Creating Synergies among Institutions in Higher and Continuing Education:

Flipped Classrooms and Project-Based Learning with Open edX

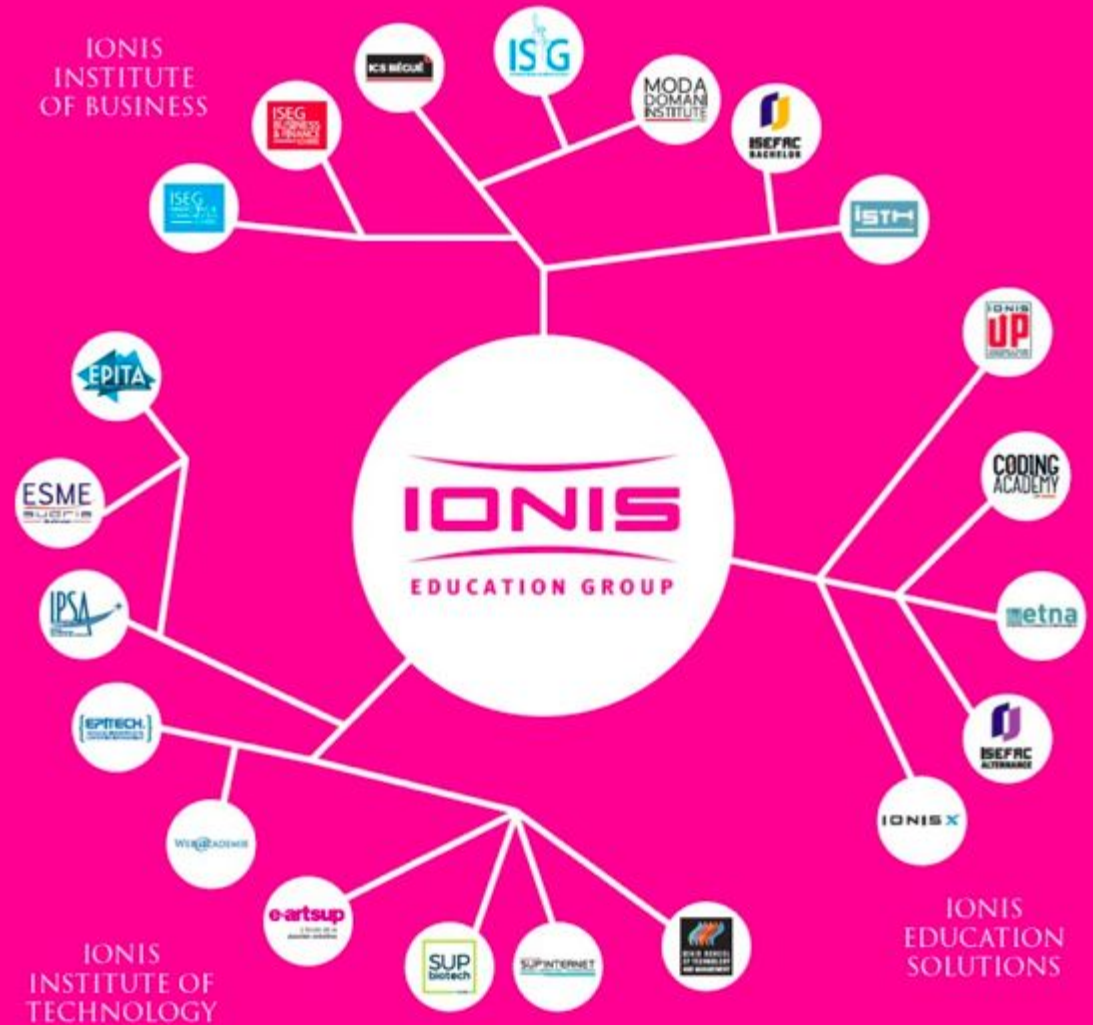*Badi Ibrahim - Managing Director*
Isabelle Druet - Project Manager

Madrid, Open edX Conference, May 2017

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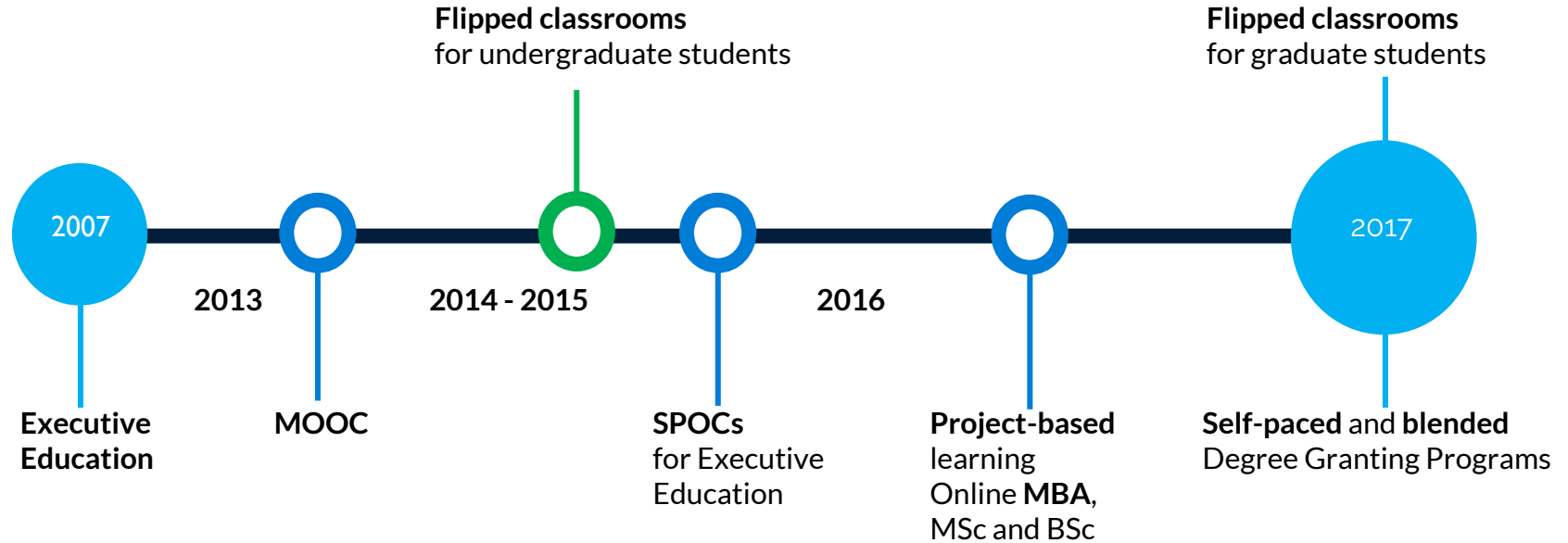
IONISx, the online branch of IONIS Education Group

- 25,000 students
- 22 schools
- 12 cities in France
- 65,000 alumni

France Leading Private Higher Education Group

From MOOCs to Degree-Granting Programs

Higher Education

Continuing Education

Flipped classrooms for undergraduate students

Flipped classrooms for graduate students

2007

2013

2014 - 2015

2016

2017

Executive Education

MOOC

SPOCs for Executive Education

Project-based learning Online **MBA**, MSc and BSc

Self-paced and **blended** Degree Granting Programs

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Sharing experience, tools & processes

1. Enabling synergies among institutions:
    Flipped classrooms for undergraduate students

2. From higher education to lifelong learning:
    Project-based learning for working professionals

→ Keys to success & new needs

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1. Flipped classrooms

To enable synergies among institutions

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Flipped classrooms in practice:

- Customise the angle of the course - both online and in class.
- Vary the type of learning - alternating between distance and face-to-face.
- Avoiding passive lectures - devote class time to interactions & experimentations.

4 Engineering schools:

Common Content in **Maths**, **Physics** and **I.T.** Curriculum

Specialisations:

Generalist

Biotechnology

Aeronautics

Information Technologies

The scenario solution : Standardise online components while allowing for specialisation online and in class

Creating independent micro-modules to take advantage of possible synergies

Code MIMo	Chapitre	Notion (Titre du MIMo)	EPITA	IPSA	ESME	Sup' Biotech
SN1	Séries numériques	Généralités sur les séries numériques	S3	S4	S3	0
SN2	Séries numériques	Séries à termes positifs (1/2)	S3	S4	S3	0
SN3	Séries numériques	Séries à termes positifs (2/2)	S3	S4	S3	0
SN4	Séries numériques	Séries à termes quelconques	S3	S4	S3	0
DMC1	Diagonalisation des matrices carrées	Déterminant d'une matrice carrée - Définition	S3	S3	S4	S3
DMC2	Diagonalisation des matrices carrées	Déterminant d'une matrice carrée - Applications	0	S3	S4	S3
DMC3	Diagonalisation des matrices carrées	Généralités sur la diagonalisation des matrices carrées	S3	S3	S4	S3
II2	Intégrales impropres	Intégrales impropres de fonctions positives	S3	S4	S3	0
II3	Intégrales impropres	Autres critères	S3	S4	S3	0
II4	Intégrales impropres	Convergence absolue d'une intégrale impropre	S3	S4	S3	0
EPR1	Espaces préhilbertiens réels	Généralités sur les espaces préhilbertiens réels	S4	S3	0	0

Code MIMo	Chapitre	Notion (Titre du MIMo)	EPITA	IPSA	ESME	Sup' Biotech
CD5	Calcul différentiel	Différentiabilité des fonctions de 2 variables à valeurs réeeles	0	S3	S4	S4
CD6	Calcul différentiel	Extrema locaux d'une fonction de 2 variables	S4	S3	S4	S4
CD7	Calcul différentiel	Différentiabilité d'une fonction vectorielle	0	S3	S3	S4
CD8	Calcul différentiel	Introduction aux EDP : le problème de transport.	0	0	S3	0
AC1	Analyse complexe	Fonctions holomorphes.	0	0	S4	0
AC2	Analyse complexe	Intégration le long d'un chemin de C.	0	0	S4	0
P1	Probabilités	Généralités sur les probabilités	0	0	S4	S4
P2	Probabilités	Variables aléatoires réelles et lois de probabilité usuelles.	0	0	S4	S4
P3	Probabilités	Inégalités et théorèmes limites classiques.	0	0	S4	0
SE1	Séries entières	Généralités sur les séries entières	0	S4	S3	0
IM1	Intégrales multiples et curvilignes	Formes différentielles	0	S3	S4	S4
IM2	Intégrales multiples et curvilignes	Intégrales multiples	0	S3	S4	S4
IM3	Intégrales multiples et curvilignes	Intégrales curvilignes.	0	S3	S4	S4
Nombre de MiMo total			32	29	32	12

A typical 30-minute module

- Content & objectives
- Videos
- Training exercises with solutions
- Summary in pdf format
- Additional content and links to explore
- Self-evaluation quiz
- Feedback component for quality

Screenshot 1 (video & training):

Collecting data

Training: Question 1 (1 point possible)
Check right sentences:
- A single individual is statistical unit of the study in a row.
- A individual mix is the statistical unit of the study in a row.
- A multiple item in a single column.
- A item in a single column.

Start with the raw data
- Objectives and Content
- Collecting Data — Learning and Training
- Coding the possible values of the variables — Learning and Training
- Data File — Learning and Training
- Synthesis
- Evaluation — Self-Evaluation

Screenshot 2 (evaluation):

Define the type
- Binary qualitative variable
- Continuous quantitative variable
- Nominal qualitative variable
- Ordinal qualitative variable

And the missing value
- NA
- 99,999,...

Valider   Afficher la réponse   Vous avez utilisé 0 essais sur 1

HISTORIQUE DES SOUMISSIONS   INFO DE DÉB

Congratulation, you finished this course!

Evaluez votre niveau de compréhension
★★★★★

Evaluez la qualité de ce cours
★★★★★

Terminer ce module et revenir au cours

Screenshot 3 (synthesis):

Shynthesis

UNIVARIATE ANALYSIS
START WITH THE RAW DATA

COLLECTING DATA

All data should go into a single data file or infrastructure.
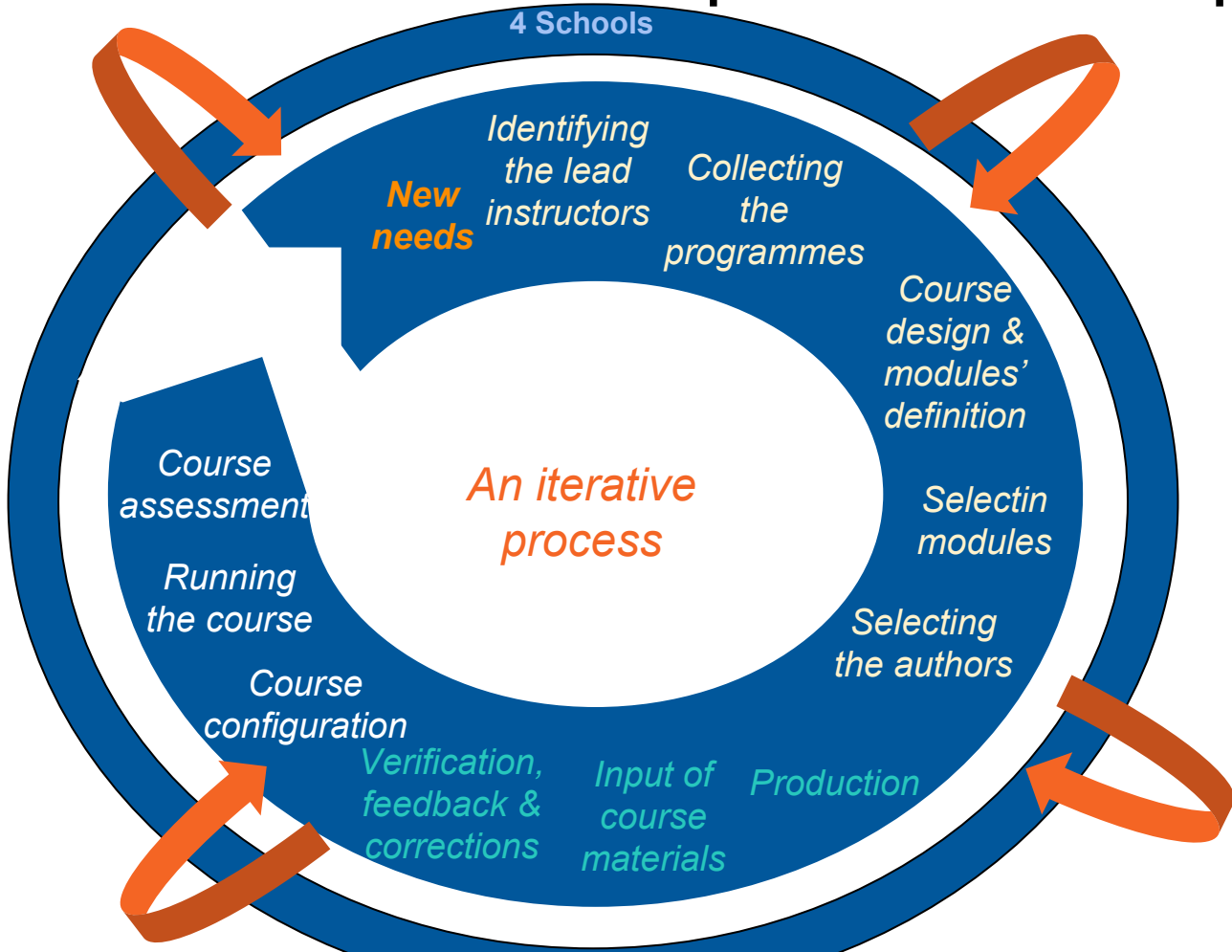The quality control of the initial data is essential for the analysis:
- Responsibility of the investigator rather than statistician.
- Initial collection of the data.
- Deliver and validate the "raw" data of the analysis : "Data Freeze"

All the data required for the analysis gathered in a single file.

Basic rules = 4 Tips:
1. Define statistical unit of the study.
2. A single individual /observation = Statistical unit of the study in a row.
3. A item /feature (of clinical data or questionnaire) in a single column.
4. All values are coded in numeric way = answers have to be coded.

Screenshot 4 (right panel, course outline):

Start with the raw data
Programmé : 01 janv 2020, à 00:00 UTC

Objectives and Content
Programmé : 01 janv 2020, à 00:00 UTC

Collecting Data
Programmé : 01 janv 2020, à 00:00 UTC
Learning and Training

Coding the possible values of the variables
Programmé : 01 janv 2020, à 00:00 UTC
Learning and Training

Data File
Programmé : 01 janv 2020, à 00:00 UTC
Learning and Training

Synthesis
Programmé : 01 janv 2020, à 00:00 UTC

Evaluation
Programmé : 01 janv 2020, à 00:00 UTC
Self-Evaluation

+ New Sou

High level of coordination for the conception and selection process

4 Schools

New needs

Identifying the lead instructors

Collecting the programmes

Course design & modules' definition

Selectin modules

Selecting the authors

Production

Input of course materials

Verification, feedback & corrections

Course configuration

Course assessment

Running the course

An iterative process

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Navigating in our shared production dashboard

Description					Selection by each School + Semester planning				Author	Production Status					Link	Review
Reference	Chapter	Module	Objectives & skills	Content	School 1	School 2	School 3	School 4	Author	Status	Preparation	Shooting	Input	Release	Link to Prof	Corrections needed
C11	Chap1	Title A	Being able to...	Context of … Definition of… Application to...	S1	S2	S1	S2	Author 1	Last action & next steps	Done	Done	In process	Planned week	Link module A	Corrections needed
C12	Chap1	Title B			S1	S2	S1		Author 1		Done	Done	In process	Planned week	Link module B	
C13	Chap1	Title C				S2	S1	S2	Author 1		In process	Planned week	Planned week	Planned week	Link module C	
C21	Chap2	Title D			S1	S2		S2	Author 2	Last action & next steps						
C22	Chap2	Title E			S1	S2			Author2							

Course configuration with skills' indexed modules, chapters, introductive videos, authors' bios...

# Flipped classrooms with Open edX : key takeaways

After 3 years, we've established a successful model for:

- Collaborating with teachers from different institutions and animating the community (collaboration tools, the role of the lead instructors, the course authors, the pedagogical coordinator…)
- Spliting courses into small, independent units.
- Organising flipped classrooms for undergraduates.

→ Using the benefits of edX to create synergies for several institutions who want to use content that is similar but not exactly the same.

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2. Project-based learning

From higher education to lifelong learning

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Digital Transformation to Online University
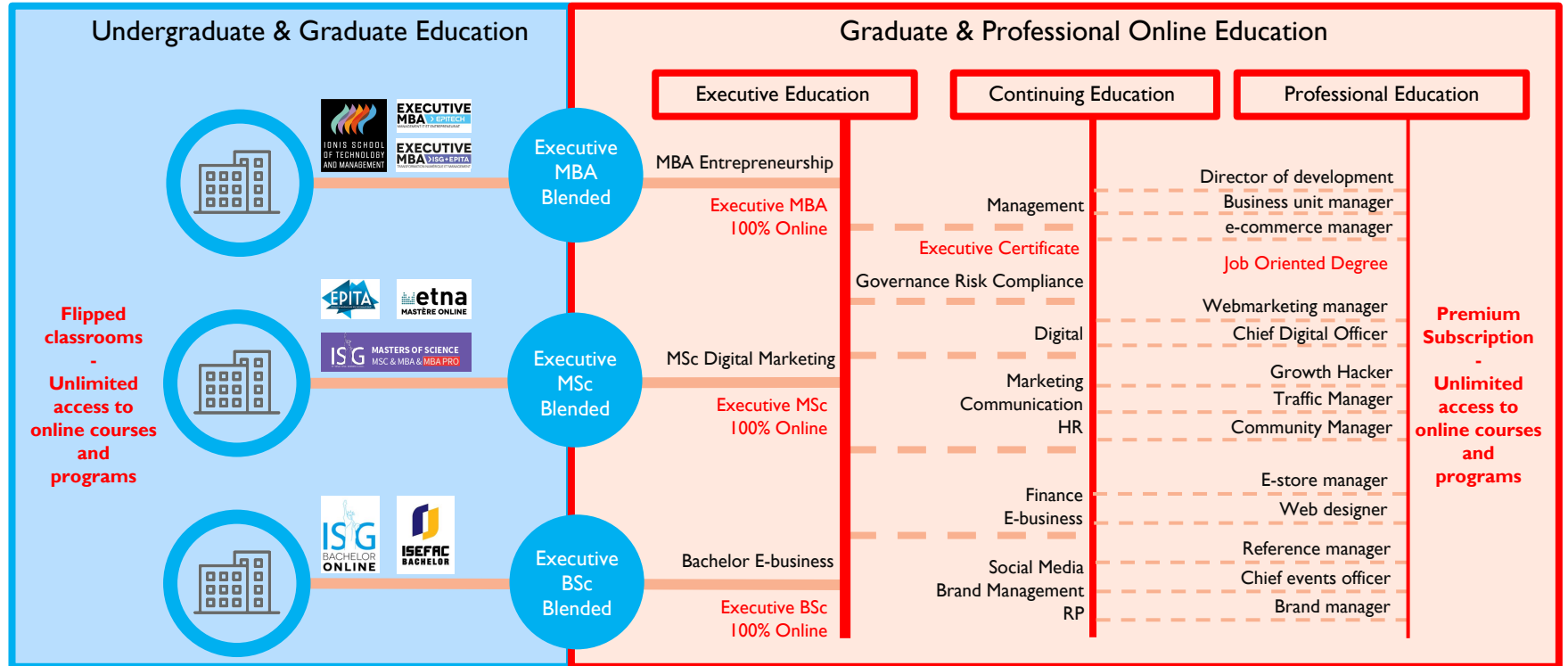
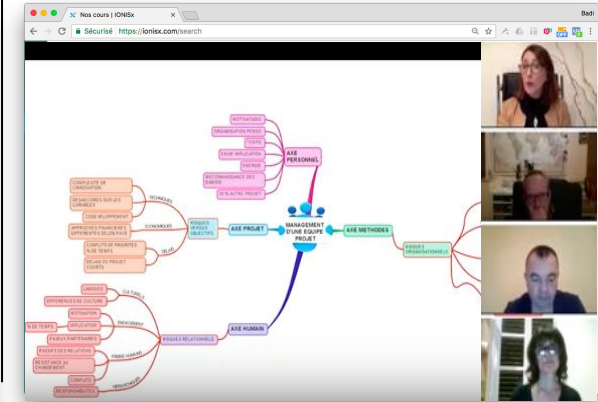# Graduate and Professional Online Education

Content library indexed by degrees, competencies and job orientations
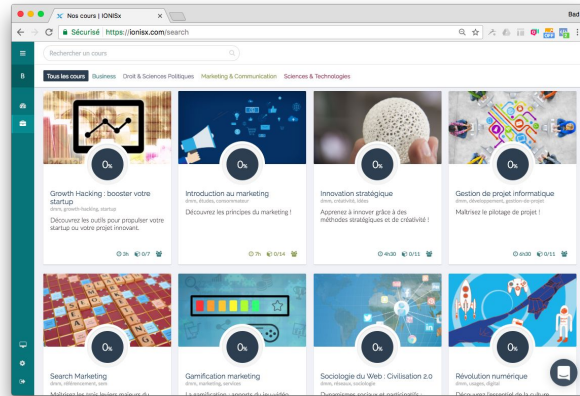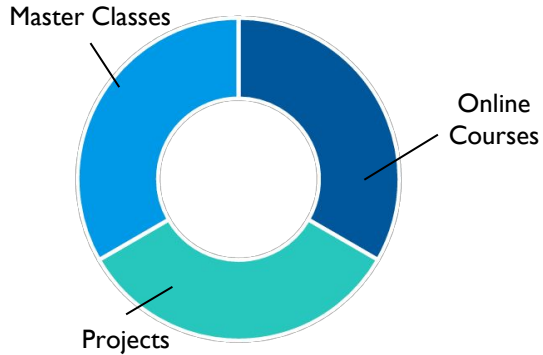
**Projects :
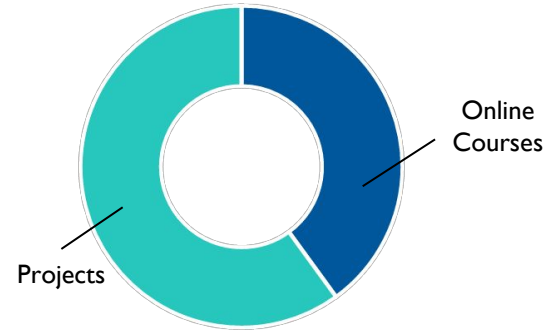Individual & Group**
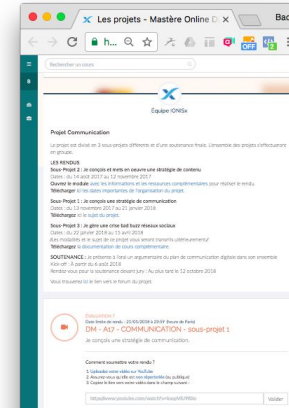
**Coaching :
Experts and Community**

→ **Deliverables:** recognized degrees, skills and career paths

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# Project + skills oriented pedagogical model

Blended Model Structure

Master Classes

Online Courses

Projects

Self-paced Model Structure

Online Courses

Projects

- **Online courses** = mutualisation of learning content across blended and self-paced programs
- **Projects** = individual and group work to validate skills acquisition
- **Master classes** = synchronous or asynchronous content provided face-to-face or remotely
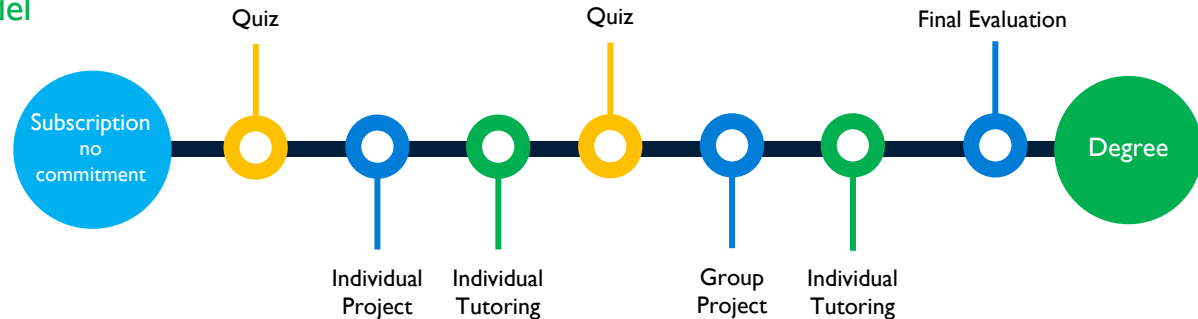
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Tailored models for blended or self-paced

Key Success Factors for blended model

- Flexible yet synchronous learning paths
- Group projects and assessments
- Tutoring and master classes

Start — Master Classes — Group Project — Master Classes — Group Project — Final Evaluation — Degree
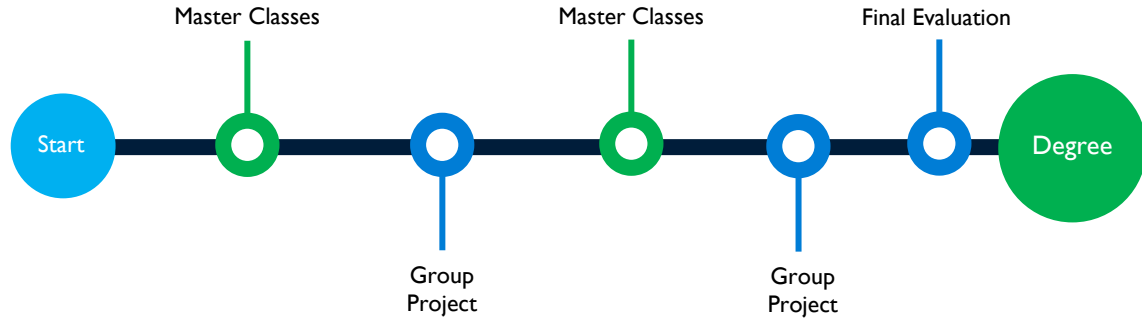
Key Success Factors for self-paced model

- Auto enrollment
- Asynchronous learning paths
- Individual projects and automated assessments
- Tutoring and peer-to-peer support
- Community Management

Subscription no commitment — Quiz — Individual Project — Individual Tutoring — Quiz — Group Project — Individual Tutoring — Final Evaluation — Degree

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Online platform supported by Open edX

progress tracking indicators

social and collaborative tools

project support

multi-environment

notifications and alerts

custom learning paths

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Custom tools for better user experience

Key Takeaways

Since the launch of our first Online MBA in January 2016, we've successfully:

- Used Open edX to create synergies for continuing education programs.

- Adopted competency-based and project-based pedagogical models.

- Developed models for blended and self-paced learning to suit all students.

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Conclusion

- Modular content → synergies between different schools or programs, and different level of students.

- To design modular content, many people need to be involved at the stage of course conception, before the production starts. The importance of advance planning can't be overstated.

- Support to both learners and teachers is also key: change management is a big component of the projects.

- The content of the online class is only part of the learning/teaching experience: learning scenarios are highly important. This is thought out/anticipated from the stage of conception.

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Thank you for your attention.

Let's talk!

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