

# Cable Path Planning Method And Apparatus

## Communications & Information

Digital Broadcasting, Telecommunication and Optoelectronics

### Opportunity

With the rapid expansion of data networks and ever-increasing demands, there is a crucial need for the efficient and cost-effective placement of submarine cables. Currently, cable path planning follows a meticulous manual process, considering various factors from earthquakes to other anthropological activities that may cause breakage. This process, although thorough, is time-consuming and costly. Therefore, the invention presents an opportunity to automate and optimize this process, incorporating all potential considerations in a cost-effective and efficient manner. It offers a more dynamic approach to deal with ever-evolving factors affecting the cable path, thereby addressing the demand for improved planning and operational efficiency in the industry.

### Technology

The invention is a computer-implemented method that plans the cable path of infrastructure cables across a certain terrain. One or more processors derive an optimal set of weights of design considerations from an optimal virtual cable path. This path is generated based on minimizing both the life-cycle cost modelled with one or more design considerations and a discrete Fréchet distance with respect to a reference cable path. The optimal path arrangement for the infrastructure cable is then determined based on these derived weights. By incorporating factors affecting the cost and reliability of submarine cables, this technology produces cost-effective and reliable cable paths in less time.

### Advantages

- Substantial time and cost savings due to automation and optimization
- Enhanced reliability and resilience of cable network as multiple factors are considered
- Increased operational efficiency through real-time path planning and optimization
- Greater adaptability to changing circumstances and considerations
- Life-cycle cost modelling allows considering the total cost over the cable's effective service life, reducing the overall cost

#### IP Status

Patent granted



Technology Readiness Level (TRL) ?

5

#### Inventor(s)

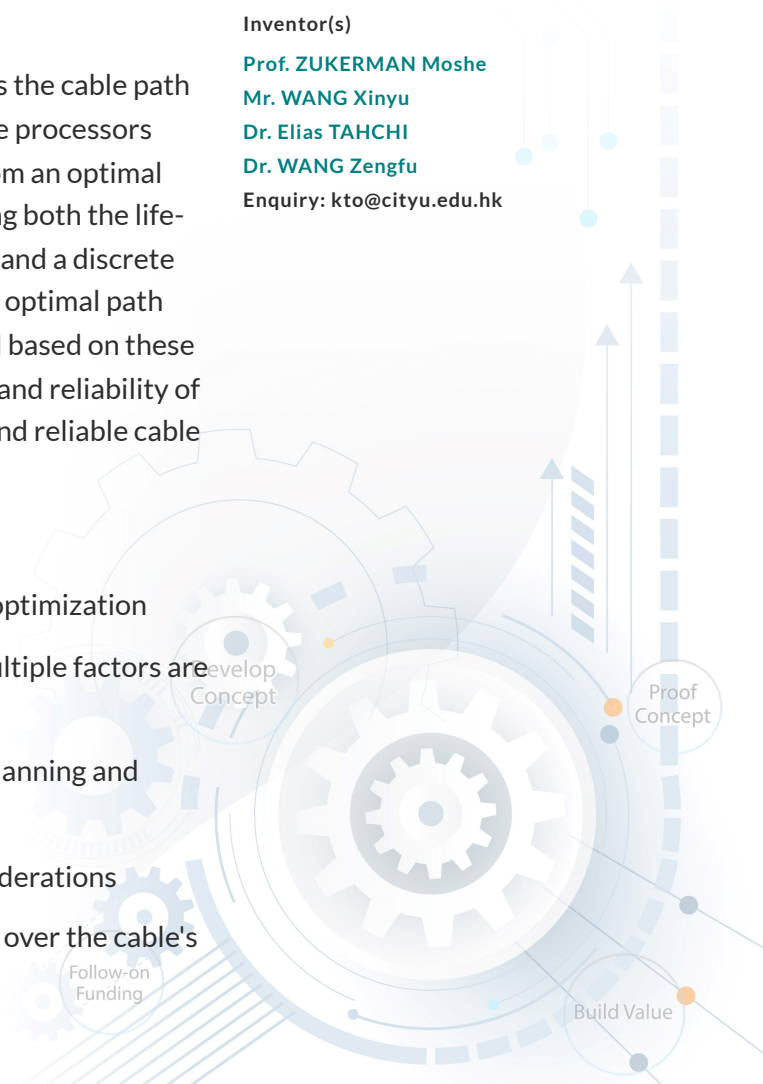
Prof. ZUKERMAN Moshe

Mr. WANG Xinyu

Dr. Elias TAHCHI

Dr. WANG Zengfu

Enquiry: [kto@cityu.edu.hk](mailto:kto@cityu.edu.hk)



## Applications

- Technology can be used in laying infrastructure cables for 5G networks
- Can be implemented in maintenance and upgradation of existing submarine cable networks
- Potential application in planning cable paths for disaster recovery networks
- Use in preliminary route design during feasibility studies for new cables
- Utilizable in regular path monitoring and adjustment of active cables

