Industrial Internet Platforms
A game changer in terms of power relations in manufacturing value chains?

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Fears of a platform takeover in industry

Do platforms disrupt industrial value chains and how?
Who are the main beneficiaries of the IoT in industry?

Project “Industrial Internet Platforms, Restructuring of Production Networks, and Work in China and Germany”
Explorative qualitative study: 01/2020-06/2022, funded by Hans-Böckler-Foundation

Theoretical references
• Critiques of platform capitalism (Srnicek 2016, Zuboff 2015, Staab 2019)
• Literature on platform’s business models (Cusumano, Gawer, & Yoffie, 2019, Kenney/Zysman 2016, McAfee & Brynjolfsson, 2017, Abdelkafi et al., 2019)
• Data as „new intangibles“ (Butollo/Schneidemesser forthcoming)

Empirical design
42 interviews with industrial internet platforms and customers in Germany
• Platform architectures: relationship between customers, platforms and complementors (app providers)
• Sources of market power: network effects and data utilization
• Revenue model: how do platforms make money? How is added-value distributed?
A new universe: platforms in the industrial realm

Foundations:

• Datafication of industry (industry 4.0), products and social relations
• Evolution of connectivity standards and reference architectures
• Cloud computing

Sources of data and functionalities/types of platforms

Production-centred PF

• Production efficiency
• Apps to improve maintenance, QC, production flow, etc.

Product platforms

• Improve product
• Update functionalities
• Equipment as a service / industrial sharing economy

Industrial enterprise

Distribution-centred PF

• Matchmaking
• Digital pricing tools

Individual customers

Customization platforms

• Product design according to customers preferences
• On-demand production
• Producer-owned platforms
Production-centred platforms
(case study of platform firms operating in Germany)

Characteristics

• 'Operating systems for the industrial internet'
• Objective: integrate apps for enhancing performance
• IIoT-Stack: functional specialization
• PaaS: (Primarily) innovation platforms

Findings concerning power relations in this emergent field

1. Domain-specific knowledge matters: division of labour / coopetition between IaaS/PaaS/SaaS (so far) no takeover by tech enterprises. Yet disruption of field of industry software / mechanical engineering

2. Specificity of data: limited insights from aggregated industry data from complex production environments weak direct network effects, “consultancy” element of customer relationship, option of fragmented market

3. ‘Privacy’ of data: a complex governance (‘communities of practice’) of sharing data and benefitting from it barrier to direct network effects

4. Difficulties of a proprietary lock-in: diverse equipment settings, need to stay open indirect network effects matter!

5. Earnings models depend on productivity enhancement on customers side (still an uphill battle), no secondary use (ads)
Distribution-centred platforms
(case study on online manufacturers in the metal components industry)

General characteristics
• Self-proclaimed ‘online manufacturers’
• Matchmakers between customers and production partners
• (Primarily) transaction platforms

Findings concerning relationship between platforms and manufacturers:

1. **Indirect network effects matter**: the more manufacturing partners, the more attractive the offer to customers

2. Platforms **record and use transaction data**: AI-based pricing calculations

3. **Ambivalent effects on manufacturing partners**:
   - Easier market access, ability to sell off overcapacities
   - Loss of direct customer relationship: hollowing out of functions?
   - Lack of transparency, price competition (with growing maturity)
   - Globalization of sourcing (Quote on prices)

4. Platforms as **disruptors and main beneficiaries**
Conclusions

1. **Analogies** between the commercial internet and IIoT only go so far.

2. **The multiplicity of uses** of data and platform strategies needs to be acknowledged (so far debates focus on the role of hyperscalers).

3. Concrete analyses of **platform governance** are needed in order to single out potentially disruptive effects:
   a) Innovation/transaction platform
   b) Direct/indirect network effects, particularly: issues of data governance
   c) Revenue models
   d) Relationship between technological core (standards) and complementors

4. We need a better understanding **what industry segments** change (in case of production-centred platforms not primarily end manufacturers, but providers of industry software or mechanical engineering companies)
Literature


