ENEXIS PERSONEEL B.V.

SUMMARY - MARKET CONSULTATION

SMART DESIGN SOLUTION

A digital, integrated engineering and work preparation platform that standardizes and accelerates the creation of high-quality low voltage, medium voltage and gas underground network designs, and enables future automation such as revision processing.

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1. GENERAL

1.1 Why a market consultation?

Before (potentially) publishing a tender, we started with a market consultation.

The purpose of this market consultation was:

- **Gathering information**
  We want to gather information on available products, services, technologies and/or market practices. This will help us develop our procurement strategy and formulate clear specifications and requirements.

- **Gaining insight into the market**
  This allows us to better analyse the market structure, identify potential suppliers and assess whether there is sufficient competition and capacity in the market.

- **Receiving feedback**
  From the market on possible solutions, risks, costs and other relevant aspects. This helps us refine our project plan and identify potential challenges.

- **Promote dialogue and cooperation between Enexis and the market**
  It enables both parties to communicate openly, ask questions and discuss possible solutions. This leads to a better understanding of each other's needs and finding innovative solutions.

In short: through this market consultation, we hoped to maximise the value and effectiveness of our anticipated tender.

1.2 Our Communication Platform: TenderNed

To make the procedure as efficient as possible, information exchange from and about this market consultation has taken place via TenderNed platform (https://www.tenderned.nl/cms/nl) (hereinafter referred to as TenderNed).

If you have any questions about the operation of the platform, please use the platform's on-line help. You can also contact TenderNed's helpdesk at 0800-836 33 76, Calling from abroad? +31 70 379 88 99 or at Hulp bij het gebruik van TenderNed | TenderNed.

2. DESCRIPTION OF THE SITUATION

2.1 Background

Enexis is seeking a Smart Design Solution (SDS): a digital, integrated engineering and work preparation platform that standardizes and accelerates the creation of high-quality low voltage, medium voltage and gas underground network designs, and enables future automation such as revision processing. The solution should help internal and external users make optimal design decisions using multiple internal and external data sources, streamline the design-to-execution chain, and support our large-scale infrastructure build-out.

2.2 Current situation

How We Work Today: End-to-End Engineering & Preparation Process (As-Is)
Initial Desk Study (project intake & risk identification)

Every project starts with a desk study with a high-level design, in which the engineer analyses the assignment and identifies potential risks.

This includes checking for:

- asbestos and chromium-6;
- possible land acquisition:
- contaminated or constrained soil conditions:
- required environmental or situational assessments:
- underground & aboveground infrastructure:
- safety-related elements such as secondary protection;
- work near high-voltage or medium-voltage substations;
- and activities on third-party sites.

The engineer also drafts:

- a short description of the intended work, and
- an initial Health & Safety plan.

To perform this study, engineers consult a combination of internal technical data sources, geospatial information, project records, and publicly available environmental and land-ownership information.

Identifying Permit Authorities
Once the desk study is complete, the engineer determines which authorities must grant permits or exemptions.
This is done by consulting national and local digital permitting portals, as well as regional environmental or planning information platforms.

Preliminary Design (PD)
The engineer then prepares a Preliminary Design, using widely adopted CAD and GIS design tools (the specific toolset may vary per region).

To create the PD, the engineer uses among others:

- Internal network information (current asset layout and condition),
- Project portfolio information (coordination with other ongoing internal and external work),
- Visual and geospatial imagery (satellite, aerial, and street-level images),
- Network capacity and engineering guidelines, and
- Property and land-use information from public or semi-public data sources.

Occasionally, external design information from municipalities, developers, or other third parties is incorporated into the draft.

Detailed Project Drawing & Digital Documentation
After completing the PD, a technical support engineer further develops it into a detailed project drawing, which is stored in a structured digital project folder.
This folder contains the complete project documentation, including designs, assessments, agreements, and safety documents.

If strategic materials must be procured early, they are reserved or requested through our internal material management processes.

Site Walk-Down (Field Inspection)
For most projects, a **physical site inspection** is organised with:

- the contractor,
- local authorities, and
- Enexis representatives.

During this visit, the parties:

- verify the findings of the digital desk study in the physical environment,
- confirm or refine the preliminary design, and
- discuss execution, safety, environmental considerations, and legal constraints.

The outcomes are recorded in a **field inspection report**, which becomes part of the digital project folder.
Afterwards, the engineer prepares a **project budget** following our standard estimating and approval procedures.

Final Design (FD), Permits & Materials
Following the site inspection, the technical support engineer updates the drawing to create the **Final Design (FD)** and uploads it to the digital project folder.

Next steps include:

- Submitting permit applications via the formal permitting channels, usually executed by a dedicated permit coordinator,
- Ordering standard materials through the internal materials process, and
- Preparing the required future-state network schematics and work packages, which are entered into our internal GIS asset and network data environment.

Execution & As-Built Processing
The project moves into **execution**, typically in cooperation with an external contractor.

After construction, the project enters the **administrative closing phase**:

- The contractor supplies as-built information,
- A data specialist validates and processes this information into the official network registration,
- The updated network model reflects the actual situation after construction,
- The financial settlement takes place.

What Vendors Should Understand

- We work with structured, repeatable engineering steps: Digital desk study → preliminary design → site inspection → final design → work preparation→ execution → as-built → administrative completion.
- In the current situation, the IT-tooling barely supports building further on information and data along the engineering steps as mentioned above.
- We rely on many data sources—internal technical data, geographic information, environmental data, land-ownership information, and project records.
- We avoid single-system dependency: the process is supported by a mix of data and tools, not by one platform.
- Clear roles exist: e.g. engineer, technical support engineer, permit coordinator, executor, contractor, and data specialist.
- Collaboration with contractors and authorities is central, especially during the site inspection and permitting phases.
- Digital project dossiers ensure consistent documentation and traceability throughout the lifecycle.

2.3 Desired situation

A Unified Digital Core for Engineering & Work Preparation
Enexis aims to introduce the Smart Design Solution (SDS) as the central digital platform for all engineering and preparation activities. The goal is to professionalise, standardise, and accelerate the engineering process so the organisation can scale up efficiently to meet a rapidly growing construction demand.
SDS will increase productivity in execution by raising the quality of engineering, improving collaboration and communication with external partners and reducing rework by building on existing information.

In the desired situation, SDS becomes a key enabler of Enexis' engineering vision and directly contributes to the strategic objective of building faster, safer, and more predictably. As more work is being outsourced to contractors, they should have the possibility to gain access to SDS, if approved by Enexis.

End-to-End Impact Across the Entire Delivery Chain
Although SDS focuses on engineering and preparation, the intended impact spans the full value chain:

- Reliable, standardised design packages for execution teams
- Higher first-time-right performance, reducing rework in the execution phase
- Clear, consistent communication with partners and suppliers
- Fast, accurate and automated subsequent processes, including material orders, permit applications and revision, using the design as its basis

In the future state, the design created in SDS becomes the single source of truth reused throughout planning, permitting, materials, execution, and revision—eliminating duplication and inconsistencies. Although SDS is not intended as an everything-in-one platform, it is envisioned to have far-reaching integrations with adjacent engineering and execution systems such as project management and ERP systems.

Designed for Both Enexis and Partners in the Value Chain
A significant portion of engineering work is (and will continue to be) performed by partners in the value chain. The new solution will be a product aligned with sector standards. It will not be a custom-built Enexis product, but a solution suitable for any party that wants to perform engineering and work preparation within this domain.

In the desired situation:

- Contractors can use the same tooling as Enexis engineers.
- Contractors participate in the development of functional requirements, ensuring the tooling fits their workflows.
- Contractors remain free to choose whether they use the tool, but SDS offers clear advantages.

What the SDS Will Enable Functionally

Route, Location & Asset Determination
SDS can be used to explore potential project locations by consulting a broad range of map layers, providing insights that support the digital desk study.
SDS will assist in determining optimal routes for low voltage, medium voltage and gas, station locations, and asset choices—including reuse of existing asset locations—based on a large set of internal (GIS) and external data sources and configurable preference settings.
It will offer data-driven proposals, while allowing users to adjust them to specific project needs.

Modern Design & Drawing Capabilities
Users will be able to:

- Import project plans in GIS formats,
- create and modify designs intuitively supported by automatic design validations,
- use predefined, modular asset “building blocks”,
- generate detailed drawings and plans, and
- work collaboratively and communicate within the same environment.
- All system-generated proposals remain fully editable.

Aligning with Information Model Standards in the Sector
SDS aligns with the sector’s strategy to work as much as possible with information model standards. It supports widely adopted standards such as NLCS++, as well as other developments initiated in the sector by parties such as Taskforce Elektra and TNO IXCESS, enabling:

- continuous enrichment of the design throughout the process, preventing rework along the value chain,
- reuse of design information without rework,
- automatic generation of artefacts such as permit inputs, material lists, and financial budgets,
- the final design becoming the direct basis for automated revision processing.
  This ensures consistent information flow from initial assignment to final as-built state.

In Summary — What Enexis Is Looking For
Enexis is seeking a future-proof, data-driven, collaborative engineering platform that:

- standardises and elevates the quality of all engineering and preparation work,
- enables faster, safer, and more predictable project execution,
- supports both internal teams and external contractors,
- integrates seamlessly with existing IT and processes,
- eliminates rework by ensuring one coherent information model across the entire chain,
- and forms the digital backbone for large-scale grid expansion.

SDS is not just a tool—it is the **core platform** that will transform how Enexis and its partners design, prepare, and deliver infrastructure projects.

3. QUESTIONS & ANSWERS

The questions below were answered by several organisations as part of the market consultation. In addition, Enexis held follow-up discussions with a number of parties to clarify specific responses and to gain a better understanding of the market's perspective. Based on the written answers and these additional conversations, Enexis has formed a clearer view of the current market capabilities, possible development paths, key dependencies and points of attention in relation to the intended Smart Design Solution.

The anonymised feedback per question summarises the main insights received from the market. It does not represent the position of one individual supplier, but reflects recurring themes, common observations and relevant differences in the responses. This feedback is intended to provide transparency on what Enexis has learned from the consultation and how this input may be used to further shape the procurement strategy, scope and requirements.

Questions to the suppliers:

1. **To what extent are your current products and/or services able to support the intended future-state scenario?**
   Please clearly indicate which requirements can already be met and which cannot (yet), including any relevant constraints or dependencies.

Summary of the answers

Similarities

- The majority of the parties can already support part of the SDS ambition with existing products, services or platforms.
- There is broad consensus that SDS should act as a central engineering and work preparation tool, reusing data across the entire chain.
- Many respondents mention:
  - GIS and data-driven design and analysis;
  - Modular design elements;
  - Automatic validations;
  - Generation of outputs such as drawings, bills of materials and project inputs;
  - Support for cooperation with internal and external parties.

Differences

- Some parties focus primarily on:
  - A fully integrated engineering platform;
  - An engineering backbone with strong lifecycle management;
  - Specific links in the chain (e.g. design, revision, permits or AI support).
- Not all parties currently cover:
  - All grid domains (LV/MV/gas);
  - The complete desk study or permit chain;
  - Automate the link with asset registration and revision.
  - Strong data-driven route and location determination capability

Pattern

- No one claims a fully finished, off-the-shelf SDS.
- The market sees SDS as a composition of existing capabilities, not as one total product.

2. **For any identified gaps between the current capabilities and the desired future state, how would you propose collaborating with Enexis to close these gaps?**
   Please outline your proposed approach, including delivery model, required joint efforts, and realistic timelines.

Summary of the answers

Similarities

- The biggest gaps are not primarily in software, but in:
  - Coherence between systems;
  - Setting up processes;
  - Data availability
  - Standardization of data and rules;
  - Governance and ownership.
- Almost all parties propose a phased approach:
  - Start with focus (pilot or core functionality);
  - Proven value;
  - Controlled upscaling.
- Co-creation is consistently mentioned as a preferred model:
  - Joint workshops;
  - Pilots with real projects;
  - Iterative further development.

Differences

- Some parties mainly emphasize technical integration (APIs, architecture).
- Other parties place greater emphasis on:
  - Process design;
  - Change management;
  - Adoption by contractors;
  - AI support as an additional intelligence layer.

Pattern

- The market explicitly warns against a "big bang" implementation.

There is broad support for a roadmap with clear moments of choice (go/no-go).

3. **Based on your knowledge of the market in which Enexis operates, to what extent do you agree with the proposed vision and direction?**
   Please provide your perspective on its feasibility and highlight any adjustments or alternative considerations you would recommend, we appreciate critical feedback.

Summary of the answers

Similarities
Almost all respondents are positive to very positive about the SDS vision.

- The emphasis on:
  - Standardization;
  - Data-driven design;
  - Chain cooperation;
  - Reduction of rework; is seen as necessary.
- Positioning SDS as a sector-aligned solution (not pure customization) is widely supported.

Critical comments (widely shared)

- SDS must:
  - Not become a new monolithic system;
  - Leave room for existing tools;
  - Have clear boundaries with regard to ERP, project management and asset registration.
- Automation should follow:
  - Clear information models;
  - Mature data quality;
  - Consistent working arrangements.

Pattern

- The vision is considered feasible, provided that it focuses on governance, adoption and phasing.

4. **What would you require from Enexis to successfully implement, tailor, and further develop this tooling in order to maximize its value?**
   Please specify the necessary organizational, technical, governance, and collaboration prerequisites, as well as any assumptions regarding roles, responsibilities, data availability, integration capabilities, and change management support.

Summary of the answers

Very broadly shared requirements

- Clear ownership from Enexis:
  - Business owner for SDS;
  - Decision-making mandate.
- Clear governance:
  - Standards, validation rules, exceptions;
  - Division of roles between Enexis, suppliers and contractors.
- Access to data and systems:
  - Insight into source data, data quality and interfaces;
  - Clear choices about system of record per data point.
- Active User Engagement:
  - Engineers;
  - Technical support engineers;
  - Contractors.

Striking

- Several parties explicitly state that:
  - SDS is only successful if contractors are included from the start;
  - Change management should not be an afterthought.

4. SUMMARY OF DESK RESEARCH AND IN-DEPTH INTERVIEWS

In addition to the market consultation and the follow-up discussions with suppliers, Enexis has carried out desk research to obtain a broader view of relevant market developments, available technologies, sector standards and comparable initiatives. This research helps to place the input from the market consultation in a wider context and provides additional insight into the maturity, opportunities and dependencies associated with Smart Design Solutions for engineering and work preparation.

The following summary brings together the main findings from this desk research and the in-depth interviews. It is intended to highlight the key themes, lessons learned and points of attention that may be relevant for the further development of the procurement strategy, the scope of the solution and the formulation of future requirements.

4.1 Market Direction & Strategic Trends

Across all consulted parties, there is strong alignment on the future direction of engineering and design solutions within infrastructure domains:

- The market is shifting from standalone CAD-based tooling toward integrated, platform-based engineering environments.
- There is a clear trend toward data-centric working, where engineering data is reused across the full lifecycle (design, construction, operation, maintenance).
- Platformisation is considered essential: bringing together multiple tools, data sources, and stakeholders within one ecosystem.
- AI and automation are expected to play an increasingly important role in engineering workflows in the coming years.
- Future-proof solutions will rely on:
  - Open standards
  - Strong integration capabilities
  - Scalable data foundations
  - Ecosystem-based collaboration models

4.2 Solution Design Principles

The consultation highlights several consistent design principles for future solutions:

- A platform layer should complement existing systems, rather than replacing them.
- Interoperability is critical:
  - Systems must integrate with legacy environments
  - Data can remain in source systems and be accessed via connectors
- Solutions should support a broader engineering workflow, connecting:
  - Assignments
  - Engineering data
  - Design
  - Work preparation
  - Execution
  - Asset registration
- A key objective is to reduce fragmentation of tools and processes.

4.3 Functionality & Positioning

The market consistently positions future solutions as part of a broader engineering ecosystem:

- Solutions are expected to provide:
  - A common data foundation
  - Support for engineering and collaboration processes
  - Integration with GIS and other enterprise systems
- The emphasis is on:
  - Standardisation via common data models and components
  - Configuration instead of heavy customisation
- The added value lies in:
  - Reducing fragmentation
  - Improving efficiency and data reuse
  - Enabling data-driven engineering at scale
- Solutions are generally not positioned as a single central system, but as part of a multi-system landscape.

4.4 Implementation & Collaboration

Several important implementation insights emerge:

- Implementations typically follow a phased and iterative approach, allowing scope and requirements to evolve over time.
- Collaboration between multiple parties is standard, including:
  - Software providers
  - System integrators (optional)
- Close collaboration is required to ensure:
  - Alignment between systems
  - Effective data exchange
  - Consistency in workflows

4.5 Architecture & Data Management

Data and architecture are critical success factors:

- A robust data foundation is essential, including:
  - A common data model
  - Standardised components
  - Clear governance structures
- Solutions should support a common data environment, integrating:
  - Asset data
  - ERP data
  - Engineering data
  - GIS information
  - Documentation and field data
- Key challenges identified:
  - Fragmented data landscapes
  - Unclear data ownership
  - Lack of clarity on data flows across systems
- Important requirements include:
  - Clear agreements on where data is stored and managed
  - Reliable data exchange between systems
  - Strong data governance and quality assurance
  - Security compliance

4.6 Pricing Models (High-Level)

Different pricing approaches are observed in the market:

- License-based pricing, depending on user roles and functionality
- Implementation and configuration costs as a significant component
- Variants include:
    - User-based licensing
    - Value-based pricing
- Other possible cost factors:
    - Training
    - Support and maintenance
    - Further development if required

4.7 Lessons Learned & Risks

Several recurring lessons and risks were identified:

- Data maturity is a key determinant of success and can significantly impact timelines.
- Projects tend to grow in scope during implementation, requiring flexible and iterative approaches.
- Common pitfalls include:
    - Lack of alignment between systems
    - Unclear data flows and responsibilities
    - Fragmented implementations
    - Ambiguity in scope and process boundaries
- Critical success factors:
    - Early establishment of data governance
    - Clear definition of process scope and boundaries
    - Avoidance of duplicate data requests and fragmented environments

4.8 Overall Conclusion

The consultation confirms a clear market consensus:

The future of engineering and design solutions lies in integrated, platform-based ecosystems that enable data-driven, standardised, and collaborative workflows across the full asset lifecycle.

At the same time, successful adoption requires:

- A strong data foundation
- Clear architectural choices
- Incremental implementation
- Effective ecosystem collaboration