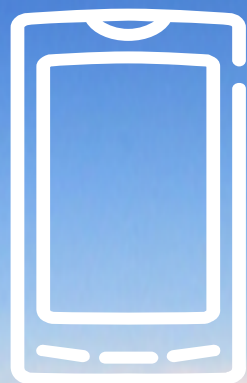# ERIK WESTERBERG, PH D

SYSTEM AND TECHNOLOGY
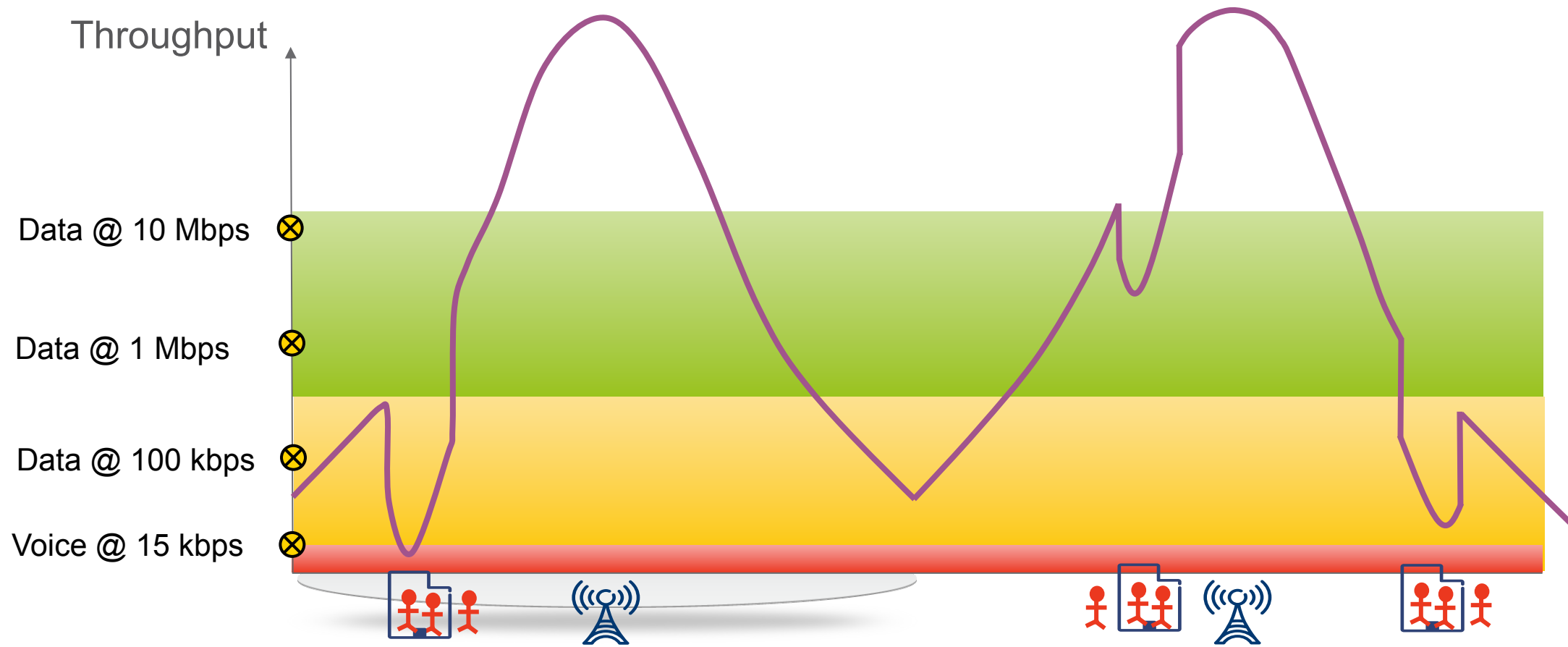## BUSINESS UNIT NETWORKS

CLOUD SERVICES DRIVING MBB COVERAGE

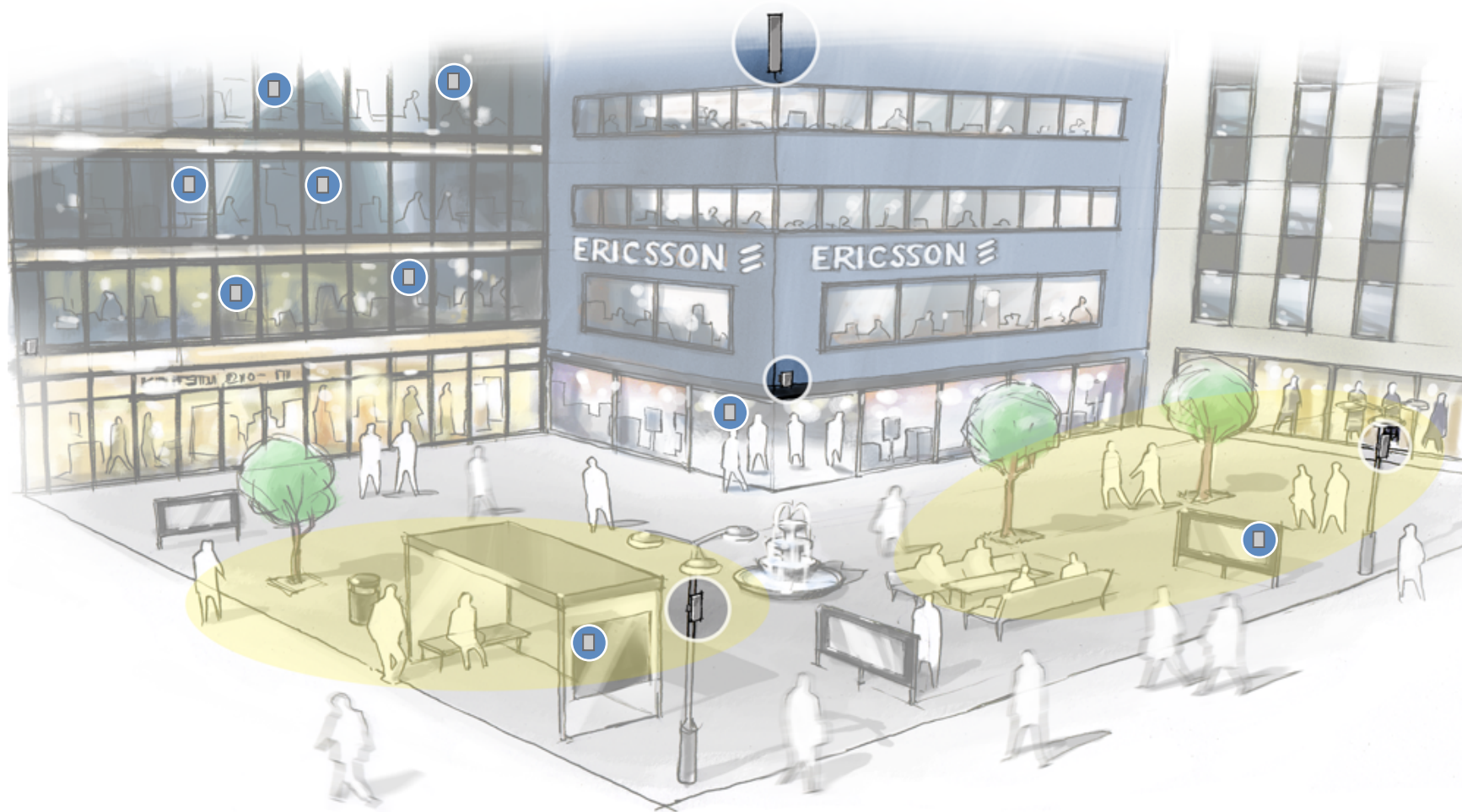USERS EXPECTATIONS = CONNECTIVITY + SERVICES

MOBILE BROADBAND COVERAGE

IMPLICATIONS FROM RADIO BASICS

Signal strength measure: Decibel (dB). Doubling the signal strength equals an increase with 3 dB, x4 equals 3 + 3 = 6 dB, x8 equals 3 + 3 + 3 = 9 dB etc

› Rule 1: Power and spectrum are the limiting resources, linking coverage and capacity

› Rule 2: To double the throughput you need to double the received signal strength

› Rule 3: To get 10 Mbps downlink you need at least 1 Mbps uplink (and vice versa)

› Rule 4: Double the number of sites and you gain 6 dB

› Example calculation: MBB with uplink of 10 Mbps and downlink of 1 Mbps "everywhere" requires x8 more base station than voice @ same coverage.

MEETING THE CHALLENGES

CONCLUSIONS

RADIO
INSIGHTS

Data applications in everyday life drive mobile broadband coverage everywhere

MBB coverage drives operator revenue and requires high signal strength everywhere motivating radio network investments

MBB coverage is a moving target – the radio networks will never be "finished"