QoS extension in dense and heterogeneous wireless networks for industry usage - Part 2: Technical Aspects -

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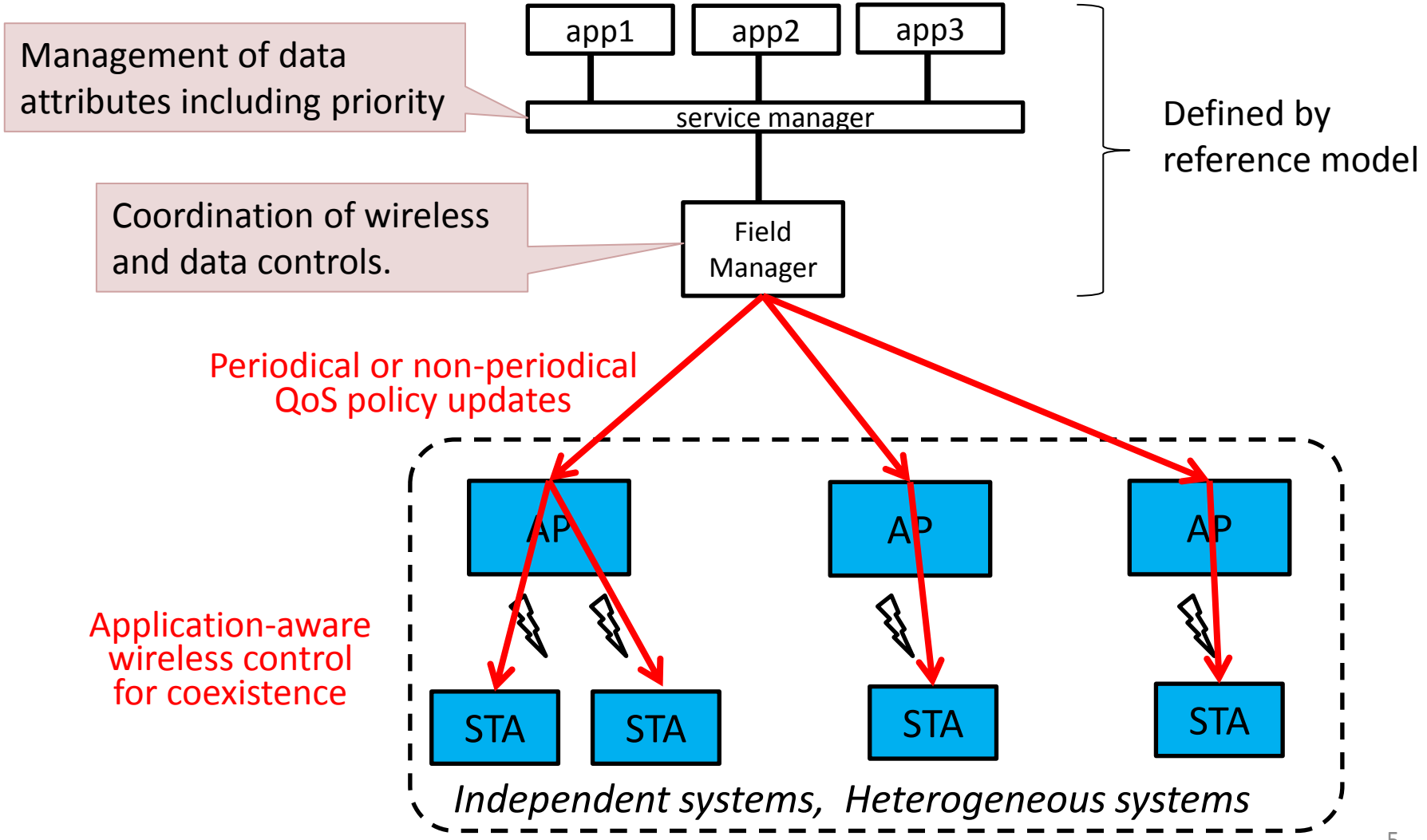
Introduction

- This presentation addresses technical issues of QoS extension in wireless communications, in particular for a factory as a case of dense and heterogeneous wireless networks.

Technical goals

- Harmonized and dynamic QoS over different wireless systems in limited and fluctuating radio resources.
- Application-aware coexistence procedure of heterogeneous systems.

An example of harmonized and dynamic QoS control



QoS defined in 802.1p and 802.11e

- 8 types with 3bits-field for fixed usage are assigned.

IEEE 802.1p			IEEE 802.11e	
PCP	Acronym	Traffic type	Access Category (AC)	Designation
1	BK	Background	AC_BK	Background
2	-	Spare	AC_BK	Background
0	BE	Best Effort	AC_BE	Best Effort
3	EE	Excellent Effort	AC_BE	Best Effort
4	CL	Controlled Load	AC_VI	Video
5	VI	Video	AC_VI	Video
6	VO	Voice	AC_VO	Voice
7	NC	Network Control	AC_VO	Voice

Use case analysis (tentative)

- 20 use cases with different attributes are in scope.
- Current QoS control may be insufficient to fit all use cases.

Category	Use cases									
	RF-ID tags	Process management	Environment sensing	Machine monitoring	Machine control	Program/ data distribution	Video monitoring/ guidance	Video inspection	Vital sign monitoring	Persons/ parts positioning
Quality			✔	✔			✔	✔		
Management	✔	✔	✔	✔			✔			✔
Display		✔					✔			
Control					✔					
Safety			✔	✔			✔		✔	✔
Others						✔	✔			

Technical challenges

- Introducing harmonized and dynamic QoS control.
- Defining usage of tag fields (like TPID in IEEE 802.1Q -needs to be discussed) for precise and fine QoS control in L2.
  - MAC relay over heterogeneous systems including wired networks are expected.
  - Function assignment to L2 and L3 needs to be considered.

TPID: Tag Protocol Identifier

Any questions?

Straw poll

Do you agree that discussion on “QoS extension in dense and heterogeneous wireless networks for industry usage” is worth to a work item in IEEE802.1?

- Yes
- No
- Need more information