

Data analytics in de zorg

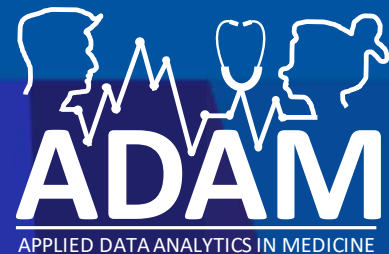
Hype, Revolutie of Evolutie?

Prof dr Wouter van Solinge

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Universitair Medisch Centrum Utrecht



Reasoning Foundations of Medical Diagnosis

Symbolic logic, probability, and value theory
aid our understanding of how physicians reason.

Robert S. Ledley and Lee B. Lusted

The purpose of this article is to analyze the complicated reasoning processes inherent in medical diagnosis. The importance of this problem has received recent emphasis by the increasing interest in the use of electronic computers as an aid to medical diagnostic processes (1, 2). Before computers can be used effectively for such purposes, however, we need to know more about how the physician makes a medical diagnosis.

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ance are the ones who do remember and consider the most possibilities."

Computers are especially suited to help the physician collect and process clinical information and remind him of diagnoses which he may have overlooked. In many cases computers may be as simple as a set of hand-sorted cards, whereas in other cases the use of a large-scale digital electronic computer may be indicated. There are other ways in which computers may serve the physician, and some of these are suggested in this paper. For example, medical students might find the computer an important aid in learning the methods of differential diagnosis. But to use the computer thus we must understand how the physician makes a medical diagnosis. This, then, brings us to the subject of our investigation: the reasoning foundations of medical diagnosis and treatment.

Medical diagnosis involves processes that can be systematically analyzed, as well as those characterized as "intangible." For instance, the reasoning foundations of medical diagnostic procedures are precisely analyzable and can be separated from certain considered intangible judgments and value decisions. Such a separation has several important advan-



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'Hive mind' AI connects groups of radiologists, outperforms specialists or AI alone

September 11, 2018 | [Subrata Thakar](#) | [Artificial Intelligence](#)



A small group of experienced radiologists, connected by machine learning algorithms that enable them to work together as a “hive mind,” can achieve higher diagnostic accuracy than the individual radiologists or the machine learning algorithms alone, according to [new research](#) presented on Sept. 10 at the Society for Medical Imaging Informatics in Medicine (SIIM)'s Machine Intelligence in Medical Imaging conference.

Artificial Swarm Intelligence employed
to Amplify Diagnostic Accuracy in Radiology

<https://unanimous.ai/wp-content/uploads/2018/09/ASI-for-Radiology-IEEE-IEMCON-2018.pdf>



2018



Innovatieve zorgvormen/e-Health

q. Randvoorwaardelijk om stappen te kunnen zetten richting de juiste zorg op de juiste plek moet de opschaling van zinvolle en doelmatige (proces)innovaties, e-healthtoepassingen en digitaal ondersteunde zorg worden versneld. Dit draagt bij aan verbetering van de ervaren kwaliteit van zorg en een lagere administratielast voor zorgverlener en patiënt. Veilige en doelmatige e-health-toepassingen dienen binnen de looptijd van dit akkoord een regulier onderdeel van goede zorg te worden en de regie op gezondheid door mensen zelf te ondersteunen. Veilige en doelmatige e-health komt beschikbaar voor iedere patiënt die er gebruik van kan en wil maken.

Welkom bij de vernieuwde digitale krant van NRC. Geef feedback. Oude digitale editie. Meer informatie

Terug naar de krant

EU dreigt digitale kolonie te worden

Kunstmatige intelligentie China en de VS werken al jaren aan werelddominantie. 'Het gaat om de volgende industriële revolutie, er staat veel op het spel'

Wouter van Noort 27 april 2018



De Europese houding ten opzichte van kunstmatige intelligentie (artificial intelligence, AI) leek lang op slaapwandelen. AI jaren wordt de achterstand van de EU op AI-groetmachten Amerika en China groter. Rapport na rapport wijst erop dat Europese investeringen ver

04 sep 2018 NTB Congres 'van Hippocrates tot datadriven dokter; voorop in vernieuwing'

TECH

Big firma, big data

Paul Souren

16 april 2018

In de gezondheidszorg zien we steeds meer maatwerk op patiëntniveau. Persoonsgerichte zorg oftewel personalized healthcare is al langer een trend, maar lijkt nu een vlucht te nemen. Personalised medicine levert daar een belangrijke bijdrage aan.

“De impact van AI is groter dan die van vuur of van elektriciteit”

Sundar Pichai – Google-topman

Akkoord over terugdringen kosten ziekenhuizen

VANDAAG, 16:00 AANGEPAST OM 18:43 BINNENLAND, POLITIEK



Ziekenhuizen worden in de toekomst kleiner en er moet meer zorg worden geleverd door huisartsen en anderen. Dat is de kern van een akkoord over medisch-specialistische zorg dat minister Bruins heeft gesloten met diverse organisaties, waaronder de Nederlandse Vereniging van Ziekenhuizen, Zorgverzekeraars Nederland en de Patiëntenfederatie Nederland.

Doel van het akkoord is "de juiste zorg op de juiste plek te krijgen door de juiste professional op het juiste moment en tegen de juiste prijs" in te zetten.

Bruins zegt dat iemand soms het beste knie, maar dat hij soms beter af is met van duurere vormen van zorg naar m brengen."

Voorbeelden van dingen die niet meer per se door ziekenhuizen hoeven te worden gedaan zijn bloedafnames, onderzoek naar huidaandoeningen, in de gaten houden van astmapatiënten en het verwijderen van aambeien. Een van de afspraken is dat er meer gespecialiseerde verpleegkundigen worden opgeleid en dat er regels worden geschrapt. Ook wordt er meer gebruik gemaakt van innovatie, zoals 'e-health'.



FDA News Release

FDA permits marketing of artificial intelligence-based device to detect certain diabetes-related eye problems

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Inquiries

Media

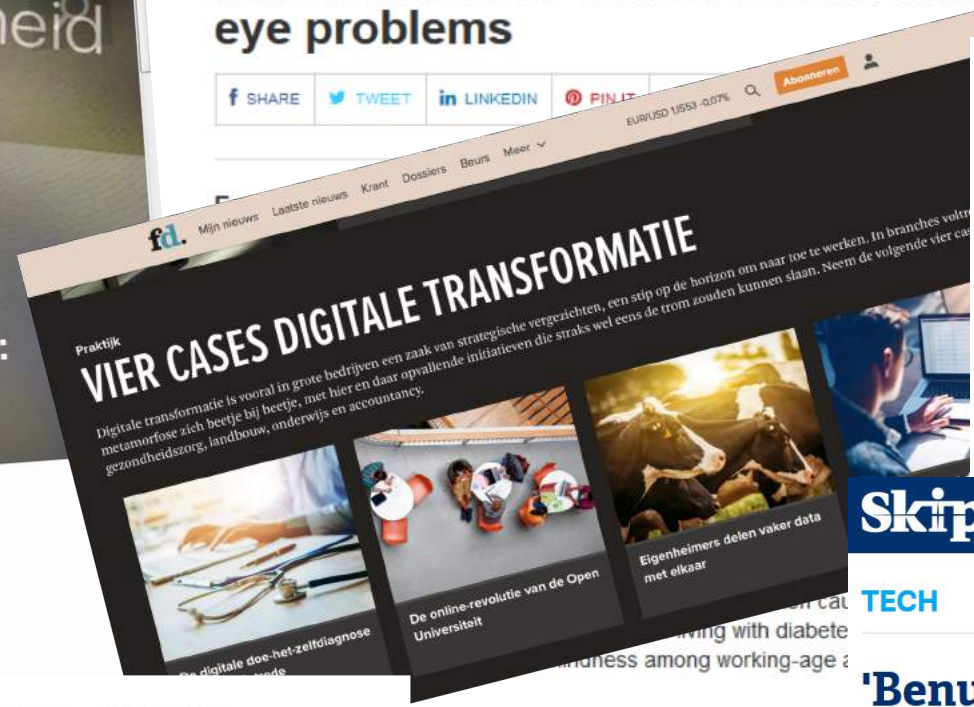
✉ Angela Stark

Eén miljoen voor BIG data project EUR ter verbetering van de uitkomsten in de zorg

04-04-2018, 10:10 | Lezersnieuws | Philogirl



3 april 2018 – Erasmus School of Health Policy & Management (ESHPM) ontvangt een EU Horizon2020 subsidie van één miljoen euro voor het onderzoek BigMedylitics naar de brede toepassing van Big Data in de gezondheidszorg. ESHPM onderzoekt of, hoe en onder welke voorwaarden met Big Data de productiviteit in de zorg kan worden



GESCHREVEN DOOR

Nik Wouters en Leen Kraniotis
redacteuren Economie



Ontdekken ICT-oplossingen ICT Consulting

Het was een aankondiging die apothekers fors deed dalen de bank en een investeringsmaatschappij. De gezondheidszorg gaat geregele

Met het initiatief hoopt Amazon te beteugelen. In eerste instantie als het een succes wordt, zou de aanbieder kunnen worden



ICT in de zorg
flexibel en veilig met KPN Zorg

Skipr NIEUWS BLOGS EVENTS VACATURES HRM TECH GASTVRIJHEID VASTGOED

TECH

'Benut de kansen van big data in de zorg'

Zaandam, 28 juni 2018

Albert Heijn lanceert Mijn Voedingswaarden op ah.nl

Inzicht in voedingswaarden van boodschappen maakt bewust boodschappen doen makkelijker

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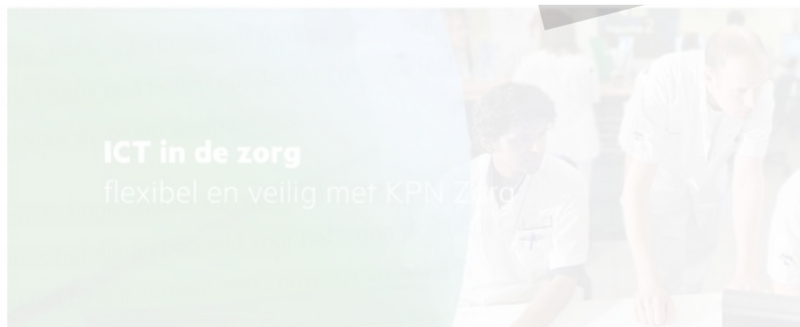
Apple Watch Series 4 will have FDA-cleared ECG, fall detection

This is the first FDA clearance for Apple and pushes the Watch further into healthcare than ever before.

By **Jonah Comstock** | September 12, 2018

<https://www.mobihealthnews.com>

SHARE  31



ICT in de zorg
flexibel en veilig met KPN Zorg

Zaandam, 28 juni 2018

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zorg

Skipr Redactie
12 juni 2018
2197 keer gelezen
0 reacties



Het gebruik van big data biedt volop mogelijkheden voor het verbeteren en personaliseren van de zorg. Privacy blijft een belangrijke kwestie, maar mag de ontwikkeling van nieuwe big data toepassingen niet in de weg staan.

Dit kwam naar voren tijdens het Tech Campus in Eindhoven.



Patienten kunnen dankzij nieuwe technieken al veel

Inquiries
Media
Angela Stark

How America's 5 Top Hospitals are Using Machine Learning Today

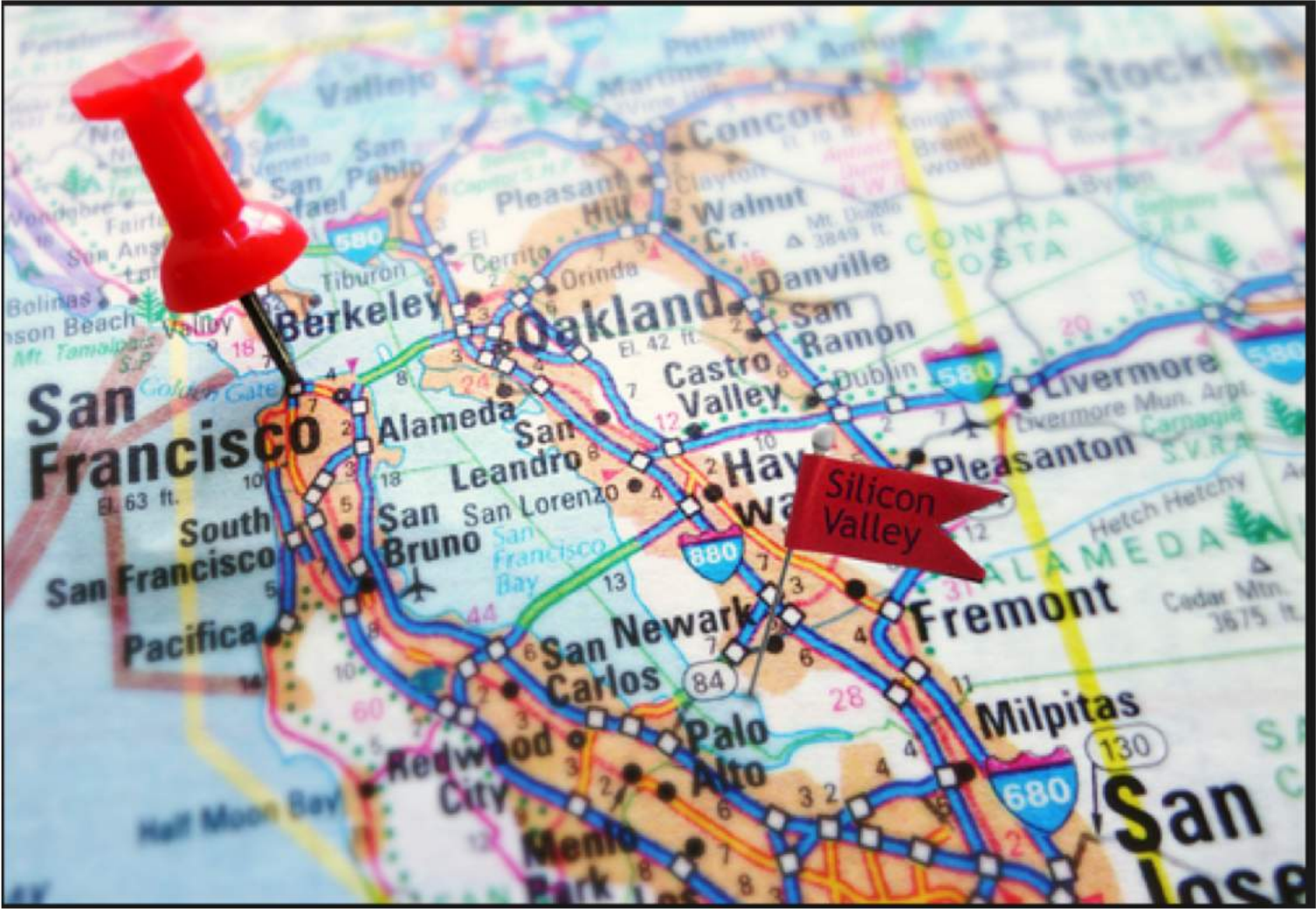
Last updated on April 13, 2018 by Kumba Sennaar



<https://www.techemergence.com/top-5-hospitals-using-machine-learning/>

Despite the massive venture investments going into healthcare AI applications, there's little evidence of hospitals using machine learning in real-world applications.

Ondertussen in Silicon Valley... ..



Google's Masterplan for Healthcare

The Medical Futurist | 8 minute read
19 June 2018



NOS

Nieuws

Sport

Uitzendingen

'Amazon begint eigen medische klinieken voor personeel'

© VR 10 AUGUSTUS, 09:49 BUITENLAND

Verily, Calico, Deepmind, more than 150 patents in life sciences and countless collaborations with pharma companies. The search engine's parent company, Alphabet takes its move into healthcare and medicine seriously. We looked thoroughly at what Google in healthcare looks like.

My Apple health chatbot referred me to the Amazon hospital where I got Google drugs



Nieuw toetreders komen van buiten het huidige ecosysteem

Meer dan ooit; verwacht het onverwachte



Consumentenverwachting (=het individu, de patiënt, de zorgverlener,...)

Altijd en overal gepersonaliseerde diensten



Amusement



Shoppen



Leren

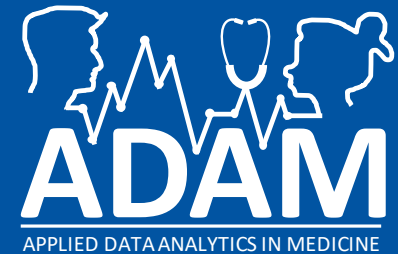


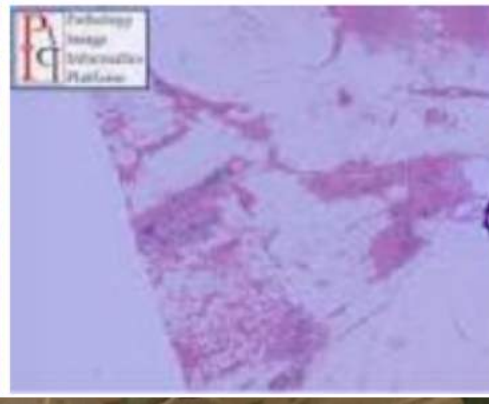
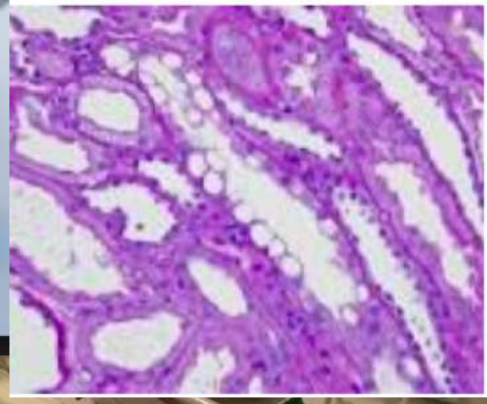
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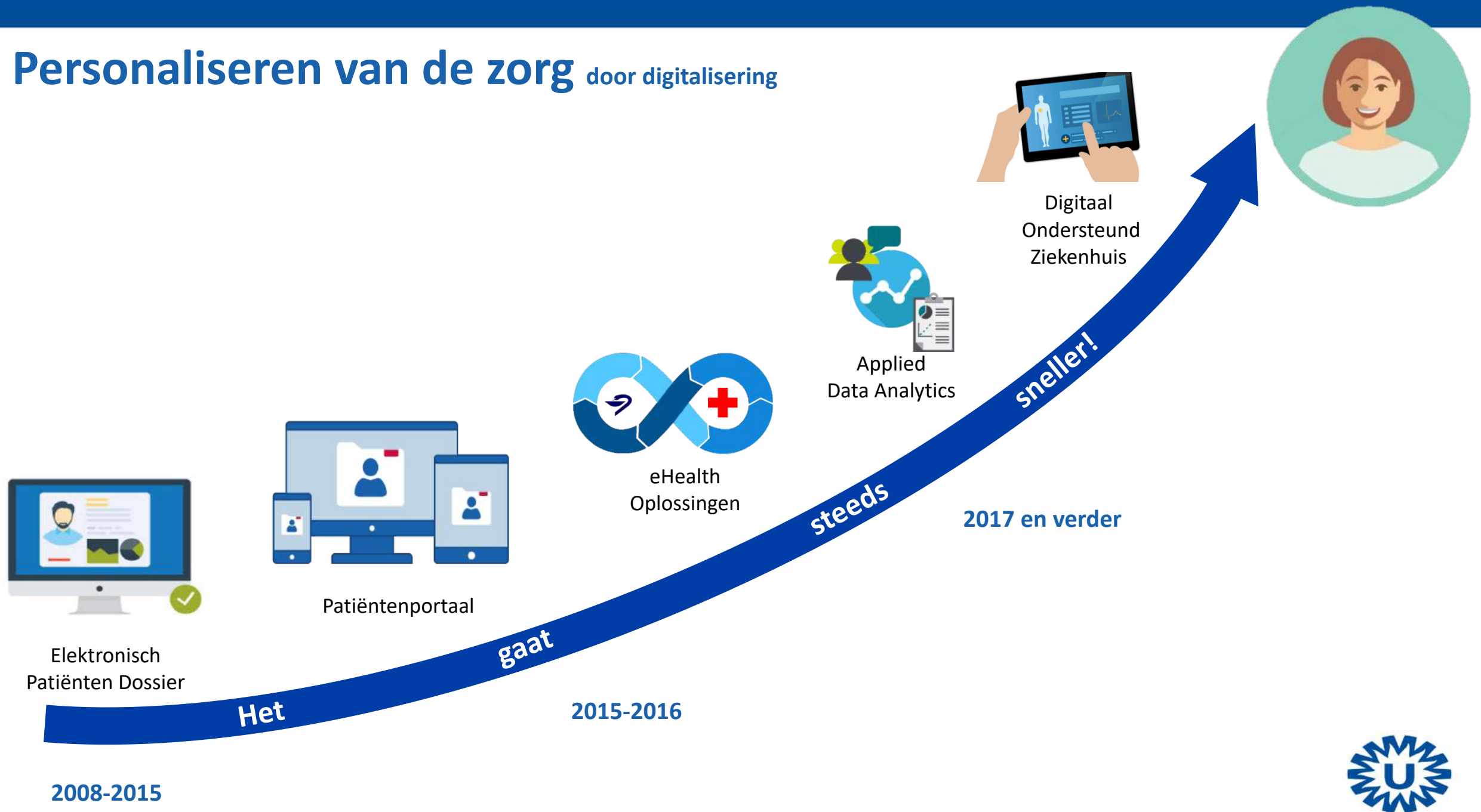
ADAM: Applied Data Analytics in Medicine

- Digital Health -





Personaliseren van de zorg door digitalisering



Proeftuin data analytics in de zorg

Het UMC Utrecht heeft het EPD, het live-patiëntenportaal, het Research Data Platform, de eHealth pilots, dus **veel ontsloten data beschikbaar**

Essentieel om volgende stap te zetten, **data te gebruiken** voor verbetering van zorg, nu de “analytics-technologie” beschikbaar komt?

In opdracht van de **Raad van Bestuur**

Corporate programma met budget: “**proeftuin ADAM**”

Met **sterke externe partners** (bedrijven met data scientists/data analytics ervaring)

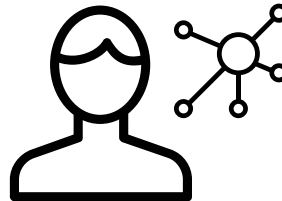
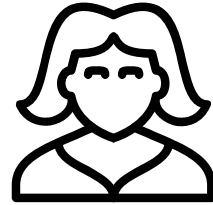


Multidisciplinaire teams in ADAM

Gedurende het proces werken patiënten, medisch specialisten en data scientists samen aan oplossingen



Patienten



Medische Experts
Eigenaar pilot

Data scientists

- ● Wekelijkse project meeting (Scrum) We
- ● start
- ● Elke 4 – 6 weken Expert sessies
- ● ● Elke 4 – 6 weken Patiënten groepen
- ● ● Pilots
- ● Veranderkundige meting



Projects en externe partners ADAM1



accenture

Project management and impact/change management assessment



NICU



Psychose



Cardiovasculaire
Risico Management



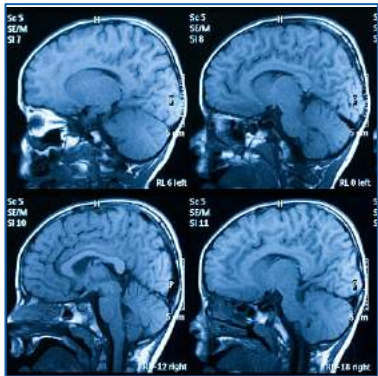
Reumatoïde
artritis



Projects en externe partners ADAM2


accenture

Project management and impact/change management assessment



IMAGR



**Urineweg
infectie**

SIEMENS



UrStatus



**OK/IC
Capaciteit**

pacmed

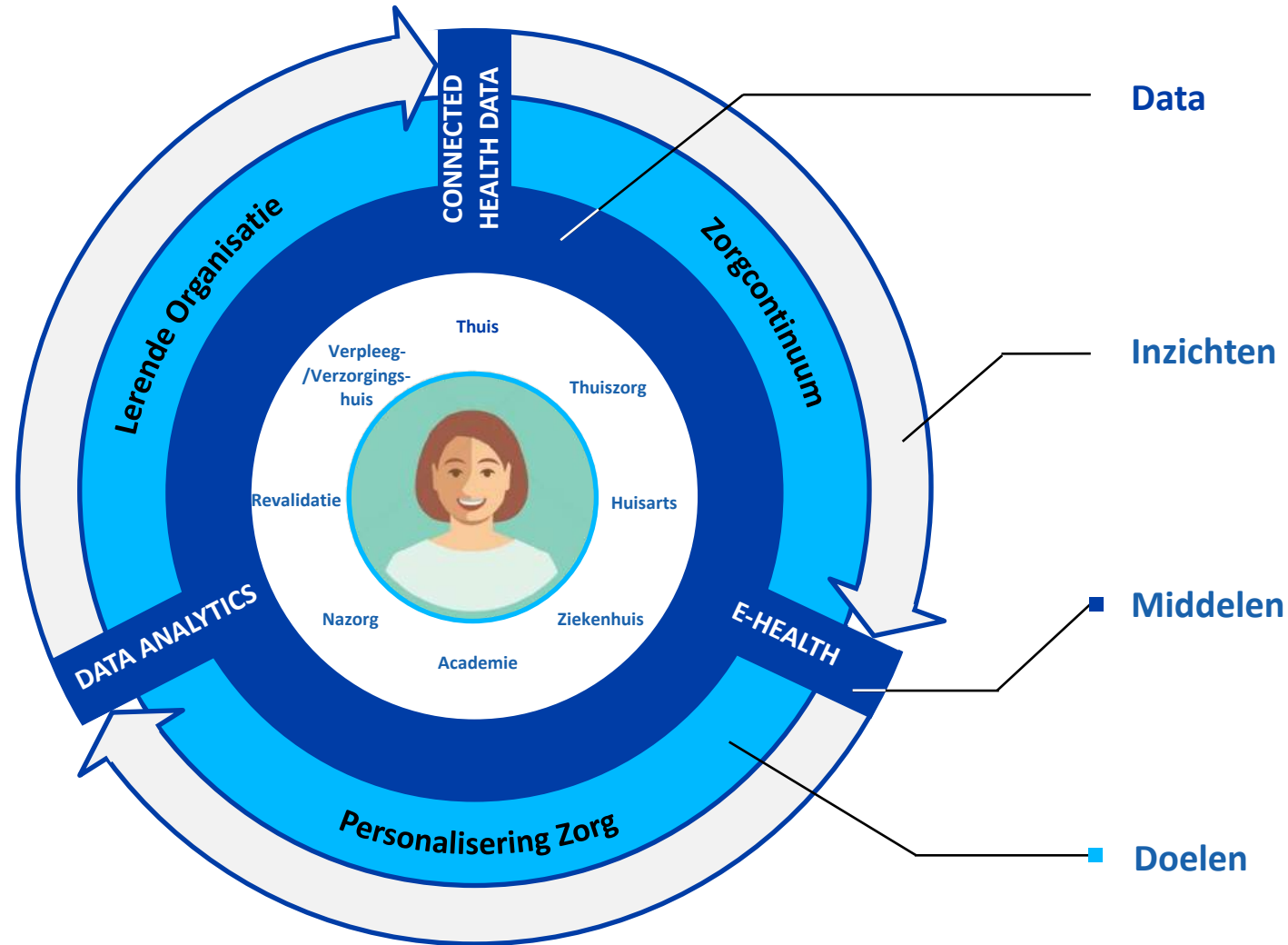


Geboortezorg

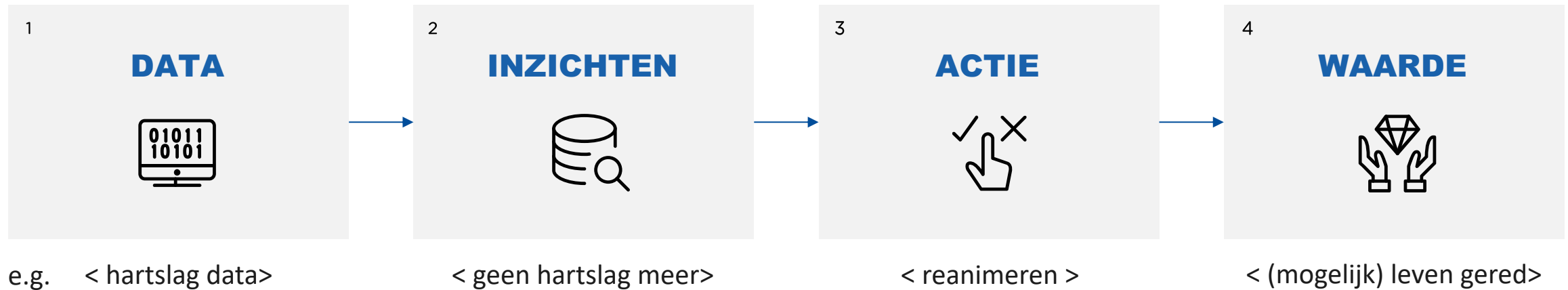
ORTeC



Data is de zuurstof voor het hele zorgcontinuüm van de patiënt



Data om de Data is onzin, het gaat om de Inzichten en uiteindelijk de Waarde



Kwaliteit van de Data is essentieel: weet wat je hebt, zorg voor de context

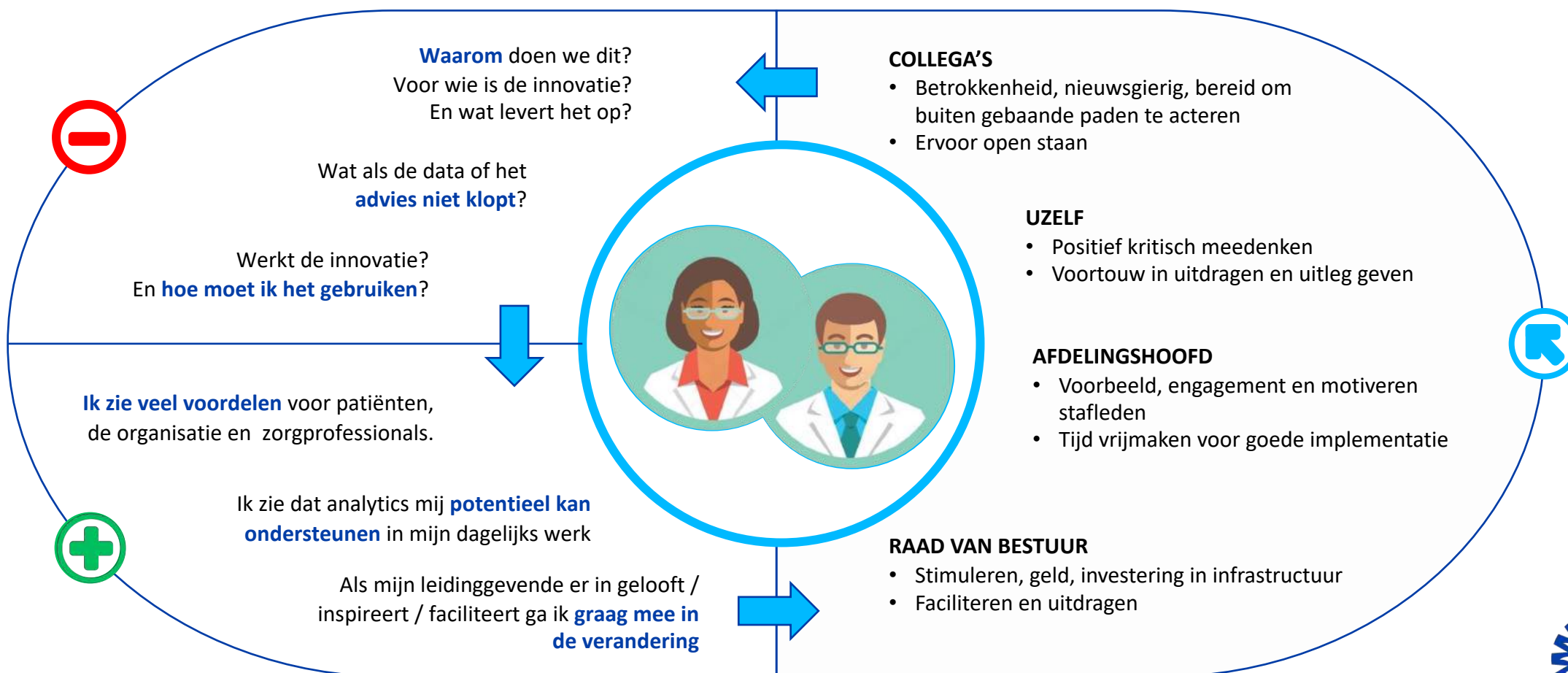


Augmentin

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Augmetin	Augmetnin	Augmintin	Augmmentin	Augmnentin	Augmnetin
Augnemtin	Augnmentin	Auhmentin	Aum	Aumentin	... (Even more)

Verandermanagement - noodzakelijk en verwacht voor implementatie* -

OBSERVATIES 'CHANGE READINESS' << >> VERANDERMAGEMENT VERWACHTINGEN



* Uitkomst veranderkundige meting onder (bij de ADAM-projecten) betrokken zorgprofessionals



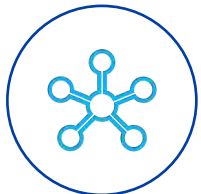
Personaliseren van de Zorg - Samenvatting -



Investeren in “Digitale Gezondheid” en opbouw competentie is nu belangrijk



Data is cruciaal: context - medische kennis - waarde creatie



Splendid isolation won't do



Data analytics in de zorg

Hype, Revolutie of Evolutie?

1959.....2019

