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Newsletter

Residential Renovation towards nearly zero energy CITIES



Welcome to the 2nd R2CITIES Newsletter!

This second issue of the R2CITIES newsletter marks the first year of four busy years aimed at enhancing and then demonstrating energy efficiency in residential districts.

We are now up to cruising speed as we head into our second year and the consortium is intensively collaborating to fine-tune and plan the interventions at the <u>demonstration sites</u>.

Our 2nd progress meeting in June was far from being an isolated event. It was designed to fit into the fully packed <u>Genoa Smart Week</u>, hosted by Genoa Municipality. This Smart Week included a series of high-level policy events, conferences, and fora during which a number of other European projects in fields related to R2CITIES held their consortium meetings and general assemblies. The Smart Week thus represented a unique opportunity for leveraging outreach and knowledge sharing among the energy efficiency community at all levels. We will be spotlighting Genoa in this issue and introducing both Genoa Municipality and the University of Genoa.

At this point on the project's timeline, one of the vital steps of bringing the demonstrations to fruition is the public procurement rounds. At each of the demonstration sites, Genoa (Italy), Kartal (Turkey), and Valladolid (Spain), the innovative retrofit work to be undertaken has to go through a procurement process. This is not straightforward since there is a fine middle road to go down between complying with local legislation and the necessary alignment of work among the three demonstration sites.

Happy reading and happy holidays!

With best wishes **Rubén Garcia Pajares** - R2CITIES Coordinator

Fundación CARTIF



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Visit our website to browse this newsletter online!



Greening our cities

Solutions to halving energy consumption, costs and greenhouse emissions in cities may be on the horizon, as long as partners find suitable ways to cooperate.



Imagine if a city could halve its energy consumption, costs and greenhouse gas emissions. This would get closer to levels that would ensure sustainability of resources. On a planet under constant threat of environmental and energy crises, this would be a welcome change. Suppose also that this city finds a strategy to upgrade its household energy system with a budget of as little as €100 per square metre. This too would be a tremendous change.

Now, the EU funded project R2CITIES, launched a year ago, and due to be completed in 2017, is testing solutions to achieve this ambitious goal in Istanbul, Turkey, Valladolid, Spain, and Genoa, Italy. "We are now at the stage of designing potential solutions," says Margherita Scotto, a civil engineer at D'Appolonia, an engineering and consulting company based in Genoa, Italy and one of the leading project partners. However, "at this current stage, we do not have results yet" she adds.

The Italian port city, Genoa, is a good example of a city facing challenges in addressing its target sustainable growth strategies. One of the project's test sites is located in city's Lavatrici social housing district, which was developed during the 1980s. "In Genoa, we intend to undertake large residential district renovation, such as applying green energy solutions like, for example, active construction elements," Scotto tells us. She adds: "We also intend to design and install new tailored photovoltaic elements. Solutions will also consider the distribution of thermal energy in Lavatrici district."

Scotto also explains that the team is looking into technical solutions that may cut consumption by 50% in about 160 households. This spans a total of about 18,000 square metres. "We chiefly need to find ways to improve thermal insulation by introducing grenn building materials, optimising heating storage and distribution systems," she explains.

One of the main challenges is coordinating many stakeholders with different backgrounds, interests, and schedules. "We need to coordinate with the local municipality, which owns the houses, the University, which takes care of the experimental studies on the sites, and other industry partners," says Scotto.

The first step is prioritising operations, and this is where the local university comes in. "We have been asked to assess key energy issues that need to be addressed and support the municipality with investigation on current energy consumption and quality of buildings," explains Renata Morbiducci, professor of building technology at the University of Genoa, in Italy, and principal scientific coordinator within the project. "Trying to reach the target of a 50% energy cut at just €100 per square metre, this is the key challenge we will face. Achieving this goal, this is the innovation the EU is expecting from this project," adds Morbiducci.

Another project partner from industry comments that dialoguing with so many different stakeholders is proving to be exciting, constructive but also challenging. "This project is a real challenge," says Andrea Melis, engineeer at the Genoa branch of a large automation technologies multinational company based in Switzerland called ABB.

Our expertise is in industrial automation. We will have to develop technological tools to operate and coordinate all apparatus that will regulate energy flow in the refurbished buildings," he tells us. "Cooperating with municipalities and the academic sector at the same time is rather new to us. But as our company is willing to explore the civil energy efficiency sector, this is the way to forward, and we are keen on investing in this project."

R2CITIES goes to Genoa Smart Week

R2CITIES partner, Genoa Municipality, is gearing up to stage its Smart Week from 16 to 20 June this year. The week's agenda will feature a series of high-level events bringing together experts, stakeholders, and authorities from across Europe.



The Municipality, which is responsible for the Lavatrici district demonstration site within R2CITES, will also be hosting the project's second periodic meeting during Smart Week, thus providing a remarkable networking and knowledge sharing opportunity for the whole of the consortium in attendance.

Genoa Smart Week will draw on various European projects, including R2CITIES, and on organisations, agencies, federations and policy-makers to inspire high-level discussion about moving towards more sustainable, energy-efficient cities. Projects that Genoa Municipality is involved in and that will be present during Smart Week include CELSIUS, ILLUMINATE, ELIH

MED, <u>iCITY</u>, <u>TRANSFORM</u> and others Many of these projects will themselves be organising side events and are planning to hold their consortium meetings during the week.

One event arising from project contributions is the TRANSFORMation Dialogue, due to take place on 17 and 18 June and co-organised by the cities of Hamburg and Genoa. This two day policy forum is packed full with presentations and talks about the political responsibility and commitment required for a strategic agenda to transform our cities. It will gather experts from both cities and beyond, who will deal with themes such as energy transition, Horizon 2020, the role of regions in developing smart cities, modes of transformation governance, to name but a few. European projects working in energy efficiency will also provide concrete field experience and R2CITIES will be among them.

Also on the Genoa Smart Week agenda is the <u>forum</u> "The city we want: smart and sustainable", organised by the International Telecommunication Union, a specialist UN

agency for ICTs. This forum will take place on 18 June in the afternoon starting with two keynote speeches: Environment and climate change, and The European partnership on Smart Cities and Communities in a nutshell. This will be followed by a session on ICT as a way to improve living, function and sustainability.

The diversity of events, and the common theme of a transformation agenda for sustainability, will make Genoa Smart Week a high-profile event in itself. R2CITIES stands to give and gain much during this week.

For more information, please contact: <u>R2CITIES</u> Communication Secretariat

Link to Genoa Smart Week agenda

In this picture: R2CITIES coordinator Rubén Garcia during the meeting.



Genoa Smart Week – a series of events hosted by R2CITIES partners Genoa Municipality

Between 16 and 20 June, R2CITIES partner, Genoa Municipality played host to over ten events, not including several satellite events, designed to pave the way forward for green urban policy.



The line-up of events ranged from conferences, presentations and roundtables bringing together experts, stakeholders and authorities from across a number of cities and districts in Europe.

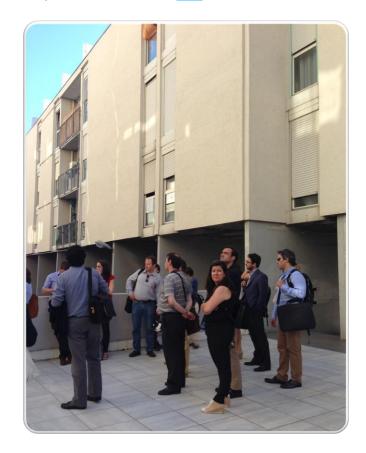
It was of course a week that couldn't be missed by the R2CITIES consortium, which held its 2nd periodic meeting at the same time in Genoa.

One of the major events organised of Genoa Smart Week was the TRANSFORMation Dialogue, a two-day forum aimed at examining a new generation of policy approaches for going green and staying green in the built environment across Europe and beyond. Following 8 workshops on the first day of the forum, Gloria Piaggio from Genoa Municipality along with Ulf Skirke from Hamburg Municipality delivered a presentation setting out guidelines on eight strategic outcome areas: policy, economy, governance, social equality, technology and legal frameworks and on how they should evolve to address the challenges ahead.

These outcome areas feed into complete spectrum of topics. For example, active citizen involvement cropped up many times as an aspect that must be fully embraced by policy makers. Also, a Smart City agenda champions the efficient use of resources, preferably renewable, and this in turn has implications for technology, social harmony, business and economic models, and of course legislation. Going beyond the state of the art means combining digital infrastructure, sustainable mobility and low energy districts. Green city agendas are set to become a laboratory of new institutional and legal arrangements, and R2CITIES is very much a part of that laboratory.

The TRANSFORMation Dialogue wound up with the official opening of a permanent political forum about smart cities. This permanent dialogue is designed to steer EU policy toward the right future, taking into account both the strategic goals and the tactical considerations along the way.

All presentations available here



Gloria Piaggio: Genoa, a Smart City

New technologies and energy management could soon lead to sustainable cities.



Cities substantially contribute to European air pollution as they are the source of about 36% of the total CO₂ emissions. Modern cities therefore raise sustainability concerns. Now R2CITIES aims to test solutions that should cut energy consumption by about 50%. The project will focus on the districts of three Mediterranean towns as case studies. Their current consumption will be recorded before testing possible solutions based on building renovation and changes in energy sources and distribution. The case studies include districts in Valladolid. Spain, in Genoa, Italy. in Kartal near Istanbul, in Turkey. These will be refurbished and improved at a cost of €100 per square meter, as required by the EU commission, which supports the project.

Gloria Piaggio, director of the <u>Smart City programme at the Genoa municipality</u>, connected to the project, talks about how architects, engineers, and technicians are planning to make a test case in an estate of about 160 council houses, spread over 18,000 square meters, to create an environmentally friendly district.

Why did you call your project Smart City?

Cities are growing fast and there is a need to improve quality of life. The improvement is based on an economic development that must be sustainable, both economically and environmentally. Once seen as mere bureaucratic agencies, municipalities are now shifting towards acting as planning offices. In Genoa, we have created a Sustainable Energy Action Plan, where we set out 80 actions towards long term development. Examples of such actions include greater energy efficiency in public buildings, energy saving

technology in street lighting, boosting of car-sharing, plans to convert house heating systems from oil to methane.

Is this plan achievable?

Yes, this is ambitious and the road to a Smart City is all but easy. However, as a municipality we could keep on dealing with growing towns and increasing economic and environmental pressures forcing us to be reactive in the face of emergencies. Alternatively, we can develop long term plans. Planning can also guide us towards economic benefits. For example, shifting to LED street lighting would lead to 70% energy savings with a two year return on investment.

How will you handle the fact that long term planning and politics do not well mix together?

Because politicians often have a short term horizon, we want to promote a dialogue between institutions, academics, citizens, and the private sector. To do so, we have created the Genova Smart City Association (AGSC). It engages with citizens' associations and NGOs, as we need to dialogue with as many stakeholders as possible.

What is the novelty of this specific project?

The project fosters close co-operation between the Genoa municipality, which owns the Lavatrici social housing district, the university, and the private sector. Establishing a dialogue between these three entities is a major challenge. As most buildings in Europe were erected after the Second World War, the building quality in the district is poor. However the households have demonstrated that they care considerably

(continued)

about the buildings and they are keen to test new solutions.

We are experimenting with an ideal Smart dwelling in two flats, with new windows, energy saving refurbishing, temperature controllers, and more. They will be monitored for one year to measure changes in energy consumption. Once this has been completed, the plan is to refurbish and change the heating distribution systems while applying new controlling technologies in about 160 dwellings.

How would you rate households' response in this project?

In social housing there is a disconnect between the owner, the municipalities and the users. In the Lavatrici district, inhabitants understand that households will benefit from this programme because the houses will undergo significant improvements. Their feedback is positive, they are engaged and eager to co-operate.



In these pictures:
Buildings from Lavatrici district in Genoa





In the spotlight #1: Genoa Municipality

Keen to introduce a more coordinated way to achieve healthy and productive growth towards a better quality of life, Genoa was one of the first cities in Italy to join the Smart Cities initiative of the European Commission. This is a European Innovation Partnership bringing together cities, industry and citizens to improve urban life through more sustainable integrated solutions.

In 2010, and aware of on-coming crisis and societal challenges, Genoa engaged in a transformation process towards a Smart City, involving sustainable economic development based on innovation and research and led by the local government through a process of integrated planning.

Under the Municipality's leadership, a fertile ecosystem has developed. It comprises public bodies, business, academia and citizens working together in a comprehensive strategy to promote innovation and to apply it in practical ways. They are all driving towards a shared vision, consistent with Europe 2020 targets, of a Smart City where people lead better lives.

Genoa promoted the creation of an innovative governance methodology that connects the quadruple helix (institutions, academia, business, civil society):

- citizens' needs
- political vision & strategic planning
- academia's creativity
- businesses' marketing strategies
- job creation opportunities
- regulatory systems
- funding opportunities

when it gave life to the **Genoa Smart City Association**. Its 90 plus members aspire to make the city a vibrant and productive place where an intelligent and collaborative approach is applied to planning and development while drawing on stakeholders and networks. European projects, national initiatives, and tailormade business cases all combine to implement this strategic vision that stakeholders share.

Defining a smart city as "improving quality of life through sustainable economic development based on innovation and research and led by the local government in a process of integrated planning", Genoa has encompassed all major aspects of a transformation towards real improvement for the city and its inhabitants. Since its first Energy Efficiency Improvement Plan in 2001, the Municipality of Genoa has prepared the path to strategically planning the city's sustainable development. This reached a turning point with the preparation of the Sustainable Energy Action Plan (SEAP) within the Covenant of Mayors initiative.



GENOA MUNICIPALITY fast facts

Genoa Municipality is the local authority acting on Genoa city's area.

Genoa Municipality's objectives are focused on education and solidarity, quality of life, energy efficiency strategies, economy and employment, communication and promotion of the City, Port and infrastructures, city management improvement.

The Municipality of Genoa is one of the first cities in Italy to have committed itself to the Smart City initiative of the European Commission, considering the city as a complex organism needing a coordinated guidance to drive its healthy and productive growth towards a better quality of life.

Contacts

Website: www.comune.genova.it

Gloria Piaggio

gpiaggio@comune.genova.it

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The SEAP includes a far-reaching set of actions in the following areas:

- the built environment, including new buildings and refurbishment, by introducing more stringent energy efficiency requirements in the new set of Building Regulations;
- renewable energy sources, with the installation of photovoltaic plants and thermal solar plants in schools and sports centres;
- transport, thanks to a strategy promoting local public transport by reorganising and rationalising urban mobility.

Genoa's SEAP aims to cut emissions by 23% from now to 2020. Baseline study & actions proposed show that integrated processes are advantageous. The New Urban Master Plan (PUC) has integrated concepts into development areas favouring smart buildings. The Port Authority, an AGSC member, has approved its Energy Plan linked to the SEAP, and the Port's Development Plan comes within the PUC.

As part of the R2CITIES project, Genoa Municipality has selected a demonstration site for innovative district renovation. The site is a part of the Pegli 3 District is called "Lavatrici", it was built from the 1983 and the 1989 on an area of more than $40,000 \text{ m}^2$. The total volume of the 4 blocks is around 230, 000 m³ corresponding to $64,000 \text{ m}^2$.

It is divided into several sectors where various social services are present (i.e. schools, sports and recreational areas, supermarkets, road connections, etc.). The district also includes an area built with private funding, one built by ARTE (Regional body in charge of constructing and refurbishing public buildings) and finally the area fulfilling the role of R2CITIES demo site: the "Lavatrici".

Genoa Municipality has an active role in the project as pilot owner and is involved in all the pilot installation and the validation phases.



In this picture: The location of Pegli 3 district and of the Lavatrici

In the spotlight #2: University of Genoa

The University of Genoa (UNIGE) has much experience both in EC Framework Programmes (over 100 projects in FP5, 92 projects in FP6 and over 40 projects underway in FP7) and in other international research and cooperation programmes (153 projects for the period 2000/2009 – European Structural Funds, Life Programme, Bilateral Scientific Cooperation, etc.).

UNIGE has a synergic collaboration with the "Italian Institute of Technology – IIT" whose aim is to promote excellence in research in Italy by attracting the brightest researchers from a variety of disciplines to Genoa.

The achievements arising from this collaboration – discoveries, inventions, developments – are successfully commercialised.

UNIGE's input into the R2CITIES project comes from the Department of Science for Architecture (DSA) of the Polytechnic School of UNIGE. The DSA was set up in January 1999 and today it hosts some 100 teaching and research staff in various fields of architecture. Their research interests focus on new/existing architecture and processes of compositional design at different scales. In particular; the DSA's research places emphasis on scientific and analytical knowledge (from mathematical disciplines to the analysis of materials and structures, from technology to the study of the built environment and city planning, from architectural relief to restoration), on critical and historical knowledge (including archaeological aesthetics) and also on industrial design (product, communication and yacht design).

The DSA is involved in several of the R2CITIES work packages. Its activities mainly focus on the measurement and verification of energy performance and savings. The aim is to develop several tailored solutions for residential district renovation, to produce an integrated design methodology for a systemic energy efficient, and to identify the most suitable existing protocols for measuring and verifying energy performance.



DI GENOVA

UNIGE fast facts

The University of Genoa is among Italian's leading research universities with an international reputation of world class research across a wide range of disciplines.

The University of Genoa has much experience both in EC Framework Programmes (over 100 projects in FP5, 92 projects in FP6 and over 40 projects currently running in FP7) and in other important European and international research and cooperation programmes (153 projects for the period 2000-2009 – European Structural Funds, Life Programme, Bilateral Scientific Cooperation, etc.).

Contacts

Website: www.unige.it

Renata Morbiducci

renata.morbiducci@unige.it

News from the demo sites



In the Cuarto de Marzo district of Valladolid, a number of different activities have been taking place including audits, diagnosis and stakeholder consultation.

The Valladolid demo team (VIVA, CARTIF, Acciona and ONYX) has now finalised the methodology for district level audit and diagnosis. This is designed to assess energy performance and to set out main targets to be reached. As part of the diagnosis, barriers to implementing the Energy Conservation Measures were identified using performance simulations, non-destructive testing and data collection with help from tenants.

Following this diagnosis phase, the team set about evaluating a range of scenarios for combined energy conservation measures. From this, intervention packages have been defined taking into account comfort improvement and value for money. These packages will enable some 30 buildings (300 dwellings) to be renovated.

Another important activity underway is stakeholder consultation and outreach. A first set of meetings has been held with the Communities of Owners of the Cuatro de Marzo district to provide an overview of R2CITIES along with more detailed explanations about the work ahead and how the public grant is to be used. These meetings started in early June and are set to continue until mid-September.

In addition to these meetings, various professional organisations have beer approached with a view to informing them about R2CITIES and especially the nature of the renovation due to take place in

Valladolid. These professional bodies include Association of Architects of Castilla y León, the Association of Architects of Valladolid, the Valladolid Association of Construction Entrepreneurs and some financia institutions.

As part of these outreach and sharing endeavours, a brochure is now available for residents and other stakeholders with information about R2CITIES including grant possibilities. It is currently being circulated to the relevant communities.

And finally, CARTIF, representing the whole demo team, participated in the II Nationa Congress of nearly Zero Energy Buildings, where they presented the overall R2CITIES approach focusing work set for the Cuatro de Marzo district. This forum is considered as the national reference congress in the field of Energy Efficiency in Buildings in which representatives of all stakeholders from this sector were present (public administrations, technicians, financia entities, construction companies, SMEs, users, etc.)





Genoa Municipality has been meeting with tenants who stand to benefit from the renovation planned within R2CITIES. Tenants have been informed about the project and how it is likely to affect them. The information given out relates to the specific activities that will be carried out in Genoa's layatric district

As part of these consultations with local residents, various surveys are being conducted to obtain information on the dwellings from the tenants themselves, and to define levels of user acceptance.

In addition to this, Genoa Municipality is now finalising the selection of dwellings to be used as "in situ laboratories", and the <u>University of Genoa</u> is now set to undertake the first test.





Turkey's technology and research council TUBITAK is responsible for coordinating the FP7 nationally. As such, it supports various multinational research and technological projects within the EU. The R2CITIES project is one of these and it involves partners from six countries. In terms of budget and consortium it represents Turkey's largest FP7 project.

The aim of the project is to boost energy efficiency in residential areas drawing on innovative insulation techniques and



alternatives methods, thus contributing to a model for replication on national and international scales. Such a model is being developed with the involvement of a nursing home building owned by Kartal municipality and will be promoted both nationwide and abroad. This is the first time that such energy efficiency improvement is being undertaken at a nursing home, and the work set out within R2CITIES will take about one year to complete.

As part of this initiative, project coordinator Rubén García, and his colleague Miguel Angel García from Fundación CARTIF based in Valladolid, Spain, visited Kartal municipality in early June. They met with Kartal Municipality's Mayor Op. Dr. Altınok Öz, Vice Mayor Gülcemal Fıdan, Kartal Municipality Project Team, TUBITAK and representatives from istanbul Teknik Üniversitesi. A number of presentations and exchanges took place and a on-site technical visit of the nursing home was arranged.

The delegation was pleased with how the work in Kartal was progressing and the visit was concluded by our mayor Op. Dr. Altınok Öz and his wife Feray Öz.

News from our networks

As a demonstration project, R2CITIES is keen to engage with various communities relevant to its interests.



Fifteen cities, one agenda: My Smart City District

Three projects, EU-GUGLE, R2CITIES and ZenN, involving 15 municipalities have decided to join forces for greater leverage in sharing and promoting energy efficient renovation solutions for cities and communities EU-wide.

Find out more



Publication of a set of proposals to drive forward energy transition in our towns and cities

Energy Cities brings together local authorities to manage and promote energy transition. To help accelerate this transition, Energy Cities has published a set of 30 proposals from across Energy City members based on observation and analysis of hundreds of practical examples. The proposals cover five main areas: empowering local players; knowing our territories; resources and flows; rethinking funding solutions; inventing local governance; urban planning as a way of reducing energy consumption.

This set of proposals is the fruit of a collection process initiated in 2012. It draws on the premise that although much is happening on EU and national levels, it is at more local levels that the new energy paradigm is being shaped.

Find out more



R2CITIES attends the 4th annual Energy Efficient Buildings Public Private Partnership Impact Workshop in Brussels.

As project coordinator, Rubén García from Fundación CARTIF, represented R2CITIES at the European Commission's 4th EeB PPP impact workshop in Brussels on 1-2 April 2014. Margherita Scotto from R2CITIES partner D'Appolonia was also present.

Find out more

Recommended events

Interesting upcoming events selected by the R2CITIES team

Events

Description



Smart Energy Expo, 8-10 October 2014, Verona, Italy Targeting professionals, the second edition of the international exhibition about energy efficiency and the white-green economy is dedicated to energy efficiency solutions, products and technologies. The event serves as a meeting point to analyse market trends, covering the entire supply chain: monitoring systems and intelligent management of electricity, heat and water, building insulation, high-yield co-generation, biomasses and electric cars.

Come and meet R2CITIES partner Officinae Verdi to discuss energy management with them.

For further information



12th European Week of Regions and Cities, 8 October 2014, Brussels, Belgium This workshop will take place as part of the 2014 Open Days in Brussels, and will focus on bringing closer together energy, mobility and ICT for greater social, environmental and economic sustainability. R2CITIES partner youris.com will be there. For further information



World Sustainable
Buildings,
28-30 October 2014,
Barcelona, Spain

Also known as WSB14, this major conference is aimed at addressing social and environmental challenges facing the building sector as a whole. In practical terms, this means setting out a roadmap for local action plans consistent with global energy efficiency challenges. The conference therefore seeks to achieve consensus among stakeholders, organisations and experts, and to draw on the different existing realities in an integrated manner. The R2CITIES project will be well represented at this event since three partners including the coordinator will be present: Fundación CARTIF, Acciona and youris.com For further information



Smart City Expo World Congress, 18-20 November 2014, Barcelona, Spain Six broad themes encompassing cities and citizenship will be featured: Smart society, technology, governance, energy, mobility, sustainability. These cover many of the concerns of the R2CITIES project and in particular those of our partner Genoa Municipality who will be participating. The event includes an international congress along with an exhibition.

For further information

Contacts

More information on this Newsletter and related dissemination and communication activities of the project available at:

R2CITIES D&C Secretariat

e-mail:

<u>secretariat@r2cities.eu</u>

Project Coordinator

Centro Tecnológico CARTIF Parque Tecnológico de Boecillo 205. C.P. 47151 Boecillo, Valladolid - España Tel. 0034 983 54 65 04 Fax 0034 983 54 65 21

Coordinator

Rubén Garcia Pajares Energy & ICT Divisions Fundación CARTIF

e-mail:

contact@r2cities.eu

Register on http://www.r2cities.eu or get access with your LinkedIn, Facebook, Google or Twitter accounts to receive the R2CITIES newsletter via e-mail.

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