GOVAN · Embedded engineering & custom development

Products & solutions Selection guide

Engineering that connects devices, data and industry applications.

01 Industrial IoT

02 Optical detection

03 Custom AI solutions

04 Marine communications

05 Low-altitude aviation

Applications, selection inputs and handover scope for 22 product and solution offerings. Configuration, interfaces, performance targets and deliverables follow the project agreement and validation.

01 / Business area

Industrial IoT

Industrial computers, gateways and sensors connect the production floor—from line retrofits and edge acquisition to cloud integration and data governance.

Industrial computers & edge terminals

Bring computation, equipment interfaces and applications to edge nodes in cabinets, machines and production sites.

Selection inputs

- Compute & system: workloads, operating system, software dependencies and startup.
- I/O & peripherals: serial, Ethernet, USB, display and connected devices.
- Environment & enclosure: cabinet or outdoor location, cooling, dimensions, mounting and vibration.
- Power & maintenance: input supply, outage behavior, logs and remote servicing.

Full worksheet: website Resources

Industrial gateways & protocol integration

Connect PLCs and instruments to cloud applications through protocol adaptation, data mapping and managed forwarding.

Selection inputs

- Devices & protocols: equipment models, protocol documents and register or tag lists.
- Data & intervals: fields, sampling needs, timestamps and event triggers.
- Links & platforms: serial or network links, target systems, authentication and formats.
- Site & continuity: supply, mounting, offline buffering and recovery.

Full worksheet: website Resources

Industrial sensing & acquisition nodes

Combine sensors, acquisition electronics and data interfaces for temperature, pressure, vibration, level and environmental measurements.

Selection inputs

- Measurement: physical quantities, range, accuracy targets and calibration.
- Installation: media, contact method, space and service access.
- Signal chain: output type, sampling interval, channels and synchronization.
- Environment & power: temperature, humidity, protection, interference and supply.

Full worksheet: website Resources

Production retrofits & data platforms

Build on usable equipment with connectivity, condition monitoring, data governance and production visualization.

Selection inputs

- Existing site: process flow, asset inventory, network and software.
- Definitions: metrics, field meanings, master data and data owners.
- Integration: interface access, historical data, hosting and access boundaries.
- Rollout: downtime windows, pilot scope, training and acceptance targets.

Full worksheet: website Resources

02 / Business area

Optical detection

Single-photon and low-light detection, supported by optical acquisition electronics, counting, synchronization, instrument control and application software.

Single-photon detection & counting

Integrate detector electronics, bias and drive circuits, pulse readout and counting interfaces for faint optical signals.

Selection inputs

- Optical input: spectral range, coupling and incident-light conditions.
- Detection targets: count behavior, dark counts, timing goals and validation methods.
- Electrical interfaces: bias, pulse readout, triggering and synchronization.
- Test environment: light shielding, thermal control, electrical shielding and mounting.

Full worksheet: website Resources

Optoelectronic acquisition & synchronization

Develop analog front ends, data acquisition, trigger synchronization and data interfaces for optical measurement systems.

Selection inputs

- Signals: amplitude, bandwidth, noise and input format.
- Acquisition: channels, sampling needs, processing and storage.
- Synchronization: clock source, trigger direction and timing constraints.
- System links: host interface, software environment and test instruments.

Full worksheet: website Resources

Instrument control & experiment software

Organize device control, configuration, acquisition records and analysis into practical experimental workflows.

Selection inputs

- Device interfaces: protocols, SDKs, commands and connection methods.
- Workflows: experimental steps, parameter bounds and exception handling.
- Data: file formats, metadata, analysis and export needs.
- Runtime: operating system, deployment hosts, permissions and maintenance.

Full worksheet: website Resources

03 / Business area

Custom AI solutions

Custom AI solutions for emotional interaction, LLM applications and speech recognition, combining synthesis, knowledge retrieval, agents and embedded devices.

AI voice box & embedded modules

Integrate audio capture, conversational services and playback with hardware, firmware and interaction development.

Selection inputs

- Interaction: buttons, triggers, wake behavior and dialogue flow.
- Acoustics: speaking distance, ambient noise and playback targets.
- Network & services: connectivity, content, service interfaces and data boundaries.
- Integration: dimensions, supply, buttons, enclosure and acoustic cavity.

Full worksheet: website Resources

Voice interaction for plush toys

Develop embedded voice components around plush forms, character content and interaction triggers.

Selection inputs

- Form: toy dimensions, filling, disassembly and cleaning.
- Audience: age, context, content review and parental-control needs.
- Interaction design: character, voice, button placement and trigger flows.
- Electronics: power, speaker placement, connectivity and safety validation scope.

Full worksheet: website Resources

Voice guides & announcement terminals

Connect content management, triggers and audio terminals for exhibits, guides and equipment events.

Selection inputs

- Context & triggers: manual input, sensors, device events or software commands.
- Content & language: scripts, voice style, languages and updating.
- Site acoustics: coverage, noise, volume and mounting layout.
- Management: connectivity, device count, administration and access rights.

Full worksheet: website Resources

Emotional interaction & character dialogue

Build voice experiences around character design, conversation memory and expressive responses.

Selection inputs

- Audience: age, context, interaction boundaries and content review.
- Character: persona, voice, tone, emotional feedback and excluded content.
- Memory & data: retained information, duration, user controls and deletion.
- System & validation: device, connectivity, model interfaces and dialogue evaluation.

Full worksheet: website Resources

03 / Business area

Custom AI solutions

Custom AI solutions for emotional interaction, LLM applications and speech recognition, combining synthesis, knowledge retrieval, agents and embedded devices.

LLM applications & agents

Integrate language models into products and workflows with tailored prompts, tools and multi-turn interactions.

Selection inputs

- Tasks: user questions, tools, permissions and confirmation steps.
- Models & hosting: interfaces, runtime, latency targets and budget.
- Knowledge & context: business materials, updates and session state.
- Quality & boundaries: evaluation cases, fallbacks, logs and data management.

Full worksheet: website Resources

Speech recognition & voice interfaces

Combine audio capture, speech recognition, intent understanding and synthesis for real operating conditions.

Selection inputs

- Audio input: languages, accents, distance, noise and microphones.
- Recognition tasks: commands, transcription, streaming and domain vocabulary.
- Output & interaction: synthesized voice, interruption, latency and error prompts.
- Deployment & tests: online or local processing, compute, samples and evaluation.

Full worksheet: website Resources

Knowledge voice assistants & smart guides

Connect documents, product materials and business knowledge to maintainable retrieval and voice-Q&A services.

Selection inputs

- Knowledge: document formats, access, versions, terminology and content owners.
- Q&A scope: common questions, answer boundaries, retrieval and human handoff.
- Voice experience: terminal, language, voice, connectivity and response targets.
- Maintenance: content publishing, permissions, evaluation sets and logs.

Full worksheet: website Resources

04 / Business area

Marine communications

Equipment and integration for buoys, submerged moorings and marine monitoring, spanning BeiDou, satellite communications, radar, HF radio and shore-side data systems.

Surface buoys & monitoring nodes

Combine sensing payloads, acquisition control, power management and telemetry for marine surface observation.

Selection inputs

- Deployment: area, depth, sea state, mooring and service interval.
- Payload: sensors, interfaces, acquisition and calibration needs.
- Energy: supply source, measurement schedule, communications and storage constraints.
- Telemetry & shore: coverage, volume, latency and management platform.

Full worksheet: website Resources

Mooring acquisition & subsea recorders

Develop low-power acquisition, logging, pressure-housing integration and recovery readout for submerged observations.

Selection inputs

- Environment: target depth, pressure, temperature, corrosion and duration.
- Acquisition: sensor interfaces, schedule, clock and data volume.
- Energy & structure: batteries, sleep behavior, seals and connectors.
- Recovery & readout: service interval, download method, integrity and test conditions.

Full worksheet: website Resources

BeiDou, satellite & marine links

Integrate positioning, timing, short messages, satellite links, HF radio and equipment interfaces around marine operations.

Selection inputs

- Traffic: message content, priorities, intervals and tolerable delay.
- Coverage & terminals: operating region, antennas, mounting and installed equipment.
- Interfaces & scheduling: protocols, buffering, retries and link switching.
- Operations: service activation, access rights, service charges and maintenance responsibilities.

Full worksheet: website Resources

Shore-to-sea monitoring platforms

Organize stations, devices, observations and alarms for shore-side visibility and maintenance coordination.

Selection inputs

- Assets: station inventory, locations and management structure.
- Sources: terminal protocols, fields, intervals and historical records.
- Workflows: alarm rules, duty teams, dispatch and incident closure.
- Hosting: networks, permissions, backups and connected systems.

Full worksheet: website Resources

05 / Business area

Low-altitude aviation

Multirotor platforms and civil applications, with flight-control and payload integration, airborne connectivity, ground stations and inspection-data applications.

Multirotor platform integration

Integrate structures, electronics, power and airborne interfaces for civil inspection, observation and industry tasks.

Selection inputs

- Mission: location, environment, workflow and operating constraints.
- Platform: aircraft type, payload, energy, structure and mounting.
- Interfaces: flight controls, communications, ground station and data links.
- Validation: ground tests, flight evaluation, personnel and site arrangements.

Full worksheet: website Resources

Payload & airborne-link integration

Connect gimbals, sensors, mission equipment and telemetry links to operational workflows.

Selection inputs

- Payload: purpose, dimensions, mass, power and mounting location.
- Control: commands, status, triggering and flight-control connections.
- Data links: volume, synchronization, storage and transfer needs.
- Testing: vibration, interference, cooling and aircraft integration scope.

Full worksheet: website Resources

Ground stations & mission software

Bring equipment status, mission configuration, telemetry and field operations into practical ground-station interfaces.

Selection inputs

- Protocols: flight controls, telemetry, payloads and existing ground systems.
- Workflows: mission configuration, permissions, confirmations and exceptions.
- UI & data: maps, status fields, alarms, logs and playback.
- Deployment: desktop or web, networks, offline use and updates.

Full worksheet: website Resources

Inspection data & industry applications

Organize acquired data into searchable mission records, field reports and business-system interfaces.

Selection inputs

- Outputs: imagery, measurements, tracks, annotations and mission records.
- Organization: assets, locations, time, versions and search.
- Workflows: review, reporting, corrective actions and system integration.
- Data management: capacity, permissions, backups, retention and hosting.

Full worksheet: website Resources

Project preparation & handover

Make the engineering brief concrete.

What to prepare

1. Use case, deployment environment and operating constraints
2. Existing equipment, interface documents, drawings or code
3. Targets, validation conditions and acceptance criteria
4. Deliverables, timeline and budget range
5. Contact person and technical coordination method

Agree the handover scope

- Design documents, firmware, software and configuration
- Source files, IP and rights of use
- Prototypes, test records and issue list
- Deployment, training, backups, updates and support

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Download product, business-area and handover worksheets from Resources. Product scope, technical requirements and outcomes follow mutually agreed project documents.