

Research Issues RSC811 - Task 4

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Part

1

العنوان : Research Title

إعداد تقرير عن آخر التطورات الاتجاهات البحثية العالمية في موضوع مشروع البحث

Part

2

Introduction : المقدمة

Operational Technology (OT) and Industrial Control Systems (ICS) have become far more exposed than before because plants, airports, energy sites, and utilities are integrating with IT, cloud, and remote vendors. This connectivity closed the “air gap” and made OT an attractive target. Recent OT reports (Dragos, Fortinet, Honeywell) all show a steady rise in OT-focused incidents in 2025.

Latest trends آخر التطورات في مجال البحث

Ransomware pivoting to OT environments: 2025 data shows that almost half of ransomware incidents hit critical sectors (manufacturing, energy, transport).

Supply-chain and remote-vendor attacks: reports show a jump in attacks via trusted third parties and remote maintenance channels

OT is no longer “low percentage” of attacks: ENISA 2025 shows OT-related incidents taking almost a fifth of observed threats, which is high for a domain that used to be hidden.

Research directions الاتجاهات البحثية

Secure Remote Access to OT

How to let OEM/vendor/NEOM-like parent entity connect without breaking Saudi/NCA or plant policies.
Use of DMZ, jump hosts, unidirectional gateways, brokered sessions, recording, MFA.

Network Segmentation & L3.5 / DMZ Design for Industrial Sites

Research is moving from “just VLANs” to “zones & conduits” with policy enforcement and continuous monitoring — because once attackers are in, lateral movement is easy in flat OT networks

However, the paper could better highlight how organizations can directly implement these findings in real-world cybersecurity frameworks.

Part

4

Research Gaps الفجوات البحثية

Research Gaps

Most reports are **global/vendor-level** — little work is contextualized to **national regulators in KSA (NCA ECC, energy, aviation)**.

Few studies quantify the *operational* impact (downtime avoided, MTTR) of proper OT segmentation — you can measure that.