Prospects and Challenges for Forest Harvesting technologies in Europe

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Forestry – many aspects and interests
Horizon 2020: Societal challenges

1. Health, demographic change and wellbeing

2. Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy

3. Secure, clean and efficient energy

4. Smart, green and integrated transport

5. Climate action, environment, resource efficiency and raw materials

6. Europe in a changing world - inclusive, innovative and reflective societies

7. Secure societies - protecting freedom and security of Europe and its citizens
It is not going to happen

...without profitable and efficient value chains

Forest engineering plays a crucial role!
Terrain transport: Incremental improvements

- Power
- Size
- Soil impact
- Ergonomics
- Machine uptime

Basic concepts remain
Felling/processing: Incremental improvements + system change

Å Feller-bunchers
  Å Steep slope capacity
  Å Boom reach
  Å Navigation assistance

Å Harvesters/processors
  Å Single-grip all over
  Å Multi-stem processing
  Å Wood value recovery
Most improvements inside
Directive 97/68/EC

Particles (PM) (g/kWh)

NOx + HC (NMHC) (g/kWh)

* NOx only

EURO I 1999

EURO III 2006

EURO II 2002

EURO IV

EURO IIIb

NOx only
Looking ahead – big picture

- Compliance
- Climate change
- Public confidence
- Attractiveness
- Sustainable market for OEMs
- Adaptability
- New technology in forestry applications
Examples of implications in forestry and forest engineering

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| Reducing soil impact | Å  Technology  
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| Operator’s environment and performance | Å  Automation  
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| Å  Active suspension  

Examples of implications in forestry and forest engineering

| Reducing soil impact | Technology  
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| Increasing value | Training  
| | Automation  
| | HMI  
| | Active suspension  
| | Measurement technology  
| | Data transfer & B2B systems  
| | Decision support  
| | ICT (see below)  

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- Training                                                                 |
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| Increasing value                              | - Measurement technology  
- Data transfer & B2B systems  
- Decision support  
- ICT (see below)                                                                 |
| Energy efficiency                             | - Hydraulics  
- Hybrids (electric, hydraulic)  
- Systems engineering                                                                 |
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Planning tools for minimized soil impact

• Pioneered by J.D Irving and University of New Brunswick
  • Implementation ongoing
  • To be combined with soft footprint technology
  • Best practice is performing well
Operator’s environment

- HMI
  - John Deere’s IBC is implemented
    - others to be expected
  - Head up display
- Active suspension
  - Comfort
  - Speed
  - Ground pressure
Increasing wood value

- Detailed spec from saw mill
  - Individual pieces
  - Narrow distributions
- Dimension measurement
- Information management
- B2B systems
Who is going to do it?

- Common responsibility
- Different roles
- Most happens outside forestry
- Common awareness of driving forces that apply

- User
- R&D
- OEM

- Low-volume market
- Who requests?
- Who buys?
- Who implements?
It can happen!

- **Profitable forestry** – suppliers to several industries – active in R&D
- **Strong R&D** – cross disciplines
- **Thriving OEMs** – providing forestry with leading technology
Thank you!
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