Generative AI as gamechanger for healthcare

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Start presentation

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VWS report

- Answer patient-questions prepare concepts for health professional

- Summarize patient-dossiers to prepare

- Automate the reporting of a health meeting between a patient and healthcare professional

- Prepare and question guidelines and medical knowledge

- Development of new medication

- Triage and advise at home

- Diagnoses en triage support without healthcare professional (Hippocrates of Nvidea)

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Risico toepassingsgebieden van GAI

Toepassing	Risico Niveau	Potentie Niveau	Reden
Automatisering van administratieve taken	Laag tot gemiddeld risico	Hoog	Draagt direct bij aan vrijmaken capaciteit van zorgpersoneel zonder grote risico's rondom hallucinaties en controle. Eenvoudig om samen met expert te laten werken. Risico hang af van de mate waarin model medisch gerelateerde handelingen verricht.
Virtuele gezondheidsassistenten en telemedicine	Gemiddeld tot Hoog risico	Gemiddeld tot Hoog	Potentie om veel werk van de zorgverlener uit de zorgpraktijk te nemen naar de thuissetting. Risico is hoger dan vorige toepassing vanwege mogelijke medische aard. Hoog risico als het met medische en biometrische gegevens werkt.
Diagnose en behandelplanning	Hoog risico	Hoog	Potentie hoog om werk van zorgverlener te ondersteunen en uit handen te nemen. Hoog risico als mens niet eindverantwoordelijk is en omdat er met biometrische gegevens wordt gewerkt.

Daadwerkelijke risiconiveau zal use-case afhankelijk zijn

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Challenges and obstacles

- Hallucinaties en mis-leading outcomes

- Author-rights

- Reinforcement of bias (synthetic data)

- Transparanty and openess of models

- Disruption of professional secrecy (data leakages)

- Disruption of treatment relationship and loss of humanity of care

- Cost-benefits of Gen AI not at the same party

- Power large tech companies (especially VS)
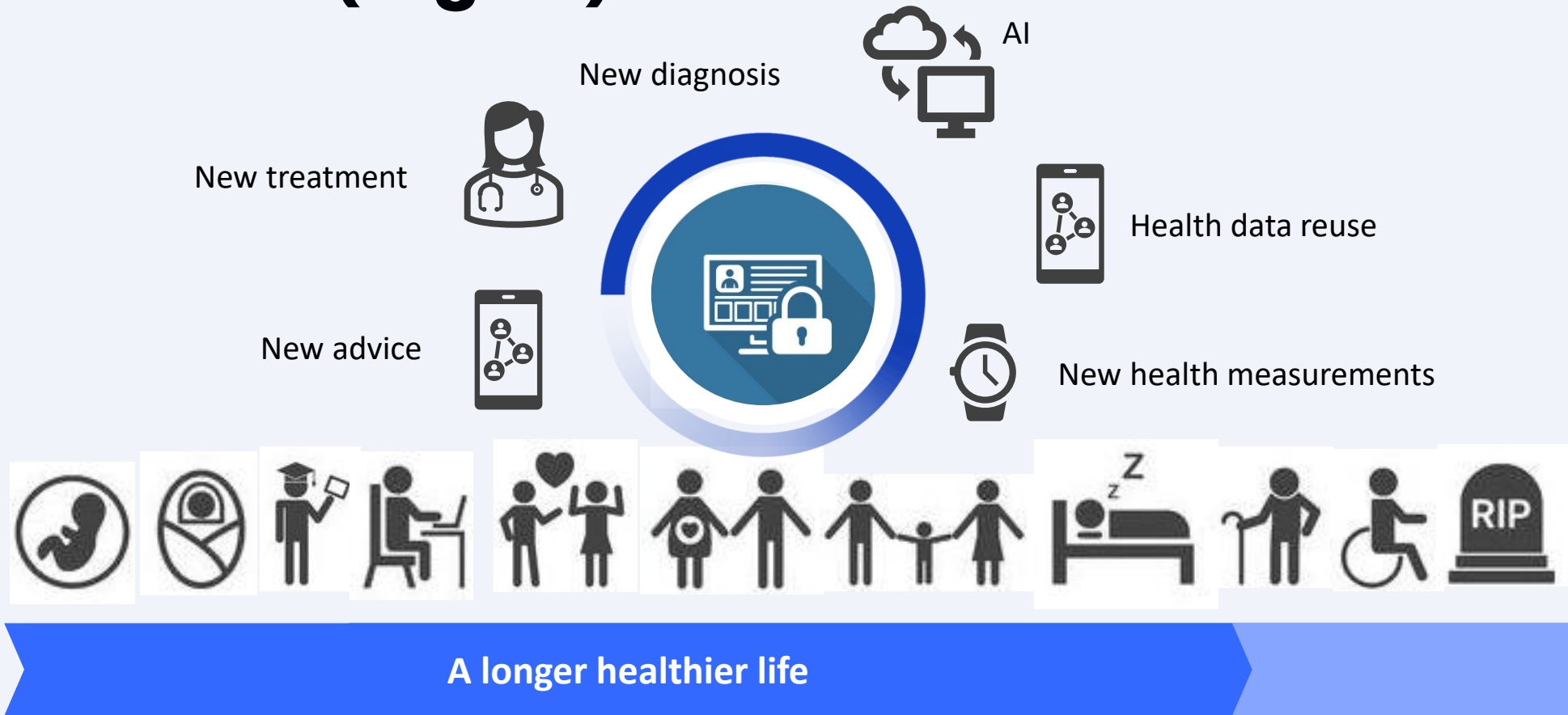

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Vision

- Gen AI has the potention to contribute to affordable, accessible and qualitative care (also long-term)

- Important to guarantee the Dutch values as justice, transparancy, safety, responsibility and sustainability in law and policies

- Prevent dependency of a small number of international parties by investing in AI-innovations in the Nederlands

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The future of (Digital) Health

New diagnosis

AI

New treatment

Health data reuse

New advice

New health measurements

RIP

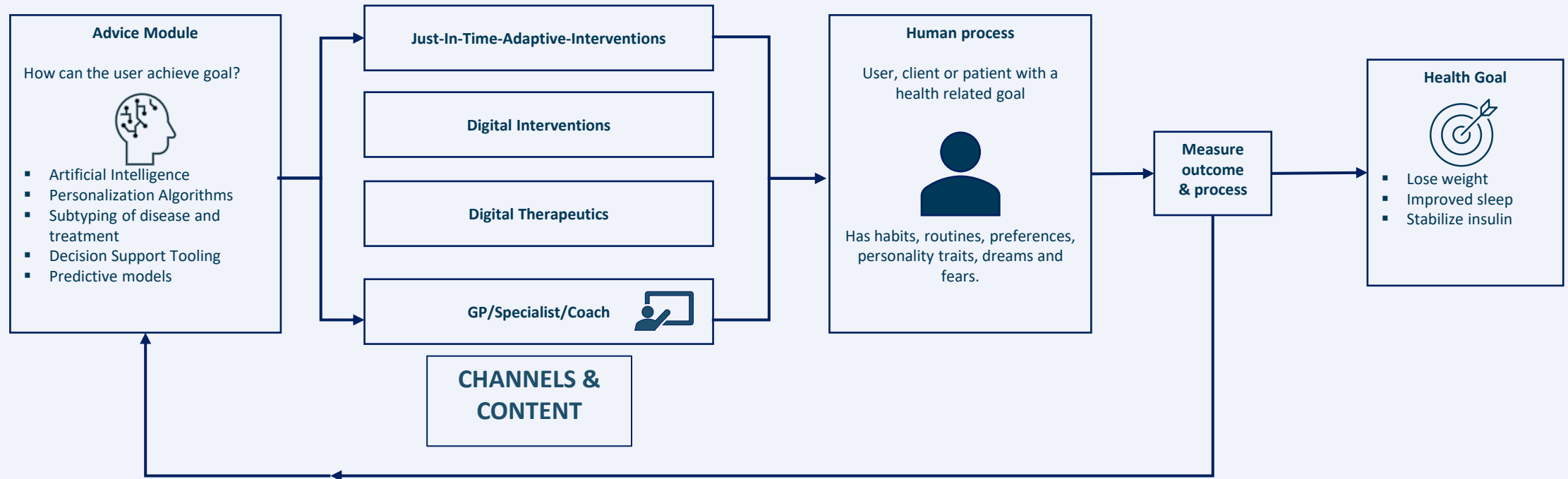**A longer healthier life**

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Perspective on the use of AI

Role in advice	Data quality & data access & data combination					Integration & interpretation of data: personal diagnosis, prediction and advice				Engaging & user aware advice	
Challenge	Unstructured data	Privacy & legislation	Burden of data combination	Burden of data collection	Interoperability & standardization	Black box models	Knowledge access	(Health) inequity	Continuous data interpretation	Engagement	Lack of agency
Solution	Large language models (generative A.I.)	Federated learning & S-MPC	Automated data standardization (LLMs)	Speech to data (LLMs)	Automated FAIRification	Explainable and trustworthy AI	Large language models	Bias aware AI/ assessability of A.I.	n=1 statistics	AI for Engagement	Personalized advice models LLM's -> comprehensive advices/ language

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Perspective on the use of AI

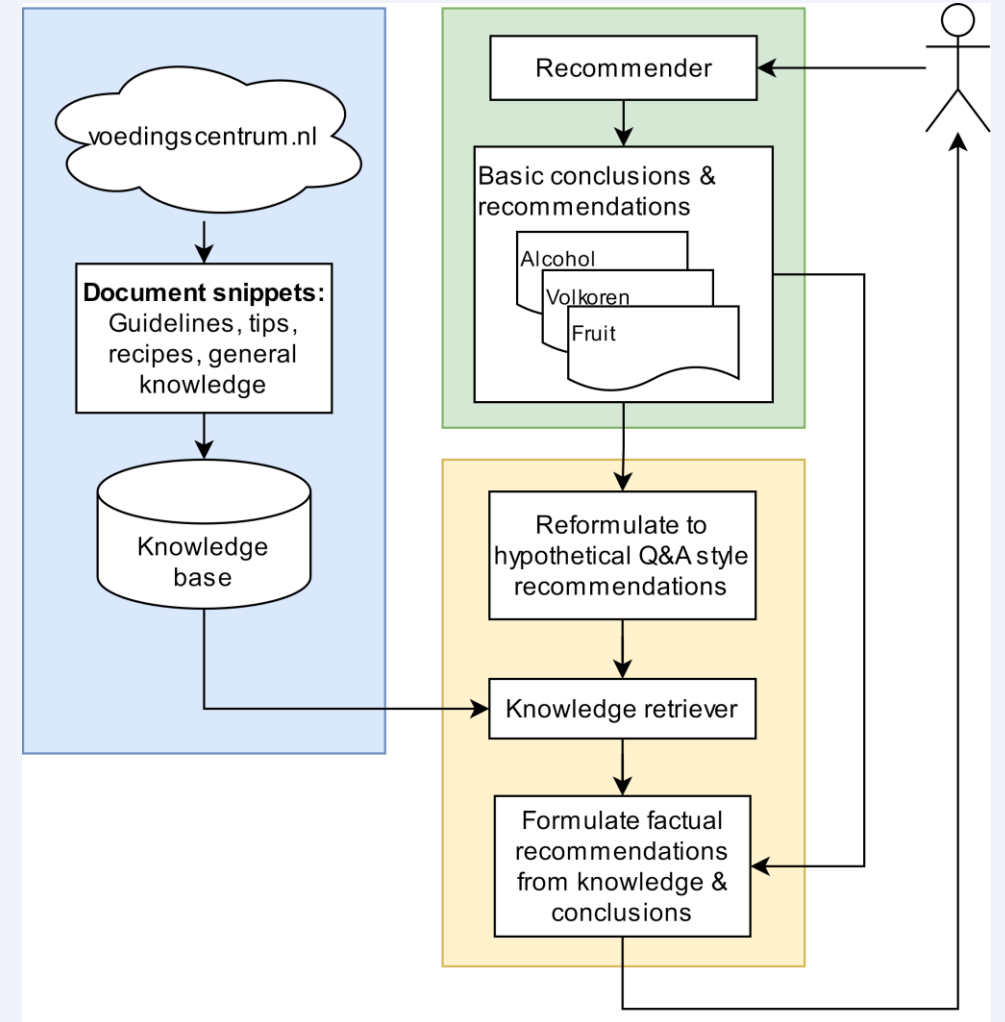| Role in advice	Data quality & data access & data combination					Integration & interpretation of data: personal diagnosis, prediction and advice				Engaging & user aware advice	
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LLM-based recommender

Generate recommendations that:

- Combine existing recommender with 'Retrieval-augmented generation'

- Use rule-based diagnosis

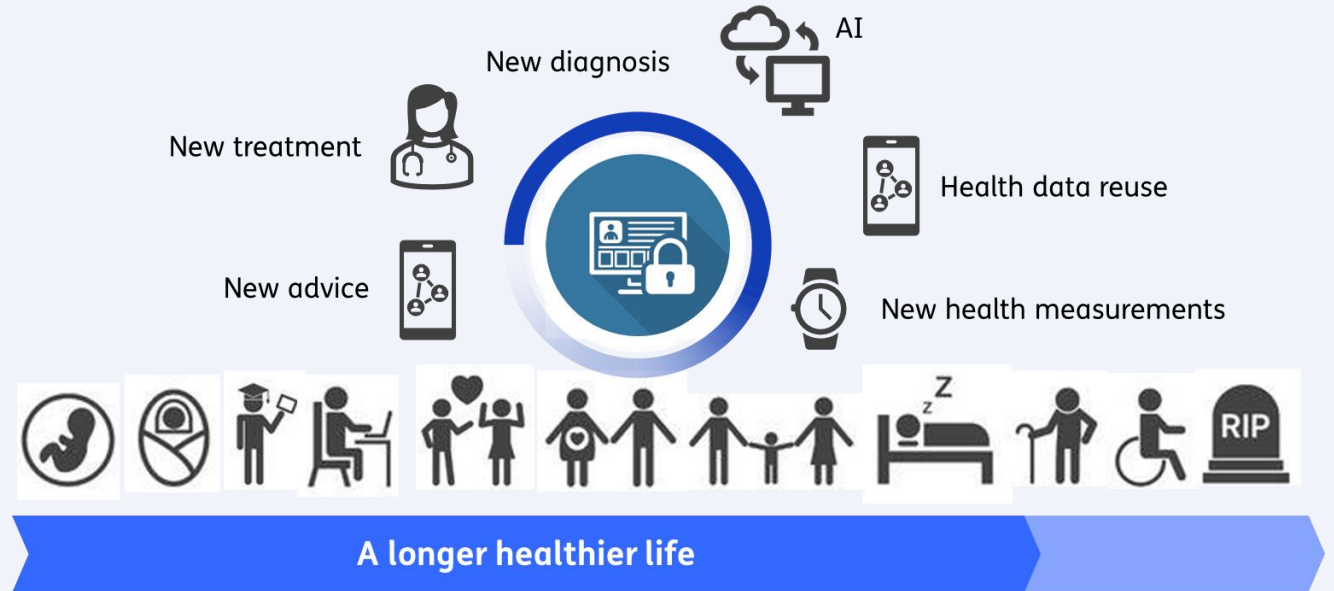- Leverage content from Dutch nutritional guidelines

Three parts:

- Recommender (existing)

- Knowledge base

- Synthesizer

Next: Add a fitting tone of voice

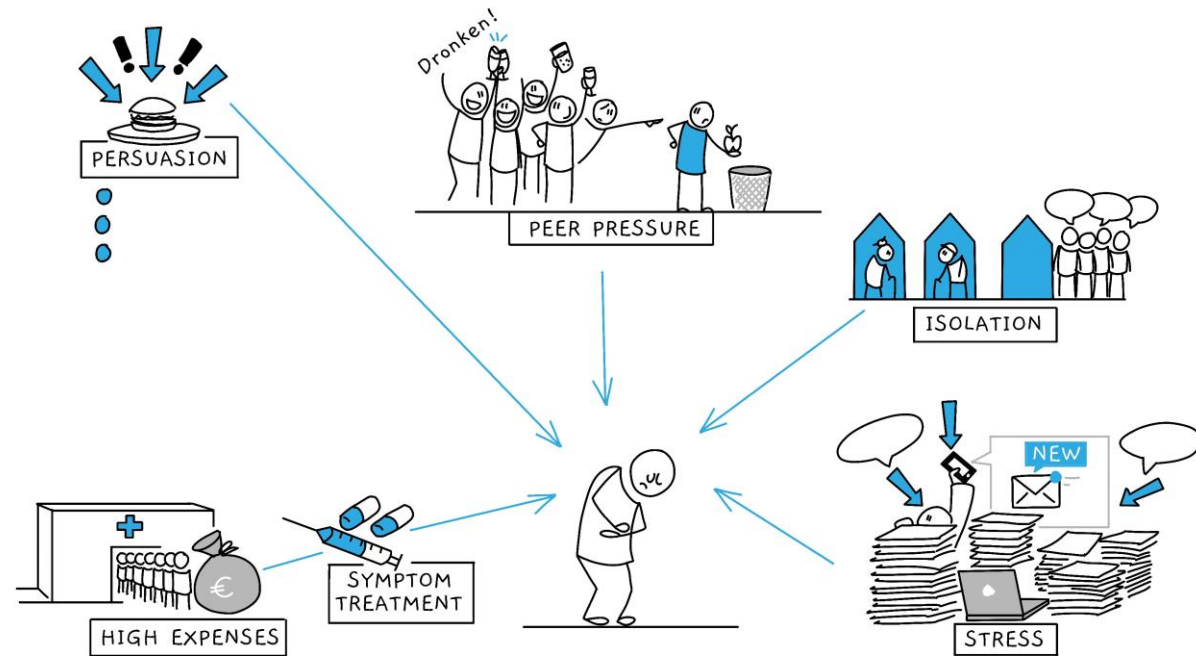TNO innovation for life

Conclusions & perspectives

- Many components are needed for personal health advice

- Systems approaches are needed for fitting advice

- Health care can become more preventive

- Health care can be more fun to work in

Thank you for your attention

LDDC 19 September 2024

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CURRENT CHALLENGES IN HEALTH