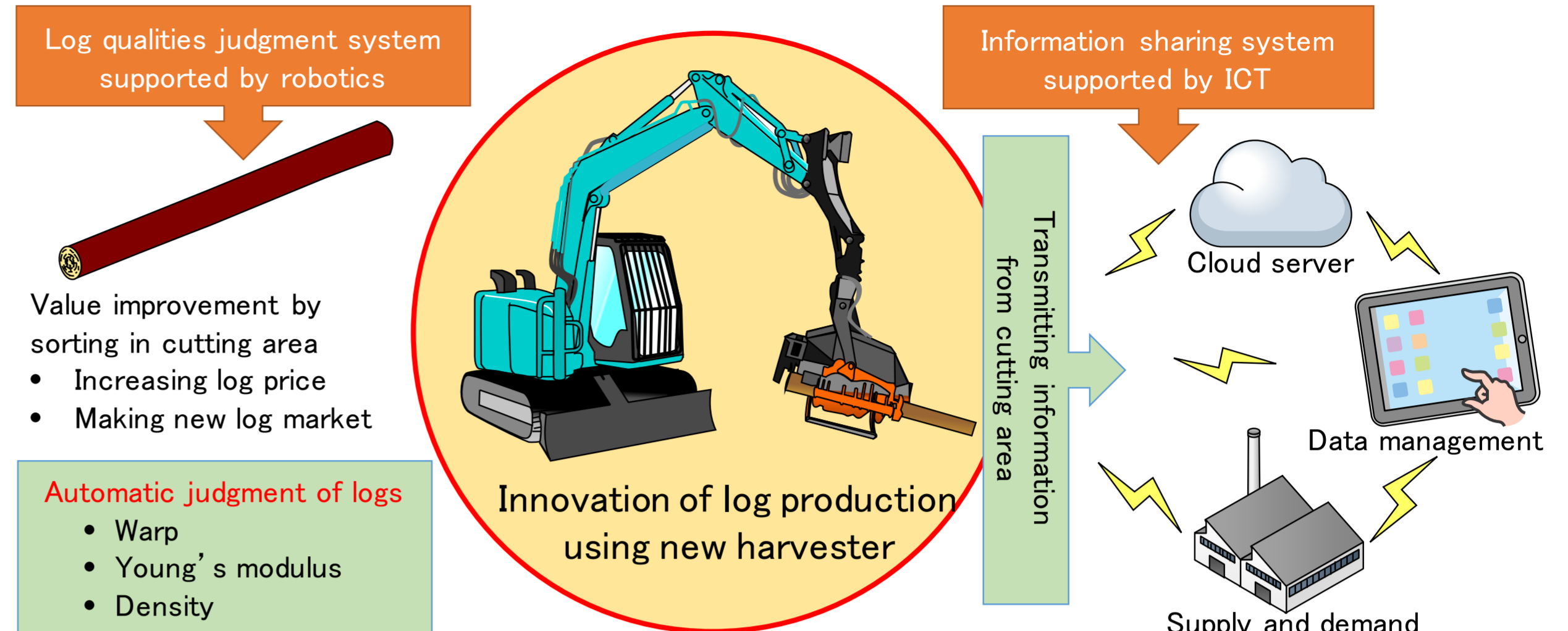


# INFORMATION-SHARING SYSTEM FOR A NEW HARVESTER EQUIPPED FOR AUTOMATIC ASSESSMENT OF LOG QUALITIES

## Introduction

This study aims to develop an information-sharing system for the Japanese forestry by developing a new harvester head with the aid of ICT and robot technology. In our previous report, we made a prototype of the information-sharing system that was implemented in relation to StanForD for Japanese forestry. In this study, we upgrade our system by adding some new tools.

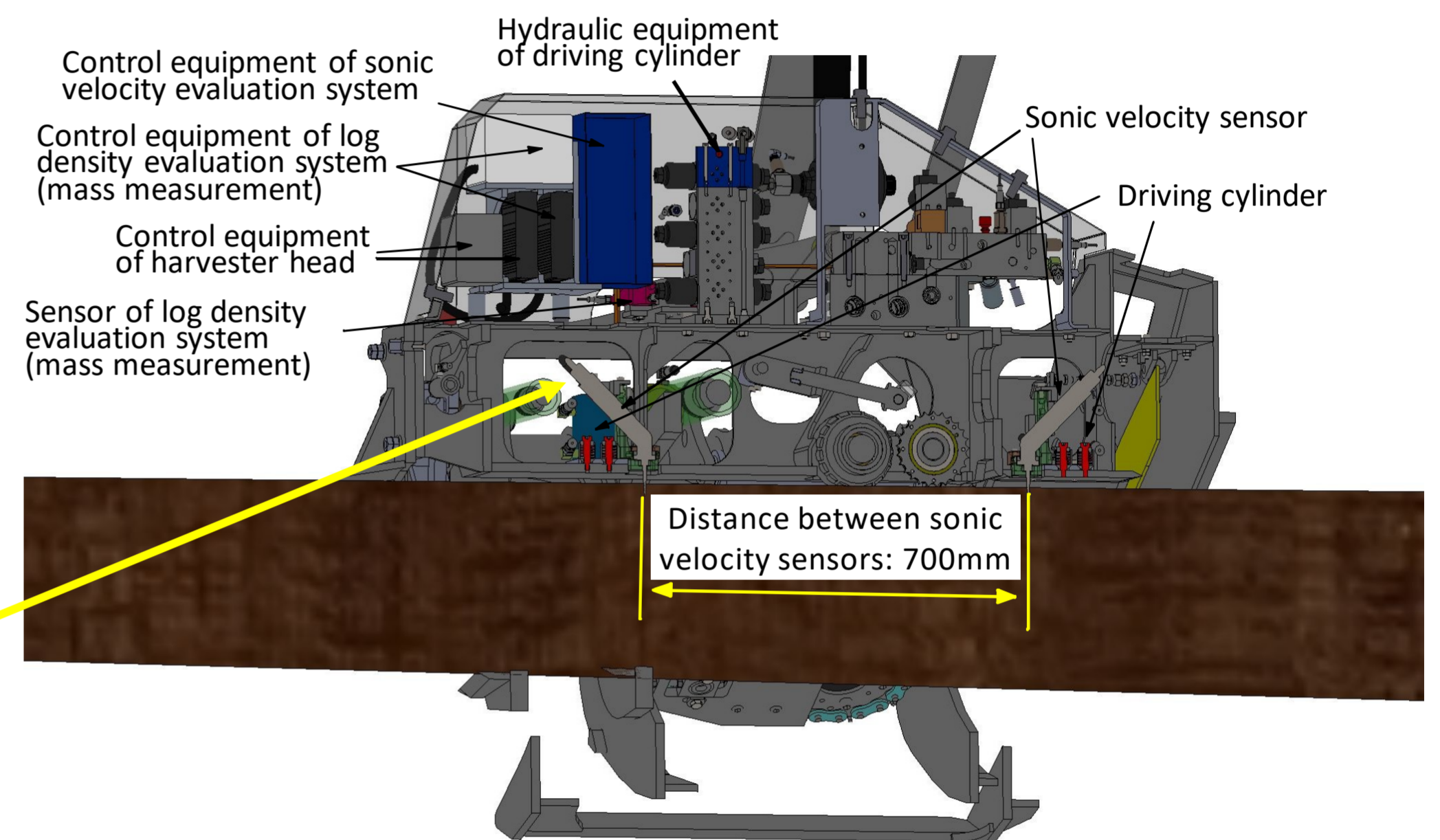
Development of harvester head equipped for log quality judgement with the aid of ICT and robot technologies



## New harvester head

### Development concept

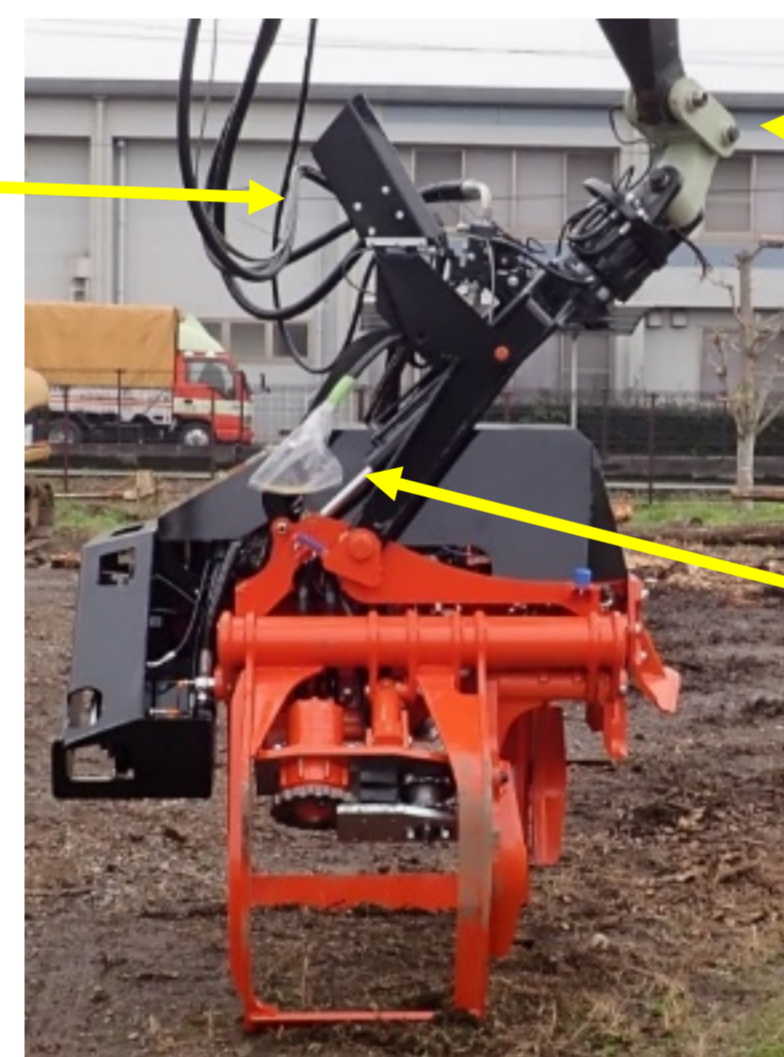
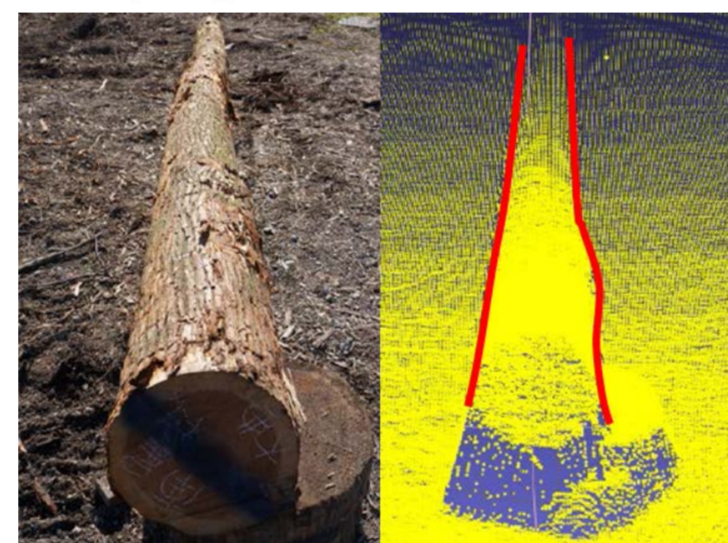
- (1) automatic assessment of log straightness (warp) for the efficiency in operating, operator work saving, and objective assessment
- (2) estimation of log strength (Young's modulus) and density prior to processing for the increasing log price at landing by sorting the logs by quality
- (3) efficient use of log data from the harvester for the use of unused data (skipping the log acceptance inspection) and matching between supply and demand



Sonic velocity sensor driven by hydraulic cylinder to estimate Young's modulus and density



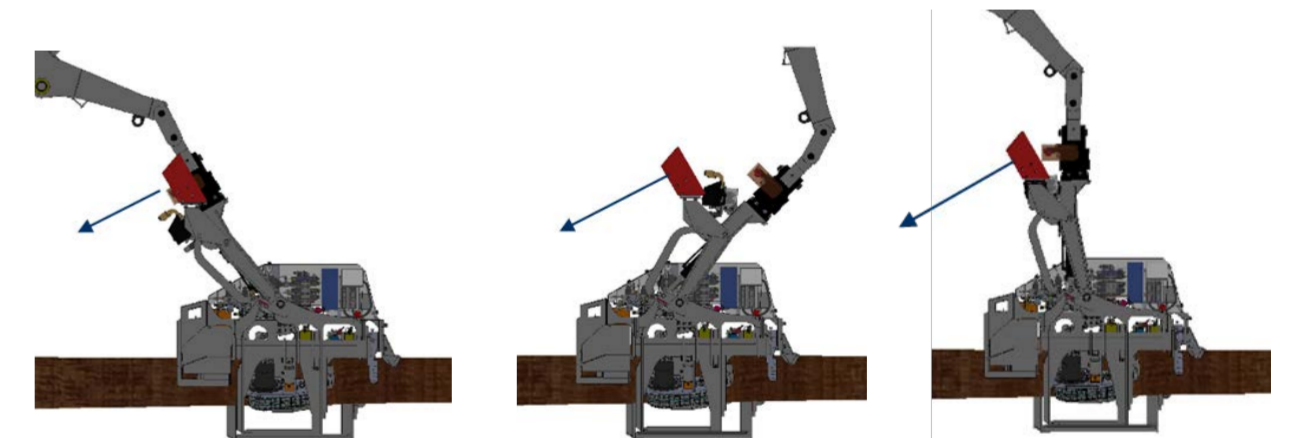
3D scanner to estimate warp



Pin type load cell for log weight to estimate density



Parallel link to see a fixed direction



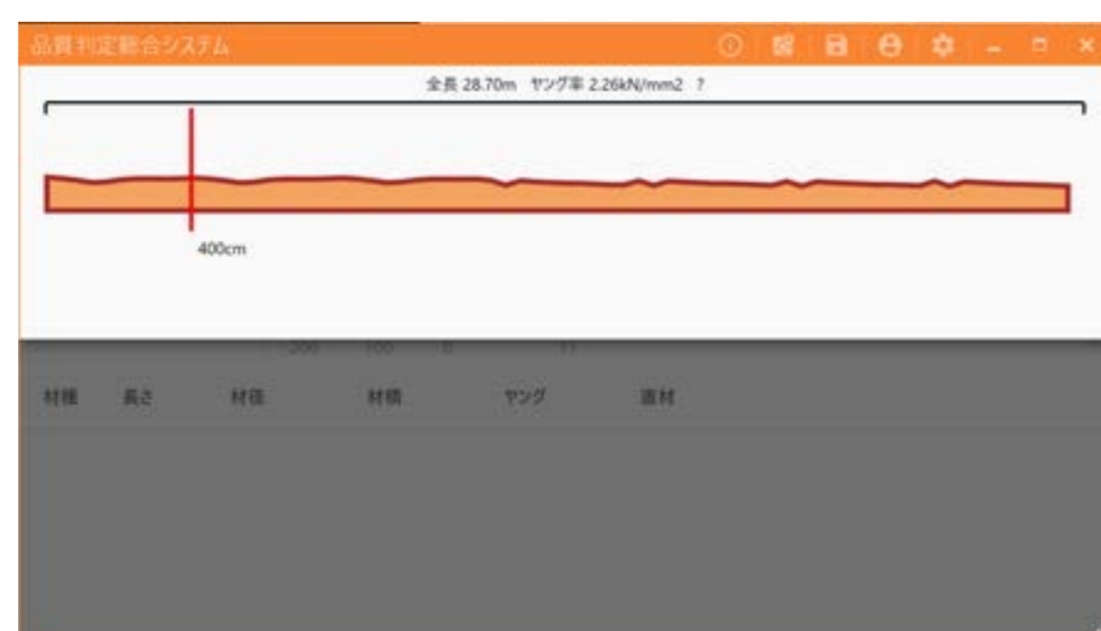
## Our information sharing system based on StanForD revised version 2019

- Add log quality data (butt end diameter, young's modulus, density, weight) into extend partition.
- Value backing based on the log qualities, aggregated hpr files, map interface showing the location of the logs

### Monitors in cockpit



### Value backing based on log qualities

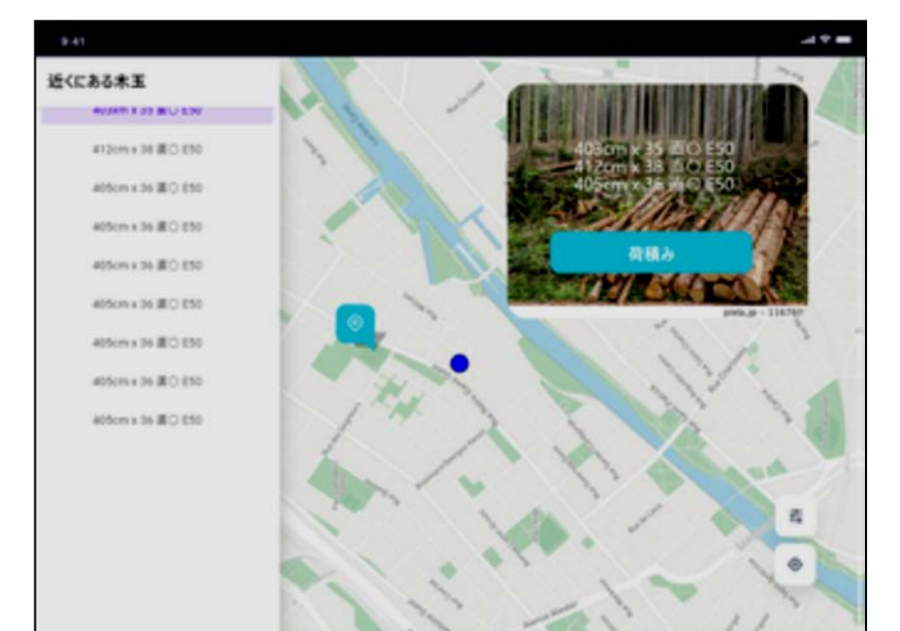


ID	品名	材質	長さ	材径	小径側径	端径
200	90	0	10			
300	90	0	16			
400	90	0	45			
200	100	0	11			

材種	長さ	材径	材径	ヤング	密度
A	0.29m	37.00cm	0.14m <sup>3</sup>	E50	×
A	6.21m	31.30cm	0.61m <sup>3</sup>	F50	×
A	4.52m	31.30cm	0.40m <sup>3</sup>	E50	×
A	3.11m	30.80cm	0.29m <sup>3</sup>	E50	×

### Map interface



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