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air transport - user perspective



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former chief medical officer, bmi
& Airbus A320/A330 captain

bmi & telemedicine

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- bmi launched longhaul services in spring 2001
- three Airbus A330s
- small fleet
- disruption
- focus on unnecessary medical diversions
- diversions generate huge disruption and cost
- failure to divert for genuine medical emergency will generate intolerable adverse publicity and litigation

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costs and disruption of diversions

- cost averages between USD50,000 and USD100,000.
- approximately 1 in 40 longhaul sectors generate a significant medical event (BA estimate)
- several factors likely to make this worse
 - demographics
 - A380

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costs and disruption of diversions

- aircraft out of position
- crew out of hours
- crew positioning costs
- passengers in hotels
- compensation payments

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bmi's wants

- take the guesswork out of medical emergencies
- give hard data to ground-based doctors
 - voice
 - blood pressure
 - pulse
 - oxygenation
 - ECG
 - carbon dioxide levels
 - blood sugar
 - temperature
 - video

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bmi's wants

- easy to use
- minimal training overhead
- light weight
- wirefree
- reliable

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service launch

- telemedicine products coming to market
- bmi decided to be launch airline for the RDT product
- vanity case-sized box called Tempus 2000
- first ever transmission of a diagnostic ECG from a patient in flight
- only airline with telemedicine – until 2007

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initial product

- bmi pioneered the development with telemedicine with RDT on its original product
- this product delivered on many of the wants but did not transmit all medical data real time, and did not support integrated voice and video
- additionally bmi wanted the product to be smaller and lighter and even easier to use

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original capabilities

- 2K4 pipe
- video out of the question
 - 2-way still picture with annotations
- blood sugar not possible at the time
- wire free not possible
- ECG quality was quite remarkable

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in-service development

- most problems with connection
 - data poorly handled by old satellite system
- some problems with interface
- RDT & bmi reviewed every use

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ESA IAP project

- next generation of communication technology
 - broadband
 - picocell
- bmi worked with RDT to bid for a project to develop the next generation of airline telemedicine that would
 - take advantage of the new comms technology
 - use experience gained to leverage more of the wants into the device
- this project is just completing, resulting in
 - newer, smaller and more capable product
 - Tempus IC

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System Capabilities



Blood Pressure & Pulse Oximetry



Temperature



Capnometry



12 Lead EKG



Glucometry



Real Time Voice and Data



Camera With Stills and Real Time Video



Automatic Status Reporting

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ESA IAP project

- IAP funding and collaboration enabled RDT and bmi to produce a world class system capable of utilising the latest broadband technology
- flight trial on 24 Feb 09
 - broadband connection provided by OnAir
 - live video
 - blood sugar



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ESA IAP project

- 50% co-funding assists with business case for the work
- ESA collaboration brings other benefits
 - gave us input from a wide variety of potential users
 - involvement of other parties such as Airbus
- IAP is focussed on ensuring that projects are end-user-driven, not technology-driven
 - this was very important to bmi
- following video shows the results of the project