

INTERNET OF THINGS: O QUE TEMOS AGORA E O QUE NOS ESPERA MAIS PRA FRENTE?

Elany Branches
Belo Horizonte, 2019



SOBRE



Elany Branches, 26 anos, Paraense.

Cientista da Computação.

Mestranda em Eng.Elétrica.

Entusiasta da Cultura Maker, Rede de Sensores
sem Fio e IoT.

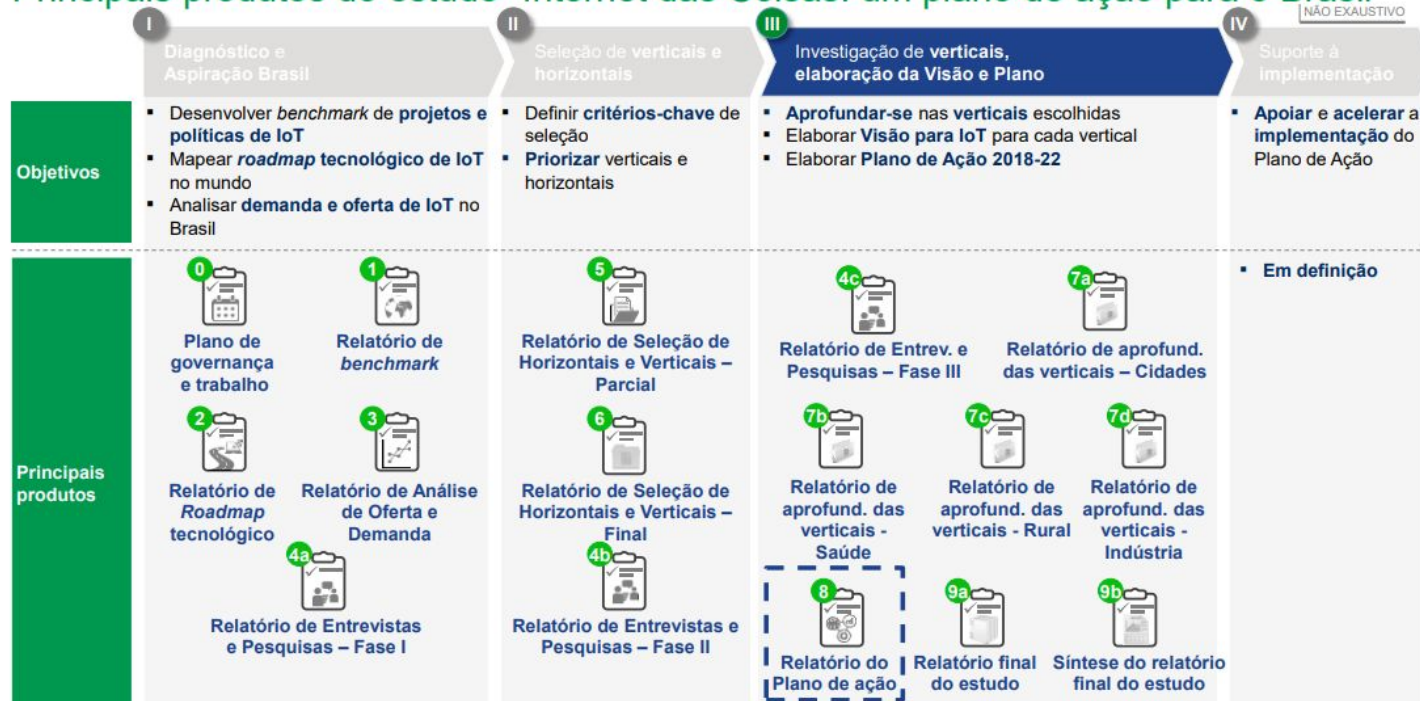
O TERMO "INTERNET OF THINGS"

Mencionado pela 1ª vez em 1999 por Kevin Ashton em uma apresentação para a P&G.



INTERNET OF THINGS

Principais produtos do estudo “Internet das Coisas: um plano de ação para o Brasil”



FONTE: Análise do consórcio

Fonte: [BNDS](#)

INTERNET OF THINGS

Três características de uma solução IoT

Três pré-requisitos:



- **Recebimento de dados** digitais vindos de **sensores** e/ou indo para **atuadores** (por exemplo, sensor de temperatura em um motor).



- **Conexão com uma rede** fora do objeto.



- Capacidade de **processar dados** de forma **automática** (sem intervenção humana).

Cartilha de Cidades

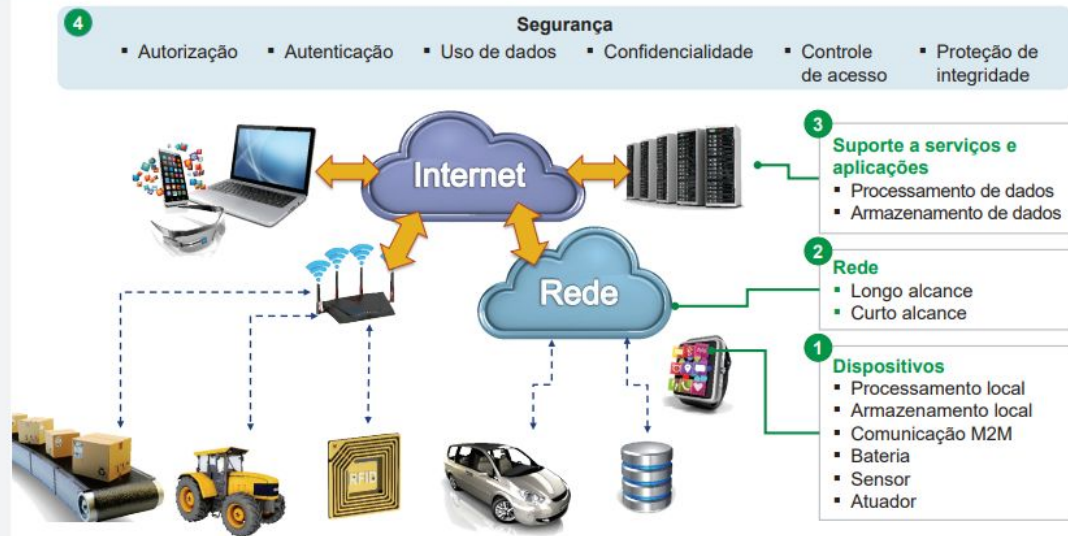


Janeiro de 2018

Fonte: [BNDES](#)

INTERNET OF THINGS

As 4 camadas tecnológicas das soluções de IoT



FONTE: UIT, Análise do cenário

Fonte: **BNDS**

Cartilha de Cidades



Janeiro de 2018

Versão 1.1 - Novembro/2017

Acelerar a implantação da **Internet das Coisas** como instrumento de **desenvolvimento sustentável da sociedade brasileira**, capaz de **aumentar a competitividade da economia**, **fortalecer as cadeias produtivas nacionais**, e **promover a melhoria da qualidade de vida**



Cidades



Saúde



Rural



Indústrias

Elevar a **qualidade de vida** nas cidades por meio da adoção de tecnologias e práticas que viabilizem a **gestão integrada** dos serviços para o cidadão e a melhoria da **mobilidade, segurança pública e uso recursos**

Contribuir para a ampliação do **acesso à saúde de qualidade** no Brasil por meio da criação de uma **visão integrada** dos pacientes, **descentralização** da atenção à saúde, e da **melhoria de eficiência** das unidades de saúde

Aumentar a produtividade e a relevância do Brasil no comércio mundial de produtos agropecuários, com elevada qualidade e sustentabilidade sócio-ambiental, por meio do uso difundido do IoT no campo e posicionar o Brasil como o maior exportador de soluções de IoT para agropecuária tropical

Incentivar a produção de itens mais complexos e aumentar a produtividade da indústria nacional a partir de modelos de negócios inovadores e da maior cooperação nas diversas cadeias produtivas




Mobilidade



Doenças crônicas



 **Uso eficiente de recursos naturales e insumos**



Recursos e processos



Segurança pública



Promoção e Prevenção



Uso eficiente maquinário



Bens de capital



Eficiência energética e saneamento



✓ Eficiência de gestão



3 Segurança sanitária



Estoque



Inovação



Inovação



Inovação



Inovação

Fonte: BNDS

FONTE: Fóruns de engajamento do estudo, discussões com BNDES/MCTIC e análise do consórcio

INTERNET OF THINGS

“Até 2025, IoT terá um impacto econômico maior do que a robótica avançada, tecnologias cloud e até mesmo que a internet móvel.”

O impacto esperado no Brasil é que seja cerca de 10% do PIB.

Produto 8: Relatório do Plano de Ação

Iniciativas e Projetos Mobilizadores

2017

Versão 1.1 - Novembro/2017

Fonte: **BNDS**

BARCELONA, Spain, November 7, 2018



Gartner Identifies Top 10 Strategic IoT Technologies and Trends


Analysts Explore Internet of Things Opportunities and Pitfalls at Gartner Symposium/ITxpo 2018, November 4-8 in Barcelona, Spain

Gartner, Inc. today highlighted the top strategic [Internet of Things](#) (IoT) technology trends* that will drive [digital business](#) innovation from 2018 through 2023.

"The IoT will continue to deliver new opportunities for digital business innovation for the next decade, many of which will be enabled by new or improved technologies," said [Nick Jones](#), research vice president at Gartner. "CIOs who master innovative IoT trends have the opportunity to lead digital innovation in their business."

In addition, CIOs should ensure they have the necessary skills and partners to support key emerging IoT trends and technologies, as, by 2023, the average CIO will be responsible for more than three times as many endpoints as this year.

Analysts discussed how CIOs can lead their businesses to discover IoT opportunities and make



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Gartner forecasts that 14.2 billion connected things will be in use in 2019, and that the total will reach 25 billion by 2021, producing immense volume of data. "Data is the fuel that powers the IoT and the organization's ability to derive meaning from it will define their long term success," said Mr. Jones. "AI will be applied to a wide range of IoT information, including video, still images, speech, network traffic activity and sensor data."

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Last year's Gartner survey of IoT projects showed 35 percent of respondents were selling or planning to sell data collected by their products and services. The theory of infonomics takes this monetization of data further by seeing it as a strategic business asset to be recorded in the company accounts. By 2023, the buying and selling of IoT data will become an essential part of many IoT systems. CIOs must educate their organizations on the risks and opportunities related to data broking in order to set the IT policies required in this area and to advise other parts of the organization.

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The sensor market will evolve continuously through 2023. New sensors will enable a wider range of situations and events to be detected, current sensors will fall in price to become more affordable or will be packaged in new ways to support new applications, and new algorithms will emerge to deduce more information from current sensor technologies. CIOs should ensure their teams are monitoring sensor innovations to identify those that might assist new opportunities and business innovation.

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Who's Monitoring Our Heritage? Preserving Historic Buildings with the IoT



Sarah McMillian, Product Outreach

1 month ago



Protecting Historic Buildings with the IoT

On April 15, 2019, at approximately 3:00 in the afternoon, a structural fire broke out beneath the roof of the Notre-Dame Cathedral in Paris.

The tragic fire caused the main spire and roof of the building to collapse, causing extensive damage that will take a long time and considerable costs to repair.

Fonte: [Temboo](#)

Who's Monitoring Our Heritage? Preserving Historic Buildings with the IoT



Sarah McMillan

The Torre Aquila

The exterior of the Torre Aquila may be demure, but inside are the brilliantly painted frescos, the "the Cycle of the Months." The painted walls offer insight into life in the region during the 14th century, and attract thousands of visitors each year ([Buonconsiglio](#)).



A scene from the Cycle of the Months Frescos. Photo courtesy of Provincia Autonoma di Trento.

On April 15, 2019,
Notre-Dame Cathedra

The project started when the Municipality of Trento, where the Torre Aquila is located, submitted a proposal to build a road tunnel near the tower.

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The initial construction, compounded by the pollution and vibration from the cars that followed, posed a threat to the structure and the frescos inside. The looming danger **motivated the tower's manager to install a monitoring system that would warn them of adverse conditions** ([Zonta et al.](#)).



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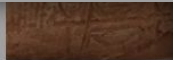
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The Conservancy preferred a wireless sensor network instead of a cable-based network because cables would detract from the space's allure. They installed three types of sensors: deformation sensors, environmental sensors (temperature, humidity, light), and accelerometers. A research team custom designed all of the sensors to meet the special battery and lifespan requirements of the building.



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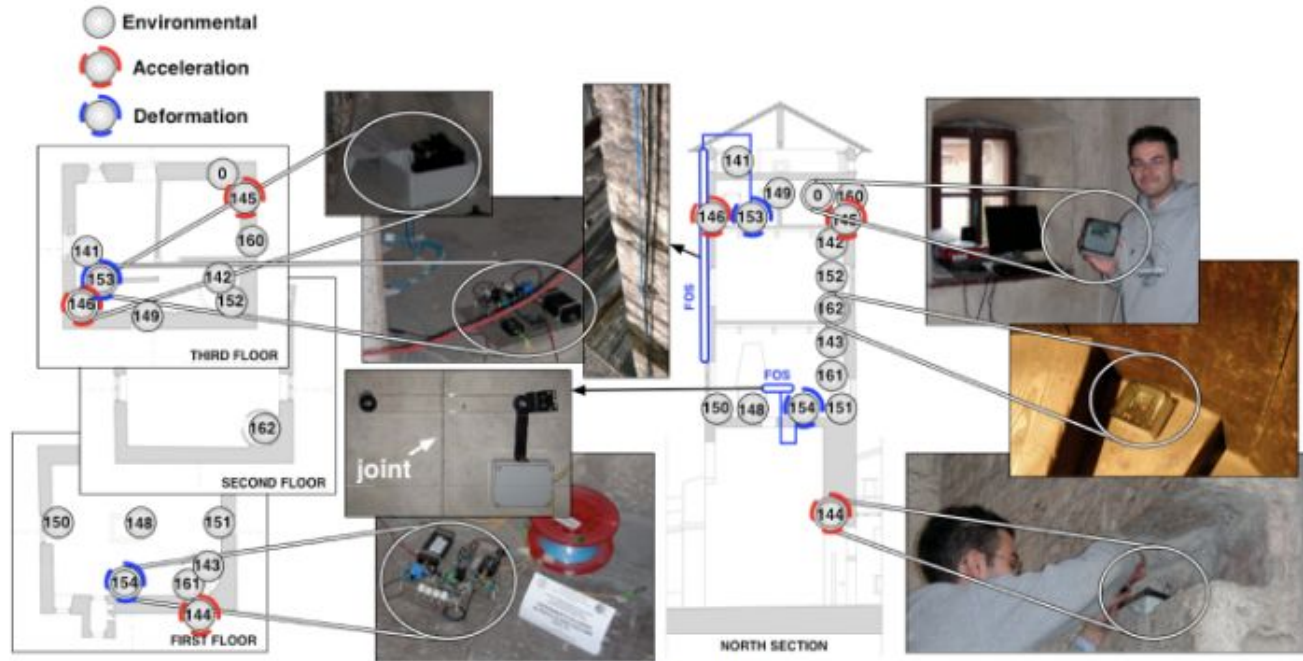
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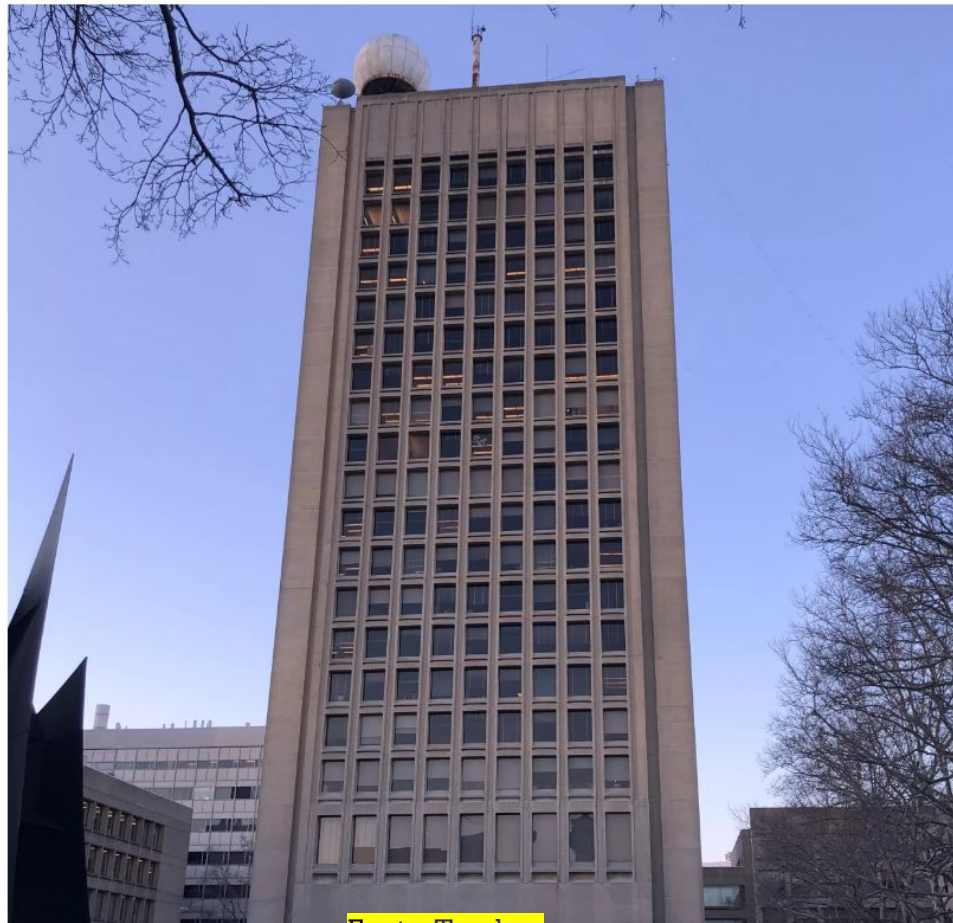
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The MIT Green Building

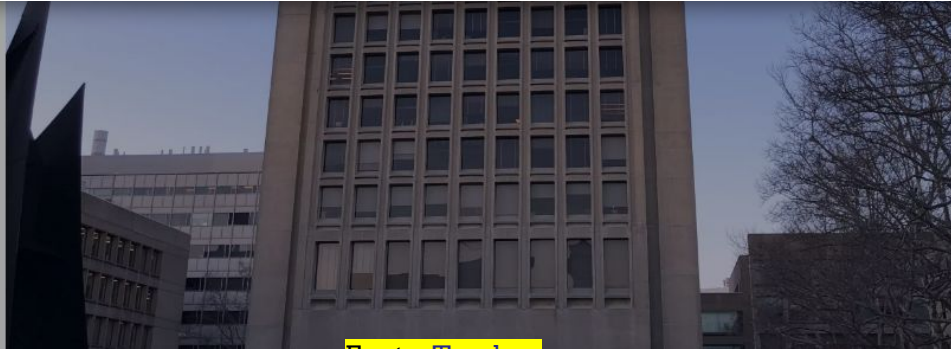


Fonte: [Temboo](#)

The MIT Green Building



They developed a monitoring system that collected data from 36 accelerometers spread throughout the building, and combined it with weather data, such as wind speed. They plugged that data into a high-fidelity finite element model that incorporated other relevant variables, such as “the strength and density of concrete walls, slabs, beams, and stairs in each floor ([MIT News](#)).”



Fonte: [Temboo](#)

THE INTERNET OF THINGS



Fonte: [Gartner](#)



Obrigada!

