In the familiar boot shape of the Italian peninsula, the region of Puglia makes up the heel. It’s a place of broad plains and gentle hills, bounded on three sides by the sea. Agriculture and commercial fishing have largely defined the region’s economy as far back as Roman times—and today account for some 60 percent of Puglia’s economic activity.

Along the region’s Adriatic coast, picturesque ports like Trani, Barletta and Bari—the region’s capital and largest city—are home to fleets of mainly small boats that ply the local waters for mullet, cod, snapper, tuna and a dozen other varieties of fish. The fresh catch they bring back to port supports not only the fishermen’s families, but also the economic vitality of the region as a whole. The sense of tradition and continuity—of reassuring daily rhythms—are strong here. It’s seen in the way so many fishermen come from fishing families, as well as in the time-tested practices they follow.

---

University of Bari

A case study in smarter planet leadership

---

Leadership Spotlight

Under the guidance of Professor Giuseppe Visaggio, University of Bari is leading a consortium of players across Italy’s Puglia region to find new ways to reinvigorate growth in industries like commercial fishing whose roots go back to ancient times.

How Puglia’s fishermen got smarter

Professor Visaggio has long been a fervent believer that simplicity is essential to extending advanced business practices to industries and segments for which such advances have been out of reach. In the case of the region’s time-honored fishing industry, Visaggio realized core fishing practices were sound, but fishermen needed a new way to bring their catch to market. In fact, they needed to redefine the whole notion of ‘market’. A cloud-delivered service being tested by Visaggio

continued on the next page
Committed to making an impact

As a lifelong resident of Puglia, Giuseppe Visaggio knows firsthand the importance of farming and fishing to the region’s culture and prosperity. Visaggio’s other connection is through University of Bari, where, as a professor of software engineering, he has built a reputation and a track record of supporting local businesses by making technology more accessible. These days, he’s making perhaps his strongest impact through the university’s involvement in a regional development consortium known as DAISY-Net, whose members—universities and a growing number of technology companies from around the region—are designing new ways for Puglia’s businesses to solve old problems.

To see the focus of the consortium’s earliest efforts, one need only make the ten-minute walk from Visaggio’s office at the university to see the fishing boats of Bari Harbor. From the moment Visaggio and his colleagues at the university set out to show how cloud computing could make a big difference in the region’s economy, the local fishing industry—involved in the project through the efforts of Confcooperative Puglia, an organization that coordinates and manages relationships between unions and federations of various sectors in the region—stood out as a powerful test bed. The idea of targeting commercial fishing was first put forward by Visaggio himself. As both President of the DAISY-Net consortium and Scientific Coordinator of the strategic project (DIPIS) that employed cloud computing, Visaggio had both the credibility and the clout to make the case to other members of the consortium. When Visaggio and other research colleagues advanced the case before DAISY-Net’s board of directors, their main thrust was the potentially huge impact the project could have on one of Puglia’s most important economic sectors. In short, Visaggio asserted, the proposal was directly aligned with the consortium’s broad goals and could be implemented with a relatively modest up-front investment.

Looking for insights at sea

The strength of Visaggio’s confidence was equaled by the consortium’s conviction that practical usability—that is, solutions realistically woven into the way things are done—would be the key to success. To gain the necessary insights, Visaggio’s team went to the source, sometimes getting their feet wet in the process. After going out in the boats with local fishermen, team members brought back a firsthand account of their top priority—improving the way fish are brought to market.

The root of the issue is that there is no one “market” for fish, but a collection of markets—one for red tuna, one for sea bass and so on—each subject to its own supply and demand at any point in time. Without any view into demand conditions, Visaggio explains, fishermen have little recourse but

“We consistently emphasized the consumability of the technology in every aspect of our design efforts, with an eye on people who don’t have high technology skills.”

and his team now enables Puglia’s fishermen to sell into a broader market and better align their catch with what the market is demanding. And with on-boat activities triggered by the market, crews can sort and pack smarter—while still miles out in the Adriatic. This heralds a new age of opportunity for an industry steeped in tradition.

The benefits of University of Bari’s smart fish-market solution

- 700 percent increase in the size of fishermen’s addressable market
- 25 percent increase in income for fishermen using the solution
- Stronger margins through higher fish prices due to an improved ability to match supply with demand
- Significant reduction in wasted fish catches
- 70 percent faster time to market—from “port to plate”—by virtue of smarter processing of fish catch while boats are at sea
Leadership is:
**An unwavering focus on the user, not the technology**

Professor Visaggio and his team recognized that the transformative potential of cloud technology could only be realized if it were realistically woven into the core, everyday practices of the fishermen they intended to help. “We consistently emphasized the consumability of the technology in every aspect of our design efforts, with an eye on people who don’t have high technology skills.”

—Professor Giuseppe Visaggio
DAISY-Net Project Leader
University of Bari

Lesson learned:
**In defining needs, get information firsthand**

Professor Visaggio knew that the only way for his team to deliver the right solution was to get out of the software lab and into the boats with fishermen to witness their daily routines. “The insights we drew from our experience in the field proved to be the biggest factor in the solution’s success.”

— Professor Giuseppe Visaggio

Netting new markets

For Puglia’s fishermen, the University of Bari solution promises nothing short of a life-changing transformation in the way they function, as well as economic opportunities. They may fish the same waters they always have, but now these fishermen are able to sell their catch into markets that were previously beyond their reach. That’s because the market transparency enabled by the solution makes it possible for a new wave of individual restaurants, shops and markets—many several miles away from port—to bid directly on the fish through an online auction capability. For Puglia’s fishermen, the broadest impact of having more buyers in the market comes from a nearly 700 percent increase in buying power that they can now address. But ultimately, the fact that each boat is better able to liquidate its catch—and do so at the best possible price—may leave the biggest impact on fishermen’s daily lives.
At sea with smarter processes

In the course of field research, Visaggio’s team also recognized that for the new market model to be viable, Puglia’s fishermen would need to adapt their processes to meet a more diverse set of requirements from customers, especially in the all-important realms of packaging and logistics. When a restaurant buys 1,000 pounds of red tuna, for example, it’s also buying the assurance that the fish will be sorted to its specifications, packed in the right kind of boxes and ready for immediate transport—all before reaching port. To fulfill this requirement, fishing crews needed the capability to perform these functions earlier in the cycle—not when they reached port, but well before. It’s not unlike just-in-time manufacturing, where market demand signals trigger activities up the value chain—only it’s taking place miles offshore.

Visaggio’s team needed a mechanism for delivering these signals and found it in the cloud. At the moment a customer contracts to buy one or more species of fish, algorithms embedded in the solution formulate specific guidelines and communicate them wirelessly and in real time to boat crews, who can begin acting on them immediately. The resulting speed and efficiency with which Puglia’s crews can process a cargo as inherently perishable as fish is perhaps the single biggest reason they are now able to serve markets both near and far. In this and other ways, the solution provides an infrastructure for fishermen to follow their entrepreneurial instincts.

A new formula for success

But the fact that the solution is delivered as a cloud service—running on an IBM System z® server—means that neither the fishermen nor their customers had to invest in costly up-front infrastructure. To Visaggio, this arrangement embodies the DAISY-Net consortium’s pioneering approach for bringing smarter business practices to Puglia’s smaller enterprises. “Cloud computing has enabled us to create a flexible framework for promoting new business models and ways to compete and grow,” says Visaggio. “It is enabling us to change the formula for success—for the companies that use it and for the region as a whole.”
Demonstrating the versatility of this approach, Visaggio and his colleagues are also in the process of developing new solutions for other key sectors of Puglia’s economy. The most advanced effort is designed to help the region’s wine-making industry maintain the distinctive qualities that have made Puglia the second-largest wine producing region in Italy. Using RFID technology and running on the same cloud infrastructure, the solution is designed to continually monitor factors such as temperature, humidity and, perhaps most importantly, soil conditions at vineyards across Puglia to guarantee both the quality and the provenance of the grapes grown there. A comparable approach is being used to monitor the conditions in vineyard wine cellars to ensure that proper storage conditions are continuously maintained.

Spreading waves of success

Meanwhile, the smart fish-market solution is now being tested among a subset of the roughly 1,000 fishermen it will ultimately serve. Confcooperative Puglia, one of the strongest promoters of the initiative, played a crucial role in their involvement. When Visaggio and his team first fanned out among the regional ports in their research stage, they set in motion the first ripples of interest among the local fishermen. When they came back a few months later to recruit several dozen fishermen to test the solution, that interest intensified and spread still further. Now several months into the field tests, that inaugural group of fishermen has seen the impact of the solution in their lives and they’re eager to get the word out—waste is down, profits are up and their customer base is growing.

So too is Visaggio’s reputation as someone who cares about the community. In and around Bari, he has heard firsthand the appreciation of fishing families for the university’s most recent initiative, which adds to his already long track record of locally focused efforts. But what may energize him most is the sense of pride he feels in being able to make a difference in the lives of Puglia’s citizens. “It’s personally and professionally satisfying to apply new ideas like cloud computing to breathe new competitive life into such established industries,” Visaggio asserts. “It inspires us [at the university] to keep on looking for new ways of doing things.”