

ARTIFICIAL INTELLIGENCE FOR TELECOM MARKET



LAUDE TECH

Germán Giner Pellicer

Key Account Manager

+34 670 557 541

german.giner@laude.tech

C/ Julian Camarillo 42

28037 Madrid



LAUDE TECH

Roberto Sanchez

CTO

roberto.sanchez@laude.tech

C/ Julian Camarillo 42

28037 Madrid

“Making your life easier...”

April 2024

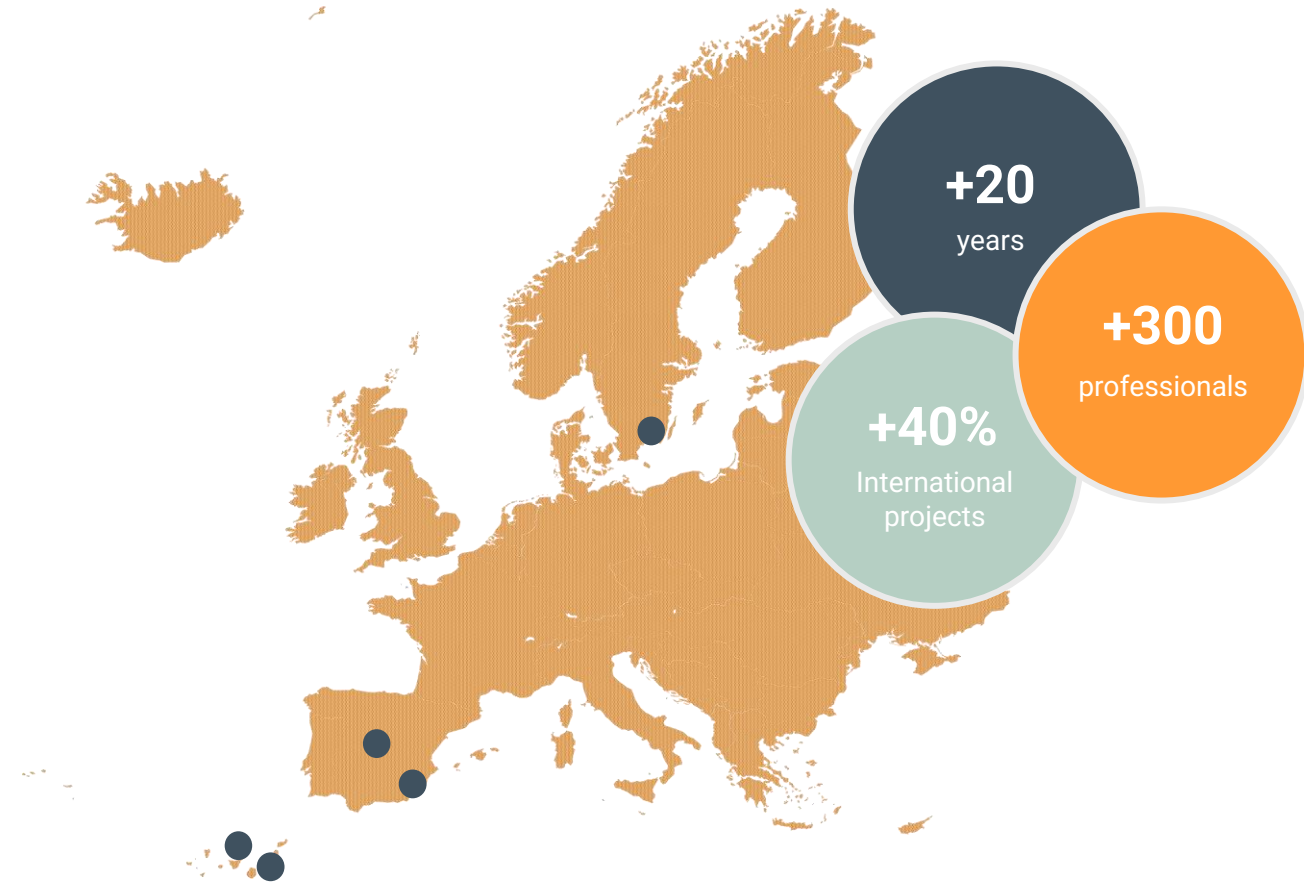


ABOUT LAUDE

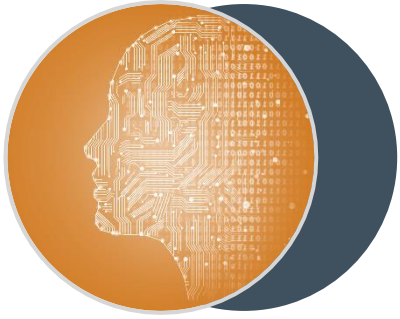
LAUDE aims to be one of the leading providers of digital solutions and services in the next decade.

We are the result of the unification of the portfolio of several companies with recognized trajectory in their markets. Together we combine **more than 20 years of experience, more than 300 expert professionals and more than 40% of the projects in Europe and America.**

LAUDE is created to provide a combined answer to the market demands about Cloudification, Automation, Data Analytics, Security and, of course, Artificial Intelligence. We help businesses to **leverage the power of technology to drive innovation and growth.** LAUDE has a proven track record in executing successful projects for clients in the areas of **Telecommunications, Finance, Industry, Public Administration, Energy and Utilities.**



- *Madrid*
- *Málaga*
- *Estocolmo*
- *Las Palmas de Gran Canaria*
- *Santa Cruz de Tenerife*



Artificial intelligence is the simulation of human intelligence processes by computer systems. AI is able of performing complex tasks that historically only a human could do. Specific applications of AI include expert systems as natural language processing, speech recognition and image recognition. It is important to remark that AI is not truly intelligent but rather well-trained to perform specific tasks within a predetermined set of parameters.



From Turing Tests to ChatGPT. In 1950 Alan Turing published his work “Computer Machinery and Intelligence”. Turing Tests propose that a human evaluator judge natural language conversations between a human and a machine designed to generate human-like responses. Seventy-two years later, Samuel H. Altman and OpenAI launched ChatGPT. ChatGPT, able to chat and answer any user question based on internet information, produced a revolution worldwide.

AI components:

- 1) Tools: Image recognition, speech recognition, natural language processing, and intention analysis.
- 2) AI Algorithms: Deep learning, machine learning, and neural networks.
- 3) SW & HW: GPUs, parallel processors, cloud and/or computer platforms, etc
- 4) Programming languages: Python, Rust, Java, C, etc



DATA, LIFEBOOD OF AI

Data is the most fundamental component of artificial intelligence.
 AI is useless without clean and quality data.



The learning process depends on the quantity and quality of data available

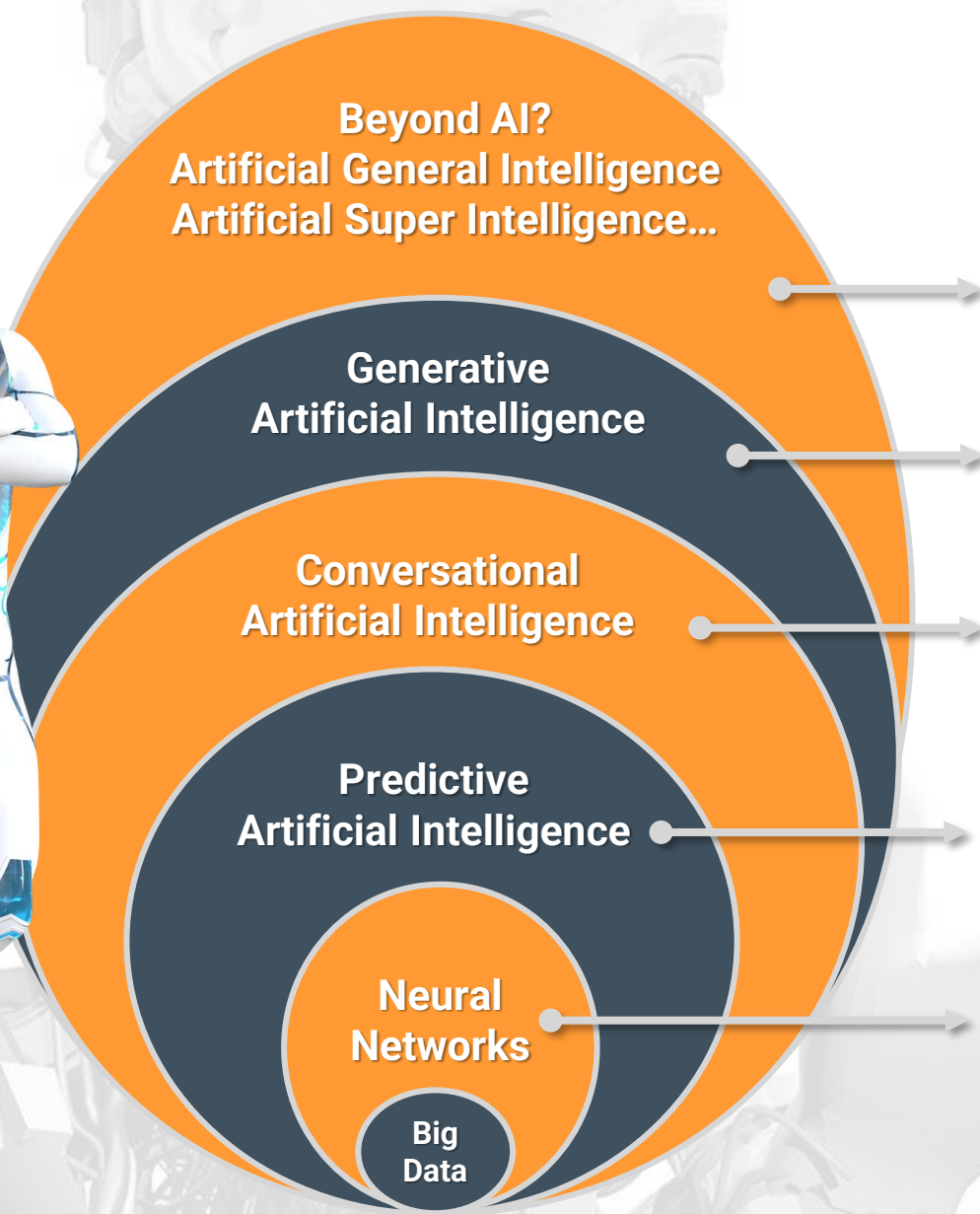
Data quality directly affects results quality. Prepare data often takes up 70% of the project time..

Appropriate algorithm must be chosen. It is an extremely complex mathematical process but available in the form of well-known algorithms to select and configure.

Result quality evaluation determines whether we should go back at any stage or continue.

Solution is ready to work on new data and real cases. It is important a continuous monitoring of the results





Artificial General Intelligence (AGI) is a type of artificial intelligence that can perform as well or better than humans on a wide range of cognitive tasks, as opposed to Artificial Narrow Intelligence (ANI), which is designed for specific tasks and operate under a limited set of constraints. Most of the current existing AI systems are considered ANI. **Almost any ANI can be adapted with minimal training for targeted domains, as Telecom scenarios.**

Artificial Super Intelligence (ASI) is a hypothetical software-based artificial intelligence system with an intellectual scope beyond human intelligence. At the most fundamental level, this superintelligent AI has cutting-edge cognitive functions and highly developed thinking skills more advanced than any human...

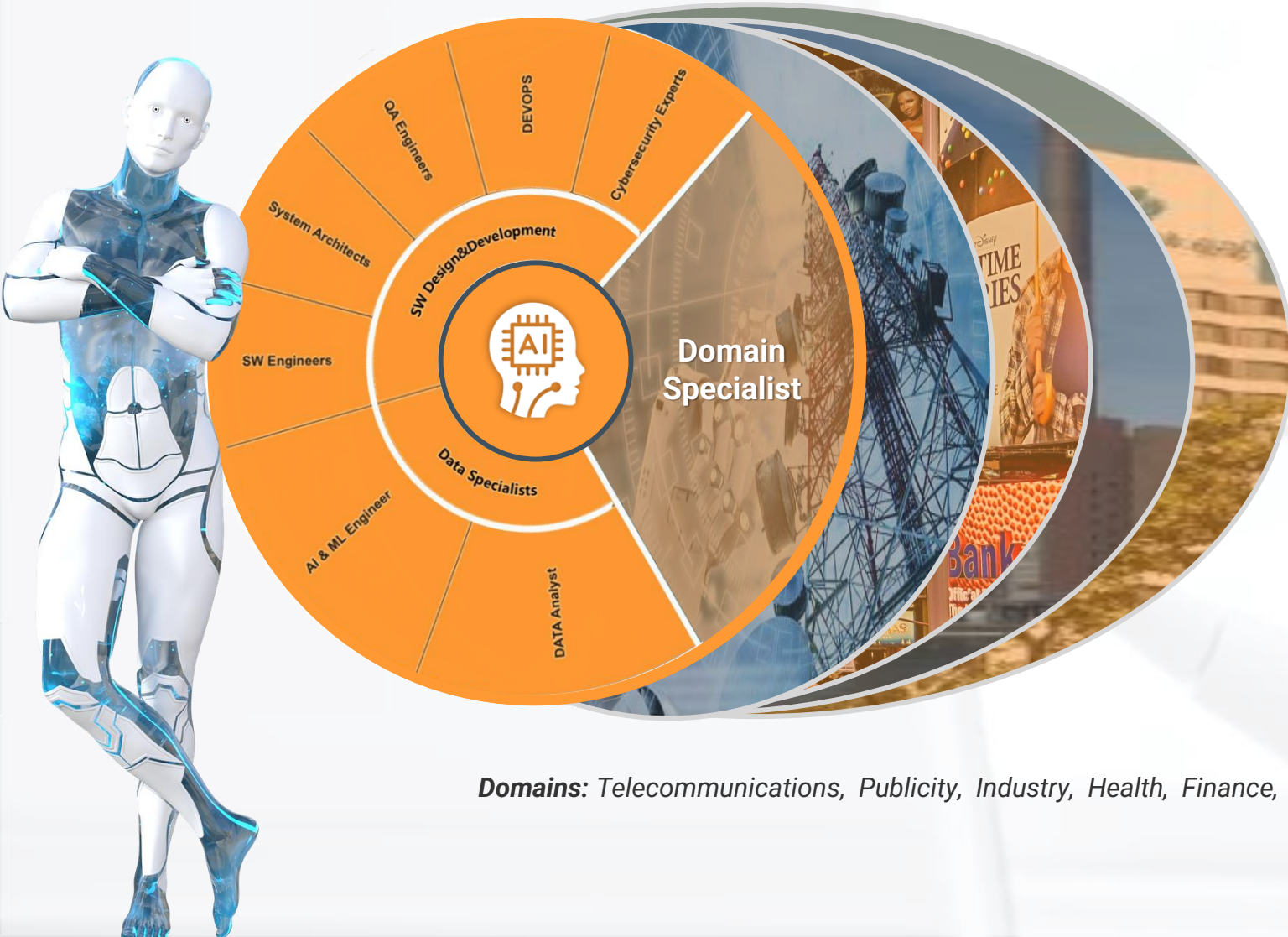
Generative Artificial Intelligence (Gen-AI) refers to the use of AI to create new content, like text, images, music, audio, and videos. Generative AI is powered by foundation models (large AI models) that can multi-task and perform out-of-the-box tasks, including summarization, Q&A, classification, and more.

Conversational Artificial Intelligence (Con-AI) is a type of artificial intelligence that can simulate human conversation. It is made possible by natural language processing (NLP) and large language model (LLM).

Predictive Artificial Intelligence (Pre-AI) refers to the use of machine learning to identify patterns in past events and make predictions about future events. **Machine Learning (ML)** is a subfield of artificial intelligence, which is broadly defined as the capability of a machine to imitate intelligent human behavior. **Example of use case: predictive maintenance applications based on network performance data**

Artificial Neural Network (NN) attempts to mimic the human brain through a combination of data inputs, weights, and bias. **Deep learning (DL)** networks learn by discovering intricate structures in the data provided. DL & ANN work together to accurately recognize, classify, and describe objects within the data. **E.g. use case: network element recognition.**

ARTIFICIAL INTELLIGENCE DEVELOPMENT



Artificial Intelligence Engineers are responsible for developing, programming and training the complex networks of algorithms that make up AI so that they can function like a human brain.

This role requires combined expertise in:

- 1) **SW Design and Development**, which is formed by Software engineers, System architects, Quality Assurance engineers, DevOPs wngineers, and Cybersecurity experts.
- 2) **Data Specialists**, which is formed by Artificial Intelligence and Machine Learning engineers, and Data Analysts
- 3) **Domain Specialist**, specialist of the technical area where the software will act, as for instance, **Telecommunications**

Domains: Telecommunications, Publicity, Industry, Health, Finance, Gaming ...

AI FOR TELECOM USE CASES

1. Customer Service



Con-AI Gen-AI

2. Sales & Marketing



Gen-AI Pre-AI

3. Network Operations



Pre-AI

4. Software Development



Gen-AI

5. Support Functions



Con-AI Gen-AI
Pre-AI

AI FOR TELECOM: USE CASES

1. Customer Service

In customer service, where the technology can vastly improve customer experience, increase agent productivity, and enable fully digital interactions.

A Latin American telco is enhancing its customer service **AI chatbots to improve agent support, a move it anticipates will reduce costs by 15 to 20%.**

A European telco uses **AI to summarize voice and written client interactions, associated costs are reduced 80%.**

Customer Service Chatbot.

Interpreting and responding to customer queries and requests in a human-like conversational manner.

Predictive Customer Service

Use AI to anticipate customer issues and address them proactively.

Contact Center Documentation.

Generate transcription of calls, summarize customer interactions and suggest follow-up actions.

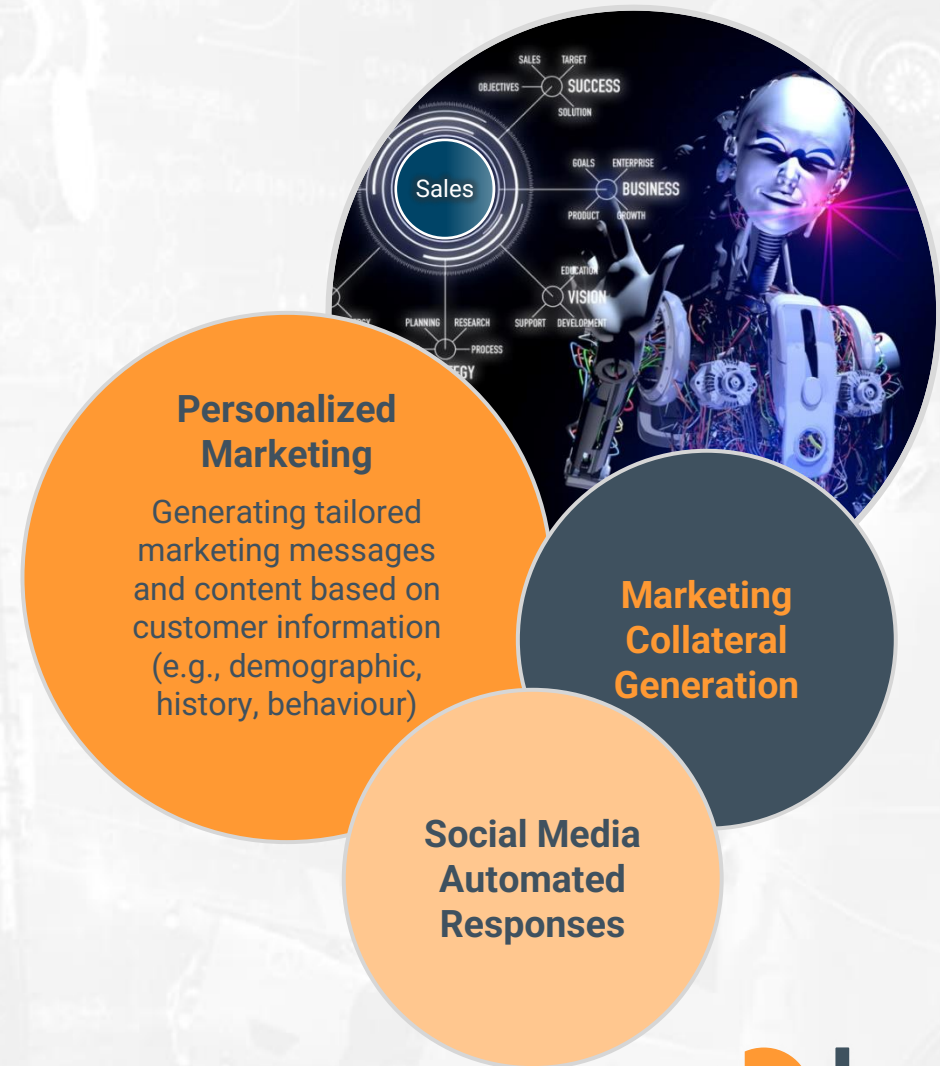


AI FOR TELECOM: USE CASES

2. Sales and Marketing

In sales and marketing, where AI enables hyperpersonalization, deeper customer insights, and faster content generation.

A European telco is using AI to identify new sales leads from customer calls, with its pilot project achieving a more than 10% conversion rate. The company can now also create personalized messages and visual media to target individual customer microsegments. To do this, the telco feeds a Gen AI model standard marketing messages, customer data (including household details, type of phone they use, and where they live), and cognitive biases (for example, whether the customer would be more receptive to messaging that evokes scarcity, such as a limited time offer, or emphasizes authority, such as endorsements, awards, and industry experience).

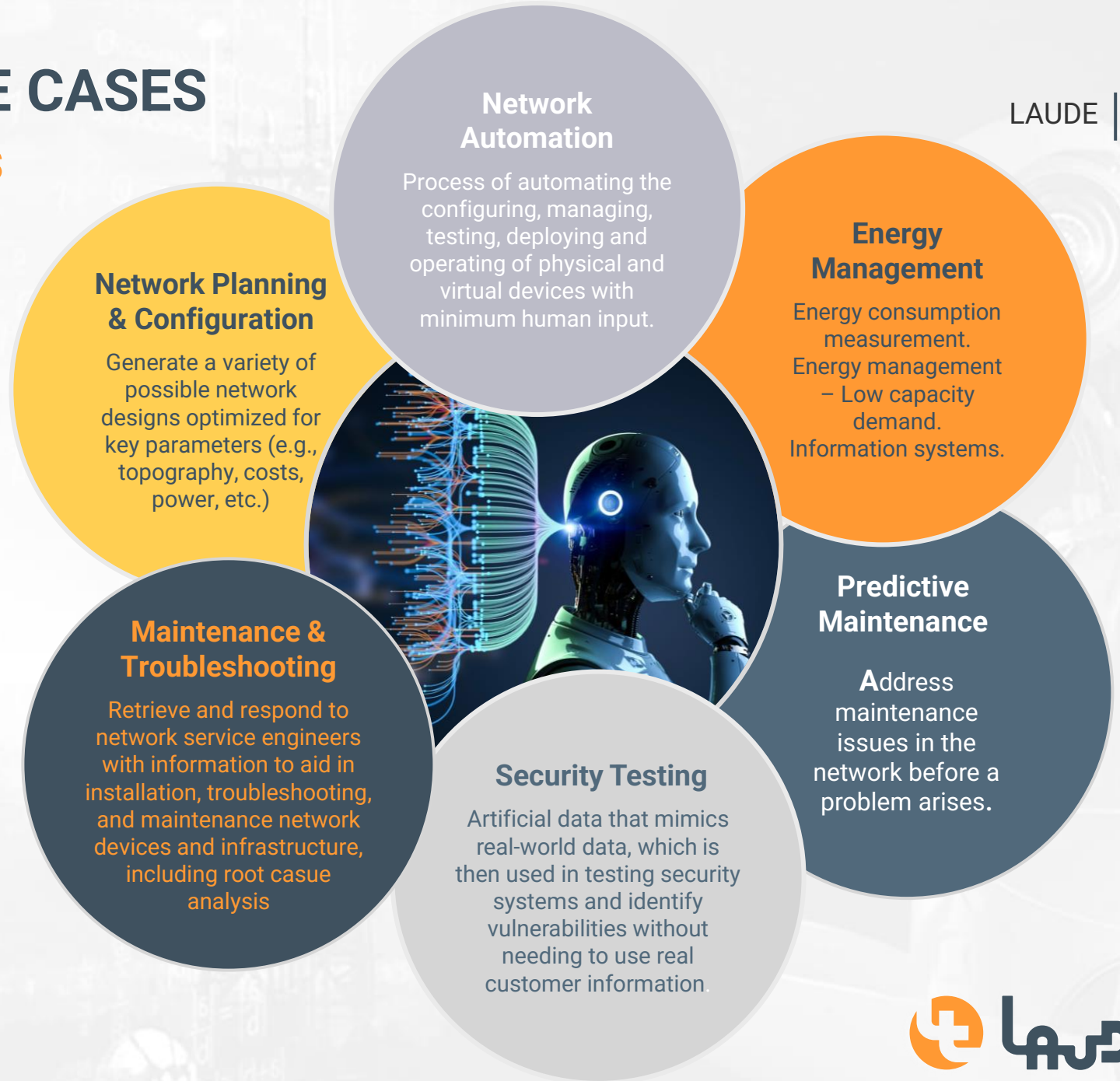


AI FOR TELECOM: USE CASES

3. Network Operations

In network operations, AI can optimize technology configurations, enhance labor productivity, extract customer insights from social media, and improve inventory and network planning and management through the ability to mine unstructured data.

One large telco is using the technology to accelerate network mapping by analyzing and structuring data about network components, including specifications and maintenance information, from supplier contracts. This will enable the telco to more accurately assess component compatibility, maintenance requirements, and more—an effort anticipated to improve operational planning and optimize capital productivity. **Network operation uses cases supposes 45% of the AI applications.**

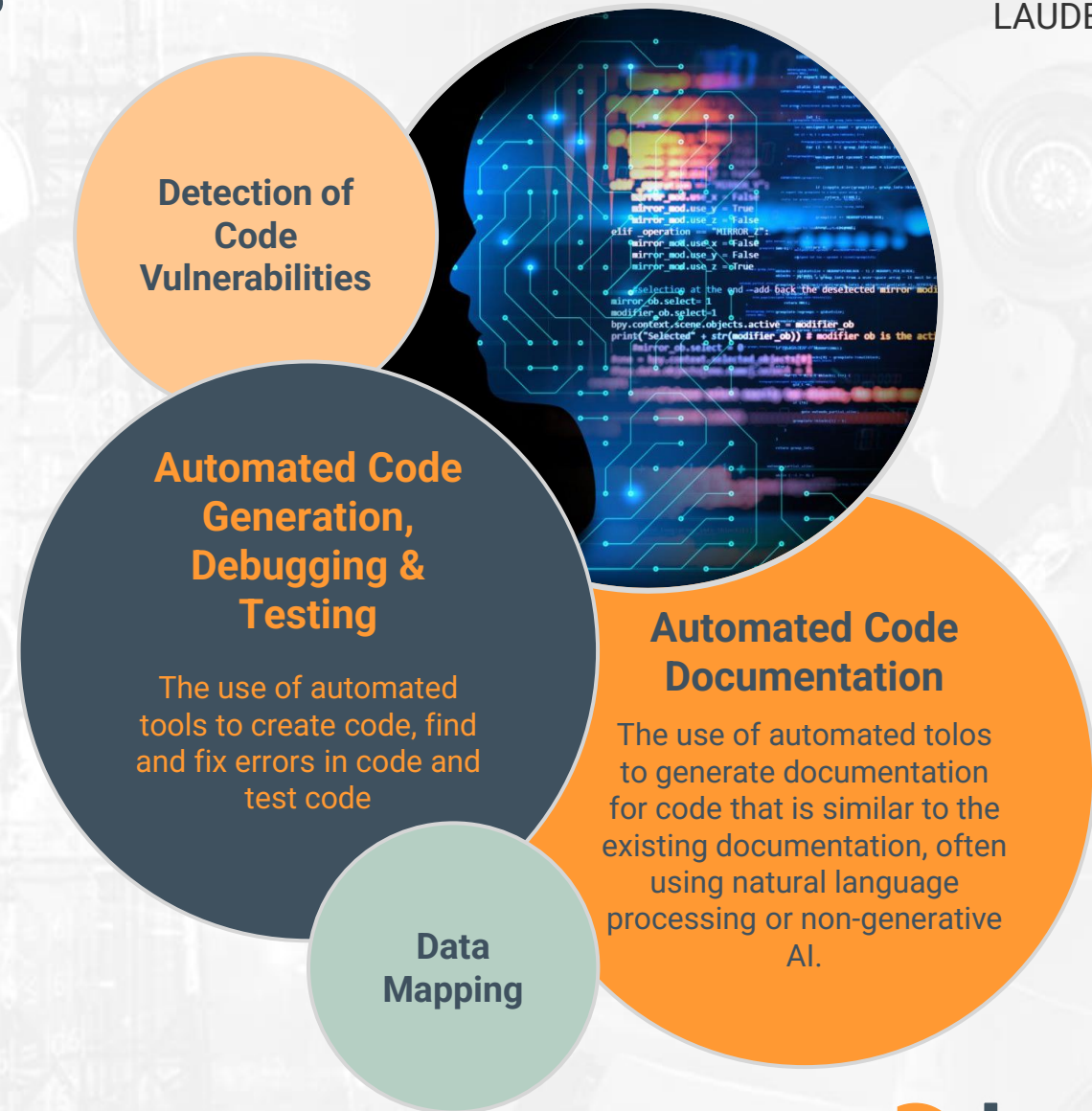


AI FOR TELECOM: USE CASES

4. Software Development

In IT, where the technology can accelerate software migrations and development, AI offers telcos a path to reduce their mounting technical debt and enable capabilities previously deferred because of time and resource constraints.

Organizations are applying AI to streamline the entire software life cycle, from documenting how a new product, feature, or service will be perceived by end users to generating and scanning code for vulnerabilities before launch. One McKinsey study found that **software developers can complete coding tasks up to twice as fast with gen AI.**



AI FOR TELECOM: USE CASES

5. Support Functions

In support functions, where AI will reduce the costs associated with back-office operations and improve employee productivity.

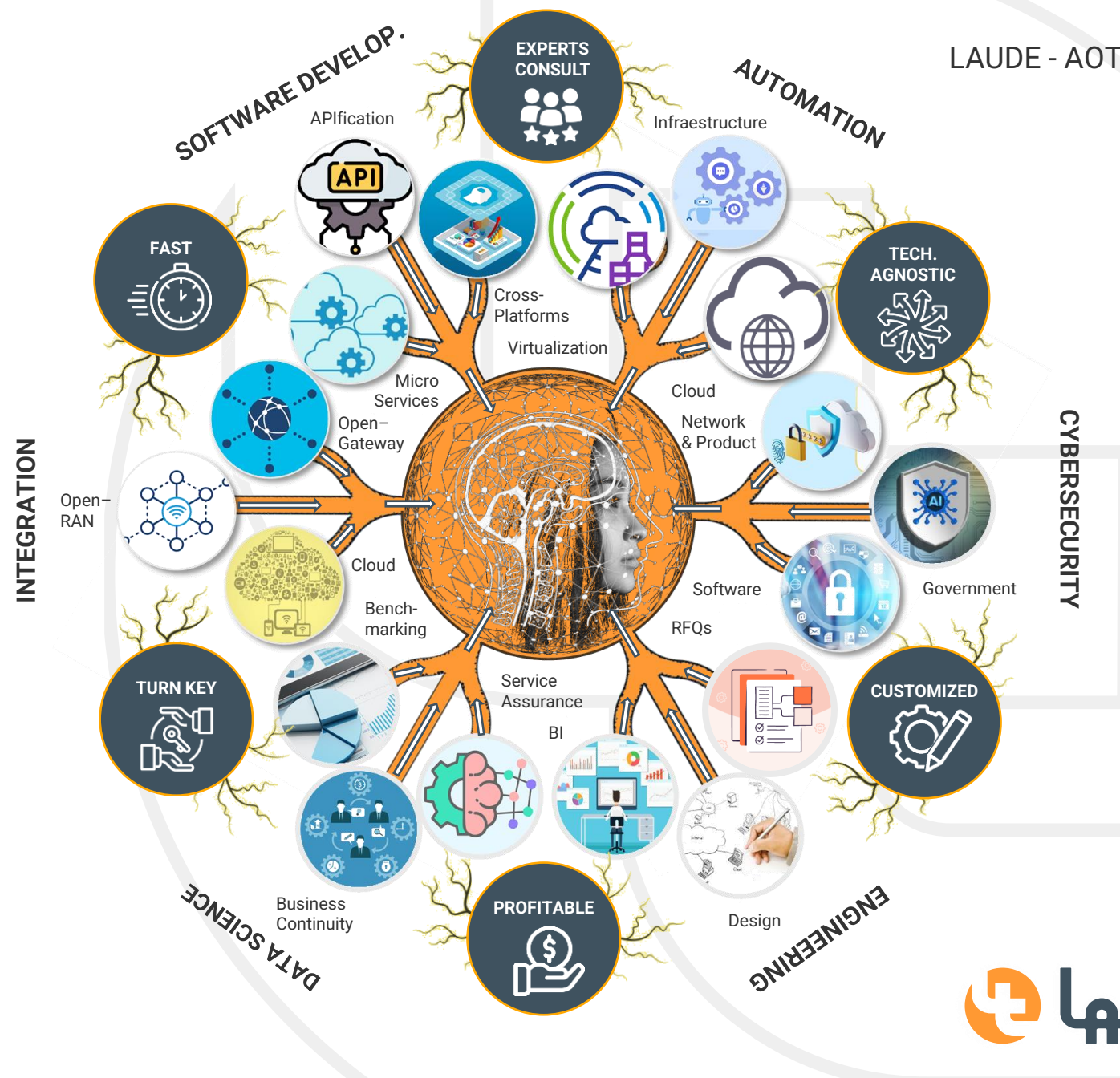
A European telco uses the technology in a number of ways, including shortening procurement analysis and negotiation strategy insights from weeks to a few hours, reducing recruiting costs with automated screening and recommendations, improving employee productivity using internal gen chatbots and copilots, and automating most internal content generation. Combined, **the company anticipates these efforts will improve employee productivity by 30%**



ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is the natural convergent answer to the markets demands of the services provided by LAUDE for 20 years: software development, technology integration, systems automation, cybersecurity, engineering and data science.

LAUDE can help you take advantage of AI in an easy and fast way...



AI DEMO FOR TELECOM MARKET

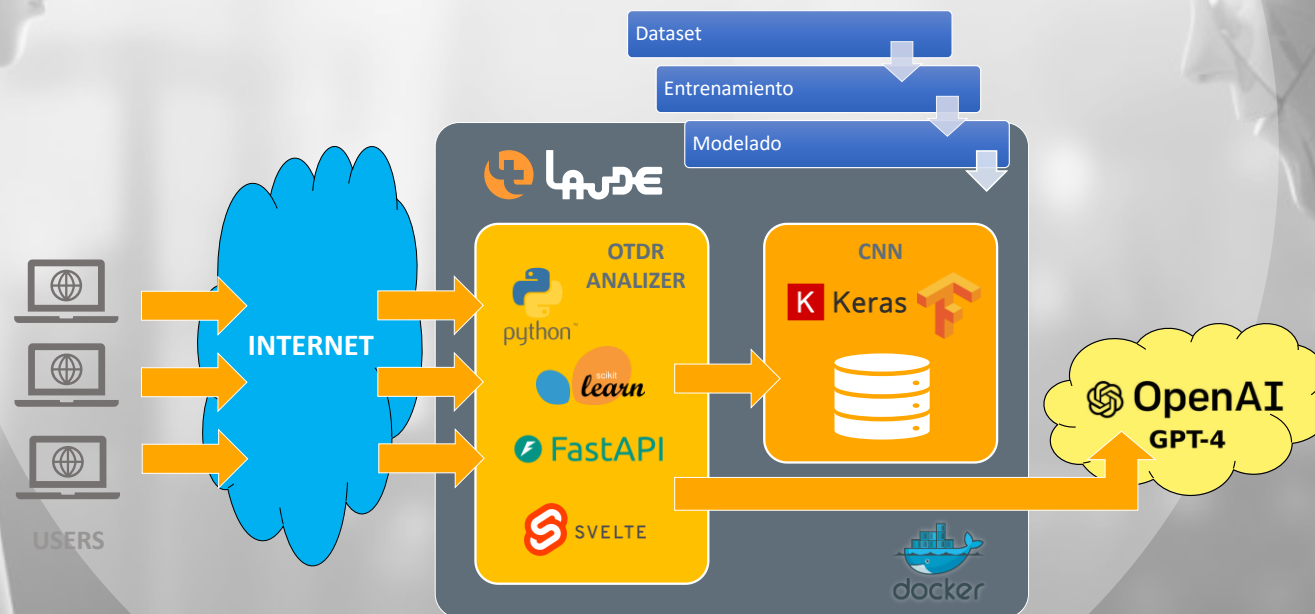
AI-powered Predictive tool to detect Fiber Optics faults in OTDR log traces based on Machine Learning models built with Neural Networks.

The core of the tool is a Convolutional Neural Network (CNN), trained with a data set created from OTDR traces with real incidents. The dataset detects up to 8 types of problem categories from the information recorded in OTDR traces:

Normal / Normal	—
Fiber Tapping / Interferencia	— —
Bad Splice / Mal empalme	—┐
Bending event / Dobladura	—└
Dirty connector / Conector sucio	—●—
Fiber Cut / Corte	— —
Reflector	—■

AI DEMO FOR TELECOM MARKET

AI-powered Predictive tool to detect Fiber Optics faults in OTDR log traces based on Machine Learning models built with Neural Networks.



AI DEMO FOR TELECOM MARKET

AI-powered Predictive tool to detect Fiber Optics faults in OTDR log traces based on Machine Learning models built with Neural Networks.

*DEMO
START*



Applied Technology Knowledge

Digital Services
more Agile,
Innovative and
Human-Centered

Thank you!

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