



INTERNET MANAGEMENT AND MEASUREMENT

265310
MSc TEL/INF/BIT/EL
5 EC

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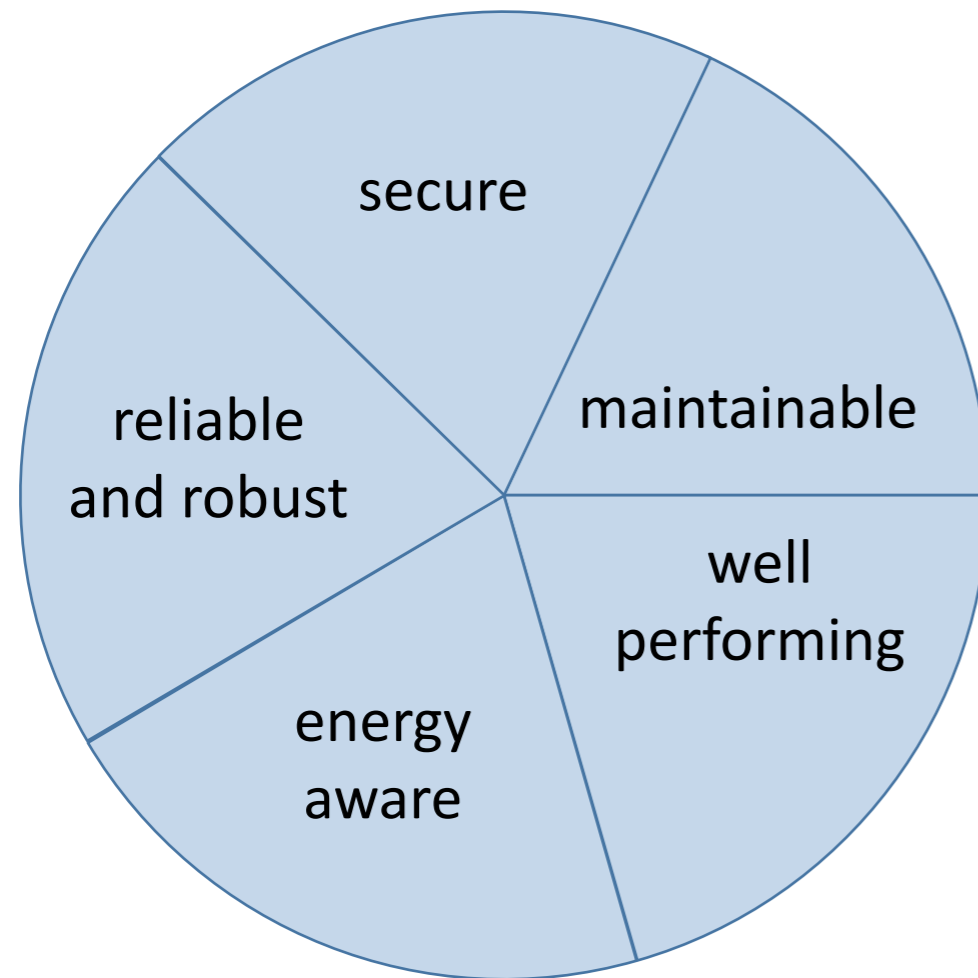
<https://blog.luukhendriks.eu>



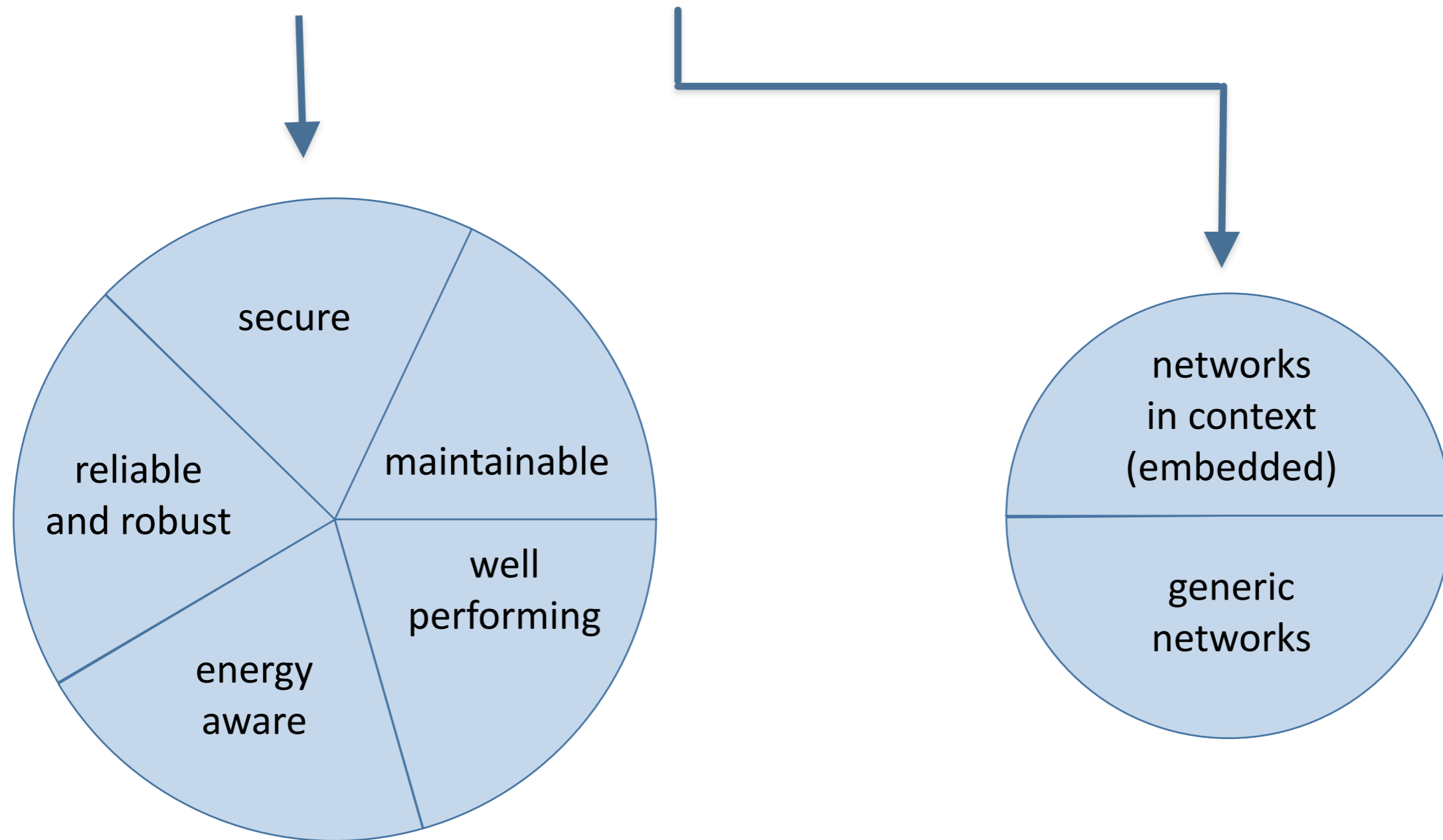
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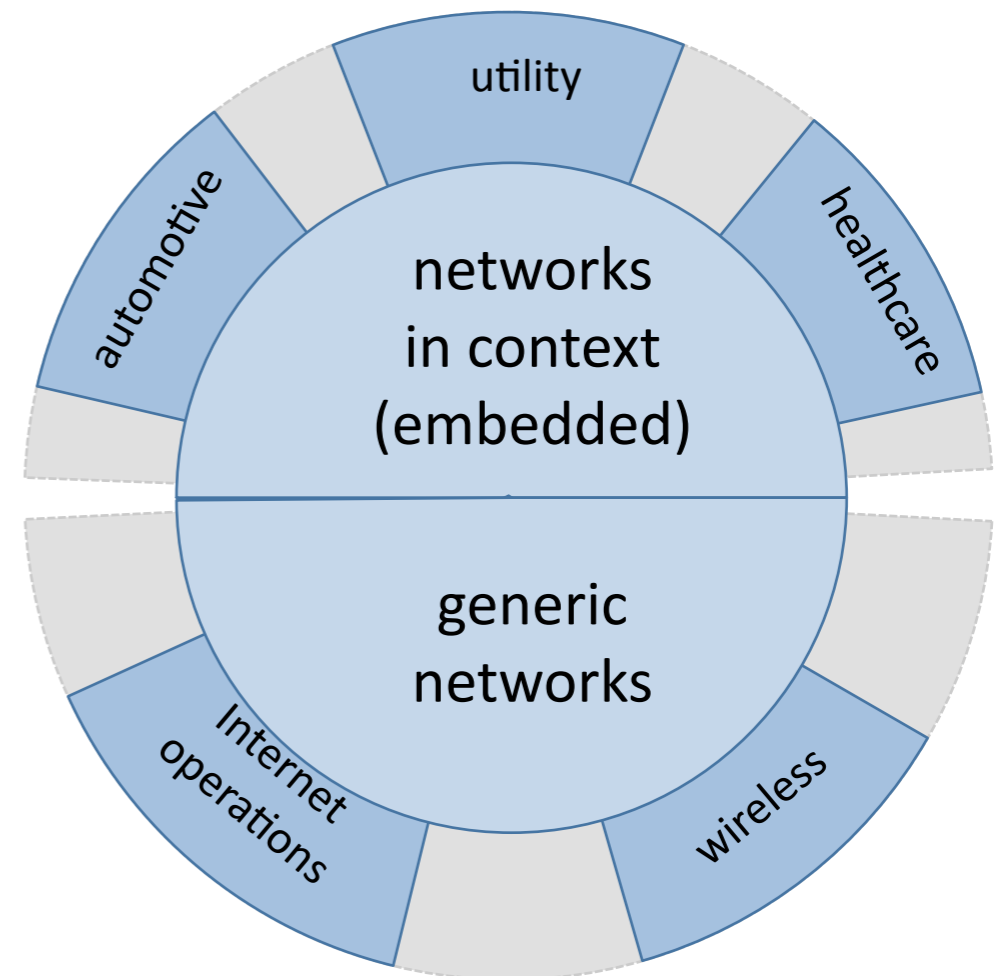
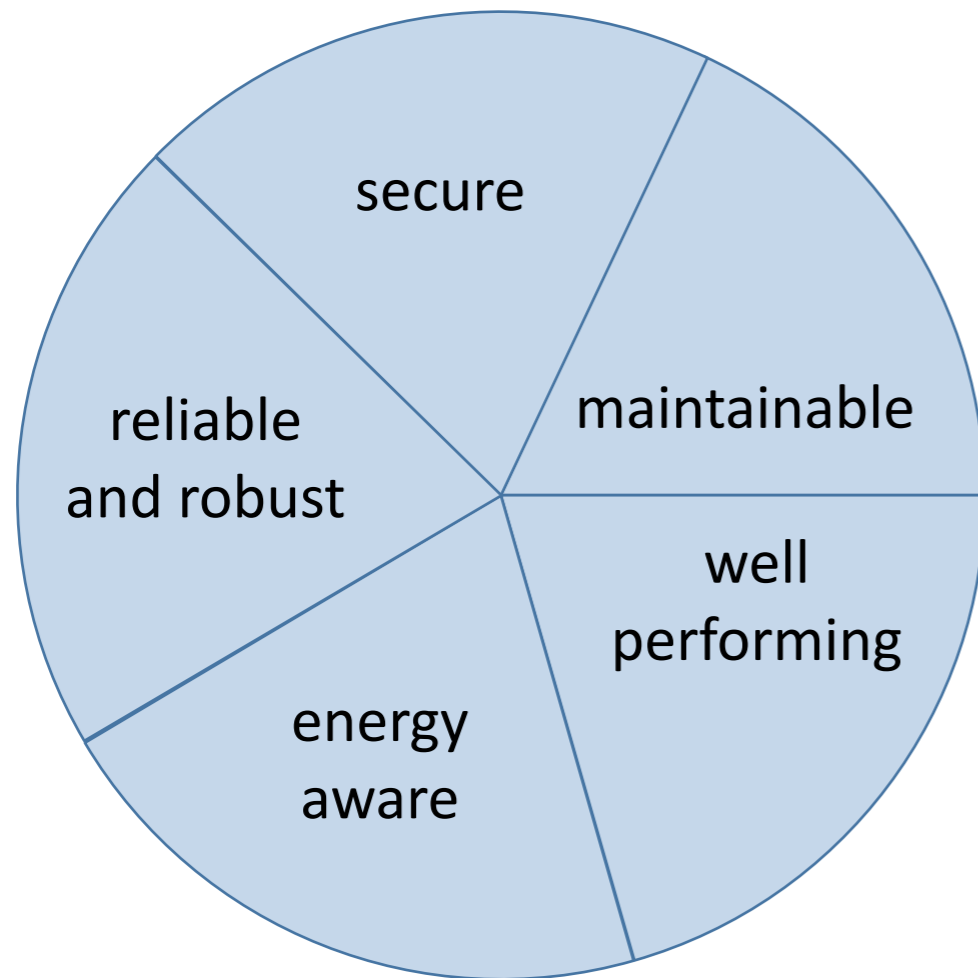
Dependable networking in a dynamic world



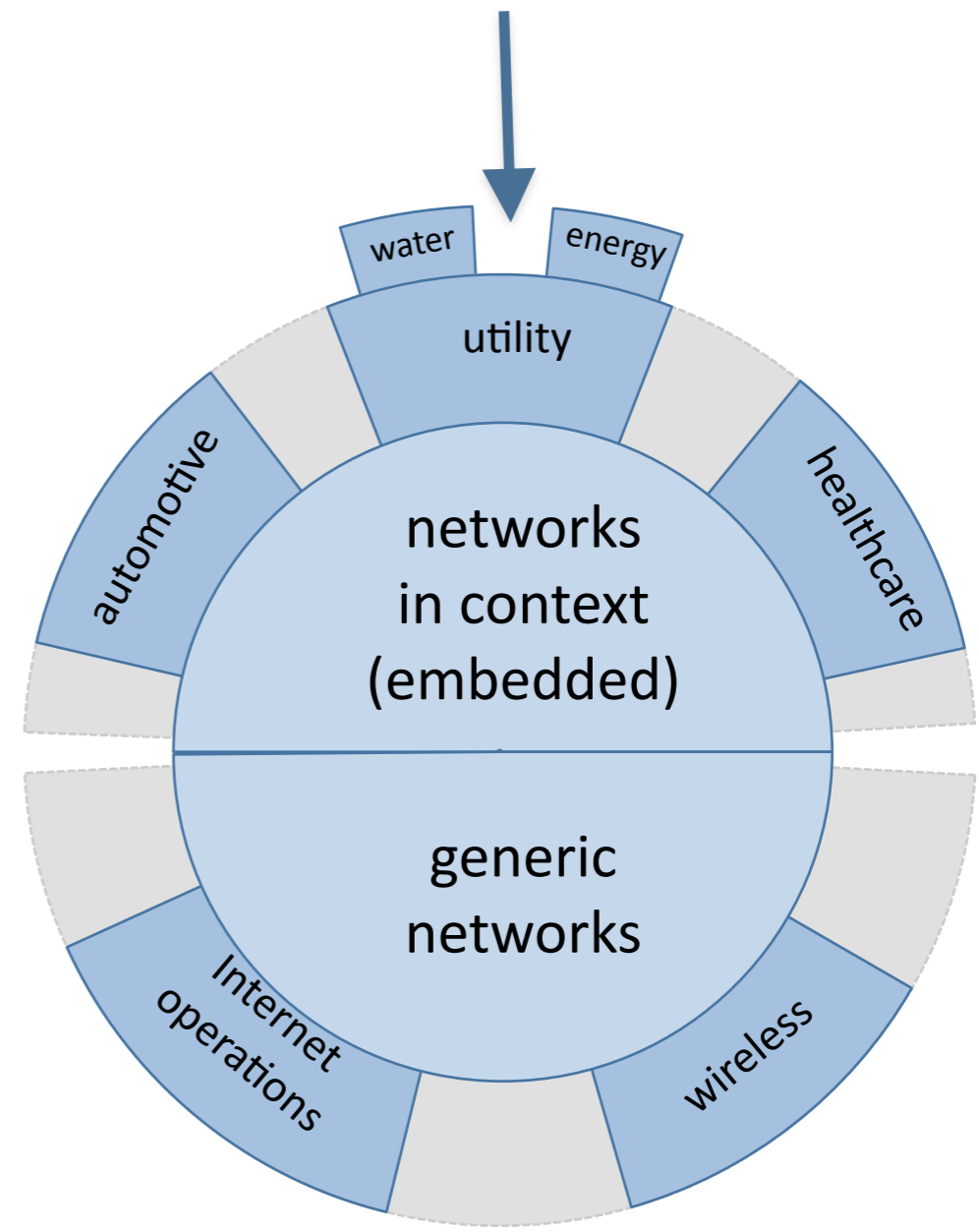
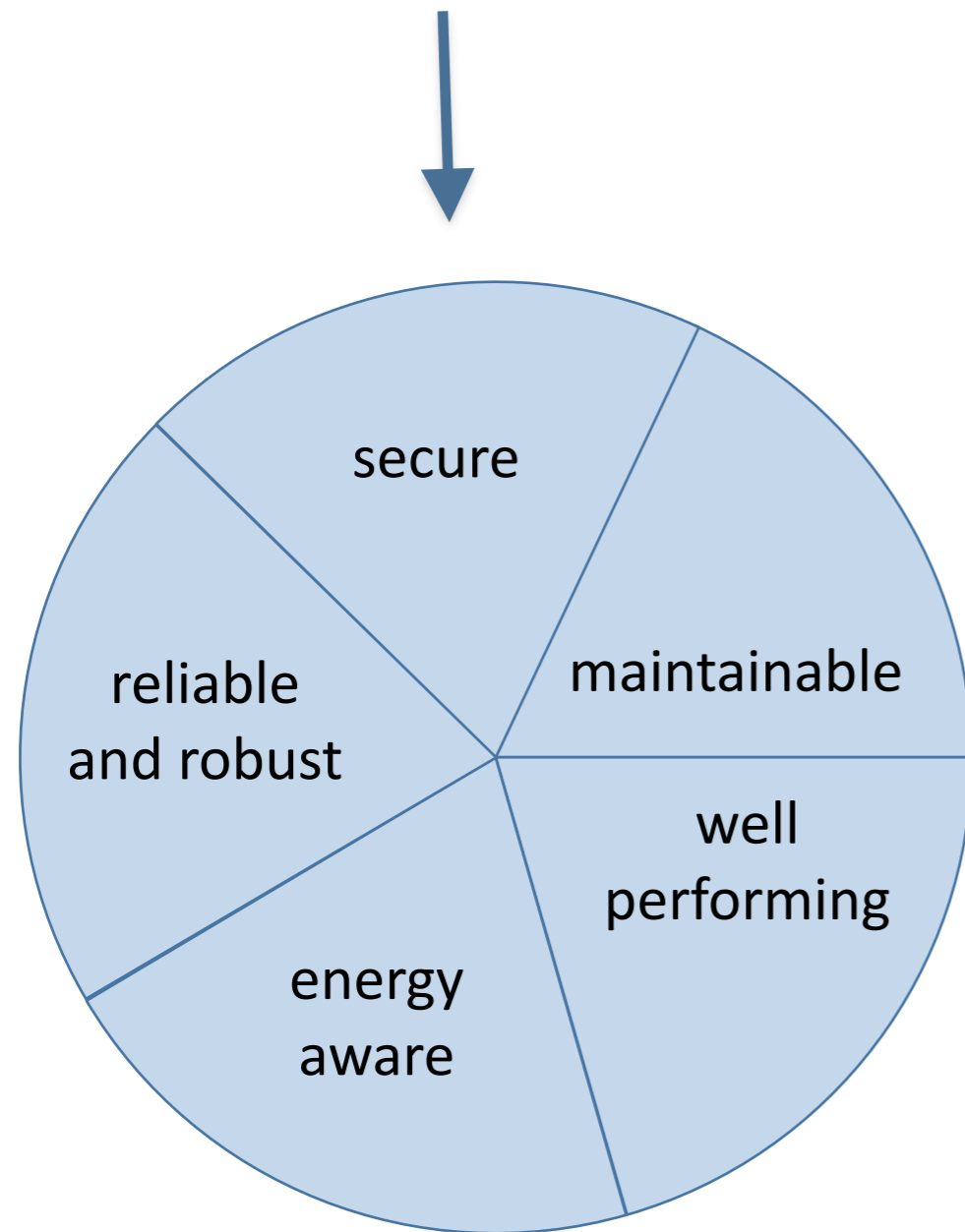
Dependable networking in a dynamic world



Dependable networking in a dynamic world



Dependable networking in a dynamic world



PURPOSE OF THIS COURSE

THE PURPOSE OF THIS COURSE
IS TO GET AN UNDERSTANDING OF:

- WHICH MANAGEMENT INFORMATION EXISTS WITHIN THE INTERNET
 - WHO DEFINES THIS INFORMATION
- THE SYNTAX IN WHICH THIS INFORMATION IS DESCRIBED
 - THE PROTOCOLS THAT ALLOW THIS INFORMATION TO BE MONITORED / MODIFIED
- HOW TO MEASURE THE FLOW OF INTERNET TRAFFIC

MATERIAL

BOOK

William Stallings: SNMP, SNMPv2, SNMPv3, RMON 1 & 2;
Addison Wesley, ISBN 0-201-48534-6

PODCAST / REAL MEDIA PRESENTATIONS

www.simpleweb.org/wiki/Video_tutorials

YOUTUBE VIDEO PRESENTATIONS

<https://www.youtube.com/user/fp7flamingo>

Playlist: [Tutorials on SNMP / Internet Management](#)

SLIDES

www.simpleweb.org/wiki/Internet_Management_Tutorials

EXERCISES

www.simpleweb.org/wiki/Exercises_in_Internet_Management

BLACKBOARD WEBSITE

COURSE ORGANIZATION

COURSE CONSISTS OF THREE ELEMENTS:

- FIVE LECTURES IN CLASS ROOM
- TWO VIDEO LECTURES AS SELF STUDY
 - SEVEN EXERCISES

Classroom lectures

Lecture	Date	Location	Teacher	Topic
1	21/4/2015 13:45-15:30	VR 559	Aiko Pras	Course intro / SNMP versions 1 and 2
2	28/4/2015 13:45-15:30	VR 559	Aiko Pras	SNMP version 3
3	12/5/2015 13:45-15:30	VR 559	Aiko Pras	New approaches for network management
4	26/5/2015 13:45-15:30	VR 559	Luuk Hendriks	Network measurements
5	2/6/2015 13:45-15:30	VR 559	Luuk Hendriks	Network measurements 2

NOTE: No classroom lectures on 5 and 19 may 2015

Slides of the classroom lectures can be found at:

http://www.simpleweb.org/wiki/Internet_Management_Tutorials

Book is: William Stallings: SNMP, SNMPv2, SNMPv3, RMON 1 & 2, Addison Wesley, ISBN 0-201-48534-6

Video lectures

Lecture	Follow before	Topic
1	28/4/2015	Network Management Principles
2	28/4/2015	Management standards
3	28/4/2015	Old: Introduction to SNMP New: <ul style="list-style-type: none">- Network Management Principles- SNMP / Internet Management History- SNMP / Internet Management Goals- SNMP / Internet Management Standards
4	28/4/2015	Structure of Management Information (SMI)
5	12/5/2015	Introduction to Management Information Bases (MIBs)
6	12/5/2015	MIB-II

Video lectures 1, 2, 3 and 4 are needed to answer exercise 1

Video lectures 5 and 6 are needed to answer exercise 2

Video lectures can be found at:

<https://www.youtube.com/user/fp7flamingo>

(Playlist: [Tutorials on SNMP / Internet Management](#))

http://www.simpleweb.org/wiki/Video_tutorials_on_Internet_management

Mapping book - lectures

Book Chapter	Lecture	Topic of the lecture
1	Classroom 1	Course intro
2	Classroom 1	Course intro
4	Classroom 1 Video 2	Course intro
5	Video 3	Structure of Management Information (SMI)
6	Video 4 & 5	Management Information Bases (MIBs)
7	Classroom 1	SNMP versions 1 and 2
11	Video 3	Structure of Management Information (SMI)
12	Classroom 1	SNMP versions 1 and 2
15	Classroom 2	SNMP version 3
16	Classroom 2	SNMP version 3
17	Classroom 2	SNMP version 3

Mapping slides - lectures

Slide titles	Lecture	Topic of the lecture
About this course Ad-hoc approaches to network management Network management standards Intro to SNMP SNMP version 1 SNMP version 2	Classroom 1 Video 1 Video 2 Video 3	Course intro, SNMPv1 & SNMPv2
SMIv1, SMIv2	Video 4	Structure of Management Information (SMI)
Introduction Relation between MIBs MIB-II SNMPv2 MIB Interfaces MIB IP MIB TCP MIB UDP MIB Host resources MIB	Video 5 & 6	Management Information Bases (MIBs)
SNMP version 3	Classroom 2	SNMPv3
New approaches: COPS-PR and NetConf New approaches: Web-services for management	Classroom 3	New approaches for network management
Internet measurements	Classroom 4 Classroom 5	Measurements

Exercises and deadlines

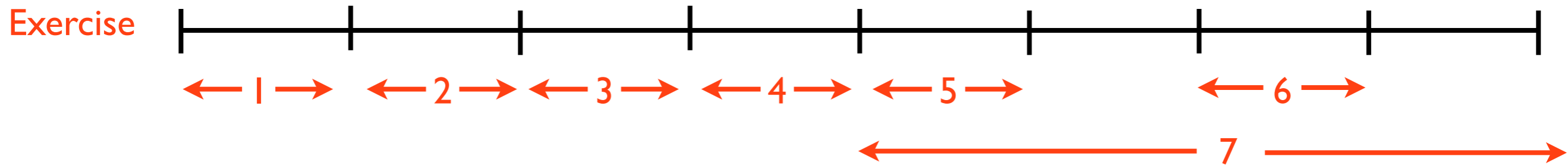
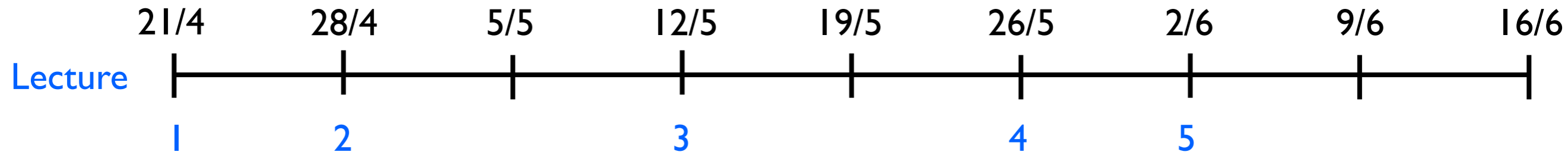
Exercise	Deadline	Topic
1	28/4/2015	Structure of Management Information (SMI)
2	5/5/2015	Management Information Bases (MIBs)
3	12/5/2015	Decode an SNMP packet
4	19/5/2015	Install and configure an SNMP agent
5	26/5/2015	SNMP: Comparison versions 1, 2 and 3
6	From: 1/6/2015 9:00 To: 5/6/2015 17:00	Run a management application
7	19/6/2015	Measuring SSH Dictionary Attacks using NetFlow/IPFIX, <i>or</i> Write an extension to a SNMP agent, plus a report

Answers to exercises must be entered in Blackboard before 01:00 on the day of the deadline

Exercises can be found at:

http://www.simpleweb.org/wiki/Exercises_in_Internet_Management

Overview



Grading of exercises

Exercise	Topic	Weight
1	Structure of Management Information (SMI)	10%
2	Management Information Bases (MIBs)	5%
3	Decode a SNMP packet	5%
4	Install and configure a SNMP agent	10%
5	SNMP: Comparison versions 1, 2 and 3	10%
6	Run a management application	20%
7	Measuring SSH Dictionary Attacks using NetFlow/IPFIX, <i>or</i> Write an extension to a SNMP agent, plus a report	40%