



# Bartosz J. Solowiej

Principal AI & Data Architect · Fractional CTO · Sovereign Infrastructure Advisor

Co-Founder & Technical CEO, Ember Venture Group Pte. Ltd. (Anominal AI) · Senior Technical Consultant, World Bank Group & IMF

Remote · Oregon · Singapore · Indonesia    Contact through Ember

[linkedin.com/in/bartoszsolowiej](https://linkedin.com/in/bartoszsolowiej)    [github.com/4Z4T4R](https://github.com/4Z4T4R)    [embergroup.ai/consulting/bartosz](https://embergroup.ai/consulting/bartosz)

## 20+ years

Software, data and technical leadership, from founding engineer to CTO

## 7 governments

National advisory through the World Bank Group and IMF

## \$1.5B+

Institutional financing across the public program portfolios he has advised

## Co-author

World Bank Group, *AI in the Public Sector* (2021)

## From founding engineer to advisor to seven governments.

**Bartosz Solowiej is a technical executive and hands-on architect with more than twenty years of software leadership across enterprise platforms, distributed data systems and applied machine learning.** He is Co-Founder and Technical CEO of Ember Venture Group Pte. Ltd., the Singapore company behind Anominal AI, and serves as a Senior Technical Consultant to the World Bank Group and the International Monetary Fund.

His institutional work turns government-wide requirements into architecture, technical specifications and procurement-ready terms of reference: treasury cash-flow forecasting for the Central Bank of Somalia, national revenue and customs AI architecture for Armenia's State Revenue Committee, subnational fiscal analytics in Indonesia, and whole-of-government data architecture in the Philippines. Across these mandates he has advised and contributed technical architecture to public program portfolios touching over \$1.5B in institutional financing.

In the private sector he has served as CTO, fractional CTO and principal architect, from founding engineer at a venture-backed startup to the office of the CTO at a global manufacturer. At Ember he designed, procured and operates the dedicated compute on which Anominal AI runs.

He is as deliberate about people as about systems. A long-standing mentor and coach, he draws on therapeutic and communication modalities to build trust, give honest feedback, resolve conflict and help teams align around a goal and do their best work.

### WORKING MODEL

Remote delivery after scoped on-site discovery; periodic on-site reviews by agreement.

### CONTRACTING

Through Ember Venture Group Pte. Ltd. (Singapore). Direct US contracting available.

### ADVISORY FOOTPRINT

- Armenia
- Georgia
- Indonesia
- Philippines
- Romania
- Saudi Arabia
- Somalia

## Executive judgment with engineering depth.

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| <b>01 Executive Leadership</b> <ul style="list-style-type: none"><li>Fractional CTO and technical transformation leadership</li><li>Engineering operating models, hiring and mentoring</li><li>Technology budgets, vendor partnerships and procurement</li><li>Build-versus-buy and technology investment decisions</li><li>Board, ministerial and executive advisory</li></ul> | <b>02 Sovereign AI &amp; Architecture</b> <ul style="list-style-type: none"><li>Bare-metal and colocated high-density CPU+GPU compute</li><li>Private, on-premise and hybrid AI infrastructure design</li><li>Model-agnostic time-series and forecasting engines</li><li>Walk-forward validation and model acceptance gates</li><li>Auditable, immutable decision records</li></ul> | <b>03 Data Engineering &amp; Systems</b> <ul style="list-style-type: none"><li>DuckDB + Parquet analytical data layers</li><li>Event-driven pipelines and streaming ingestion</li><li>Data-quality gating with repair audits</li><li>Whole-of-government interoperability and integration</li><li>Data warehouse assessment and recovery design</li></ul>                                                                                                                                 |
| <b>04 Advanced Communications &amp; Leadership</b> <ul style="list-style-type: none"><li>Terms of reference and RFP design and review</li><li>Independent vendor and architecture evaluation</li><li>Public-sector AI education and executive workshops</li><li>Capacity building and technical handover</li><li>Research writing and technical editing</li></ul>               | <b>05 Delivery Practice</b> <ul style="list-style-type: none"><li>Whole-system operational discovery, on site where it matters</li><li>Automated test-driven GitOps CI/CD</li><li>Research-to-production handover with reproducible notebooks</li><li>Distributed and offshore team leadership</li><li>Agile and Scrum delivery</li></ul>                                           | <b>06 People Leadership &amp; Coaching</b> <ul style="list-style-type: none"><li>Coaching and mentoring engineers, students and client teams</li><li>Therapeutic and communication modalities applied to feedback, coaching and conflict resolution</li><li>Emotional intelligence and psychological safety in distributed teams</li><li>Aligning people around a single goal through change and uncertainty</li><li>Servant leadership, grounded in ethics and long-term trust</li></ul> |

### Core Technical Stack

Hands-on across every stage of the AI pipeline, from raw data to the decision it informs.

Languages Python · Go · SQL · JavaScript and TypeScript · C/C++ · Bash · Linux

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>01 Ingestion &amp; integration</b> <p>REST · gRPC · HTTP/2 · WebSockets · event-driven message buses · streaming and batch ETL/ELT · market and operational data feeds</p>                                                        | <b>02 Storage &amp; data layers</b> <p>DuckDB · Apache Parquet · PostgreSQL · MySQL · SQLite · MongoDB · Redis · Couchbase · kdb+ · Hadoop/MapR · data lakes and warehouses</p>                                                                                   | <b>03 Processing &amp; data quality</b> <p>pandas · NumPy · Apache Spark · MapReduce · data-quality gates and repair audits · calendar-aware time-series alignment</p>                               |
| <b>04 Machine learning</b> <p>scikit-learn · statsmodels · TensorFlow · PyTorch · statistical, deep-learning and foundation-model families · forecasting, clustering, classification, anomaly detection, NLP and computer vision</p> | <b>05 LLMs, retrieval &amp; agents</b> <p>Vector databases · embeddings and semantic search · retrieval-augmented generation · LLM orchestration and agent frameworks · fine-tuning and evaluation of open-weight models · private, self-hosted model serving</p> | <b>06 Training &amp; evaluation</b> <p>GPU training with CUDA · parallel hyperparameter sweeps · walk-forward backtesting · holdout and cross-validation · leakage testing · experiment tracking</p> |
| <b>07 Deployment &amp; MLOps</b> <p>Docker and containers · GitOps CI/CD · test-driven release pipelines · model registries · acceptance gates · monitoring, retraining and drift detection</p>                                      | <b>08 Infrastructure &amp; security</b> <p>Bare-metal and colocated CPU+GPU · AWS · hybrid and on-premise · private mesh networking · secrets management · least-privilege access</p>                                                                             | <b>09 Decision interfaces</b> <p>D3.js · real-time web applications · dashboards and alerting · Jupyter notebooks · decision records and audit trails</p>                                            |

# Professional History

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May 2024 – Present

## Ember Venture Group Pte. Ltd. · Anominal AI

### Co-Founder & Technical CEO

Singapore

Co-lead company strategy, product and technical delivery as principal engineer and technical founder of Anominal AI, a full-lifecycle sovereign time-series platform.

- Designed and procured the colocated CPU+GPU hardware that runs all Anominal data, compute and models, and operate it 24/7; cloud use is limited to the customer-facing web tier and container registry.
- Built the platform core: streaming ingestion, data-quality gating with repair audits, a calendar-aware multi-resolution time engine, feature and regime layers, model training and selection, serving, alerts and an immutable decision record.
- Engineered a DuckDB + Parquet data layer and event-driven message bus for high-volume cleansing, training and forecasting on commodity hardware and open-source software.
- Developed model-agnostic training and serving: classical statistical, deep learning and pretrained foundation models behind one interface, with walk-forward evaluation and acceptance gates.
- Automated every release through a test-driven GitOps pipeline that deploys to owned hardware with zero manual steps.
- Co-lead product strategy, customer development and commercial planning.

Aug 2018 – Present

## The World Bank Group

### Senior Technical Consultant · Global Governance Practice

Lead public-sector AI/ML and enterprise data initiatives, translating policy and operational requirements into architecture, procurement specifications and implementation plans.

- Co-authored *Artificial Intelligence in the Public Sector: Maximizing Opportunities, Managing Risks* (2021).
- Developed public-sector AI training material and delivered AI education to government stakeholders.

#### Selected national mandates

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|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Armenia</b><br>State Revenue<br>Committee                    | National Customs & Revenue AI Infrastructure Architecture. Sole technical architect for the revenue division's AI/ML fraud-detection program: authored the terms of reference, reviewed the RFP and advised the implementation team. Separately designed the architecture and technical specifications for the national customs AI initiative, covering hardware, data pipelines, model approaches and staffing, through TOR and RFP drafting. |
| <b>Indonesia</b><br>Directorate<br>General of Fiscal<br>Balance | \$400M Subnational Revenue Allocation & Expenditure Performance Clustering Architecture across 500+ regional authorities. Led technical planning for budget-performance monitoring and AI/ML data infrastructure; worked with a 12-engineer team on transaction matching, clustering and forecasting; provided on-site implementation support and presented findings to senior government leadership.                                          |
| <b>Philippines</b><br>Department of<br>Budget and<br>Management | \$30M+ Whole-of-Government Data Architecture, Interoperability Design and Systems Procurement Advisory. Designed interoperable data architecture for budget planning, accounting, payroll and financial-management integration; assessed infrastructure, data and staff capability; evaluated hybrid cloud and commercial software options; delivered public-sector AI education.                                                              |
| <b>Georgia</b><br>National revenue<br>administration            | \$30M+ National Revenue Data Warehousing & GovTech Architecture. Assessed revenue-system data warehousing, storage and processing architecture; delivered GovTech project concepts and implementation objectives.                                                                                                                                                                                                                              |
| <b>Romania</b><br>Central<br>Government                         | Led business-continuity planning and disaster-recovery guidance for a whole-of-government program aligned with ISO 27001-related requirements.                                                                                                                                                                                                                                                                                                 |
| <b>Saudi Arabia</b><br>Central<br>Government                    | Researched and delivered a paper on nation-scale AI/ML computing infrastructure and electronic control systems for government leadership.                                                                                                                                                                                                                                                                                                      |

Oct 2023 – Present

## International Monetary Fund

### Senior Technical Consultant · Finance Team

Delivered nation-scale treasury cash-flow and liquidity forecasting for the Central Bank of Somalia, with capacity building for central bank staff in Mogadishu.

- Served as sole lead ML researcher and developer, covering data preparation, exploratory analysis, an evaluation rubric, a four-model comparison of univariate approaches and reproducible notebooks.
- Achieved 96% accuracy on held-out data at a six-month forecast horizon with the selected SARIMA model.
- Delivered the forecasting software and trained central bank engineers to operate, maintain and extend it independently.
- Contribute architecture and research expertise in digital government infrastructure.

Aug 2018 – Jun 2024

## pSilent Partners Ltd.

### Founder & Executive Consultant

Founded and ran a consulting company providing technical strategy, research, product engineering and business development to clients and engineering teams.

- **Veme Enterprises (2018), Fractional CTO / Head of Product Engineering.** Directed a 12-engineer offshore team developing a video-content application and aligned it around a single product and delivery plan; guided delivery of a working iOS prototype in two weeks.
- Developed computer-vision workflows for keyframe analysis, object and context detection and automated video editing (Python, FFmpeg); supported engineering recruitment.

Jan 2017 – Aug 2018

## Flex · Consumer Technology Group

### Senior Software Architect, IoT & Web of Things

Office of the CTO · joined through the acquisition of the Olio Devices team

- Architected web platforms and IoT systems from inception to production, including bidirectional device communications over CoAP on Bluetooth Low Energy, WebSockets and HTTPS.
- Engineered communications and microservice infrastructure for connected devices, including digital-health and mesh-networking applications.
- Owned the team's technical infrastructure budget and led hiring for DevOps, full-stack engineering and QA.
- Served as principal engineer for six technical partnerships: AWS, Couchbase, MongoDB, MapR, RedisLabs and Meteor Development Group.

Sep 2015 – Jan 2017

## Olio Devices

### Senior Software Architect

- Directed web-platform architecture and engineering (MongoDB, Node.js, Meteor); worked directly with the CEO as strategic technical principal.
- Planned data infrastructure for customer growth, implemented aggregation pipelines for analytics and ML, and mentored engineers on production data practice.
- Ran web engineering recruitment, user experience, interface engineering and web product development.

Sep 2013 – Jul 2015

## Heights Media, LLC

### Chief Technology Officer

- Co-architected a bidder capable of 160,000 queries per second, and researched, architected and implemented the decision engine for a private demand-side advertising platform.
- Owned product design, prototyping, user experience and engineering methodology.

Dec 2012 – Aug 2015

## **Twinflame, Inc.**

### **Principal Engineer & Consultant**

- Guided product research, prototyping, design and implementation for startups in New York and Silicon Valley; mentored clients in Agile delivery and lean UX.

Oct 2010 – Sep 2013

## **MapR Technologies, Inc.**

### **UI/UX Lead**

- Joined as the 20th employee and led architecture, design and engineering of the web control interface for large-scale distributed computing clusters: UI research, visualization, REST interfaces and API coordination.
- Re-architected the UI from ExtJS to Backbone.js, created a D3.js/HTML5 charting suite and grew the UI team.
- Owned source-control branching, release strategy and engineering documentation during early-stage growth.

Aug 2007 – Oct 2008

## **TokBox, Inc.**

### **Product Design & Engineering · Founding engineer**

- Joined as the third hire; developed the original web interface, prototyped the first API and led the initiative for its second version; built browser-based video-chat interfaces.

Sep 2005 – May 2007

## **The Washington Post**

### **Frontend Engineer**

- Integrated more than 350 business-logic permutations with SAP APIs in a self-service classified-advertising application that rendered advertisements in real time.

## **Foundations**

### **EDUCATION**

#### **Emory University**

B.A., Economics and Mathematics · 3.95  
GPA in major · 2003

#### **University of Washington**

Machine Learning Specialization  
coursework (Coursera): Foundations,  
certificate 2016; Regression

### **CERTIFICATIONS, TRAINING & LEADERSHIP**

#### **Amazon Web Services**

AWS Technical Professional; AWS  
Business Professional; Partner Solutions  
Training: Foundations and Machine  
Learning on AWS; TCO & Cloud  
Economics

#### **MongoDB University**

M102: MongoDB for DBAs · 2016

#### **Leadership & communication**

Team Captain, K4 men's leadership  
program, 2021 and 2022; LinkedIn  
Learning: Transitioning from Manager  
to Leader; Ethics & Servant Leadership  
Forum, Emory University Center for  
Ethics, 2001 – 2002

### **PUBLICATIONS & APPOINTMENTS**

#### **Artificial Intelligence in the Public Sector: Maximizing Opportunities, Managing Risks**

World Bank Group, 2021 · co-author  
Read the publication (<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/809611616042736565>)

#### **Manning Publications**

Technical Editor, large-scale gRPC  
systems engineering · 2022 – 2023

#### **Thinkful**

Data Science Technical Expert and  
mentor · 2018 – 2019

Ember Venture Group Pte. Ltd. · Singapore · [embergroup.ai](https://embergroup.ai) · References and a confidentiality dossier are available under mutual NDA.