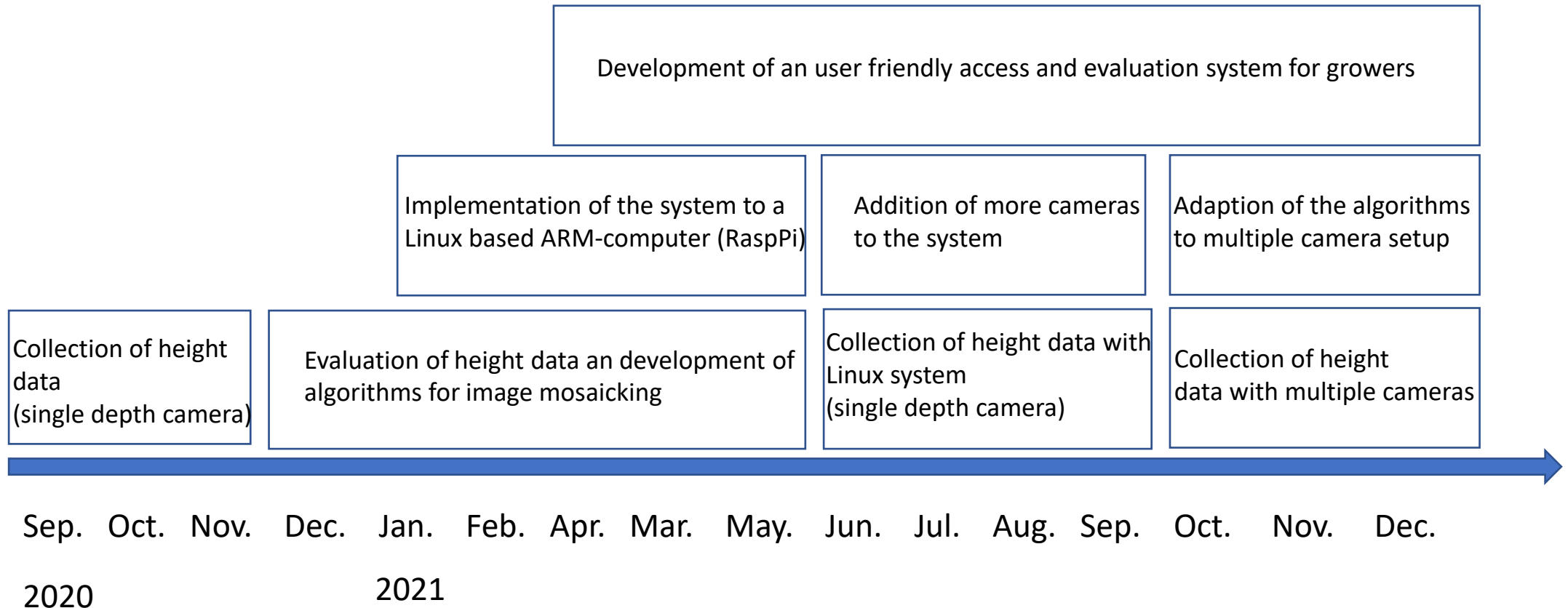


# Height data collection of crops in greenhouses

# Table of content

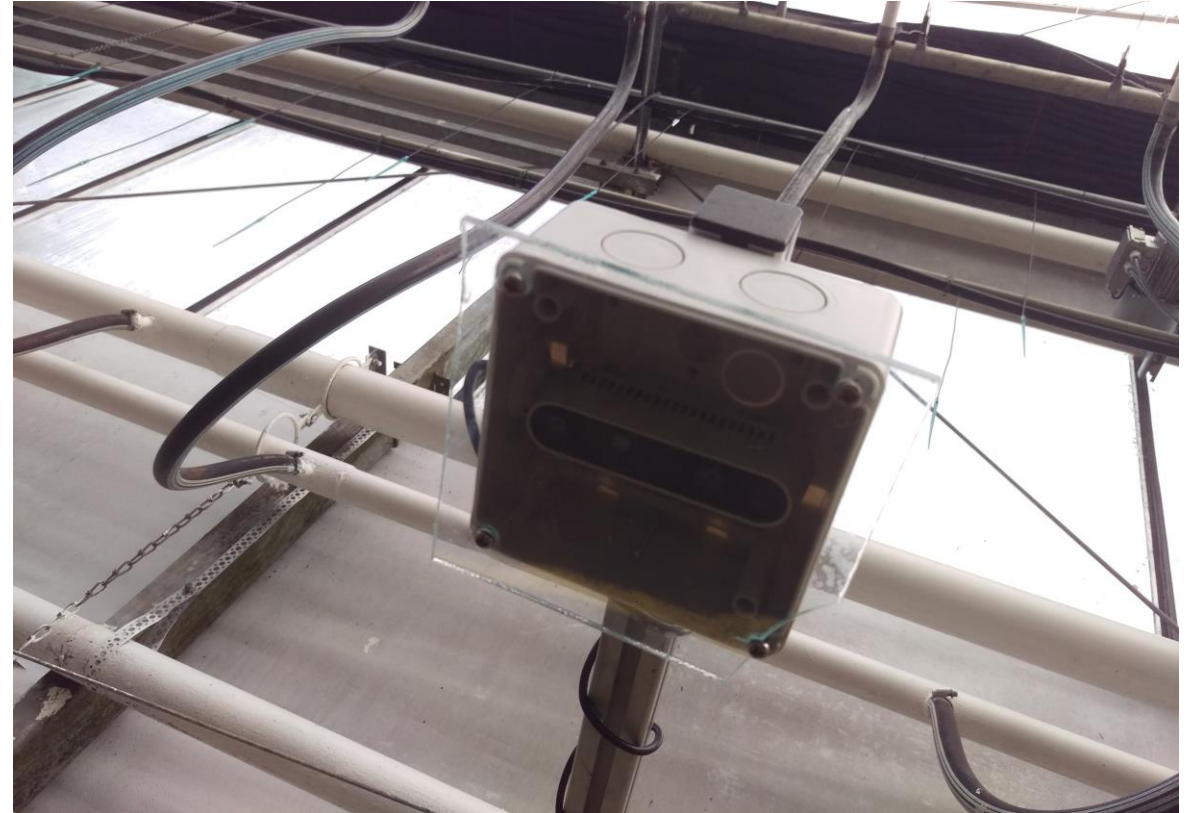
- Time line of the project
- Current status of the project
- Outlook

# Time line of the project



# Current status

- Collection of height data in 2020



# Current status



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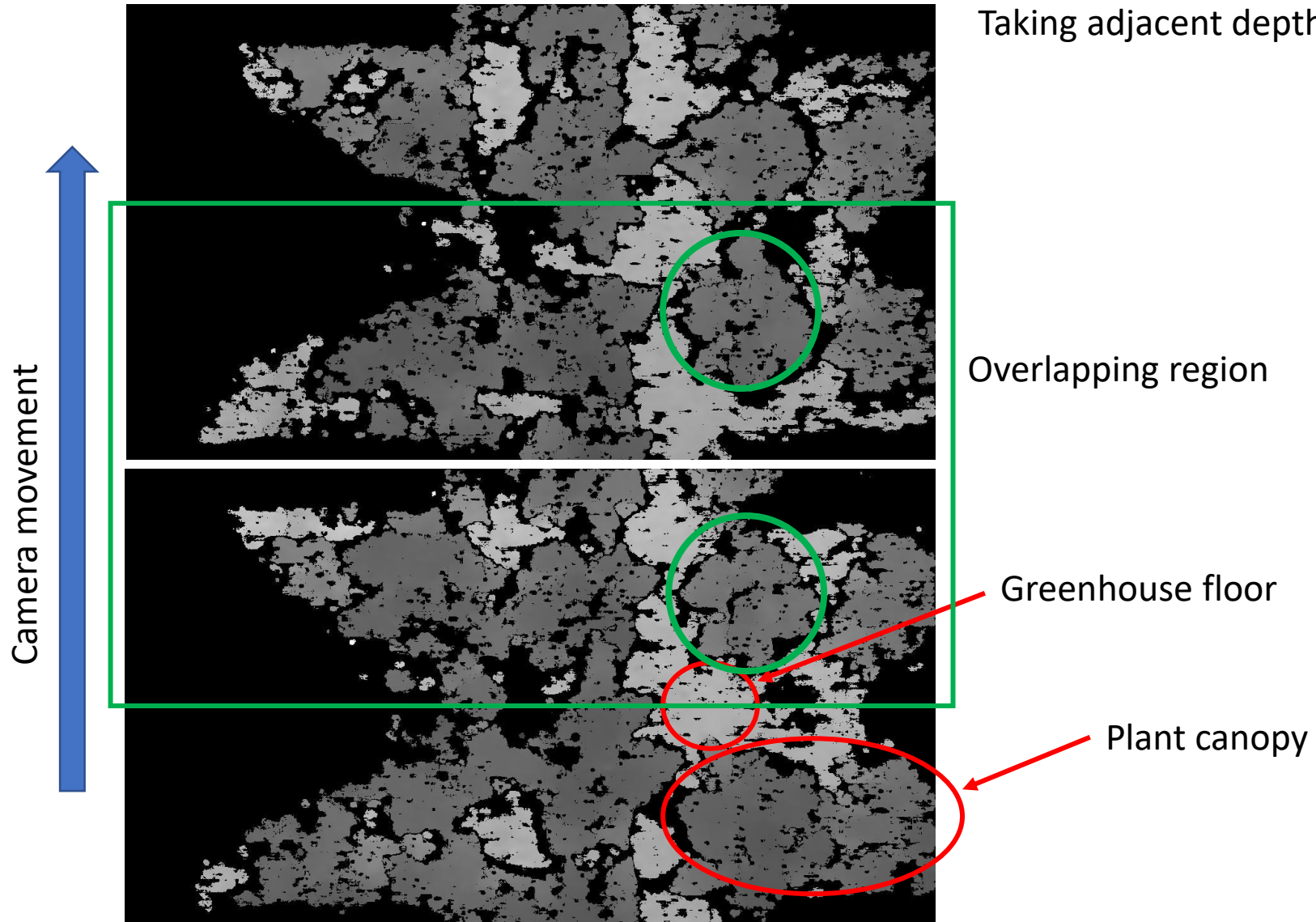




# Current status

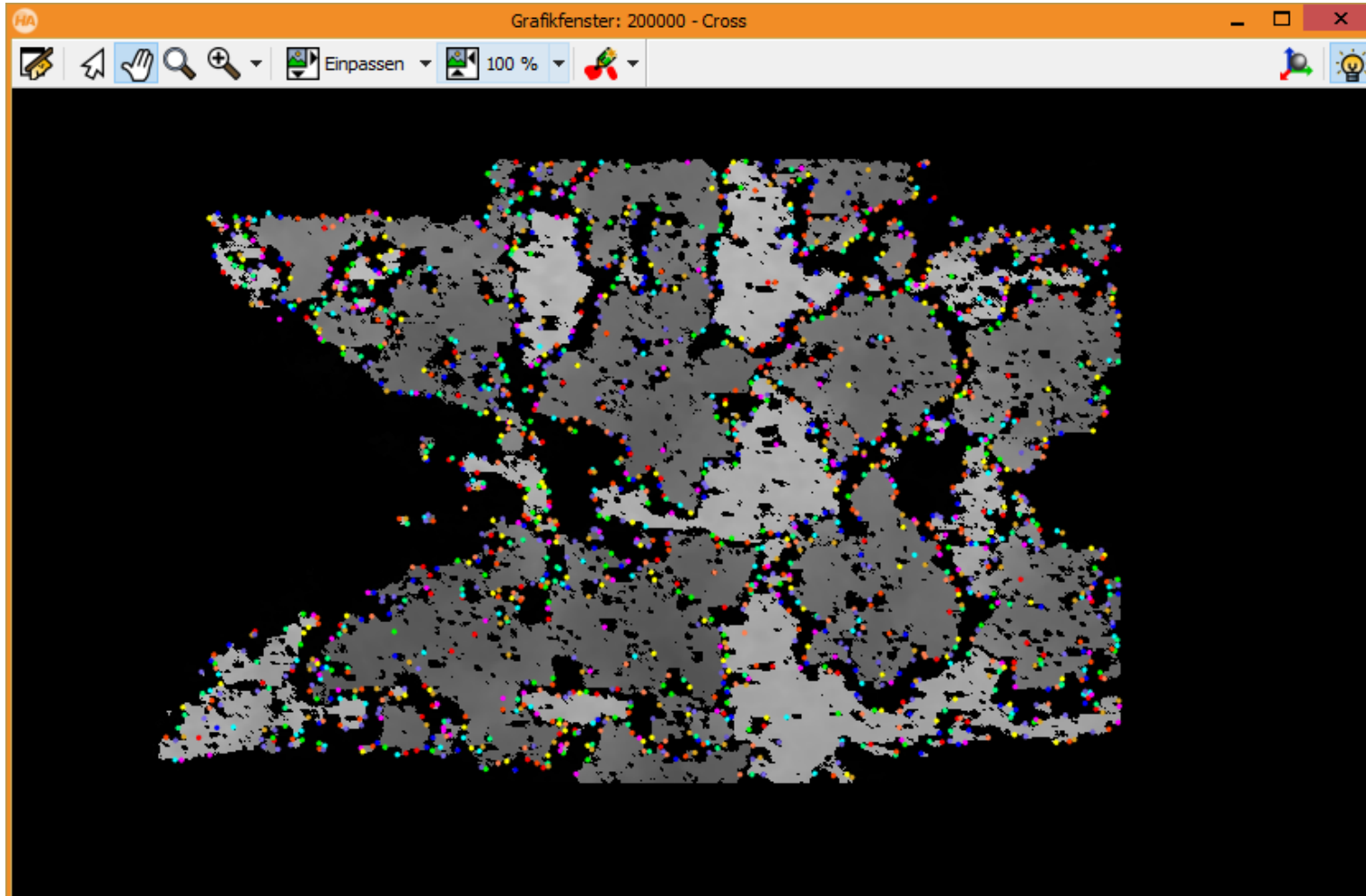
- Evaluation of height data
    1. Taking adjacent images
    2. Images must have overlapping regions
    3. Extraction of significant points in adjacent images
    4. Matching between significant points
    5. Transformation into a bigger mosaic images
- Mosaic images of the whole crop can be evaluated for height grow at different moments

# Current status



# Current status

Extraction of significant points





# Current status

- In a next step:

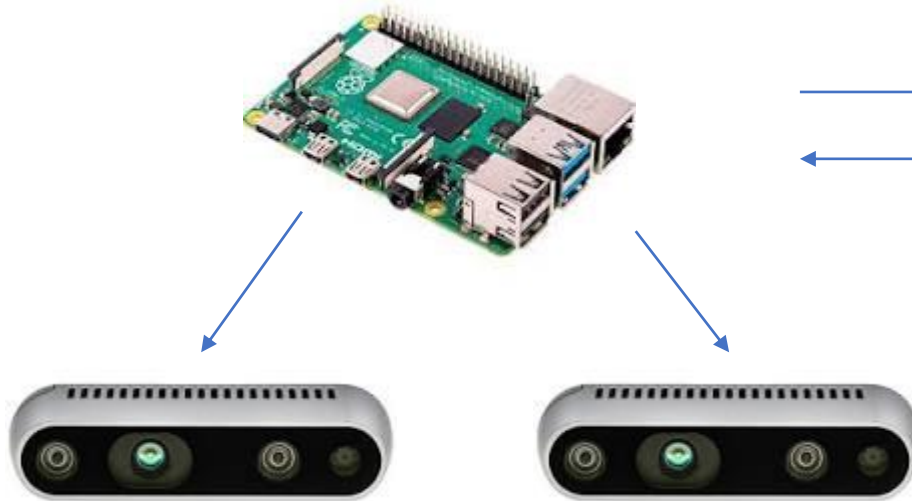
→ Conversion of the 2D-depth images into 3D-images

→ Stitching the 3D-images into a bigger mosaic image

# Outlook

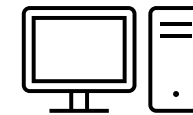
**HALCON**  
a product of MVTec

1. Implementation of the system

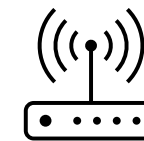


2. Multiple camera setup (with colour image stream)

Greenhouse controller

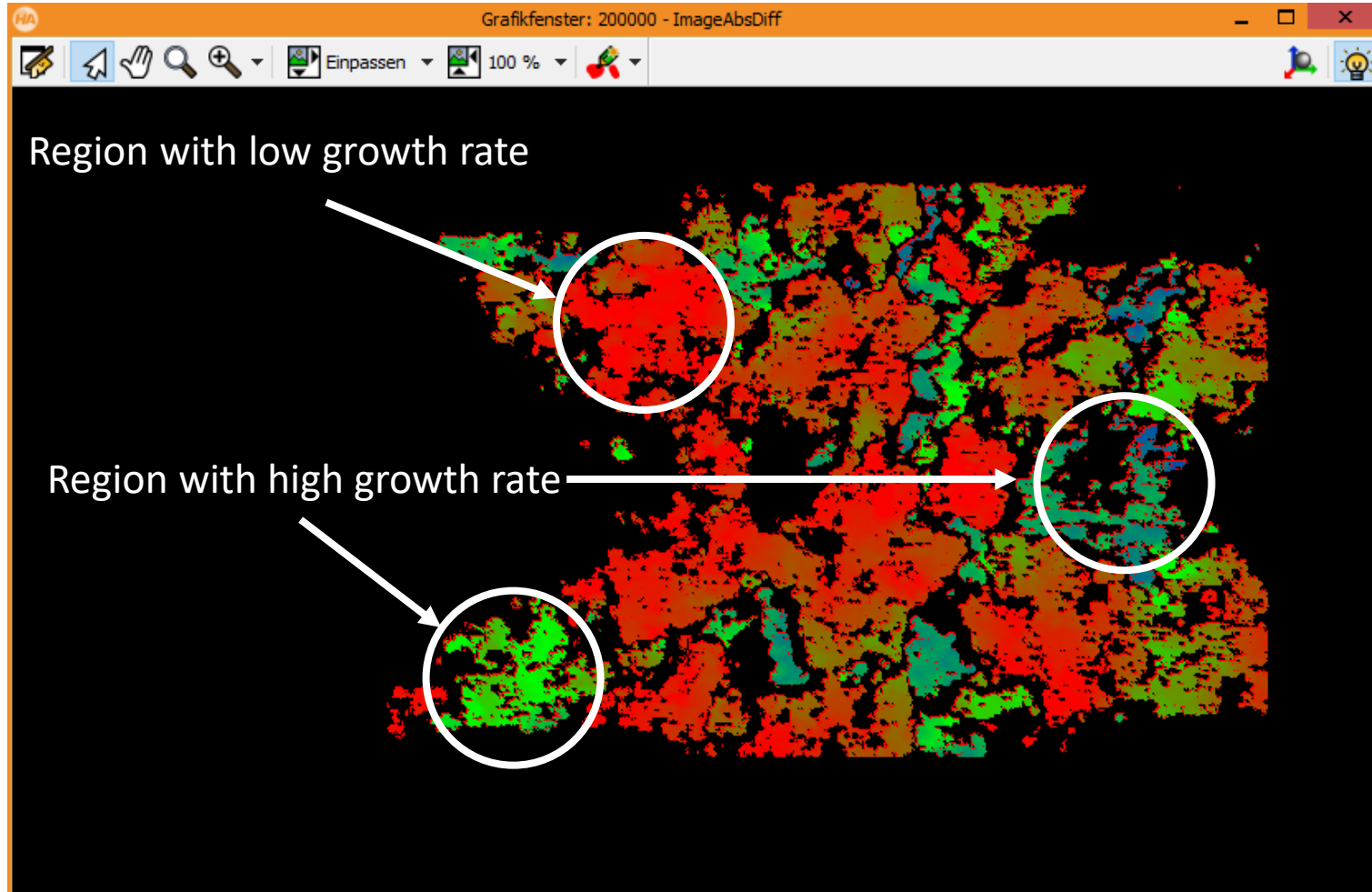


3. Make the data accessible over wifi network (and adding a visualization of the data)



Grower's PC

# Outlook



Make the differences of height visible

Inspection of the growth at different moments

Tracking the growth of single plants?

Difference between 10 days of growth; red: low difference = slow growth, blue/green: high difference = fast growth<sup>11</sup>

# Outlook

Live presentation HALCON (3D-visualization)

# Outlook

- Which information can we get from the height data?
- Analysis of the growth of whole crops
- Tracking single plants
- Identification of plants or regions in the greenhouse with lower growth rates
- Integration of height data with other parameters (eg. climate data)

Thank you for your attention!