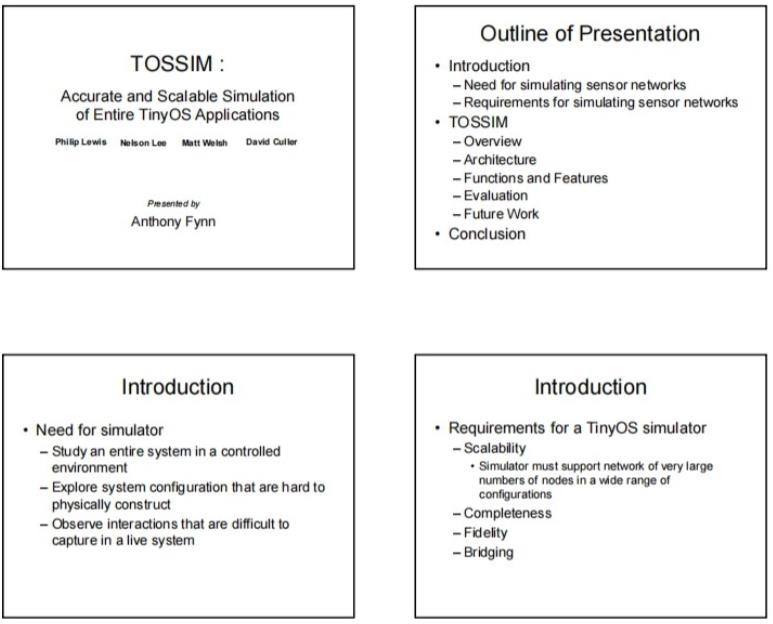
**Practical 03**

# Understanding TOSSIM for

1. Mote-mote radio communication
2. Mote-PC serial communication



Introduction



Introduction

* Requkemente for a TInyOS siiTlulator
* Req ire«›enis for a TlnyOS sirr›uBtor
  + scaiaiaity

Introduction

* Requirements for a TinyOS skuulator

\_ Mty





Introduction

* Prar dmuletors for senaor nelvori‹e

## — ra-2



### TOSSF

* + - Bnxd¥Na TrYyOS Cz a As a d+ffbfent labxs FT. Not ¥vdugted



TInyOS Recap

* A TInyO5 jxz›gram Is a pmh of cofTporanB such ns ADC. aeraors, corr$sutaibnal eratlea

- Corny rtente h6vo 5 computo0on8l abatrac#ons: convnanda, everita and laaha



TOSSIM - Overview

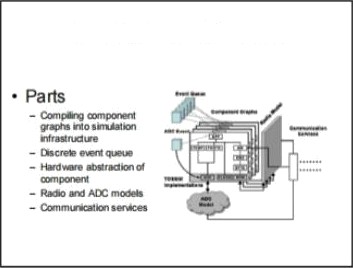
* LJhe TlnyOS applkatlona. TOSSIM la



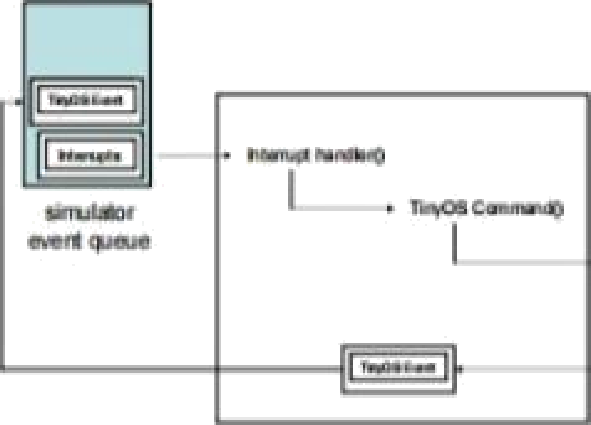
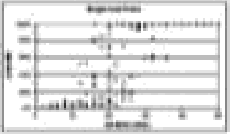
TOSSIM - Overview

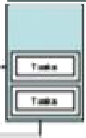
* Uses a directed graph \o represent a network
  + Each vertex represents a node
  + Each edge has a bit error probabillly

- Abslraclion can capture mosl cor+diñons



TOSSIM - Architecture





TOSSIM - Event SlmubtDn

TOSSIM - Netwofi 3mul4a

TOSSIM - Fe8ures



TOSSIM - Evalua ion



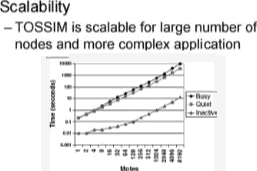
TOSIM - Evalus0on

TOSSIM - Evakation



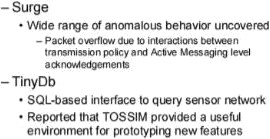
* 6Ws catatbfsW aeamsdln ¥a Maiga





TOSSIM - Evaluation

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TOSSIM Evaluation

* Completeness

- Evaluation melnly based on gne epplica4on

TOSSIM — Future Work

* Reseerchers are exploring connecting reaI•world mates to Ihe TOSSIM networking model
* Researchers are modlfying TOSSIM eo that multiple running copbs can commix›Icate through a neMork proxy
* Energy consumption need to be captured
* TOSSIM should be made less application

TOSSIM - Evaluation

* Budging
  + TOSSIM compilas directly from TinyoS code
  + Simulation code is almoet denlical to code running on hardware
  + Users cen trensiiion between slmulation end
  + Ueere can etep through Bimulation code with

(r8ditionel d6bUgg6f6 wlthoUt di6FUg(i0g M0t6

Conclusion

* TOSSIM captures a good deal of a real- work sensor network running a TinyOS application
* The effectiveness of TOSSIM cannot be generalized for all sensor networks
* It seems authors evaluated sensor network simulation based on the capabilities TOSSIM