instituto de telecomunicações

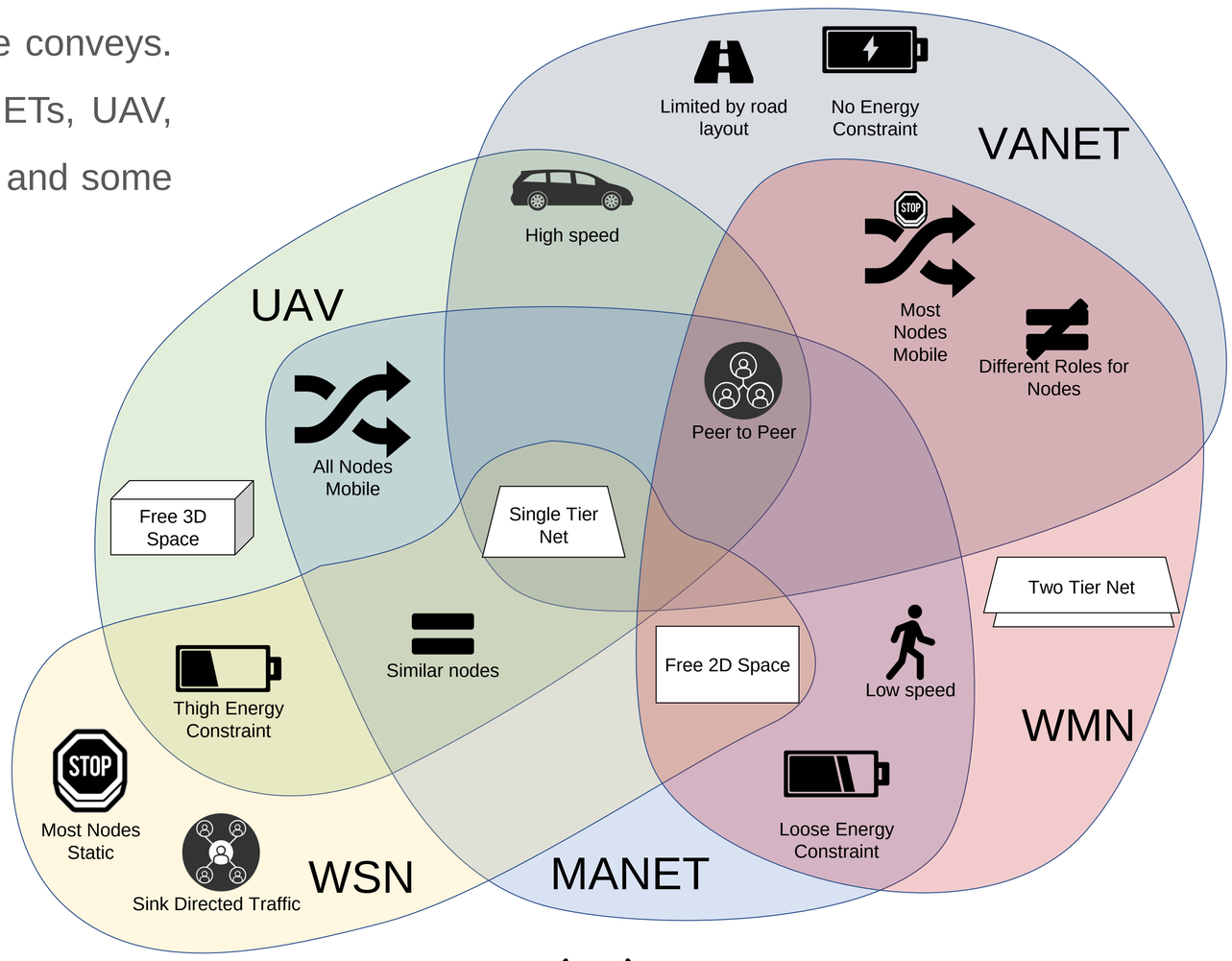
IT-Porto

Multicast for MANETs (Mobile Ad-hoc NETwoks)

Networked Systems

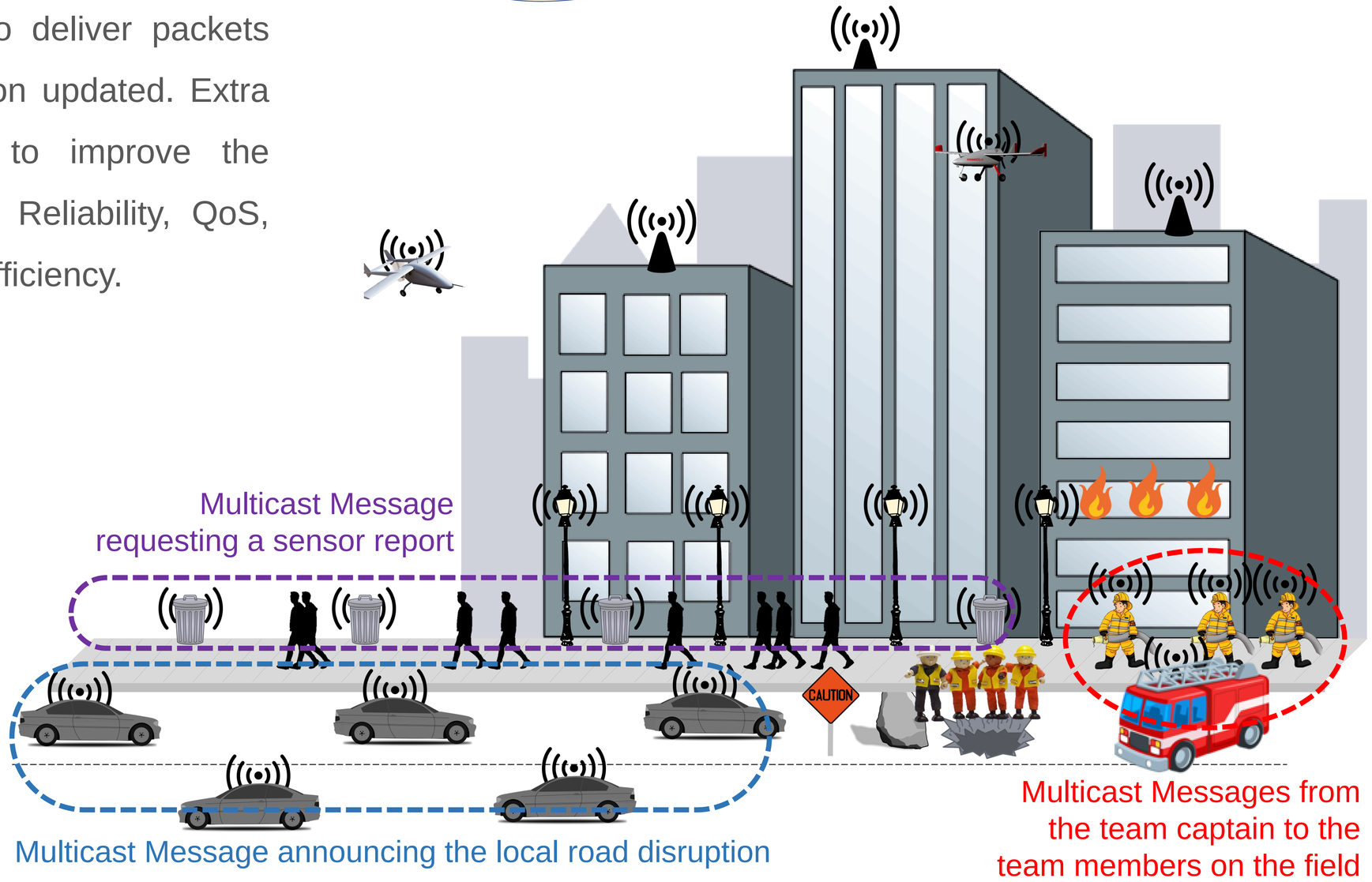
Background and challenges

- MANETs (Mobile Ad-hoc NETworks) are more than the name conveys. Currently they can be expanded to various paradigms: VANETs, UAV, WSN, WMN. They share some characteristics between them and some key differences (mostly in mobility and energy).
- Multicast transmissions in 802.11 do not have the optimizations of unicast transmissions, missing the RTS/CTS mechanism, acknowledgments, retransmissions or data-rate adaptation.



Description and main innovation

- A Multicast Routing Protocol has a set of fundamental elements: discovery of senders and receivers, topology created to deliver packets and maintaining the information updated. Extra elements can be present, to improve the delivery of packets, such as Reliability, QoS, Network Coding and Energy Efficiency.
- This work proposes a set of improvements in routing, transmission and reliability of multicast traffic. Making multicast a communication paradigm easy to use and with reliability on pair with unicast, making it usable across the various sub-types of MANETs.



Achievements

Transmission	Routing	Adaptability
• Data-rate Improvement of transmission of multicast in 802.11 by using the knowledge of paths between senders and receivers in addition with the one-hop transmission rate information.	• Build better paths for multicast traffic by exploring new metrics present in the new paradigms: energy, neighborhood (mobility and topology), data-rate.	• Adapt across the evolution of the multicast group dynamics (senders and receivers entering and leaving).

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