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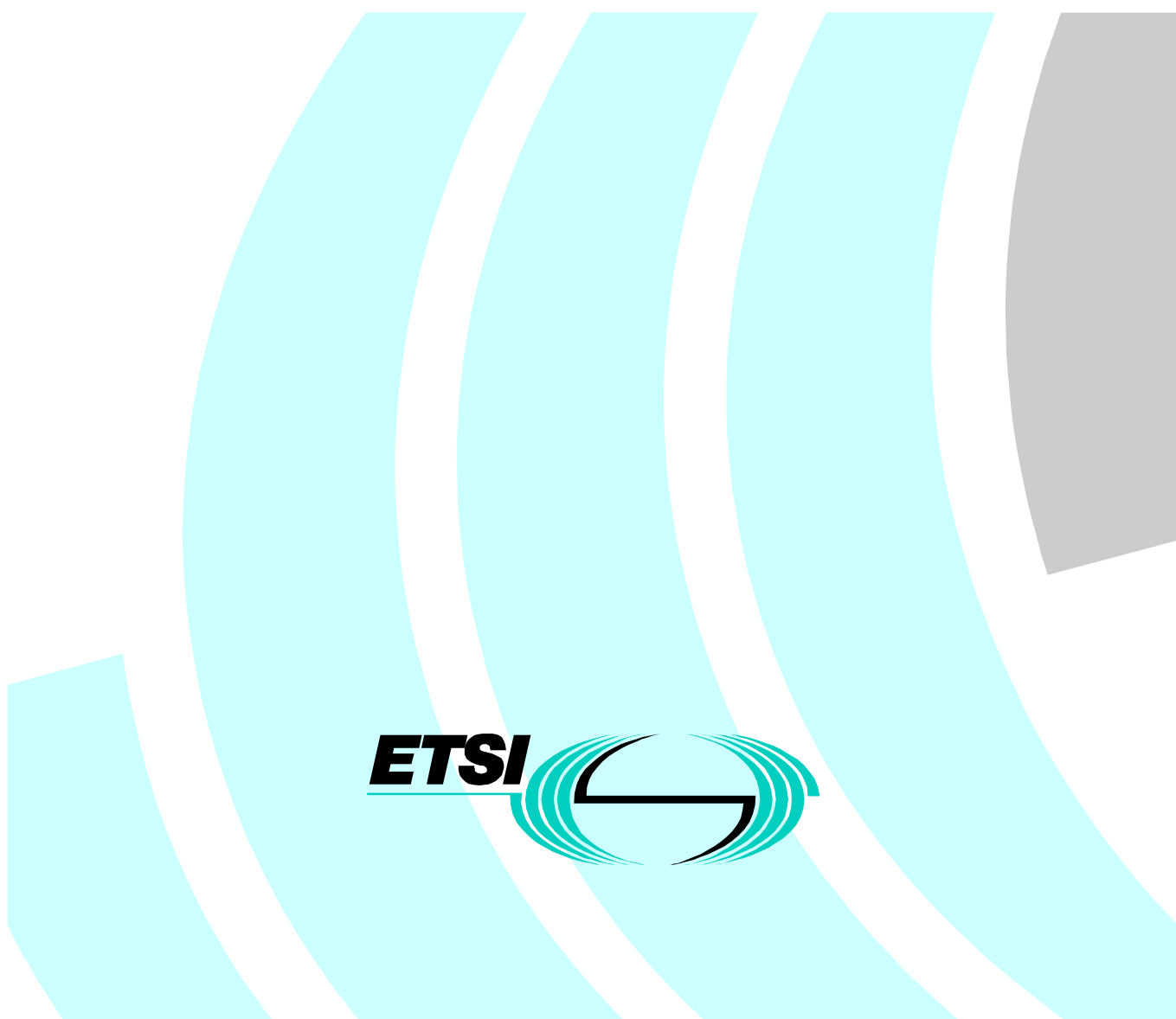
**Telecommunications and Internet Protocol
Harmonization Over Networks (TIPHON);
Project method definition**

Reference

DTR/TIPHON-01007

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Foreword

This Technical Report (TR) has been produced by ETSI Project Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON).

Introduction

The ETSI Project TIPHON considers a broad range of complex networking technologies and the inter-working of those technologies to provide capabilities that may be used to provide public services. Given the complexity of these issues and the pace of technological development, the project requires a clear internal management process by which it can identify, quantify, schedule and deliver its work in a timely and organized manner. The present document draws upon and modifies related procedures developed for the production of ISDN [1] and UMTS [2] specifications and declares a process to be used within the TIPHON project.

1 Scope

The present document defines the specification development process to be used to ensure the TIPHON project develops coherent specifications in a timely manner.

The present document is applicable to members of the TIPHON project, working group chairs, work item rapporteurs and the TIPHON Project Management Committee. It should be referenced when planning work to be undertaken by the project.

2 References

The following documents contain provisions that, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, subsequent revisions do apply.

- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1]   ITU-T Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2]   ETSI TS 122 105 (V3.7.0): "Universal Mobile Telecommunications System (UMTS); Services and Service Capabilities (3G TS 22.105 version 3.7.0 Release 1999)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Step: discrete phase of major activity within the process.

RDS: focussed piece of work that is undertaken to explore requirements that are not sufficiently clear.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ISDN   Integrated Services Digital Network
RDS   Requirements Definition Study
TIPHON   Telecommunications and Internet Protocol Harmonization Over Networks
TR   ETSI Technical Report
TS   ETSI Technical Specification

4 Overview of the TIPHON process

The TIPHON project considers a wide range of complex technology issues arising from the inter-working of differing and independently evolving network technologies. The TIPHON process therefore comprises two distinct stages. The first stage is concerned with establishing a fixed set of requirements to be worked on and in doing so defines the scope of a TIPHON Release. Whilst the second stage is concerned with developing a coherent set of specifications from a fixed set of requirements for a specific TIPHON Release, as shown in Figure 1.
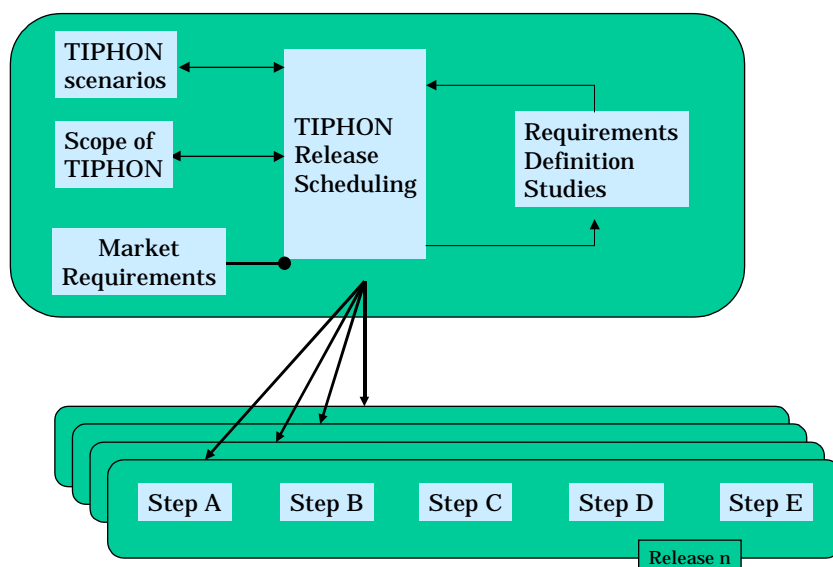
Figure 1: Overview of the TIPHON process

4.1 TIPHON Release Schedule

The TIPHON project shall work towards its goals from clearly stated and expressed requirements derived from three sources; the TIPHON project scope, the TIPHON scenarios and specific market requirements. Where an aspect relevant to the TIPHON project cannot be clearly stated or is insufficiently understood from these three sources, a TIPHON Requirements Definition Study (RDS) will be required before these aspects can be considered for incorporation within a Release. A Requirements Definition Study considers various aspects of a given topic as is appropriate and produces a qualified set of requirements relating to the topic as a result. The project will therefore be constrained to working on a clearly understood, scoped and qualified set of requirements within each Release whilst having the ability through Requirements Definition Studies to adapt to a continually changing environment.

4.2   Step A - Release Definition

As shown in Figure 2, a TIPHON Release shall be constructed from a set of qualified requirements that can be progressed through to a coherent and focussed set of specifications of the necessary quality within an acceptable period of time. The Release definition shall comprise a statement of the top-level topics to be addressed within a specific release and the declaration of a plan with the identification of the associated work items.
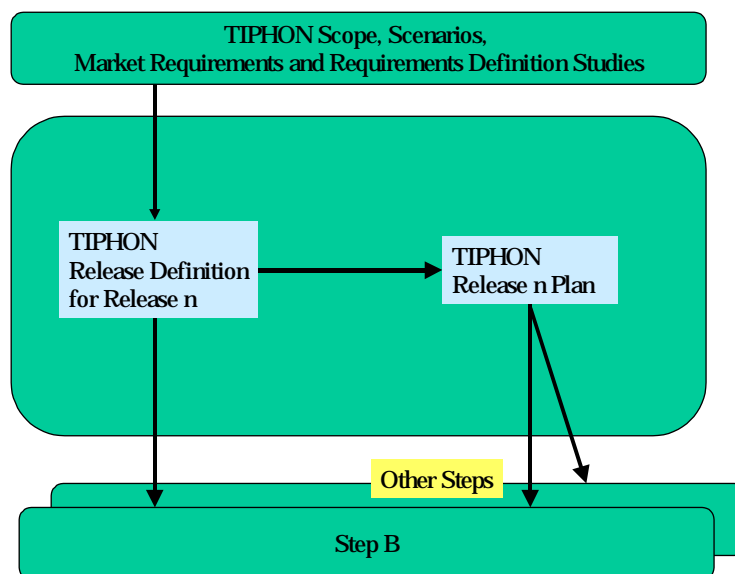

Figure 2: Step A - Release Definition in TIPHON

## 4.3   Step B – Capabilities and Requirements

Based upon the information contained and referenced by a TIPHON Release Definition, Step B will develop appropriate Service Capability Definitions and associated Statements of Service Independent Requirements. These aspects of the process draw upon but are not constrained by the stage 1 elements of the ISDN three stage process. A complete application of that process has not been adopted by the TIPHON project for two reason – firstly it would simply lead to a recreation of an ISDN on an IP core network and second it does not align with the approaches being adopted for third generation mobile networks. Full adoption of the ISDN three-stage process would prejudice future network and service development which is acknowledged to be following a more IP-centric approach.
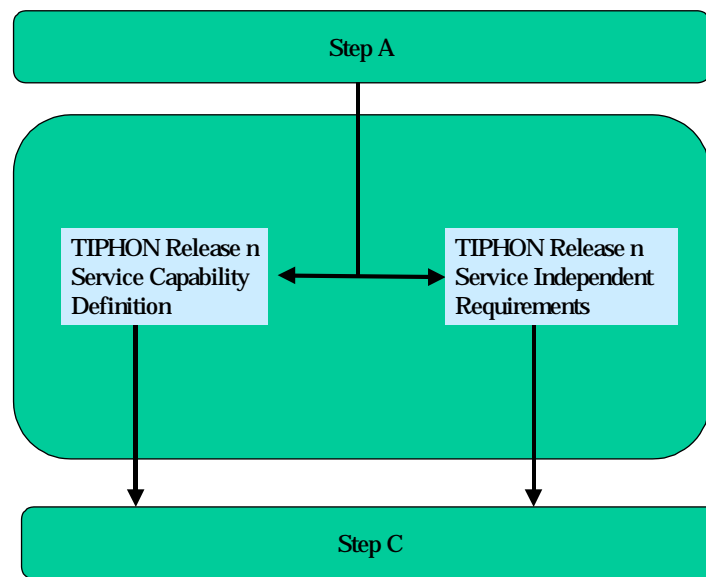
Figure 3: Step B – Release Capability Definition

Step B Service Capability Definitions, indicated in Figure 3, specify the core components expected from the network technology and associated management technology and processes to deliver the functions specified for the Release. Additionally, it is inevitable that there will be aspects implied for a Release that cannot be defined within a Service Capability Definition; these requirements will be captured in a Statement of Service Independent Requirements for the associated Release.
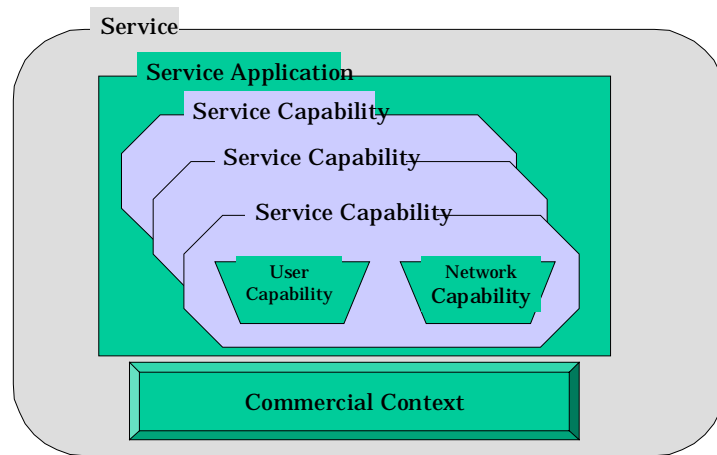
Figure 4: Services and Service Capabilities

Within the TIPHON project, end services are understood to mean functionality provided by service applications set in a commercial context. It is therefore not the purpose of TIPHON to specify services, rather the scope is to address the needs of how service applications can be constructed from sets of functionality. In line with the approach adopted by Third Generation networks, the focus is on the definition of User and Network Capabilities that may be assembled into Service Capabilities. Whilst the support of Third Generation Network services is seen as desirable, such support is not a mandatory requirement of the TIPHON process.

4.4   Step C – Reference Architecture

The outputs from both Step A and Step B form the source documents for Step C that develops a Reference Architecture in support of the Release. The Reference Architecture shall be developed independently of underlying technology issues where possible and represents a static design for the Release. In support of the Reference Architecture, Management and Network Information flows are developed to express the dynamic behaviour of the system.
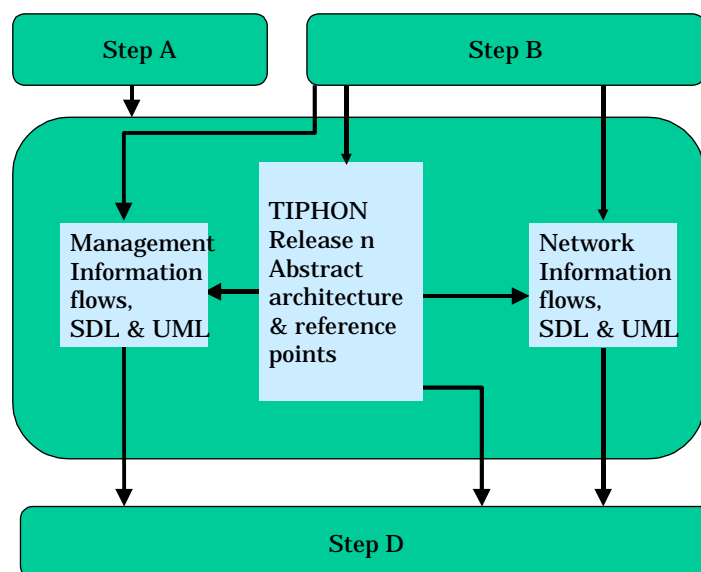
Figure 5: Step C - Development of the Reference Architecture

4.5   Step D – Implementation Framework

For a given TIPHON Release, the reference architecture and associated network and management information flows
will be mapped into individual protocol and management frameworks, as indicated in Figure 6. The frameworks
identify key interfaces and establish requirements for information flows over each interface. These frameworks are the
essential means by which the TIPHON project remains protocol neutral to the last point in specification development –
ensuring that the complex inter-working issues addressed by the project can be fully explored independently of
technology constraints. Once the interface requirements have been produced, they can then be mapped into a given
technology through technology mapping and compliance definitions.
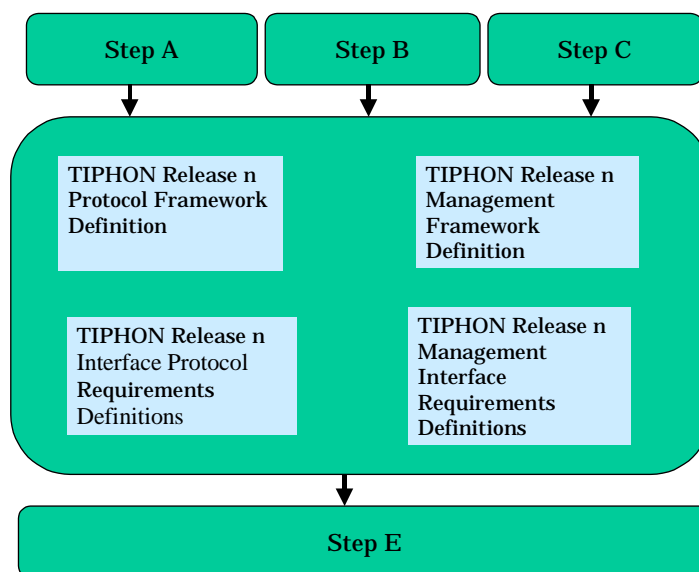
Figure 6: Step D - Implementation Framework

For the network technology elements, the Protocol Framework is developed to provide an identification of the key
interfaces required in a system that is compliant with the specific TIPHON Release. For each interface identified,
detailed requirements state the behaviour that is to be provided across the interface.

4.6   Step E - Technology Mapping and Verification

Once completed, the interface definitions are then mapped into the technologies supported by that release of the TIPHON project. This is achieved by providing an appropriate profile of the technology for a given interface, as shown in Figure 7. Where a technology fully meets the requirements for a specific interface, a protocol profile will be produced for that protocol which defines its use in implementing that interface. However where a specific technology does not support the required functionality, the mapping will not be able to generate a profile – as shown in the case of Technology A in Figure 7 for interface "**q**". For such cases, the requirements identified for the interface may be used as the basis of extensions to the technology in question.
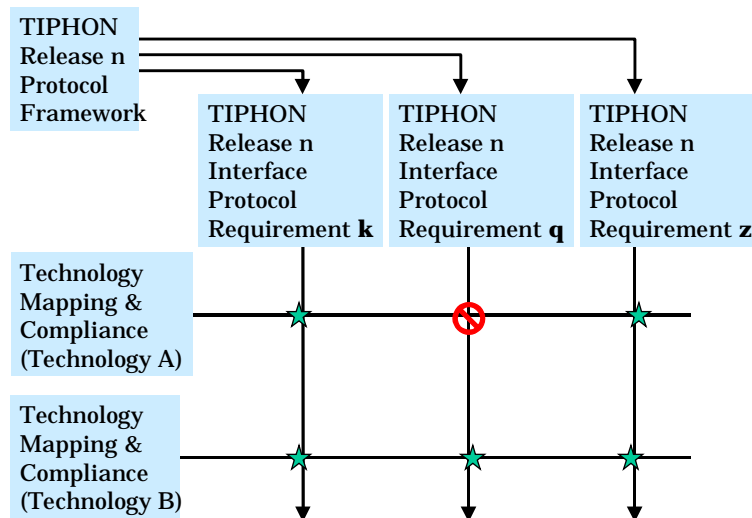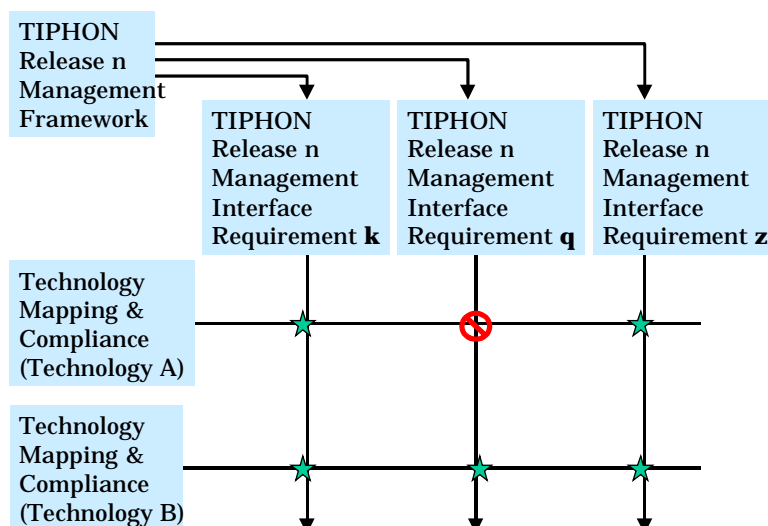
Figure 7: Step E - Network Technology Mapping

In a similar manner, the Management Framework is developed and mapped via Management Interfaces onto supporting technologies as shown in Figure 8. As with the Network Technology Framework, the process of mapping will expose any deficiencies in the underlying technology. In the example shown, Technology A is found to meet the requirements for Management Interfaces "k" and "z" but does not meet the requirements for interface "q". This contrasts with Technology B which is able to meet the requirements for all three interfaces shown through appropriate profiles as indicated.

Figure 8: Step E - Management Technology Mapping

Having developed the Network Technology and Management Frameworks and mapped them to specific technologies, appropriate Protocol Implementation Conformance Specifications must be constructed to ensure the profiles are implemented correctly.
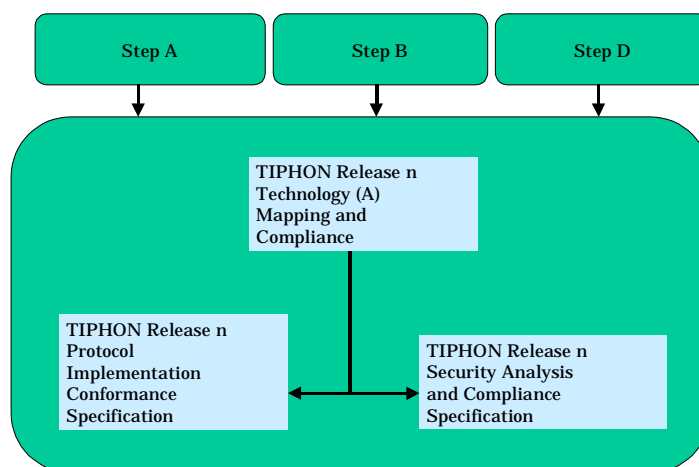
Figure 9: Step E - Conformance Specifications and Security Analysis

The final element of Step E is to complete the security analysis and compliance specification for the Release acts as a final check on the Release to ensure security and integrity issues have been correctly addressed.

5 Deliverables for TIPHON Releases

Each step of the TIPHON process will have one or more associated deliverables that contribute to the formal TIPHON Release documentation set. To assist identification, it is recommended that the title of each document start with "TIPHON Release n: ", where n is the number of the TIPHON release. Note that in the following clauses, the bracketed text following each bullet contains the suggested document type for each deliverable with TR representing Technical Report and TS representing Technical Specification. Note that this is a non-exhaustive list of deliverables and a specific Release may adopt the general framework of deliverables as is appropriate.

5.1 Deliverables for Step A

Step A comprises:

- Release Definition (TR)

- Release Plan (TIPHON Permanent Document)

5.2 Deliverables for Step B

Step B comprises:

- Service Capability Definition (TR)

- Service Independent Requirements Definition (Release Specific and Core requirements) (TR)

5.3 Deliverables for Step C

Step C comprises:

- Functional Architecture Definition (TR)

- Information Flow and Reference Point Definitions (TS)

5.4 Deliverables for Step D

Step D comprises:

- Protocol Framework definition (TR)

- Interface Protocol Requirements definitions (TS)

- Management Framework definition (TR)

- Management Process Requirements definitions (TS)

5.5 Deliverables for Step E

Step E comprises:

- Technology Mappings (TS)

- Technology Compliance Specifications (TS)

- Security Analysis and Compliance Specification (TR)

- Release Protocol Implementation Conformance Specifications (TS)

Annex A:
Requirements Definition Studies

A.1   Introduction

Requirements Definition Studies are expected to be a flexible route to TIPHON adapting its work to meet the continuing changes in the market place without engaging in inconclusive debate. They may be initiated within any working group within the project to explore aspects requiring further study. Ideally they should be timed to deliver requirements into a TIPHON Release.

A.2   Headings for RDS reports

The following are suggested as headings for and RDS document:

- Issue statement – defines the problem being considered and stating why it is important and relevant to TIPHON.

- Issue scope – declares the bounds of the problem being considered to focus the work of the study.

- Discussion – considers the various aspects of the problem and identifies those aspects that are relevant to TIPHON, stating core requirements derived from the discussion.

- Conclusions, Results and Recommendations – states the key findings of the study, making recommendations as to how the problem considered can be addressed and identifying requirements that should be adopted within a TIPHON Release as appropriate.

When considering structuring an RDS, it is important to remember that the study period from initiation to completion of work should be as short as possible. It is not intended that RDS deliverables should be used for open-ended work.

Annex B:
# Technology Mapping and Compliance

B.1 Mapping and Compliance

For each interface identified in the framework, a protocol profile shall be generated for each technology defined within the scope of the TIPHON project as stated in the Release Definition. The profile shall state in an unambiguous manner how the specific protocol should be used in terms of elements of procedure and protocol data elements.

Where a protocol cannot meet the requirements identified, the protocol mapping should clearly indicate the non-conformance. The requirements that have not been met should be stated in a manner such that the developers of the technology can establish the deficiency and determine any necessary corrective action that needs to be taken.

Annex C:
Relationships between process steps and TIPHON WGs

C.1 Roles of TIPHON Working Groups in the Process

The main elements of the process are concerned with establishing requirements for inter-working networks and developing frameworks for protocols and management solutions based upon a technology independent Reference Architecture. In support of this core process, specialist groups will be required to address detailed issues in depth.
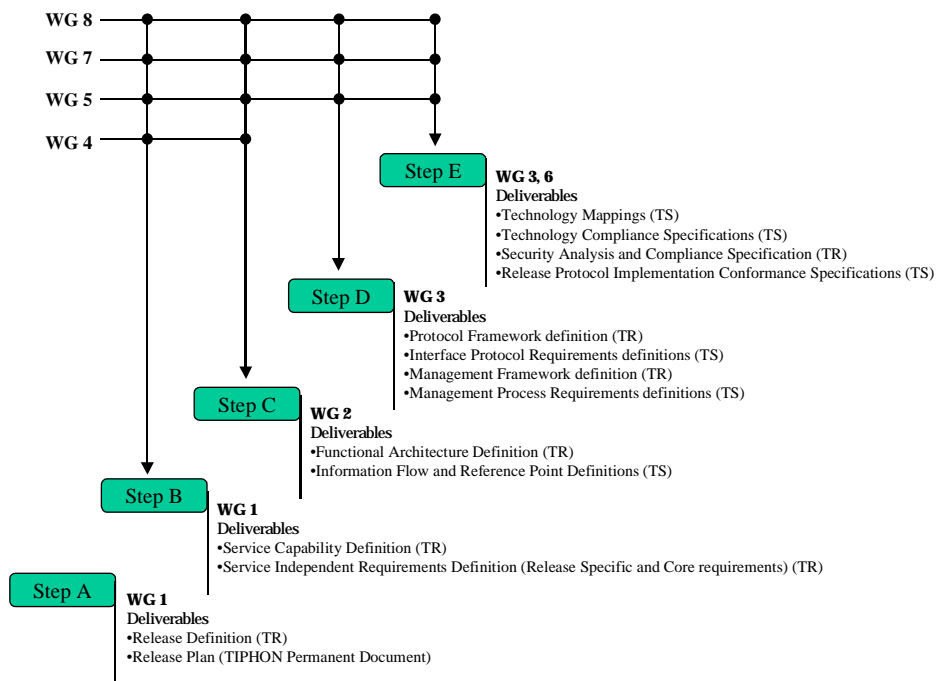
Figure C.1: Process steps and work group allocation in TIPHON

The existing TIPHON working groups can therefore be mapped onto the process as shown in Figure C.1 as follows:

- Step A – Wg1

- Step B – Wg1

- Step C – Wg2

- Step D – Wg3

- Step E Technology Mapping – Wg3

- Step E Protocol Implementation & Conformance – Wg6

- Step E Security Analysis & Compliance – Wg8

The work of the above groups is expected to be supplemented by the other TIPHON working groups are follows:

- Wg4 – is expected to contribute into Wg1 (Step B) and Wg2 (Step C)

- Wg5 – is expected to contribute into Wg1 (Step B), Wg2 (Step C) and Wg3 (Step D and Step E)

- Wg7 – is expected to contribute into Wg1 (Step B), Wg2 (Step C) and Wg3 (Step D and Step E)

- Wg8 – is expected to contribute into Wg1 (StepB), Wg2 (Step C) and Wg 3(Step D and Step E – Technology Mapping & PICS)

The existence of a working group does not mandate that it will necessarily continue to exist into the future. Where new working groups are created or existing ones closed, the associated changes will be reflected in this document.

History

Document history		
V1.1.1	July 2000	Publication