**3GPP TSG-SA3 Meeting #103 *draft\_S3-211358-r3***

**e-meeting, 17 - 28 May 2021**

**Source: MITRE**

**Title:** **New KI: Secure ProSe Direct Discovery for out-of-coverage scenarios**

**Document for: Approval**

**Agenda Item: 5.9**

1 Decision/action requested

***This pCR proposes a new Key Issue: Secure ProSe Direct Discovery for out-of-coverage scenarios***

2 References

[1] 3GPP TR 33.847 "Study on Security Aspects of Enhancement for Proximity Based Services in 5GS".

[2] 3GPP TR 23.752: "Study on system enhancement for Proximity based Services (ProSe) in the 5G System (5GS)".

[5] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".

[4] 3GPP TS 23.304: "Proximity based Services (ProSe) in the 5G System (5GS) "

3 Rationale

This contribution proposes a new Key Issue to study solutions for Secure ProSe Direct Discovery in out-of-coverage scenarios. This Key Issue is of essence due to the inherent need to provide out-of-coverage ProSe Direct Discovery availability, especially in the case of rescue personnel and such.

A UE performing ProSe Direct Discovery when out-of-coverage is limited by the validity time of the provisioned discovery parameters, to include but not limited to discovery codes and filters. The ProSe discovery codes and filters can be a ProSe Application Code, Discovery Filter, Discovery Query Filter, ProSe Query Code, and others for UE-to-Network relay discovery or Restricted direct discovery as described in TS 23.303 clause 4.6 [5]. Depending on the ProSe Direct Discovery model – A or B – the ProSe UE will use a different discovery code or filter, the models are described in TS 23.303 clause 5.3 [5]. Once the validity of the ProSe UEs discovery codes or filters expire, then that ProSe UE must reconnect to the 5GC and perform a discovery request to renew them as described in TS 23.303 clause 5.3 [5]. Without valid discovery codes and filters the UE may have an inaccurate view on the presence of other UEs in the discovery group; in addition, the UE may be limited to ProSe communication with only previously discovered UEs.

For UE-to-UE or UE-to-Network Relays the UE without 3GPP network access – Remote UE – may be out-of-coverage for prolonged periods and they must be able to securely renew their discovery codes and filters. If the remote UE is limited to the validity period of the discovery codes and filters, then they will lose ProSe Direct Discovery availability and, in some cases, (e.g., public safety or first responder situations) this is unacceptable.

To maintain ProSe continuity when out-of-coverage, there must be a secure method for ProSe enabled UEs to renew their direct discovery codes and filters without direct 5GC coverage (e.g., self-renewal, UE-to-Network relay renewal).

More information on the Direct Discovery procedure can be found in TR 23.752 [2], TS 23.303 [5], TS 23.304 [4], and in this specification in clauses [6.3, 6.4, and 6.22].

4 Detailed proposal

SA3 is kindly requested to agree to the below pCR to TR 33.847.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* First Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## 5.XX Key issue #X: Secure ProSe Direct Discovery for out-of-coverage scenarios

### 5.XX.1 Key issue Details

A UE performing ProSe Direct Discovery when out-of-coverage is limited by the validity time of the provisioned discovery parameters, to include but not limited to discovery codes and filters. The ProSe discovery codes and filters can be a ProSe Application Code, Discovery Filter, Discovery Query Filter, ProSe Query Code, and others for UE-to-Network relay discovery or Restricted direct discovery as described in TS 23.303 clause 4.6 [5]. Depending on the ProSe Direct Discovery model – A or B – the ProSe UE will use a different discovery code or filter, the models are described in TS 23.303 clause 5.3 [5]. Once the validity of the ProSe UEs discovery codes or filters expire, then that ProSe UE must reconnect to the 5GC and perform a discovery request to renew them as described in TS 23.303 clause 5.3 [5]. Without valid discovery codes and filters the UE may have an inaccurate view on the presence of other UEs in the discovery group; in addition, the UE may be limited to ProSe communication with only previously discovered UEs.

For UE-to-UE or UE-to-Network Relays the UE without 3GPP network access – Remote UE – may be out-of-coverage for prolonged periods and they must be able to securely renew their discovery codes and filters. If the remote UE is limited to the validity period of the discovery codes and filters, then they will lose ProSe Direct Discovery availability and, in some cases, (e.g., public safety or first responder situations) this is unacceptable.

To maintain ProSe continuity when out-of-coverage, there must be a secure method for ProSe enabled UEs to renew their direct discovery codes and filters without direct 5GC coverage (e.g., self-renewal, UE-to-Network relay renewal).

More information on the Direct Discovery procedure can be found in TR 23.752 [2], TS 23.303 [5], TS 23.304 [4], and in this specification in clauses [6.3, 6.4, and 6.22].

### 5.XX.2 Security threats

In case of prolonged out-of-coverage situations, either discovery codes and filters are used longer than is acceptable for UE trackability, or discovery is prohibited during prolonged periods (causing prolonged unavailability of discovery for ProSe UEs).

### 5.XX.3 Potential security requirements

It shall be possible to securely renew discovery parameters (e.g., codes, filters, discovery keys) without connecting to the 5GC, i.e. suitable for prolonged out-of-coverage scenarios.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*