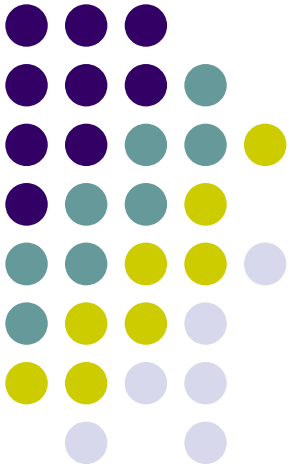
# Travaux d'Etudes et Recherche:

# Genie Logiciel

## Apprendre un processus de développement par exemple



# About: The Module as Such

The software engineering project (“Projets GL”) is a course at the CS dpt of Université Paris-Saclay. It is a module at the 2nd semestre of the 3rd year as part of the Bachelor CS and CSA (“MIAGE”) programme.

The principal goal of “Projets GL” is to exercise the methods of a V-style software development process on a medium-size example. Several subjects are proposed that were  tackled in groups of “teams” performing one development cycle independently.  The teams provide the usual milestones and present the final product of their development in an oral exam containing a demo.

# About: The Module as Such

A second objective is to learn collaborative development techniques and tools for collaborative work (in editing, version-management, groupware-use, …).

In the current instance of "Projets GL" contains the development of a smartphone APP EUGLOH and a website for a Mediathèque.

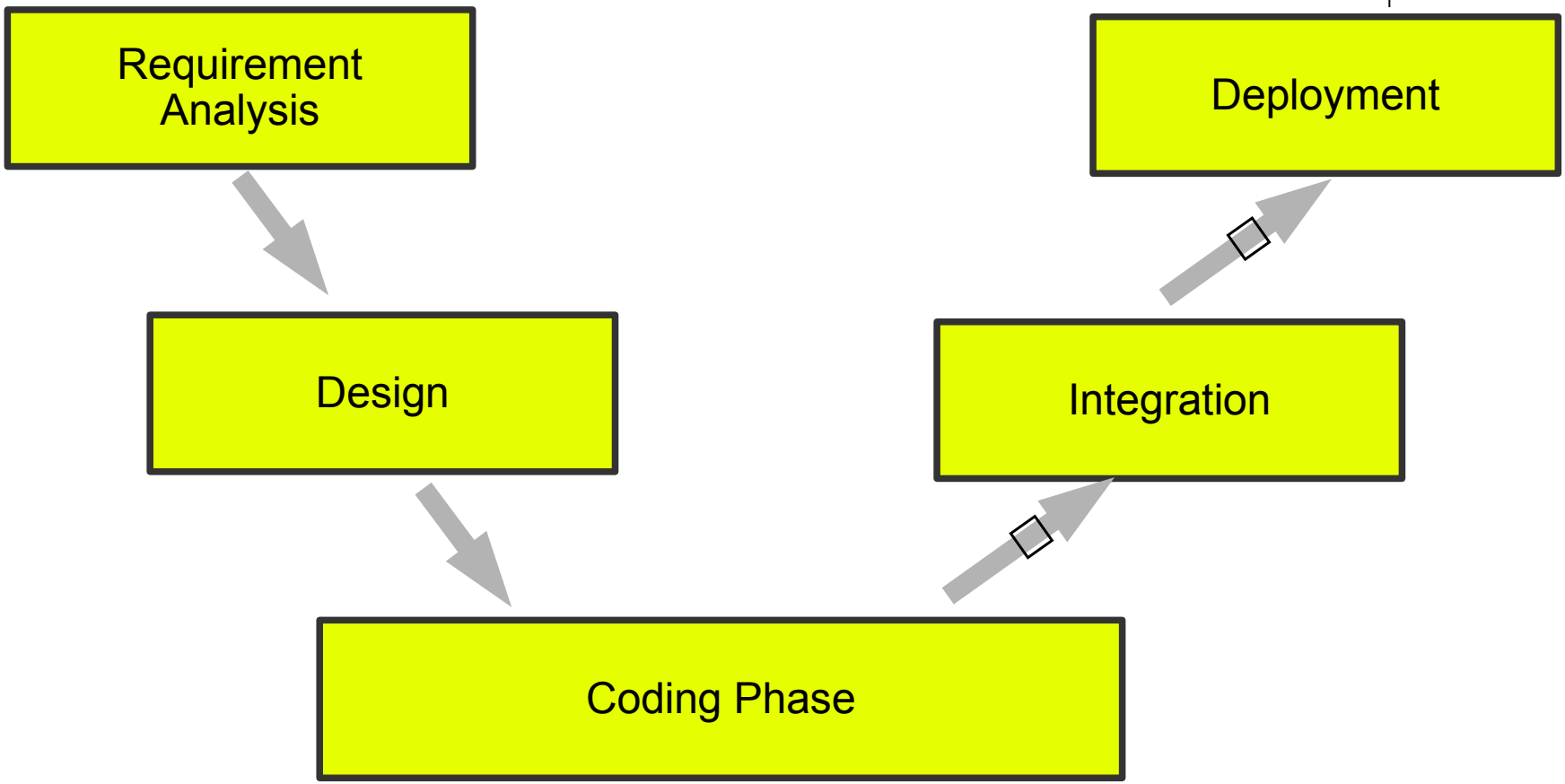
The proposed module for spring 2022 will offer additional groups --- held and accompanied in english --- offered to Students of the EUGLOH Alliance.

# About: The Module as Such

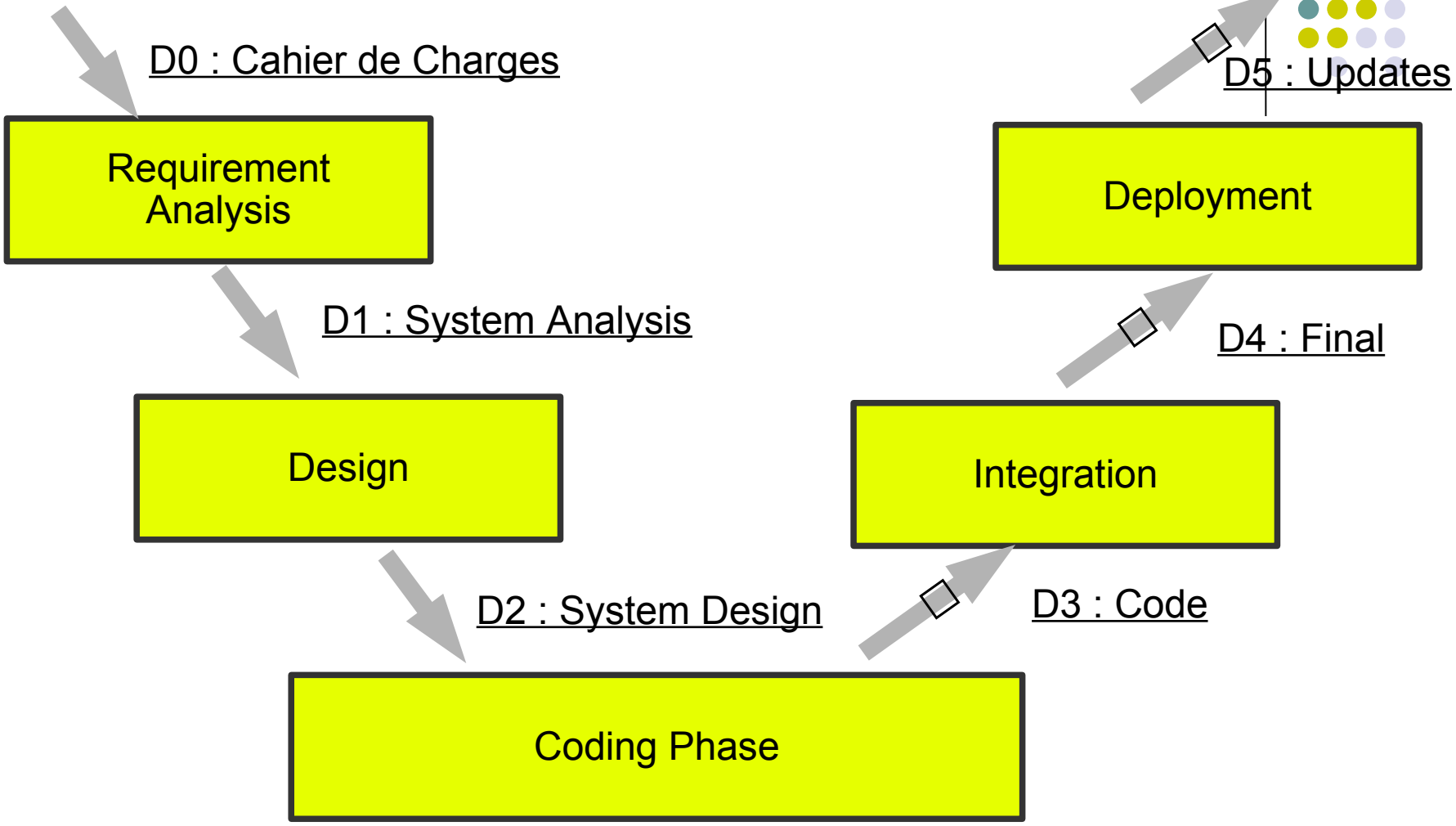
The module is intended to be an example for a “mutualized course” were an existing, established module anchored in the teaching programme of Paris-Saclay is extended by “tracks” offered to external students and funded by the EUGLOH project.

The construction allows for international students subscribed to the module to acquire 5 ECTS.

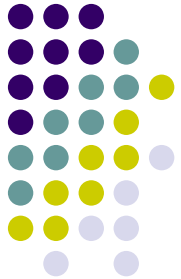
# Outine: The development process



# Outine: The development process



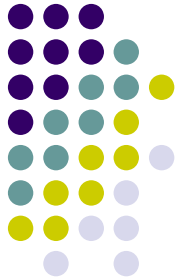
# D0: Cahier de Charges



- A document explaining the context, a basic domain-specific vocabulary
- Objective: Making the customers requirements explicit
- Objective: Making Administrative-User-Economic-Environmental and Financial Constraints explicit
- IT ATTEMPTS TO CAPTURE THE REQUIREMENTS,

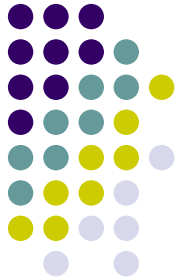
  BUT AVOIDS DESIGN DECISIONS

# Cahier de Charges : Objectives



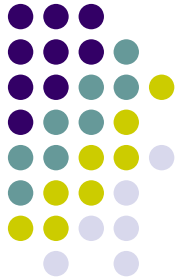
- Objectives and context the product should respond to the questions:
  - To whom, to what end does the product serve?
    On what data/services/person should it have impact?
- Identification of the fol;lowing types of constraints:
  - economical
  - environmental
  - security concerns
  - industrial („must be produced in Canada“)
  - material („should work on Windows XP“,
    “should be compatible with card reader XY”, .,..)

# Cahier de Charges : Objectives



- The CDC can fix:
  - The protocols of components (abstract)
  - The life-cycle of threads, sessions, communications, processes
  - In CDC's targeting subcontractors, a technical environment description + design decisions ("use language/library X") can be included

# Cahier de Charges : Objectives

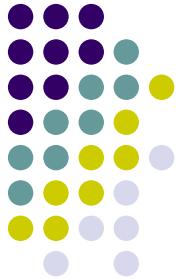


- The protocols of components (abstract)
- The life-cycle of threads, communications, processes

IT ATTEMPTS TO CAPTURE THE REQUIREMENTS,

BUT AVOIDS DESIGN DECISIONS EXCEPT MENTIONED IN THE CDC

# Structure du CdC Fonctionel



- D1 Fonctionel (le “noyau dur” d‘un D1)

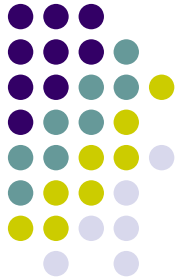
  - Structuration du CDC sous

    forme des diagrammes

    UML

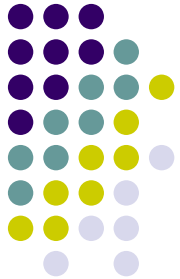
  - Identifiant des Questions „mission critical“
    - dans la comprehension du CDC (demander client)
    - dans la feasabililité du projet

# Structure du CdC



- Suit la structure du CdC Fonctionel : Rappel
  - Objectifs et contexte du produit
    - reponses au questions:
      - à qui, à quoi le produit reend-il service
      - Sur qui, sur quoi agit-il
      - dans quel but.
  - Identification des contraintes:
    - économiques
    - environementales
    - securitaires
    - industrielles („doit etre fabriqué au Canada“)
    - materielles („doit marcher sur Windows XP“,
      “doit utiliser lecteur de Carte XY”,

# Cahier de Charges : Objectives



- The protocols of components (abstract)
- The life-cycle of threads, communications, processes
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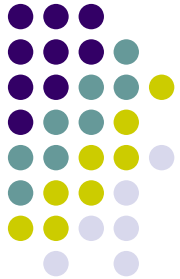

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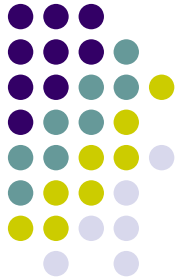
# About: D1 : System Analysis



- D1: Functional Analysis (the “core” of a D1)
  - Reformulation/Structuration of the CDC in form of UML diagrams
  - Identifying the „mission critical“ questions
    - In the understanding of the CDC
    - detecting/clarifying ambiguities (what to ask the client ?)
    - Studying the feasabilility/costs of the project

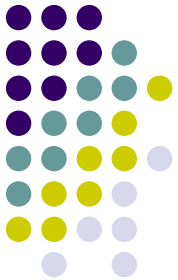
# About: D1 : System Analysis

- In contrast to the Design Document D2, the analysis milestone is oriented towards the

  Cahier de Charge (CDC)

- It attempts to identify/making explicit
  - the actors of the system
  - the possible use scenarios
  - the data necessary understand the system

# Structure of the Analysis D1



- Follows the structure of the CdC Fonctionel : Rappel
  - Objectives and context of the product
    - Answers to the questions:
      - to whom and to what serves the product
      - with whom and with what does it interact
      - to achieve what goal
  - Identification of constraints:
    - economical
    - environmental
    - security
    - industrial („doit etre fabriqué au Canada“)
    - hardware („should work on Windows XP“,
      “must use XY card reader”,

# About: D1 : System Analysis

- In contrast to the Design Document D2, the analysis milestone is oriented towards the Cahier de Charge („analyses the CdC”)
- It attempts to identify/making explicit
  - the actors of the system (3 pp UML plus descr.)
  - the possible use scenarios (20 pages scenarios)
  - the data necessary understand the system (5-10 pages)
  - Other diagrams (0-10 pp)
  - catalogue question / problems: (3 pp)

# About: D2 : Conception

- In contrast to the Analyse D1,
  the design is oriented towards the
  chosen target technology (technologie cible)
- Roughly the same structure as a D1,
  but more detailed. UML diagrams + descriptions.
- It attempts to identify/making explicit
  - the implementing actors of the system
    (5 pp UML plus descr.)
    (describing for example, elements of the GUI,
    but also internal processes (servers, clocks, etc)
  - GUI Mockups (rough sketches with a drawing prog.)
  - class diagrams (both library and concrete implementation data, interfaces to COTS components)

# About: D2 : Conception

- In contrast to the Analyse D1,
  the design is oriented towards the
  chosen target technology (technologie cible)
- ...
  - the possible use scenarios (30 pages scenarios)
    (scenarios with concrete data exchanges
    corresponding to the class diagram)
  - other diagrams (0-10 pp)
    (protocols in collaborative diagrams,
    state-machines for the life-cycle of critical objects,...)
  - object diagrams for critical data . . .

# About: D3 : Implementation

- ...

# The Exam

- A half-hour presentation of each «team»
- … inside a «Project Day»
  - Including synthesis on delivered milestones
  - a brief demo of the artefact
  - Resumee of general experiences