MOOC AS A TESTBED FOR NEXT-GENERATION DIGITAL LIFELONG LEARNING INFRASTRUCTURE

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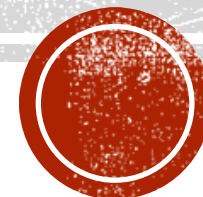
MOOC

- Massive: 5k-150k-more (BUT managed *by small course team, machine-assisted*)
- Open: BUT various business models
- Online: BUT blended approach acceptable
- Course: not content sharing but education [the issue of badge, certificate; in future, credit, degree]

Not only *scalable LMSs*

but *a total solution to realize Openness and Quality Assurance at once in sustainable way using IT and Big Data Science*

MOOCs Growth Stages (2013)

Stage	Impact on Higher/Tertiary Education	Indicator (for example, Dropout Rate)
1	*A new type of quality OER* Still Limited	80-90% and higher
2	*A new sustainable model of open education* Sufficient threat to open universities	the same as the rate of correspondence courses and lower
3	*A new model of higher education* Real Innovation:	the same as the rate of traditional universities Face-to-Face/blended courses and lower plus course accreditation system by trusted third parties

Adaptive
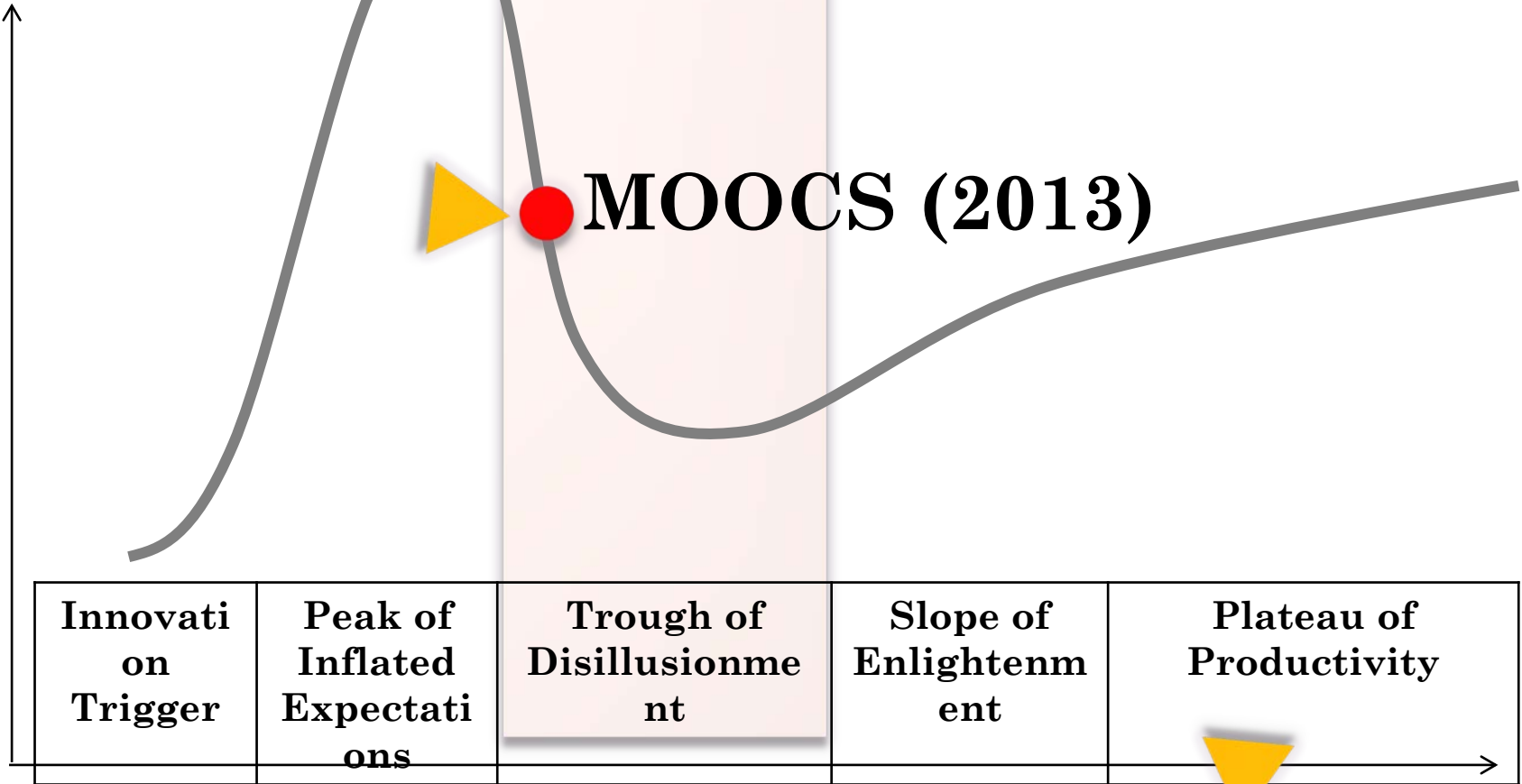Customizable
Coexistence of MOOC and SPOC

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More complicated

The hype for "MOOC" is over?

Gartner's Hype Cycle for Ed

Source: Gartner, 2014

EXPECTATIONS

MOOCS (2013)

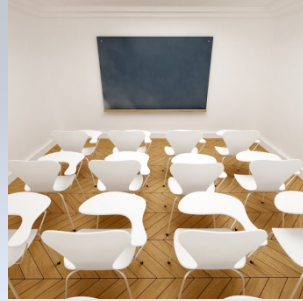| Innovation Trigger	Peak of Inflated Expectations	Trough of Disillusionment	Slope of Enlightenment	Plateau of Productivity

TIME

Obsolete Before Plateau (2014)

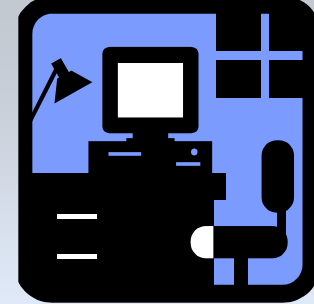# MOOCs showed new styles of learning / education

Flipped Classroom

Traditional Class room

Lecture/Teaching

Preparation, HW

Flipped Classroom

Knowledge Transfer

Knowledge Integration
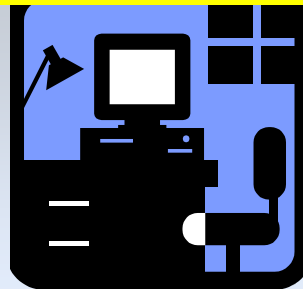
Online Courses
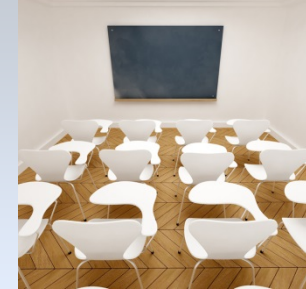
Q/A, Program/Group Learning

New MOOC features

Adapting and evolving in each context,

Developed countries (like USA),

- ◆ ==micro credential-oriented==

- ◆ combination of open and proprietary education (blended w/MOOC, SPOC and F2F)

- ◆ ==NGDLE== (Next Generation Digital Learning Environment, EDUCAUSE)

Developing countries

- ◆ ==OER-oriented MOOC==

EDUCAUSE | LEARNING INITIATIVE

The Next Generation Digital Learning Environment

A Report on Research

Malcolm Brown, EDUCAUSE Learning Initiative

Joanne Dehoney, EDUCAUSE

Nancy Millichap, Next Generation Learning Challenges

ELI Paper
April 2015

NEXT of LMS

Our view 1: the nature

"MOOC" is an aspect / a phenotype of the next-generation ICT-enhanced learning /education system for humans toward singularity. Depending on ICT environments and learners' readiness, the system(s) reorganizes the elements, architecture (structure) and functions in adaptive and scalable ways ("Paradigm EX", tentatively, and maybe same as NGDLE).

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MOOC is not replaced with conventional HE/TE/LLL but "big trend" is transforming the whole education system in broader but silent way

MOOC PHENOMENA IN JAPAN

2013 was the first year of MOOC in Japan
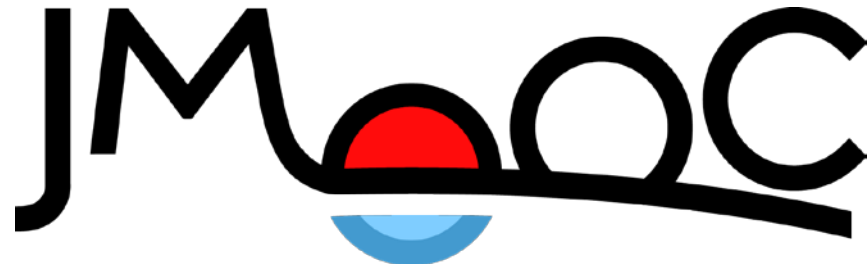
(Japan Massive Open Online Course consortium)
was launched in November 2013
http://www.jmooc.jp/

Our view 2: the historical roles

"MOOC" is a catalyst of the next-generation ICT-enhanced learning /education system(s), which is applicable to developing areas and late-majority (thoughtful!) institutions.

"MOOC" is the common **test-beds** for late-majority/adopters.

We regard "MOOC" is still in the midst of the evolution and not sufficient to provide the complete service models.

Multiple Platforms

- NTT Docomo Platform "Gacco" (97 courses)
    - Open edX-based/Video Lecture
    - From April 2014
- OUJ-TIES Platform (4 courses)
    - Multimedia e-textbook (iBOOK/epub3)+LMS
    - Video Lecture/CAI/SNS
    - From April 2014
- Net-Learning Platform "Open Learning" (22 courses)
    - Domestic Integrated Learning Support Platform
    - From October 2014
- Fujitsu Platform "Fisdom" (1 course)
    - Web-based
    - From March 2016

Number of JMOOC courses

	OUJ-MOOC	gacco	Open Learning, Japan	Fisdom
Course running	0	6	1	0
Registration Open	1	9	1	0
In preparation	1	0	1	0
Over	2	82	19	1
Total	4	97	22	1

Totally 124 courses

OUJ-MOOC

OUJ MOOC Platform: Concept

LMS

eTextbook

Social Apps
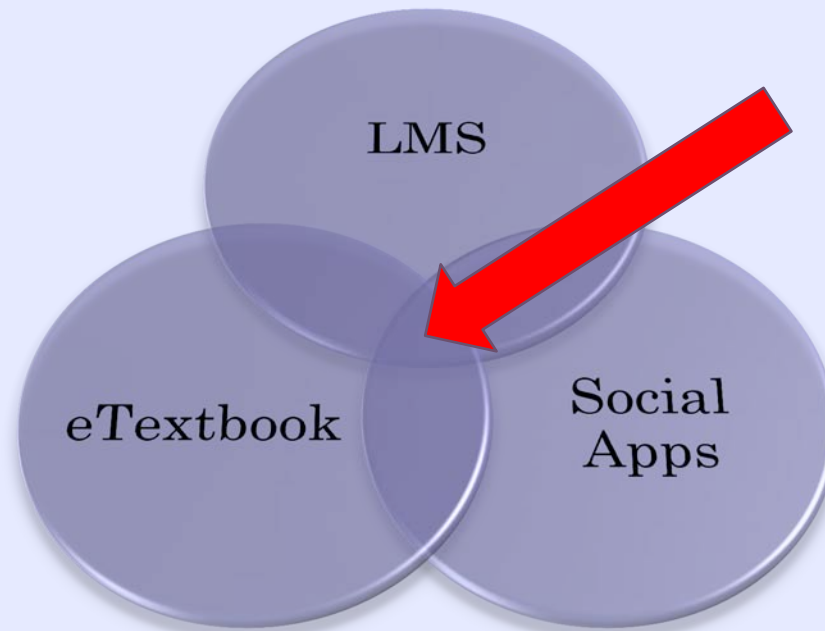
+ Big DATA Collection &
  Learning Metrics and Analytics

Standard Curriculum (CEFR) Competency model

JAPANESE LANGUAGE STARTER A1 LEVEL

講座の構成　Ｃｏｕｒｓｅ　Ｐｌａｎ

| 10 Lessons	27 Can-dos
1) Hello 　　Konnichiwa	1) Exchange greetings 2) Recognise Japanese characters
2) Would you say that again? 　　Moo ichido onegaishimasu	3) Use basic classroom expressions 4) Write your name and country in Japanese
3) Nice to meet you. 　　Doozo yoroshiku	5) Give a simple self-introduction 6) Recognise the parts of a business card
4) There are three people in my family Kazoku wa san-nin desu	7) Talk briefly about your family 8) Tell someone about your family, using a family photo
5) What kind of food do you like? 　　Nani ga suki desu ka	9) Talk about your favorite foods　10) Offer someone a drink 11) Talk about your breakfast
6) Where are you going to have lunch today? 　　Doko de tabemasu ka	12) Say what your favorite dish is 13) Talk with a friend about where to go for lunch 14) Read a menu 15) Order food and drinks at a hamburger shop
7) There are three rooms in my home.　Heya ga mittsu arimasu	16) Say what kind of home you live in 17) Say what you have in your home 18) Write an e-mail inviting someone to your home
8) It's a nice room. 　　Ii heya desu ne	19) Ask/Say where to put things in the room 20) Visit / Welcome a friend 21) Show someone around your home 22) Recognise the name and address on signs
9) What time do you get up? 　　Nan-ji ni okimasu ka	23) Say the time you do something 24) Talk about your daily routine
10) When is convenient for you? 　　Itsu ga ii desu ka	25) Talk about your schedule for this week 26) Talk about when to have a party 27) Write a birthday card

Number of Registrants/Graduates

CLS*	Period	Pace-making	No. of Registrants [Moodle/Facebook]	No. of Certificate holders ("Big Badge holders)
1	14th Apr- 18th May 2014	2 lessons /wk	-/467	
2	2nd Jun – 7th Jul 2014	2 lessons /wk	-/882	
3	4th Aug –15th Oct 2014	Self-paced	-/1475	
4	3rd Nov- 23rd Dec 2014	2 lessons /wk	353/249	
5	12 Jan – 23 Mar 2015	1 lesson / wk	120/96	227*
6	11 Jun -15 Jul 2015	2 lessons /wk	200/0	
7	9 Nov 2015 – 20 Dec, 2015	2 lessons /wk	256/0	
8	20 Jun – 31 Jul 2016	2 lessons /wk	0/870*	
		Total	929/4039	

* As of 18 July 2016
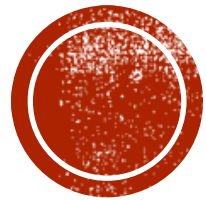
JMOOC IN HE REFORM

MOOC in Governmental Policies 1 JMooC

- MEXT : Basic Plan of Promoting Education (June 2013, Approved by the Cabinet)
- Measures in the next five years
  - Basic measure 8: **_Qualitative transformation_** of college education to establish **_self-directed/autonomous learning_** by students
  - To facilitate active participation of universities to open the universities' knowledge to the world and to improve the quality of education, through MOOCs and OCW (OER)

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MOOCs in Governmental Policies 2 JMOOC

- "Education reproduction practice meeting" under Cabinet Secretariat

- Submitted to the prime minister, 14 May 2015, the 7th report "Competencies, the education and the teachers in the new era"

(2) Innovation of learning environments and cultivation of computer literacy by ICT implementation

- Promote ICT-enhanced learning, such as **flipped classroom** and **collaborative learning**

- Implementation of **digital textbooks**

- Promote strategic utilization of **MOOCs** (universities)

- Prepare for some program on programming, information security and ethics (In all school le

- 1 to 1 computing environments

Problems

- High drop-out rates
  - 5-20 percent (strongly-motivated and well –prepared) can finish
  - show more autonomous, flexible and independent learners (non credit-oriented)
- Learner supports insufficient
  - Technologies for supporting personalized learning are not matured
  - Practices utilizing learner community are not accumulated

COMING NEXT

MOOC innovation

1. New Model of Open "Education"
2. Big Data + Learning Analytics
3. Optimization/Customization/Personalization of Learning Processes
4. Independent LLL supported by personal AI tutors

Joint MOOC

- Personalization
- Localization
- Contextualization
- Interoperability

- User-specific
- Context-specific
- Purpose/Goal Dependent

Cloud Computing + Big Data Analysis

Learner 1

Device1

Content1

Device2

Learner 2

Device2

Content1

Learner 3

Device1

Device2
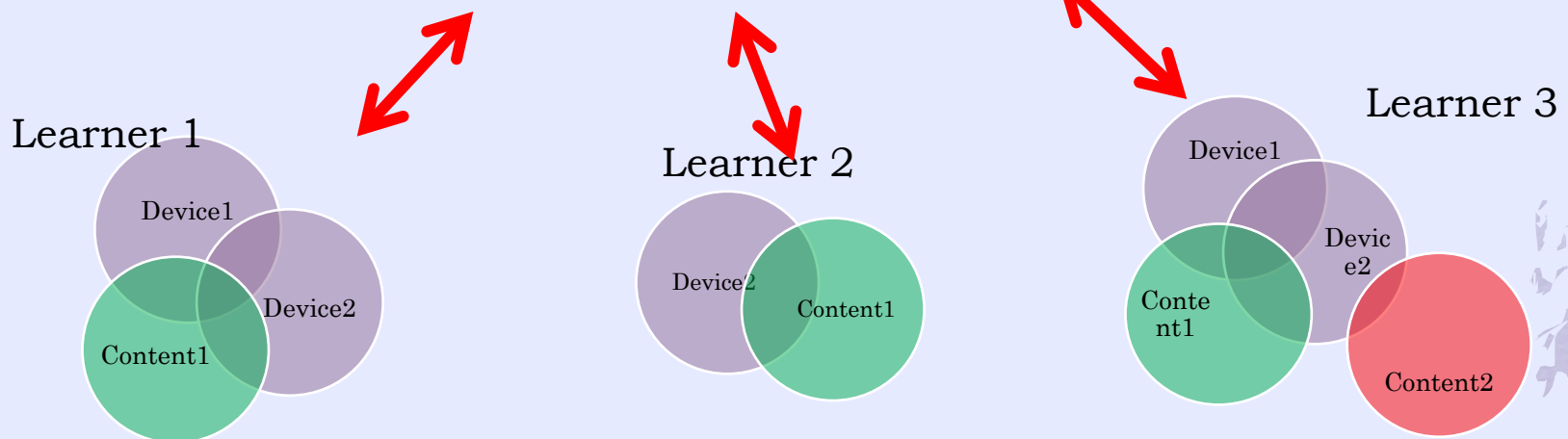
Content1

Content2

NEW sharable elements

Multi-devices/ Multi-platform (LMS, mobile, e-book)	MOOC platform (Multimedia e-book & LMS to cope with standalone use)
Customization /Personalization	==Content:Materials Repository Envrnmrnts: Tools and Dashboards==
Mash-up	API (Application Programming Interface) Store
Optimization	==Big data and Learning Metrics/Analytics==
New Standards	EDUPUB, IMS/Caliper ADL/experience APIs

LEARNING METRICS AND ANALYTICS

LA and other educational data

- LMS
- e-Portfolio
- SIS
- Digital Badge
- Extended Transcript
- OneRoster

Learning Analytics
- Sensor
- Learning Log Store
- Analyzer (AI)

OUJ MOOC: Learning Data and Analytics

◆ "Big Data" Database and the Federation
◆ Toward to a Compliant of some
   International Standards
   e.g. IMS Caliper (Version 1.1
        will be released soon)

◆ Description of multi-layer learning
   processes
   ◆ Population/Individual/Mental Function
   /Sensory-Motor/Brain Activity!!

IMS Caliper

Sensor API Metric Profiles Contextualize Events

IMS Metric Profiles

- Activity Metrics
- Activity Information Model / Context
- Engagement + Performance Metrics

Learning Activity Metrics

Reading	Assessment	Act Context
Media	Lecture	Assignable
Discussion	Social	Gradeable
Chat	Blog	Annotation
Project	Tutoring	
Gaming	Research	

Foundational Metrics

- Engagement
- Performance
- Learn Context

IMS Metric Profile

IMS Metric Profile

- Activity Metrics
- Activity Information Model
- Engagement and/or Performance metrics

Learning Activity Metrics

Lectures
- > frameset use
- > scrub marks
- > view time
- > weblink refs

Quiz
- > scores
- > attempts
- > remediations
- > assoc refs

- > time utilization
- > attempts
- > completion

- > message profile
- > frequency

- > marks
- > tags
- > attachments

- > Attempts
- > Hints
- > Collaboration

Social
- > connections
- > assoc context
- > message profile
- > frequency

Messaging
- > assoc context
- > outbound Pool
- > inbound Pool
- > attachments

Scheduling
- > assoc context
- > event patterns
- > event profile
- > time utilization

Discussions
- > post mark
- > frequency
- > participation
- > collaboration

Foundational Metrics

Context
- > institution
- > course/section
- > learner profile
- > course context
- > path/sequence
- > usage context

Engagement
- > activity usage
- > time on task
- > session time
- > last access
- > activity affinity
- > content affinity
- > task patterns
- > correlations

Performance
- > grades
- > progress
- > rubrics
  - course goals
  - topic
- objectives
  - qualitative evaluation
  - quantitative scores
- > patterns
- > correlations

IMS Global and IMS Japan Society

Independent organization

IMS-JS

IMS Global

IMS Global
Contributing member
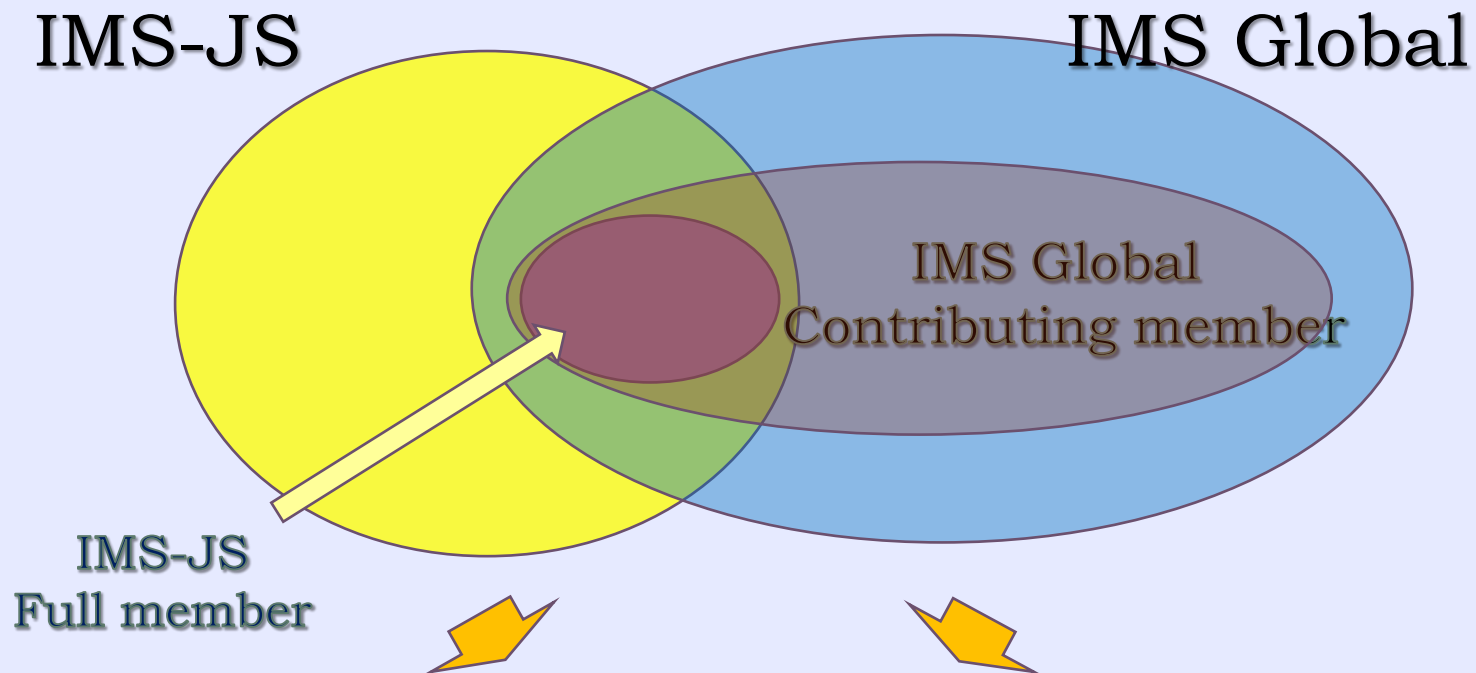
IMS-JS
Full member

"IMS Japan Project" as a collaboration

Dissemination, IMS Japan Award, (Conformance test and more)

IMS/JS - JMOOC joint project

JMOOC Official platforms

Open Learning, Japan
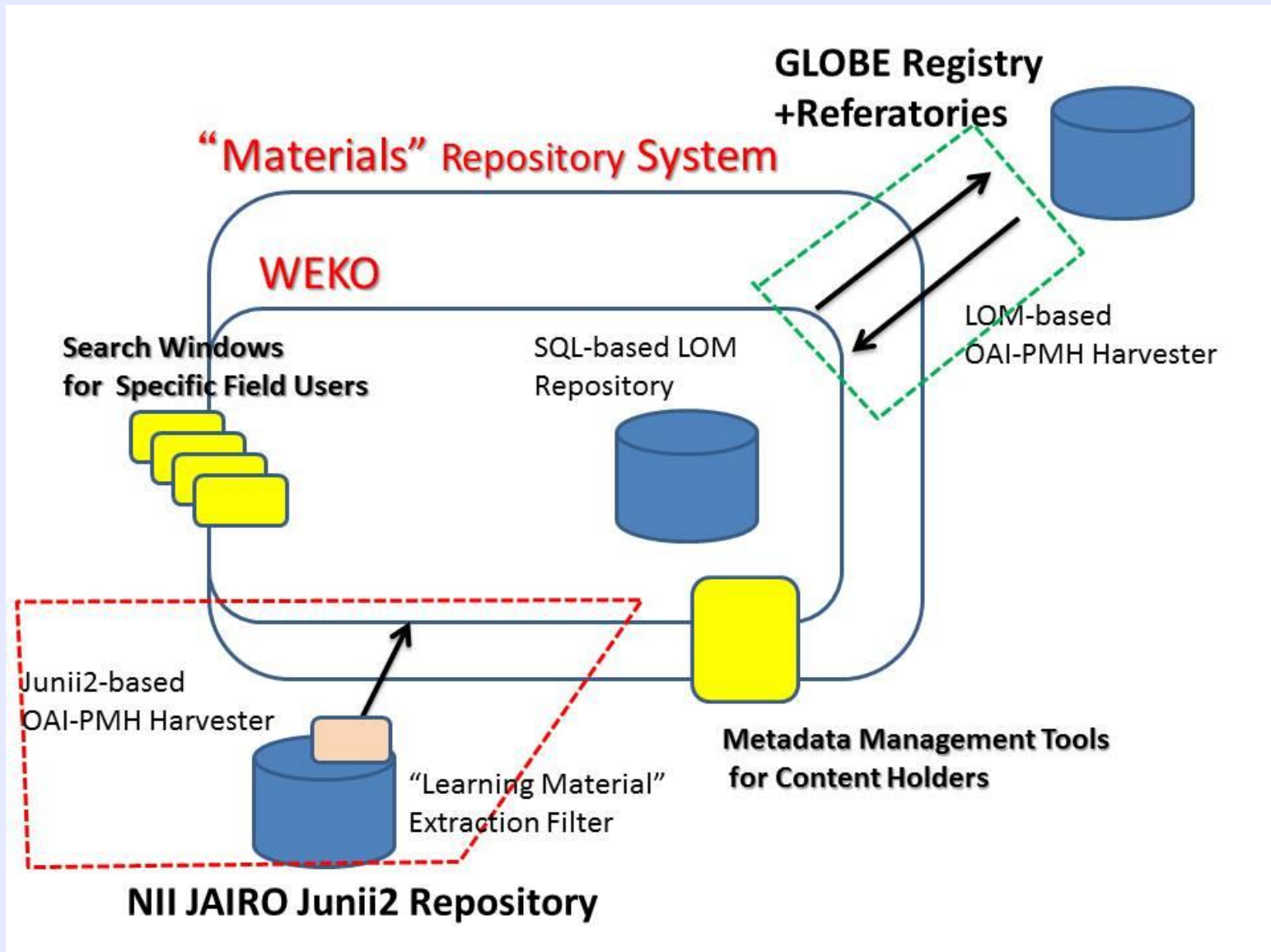
OUJ MOOC

Fisdom

OUJ Learning Log Store
@ NII Academic Cloud

"MATERIALS" REPOSITORY

Why smaller granular materials?

* Learning process
  + Adapt courseware for **Localization and Personalization**
* Development process
  + Limited financial and human resources (Shrinking budgets, Decrease of enrollment…)
  + Multiple media delivery (broadcasting, digital textbook, Internet, ….)
  + **Reuse and sharing** of quality materials (Broadcasting quality)

The Metadata Database System at NII JAIRO Cloud

"Materials" Repository System

GLOBE Registry +Referatories

WEKO

Search Windows for Specific Field Users

SQL-based LOM Repository

LOM-based OAI-PMH Harvester

Junii2-based OAI-PMH Harvester

"Learning Material" Extraction Filter

Metadata Management Tools for Content Holders

NII JAIRO Junii2 Repository

GLOBE: An international consortium for reuse and sharing (from 2004)

- Cross-Institutional search system of quality learning content and information beyond borders
- Exchange and Sharing of **METADATA**
- Federated search and Harvesting
- Movement of global coverage, all school level

International level

Nation-wide level

Institution level
University repository level
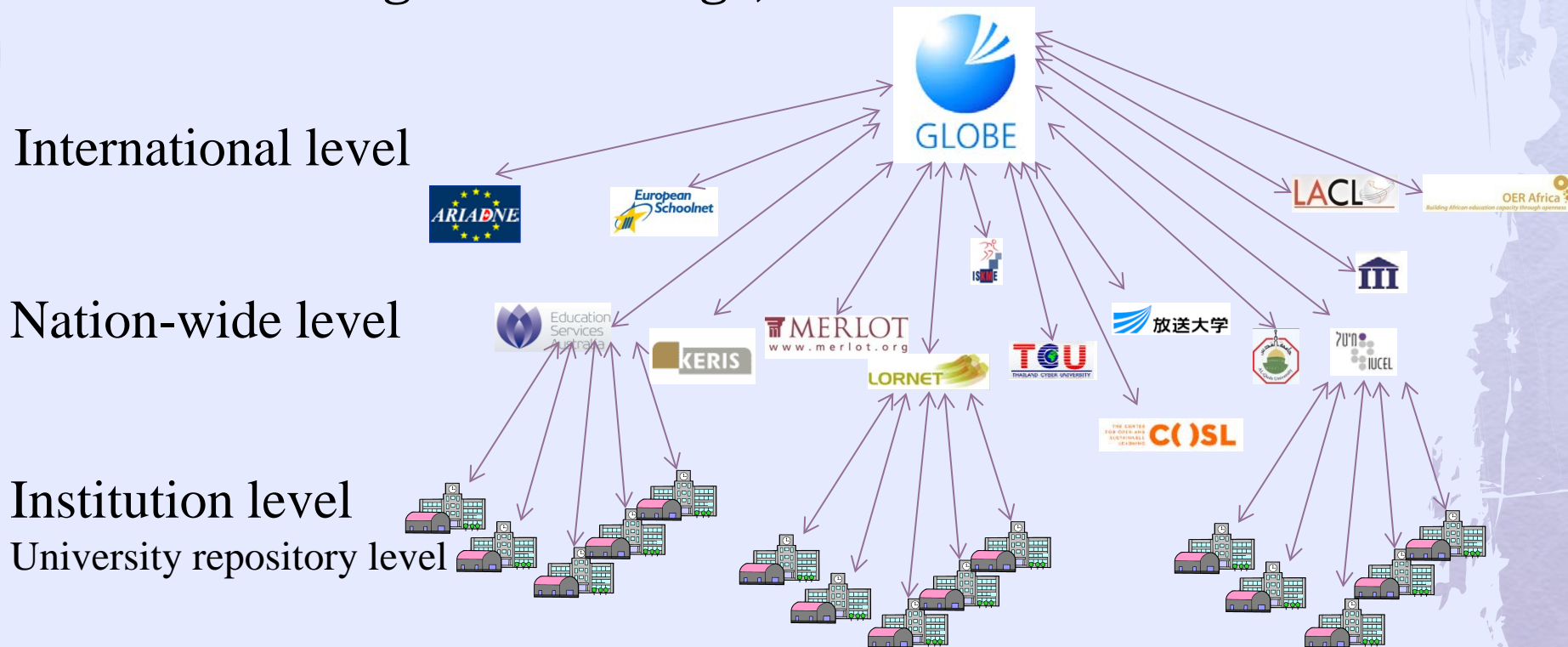
Issues

- The concept and philosophy for new autonomous LLLers
- Ecosystem for sustainability
- Collaboration among stakeholders
  - Virtual marketplace and community
  - Team for Big Science

  LA research: Educators, System developers, Instructional designers, Data Scientists
- Rights and Ethics

Thank you very much!!

Contact Information
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