

GILYTICS INFRACHALLENGE 2021 EXECUTIVE SUMMARY

Gilytics' Pathfinder Software and services are aligned with the Infrachallenge definition of resilience as we help utilities and the communities, they operate in to survive, adapt, and grow despite the chronic stresses experienced related to climate change or natural disasters and get linear infrastructure upgraded or connected faster.

Value Proposition

Our technology automates linear infrastructure planning, routing, and monitoring helping companies and communities building infrastructure save time, money and CO2 with better data, visuals, and communication to connect projects faster. Our vision is to become the standard software solution for the planning of linear infrastructure to deliver on our mission to accelerate the clean energy transition through smarter planning processes. It can also be used in construction monitoring and asset management.

Scalability

Our software is very scalable as it uses spatial data and satellite imagery that is available globally. The tool addresses the large problem that 50% of projects are delayed often due to manual processes and poor data or are delivered around \$500M over budget. The need to build new infrastructure to connect renewables and more sustainable transport. The tool can be used for more than 32% of infrastructure from planning cable, pipe, powerlines, renewables, roads, oil & gas, telecom, transport, and water projects. The tool can be used to plan overhead, underground, offshore, brownfield and greenfield projects. For power where we have our initial focus, water and telecom, the approximate addressable market is around \$3B. Powerlines are our first segment with \$1T required to build 1MKM of new powerlines in the coming years and 3000+ potential clients. Our solution is already used by the largest utilities and rail providers in Germany and Switzerland and we have successfully expanded into other markets starting with the largest utilities and scaling through their partners. Our first clients include Transmission System Operators, Distribution System Operators, renewables developers, energy, engineering, and rail companies, as well as ministries responsible for infrastructure.

Implementation Considerations

Our Pathfinder tool can be easily applied and has already been implemented in projects in North America, South America and throughout Europe. It has been used to plan projects covering more than 6000 miles. Spatial data is available at no cost in most markets and where it is not more costly satellite images can be used. Analysis can be done on the cloud and if required on premise. The software applies local costs, engineering, environmental, and regulatory rules based on user feedback to identify routes within spatial constraints. This customization and optimization approach makes implementation across markets straight forward. Gilytics provides data services to help clients to collect and learn how to process data in the software as a first step. We start with a pilot project using data from an existing project to demonstrate the accuracy of our analysis to help clients who can be at first resistant to use a new technology to become comfortable and trained on the tool. We have experienced no churn with those using the tool starting to apply it as the standard for planning new projects.

Benefits to End Users

Introducing new infrastructure from powerlines to telecom cables to transport connections, increases the economic growth of the communities benefitting from these new projects and employment opportunities. Improving grid connections and capacity can help to reduce electricity bills. Connecting solar and wind projects can help to increase the income of those investing in these projects from communities to individuals. As one example our tool has been used to plan projects in Colombia that will bring power to communities who have not had power before, and to areas near cities where electric transport will make commuting to jobs possible. Our research has shown that around 50M USD is wasted in each infrastructure project with around 11% of this in the planning process. Utilities using our solution have shared that it saves them six months in the powerline project process, around 10% in costs, with 50% faster results in the predesign phase. Our tool helps users to accurately calculate project CAPEX and OPEX needed for their business case in greater detail. They can also identify the most cost-effective route to better control project costs,

helping them to be more competitive. This helps to win tenders and secure investment as well as to save costs in the permitting, design, and construction process. They can also use the solution to see how to repair and use existing infrastructure and when to build new lines, helping them to maximize returns on their assets. Our construction monitoring solution currently in development, uses satellite imagery to show how advanced construction of solar projects is to optimize the construction process and identify when construction is behind schedule. Tools like the European Green Deal as one example, planned to help countries come out of the economic crisis caused by the Corona Virus can use our tool to more cost effectively plan projects.

Our tool helps to reduce environmental impact and emissions related to new and old transport and energy infrastructure globally making up 60% of all emissions according to the IEA. Pathfinder helps utilities plan powerlines with the least environmental impact, giving them a greater level of environmental detail and visualization from how to avoid protected areas to how to limit avalanche and flooding risk. The analysis is used in environmental impact assessments as it quantifies 100+ layers of spatial data related to habitat, species, forests, soil, and protected areas to limit impact. It can also be used to measure CO2 consumption for power and rail projects with scenarios to support reduction. Our 2D, 3D and AR visualization combined with analytics for each route option, helps users develop projects more sustainably with better communication and data. Our analysis helps to connect renewable energy and electric transport projects more quickly being used for example in Germany to build the grid needed to transport wind energy throughout the country. The analysis speeds of the design discussion between utilities with engineering providers, landowners, regulators, communities, and NGOs. Stakeholders communicate is accelerated as they can see all options considered and why one option is prioritized in a more accurate, realistic, and quantifiable way. Pathfinder analysis also helps users to reduce CO2 consumed in project materials, transport, damage to trees, power loss, nitrous oxide as these costs can be quantified in the project model. Visualization in AR of a planned project which we have developed on a mobile phone, can also increase acceptance of renewable energy projects. An initial life cycle analysis completed with environmental NGOs and Swissgrid estimated that Pathfinder could help users to reduce more than 2 million tons of CO2 by 2022. Beyond the planning process Gilytics is testing technology to use satellite images to manage vegetation exposed to power lines to prevent forest fires and electrical outages caused by severe weather conditions. Combining many linear infrastructure verticals in planning can optimize processes. Historical and current weather data can be used to identify risks and plan upgrades needed for resiliency.

The analysis that Pathfinder provides social impact, by identifying the most socially acceptable route for new linear infrastructure projects identifying the distance between buildings and new projects and visual impact among other factors. Bringing new infrastructure from power to transport to water to communities more quickly can have a large social impact by improving access to basic resources from clean water to electricity needed to improve quality of life and social gains. Making the transition to renewable energy more efficient can also improve well being though this is hard to quantify. Our tool can deliver social benefit after a natural disaster by making it possible to provide power faster following as new grid connections could be planned more quickly. Pathfinder contributes to many Sustainable Development Goals (7 affordable and clean energy; 9 industry, innovation, and infrastructure; 11 sustainable cities and communities; 13 on climate action; 6 related to clean water and sanitation).

Resources

Gilytics completed a \$1M seed round led by the High-Tech Growth Fund of the German Government, the Zurich Cantonal Bank and Swiss Start Up Capital in 2020. These investors have committed to support us through a Series A investment and have a wide network to help us to attract additional resources. We raised around \$500,000 before this with grants from the EU Horizon 2020 Program, Swiss Ministry of Energy and the European Space Agency Business Incubator Center Program in Switzerland and Venture Kick support. We can secure more research funding and a loan from the Swiss government. We can continue to grow our client base of 10 with whom we have multi year contracts and revenue generated to further trials, as they and their partners implement our solution. Our technology is based on research from the ETH, a leading technical university and experience working with our Swiss customers including Swissgrid, the leading European Swiss rail company SBB and Axpo, Switzerland's largest producer of renewable energy. We continue to grow our customer base of 5 in Europe working with TenneT and with two utilities in Colombia, and a global engineering company based in Canada. We have our first clients in Asia in India and South Korea. We have

proven that we can move from pilots to providing licenses. Our team has extensive experience working in other start-ups and in the energy and infrastructure industry globally, so are leveraging their contacts to help us to secure additional industry expertise and resources. Bringing together a PhD in GIS, and an MBA with infrastructure sales and marketing experience, and a finance and accounting expert, and strong developers, our team has deep international, technical, commercial and industry experience. Our technology was recognized with several awards starting with the Elia innovation challenge, a SET 100 winner where we were selected as a top global 100 energy transition start up by the World Energy Council, a top ten Future Grid Start Up by the Energy Tech Challengers and as a top ten Swiss Engineering Start Up.

Track Record

Our product has been adopted by the market and proven in-situ first for the planning of overhead lines in Europe and the Americas, used in projects by utilities, rail and engineering companies in the pre-design phase for projects. Underground routing has been proven in Switzerland. We are working with partners to test routing of pipelines onshore and offshore and telecom cables. Our algorithm is very agile and should work on many kinds of linear infrastructure to solve optimization problems. Our algorithm, analytics, 2D, and 3D tools have all been proven with clients. Our AR solution was tested with a POC in partnership with our customers and our construction monitoring tool concept developed with clients.

Technology Readiness

Our Pathfinder Platform is at level TRL 8 of technology readiness for use in planning of linear infrastructure. The following client testimonials explain the benefit of the tool. "Pathfinder provides the potential to improve and accelerate planning saving costly time. The more modern 3D visualization is very useful for 3rd party communication" Head of Data Analytics, DSO. "Planners use the software as a decision support tool giving them more time to discuss alternatives and less time finding them" Communication Manager, Swissgrid. As the problem is quite similar for other verticals, we expect advancing the technology to other use cases to be efficient. Vegetation management and solar construction monitoring are around TRL 6 as we have confirmed client interest and are in the proof-of-concept phase. A video demo of Pathfinder is available here: <https://www.youtube.com/watch?v=lvJkhK80jFk>

Unique Selling Points

Our Pathfinder Solution is unlike other tools available on the market. The Platform provides a new level of automation with a unique algorithm, greater data customization, faster and easier scenario generation, more precise and transparent analysis with more realistic visuals and metrics. The algorithm provides transparent but accurate results including parameters based on resistance values the client sets including environmental, technical, and regulatory parameters for better data management. Pathfinder is used earlier in design process for routing and siting. The interface is easier to use as it provides fast integration of GIS data with other tools using easy import and export and data processing that is 5 times faster. The cloud and Web viewer as well as multiuser cloud database and collaboration tools make sharing information with stakeholders easier. Analysis of routing alternatives and validating results is much faster, saving six months in the project process. Combining layers of spatial data that can be used to quantify costs related to risks related to weather or other elements and to plan temporary projects after a disaster and long-term project so easily and accurately is unique.

Infrastructure Challenge Impact

Participating in the challenge would help our team to scale. The opportunity to work with and be challenged by a mentor who understands the infrastructure industry would help us to improve our product, access new verticals and further professionalize our activities. The chance to learn from other start-ups globally and to further validate our product market fit and our go to market strategy would be a great opportunity. The financial support could help us to invest more in business development and to validate which use cases to prioritize related to renewables or other verticals. The global exposure and network that partners like the G20, WEF and the GI Hub would provide could help us to enter new markets and give us greater credibility.