

The manual-intensive process of TDoc search is transformed by Apex Standards advanced TDoc tools, providing a comprehensive UI to meet most search and analysis needs. To further enhance integration with organizational TDoc operations and analysis, we introduce the "Apex Standards 3GPP TDoc API." This API, using standard JSON calls, seamlessly integrates and analyzes data, giving organizations a strategic edge. Here, we present three strategic scenarios demonstrating how our API can significantly improve your organization's market positioning, resource allocation, and competitive analysis.

### Scenario 1: Systematic Analysis and Support for Subsequent Tasks I/O

The "Apex Standards 3GPP TDoc API" is engineered to empower systematic analysis of an organization's standard contributions, followed by the support of subsequent tasks such as comparative high-level reviews and landscape views. For instance, an organization can leverage the API to integrate its workflows, thereby streamlining its standard contributions. This strategic move would facilitate the organization in staying ahead of its competitors by being more agile and responsive to rapidly evolving R&D dynamics.

The API's capabilities extend to conducting annual TDoc reviews, which are integral in assessing the organization's performance over a defined period. These reviews are crucial as they provide insights into areas of improvement, thereby aiding the organization in making informed decisions for future contributions. The API's sophisticated analysis tools, like the Vincent proposal, will offer a comprehensive overview of the organization's contributions, providing valuable insights that can guide strategic planning and roadmap development.

### Scenario 2: Strategic Integration, Comparative Analysis, Managerial Review

The "Apex Standards 3GPP TDoc API" is adept at providing a high-level strategic integration that culminates in a comparative view of an organization's contributions vis-à-vis its competitors. To illustrate, the API can be used to build tables that count standard contributions across various timelines and companies, thereby offering a structural insight into the organization's performance.

This tabulation building feature is instrumental in highlighting the organization's market positioning and competitive edge. By drawing on data from different working groups in 3GPP, focusing on topic X, and Work Item Y, the API offers a panoramic view of the organization's contributions in relation to its competitors over time. These comparative tables can be customized based on specific filters, such as TDoc status, to ensure that only relevant data is considered in the analysis. This granular approach to data analysis is pivotal in uncovering patterns and trends that can guide the organization's future contributions.

### Scenario 3: Trend Spotting, Resource Allocation, Technological Positioning

The "Apex Standards 3GPP TDoc API" can optimize the organization's resource allocation and enhance its technological positioning. By leveraging the API's filter operator and logical modifier, the organization can sift through vast amounts of data to extract only the most key issues that will inform its contributions.

The API's flexible research capabilities will aid the organization in identifying key areas that require more resources, thereby ensuring that the organization's efforts are channeled towards initiatives that will yield the maximum return on investment. Furthermore, the comparative tables built by the API will offer a bird's eye view of the organization's positioning in relation to its competitors, thereby enabling one to carve out a unique niche for itself in the industry.

"Apex Standards 3GPP TDoc API" revolutionizes standard contributions, offering refined searches, insightful trends, easy integration, and systematic analysis to secure a competitive advantage. Our strategic scenarios illustrate the API's capacity to enhance R&D, streamline resources, and sharpen competitive analysis. Such TDoc automation liberates professionals from tedious manual work, saving valuable time and enabling them to focus on high-impact tasks and topics. Harness the full potential of your innovation with our pioneering API.

Logical operators or modifiers: if a query is too general you may receive an unmanageable number of hits, or too few if the query is too specific. To achieve better results, use below operators to refine your search.

- Stemming** de facto, where search terms are automatically expanded and variant forms of the root word are searched, e.g., **correspondence** → TDocs containing correspond, corresponds, correspondence, corresponding, etc
- Truncation, a.k.a. wildcards** Truncation is similar to stemming; however, it gives the user a measure of control in determining where the stem begins. Use the wildcard symbol \* at the end of a search term to expand your results (e.g., **correspond\***). **Caution:** Using a wildcard character in combination with a presumed inherent stemming can produce unexpected results. All search terms are stemmed by default, even those with a wildcard character appended to them. So, a search for carrier\* initially stems to carry. This means carrier\* will also find carriage. By contrast, however, a search for carrie\* will not find carrier, as you might expect, because carrier stems to carry not carrie.
- ALL** de facto, no logical operator or modifier is needed. All search terms in the same or variant forms must occur, e.g., **beam correspondence** → TDocs containing "beam correspondence" or beams sweep procedure → the level of correspondence(s) ...
- OR** **carrier | aggregation** → TDocs containing either carrier or aggregation; **Nokia | Ericsson | Huawei** in the Source field → TDocs sole sourced or co-sourced by either Nokia or Ericsson or Huawei; **R1 | R2** in the WG field → TDocs in either RAN 1 or RAN 2.
- NOT** **communication service -interface** → TDocs containing communication and service but not interface. **Samsung -ZTE** in the Source field → TDocs sourced by Samsung et al, excluding ZTE. **Caution:** the query must not involve an implicit list of all documents. For example, -mimo is not acceptable; calibration | -mimo is not acceptable. However, calibration -mimo is okay.
- Phrase (exact) search** **"mission critical architecture"** → TDocs containing the exact phrase "mission critical architecture"
- Exact form operator** **mission critical =architectures** → TDocs containing mission(s) and critical(ly) and architectures, where the word architecture must appear in a plural form
- Strict order operator, a.k.a. "before"** **mission << critical << data** → TDocs containing mission(s) and critical and data, where mission(s) must appear before critical and critical must appear before data
- NEAR, a.k.a. proximity** **"mission critical" NEAR/3 solution** → TDocs containing "mission critical" and solution(s), in less than 3 words apart, e.g., mission critical solution(s), mission critical security solution(s), mission critical security enhancement solution(s)
- Parenthesis** Search terms are processed from left to right. Parentheses can be used to group searches together, changing the order of evaluation, e.g., **mission (critical | priority)** → TDocs containing mission(s), and one of critical, critically, priority or priorities.
- Order of query evaluation** \* " - = (·-) ALL OR << NEAR/n

An example of a complex query: **(local area =network) << ("mimo calibration" NEAR/5 stage\*) << coverage|space|direction|point ) -antenna**

**Query Leading Search** To force a query to be in the beginning position in a specified field, put ^ before the query, e.g., **^CATT** in the source field requires that the returned TDocs must have CATT as the leading source. **^NTT Docomo** returns TDocs having NTT Docomo as the leading contributor.

**Query Ending Search** To force a query to be in the ending position in a specified field, put \$ after the query, e.g., **vivo\$** in the source field requires that the returned TDocs must have vivo as the last source. As another example, **^Spirent\$** returns TDocs with Spirant as the Sole Source.

**TS/TR or Series separation search:** To see only TR-related TDocs, leave **TR** in the TS/TR field. To see only TS-related TDocs, leave **TS** in the TS/TR field. To see only the 38-Series TDocs, leave **38** in the TS/TR field.

**Logical Modifier.** The API provides a sophisticated means of keyword characterization, maximizing the flexibility to tailor the queries precisely to the requirements of research.

```
{
  "3GPP_TDoc_Filter": {
    "tdoc_Number": "", // 3GPP TDoc No. Search. Returns Entire Genealogy/Revision History Based on the TDoc. e.g., "R2-1905000"
    "tdoc_Working_Group": "", // The working group, e.g., "RP", "S2", "CI"
    "tdoc_Meeting": "", // Meeting details, e.g., "R1-99", "CP-85", "S2-136", or venue details like "Online", "Toulouse", etc.
    "tdoc_Source": "", // The source or contributor to the TDoc, e.g., "Nokia", "Qualcomm", "Huawei", etc.
    "tdoc_Source_Industry": "", // The industry of the source, e.g., "Operator", "User End", "Equipment", "Semiconductor", "Government", etc.
    "tdoc_Source_Headquarter": "", // The geographic location of the source's headquarters, e.g., "EU", "US", "CN", "JP", etc.
    "tdoc_Contact_Person": "", // Contact person details, e.g., "Peter", "Martin"
    "tdoc_Work_Item": "", // Details of the work item, e.g., "UAS"
    "tdoc_Spec": "", // Specification details, e.g., "TS/TR", "38.300", "25.4"
    "tdoc_Release": "", // Release details of the TDoc, e.g., "17.18.19"
    "tdoc_Type": "", // Type of the TDoc, e.g., "CR", "Discussion", "pCR", etc.
    "tdoc_Purpose": "", // Purpose of the TDoc, e.g., "Decision", "Approval", "Agreement", etc.
    "tdoc_Decision": "", // Decision made on the TDoc, e.g., "Approved", "Revised", "Noted", etc.
    "tdoc_Status": "", // Status of the TDoc, e.g., "Revised", "Noted", "Agreed", etc.
    "tdoc_Begin_Date": "", // Start date of the TDoc, format "YYYY-MM-DD"
    "tdoc_End_Date": "" // End date of the TDoc, format "YYYY-MM-DD"
  },
  "Keyword_Details": {
    "General_Keyword": "", // General keywords related to the TDoc
    "Title_Keyword": "", // Keywords found in the title of the TDoc
    "Abstract_Keyword": "", // Keywords found in the abstract of the TDoc
    "Agenda_Item_Keyword": "", // Keywords found in the agenda item or textual description
    "Text_Proposal_Keyword": "", // Keywords found in the text proposal of the TDoc
    "Secretary_Remark_Keyword": "", // Keywords found in the secretary remarks corresponding to the TDoc
    "Chairman_Notes_Keyword": "" // Keywords found in the chairman notes corresponding to the TDoc
  },
  "Change_Request_CR_Details": {
    "Category": "", // Category of the Change Request (CR), e.g., "A", "B", "C", "D", "F"
    "Number": "", // Number assigned to the CR by HCC
    "Revision": "", // Revision of the CR, e.g., "9": Original, "1": First Revision, etc.
    "Version": "", // Version of the CR, e.g., "17.0.1"
    "Reason_Keyword": "", // Keywords found in the CR reason
    "Summary_Keyword": "", // Keywords found in the CR summary
    "Consequence_if_not_Changed_Keyword": "" // Keywords found in the CR consequence if not changed
  }
}
```

**Apex Standards 3GPP TDoc API I/O Specification.** The API call can accept any combination of the variables provided in the JSON format, and will return detailed TDoc results. The API returns TDoc data matching the user's queries. For instance, to find a TDoc from "Ericsson" in the "RAN 1" working group with "UAS" in the Chairman Notes, input: ("tdoc\_Source": "Ericsson", "tdoc\_Working\_Group": "R1", "Chairman\_Notes\_Keyword": "UAS"). Invoking the API with these parameters will lead to the TDoc results meeting the criteria.