

Connecting ideas, anticipating the future:
collaborative innovation for 5G and 6G networks.

II INTERNATIONAL WORKSHOP xGMobile

Organized by:

xGMobile
Centro de Competência EMBRAPA
em redes 5G e 6G

Inatel

FAPEMIG

EMBRAP
Instituto de Pesquisa em
Ciência e Tecnologia

**GOVERNO
DE MINAS**
AQUI O TREM PROSPERA.

MINISTÉRIO DA
CIÊNCIA, TECNOLOGIA
E INOVAÇÃO

GOVERNO DO
BRASIL
DO LADO DO POVO BRASILEIRO

Funding the future of mobile networks in Brazil

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Centro de Competência EMBRAPII
Mobile em Pesquisa, Inovação e Negócios

Inatel

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EMBRAPII

Empresa Brasileira de Pesquisa
e Inovação Industrial

BRAZILIAN COMPANY FOR INDUSTRIAL RESEARCH AND INNOVATION

MINISTÉRIO DO
DESENVOLVIMENTO
INDÚSTRIA, COMÉRCIO
E SERVIÇOS

MINISTÉRIO DA
SAÚDE

MINISTÉRIO DA
EDUCAÇÃO

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Industrial Innovation Specialist at EMBRAPII, author of the operational model for the EMBRAPII Competence Centers

Guest Lecturer at Fundação Dom Cabral, contributing to executive programs in Innovation, Digital Transformation, Business Digitalization, and Innovative Leadership

Member of the technical group that designed Brazilian National Strategy for Quantum Technologies

Contributor to Brazilian national policies such as the National IoT Plan, the ICT Law, and the National Policy on Communications Security and Privacy

Board member of the EMBRAPII Competence Centers QULIN (Quantum Technologies) and xGMobile (5G/6G Networks), advising on strategic innovation and industrial competitiveness

Member of the judging panel for Brazil's 100 Most Innovative Companies Award (2020 to 2025)

Member of the judging panel that selected Brazil's most innovative Deep Tech startups in 2025

Supporting

INNOVATION IN COMPANIES

through partnerships with Brazil's
leading Research and Technological
Development Centers.



Embrapii Unit

Look at the present

- ↳ Respond to what industry needs today.
- ↳ Turn demands into solutions (market-pull/demand-pull)
- ↳ Where knowledge becomes immediate impact
- ↳ Technology moving from TRL 3 to 6
- ↳ R&D&I projects with short and medium-term results
- ↳ Non-reimbursable funds with industry co-funding

Embrapii Units respond to demand

Competence Center

Look at the future

- ↳ Create the capabilities industry will need.
- ↳ Tackle strategic challenges (technology-push/knowledge-push)
- ↳ Where knowledge becomes tomorrow's breakthroughs
- ↳ Push frontiers (TRL 2 to 6)
- ↳ Deliver medium and long-term results
- ↳ Non-reimbursable funds leveraged by the membership model

Competence Center anticipate demand

Together, they drive innovation in Brazil



Embrapii

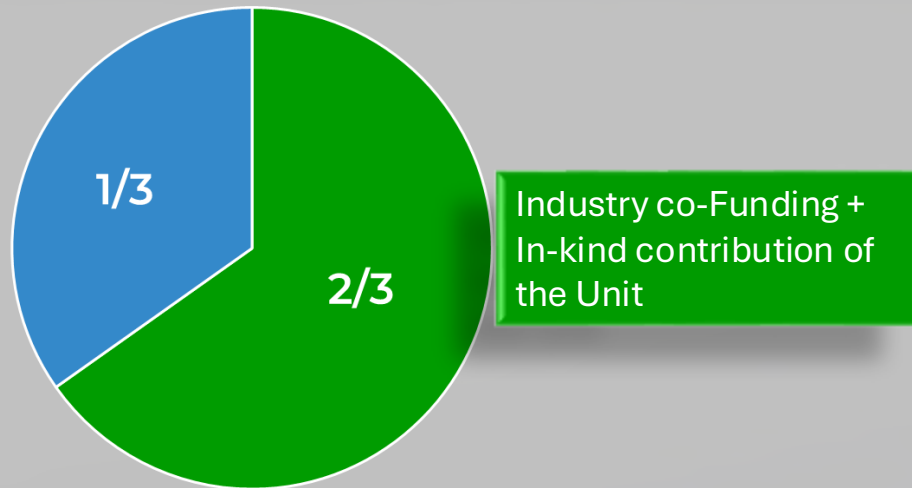
Units



Agility,
flexibility,
on company demand
And low bureaucracy

PROGRAM OF FUNDING

Traditional



TRL 3-6



SERVING ALL COMPANY PROFILES

80% of the 20 most innovative companies in Brazil (Economic Value Ranking) + Strengthens innovation support for SMEs (68% of supported companies in 2025)

Strategic

Non-reimbursable funds

No call for proposals

The resources are available in the Units.



TRL 3-9

Embrapii contributes up to 90% of the financial resources

91 Embrapii Units

NATIONWIDE

Targeted research lines

NORTH

AMAZONAS (2)
INDT
IFAM

PARÁ (2)
UFOPA
UFPA

TOCANTINS (1)
UFT

5

NORTHEAST

ALAGOAS (1)
EDGE/UFAL

CEARÁ (3)
IF-CE
INSTITUTO
ATLÂNTICO
LESC-UFC

PARAÍBA (4)
CEEI/UFCC
CEAR/UEPB
IF-PB
NUTES/UEPB

BAHIA (2)
SENAI
CIMATEC
IF-BA

RIO GRANDE DO NORTE (2)
IMD/UFRN
CRTM-IFRN

PERNAMBUCO (5)
CESAR
CIN/UFPE
CETENE
LITPEG/UFPE
ISI TECNOLOGIAS
DA INFORMAÇÃO
E COMUNICAÇÃO

17

MIDWEST

MATO GROSSO DO SUL (2)
ISI BIOMASSA
AGROTECH/UFMS

GOIÁS (3)
IF GOIANO
CEIA/UFG
IFG

DISTRITO FEDERAL (2)
EMBRAPA
AGROENERGIA

6

SOUTHEAST

SOUTH

SANTA CATARINA (7)
POLO/UFSC
CERTI
ISI LASER
IF-SC
ISI EMBARCADOS
CIENP
MOVE/UFSC

RIO GRANDE DO SUL (7)
ISI POLÍMEROS
ISI METALMECÂNICA
INRI-UFSM
ITEC-FURG
UCSGRAPHENE
SI MOB/UFRGS
INOVAAGRO-UFPEL

PARANÁ (3)
LACTEC
ISI ELETROQUÍMICA
ISI ENGENHARIA DE
ESTRUTURAS

17

RIO DE JANEIRO (7)
INT
COPPE/UFRJ
IF FLUMINENSE
TECGRAF PUC-RIO
ISI BIOSINTÉTICO
ISI QUÍMICA VERDE
CETEM

MINAS GERAIS (13)
IFMG
DCC/UFMG
INATEL
FEMEC/UFU
IF SUL DE MINAS
ISI MLE
UFMG FÁRMACOS
UFOP
ZETTA/UFLA
DEF/UFV
IF TRIÂNGULO MINEIRO
FITEC BELO HORIZONTE
CTNANO-UFMG

SÃO PAULO (26)
CPQD
CEINFAR/USP
CIM/UNIFESP
UFSCAR
CTIM/UFABC
CCM/ITA
POL/USP
ICMC/USP
IFSC/USP-SC
IQ/USP
E-RENOVA/UNICAMP
TECNOGREEN/USP
CQMED/UNICAMP
ESALQ/USP

ELDORADO
CNPEM
SENAI/SP
IFSP
IPT BIO
IPT MAT
FMRP/USP
WERNHER VON
BRAUN
FITEC CAMPINAS
LSI-TEC
EMBRAPA
INSTRUMENTAÇÃO
POWERTRAIN/USP

46



Embrapii in numbers

Cumulative 2014 – 2024

R&D&I PROJECTS - CONTRACTED

2014 - 2025



3,663 CONTRACTED
PROJECTS

2,314
COMPLETED
PROJECTS

1.415
IP APPLICATIONS



USD* **1.27 billion**

TOTAL VALUE OF R&D&I PROJECTS

34%

EMBRAPII

50%

COMPANIES

16%

EMBRAPII UNITS



2,489 SUPPORTED
COMPANIES

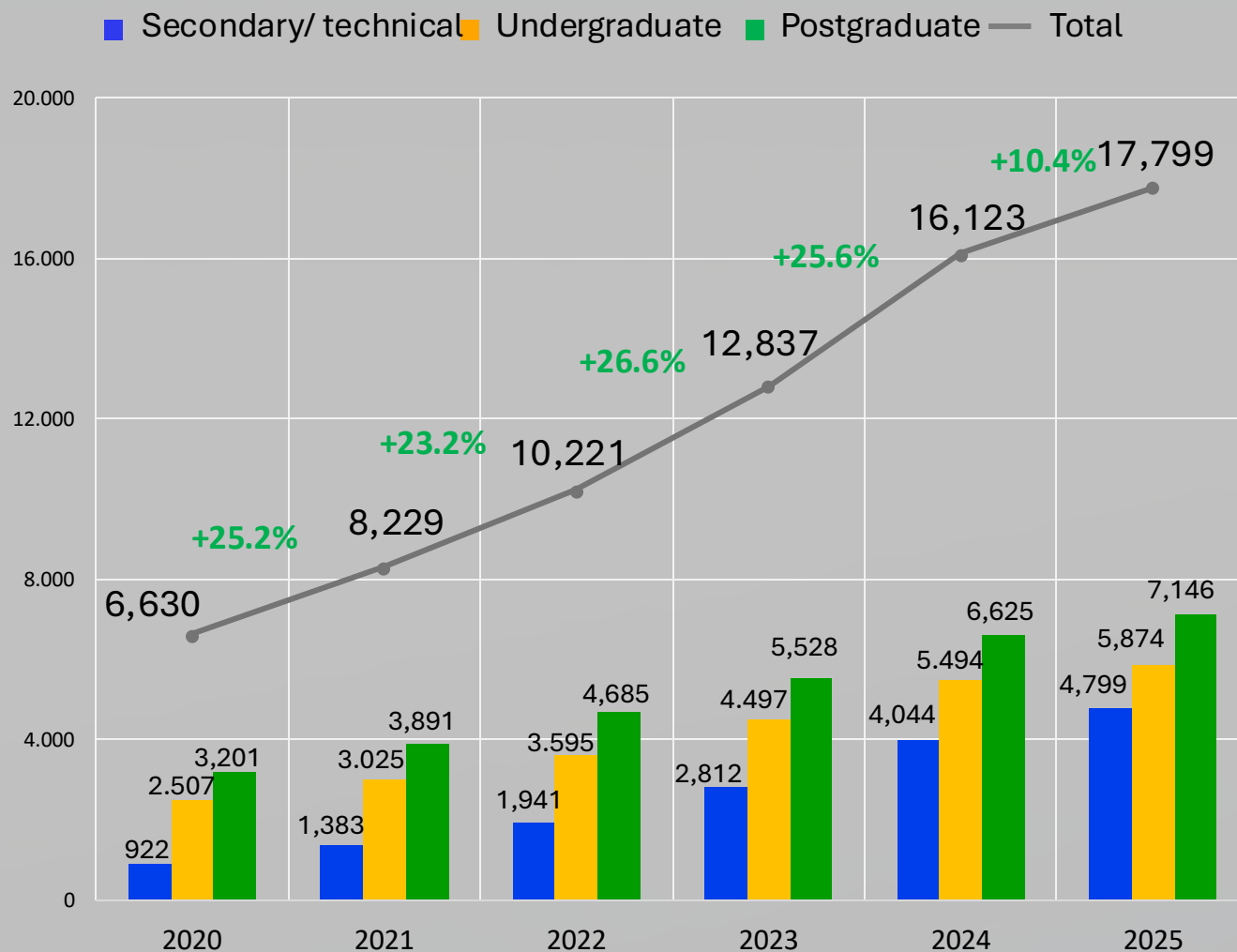
64%
MICRO & SMALL
COMPANIES

72%
1ST AGREEMENT

* Exchange rate: 1 USD = 5.5 BRL

Source: Embrapii SRInfo. Data retrieved on November 15th, 2025

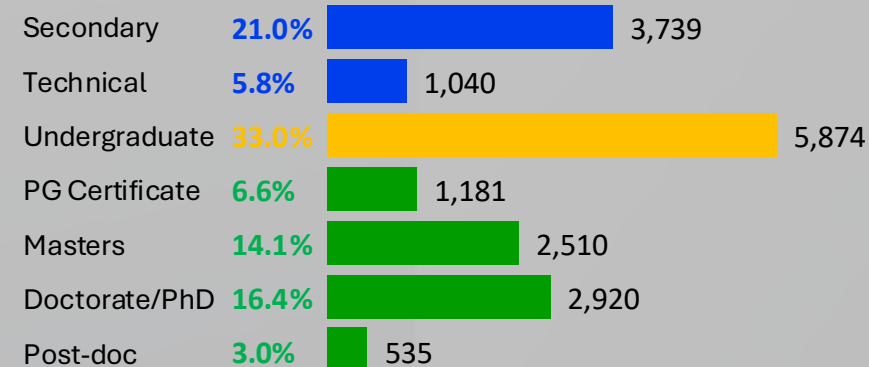
EMBRAPII UNITS: STAFF



17,799 ACTIVE STAFF IN EMBRAPII UNITS

7,146 POSTGRADUATE STAFF
40.1%

Current employed staff by level of education



EMBRAPII COMPETENCE CENTERS

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GOVERNO FEDERAL
BRASIL
UNIÃO E RECONSTRUÇÃO

The background image shows a high-tech industrial environment. Several yellow robotic arms are positioned along a production line, working on components. The floor is marked with yellow and red safety lines. The lighting is dim, with some blue and white highlights from the machinery and workstations.

Objective:

Conduct high-impact research and prepare talents to lead the industry of the future.

THE FUTURE OF INDUSTRY



Innovative environment for
new technologies

WHAT IS A COMPETENCE CENTER?

- 1 A Competence Center (CC) is a long-term initiative coordinated by Embrapii to strengthen Brazil's industrial innovation capacity in frontier and strategic technologies.
- 2 Each CC is hosted by a leading research institution and organized as a multi-institutional network, integrating academia, companies, and startups.
- 3 Its mission is to develop, validate, and transfer cutting-edge technologies, while also training specialized human resources and supporting open innovation partnerships.
- 4 The Centers operate with a governance model focused on agility, impact measurement, and continuous collaboration between science and industry.

WHY EMBRAPII COMPETENCE CENTERS?



Position Brazil in the most relevant **global discussions**



Transforming Brazil from a consumer to a **strategic player** in cutting edge technologies



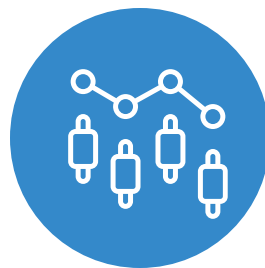
Promote social and economic impact based on the **skills and technologies developed**

STRATEGY FOR THE INDUSTRY TO GO **FURTHER!**

WHAT MAKES THIS FUNDING MODEL DIFFERENT FROM OTHERS IN BRAZIL?

- ✓ Unlike traditional project-based or short-term funding, the Competence Center model provides long-term and flexible institutional support.
- ✓ It allows continuous R&D collaboration between companies and research groups, ensuring technological evolution beyond individual projects.
- ✓ Funds are used to maintain a permanent innovation structure, including technical teams, laboratories, and advanced infrastructure.
- ✓ Governance emphasizes autonomy, performance-based funding, and accountability.
- ✓ The program encourages co-investment (membership model) from the private sector, multiplying the impact of public resources.

EMBRAP II COMPETENCE CENTER



EMBRAP II COMPETENCE CENTER

- **LEAD RESEARCH EFFORTS IN STRATEGIC AND FRONTIER TECHNOLOGICAL DOMAINS**
- **TRANSLATE RESEARCH OUTCOMES INTO VALUE FOR ACADEMIA AND INDUSTRY**

EMBRAP II COMPETENCE CENTERS



- **TO BUILD A RESEARCH-DRIVEN ECOSYSTEM THAT STRENGTHENS INNOVATION AND COLLABORATION ACROSS CENTERS, UNITS, STARTUPS, AND INDUSTRY**
- **CONDUCT COLLABORATIVE PROJECTS IN AN OPEN INNOVATION ENVIRONMENT**
- **COLLABORATION WITH TOP-TIER INTERNACIONAL RESEARCH INSTITUTIONS AND LEADING RESEARCH GROUPS**

EMBRAP II COMPETENCE CENTERS



- **TRAIN AND QUALIFY RESEARCHERS AND HIGHLY SKILLED PROFESSIONALS IN STRATEGIC AND FRONTIER TECHNOLOGIES**
- **PREPARE MEMBERSHIP COMPANIES PROFESSIONALS FOR FUTURE INDUSTRY CHALLENGES THROUGH EFFECTIVE KNOWLEDGE TRANSFER.**
- **FOSTER DEEP TECH STARTUPS CAPABLE OF DELIVERING INNOVATIVE SOLUTIONS AND COMPETING GLOBALLY**

EMBRAP II COMPETENCE CENTERS



- **RESEARCH-BASED TECHNOLOGY TRANSFER TO ACCELERATE INDUSTRIAL ADOPTION**
- **LICENSING OF IPs AND ACCESS TO FRONTIER RESEARCH**

EMBRAP II COMPETENCE CENTER



MEMBERSHIP BENEFITS

- **PRIORITY ACCESS TO CUTTING-EDGE RESEARCH, TECHNOLOGIES, AND SCIENTIFIC INSIGHTS**
- **PARTICIPATION IN COLLABORATIVE PROJECTS WITHIN AN OPEN INNOVATION ENVIRONMENT**
- **PRIORITY RIGHTS FOR IP LICENSING AND ACCESS TO BENEFITS SUCH AS LAB USE, RESEARCHER EXCHANGE, AND TRAINING UNDER PRIVILEGED CONDITIONS**

SOME MEMBER COMPANIES OF THE CENTERS





9

Accredited

Competence Centers

WHY 5G AND 6G?

- ✓ 5G/6G serves as the backbone for emerging technologies such as AI, IoT, edge computing, autonomous systems, and digital twins, accelerating Brazil's innovation capacity and industrial competitiveness.
- ✓ 5G/6G will shape global technological leadership, and Brazil must position itself not only as a user but as an active contributor to international research, standards, and innovation.
- ✓ Brazil has a strong history in global telecom standardization, internationally recognized research groups, and an established industrial ecosystem that would benefit from adopting 5G/6G as a strategic focus.
- ✓ Brazil aims to build robust domestic capabilities in next-generation communications, reducing technological dependence and strengthening national sovereignty.

EMBRAPII COMPETENCE CENTERS



PARAÍBA

Smart industry

Virtus - UFCG

BAHIA

Quantum technologies

SENAI CIMATEC

PERNAMBUCO

Cybersecurity

CESAR

MINAS GERAIS

Technologies and infrastructure for 5G and 6G communications

Inatel

SÃO PAULO

Open RAN
CPQD

Advanced therapies
Hospital Albert Einstein

UNDER ACCREDITATION:

- RNAm
- LOW-CARBON HYDROGEN
- ACTIVE PHARMACEUTICAL INGREDIENTS



Embrapii Competence Centers in numbers

Cumulative 2024 – 2025

BENEFITS AND EARLY OUTCOMES

- ✓ The Competence Centers have already shown measurable impacts on collaboration and innovation capacity.
- ✓ They attracted dozens of industrial partners and co-funded projects in strategic technologies.
- ✓ The program has contributed to building qualified human capital, with researchers and students trained in real-world industrial challenges.
- ✓ Early results demonstrate increased private investment, new intellectual property assets, and integration between research ecosystems and companies.
- ✓ These outcomes reinforce Embrapii's mission to transform scientific excellence into industrial innovation.

EMBRAPII CENTERS IN NUMBERS



+80

R&D PROJECTS EXECUTED /
IN PROGRESS



+160

ASSOCIATED COMPANIES



+8.000

TRAINED / QUALIFIED
PROFESSIONALS



+70

PUBLISHED ARTICLES



+US\$ 146 million

TO BE INVESTED IN THE CENTERS

**RESEARCH AND DEVELOPMENT
PROJECTS**

**HUMAN RESOURCES TRAINING
AND QUALIFICATION**

OPEN INNOVATION

INFRASTRUCTURE

GET IN TOUCH AND BE PART OF THE
EMBRAPII COMPETENCE CENTERS

centrosdecompetencia@embrapii.org.br





EMBRAPII


Empresa Brasileira de Pesquisa
e Inovação Industrial

Thank you!

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 /embrapii

 /embrapiioficial

embrapii.org.br

Edelvicio Junior

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