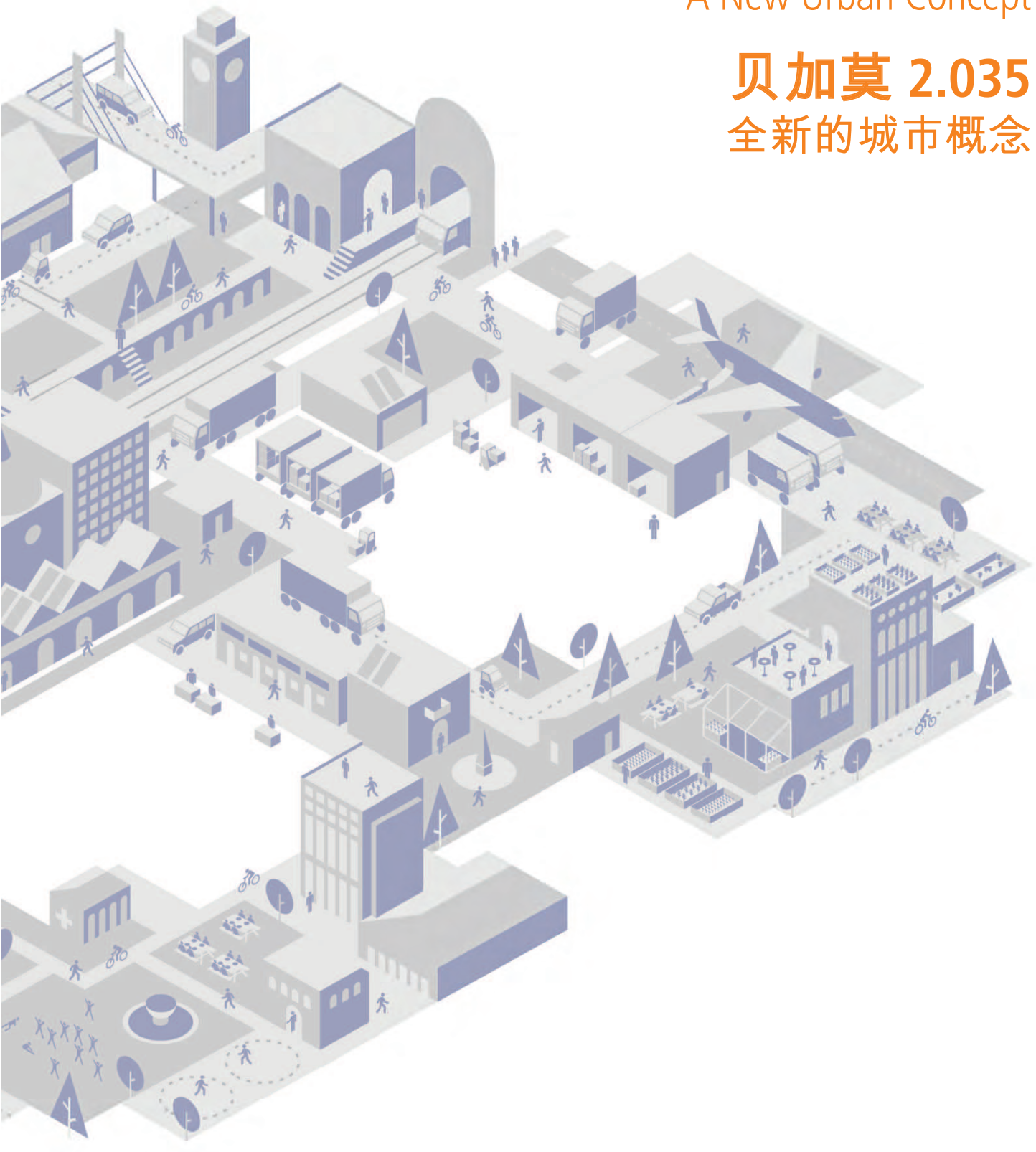
Bergamo 2.035
A New Urban Concept

贝加莫 2.035
全新的城市概念



Bergamo 2.(035)
A new urban concept

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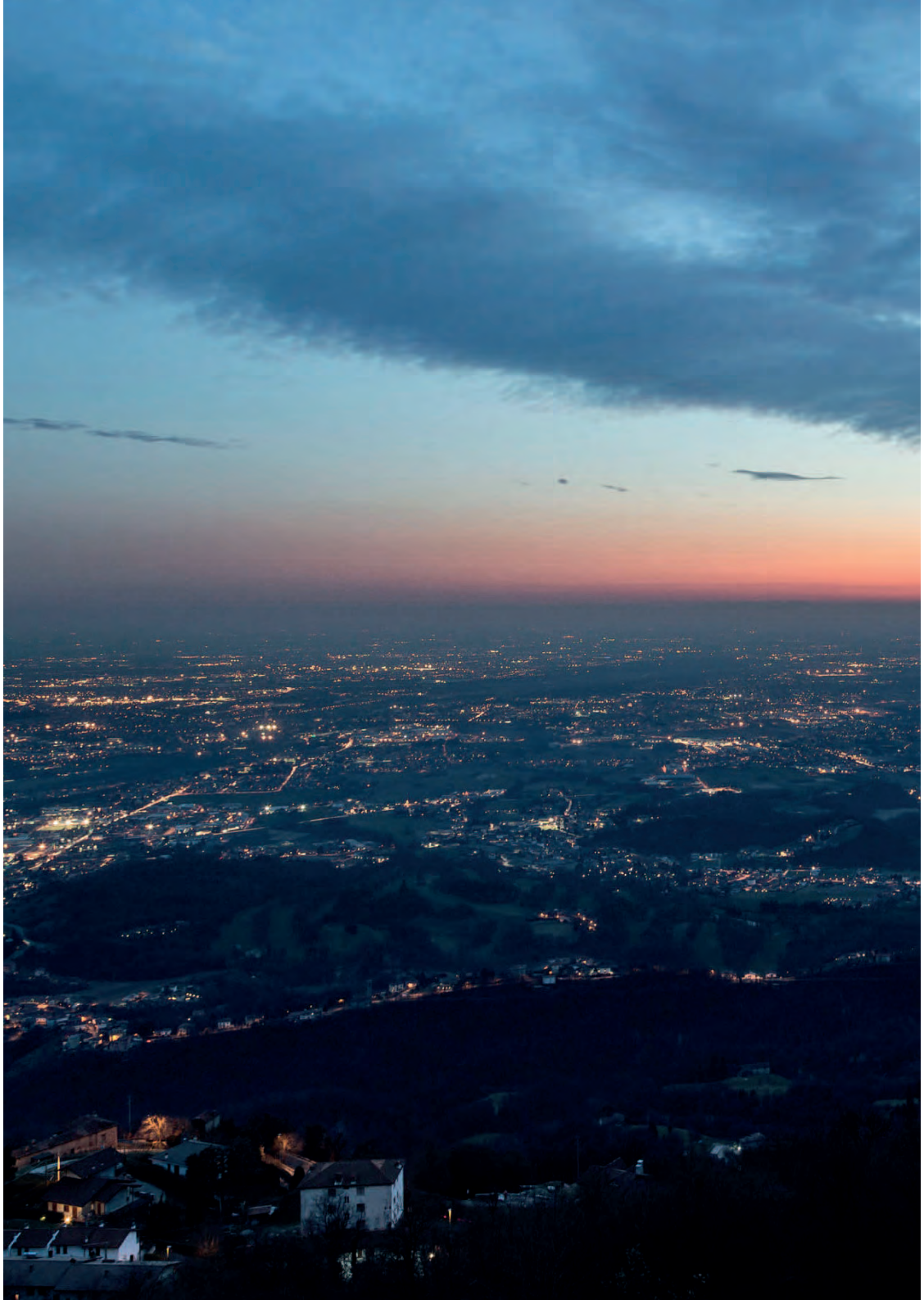
Harvard University
Graduate School of Design

BERGAMO
CITTÀ DEI MILLE



Bergamo 2.035
A New Urban Concept

This booklet presents an updated synthesis of the research work pursued by the Bergamo 2.035 initiative, whose first outcomes were published in 2014 through a comprehensive book - written in Italian. Both the foreword and the introduction are here included in Chinese also, as Bergamo 2.035 has been chosen as a "model" to be showcased at the Italian Pavilion of the 2016 China International Technology Fair (CSTIF) in Shanghai.

贝加莫 2.035
全新的城市概念

这本册子介绍了最近期"贝加莫2.035"前期研究工作的总结。其工作初步成果于2014年出版在一本用意大利文撰写的综合性著作中。考虑到"贝加莫2.035"已经被评选为2016年中国上海国际技术进出口交易会意大利展览馆的 "模范"，该册也包括中文版的序言和前言。

View of Bergamo view from Città Alta (the upper town)

BERGAMO 2.035
A NEW URBAN CONCEPT

The main lesson to be drawn from the recent years of economic downturn is that short-term choices made within a limited geographical scope are unsound. What we need is instead to formulate a view capable of looking at a complex scenario over a long period of time. We need to stress the relevance of new generations, not only with regard to their education, but also as key players in the development of civil society and of business.

The 10th anniversary of Italcementi Foundation provided the ideal opportunity to present the city of Bergamo with an ambitious plan, intended to boost the great potential of a unique territory, which is typical of a mid-size historical Italian town within a vast territory highly characterized by a relevant industrial tissue, but which has also preserved a well rooted rural economy.

Hence "Bergamo 2.035": an interdisciplinary project that sees University of Bergamo in a leading role in collaboration with Harvard University Graduate School of Design. Its aim is to set up an articulate project based on the analysis of the most prominent trends which will involve cities, citizens and their respective territories in the near future, with a view to promoting a viable model for the city of Bergamo.

The Italcementi Foundation is always keen to support initiatives where "doing business" aims at creating value, where quality and innovation help reaffirm Italy's competitive edge. As such, Italcementi Foundation is proud to act once again as the promoter of a project that addresses city stakeholders. The goal is to introduce Bergamo as a case study and benchmark at international level for developing strategies, models and solutions, aimed at creating a "prototype of smart reality" that may effectively act as a point of reference for other urban contexts.

Accordingly, "Bergamo 2.035" aims to expand the current concept of "smart cities" by defining a context in which technologies and innovative solutions are developed along with new social models of inclusiveness, where citizens - "smarter citizens"- become active agents of change for improving the urban environment.

This research project is unique: it involves Harvard University as well as local actors who will play a leading role in the evolution of Bergamo in the decades to come. The project highlights the key role of University of Bergamo both as a primary source of education and liaison with territory and local businesses, and as a force for ensuring and increasing international visibility.

Carlo Pesenti
Chief Executive Officer Italcementi

Remo Morzenti Pellegrini
Rector University of Bergamo

Introduction

Given the uncertainties that affect the spheres of technology, politics, economics and demographics, to envisage scenarios for future cities would appear an arduous and, at worst, a useless exercise. Nonetheless, it is possible to prospect a future through a more careful analysis of the present trends, starting from the constraints and opportunities of current developments.

Bergamo 2.035 is in fact a specific instance of application of this vision to a well-defined territory, taking into account the city's distinctive features, its size and its relationship with surrounding areas, its cultural and productive vocations; in short all those aspects that make each single territory "unique".

The research program developed here ultimately aims at enhancing the quality of life of an urban community. The goal may sound anachronistic in a period of economic stagnation, when general prospects of medium to-long-term development appear very modest. Yet, such inconsistency is only apparent, considering the fact that the notion of welfare incorporates issues related to social balance, environmental sustainability, ethics and even aesthetics. All these are of course favourably affected by sustained income growth, yet to some extent they may be quite independent from it. In times of crisis such issues may advocate values that are even more essential than economic growth itself.

Despite uncertainties on the global scale, the research examined those feature of technology and the environment, of society and economics which, starting from today and within the limited scope of the territory surrounding Bergamo, were seen as presenting a higher degree of "future content". This is not an abstract exercise in futurology, but a realistic account of trends already observed. It should enable us to leverage the territory's most promising and disposable resources while at the same time minimizing the risk of unwanted outcomes.

In all the various threads that the research unravelled a common trait is immediately apparent, which groups together seemingly unrelated themes, processes, and methods. This common feature is the need to manage the complexity of a system, such as the urban environment, which emerges from the various components - social, economic, cultural - that make it up. It is a complexity that may turn into value and collective driving force only if the various perspectives, experiences and actions are not simply the expression of each individual component, independent of others, but are intertwined and directed to a common goal.

It should be stressed out that the thematic areas addressed by the research are not meant to respond to all the issues that currently affect or that may ultimately invest Bergamo in years to come. Bergamo 2.035 is not intended as a manual for the "sound administration" of a city, a reference source for looking up contingent issues and finding appropriate answers and solutions.
Nor should it be understood as a kind of handbook of what the territory needs to do. Rather, it is evidence of a specific working method that characterized the entire project. In that project, expressions such as participation, involvement, and the sharing of proposals have been taking physical shape in the various workgroups that animated discussion, both within the university research team, and, above all, through the support of a wide audience of territorial actors (stakeholders), who embody different interests and sensitivities, proposals and planning.

The project also took on the challenge of resisting technological leverage as an allegedly decisive element for addressing the problems of a

community. On the contrary, technology was counted among other "softer" factors, as one of the tools that, when suitably combined, enable us to understand the real needs of citizens, to build a shared path of growth and learning with them, to plan collaborative solutions which, duly empowered by technology, may prove widely accessible to various social and generational swathes and not remain the preserve of entrenched groups.

These concepts were the starting point and marked the overall thrust of the project. To say it with a catchphrase, Bergamo 2.035 thought of "a city whose community is able to learn, to adapt

and to innovate". By that approach, citizens are not treated merely as passive users of solutions that are designed and developed top-down, but as active and conscious drivers of innovation, on par with the subjects traditionally appointed to this role. In brief, the city of the future enables citizens to take charge of the processes of change they desire, to give voice to their needs, implement actions for change and be first-hand agents of innovation.

The goal of this publication is to outline a conceptual and methodological framework on which to build the pillars of Bergamo's future, with the cooperation of the many local actors who contributed to its creation. It is, in short, the exact reverse of a study aimed at envisaging the future of a city by outlining its needs and priorities, only to leave to others the task of translating such needs into viable plans.

In this sense it was thought it best to define appropriate governance mechanisms, so as to make the process sustainable. In particular, the underlying concern was to prevent fragmentation into mutually inconsistent or simply redundant planning proposals, to the detriment of a systemic view.

The research conducted within the project cannot be and does not intend to be a set of prescriptions and "turnkey" solutions that are easily applicable and transferable to other contexts. However, although largely "city specific", the method guidelines developed here could be of general use elsewhere and offer at least useful terms of comparison for similar schemes set up by other territories.

The cooperation established with Harvard University Graduate School of Design and in particular with its Responsive Environments and Artifacts Lab (REAL) is a clear evidence of this international vision and approach, as through this project Bergamo has the unique opportunity to be included in a network of research hubs worldwide - "REAL Cities" - that offer ideal contexts of intervention for tackling pressing problems of today societies.

Bergamo 2.035 coordinators and researchers are aware that the proposals and the discussion generated at round tables within the project are only the first steps of a long journey. Naturally, the aim is to initiate a virtuous circle able to engage the interest and participation of the entire community. Demand for change is widespread in the region.

The resources to meet this demand are as well already present. Through Bergamo 2.035, an alternative method for meeting the challenges of the future with increased chances of success is offered.

REAL Cities / Bergamo 2.035

贝加莫 2.035
全新的城市概念

从近些年来经济的不景气，我们得出的一个最主要的教训是：在有限的地域范围内所做出的短期选择是不合理的。相反，我们需要做的是树立能够在当今错综复杂的社会大舞台上一个经久不衰的高眼界。我们的注意力需放在新一代青年之间的关联性上，而不仅仅只注重他们的教育，还要将他们作为民用社会与企业发展的关键种子选手。

意大利水泥集团基金会在其十周年上用一个具有雄心壮志的企划向贝加莫市提供了一个展示其自身的机会。该企划旨在发挥出一个独特城市地域的巨大潜力。因为对于贝加莫这样一个典型的、极具历史渊源的意大利中型城镇来说，地域广阔，其特点是既拥有重要的工业覆盖率，也很好地保留了传统农村经济的根基。

因此，“贝加莫2.035”：一个跨学科的项目，使得贝加莫大学在与哈佛大学设计学院的合作中一直占于主导地位。其目标是经过最明显的趋势分析后进而建立一个专项的企划方案，这些趋势在不久的将来会涉及到城市，公民和他们各自的地域，以期为贝加莫城市推行一个可持续性发展的模式。

意大利水泥基金会总能积极留心各种机遇，哪里有潜力哪里就创造价值，用质量与革新来重申意大利的竞争力。因此，意大利水泥基金会将会再一次很荣幸地成为解决城市利益关系项目的助推者。我们的目标是把贝加莫当作一个国际性的“研究案例”，从而研究出针对创建一个能成为其他城市参考的“智能案例”的战略、模型和解决方案。

故而，“贝加莫2.035”旨在用技术革新来定义、拓宽 “智能城市”现行概念，伴随着新颖的社会模式，以及更明智的公民一起被发展成为改善城市环境的积极变革者。

这一研究项目是独一无二的，因为参议合作的是哈佛大学与一些即将成为贝加莫未来几十年内发展中起领头人的当地知名企业。该项目突出了贝加莫大学的关键地位，她不仅是教育事业的主要来源，也将城市占地与当地产业紧紧联结在一起，更是确保且提升其国际知名度的力量。

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意大利水泥集团首席执行官

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贝加莫大学校长

前言

考虑到影响技术、政治、经济、人口领域的不确定因素，要去设想城市发展前景似乎是一项艰巨的任务，甚至可以说是徒劳无功。尽管如此，从那些在目前发展中备受我们关注的约束因素和促进因素起，通过对现在趋势一系列的谨慎分析后再去展望未来还是有可能的。

“贝加莫2.035” 实际上是对设想一块限定范围的城市地域规划应用的实例，融合了其城市自身的特色、规模及与周边地区相互关系、文化及生产性职业；总而言之，所有这些层面都使每个单独地域变成一个“唯一”。

这里所发展的调查研究项目最终目标是加强城市社区的生活质量。而这一目标会显得很不合时宜，因为在现在这个时期经济停滞不前，而且中长期发展的总体前景也很不乐观。然而，当人们认为健康生活水平的概念包括了社会平衡、环境可持续性以及伦理和美学意义时，这样的矛盾就只是表面现象了。所有这些都受收入持续增长的有利影响，但在某些特定程度上，他们也有可能有相当的独立性。在危机时期这一类型问题很有可能会扩张其比重，不可忽视性甚至超过经济增长本身。

尽管那些不确定性是全球范围内的，在研究中考察了从现今出发并围绕着贝加莫这个所述地域范围中的技术、环境、社会和经济方面，从而得出了我们认为最具有“未来发展前途”的内容。总之我们并不是在对未来进行抽象的预测，而是对可观察到的方面进行实际的考量，从而能发挥并以最具发展前景而可得的该地域资源为基础，同时也尽可能地降低出现不期待的变革情况的危险。

经历过所有这些形形色色的研究后，不难从那些看似在主题、流程、方法上毫无关联的群体中发现一个共同点。该共同点是在于需要管理城市环境系统的复杂性，因为这个系统就是各个其组成如社会、经济、文化等部分协调共处。这里所说的复杂性只有当各式各样的前景、经历与行为不再是简单地每单位个体的表现，与其它毫无关系，而是纵横交错在一起却又向着同一个目标行进时才可译为价值与集体驱动力。

还要强调的是在研究中所分析的相关主题并不能对目前或者未来几年中会让贝加莫困惑的所有问题给出正确的答案。“贝加莫2.035”的主旨不是作为一个城市管理手册，或是可寻求解决问题方案的参考书。相反，它是整套项目所特有的专业工作方法的凭证。在该项目中，所映射出的参加参与和分享提议都被转型在各个工作组的积极讨论中，加上大学的科研团队，通过作为广泛受众的当地参与者（利益相关者）的支持，来表现出来不同的利益，敏感问题，建议和规划。

同时该项目也面临了抵制技术杠杆作为决定因素来解决社区问题的挑战。反之，技术就像其他 “软因素”一样，曾只被视为其中的一种，而这些因素如果结合良好就能了解公民们的真正需求，与他们一同建立起一条共同成长和学习的道路，一起策划出能很好地得到技术支持的解决方案，从而让各个社会和年代的阶层都可以获益而不仅限于某一个群体。

这些概念被作为起始点标注，贯穿于整个项目。简而言之，“贝加莫2.035”是“一个城市社区具备学习、适应、创新能力”的中心思想。拥有这种态度，市民不再被视为自上而下对设计开发方案的被动使用人，而是有主观能动性的革新驾驭者，与传统任命为该角色的受试者不相伯仲。总之，未来的城市需具备能使其市民对渴望变革过程负责的能力，呼其所求，付之行动，成为创新的最主要原动力。

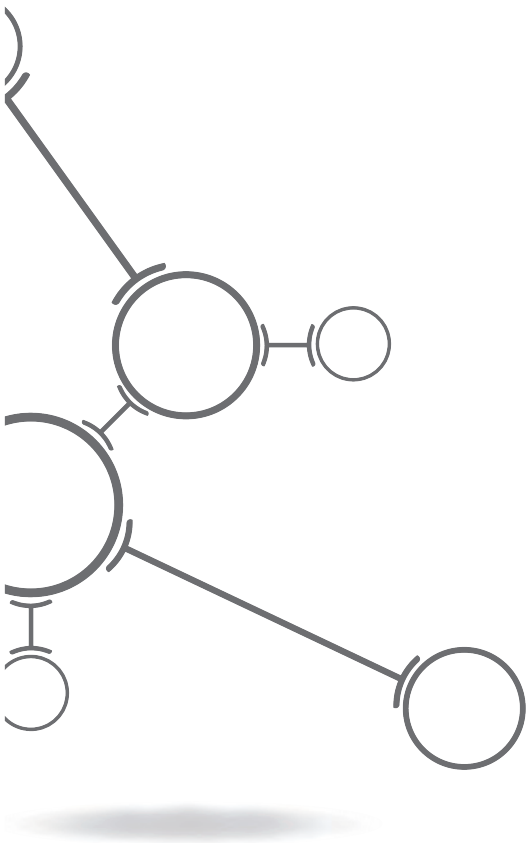
本报告的目的是结合当地参与者为其诞生所贡献的合作，在打造贝加莫未来的支柱时勾画出一个概念体和方法论的框架。总之，其他研究通常是针对预测一座城市的未来、要划分出其需求和优先解决的事项，而留给有关机构将之变成可实施的方案。我们的研究却不在此列。我们觉得重要的是划分出一些统一管理的机制，从而让这个过程变得可持续，尤其是要避免这个过程在如此众多且相互之间不一致或仅仅是多余的规划建议中四分五裂，最后导致系统的整体性受损。

用项目所进行的研究不能趋向成为可随意适用转型服务于其他情况的一套处方又或是一把万能钥匙。然而，尽管很大程度上针对的是某一个“特定城市”，但是在这里开发的指导方针却可用于其他地方的一般情况，或至少对其类似企划提供有益的比较。

该合作由哈佛大学设计学院，尤其是其“应环境工艺试验室”（REAL）设定建立。这个合作是其国际愿景的一种尝试，因为通过这个项目贝加莫就能被并入到REAL cities研究的全球网络当中，而这个网络提供理想的介入案例从而能面对当代社会的各种沉重问题。

“贝加莫2.035” 计划的协调员和研究员意识到，这些由纸上谈兵所得出的提议只是漫长旅途的第一步。这样做的目的自然而然地是为了开启一个良性循环来吸引整个社会的关注与参与。变革的需求在该地区已经十分普遍，满足这种变革需求的资源也已经浮出水面。通过 “贝加莫2.035”，在面临未来挑战时也具备了可行方法，将大大提高了变革成功的机会。

The concept of Smart Cities



Urban environments have undergone a profound change in recent decades: from dense industrial sites, developed as poles of attraction for labor from rural communities, to places of consumption, where the creation of value focuses mainly on the distribution of goods and services.

Globalization and the advent of the Internet, which marked the transition into the new century, further accentuated the collapse of any geographical barrier in space or time. That not only made it possible to exchange goods, information and data virtually in real-time, but also contributed to a radical transformation in the relationship between the individual and territory, according to more fluid and less stable forms. Fast, easily accessible and low-cost mobility creates opportunities never imagined until a few years ago. We are now in a position to seize chances for professional growth, to make cultural experiences, and to maintain any kind of relationship "remotely". Yet, even in these newly chosen contexts, there remains the need to maintain or recreate a social bond with a community of people we can identify as our own and with whom we can share values, needs and common projects.

The choice of "where to live" becomes just as important as the choice of "who to work for". If we turn to the new generations, those of the so-called Millennials born at the end of the last century, it is clear that, also as a result of the recent and enduring economic slump, they are ever more attracted to places or territories other than the ones where they were born or to which they belong, according to the opportunities that those regions have to offer. For instance, the Silicon Valley in California, the biotechnology pole in Houston, the bohemian districts of Porto Alegre, the medical centers of Boston or Pittsburgh, and of course of university cities such as Cambridge and Oxford.

Along with the standardization and cultural levelling brought about by globalization, counter-trends have emerged that aim at cultural heterogeneity.

According to the geographer Allen Scott, cities have started to acknowledge the specific quality of local products and services, thereby rediscovering their increasingly crucial role in global competition. That has led them to develop a series of innovative schemes. The degree of attractiveness of a territory is based on its ability to motivate and enhance the creativity of its people. Human capital is critical to the success of an institution or a place, and it also becomes essential for the economic system. It promotes attraction and the development of businesses which can benefit from the positive externalities arising from the existence of a community of people endowed with high potential.
As reported in the Europe 2020, Lisbon Agenda, we need to shift urban paradigms towards a new chapter in their historical evolution, where economy is based on knowledge. Then, knowledge should come from the ongoing effort of social inclusion and collective interaction of all the involved parties (the so-called stakeholders) that operate within an urban environment, and not be limited to instances of individual excellence.
Given these evolutionary dynamics, how to design the city of the future? Historically, ever since the first urban vision - the Ideal City of the Renaissance - technology has always played a key role in the conception and representation of the city. Technological innovations at the time, either real or envisaged, seemed to provide the main stimulus in the creation of these alternative urban scenarios by architects, urban planners or philosophers.

In this line of thought, the concept of Smart City emerges as a new model for a "city of the future" due to the dramatic technological advances of the twenty-first century: digital devices, big data and ICT (Information and Communications Technology) systems. The term is now firmly part of accepted usage even if it only dates back to 2005 when a number of companies in the ICT world (especially Cisco, IBM and Siemens) started to propose solutions for integrating the management of infrastructure systems and urban services, such as transport, the distribution of electricity and water, and the facility management of buildings and urban lighting. Since then the term was extended to mean any technology-based, either hardware or software innovation which may have an impact on urban environment.
Clearly, the charm of technology associated with the wide availability of ever cheaper devices, together with the need on the part of trade companies to find new reference markets for their products, consolidated the idea that by running some apps one could manage and optimize each and every moment of one's daily life.

A smart city view of this type is open to criticism, which we could summarize as follows:

- Smart city solutions are mostly driven by hard-core technology rather than social innovation;
- There are no standard smart city solutions, available "off the shelf";
- A smart city is designed for a generic space and fails to take into account the cultural values inherent in a city;
- Smart city solutions ought to start with the city rather than with smartness;
- The positive impact of existing smart city solutions has yet to be conclusively demonstrated, partly because of the lack of evolved business models that are reproducible and portable;
- Smart cities tend to exacerbate the digital divide because they often neglect the different cultural levels and inconsistent access to technology by different social classes and generations.

At present, although attention continues to be focused on the city's ability to intercept and meet the demand of individuals, a shift of perspective is taking place. The shift is toward greater inclusion and a more direct involvement of citizens in decision-making and in urban governance. Citizens need to be informed and made aware of being active parts of a community, fibres of the same social fabric which technology, paradoxically, threatens to unravel.

Not smart cities therefore but smart communities. This approach aims to directly link the individual with information about the surrounding urban space, to interact with decision-making and development, to elicit participation in reporting unfavourable urban conditions and in activating mechanisms of political reaction. New digital technologies and datalink systems allow for the establishment of organizational processes that make it possible for citizens to bring about actions. Citizens thus acquire the necessary skills to come to terms with the more traditional arrangements of urban governance.

The vision for Bergamo 2.035

In line with this general approach, Bergamo 2.035 aims to focus its research on the citizens of the future, avoiding the "Cybercity approach" where technology becomes a pervasive, and somewhat invasive, factor in the everyday life of a community, strongly affecting its habits, actions and decision-making skills.

Bergamo 2.035 focuses primarily on a territorial and urban context that is typical of a medium-sized city, within a vast territory that is strongly marked by industry and trade, and yet retained significant potential for the development of the rural economy.

The research does not aim to pursue a visionary plan for a future city starting from a blank slate, as is the instances of the popup towns typical of recent cities built in the Arabian Peninsula or in the Far East, in desert environments or on pre-existing agricultural areas. Instead, the goal is to effectively capitalize both on the industrial and economic assets and on the cultural and social heritage, the historical endowment of a centuries-old city which is an invaluable resource for building the future. As we turn back to history we certainly do not intend to entrench the set of social practices inherited from the last century. Rather, we want to rethink it in order to achieve the model of a city designed not only to meet the current needs of its citizens, but also to mark the context in which new and future generations may find their highest expression.

With the idea to avoiding a futuristic and somewhat utopian drift, the project starts by considering previous experiences: instances of success and failure in other similar projects both nationally and internationally. It also focuses on the citizens of today, people who are fully aware of their role in society, active parties within the different social systems in which they operate.

The Bergamo 2.035 agenda sees citizens as an integral part of a creative class aware of its role in the society. They are witnesses to a constant evolutionary process that, to borrow Poincaré's famous phrase, is able to combine existing elements with new, useful connections. They are people who can continually learn and adjust to new contexts, rising to future challenges to translate them into opportunities for innovation.

Taking the lead from recent studies, Bergamo 2.035 aims to build "a city whose community is able to learn, adapt and innovate": a territory endowed with a high level of learning and innovation, based on the creativity of the people, on the institutions responsible for the production of knowledge, on traditional and modern communications infrastructure. A territory that pursues sustainable economic growth, through participatory governance and the active empowerment of citizens.

A distinctive feature of Bergamo 2.035 is the adoption of a multidisciplinary and multi-perspective approach that involves many actors who share their planning, their vision, their sensitivity and their interests. A city is a system of systems that comes from the integration of complementary perspectives and from the interaction of institutional, socio-economic and technological components. The interaction of these components makes it possible to breach those "knowledge hoards" that prevent the creation of a shared social capital.

For this reason, the program relies on the strong involvement of the major players in the area, bearers of the various interests and interpreters of the main barriers or opportunities which could either hamper or promote the adoption of the practices and solutions that may emerge. Their contribution turned out to be most relevant, with a view to analysing, evaluating and applying solutions in a specific urban context that cannot overlook or deny the current problems and critical issues, some of which will be addressed below.

The Bergamo 2.035 vision

Phases of the research program

BG 2.035 Exhibition Lab

Bergamo 2.035 is a research program that, in line with its objective, is based on a long-term perspective. The involvement of a community of people, the need to protect and enhance their different expectations, a different way of projecting the future of one's city, the ability to reach a synthesis that is neither reductive nor focused on specific interests, and not least the translation of it all into projects of social innovation, require a research platform based on adequate complementary methodologies and on careful work planning, the timeframe of which cannot possibly be solely in the short term.

In its first two years of operation, the program rolled out into three main phases:

1. An initial analysis during which the researchers of the Bergamo 2.035 team, coming from very heterogeneous fields, shared a joint research platform on which to work and pinpointed the main evolutionary trends of urban contexts. The main effort during this first phase was to prevent excessive attachment to issues related to the city of Bergamo only. This was achieved via a strategic intelligence analysis that could lead to the definition of general trends not specifically tied to the context of Bergamo, but based on conceptualizations, research, practices and experiences related to similar urban contexts: medium to large European cities with a well-defined social, economic and cultural milieu.

2. A discussion phase was made explicit in a series of meetings with key stakeholders, who had a deep knowledge of territory and embodied various interests and needs of the urban community. In particular, as it was not possible to involve individual citizens, Bergamo 2.035 deliberately chose to build on the skills, experience and planning of the many NPOs operating in the area, a veritable means of transmission of the voice of citizens. The main findings of the first stage of analysis were shared in different workshops, which addressed their impact on the urban setup of Bergamo and its territory.

3. The third phase of the research program consisted of a Proposal phase, during which each working group, divided by topic areas, formulated tentative implementation schemes that were subjected to the scrutiny of stakeholders through focus groups and questionnaires. Where possible, action plans for future projects to be activated after this first phase of the research program were also addressed.

A temporary "Exhibition Lab" was also opened in 2014 in one of the most popular streets of Bergamo in order to make also the "common citizens" aware of the ideas and proposals of the project. Following the successful implementation of the first analysis, discussion and proposal phase, Bergamo 2.035 also envisaged in December 2014 the creation of a permanent REAL Cities / Bergamo 2.035 Urban Innovation Laboratory, an innovation lab to be developed together with the REAL Lab of the Graduate School of Design - Harvard University, with the aim to focus the research on new urban systems able to combine a community-centered approach with the use and support of new technologies.

BG 2.035 Exhibition Lab

Participatory governance

Many innovations are governed by individual institutions that internally carry everything needed to design and produce a new product or service. Increasingly, however, innovations occur via a permeable path, in line with what has been named "open innovation", where innovation processes enter and leave company boundaries by involving more actors and institutions.

In this sense, as stated by a recent report of the European Commission, interesting spaces open up for a new vision of the city as a place of open systemic innovation. These cities welcome patterns of governance of the type PPPP (PublicPrivatePeoplePartnership), which make it possible at the same time to meet the demand for an enlargement of citizen participation,

to finalize and direct Public Administration programs, and to balance the profit requirements of businesses with those of environmental and social sustainability.

It is not a matter here of envisaging new institutions, with complex and strict procedures or to add new constraints to the ones that are already in place. Rather, the goal should be to mobilize the different actors of change to make action more fluid and maximize synergies. Innovation moves in the direction of increasing the importance of soft and custom-oriented technologies. Similarly, on the level of governance, informality, the identification of ad-hoc ways to achieve a goal and procedural streamlining should be the empirical principles to be followed if we aim to achieve the highest possible level of participation and shared choices, consistent with the efficiency and timeliness of decision-making processes.

If, on the one hand, institutional decision-makers need new models to improve the vertical and horizontal transfer of knowledge within a community, on the other participatory governance aims to propose a new model of participation based on a process of "co-learning" via an osmotic transfer of knowledge and skills. Such model values the planning skills of all the actors involved. Technologies can become a key element of support and motivation for involving and empowering the social capital. Of course, that will never be a substitute for actual citizen participation: interpersonal relations, mutual trust and empathy remain crucial links in a community and are the ultimate grounding for any project of social innovation.

The 7 pillars of Bergamo 2.035

With the objective of developing alternative model of urbanization framed within the context of technologically-enhanced cities, Bergamo 2.035 has been addressing seven crucial emerging areas (Knowledge, Health, Local Food System, Mobility, Logistics, Corporate Social Responsibility, Urban Factories) exploring the new opportunities innovative technologies can offer in the framework illustrated before and the possible scenarios that might emerge.

For the purpose of developing innovative strategies, models, and solutions at the global scale, Bergamo is treated as a European case study, with the goal of eventually turning the town into a smart urban prototype as a reference for other cities worldwide. A short summary of the different research areas is provided below.

2014 - Knowledge & Health [1] [2]

In 2014, Bergamo 2.035 addressed mainly the emerging areas of "Smarter Knowledge" and "Smarter Health", exploring the new opportunities innovative technologies can offer for the redefinition of knowledge creation and distribution of ecosystems of innovation, and for the enhancement of health solutions and wellbeing behaviours for healthier practises.

The research investigated - both theoretically and practically - how new models of networks, enhanced immersive and interactive spaces, and novel computational technologies can contribute to tackling pressing questions of learning and healthcare through the lens of the design of smart architectures, infrastructures, and ultimately artifacts, as well as technologically retrofitting or repurposing our built environments.

Bergamo Knowledge
the engine of innovation for the economy and society
[1]

The main objective was to identify and systematize sources and users of knowledge, as well as to consider their various forms in Bergamo. The analysis was developed by identifying strengths and weaknesses in the roles of different actors, and focused mainly on the relations between the various parties, with the ultimate goal of recognizing the factors that facilitate or hinder an integrated approach - a crucial aspect in determining the success of a joint action in a field where formal, non-formal and informal elements intermingle.

Research area description

The city is increasingly central to the life of the contemporary world. Today more than half of the world's population lives in cities and in Europe this figure rises well above 80%. In the coming years another 2.5 billion people will be added to the inhabitants of urban areas. How to deal with this massive movement and population increase? How to prevent it from exacerbating the great challenges of the coming decades (climate, energy, food, water), and instead use it toward their solution? The area of inquiry for this project covered precisely the role played by knowledge in contemporary society and particularly in the city, where an ever-increasing portion of the world population lives and where most of the challenges for the future are played out.

Results and proposals

A careful analysis of the context of Bergamo and meetings with stakeholders identified a number of features that are useful for outlining policies and strategies to improve the territory's ability to be more "resilient" and creative.

That will be achieved by exploiting both traditional resources (such as those of cultural and environmental resources or of formal educational agencies) and resources that are yet to be valued, such as immigrants, the experiential

Bergamo Knowledge System concept

knowledge possessed even unknowingly by many actors (including the fabric of small and medium businesses), and "objectified" knowledge. Not all the players who were surveyed responded or showed interest, and that is also a signal worth pondering. We need to ask ourselves if there are certain sectors of society in Bergamo which rely on some form of self-reference, or at least seem rather unaware of the importance of being part of a system.

Research objectives include: to make Bergamo an "educational city"; to strengthen the role of the university as a resource for research and higher education across different themes and different areas; "to network" (both via ICT and via better physical links) resources and knowledge of the various educational agencies and the various social actors; to encourage widespread creativity; to pinpoint a thread (recognisable and shared) that may link the various opportunities for learning and knowledge, orienting to the future and its attendant challenges: these are some of the pillars that should support the action of the many public and private subjects.

In terms of viable proposals, three areas of intervention can be outlined:

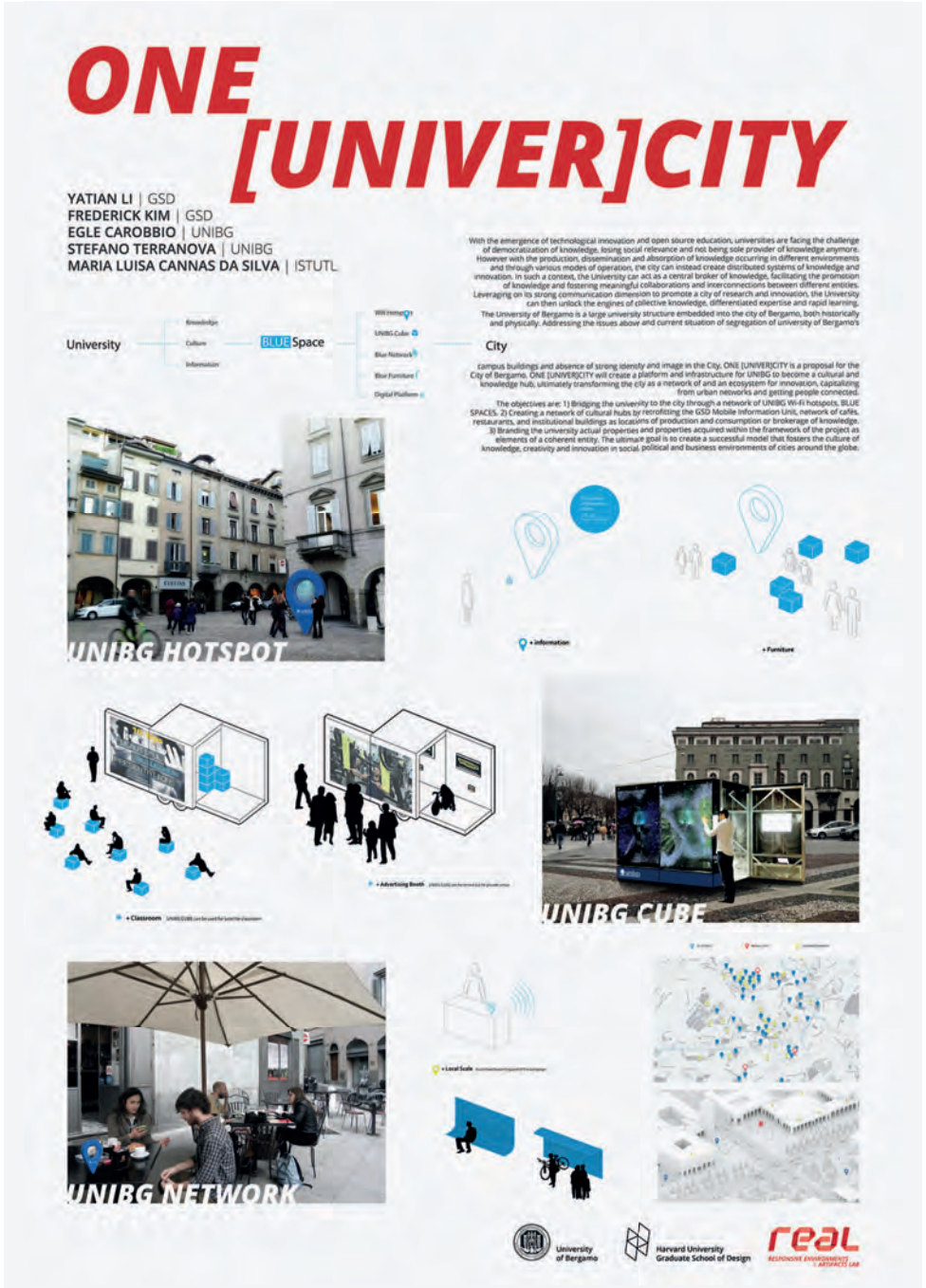
1. The first mission is to use technology platforms for the preservation and sharing of knowledge (but not only these) to network existing initiatives more effectively. From this point of view, many of those who gathered at the Bergamo 2.035 round table noted that Bergamo is a fragile city in terms of its ability to create a system and function as an "educational city".

2. It is also important to enrich learning by feeding it with all the elements of objectified knowledge and material culture (museums, parks, businesses, landscapes, etc.), often poorly used by significant segments of the population.

3. Finally, but crucially, it is necessary to involve decision makers. Only by taking full responsibility can those who administer Bergamo transform the spirit of initiative and the resources described in this section into a real city of knowledge.

In addition, the joint research team made of Harvard Graduate School of Design and University of Bergamo Faculty, Researchers and Graduate students (25 students of both Universities contributed specifically to this subject, also through field visits and meetings with the stakeholders) worked on envisioning, proposing and designing specific solutions to be prototypically implemented in Bergamo.

For example, the team investigated the role that could be played by the University of Bergamo, a large structure embedded into the city both historically and physically, to become a cultural and knowledge hub, ultimately transforming the city as a network of and an ecosystem for innovation, capitalizing from urban network and getting people connected.



One UniverCity concept

Bergamo Health
wellness, care and lifestyles
[2]

The main focus was to identify the city's role as a vehicle for the development of practices and spaces aimed at promoting healthier behaviours and lifestyles. To this end, new organizational models and new communication technologies were explored. The research also assessed the role of current actors who are typically involved in health treatment and of individuals who could potentially play an active role in creating a better culture, greater sensitivity and better health-related practice.

The ultimate goal was to create a positive spiral, to make Bergamo a City of Health, i.e. a city where every citizen actively participates in the promotion of health through an integrated system of knowledge, technology and structuring of environments.

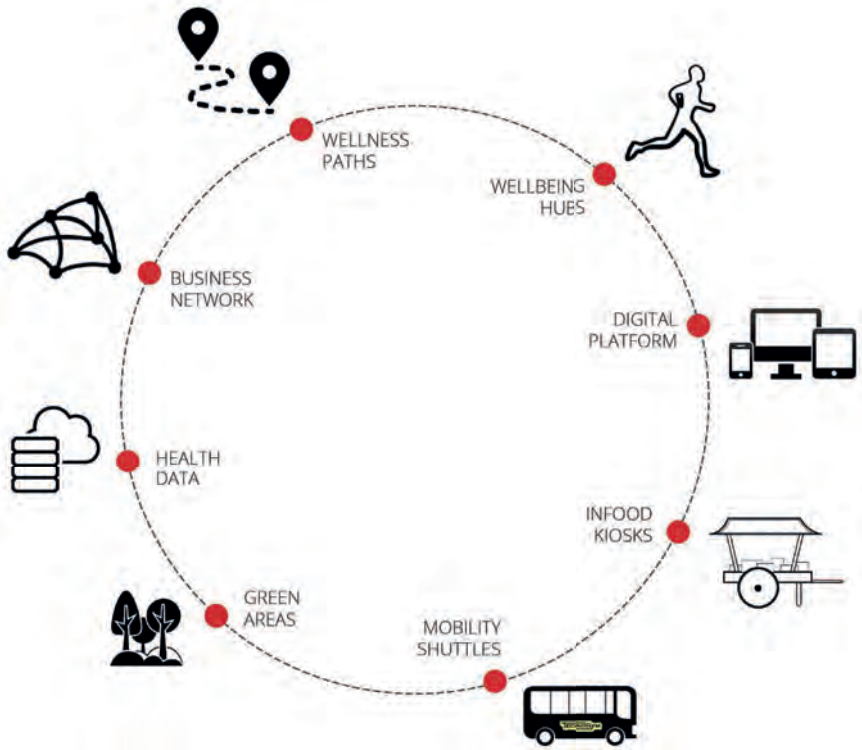
Research area description

Over the last decades, the challenges in health promotion have seen a significant increase in terms of complexity, diversity and scale. The aging of the population, the prevalence of obesity, incorrect lifestyles on both nutrition and physical activity, at times combined with unhealthy environments have a negative impact on health services that are often obsolete. While the situation is both serious and daunting, these challenges also provide ample opportunities for research and innovation.

For instance, an unprecedented availability of data, for both physicians and patients could lead to a more streamlined health service and more informed choices for a healthier lifestyle. Advances in sensor technology could allow a deeper understanding of human behaviour and thus help in the active creation of spaces and devices that promote health.

Clearly, the implications of these developments go far beyond the walls of the clinic and touch directly upon the construction of spaces.

Bergamo Wellness Ecosystem concept



Results and proposals

A careful analysis of the context of Bergamo and the meetings with stakeholders brought to the fore important features of the city with regard to health. First of all, Bergamo is an average-size city which offers a very efficient social health service.

That is accompanied by a widespread pool of associations in the city and in the provinces, informal and social support networks that are indirect indicators of a marked degree of community cohesion across territory. Issues have to do mainly with marked population aging and the onset of incorrect lifestyles (bad habits, physical inactivity); a city environment that does not always facilitate healthy choices (few and fragmented bike lanes, heavy traffic); and the difficulty of integrating the many and varied health initiatives across territory, which entails the loss of possible important synergies.

Hence, the interventions that need to be promoted:

- To value the role of the elderly and of foreign people within the community;
- To enhance the integration of health plans and health and social services;
- To take advantage of the presence of healthcare excellence in the area in order to maximize benefits to the region;

- To achieve cultural and social integration even in choices for a healthy lifestyle;
- To facilitate everyday healthy choices in the context of the city;
- To simplify the use of technology for everyone;
- To encourage solidarity between generations.

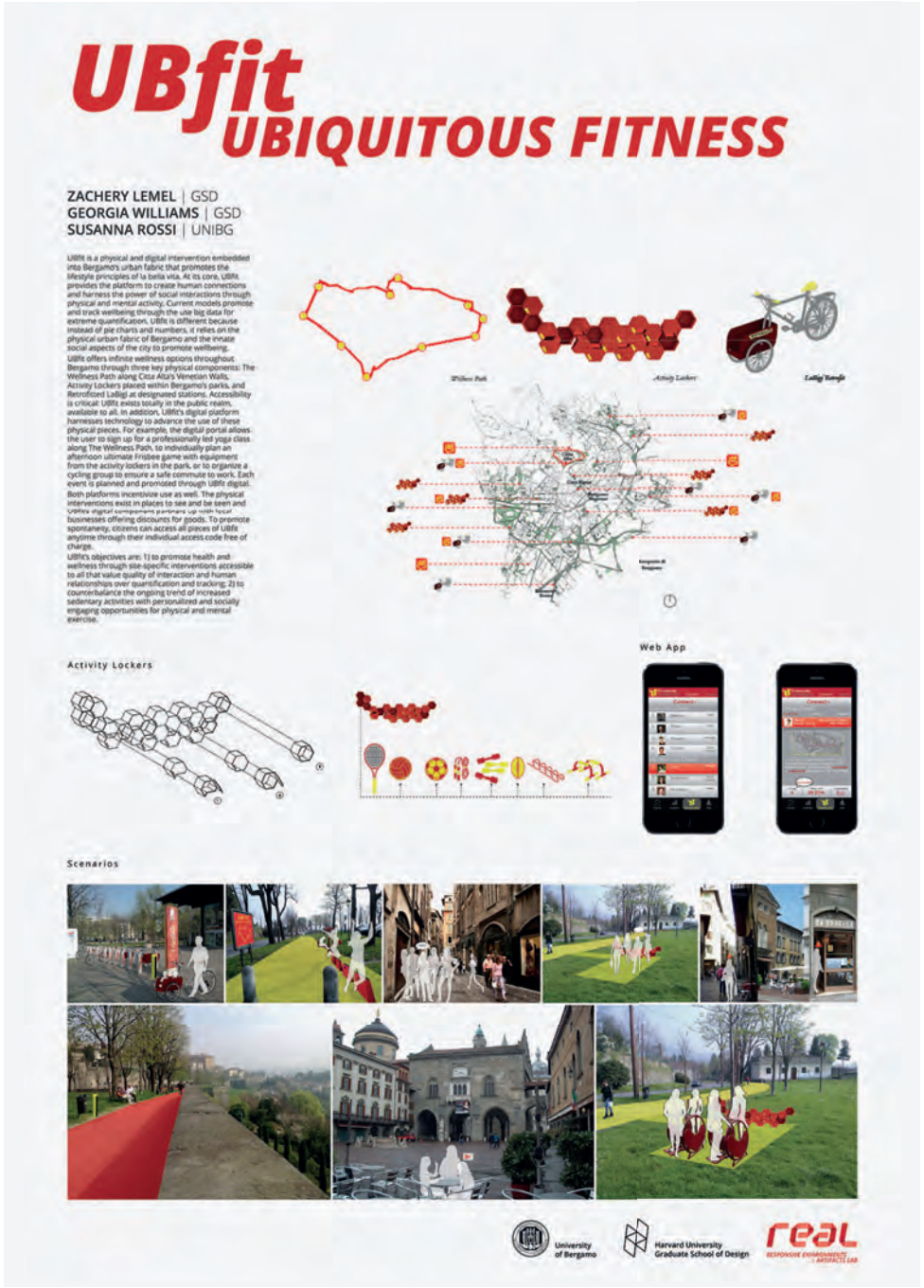
Technology can undoubtedly make a key contribution toward this goal, but it needs to be placed within the system, integrated in the urban context with an eye on its limits and its specific features. Active participation of citizens is also a prerequisite, in order to find solutions that are shared and appreciated by the entire community. To this end, a popular method is that of home/living labs, i.e. open innovation environments in real-life situations, where the active involvement of end users makes it possible to develop schemes of co-creation for new services, products and social infrastructure.

This is the approach taken by HomeLab Bergamo, created to bring together a community of older people willing to take part in research and a multidisciplinary group of scientists and companies in the region. The aim of the lab is to start trials in homes/nursing homes that support the development of innovative technologies for the health, well-being and independence of older people, assessing their safety, effectiveness, usability and accessibility. HomeLab Bergamo is meant as a container and interaction ground that involves territorial actors in systematic, organized and synergistic ways.

Also, the Lab will be able to count on a solid technological and scientific background as well as on numerous local and international collaborations with all participating partners.

The joint research team made of the Harvard Graduate School of Design and the University of Bergamo worked to identify the role of the city as a key driver to develop practices and spaces for better health behaviours and lifestyles, exploiting also new communication technologies and organizational models.

As an example, the "UBfit" concept was thought as a physical and digital intervention embedded into Bergamo's urban fabric to promote physical activity through specifically designed paths complemented with a dedicated app.



UBfit concept

2015 - Local Food System

[3]

In 2015, as Italy was hosting in Milan the Universal Exposition focusing on the theme "Feeding the Planet, Energy for Life" (embracing technology, innovation, culture, traditions and creativity and how they relate to food), Bergamo 2.035 focused its research mainly on the crucial emerging area of "local food system", in order to take advantage of possible positive synergies.

Bergamo Prosumer
enhancing and promoting the local food system

[3]

At a time when food adulteration, pollution of the production areas and the poor quality of some of the processed food and fast food are under media attention, a growing number of citizens is becoming increasingly conscious of healthy food choices. There is also a growing focus on environmental, social and economic aspects of production and their consequences on the territory.

Based on these trends, the project main focus was to enhance the local food industry as a driving force for sustainable development of the city of Bergamo and the surrounding rural areas, drawing producers and consumers on one hand, rural and urban areas on the other hand, closer to each other. By enhancing local products and organic production with low environmental impact, shortening the supply chain and rekindling a relationship of trust between producers and consumers, the initiative intended to promote a local food system that integrates several economic sectors.

Certainly, the theme of food is an area that is both cultural and economic, involving different social actors (citizens-consumers, companies, institutions) and economic actors (agribusiness but also catering and school or business canteens, local tourism, crafts etc., as in the case of the bond that exists between typical agricultural food production and local tourism routes).

Casoncelli - a case study of the local food system

Research area description

The research was used as an activity for aggregating regional stakeholders who are interested in building a system of local food cooperatively and for hearing their expectations. Bergamo 2.035 first mapped out local initiatives already underway, which aimed at revitalizing the local agri-food sector and the sustainability of production and consumption, both from the educational point of view and from that of the production and the relationship between consumers and producers.

Later, opinions and the difficulties perceived and experienced by the subjects who animate the local food chain have been recorded. This activity allowed to grasp the potential and obstacles of the local context, identifying all possible strategies to encourage greater collaboration. In fact, a crucial course of action for the project was to facilitate dialogue between groups of "Consumers/Actors" (individual consumers or organized groups who, through their consumption choices, intend to promote more sustainable production), associations of producers and institutions, with a view to developing concerted strategies between these subjects and to promoting more sustainable local development starting with food.

Results and proposals

The main results of the dialogue with the territory showed a lack of cooperation and a high fragmentation of initiatives, but also the valuable opportunities for promotion and economic development of territory that Bergamo

"Responsive Environments: Glitchy Food" concepts

2.035's proposal would provide. Several local governments faced these challenges by turning to instances of successful international practices (in Toronto, Rotterdam, London, etc.).

They endeavoured to build International Food Policy Councils, or permanent round tables between producers, consumers and institutions, which compare and set up a system of all initiatives for education, urban agriculture, local revitalization, and local agribusiness that already exist in the region. Local authorities provided a permanent space for discussion and evaluation, as well as various forms of support (logistical, educational, economic etc.) for such initiatives.

Networking together successful practices and other entities that make up a local food system aims therefore to build a "place" where sustainability initiatives may be elicited and enhanced, in which the various parties may work together and with local government to find solutions to the issues and constraints outlined above. Ultimately, Bergamo 2.035's goal is less to create a sustainable system modelled on other international contexts than to foster a shared process of development, in which international experiences may provide suggestions for strategies to be attuned to the local context. Bergamo is indeed full of grassroots initiatives, but these lack consistency, stable connections between subjects and opportunities for collaboration.

The Expo 2015 event has given high visibility to the theme of food. Starting on existing good practices in the area and supporting their development can provide a more solid basis to visibility that would otherwise be fleeting and ephemeral.

On this area, the joint research team from the Harvard Graduate School of Design and the University of Bergamo focused mainly on the theme of "Responsive Environments: Glitchy Food", introducing a new take on the framing and creative potentials of situated and connected environmental technologies. In particular, it proposed the concept of Urban Glitches as a trigger for creativity and how these can translate to the urban space of the city. As a reaction to the digitally driven, routine inducing built environments depicted by current smart city concepts, the research argued that urban glitches are important elements to help create technologically driven conditions other than efficiency, which is widely the driver in the approach to smart cities.

Urban glitches - that are unintentional, temporary, democratic, creative, and qualitative - ultimately become a recipe for the design of technologically augmented or 'smart' cities, developing environments that foster creativity, have a better ambiance, and lead to pleasant and unexpected repercussions throughout the whole city.

Using the glitch as a metaphor in the context of food systems, this research developed alternative design strategies to augment food experiences. Such strategies include: adopting the concept of 'portals' as a way to test the uncanny ability of food to transcend space and time; using interactive technologies for augmenting the experiential qualities of food to activate and to revitalize abandoned and unused spaces in cities; creating new opportunities for people to engage with food by digitally augmenting the user/dish connection and embracing the whole food system.

A relevant workshop was also hosted at the Italian Pavilion in the Milan Expo, in order to present the main findings of the research to the media and to a wider and diverse audience.

Uncork augmented wine tasting prototype

2016/17 - Urban Mobility & LogisticsSystem

[4] [5]

Urban mobility and logistics were both active working tables during the Bergamo 2.035 initial research program. An extensive set of connections with relevant stakeholders was built during that phase.

Accordingly, the 2016-2017 research work focuses on the analysis and exploitation of emerging trends and technologies for different modes of transportation in order to develop alternative future urban scenarios for Bergamo.

Bergamo Mobility
shifting urban mobilities

[4]

Bergamo Mobility has the dual goal of analysing the management tools of mobility and of understanding the needs of the people through the application of participatory techniques.

The research was divided into two integrated and overlapping areas:

- Smart Mobility Planning: aimed to analyse and identify smart planning tools for mobility, starting from successful international case studies, with a view to providing a vision of the urban context in Bergamo that highlights the transcalar connections between the urban and extra-urban systems;

- Spatial Capital/ Governance: aimed to identify the spatial capital, understood as a set of skills and experiences that individuals - either inhabitants or city users - possess with regard to the places in which they move. Such capital may be recovered and developed as heritage in territorial governance through participatory processes and mapping systems.

Research area description

Within the Bergamo 2.035 agenda, the research was organized with a theoretical-methodological approach based on the concept of globalization and heavily focused on the relationship between

spatial capital and territorial governance. These key concepts helped to envisage a new definition of mobility, not linked solely to the movement in space of individuals or of tangible and intangible assets, but strongly linked to accessibility, seen as a set of opportunities for movement offered both to individuals and to goods.

When planning is based on the needs of citizens with regard to the accessibility of sites and services, it becomes possible to envision new mobility solutions, as well as alternatives to movement itself and to the increase of transport infrastructure related to it.

A "smart" approach based exclusively on the enlargement, implementation and dissemination of Information and Communication Technologies (ICT) is therefore discarded. Bergamo 2.035 initially focused instead on smart urban features by advancing analysis and planning which involve various local actors (institutional, associative, private, etc.) in all stages of research, which was carried out through:

- Analysis of planning tools and of the local context;

- Comparison with international schemes in medium-sized cities comparable to the context of Bergamo;

- Participatory research or action: interviews, focus groups and online questionnaires;

- Bergamo Mobility 2.035 Round Table;

- Realization of cartographic tools (Mobility Mapping).

Results and proposals

Bergamo Mobility put forth a number of proposals aimed to address the main problem areas of mobility in Bergamo, which may be summarized in three areas:

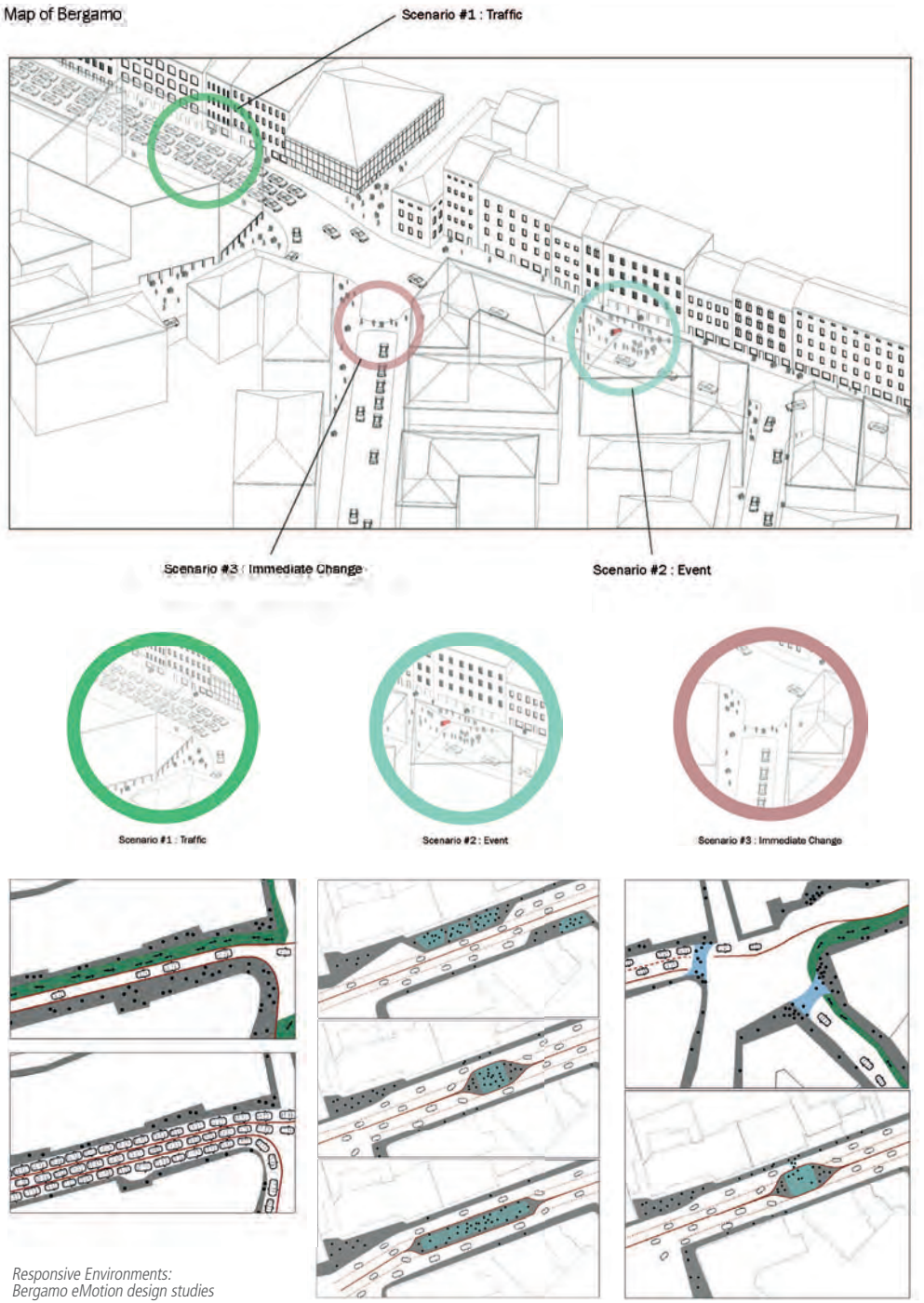
- Institutional: the weakness of political and management choices;
- Communication/planning: the unsustainability of traditional mobility choices and hence the need for a "mindset change";
- Infrastructure: the fragmentation of pedestrian and cycle paths, traffic congestion and poor inter-modality.

Aware of the impossibility to provide a clear and conclusive answer for sustainable mobility but still willing to translate their reflection into practice, the research groups proposed to address problem areas via these courses of action, which take into account the initiatives that the various stakeholders advanced in recent years and take advantage of their space capital:

- Institutional context: join local and European networks (as the Civitas - Civinet network), in order to make permanent, to extend to other actors and to institutionalize the Framework role of the Mobility. The ongoing aim is to keep reflecting on mobility at various scales, via a forum that is both regional/local and European;
- Communication/planning context: smart devices for map-based info-mobility and continued collection and sharing of data via the consolidation of participatory processes; creation a network of sensors, both fixed and mobile, for monitoring mobility and accessibility services; development of Mobility Mapping as a map-based platform of open data for the dissemination and collection of real-time information, as well as for the study of the viewpoints of local actors;
- Infrastructural context: pilot projects for sustainable mobility, intended to heal urban fractures and increase social spaces starting from the central role of districts. The goal here is to promote alternatives to the use of private cars through incentives for using clean technologies and transport sharing (district-based car sharing). Finally, action will be taken on a European scale to help place the city within the national and international context as a model for other cities of comparable size.

The Harvard GSD / UNIBG collaboration has been pushing forward this initial research by addressing the question of how the built environment and its infrastructures will integrate emerging technologies and trends for evolving mobility patterns and systems, and how users will adapt to - and in some cases drive - those changes.

The research ultimately aims to investigate the complex interplay of people's behaviors and new modes of transportation in responsive built environments, opening up unexpected research and design opportunities as well as generating impulses and solutions for innovative urban development at different scales.



Responsive Environments:
Bergamo eMotion design studies

Bergamo Logistics
urban freight mobility
[5]

Bergamo, view from Porta San Giacomo

The goal of the Bergamo Logistics research topic is to conduct exploratory analysis on the issue of freight logistics in urban areas. The aim is to identify the strengths and weaknesses of freight logistics in the urban territory of Bergamo as well as possible directions for future development. The initial research included a thorough analysis of the local context through interviews, questionnaires and surveys and comparisons with national and international cases. The development of preliminary solutions in this area also required sustained involvement of local actors (institutions, local authorities, transport operators, traders), who often have different and sometimes conflicting goals.

Research area description

Bergamo Logistics is a city logistics project for Bergamo, aimed at analysing and identifying opportunities to optimize the delivery of goods that take place in the urban area. These processes of improvement for activities cannot possibly be separated from the consideration of factors such as traffic conditions, congestion, fuel consumption, attendant costs and the level of service desired. Among the main objectives, there is a reduction of the number of vehicles operating in the city through a rationalization of transport and distribution operations, in particular for the so-called "last mile."

Results and proposals

Several proposals for future developments of the city of Bergamo emerged from research groups and during interviews with project stakeholders. The attention here is focused on proposals that are potentially more practical and viable over the medium term. Specific feasibility studies will provide more details.

- **Establishment of a permanent working group on urban logistics**:

As an identified problem area is the lack of shared information and participatory decision making, the establishment of a permanent workgroup on urban logistics involving the various stakeholders on a continuous basis can be an important step forward. As emerged from international experiences (eg, Saint Étienne, La Rochelle, Bilbao) and during the workshop with stakeholders, the presence of the University as a third and impartial body in coordinating and supporting the activities of the working table can be a key factor for success.

- **Participation of the city of Bergamo to national and international networks on the theme of urban logistics**:

As a second proposal, Bergamo 2.035 intends to promote the participation of Bergamo to initiatives and national and international networks for the exchange and sharing of practices on the themes of mobility and sustainable logistics (eg, CIVITAS networks - www.civitas.eu and Eltis - www.eltis.org).

- **Improvement of the system of loading and unloading city-center pitches via electronic booking:**

Another demand expressed by transporters and traders is the improvement of the system of pitches used for the loading/unloading of vehicles and the parking of vehicles during operations.

The term "improvement" refers both to an increase in the number of pitches available, and to their strategic relocation.

- **Rationalization of LTZ (Limited Traffic Zones):**

Lombardy Region guidelines indicate time and space rationalization of LTZ as a necessary step. If access times are consistent across adjacent municipalities transport companies can plan delivery rounds more easily, thereby saving time, cost, energy consumption and pollutant emissions.

- **Internet Platform for the collection and sharing of data:**

Given the presence of numerous actors, a major problem has to do with the fragmentation and lack of data on urban logistics in Bergamo. By that, we do not mean of course sensitive or confidential data, but data relative to the fleet of vehicles, traffic flow and pollution levels. It would also be useful to integrate data relating to European, national and local incentives for businesses that adopt specific initiatives to support the environment.

- **Urban CDU for Città Alta (Upper Town):**

Finally, Bergamo 2.035 found that the Upper Town presents some problem areas in its own right, such as the high historical and artistic value, the presence of tourists, the architectural constraints over transport (roads and narrow gates), access difficulty and the presence of numerous retail businesses. For this reason, more than in other areas of the city it would be interesting to envisage the construction of a small Urban Distribution Center (UDC) just outside the Upper Town, as already implemented in several other cities. Again, before deciding whether a UDC solution is actually applicable to the case of Bergamo, it is necessary an analysis of the actual flows of goods and an assessment of economic feasibility and effective participation in the initiative by the traders and transporters involved.

Further pillars -Corporate Social Responsibility & Urban Factories

[6] [7]

Responsible Bergamo

the social role of businesses in the local community

[6]

The objective of this research track was to investigate the relationship between businesses and sustainability with regard to the local context. This led to focus on two areas of inquiry:

- Social responsibility practices adopted by regional businesses for the benefit of the local context;
- Forms of cooperation between local businesses and modes of support from other local actors aimed at promoting sustainability practices.

Research area description

The concept of sustainable development was defined as a form of development that meets the needs of the present without compromising the ability of future generations to meet their own needs. A key element for the development of an area is the business activity and the role played by companies, whose activities are related to the levels of production, employment and prosperity of a given local area.

In brief, the sustainability of development and growth is the ability to combine three basic dimensions:

- Economic (creating economic value);
- Environmental (Protection of the natural environment, minimizing pollution and the use of scarce resources);
- Social (equity and social inclusion).

Results and proposals

A structured round table could be one possible tool for fostering collaboration between local

actors on sustainability. That would enable companies to understand how to turn issues into a "system" and would initiate practical schemes of collaboration between businesses and between other local actors.

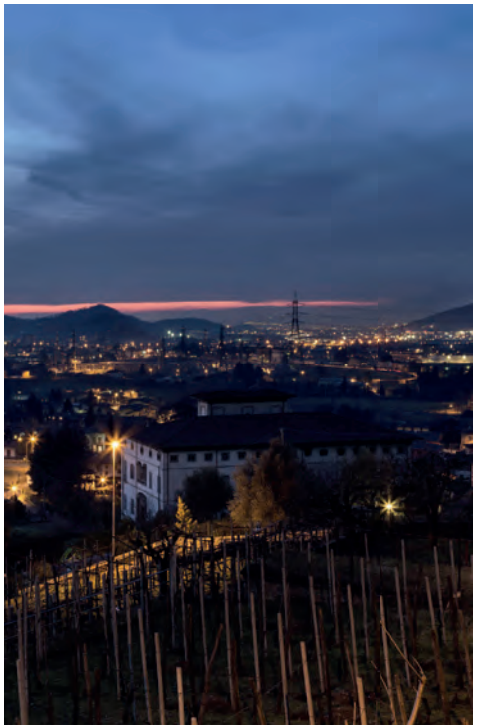
Key steps for this round table should be:

- Identifying the needs that businesses and other territorial actors advance on various aspects related to sustainability;
- Identifying specific resources and expertise that businesses themselves and other regional players may deploy in order to meet those needs;
- Organizing structured workgroups for implementing forms of collaboration and support on specific issues.

Ultimately, this type of workgroups could be used to set four main goals:

- Gaining forms of shared knowledge between businesses with regard to sustainability practices (via a transfer of information and know-how both from large to small and medium enterprises, and between businesses - small and large - from different sectors);
- Identifying possible areas for operational cooperation between companies for implementing social responsibility practices (e.g. joint investments to optimize the management of logistics and employee mobility);
- Identifying support needs shared by businesses and initiating a dialogue with other local actors with a view to sharing solution plans that can meet these needs;
- Raising awareness and involving citizens and institutions on issues of sustainability and on the plans that businesses are already developing in this area.

Technological Bergamo
the return of urban factories
[7]



This research area aimed to conduct an exploratory analysis on the topic of urban manufacturing and technological craft, identifying the benefits, strengths and main constraints for its effective implementation in the city of Bergamo.

These goals were pursued both through an analysis of the technologies that uphold the Urban Factory model and through careful evaluation of initiatives at the national and international level.

Given the complexity of the phenomenon, possible solutions entail the involvement of local actors of various nature, able to apply their skills systematically to support promising ideas.

Research area description

Technological Bergamo is a research and technical and managerial training scheme, which aimed to address key sustainability issues to do with the model of Urban Factory in the city of Bergamo. The project aimed to bring manufacturing activities and crafts within the city limits, via a technological reinterpretation of their functioning.

In recent years, we have witnessed a relentless development of technologies and models of technology adoption that are potentially capable of upsetting conventional industry and craft activities. For example, modern 3D printing and laser cutting systems as well as the widespread adoption of open-source systems such as Arduino have enabled business models that are compatible with the many and various constraints posed within the urban context.

However, for a full understanding and dissemination of the Urban Factory model, it seemed necessary to lay down a plan of action able to fully grasp the dynamics involved and to promote initiatives that are effectively successful.

Results and proposals

Based on the results of the research conducted, the team developed an action plan that indicates the actors and the activities required to facilitate the transition towards a model of Urban Factory. Given the complexity of the issue, the plan provides for the complementary presence of skills that cover the many facets of the Urban Factory paradigm.

Specifically, the skills required may be broken down in three areas:

1. Technical context: A thorough knowledge of the available technologies, their potential applications and the business models they can implement is required. This field could be manned by research teams working in universities, particularly in the research areas of product design, production systems, ICT, economics, entrepreneurship and technological innovation management.

2. Scope of Application: implementation of the plan also requires specific technical and applicative knowledge of Urban Factory technologies possessed by technology solution providers as well as by producers and users of open-source systems.

3. Institutional Framework: in order to foster the involvement of the local manufacturing community in the action plan we devised, it's necessary an information and sponsorship campaign that could be set up by involving local professional associations. By virtue of their contact with manufacturing business in the area, these associations are essential in the co-design of research and training activities, in the extension of the initiative to members, in the assessment of technological and business opportunities, as well as in the identification of possible pilot cases.

In order to develop effective Urban Factory initiatives, it is necessary to act both on skills and on technology and design systems. This requires the creation of a Center of Expertise able to make more complex or costly technology accessible to subjects who may then assess their actual areas of application.

Finally, the action plan aimed to support the development of new business models and enhanced management and organization systems, where there is no single player holding all the strategic assets, but a shared pool of assets effectively accessible to all across the territory.

Bergamo 2.035 innovative media and content strategy

In line with the unique features of "Bergamo 2.035", which puts the human being at the center and forefront and promotes a multidisciplinary approach as well as the active involvement of all the possible stakeholders, in 2016 it was also launched an innovative and media content strategy in order to further develop awareness and involvement. Besides citizens in general, the core target of the strategy has been identified in young students between the ages of 20 and 25, digital natives and future "Smarter Citizens" that the project aims at involving as active drivers of change towards improving their own urban environment. To reach them, Bergamo 2.035 has therefore developed - in strong cooperation with an emerging Italian company (Mosaicoon) - the whole strategy based on creative solutions to reach the target through the most impactful tool: the online video.

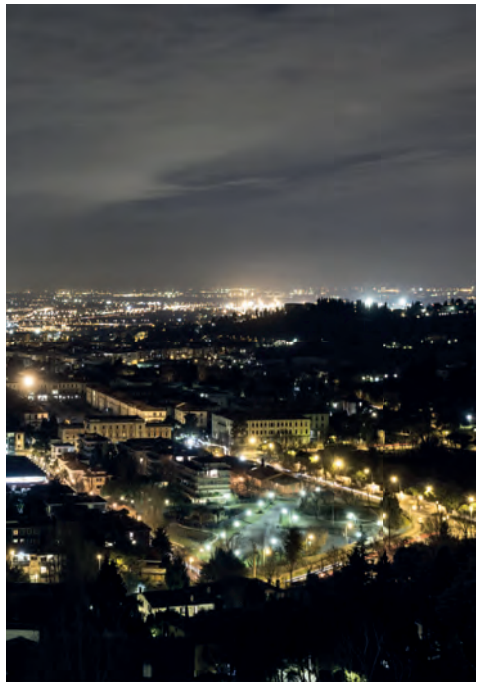
The main objective is to let people know about Bergamo 2.035 and to involve citizens in participating based on 3 macro goals:

1. Increasing awareness about the program;
2. Creating engagement;
3. Bringing traffic to the website: www.bergamo2035.it

To reach the citizens in this way, the new video strategy integrates both a content and a media component, joined and managed in an end-to-end way thanks to a technological platform. In terms of content, it was chosen to focus on the two video formats that would best respond to the need to describe the program and at the same time to actively engage users, i.e. a video animation that talks about the initiative and 5 animated GIFs, distribution tool on social networks that instead illustrates in graphics the topic areas of Bergamo 2.035.

For a highly profiled distribution of this content, it was also developed a distribution strategy on vertical websites, blogs in target and social, integrated with the Social Video Page scopri.bergamo2035.it which incentivizes user traffic towards the website of the initiative with a specific Call To Action.

Looking forward



Bergamo needs not only projects of social innovation, which in fact already exist throughout the territory in the form of various practices and active projects, but also shared innovations based on a participatory governance that is an expression of a common way of seeing the city's future. Innovation is shared only if:

- it generates widespread benefit throughout the community, which may regard economic, environmental or social aspects;
- it is based on a continuous process of sharing decisions and actions, without the presence of a single and final decision maker but relying on distributed decision-making;
- it invariably pursues active participation of the beneficiaries of innovation itself.

Thanks to the number and quality of potential actors involved and to the practical outcome of the proposed plans, Bergamo 2.035 has demonstrated till now how we can free ourselves from apparent stereotypes on the public sector as a place of inefficiency and bureaucracy, as well as of the notion of a private sector driven exclusively by motives of individual profit. Moreover, the presence of a university on the territory provides added value on account of its recognized impartiality and independence. The university also acts as a promoter and disseminator of research activities carried out in partnership with the private sphere and in particular with the Third Sector.

The proposal advanced here is therefore for a Bergamo 2.035 "Lab": a permanent workshop able to function as a shared ground in which all local players can gather to implement projects of shared innovation. Bergamo 2.035 Lab aims to turn territory into an active space for proposals, where the boundaries between institutions and citizens become less stringent.

In the short term, Bergamo 2.035 Lab has set a number of some instrumental goals that it intends to take up:

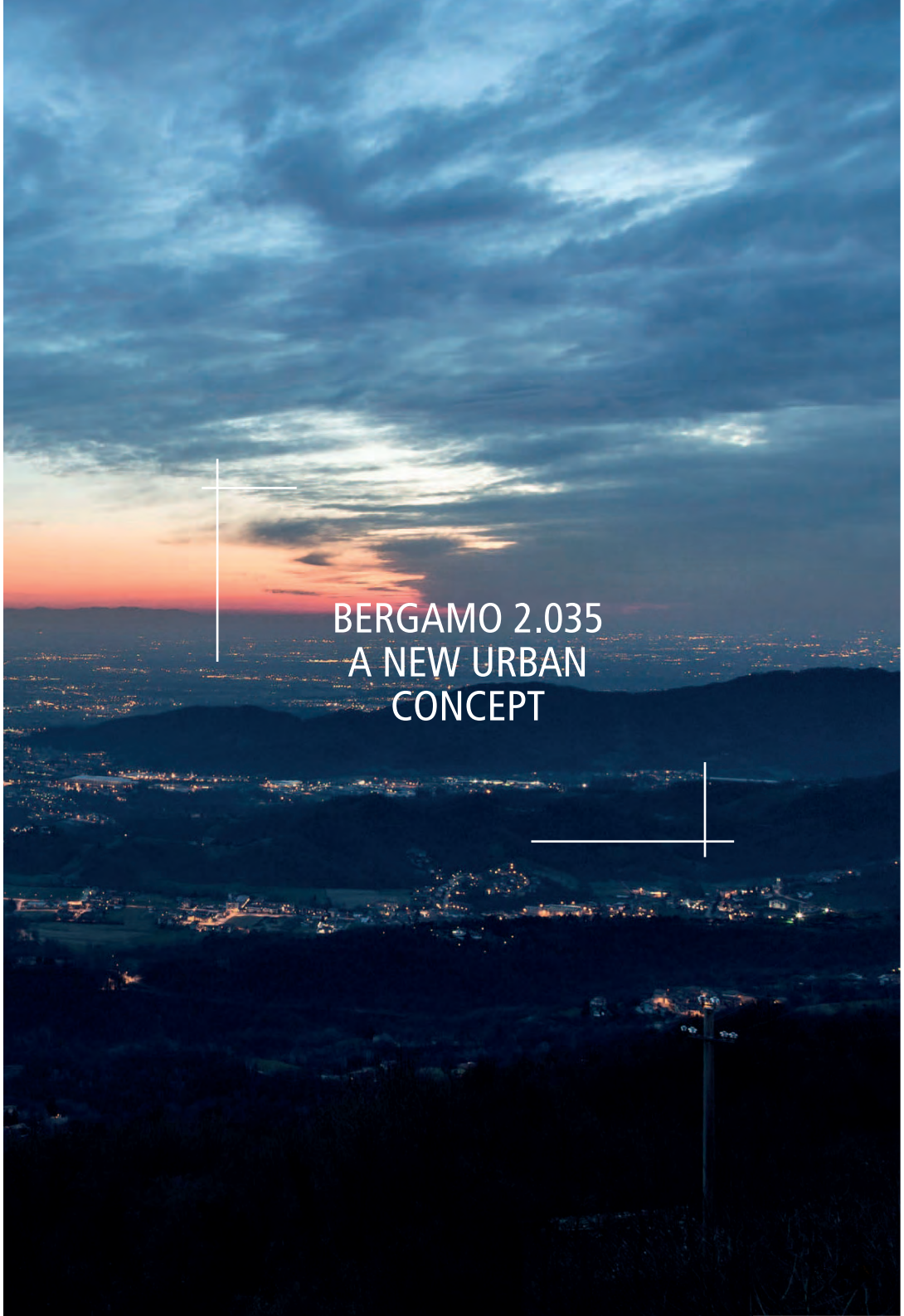
- Involving the highest possible number of stakeholders (companies and their representatives, associations, cooperatives, volunteer networks associations, buying groups etc.);
- Maintaining open round tables for hearing and sharing different perspectives on each theme;
- Ensuring the definition of medium-term planning guidelines (for instance on mobility and traffic reduction), that may be tweaked along the way but not undergo major changes once they have been set;
- Ultimately creating a climate of collaboration (in the etymological sense of working together) that can overcome entrenched oppositions (for instance city versus extensive territory, industry versus services, production versus consumption).

Five main categories of actors will converge in the Bergamo 2.035 Lab:

- Planners of policies and of territory development programs. Their role is to promote a 360-degree view of local needs and to promote a short and medium term programmatic agenda that identifies key priorities;
- Creators of innovation, represented by innovation engines such as research centres and universities. They will be able to develop innovation in line with the policies and programs developed by planners, and by the providers and developers of new technologies, which support the prototyping process and the implementation of applied solutions;
- Enablers of innovation, represented by banks and by public or private bodies at local, national or European level, for example, foundations, regional or national clusters, the Horizon 2020 European Framework Programme for Research and Development, whose role it is to identify and facilitate possible sources of funding, thereby setting the conditions for sustainability, also economic sustainability, of shared innovation initiatives;
- Actors of change. These include the people physically called upon to implement change, for example, companies and system integrators, and agents that favour change such as NPOs, technology parks, and training centres. The work of these actors is essential in order to ensure the applicability and actual usability of solutions designed for a community;
- Subjects of change. These include actors who are most affected by change itself and on behalf of whom innovation was developed: citizens and city users. As well as being the end users, they also play the role of collecting issues and needs, communicating with other actors to direct actions.

The presence of a social innovation workgroup, as Bergamo 2.035 Lab intends to be, would ensure the aggregation of various skills throughout the territory, avoiding inconsistencies or redundancies between the various initiatives. Thanks to a shared process of innovation, the Lab would also work also as a guarantor of the real value and the real contribution of locally promoted initiatives.

In parallel, it would be crucial to maintain and enlarge the international perspective of Bergamo 2.035, envisioning Bergamo as an open living lab where to design, test and evaluate the main outputs of the project, making it a model for other town with similar urban features. On this regard, Bergamo 2.035 has been chosen as a "model" to be presented both at the Italian Pavilion at MIPIM 2015 in France and at the China International Technology Fair (CSTIF) in Shanghai in 2016.



The main lesson to be drawn from the recent years of economic downturn is that short-term choices made within a limited geographical scope are unsound. What we need is instead to formulate a view capable of looking at a complex scenario over a long period of time. We need to stress the relevance of new generations, not only with regard to their education, but also as key players in the development of civil society and of business.

Accordingly, "Bergamo 2.035" aims to expand the current concept of "smart cities" by defining a context in which technologies and innovative solutions are developed along with new social models of inclusiveness, where citizens - "smarter citizens" - become active agents of change for improving the urban environment.

Bergamo 2.035
A New Urban Concept

A project by
University of Bergamo
Italcementi Foundation

In cooperation with
Harvard University Graduate School of Design
Municipality of Bergamo

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