WELCOME TO PANEL SESSION
- EIWAC 2010 -

“FUTURE OF AUTOMATION IN AIR TRAFFIC MANAGEMENT AND RELATED INDUSTRIAL SYSTEMS”
Panelists

- **Shinji Suzuki** *(University of Tokyo)*
- **Peter Hecker** *(Technische Universitaet Braunschweig)*
- **Toshiyuki Inagaki** *(University of Tsukuba)*
- **Kimihiako Ito** *(Civil Aviation Bureau Japan)*
- **Yuji Hirao** *(Nagaoka University of Technology)*
- **Francisco Javier Sáez Nieto** *(University of Madrid)*
Future ATM, assisted by automated systems

- **Background of the Future ATM (1)**
  - Traffic Increase in airport/airspace
  - Reduction of operation cost
**Background of the Future ATM (2)**

- Reduction of environmental impact
- Increase safety
- Keep Competitiveness
In order to respond such demands for Future ATM ... 

Trajectory Based Operation is a Key!

1: Limited space & time
2: Business Trajectories
3: Information exchange
4: Separation assurance

◆ SESAR Project
What is Trajectory Based Operation?

- **Strict time based operation as train diagram**
- **Reserved 4D coordinate**
- **Safe & Smooth Merging**
- **Keep Separation**
- **Update of the trajectory**
- ✔️ **Accurate trajectory prediction**
To realize this Operation ...

- Common Data Exchange
- Integrated Operation Assistance
- Collaborative Decision Making
- Safety Management

Adaptive to operational and technical variations

To attain the goals ...

Automated System!
To introduce or develop such automated system ...

The system must be safe no matter ...

- What have happened,
- Where the system is used,
- When the system is employed,
- How the system is used,
- Who uses the system.

Other traffic system?
Present Status for Safety and Automation ...

a. Safety: Philosophies and features of ...

- Railway
- Automobile
- Aircraft
- Air operation
b. Present problems

To keep safety under the environment of introducing/developing new technologies for ...

- Railway
- Automobile
- Aircraft
- Air operation
c. Prospect of Automation

How to realize smooth introduction of automation to …

- Railway
- Automobile
- Aircraft
- Air operation
Practical applications of automated systems...

- No man train
- Automatic braking system
- UAV
Open discussion (1)

- Other difficulties?
- Similarities in manufacture?
Coffee/Tea break …

Will be back in 10 minutes …
Challenges to realize Future ATM

Be convinced of safety, risk analysis & estimation necessary in all traffic systems ...
a. Risk analysis & estimation generally conducted in ...
b. Another difficulty of risk analysis & estimation ...

Human - Machine Interface (HMI) problems facing in ...

- Railway
- Automobile
- Aircraft
- Air operation
Practical questions about HMI problems ...

- Automobiles with new operation system
- Boeing & Airbus airplanes
- New ATC displays
c. Task Sharing in future Air Operation ...

Pilot, ATC, Operator, Airport

And ...

Man and automated system

Terminal Area Traffic
Questions ...

• How to share a task among parties?
• Who is responsible for the total system?
• How to conduct “Collaborative Decision Making”?
• Possibility of fully Centralized System?
d. (Far) Future ATM Model ...

Pilot, ATC, Operator, Airport etc.

- **Monitor** the total system normally.
- Appropriate and quick response to recover anomaly only in case of impending hazards ...

➢ Is it our goal?
Open discussion (2)

- Question & Comment from other point of views?
- ????
Concluding Comments from All Panelists

- Prof. Suzuki
- Prof. Hecker
- Prof. Inagaki
- Mr. Ito
- Prof. Hirao
- Prof. Nieto
- Yamamoto
Thank you very much for your attention and participation!

Welcome Session at UDX Building!