Empreendedora



**REFLEXÃO**

# PEERS INC



How People and Platforms are  
Inventing the Collaborative Economy  
*and* Reinventing Capitalism

ROBIN CHASE  
*cofounder of* ZIPCAR



- O que está por trás dessas transformações?
- Qual é a estrutura organizacional ?
- O que significa em termos de emprego e como as pessoas passarão obter renda?
- Quais são os fatores que fazem este paradigma possível?
- Como construir uma plataforma do começo ?
- Qual papel do governo ? Como ele se transformará?
- Como superar os grandes desafios ?
- Como será o futuro?

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**Tel. 3091-5536**