



# Towards Greater Grid Universal Accessibility: Initial Benchmarks and the Road Ahead

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# Motivation

Motivation

UA / UD

Grid Portals

Grid UA

Road Ahead

- Local Research Agenda (Ireland)
- Regional Research Agenda (EU)
- International Research Agenda (UK, US, rest of the world)

## UA – Universal Access

- addresses the numerous and diverse accessibility problems in human interaction with software applications and telematic services

## UD – Universal Design

- design for the widest diversity of users
- prevent functional limitations from turning into disabilities
- look at the design from a wider range of viewpoints





# Types of Disabilities

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## Actual Disability

**Blind**

**Visually Impaired**

**Deaf**

**Hard of hearing**

**Physical Disability**

**Wheelchair User**

**Cognitive Disability**

## Situated Disability

**Driving Car**

**Using Small Display**

**In silent place**

**In noisy place**

**In space suit**

**Multiple devices at hand**

**No Languages skill**



# Universal Design Strategies

- Motivation
- UA / UD**
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## **Basic Access Principle**

Format

Interaction

Content Navigation

Cognition

Compatible: assistive technologies

## **How General**

presentation independent form

- operable with No activations, twisting motions, fine motor control, biological contact, speech

- clear (TOC, maps), consistent, convenient

- easy language, rich media content, language identification

- connect / do not interfere



# Classification of Grid Portals

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## Five Categories

- providing single access point for user support (**GGUS**)
- providing a user-friendly access to services of a single grid (**MD, Genius, AccessGrid**)
- portals providing access to services of multiple grids (**P-Grade**)
- portals supporting grid enabling applications (**LUNARC**)
- portals supporting workflow (**K-WF, BOSS, MOTEUR**).

## Two Development Frameworks

- frameworks for building grid portals (**enginframe**)
- frameworks supporting grid accessibility via various media delivery channels (**various research projects**)



# Criteria for Grid Universal Accessibility

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## **Requirements**

coping with cultural differences (languages and interaction)

account for varying human capabilities

level of expertise

availability of technology resources any time any where

## **Criteria**

- multi-lingual support
- various patterns of interaction

- support for physical disabilities
- support for elderly/young people

support for various accessibility levels (easy, complex, advanced)

- various media delivery channels
- advanced multimedia access



# Result

## Low level of Universal Accessibility to the Grid



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	GGUS	MD	Genius	PGrade	Engin Frame	LUNARC	Access Grid
multi-lingual support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patterns of Interaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Accessibility Levels	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Various Media Delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disabled Access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elderly Access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rich Media Content	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>





# The Road Ahead – A General Framework for Grid Universal Accessibility

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- GUA Levels
- GUA framework that extends the notion of Grids Interoperability to Grid – Application Interoperability (Interactivity / Universal Accessibility)
- Implementation – Scenarios for Grid Accessibility addressing: Actual and Situated Disability; Edutaining Accessibility; Wireless Accessibility; Group Collaborative Accessibility