• Superyachts and Sailing ships: a category of their own
• The first "smart sail" ever (?): SAIL LAB with VTT and Markku Hentinen, 1992.

Gauges to measure sail stress & strain
Two kinds of smart properties for sails:

1. **Environmental data collection**

2. **Sail trim & user help**

Pressure sensor tested in laboratory conditions on a model sail
Two kinds of smart properties for sails:

2. **Sail trim & user help**

• Flow sensors on sail help to trim sails correctly
Two kinds of smart properties for sails:

2. **Sail trim & user help**

   - Flow sensors on sail help to trim sails correctly
     - sensors can fire LEDs
     - or they can transmit data to a display in the cockpit, where the trimmer can profit of the information
Challenges and obstacles

• Energy: sensors need electricity
  - sensors
  - LEDs
  - Radio transmitting
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  - LEDs
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• Harsh environment
  - sea water
  - wind
  - rain
  - sun exposure (UV)
  - folding & scrubbing
Challenges and obstacles

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• Cost: sophisticated sensors cost easily 200 €/each
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• Energy sources: soft solar panels, thin, soft batteries.
Thank you for your attention!