

QuantumSpectra

Investor & municipality one-pager

We fuse hyperspectral imaging, satellite feeds, quantum-enhanced AI, structural simulation and custodial blockchain finance into one platform for sustainable agriculture, earthquake-safe urban renewal and auditable public services in Türkiye.

`2 pages · deterministic · live KPIs · partners@quantumspectra.io`

Vision

We fuse hyperspectral imaging, satellite feeds, quantum-enhanced AI, structural simulation and custodial blockchain finance into one platform for sustainable agriculture, earthquake-safe urban renewal and auditable public services in Türkiye. Every measurement, contract, pickup and payment is SHA-256 anchored, so citizens, municipalities and funders look at the same evidence.

Problem

01

Fragmented rural production, unreliable provenance and unfair prices — shoppers cannot see field quality, farmers do not earn the premium.

02

Millions of earthquake-vulnerable homes; renewal finance is slow, opaque and dependent on outside capital.

03

Rural health, mining and urban-planning decisions rest on data nobody can measure or audit.

Solution

01

Soil → produce → product quality passports, fair price bands and a collective treasury; CSA boxes, QR pickups and shopper ratings.

02

URAR-style appraisal, transparent ML risk, renewal bonds, staged draws and monthly coupons — all anchored.

03

Rural health triage, province mining reports, 9D tender feasibility and a per-city Justice Index with citizen attestations.

Fourteen domains · one backbone

01
Identity wallet ledger

02
Hyperspectral registry

03
İmece Commons market

04
Farming pilot CSA

05
Quality QR passports

06
God's Eye Justice Index

07
Renewal Finance bonds

08
Social housing & donations

09
9D BIM tenders

10
Rural health diagnostics

11
Sustainable mining

12
Micronutrients value chains

13
AI quantum integrations

14
Disaster governance 3D terrain

Accounts · custodial wallets · SHA-256 anchor ledger — the shared backbone of every domain

Live KPIs · 2026-11-24 12:51 UTC

53
hyperspectral / satellite scans

56
safety & carbon certificates

727 kg
farm-to-fork traded · 10 orders

6
cooperatives on the market

0
CSA households · treasury 0 TRY

117.2 M TRY
renewal bond capital · 19 cases

36
earthquake-safe units renewed · 36 high-risk retired

19
rural health screenings · loop closure 0.0 %

16
mining research sites · 0 surveys

0
quality QR batches

0
shopper ratings · avg —/5

6.6 M TRY
social-housing donations · 7 sites · 41 citizen claims

Spectral, health and mining values are SIMULATED research-grade outputs until live sensors stream; wallets and bonds run on simulated TRY; blockchain anchors are SHA-256 hashes stored in MongoDB.

Pilot economics

Pilot economics — Kastamonu — Taşköprü collective farming pilot · model v1

Land
120.0 ha · 45 plots → 12 blocks

Crop split
Siyez 50 % · onion 30 % · salep 20 %

CSA
80 households · 24 weeks · share 8 k TRY

Capex
46.5 M TRY (840,669 EUR) · grant 60 % · equity 18.6 M TRY

Y1 EBITDA
10.1 M TRY

Steady EBITDA
31.9 M TRY · ROI 68.5 %

Payback
2.8 yrs (equity 1.8)

5-yr NPV
16.4 M TRY @ 20 %

Solar pump
60 kWp · required 139 kW · coverage 43.1 %

Labour
4,092 days · 18.6 FTE · 3.7 M TRY

Revenue model

Market levy	0–10 % (default 3 %) on every İmece order → city treasury: floor-price support, scan subsidies, imece work-days	`live · simulated TRY`
CSA shares	Season share × households; three instalments relative to join date; institutional 5× shares	`live`
Renewal bonds	Bond units from investor wallets; monthly coupon runs; secondary market; origination & servicing fee	`live · simulated`
Quality & provenance services	QR passports, stall labels/posters, lab calibration, certificates — for coops and municipalities	`live`
Municipal data & reports	Justice Index, province mining report, 9D tender feasibility, health equity dashboards	`live`
Carbon credits	Zero-carbon credits from clean farms and renewed buildings	`simulated ledger`

Roadmap

Now

14 domains live (simulated spectral models), anchored ledger, Claude assistants, 5 platform crons, EN/TR, Expo field app

6 months

Kastamonu — Taşköprü season 1 (80 CSA households); first field SWIR cubes replace simulated scans; Twilio SMS & metals.dev once keys arrive

12 months

IBM Quantum hardware validation (QAOA/QSVM) with credentials; public testnet anchors; mobile app in stores

24 months

Başkent University validation publications; second province; renewal bonds with real underwriting partners

DEMO LIVE

Urban Digital Twin

Demo viewer live at /twin — SIMULATED data (3D, retrofit what-ifs, survey upload); not a field capability yet.

Live 3D city twins fusing satellite, sensor and structural data for resilient urban management: post-earthquake and post-disaster sustainability simulation of existing structures and infrastructure, using big data from UAV- and tripod-mounted hyperspectral cameras and an integrated solution ecosystem of OpenSees, Grasshopper and Plaxis 3D Ultimate.

Data acquisition & diagn…

UAV & tripod hyperspectral im…
spectral-signature mapping of micro-cracking, rebar-corrosion exudates, chemical spalling and moisture ingress on concrete and ste…

3D point-cloud integration
spectral data triangulated with terrestrial tripod LiDAR and aerial photogrammetry to texture 3D geometry with material-health metric…

Satellite & IoT sensor fus…

InSAR deformation mapping
regional ground subsidence, fault displacement and structural tilt trends pre- and post-event.

Edge sensor telemetry
real-time structural-health-monitoring metrics (triaxial accelerometers, tiltmeters, strain gauges) streamed directly into the spatial twin.

Integrated simulation ec…

Grasshopper (Rhino)
parametric geometry & data engine; the central BIM/GIS hub turning point clouds and attribute maps into parametric geometry.

OpenSees
non-linear push-over, time-history and dynamic assessment of RC and steel structures with hyperspectrally derived material degradation.

Plaxis 3D Ultimate
geotechnical & SSI modelling: foundation settlement, slope stability and liquefaction under seismic loading.

Post-disaster workflows

Rapid structural triage
UAV-derived hyperspectral signatures mapped onto parametric structural members instantly identify compromised load-bearing elements.

Geotechnical-structural co-sim…
foundation reactions from OpenSees passed into Plaxis 3D to evaluate pile / raft performance under site-specific ground motions and liquefaction zones.

Scenario-based resilience plan…
cascading-collapse risks and retrofitting strategies (FRP wrapping, steel jacketing, soil stabilisation) simulated inside the twin before field …



Retrofit compare <60 · TRY/pt · avoided ≈1032 tCO2e → ZCC

- `FRP · 45 · 70.6→74.3 · 1.1 M · 1 k/pt · −6%`

`Jacket · 49 · 70.6→75.8 · 2.6 M · 1 k/pt · −8.9%`

`FRP+Jacket · 49 · 70.6→76.5 · 4.2 M · 2 k/pt · −10.6%`

What we ask

Municipalities

- Pilot land allocation and a market-hall stall for the Kastamonu — Taşköprü CSA hubs
- Adopt the Justice Index and Safety Registry as open civic data
- Co-fund scan subsidies through the treasury levy
- Appoint planners (public-authority role) for tenders, social housing and mining verdicts

Funders

- Anchor investor for the pilot capex equity: 18.6 M TRY (of 46.5 M TRY, 60 % grant)
- Seed renewal-bond capital for the first high-risk blocks
- SWIR InGaAs field sensors to replace the simulated feeds
- 24-month runway for the Başkent University validation studies

partners@quantumspectra.io · Academic partner: Başkent University · https://spaceseax.tech/pitch

anchor 0xf4470069a6cbe6681c913c129d7238f2f81f0640c1edbad046cbda39ae42ae60 · content 14d0f0ab5979384a6ebe2d33212fb379… · model v1