HFMA – AI in Healthcare Finance
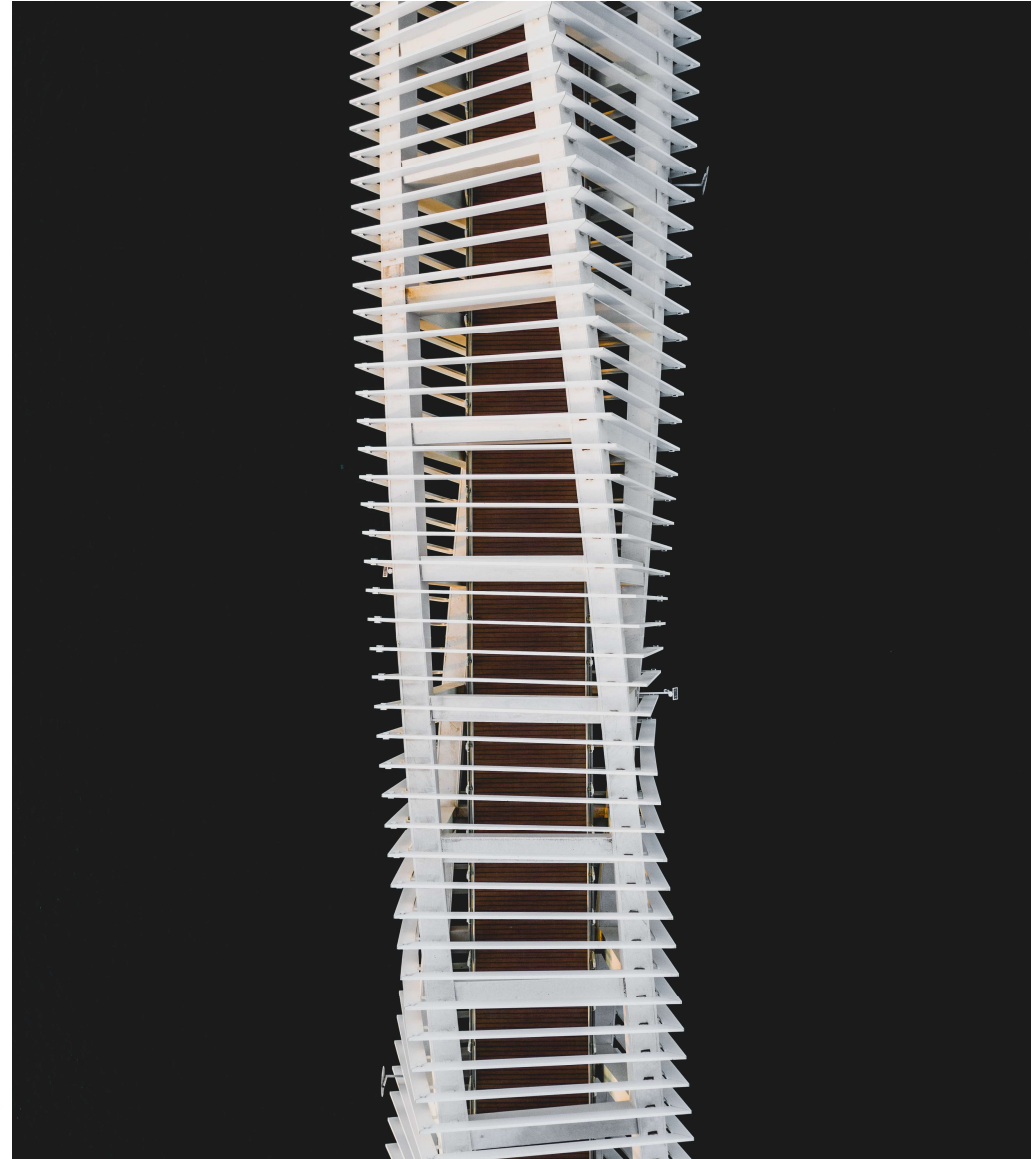
Practical application of AI in NHS

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Types of AI

When to use
Traditional AI capabilities

Predictive/ Prescriptive
Structured data analysis, predictions, forecasting etc.

Directed Conversational AI
Deterministic dialog flows for API driven conversational AI

Computer Vision AI
Machine Vision for object and anomaly detection

Process Automation
Robotic Process Automation, Process reengineering & optimization

When to use
Generative AI capabilities

Summarization eg. documents such as user manuals, asset notes, financial reports, etc.

Conversational Search eg. SOPs, troubleshooting instructions, etc.

Content creation eg. personas, user stories, synthetic data, generating images, personalized UI, marketing copy, email/social responses etc.

Code creation eg. Code co-pilot, code conversion, create technical documentation, test cases etc.

OpenAI ChatGPT Microsoft salesforce
IBM Google Meta Open Source

Examples of AI in Finance

Ask 'Finance'
Conversing and engaging with self-service chat capabilities

Quick 'Decision Support'
Crafting and narrating impactful management & statutory reports

Policy & Compliance Advisor
Monitoring and enforcing policy changes, controls, and compliance

Intelligent Invoice Management
Matching and validating vendor invoices; Intelligent 4-way match

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AI in Finance:

6 selected use cases demonstrating the power of generative AI augmenting traditional AI, driving efficiency and productivity improvement in the finance workflows

01 — *Quick 'Decision-Support'*

Crafting and narrating impactful management & statutory reports

Creation of commentary and narratives for financial dashboards and CFO Playbook (e.g., Analyst communications, Financial statements and Board of Directors reports, Sales Analysis, Cash Flow Analysis)

60%
reduction in manual report creation

90%
improvement in time to decision support

02 — *Ask 'Finance'*

Conversing and engaging with self-service chat capabilities

Generation of interactive and intelligent human-like conversational answers to questions for vendors, customers and financial analysts (e.g., provide with operating expenses line items for this quarter?)

70%+
Productivity Improvement

90%+
Improvement in time to decision support

03 — *'Financial Intelligence' Advisor*

Extracting and interpreting contract financial data

Automatic financial data extraction with recommendations for accounting treatment and actions (e.g., sales, real-estate, lease and project contracts, inter-company agreements)

85%
reduction in time spent reviewing contracts

40%
reductions in errors

04 — *Cash & Claims Advisor*

Recovering cash by validating customer claims & deductions

Acceleration of claims & deduction processing time, identify patterns and trends (e.g., promotion deductions, chargebacks, insurance claims, rebates)

~60-70%
Revenue leakage savings

50%
Deductions management FTEs reduction

05 — *Intelligent Invoice Management*

Matching and validating vendor invoices; Intelligent 4-way match

Identification of reasons for mis-matching and self-validation of data for exception handling (e.g., missing GR, price variance)

~upto1%
Reduction in indirect spend

~400M$[1]
Reduction in indirect spend

[1]based on selected client data

06 — *Policy & Compliance Advisor*

Monitoring and enforcing policy changes, controls, and compliance

Detection of policy changes with impact assessment (e.g., labor, payroll, tax, environmental and sustainability requirement changes)

60%
productivity improvement in analysis and reporting

75%
improvement in quality

Built on Large Language Models (LLMs) optimizing finance workflows, fueling creativity, and innovation

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Unstructured Data · External Data · Hybrid AI/ML · Visual Analytics · Interactive dialogue

4

'Enquire' HR Virtual Assistant

NHS
East and North Hertfordshire
NHS Trust

The Challenge

The Covid 19 pandemic **increased the number of inbound calls** to the Health at Work team, a digital solution was required at short notice.

A cloud-based call centre was implemented, although **staffing the solution remained a constant challenge** (due to unprecedented demand).

The Trust engaged IBM to identify and implement a **more sustainable solution** across all People Team related services.

The Solution

'Enquire' HR Virtual Assistant

Conversational assistant designed to support employees with all first level People Team queries.

Provides **instant answers (24/7)** to 'High volume, low complexity' enquiries previously answered by HR/People support teams.

Conversational AI

Focus on **accurate, concise information** based on reference to policies / procedures, maps, interactive user guides and YouTube / Vimeo videos.

Summarisation

A **paired development** approach **equips employees to become self-sufficient** and able to continue training 'Enquire' after initial go-live.

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HR Virtual Assistant – Results

82% of requests resulted in responses that **met employee needs**

2.7k **hours saved** annually through reduction in calls to contact centre

£107k **cost saving** based on Band 4 costs (excluding unsocial hours payments)
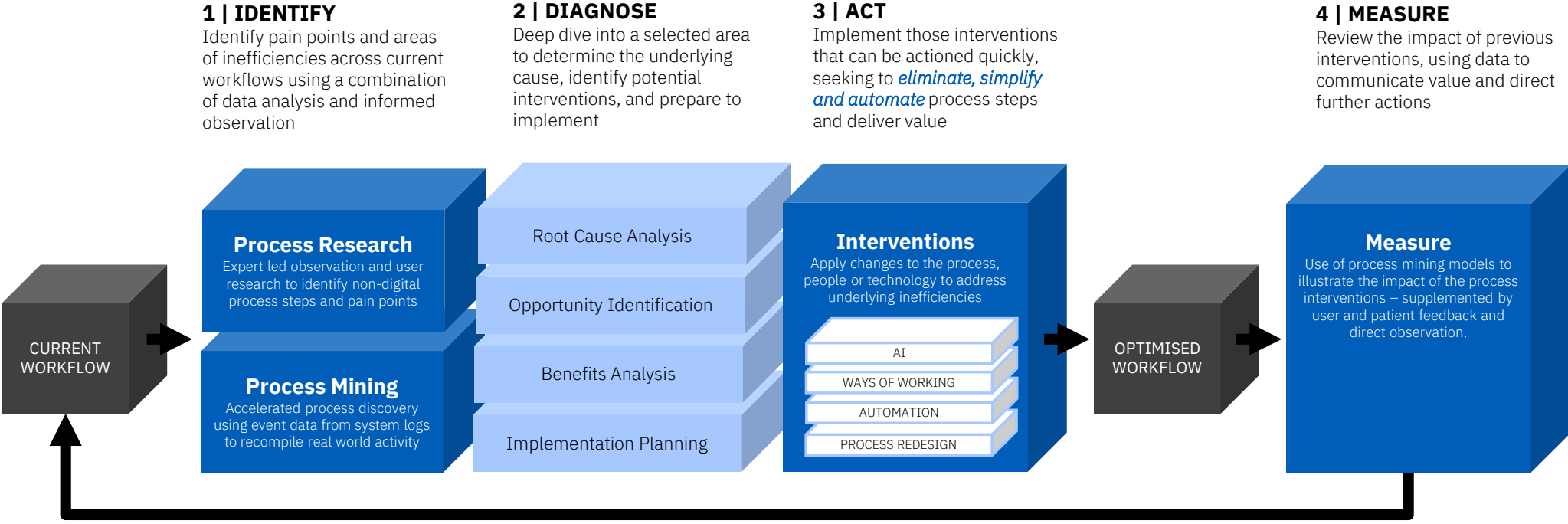
★★★ consistent responses **removes ambiguity** / scope for frustration

Intelligent Workflows in the NHS

Process Mining has the potential to support the national priority to deliver **better care at a lower cost** by identifying opportunities to **reduce waste and increase efficiency.**

1 | IDENTIFY
Identify pain points and areas of inefficiencies across current workflows using a combination of data analysis and informed observation

2 | DIAGNOSE
Deep dive into a selected area to determine the underlying cause, identify potential interventions, and prepare to implement

3 | ACT
Implement those interventions that can be actioned quickly, seeking to *eliminate, simplify and automate* process steps and deliver value

4 | MEASURE
Review the impact of previous interventions, using data to communicate value and direct further actions

CURRENT WORKFLOW

Process Research
Expert led observation and user research to identify non-digital process steps and pain points

Process Mining
Accelerated process discovery using event data from system logs to recompile real world activity

Root Cause Analysis

Opportunity Identification

Benefits Analysis

Implementation Planning

Interventions
Apply changes to the process, people or technology to address underlying inefficiencies

AI

WAYS OF WORKING

AUTOMATION

PROCESS REDESIGN

OPTIMISED WORKFLOW

Measure
Use of process mining models to illustrate the impact of the process interventions – supplemented by user and patient feedback and direct observation.

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Intervention Examples

NHS
University Hospitals
Coventry and Warwickshire
NHS Trust

Changes implemented:

SMS reminder scheduling **optimised**.

New **SMS confirmation service** to confirm receipt of referrals as ~30% of calls to the Patient Access Team are from patients checking receipt.

Process Automation

Virtual assistant (chatbot) **implemented** on the website to answer 'high volume, low complexity' FAQ style enquiries.

Conversational AI

Prototypes developed for future implementation:

Email responder tool to help the Patient Access Team answer queries faster, by ensuring key information included in emails.

Summarisation

Enhanced telephony capabilities supporting **patient call-back** and inclusion of **AI insights** to help resolve queries faster.

Summarisation

A **content advice** tool to improve consistency and avoid call volumes resulting from conflicting advice in patient communications.

Prediction

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Intelligent Workflows – Results

NHS
University Hospitals
Coventry and Warwickshire
NHS Trust

£1.4m

realisable annual benefits linked to short term interventions.

17k

appointments released through reduction in wastage.

1.5 FTE

administrative staff time saved through reduced re-booking.

95%

patient **requests resolved** without diversion to patient access team
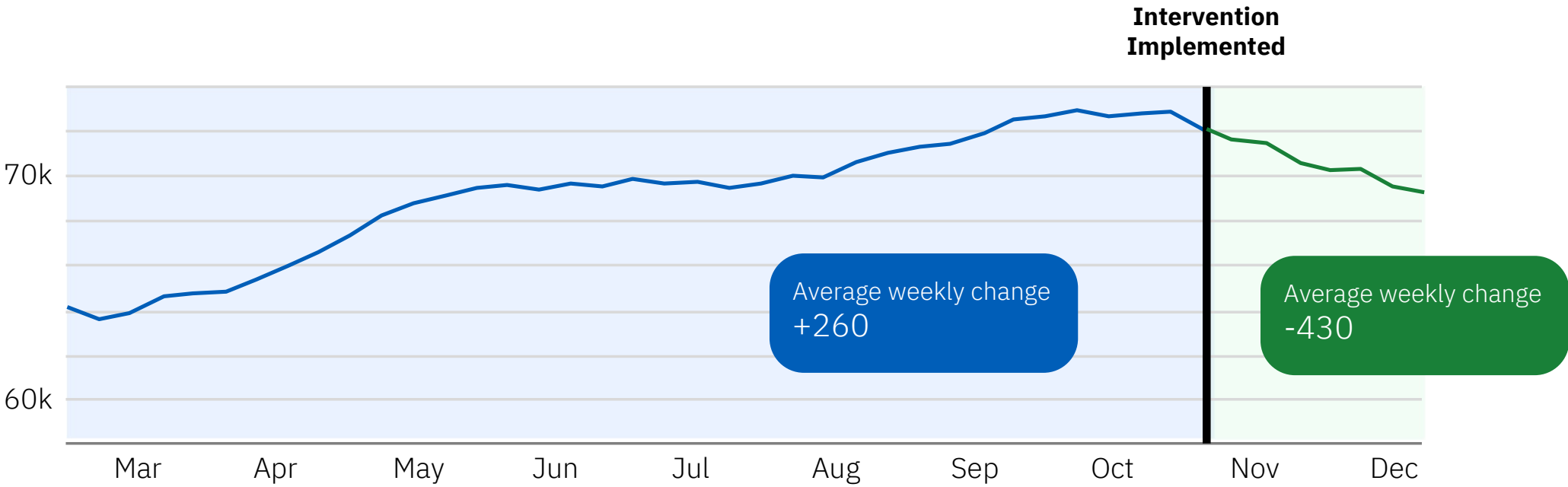
★★★

overwhelming **positive feedback** from patients using virtual assistant

increased access for patients in more **deprived cohorts**

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Overall Impact on Waiting Lists

Total Waiting List by Week 2023

Question...

Where do you see the opportunities for the application of AI across your trust?