

# Integrated Learning Environment for blended-oriented course

*3-year feedback on a skill-oriented hybrid strategy*

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**Université de Lille 1 | Polytech'Lille**



*This work was supported by the University de Lille from 2014-2017 through the CNL bidding process to support the creation of digital educational resources by the trainers.*

# PLAN

## ■ Context of WIL & Motivations (Chartered engineer)

## ■ A standard learning scenario

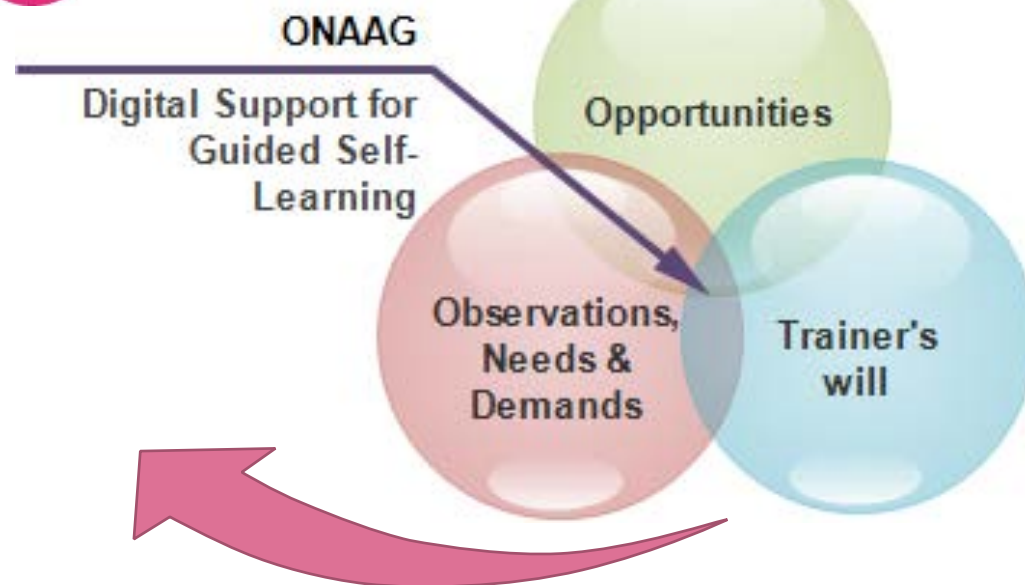
- blended-oriented hybrid course

## with ONAAG to support active pedagogy

- 2 parts
  - Knowledge ownership
  - Abilities

## ■ Main results & feedback

## ■ Conclusion



# CONTEXT & MOTIVATIONS

## ■ Work Integrated Learning

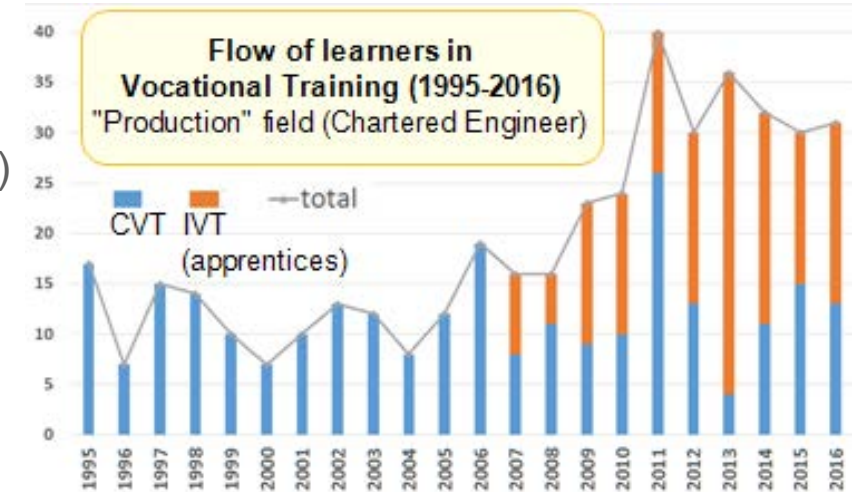
- **2 Vocational Trainings** (sandwich-courses since 1992)  
based on repository of skills and active pedagogy
- **2 TU** (Automatic Control, Computer Programming)

## ■ Target audience evolution

- **Variability of student flow & younger learners**  
Heterogeneity of previous training & work experience
- **Lack of prerequisite & skills**  
mathematics, IT, learning autonomy, collective intelligence
- **Less involvement**  
generation phenomenon, learning outcomes not identified
- **Less asynchronous time available**  
the 3 lives of the learner in Formative Work Situation

## ■ Recent changes in the organization

- **Reduction of face-to-face lessons**
- **Change in the training culture**  
merging & retirements in the pedagogical team



**More failures** of learners

**Jeopardy** in the classroom

**Higher efforts** required for the parties involved

**Less adapted** pedagogy

# MOTIVATIONS TO CREATE THE ONAAG PEDAGOGICAL DEVICE

## • Of the Learners

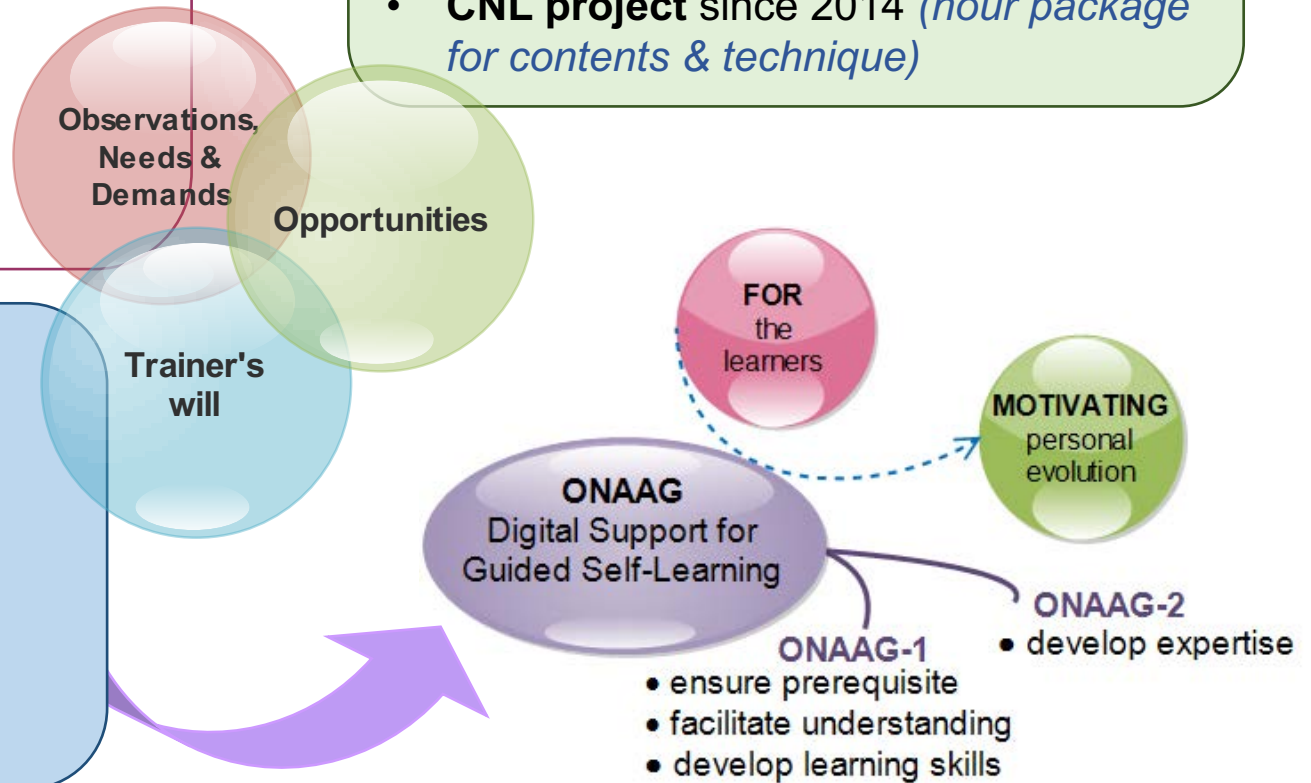
- **More help** requested (*IVT*)
- **Prerequisites** to be taught
- **Resources wanted for self-learning** before the lecture starts (*CVT*)

## • Of the Trainer

- **More interactions & efficiency** (*trainer*)

- **Facilitate access to new notions**
- **Give complementary tools, resources** (*for apprentices*)
- **Ensure distance follow-up** (*for alternation*)
- **Support formative assessment** (*for efficiency and quality of the training*)

- **Evolution of IT for education**
- **Meetings** with multimedia supports
- **Trainers' skills** (*LMS Moodle, Code*)
- **CNL project** since 2014 (*hour package for contents & technique*)

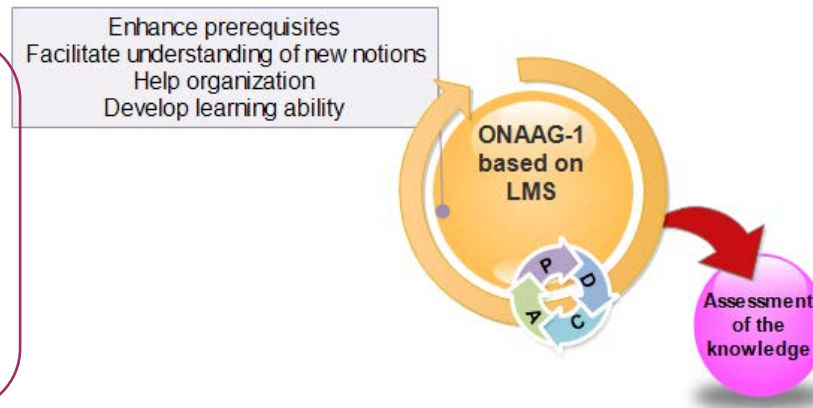
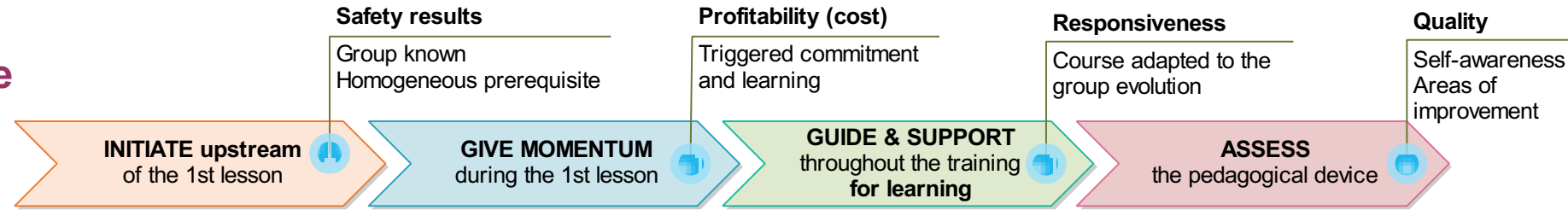


# STANDARD SCENARIO

## ■ Hybrid & blended-course

- Designed for CVT (2014)
- Duplicated, transferred to initial training (2015)
- Improved scenario with
  - initialization
  - mini-games

- New requirements
  - Digital competences
  - Use of the LMS
  - Organization
  - Autonomy
  - Collaboration



# ONAAG-1 | LEARNING ACTIVITIES SYNCHRONIZED ON THE LMS



[ONAAG 1.3] STIC (2016, W. NUNINGER)

Accueil ▶ Polytech Lille et EPU ▶ ONAAG13-STIC-2016

**SOMMAIRE DU COURS**

ONAAG 1.3 - STIC, *Outil Numérique d'Appui de l'Auto-formation Guidée*

Module d'apprentissage proposé par W. NUNINGER

Sciences et Technologies de l'Information et de la Communication (Informatique, Automatique)

GB IAAL ESP 2A ESP FC

**Objectifs** : Consolider les pré-requis, faciliter l'accès aux connaissances basiques pour bien démarrer et suivre le module en développant les compétences.

**Enjeux** : Renforcement des capacités d'apprentissage, de l'autonomie et du collectif. Appropriation des attendus du module suivi.

▶ Tout ouvrir ▼ Tout fermer  
Instruction : un clic sur le titre de la section affiche ou masque cette section

1 ▶ Pour bien démarrer, c'est ici !

Faciliter votre apprentissage (pré-requis, base, nouvelles notions), cet outil vient en appui du cours qu'il ne remplace pas mais y est intégré

⌚ 2 min (vidéo introductive) + 5 min (sondage) + 30 min (auto-évaluation TIC pour vous positionner)

3 ▼ A | Logique booléenne | GRAFCET

⌚ 4h + test (45min) | durée estimée | obligatoire sur S5

Non disponible à moins que :

- Vous soyez membre de **GB-IAAL3** (caché sinon)
- L'activité **Sondage avant de commencer** soit marquée comme achevée

📌 Consignes

A.1 | Logique booléenne

A.1 | Test de connaissance Logique Booléenne (15 min)

Sondage | ONAAG GRAFCET - SADT (IAAL)

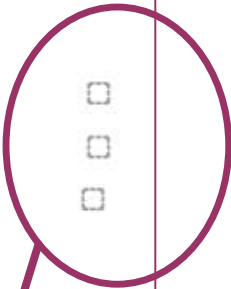
Non disponible à moins que :

- L'activité **A.1 | Test de connaissance Logique Booléenne (15 min)** soit marquée comme achevée
- L'activité **A.3 | Test d'appropriation GRAFCET (15 min)** soit marquée comme achevée

Triggered learning parts

Multimedia lessons (html+videos) followed by self-assessment

Achievements follow-up



Satisfaction survey

Requirements to access the following activity

# ONAAG-1 | THE TRAINER'S PERSPECTIVE



## ■ Before, during the TU, for

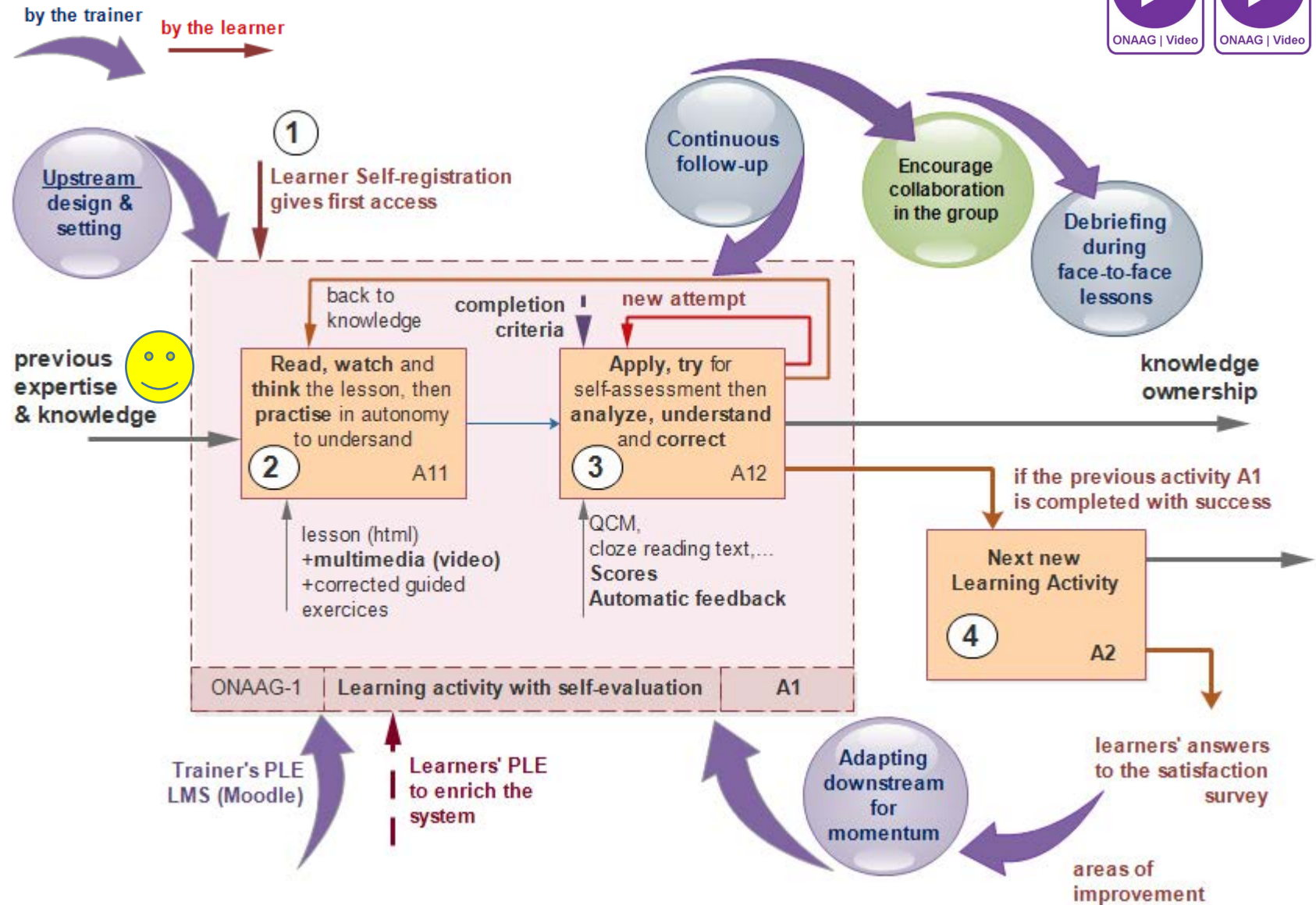
- Knowledge
- Learning skills, Autonomy

**Learning sequence of increasing difficulty with completion criteria**

- **Multimedia and digital contents** for lectures +
- **Corrected exercises of application** (videos) +
- **Self-assessment tests for knowledge ownership**

**Deadlines** to be respected for commitment

**Implementation**  
Learning Management System (Moodle)



# STANDARD SCENARIO

## Hybrid & blended-course

1 validated flexible standard scenario

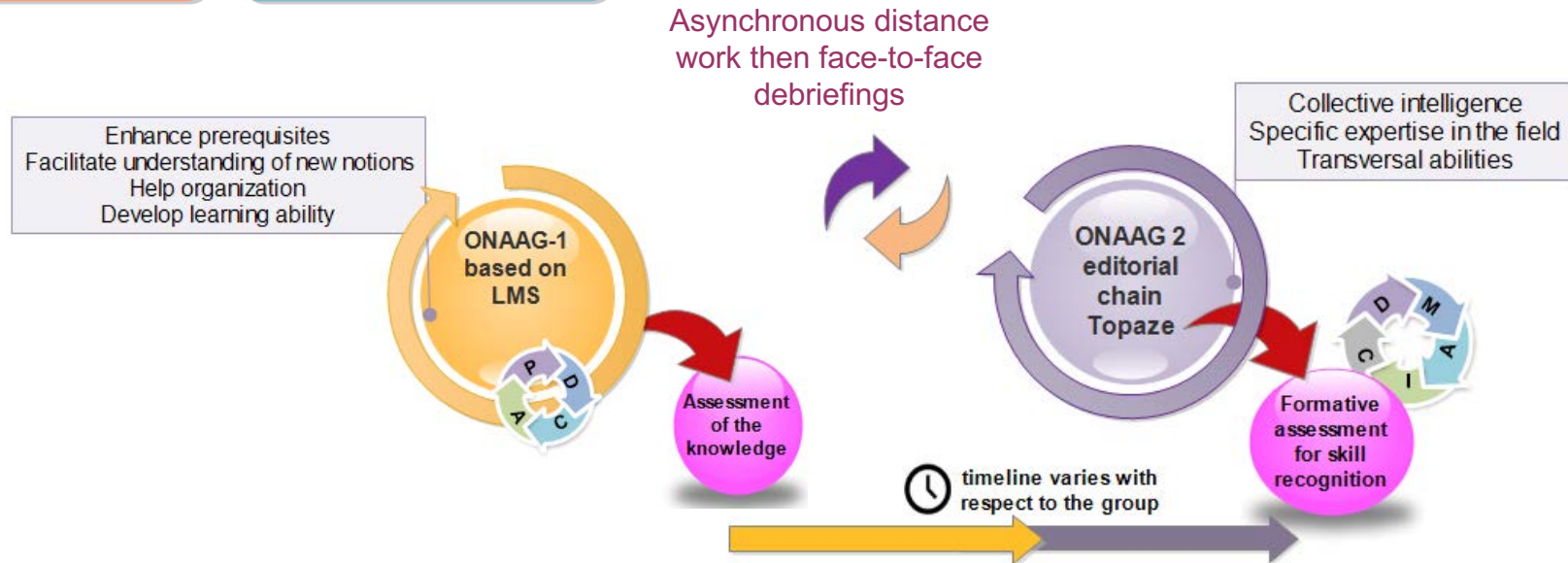
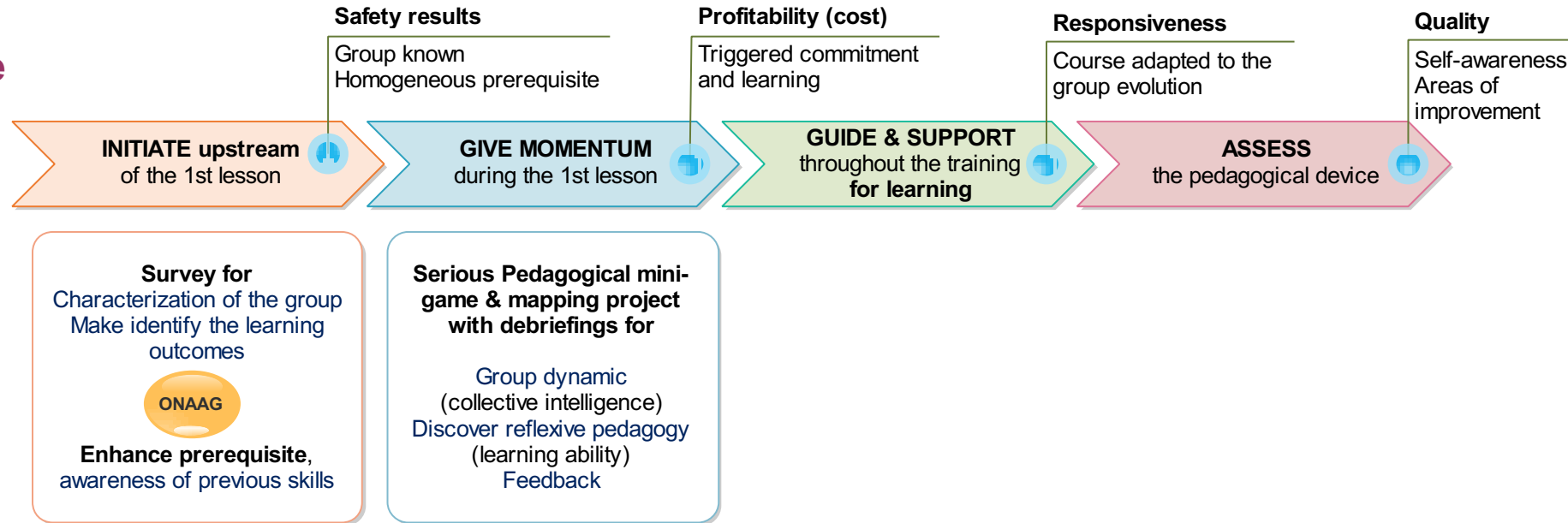
- Completed with ONAAG-2 for CVT (2016)

- New requirements
  - Collective intelligence

- Fully integrated to the LMS (2017)

2 technical solutions, adaptable, modular, interconnected to LMS Moodle

1 enhanced Teaching Toolkit



# ONAAG-2 | LEARNER-CENTERED TOOL



## ■ During blended-course, for

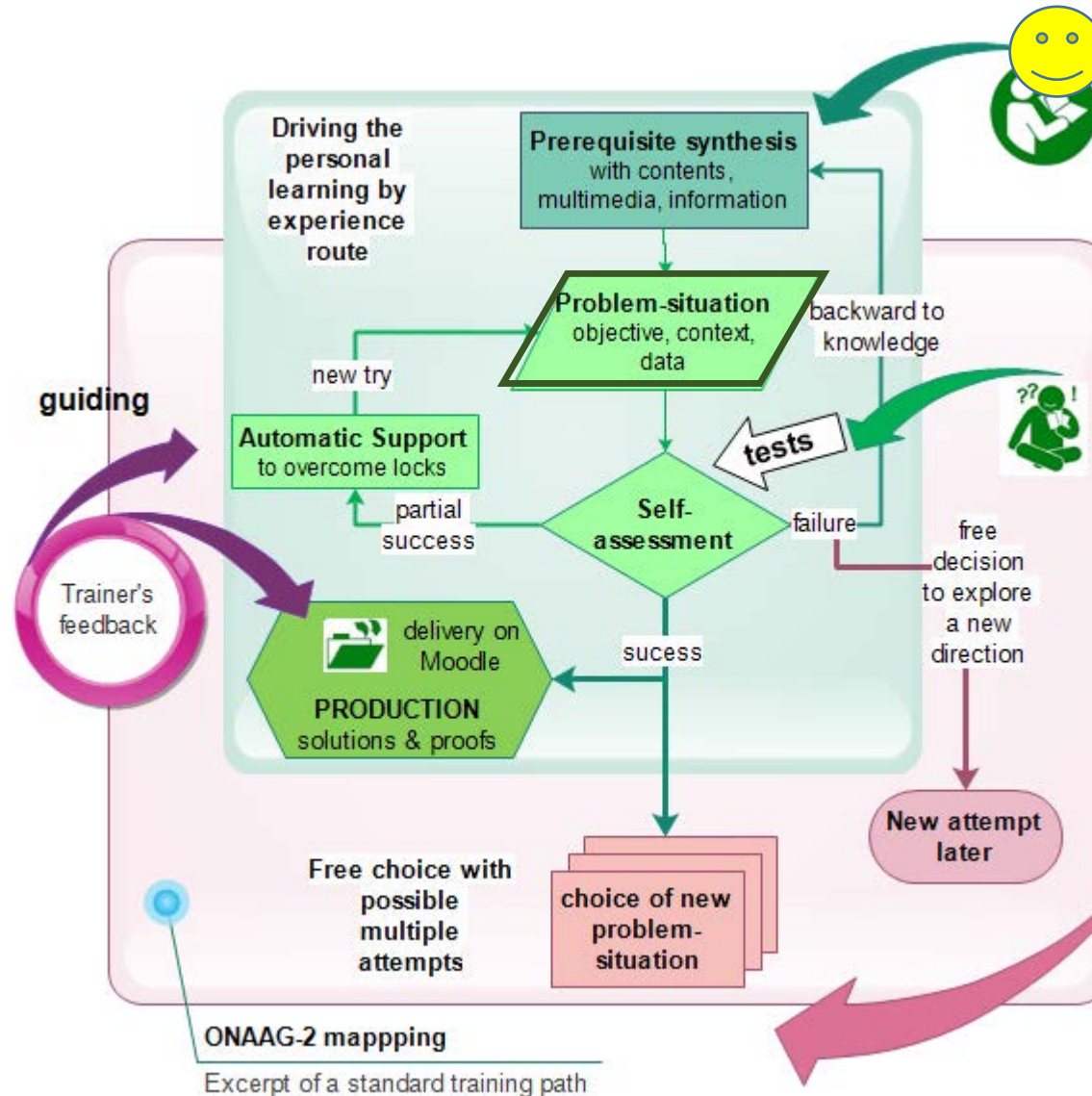
- Expertise in the field
- Reflexive learning
- Collective intelligence

**Case study to be solved with free-choice analysis route**

- **Web interface** to connect problem-situations
- **Videos** to help free choice
- **Autonomous practices** based on external softwares
- **Automated guidance** based on tests for self-assessment

**Progress report** for feedback  
**Collective debriefing** in class for additional guidance  
**Pair review** and final evaluation

**Implementation**  
 Editorial Chain Topaz (ScenariChain)



**1- Identify the issue**

Decide the goal  
 Choose the solving approach

20% of time

**2- Solving**

Search information  
 Solve & check solutions  
 Share your proposal  
 Provide a synthesis  
 Self-validate

50% of time

**3- Improve, Innovate**

Improve the solution  
 (feedback, peers review,  
 new constraints)  
 Search new information

30% of time

**sociated training approach**  
 am by doing act expected from  
 a learner

# ONAAG-2 | LEARNER-CENTERED TOOL



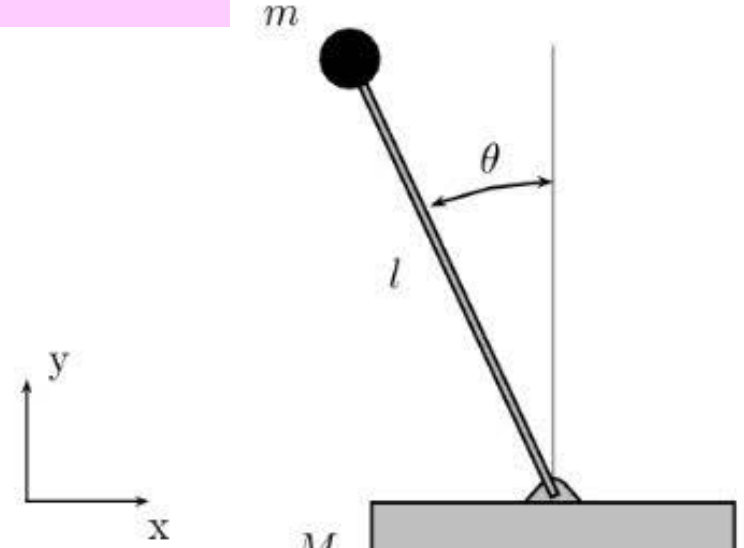
© ONAAG de W. NUNINGER depuis 2013 | © Université de Lille, Polytech'Lille 2014-2016 (cc) BY-ND-SA

ONAAG-2 v.2 | 2017

du système

**Exercice 2015 - Pendule inversé**

pendule inversé permettant de simuler le mouvement d'une fusée par un chariot (ou un tremblement de terre sur un bâtiment) avec la masse  $m$  reliée par une tige de longueur  $l$  (avec des frottements  $R$  en sec et visqueux notamment), maintenir l'angle  $\theta$  nul (entre la masse  $m$  et la verticale) (cas b).




**Testez-vous !**

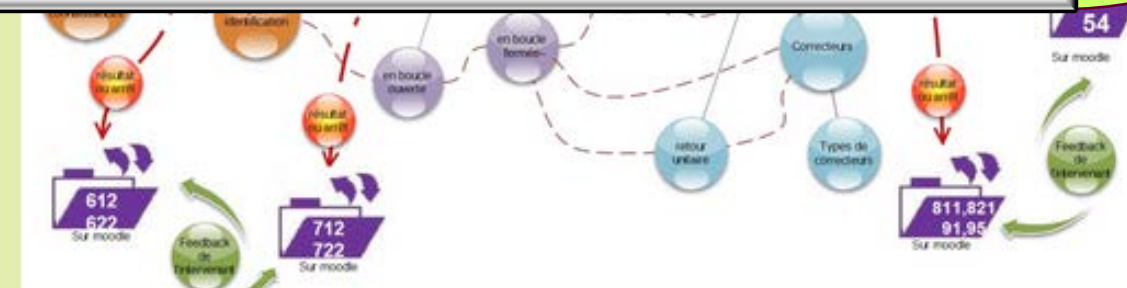
walter, votre score global est de 0%. Vous allez pouvoir recommencer le parcours afin de répondre correctement aux questions ou faire un autre choix de parcours. Ci-dessous, le bilan détaillé de vos réponses au **quiz 712**. N'oubliez pas de déposer votre compte rendu d'avancement argumenté sur Moodle ainsi que ce bilan.

Bilan de vos réponses aux questions

Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7
Non validée	Non validée	Non validée	Non validée	Non validée	Non validée	Non validée



ONAAG2 | Feedback du quiz



Navigation

Mapping of free-choices Guidance Resources

Problem situation to solve

choice nu

# MAIN RESULTS

**Beneficial interactions** between parties  
**Autonomy**, Learn at our **own pace**,  
**Playful**, Progressive, Facilitate learning  
**Learn in a different manner**

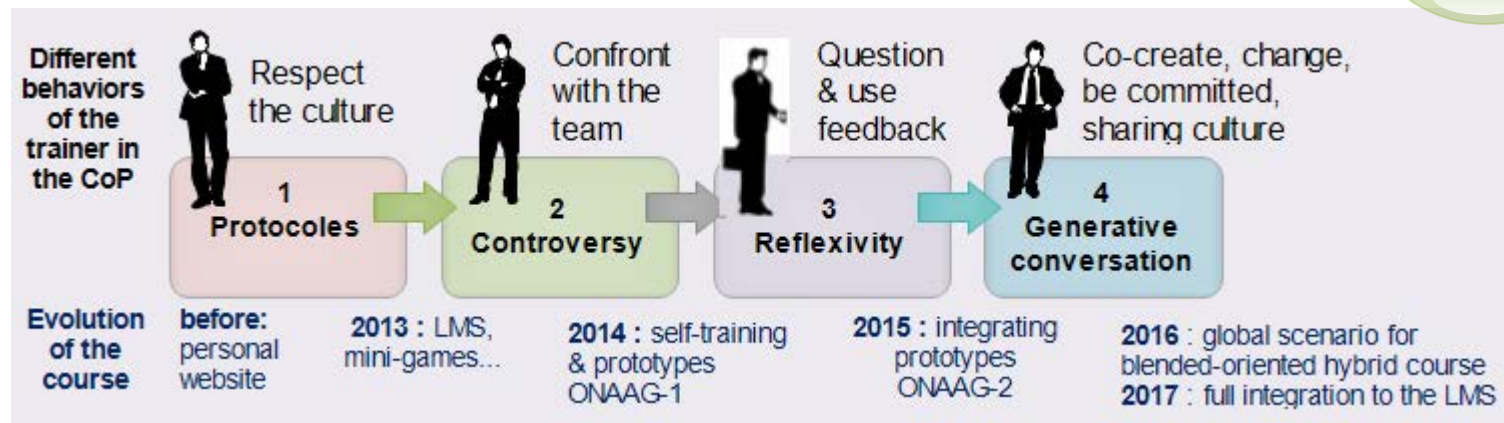
## ■ Learners' satisfaction with

- Less failure to final assessment & Higher commitment
  - but some discrepancies (IT skill, quick overview of videos...)
  - and a lack of technical possibilities (dashboard, automated report...)

## ■ Trainer's satisfaction, changing the course through the years

- In line with the pedagogical transformation of the trainer
  - Evolving paradigm between the parties

3 years of  
Agile  
development  
Integrating the  
audience for  
satisfaction



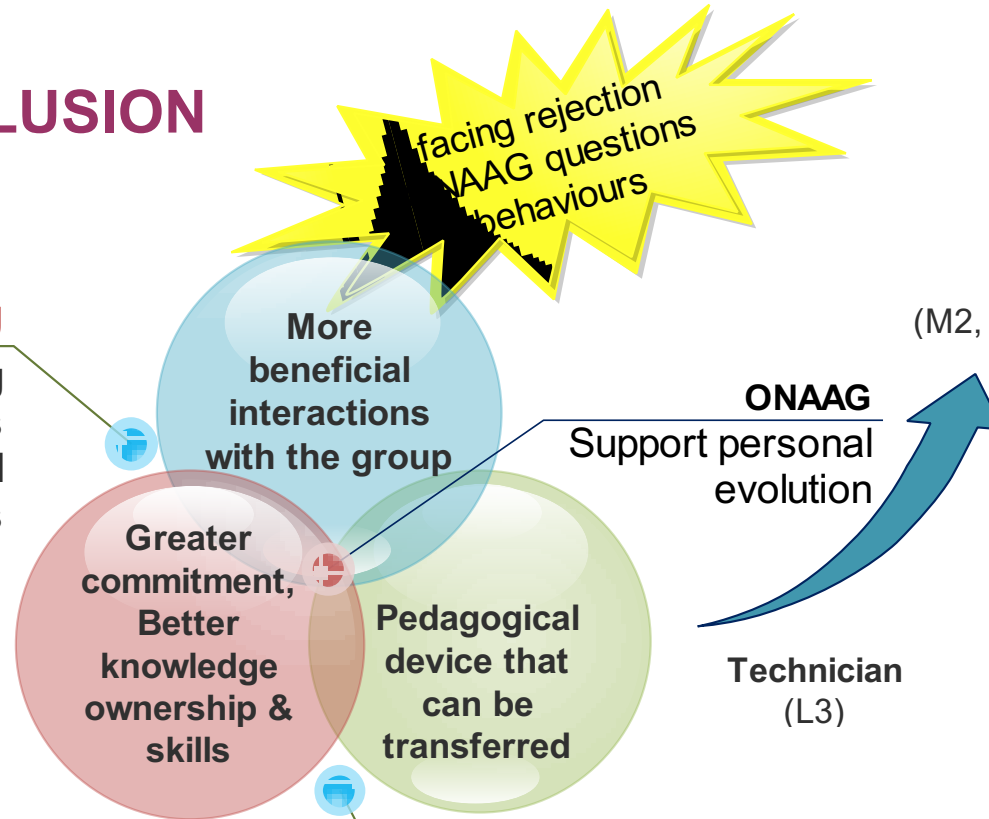
- a **course leader** for the *disciple*
- a **coach** (the one to go) for the *students discovering autonomy*
- an **expert** for the *committed peer*.



# CONCLUSION

## Risk taking

By targeting the learning outcomes, ONAAG raises awareness of personal learning abilities



More beneficial interactions with the group

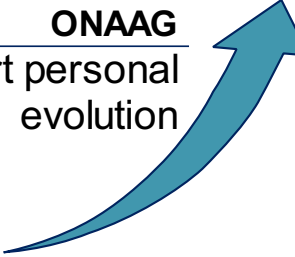
Greater commitment, Better knowledge ownership & skills

Pedagogical device that can be transferred

## Levers in the CoP

Enrich content  
Mixing the cultures  
Organization' support

Engineer  
(M2, Master's degree)



Technician  
(L3)



## Keys of success

Designed by & for the trainer  
Guiding & Support by the trainer



## Technical obstacles

Limited user interface (appealing)  
Automated report not available to facilitate learner's production  
Not accurate trainers' dashboard to identify contents overview

## Apply to

- other TU
- distance learning with virtual inverted lessons

Train the trainer the same way for tutoring (Learn by doing approach) to share the culture

# FUTURE PROSPECT

ONAAG questions  
the normative final assessment rule :

**Recognition**, in the collective production, of the personal added-value & evolution of the *learner who became autonomous*

# Workload behind the scene !

Learn

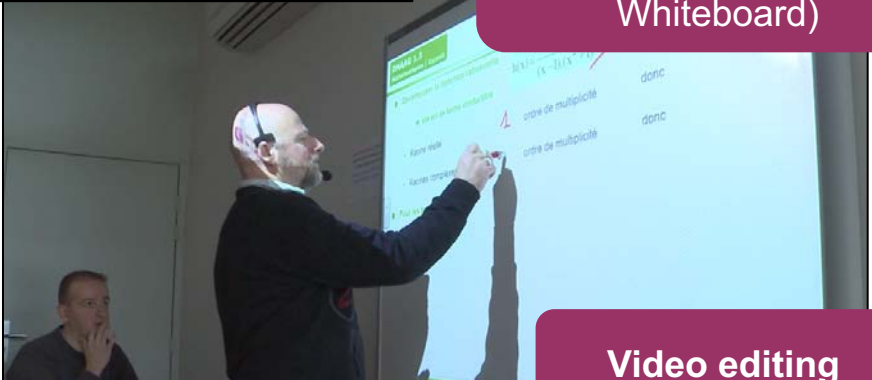


Collaborate



Design

Content production  
(video, Interactive Whiteboard)



Video editing



Coding for ONAAG-2  
(Scenarichain, javascript)

ONAAG - SCENARIClient 4.0

Application Atelier Fenêtres ?

Explorateur

- ONAAG1
  - XX\_ONAAG1\_21\_07\_maj1611
    - 0000\_a\_savoir\_Moodle.node
    - 0000\_accueil\_module.case
    - 0001\_presentation.node
    - 0002\_contenu\_vue\_ensemble.node
    - 00030\_infos\_apprenant.node
    - 00031\_infos\_apprenant\_verif.node
    - 00040\_fin\_sur\_erreur.node
    - 00041\_fin\_parours.node
    - 0005\_choix\_parours.node
    - 05
    - 06
    - 07
    - 08
    - 09
    - 10\_images
      - 01\_orientation
      - 02\_puces
      - 03\_nde\_specifique.jpg
      - 04\_choix\_orientation.jpg
      - 05\_contact\_lien.jpg
      - 06\_cours.jpg
      - 07\_fichiers.jpg
      - 08\_lien\_video.jpg
      - 09\_ressources\_externe.jpg
      - 10\_resultats.jpg
      - 11\_travail\_demande\_planning.jpg
      - 12\_arbre\_decision.png
      - 13\_nde\_pen\_dulum.png
      - 14\_centrale\_nucleaire.png
      - 15\_connecteur\_serie.png
      - 16\_figure1\_mesure\_entree\_systeme...
      - 17\_figure1\_systeme\_dacquisition.png
      - 18\_figure2\_mesure\_sortie.png

ONAAG

Accueil de l'étude de cas | Item | Titre

français (fr) - Walter Nuninger

Catégorie actuelle: Défaut pour ONAAG2014 (54) [X] utiliser cette catégorie

Enregistrer dans la catégorie: Défaut pour ONAAG2014 (54)

Nom de question\*: GRAFCET - structure

Texte de la question\*

Partenaires

- UL1-2014\_7.jpg (XX\_ONAAG1\_21\_07\_maj1611)

Logo

Université de Lille  
1 SCIENCES ET TECHNOLOGIES

Logo

Licence: Paternité - Pas d'Utilisation Commerciale - Partage des Conditions de la Licence

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[Projet de Dublin-core et LomiF] - depresse...

Etape de départ

Accueil de l'étude de cas | Partenaires

Recherche d'items

Topaze 1.3 (fr-FR) (1.3.101)

Feedback général

• (1) est {1:SHORTANSWER:%100%ETAPE INITIALE#Bravo!~\*#faux} 2 mots, 5 et 8 lettres

• (2) est {1:SHORTANSWER:%100%TRANSITION#Bravo!~\*#faux} 1 mot de 9 lettres

• (3) est {1:SHORTANSWER:%100%JETON#Bravo!~\*#faux} qui est bleu ic

• (4) est {1:SHORTANSWER:%100%ACTION#Bravo!~\*#faux} 1 mot de 6 lettres avec un A au début

• (5) est {1:SHORTANSWER:%100%CARACTERISTIQUE#Bravo!~\*#faux} 15 lettres (C... ) comm

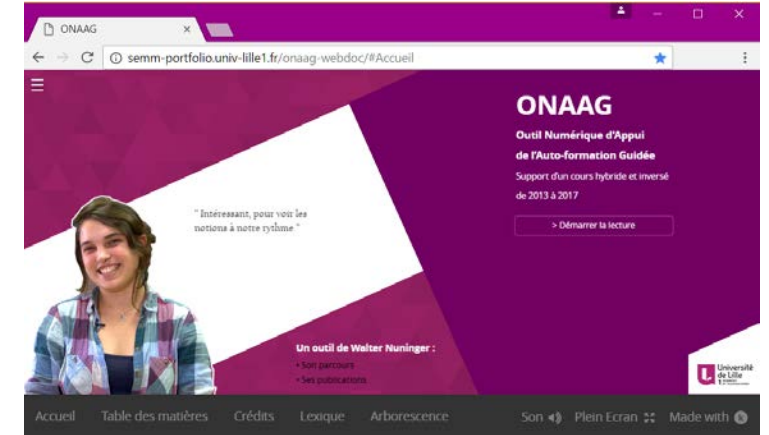
Coding tests for ONAAG-1  
(sous Moodle)

# COMPLEMENTARY RESOURCES ABOUT ONAAG

## ■ ERM with interviews,

- behind the scenes
- ONAAG -1, -2 presentation

• <http://goo.gl/ojqYMr>  
(with subtitles)



## ■ Watch the conference at Lille 2017, february 7th

• <https://goo.gl/j8PA82>  
(with subtitles)



Thanks !

# SOME INTERVIEWS ABOUT ONAAG

## ■ 2016/17 | ONAAG-1



## ■ 2015/16 | ONAAG-2



**Playful**  
**Facilitate Learning**

**Full-time students (initial training)**

**Autonomy**  
**Learn at our own pace**  
**Progressive**

**Blended-course**  
**Beneficial interactions between parties**

**Learner in CVT**

**Interesting**  
**Change learning behavior**  
**Learn in a different way**

**Learner in CVT (graduate)**