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

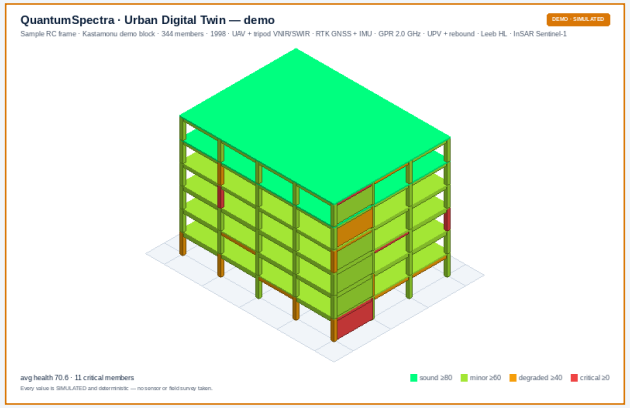
UAV-derived hyperspectral signatures mapped onto parametric structural members instantly identify compromised load-bearing elements.

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

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