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## **Autonomous Contracts in Industry 4.0**

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Region: Switzerland

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[Rz 1] According to a survey conducted by CSC<sup>1</sup>, companies in the DACH-region are not well informed about *Industry 4.0*.<sup>2</sup> Switzerland ranked last, which is why we pick up the term and look at some legal challenges.

[Rz 2] Industry 4.0<sup>3</sup> stands for the 4<sup>th</sup> industrial revolution<sup>4</sup> adopted by the German Federal Government<sup>5</sup>: networked production by the Internet (of Things).<sup>6</sup> The Internet of Things (IOT) describes a number of technologies and research disciplines that enable the Internet to reach out into the real world of physical objects<sup>7</sup>, e.g. with sensors or actuators. The potential seems large: Gartner predicted that the IOT will grow to 26 billion objects by 2020.<sup>8</sup>

[Rz 3] Industry 4.0 leads to a paradigm shift from a central process control towards a decentralized process structure, in which the individual components control their manufacturing environment and create their own working environment.<sup>9</sup> In other words, within the manufacturing process the product being manufactured communicates with the machinery. Who is responsible for such communication? Can the intelligent agents in the smart factory autonomously conclude binding agreements for the manufacturers?

[Rz 4] Swiss law does not have a «law for software agents». Hence, general law applies to interactions of artificially intelligent devices. However, directly applying general legal rules does not seem to suffice.<sup>10</sup>

- A (direct) *proxy* (art. 32(1) Code of Obligations [CO]) acts rightfully on behalf of a principal. As a software agent (agent) has neither legal capacity nor capacity to judge (art. 18 CC), it cannot act as a proxy.
- A *falsus procurator* (art. 38(1) CO) acts on behalf of a principal without authority. Not only does the agent lack the required legal capacity, but the contracting party is typically *not* unaware of the missing authority — it's the main purpose that the intelligent agent acts on its own.
- A *messenger* only conveys a message and does not have any latitude of judgement or explanation. As the agent by system design makes its own judgement, it cannot be a messenger.
- A *blanket declaration* lies between proxy and messenger. Completing the blank declaration requires legal capacity to act (art. 12 Swiss Civil Code [CC]), which the agent lacks.

[Rz 5] An analogous application of these legal rules, or assuming legal fiction by degrading the agent to a mere communication device (e.g. phone) are disputed.<sup>11</sup> If Industry 4.0 is indeed an industrial revolution as claimed, then a legal solution will inevitably be found.

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<sup>1</sup> Computer Sciences Corporation, [www.csc.com](http://www.csc.com).

<sup>2</sup> MÜLLER (gvm), Die Unternehmen haben das Thema noch nicht im Griff, NZZ Nr. 17, 22. Januar 2015, S. 28.

<sup>3</sup> KAGERMANN/LUKAS, Industrie 4.0: Mit dem Internet der Dinge auf dem Weg zur 4. industriellen Revolution, VDI Nachrichten, 1 April 2011, [tinyurl.com/ly6vkgf](http://tinyurl.com/ly6vkgf).

<sup>4</sup> 1780—1900: mechanical production; 1900—1970: mass production; 1970—2000 automated production.

<sup>5</sup> Bundesministerium für Bildung und Forschung, Zukunftsprojekt Industrie 4.0, [www.bmbf.de/de/9072.php](http://www.bmbf.de/de/9072.php).

<sup>6</sup> MÜLLER (gvm), Das Internet hält Einzug in der Fabrik, NZZ Nr. 17, 22. Januar 2015, S. 28—29.

<sup>7</sup> FLOERKEMEIER, ET AL. (Eds.), *The Internet of Things*, Springer, 2008.

<sup>8</sup> Gartner Newsroom, [tinyurl.com/q6jyk9y](http://tinyurl.com/q6jyk9y).

<sup>9</sup> HÖTTITZSCH, Industrie 4.0, 6 July 2014, Telepolis, [tinyurl.com/q4ujmqf](http://tinyurl.com/q4ujmqf).

<sup>10</sup> KIANIKA, Die Agentenerklärung, ZStP - Zürcher Studien zum Privatrecht Band/Nr. 252; WETTIG/ZEHENDNER, A legal analysis of human and electronic agents, *Artificial Intelligence and Law* (2004) 12: 111—135.

<sup>11</sup> Kianika (FN 10), 133—136.

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