

"SMART CITIES"

by Michele Buono

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MICHELE BUONO OFF SCREEN

We are entering the era of intelligent cities. Right across the globe, everything that really matters happens in the large metropolitan areas. Each metropolis is an exchange hub with other areas around the world, connecting up resources and skills; ideas and projects fly in all directions, but only if there's one prerequisite: you need lots of people in order to create a critical mass. And if the size and numbers are not sufficient? You make them sufficient.

JÖRG HÖLLMÜLLER - VICE PRESIDENT DISTRICT OF MITTELSACHSEN

Dresden is on that side and Leipzig is here. We're in Mittweida which is a rural area.

MICHELE BUONO OFF SCREEN

It's as if they've created a large metropolis. All that was needed were trams that transform into trains - when necessary - and these rural areas have now become districts of a single area. Nice and 49 municipalities have joined forces.

ISABELLE BRÈS - MAYOR OF COLOMARS – NICE COTE D'AZUR METROPOLIS

Being able to work together gives us a perspective that we didn't have before!

MICHELE BUONO OFF SCREEN

The large numbers on the Bari-Taranto axis are currently being evaluated.

BEPPE FRAGASSO - ARCHITECT - ANCE CONFINDUSTRIA BARI (Italian Association of Private Construction Contractors, Bari)

If we could connect these two cities together, the infrastructures, the industries, the businesses, the movement of people, we'd create a population of around two million people.

MARCO BENTIVOGLI – GENERAL SECRETARY FIM Cisl (Italian Federation of Metalworkers and Mechanical Engineers)

We need to be able to think from an ecosystem perspective; if we continue to think in terms of local systems and old industrial areas the risk is that we will continue to build and plan new developments in ways that do not meet modern needs.

MICHELE BUONO OFF SCREEN

New York.

COSTA CONSTANTINIDES - NEW YORK CITY COUNCIL

The UN's climate reports says that we only have eleven years left to act.

MICHELE BUONO OFF SCREEN

In New York they haven't wasted time just talking, why?

PETE SIKORA –NEW YORK COMMUNITIES FOR CHANGE

The laws that apply to the city of New York cover an area of eight million inhabitants. We've managed to mobilise a large number of people, and when politicians see large numbers, they act.

SIGFRIDO RANUCCI IN THE STUDIO

It's that simple. There's no magic wand, so in order to create intelligent cities you have to count on capable politicians and senior public and private sector managers. And then you need to unite, a huge critical mass, lots of people, put all the best resources you have into it, leave nobody behind, ensuring you don't exclude society's less well-off. That's what the administration in New York is doing, they are implementing a wonderful plan. It's broken free from the federal state, and is pursuing its own idea right to the very end and is putting a huge plan into action, the most energy efficient and inclusive the world has ever seen. They started by mapping the buildings, the single apartments, because how can you improve a city if you don't have your finger on the pulse of exactly what's going on in your city? It's also the most significant plan in the world of the aggregate economy thanks to which, even a simple building number, 987, memorise this number, could become the centre of the world's attention, because they've put workers, businesses, consultants, financial institutes and banks all together. And they started – as we said - by mapping a building, an apartment, and putting in sensors to know exactly how much gas, fuel and electricity it uses, and therefore its impact, i.e. the amount of CO2 emitted. And if necessary, you take action, you make that building more efficient: you add insulation, install solar panels, offer funding or low interest loans which can be repaid using the savings made on the lower energy bills. You provide advice on putting batteries in the cellar perhaps, which can accumulate and provide clean energy to where it's needed or advice on creating an organic vegetable garden on the roof to not only supply zero food mile products, but also to reduce levels of CO2. All these are called technical trials for a better future. But if you take a closer look at it, it's also the proposal of an industrial plan; this is the proposal of our Michele Buono.

MICHELE BUONO OFF SCREEN

Manhattan, in the west of the city towards Harlem. This is Amsterdam Avenue.

KEITH WILLIAMS

Welcome to 987! Now I'll take you into the bowels of the building. The intestine is important, come on! There used to be an old boiler here, it was heating up too much and burning a mountain of dollars and all us tenants could do was argue about it. Then one day five engineers turned up. "We've got a plan", they said. The families that live here could never afford five engineers. I was gobsmacked, they had loads of ideas and plans, and not just about the boiler.

MICHELE BUONO OFF SCREEN

An energy efficiency plan for the entire building and for every single building in New York that needs one. Residents, workers and companies are all in; research centres and universities for consultations; banks and finance. This is called the aggregate economy.

COSTA CONSTANTINIDES - NEW YORK CITY COUNCIL

70 percent of greenhouse gases in New York come from buildings. This was the starting point: the problem of buildings which consume too much energy. It's what forms the foundation of the Climate Mobilization Act, New York's new climate legislation.

BILL DE BLASIO - MAYOR OF NEW YORK CITY

I would like to thank all those who wanted to believe in the New York City Green New Deal! And he's one of our heroes!

MICHELE BUONO OFF SCREEN

Approved by the New York City Council on 18 April 2019, it is hoped that the new law will start bearing fruit by 2024 with an overall target set for 2030 of a 40 percent reduction in CO2 emissions from buildings, and 80 percent by 2050.

COSTA CONSTANTINIDES - NEW YORK CITY COUNCIL

It's the widest ranging bill on the reduction of emissions that's ever been passed.

MICHELE BUONO OFF SCREEN

The first objectives are already just around the corner and the council has created a specific department to get things moving more quickly. The tool is an interactive map of the city's buildings developed in collaboration with New York University. Building by building, the data enables the situation to be monitored in real time.

MARK CHAMBERS - DIRECTOR NEW YORK CITY SUSTAINABILITY DEPARTMENT

You just need to choose any building in New York and the map will tell you the level of emissions it produces. We can get a detailed picture of the fuel, electricity and gas consumption, and understand which would be the most suitable strategies for reducing the use of fossil fuels.

MICHELE BUONO

Who pays for the work?

MARK CHAMBERS - DIRECTOR NEW YORK CITY SUSTAINABILITY DEPARTMENT

We've organised a programme of long-term, low-interest loans which are paid back via the savings that are made on energy bills.

MICHELE BUONO OFF SCREEN

No time is wasted, you get on with it. You need to make the buildings and facilities efficient and do so in a way that ensures the buildings are not sieves just leaking energy; technical advice for everyone provided by the council with particular attention paid to those who are the population's least well-off. 987 Amsterdam Avenue. Those with the boiler.

KEITH WILLIAMS

We paid for the new boiler ourselves, but we'd never have been able to do it if those from the modernisation programme hadn't donated the rest.

MICHELE BUONO OFF SCREEN

The installation, all the devices and control systems, such as external temperature sensors to ensure the boiler isn't working more than it needs to. Is that all?

KEITH WILLIAMS

No! Doors and windows! They checked to see if there were any points where heat was escaping; and we are getting things done.

MICHELE BUONO

Is this your house?

KEITH WILLIAMS

It's no palace, but it's my humble abode.

MICHELE BUONO

Low energy bulbs?

KEITH WILLIAMS

They gave ten to each apartment, look how bright they are.

MICHELE BUONO

Did they also give you valves for the radiators?

KEITH WILLIAMS

Of course! If you don't need much heat in one of the rooms, you can turn it down and save energy.

MICHELE BUONO

And who painted the roof?

KEITH WILLIAMS

We did that all ourselves, they explained how to do it; the silver paint reflects the Sun's rays and so the building doesn't get too hot.

MICHELE BUONO

And what did the engineers say?

KEITH WILLIAMS

They said it was fine. Look, it's written here: "Cold roofs and building envelope ok".

MICHELE BUONO

What's your exact name? I need to write your name down for the interview.

KEITH WILLIAMS

Hold on, let me just check that I don't owe anyone any money. Ok, my name's Keith Williams, I came to live in this building in March 1981 with my mother. It was always my dream, when I was in the Army, to get her out of that squat in Harlem she was living in. I want to tell you something: those people from the modernisation programme have been so good. We're just common people, and they've given us help, advice, even money. And now apparently it's us that are leading the way, because we're the first to install solar panels. Thanks for coming to 987. Wait and see what it will become.

MICHELE BUONO OFF SCREEN

There are 50,000 critical buildings that need immediate attention, then there's about another million that need to be checked and brought into line with the legislation. As soon as the buildings have been made efficient and equipped with solar panels, they'll be in a position to generate more energy than they consume.

DOUG STAKER - VICE PRESIDENT ENEL X NORTH AMERICA

Equipped with battery systems, they can supply energy to buildings that need it. It's from here that we connect to the grid.

MICHELE BUONO OFF SCREEN

A programme charges the batteries if too much energy is produced by the solar panels or during those periods of the day when the energy is cheaper - for example at night - it is then used during those moments when there are peaks in demand.

DOUG STAKER - VICE PRESIDENT ENEL X NORTH AMERICA

The power stations that kick into action during peaks in demand are the most polluting: they use twice the amount of fuel as a normal power plant, so they produce twice the emissions.

MICHELE BUONO OFF SCREEN

Once fully operational, the system would replace those highly polluting power stations, thus reducing emissions even if there are peaks in consumption.

DOUG STAKER - VICE PRESIDENT ENEL X NORTH AMERICA

Exactly.

MICHELE BUONO OFF SCREEN

This is a residential complex consisting of 625 apartments. Here is New York's first external lithium-ion battery system which works together with a photovoltaic panel installation on the roofs.

DOUG STAKER - VICE PRESIDENT ENEL X NORTH AMERICA

It's part of the package of incentives for the Brooklyn-Queens area and it's an example of how even the poorer sections of the New York population can be included in the programme.

MICHELE BUONO OFF SCREEN

Energy upgrades for buildings are mandatory, otherwise there are fines to pay which are more expensive than having the work done. You can also decide to put a garden or vegetable garden on your roof, you just have to reduce emissions. And the roofs of New York are starting to turn green.

ERIC DALSKI - LANDSCAPE ARCHITECT - HIGHVIEW

It's an extremely effective form of insulation that prevents heat escaping from the building. In summer, when the temperature of a normal roof reaches 60 degrees, a green roof stays as low as 32, 35 degrees maximum, so there's less work for the air conditioners to do. In addition, the plants are able to absorb carbon dioxide and to integrate it into the biomass.

MICHELE BUONO OFF SCREEN

The green roof system, once fully developed, will contribute to reducing the ground temperature by one degree. And what if every roof in New York had a green roof?

RAFAEL ESPINAL – NEW YORK CITY COUNCIL

There would be more than 10,000 hectares of plant life and the impact would be enormous.

ERIC DALSKI - LANDSCAPE ARCHITECT - HIGHVIEW

These are chives, their beautiful purple flowers which bloom in spring cover the whole roof.

MICHELE BUONO

You're going in completely the opposite direction compared to the federal government.

COSTA CONSTANTINIDES - NEW YORK CITY COUNCIL

There's no time to waste and we can't wait for help from the federal government, at the moment if they get involved it's only to make things more difficult for us. It's the cities that are on the front line now. New York has shown that not only are cities capable of facilitating these activities, but that it is them that have to drive them.

SIGFRIDO RANUCCI IN THE STUDIO

There's no time to waste. Just having a policy that promoted the creation of rooftop gardens would generate new jobs. According to a research study carried out by the non-profit organisation Urban Green Council, by 2030, as a result of new climate legislation, 20 billion dollars worth of economic activity could be generated, which in itself would create 141,000 new jobs. This is just one example of an aggregate economy, and the non-profit organisation also said they'll make their project available to all cities, to any administrations that are interested. It's free, so... take advantage of it. Because they've even done it in Nice. They created a critical mass. In France there was a city that took a look around itself and, together with the neighbouring towns, they looked each other in the eye, they shook hands and what we've learned is that a city doesn't gobble up its surrounding areas, it doesn't create poverty, inequality or the proliferation of intolerance, but it's quite the contrary: a metropolitan area, a mountain area and a coastal area all became resources for each other. The whole community benefited, more public funding and private investment came flooding in and they all live in a less contaminated environment and it's no utopia, eh I can assure you.

MICHELE BUONO OFF SCREEN

In this part of the Mediterranean there is no longer a city that's just called Nice: now there's the Nice Cote D'Azur Metropolis. It's become an urban area covering 1,400 square kilometres with the sea in one district and the mountains in another.

CHRISTIAN TORDO - HEAD OF FINANCE AND ECONOMY NICE COTE D'AZUR METROPOLIS

The objective is to distribute the wealth uniformly across the whole territory.

MICHELE BUONO OFF SCREEN

Forty-nine municipalities, since 2014, have combined their budgets to ensure everyone is equal and grows together.

MICHELE BUONO

What benefits does this offer?

LOUIS NEGRE - VICE PRESIDENT NICE COTE D'AZUR METROPOLIS

Unity is strength! By combining our budgets, we have a total of one and a half billion euros with which we can implement development policies that benefit everyone. We also receive loans from Europe which they have no problems giving to us, because we have the capacity to pay them back quite easily, something that a smaller municipality wouldn't have.

MICHELE BUONO OFF SCREEN

The Metropolis Council The municipalities have transferred most of their authority to here. All the mayors are here, they evaluate the projects and vote for them only if they believe they will benefit the entire community.

ISABELLE BRÈS - MAYOR OF COLOMARS – NICE COTE D’AZUR METROPOLIS

When it comes to the decisions, the mayor of Nice has no greater weight than any of the other mayors from the smaller municipalities. Each mayor continues to manage their own territory, but we work together on the larger issues.

MICHELE BUONO OFF SCREEN

The municipality of Isola in the Alpes-Maritimes department, a population of 800 people.

JEAN-MARIE BOGINI - MAYOR OF ISOLA - NICE COTE D’AZUR METROPOLIS

Before we became part of the metropolis, there was an incinerator here that stopped working, and we just didn't have the money to build another one that would be legally compliant.

MICHELE BUONO OFF SCREEN

Waste is now the responsibility of the Metropolis. Each municipality has a collection point where the waste is separated, it is then sent to the central collection point in Nice which handles the treatment and disposal.

JEAN-MARIE BOGINI - MAYOR OF ISOLA - NICE COTE D’AZUR METROPOLIS

We just pay a tax which is 25 percent lower than it was costing us when we were on our own.

MICHELE BUONO OFF SCREEN

It's the same for the wastewater treatment. The old facility was no longer compliant with legislation and a new one would have cost the municipality 7 million euros.

JEAN-MARIE BOGINI - MAYOR OF ISOLA - NICE COTE D’AZUR METROPOLIS

We would have been in debt for thirty years and any other investments would have been impossible.

MICHELE BUONO OFF SCREEN

So, the water treatment plant was built. The Metropolis took care of it. This is how you create additional resources to restore bridges, renovate the façades of houses and repair the town's roads.

JEAN-MARIE BOGINI - MAYOR OF ISOLA - NICE COTE D’AZUR METROPOLIS

In the past a mayor was only able to launch a new project every three years, now we're rolling out about ten a year.

MICHELE BUONO OFF SCREEN

With tickets costing just one euro, a bus network connects the entire metropolitan area, from the mountains to the sea. And thanks to this, tourism is also now on the rise.

JEAN-MARIE BOGINI - MAYOR OF ISOLA - NICE COTE D’AZUR METROPOLIS

This city is unique throughout the world: you can travel from the mountains to the coast.

MICHELE BUONO OFF SCREEN

The network connects buses, trains and the new tram lines between Nice and the coastal towns.

CHRISTIAN TORDO - HEAD OF FINANCE AND ECONOMY NICE COTE D'AZUR METROPOLIS

It carries 60,000 passengers per day, helps reduce traffic in the city and makes life easier for businesses.

MICHELE BUONO OFF SCREEN

Because the network covers the whole area, each municipality can make a contribution to creating value for everyone. Nice and the coast contribute with the sea, the port, the international airport and a research ecosystem.

OLIVIER SASSI - MANAGING DIRECTOR NICE ECO-VALLÉE

This infrastructure has enabled us to obtain almost 400 million euros in private investment and the Metropolis has invested 100 million euros in state-of-the-art university equipment and training for the Technopole.

MICHELE BUONO OFF SCREEN

And a research district was created: living accommodation, services and a university alongside a range of businesses. Mediterranean Institute of research and sustainable development.

ARIANNA CALZA – SMART CITY PROJECT UNIVERSITY OF CÔTE D'AZUR

What you can see around you is a 360 degree reproduction of Nice's new intelligent district: it's a cityscan application that enables us to observe our district.

MICHELE BUONO OFF SCREEN

Real time data on the types of buildings, activities and consumption, the number of inhabitants and type of use. The objective is to get a detailed understanding of the area and to plan any necessary operations or activities.

ARIANNA CALZA – SMART CITY PROJECT UNIVERSITY OF CÔTE D'AZUR

This is a representation of the mobility data which enables the user to understand how to get from point A to point B and which are the different modes of transport that they can use.

MICHELE BUONO OFF SCREEN

The experimental system, managed by IBM, collects and aggregates data so as to enable the user to choose the best way to travel quickly, it also enables the administration to understand where best to aim their mobility policies. Air quality sensors are scattered everywhere around the city.

MICHELE BUONO

What results has the combination of all these large metropolitan area activities produced?

CHRISTIAN TORDO - HEAD OF FINANCE AND ECONOMY NICE COTE D'AZUR METROPOLIS

An increase in the number of innovative companies. Another good indicator is the airport: in 2008 the number of passengers was around 8 million, today there are 14 million, and two thirds of them come from outside France.

MICHELE BUONO OFF SCREEN

Nice shares a border with Italy, and the vision of a large metropolitan area could be extended across the border, why not?

MICHELE BUONO

Mr Negre, let's imagine another vision: to create an even larger area that brought Nice and Genoa together.

LOUIS NEGRE - VICE PRESIDENT NICE COTE D'AZUR METROPOLIS

It could be interesting from an infrastructure standpoint: we haven't got a large port like Genoa has, whilst we have an international airport whereas Genoa doesn't. This could give us a starting point from which to start working together and to rediscover our joint roots, Roman Liguria.

MICHELE BUONO

Then we could create sea motorways and strengthen the rail links.

LOUIS NEGRE - VICE PRESIDENT NICE COTE D'AZUR METROPOLIS

We could efficiently increase the number of trains that run.

MICHELE BUONO

You could effectively create a euroterritory.

LOUIS NEGRE - VICE PRESIDENT NICE COTE D'AZUR METROPOLIS

Exactly, yes, a euroterritory.

SIGFRIDO RANUCCI IN THE STUDIO

Rien Monsieur Negre. So, they're offering their hand, Nice is extending us its hand, but we don't know how to hold ours out because we don't have the networks, we don't have the infrastructure. And do you think our politicians will be capable of holding a discussion with that digital city? They definitely have a certain appeal, since they received 100 million euros in public investment, 400 million euros in private investment. They have increased their investment by 74% over the last 5 years and the wealth resulting from this aggregate economy has been redistributed to the neighbouring municipalities. And this is because the investors know that they are investing their money in a place that isn't just going to throw it away. They know that in that district, in that area, there's value being added. Starting with the continuous monitoring that they do. If you don't have an x-ray to show you what's wrong, how can you choose the right treatment? If you don't take action immediately, there's a risk that the illness will become chronic. They monitor everything, they gather data on the movement of people, this enables them to reduce travel times and to invest the time saved in being productive. They also collect data on waste disposal, they optimise, and then save 25 percent on the waste disposal tax. They even collect data on immaterial aspects, such as noise, and they share it with the research institutes, and more importantly with the public administration who can then analyse it and plan the future better, that's it. Instead, let's think about what might happen if, in an area of our country that's capable of aggregating a critical mass, say of around two million, we were to simulate an aggregate economy. Ok, there is a place that's got some serious skills and quality to offer, they are even building the Ferrari of the skies, they've got Europe's longest runway, if we were to turn our simulation into reality, Michele Buono's simulation, perhaps an entire territory could also reach for the skies.

MICHELE BUONO OFF SCREEN

Los Angeles is 240 kilometres in length and it has a population of more than four million people. Trains, underground trains and buses link the entire territory and its activities. Speak about Venice, Playa Vista, West Hills and all the districts you want, but it's all Los Angeles. There are almost 100 kilometres between Bari and Taranto, two ports and lots of activities in between, but this area has no name. And what if we view it as a single area?

BEPPE FRAGASSO - ARCHITECT - ANCE CONFINDUSTRIA BARI (Italian Association of Private Construction Contractors, Bari)

It would become a polycentric city where each city has its own attributes. If we could connect these two cities together, the infrastructures, the industries, the businesses, the movement of people, we'd mobilise a population of around two million people.

MICHELE BUONO OFF SCREEN

Bringing together two million people; engineering, chemical, pharmaceutical, food and aerospace industries, good schools and universities and this airport that's about to become a spaceport for private spacecraft flights and satellite launches. Grottaglie, near Taranto, Aerospace Technology District.

GIUSEPPE ACIERNO - PRESIDENT APULIAN DISTRETTO TECNOLOGICO AEROSPAZIALE

There was nothing here before, now there are these huge structures, this is Leonardo there are a thousand people working here, young Apulians.

MICHELE BUONO OFF SCREEN

They make two sections plus the horizontal stabilizer for the Boeing 787 Dreamliner, made of carbon fibre. A B747 acts as a shuttle between here and Charleston, in South Carolina, which is where they are assembled.

GIUSEPPE ACIERNO - PRESIDENT APULIAN DISTRETTO TECNOLOGICO AEROSPAZIALE

It's 3.2 kilometres long; it's the longest runway in Europe.

MICHELE BUONO OFF SCREEN

The Apulian Aerospace Technology District is a consortium consisting of companies from the aerospace industry, universities and research centres.

GIUSEPPE ACIERNO - PRESIDENT APULIAN DISTRETTO TECNOLOGICO AEROSPAZIALE

We're also talking about Avio aero from the General Electric Group which, here in Apulia, has started producing an engine for a regional aeroplane.

MICHELE BUONO OFF SCREEN

At the Brindisi facility they produce 3D-printed components for aviation engines, they also repair the engine components mounted on 80 percent of all civil and military aircraft. They count a total of 700 employees and they create spin-off activities for another 75 local companies.

Monopoli, Bari. Blackshape, Angel Group. This aircraft, completely Apulian, was designed and built in this facility. The average age of the employees is thirty-two and 60 percent of them have a degree. Sold in 18 countries, this pleasure aircraft is also particularly suitable for carrying out surveillance missions.

GIUSEPPE ACIERNO - PRESIDENT APULIAN DISTRETTO TECNOLOGICO AEROSPAZIALE

This small Blackshape aircraft has been given the nickname the Ferrari of the skies, since it's a small plane that's entirely made of carbon fibre.

MICHELE BUONO OFF SCREEN

Mola di Bari. Sitael, also from the Angel Group. Here they design and build satellites for a new frontier: a constellation of small satellites for observing Earth, for telecommunications and for scientific applications. From Mola di Bari to Vandenberg, California. Space X Falcon 9 is taking Eseo into orbit, a satellite invented by students from ten European universities.

GIOVANNI SYLOS LABINI – CEO PLANETEK ITALIA

Today, in Apulia, we have the capability to build satellites, to develop the on-board software for processing data from an Earth observation mission: in other words, we control the entire production and supply chain.

MICHELE BUONO OFF SCREEN

Bari. This is Planetek. Here the data collected by the satellites is transformed into information. The satellites offer a ground resolution of up to 30 centimetres, enabling us to reconstruct millimetric land surface shifts and predict extreme events.

GIOVANNI SYLOS LABINI – CEO PLANETEK ITALIA

With our technology we are able to support the impact analysis of rising average sea levels on coastal areas.

MICHELE BUONO OFF SCREEN

To see all this, as we said, as part of a single metropolitan area connected with all the other activities. A large metropolis of two million people with two ports, one per district: Bari and Taranto. You would need, however, a train line for large trains to carry goods between the two industrial centres of the Bari Taranto metropolitan area.

SERGIO PRETE - PRESIDENT TARANTO PORT AUTHORITY

The utility would be – indeed - in linking the two strategic infrastructures, but more than that, in addition to the infrastructures, you would also be connecting up the market that's between them.

MICHELE BUONO OFF SCREEN

The industries located between them could utilise the logistics system to access the overseas shipping lines from Taranto, and from the port of Bari access the Balkans and the Middle East.

UGO PATRONI GRIFFI - PRESIDENT SOUTHERN ADRIATIC PORT AUTHORITY

It's quite plausible, this is a very realistic scenario. The port infrastructure in Taranto is deeper than we have here, they can attract the kind of shipping traffic that we're not capable of accommodating in Bari. We can supply Taranto with what it lacks to become a hub for the central and northern European markets.

MICHELE BUONO OFF SCREEN

Via the Adriatic railway line which is currently being upgraded to take 750-metre long trains that can transport 2,000 tonnes of goods. This is the only way that Taranto could intercept the traffic of goods from the Far East.

ALESSIO MUCIACCIA – CEO GTS RAIL BARI

Italy and Apulia have a great advantage, they have the port of Taranto, a fantastic port facility that's perfectly located on the route from the Suez Canal to Gibraltar. And today everything moves across the Mediterranean to get to the ports in northern Europe. Right at this moment we're incredibly lucky: we're in the right place at the right time.

MICHELE BUONO OFF SCREEN

In the Bari area they build trains, they also carry out maintenance and provide training for logistics specialists. They are ready to take on the challenge, as long as the two ports are connected by the railway.

SERGIO PRETE - PRESIDENT TARANTO PORT AUTHORITY

For the ports this would increase the movement of both goods and people, which would therefore undoubtedly increase business opportunities and employment for the entire region.

MICHELE BUONO OFF SCREEN

An area can only consider itself a real metropolitan area when people can travel around quickly.

BEPPE FRAGASSO - ARCHITECT - ANCE CONFINDUSTRIA BARI (Italian Association of Private Construction Contractors, Bari)

Of course, a kind of overground metro system would be desirable. We don't want to increase the populations of Bari or Taranto, we want to improve the links between Rutigliano, Acquaviva, Santeramo, Gioia, Martina and Grottaglie, in such a way that enables these towns to be attractive to people.

MICHELE BUONO

What would the ideal travelling times be?

BEPPE FRAGASSO - ARCHITECT - ANCE CONFINDUSTRIA BARI (Italian Association of Private Construction Contractors, Bari)

We would be looking at travelling times of no more than thirty minutes.

MICHELE BUONO OFF SCREEN

Like in Chemnitz. In Saxony, in eastern Germany. This is a tram/train, a tram that turns into a train when it needs to.

MATHIAS KORDA – VMS HEAD OF TRANSPORT - CHEMNITZ

It's the perfect solution for connecting Chemnitz with the surrounding areas where around 800,000 people live. Along the valleys in the Ore mountains there are many towns as well as different types of companies and commercial activities.

MICHELE BUONO OFF SCREEN

Five lines, radiating out like spokes, connect the city with the rest of the region. In the residential areas it's a tram, stop after stop, it then becomes a train and travels to another town.

UWE LEONHARDT- VMS TECHNICAL DIRECTOR - CHEMNITZ

At this point the parameters change and we become a train. We're now travelling at one hundred kilometres per hour.

PASSENGER

I can arrive right outside the centre where I do my rehabilitation without needing to change the means of transport. No changes, I just stay sat down until I get to my stop and then I get off.

UWE LEONHARDT- VMS TECHNICAL DIRECTOR - CHEMNITZ

The numbers of passengers increased by 80-90 percent between 2017 and 2018.

YOUNG WOMAN

We study in Mittweida and we return home to Chemnitz.

YOUNG MAN

Straight from the university to our house.

YOUNG WOMAN

No need to take the car and have problems with traffic or parking.

MICHELE BUONO

It's as if it's just one city.

MARCEL SCHMIDT - MAYOR OF STOLLBERG

I would call it a network of small towns and large cities; in Chemnitz there's an opera theatre, we've got our markets, we have a lovely park which families from all over the region come to visit.

MICHELE BUONO

How's business?

INES FLEMMING - BUSINESSWOMAN

Many tourists come here now, the centre is more alive and that's undoubtedly a good thing for us.

KERSTIN WALTHER – BOOKSHOP MANAGER

Normally, in a small town like this, a bookshop wouldn't survive, but we're doing well because now we're well connected.

MARCEL SCHMIDT - MAYOR OF STOLLBERG

Around 6,000 commuters travel to Stollberg each day for work. Being able to make that trip in thirty minutes, whether it be from the rural areas or from the city, is beneficial to both employees and businesses.

MICHELE BUONO OFF SCREEN

From the mechanical engineering sector to state-of-the-art technological manufacturing. There's even a vinyl record factory, making three and a half million records for the international market.

CARSTEN HAUPT – CEO CELEBRATE RECORDS

The airports of Dresden and Leipzig are linked to Chemnitz by the railway and to get to us takes a total of fifty minutes. We send packages in the late afternoon and they can be anywhere in the world within 48 hours.

MICHELE BUONO OFF SCREEN

New businesses continue to spring up along the tram/train line and they are also building residential areas. Let's go back to our simulation: Bari and Taranto is a single metropolitan area with a complete set of infrastructure. There's a steelworks in Taranto: what role could that play in an area that's completely interconnected? You make cars with steel. Might it be possible to set up a car factory that looks to explore new production frontiers?

The most advanced self-driving car project is Italian. Parma, Vislab. This car drives itself: put the address in the sat nav, press ok and sit wherever you like. It reads the signs, gives way, it sees pedestrians.

ALBERTO BROGGI - MANAGING DIRECTOR VISLAB/AMBARELLA

There are these cameras on the roof that have a 360 degree view of up to 150/200 metres, the cameras on the side can see up to 5 metres.

MICHELE BUONO

Unlike humans, it respects the rules.

ALBERTO BROGGI - MANAGING DIRECTOR VISLAB/AMBARELLA

Yes.

MICHELE BUONO

What about in a world that's completely self-driven?

ALBERTO BROGGI - MANAGING DIRECTOR VISLAB/AMBARELLA

93 percent of accidents are caused by humans, a large number of that 93 percent would be avoided.

MICHELE BUONO OFF SCREEN

Because this car can see more than one person is capable of - in front, behind, to the side - and the software turns that information into driving commands. The on-board cameras codify, using different colours, the distances to every object and obstacle.

ALBERTO BROGGI - MANAGING DIRECTOR VISLAB/AMBARELLA

The closer the obstacle, the redder it gets. For example, here I'm moving my head closer so it's turning red, but as I move away it becomes blue and then turns green.

MICHELE BUONO OFF SCREEN

If all the cars worked like this, what would be the point of owning one? It could be shared. Would a metropolitan area such as this be a good place for starting experimentation?

ALBERTO BROGGI - MANAGING DIRECTOR VISLAB/AMBARELLA

The true advantages derive from aggregating many communities together, different cities or different areas. The more sharing there is, the better.

MICHELE BUONO OFF SCREEN

Self-driving vehicles could exchange information with the entire urban infrastructure, they've got cameras that can see everywhere. What contribution could you make to this driving system?

GIOVANNI SYLOS LABINI – CEO PLANETEK ITALIA We would be in a position to validate that information, to say what the true situation actually is and if this corresponds to the scenario that the system is seeing in that moment.

MICHELE BUONO OFF SCREEN

A safety system to impede potential IT system attacks that might attempt to change the vehicle's vision and cause problems.

MICHELE BUONO

What would be needed to put creating a metropolitan area like this into motion?

MARCO BENTIVOGLI – GENERAL SECRETARY FIM CISL (Italian Federation of Metalworkers and Mechanical Engineers)

Intelligent production needs an ecosystem. From this perspective the aerospace, steel and all the other manufacturing industries may have many aspects in common and this, aggregating what is today completely fragmented, i.e. the individual municipalities, would make projects possible that until now have been considered unthinkable.

MICHELE BUONO OFF SCREEN

In a fully operational system, the self-driving car would pick you up and, once finished, go and park outside the city in large silo car parks, one above the other, ready to come when called. Such structures could be combined with a current Enel X project: to integrate electric vehicles into a network of charging stations.

FRANCESCO VENTURINI – CEO ENEL X

The benefits are huge because it gives you the possibility to ensure that the energy generated at certain times of the day can actually be used when there is a need for energy.

MICHELE BUONO OFF SCREEN

By getting it from the electric cars that are connected to the charging stations.

MAURIZIO VERGA - CESI RICERCA MILAN

The charging stations are bidirectional: I can charge when I need the energy and I can feed energy back into the network when it requests it.

MICHELE BUONO OFF SCREEN

To maintain the equilibrium in the network, otherwise it would go haywire. In so doing, instead of suspending the production of renewables when there are moments of excess, that energy can be stored. The result? Energy efficiency that benefits the economy and the environment.

MICHELE BUONO

Would thinking on the scale of large metropolitan areas help these kinds of projects?

FRANCESCO VENTURINI – CEO ENEL X

It would also help to ensure that the rules were always the same. We have a big problem in Italy, many decisions are taken at the local level: installing a charging station in town A and another in town B often requires two completely different sets of rules to be followed, and these can even be neighbouring towns.

MICHELE BUONO OFF SCREEN

Self-driving cars equipped with electric engines could transform these silo car parks into huge energy storage batteries which would also contribute to reducing traffic

congestion in urban areas. In a large metropolis this would lead to an increase in business activity and therefore an increase in demand for infrastructure and buildings.

MICHELE BUONO

This is a simulation involving one area of the country, but it could be replicated right across the nation.

MARCELLO MINENNA - ECONOMIST

The economic impact would be a difference of a few percentage points in the Gross Domestic Product; Italy desperately needs to modernise.

MICHELE BUONO

How could this process be financed?

MARCELLO MINENNA - ECONOMIST

The Government could set up a special purpose vehicle and look to the markets. Look to the constructors who could underwrite the riskiest securities and then have the right to utilise the value of that infrastructure over time; turn to families where, with a guarantee from the Government, the investment would be comparable to a government bond; and then there's the banks, pension funds.

MICHELE BUONO

How much could be raised between private savings, institutional investors and companies?

MARCELLO MINENNA - ECONOMIST

I believe that an initial 100 billion euros is completely plausible, taking into consideration the level of private savings and the funds available from institutional investors and companies.

SIGFRIDO RANUCCI IN THE STUDIO

The simulation involves an area where there is a rather tough nut to crack: Ilva! Right next to a steelworks that in recent years has survived on blackmail: jobs in exchange for poison, judicial protection, you could set up a factory making the cars of the future instead. Self-driving cars that also have electric engines and can, if given the capability, feed clean energy back into an intelligent district. The godfather of self-driving cars, the godfather of the project is in Parma, it's Italian, but the project, the patent has already flown across to the United States. And there you go: all future royalties will end up in their pockets. At least let's not lose the chance to build a factory here making the cars of the future, but let's put this into an intelligent context. The union official Marco Bentivogli, one of the few people who shares this vision, a consultant for the Ministry of Economic Development, when speaking about the artificial intelligence project, said: "Intelligent production needs an ecosystem. Aggregating what is today completely fragmented across the territory would make projects possible that until now have been considered unthinkable". We've got the aerospace expertise, they're building the Ferrari of the skies as we've seen, they've got the longest runway in Europe, but walk out the front gate and there are no networks, no intelligent roads to take you to the region's two strategic areas: Bari and Taranto. The port of Bari will extend its hand to the port of Taranto as long as the necessary railways are built to enable those long trains to run that can transport the goods. What's the reasoning? The reasoning is this: we are Bari and Taranto and we are in a strategic position: between North Africa and northern Europe. Two and a half million containers pass under our noses every year. Let's try to intercept them, let's

exchange goods and with an intelligent railway network we could open up to markets in the Balkans, the Middle East and northern Europe. Ok, we would need to build our own little Silk Road which would be a godsend, at least according to Confindustria Bari architect Beppe Fragasso, because it would revitalise an entire sector, the building sector which has been left behind, it would modernise it and, above all, it would bring back the hundreds of thousands of people who have left that line of work. And it wouldn't even be a problem from a financial perspective, says the economist Marcello Minenna, you would just need to create a vehicle and this would attract investors as long as there's a clear political vision and a concrete implementation schedule. It's a combination that's already borne fruit, elsewhere... always elsewhere eh... always.

MICHELE BUONO OFF SCREEN

The United Kingdom. A 600-billion-pound, ten-year government plan to create new infrastructure drove the construction industry to ask one question: will it be possible to complete within budget and guarantee the delivery schedule?

JAIMIE JOHNSTON – DIRECTOR BRYDEN WOOD GLOBAL DESIGN STUDIO

We understood that the problem was inefficiency and that it was necessary to reorganise the entire production process to make it quicker and more cost effective.

MARTIN WOOD – CO-FOUNDER BRYDEN WOOD STUDIO

Preventing this waste would mean being able to build more schools, more hospitals, more infrastructure, whilst spending less money.

MICHELE BUONO OFF SCREEN

The building cycle got a new lease of life in the United Kingdom and the construction industry started to change its approach: unify and digitalise all the processes. This makes it possible to transfer the majority of the work from the building sites to the manufacturers, where they create entire structures and façades complete with the necessary installations, whilst on site all the labourers need to do is assemble the final product. Each phase is coordinated in real time by the design studios.

JAIMIE JOHNSTON – DIRECTOR BRYDEN WOOD GLOBAL DESIGN STUDIO

There's a wide variety of skills in this studio, there are robotics experts, industrial designers, programmers, data analysts, economists, and process engineers.

MICHELE BUONO OFF SCREEN

They create software for optimising the design process using standard modules for schools, hospitals and student accommodation.

MAURO BURGIO – ARCHITECTURE DIRECTOR BRYDEN WOOD STUDIO

You select the type of school you are looking to design, you select the blocks to understand how many internal components make up that module: the number of walls, pillars, beams or doors you need.

MICHELE BUONO OFF SCREEN

You can then order exactly the materials you need. No waste, and certain costs. All the projects are on the BIM, which is a model that enables all the teams to share all the information in real time.

MARTINA CARDI – ASSOCIATE ARCHITECT BRYDEN WOOD STUDIO

The personnel on site usually visualise the models, this enables them to evaluate the model and to question all the designers about their reasoning, if there are any specific characteristics or if there are any mistakes.

MICHELE BUONO OFF SCREEN

No waste, no downtime. All construction and assembly tests can be done using virtual reality, to make sure everything works. They create a prototype of each component before it's sent for production.

MAURO BURGIO – ARCHITECTURE DIRECTOR BRYDEN WOOD STUDIO

We created a prototype measuring approximately 15 metres by 15 metres on two levels, it was put up in just under two weeks, which if we were using a traditional construction approach would take more than four weeks. We provide the measurements of the pieces we need and we know exactly which type of component goes where, and it can all be assembled using an instruction manual, just like a child's toy.

MICHELE BUONO

What enables this kind of industrial organisation?

THOMAS MIORIN – PRESIDENT REBUILD ITALIA

It would mean increasing current levels of productivity by at least 50 percent. Hybridising the construction and manufacturing sectors would lead to cost reductions of up to 20, 30, 40 percent.

MICHELE BUONO

Advantages?

THOMAS MIORIN – PRESIDENT REBUILD ITALIA

It would make it possible to initiate projects in more outlying areas, even in small towns, places where these processes are not currently cost effective to undertake.

MICHELE BUONO

What would the impact be on employment?

ALFREDO MARTINI - DIRECTOR CIVILTÀ DI CANTIERE

If the redevelopment of buildings with 28 billion euros of new activities linked to energy efficiency, to incentives corresponds to two million six hundred thousand jobs, given that there's 320 billion euros worth of potential demand, you can understand what this would mean in terms of employment.

MICHELE BUONO OFF SCREEN

And this half of Los Angeles, full of people and activities, how much potential demand would it generate? But only if we see it as a single area, from Taranto to Bari.

SIGFRIDO RANUCCI IN THE STUDIO

How many little New Yorks or intelligent metropolitan areas could we create in our country. Michele Buono's simulation looked at two large cities in the south: but what if we extended it to all the other areas of the country, what impact would this have on GDP, on unemployment, on the environment? Well, we've seen that unity means strength. Even in the construction sector, where you can design and build a school, a public or private building, a large infrastructure project, the infrastructure the country needs, all to certain time frames and costs. Everything is managed by design studios

at the centre of a network, they monitor the companies that build the components, as well as those that carry out the construction work. And everything is traced. It's traceable. But the tongue ever turns to the aching tooth. We saw that the people conducting the orchestra in those design studios were Italian engineers and architects, but why are they there? So basically, our most prized asset, our people, we continue to give them away to other countries. But there's another horrible nagging feeling. The feeling that here in Italy, due to the lack of traceability and the waste that widen all those dark areas where it's so easy to play dirty, perhaps they wouldn't be able to do their job properly. Where it's easy to break the law on workers' health and safety, where there's worker exploitation, where it's the off-the-books cash payments that finance corruption. It's what you get from a weak vision, from a political class that prefers to take short cuts, those that keep the electorate hanging with promises of forlorn hope and that make them walk arm in arm with those who create their uncertainty. It's a weak vision which compels you not to take the right decisions for the common good. Why? Because you're afraid to lose popularity. To lose votes.