NUCLEUS Field Trip Report Budapest

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Figure 4: The NUCLEUS Field Trip Team in Budapest. From l to r, beginning at the back, Anette Klinkert, Ricarda Ziegler, Menelaos Sotiriou, *Alexander Gerber, Padra Murphy, Aleksandra Drecun, Edward Duca. Behind the camera is Sarah Anderson. Satu Lipponen, NUCLEUS member and EUSJA president is not present.*

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Short Description

On 2–3 November 2015, participants of the NUCLEUS project gathered in Budapest to investigate, as one of six field trips, how Responsible Research and Innovation (RRI) spreads and interacts as processes of communication and mutual learning between research–intensive insitutions—such as universities—and the rest of the components of society. For Budapest, we investigated one of those components, or "cells" in the overall research "organism", Media. The barriers examined in Budapest were those in media that may prevent RRI in societal discourse.

The goal is to set out a roadmap, providing practical guidelines for Higher Education Institutions and funding agencies across Europe and beyond to facilitate RRI. Day 1 was divided between a briefing session among NUCLEUS partners, and a second session where local experts were invited to contribute to the discussion. Day 2 covered the Annual Conference of the European Unions of Science Journalists' Associations (EUSJA). EUSJA is a partner within the NUCLEUS project who are developing a network to address RRI. The conference itself contained many themes of relevance to RRI and media.

The following is what was learnt in Budapest to contribute to the NUCLEUS RRI Roadmap:

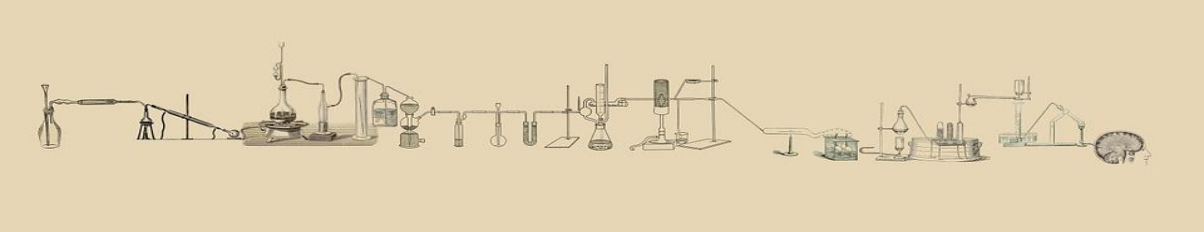
- Realisation of the growing interactions between **scientific knowledge and expertise and interactions with popular culture;** within this realisation is a warning to address polarised and highly invective language use in new social media

- **the changing professions and roles of science journalism**—the relationships and tensions between HEIs and journalists in combined and contrasting practices of promotion, dissemination and engagement; yet **the need for critical journalism** remains

- **understanding of the contextualised scientific culture of particular regions**

List of Recipients: NUCLEUS: Alex Gerber (Rhine-Waal University), Annette Klinkert (Rhine-Waal University), Menelaos Sotiriou (ScienceView), Satu Lipponen (European Union of Science Journalists' Association) ,Ricarda Ziegler (Wissenschaft im Dialog), Aleksandra Drecun (representing Mathematics Institute, Serbia), Edward Duca (University of Malta), Padraig Murphy (Dublin City University) Invited Guests: Dr. Gács János (Intellectual Property Rights in Hungarian innovation) Edina Németh (EC NCP FET/ICT), Andrea Kárpáti (EUSJA),Gorm Palmgren, EUSJA

NUCLEUS FIELD TRIP REPORT, CELL 4: **SCIENCE IN MEDIA AND RESPONSIBLE RESEARCH AND INNOVATION**



2–3 November 2015

Hotel Gellért Budapest and the Hungarian Academy of Sciences
Budapest, Hungary. Work Package Lead: Dublin City University

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EXECUTIVE SUMMARY

On 2–3 November 2015, participants of the NUCLEUS project gathered in Budapest to investigate, as one of six field trips, how Responsible Research and Innovation (RRI) spreads and interacts as processes of communication and mutual learning between research–intensive insitutions—such as universities_and the rest of the components of society. For Budapest, we investigated one of those components, or "cells" in the overall research "organism", Media. "NUCLEUS" stands for New Understanding of Communication, Learning and Engagement in Universities and Scientific Institutions. In order to achieve a multifaceted and cross-cultural approach, 26 renowned institutions from 15 countries, among them leading representatives of 14 high-level universities, are collaboratively identifying, developing, implementing and supporting inclusive and sustainable approaches to RRI. NUCLEUS is methodologically analysing structural, cultural and individual obstacles to RRI in scientific institutions, and will collaboratively develop innovative approaches to address and overcome these barriers. The goal is to set out a roadmap, providing practical guidelines for Higher Education Institutions (HEI) and funding agencies across Europe and beyond to facilitate RRI. By offering new academic insights and practical recommendations derived from 30 "RRI test beds", NUCLEUS will contribute a set of recommendations to the debate on how national and European funding policies for science and innovation, including the European Research Area (ERA) could be configured and resourced in the future.

Day 1 was divided between a briefing session among NUCLEUS partners, and a second session where local experts were invited to contribute to the discussion. Day 2 covered the Annual Conference of the European Unions of Science Journalists' Associations (EUSJA). EUSJA is a partner within the NUCLEUS project who are developing a network to address RRI. The conference itself contained many themes of relevance to RRI and media, What was learned in Budapest to contribute to the NUCLEUS RRI Roadmap:

- Realisation of the growing interactions between **scientific knowledge and expertise and interactions with popular culture;** within this realisation is a warning to address polarised and highly invective language use in new social media
- **the changing professions and roles of science journalism** - the relationships and tensions between HEIs and journalists in combined and contrasting practices of promotion, dissemination and engagement; yet **the need for critical journalism** remains
- **understanding of the contextualised scientific culture of particular regions**

INTRODUCTION

THE NUCLEUS PROJECT

NUCLEUS is a four-year Horizon 2020 funded project which develops, supports and implements inclusive and sustainable approaches to Responsible Research and Innovation within the governance structures of research and Higher Education Institutions in Europe. Responsible Research and Innovation (RRI) is the European Commission response to science and technology's impact on society by focusing on such topics as gender, engagement, open access, science education, ethics and governance issues in the development of science and technology.

A major goal of this interdisciplinary project will be to facilitate the communication and governance of research and innovation which continuously reflects on and responds to societal needs guided by the principles of RRI. In order to achieve this, NUCLEUS (which stands for New Understanding of Communication, Learning and Engagement in Universities and Scientific Institutions), will combine the RRI resources of 26 institutions from 15 countries, among them leading representatives of 14 universities, to collaboratively identify, develop, implement and support inclusive and sustainable approaches to RRI. By means of a mutual learning and exchange process, the project will reach out beyond the European Research Area by including scientific institutions in China and South Africa. Within a 4-year timeframe NUCLEUS will systematically uncover and analyse structural and cultural obstacles to RRI in scientific institutions. The partners will collaboratively develop innovative approaches to overcome these barriers.

By offering new research and practical recommendations derived from 30 'RRI test beds' across Europe and beyond, NUCLEUS will contribute to the debate on science policies both on a national and European level, including the future design of Horizon 2020 and the European Research Area (ERA).

CAPACITY-BUILDING THROUGH FIELD TRIPS

The field trips are an important data gathering and knowledge exchange mechanism for the Analysis and Capacity Building Phase of NUCLEUS. The NUCLEUS project requires to develop a better understanding of the dynamic required for the embedding of Responsible Research and Innovation (RRI) within Higher Education institutions connected to, and traversing our chosen societal 'cells' of Economy, Media, Civil Society, Policy and Public Engagement. The purpose of these trips is to achieve better understanding and learning from various localities around the world around the interpretation and implementation of RRI so that it pervades the

practice of a range of stakeholders and perhaps most importantly, those institutions pursuing research and creating new knowledge.

Six geographic sites have been chosen, each themed around a specific cell of the NUCLEUS narrative. In each place, we will bring together stakeholders who have an influence in RRI and together with NUCLEUS partners, explore the understanding of RRI (background knowledge) in these geographically and culturally diverse environments. The trips will capture ideas and approaches and investigate barriers to the embedding of RRI principles into tangible interventions and practice (new knowledge). A main goal of the field trips will be the definition of an RRI Roadmap leading to the implementation of installed NUCLEI.

An important stage of the NUCLEUS project is the installation of 10 institutionalised NUCLEI (test beds for embedded RRI practice) around Europe, China and South Africa. These NUCLEI will be setup in accordance with an Implementation Road Map which itself takes in two major work strands:

1) The learning provided from field trip from these field trip interventions about barriers to RRI.

2) The second is the benchmarking study being carried out as part of the NUCLEUS project (Work Package 3) to validate what can be done for RRI and ensure the project contains both the systems and knowledge capacity to implement the plan.

The six locations for the field trip corresponding to each cell are: Budapest (the Media cell), Edinburgh (the Higher Education and Research Institution cell), South Africa (the Civil Society cell) Nottingham (the Policy cell), Dublin (the Economy cell) and Beijing (the Public Engagement cell).

For the Media cell, Budapest was specifically chosen (replacing the original project plan of Moscow) with the prospect of examining a state where cultural barriers already exist with the free movement of information[1]. This provides more data for RRI in restricted regimes.

The specific objectives of the Budapest field trip were:

1. To examine this restrictive media regime in its potential barriers to RRI.

2. To establish the European Union of Science Journalists Associations' (EUSJA) role and links with NUCLEUS, and also attend the EUSJA Conference in Budapest as part of data-gathering for the media field trip.

3. To distribute a survey of science journalists own perceived role for science and RRI, to be analysed and disseminated later in the NUCLEUS project.

[1] Freedom House (2015) Online] Available from https://freedomhouse.org/report/freedom-press/2015/hungary

METHODOLOGY

Table 1: Field Trip Methodology. NB The Budapest field trip contained slight variances from the standard field trip methodology given the location was outside partner knowledge and it's tying in with EUSJA conference

Timeline	**Objective**	**Method**
Day 1: Session 1	Recap and setting the scene for partners	An icebreaker/introduction session for everyone who is participating in the field trip A general introduction session to RRI and the theme of the field trip led by the NUCLEUS team An introduction to the local hosts (could take the form of a keynote address)
Day 1: Session 2	Exploration with local experts (invited guests)	This information gathering will take the form of: - recorded interviews/meetings - facilitated sessions
Day 2: Session 1	Exploration of local event	• EUSJA conference, field trip interviews, conversations • Science journalist survey • NUCLEUS reflection and evaluation

CONTEXT

SCIENCE COMMUNICATION, MEDIA AND LEARNING IN HUNGARY

The media in Hungary

A week before we arrived, there was a major movement of refugees, as people disembarked from trains at Budapest station . This emerging Europe, a continent of risk, of chance and unequal opportunities, had been presented to us quite starkly. This is just one of many questions been asked of 'the European project' as a whole; it is an important one for a responsible and just society. Our NUCLEUS project looks at another issue, yet still a question of equity across the Union: the more nuanced, reflexive Rome Declaration version of RRI rather than the more instrumental keys of open access, engagement, gender and the rest, and the rights of European citizens to be involved in its sciences and innovation. The RRI definition we are currently working to in this project is:

> a process in which all societal actors (researchers, citizens, policy makers and businesses) work together during the whole research and innovation process in order to align… outcomes to the values, needs and expectations of European society.[2]

It is important that we understand—even in this restricted, short-term method of a 'field trip' —the historical and cultural contexts to the possible emergence of an RRI system. In this preliminary section, we briefly examine:

- The context of the barriers or restrictions for principles of RRI such as societal participation, engagement, openness
- The context of the free movement, or not, of information in Hungary, free speech, possibilities for a critical, independent media. How does the country , comparatively speaking, operate as a free society

Beata Klimkiewicz, of Jagellonian University, Cracow has stated [3] that constitutionally Hungary is quite lenient on what other jurisdictions would consider hate speech acts, a legacy from a Communist regime, but reinstated in 2010. Similarly there are restrictions on content for community radio. A study commission carried out by the Centre for Media and Communication Studies (CMCS) found that:

[2] Gilles Laroche, EC, Ethics and Innovation, PLACES annual conference, Torino, Italy, June 2013

[3] Klimkiewicz, B. 2010 'Media Freedom and Pluralism: Media Policy Challenges in the Enlarged Europe', COST A30, a Research Project of the European Cooperation in Science and Technology.

> Hungary's media laws are largely inconsistent with the cited European practices and norms, based on an examination of the legal precedents provided and on the expert analyses of how these precedents are implemented in these European and EU-member countries (CMCS, p ix)…. analyses indicate that the Hungarian Government's general assertion that its media laws are derived from those in other European and EU-member states cannot be substantiated by the examples it provided (CMCS, p xv). [4]

Within the context of RRI for the European Research Area, Hungary then may contribute other barriers to RRI that other countries do not, when we take this report's perspective of science coverage in media, or media as the extended public discourse cell of an RRI ecosystem.

The context of science journalism globally

Compounding the issue of restrictive reporting is the legacy of science journalism itself, impacting on the coverage of science. Science journalism is unique because of its complexity of content and concepts, dependency on particular types of sources, reliance on scientific journals, focus on 'translation', and difficulty in presenting a narrative[5]. For Responsible Research and Innovation, it is clear that an open press is required in order to facilitate its central tenets. To list the historical moments of press reporting science internationally, as commented by Nelkin[6], Gregory and Miller[7] and many other scholars

- 1930s: first US professional grouping (formally the National Association of Science Writers, up to 1950s) — 'cheerleader' or 'gee-whiz phase'
- 1960s: intensive coverage of the space race , a period of 'boosterism'
- 1970s and 1980s: a rise in more critical science reporting
- 1980s: specialist newspaper sections, programmes — New York Times's *Science Times*
- 1990: university courses in science communication and science journalism; information services for science journalism: the emergence of Eurekalert!, alphagalileo, Science Media Centre.
- 2000s: In US, the reported decline of science journalism, and particularly critical science journalism under Bush administration

[4] Centre for Media and Communication Studies (2012) *Hungarian Media Laws in Europe: An Assessment of the Consistency of Hungary's Media Laws with European Practices and Norms* Budapest: CMCS

[5] Hansen, A., (1994), 'Journalistic practices and science reporting in the British press', Public Understanding of Science, 3. - Radford, T. (2006) 'Hype, Hope, and Hair-raising: How the British Press Saw It', paper presented at 'Talking Embryos: Interdisciplinary Conversations Exploring the Social Roles of the Embryo', King's College, University of Cambridge , 5 May.

[6] Nelkin, D (1995) *Selling Science: How the Press Covers Science and Technology (Revised)* W.H. Freeman & Company

[7] J. Gregory and S. Miller 1998*, Science in Public: Communication, Culture and Credibility* Plenum

According to Montgomery [8] for much of the 19th and 20th centuries, the institutions of science depended on restricted access. The traditional model of science publication remains the peer review system with journals, books, chapters, theses caught with 'impact factor' measurement, and firewalled from journalist access. Journalists depend on engaged researchers. It could be argued that social and new media erode this elite community building and prestige; however this remains to be seen. RRI is seen as reflexive examination of this science-media relationship, and it must be acknowledged, the focus of discussions at Budapest presents journalism in a relatively traditional mode.

The moments described above show that science journalism emerged as just another type of science communication. As Keay Davidson, science reporter with the San Francisco Chronicle and biographer of Carl Sagan and Thomas Kuhn has stated, science writers 'love science too much to cover it with total, brass-tacks honesty… most science journalists, myself included, are actually science propagandists (p22)'. Now he is 'less deluded by science's epistemic pretensions' than he once was (p22 and p29)

> The best cure for naive science journalism, I believe, is the regular reading of the history of science – not just the "pop" history of science books . . . but also the shrewder, more socially oriented academic history of science that has thrived since Kuhn's book appeared'[9]

Cultural indicators for science policy in Hungary

Examining evidence for indicators of a 'scientific culture' in Hungary — in other words a structural context to Hungarian society's relationship with science and technology — we see that it has contributed significantly to global innovation. Tivadar Puskás' has been credited with inventing the telephone exchange in 1893 but there are many other examples: the Hungarian Laszlo Bíro was inventor of the ballpoint pen; there have been contributions to the sciences of nuclear chain reactions, geometry, holography, plasma screens and not forgetting of course Ernö Rubik's famous cube. Some significant science/society milestones include:

[8] Montgomery, S. 2009. 'Science and the online world: realities and issues for discussion' IN:R. Holliman et al (eds) 2009, *Practising science communication in the digital age* Oxford University Press

[9] Davidson, K. (2006).' Why science writers should forget Carl Sagan and read Thomas Kuhn: on the troubled conscience of a journalist'. In Doel, R.E, & Söderqvist, T (Eds.). The Historiography of Contemporary Science, Technology, and Medicine: Writing Recent Science (pp15-30). New York: Routledge.

- Setting up of Hungarian Academy of Sciences, 1825
- Founding Science Centre Foundation and CSOPA, 1993
- Innovation Advisory Board was established within the Ministry for National Economy, 2012 (NGOs included).
- Creation of National Science Policy and Innovation Board (NTIT) , 2013
- ELTE launched its MSc Science Communication, 2011
- World Science Forum held in Budapest in 2012 and 2015
- From a science policy perspective, the targeting of GERD of 1.8% by 2020[10]

While these events demonstrate a similar set of scientific 'cultural indicators' of science-in-society to other states where there is a developed innovation system, we must still evaluate a society such as Hungary within the relatively emerging paradigm of Public Engagement with Science and Technology (PEST) which has been a principle driver for how we now envision RRI. The assumed narrative of PEST is that there has been a shift in emphasis from dissemination *to* society, towards dialogue *with* society, to an appreciation of a menu of options for which RRI now represents: expertise, practices, conversations, co-production and methods of reflexivity between many different actors, including publics, with science and research—intensive institutions at the heart, that these set of options now include dissemination, dialogue and participation.

Hungary's engagement, at state level, with public participation with controversial technologies that are accepted by STS and science policy scholars to require collective public decision-making are pivotal to RRI. Although it is a snapshot, we can look at paradoxes within Hungary's attitude to new and emerging technologies, for which RRI becomes an important part of societal acceptance/rejection (or at least a paradox in relation to other European country's adoption of emerging technologies).

Hungary's re-written constitution in 2011, while criticised internationally because of its national Government's perceived lack of engagement with its citizens, now contains the following phrase:

> Hungary shall promote the effective application of the right referred to in Paragraph (1) by an agriculture free of genetically modified organisms[11]

[10] Simon , A.L. (1998) *Made in Hungary: Hungarian Contribution to Universal Culture*
[11] Fundamental Law of Hungary, Article 20.2

It was widely reported just before the Budapest field trip that protesting farmers had burned fields of genetically modified (GM) crops. Conversely, nanotechnology a so-called disruptive, convergence technology that has created public or CSO backlash across Europe, is not only accepted but significantly promoted by Hungary, without visible dissent. In 2008, NANOBAKT became an important consortium of nanotechnology private industries with the Hungarian Academy of Sciences. Similarly, Viscek[12] noted that there has been no significant controversy reported in Hungarian press about stem cell technologies.

What do European studies say about Hungary's science-society relationship? Meijgaard and Sales (2012) list Hungary on the borders of their typology of 'over-achievers' and 'discontented'[13]. In a Eurobarometer from 2007[14], Hungary scored among the lowest for the self-reported categories 'Internet search for scientific information' and science articles in press or magazines. Balanced against this apparent public apathy, Hungary recently appointed the unique position of Minister for Future Generations, which is a progressive step that chimes with the principles of RRI. It is also interesting to note that HAS-SEC, a Hungarian research institution, was a partner in the PACITA (FP7) project, looking at Parliamentary Technology Assessment (PTA) across Europe.

Figure 1: Images of Hungarian resistance to GMOs

[12] Lilla Vicsek (2011) Costs and Benefits of Stem Cell Research and Treatment: Media Presentation and Audience Understanding in Hungary *Science Communication*, 33, 3: pp. 309-340.

[13] Niels Mejlgaard and Sally Stares (2012) 'Performed and preferred participation in science and technology across Europe: Exploring an alternative idea of "democratic deficit"' *Public Understanding of Science* 22, 6: pp. 660-673

[14] European Commission (200X) Eurobarometer: *Scientific research in media*, Brussels: European Commission

HOSTING AND LOCATION

The Budapest field trip on the Media Cell was different from the others planned for NUCLEUS in that there was no hosting organisation. Organisation of the trip was managed by Dublin City University.

The Hungarian Academy of Sciences (or Magyar Tudományos Akadémia (MTA) in Hungarian) is a Government body in Hungary, housed in a beautiful building by the Danube in Budapest. It reports it main responsibilities are "the cultivation of science, dissemination of scientific findings, supporting research and development and representing Hungarian science domestically and around the world". The EUSJA Conference – and Day Two of the Budapest Field trip – was hed here.

Figure 2: Hungarian Academy of Sciences, Budapest

Fig 3: Hotel Gellért, Budapest

The Gellért Hotel was the Art Nouveau location for our Day 1 session. Its famous bath house provide a rich introduction to the traditions of the city of Budapest just at Liberty bridge separating the famous dividing areas of Buda and Pest.

SCHEDULE AND DETAILS

Attendees: NUCLEUS partners and local representatives

Nov 2nd SESSION 1

9:30 – 12:30

Participants: NUCLEUS partners only

General introductions

Reaffirmation of NUCLEUS objectives

Field Trip Information

Logistics of Budapest Field Trip

LUNCH 12.30pm

Nov 2nd SESSION 2

[Participants: NUCLEUS partners and local representatives]

Introductions and welcome: field trip participants join the meeting

General introduction session to RRI and the theme of the field trip led by the NUCLEUS team

Workshop/world cafe – 'Barriers to RRI in the media'

Wrap up of Day 1

Nov 3rd SESSION 3

[Venue: Danubius Hotel Gellert and Hungarian Academy of Sciences]

Topic:

RRI and Media: Barriers to media coverage of Responsible Research and Innovation in Hungary as represented by the changing roles of science journalists in a changing world of science journalism

Follow up on Day 1 and further discussions

Transport to EUSJA Conference

field trip notes,

'Drop-In Centre' [planned], targeted interviews

Launching a new EUSJA network

Official launching of Nucleus network and its aims (Satu Lipponen)

A science journalism roadmap in Europe – short presentations

Preliminary analysis of local and partner processes and governance

FIELD TRIP PROCEEDINGS

We briefly outline here general observations on how the field trip proceeded, as well as challenges. The original plan for the first day required a host of agencies to reflect on the changing nature of science and innovation in Hungary and the possible barriers for RRI and media. However our field trip coincide with the hosting of the Global Science Forum that same week in Budapest, so for that reason (and perhaps because of the short notice between project beginning and the Budapest field trip) the following invited guests we unable to attend: Csopa – Center of Scientific Wonders , Science Editor of index.hu , Central European University, Budapest, Ministerial Commissioner at Ministry of Human Capacities, National Research, Development and Innovation Office Department of International Affairs, Hungarian Academy of Sciences, Research Office, Pazmany Peter Catholic University, and European Researchers' Night.

The NUCLEUS team is therefore all the more grateful that the following could interrupt their busy schedule to attend: Edina Németh, János Gács, Gorm Palmgren and Andrea Kárpáti.

In addition we in intended to get 60–70 delegates to complete the science journalist survey, and to host a stand or 'drop-by' clinic at the EUSJA conference. For the former, only 15 could find the time to do so; for the latter our research team decided on the day that proactively conversing with delegates was of more immediate value than waiting for them to arrive. We also decided that an online survey would receive more traction among science journalists. The EUSJA has committed to distributing the online version for completion by its members.

RRI AND FIELD TRIP INSIGHTS

OBSERVATIONS

Session 1: Defining RRI and establishing roles and responsibilities

The main aim of this field trip was learning, for ourselves as a project team, but also for the establishment of a co-constructed and mutual learning process, the potential barriers for RRI that research and sciences in media might present, and using Budapest as a test case. In Session 1 we needed to re-establish out goals and understandings, then shape the agenda for the two days -the EUSJA event, interview formats, distribution of questionnaires, etc. This was the first field trip, so the internal procedural task of format and purpose of the field trip reports was required.

Then there was the conceptual nature on a reflexive question: what do we ourselves mean by RRI? How do we define it? Before our invited guest arrived for Session 2, NUCLEUS participants reflected on the survey questions.

It was then necessary to establish the roles of the partners, with particular attention , given the objective of the Budapest Field Trip, to the role of EUSJA, as well as tasks and deliverables. It was here that the project team utilised both theoretical and practice experience to frame what RRI could be for science in media and to use this to complete the survey question framings, as well as how we would present ourselves, and the NUCLEUS project, to our invited guests from Budapest in the afternoon.

Concepts that emerged:

- the different registers of *socioscientific ethics and journalistic ethics*; the tension, the conflicts, overlapping interests
- Massimiano Bucchi 's model of science communication and diffusion
- Staff writers at newspapers are bound by pressures of editorship and contracts
- There is an 'illusion of integrity' among science journalists
- Communication as a process, rather than dissemination at the end of a research project
- The cultures of a country, the cultures of journalism as a profession and how this applies to Hungary
- Journalistic ethics, investigation of society, holding powerful structures to account

- Should journalists be even involved in a large scale Horizon 2020 projects like NUCLEUS? Can they be 'stakeholders' in a coproduction process when the professional integrity relies on them being 'outside' society?
- The working definition of RRI may not work for US journalists who do not see themselves as 'societal actors', for example
- There is a general resistance among RRI academics and practitioners to the RRI keys. We can utilise these in a superficial way, but we must not forget process.
- But then there is the realism of journalists being involved in institutional communication
- The era of 'citizen scientists' and 'citizen journalists'
- There was discussion around institutional bias, and protectionism
- medical sciences are better understood more than social sciences
- questioning the independence of journalists
- Journalists as workers in this new configuration proposed by the Rome Declaration . What about role definitions of the future, and the uncertain future of science journalism?
- The emergence of new roles, the removal of mediators
- There was agreement that many of the slides that Padraig was proposing were academic in nature and not easily communicated to our visitors in the second session. Our 'cells' diagram had clarity and should be the organising image.

As our group began discussing science *in journalism*, rather an entity called *science journalism*, the issue of swift fact-checking in a Twitter-driven world kept emerging. Also the key question: can journalists really be 'societal actors' as described in this new RRI definition? Satu proposed that journalists need to be outside the system, not insiders

Session 2: Interaction with local experts in Budapest

Joining the meeting in Session 2 were Edina, FET NCP, Janos from the Patent Office and Gorm, Danish science journalist.

An initial question, asked by one of our participants: "Where do I , as a journalist, fit into RRI"?

Can a journalist be constantly critical, or do they also fulfil a dissemination role too? Science and technology is seen as different in this way — a pedagogy is required, a 'teaching /explaining' role.

The issue with many journalists is that the report of the technology comes first, with issues of ethics and social implications later. While university PR is only one perspective — and the dissemination default setting is strong -—there is a distance between science journalists and science communicators (a point echoed by Connie St Louis at the EUSJA Conference the next day). Good science journalism should compare scientific rigour, an extra layer of public good quality assurance, that need not be concerned with broader science communication (whether dissemination or participation).

Besides the current capitalist tendencies to have content of all kinds paid for as news, there is a specific set of issues for Hungary: there is a closing off from Government. Access to policy or state-invested science is not easy. Hungarian scientists do not devote enough time to public communication. Also science is competing with other topics - science is not popular in Hungary.

"There is no money in science communication", as one of our participants said.

There are two science journals in Hungary, according to our group: 1) one popular publication and 2) one that was set up 100 years ago by , what was reoorted as,'the brother of an expert' [the Bulletin of the Hungarian Academy of Sciences]

For ICT, and Future and Emerging Technologies (FET) a respondent atated that "robots have good outreach potential." However, there is a 'tech push' in FP7 /H2020 programmes, and while ICT is easier for upstream communication, FET is more difficult for engagement. "It can be sometimes hard to even get the interdisciplinary research teams together". The RRI focus of the CODESIGN/COCREATION calls from the societal challenges is not present within FET making it a limitation for RRI. The areas of research can remain removed from public participation. However most European projects will not get funded if they do not build in some form of communication.

However, post-award, science journalists are increasingly cut out of the process as scientist and scientific institutions develop keener skills of mediation, PR and outreach. "For [this new type of] journalism, sensationalism wins out over reality."

One suggestion was — perhaps universities/HEIs should not report on their own research; perhaps HEIs could have media staff that could comment on others. Our assembled group appear to think of the end-points only — innovation and discoveries. "It would be a scoop if a journalist gets a scientist's results before it is published", said one, which is not the same

issue as what scholars such as Nelkin, Davidson[15] and Wilsdon and Willis[16] describe as a see-through science all along the process of innovation.

So what stages of research suit journalistic engagement under the rubric of RRI? The response was: "what editors want are *results* and *entertainment*". There is less editorial interest in issues of public engagement themselves. However, science centres can serve as public spaces for RRI. However, there does not seem to be this space in Hungary — "there is space for personal opinion and political opinion, but not science."

To a question about the funding issues of science journalism, the response from our invited guests is that Hungarian science journalists would not feel particularly influential , where as political journalists are. But the short-termism of politicians mean the longer term issue of science gets rare media coverage.

There is a question mark by some participants over the veracity of the term 'responsible.' However the Nisbet and Fahy typology[17] that frames the NUCLEUS questionnaire wins favour with the participants.

There are some queries among the guests, when reflecting on the images of the 'cells' , that perhaps media does not fit easily; where Annette then mentions PE becomes a large cell (there is not parity of size, despite the graphic But participants were reassured that they now part of the NUCLEUS network.

Session 3: EUSJA Conference

Themes from the EUSJA Conference of relevance to NUCLEUS # 1: journalists' perception of a 'fight at the gates'

Laszlo Lovasz, President of Hungarian Academy of Sciences, in his opening speech makes many references to a Mode-1, Enlightenment idea of science, that perhaps do not fit easily into how RRI can be imagined for the European Research Area and its mediation:

"We are all devoted to science and the popularisation of science".

[15] Davidson, K. (2006).' Why science writers should forget Carl Sagan and read Thomas Kuhn: on the troubled conscience of a journalist'. In Doel, R.E, & Söderqvist, T (Eds.). The Historiography of Contemporary Science, Technology, and Medicine: Writing Recent Science (pp15-30). New York: Routledge.

[16] James Wilsdon and Rebecca Willis (2004) *See-Through Science : Why Public Engagement Needs to Move Upstream*

[17] Declan Fahy and Matthew C. Nisbet (2011) The science journalist online: Shifting roles and emerging practices *Journalism* 12: 778

"The average lay person can't understand [science]."

"Even scientists can't understand it unless they work in the same field"

"Of course the situation is very dangerous."

"We need control of society over science".

The dangers he highlights(for science) include: funding issues, spread of pseudoscience (with emphasis here on the medical field, lack of rational discussion on global issues (eg climate change, migration, energy , water). There are "dangerous scientific arguments being put forward". However: "we depend on science journalism".

Satu Lipponen, President of EUSJA (also participant partner in the NUCLEUS project) then tells the audience that EUSJA has 23 member associations across 20 countries. Satu announces that EUSJA is "opening a new discussion about science journalism ethics". "Science journalism", she states while acknowledging that the individual journalist wears many hats, "Needs to avoid cherry-picking, bias and bubbles"

Curtis Brainard, former science reporter of the Columbia Journalism Review 'Science Journalism in Society' reflects on TV health news, and the 'gee whizz' angle presented case study on Fox News Edge website and its coverage of Cleveland Clinic, who feed news stories to many news organisations, and successfully picked up. Brainard laments this "hybrid of news and marketing" "spreading almost like an epidemic"

Brainard tells the case of Fox News 'Edge, the online platform, which ran a series of 'embedded journalism' pieces in 2007. As recounted by Trudy Lieberman in *Columbia Journalism Review*

> [In the mornings] on KTBC-TV, the local Fox channel in Austin, Texas, in mid-January, they heard the anchor, Joe Bickett, introduce a story about a new electronic rehabilitation system for injured kids. "Sharon Dennis has more on that," Bickett said.[18]

Sharon Dennis moved about the hospital, interviewing medical staff. But what challenges science journalism is that Dennis did not work for KTBC-TV, nor any other Fox agency. She was a media professional hired by Cleveland Clinic, using a slick journalistic style of reporting of a technology story. She was part of Cleveland Clinic News Service.

[18] Trudy Lieberman, The Epidemic *CJR* MARCH / APRIL 2007 [Available online: http://www.cjr.org/feature/the_epidemic.php]

Brainard quotes Cleveland Clinic: "We act as a news hero for Fox". He says, in contrast: "sometimes [science journalists] have to step out of the picture."

Brainard calls this marketing a 'disease' within science journalism, for which the 'cure' is the type of nobility that one science journalist demonstrated in the recent past, by leaving because of a similar news agency/ hospital arrangement. Glen Mabie was news director for WEAU-TV in Eau Claire, Wisconsin but resigned when he learned of a deal which granted the station an exclusive coverage for local hospital, as a protest for what he claimed compromised the station's independence and integrity. This forced a re-think by WEAU-TV, and the link was severed.

Another case gives science journalists the phrase 'The Gupta Effect', perhaps more extreme than the Cleveland Clinic case: participatory journalism in health reporting. Dr. Sanjay Gupta is a CNN Medical Correspondent, perhaps famous for reporting on cases for which he himself, an Emory University Hospital neurosurgeon, works on. He might be seen as the ultimate embedded, participatory journalist. But not to Brainard. He relates the case of news reporting that saw Gupta having to admit 'editorial staging'. Earlier in 2015, Gupta did an on-the-ground reporting special, after the Kathmandu earthquake, where he was reporting while performing surgery on what supposedly was a little 8 year old girl. 'Salina' would die without the surgery, he claimed, and later claimed she was doing well. However the Global Press Journal reported that the 8-year-old girl was in fact a 14-year-old with traumatic head injuries. Gupta claimed that in the chaos of the situation, a mistake was made. "When foreign correspondents are parachuted into a place where they have no social, historical, cultural or political context, the coverage is automatically compromised," Cristi Hegranes from Global Press Journal stated afterwards, "accuracy is not the top priority."

This relates directly to the discussion the previous day on journalists' role within the RRI-matrix for society. Are they inside or outside the system as societal actors? Are they truly 'societal actors' or should their role be 'extra-societal actors? This is a view that Brainard (and our guests in the workshop) put forward: that journalism should not be compromised to fulfill an RRI tenet, that is, engagement. Doctors reporting as they perform surgery provide a thrilling engagement factor for news reporting, but how is it compromising the traditional journalistic values of objectivity and impartiality? (These are questions for all citizen/participatory journalism not just science journalism)

Brainard quotes the LA Times when he says it "clouds objectivity" and "mungs the news". Gupta has said "I am a doctor first." It is fair to say, however, that Gupta's side of events can be believed.

There is also the issue of *native advertising*, and related stealth PR in science reporting. Brainard went on to recount other case studies of embedded reporters, or participatory journalists, in health news such as NSF 'underwriting' coverage of *Livescience*, ScienceNation

and *Discover Files* podcast. He described native advertising at Pepsi ("PepsiGate") The Atlantic adverts for Scientology, Shell's *Energised Cities* project with the *New York Times*, even the *Health News Review*

Brainard asks: What can science journalists do? He suggests:

- refuse or fight back
- develop guidelines, or
- produce superior work

Themes from the EUSJA Conference of relevance to NUCLEUS # 2: STEM, gender and social media

Connie St Louis was one of the highlights of the EUSJA conference. It was a personal story and it raises another RRI theme: gender in science. Dr. St. Louis is a science journalism lecturer who was a central media figure in "the Tim Hunt affair". In her presentation to the EUSJA conference, she wanted to share her story so that it would be a lesson both for science journalism and science itself.

St. Louis wants to see a deeper separation between the professions of science journalism and science communicator. The latter, in her view, is most often involved in promotional activities, while the former "needs to embrace accountability....not just understand content, but also process and flow of money." She referenced the book *Merchants of Doubt* and warned against "the dangers of political ideology." And most of all journalism, and other, newer types of science reporting in the media needs to attend to what she calls "the strikeback syndrome" — a strong, negative reaction to defend science as an institution at all costs.

Her story was a stark one for women in STEM disciplines (science, technology, engineering and maths) particularly as represented in the anonymity of social media. In June 2015, Prof Tim Hunt speaking at the World Conference of Science Journalists in Seoul, was widely claimed to have made sexist and disparaging remarks, reputed;y in jest, against women scientists. Perhaps the original context of Hunt's remarks are part of what are now dubbed "Poe's law", the internet adage that states that a controversial or extremist comment that may be made ironically or sarcastically when taken out of context and amplification though social media loses that original context. It is beyond the scope of this report to comment on the appropriateness of the languag used and the context of the "joke" and that is not the point of what faced this journalist. What transpired in the anonymous social media commentary that followed St Louis's tweeting about the incident demonstrated a residual sexism, and indeed racism, against St Louis herself, allied to a defence of science which, in many respects, was not unlike the Gamergate affair[19]. St Louis accused scientists and journalists of supporting

[19] Valenti, J. (2015)[online] 'Anita Sarkeesian interview: 'The word "troll" feels too childish. This is abuse', *The Guardian*, Technology Section. Available from http://www.theguardian.com/technology/2015/aug/29/anita-sarkeesian-gamergate-interview-jessica-valenti

"science" against her accusations of sexism, defending Prof Hunt's integrity, if not defending Hunt's actions or words at the conference. She had to change emails and phone numbers and warned others about the liberal use of social media. However the harder lessons for science and journalism were: 1) journalists should not get too close to science resulting in defending it at all costs 2) racial and gender stereotypes should not be perpetuated (with reference also to global Ebola coverage).

Themes from the EUSJA Conference of relevance to NUCLEUS # 3: the transient nature of science journalism as a profession and the rise of the public communication of science

Tim Radford, in his presentation, picked up some of the themes earlier taken on by Curtis Brainard. Radford is a *Guardian* journalist of great experience and he humbly stated that his job was merely to tell stories. What concerns him, however, is that many science stories in the press are not science journalism. "Journalism is writing something many do not want you to write." There should be, he said " a free, active, irritant press". This item aligns with many comments from field trip participants over the two days: the independence, or the striving for independence of the science journalist. But there are competing interests, for which freelancers themselves must cover, such as politics, sport, celebrity and culture. At the same time, "science communication" has "cut out the middle man". Radford gave an account of the free service he is involved with, the Climate News Network, granting access to those developing countries that do not. "Science journalism globally" he says "is needed more than ever".

SYNTHESIS AND INTERPRETATIONS: BARRIERS TO RRI

The following themes emerged from the field trip:

1. **Pseudoscience in popular culture** There was concern among many science journalists about the rise of pseudoscience, and journalists' perception of a 'fight at the gates' against these forces of unreason . However, are these issues connected with Mode-2, for which journalists themselves are unprepared? Mode-2 science is the contextualised, blurred boundary science of late modernity where contestations and co-production emerges from different actors and expertise, one of which will be the media, as described by former ERC Director Helga Notowny and colleagues[20] . While

[20] Nowotny, H. Scott, P and Gibbons, M.T. (2001) *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty* London: Polity Press

Mode-1 describes the non-contextual, lone scientist approach to discover and innovation, RRI among various societal cells would appear TO follow the theoretical frame of Mode-2. If this were the case, journalists themselves would need to follow these contours of uncertainty, the porous boundaries between field we describe as 'science' and 'society', the challenges of dependencies, and the new forms of objectivity and subjectivity these practice create, while maintaining hard critique of these practices[21].

Themes from the EUSJA Conference of relevance to NUCLEUS # 2: STEM, gender and social media
Connie St Louis and the Tim Hunt Affair
Themes from the EUSJA Conference of relevance to NUCLEUS # 3:
Tim Radford

2. **The profession of science journalism** The precariousness of science journalism as a profession

Tim Bradford, Curtis Brainard - and most especially cogently - our guests the transient nature of science journalism as a profession and the rise of the public communication of science,a dn the phenomenon of double-jobbing journalists. Our field trip researchers (Padraig Murphy and Ricarda Ziegler) were unsuccessful at getting delegates to respond to our survey: we received only 15 responses from > 70 delegates. However many more conversed with us and an online survey is in process.

What was striking was less than 50% of those asked - whether or not they had an opportunity to complete the questionnaires - identified themselves as 'science journalists'. There were many here who were interested in science journalism, media, the academic study of science communication, perhaps a few interested in RRI itself. A significant number were not practicing journalists.

3. **Investigative reporting** The continued importance of investigative reporting in science while editors, as our guests opined, required *results* and *entertainment*

4. **The threat of native advertising** The sustained fight of those connected with journalism in Budapest to retain integrity was important to them, guests and conference speakers. The perceived loss of integrity was sometimes attributed to market force such advertorials native advertising and advertorials. It is commonplace that respected publications such as the New York Times enter into deals with large

[21] Latour, B (2004) 'Why has critique run out of steam?' *Critical Inquiry* 30 (Winter 2004)

corporations to produce well-packaged infotorials. A critical studies approach would challenge neo-liberalism, but need there be a more subtle approach for RRI, again assuming Mode-2, connected cells, one of which is industry? The 'Economy' cell field trip may provide more insight.

5. **Cultural indicators of a scientific culture**, and relationship to society. Some European countries, such as France, have a well-developed historical sense of the culture of science. There are smaller countries where the science/soceity relationship is different. A fair, open, RRI method of approaching this is to accept the cultural status quo, but effect change where there is less open access, gender recognition, ethical considerations etc.

6. **Media laws** restrictions causes by media laws **eg Hungary's but also other countries**

7. **Social media strikeback -** when an RRI issue, of engagement, ethics, and, it would appear, especially gender is raised, it can raise the open hostility from the closed ranks of anonymous social media users

The question for RRI is: leaving aside questions of commercial marketing: can journalists "working with stakeholders" ever satisfy the critical view of objectivity as represented by Brainard and *the Columbia Journalism Review*? Is it not possible to have critical elements within a stakeholder network of co-creation and co-production, to which journalists have an advantage of social critique? Can non-journalists and scientists not produce good journalistic content? Do science journalists, who embrace the traditional values of journalism, view themselves as necessarily *outside* the co-production assemblages that are created by Horizon 2020-shaped projects? In our working definitions of RRI, the participating science journalists in our field trip do not see themselves as *societal actors*. Nor do Hungarian science journalists feel particularly influential , whereas political journalists are perceived as having that much more inflence. There is also a question mark by some participants over the veracity of the term 'responsible.'

IMPLICATIONS FOR THE RRI ROADMAP

Based on the findings and interpretation, what are the implications and recommendations for the NUCLEUS RRI Roadmap? The NUCLEUS work plan has the following goals for Phase 2 Implementation:

- *Innovation Inclusion*: build institutionalised bridges between the research community, stakeholders and the general public
- *Debates*: catalyse ongoing debates about the role of science in open societies
- *Transdisciplinarity:* Develop, nurture and support new forms of transdisciplinary research including RRI principles in the scientific (STEM and AHSS) communities
- *Cocreation*: stimulate co-responsibility of all actors involved in the process of research and innovation
- *New forms of communication*: question and redefine prevailing notions of "recipients" and "agents"
- *NUCLEUS Phase 2*: the context, possibilities and types of activities for mobile NUCLEI as part of Phase 2

Most importantly: the project needs to ensure local knowledges and practices are recognised.

Of interest to the Roadmap:

- These objectives need to be cognisant of journalists' fears pseudoscience in popular culture
- Can other cells consider the changing profession and roles of science journalism while maintaining investigative reporting of various hues within new and social media?
- How do we consider the role of industry? How serious is the threat of native advertising
- With newer data laws emerging, how to guard against the social media 'wolf pack' tendencies, while maintaining objectivity and critique where it is needed
- Being cognisant of media laws of each country or region
- Being cognisant of cultural indicators of a scientific culture of each country or region

Proposals

- We need to consider building in reflexive critique into research, an exchange between outside/ inside NUCLEI. The 'cell" analogyy has been dveloped for this project. To further develop our "cells" and "nuclei" analogy, journalistic inquiry is a necessary, chaotic Varela-type semi permeable barrier that operates as *autopoeisis*, self-changing without causing lysis to the cell, or on a smaller scale, leading to the *products* of that cell ie emerging technologies. These products can be *inhibited* by this reflexive journalism, however the action inside and outside the cell keeps its integrity).
- Role of EUSJA within NUCLEUS and as a broker outside becomes particularly important for RRI in media in Europe. The crucial link is the setting up an EUSJA network and toolkit that embraces RRI

IMPLICATIONS FOR FUTURE FIELD TRIPS

Based on the field trip proceedings, what are the implications or recommendations for future field trip hosts? Budapest was chaotic while Edinburgh ran smoothly, the former caught up in the dependencies of external forces to the project that existed at a remove from the organising parters.

The decision to have an organising partner work from outside the host city proved challenging. This meant that the field trip was 'real' in the sense none of our NUCLEUS partners were familiar with the field. More time spent there would have given us more insight and access.

The NUCLEUS survey of science journalists, which will be reported in a special paper output, will then provide better information on science journalists' own perspectives on their roles with relation to science and technology reporting and is possible impact on RRI.

All field trips need to consider the Budapest implication from the previous section, but one issue that was raised prominently by this field trip can be taken upon directly by another: research, media, RRI and the connection to maters of commerce and economy.

CONCLUSIONS

On balance, although the objectives of finding out barriers to RRI for media among local practitioners and experts in Hungary were not entirely successful, there was a richness to the findings when placed into a global context, and perhaps this reflects on the direction that science journalism is taking. Summary points:

- **science , knowledge and interactions with popular culture**
  - hard defence of positivist view of science, connected to patriarchal and online trolling that dangerously defends this position, and the need to take this to account

- **the changing professions and roles of science journalism** (to be addressed further in a NUCLEUS science journalism survey report)
  - the relationships and tensions between HEIs and journalists in combined and contrasting practices of promotion, dissemination and engagement
  - however the central critical ethos of a traditional journalism is required more than ever

- **the scientific culture of particular regions**, where there is local media coverage

APPENDIX A: PARTICIPANTS

Affiliation	Participant(s)	Role
Dublin City University	Padraig Murphy	NUCLEUS project and Field Trip organiser
Rhine-Waal University	Alexander Gerber	NUCLEUS project coordinator
Rhine-Waal University	Annette Klinkert	NUCLEUS project manager
Science View	Menelaos Sotiriou	NUCLEUS project and evaluator
EUSJA	Satu Lipponen	NUCLEUS project and EUSJA President
Wissenschaft im Dialog	Ricarda Ziegler	NUCLEUS project and Field Trip interviewer
Mathematics Institute, Serbia	Aleksandra Drecun (repesenting)	NUCLEUS project
University of Malta	Edward Duca	NUCLEUS project
University of Edinburgh	Sarah Anderson	NUCLEUS project

Table 2: NUCLEUS participants (one other participant could not attend)

Affiliation	Participant(s)	Role
European National Contact Point FET/ICT	Edina Németh	Invited guest
Intellectual Property Rights in Hungarian innovation & EUSJA	Dr. János Gács tanácsadó , TÚK, (Cluv of Hungarian Science Journalists)	Invited guest
EUSJA (Cluv of Hungarian Science Journalists)	Andrea Kárpáti	Invited guest
Danish science journalist	Gorm Palmgren	Invited guest

Table 3: Invited participants, Budapest (many other invited guests could not attend at short notice)

APPENDIX B: SCHEDULE

Budapest Field Trip Agenda

Date: 2-3 November 2015
Venue: Danubius Hotel Gellert AND Hungarian Academy of Sciences

Meeting organised by DCU and NUCLEUS Project Management

Attendees:

NUCLEUS partners and local representatives

Topic:

RRI and Media: Barriers to media coverage of Responsible Research and Innovation in Hungary as represented by the changing roles of science journalists in a changing world of science journalism

Nov 2nd SESSION 1

9:30 – 12:30

Participants: NUCLEUS partners only

COFFEE 9.30

General introductions

Reaffirmation of NUCLEUS objectives

Field Trip Information

Logistics of Budapest Field Trip

LUNCH 12.30pm

Nov 2nd SESSION 2

14:00 – 17:00

Participants: NUCLEUS partners and local representatives

Introductions and welcome: field trip participants join the meeting

General introduction session to RRI and the theme of the field trip led by the NUCLEUS team

COFFEE 15.30

Workshop/world cafe – 'Barriers to RRI in the media'

Wrap up of Day 1

Nov 3rd SESSION 3

8:00 – 13:00

Participants: NUCLEUS partners and local representatives

Venue: Danubius Hotel Gellert AND Hungarian Academy of Sciences

8.00 Follow up on Day 1 and further discussions

9:00 Transport to EUSJA Conference

9:30 – 13:00 EUSJA Conference: field trip notes,

'Drop-In Centre', targeted interviews

NB 12.00 Launching a new EUSJA network

Official launching of Nucleus network and its aims (Satu Lipponen)

A science journalism roadmap in Europe – short presentations

Nov 3rd SESSION 4

12:30 – 17:00

12:30 – 14:00 WORKING LUNCH AT EUSJA

COFFEE 15.00

15:00 – 17:00 Preliminary analysis of local and partner processes and governance

ACTION: Each partner to provide insight into barriers and opportunities that have been explored during the field trip. This reflection and evaluation will be verbal but also collected on paper to feed into the Field Trip report and RRI implementation roadmap.

NUCLEUS Field Trip Report, Cell 4: Media (Budapest)
Deliverable D4.5

This report was prepared by *DR. PADRAIG MURPHY, Lead for 'Media' and 'Economy' Field Trips, and Work Package Leader for WP 5 NUCLEI Implementation 2017-2019*
It was submitted on *February 29th 2016* to the European Commission.

For more information on the NUCLEUS project, please visit our website or contact the coordinating team:

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