

**Investing in RFID Seminar  
RFID Journal Live! 2006  
May 1, 2006  
MGM Grand Conference Center  
Las Vegas, Nevada**



**Putting RFID to Work**

May 1, 2006



## Private Company Showcase/Innovators

**William Colleran**, President and CEO, Impinj

**Olavi Meriläinen**, CEO, Wisteq

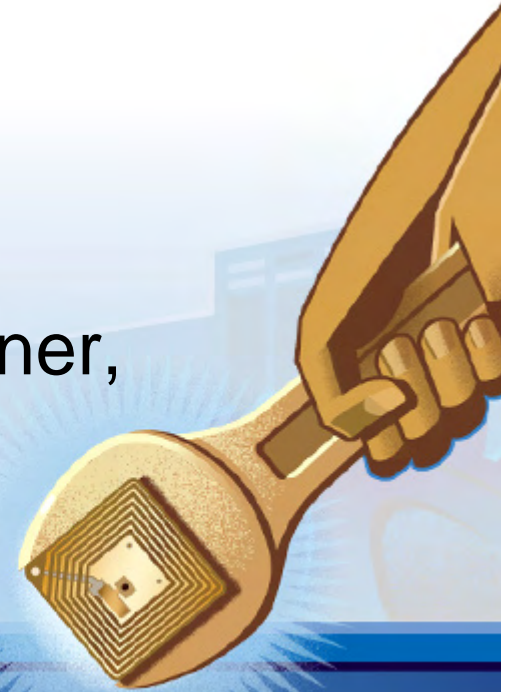
**Martin Swerdlow**, Chief Executive, Integrated Product Intelligence Limited

→ **Chris Walker**, Director of Imaging Technology, Preco Industries

*Moderator:* **Ed Schneider**, General Partner, Quan Ventures



Putting RFID to Work

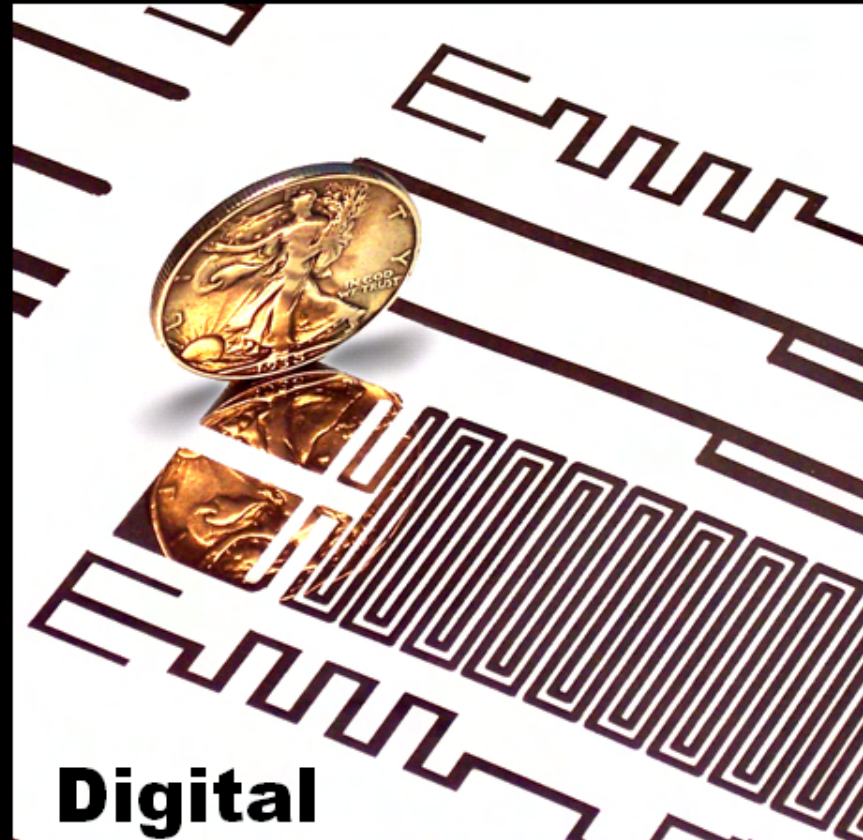


# RFID JOURNAL LIVE!

4th Annual Conference  
& Exhibition  
May 1-3  
MGM Grand • Las Vegas



CONDUCTIVE  
INKJET  
TECHNOLOGY



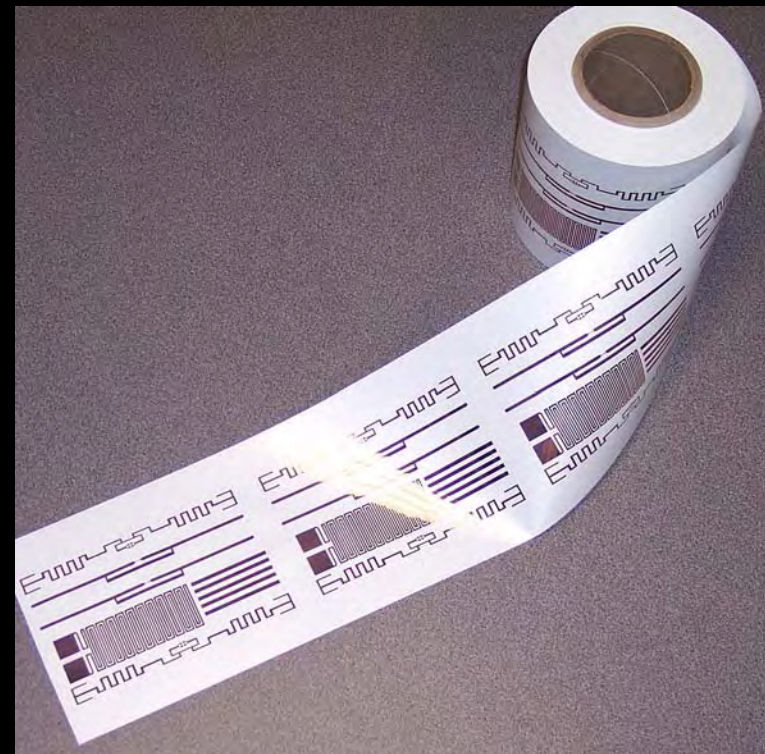
## Digital Inkjet Metallization

*Process and Equipment for Making Solid Copper Antennas*



## *The Inkjet Metallization Process*

- Additive process in web
- Catalytic seed layer
- UV curable polymer ink
- Solid copper deposit
- Utilizes known electronics production practices





## *Some Useful Applications for the Inkjet Metallization Process*

- **RFID & Smart Card Antennas**
- **Thin Film Batteries**
- **Electronic Displays, EL Display, etc.**
- **Edge Connectors & Continuous Bus**
- **Flexible Printed Circuitry**



## *Economics*

### Cost of Producing a Copper Metallized Surface:

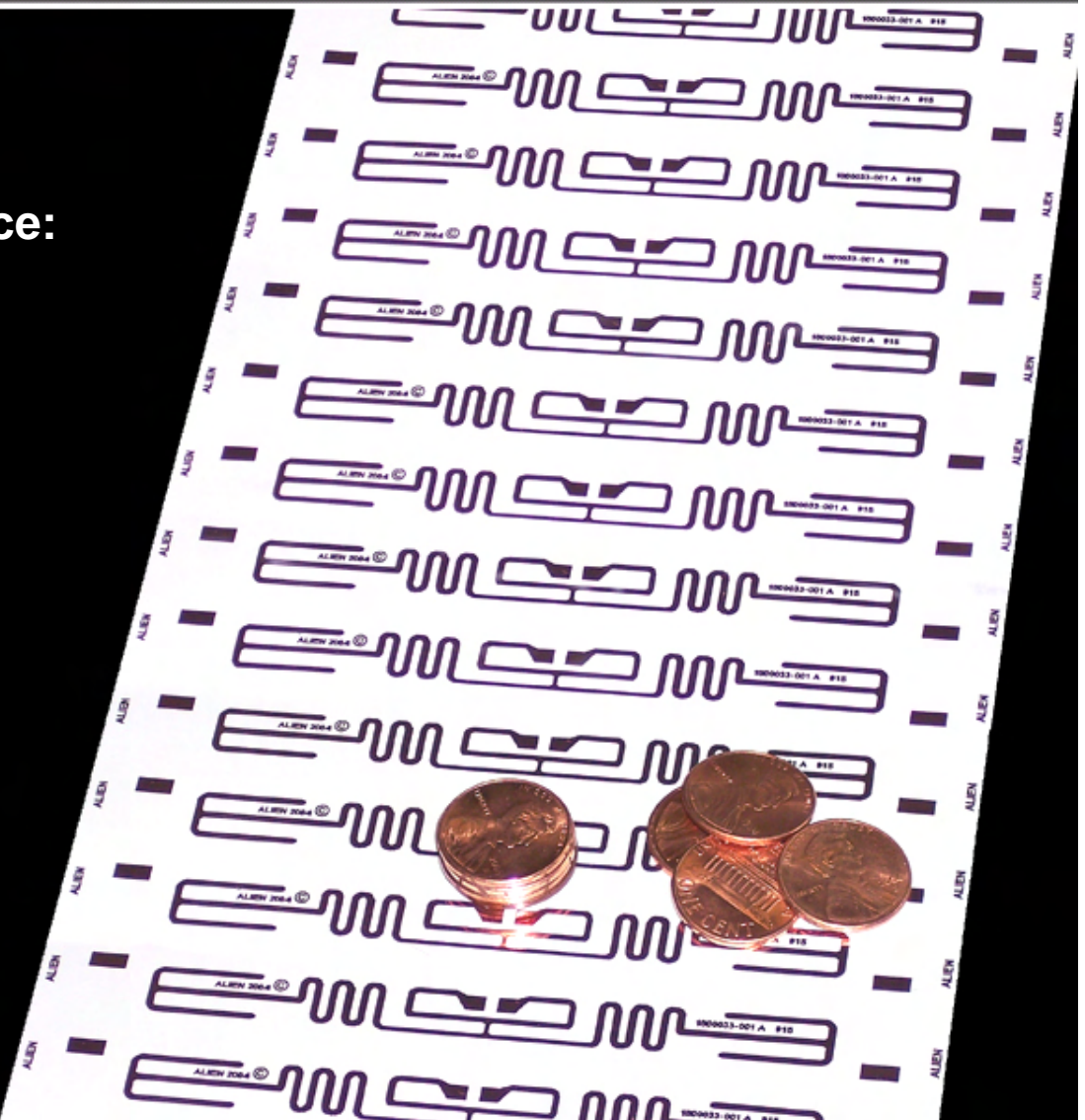
- Approximately US \$0.012 for 10 sq cm of material

1 sq cm

10 sq cm

- Thickness of copper can vary the cost by 20-70%
- Exclusive of equipment investment and licensing

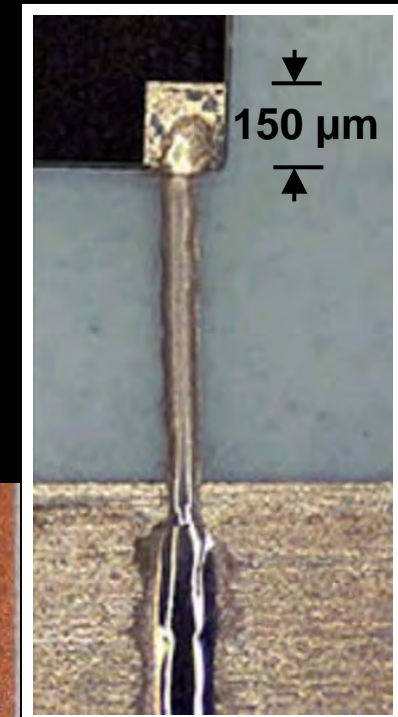
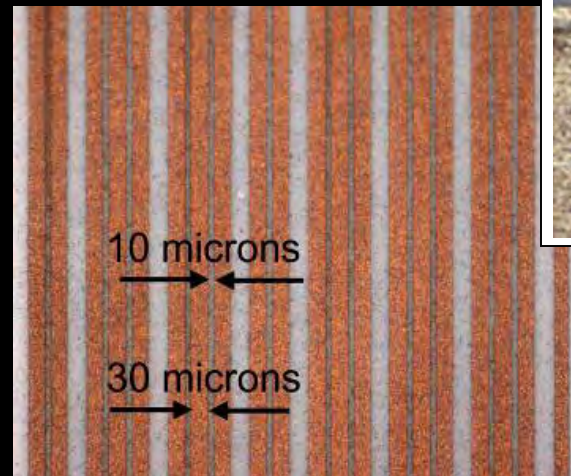
*Alien Technology's Squiggle RFID Antenna*





## *Emerging Applications*

- **Double-sided antennas**
- **Inkjetting of complementary print compositions – e.g. dielectrics**
- **Substrate variety – polyimide, PVC, etc.**
- **Print-to-Chip<sup>®</sup>**
- **Microcircuitry**





## *Operations*

- **Joint Venture Between Carclo PLC & Xennia Technology, Ltd. (both of U.K.)**

**Demonstration Lab and R&D**



**Equipment  
Manufacturing**

**Kansas City**

**Joint Commercialization Agreement  
between  
Conductive Inkjet Technology, Ltd.  
& Preco, Inc.**



## *Current State of Technology*

### **Present Equipment & Materials Offering:**

- Web width: 150 mm
- Inkjet path width: 140 mm
- Substrate: PET  
(print treated) - 50 to 200  $\mu\text{m}$
- Metallized deposit: copper
- Inkjet head: resolution to 150  $\mu\text{m}$

