Methodology for Developing and Application Outsourcing in the Cloud Using SOA
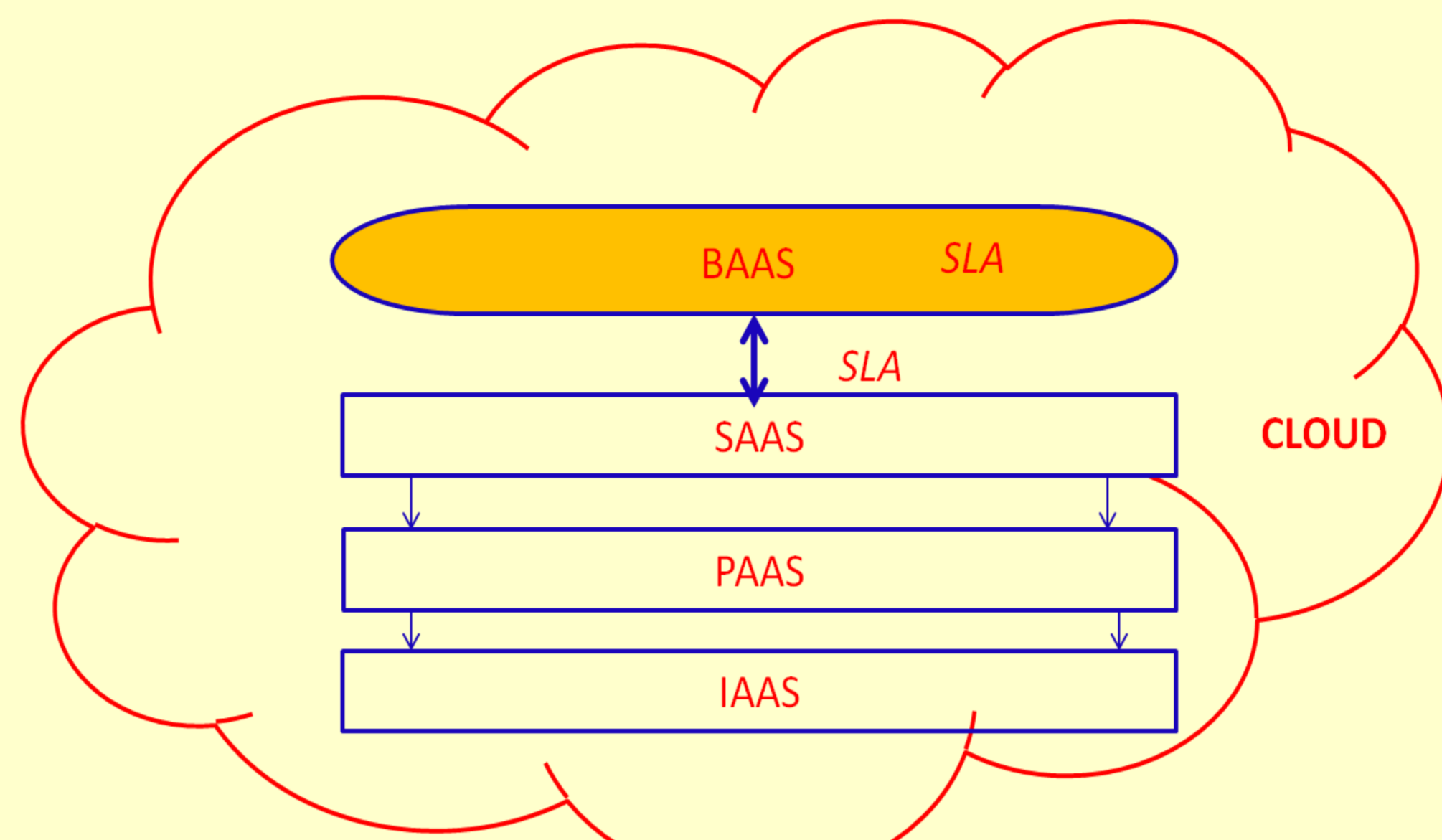
Authors CONCEPCIÓN MARTÍN GASCUEÑA; ANA GONZALO NUÑO

Polytechnic University of Madrid (SPAIN)

Introduction

New technologies such as, the new Information and Communication Technology ICT, break new paths and redefines the way we understand business.
In a few years time, Cloud Computing has become the spotlight of myriad companies that see this technology as a place from which to *develop, manage* and *launch their business* due to several causes such as: the possibility of market expansion, Cloud companies can now reach every corner of the globe.
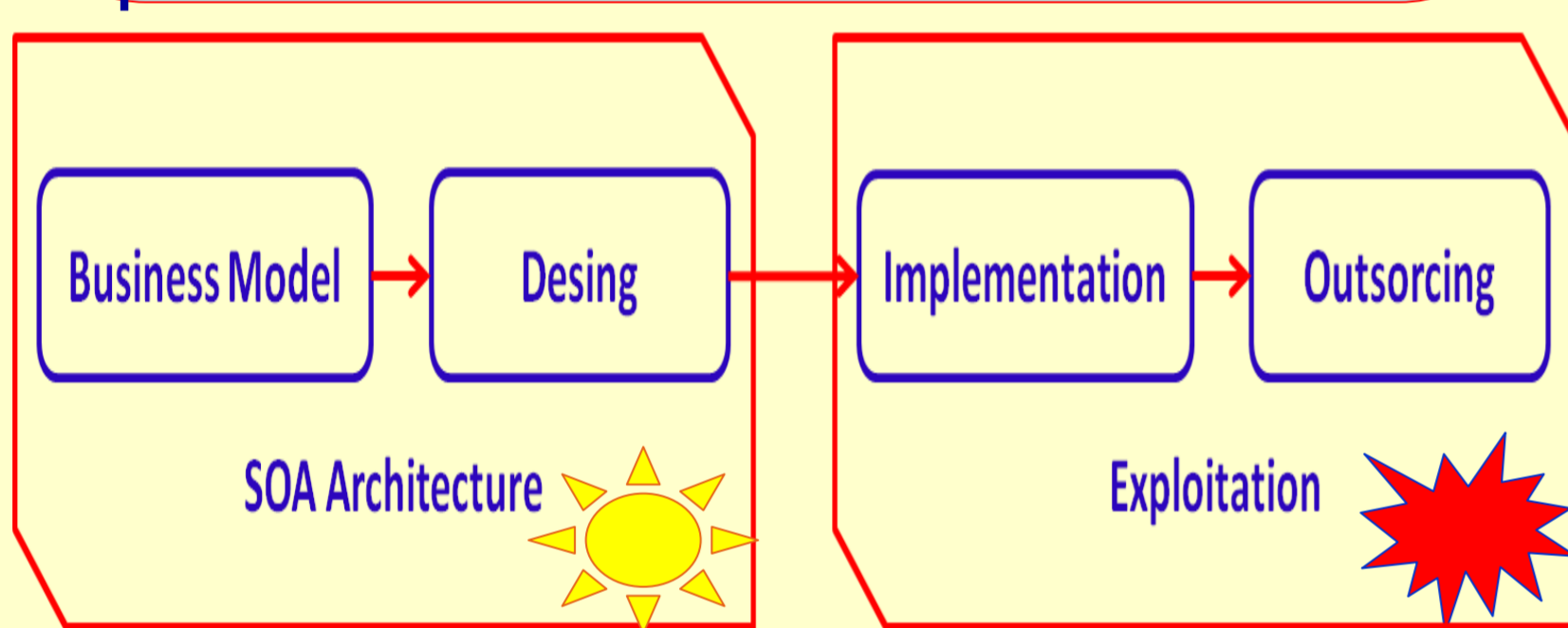

BAAS — *SLA*
SLA
SAAS — CLOUD
PAAS
IAAS

Everything in the Cloud is consumed as a service. **We consider necessary to add a new layer** on the traditional infrastructure of Cloud: **the Business as a service (BaaS) layer**.

The ability to expand or contract resources by needed with **the on demand resource gathering and the per usage payment** scheme are now commonplace, and allows companies to save on their ICT investments.
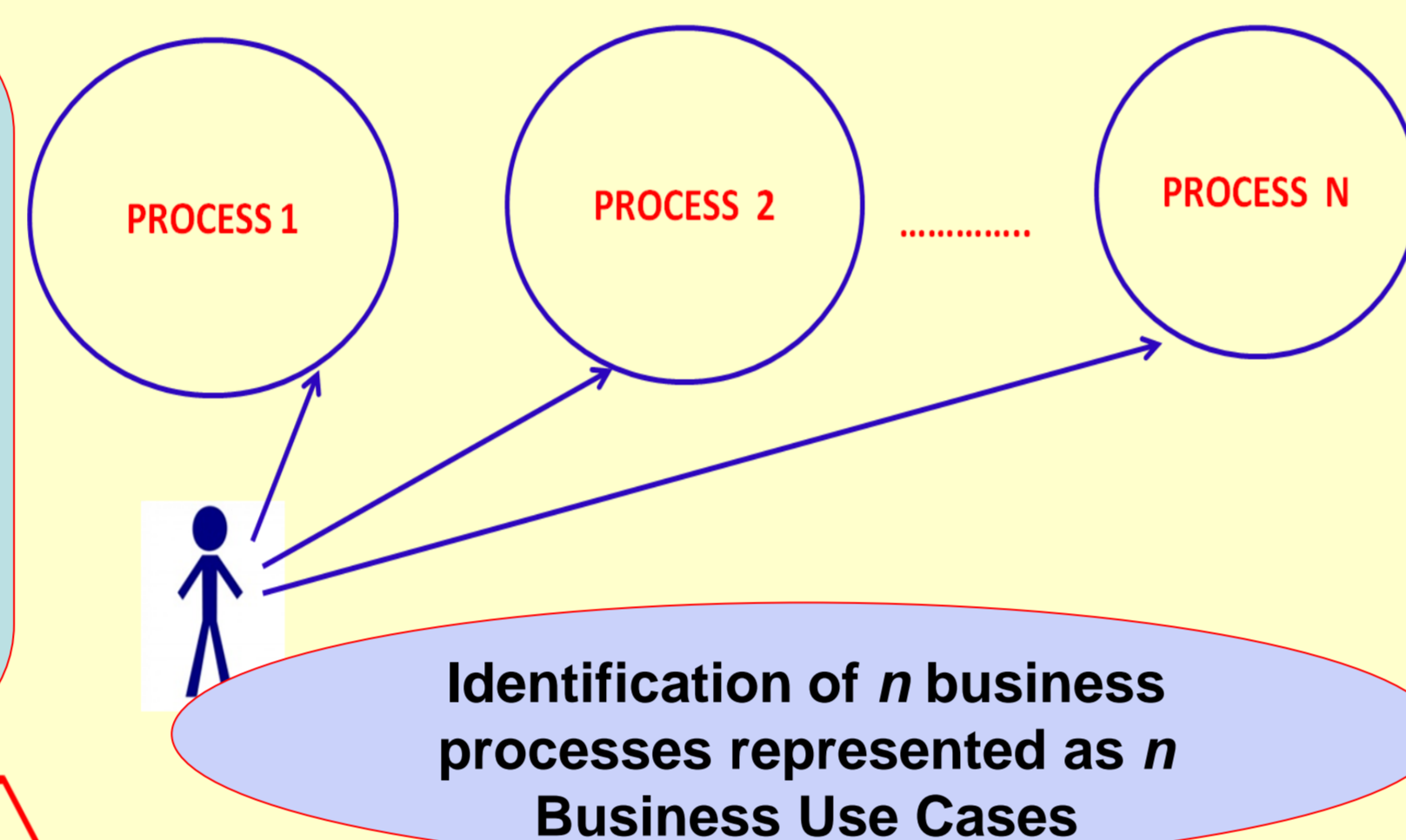
But business migration to the Cloud, including its data, services and processes, should be made **based on well-defined strategies and methodolgies.**

Methodology:

We define a methodology for the development of business models focused for their externalization in the Cloud, using Service Oriented Architect (SOA) philosophy and diagrams and UML specifications
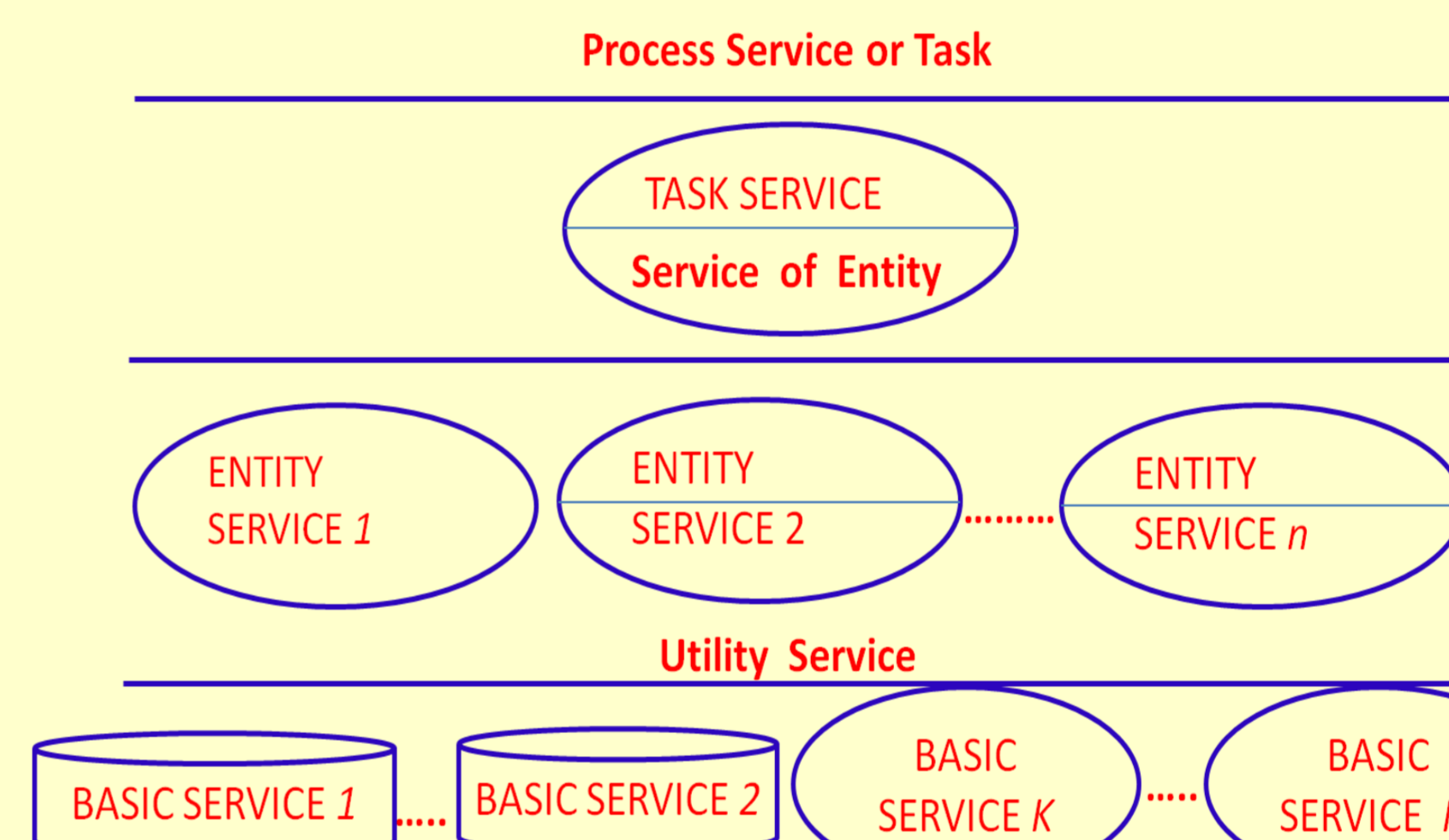
Business Model → Desing → Implementation → Outsorcing

SOA Architecture — Exploitation

The four stages of our Methodology

PROCESS 1   PROCESS 2   ....   PROCESS N

Identification of *n* business processes represented as *n* Business Use Cases

Business Modelling phase
Analysis of the Organization
Identify the business processes
Actions description

Design phase
Identify and categorize services
Discover existing services
Specify of services
Services orchestration

Process Service or Task
TASK SERVICE
Service of Entity

ENTITY SERVICE *1*   ENTITY SERVICE *2*   ......   ENTITY SERVICE *n*

Utility Service
BASIC SERVICE *1* ...... BASIC SERVICE *2*   BASIC SERVICE *K* ...... BASIC SERVICE *M*
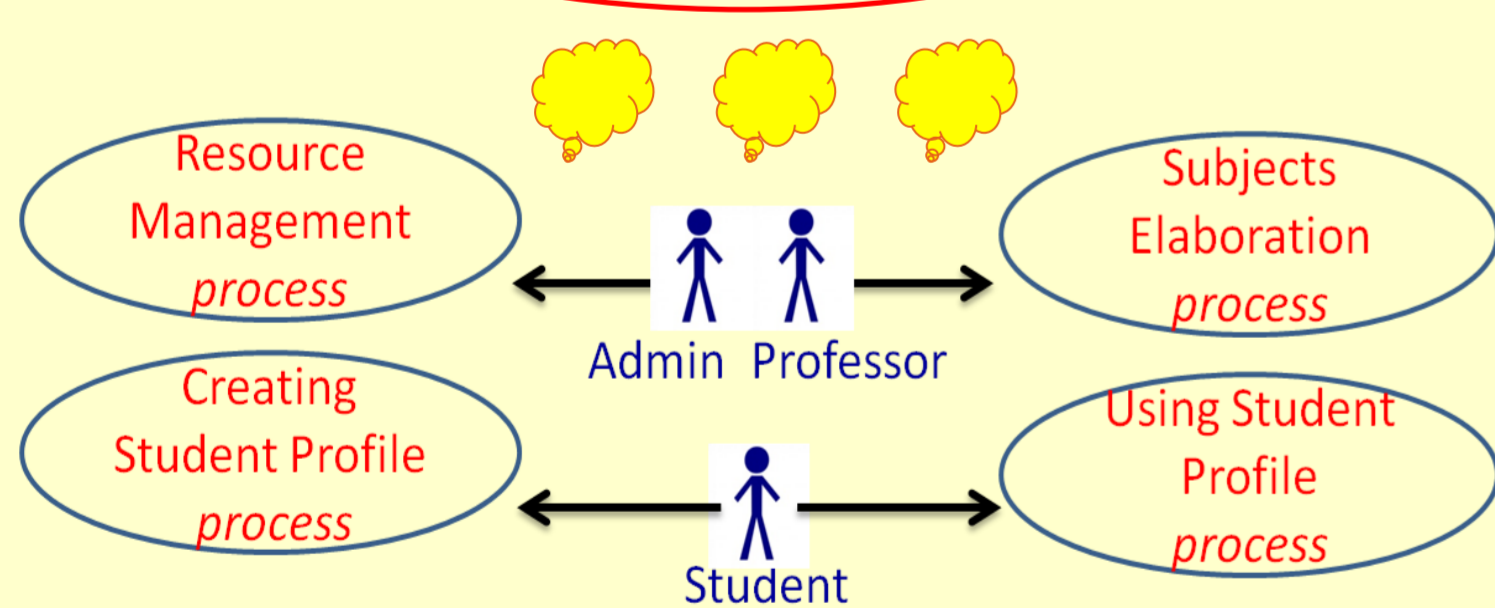
Identification and categorization of services of a process *X*

Implementation phase
Externalization in the Cloud
Process orchestration
SOA Governance model
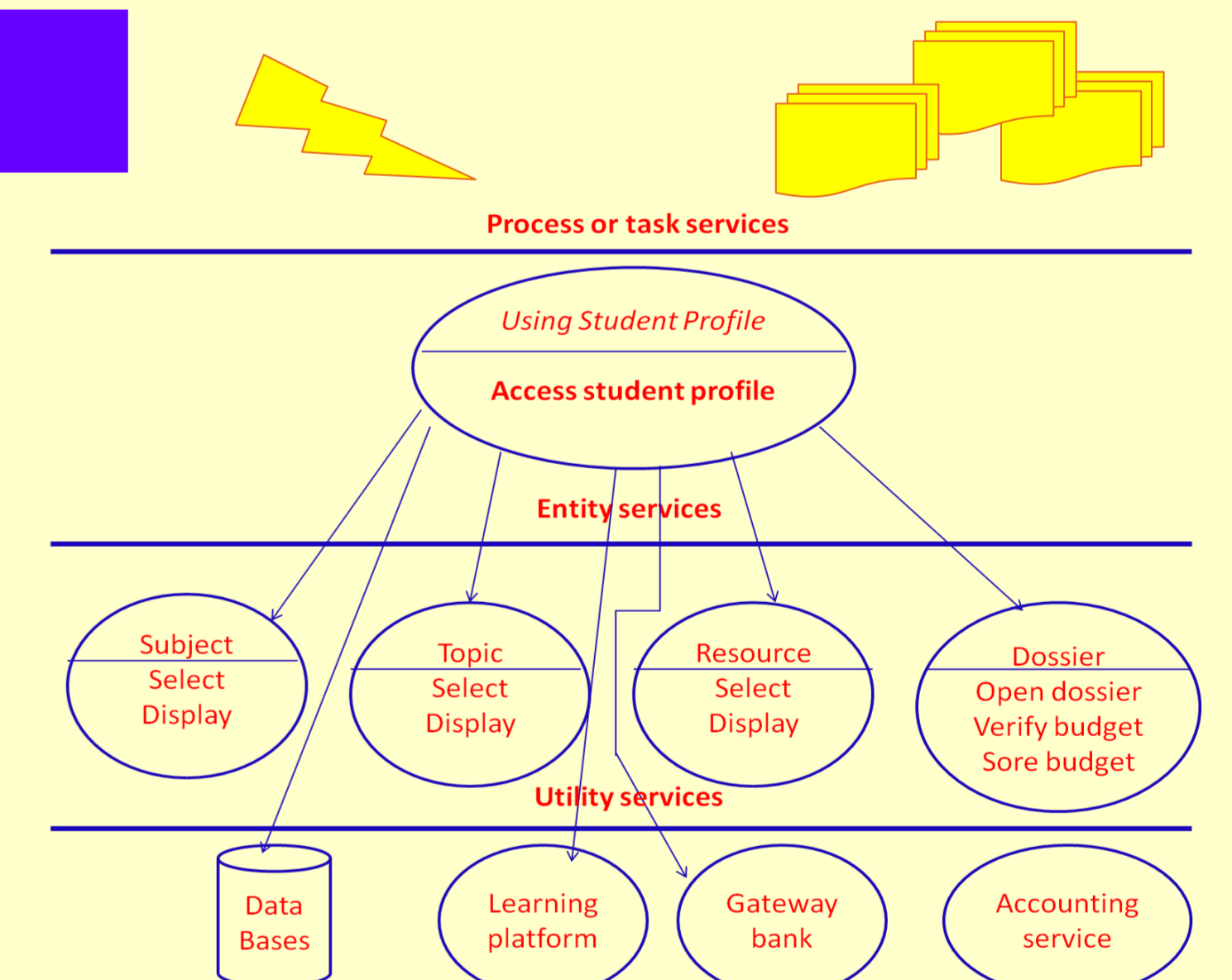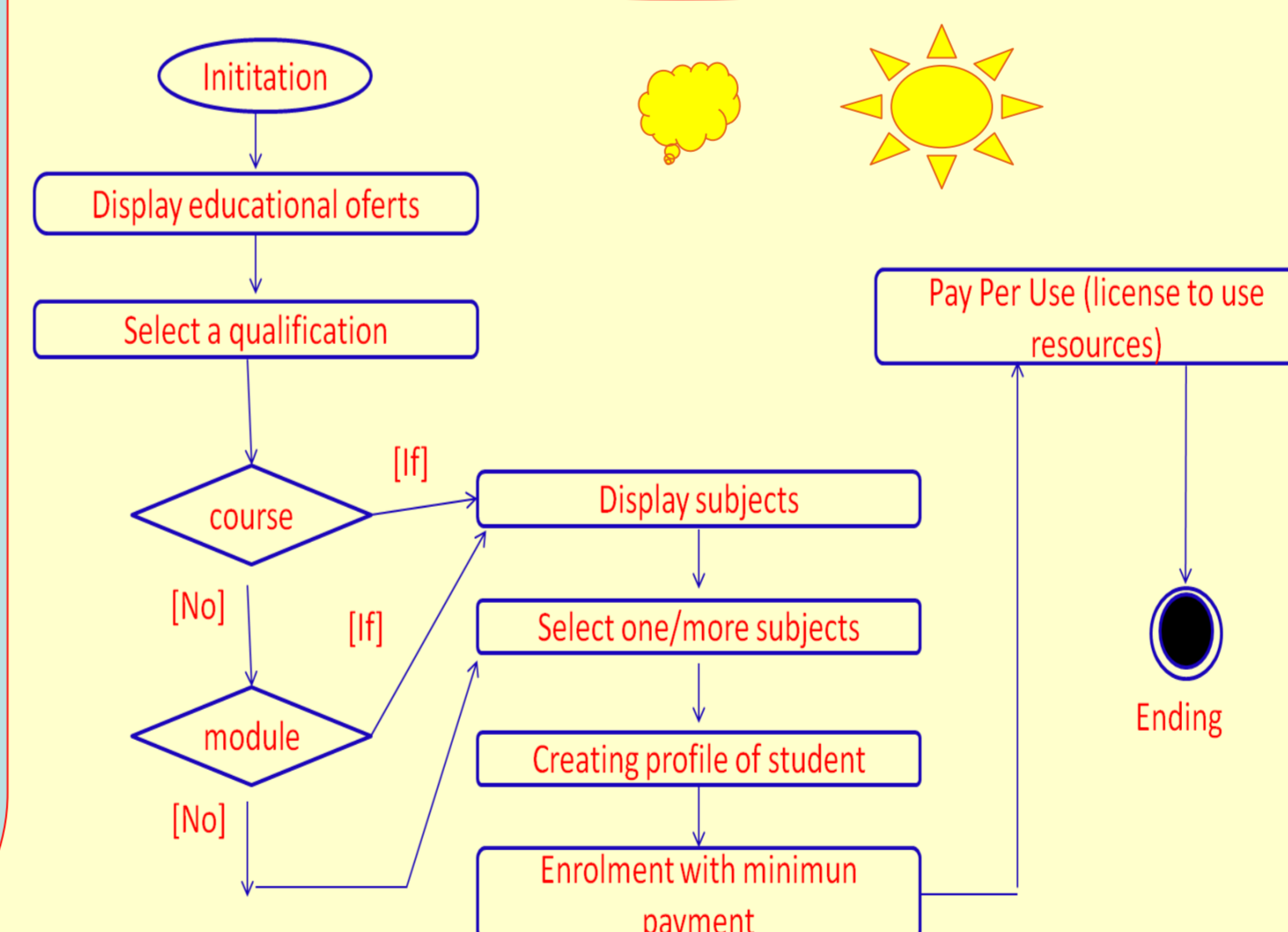Cloud Government model

Aplications: A Study Case

We apply our methodology in an example illustrating our proposal

Resource Management *process*   —   Subjects Elaboration *process*
Admin Professor
Creating Student Profile *process*   —   Using Student Profile *process*
Student

Identification of business processes and users

We propose a new educational model (business model) named "**Education on demand and pay per use**", to achieve "**Higher education from anywhere, with access from any mobile device**, **at any time**, **without requiring large investments for students**, and with reuse and optimization of resources by universities. **Cost by consumption and consumption by service**".

Activity diagram of the process "*Creating Student Profile*"

Inititation
Display educational oferts
Select a qualification
course — [If] — Display subjects
[No]   [If] — Select one/more subjects
module — Creating profile of student
[No] — Enrolment with minimun payment
Pay Per Use (license to use resources)
Ending

Process or task services

Using Student Profile
Access student profile

Entity services

Subject Select Display   Topic Select Display   Resource Select Display   Dossier Open dossier Verify budget Sore budget

Utility services

Data Bases   Learning platform   Gateway bank   Accounting service

Identification and categorization of services of the *Using Student Profile* process.

Conclusions:

Government Cloud
SLA
SOA Government
Architecture SOA — BPM — CLOUD
SLA
SAAS
PAAS
IAAS

EXPLOITATION: The Cloud Government integrating: Governance SOA, Cloud architecture and SLAs.

We think this paper can be considered as a useful guide to undertake development projects and **the outsourcing of companies into the Cloud, using SOA.**

The model identifies the business processes. These are specified in several stages to obtain a model of business services, which can be implemented using the Web services technology.

The "*Education on demand and pay per use*" is one more step towards the removal of the time and space barriers as well as the economics that currently prevent many students access to higher education provisions.

Higher Education from Anywhere

Use on Demand and Pay per Use