HealthEM.AI is a mission-driven data platform company dedicated to improving care delivery. To achieve this, we simplify patient data from all points of care and apply AI/ML-based predictive analytics to empower healthcare organizations with actionable insights leaders and clinicians. We ensure clinicians and healthcare organizations take the right actions to enhance patient health and optimize cost.
**HealthEM.AI Offerings**

1. **SDoH Risk Model**
   Derives insights on health and well-being based on social determinants of health (conditions in which a person is born, grows, lives and works).

2. **Hospital Admission Risk Model**
   Identifies which members in a population are most likely to be admitted to the hospital in the next 12 months.

3. **Predicted Cost Model**
   Predicts the development of a patient’s healthcare costs over the next year and analyzes the factors that influence this prediction.

4. **Readmission Risk Model**
   Identifies which patients are most likely to be readmitted following a stay in the hospital.

5. **Member Retention Model**
   Identifies key drivers for retaining the existing population and targets promotions to sustain market share.

6. **ER Events Risk Score**
   Helps in the early detection of patients who are likely to have an emergency room visit or hospitalization in the next 12 months.
Potential Market Differentiators

- **AI/ML**: Models with better accuracy than industry standards (2-4x higher).
- **Price**: Cost-effective pricing models for small and medium-sized health plans.
- **Integration**: Integrated library of modules with chronic models to support informed clinical decisions.
- **Innovation**: Flexible delivery models and integration with EMR, HL7, APIs and custom applications.
- **Cloud**: Cloud-enabled technology for faster and scalable deployment of solutions.
Focus Areas

- Medicare Advantage Plans
- Provider Groups
- Commercial Contracts
- Specialty Services

- Improving Population Health Management
- Revamping Operations
- Strengthening Innovation

Care Delivery
Chronic Care Management
Clinical Decision Support
Prevention & Wellness
Model Framework

**MODEL ACCURACY**
- Track model prediction accuracy via a selection of metrics – RMSE, MAPE, Precision, F1 Score, etc.

**DATA DRIFTS**
- Analysis of data and model drift with auto-triggered alerts

**EXPLAINABLE AI**
- Explainable AI visualizes predictions for better understanding

**PROVENANCE GRAPH**
- Visual graphs provide end-to-end visibility and traceability for model execution

- Track model execution errors
- Discover changes in data distribution that can potentially lead to model degradation
- Builds trust in the model with its users
- Expedites root cause identification of production issues

- Helps in validating the correctness of model predictions
- Helps in validating the correctness of model predictions
- Explains model output down to a single prediction
- Reduces dependency on DS/DE teams for production support
Data & Insights Healthcare Platform: **Capability Architecture**

**Solution Delivery**
- **Front End Provisioning**
  - Front End Development
  - Analytical Report Development
  - Front End Interaction (User Interface)
  - Front End Interaction (API, etc.)
- **Logic and AI/ML Provisioning**
  - Logic Development
  - Logic Assembly Pipeline
  - AI/ML Model Development
  - AI/ML Feature and Scoring
- **Data Management**
  - Data Model
  - Data Storage
  - Data Quality
  - Data Catalog and API Interaction

**Platform Foundation**
- **Security/Compliance**
  - Identity and Access Management
  - Encryption (Data at Rest and Motion)
  - Customer Isolation
  - Legal and Regulatory Compliance
- **IT Governance**
  - Subscription Management
  - Software Code Repository Management
  - System Monitoring
  - Automated Code Deployment (CICD)
- **Data Provisioning**
  - Data Source Gathering
    - Data Source (File based)
    - Data Source (Relational DB)
    - Data Source (API based)
    - Data Source (Other/Stream/Batch)
  - Data Lineage
  - Data Preservation and Archive
  - AI Model Drift Tracking
  - Continuous Improvement and SLA Tracking

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**Data & Insights Healthcare Platform: Technical Architecture**

**Sources**
- Files
- Relational Database
- API
- Other/Streaming/Batch

**Data Governance**
- Data Quality
- Data Lineage
- Data Model

**Data Storage**
- ADLS Gen2
- Direct Database Connection
- Extract through API Connectors

**Cleanse, Transform, Model**
- Delta lake
- Azure Databricks
- KPI Derivation and AI/ML Capability

**Reporting Data Model**
- Azure SQL

**DevOps, CI/CD**
- Azure Repos
- Azure DevOps Pipelines
- Azure VSTS
- Azure App Service

**Logging & Monitoring**
- Azure App Insights

**Security**
- Azure Active Directory
- Azure Key Vault

**Web App**
- Azure API Gateway
- Power BI
Data & Insights Healthcare Platform: **Security Solution**

**Presentation**
- Secure with TLS/SSL certificate
- Sign-on authentication by application interface
- API security through Azure API gateway
- Data access to storage within Tredence VNET
- Store application secrets in the key vault to securely access data

**Compute**
- Isolation of compute per customer through separate Databricks cluster
- Databricks and SQL DB authentication via Azure AD
- Separate SQL DB per customer enabling to compute customer-specific KPIs and measures
- Data access secured over Tredence VNET

**Storage**
- Data encryption at rest using Azure native security
- Data encryption in motion on Azure backbone network within Tredence VNET
- ADLS gen2 fine-grained security through service principal
- Separate DB per customer
- Data masking of key fields using dynamic data masking

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HealthEM.AI Best Practices to Streamline

**Agile Development**
- Product Stage -> Backlogs -> Final Product
- Process Flow Chart
- User Inputs

**Continuous Feedback**
- DevOps Engineer
- MLOps Engineer
- ML Engineer

**Continuous Integration**
- Commit
- Build + Unit Test + Code Quality

**Continuous Delivery**
- UAT
- QA
- Repository Manager

**Continuous Testing**
- Test Scripts
- Auto Ticket Creation
- Test Suite

**Sprints**
- Daily Scrum
- Sprint Phrases
- Sprint Review
- Retrospection

**Continuous Integration**
- Dev
- Repository Manager
- Repository

**Continuous Feedback**
- Data Engineer
- ML Engineer
- Solution Architect
- QA Engineer
- DevOps Engineer
- Business User
**Proposed Cadence Across Workstreams for Optimal Velocity**

A complex program requires coordination across several teams and the appropriate governance controls for delivering a high-quality solution and sustaining it in the longer term.
We Follow a Robust Process to Ensure Smooth Process Transition and Maintenance.

The maintenance cost is determined by the projected level of engagement from the solution support team.

**Pre-transition**
- Discovery phase (experts guiding the scope definition process)
- Opportunities, risks, stakeholders, process gaps, data gaps, use case definition
- Migration planning

**Transition**
- Crawl-walk-run process to ensure ample time for process understanding
- Prioritization framework to ensure critical processes take precedence

**Governance**
- Detailed SLA framework to ensure streamlined processes
- Ticketing system for tracking of issues
- Infrastructure management – backup, recovery, uptime
- Health monitoring

**Continuous Transformation**
- Automation to increase efficiency
- Improved productivity
- Process transformation & continuous improvement
- Cost optimization & spend analysis

**Rigorous Planning**
- Detailed scope & specifications document
- Automation assessment
- Business continuity plan
- Risk assessment matrix
- Stakeholder map for communication

**Seamless Takeover**
- Detailed process documentation
- Ticketing tool
- Self-service portal
- SLA document for steady state
- Escalation matrix for critical situations
- Status updates on the progress

**Uptime & Support**
- Uptime & status reports
- RCA reports in case of issues
- Executive dashboards
- User access documentation & logs

**Benefits**
- Avoid surprises during execution
- Confide in process takeaway
- Fully set up for the steady state
- All process scenarios defined
- Reliability in maintenance & monitoring
- 24/7 support
- End-user management
- Improvement in failure prediction
- Effort reduction
- User experience improvement

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Thank You