

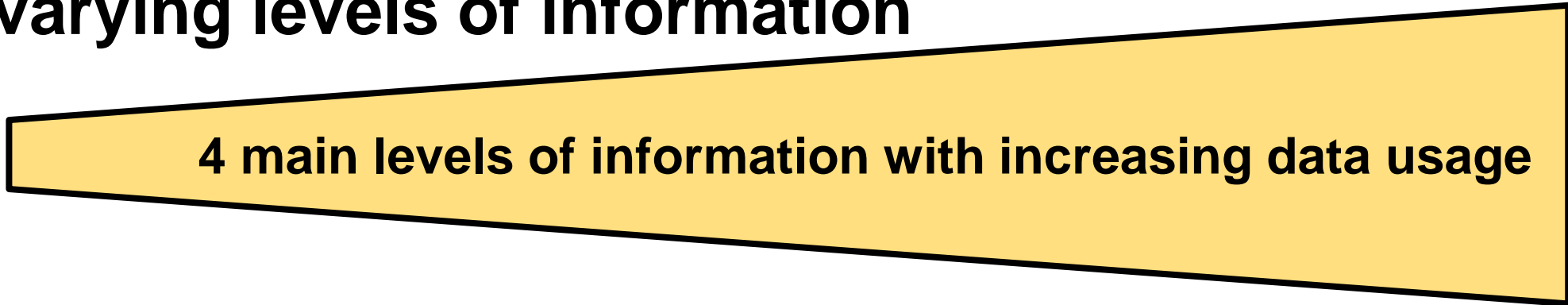
Telematics in Nonroad

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- **Telematics modules started to be introduced for Cat[®] equipment in ~2003.**
 - **Began as a customer option**
 - **Later it became standard on higher cost equipment**
 - **Currently, it's standard on the majority of Cat equipment sold into the U.S.**
 - **Most modules have cellular radios, while others also have satellite radios but at a much higher cost for data transmission when cellular coverage is not available.**

Telematics Hardware Options

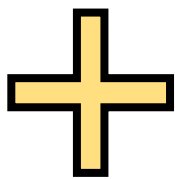
- Range of modules in use and currently available with varying levels of information



Locators



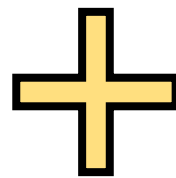
Location



Basic



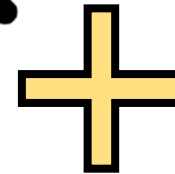
Service Clock



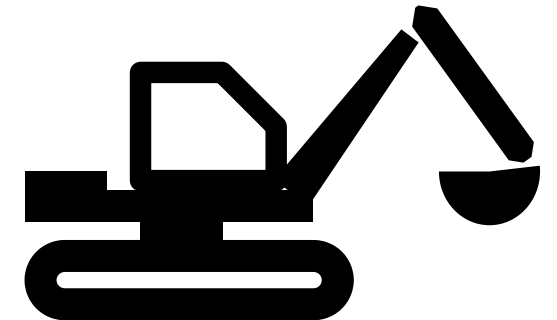
Pro



Product Health



Elite



Remote Service

- **Due to the cost for data transmission, only information that has customer value is collected, e.g.:**
 - **Fuel usage**
 - **Fuel level**
 - **Idle time**
 - **Diagnostic codes**
 - **Location**
 - **Machine health information**
 - **Productivity data**

- **Type and amount of information transmitted is based on the subscription level selected by the customer.**
- **Static information is generally not transmitted (eg. rated engine power, engine family, etc)**
- **Customers can request telematics devices be completely disabled.**
- **Customer consent required for information disclosure.**

- **High-speed engineering data is rarely captured.**
- **Small onboard buffer exists, but high-speed data may be susceptible to outages based on cellular bandwidth.**

Discussion

- **Telematics data is available only through customer consent.**
- **R&D likely required for data that is not already being captured.**



END

