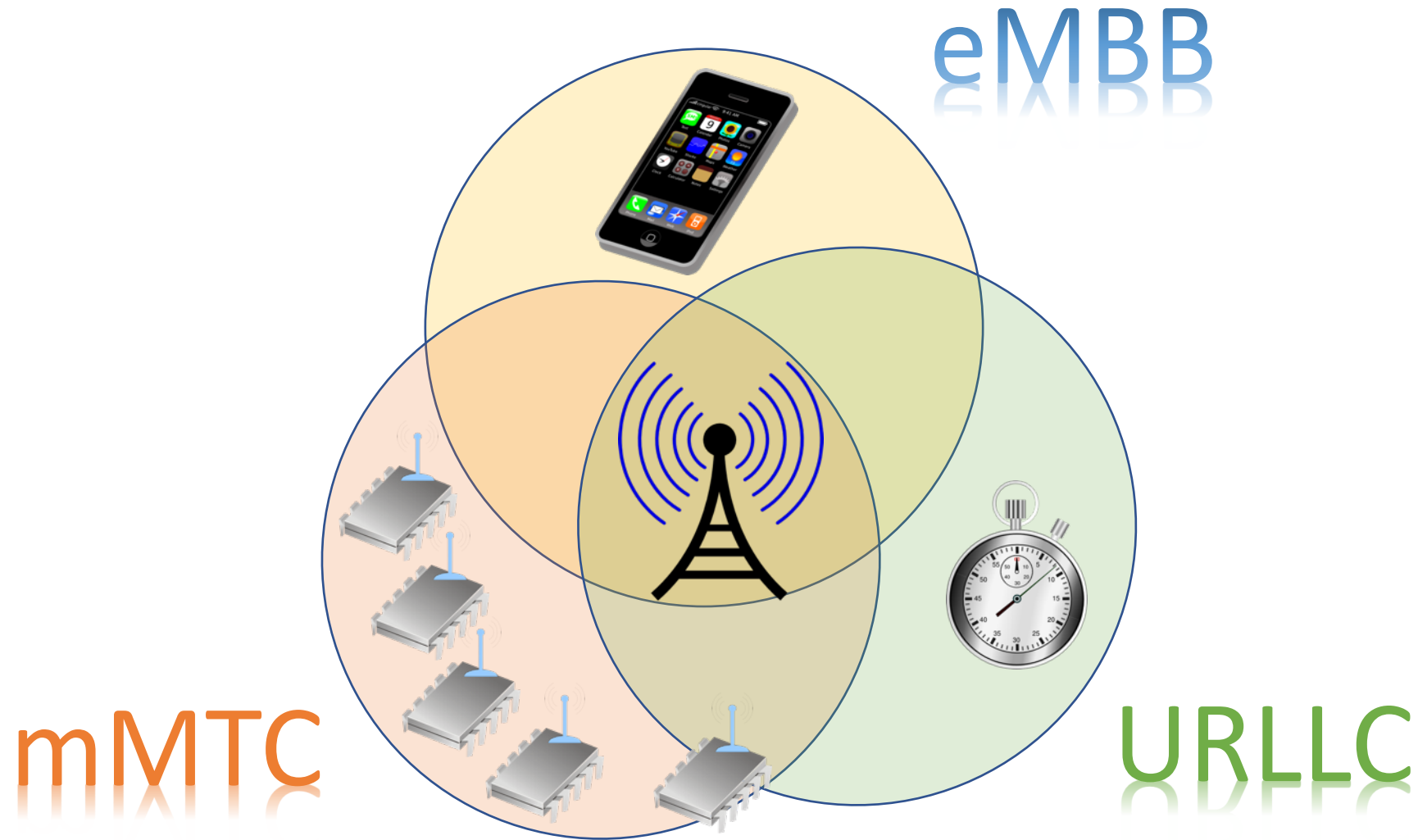


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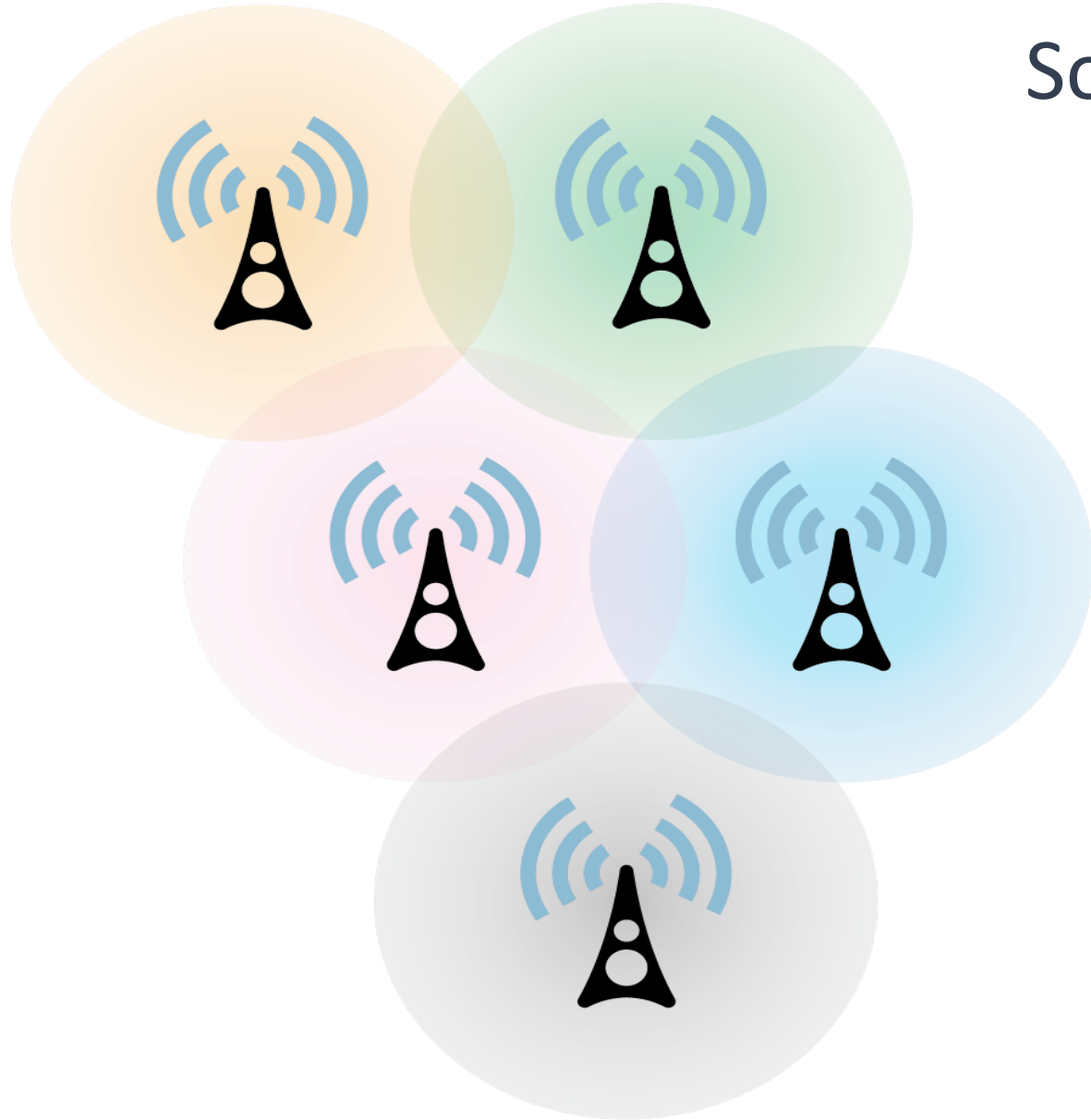
Brasil

Prof. Luciano L. Mendes

Scenarios for 5G Networks



Main Technologies for 5G Networks



Solutions for high populated areas

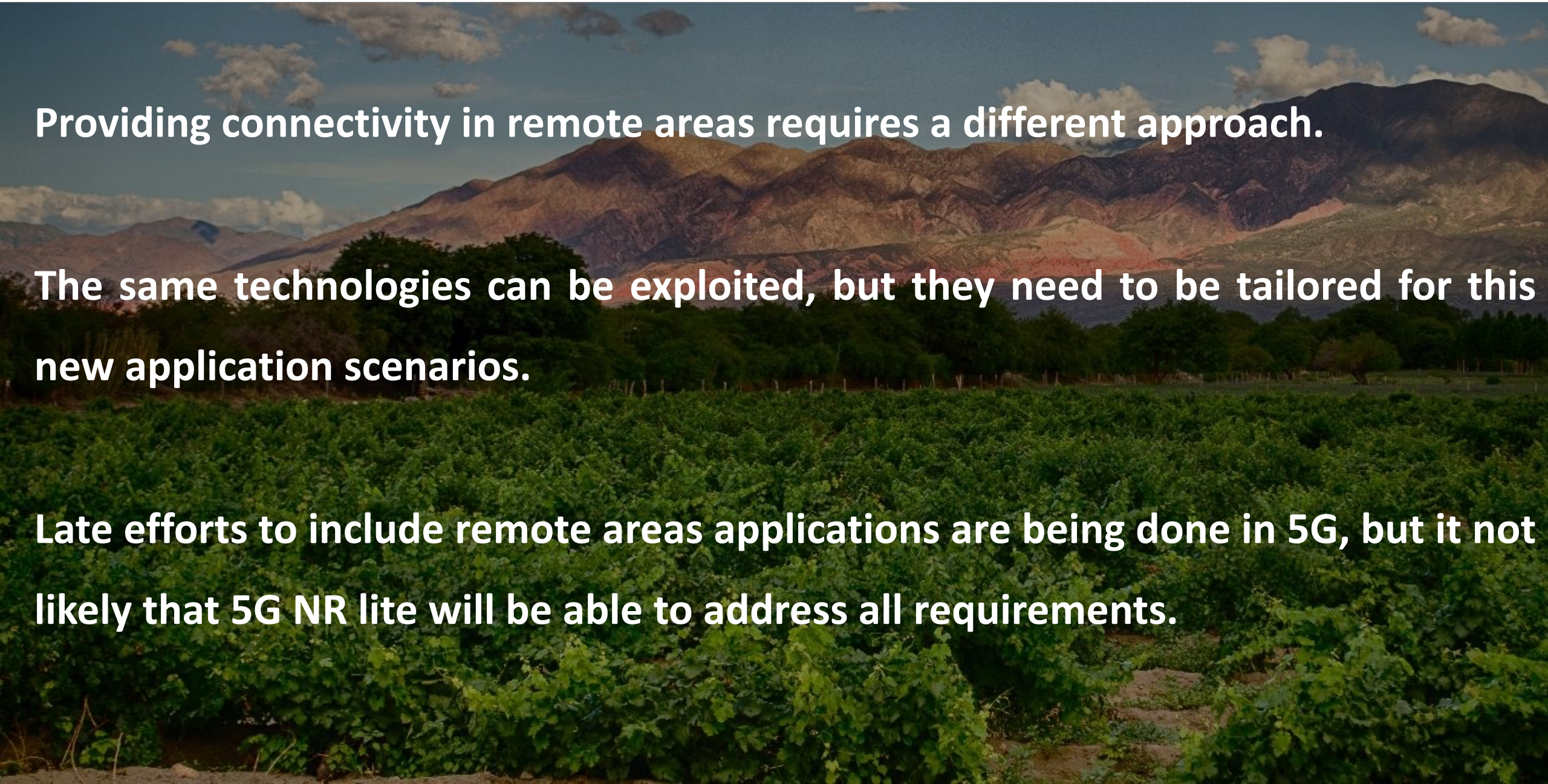
- Massive MIMO
- Millimeter wave
- Small Cells
- CoMP

What is missing in mobile networks?


Providing connectivity in remote areas requires a different approach.

The same technologies can be exploited, but they need to be tailored for this new application scenarios.

Late efforts to include remote areas applications are being done in 5G, but it not likely that 5G NR lite will be able to address all requirements.



Why 6G is important for Brazil?

- Several areas are not covered today.
 - Agribusiness is a vertical that can benefit from a broadband Internet connection in remote and rural areas.
 - A significant part of the population is not connected.
 - Digital inclusion is important for development of the Brazilian society.
- 
- A hand holding a pink pen, positioned in the lower right corner of the slide. The background is a dark, textured surface with the word "Why?" written in a light, cursive font.

6G Networks – Beyond Communications

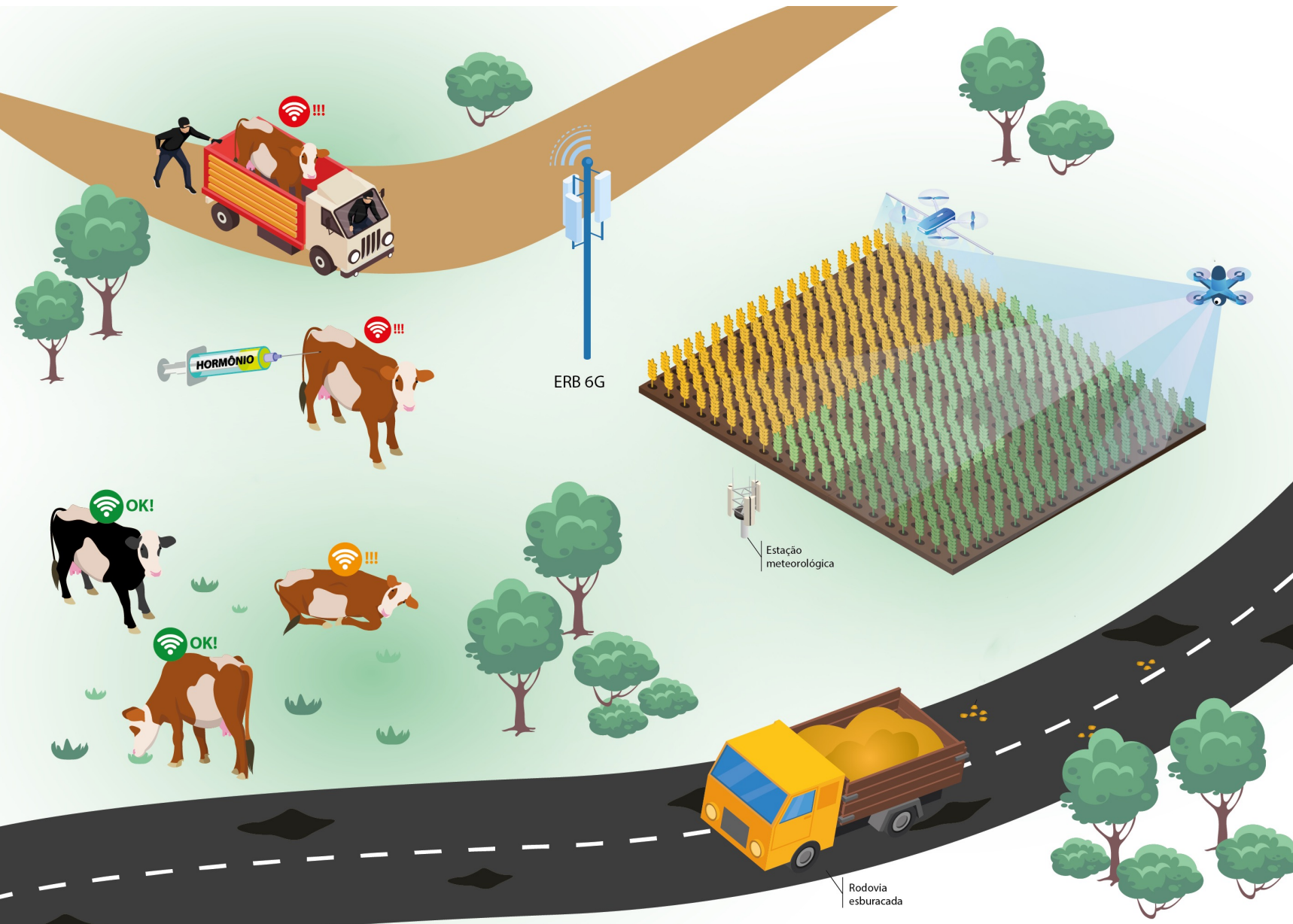
- Integration new features will support unprecedented services.
 - Communication
 - Sensing
 - Imaging
 - Positioning
- High throughput and low latency must be simultaneously addressed in several applications.



Extreme World Coverage

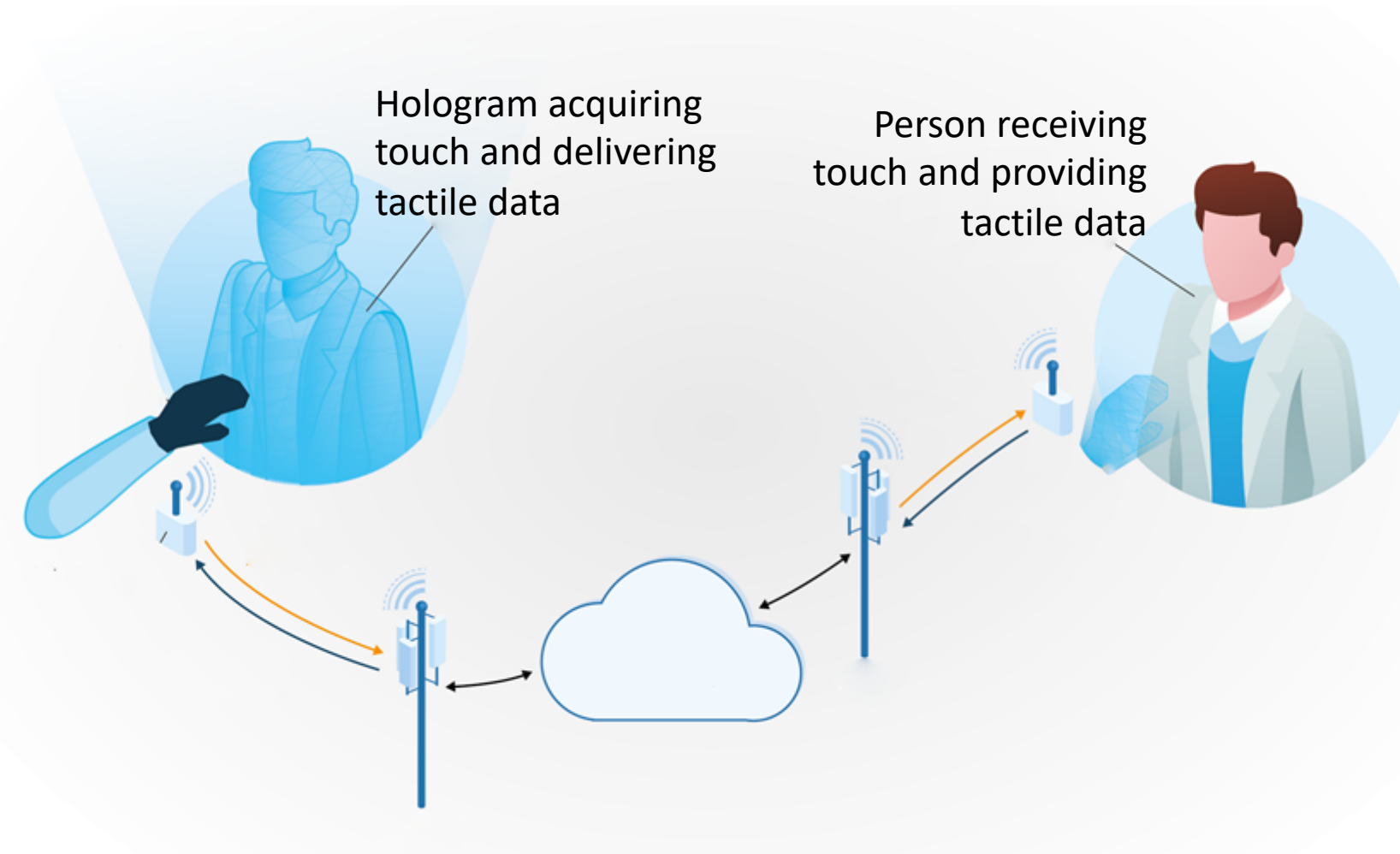
- Broadband connection anywhere
- Global IoT connectivity
- Global monitoring
- Evaluation of human activities

Advanced Agribusiness



- Complete informatization of the fields.
- Higher productivity per km².
- Intensive biological monitoring.
- Automation of the agribusiness processes.
- More efficient logistics.

Advanced Remote Interactions



- Introduction of a new dimension in personal communications.
- Haptic communication is especially interesting.
- Feedback for remote control of virtual and real objects in mining industries.

Brasil 6G Project



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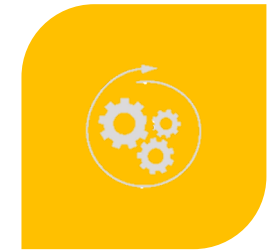
Project Goals



VISIONS, SCENARIOS
AND REQUIREMENTS



STATE-OF-THE-ART AND
ENABLING
TECHNOLOGIES



CONTRIBUTIONS WITH
THE STANDARDIZATION
EFFORTS

Different
working
groups are
researching
in parallel



1. USE CASES AND
REQUIREMENTS



2. AI FOR MOBILE
NETWORKS



3. SENSING, IMAGING
AND POSITIONING



4. PHY AND MAC
PROTOCOLS



5. ANTENNAS, RF AND
OPTICS



6. ARCHITECTURES
FOR 6G NETWORKS

Next steps



Platform for PoC based on AI.



Interaction with the research groups around the world.



Transferring Technologies for the industry.



Education.



Contribute with agencies and government.

Inatel

Thank you!

Luciano Leonel Mendes

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