IBM Software

UKInnovate2010

The Rational Software Conference

Smarter software for a smarter planet.

IBM Software

UKInnovate2010

The Rational Software Conference

The Challenges of Agile System Level Retrospective Modelling

Chris Noble

Smarter software for a smarter planet.

Introduction

Alcatel-Lucent is in the process of creating a system level SysML model of the existing WCDMA UTRAN using a small team of modellers working in a Scrum based way.

This model will be used to support future iterative development of features for the UTRAN as well as provide a central system reference for many other activities (training, debugging, estimating etc).

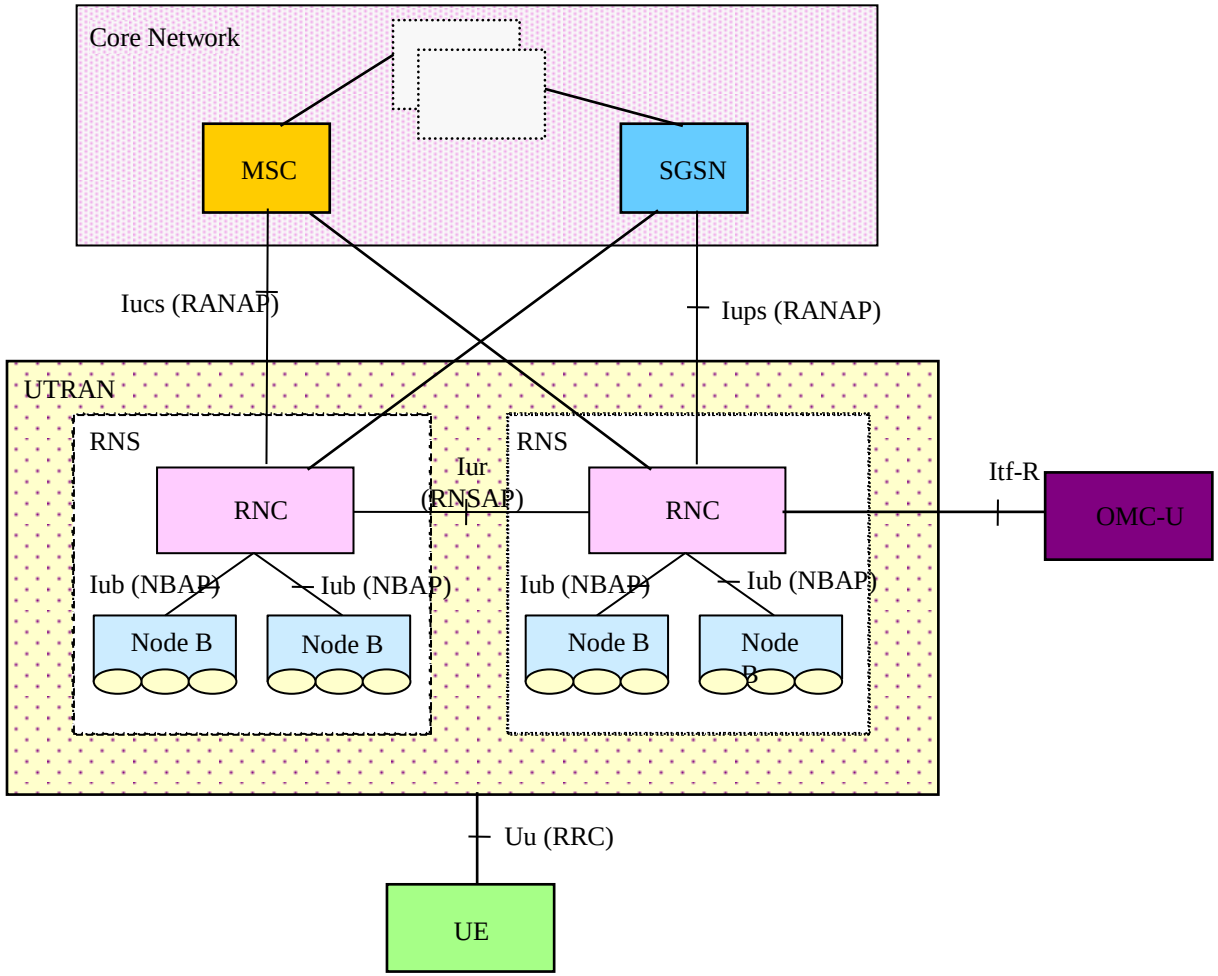
Driving Force

WCDMA of Wireless in Alcatel-Lucent was formed from a merging of three company assets – Alcatel, Lucent and Nortel (UMTS).

The merger highlighted an issue inherent in documentation based specifications – Information Scatter.

Creating a reference system model seen as the best way to address this issue.

UTRAN - UMTS Terrestrial Radio Access Network



Process Challenges

- How to change from an Existing document centric process
  - How to create a reference model?
  - How to reuse existing process interfaces?
  - How to publish the model?
- Patchy modelling knowledge and experience
  - How to increase modelling knowledge and experience
  - How to maintain model integrity
- System Engineering initiative
  - How to involve downstream groups

Modelling Challenges

- Complex deployed system still under development
  - Where to start?
  - How to find out how the existing system works?
  - How to verify model is correct?
- Model Content and Structure
  - How to model the system?
  - What artefacts to use?
  - How to control the changes to the model?

Model Introduction Strategy

Phased Approach

Phase 1 – Create system model and evaluate tools and processes

Phase 2 – Introduce new features

Phase 3 – Expand to downstream teams

Beyond Phase 3…

Project Organisation

Three separate but related projects:

1. Reference Model creation

   Modelling Engineers working iteratively - ongoing

2. Modelling processes, methods and tools introduction

   Sub set of team working continuously

3. Feature Modelling

   Modelling Engineers partnering with feature engineers

Tools

Rational Rhapsody 7.5.2 as the UML/SysML modelling tool.

Rational Rhapsody ReporterPlus 7.5.2 and Rational Publishing Engine 1.1.1.1 to publish model to HTML.

Rational Rhapsody DiffMerge 7.5.2 for the comparison and merging of model updates.

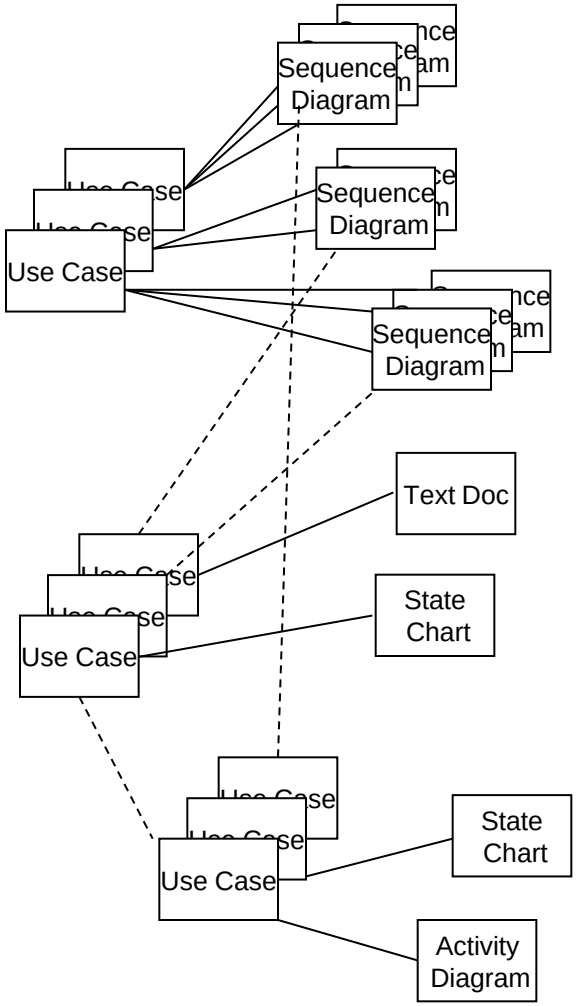
Trialling Rational Team Concert (Standard version) as the configuration management and planning reporting tool.

Excel has the prioritised use case list.

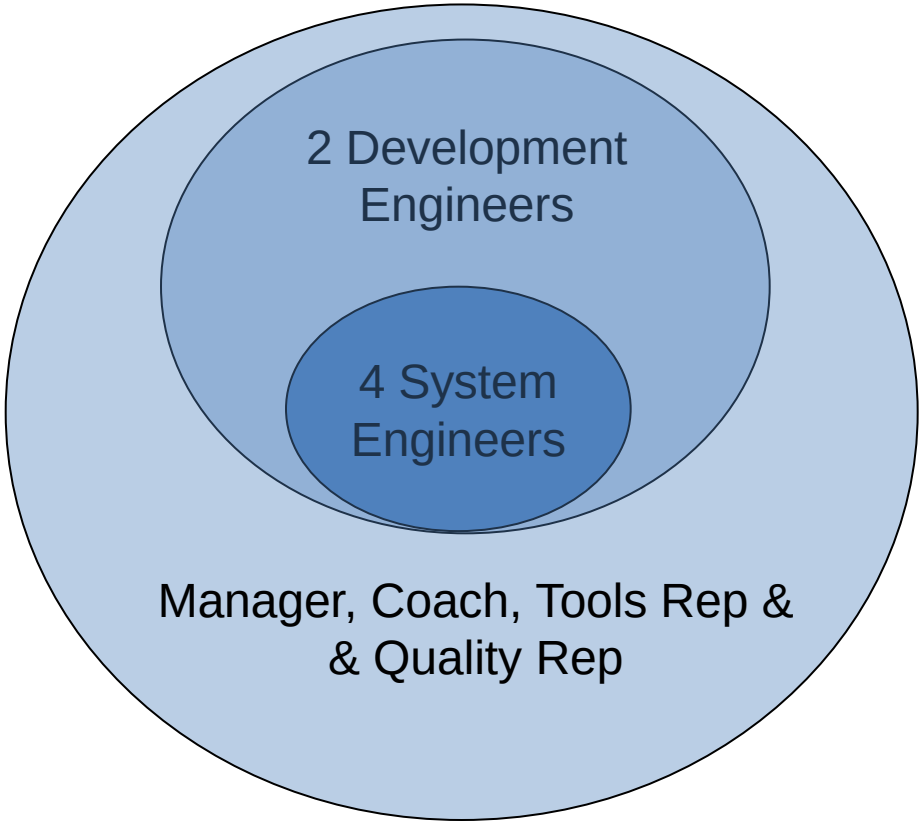
Model Content and Organisation

System Level

Network Element Level



Modelling Team Structure



Modelling Team Responsibilities

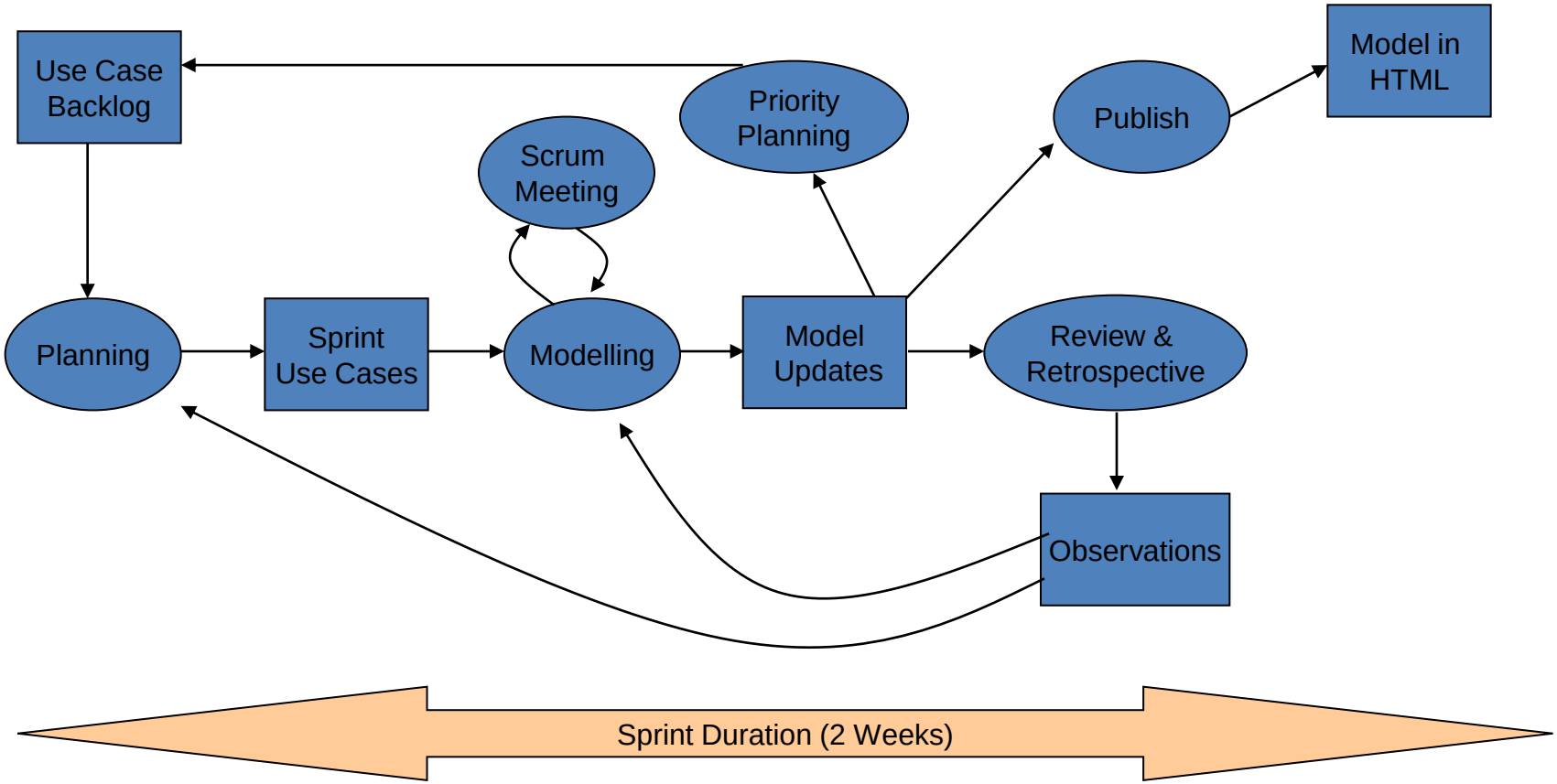
Create Reference UTRAN system model.

Create and maintain infrastructure, processes and procedures.

Coaching, training and modelling promotion both inside and outside of the modelling team.

Maintaining the system model integrity.

Reference Model Working Method



Modelling Introduction Working Methods

List of tasks

- Tool issues
- Modelling issues
- Processes, Methods and guidelines
- Infrastructure issues

Working the tasks when priority allows and placing output onto a Wiki site

Often trying to look ahead to identify and solve issues before they impact the modelling team.

Proposed Feature Working Methods (Phase 2)

Feature Engineers work with Product Management to scope feature content.

Feature Engineers create a feature specific document that is supplemented with behaviour description created in a feature stream of the model. Partnered by model team member.

Feature Engineers regularly compare their feature model with other feature models to identify feature interactions.

Feature content reviewed by Development and Test.

Current Working Challenges

Planning and estimation difficulties

- Identifying impacted areas up front
- When is anything finished – definition of Done?
- Regular refactoring

Tool Integration

Team member conflicting priorities – other work

Long term tool choice – functionality vs cost

Document publishing

Maintaining prioritised use case list

Summary

It is possible and beneficial to create a retrospective model of a complex system.

Creating the Reference System Model can be done in an Agile way using short sprints. The Agile approach is allowing early feedback to improve model structure and process.

Modelling support should be regarded as a separate but related project and planned accordingly.

Having a good model structure in place is key to ???

Good tool integration is key to creating and maintaining a complex system model.

IBM Software

UKInnovate2010

The Rational Software Conference

Smarter software for a smarter planet.