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Oral Presentation: Thursday 15:05 – 15:20 @ Meeting Room 111

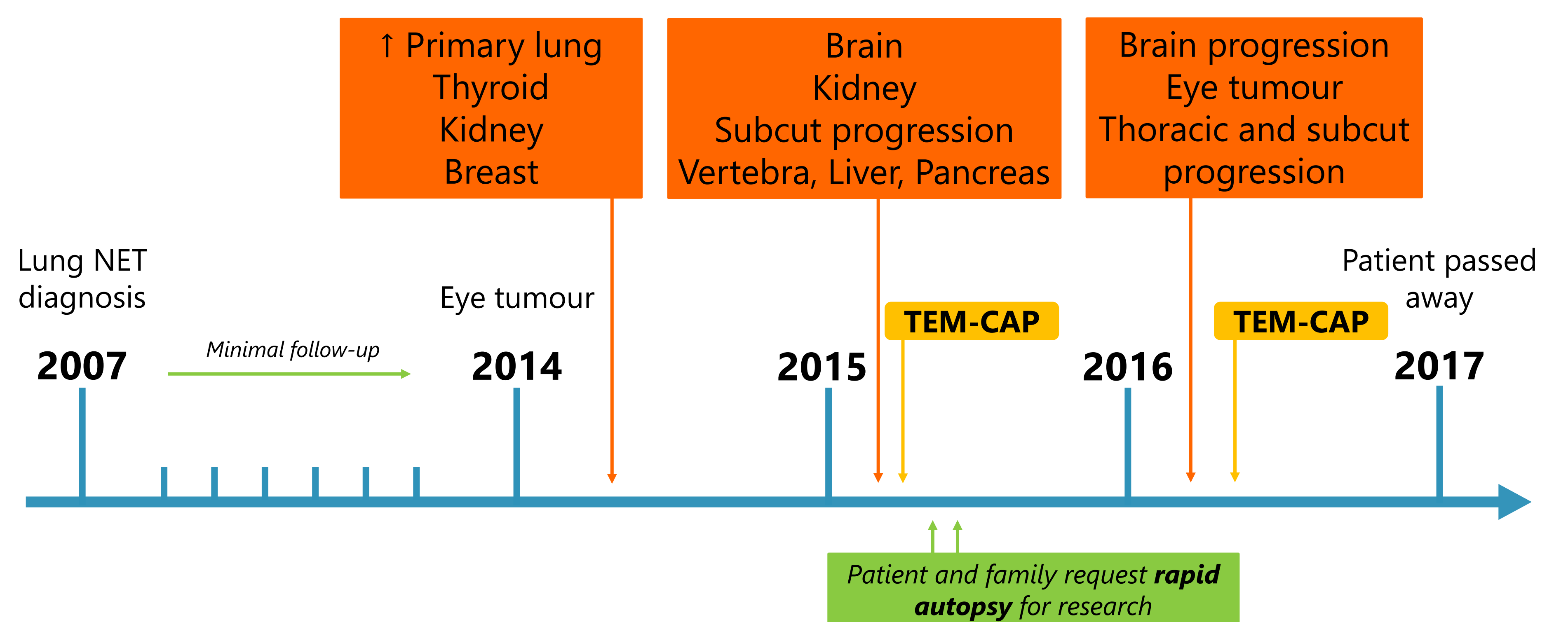
## Background

- Understanding tumour heterogeneity and evolution remain fundamental challenges in cancer.
- Decreasing DNA sequencing costs have enabled a more multi-site cancer genomic and evolutionary studies.
- Novel visualization techniques are required to better understand and investigate complex metastatic cancer studies.

## A Rare Research Opportunity

A patient with highly disseminated **lung neuroendocrine tumour** requested and consented to rapid autopsy, providing an opportunity to study tumour evolution and heterogeneity in a single patient. We have created an interactive **Augmented Reality visualisation** to follow disease progression and genomic data by anatomical site.

## Clinical Timeline



## Study Complexity

A call for novel visualisation strategies

10

years of clinical data

22

clinical imaging scans

89

tumours

358

sampled locations

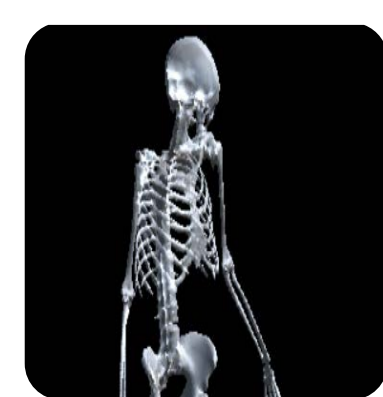
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sites with genomic data

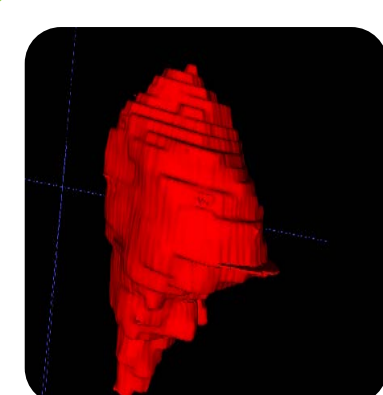
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anatomical locations

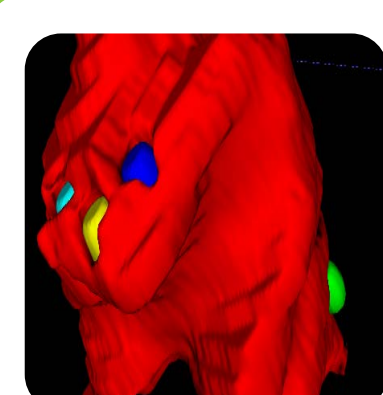
## Methods



3D Skeletal Model Segmented from CT Scans



3D Models Across Key Time-Points Extracted from CT Scans



3D Spheres as Locations of Genomic Sampling Sites

## Augmented Reality

- Microsoft **Hololens**: a self-contained holographic computer
- Presents a holographic **projection** overlaid into the real world
- **Interactive**, using hand gestures and voice commands
- Highly **collaborative**, with many users able to discuss and interact at the same time.

## Experience Cancer in Augmented Reality: Invitation to Participate



Session running:

Come and have a go, or watch while others do