



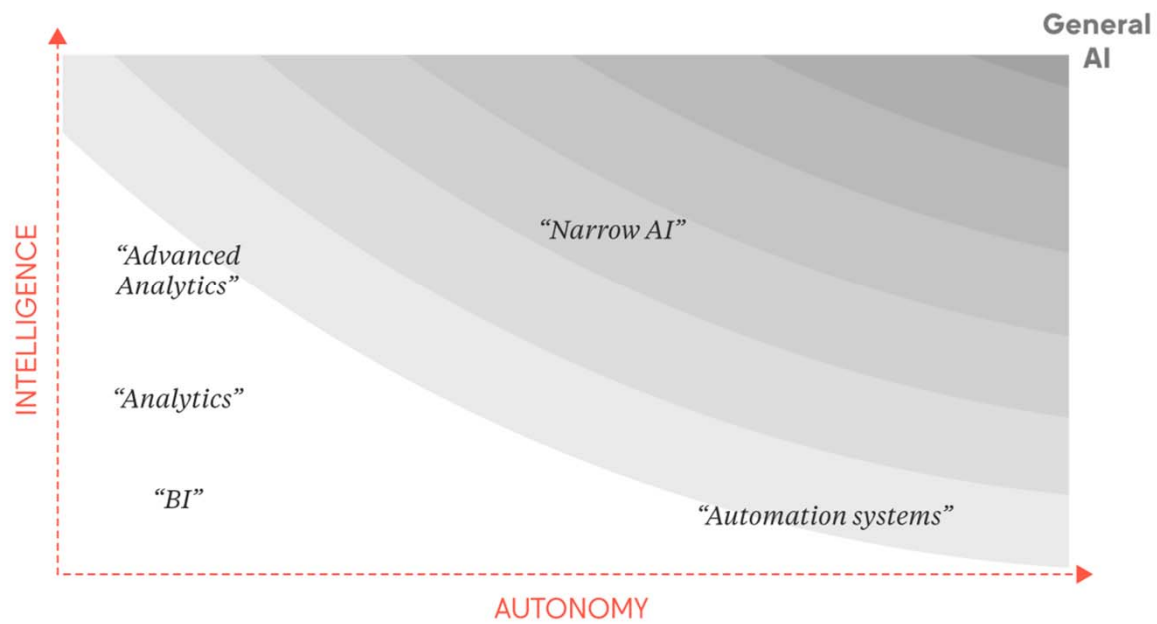
AI/Machine Intelligence in drug discovery

12 April 2018 Bioteollisuus Forum

Christer Nordstedt
Senior Vice President,
Research and Development

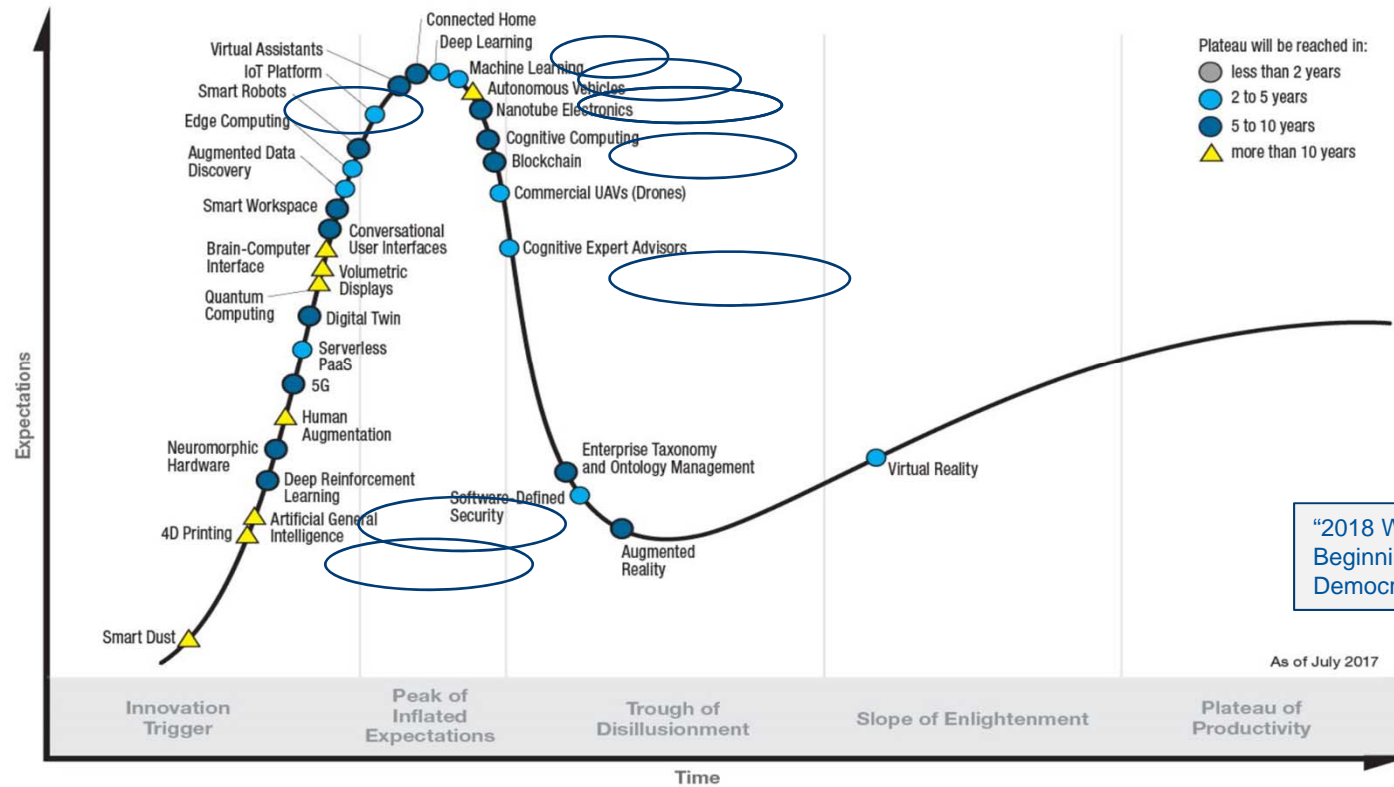


AI landscape



(Reaktor 2018)

Gartner Hype Cycle for Emerging Technologies, 2017



“2018 Will Mark the Beginning of AI Democratization”



AI* is a toolset for math problems



*Advanced analytics / Machine learning / Neural networks / other

(Kristian Luoma, OP, 2018)

Machine based Intelligence will be part of every solution of any major scientific problem in the future – also in drug discovery



Opportunities

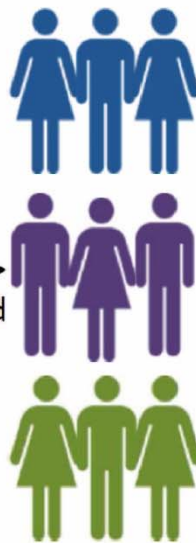


<p>New targets</p> <p>New pathophysiologies</p> <p>Drug combinations</p>	<p>Structure based</p> <p>Ligand based</p>	<p>Identification of new (digital) biomarkers</p> <p>Patient stratification and subgroups</p>	<p>Dynamic medication services and patient advisors</p> <p>Clinical tools for physicians based on data & AI algoritms</p> <p>Additional indications</p>
--	--	---	---

**One-size fits-all
medicine**



Stratified medicine



Precision medicine



Stratification
Patients are grouped
by: Disease
Subtypes
Demographics
Clinical features
Biomarkers

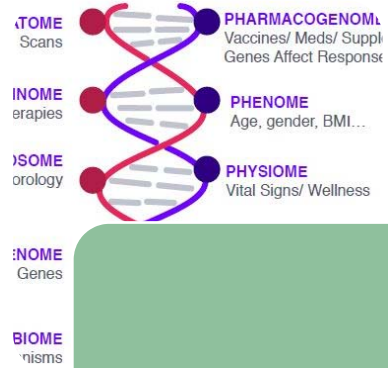
Personalisation
Patient individual:
Preferences,
Clinical features
Medication history
Environment
Behaviours & habits
Biomarker



Enablers



Tools



Data



People



As AI continues its inevitable and exponential development, how do we make sure we have enough of good data and capable people – and appropriate funding?



Conclusions and Personal Reflections

- Machine intelligence will have a greater impact on drug discovery and development than molecular biology, synthetic chemistry or any other scientific discipline
- Machine intelligence is still searching for its' use in Pharma (like molecular biology before recombinant drugs)
- (Strong) Machine Intelligence will disrupt our business model - How are we going to compete?
- Machine Intelligence (I believe) will democratize medicine and serve as a “Great Equalizer”
- Finland can be a leader in what probably is the most important and disruptive field science and technology has ever produced (with the exception of “the scientific method”)
 - Possibly the most “modern” society on the planet
 - Extremely well educated population
 - In the absolute elite among innovation countries (Bloomberg, 2017)
 - Openness to technology and science



Thank you!

