



# Implementation of Open Course Ware in Development of Certification Test on Students of Informatics Field using Content Management Application

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# BACKGROUND

OCW Application and Ubiquitous Learning (*6 Journal IEEE*)

Regulation of the Education and Student Affairs, Ministry of Research, Technology and Higher Education (Kemenristek Dikti) No. 44 tahun 2015 - SLC

“Academic certificates, professions and competences”

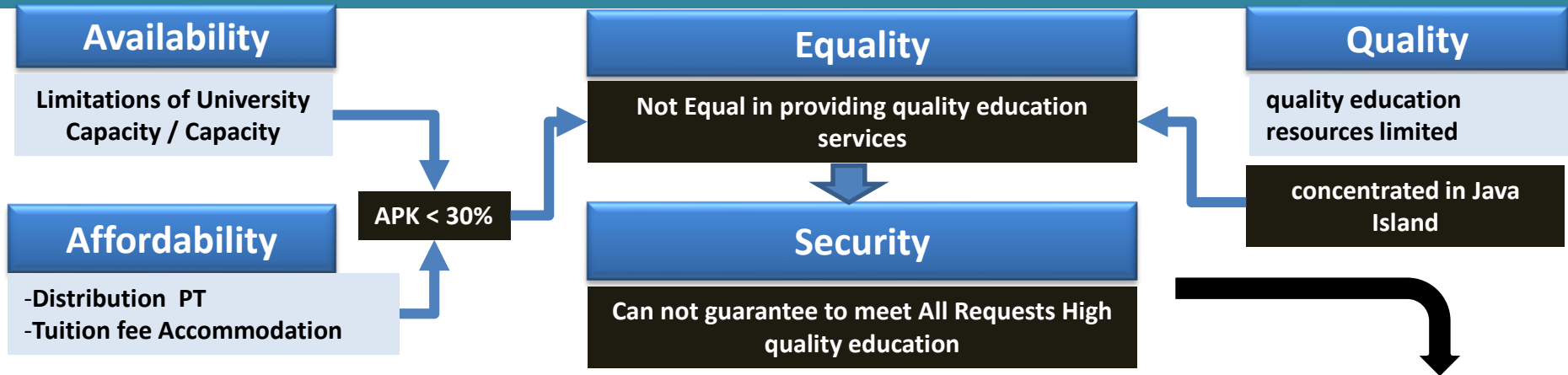
**BNSP** (National Agency for Education Certification– **LSP Informatika** (Professional Certification Institute)

**APTIKOM** (Higher Education Institution in Informatics and Computer Science in Indonesia)

**PROFESIENCE OF INFORMATICS INFORMATION COMPETENCY TEST**

Infrastruktur e-learning Infrastructure e-learning with OCW - CMA: Competency Test  
OCW – CMA : Uji Kompetensi

# EDUCATIONAL RELEASE - COMPETENCE TESTS



Ensure good quality education for all

**Aim**

Improve access to higher quality education with the addition of minimum resources

Improve the quality of existing higher education by using existing human resources

**Target**

Opening an online classroom course (KKNI)

Providing online courses (KKNI)

**Strategy**

**PROFESIENCE OF INFORMATICS INFORMATION COMPETENCY TEST**

**Action**

# BACKGROUND



## UNIVERSITY GROWTH

S1 field of Informatics there are as many as 746 courses. while the number of lecturers from PTN as many as: 2.504 people and PTS as many as 12.661. Based on the presentation of the Chairman of the Directorate of Higher Education (Ditjen Dikti)

02

01

## TECHNOLOGY ADVANCES

The development of ICT continues to increase along with the increasing needs of human beings. The development of ICT has now entered all the lines of life

03

## VARIATIONS OF CURRICULUM

Each campus has full authority in preparing the curriculum based on the rules established by Kemenristek Dikti.

04

## COMPETENCE OF GRADUATES

As a result of curriculum variation, the competence of each campus graduate is different, although coming from the same field of study

05

## INDUSTRIAL COMPETENCIES

Competence required by graduate users (industry field) is less relevant to the competence of graduates.

## CERTIFICATION ASSESSMENT - NURTURING SYSTEM



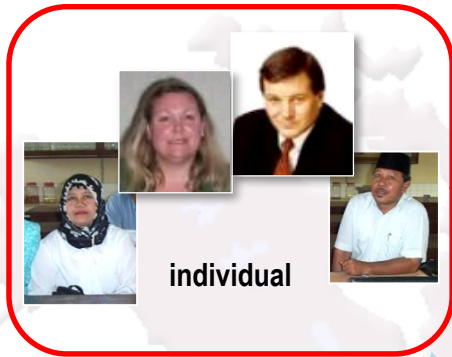
# THE CONCEPT OF HIGH EDUCATIONAL COLLABORATION AND COMPETENCE TEST

## Organizer

## Aggregator

## Services

## Users / Stakeholders



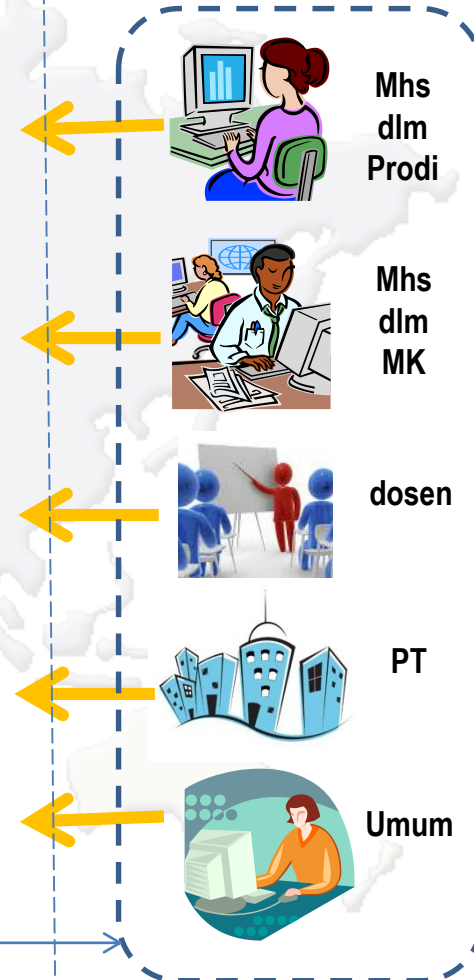
individual



Open Content /  
Materi Terbuka

Open  
Courseware /  
MK Terbuka

Open Learning /  
MK Daring



Mhs  
dlm  
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Mhs  
dlm  
MK

dosen

PT

Umum



University, Institutions



Professional Certification Agency  
Professional Association

## Implementation of Open Course Ware in Development of Certification Test on Students of Informatics Field using Content Management Application



# Methodology



• **Design of Development Model**



• **Characteristics of Developed Models**



• **Research Steps**



• **Systems development mode**



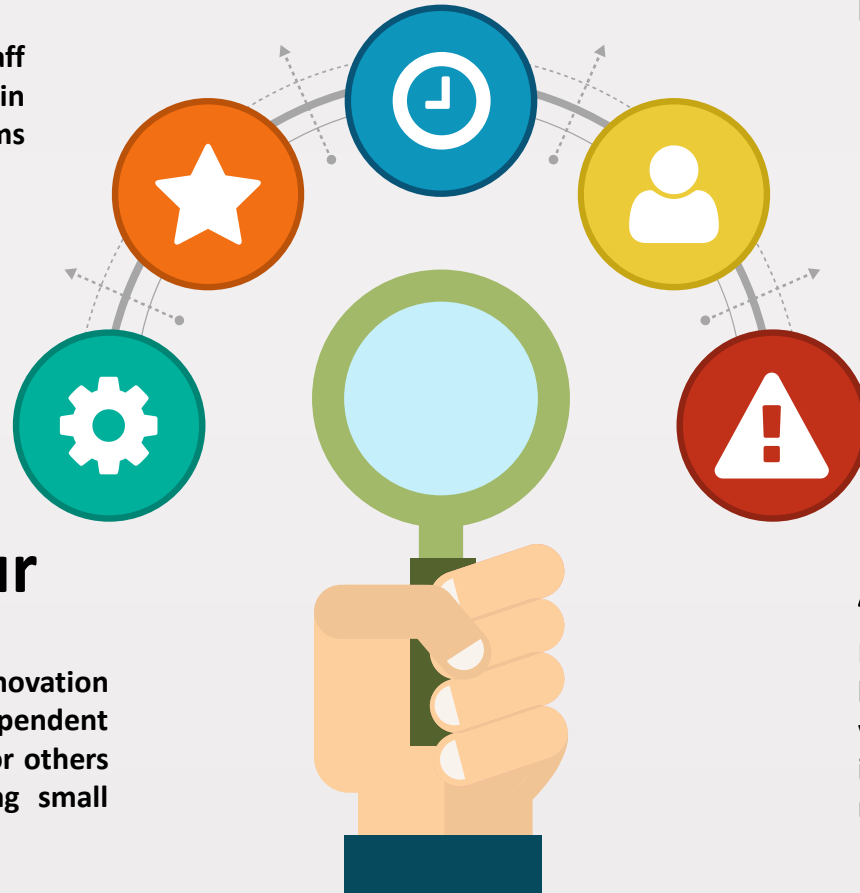
# Profile of college graduate informatics

## Employees

Evaluate his career from staff level to higher levels, both in the company and other forms of organization

## Entrepreneur

Using his creativity and innovation skills to build independent businesses or create jobs for others usually starts with building small and medium-sized UKM



## Professional

Becoming a freelancer ready to be recruited anytime by anyone in project-based or program-based format

## Bureaucrats

Work as civil servants or government employees on the basis of roles and functions that have been defined by the state

## Academics

Focusing on being a lecturer, lecturer, or researcher at various higher education institutions that give birth to new graduates



# Field conditions both technically and non-technical

## Data

The absence of a data that collects all certification test participants or industry knowledge test (Proficiency) both who have followed and have successfully passed the proficiency test.

## Information Test

There is still very limited information on industry knowledge test given by industry association or association of professional field of informatics given to students and lecturers in each campus

## Agregator

Not yet seen a system that acts as an aggregator, which is a system that bridges between the field of industry and the field of campus, especially in the field of Certification Test in the field of Informatics.

## Certification Fees

Costs are large enough in following the test of professional certification in the field of informatics for participants both students and lecturers ranging from two million rupiah to tens of millions of rupiah for each one eye certification profession profession field of informatics.

## Information

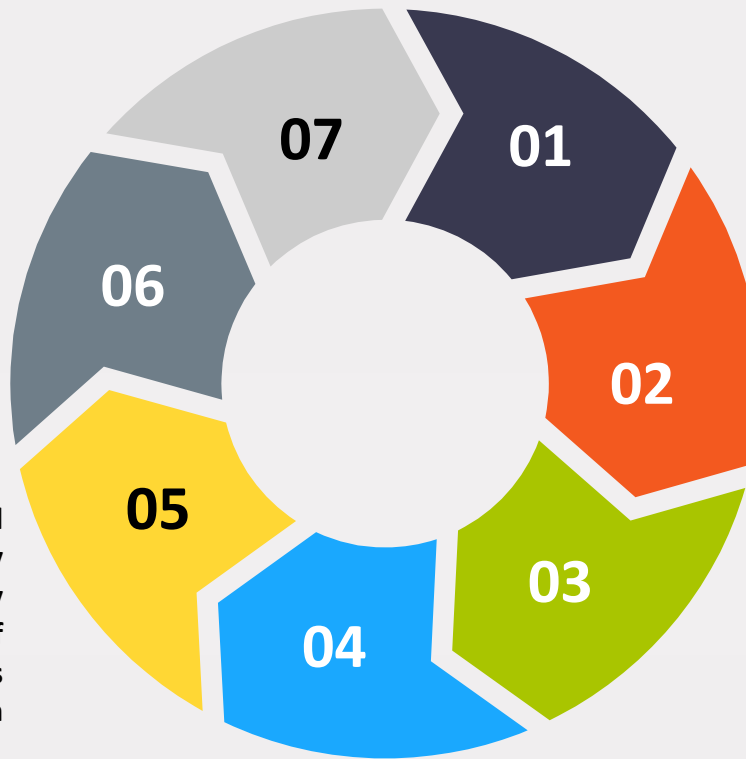
There is no information from the campus stating that graduates from each subject study program have a score or have competence in their respective fields

## Industri

Very limited information on cooperation between the campus world and industry that is spread openly and can be accessed in media sharing

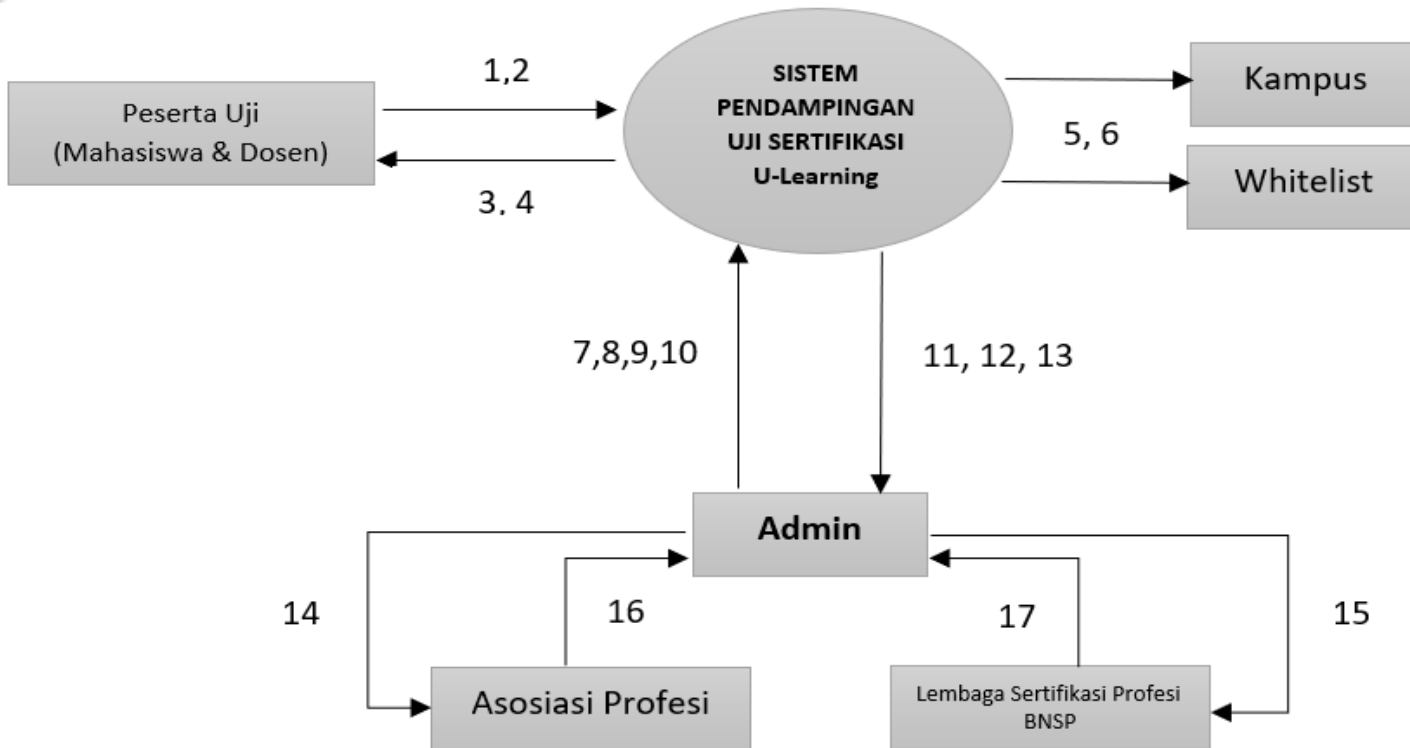
## Industry Association

There is still not much cooperation between professional associations and industry associations in implementing link and match especially in curriculum development





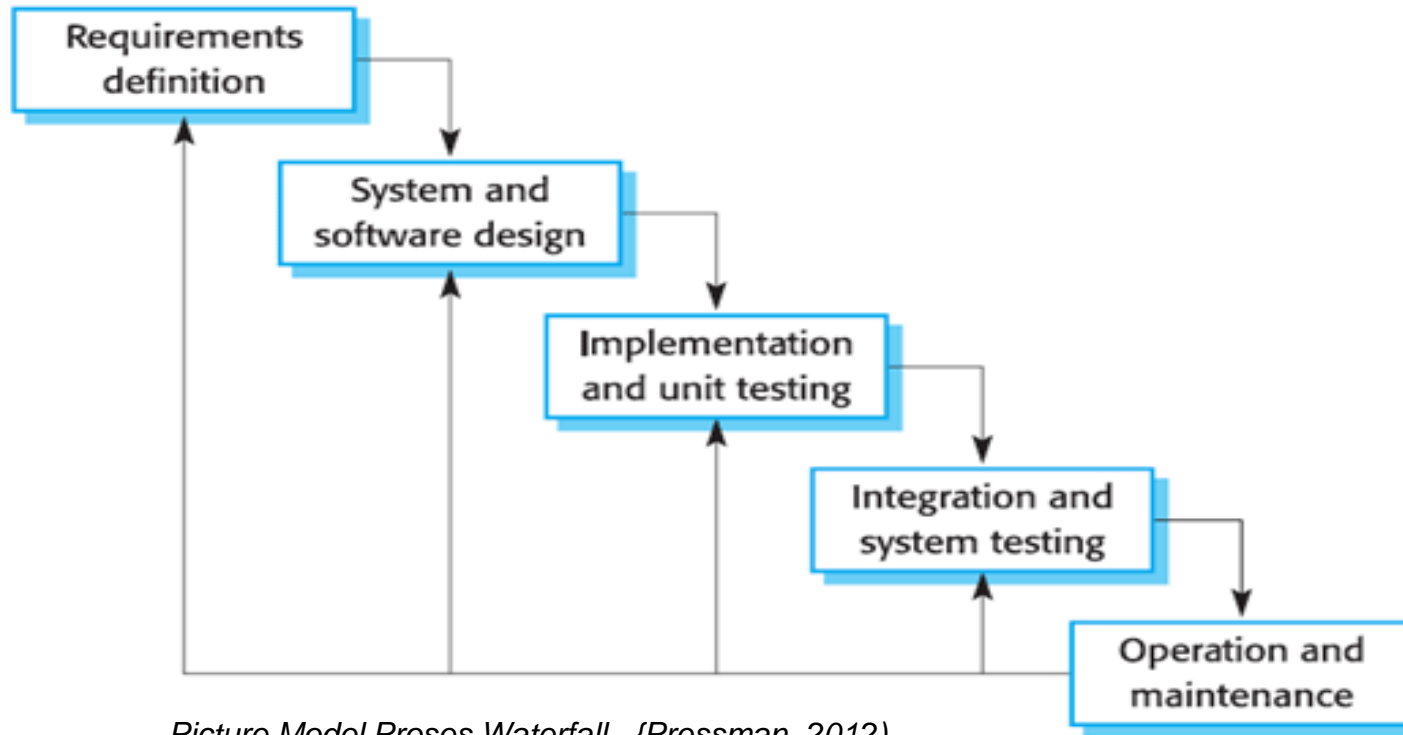
## • Characteristics of Developed Models



# Methodology

Met 4

• Systems development mode



Picture Model Proses Waterfall. {Pressman, 2012}

# CONCEPT OF MODEL DEVELOPMENT

## Model Dick and Carrey

(1) Identify instructional goal(s). (2) Conduct instructional analysis. (3) Analyze learner and contexts. (4) Write performanve objectives. (5) Develop assesment instruments. (6) Develop instructional strategy. (7) Develop and select instructional material. (8) Design and conduct the formative evaluation of instruction. (9) Revise instruction"

## Model Four-D

Define, Design, Develop, and Disseminate

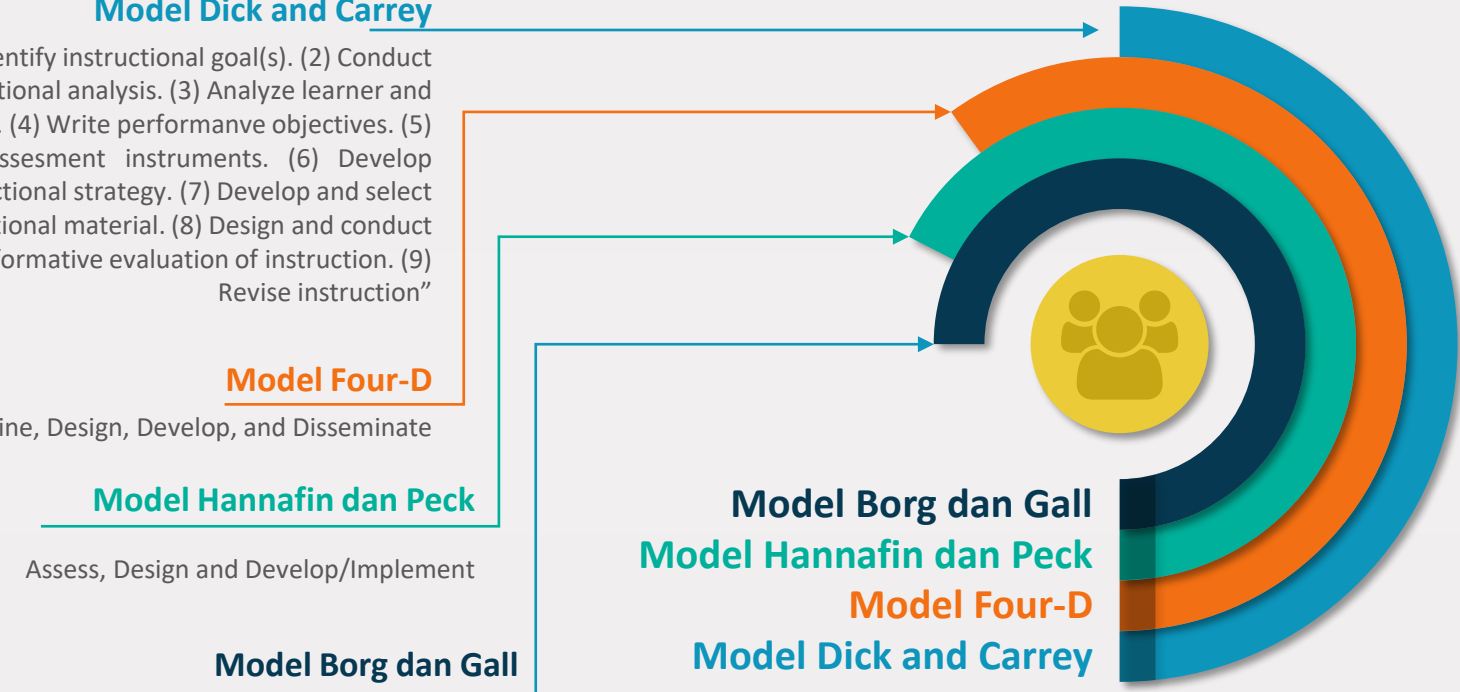
## Model Hannafin dan Peck

Assess, Design and Develop/Implement

## Model Borg dan Gall

1). Research and information collecting,  
2). Planning, 3). Develop preliminary form of product, 4). Preliminary field testing, 5). Main field testing, 6). Operational product revision, 7). Operational field testing, 8). Final product revision, 9). Dissemination and 10). implementation,

Model Borg dan Gall  
Model Hannafin dan Peck  
Model Four-D  
Model Dick and Carrey





# Model Design

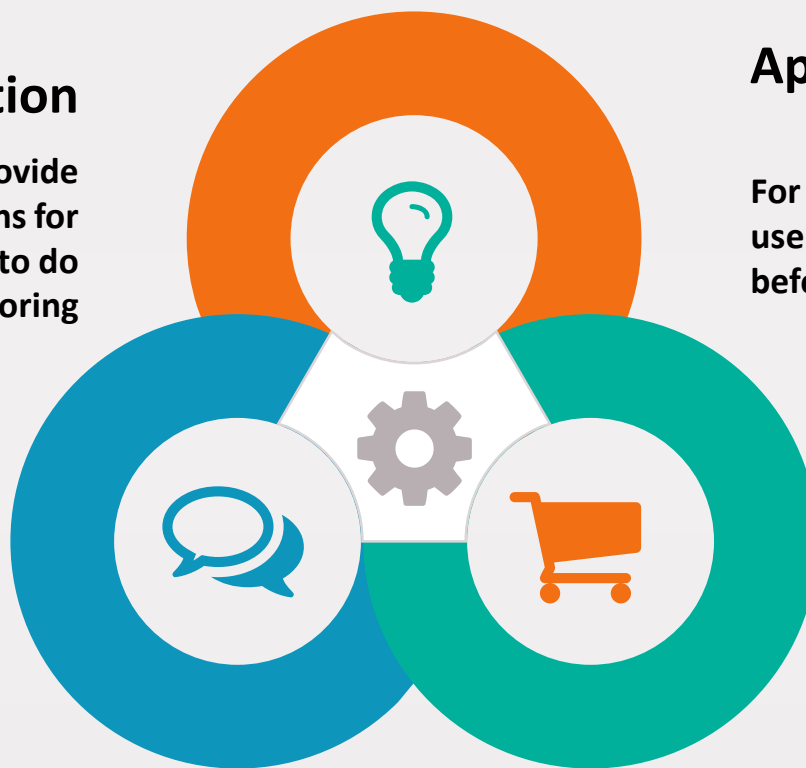


## Recommendation

Can provide recommendations for decision maker to do mentoring

## Facilitate

Can facilitate to obtain one or more e-certificates for participants who graduated, to be used as Certificate of Certificate Supervisor (SKPI)



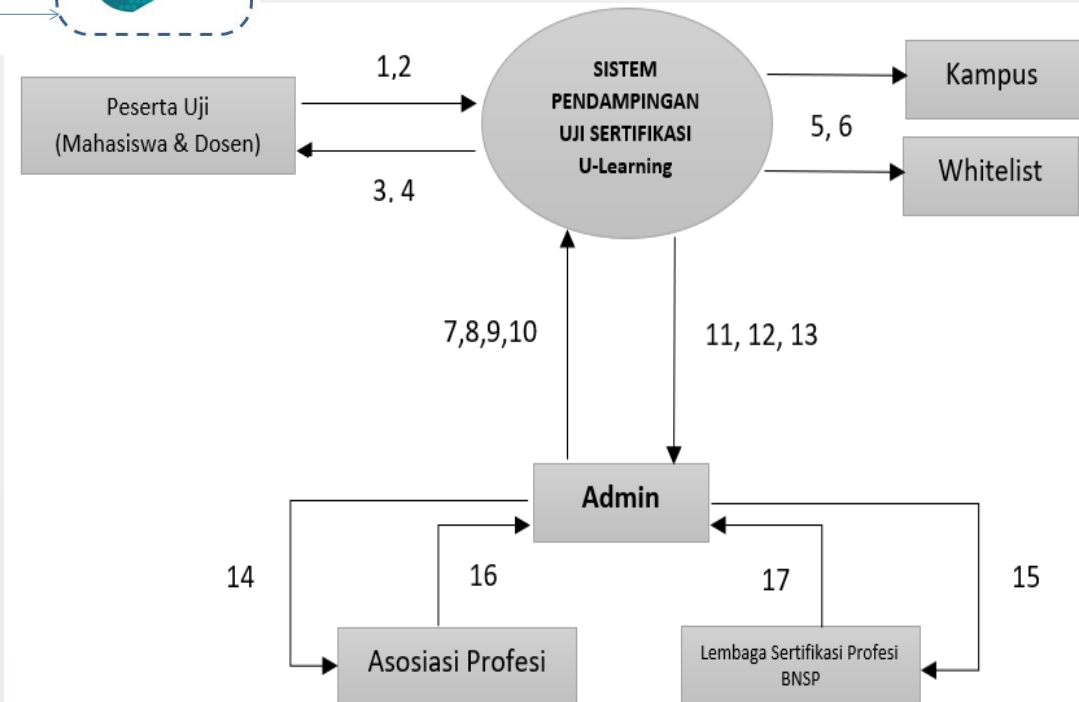
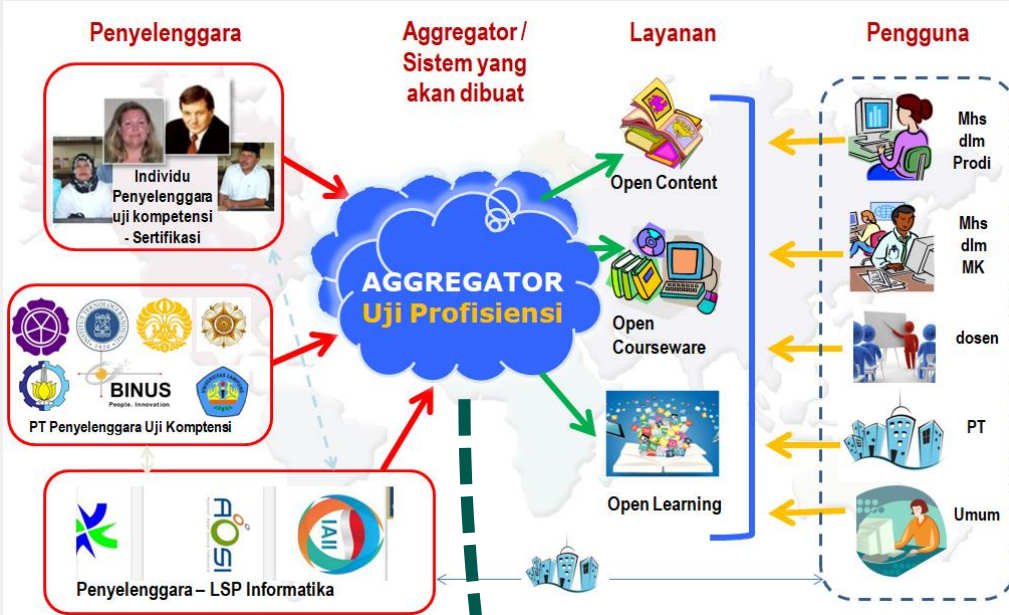
## Application

For users or examinees can use as this app to learn, before the exam is executed

## Data Base

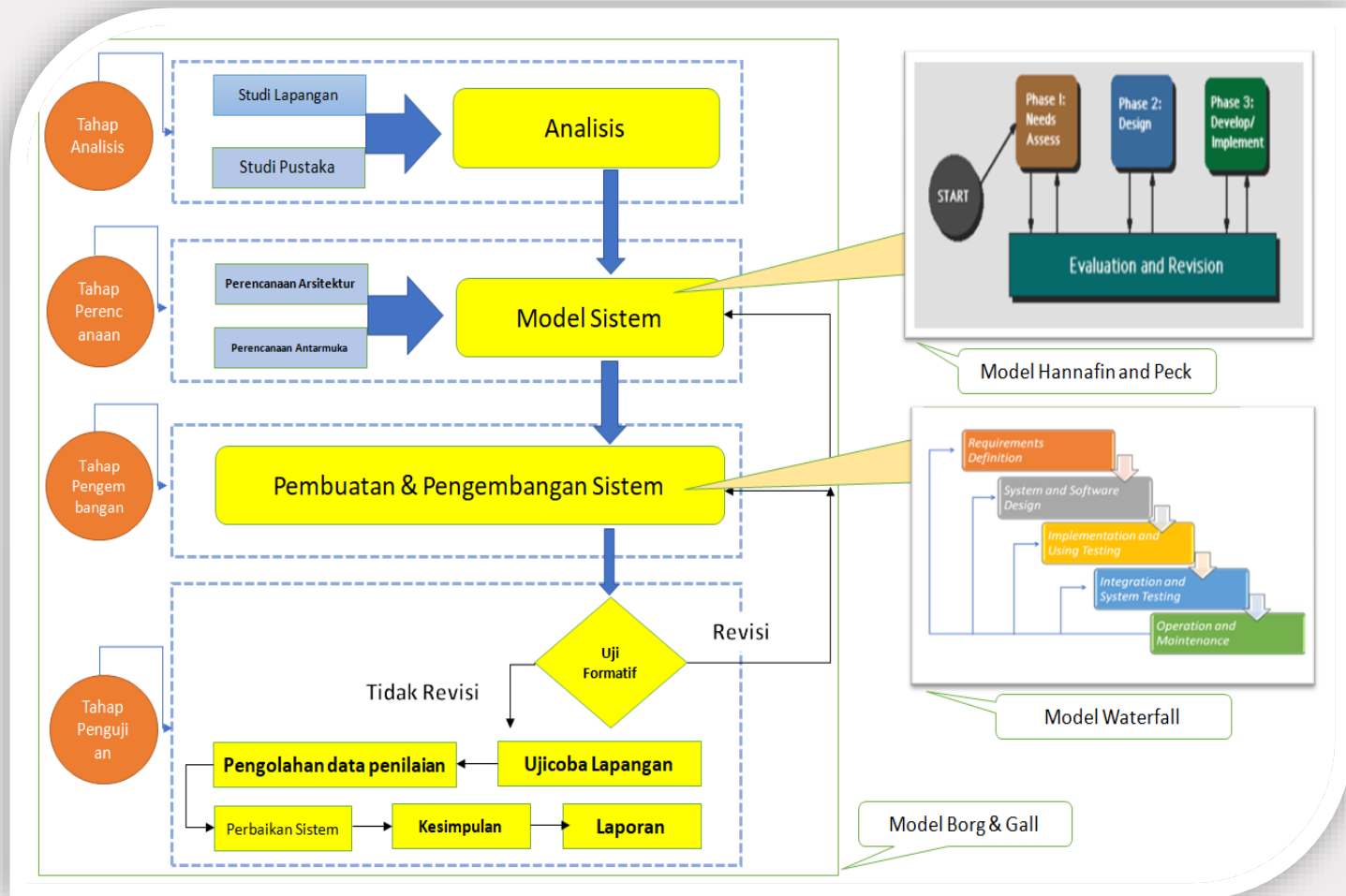
The results of this application system, can be followed up to the Association of Industrial Professions and National Board of Professional Certification as a data base (whitelist) that has been competent and open access / open

# Model Characteristics Developed



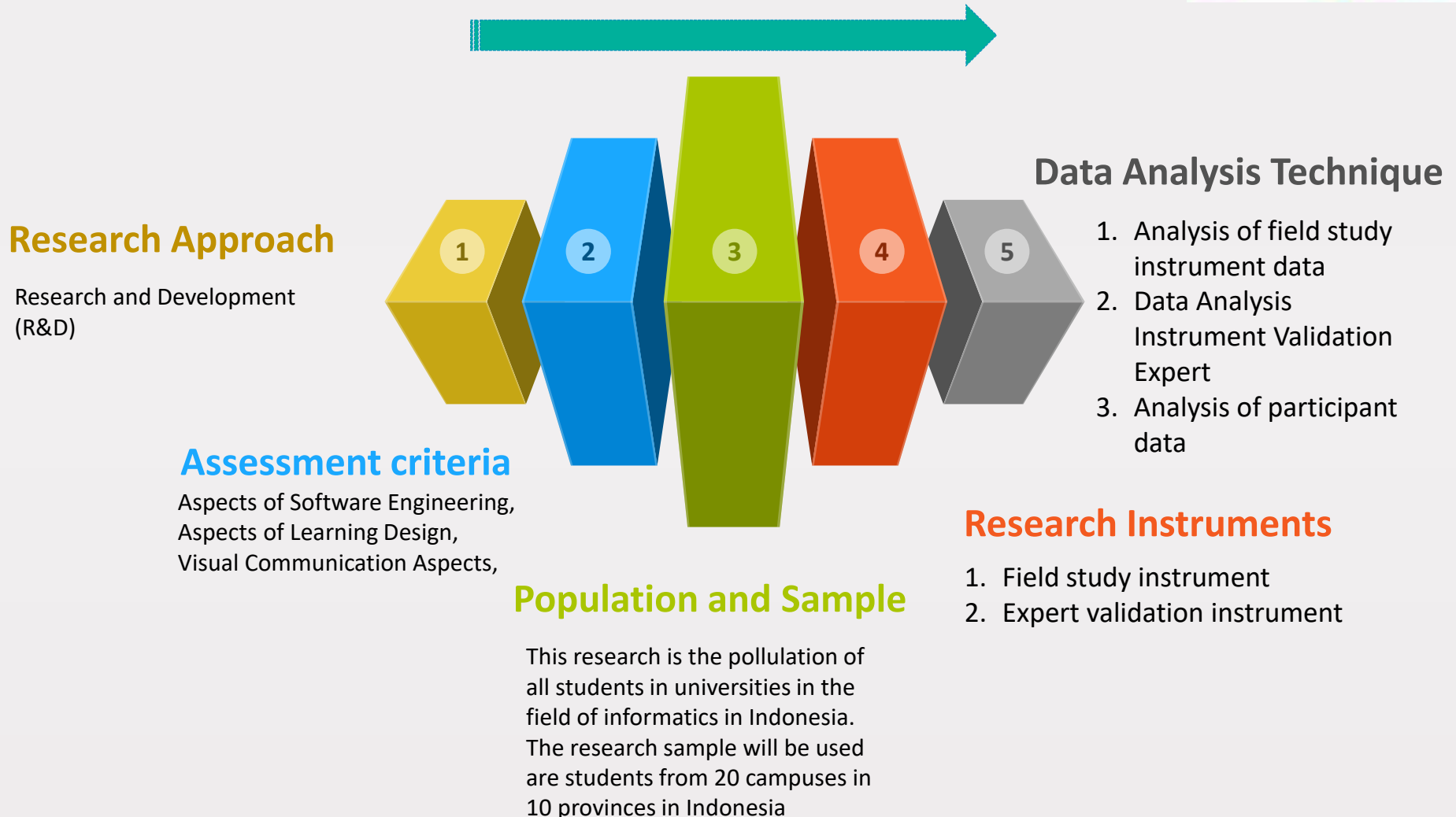
# Approach and Research Methods

## Research and Development (R&D)



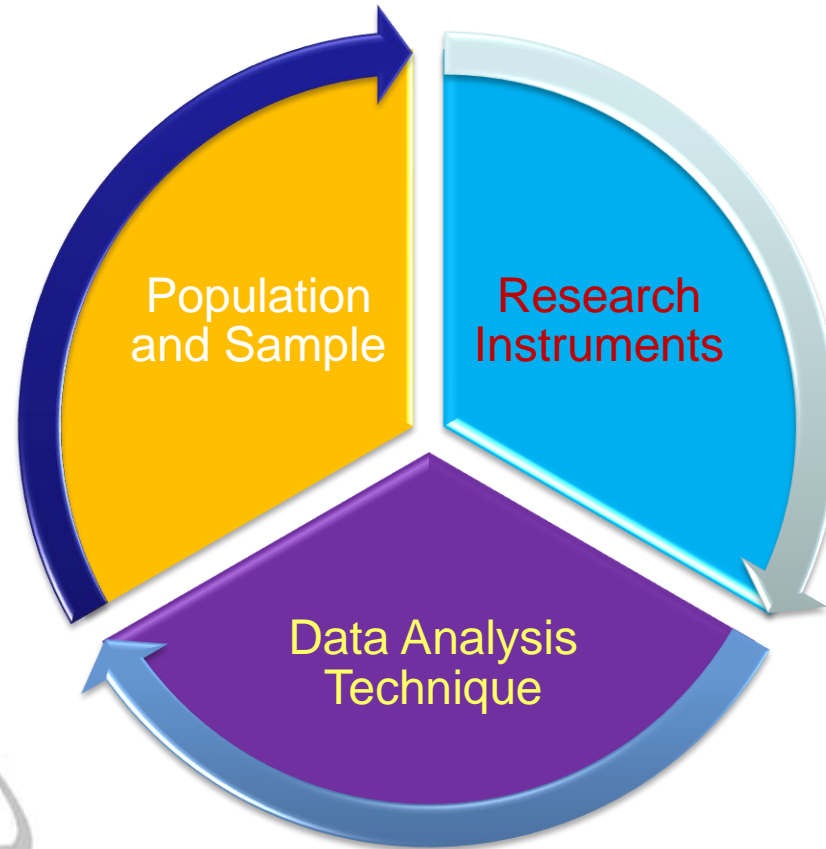
Step Research Certification Assessment System

# Research Methodology & Approach





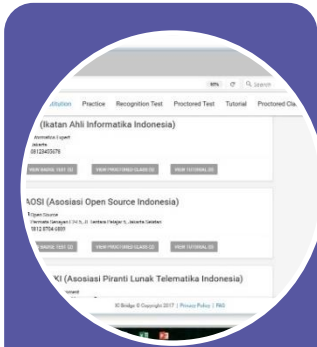
# ANALYSIS



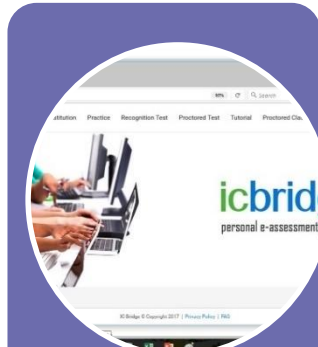
## Implementation of Open Course Ware in Development of Certification Test on Students of Informatics Field using Content Management Application



Map of Competency Test Scheme



Collaboration of Various Professional Associations



Designing Application Products



Testing Competency Test Material



Socialization of Test Results



Map of Competency Test Scheme

## PETA OKUPASI NASIONAL DALAM KERANGKA KUALIFIKASI NASIONAL INDONESIA PADA AREA FUNGSI TEKNOLOGI INFORMASI DAN KOMUNIKASI



2017

| LEVEL | KATEGORI | JENJANG PENDIDIKAN | JENJANG KELOMPOK | AREA FUNGSI TEKNOLOGI INFORMASI DAN KOMUNIKASI |                                     |                                     |                                 |                      |                                    |                                    |                                 |                              |                                |                                 |                                 |                                |
|-------|----------|--------------------|------------------|--|-------------------------------------|-------------------------------------|---------------------------------|----------------------|------------------------------------|------------------------------------|---------------------------------|------------------------------|--------------------------------|---------------------------------|---------------------------------|--------------------------------|
|       |          |                    |                  | IT BUSINESS MANAGEMENT SYSTEM                  | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN     | IT BUSINESS NETWORKS            | IT BUSINESS SECURITY | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION    | IT BUSINESS SYSTEMS SUPPORT     | IT BUSINESS SYSTEMS TRAINING | IT BUSINESS SYSTEMS EVALUATION | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION  |                                |
| 9     | RELI     | SARJANA            | JAHU UTAMA       | IT BUSINESS MANAGEMENT SYSTEM                  | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN     | IT BUSINESS NETWORKS            | IT BUSINESS SECURITY | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION    | IT BUSINESS SYSTEMS SUPPORT     | IT BUSINESS SYSTEMS TRAINING | IT BUSINESS SYSTEMS EVALUATION | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION  |                                |
| 8     |          |                    |                  | JAHU BAWAH                                     | IT BUSINESS MANAGEMENT SYSTEM       | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN | IT BUSINESS NETWORKS | IT BUSINESS SECURITY               | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION | IT BUSINESS SYSTEMS SUPPORT  | IT BUSINESS SYSTEMS TRAINING   | IT BUSINESS SYSTEMS EVALUATION  | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION |
| 7     |          |                    |                  | JAHU PERUSAHA                                  | IT BUSINESS MANAGEMENT SYSTEM       | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN | IT BUSINESS NETWORKS | IT BUSINESS SECURITY               | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION | IT BUSINESS SYSTEMS SUPPORT  | IT BUSINESS SYSTEMS TRAINING   | IT BUSINESS SYSTEMS EVALUATION  | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION |
| 6     | TEKNIKSI | DIPLOMA III        | JAHU PERUSAHA    | IT BUSINESS MANAGEMENT SYSTEM                  | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN     | IT BUSINESS NETWORKS            | IT BUSINESS SECURITY | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION    | IT BUSINESS SYSTEMS SUPPORT     | IT BUSINESS SYSTEMS TRAINING | IT BUSINESS SYSTEMS EVALUATION | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION  |                                |
| 5     |          |                    |                  | JAHU PERUSAHA                                  | IT BUSINESS MANAGEMENT SYSTEM       | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN | IT BUSINESS NETWORKS | IT BUSINESS SECURITY               | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION | IT BUSINESS SYSTEMS SUPPORT  | IT BUSINESS SYSTEMS TRAINING   | IT BUSINESS SYSTEMS EVALUATION  | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION |
| 4     | OPERATOR | DIPLOMA II         | JAHU PERUSAHA    | IT BUSINESS MANAGEMENT SYSTEM                  | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN     | IT BUSINESS NETWORKS            | IT BUSINESS SECURITY | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION    | IT BUSINESS SYSTEMS SUPPORT     | IT BUSINESS SYSTEMS TRAINING | IT BUSINESS SYSTEMS EVALUATION | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION  |                                |
| 3     |          |                    |                  | JAHU PERUSAHA                                  | IT BUSINESS MANAGEMENT SYSTEM       | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN | IT BUSINESS NETWORKS | IT BUSINESS SECURITY               | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION | IT BUSINESS SYSTEMS SUPPORT  | IT BUSINESS SYSTEMS TRAINING   | IT BUSINESS SYSTEMS EVALUATION  | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION |
| 2     | OPERATOR | DIPLOMA I          | JAHU PERUSAHA    | IT BUSINESS MANAGEMENT SYSTEM                  | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN     | IT BUSINESS NETWORKS            | IT BUSINESS SECURITY | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION    | IT BUSINESS SYSTEMS SUPPORT     | IT BUSINESS SYSTEMS TRAINING | IT BUSINESS SYSTEMS EVALUATION | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION  |                                |
| 1     |          |                    |                  | JAHU PERUSAHA                                  | IT BUSINESS MANAGEMENT SYSTEM       | IT BUSINESS APPLICATION DEVELOPMENT | IT BUSINESS ANALYSIS AND DESIGN | IT BUSINESS NETWORKS | IT BUSINESS SECURITY               | IT BUSINESS SYSTEMS ADMINISTRATION | IT BUSINESS SYSTEMS INTEGRATION | IT BUSINESS SYSTEMS SUPPORT  | IT BUSINESS SYSTEMS TRAINING   | IT BUSINESS SYSTEMS EVALUATION  | IT BUSINESS SYSTEMS IMPROVEMENT | IT BUSINESS SYSTEMS INNOVATION |



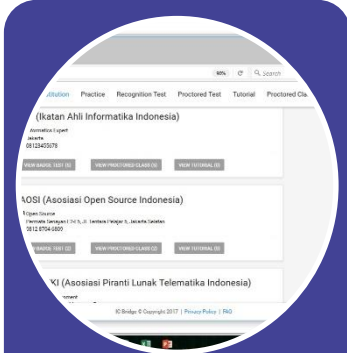
# One Semester Progress



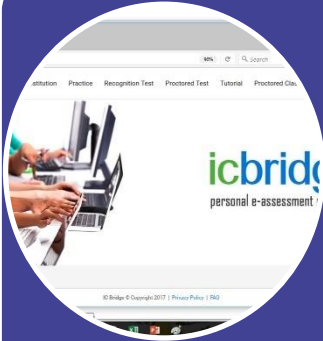
The screenshot shows the IC Bridge website interface. The browser address bar displays `icbridge.id/institution?page=2`. The website features a navigation menu with options: Home, Institution, Practice, Recognition Test, Proctored Test, Tutorial, and Proctored Class. A 'LOG IN' button is visible in the top right corner. The main content area lists three professional associations:

- IAII (Ikatan Ahli Informatika Indonesia)**
  - Informatics Expert
  - Jakarta
  - 08123455678
  - VIEW BADGE TEST (5)
  - VIEW PROCTORED CLASS (5)
  - VIEW TUTORIAL (0)
- AOSI (Asosiasi Open Source Indonesia)**
  - Open Source
  - Permata Senayan E2-E5, Jl. Tentara Pelajar 5, Jakarta Selatan
  - 0812 8704 6809
  - VIEW BADGE TEST (2)
  - VIEW PROCTORED CLASS (2)
  - VIEW TUTORIAL (0)
- ASPILUKI (Asosiasi Piranti Lunak Telematika Indonesia)**
  - Software Development

The footer of the website includes the text: "IC Bridge © Copyright 2017 | Privacy Policy | FAQ". The Windows taskbar at the bottom shows the system clock as 6:24 PM on 9/18/2017.



Collaboration of Various Professional Associations



Testing  
Competency  
Test Material

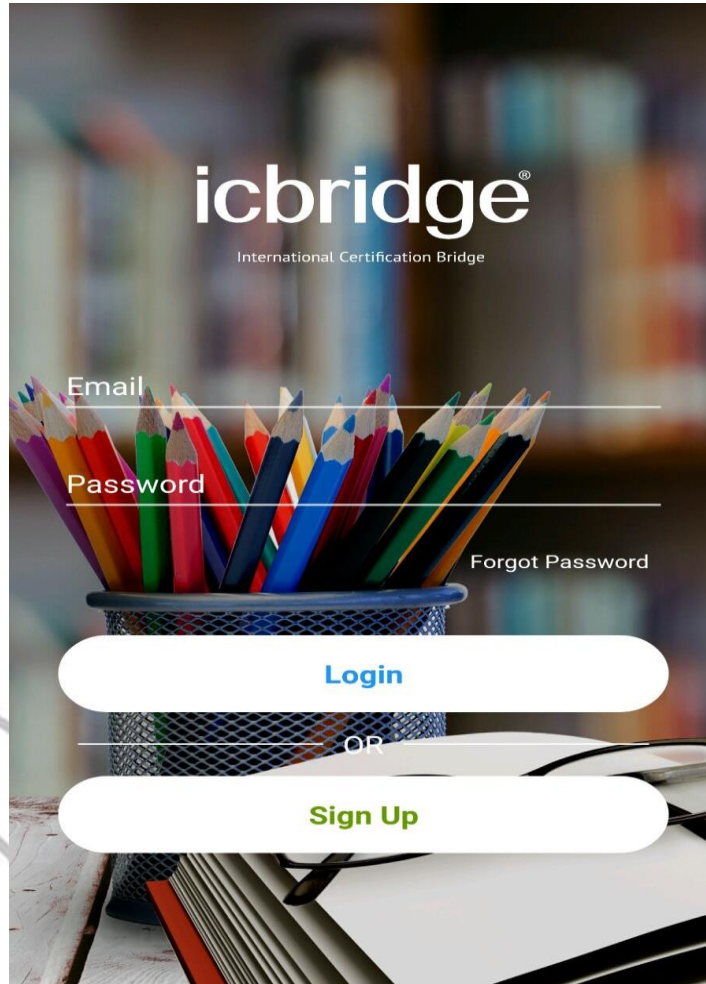
```
view-source:http://icbridge.id/subject?type=regular

1 <!DOCTYPE html>
2 <html class="transition-navbar-scroll top-navbar-xlarge bottom-footer" lang="en">
3 <head>
4   <meta charset="utf-8">
5   <meta http-equiv="X-UA-Compatible" content="IE=edge">
6   <meta name="viewport" content="width=device-width, initial-scale=1">
7   <meta name="csrf-token" content="iK39nRmVYfcWcb1f97wID2aORpt7rdWBSVKaTm3">
8   <title>IC Bridge</title>
9   <link rel="shortcut icon" href="http://icbridge.id/images/icon-icbridge.png">
10  <link href="http://icbridge.id/css/vendor/vendor.css" rel="stylesheet">
11  <link href="http://icbridge.id/css/app.css" rel="stylesheet">
12 </head>
13 <body class="">
14   <div class="navbar navbar-default navbar-fixed-top navbar-size-large navbar-size-xlarge paper-shadow" data-z="0" data-animated role="navigation">
15     <div class="container">
16       <div class="navbar-header">
17         <button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#main-nav">
18           <span class="sr-only">Toggle navigation</span>
19           <span class="icon-bar"></span>
20           <span class="icon-bar"></span>
21           <span class="icon-bar"></span>
22         </button>
23         <div class="navbar-brand navbar-brand-logo">
24           <a class="svg" href="http://icbridge.id">
25             
26           </a>
27         </div>
28       </div>
29       <div class="collapse navbar-collapse" id="main-nav">
30         <ul class="nav navbar-nav navbar-nav-margin-left">
31           <li >
32             <a href="http://icbridge.id">Home</a>
33           </li>
34           <li >
35             <a href="http://icbridge.id/institution">Institution</a>
```

Source Pemrograman dalam Web base view-source:http://icbridge.id/subject?type=regular



Testing Competency Test Material



icbridge®  
International Certification Bridge

Email

Password

Forgot Password

Login

OR

Sign Up

Please download on fire play store type in IC Bridge there are some questions for preparation of certification test materials

So students can prepare the material to be tested

# One Semester Progress



Socialization  
of Test  
Results





Socialization of Test Results

## GRADE LEVEL INDICATOR PROCTORED EXAM

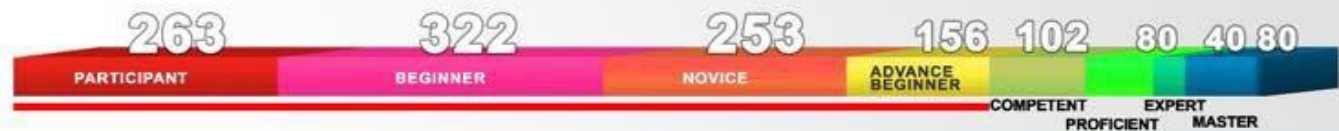
PREINEXUS<sup>TM</sup>  
LEARNING • COLLEGE • NETWORK

6 UNIVERSITY



## GRADE LEVEL HISTORY PROCTORED EXAM

TOTAL PARTICIPANT : 1296





# CONCLUSION

1. It can generate an Open Course Ware Model in implementation of Content Management Application (CMA) with Private Cloud Computing-based to help the preparation of competency test.
2. It is generated a model development by sharing the resources of science owned by universities or experts from the closed system / internal course of study through e-Learning into open learning system (OCW),
3. Produce a form of interactive learning materials by using Learning Management System with Multimedia-based in Open Course Ware model to help students who will take the competency test in the field of informatics in all provinces in Indonesia
4. As an Alternative Learning Strategy in the Preparation of Student Certification Test with web-based in Indonesia



# SUGGESTIONS



- The point to be put forward in this suggestion is the need of mindset for the stakeholders to be able to do the diffusion of innovation in the learning organization, so that it will create a tendency in the use of technology in education, so that some issues in application of education technology gradually can become even better. Especially in the utilization of EMU-based technology Learning (Electronic Mobile Ubiquitous). Particularly in the article discussing the use of Content Management Application with Private Cloud Computing-based to assist the preparation of certification test at Professional Certification Institute for Student of Informatics in Indonesia, the concept that is needed is the concept of Facilitating Learning and Improving Performance in this Application,



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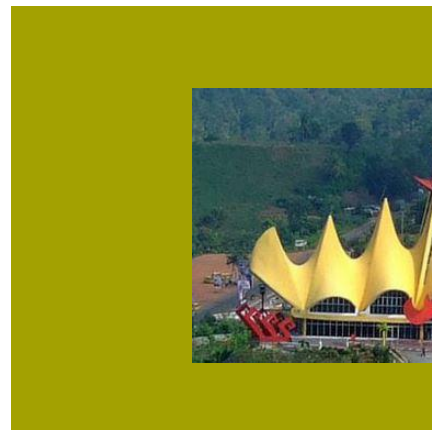
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## Q&A and Discussion. Thanks You

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