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Course Title: SESSION PROCESSING

Overview:

The services in a communications network support dialogs between users. Each user maintains a session with the network, which persists as long as the user is involved in some dialog. Service software therefore performs *session processing*, in which state machines and protocols play central roles.

Service software runs in network elements such as servers and gateways. In many cases, end-user communication devices, such as cell phones, also contain a significant amount of service software. Services are the main reason why these products exist, so a major factor in their success will be the degree to which their service software fosters reliability, scalability, and designer productivity. This course discusses session processing principles that apply to all stateful communications services and that foster these desired outcomes. It is a step towards filling the gap mentioned in section 1.3.3 of *Robust Communications Software*:

What a reactive, stateful system truly needs is a session processing framework which defines base classes for implementing protocols and state machines. Such a framework can dramatically improve both productivity and quality. Internally, it will embody many of the techniques discussed in this book. However, its overall design is a topic for another book.

Objectives:

- Participants learn about design patterns that are important in session processing.
- Participants are introduced to an object model for a session processing framework.
- Participants acquire an understanding of the framework's classes and the collaborations between them.
- Participants learn how the framework incorporates some of the carrier-grade design patterns discussed in *Robust Communications Software*.

Audience:

- Software engineers who are designing and implementing products that provide session-oriented services.
- CTOs, directors, and managers of products that provide session-oriented services.

Duration: approximately 3 to 4 hours

Number of Participants: 10 to 30

Format: lecture, with ongoing questions and answers

Outline:

- Session Processing Patterns
- Session Processing Framework
- Session Processing Details
- Robust Session Processing

Prerequisites:

Participants should have taken the course ROBUST COMMUNICATIONS SOFTWARE or otherwise be familiar with the patterns discussed in *Robust Communications Software: Extreme Availability, Reliability and Scalability for Carrier-Grade Systems* (Wiley, 2005). Participants are also encouraged to read the first three sections of “A Pattern Language of Call Processing”, which are available at www.pentennea.com/book.html.

Materials for Participants:

- Handout containing all lecture slides

About the Instructor:

GREG UTAS obtained an Honours BSc in Computer Science from the University of Western Ontario (Canada). In 1981 he joined Nortel Networks, where he served as the principal software architect for various switching products. As Chief Software Architect of GSM Core Networks, he led a team of 50 designers who redesigned the product's call processing software using object-oriented techniques. For this work, he received the Nortel Technology Award for Innovation and became the first software architect at Nortel's Director level. In March 2002, Greg joined Sonim Technologies as Chief Software Architect, responsible for the design of push-to-talk services for wireless networks. He left Sonim in May 2004 to become a consultant specializing in carrier-grade software.

Greg is the author of the recently published *Robust Communications Software*. He has presented papers at the International Switching Symposium, the International Workshop on Feature Interactions in Telecommunications and Software Systems, and at ChiliPLOP, a patterns conference. He has also written a patterns paper for *IEEE Communications* and contributed a chapter to the book *Design Patterns in Communication Systems*.