Panel

Challenges and Research Directions in Resilient Cyber-Physical Systems

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Presentations Wrap up - Challenges

- Integration, interoperation of multiple and heterogeneous devices
- Real-time filtering and fusion of data streams from multiple devices
  - Accuracy, dynamic adaptation to patient-specific diagnostic needs
- Need robust/adaptive/safe controllers for the networked control system
- Hazard identification and analysis
- Modeling and simulation
  - Context-aware patient models, user-system interactions, mental models
  - Easy to understand, executable models
  - Hybrid (continuous + discrete) of systems of systems
  - Integrated analysis of models from different disciplines
    - Diverse cultures, formalisms, abstractions, scalability
  - Formal verification and analysis
- Runtime monitoring of user-systems interactions and deviation analysis
- Certification and assurance
  - Certification based on abstract interfaces, composition
- Security
  - Self adapting human-secure design, high-assurance adaptable sec. architectures
Next Steps

- Make this workshop a regular forum at DSN to discuss:
  - Multidisciplinary approaches integrating **technological concerns** including physical system dynamics and ICT aspects, but also **social and human related aspects**
  - **Resilient Human-aware self-adapting approaches** to autonomously adapt to dynamic changes in system behavior, environment or threats
  - **Integrated and scalable design and assessment techniques** for optimal trade-offs during system engineering phases and at runtime

- See you at DSN-2013 for the 2nd edition!!