

# ID8.12 Network Management Tool API

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# **TenCompetence WP8 API**

**Task 8.3 (as in DIP2): Network Management Tool**

**Version: 0.4**

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# 1. Introduction

This document describes the API provided by the TenCompetence WP8 Network Management Tool, which is responsible for management of peer learning network communities.

## 2. Activities

This section contains a list of activities, that LNUs (learning network users) may perform. These activities are supported by methods, described with some of the classes, listed in the next section of the document.

### 2.1 Learning network user activities

These are the activities, that human users should be capable to perform in the learning network.

- Log in
- Log out
- Update electronic calendar
- Ask a content question.
  - The system should validate the question
  - The tutee agent should archive the filled question form after successful validation
- Ask for clarification content question
- Provide answer to content question
- Discuss about content question
- Rate tutor
- Round up discussion

### 2.2 Agent activities

- Send question form to LSA module
- Send question form to Agent Matchmaker
- Process content question
- Process output for community
- Populate community (with tutee(s) and tutor(s))
- Invite community members
- Send input to discussion
- Process input discussion
- Archive rounded up discussion
- Find suitable peer tutors
  - Determine LNU content competency with respect to CQ
  - Determine LNU tutor competency with respect to CQ
  - Restrict tutor's eligibility
  - Determine tutor availability
- Retrieve documents containing possible answer to question

### 2.3 Common (user and agent) activities

- Handle invitation
- Update dossier
- Update calendar

### 3. Objects

In this section the objects needed for the Network Management Tool are described. It should be noted that the lists of object fields listed below may not be exhaustive, i.e. in actual object implementation may exist more fields, but they would not be accessible by the rest of the TenCompetence system. Network Management API should provide getters and/or setter for all fields listed in this section. Already defined *User* object in TenCompetence API document<sup>1</sup> (TCAD) is reused:

- User, cf. section 1.1
- Dossier, cf. section 1.2
- Agenda, cf. section 1.3
- Tutor Competence, cf. section 1.4
- Contribution Rate, cf. section 1.5
- Competence Rate, cf. section 1.6
- Action, cf. section 1.7
- Content Question (CQ) , cf. section 1.8
- Document collection, cf. section 1.9
- Document, cf. section 1.10
- Document space , cf. section 1.11
- Community, cf. section 1.12
- Calendar event, cf. section 1.13
- Agent, cf. section 1.14

#### 3.1 User

This section contains an extension of the definition of the *user* object<sup>1</sup>.

Field Name	Values	Default Value	M/A	Reason/Meaning/Usage
Logged on	Boolean	false	A	Indicates if the user has logged on to the system
Dossier	Integer	dossierID	A	This is a the ID of dossier object, which gives attributes such as: tutor availability, past tutor load, competence and eligibility.

The list of methods of this class follows:

Method Name	Static	Return	Parameters		Notes
			Name	Type	
askContentQuestion	N	Boolean	question	Integer /cQuestionID/	The method returns false if the question is not valid. It also actualizes the relevant fields in the Dossier object, associated with the user.
ClarifyQuestion	N	void	tutor	Integer /userID/ should this be Array	The method throws an exception if the user hasn't received an answer from this tutor or if the community does not exist.
			community	Integer /commID/	
receiveInvitation	N	Boolean	question	Integer /cQuestionID/	This method should be used to invite a user to participate as a tutor in a peer community. If the user accepts the

<sup>1</sup> As defined in version 0.5.3 of the document.

					invitation, the method returns true and false, otherwise. It also actualizes the relevant fields in the Dossier object, associated with the user.
rateTutor	N	void	tutor	Integer /userID/	The method throws an exception if the user (as a tutee) and the tutor do not participate in a same peer community.
			community	Integer /commID/	
roundupDiscussion	N	void	community	Integer /commID/	The method throws an exception if the user does not participate in the community as a tutee.

### 3.2 Dossier

Field Name	Values	Default Value	M/A <sup>1</sup>	Reason/Meaning/Usage
dossierID	Integer	Last dossierID+1	A	Unique Identifier for each Dossier
Associated user	Integer	UserID	A	Uniquely identifies, the LNU, associated with the Dossier object
Email	String	""	M	E-mail address of the user
Email validity	Boolean	true	A	The system should require from the user to answer make some actions defined into a control message, sent by e-mail and thus determine if the user's e-mail address was valid.
Currently Mastering Competences	(Integer)	List of CDOIDs	A	This is the list of the competences (actions) that the user is studying at the moment. The system should automatically indicate which CDOs is currently in the process of mastering and update this field.
LN role	String	"learner"	A	Indicates the role of the user in the learning network. With respect to the network management only the users in role "learner" are considered.
ATL Role-learner	Integer	0	A	Indicates in how many actions, the user is involved as a learner.
ATL Role-tutor	Integer	0	A	Indicates in how many actions, the user is involved as a tutor.
Goal		List of actionIDs	A/M	The goal contains the identifiers of the actions that a user should complete to obtain his goal or competence. This list contains the actions to do including the list of actions for which the user is exempted.
Actions to do	(Integer)	List of actionIDs	A	Contains the identifiers of actions that the user wishes to complete, in order to achieve the goal (e.g. to accomplish the desired competences, as defined in the <i>user</i> object <sup>1</sup> ) There are actually 2 kinds of lists of actions to do. First there is the whole list of actions, excluding the exemptions, a users has to complete to achieve his goal. Secondly, based on this list, a list of actions still to do, because some of them have already been completed.
Actions in use	(Integer)	List of actionIDs	A	Contains the identifiers of actions that the user is currently using.
Completed	(Integer)	List of	A	Contains the identifiers of actions that the user has

<sup>1</sup> This column describe whether the associated filled is either filled in 'Manually, by the user, or 'Automatically, by the system.

Actions		actionIDs		completed.
Actions mastery level	(Integer)		A	Contains marks for the mastery level of each completed action. The size of this list should be equal to the size of the <i>Completed Actions</i> list.
Exempted actions	(Integer)	List of actionIDs	A	Contains the identifiers of actions that the user has been exempted from, due to previous knowledge.
Valid questions asked	(Integer)	List of cQuestionIDs	A	Contains archive with valid content questions, that user has asked.
Last Received Invitation	Long		A	Contains the date of the last invitation for participation in peer community as a tutor that the user has received.
Last Accepted Invitation	Long		A	Contains the date of the last invitation for participation in peer community as a tutor that the user has accepted.
Last Declined Invitation	Long		A	Contains the date of the last invitation for participation in peer community as a tutor that the user has declined.
Received Count	Integer	0	A	Contains the number of invitations for participation in peer community as a tutor that the user has received.
Accepted Count	Integer	0	A	Contains the number of invitations for participation in peer community as a tutor that the user has accepted.
Declined Count	Integer	0	A	Contains the number of invitations for participation in peer community as a tutor that the user has declined.
Tutor Competence	Boolean	True	A	Indicates if the user is available to become a tutor.

This object possibly requires an additional field into the *user* object, as defined in version 0.5.3 of the WP8 API.

### 3.3 Agenda

This object represents the electronic calendar and determines user agenda. Only administrators, matchmakers, LNU agents and the user itself should have rights to access the agenda.

Field Name	Values	Default Value	M/A	Reason/Meaning/Usage
agendaID	Integer	Last agendaID + 1	A	A unique identifier for each agenda
Associated user	Integer	UserID	A	Uniquely identifies, the LNU, associated with the Agenda object
Calendar events	(Integer)	List of calEventIDs	A	Identifiers of all events that form the agenda of the user.

List of methods, associated with this class follows:

Method Name	Static	Return	Parameters		Notes
			Name	Type	
getCalendarEvents	Y	(CalendarEvent)	userID	Integer	Throws an exception if there are not rights to access user's agenda.
addCalendarEvent	Y	boolean	event	Integer /calendar event ID/	Throws an exception if there are not rights to access user's agenda. Method returns true if the event was successfully added

					to the agenda or false otherwise (e.g. in case of conflict with another event).
removeCalendarEvent	Y	boolean	event	Integer /calendar event ID/	Throws an exception if there are not rights to access user's agenda. Method returns true if the event was successfully removed from the agenda or false otherwise (e.g. if such event does not exist).
removeCalendarEvent	Y	boolean	startDate	long	Same as above
	Y		endDate	long	

### 3.4 Tutor Competence

Field Name	Values	Default Value	M/A	Reason/Meaning/Usage
Tutor Competence ID (tcID)	Integer	Last tcID + 1	A	A unique identifier for the tutor competence object.
Answered Count	Integer	0	A	Contains the number of the questions successfully answered by this user, while acting as a tutor.
Failed Count	Integer	0	A	Contains the number of the questions that this user failed to answer, while acting as a tutor.
Answered Questions	(Integer)	List of cQuestionIDs	A	Contains a list of questions that this user succeeded to answer, while acting as a tutor. Dates of successful answer are stored in the relevant <i>Question</i> object.
Failed Questions	(Integer)	List of cQuestionIDs	A	Contains a list of questions that this user failed to answer, while acting as a tutor. Dates when failure occurred are stored in the relevant <i>Question</i> object.
Contribution Rates	(Integer)	List of contrIDs	A	List of <i>Contribution</i> objects.
Competence Rates	(Integer)	List of compRateIDs	A	List of <i>Competence Rate</i> objects.

### 3.5 Contribution

Field Name	Values	Default Value	M/A	Reason/Meaning/Usage
contrID	Integer	Last contrID + 1	A	A unique identifier for <i>Contribution Rate</i> object.
Associated Question	Integer	cQuestionID	A	Contains the identifier of the question, that caused this contribution rating to take place. This field should not be empty.
contribution	(String)		A	The actual text, which the tutor has contributed to the question.
Rating	Integer		M	Contains the rating that the user has given to the answer received. The value is positive if the answer was successful and zero, otherwise.
Rate Mark	Integer		M	The actual grade, which a tutee gives to the tutor's contribution.
Tutee ID	Integer	UserID	A	The identifier of the tutee rating tutor's contribution.
Date	Long		A	The time, when the rating was made

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### 3.6 Competence Rate

Field Name	Values	Default Value	M/A	Reason/Meaning/Usage
compRateID	Integer	Last compRateID + 1	A	A unique identifier for Competence <i>Rate</i> object.
Associated Question	Integer	cQuestionID	A	Contains the identifier of the question, that caused this competence rating to take place. This field should not be empty.
Rate Mark	Integer		M	The actual grade, which a tutee gives to the tutor competence.
Tutee ID	Integer	UserID	A	The identifier of the tutee rating tutor's competence.
Date	Long		A	The time, when the rating was made

### 3.7 Action (Activity Node)

Field Name	Values	Default Value	M/A	Reason/Meaning/Usage
actionID	Integer	Last actionID + 1	A	A unique identifier for each action
Associated user	Integer	UserID	A	Uniquely identifies, the LNU, associated with the Agenda object
Start Date	Long		M	When did user start action
End Date	Long		M	When did user complete action
Resources	(Integer)	List of docIDs		This field should be used by the system in order to know where to retrieve resources from. It should be noted that this list could contain more resources than listed into the <i>ordered-resource-list</i> tag, as described in TCAD
actionType	String			This field is assigned in order to distinguish between activity and knowledge resources.

### 3.8 Content Question

Field Name	Values	Default Value	M/A	Motivation/Reason/Usage
cQuestionID	Integer	Last cQuestionID + 1	A	Provides a unique identifier for each CQ
Description	String	""	M	Contains the actual question, its description...
Question Date	Long		A	Contains the time, at which the tutee has asked his question.
Associated Actions	(Integer)	List of actionIDs	A	The field contains the list of actions that are most probably related to the question. Maybe this list may also be automatically created by system, according to the current activities of the user.
Initiative Action	Integer	0	M	Contains the identifier of the action from which the question arose. Usually the user manually indicates this action. If not defined the field is zero. This field could be used in order to check, whether the user indicated the action from which the question arose.



userID	Integer	UserID	A	Contains the ID of the user who is asking the question.
Validity	Boolean		A	Indicates if the Content Question is valid.
Contribution	Integer	contrID		Contains ID of a <i>Contribution</i> object, which indicates the rating of the tutor, the date when it was given, together with the tutee who gave it.
Competence	Integer	comprRateID		Contains ID of a <i>Competence Rate</i> object, which indicates the rating of the tutor, the date when it was given, together with the tutee who gave it.
Documents		list of docIDs		the lsa engine returns some documents that form the basis of the discussion in the community.

### 3.9 Document Collection

This is a singleton object that contains information about all documents in a learning network. There can be multiple learning networks. It is possible that actions, and thus resources belong to multiple learning networks. Our current prototype only considers a single learning network.

Field Name	Values	Default Value	M/A	Motivation/Reason/Usage
dcID	Integer	Last dcID+1	A	Identifier of this document collection.
lnID	Integer	Last lnID+1	A	Identifier of the learning network to which this document collection belongs.
Documents	(Integer)	List of docIDs	A	Provides a list of identifiers of all documents within learning networks.
Up to date	Boolean			Indicates whether the collection of documents needs update
Changed	Boolean			Indicates whether new documents have been added to the collection of documents.

### 3.10 Document

Field Name	Values	Default Value	M/A	Motivation/Reason/Usage
docID	Integer	Last docID + 1	A	Provides a unique identifier for each document within learning networks
dcID	Integer		A	The identifier of the document collection, to which this particular document belongs.
dSpaceID	Integer		A	The identifier of the document space, to which this particular document belongs.
Location	String	Document URI	A	Provides the resource identifier where document is located.
Associated Actions	(Integer)	List of actionIDs	M	Contains a list of action(s) to which this document could be related
Community	Integer	commID		Contains the identifier of the community, associated with this question. If community was not populated with any users, this field contains the value of zero.

### 3.11 Document Space

This object contains information about the documents in the document space required by the LSA engine. The documentspace can be similar to the documentcollection but does not have to be so. From a single documentcollection, multiple documentspaces can be created. They usually

differ in the LSA parameters applied. LSA parameters can be divided in collection parameters, like normalization, and parameters for the LSI algorithms, such as number of factors to use, etc.

Field Name	Values	Default Value	M/A	Motivation/Reason/Usage
dSpaceID	Integer	Last dSpaceID + 1	A	Provides a unique identifier for each document space.
Documents	(Integer)	List of docIDs	A	Provides a list of identifiers of all documents within the document space.
Up to date	Boolean			Indicates whether the document space needs update
Changed	Boolean			Indicates whether new documents have been added to the document space.
Community	Integer	communityID	A	Contains the ID of the ad-hoc community that has used the document space.
lsaparameters				LSA parameters applied

### 3.12 Community

Field Name	Values	Default Value	M/A	Motivation/Reason/Usage
commID	Integer	Last commID + 1	A	Provides a unique identifier for each ad hoc peer community.
Tutee	Integer	UserID	A	Contains the ID of the user that initiated the community (i.e. asked the question).
Tutors	(Integer)	List of UserIDs	A	Contains identifiers of user assigned as tutor in the community
Question	(Integer)	cQuestionID	A	The identifier of the question that the tutee asked.
Documents		List of docIDs		Provides a list of identifiers of documents that have been added to the community.
location				Provides location (e.g. URL) of the community
Invited Users	(Integer)	List of UserIDs	A	This field contains the identifiers of users that have been invited to participate in a community as tutors.
Accepted Users	(Integer)	List of UserIDs	A	This field contains the identifiers of users that have accepted to participate in a community as tutors.
Declined Users	(Integer)	List of UserIDs	A	This field contains the identifiers of users that have declined to participate in a community as tutors.
Successfully Closed	Boolean		A	This field is assigned value <i>true</i> if the tutee was satisfied with the answers when the community is closed. The value is <i>false</i> if the user was not satisfied.
Community Start Date	Long		A	Contains the time when the community caused by the question has been created. If the value of this field is zero, it should indicate, that creation of the ad-hoc community has failed.
Community End Date	Long		A	Contains the time when the community was closed (without matter if successful or not). This field could be used together with the <i>Start Date</i> field, in order to determine how much time did it take for the community to close.

### 3.13 Calendar event

This object is used to represent a single event in the agenda of the user.

Field Name	Values	Default Value	M/A	Motivation/Reason/Usage
calEventID	Integer	Last calEventID + 1	A	Provides a unique identifier for each calendar event

startDate	long			Indicates the start date and time of the event the user should participate into
endDate	Long			Indicates the end date and time of the event the user should participate into
Description	String		M	Defines the subject of the calendar event

### 3.14 Agent

Field Name	Values	Default Value	M/A	Motivation/Reason/Usage
agentID	Integer	Last agentID + 1	A	Provides a unique identifier for the agent.
user	Integer		M	The identifier of the user, associated with this agent.
Type	String		M/A	Defines the type of the user. E.g. available types should be: "agent-tutee", agent-tutor" and "agent-matchmaker"

List of methods, associated with this class follows. In order to invite a user for participation in a community, agents should call the `receiveInvitation` method from the `User` class:

Method Name	Static	Return	Parameters		Notes
			Name	Type	
<code>takeLSAMatches</code>	Y	(Integer) /list of actionIDs/	cQuestionID	Integer	This method returns a list of appropriate activity node IDs, given the content question ID..
<code>findSuitableTutors</code>	N	(Integer) /list of userIDs/	cQuestionID	Integer	This method checks available user agendas to determine their availability and user dossiers to determine their eligibility and competency with respect to the given question.
<code>formPossibleAnswer</code>	N	String	cQuestionID	Integer	This method is similar to <code>takeLSAMatches</code> but instead of returning only the question related actions, it makes an attempt to return the possible answer to the question, directly.