

## INID WP-170306

Applying new credential technologies in an existing situation.



### Applying a new credential technology

The reasons for applying a new credential technology are diverse. They range from the requirement for improved security to utilizing new functionalities as single card physical and logical access control, adding applications like controlled printing and photocopying services, canteen payment systems, etc.

Whatever the reason maybe, applying a new credential technology requires switching from one technology to another and/or the combined use of the technologies.

### Solutions for applying a new credential technology

If the new credential technology is to replace the technology currently in use, one solution is to replace the credentials and readers in a single effort. In most cases this has major organizational implications. The size of the system, possible multiple locations and the amount of readers may counteract the replacement of the readers in a very limited time frame. Exchanging a large credential population in a single effort can be even more challenging, not only from a cost point of view but also in perspective of personalization of cards and secure issuance. Not to mention the issuance to the field operational staff.

For those situations where instant replacement of credentials in a single effort is too costly or has too much impact, other solutions exist. In these situations the credential technologies can co-exist for a possible limited time. The co-existence of credential technologies can be achieved by applying multi-technology readers like the INID MultiSmart readers (and) or the issuance of multi-technology credentials.

### Multi-technology credentials

multi-technology credentials combine two or sometimes even three technologies on a single physical credential.

Placing multiple technologies on a single credential, commonly a low frequency and a high frequency technology on a card, requires that the transponder antennas are resized to fit a single credential. This is mostly done by placing the high frequency antenna in the outer plane of the credential. The low frequency antenna is reduced in size and placed inside the high frequency antenna. To keep the low frequency transponder antenna in tune it needs to contain more windings. This antenna arrangement has two consequences that effect the read range of both transponders. The coupling factor between credential and reader has a direct relationship with the reading distance. A reduced antenna size and geometry results in a smaller coupling between credential and reader and therefor reducing the read range. The low frequency antenna that is placed inside the high frequency antenna acts as a shorted winding for the high frequency signal and absorbs a part of the high frequency energy therefor reducing the read range of the high frequency transponder.

Besides this effect the deployment of multi-technology credentials in most cases require the same logistical efforts and challenges as replacing a credential population in a single effort.



## Multi-technology readers

Multi-technology readers are capable of reading credentials that utilize different technologies.

Multi-technology readers provide the ability to keep using the existing credential population while replacing readers per entry point, location or site over a self-definable period of time with a minimum of inconvenience for the users and administrators of a system.

The INID MultiSmart provides this solution for high and low frequency credentials.

## Combining multi-technology credentials and readers

Combining multi-technology credentials with multi-technology readers combines two methods for utilizing multiple technologies. Although it looks like the best of both worlds it has definitely impact on the handling of the credential.

A standard multi-technology reader isn't aware if a credential that is presented is a single or multi-technology credential. The reader will read both credentials and treat them as separate credentials when they are presented within read range. In almost all situations the credential technology with the largest read range will be read first. In some situations the multi-technology reader provides the data of both credentials to the physical access control system.

INID MultiSmart readers provide a special feature for multi-technology credentials that allows to set a preference for a credential type. When reading the type that isn't preferred it will check for the presence of the preferred type and if detected, output the preferred type to the physical access control system.

If the reader is set to prioritize on a credential technology and a single technology card is presented, that is not of the preferred type, there may be a small delay in response. The reader doesn't know if a presented credential is a single or multi-tech credential, it will always try to to detect the preferred technology.

If the user presents a multi-technology credential outside the read range of the preferred type the reader will not be able to read the preferred type.

## Summary

There are two methods for utilizing multiple credential technologies: multi-tech credentials and multi-tech readers.

Multi-tech credentials:

- Provide a limited read range in comparison with single technology credentials.
- Impose a distribution effort for the credentials that needs to be accomplished before the new technology can be activated.

Multi-tech readers:

- Allow gradual replacement of the readers, with a minimum of down time for entry points while the current credentials can continue to be used throughout the exchange.
- Immediate availability of the new credential technology.

Combined multi-tech credentials and multi-tech readers:

- Requires a special feature to set a preference for one of credential technologies on a multi-tech credential.
- The priority setting may show a small delay in response to single technology cards that are not of the preferred type.
- If the user presents a multi-technology credential outside the read range of the preferred type the reader will not be able to read the preferred type.
- Will display all limitations from the multi-tech credential.