<u>Problem 1:</u> complexity of Transport & Aerospace markets:

- attempted solution: breakdown of value chains (cf. energy sector):
  - structural systems
  - Drive systems
  - Support systems (comms, control, security, safety, etc.)

Problem 2:

• confidentiality of (significant amount of) data related to defense (in these sectors)

 confidentiality due to limitations of proprietary information (specifically relevant in lengthy supply chains)

Identify and review <u>current approaches</u> to assessing economic impact of nanotechnology. What are their <u>limitations</u>? Are they <u>broadly applicable</u>? Are there <u>sufficient data</u> available?

Current approaches and their limitations:

- R&D funding (in part into academia) <> academic output lacks economic impact if not connected to industry R&D
- No. of (academic) publications <> academic output lacks economic impact if not connected to industry R&D
- No. of patents <> majority of patents remains unused (possible solution (as used by industry): follow patent-developments according to a filter of significance)
- Job counts <> lack of distinction between newly created and replacement jobs
- Company count <>
  - sudden bankruptcy of companies (counts need to be repeated on company-specific level to show dynamics)
  - Identification of the right companies to count in the first place (possible solution: count companies that are USING/INTRODUCE nanotechnologies in one way or another!?)

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#### Are they **broadly applicable**?

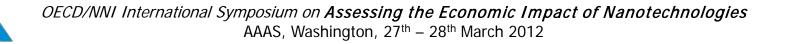
• That's part of the problem! (i.e. their usefulness is limited to those aspects that are sector-independent)

#### Are there sufficient data available?

• No, for above mentioned reasons (e.g. complexity, confidentiality, proprietary information, limitations of current approaches)

- > What is **not currently being captured** by metrics that should be?
- Assessment of changes/increases in technology-readiness (relying on the ability to quantify 'technology-readiness' with appropriate models)
- Translation of measurable environmental and health benefits into economic impacts (cf. decrease of carbon footprint, increasing safety, increase in energy efficiency)
- Number of incidents when nanotechnology was the best-in-class solution to a non-nanospecific problem.
- Products & services that would NOT exist without nanotechnology (for a similar cost and/or with a similar quality) (e.g. mobile data/energy storage, transistors, flexible displays & solar cells)

- What is a <u>reasonable objective</u> to set for the economic assessment of the impact of nanotechnology in your sector in <u>3 or 5 years (too</u> <u>short for aerospace)</u>?
- Translate & quantify technological impact (e.g. environmental & health benefits) into economic impact (cf. decrease of the cost of a kWh generated by solar cells, enabled by nanotechnology, super-lightweight materials)
- Identify/count products & services that would not exist without nanotechnology



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OECD/NNI International Symposium on Assessing the Economic Impact of Nanotechnologies Vhat is not currently beingveingturëd 환까까만 한 that should be?

BREAKOUT SESSIONS:



**Nanomedicine** – Auditorium



**Energy** – Abelson Room



Advanced Materials – Haskins Room



Food & Food Packaging – Revelle Room



Transportation & Aerospace – Cabot Lab



**Electronics** – Room 207

### **Coffee Break???**

... by discretion of the Breakout Session Co-Chairs

<u>Indicator:</u> 'Attention Level' <u>Metric:</u> ?