An OMNeT++ Model of the Control System of large-scale Concentrator Photovoltaic Power Plants

Poster Kickoff Presentation

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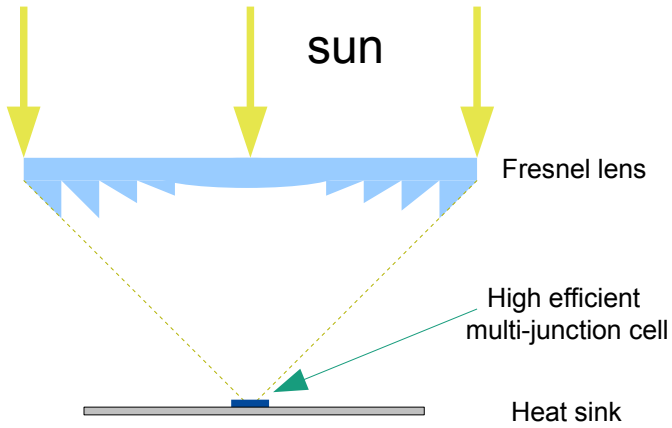
1. Introduction and Background

Concentrator Photovoltaic (CPV) Power Plants

Technology:



- Direct irradiation
- Accurate 2-axis sun tracking

Power Plants:

- Increasing size of power plants
- Communication necessary

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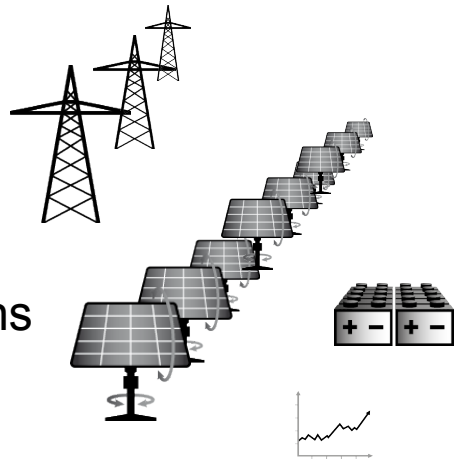
1. Introduction and Background
Challenges and Objectives



Challenges of the control system:

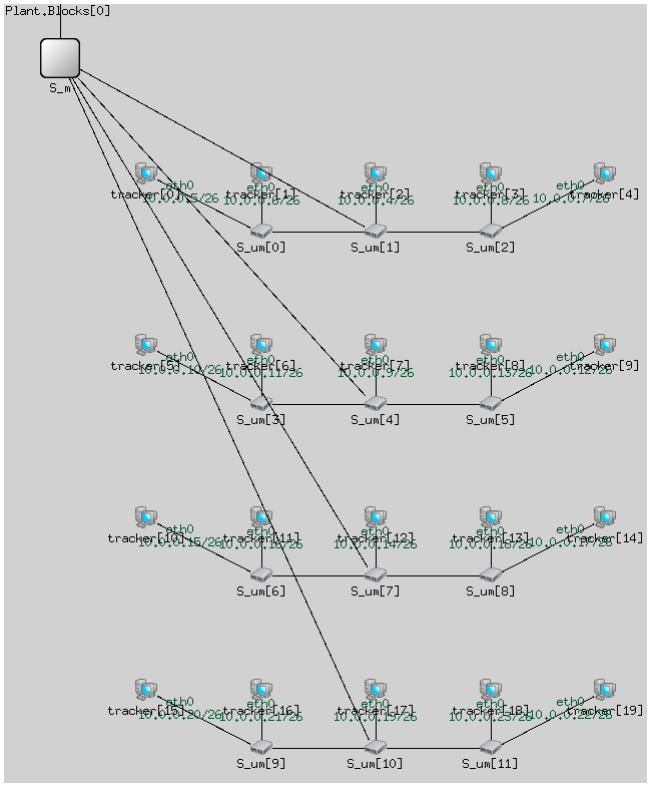
- New functional requirements in the future due to grid requirements and energy management functions
- Plant operators and investors also demand new functions for maintenance
- Up to now control system no focus of research

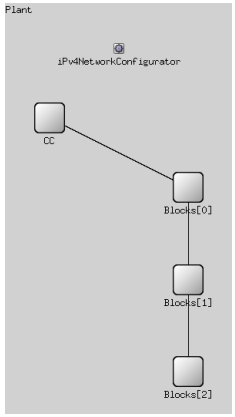
Objectives of communication simulation:

- Ethernet model for comparing state of the art with new promising approaches (e.g. WMN, PLC)
- Quantitative statements for timing and data occurrence for all scales of plants with passable effort
- Development of new approaches (e.g. auto-configuration)

2. Generic Model of Communication System
Features

- Fully scalable
- Positioning in TCL/TK visualization
- Configuration concept for small-scale and large-scale power plants
- R scripts for data analysis



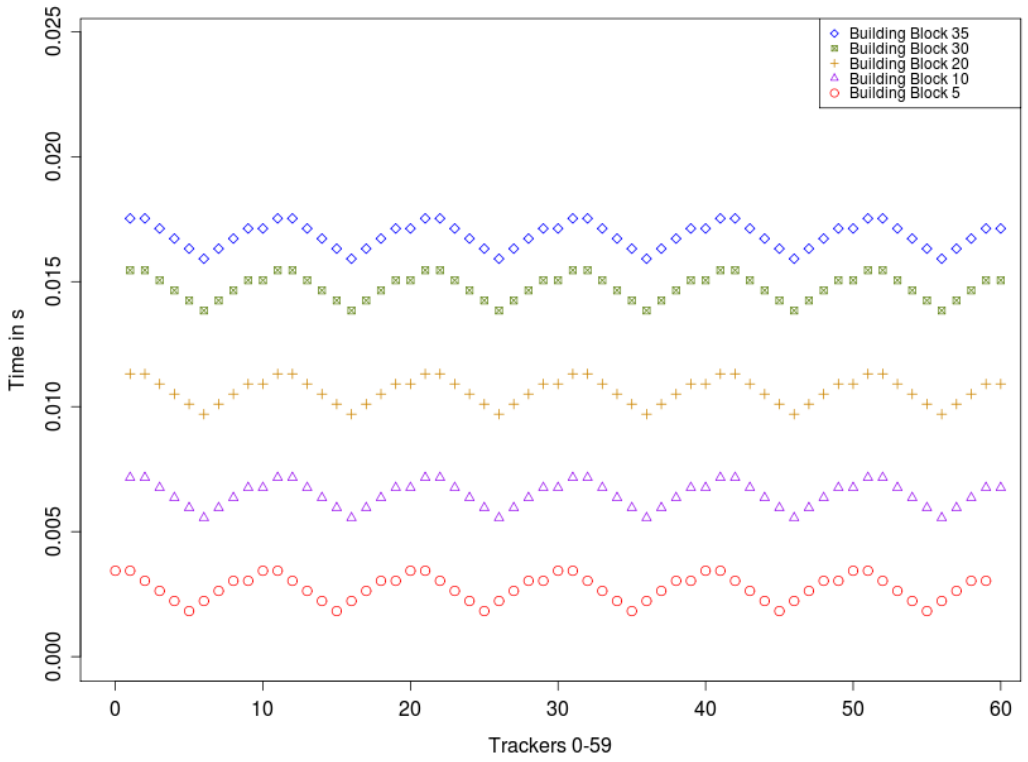


3. Results and Discussion
First results of ongoing work

- Timing experiment for 2,100 trackers power plant
- Calibration in testbed was necessary

Outlook

- Further validation experiments in real plant
- Development of auto-configuration methods and layer-3 version



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Thank You Very Much for Your Attention!

Looking forward to see you at the poster session!

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