# ITU-T

## JCA-NID
## Joint Coordination Activity on Network aspects of Identification Systems

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# Network Aspects of Identification Systems (NID)

**Content**:

- NID: What is this?

- NID Applications

- Impact on telecom networks and telco business models

- NID in ITU-T

- ITU-T Joint Coordination Activity on NID

- Conclusions

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# Network Aspects of Identification Systems (NID)

- **What is NID?**

→ NID = network aspects of identification systems (including RFID)

→ RFID = System using Radio Waves to identify objects

→ NID Components: Tag, Reader, Data processing system (local system, network, server, ..) and middleware



**Server**

**Network**

**Local data processing**

**Reader**

**Tag**
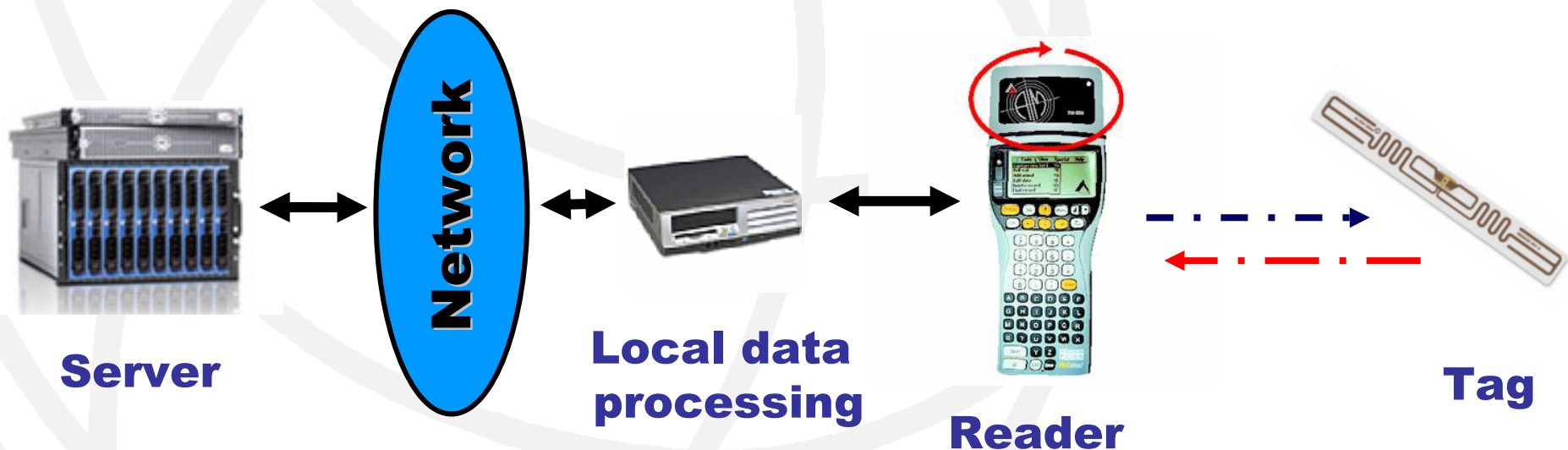
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# Network Aspects of Identification Systems (NID)

**Basic RFID Types:**

- **Active**
  - ▶ Tag transmits radio signal
  - ▶ Internally powered memory, radio & circuitry
  - ▶ High Read Range (max 300 m)
- **Passive**
  - ▶ Tag reflects radio signal from reader
  - ▶ Reader powered
  - ▶ Shorter Read Range (max 20 m)

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## NRFID - Applications: a few exemples [Ref:1]

| Field | Application | Category |
|---|---|---|
| Transport | Toll control | B2C |
| Logistics | Baggage tag | B2B/B2C |
| Security | Entrance check | B2B/B2C/G2B/G2C |
| Supply chain | Supermarkets | B2B/B2C |
| Medical | Patient records Blood supply Drug ID | B2B/B2C |
| Manufacture | Assembly line | B2B |
| Agriculture | Meat/Plant tracking | B2B/B2C |
| E-government | Driver's license | G2C |
| | Bank note | G2C |
| Defense | Passport | G2C |
| Library | Loan & return | G2C |
| Personal Safety | Children tracking | B2C |
| Shopping | e-wallet | B2C |
| Sports | Ski lifts | B2C |
| Leisure | Sight seeing info | B2C/G2C |
| Welfare | Location-Aware info | G2C/B2C |
| … | | … |

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# Network Aspects of Identification Systems (NID)

**NRFID Trends (1/2):**

- Applications related:
  - B2C, G2B, G2C in addition to B2B
  - Access and distribution of Multimedia Content (data, video, graphic, etc..)
  - More intelligence in the tags (combination with sensors and other sources of information)
  - Tags and readers as parts of MM-Terminals (Mobile phones)
  - Applications need global service and network capabilities
  - Unlimited number of potential applications
  - Privacy and security aspects are very important
  - …

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# Network Aspects of Identification Systems (NID)

**NRFID Trends (2/2):**

- Technology drivers:
  - Smart tags (more intelligence)
  - Sensors (position, environment, status,..)
  - Multi-frequency band tags
  - Smaller size ("smart dust")
  - Combination with Nanotechnology
  - Reduction of production costs
  - …

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# Network Aspects of Identification Systems (NID)

**Impact on telecommunication networks:**

- RFID is a specific wireless access technology:
  → allocation of frequency bands

  → part of the home network

- RFID is an enabler of ubiquitous services and applications (Any devices, Anywhere, Anytime, Any services):
  → RFID to be considered as part of X-Internet (Internet of things)

- RFID systems need global service and network capabilities for machine-machine (B2B) and human-machine communication (B2C):
  → Interworking is becoming a key issue (NID)

- RFID based applications have a great potential for future development:
  → need for a network platform with a high level of flexibility to support future applications (NGN concept)

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# Network Aspects of Identification Systems (NID)

## NID standardization (1/2):

- **Major objectives:**
  - Interoperability and interworking
  - Economy of scale

- **What should be addressed?**
  - RFID and Ubiquitous Sensors Networks (USN)
  - Business models and Architecture
  - MM service/network requirements and capabilities to support present and future applications (B2B, B2C, C2C,..)
  - Protocols at the service and network layers
  - …

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# Network Aspects of Identification Systems (NID)

## NID standardization (2/2):

- Security capabilities (Confidentiality, privacy, cryptography, etc..) and profiles
- Data format
- ID system
- Content management (DRM) and negotiation
- Quality of Service and performance
- Radio frequency aspects (spectrum allocation, intra/extra RFID systems compatibility
- Terminology and definition
- …

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# Network Aspects of Identification Systems (NID)

## Key players in the field of NID standardization:

- ITU: ITU-T, ITU-R, ITU-D
- ISO/IEC JTC1: SC6, SC17, SC27, SC31
- ISO: TC104, TC122, TC 204
- SDOs: ETSI, IEEE, CEN …
- Forums and Consortiums: EPCglobal, NFC, OASIS, OMA, W3C,…
- Regional and national organizations

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# Network Aspects of Identification Systems (NID)

## NID in ITU-T : History (1/3)

- First contributions to ITU-T: 2005

- Creation of a Correspondence Group (CG) on RFID in TSAG (March 2005)

- First Reports of the CG discussed in TSAG (Nov. 2005) and extension of the scope of the study to cover the broader issue of
  **Network aspect of Identification Systems (including RFID)**
  *→ not only RFID but any device requiring identification which is connected to a network*

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# Network Aspects of Identification Systems (NID)

## NID in ITU-T: History (2/3)

***CG on RFID produced four reports → TSAG (July 2006):***

- Convener's report of the CG, including Annex 3 "Collection of Terms and Definitions" [TD317 TSAG]

- Business models and service scenarios for NID [TD314 TSAG]

- Review of standardization issues on NID [TD 315 TSAG]

- Proposed ITU-T strategy for standardization issues on NID with harmonized standardization cooperation [TD316 TSAG]

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# Network Aspects of Identification Systems (NID)

## NID in ITU-T : History (3/3)

- **ITU-T Workshop** on "Networked RFID: Systems and Services" (February 2006)
- **TSAG July 2006:**
  - *Review the CG reports* and additional contributions
  - Decided to establish a *Joint Coordination Activity* on Network Aspects of Identification Systems (including RFID):
    - To examine the CG deliverables, improve them and use them as baseline texts
    - To further develop and analyze the list of standardization items and associated roadmap,
    - To forward specific standardization issues to relevant SGs and SDOs,
    - To act as single point of contact within ITU-T with other SDOs in order to avoid duplication of work,
    - To examine the best way to make available the most urgent deliverables (.e.g creation of focus groups).

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# Network Aspects of Identification Systems (NID)

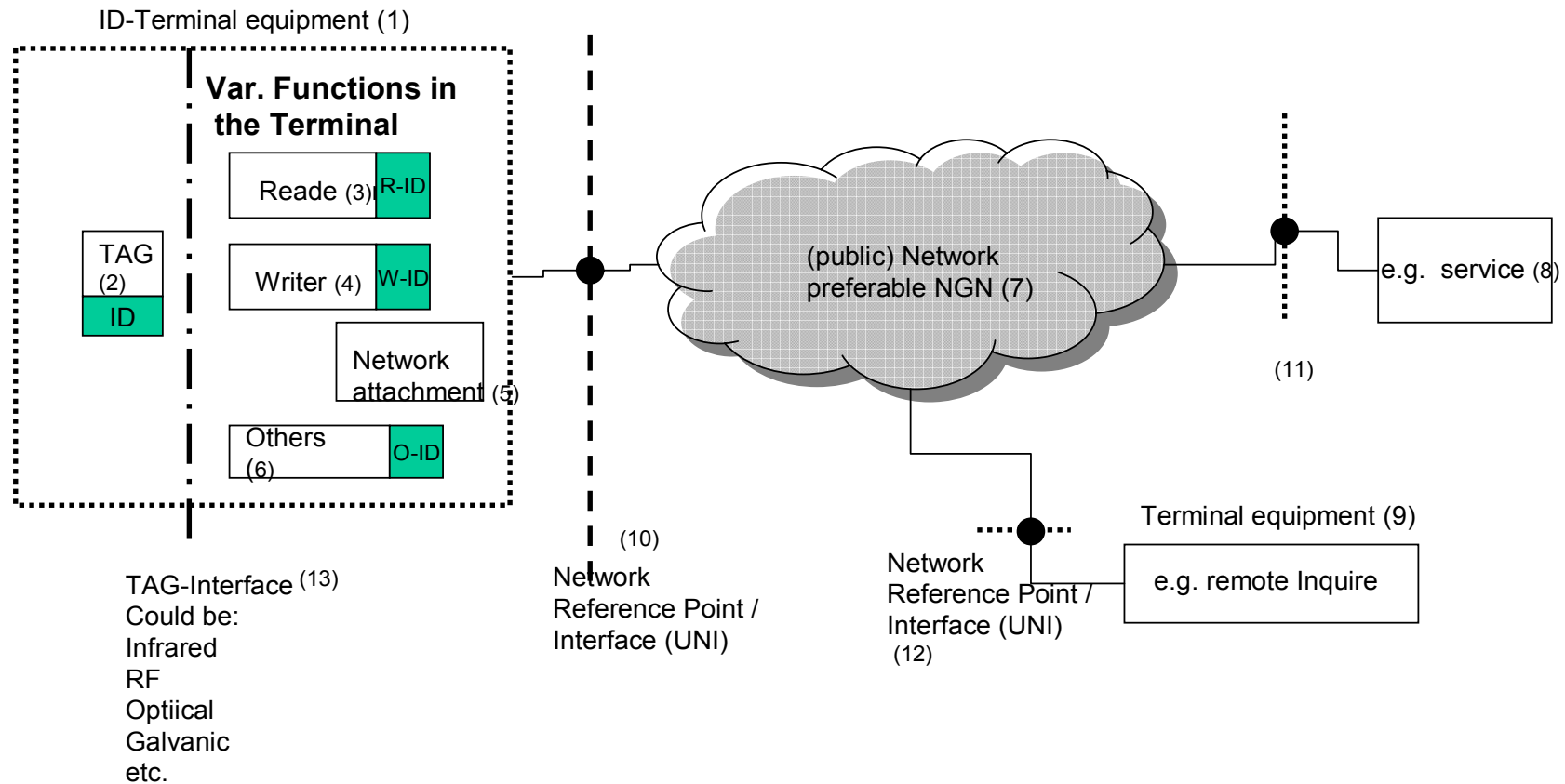## JCA-NID: present status of the work (1/4)

- **JCA-NID is an high-level coordination mechanism**, providing a platform to discuss and exchange ideas, involving representatives of groups working on relevant standardization bodies on network aspects of identification systems (NID).

- **The JCA-NID is developing the following deliverables** to help the coordination and harmonization among parties:
  - **Deliverable 1:**
    Generic architectural model
  - **Deliverable2:**
    High Level Requirements (HLR)
  - **Deliverable 3:**
    Standardization Roadmap
  - **Deliverable 4:**
    Terms and Definition document

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# Network Aspects of Identification Systems (NID)

JCA-NID High Level Ref. Architecture

ID-Terminal equipment (1)

**Var. Functions in the Terminal**

Reade (3) | R-ID

Writer (4) | W-ID

Network attachment (5)

Others (6) | O-ID

TAG (2) | ID

(public) Network preferable NGN (7)

e.g. service (8)

(11)

(10)

Network Reference Point / Interface (UNI)

Network Reference Point / Interface (UNI) (12)

Terminal equipment (9)

e.g. remote Inquire

TAG-Interface (13)
Could be:
Infrared
RF
Optiical
Galvanic
etc.

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# Network Aspects of Identification Systems (NID)

## JCA-NID: present status of the work (3/4)

- **Generic Model**: JCA-NID focuses on ensuring that USN functions are covered in the current version (under discussion among ITU-T SG13/SG16 experts)

- **Roadmap**: JCA-NID is updating the current version checking among the various contact points in standardization  bodies

- **HLR**: A correspondence group is discussing electronically the current version that will be finalized by next meeting (01/2008)

- **Definitions**: A correspondence group is discussing electronically the current version that will be finalized by next meeting (01/2008)

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# Network Aspects of Identification Systems (NID)

## Conclusions (1/2)

- RFID are evolving to intelligent devices which need networking capabilities for a large number of present and future applications

- RFID will speed up the evolution of telecommunications towards the Internet of things (AAAA)

- NID will have a major impact on telecommunications networks

- NID opens also new business opportunities for telco and service providers

- Global standards are needed to achieve economy of scale and interworking

- ITU-T has decided to play a leading role in the development of global standards

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# Network Aspects of Identification Systems (NID)

## Conclusions (2/2):

- RFID systems and sensor networks technologies are key drivers towards the "internet of things"

- NID systems will have a great impact on ITU-T standardization

- A large number of key players are already active in developing standards in this area

- ITU-T considers JCA-NID as an important tool to contribute to the development of NID global standards

- ID management is considered as an important standardization issue: ITU-T (SG17) has set up a Focus Group to propose a standardization framework

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# Network Aspects of Identification Systems (NID)

- For further information on JCA-NID, subscribe to the email list and gain access to documentation see:

  ### http://itu.int/ITU-T/jca/nid

- or contact JCA-NID Secretariat:

  ### tsbjcanid@itu.int

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