Mobile Communications TCS 455

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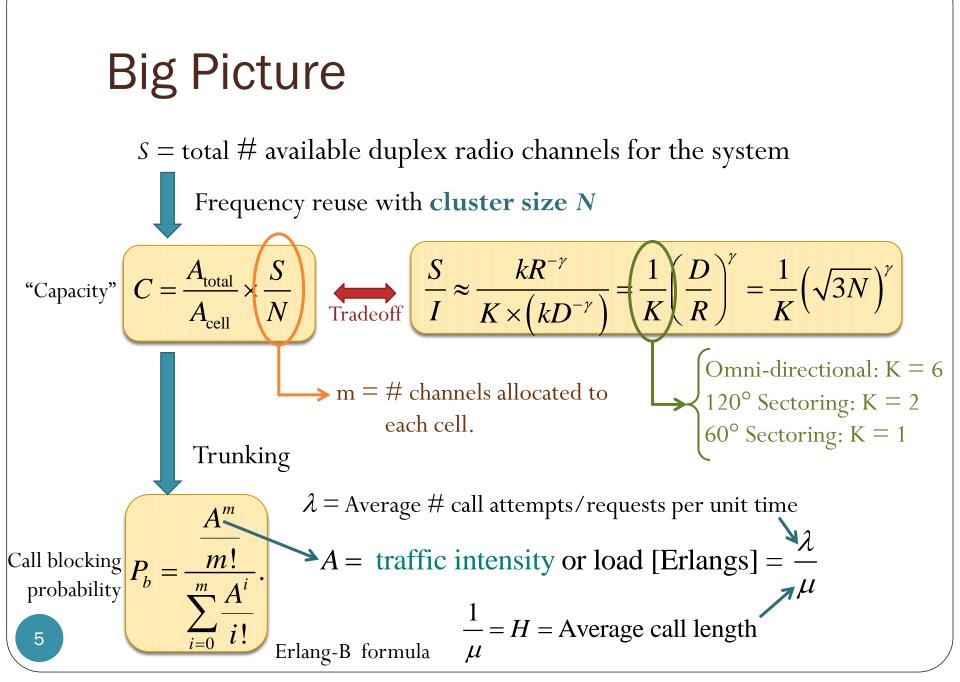
Office Hours: BKD 3601-7 Tuesday 14:00-16:00 Thursday 9:30-11:30

Announcements

- Read
 - Chapter 3: 3.1 3.2, 3.5.1, 3.6, 3.7.2
 - Posted on the web
 - Appendix A.1 (Erlang B)

Recall

- We spent a few lectures now studying Poisson process.
- This will be used to model call arrivals.
- Along the way, we review many facts from probability theory.
 - pmf Binomial, Poisson, Geometric
 - pdf Exponential
 - Independence
 - Expectation, characteristic function
 - Sum of independent random variables and how to analyze it by characteristic functions
- You have seen that Poisson process (PP) connects many concepts that you learned from introductory probability class.



Assumption

• Blocked calls cleared

- Offers no queuing for call requests.
- For every user who requests service, it is assumed there is no setup time and the user is given immediate access to a channel if one is available.
- If no channels are available, the requesting user is blocked without access and is free to try again later.
- Calls arrive as determined by a Poisson process.
- There are memoryless arrivals of requests, implying that all users, including blocked users, may request a channel at any time.
- There are an infinite number of users (with finite overall request rate).
 - The finite user results always predict a smaller likelihood of blocking. So, assuming infinite number of users provides a conservative estimate.
- The duration of the time that a user occupies a channel is exponentially distributed, so that longer calls are less likely to occur.
- There are *m* channels available in the trunking pool.
 - For us, m = the number of channels for a cell (C) or for a sector