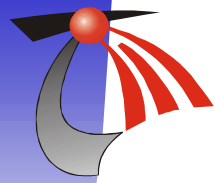

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The Netherlands

SHARING TELEMATICS COURSES
THE CANDLE PROJECT

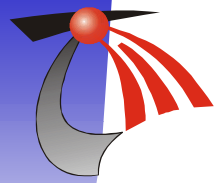
Aiko Pras

Centre for Telematics and Information Technology (CTIT)
University of Twente (UT)
The Netherlands

http://wwwhome.ctit.utwente.nl/~pras

PRESENTATION AT THE EUNICE 2001 SUMMER SCHOOL

PARIS, FRANCE, 4 SEPTEMBER 2001



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The Netherlands

OVERVIEW

- **COURSE DELIVERY IN THE FUTURE**
- **ABOUT THE CANDLE PROJECT**
- **OPEN COURSEWARE SERVICE**
- **OPEN COURSEWARE COMPONENTS**

  - FOUNDATIONS OF TELEMATICS

  - INTERNET MANAGEMENT PROTOCOLS
- **METHODS TO GUIDE AUTHORS & TEACHERS**

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- METHODS TO GUIDE AUTHORS & TEACHERS

TRADITIONAL WAY OF TEACHING

- NOTES ON THE BLACKBOARD
- INTRODUCTION OF READERS
- SOME OF THEM BECAME BOOKS
- AROUND 10 BOOKS PER SUBJECT

LIMITATIONS

- LIMITED COLLABORATION BETWEEN AUTHORS / TEACHERS

- NO MULTI-MEDIA FACILITIES

- NO ANIMATION

- NO INTERACTIVE EXERCISES

WHAT THE FUTURE WILL BRING :-)

- COLLABORATION BETWEEN AUTHORS / TEACHERS
- MULTI-MEDIA / ANIMATION / INTERACTION
- WEB MATERIAL
- MAINTAINED BY MANY TEACHERS / AUTHORS

OVERVIEW

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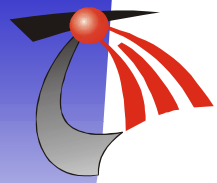

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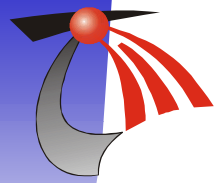
ABOUT CANDLE ...

http://www.candle.eu.org/

EUROPEAN PROJECT
IST 5TH FRAMEWORK PROGRAM

START: JUNE 2000
DURATION: 3 YEARS

- **TOTAL COSTS: 3.281 (2.391) MEURO**
- **TOTAL FTE : 30.2**
- **FTE 2001: 10.7**



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CANDLE PARTNERS

Universität Karlsruhe (DE), *PROJECT COORDINATOR*

British Telecommunications (UK)

École Nationale Supérieure des Télécommunications de Bretagne (FR)

Norwegian University of Science and Technology (NO)

University of Twente (NL)

Institut National des Télécommunications (FR)

Institute of Education (UK)

Politecnico Turino (IT)

Suffolk College (UK)

University College London (UK)

Universitat Politècnica de Catalunya (SP)

Universität Stuttgart (DE)

CANDLE GOALS

1) PROVISIONING OF AN OPEN COURSEWARE SERVICE

2) CREATION OF OPEN COURSEWARE COMPONENTS

3) DEVELOPMENT OF METHODS TO GUIDE AUTHORS & TEACHERS

OVERVIEW

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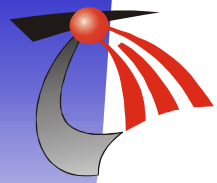
- FOUNDATIONS OF TELEMATICS

- INTERNET MANAGEMENT PROTOCOLS

- METHODS TO GUIDE AUTHORS & TEACHERS



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OPEN COURSEWARE SERVICE

TO IMPROVE THE QUALITY OF COURSE MATERIAL

AND REDUCE DEVELOPMENT COSTS

BY SHARING AND REUSING MATERIAL VIA THE WEB

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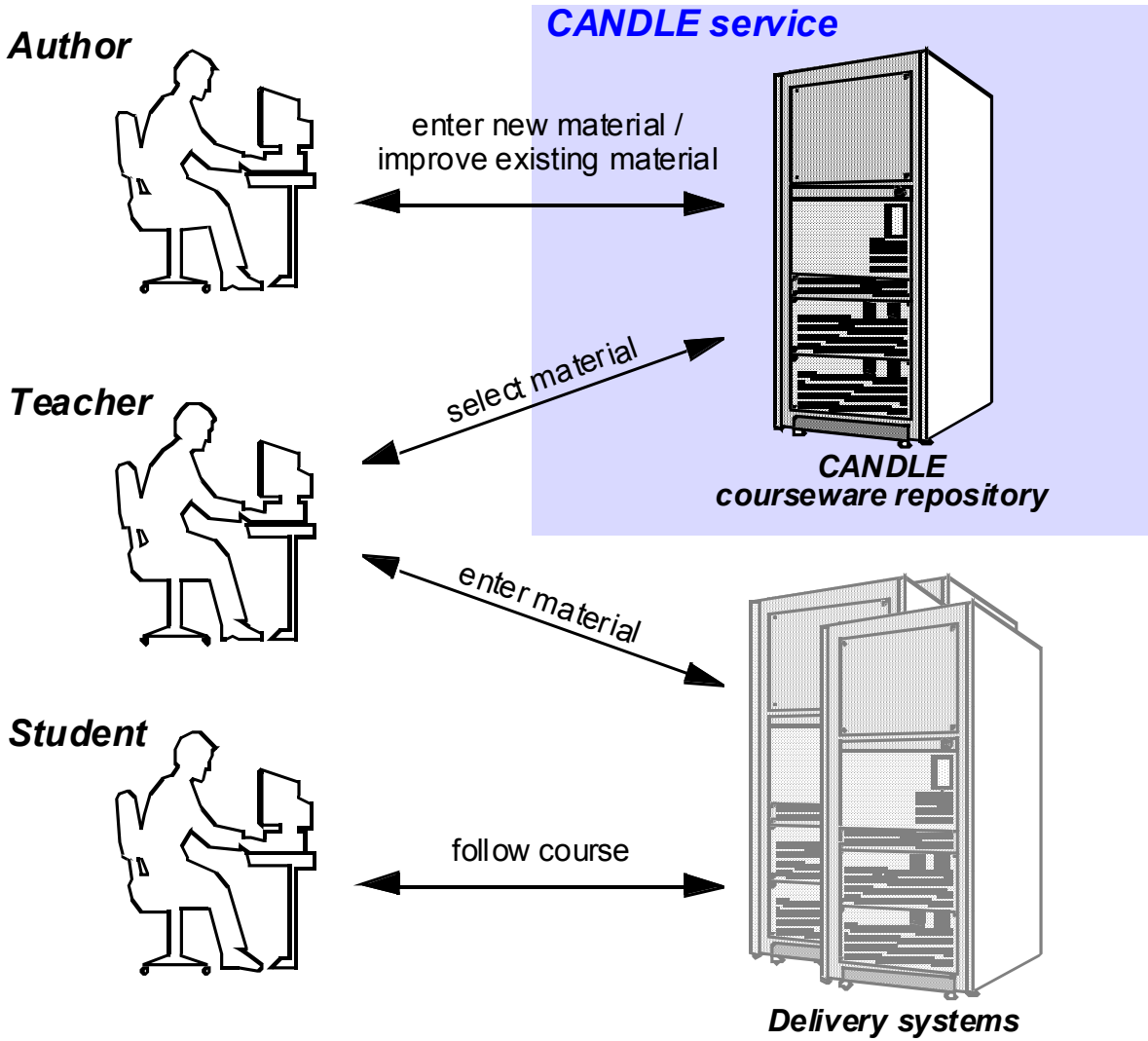
OPEN COURSEWARE SERVICE



MATERIAL WITHIN THE REPOSITORY

- SIMPLE SLIDE
- SET OF SLIDES
- FIGURES
- ANIMATIONS
- WEB PAGES
- APPLETS
- MOVIES
- ...

FINE GRANULARITY: INTRODUCTORY COURSES
COARSE GRANULARITY: ADVANCED COURSES

SELECTING MATERIAL

META DATA

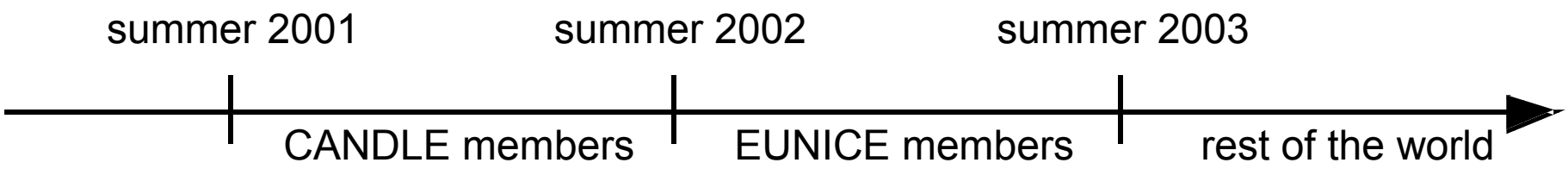
- DESCRIPTION
- NAME OF AUTHOR
- CONTACT INFORMATION OF AUTHOR
- LANGUAGE
- LOCATION (URL)
- FORMAT (MIME TYPE)
- ...

XML

SEPARATE FILES

ALWAYS IN CENTRAL REPOSITORY

PROVISIONING TIME PLAN



OVERVIEW

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OPEN COURSEWARE COMPONENTS

- FOUNDATIONS OF TELEMATICS
- INTERNET PROTOCOLS
- MIDDLEWARE
- NETWORK MANAGEMENT
- INTERNET MANAGEMENT PROTOCOLS
- NETWORK SECURITY
- ROUTING ALGORITHMS
- ACCESS NETWORKS
- LANS
- MOBILE COMMUNICATIONS
- MATHEMATICAL METHODS FOR TELEMATICS
- FORMAL METHODS FOR TELEMATICS
- CODING THEORY
- INFORMATION THEORY

FOUNDATIONS OF TELEMATICS

INTRODUCTORY COURSE

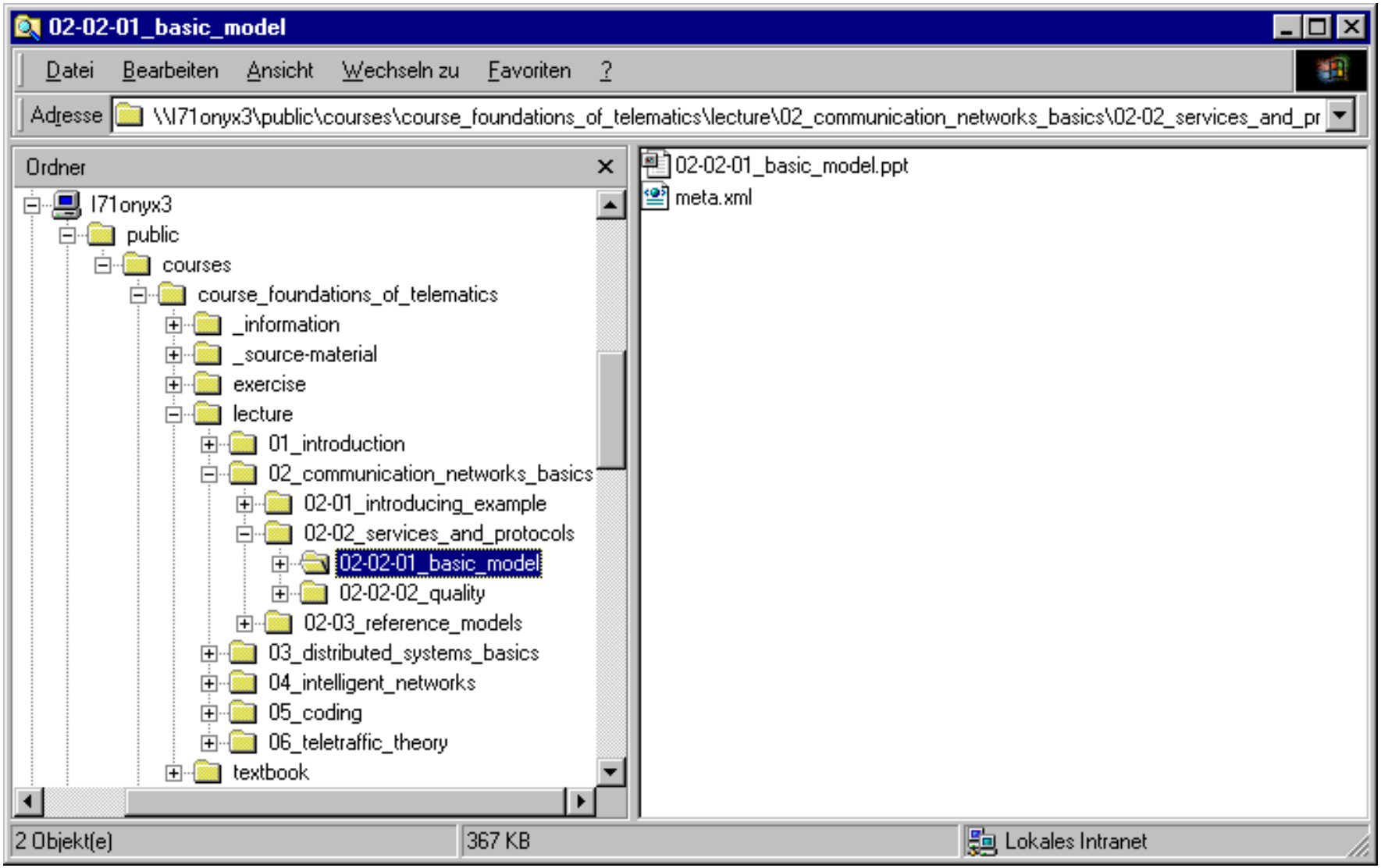
TOPICS:

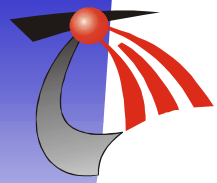
- COMMUNICATION NETWORKS
- DISTRIBUTED SYSTEMS
- INTELLIGENT NETWORKS
- CODING
- TELE-TRAFFIC THEORY

EACH TOPIC IS FURTHER DIVIDED INTO SUB TOPICS

SET OF POWERPOINT SLIDES PER SUB TOPIC

HOW IS IT (CURRENTLY) STORED WITHIN THE REPOSITORY





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INTERNET MANAGEMENT PROTOCOLS

CONTENTS:

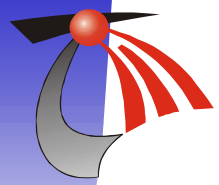
- INTRODUCTION
- STRUCTURE OF MANAGEMENT INFORMATION (SMI)
- MANAGEMENT INFORMATION BASES (MIBS)
- SIMPLE NETWORK MANAGEMENT PROTOCOL (version 1, 2 & 3)
- DISTRIBUTED MANAGEMENT
- EXTENSIBLE AGENTS
- REMOTE MONITORING

± 250 SLIDES (PDF)

± 20 VIDEOS (± 10 HOURS, REAL / …)

INTERACTIVE EXERCISES

- MANAGEMENT INFORMATION (MIBS)
- SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)



MIBs - EXAMPLE OF QUESTIONS

WHEN (DAY & TIME) WAS THE LAST RESET
OF (THE MANAGEMENT PORTION OF) THE HP LASERJET?

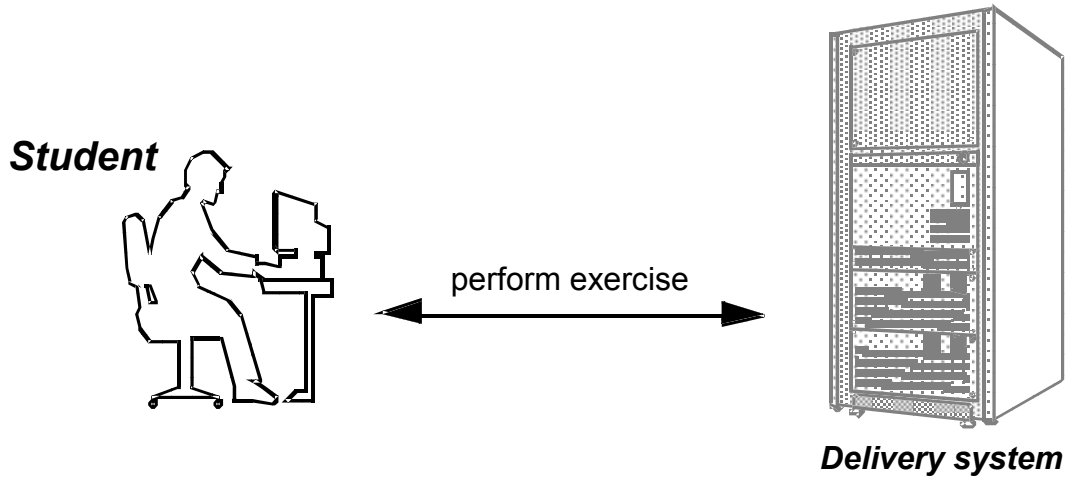
HOW MANY INTERFACES (EXCLUDING THE LOOPBACK)
HAS THE CABLETRON ROUTER

WHAT IS THE SPEED (IN MBPS) OF THESE INTERFACES?

WHAT IS THE MAC ADDRESS OF THE INTERFACE
THAT RECEIVED MOST ERRORS?

WHAT IP ADDRESS BELONGS TO THAT INTERFACE?

MIBs - INFRASTRUCTURE



Simple Web

The MIBs

Home

Internet
IETF-homepage
IETF-area
RFCs
MIBs
MIB Validation
Vendor MIBs
Links
Simple Times
FAQ
Standard orgs
Software
Events & Contacts
Bibliography

Site Search

Simple Times
(issue Sep. 2000)

TSS Mgt Group

IETF | IANA | MicroSoft

ACCOUNTING-CONTROL-MIB
ADSL-LINE-MIB
ADSL-TC-MIB
AGENTX-MIB
APPC-MIB
APPLETALK-MIB
APPLICATION-MIB
APPN-DLUR-MIB
APPN-MIB
APPN-TRAP-MIB
ATM-ACCOUNTING-INFORMATION-MIB
ATM-MIB
ATM-TC-MIB
BGP4-MIB
BRIDGE-MIB

- (•) HTML
- ( ) module
- ( ) original module
- ( ) SMIng
- ( ) XML (smi ng)
- ( ) XML (smi v2)
- ( ) RFC

Show

Legend

HTML: the left side of the screen presents the MIB navigation tree. You can click on nodes to expand / collapse the tree. The right side shows the definition of the selected MIB object.
Module: the MIB module, which might have been changed to remove possible errors.
Original module: the MIB module, as extracted from the RFC.
SMIng: MIBs in SMIng structure.
XML (smi ng): MIBs represented in SMIng structure, XML-encoded. This form is currently under discussion by the IRTF-NMRG.
XML (smi v2): MIBs represented in SMIv2 structure, XML-encoded.
RFC: the RFC the MIB module was extracted from.

IF-MIB DEFINITIONS ::= BEGIN

Simple Web

Imports

Alternatives

Module Identity

OwnerString
InterfaceIndex
InterfaceIndexOrZero

- interfaces
  - ifNumber
  - ifTable
- ifMIBObjects
- ifConformance
- linkDown
- linkUp

END

ifTable	ObjectType
Syntax	SequenceOf IfEntry
MaxAccess	not-accessible
Status	current
Description	A list of interface entries. The number of entries is given by the value of ifNumber.
Fq Name	iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable
::=	{ interfaces 2 } (1.3.6.1.2.1.2.2.)

Select device to test: HP LaserJet 4050 TN
Cabletron 2000 (router)
Cisco ags-plus (router)

IF-MIB DEFINITIONS ::= BEGIN

Simple Web

Imports

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Select device to test: HP LaserJet 4050 TN
Cabletron 2000 (router) <===
Cisco ags-plus (router)

ifIndex	ifDescr	ifType	ifMtu	ifSpeed	ifPhysAd
1	Physical port: et.1.1	ethernetCsmacd(6)	1500	Gauge32: 10000000	0:e0:63:2b
2	Physical port: et.1.2	ethernetCsmacd(6)	1500	Gauge32: 0	0:e0:63:2b
3	Physical port: et.1.3	ethernetCsmacd(6)	1500	Gauge32: 10000000	0:e0:63:2b
4	Physical port: et.1.4	ethernetCsmacd(6)	1500	Gauge32: 100000000	0:e0:63:2b
5	Physical port: et.1.5	ethernetCsmacd(6)	1500	Gauge32: 0	0:e0:63:2b
6	Physical port: et.1.6	ethernetCsmacd(6)	1500	Gauge32: 0	0:e0:63:2b
7	Physical port: et.1.7	ethernetCsmacd(6)	1500	Gauge32: 0	0:e0:63:2b

File Edit View Go Communicator Help

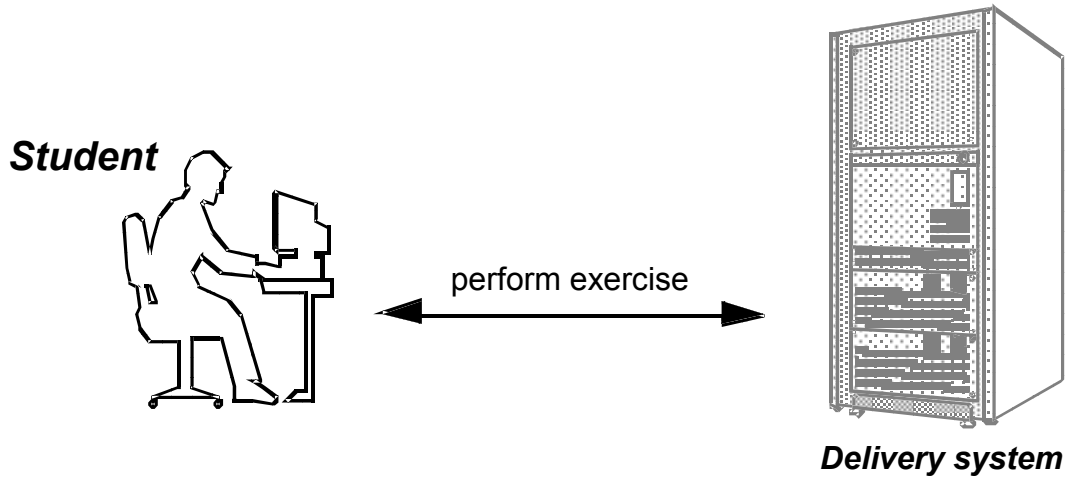
Bookmarks Location: f/mibs/modules/html/ex/?module=IF-MIB&object=ifTable&deviceFullName=Cabletron%202000%20%28router%29&orientation=hor&noTypes=1 What's Related

Select device to test: HP LaserJet 4050 TN
Cabletron 2000 (router) <===
Cisco ags-plus (router)

ifIndex	ifDescr	ifType	ifMtu	ifSpeed	ifPhysAddress	ifAdminStatus	ifOperStatus	ifLastChange	ifInOctets	ifInUcas
1	Physical	ethernetCsmacd	1500	10000000	0:e0:63:2b:2e:e2	up	up	88:23:12:34.00	1531499409	7660569
2	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	65:23:34:12.00	3007402828	3994203
3	Physical	ethernetCsmacd	1500	10000000	0:e0:63:2b:2e:e2	up	up	19:23:21:35.00	1620122291	2433505
4	Physical	ethernetCsmacd	1500	100000000	0:e0:63:2b:2e:e2	up	up	65:20:54:15.00	164427979	837965
5	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	19:23:12:24.00	191075747	414008
6	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	0:0:00:00.00	0	0
7	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	0:0:00:00.00	0	0
8	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	0:0:00:00.00	0	0
9	Physical	ethernetCsmacd	1500	10000000	0:e0:63:2b:2e:e2	up	up	17:0:59:30.00	6792528	75256
10	Physical	ethernetCsmacd	1500	10000000	0:e0:63:2b:2e:e2	up	up	17:0:59:58.00	6466776	70432
11	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	0:0:00:00.00	0	0
12	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	34:23:11:16.00	0	0
13	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	0:0:00:00.00	0	0
14	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	0:0:00:00.00	0	0
15	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	0:0:00:00.00	0	0
16	Physical	ethernetCsmacd	1500	0	0:e0:63:2b:2e:e2	up	down	65:21:26:28.00	1728	0
17	VLAN:	l2vlan	0	0		up	lowerLayerDown	88:23:12:34.00	1728	0
18	IP	ipForward	1968	0	0:0:0:0:0:0	up	up	0:0:00:00.00	0	0
19	IP	ipForward	1500	0	0:e0:63:2b:2e:e3	down	down	0:0:00:00.00	0	0
20	VLAN:	l3ipvlan	0	0		up	up	88:23:12:34.00	1531501176	7660588
21	IP	ipForward	1500	0	0:e0:63:2b:2e:e2	up	up	88:23:12:34.00	1531501269	7660589
22	VLAN:	l3ipvlan	0	0		up	lowerLayerDown	65:23:34:12.00	3007402828	3994203
23	IP	ipForward	1500	0	0:e0:63:2b:2e:e2	up	lowerLayerDown	65:23:34:12.00	3007402828	3994203

Document: Done

SNMP - INFRASTRUCTURE



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UT Demo MIB - Get (v1)

Home

SNMP v1
Get
GetNext
Set
SNMP v2c
SNMP v3

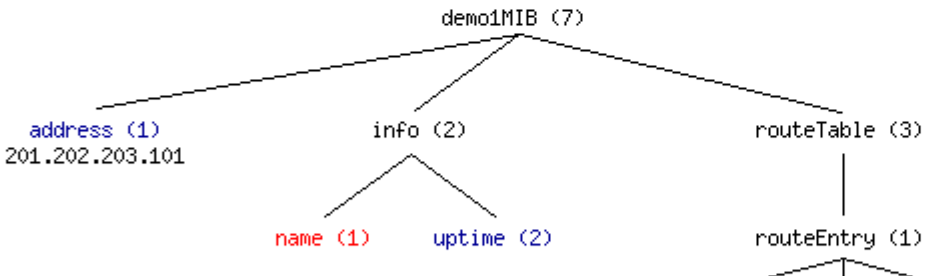
Site Search

Simple Times
(issue Sep. 2000)

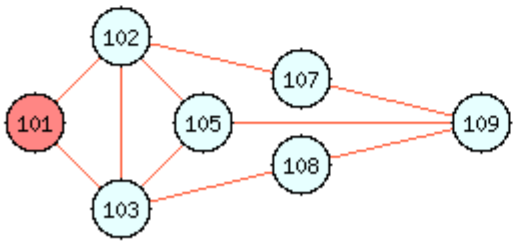
TSS Mgt Group

Object Id(s)	7.1.0
Object Value(s)	
Error Status	
Error Index	

Get



routeDest (1)	policy(2)	routeNext (3)
201.202.203.102	1	201.202.203.102
201.202.203.103	1	201.202.203.103
201.202.203.105	1	201.202.203.102
201.202.203.105	2	201.202.203.103
201.202.203.107	1	201.202.203.102
201.202.203.108	1	201.202.203.103
201.202.203.109	1	201.202.203.102



Last changed by
the SimpleWeb
May 16, 2001

Simple Web

UT Demo MIB - GetNext (v1)

Home

SNMP v1
Get
GetNext
Set
SNMP v2c
SNMP v3

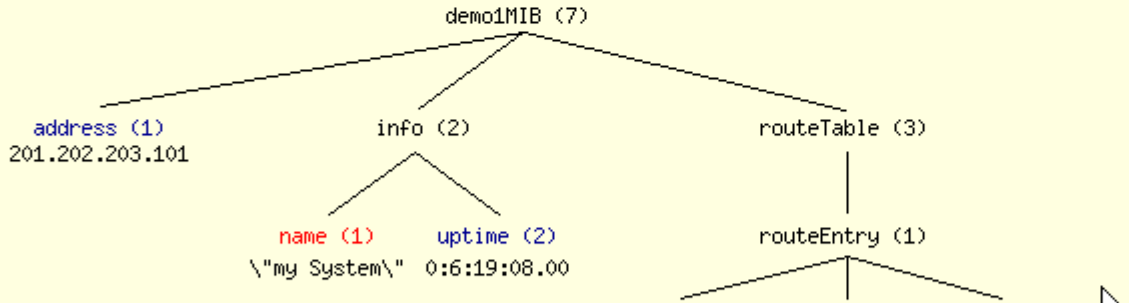
Site Search

Simple Times
(issue Sep. 2000)

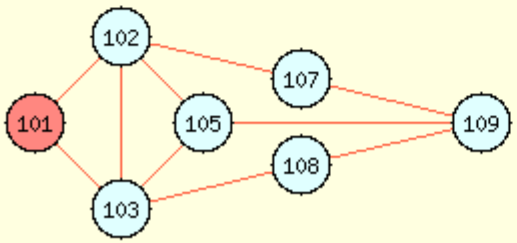
TSS Mgt Group

Object Id(s)	7.2.2.0
Object Value(s)	0:6:19:08.00
Error Status	0
Error Index	0

GetNext



routeDest (1)	policy(2)	routeNext (3)
201.202.203.102	1	201.202.203.102
201.202.203.103	1	201.202.203.103
201.202.203.105	1	201.202.203.102
201.202.203.105	2	201.202.203.103
201.202.203.107	1	201.202.203.102
201.202.203.108	1	201.202.203.103
201.202.203.109	1	201.202.203.102



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May 16, 2001

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UT Demo MIB - GetNext (v1)

Home

SNMP v1
Get
GetNext
Set
SNMP v2c
SNMP v3

Site Search

Simple Times
(issue Sep. 2000)

TSS Mgt Group

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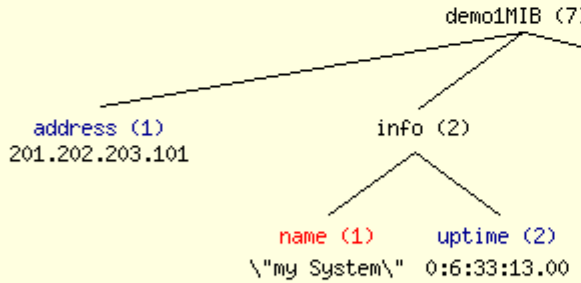
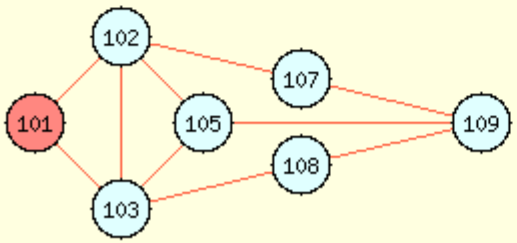
Object Value(s)	201.202.203.102
Error Status	0
Error Index	0

GetNext



routeDest (1)	policy(2)	routeNext (3)
201.202.203.102	1	201.202.203.102
201.202.203.103	1	201.202.203.103
201.202.203.105	1	201.202.203.102
201.202.203.105	2	201.202.203.103
201.202.203.107	1	201.202.203.102
201.202.203.108	1	201.202.203.103
201.202.203.109	1	201.202.203.102



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UT Demo MIB - GetNext (v1)

Home

SNMP v1
Get
GetNext
Set
SNMP v2c
SNMP v3

Site Search

Simple Times
(issue Sep. 2000)

TSS Mgt Group

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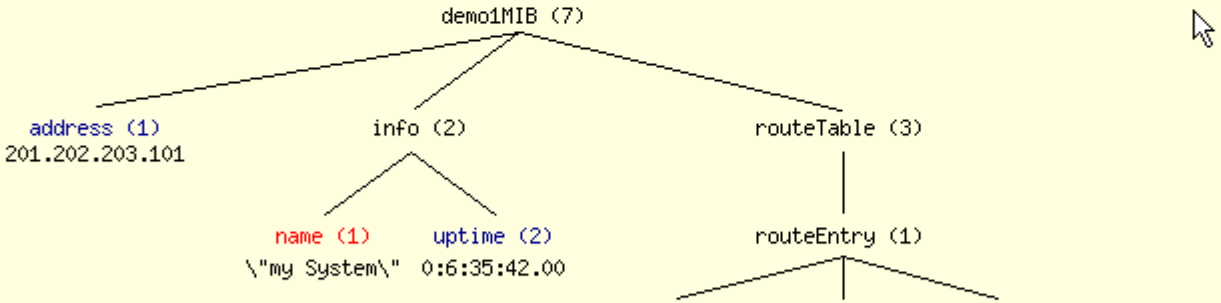
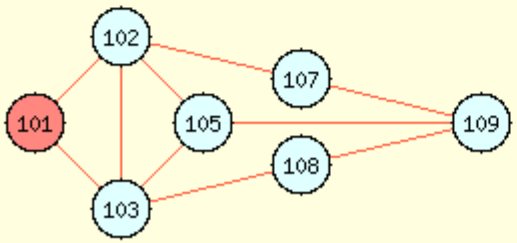
Object Id(s)	7.3.1.1.201.202.203.103.1
Object Value(s)	201.202.203.103
Error Status	0
Error Index	0

GetNext



routeDest (1)	policy(2)	routeNext (3)
201.202.203.102	1	201.202.203.102
201.202.203.103	1	201.202.203.103
201.202.203.105	1	201.202.203.102
201.202.203.105	2	201.202.203.103
201.202.203.107	1	201.202.203.102
201.202.203.108	1	201.202.203.103
201.202.203.109	1	201.202.203.102



Simple Web

UT Demo MIB - GetNext (v2c)

Home

SNMP v1
SNMP v2c
Get
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GetBulk
Set
SNMP v3

Site Search

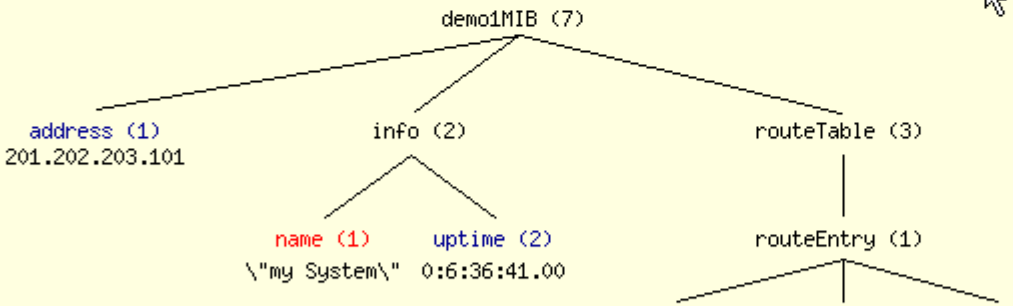
Simple Times
(issue Sep. 2000)

TSS Mgt Group

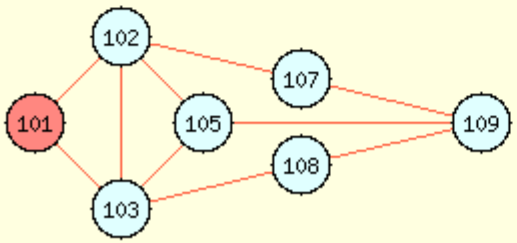
Last changed by
the SimpleWeb
May 16, 2001

Object Id(s)	7.3.1.1.201.202.203.105.1
Object Value(s)	201.202.203.105
Error Status	0
Error Index	0

GetNext



routeDest (1)	policy(2)	routeNext (3)
201.202.203.102	1	201.202.203.102
201.202.203.103	1	201.202.203.103
201.202.203.105	1	201.202.203.102
201.202.203.105	2	201.202.203.103
201.202.203.107	1	201.202.203.102
201.202.203.108	1	201.202.203.103
201.202.203.109	1	201.202.203.102



Simple Web

UT Demo MIB - Get (v2c)

Home

SNMP v1
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Get
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Site Search

Simple Times
(issue Sep. 2000)

TSS Mgt Group

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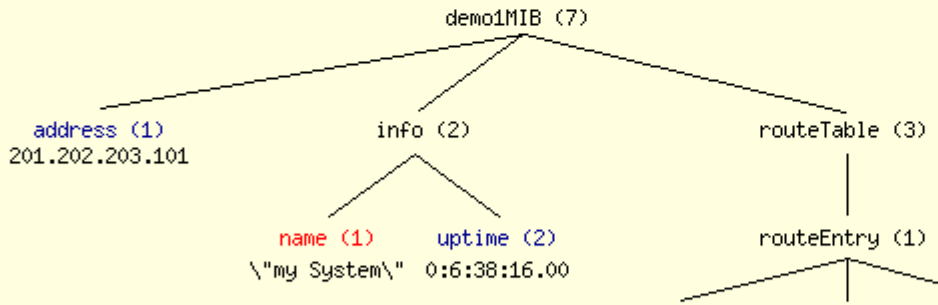
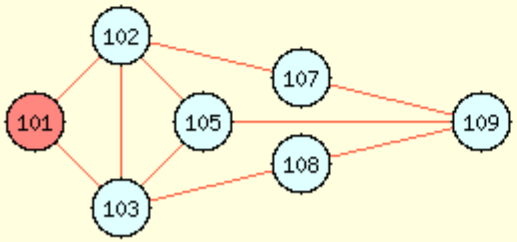
May 16, 2001

Object Id(s)	1.0
Object Value(s)	No Such Object available on this agent
Error Status	0
Error Index	0

Get



routeDest (1)	policy(2)	routeNext (3)
201.202.203.102	1	201.202.203.102
201.202.203.103	1	201.202.203.103
201.202.203.105	1	201.202.203.102
201.202.203.105	2	201.202.203.103
201.202.203.107	1	201.202.203.102
201.202.203.108	1	201.202.203.103
201.202.203.109	1	201.202.203.102



Simple Web

UT Demo MIB - Get (v1)

Home

SNMP v1
Get
GetNext
Set
SNMP v2c
SNMP v3

Site Search

Simple Times
(issue Sep. 2000)

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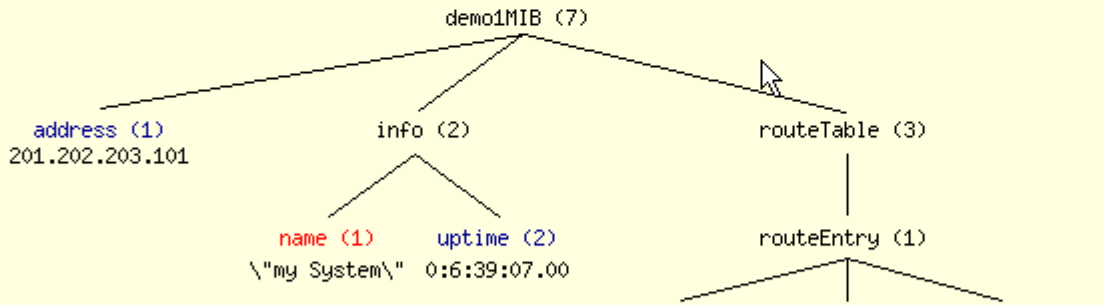
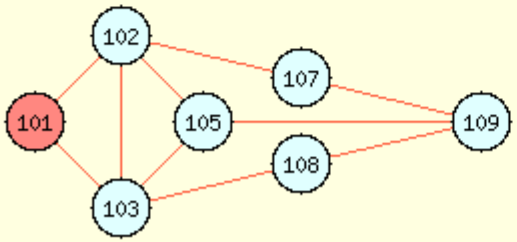
May 16, 2001

Object Id(s)	1.0
Object Value(s)	
Error Status	2
Error Index	1

Get



routeDest (1)	policy(2)	routeNext (3)
201.202.203.102	1	201.202.203.102
201.202.203.103	1	201.202.203.103
201.202.203.105	1	201.202.203.102
201.202.203.105	2	201.202.203.103
201.202.203.107	1	201.202.203.102
201.202.203.108	1	201.202.203.103
201.202.203.109	1	201.202.203.102



Home

SNMP v1
SNMP v2c
SNMP v3
Get
GetNext
GetBulk
Set

Site Search

Simple Times
(issue Sep. 2000)

TSS Mgt Group

Last changed by
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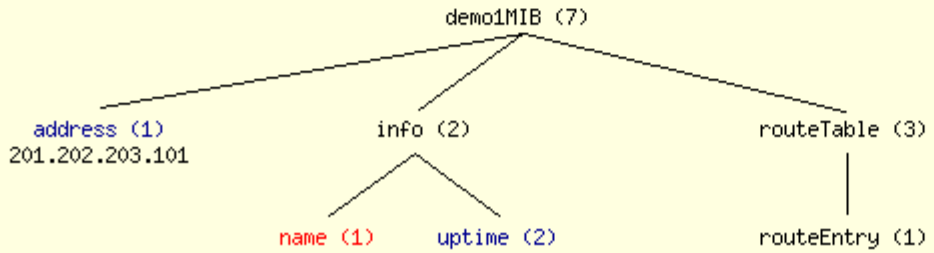
May 16, 2001

Security name		
Security level	○ no Auth, no Priv ○ Auth, no Priv ◉ Auth, Priv	
Authentication	Protocol	○ MD5 ◉ SHA
	Pass phrase *(8 or more chars)*	
Privacy	Protocol	◉ DES
	Pass phrase *(8 or more chars)*	
Object Id(s)	7.1.0	
Object Value(s)		
Error Status		
Error Index		

Get



OVERVIEW

- COURSE DELIVERY IN THE FUTURE
- ABOUT THE CANDLE PROJECT
- OPEN COURSEWARE SERVICE
- OPEN COURSEWARE COMPONENTS

- FOUNDATIONS OF TELEMATICS

- INTERNET MANAGEMENT PROTOCOLS

- **METHODS TO GUIDE AUTHORS & TEACHERS**

METHODS TO GUIDE AUTHORS & TEACHERS

ALSO INTERESTING FOR:

- PEDAGOGICAL STAFF
- RESEARCHERS IN THE AREA OF TEACHING & LEARNING

1) HOW TO ANNOTATE COURSE MATERIAL WITH META-DATA

2) GUIDELINES FOR CREATING COURSE MATERIAL (CREEM)

ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- GENERAL
- LIFECYCLE
- CLASSIFICATION
- PEDAGOGICAL
- RELATIONS
- TECHNICAL
- RIGHTS
- META META-DATA

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University of Twente
The Netherlands

ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- **GENERAL**
  - TITLE
  - DESCRIPTION
  - LANGUAGE
  - AUTHOR
  - INSTITUTION
  - CONTACT
  - ...
- **LIFECYCLE**
- **CLASSIFICATION**
- **PEDAGOGICAL**
- **RELATIONS**
- **TECHNICAL**
- **RIGHTS**
- **META META-DATA**

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ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- GENERAL
- **LIFECYCLE**
- CLASSIFICATION
- PEDAGOGICAL
- RELATIONS
- TECHNICAL
- RIGHTS
- META META-DATA

VERSION NUMBER ID
PREDECESSOR
SUCCESSOR
DATE OF CHANGE
STATUS
...

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ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- GENERAL
- LIFECYCLE
- **CLASSIFICATION**
- PEDAGOGICAL
- RELATIONS
- TECHNICAL
- RIGHTS
- META META-DATA

RANDOM KEYWORDS
ONTOLOGY

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ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- GENERAL
- LIFECYCLE
- CLASSIFICATION
- **PEDAGOGICAL**
- RELATIONS
- TECHNICAL
- RIGHTS
- META META-DATA

LEARNING ENVIRONMENT
TEACHER ROLE
...

ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- GENERAL
- LIFECYCLE
- CLASSIFICATION
- PEDAGOGICAL
- **RELATIONS**
- TECHNICAL
- RIGHTS
- META META-DATA

RELATED MATERIAL
PART OF …
BASIS FOR …
REFERENCE TO …
REFERENCED BY …
…

ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- GENERAL
- LIFECYCLE
- CLASSIFICATION
- PEDAGOGICAL
- RELATIONS
- **TECHNICAL**
- RIGHTS
- META META-DATA

SIZE IN BYTES
LOCATION (URL)
MIME TYPE
OS
BROWSER REQ. …
…

ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

- GENERAL
- LIFECYCLE
- CLASSIFICATION
- PEDAGOGICAL
- RELATIONS
- TECHNICAL
- **RIGHTS**
- META META-DATA

COPYRIGHTED?
PUBLISHER
COSTS
...

ANNOTATING COURSE MATERIAL

BASED ON ARIADNE, IMS AND LOM

EIGHT CATEGORIES:

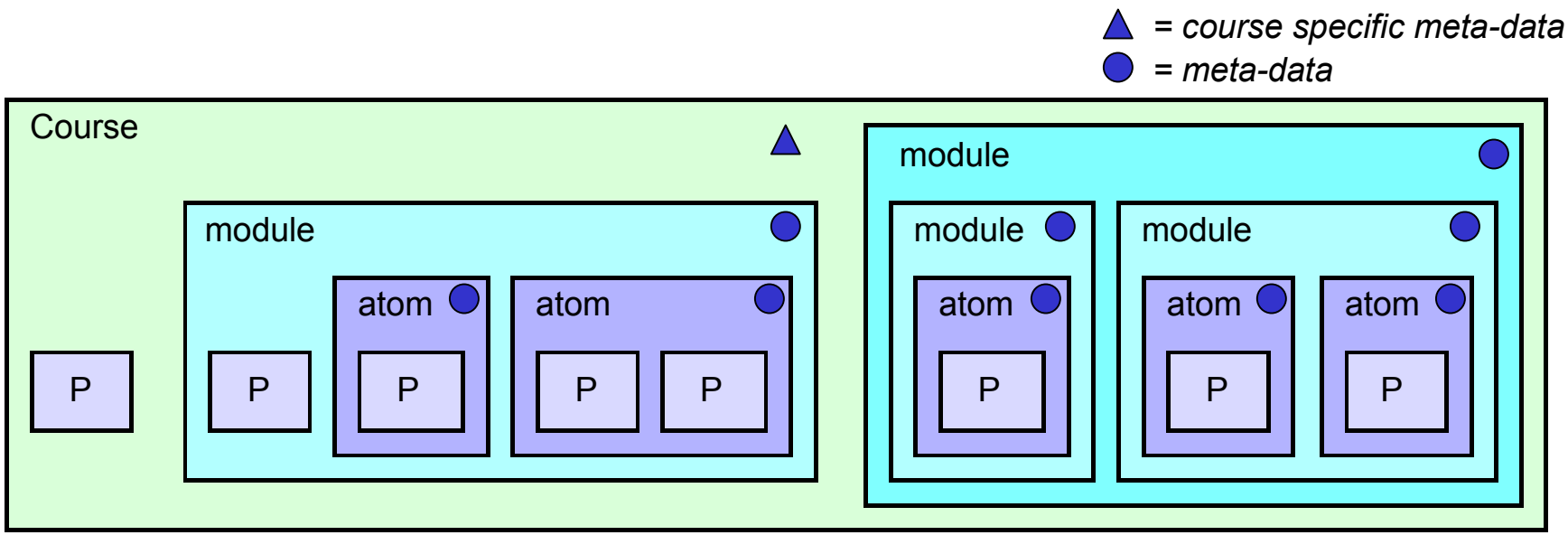
- GENERAL
- LIFECYCLE
- CLASSIFICATION
- PEDAGOGICAL
- RELATIONS
- TECHNICAL
- RIGHTS
- META META-DATA

GUIDELINES FOR CREATING MATERIAL

CREEM

- PARTICLE
- C-ATOM
- C-MODULE
- C-COURSE

CONTAINMENT HIERARCHY EXAMPLE



CONCLUSIONS

CANDLE HAS THREE GOALS:

- PROVISIONING OF AN OPEN COURSEWARE SERVICE
- CREATION OF OPEN COURSEWARE COMPONENTS
- DEVELOPMENT OF METHODS TO GUIDE AUTHORS & TEACHERS

PROJECT WELL ON ITS WAY

NEXT YEAR RESULTS WILL BE AVAILABLE TO EUNICE PARTNERS