

EDGeS

EADM

EDGeS Application Development Methodology

Tamas Kiss – University of Westminster

Leader of the EDGeS Application Support Service

E-mail: kisst@wmin.ac.uk

- **Aims and objectives:**

- facilitate the porting of applications to the EDGeS infrastructure by targeting
 - user communities already associated with EGEE or DGs
 - new user communities

- **Activities:**

- Identify user communities that require the power of the EDGeS infrastructure
- develop a generic methodology for application porting
- provide a service in order to aid the migration to and running of applications on the EDGeS infrastructure

Why do we need a methodology?

Motivations

- Grid application development is very often ad-hoc
 - Developers do not follow any methodology
 - Poorly documented systems
 - User expectations not fulfilled
- Systems design and development methodologies are too generic
 - Special focus is required when porting/developing an application to a SG/DG platform



EADM: EDGeS Application Development Methodology

- **Aims and objectives:**
 - develop a generic methodology that addresses the problem of **application porting** and defines how the **recommended software tools**, developed by EDGeS, can aid this process.
- **EADM – an iterative approach**
 - EADM identifies well defined stages that have a suggested logical order. However, the overall process in most cases is non-linear allowing revisiting and revising the results of previous phases at any point.

- **End–users:** those who utilize the application in their scientific research or industrial/business conduct
- **Developers/system administrators of original application:** application programmers who developed the current version of the application / system administrators who are responsible for the installation and administration of the software
- **EDGeS systems analysts:** capturing user requirements and making conceptual design specification
- **EDGeS application programmers:** responsible for the implementation of the migration
- **Grid operators:** operating the Grid on which the ported applications are running

EADM - at a glance

1. Analysis of current application

2. Requirements analysis

3. Systems design

4. Detailed design

5. Implementation

6. Testing

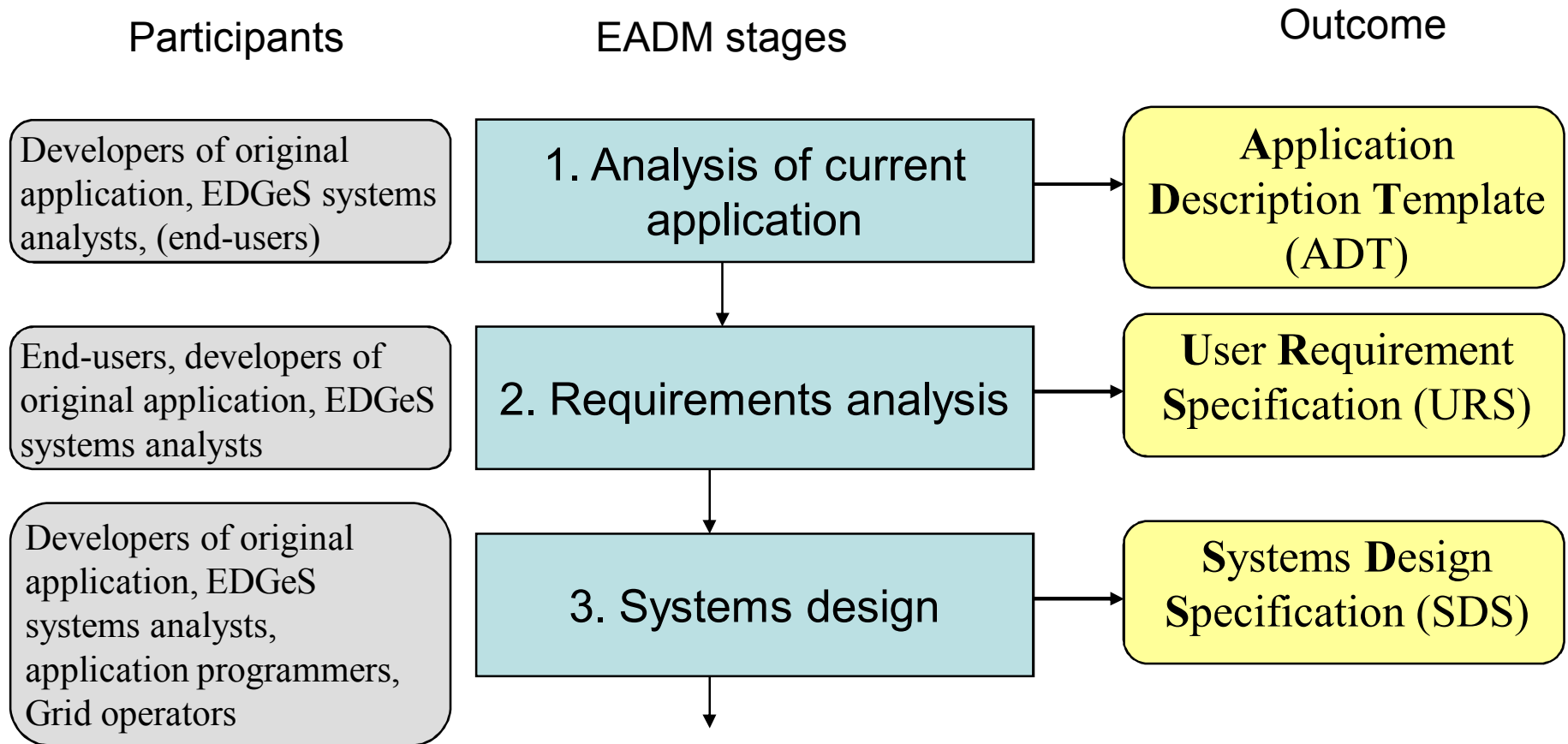
7. Validation

8. Deployment

9. User support, maintenance & feedback

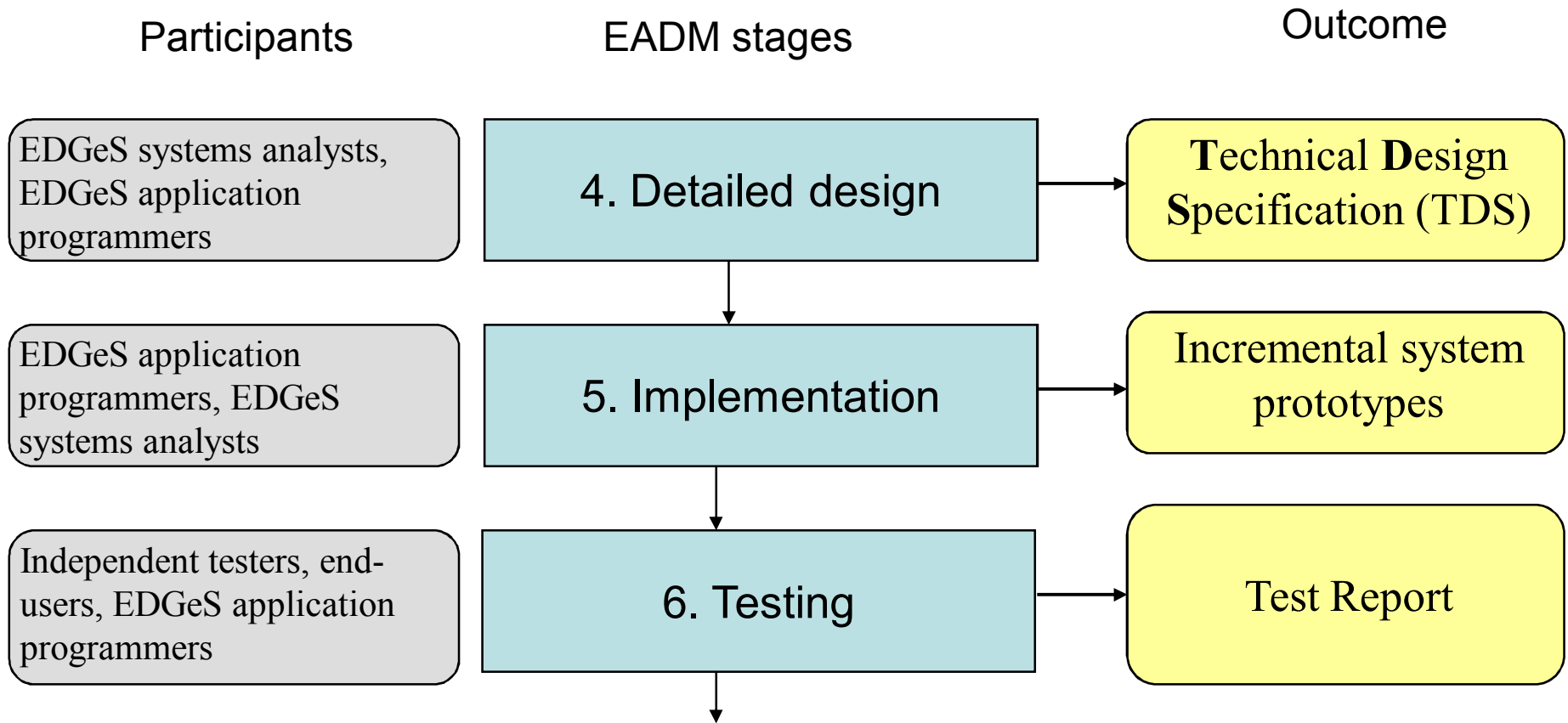
EADM Stages – an overview

Earlier stages can be revisited at any time



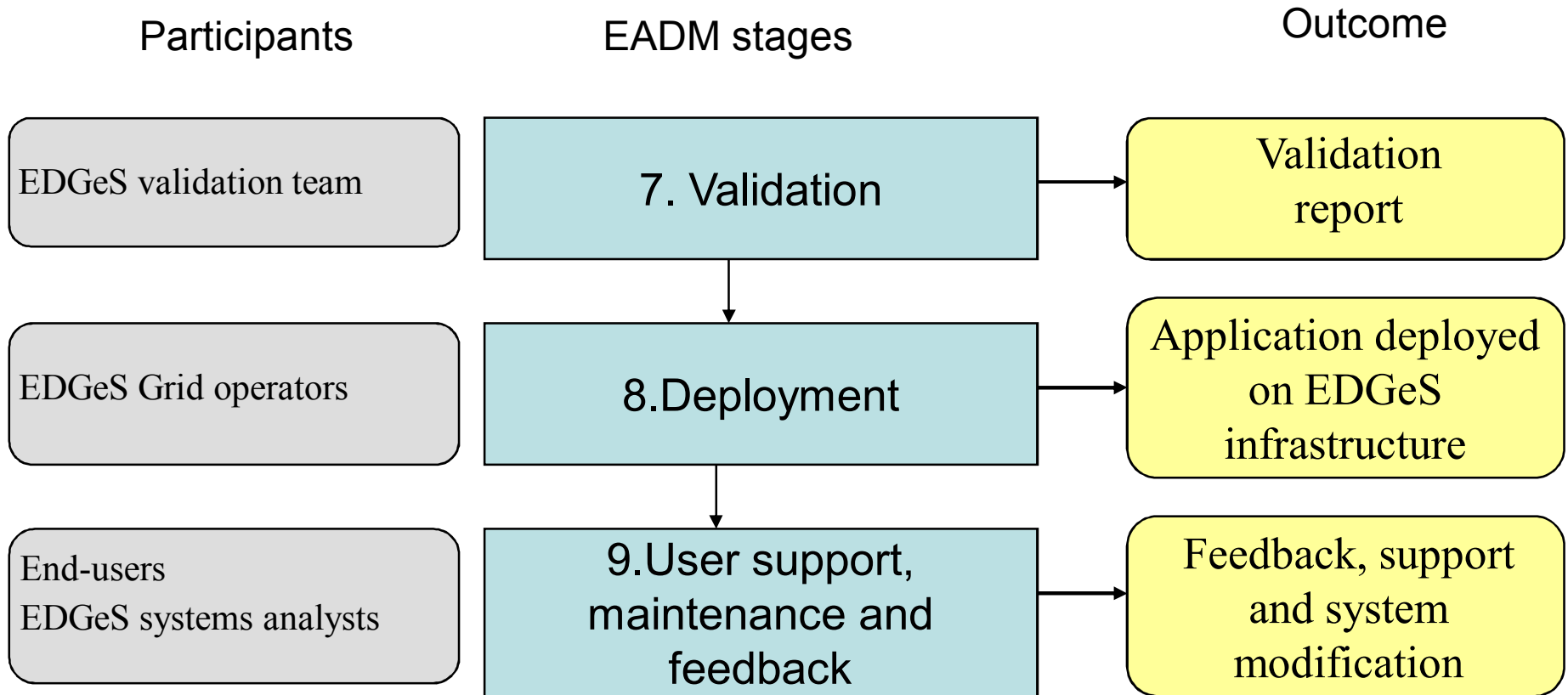
EADM Stages – an overview

Earlier stages can be revisited at any time



EADM Stages – an overview

Earlier stages can be revisited at any time



Stage 1: Analysis of current application

- **Aims and objectives:**
 - describe the currently existing application in detail
- **Participants:**
 - developers/system administrators of original application, EDGeS systems analysts, (end-users)
- **Questions to be answered (original application):**
 - Identification of *problem domain*
 - Identification of *target user community*
 - Type of *computing platform* currently utilised
 - *Type of parallelism* (if any)
 - *Current data access*
 - *Current functionalities*
 - *Other factors* (licensing issues, programming language, operating system, memory usage, security, ethical or gender issues)

- **Aims and objectives:**
 - identify how the target user community will benefit from porting the application to the EDGeS platform
- **Participants:**
 - end-users, developers/ system administrators of original application, EDGeS systems analysts
- **Questions to be answered (ported application):**
 - User requirements
 - Desired functionalities
 - Desired efficiency of execution
 - Desired efficiency of data access
 - Target computing platform
 - Required user interface
 - Other factors (licensing, security, ethical issues etc.)

- **Aims and objectives:**
 - Design the ported application at conceptual level taking user requirements and technical feasibility into consideration
- **Participants:**
 - developers/system administrators of original application, EDGeS systems analysts, EDGeS application programmers, EDGeS Grid operators
- **Questions to be answered:**
 - Identify target computing platform to be used as entry point - changes in application required?
 - Identify/design user interface
 - Define and design parallelisation principles
 - Design data access and transfer scenarios
 - Other factors

- **Aims and objectives:**
 - prepare a detailed technical design specification that forms the basis of implementing the required changes when porting the application to the EDGeS platform
- **Participants:**
 - EDGeS systems analysts, EDGeS application programmers
- **Questions to be answered:**
 - How the required changes will be implemented to utilise the target computing platforms
 - How the user interface will be implemented
 - How to implement the required parallelism
 - How to implement the data access and transfer scenarios

EADM

Further stages

- 5. Implementation:** implement the required changes in the application based on the detailed design specification
- 6. Testing:** both functional and performance tests
- 7. Validation:** in order to run on the EDGeS platform every application has to be validated to assure they cause no harm to the underlying DG infrastructure (EGEE->DG direction)
- 8. Deployment:** validated applications are published in the EDGeS application repository (EGEE->DG direction) or deployed on the target DG system (DG->EGEE direction)
- 9. User support, maintenance and feedback:** full user support is provided by the EDGeS Application Support Service

For the Developer

- **DG version of the application has to be developed**
 - Only low level APIs (e.g. BOINC API)
 - Specific expertise is required
 - Platform dependent solutions (different BOINC/XtremWeb version)
- **Application composition**
 - Creation of workflows is not supported

For the user

- **Transparency for the user**
 - User would require the same or similar user interface for DG and SG applications
 - Total lack of UI for DG systems (e.g. only BOINC Admin can run the application)
- **Only validated applications can be run on a DG**
 - Requires an application repository
 - Publish select, parameterize and execute applications

Tools supporting application development and execution in EDGeS

API level support – for the developer

DC-API:

- Provides a uniform interface for different Grid systems (BOINC, Condor, XtremWeb)

GenWrapper:

- Generic wrapper to port legacy applications to a BOINC platform without “Boincification”

High level graphical user interface – for the developer and the user

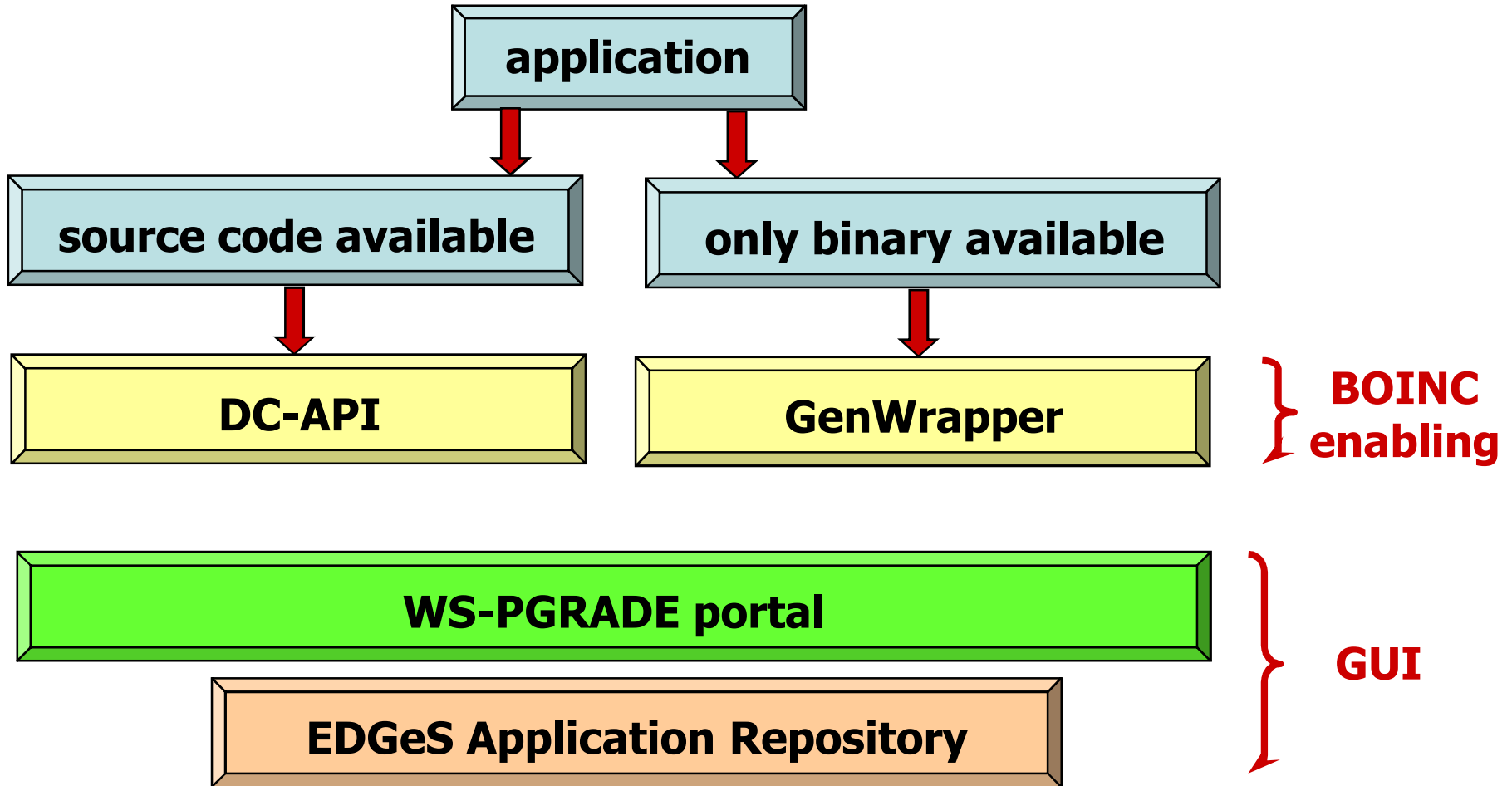
WS-PGRADE portal:

- to support the transparent exploitation of SG/DG systems at workflow level

EDGeS Application Repository:

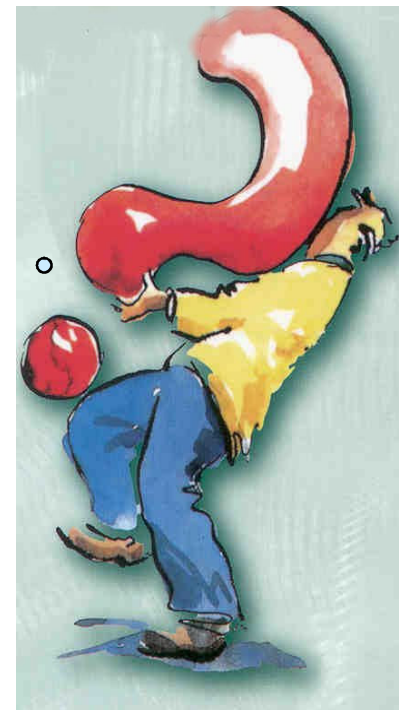
- Integrated with the P-GRADE portal
- Publish, select, parameterise and execute validated applications

Developing a DG application



Thank you for your attention ...

Any
questions?



For more information please visit the EDGeS Website:

Join the EDGeS User & Industry Forum here!

<http://www.edges-grid.eu/>

Please contact us if you need support in porting your application to EDGeS!

Email: kisst@wmin.ac.uk