



THE OHIO STATE
UNIVERSITY



Integrated Systems Engineering **Operations Research and Data Analytics**

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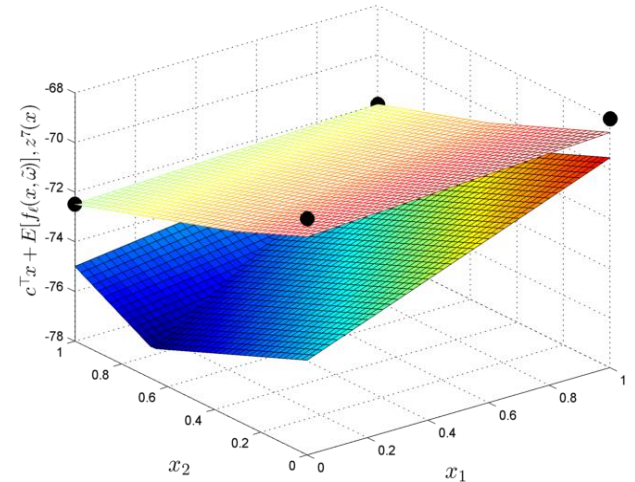
What is Operations Research (OR) and Data Analytics?

- **OR*** applies advanced analytical methods to help make better decisions. Employing techniques such as mathematical modeling, statistical analysis, and mathematical optimization, OR arrives at optimal or near-optimal solutions to complex decision-making problems.
- **Analytics*** is defined as the scientific process of transforming data into insight for making better decisions.
- **OR** provides a solid foundation for the techniques that are used in **analytics**, and **OR** allows data to be used for decision making.

* Source: [Institute for Operations Research and Management Science](#)

Operations Research and Data Analytics Research at OSU-ISE

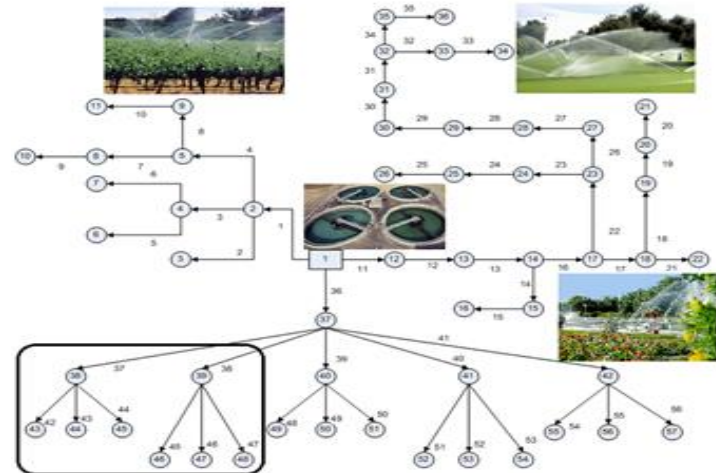
- Data analytics
 - Big data modeling
 - Data mining and clustering methods
 - Continuous prediction models
 - Data-driven optimization
- Optimization
 - Large-scale optimization
 - Linear/network/nonlinear optimization, complementarity
 - Mixed-integer programming
 - Optimization under uncertainty
(Robust Optimization, Simulation -Optimization , and Stochastic Programming)



Operations Research and Data Analytics

Research at OSU-ISE

- Stochastic processes
 - Queueing systems
 - Stochastic networks
 - Stochastic control
 - Revenue management
 - Social networks
 - Sustainable mobility
 - Water resources management
- Operations Research Applications including:
 - Cloud computing
 - Cyber and homeland security
 - Energy systems
 - Logistics and supply chain



Research Labs and Centers

Research Labs

- OPTimization and Analytics Lab (OPAL)
- [Security & Efficiency thru Analytics Laboratory \(SEAL\)](#)

Research Centers

- [Center for Resilience](#)
- [Center for Automotive Research \(CAR\)](#)
- [The Nationwide Center for Advanced Customer Insights \(NCACI\)](#)

