



Future-proofing RAIN Connectivity

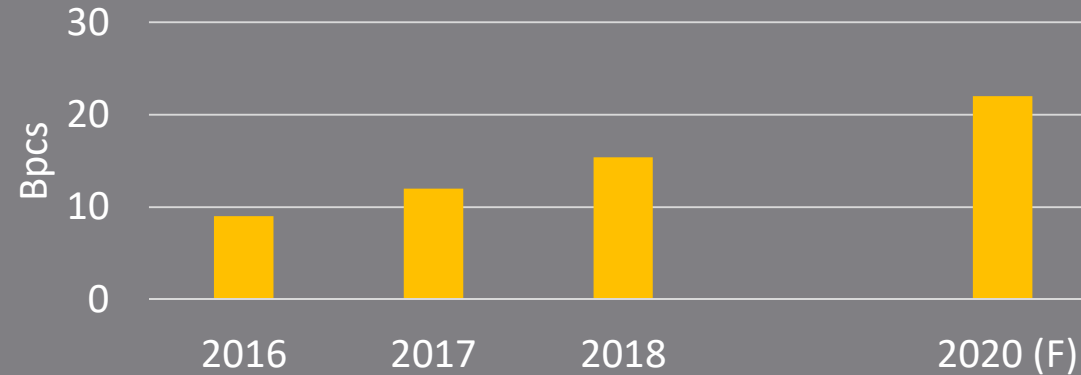
Jukka Voutilainen

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This Is Still the Beginning of RAIN Growth

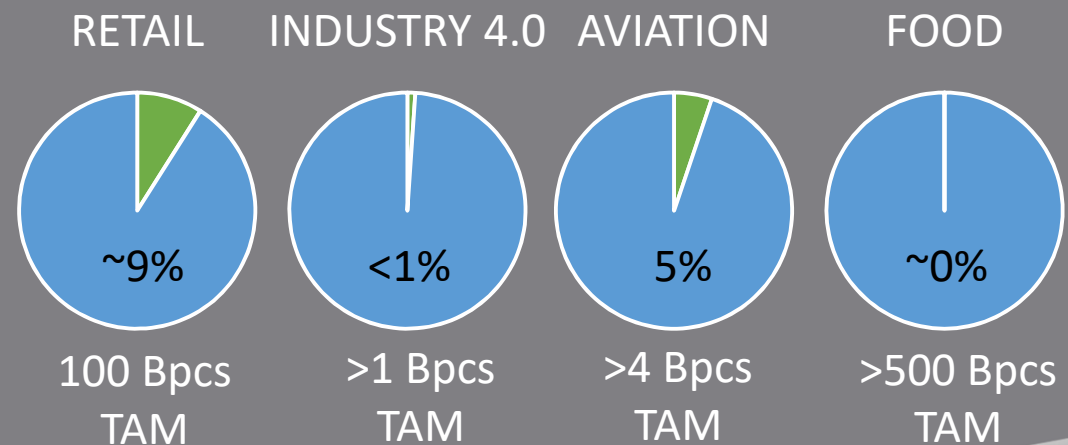


The number of sold RAIN tags is increasing constantly...



Data from NXP, IdTechEx

... but market penetration is still low



We can already see 100 billion tags
a year in the horizon!

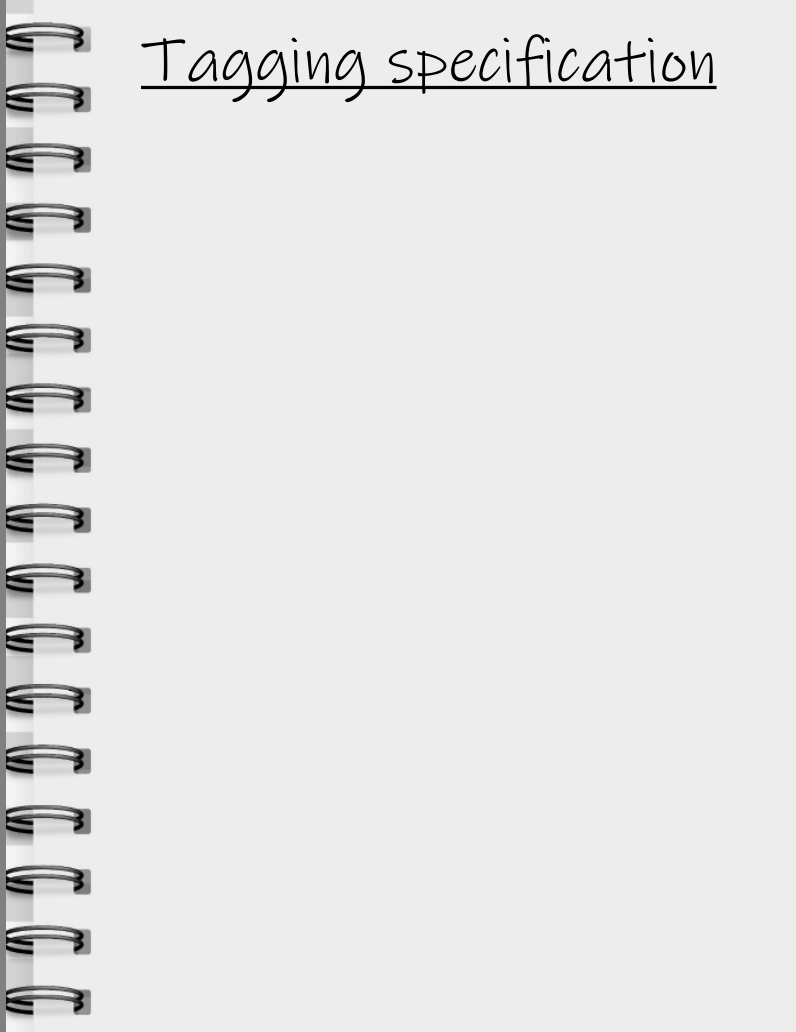


But We Have Some Obstacles to Overcome



1. We need to think about what happens when applications overlap
2. We need to prepare for people intentionally messing with the applications
3. We need to stop thinking in terms of tags, and start thinking about RAIN-enabled items

Enter the Tagging Specification

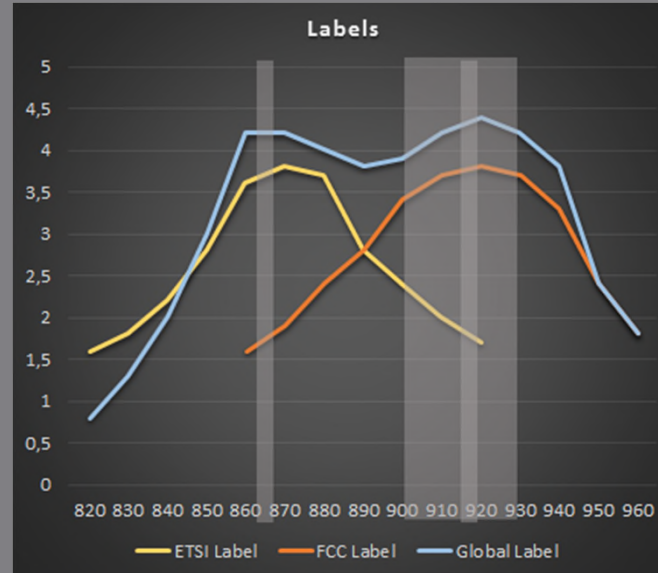


- Source tagging requires a common language between different parties on how to tag products
- The tagging specification could also work as a checklist to make sure that the most important aspects have been considered

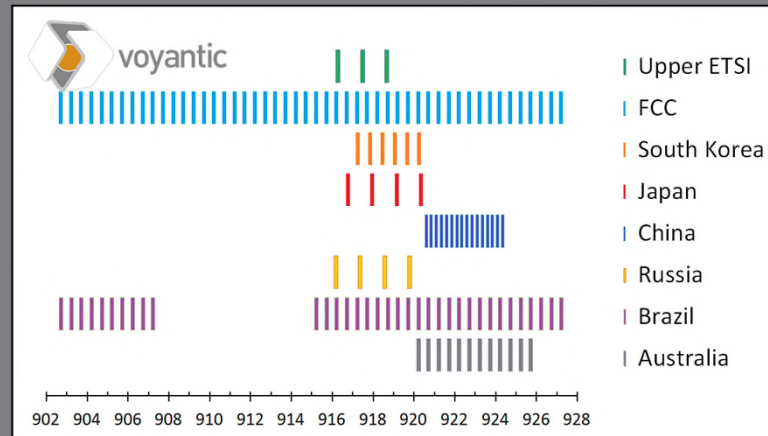
Geographic Region

Tagging specification

Region: Global



Where does the tag have to work?



Upper ETSI providing an almost global band

Tag Numbering Scheme

Tagging specification

Region: Global

Numbering: ISO/IEC 20248

Applications are starting to overlap, and if we continue with “cowboy numbering”, they will stop working properly



Security

Tagging specification

Region: Global

Numbering: ISO/IEC 20248

Security: Lock EPC and passwords

*) ask Danny about password management

There are always going to be people who will try to sabotage your RAIN application if they only can. How much security does your application require?



From Tags to RAIN-enabled Products

Tagging specification

Region: Global

Numbering: ISO/IEC 20248

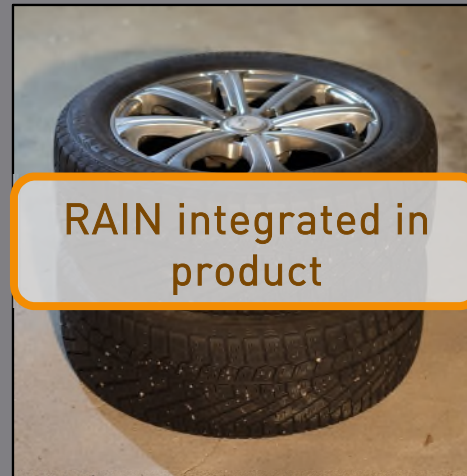
Security: Lock EPC and passwords

*) ask Danny about password management

Tagging method: Integrated in seam



RAIN added on price tag



RAIN integrated in product



RAIN added in package

Tag Size

Tagging specification

Region: Global

Numbering: ISO/IEC 20248

Security: Lock EPC and passwords
*) ask Danny about password management

Tagging method: Integrated in seam

Size: 2x5 cm

- There is going to be a compromise between small size, wideband operation, and good performance – Pick any two!



Tagged Item Performance

Tagging specification

Region: Global

Numbering: ISO/IEC 20248

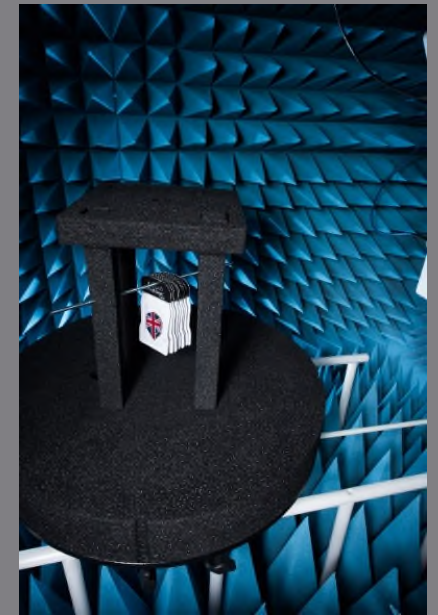
Security: Lock EPC and passwords
*) ask Danny about password management

Tagging method: Integrated in seam

Size: 2x5 cm

Performance: TIPP S20A

We need industry-specific test methodology for tagged items



Total Cost of Tagging



Tagging specification

Region: Global \$\$

Numbering: ISO/IEC 20248 \$\$

Security: Lock EPC and passwords
*) ask Danny about password management \$\$

Tagging method: Integrated in seam \$\$

Size: 2x5 cm \$

Performance: TIPP S2DA \$

- All tagging specs contribute to the total cost of tagging
- It's not only the cost of the blank label but also
 - Personalization costs
 - Tag attachment costs



Thank you!

Contacts:

jukka.voutilainen@voyantic.com

www.voyantic.com