

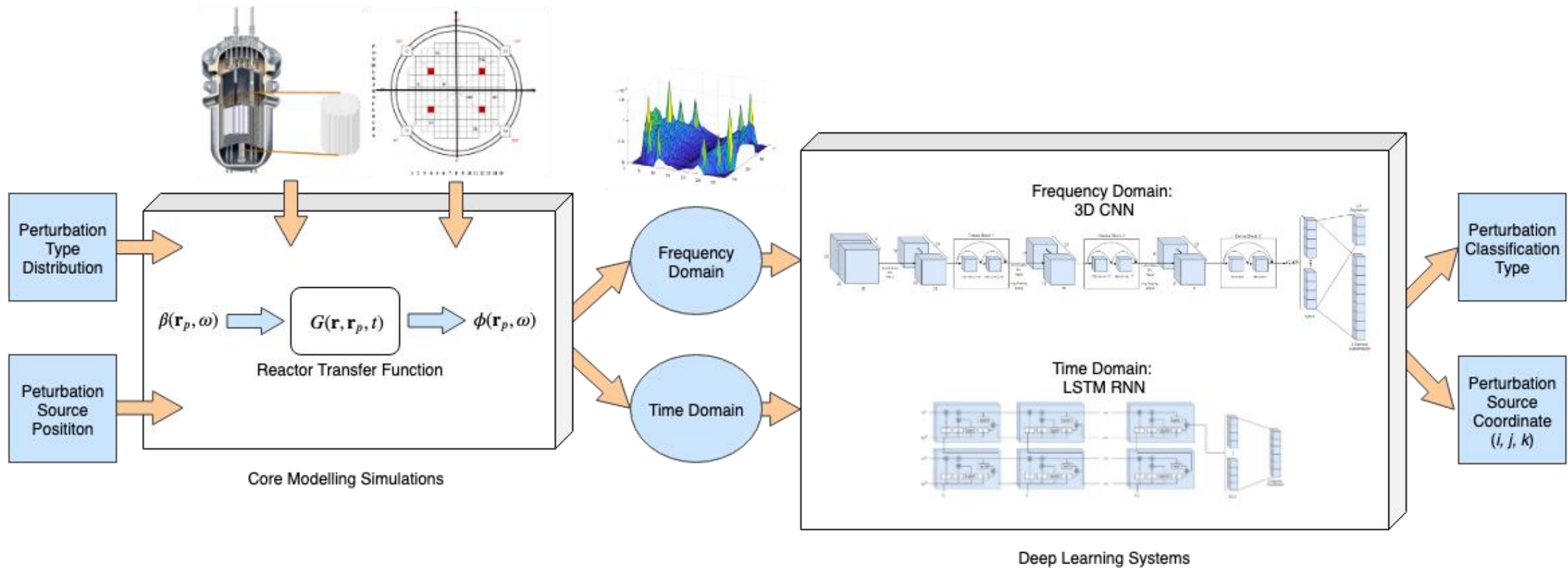
# *Machine Learning Group*

**School of Computer Science  
University of Lincoln**

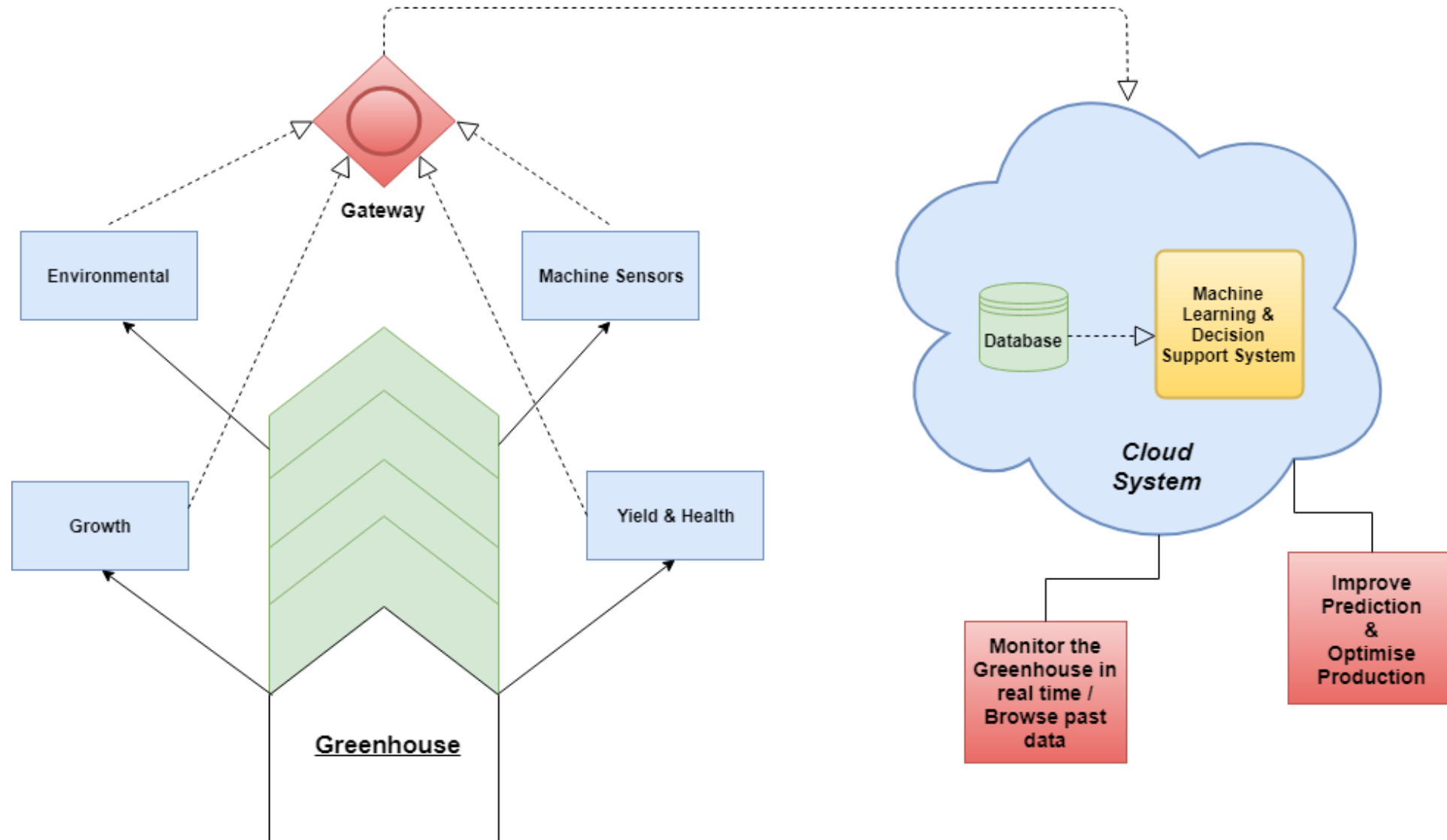
**July 2019**



# Core Monitoring Techniques and Experimental Validation and Demonstration (CORTEX, EU H2020 project , 2017-21)

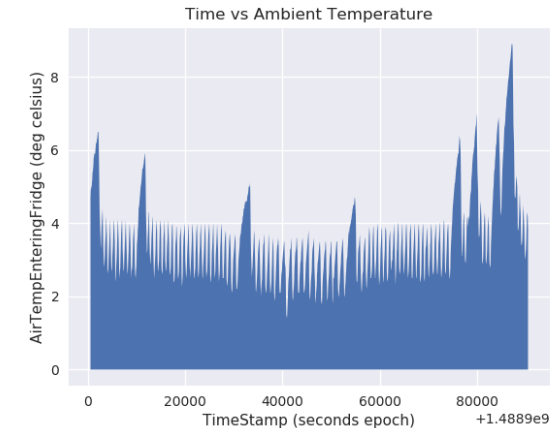
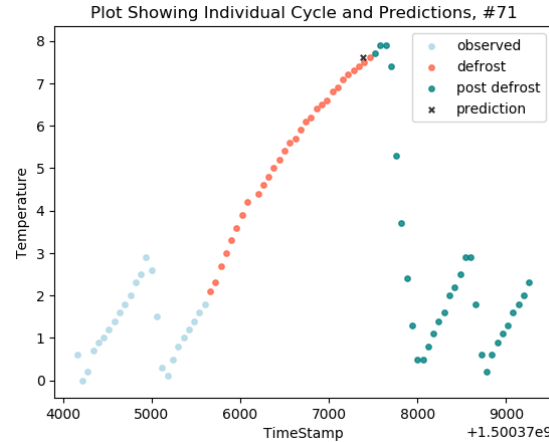


# Smart agri-food prediction using Machine & Deep Learning (Smartgreen Interreg project, 2017-21)



# Intelligent Refrigeration Systems (Tesco, IMS-Evolve and University of Lincoln, funded by Innovate UK)

- *Cut energy costs down*
- *React to demands of NationalGrid*
- *Massive IoT network of Fridges/Freezers*
- *Optimise defrosting cycles, accounting for thermal inertia pertaining to food*



Experimental facility at Riseholme

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**Energy industry**

## Cool running: supermarket fridges could help power UK

Tesco trials show chiller aisles offer possibility of being 'virtual battery' for National Grid

Jillian Ambrose  
Sun 23 Jun 2019 15:51 BST

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▲ Complex algorithms, developed by the software firm IMS Evolve, can temporarily cut the electricity supply to fridges when needed while still keeping the food cold. Photograph: Simon Dawson/Bloomberg

Supermarket freezer aisles could soon help power the National Grid after

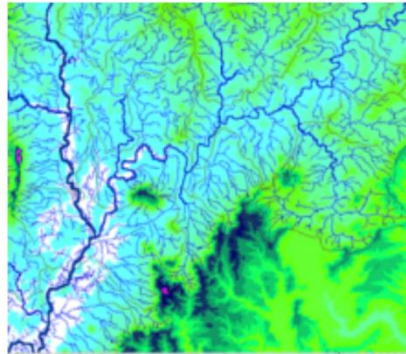
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# Engineering Transformation for Integration of Sensor Networks (UoL, CEH, Oxford Univ., funded by NERC/UKRI)

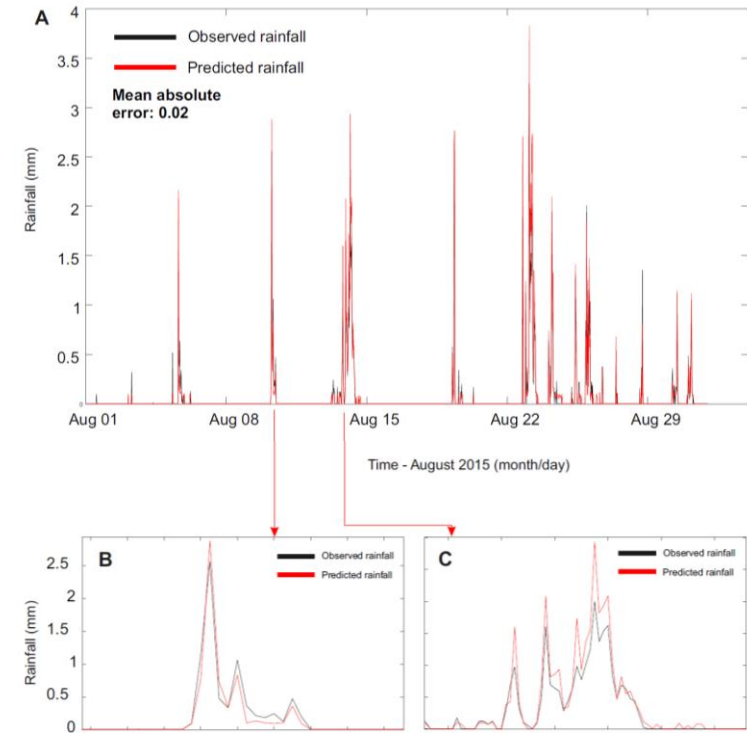
- Integration of sensor network data
- Exploitation of data using Data Science /AI
- Enhance environmental observations
- Understand environmental drivers, pressures, status



Enhancing the COSMOS-UK network with new measurements



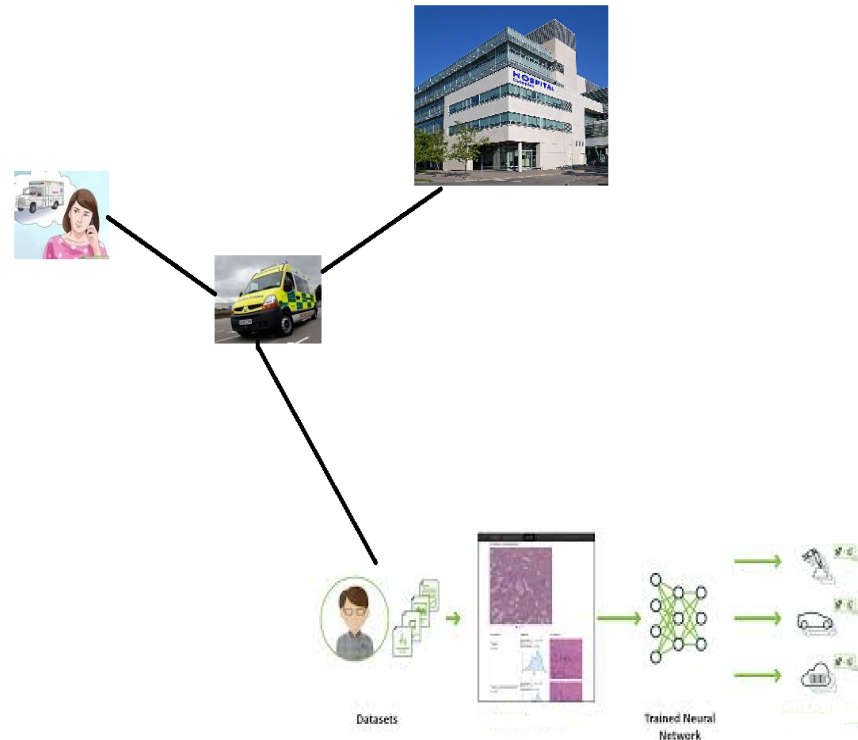
Linking sensor monitoring sites using digital rivers



Rainfall and preliminary predictions of rainfall for August 2015 from the site North Wyke (NWKY).  
A. Level 2 rainfall (black) and predictions from machine learning models (red). Over the month, mean absolute error is 0.02. B & C. Details of the predictions on rain events from A.

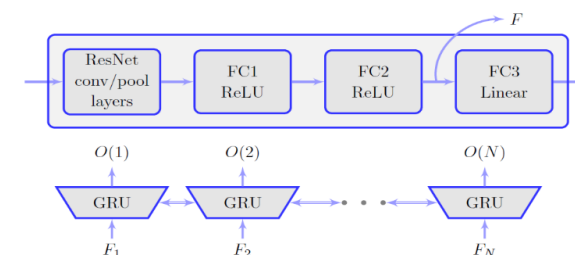
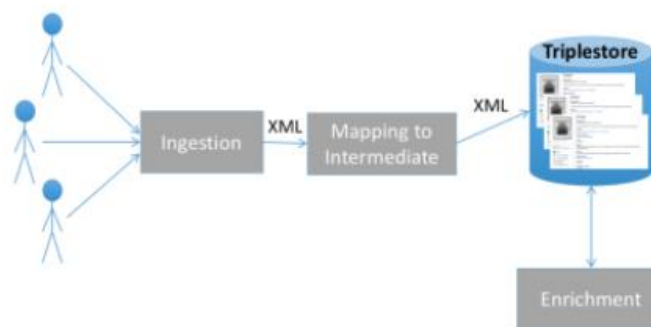
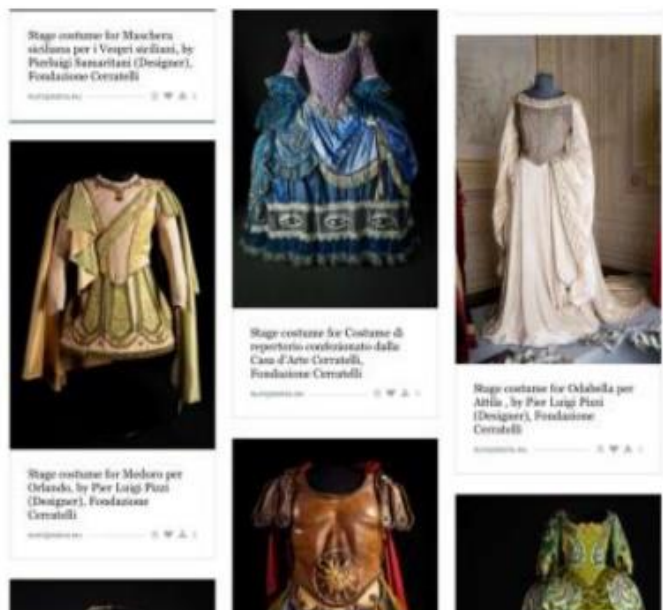
# Machine learning for predictive modelling of Ambulance calls to Care Homes (MACH project, 2019 - )

- **Target:** use ML/DL to explore demographic & clinical predictors of ambulance attendance and conveyance to hospital for people residing in care homes
- **Participants:** 1) School of Computer Science; School of Health and Social Care; School of Geography (UoL)  
2) East Midlands Ambulance Service NHS Trust





# Enrich & Creatively Re-use Content for Cultural Heritage with AI/DL (We Hope Creative Europe project, 2019-22)



# Video Understanding & Automated Annotation (UoL SoCS and MACE collaboration project, 2019 -)

- **Target:** Use DL/AI methods for Object/People/Behavior/Place/Concept Extraction and Automatic Annotation, through visual, speech & text analysis
- **Participants:** 1) UoL School of Computer Science: mlearn & intlab research groups  
2) MACE: Media Archive for Central England



We then use the camera pan to find a shot as the two men begin to clear the side of woods. Next we see them sitting at a picnic table outside the camera sitting in front of a large house. The next section shows the men walking on a path and entering the site of the main house. The next section shows the men walking on a path and entering the site of the main house. The next section shows the men walking on a path and entering the site of the main house.

