

Artificial Intelligence in Dev & Ops

DevOpsCon 2019

Dr. Martin Luckow



[Trivadis Blog](#)

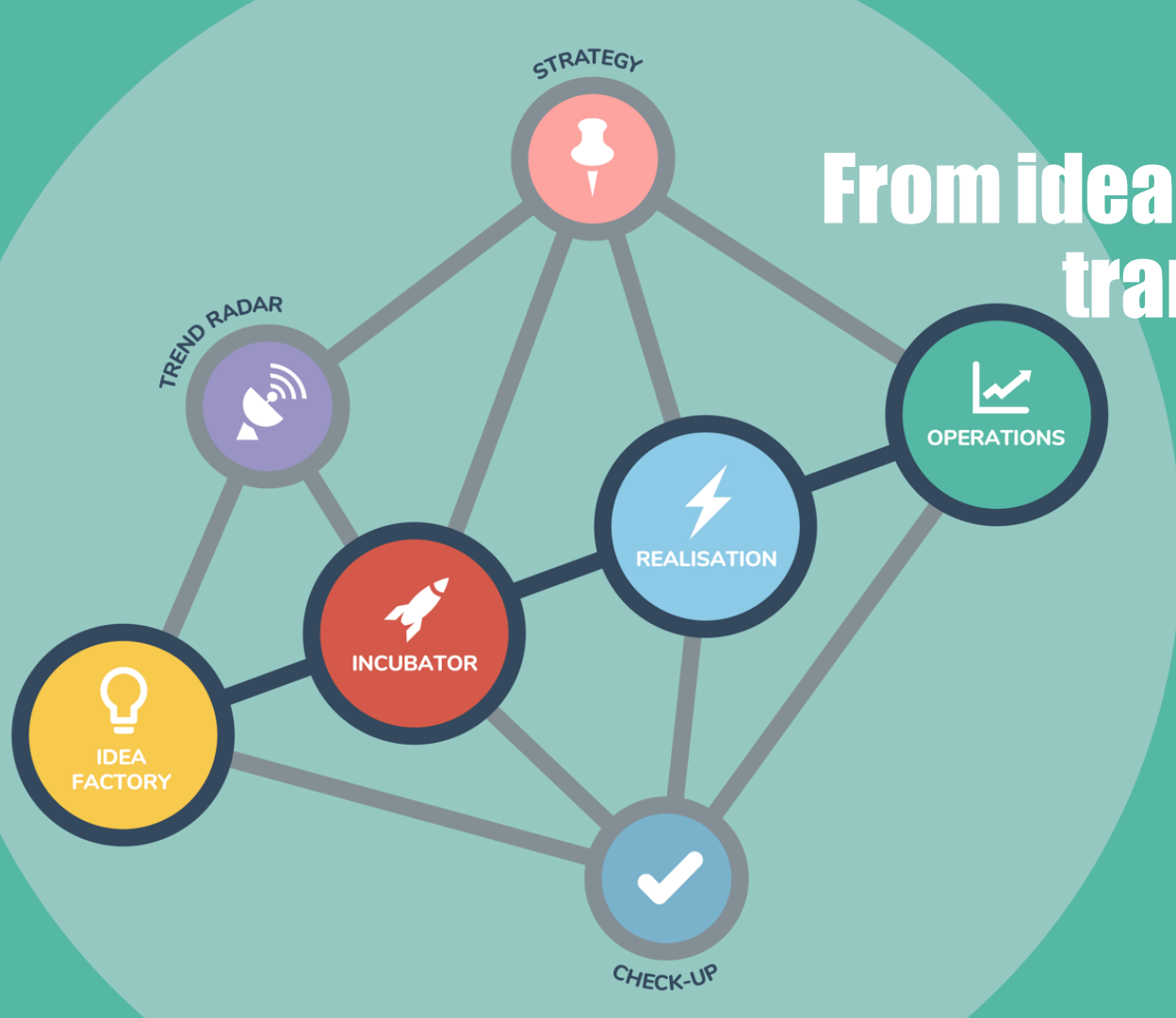
BASEL | BERN | BRUGG | BUCHAREST | DÜSSELDORF | FRANKFURT A.M. | FREIBURG I.BR. | GENEVA
HAMBURG | COPENHAGEN | LAUSANNE | MANNHEIM | MUNICH | STUTTGART | VIENNA | ZÜRICH

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From idea to realization in transformation & IT

Consulting
Solutions
DevOps
Training



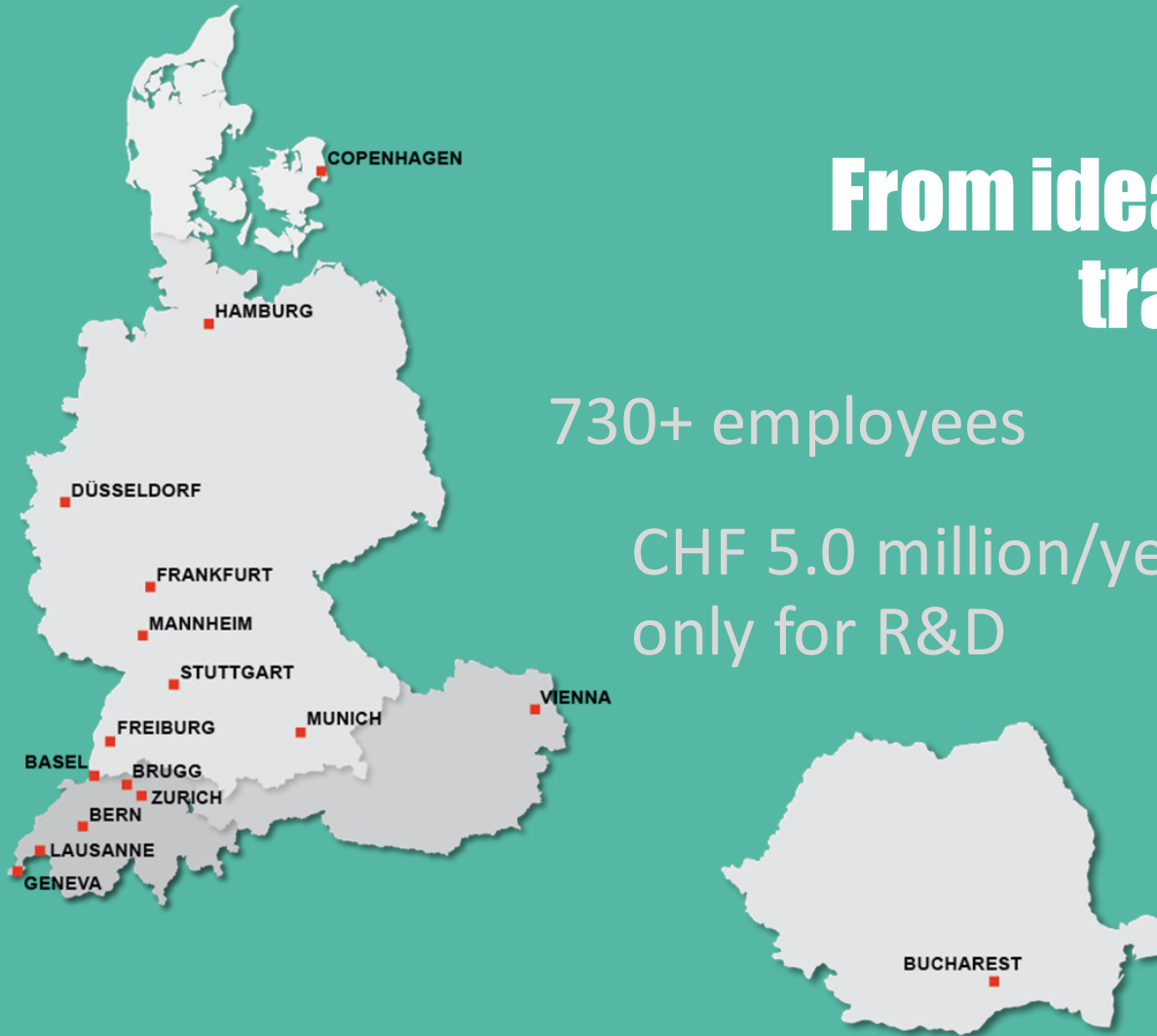
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From idea to realization in transformation & IT

730+ employees

CHF 5.0 million/year
only for R&D

Consulting
Solutions
DevOps
Training

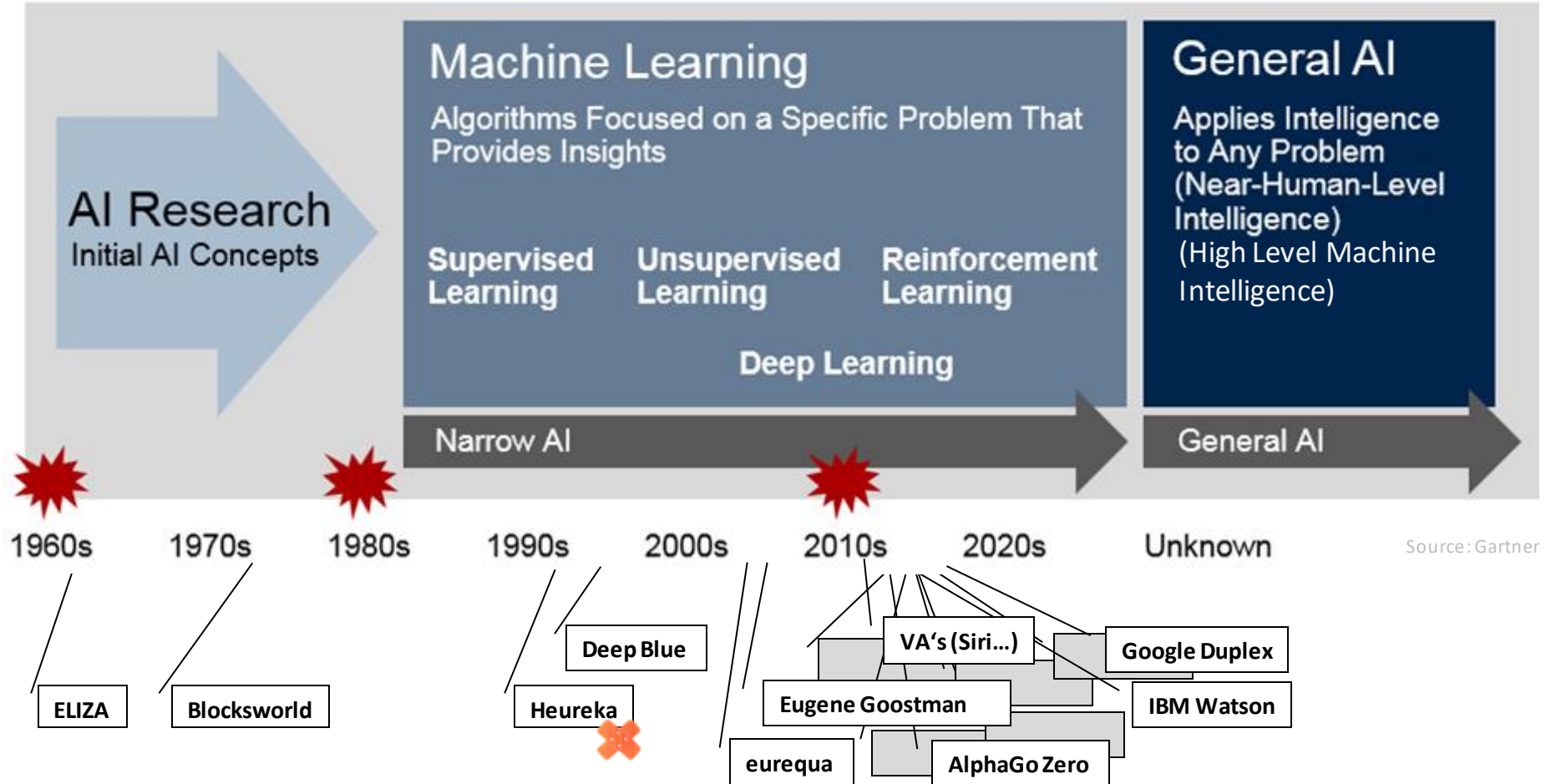



Round Up

The past, the
state and the
future of AI

AI Timeline

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A large, white, angled screen in a modern, brightly lit room displays the Google Assistant interface. At the top left of the screen is the Google Assistant logo, consisting of four colored dots (blue, red, yellow, green) arranged in a circle. Below the logo, the text "Hi, how can I help?" is displayed in a clean, sans-serif font. Further down, a user's voice command is shown: "Make me a haircut appointment on Tuesday morning anytime between 10 and 12." A man in a green jacket and dark pants stands to the right of the screen, looking at it. The background shows the interior of a modern building with glass walls and blue lighting accents.

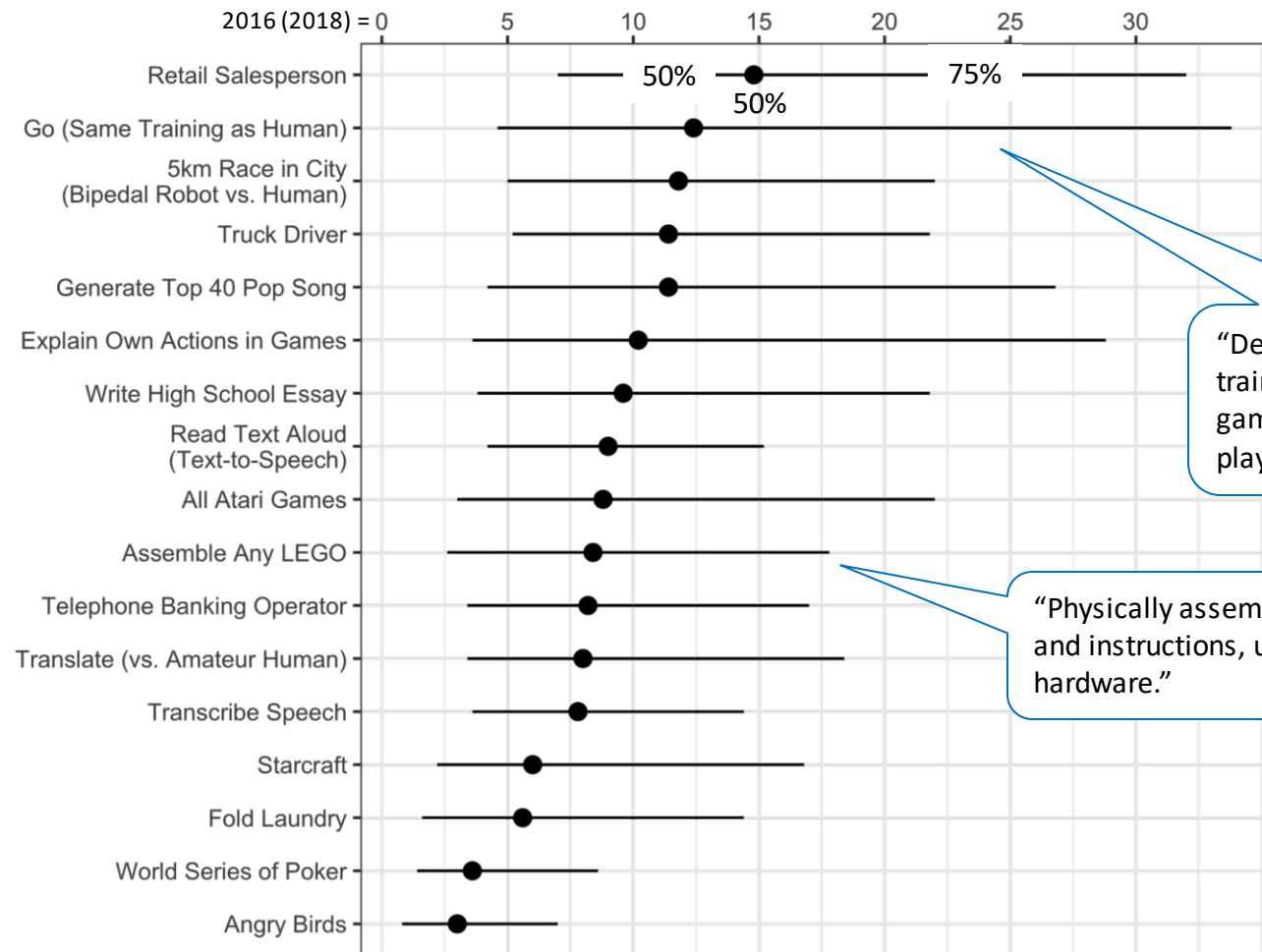
Hi, how can I help?

Make me a haircut appointment on Tuesday
morning anytime between 10 and 12.

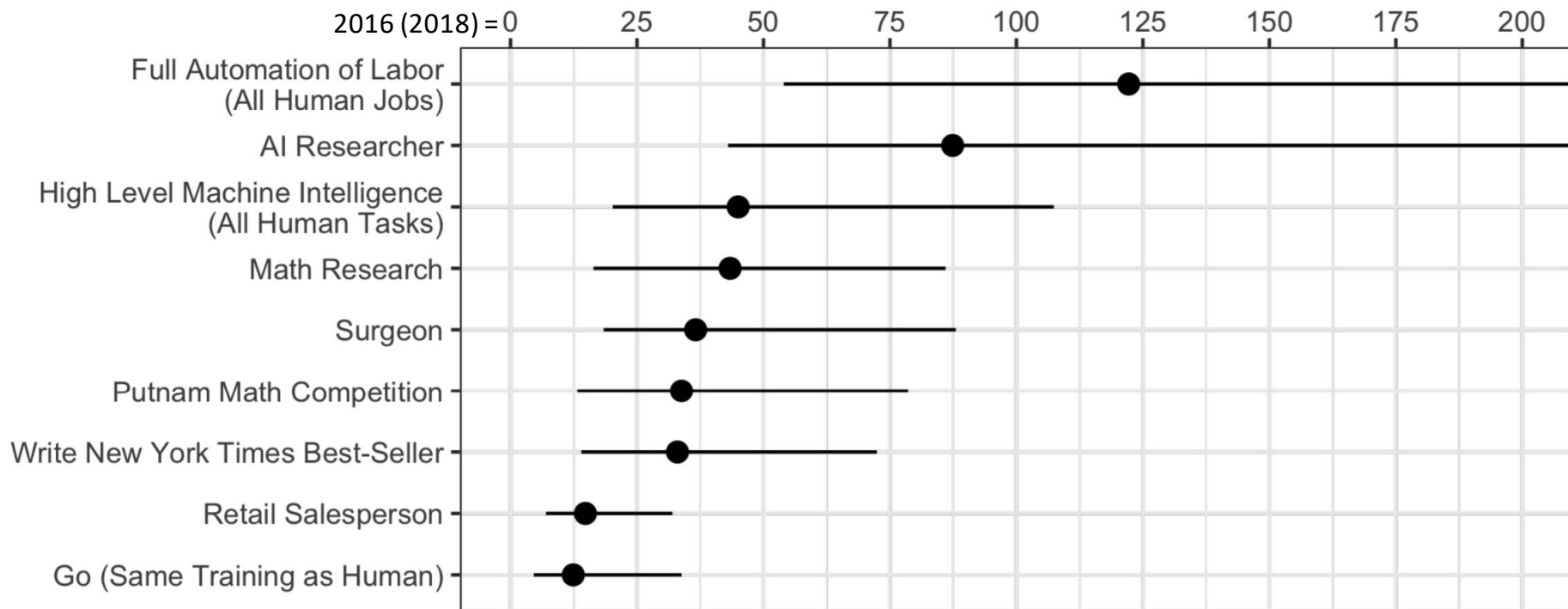
GOOGLE
PHONE CALL

M

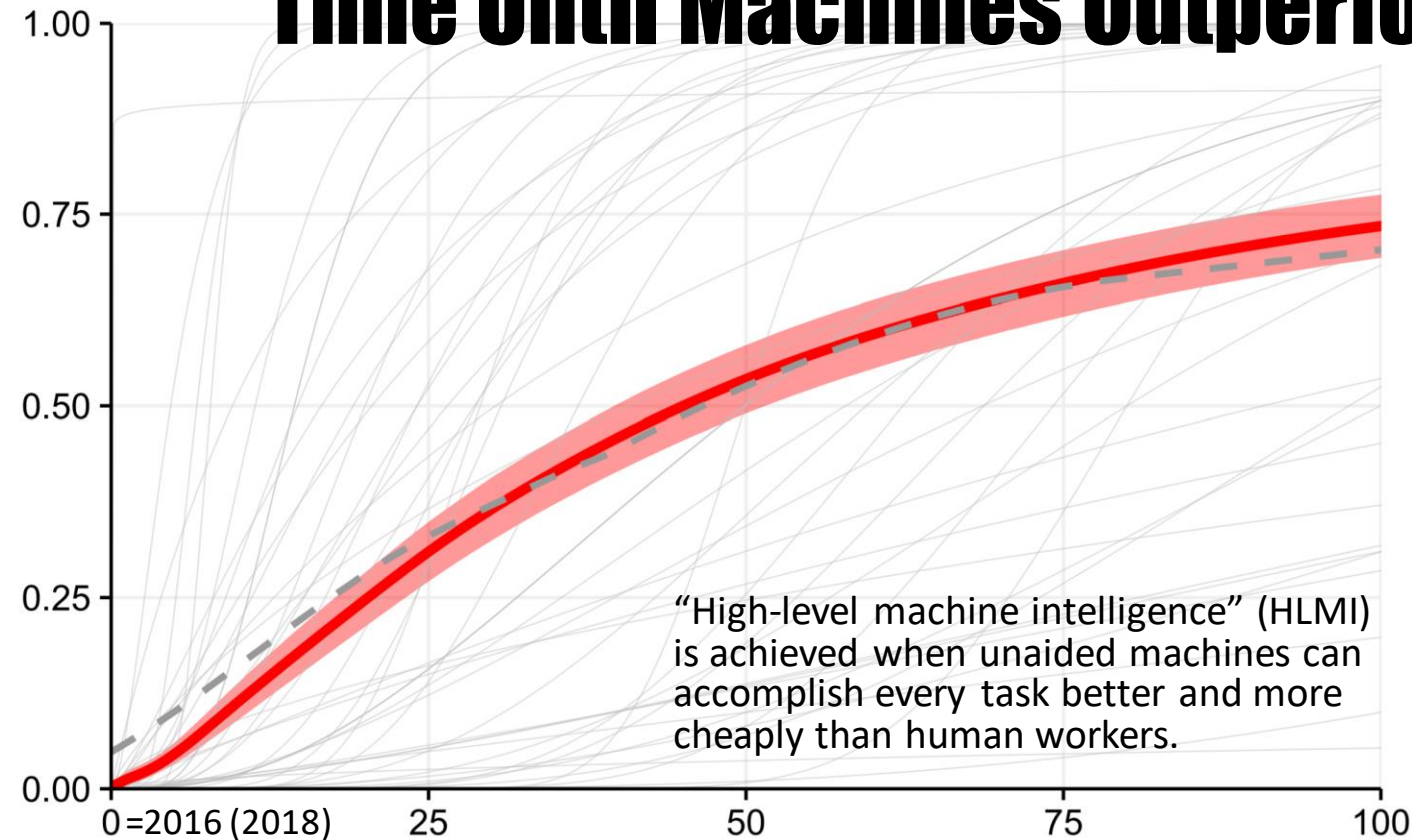
The next 15 Years of ML



The Future: towards General AI



Time Until Machines Outperform Humans



Yale/Oxford-study
(2016/18)

352 researchers in AI,
worldwide

3-Point-Estimation for
“HLMi arriving in x
years”

➔ 50% chance for HLMi
within 45 years

➔ 10% chance within 9
years

Asian researchers see it in 30y, north americans in 74y 😊

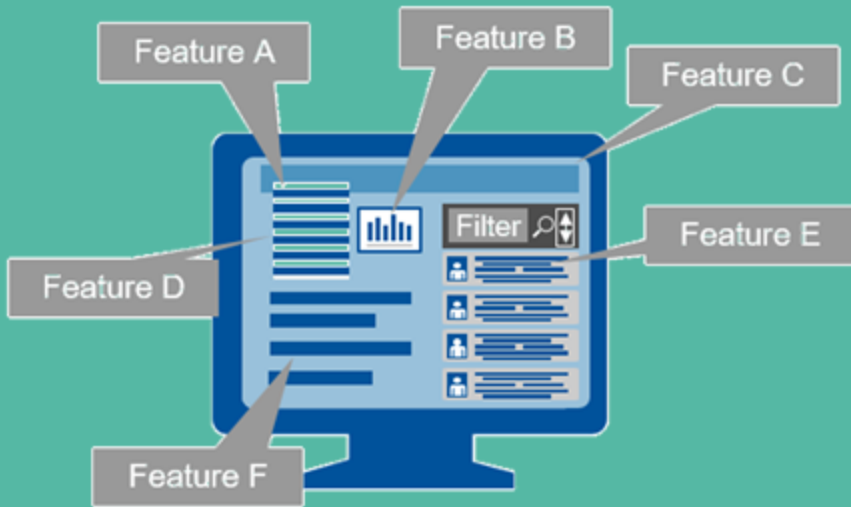
New Types of Applications

How AI Will Change Applications



Traditional Apps

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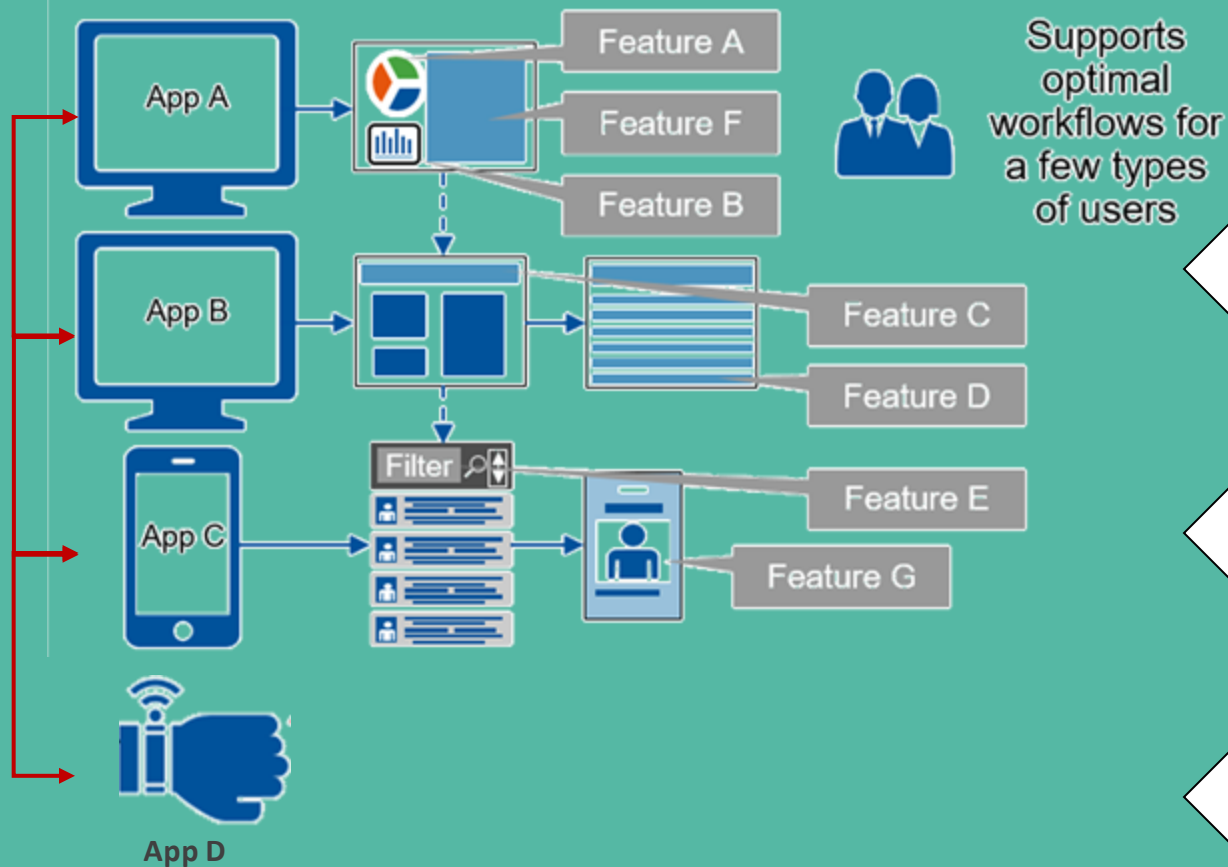


Supports
many tasks
for many
types of users



Fit For Purpose Apps

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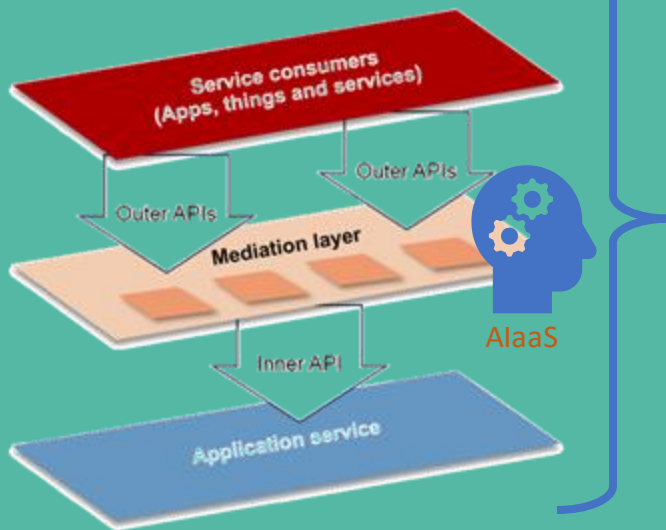


Narrow, workflow-oriented apps are suitable for today's narrow AI

Professional, cloud-based AI-services are already available

Embedded and on-premise AI available starting in 2019

MASA



AlaaS
Embedded



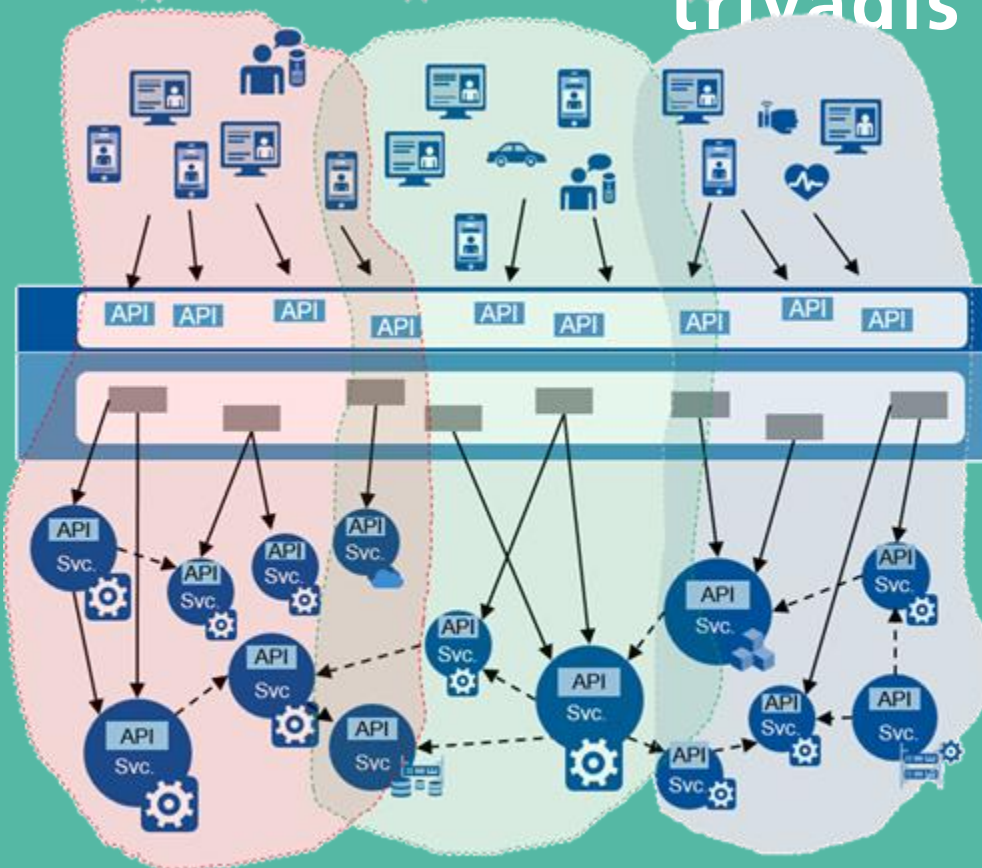
AlaaS

Mesh
Application 1

Mesh
Application 2

Mesh
Application 3

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Custom Applications
and Service
Implementations



Packaged
Enterprise
Applications



SaaS
Applications



Legacy
Monolithic
Applications



Data
Warehouse/
Virtualization

Potential Existing Functionality

Use AI to solve business problems

Where to get AI services?

AWS, Azure, Google, ...



Decision



Computer Vision

[Try for free](#) | [Learn more](#)

Image classification

Scene and activity recognition in images | [Demo](#)Celebrity and landmark recognition in images | [Demo](#)Optical character recognition (OCR) in images | [Demo](#) | [Container Support](#)

Ink Recogniser PREVIEW

[Try for free](#) | [Learn more](#)

Recognise digital ink and handwriting

Recognise and pinpoint common shapes

Enable productivity scenarios



Custom Vision

[Try for free](#) | [Learn more](#)Customisable image recognition | [Demo](#)

Face

[Try for free](#) | [Learn more](#) | [Container Support](#)Face detection in images | [Demo](#)

Person identification in images

Emotion recognition in images | [Demo](#)Similar face recognition and grouping in images | [Demo](#)

Video Indexer

[Try for free](#) | [Learn more](#)

Full analysis for the visual and audio channels of the video

Conducts facial, object, keyframe recognition, OCR, and transcription

Advanced insights such as topic inference, brands and emotion detection



Form Recogniser PREVIEW

[Learn more](#) | [Container Support](#)

Extract text, key-value pairs and tables from documents

Customised to your forms, without manual labelling

Deploy anywhere, from the cloud to the edge

Vision

Identify, caption, index and moderate your pictures, videos

on transcription and call centre log

to accommodate background



in near real time, tailor to change the

load training data, and the service



"Because the Cognitive

one year app real-time speech translation capabilities in any of the supported languages and receive either a text or speech translation back. Speech translation models are based on leading-edge speech recognition and neural machine translation (NMT) technologies. They're optimised to understand the way people speak in real life and generate translations of exceptional quality.

[Learn more](#) >

What should you do?



Attract, retain and motivate

Attract, retain and motivate developers to build their application development skills by investing in AI fundamentals training today.



Explore

Explore the AI-augmented development tools available today, by building evaluation criteria with your development team, to address both near-term and longer-term requirements.



Build

Build a roadmap for advancing your AI-augmented development strategy over time, leveraging both team practices (such as test-driven development and behavior-driven development techniques) and cloud services (autoML).



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AI in Development & Operations

AI in Development & Operations...

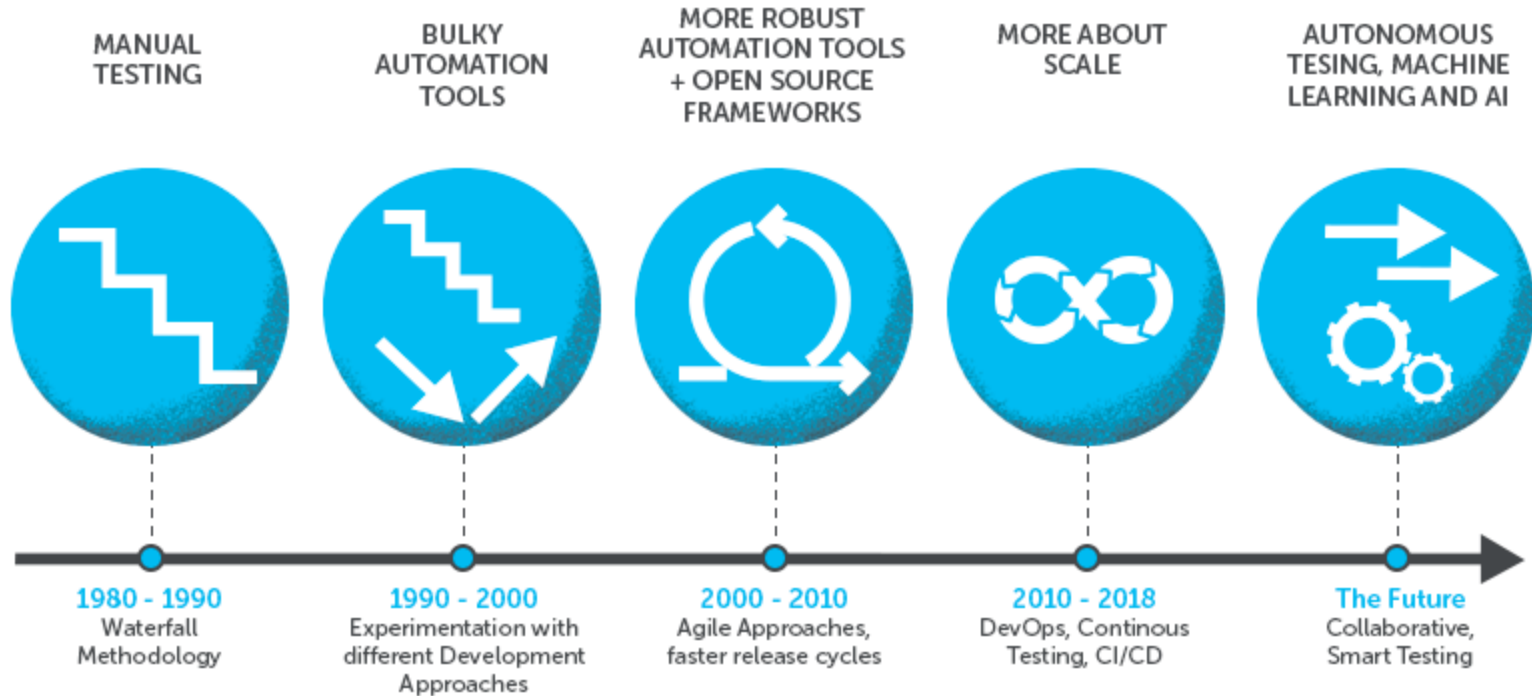
The Ultimate Goal

- to enable users to describe their own user stories or business requirements
- to an AI-based platform that in turn
 - models,
 - tests and
 - executes them automatically



Evolution in Testing

EVOLUTION OF TESTING



Use Case

- Transform any hands-drawn design into HTML code

User Workflow

1. Take a picture from the whiteboard
2. Provide it to the service
3. Get the HTML-Code

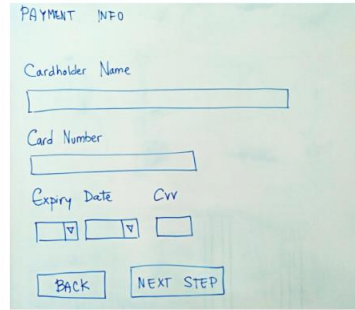
Sketch2Code

Transform any hands-drawn design into a HTML code with AI.



It's done!

YOUR SKETCH



YOUR HTML

PAYMENT INF

Cardholder Name

Card Number

Expiry Date CV



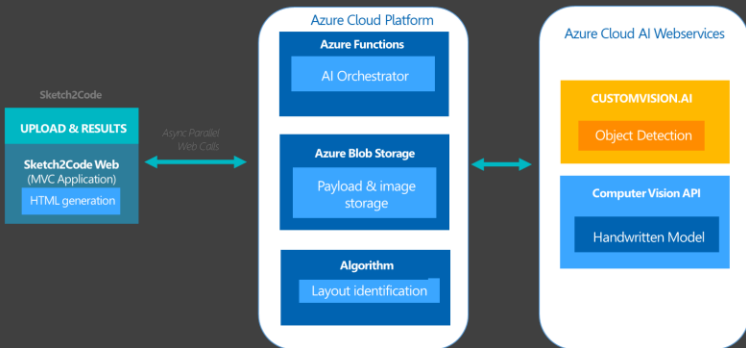
DOWNLOAD YOUR HTML CODE

PREDICTED OBJECT DETAILS

[TRY A NEW DESIGN](#)

Microsoft's Sketch2Code

- API interface in Serverless implementation (FaaS)
- Open Source on GitHub
- Evolving



Try it on

<https://sketch2code.azurewebsites.net/>

01

Detect Design Patterns

A Custom Vision Model trained to perform object recognition against HTML hand drawn patterns is used to detect meaningful design elements into an image.



02

Understand handwritten text

Each detected element is passed through a Text Recognition Service to extract handwritten content.



03

Understand Structure

The information of the detected objects and their position inside the image is feed into an algorithm that generates underlying structure.



04

Build HTML

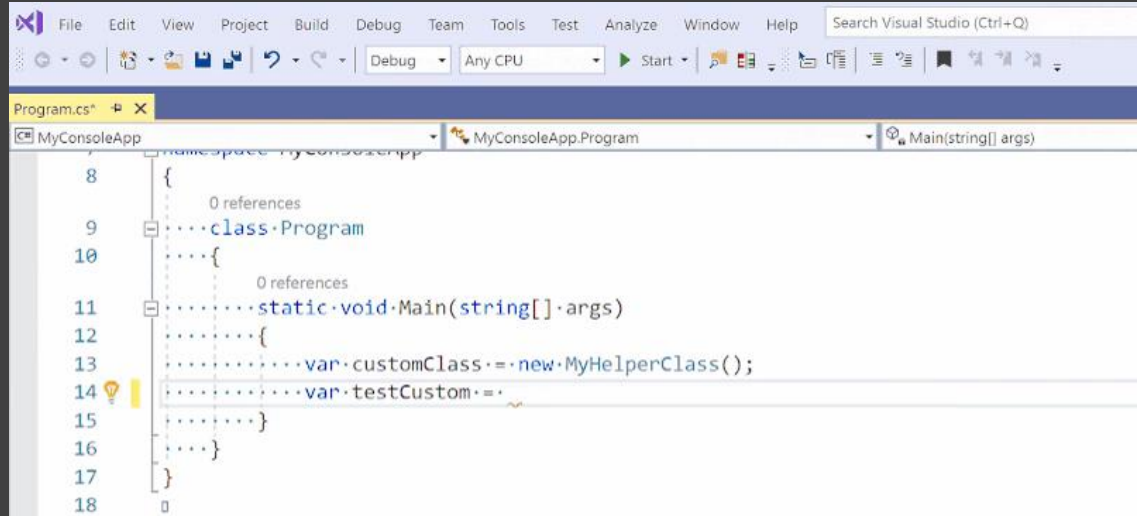
A valid HTML is generated accordingly to the detected layout containing the detected design elements.



Training base: thousands of open source projects on GitHub each with over 100 stars

- Assisted IntelliSense
- Interactive training: AI-assisted recommendations for your own code
- Issue detection (preview)
- Focused Code Review
- For C#, C++, Java, Python, TypeScript/JavaScript, XAML

Try it in Visual Studio 2019...
enable it in Tools > Options > IntelliCode



Codota: AI line completion & more

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- Uses learned open-source code models to suggest relevant code
- Intelligent code snippets search
- Supports Java & Scala, JavaScript (soon)
- Works with IntelliJ, Android Studio and Eclipse.



```
SimpleClass.java x
1
2
3 import ...
12
13
14
15 class HttpTest {
16
17     private void readUrl() throws IOException {
18
19         s
20
21     }
22
23 }
24
```


Facebook's Sapienz

Multi-objective
Automated Testing for
Android Applications

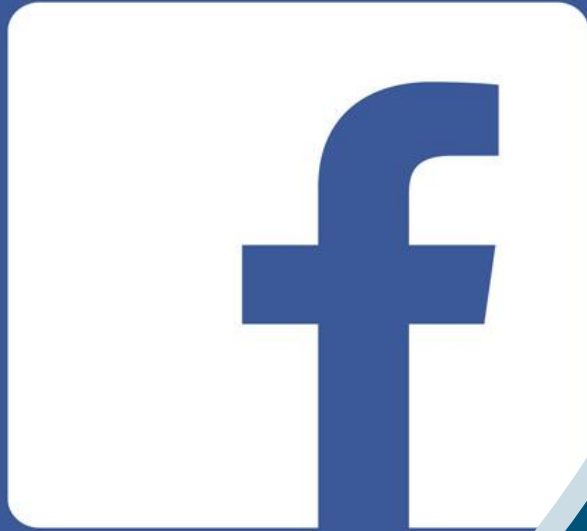


Use case:

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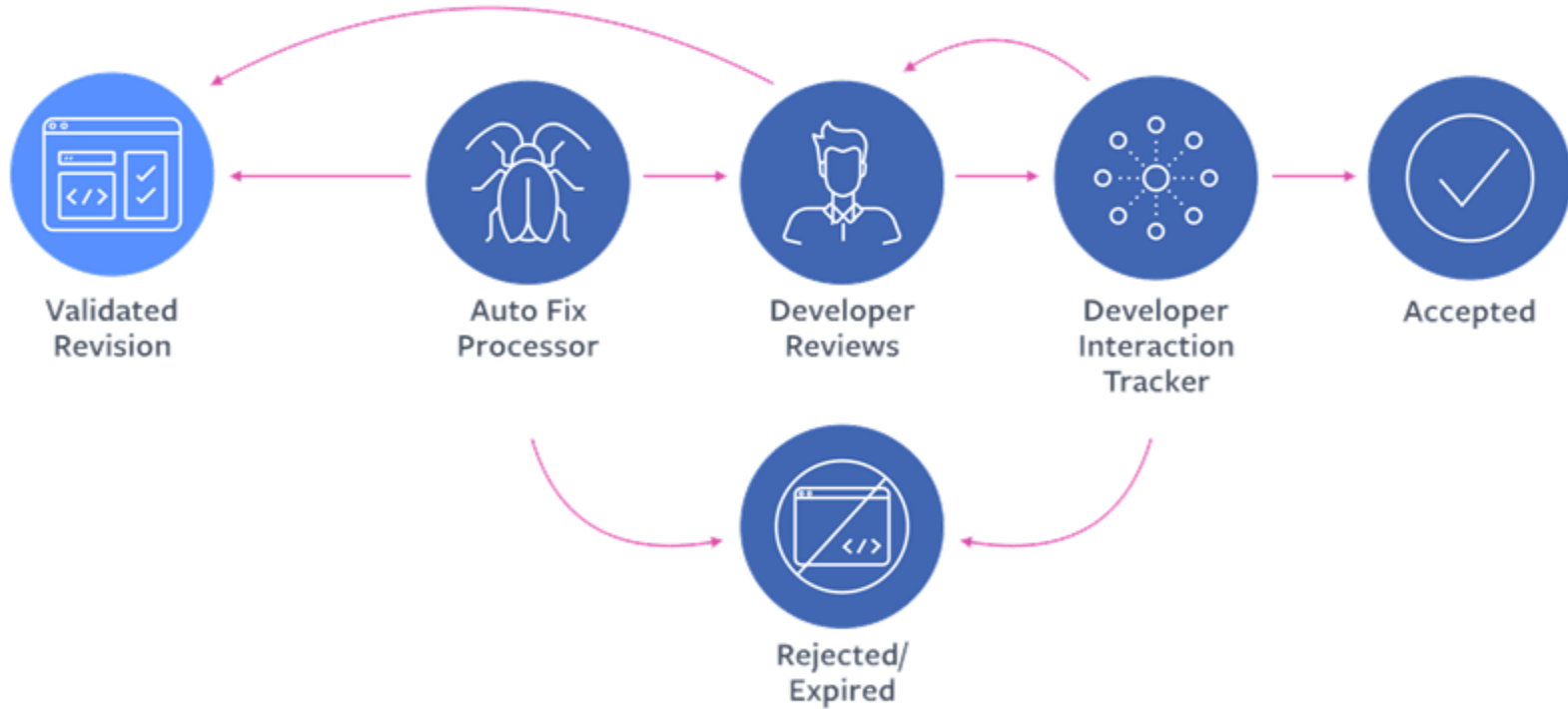
<https://github.com/Rhapsod/sapienz>

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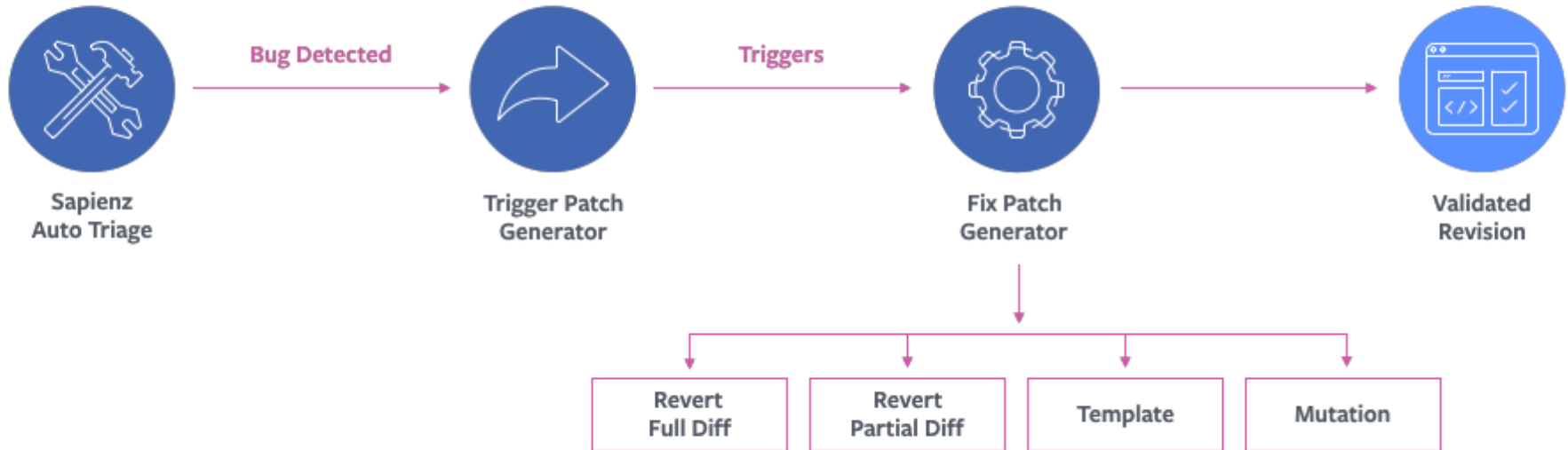
Facebook's SapFix

SapFix / Developer Interaction



SapFix / Developer Interaction

Workflow (Generation)



Sapienz & SapFix - Outlook

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What will happen?

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What should you do?

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