The UNESCO UniTwin Digital Campus for Complex Systems: a global experiment in high-quality no-cost education

Welcome to the e-Laboratories Portal of the
Complex Systems Digital Campus
a UNESCO UniTwin Network

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Coordinating the European Complex Systems community 2004 – 2014 OU has been a major player:

2004 Founder member of the Complex Systems Society

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Coordinating the European Complex Systems community

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2004 Founder member of European Conference on CS

Previous editions

ECCS' 13 Barcelona
ECCS' 12 Brussels
ECCS' 11 Vienna
ECCS' 10 Lisbon
ECCS' 09 Warwick
ECCS' 08 Jerusalem
ECCS' 07 Dresden
ECCS' 06 Oxford
ECCS' 05 Paris
ECCS' 04 Torino

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Coordinating the European Complex Systems community

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2004 Founder member of ECCS

Major role coordinating the Complex Systems Community

2005 – 2008	€ 1 m	ONCE-CS Coordination Action
2009 – 2012	€ 900 K	ASSYST Coordination Action
2011 – 2014	€ 600 K	Étoile Coordination Action
2012 – 2014	€ 800 K	NESS Coordination Action

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work packages for a UNESCO chair in complex systems

… which escalated to a UniTwin network

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2014 Founder Member of the CS-DC UNESCO UniTwin

CS-DC = Complex-Systems Digital campus

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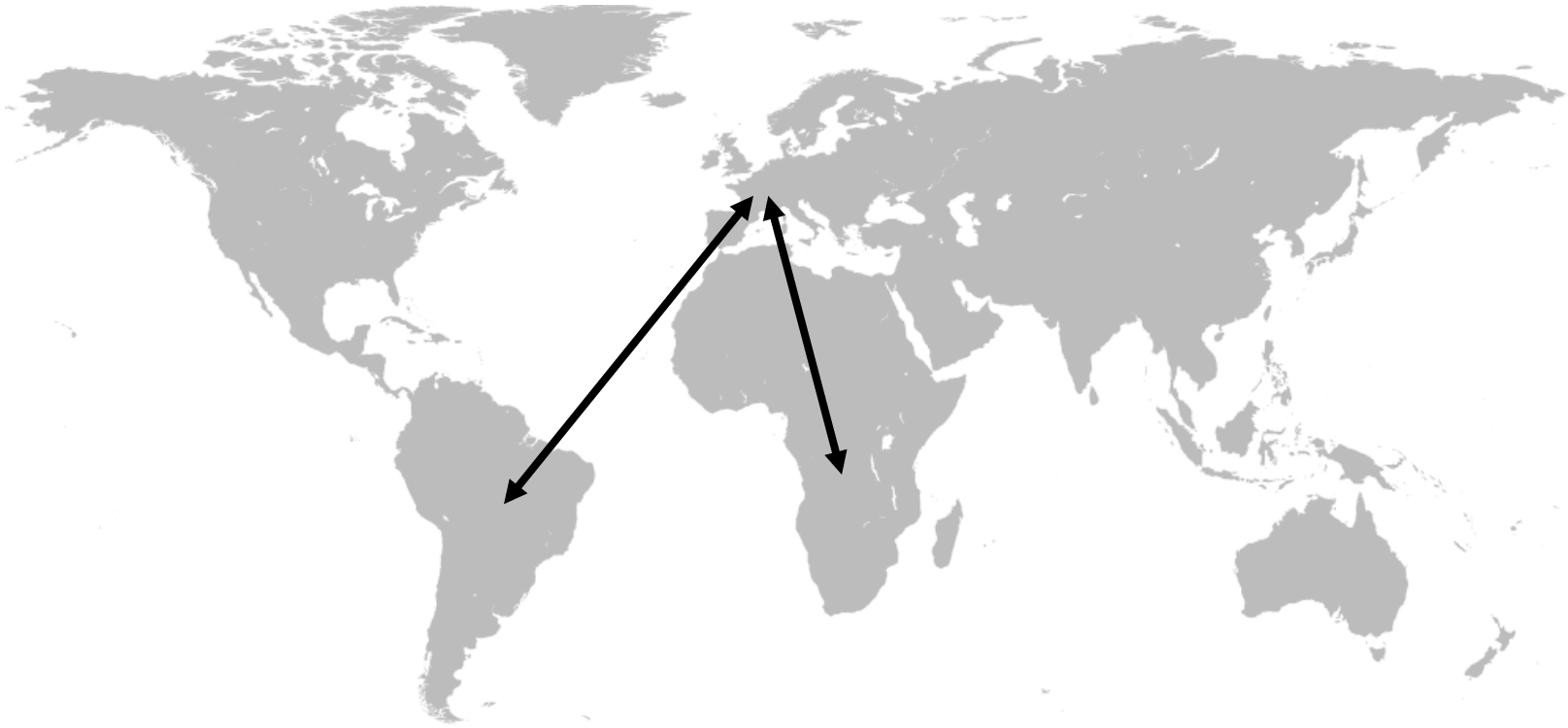

UNITWIN – linking Europe with two regions

Africa & Latin America

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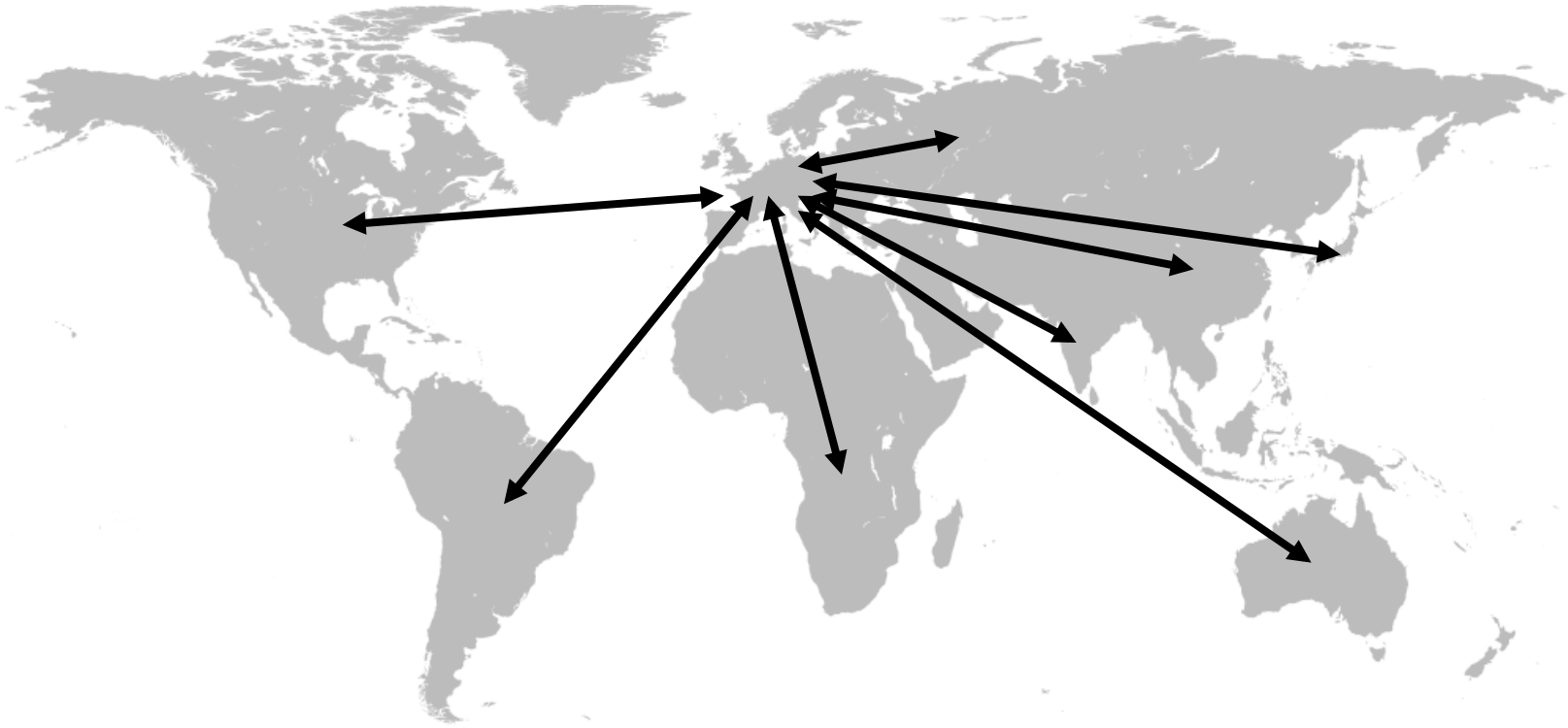

UNITWIN – linking Europe with two regions

Africa & Latin America - & now world wide

100+ top Universities, and growing

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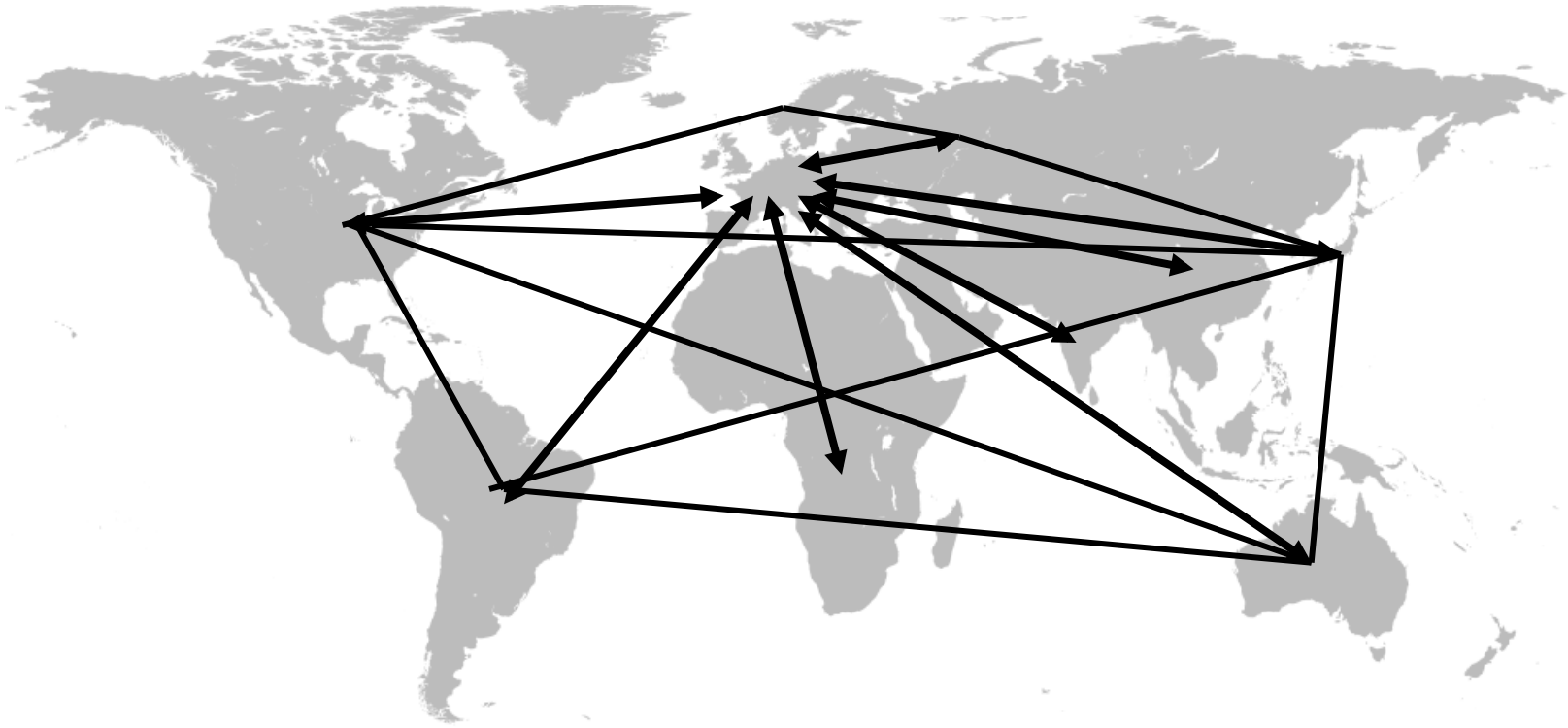

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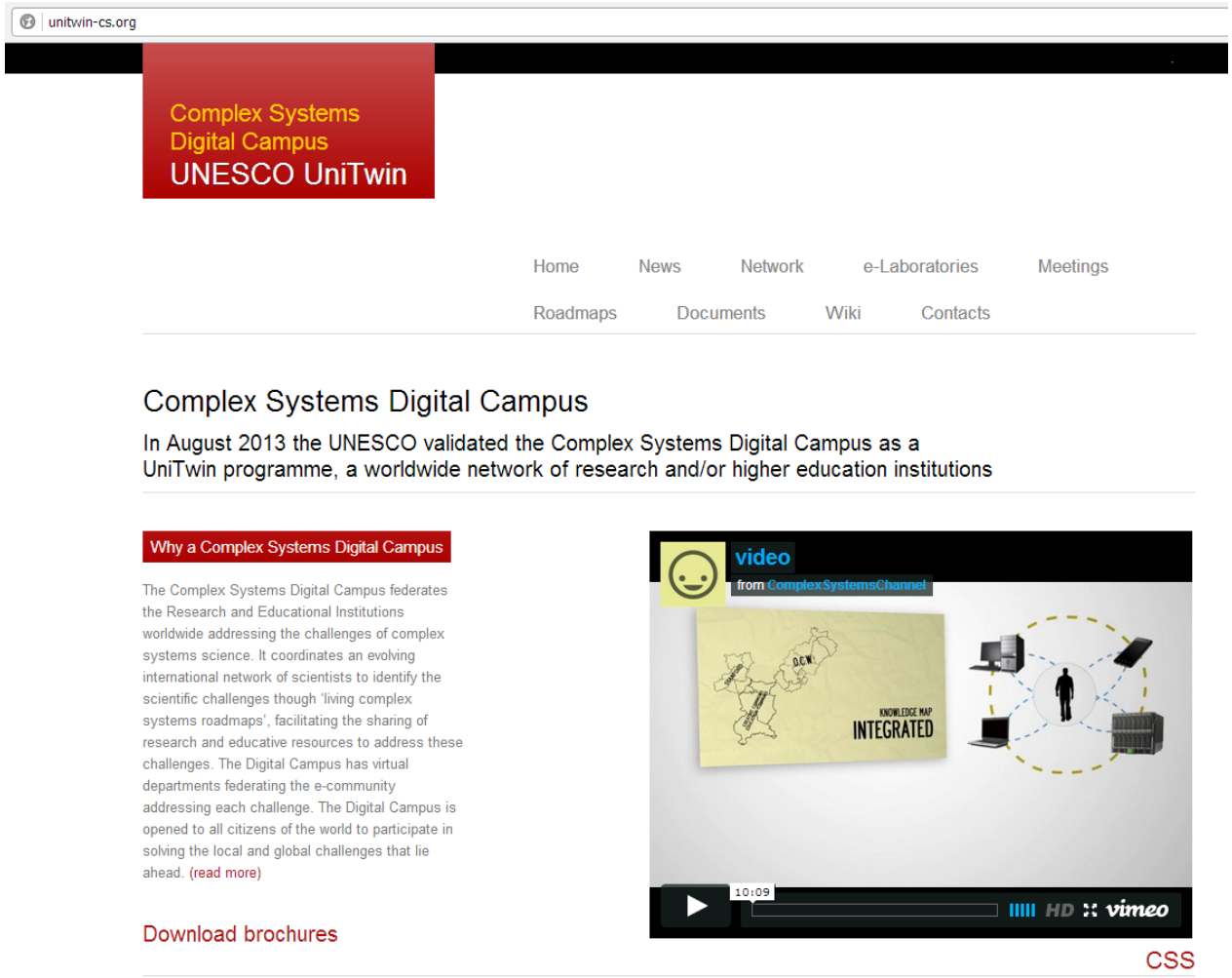

International consortium to share resources in research and teaching

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The Educational Challenge

Complex Systems Science is highly interdisciplinary

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The Educational Challenge

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Almost all of us

Know almost nothing

About almost everything

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The Educational Challenge

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How to provide mass education at no cost for the international Complex Systems Research Community?

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The Educational Challenge

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- scalable high quality postgraduate education

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The Educational Challenge: scalable no-cost education

(1) Study materials ?

(2) Assessment & certification ?

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Étoile

Enhanced Technology for Open Intelligent Learning Environments

Crowd-sourced ecology of URLs

(2) Assessment & certification ?

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Automated marking

Peer Assessment

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The Educational Challenge: scalable no-cost education

How to make peer marking robust for certification ?

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The Educational Challenge: scalable no-cost education

How to make peer marking robust for certification ?

Discriminate good markers from bad markers

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The Educational Challenge: scalable no-cost education

How to make peer marking robust for certification ?

- **Discriminate good markers from bad markers**
- **Heuristic: good markers must be highly connected**
- **Bad markers must be relatively disconnected**

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The Educational Challenge: scalable no-cost education

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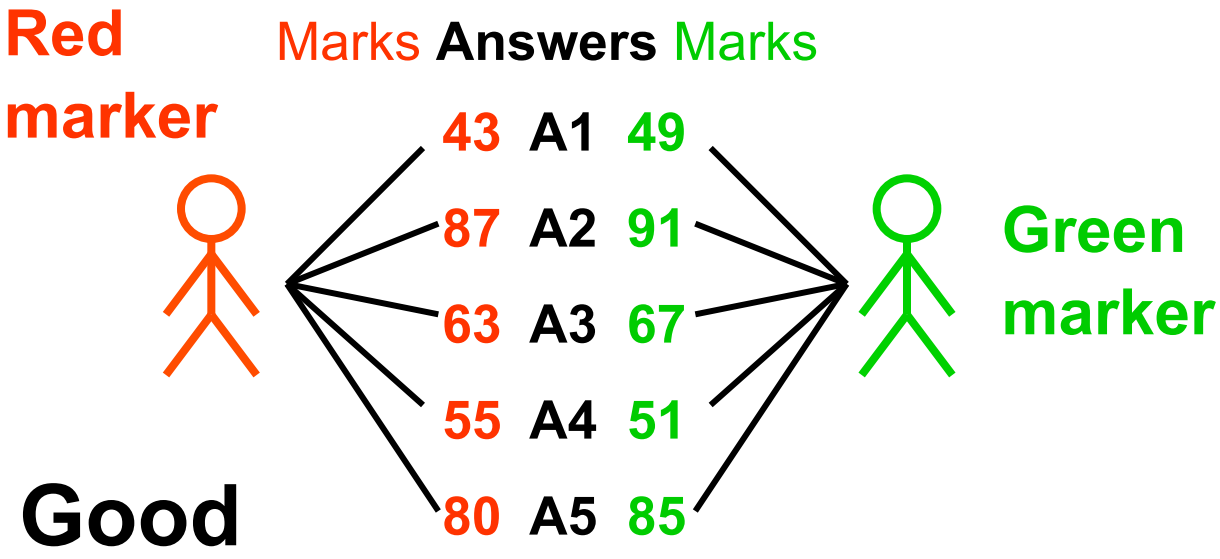

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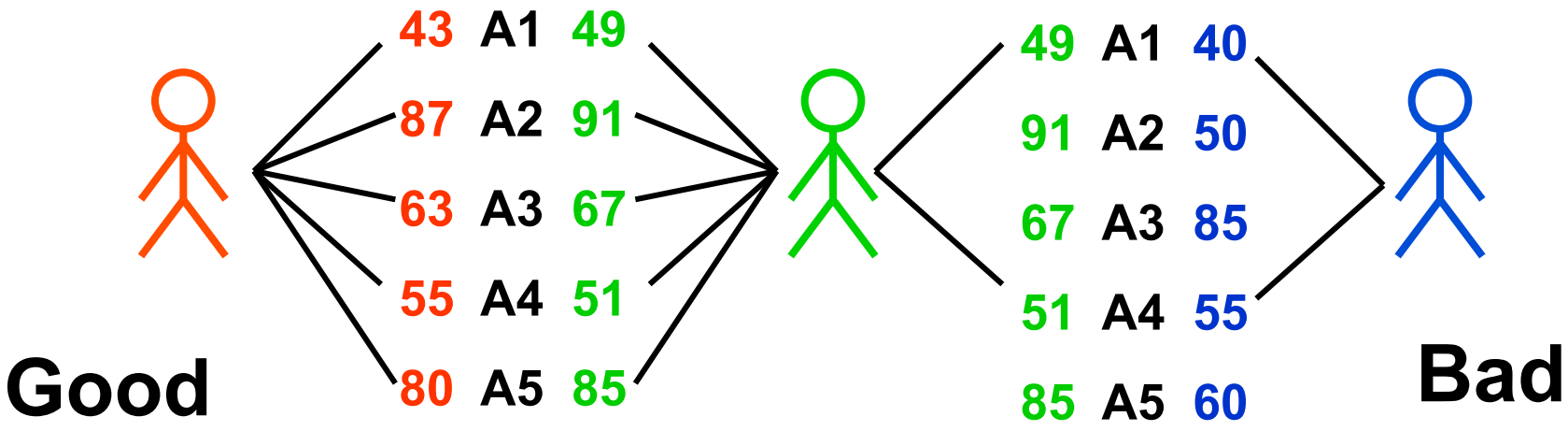

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The Educational Challenge: scalable no-cost education

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We can design the marking to optimise connectivity

Also students self-mark

And marking is symmetric – if I mark you, you mark me.

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The Educational Challenge: scalable no-cost education

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Current experiment – 48 students, 7 lessons,

5 questions per lesson

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Conclusions

- UNESCO CS-DC is major worldwide research network
- Need high-quality no-cost certificated mass education
- Automated marking is OK, but not sufficient
- ‘Intelligent’ peer marking is very promising
- Use ‘hypernetwork’ methods to detect good markers
- We are running an experiment ending at the end of May

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which we will report on as soon as possible …

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