



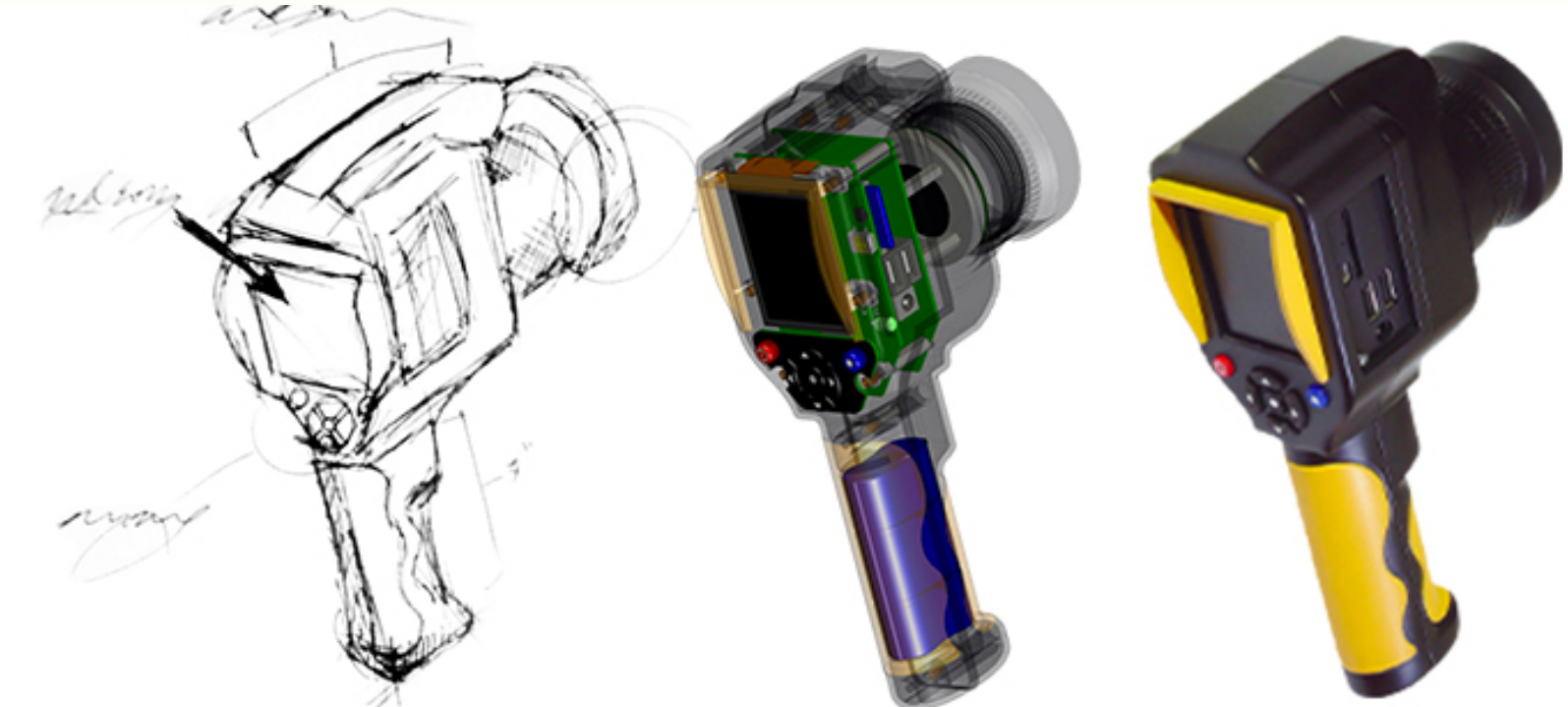
Design Requirements Gathering using Obsolescence Forecasting



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Industrial relevance

- **Problem:** Decisions made in the Design Phase are estimated to account for **60-70% of the cost over a product's lifecycle**.
- Obsolescence being a large contributor to those costs.
- More obsolescence risk information in early product design would allow firms to reduce costs in the long run.



Thrust area: Enabling Information Infrastructure

Current TRL: 3 - Experimental proof of concept

Final TRL: 6 - Technology demonstrated in industrially relevant environments

Project type: Proposed

Percent complete: 0%

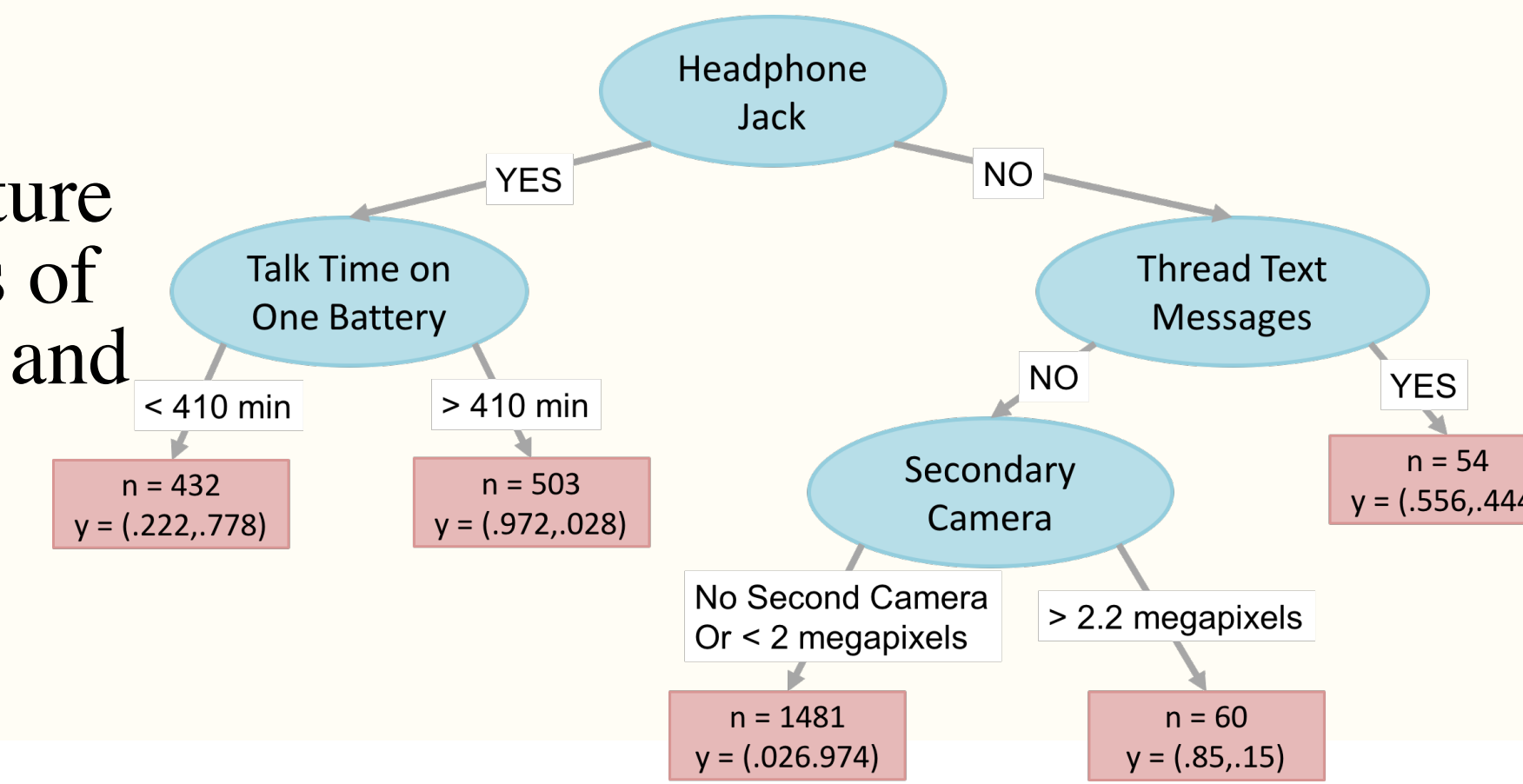
Problem statement

- Currently the majority of cost come from decisions made in the design stage.
- Designers lack adequate market knowledge to understand the relationship between obsolescence and specification selection.
- Current methods for product design requirements use manual requirements inputs and are often subjective.

Approach and method

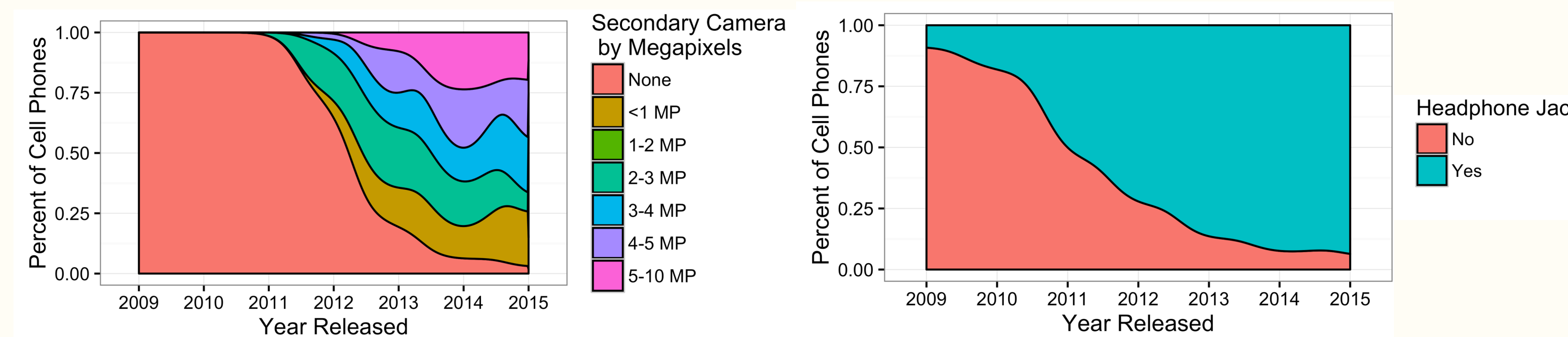
- Obsolescence Forecasting Decision Trees – To minimize the risk of obsolescence, product features will be ranked by their appearance in the decision tree (Gini Coefficient).

- Feature Analysis – Once a feature is deemed integral, an analysis of historical data reveals optimal and suboptimal specifications for designers.



Deliverables and benefits

- This project will create a methodology to rank the importance of product features to prevent product obsolescence over the product's lifecycle using a data driven approach.
- A data visualization tool will be developed to observe historical design trends in the market to help designers select specifications for each feature.



Potential application areas

- This research has applications in feature gathering in large competitive multi-product markets where manual market analysis is not practical.
- The tool developed in this research could be used in early stage design for designers to better understand market trends.



Project plan and progress

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Review Literature												
Develop Preliminary Case Study												
Conduct Market Analysis												
Develop Second Case Study												
Document and Present Recommendations												

Current state of practice and research

- Siemens TcSE (Teamcenter System Engineering) – manages the interaction of integrated mechanical, electronics and software components
- OneDesk – manages external requirements, but does not generate requirements
- IBM Rational Doors – integrates requirements between products, but does not generate product design requirements.



How ours is different

Our method uses a data driven approach to observe feature trends in a market and distills the information for decision making in the design stage.

Additionally, the method proposed in this research will not be a stand-alone system but rather extract information from preexisting obsolescence forecasting systems.

