
International SEMATECH e-Diagnostics Program

www.sematech.org/public/resources/ediag/index.htm

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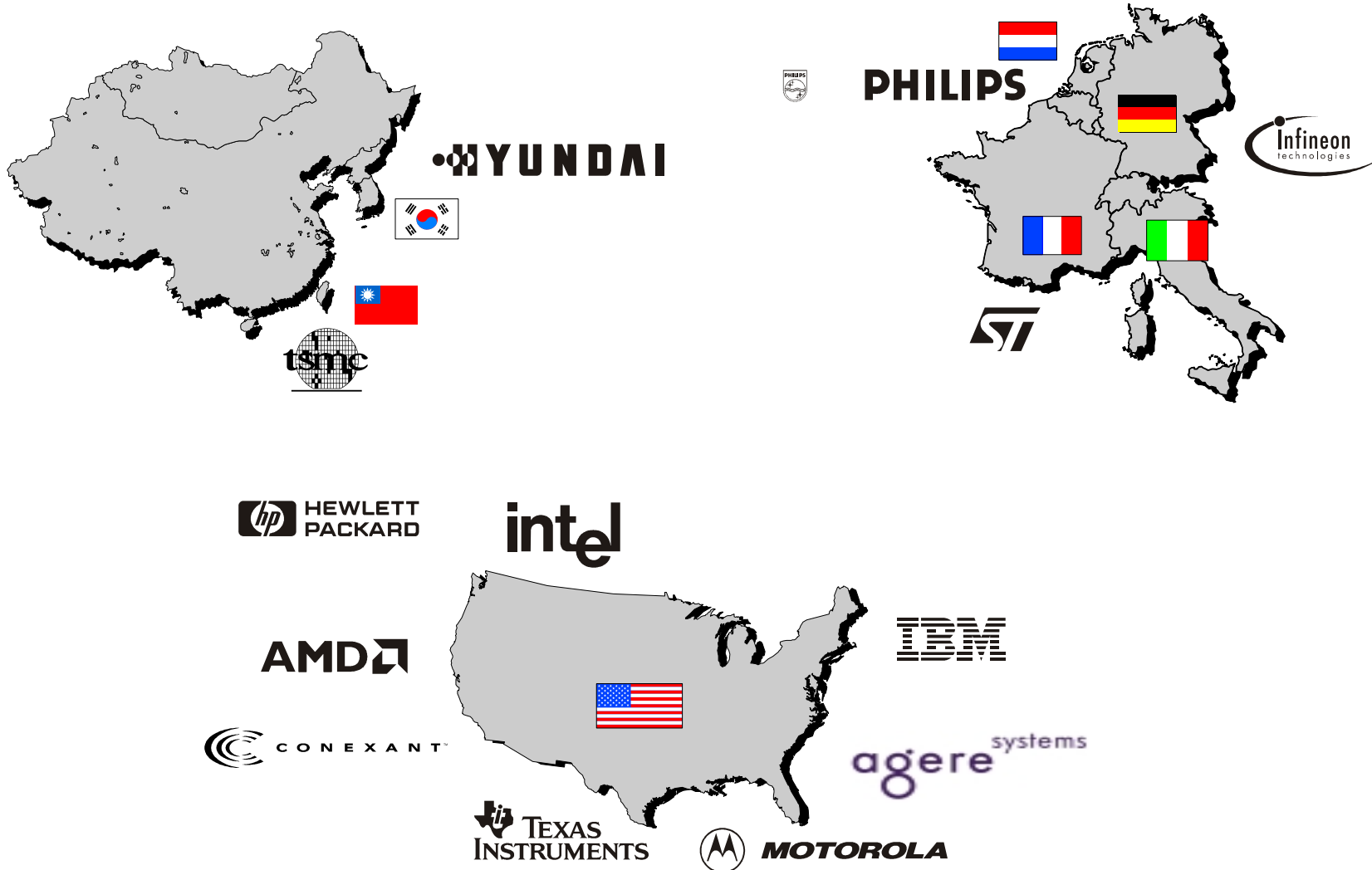
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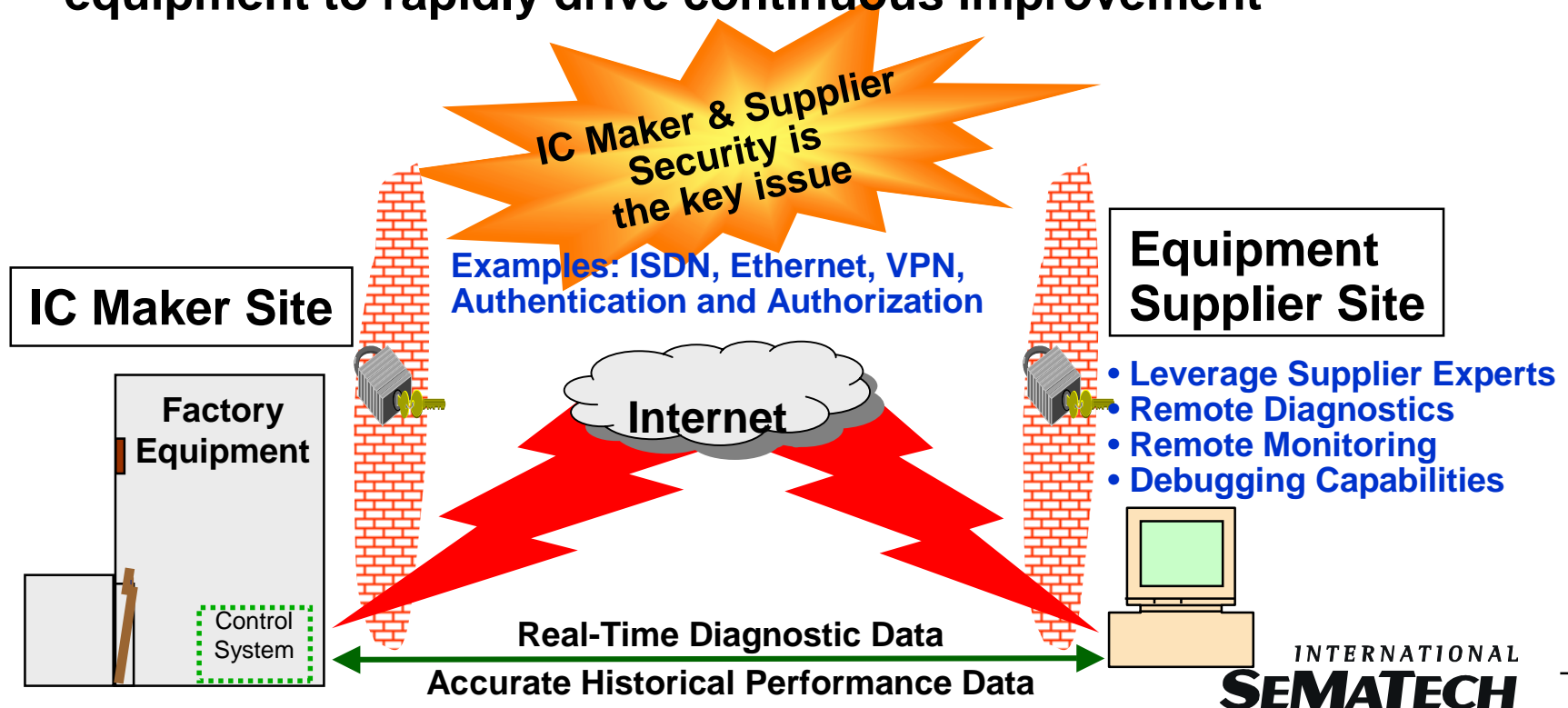
International SEMATECH 13 IC Makers Cooperating



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e-Diagnostics Overview

- Remote monitoring & diagnostics allow supplier experts to rapidly fix factory equipment issues from their sites
- Time to money – Remote diagnostics enable IC makers and Equipment suppliers to reduce upfront Install and Qual durations
- Suppliers need accurate historical performance data from factory equipment to rapidly drive continuous improvement



e-Diagnostics Working Group

MISSION:

Create guidelines

share best practices

drive commercialization of open architecture

Internet-based access for suppliers to ...

monitor equipment

provide improved uptime

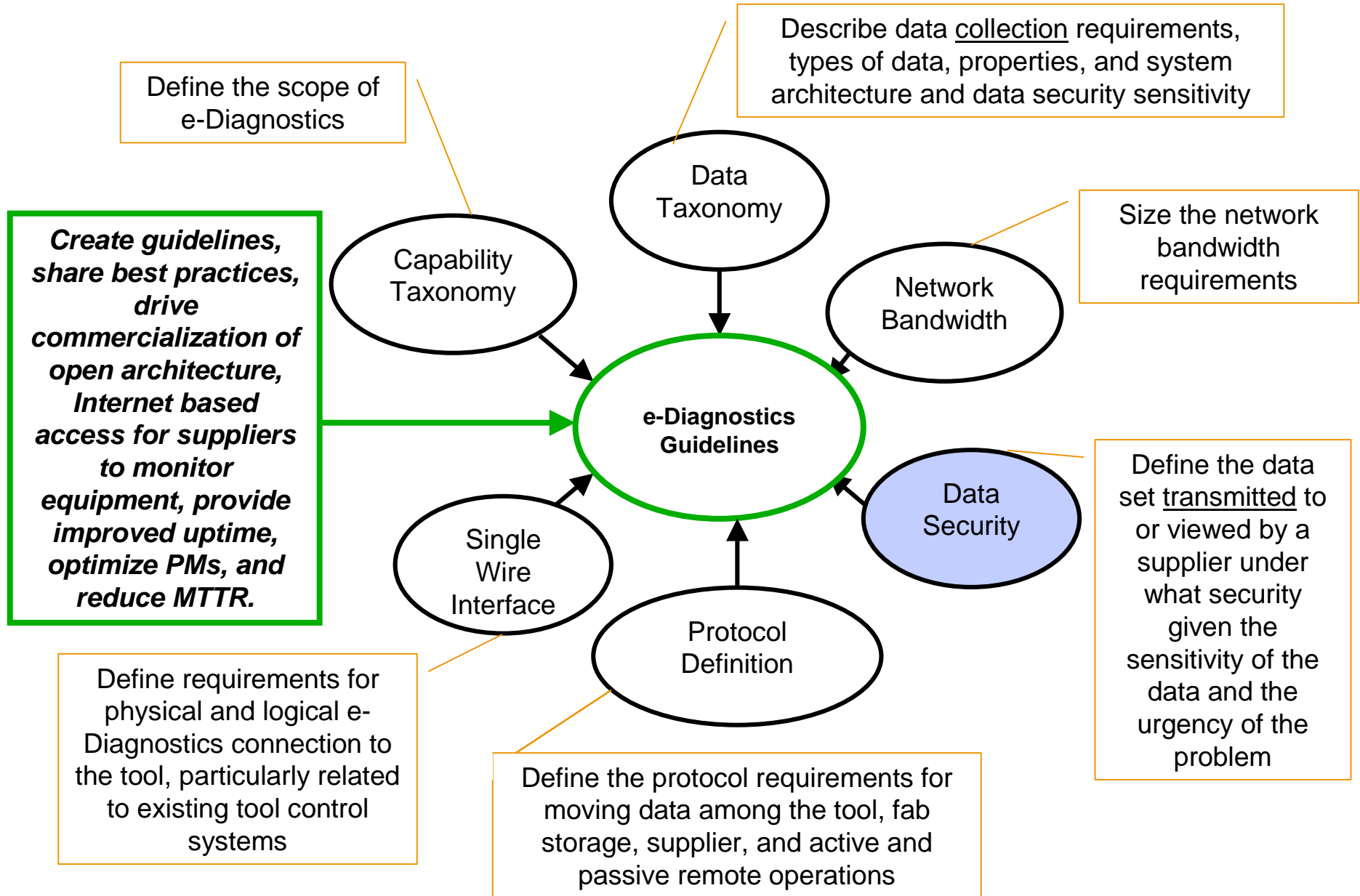
optimize Predictive Maintenance

and reduce Mean-Time-To-Repair

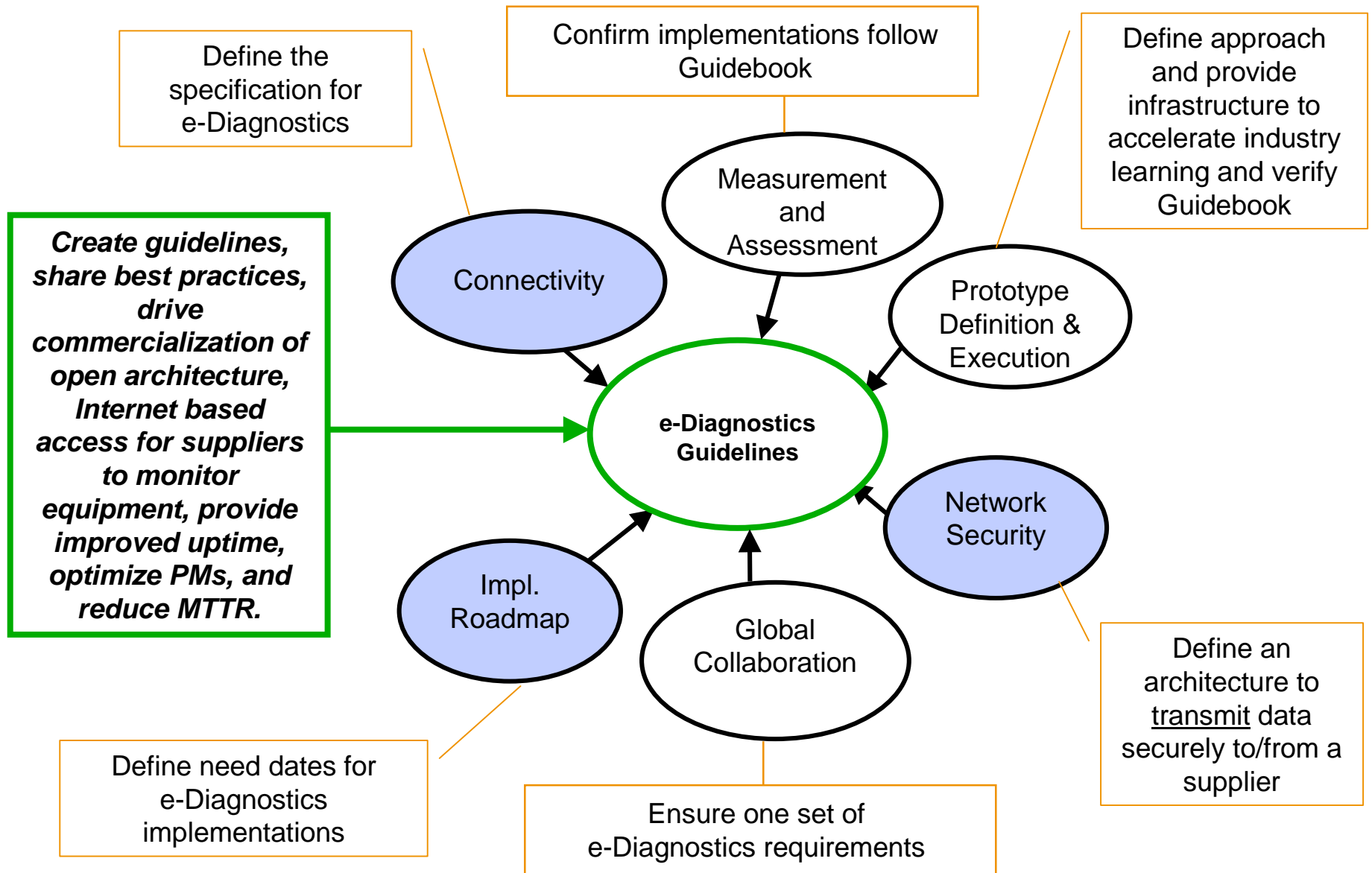
e-Diagnostics Progress and Participation



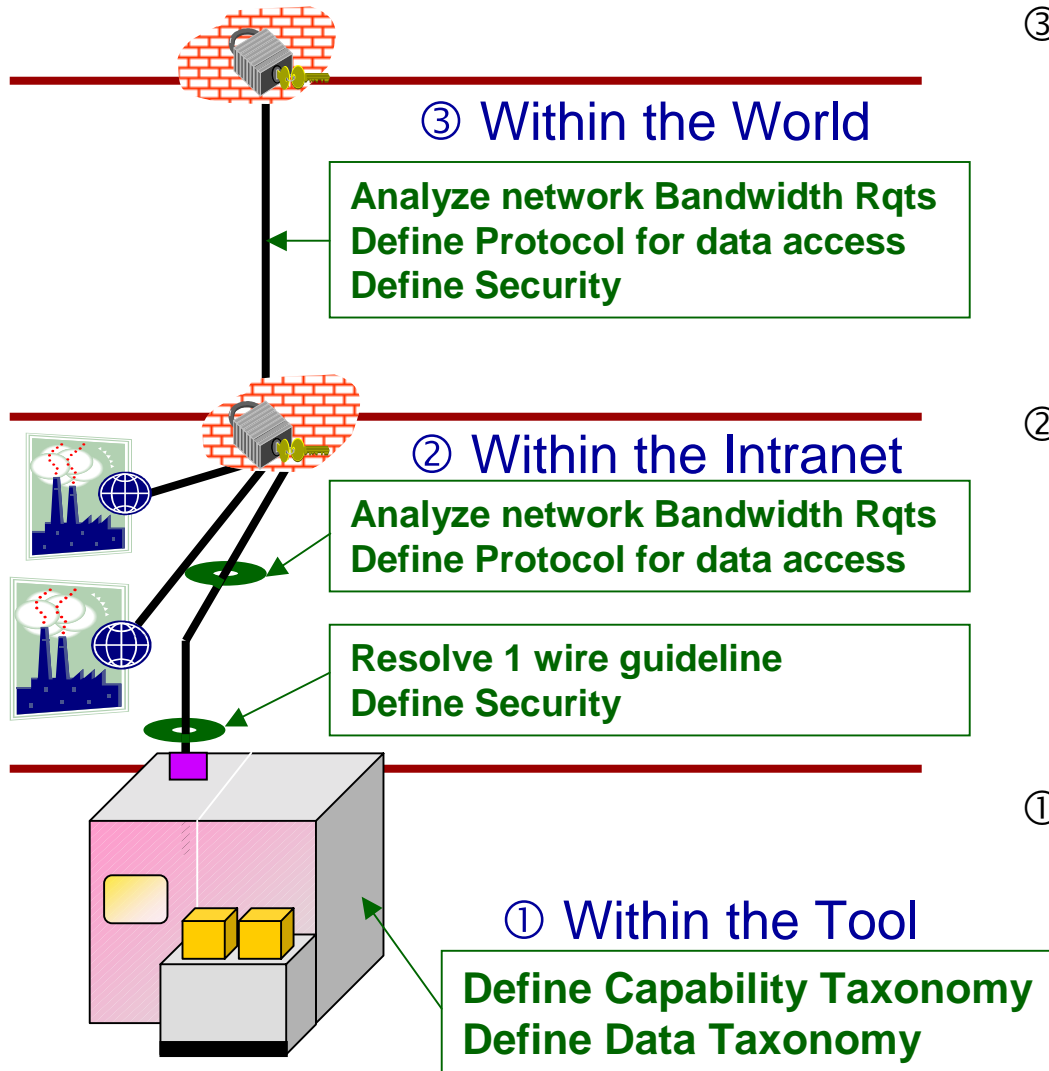
How do the Original Teams fit?



How do the New Teams fit?



e-Diagnostics Capability Definition



③ Predictive / Preventative Maintenance

- Automatic identification of pending failures by the process tool
- Automatic action of tool to fix the issue

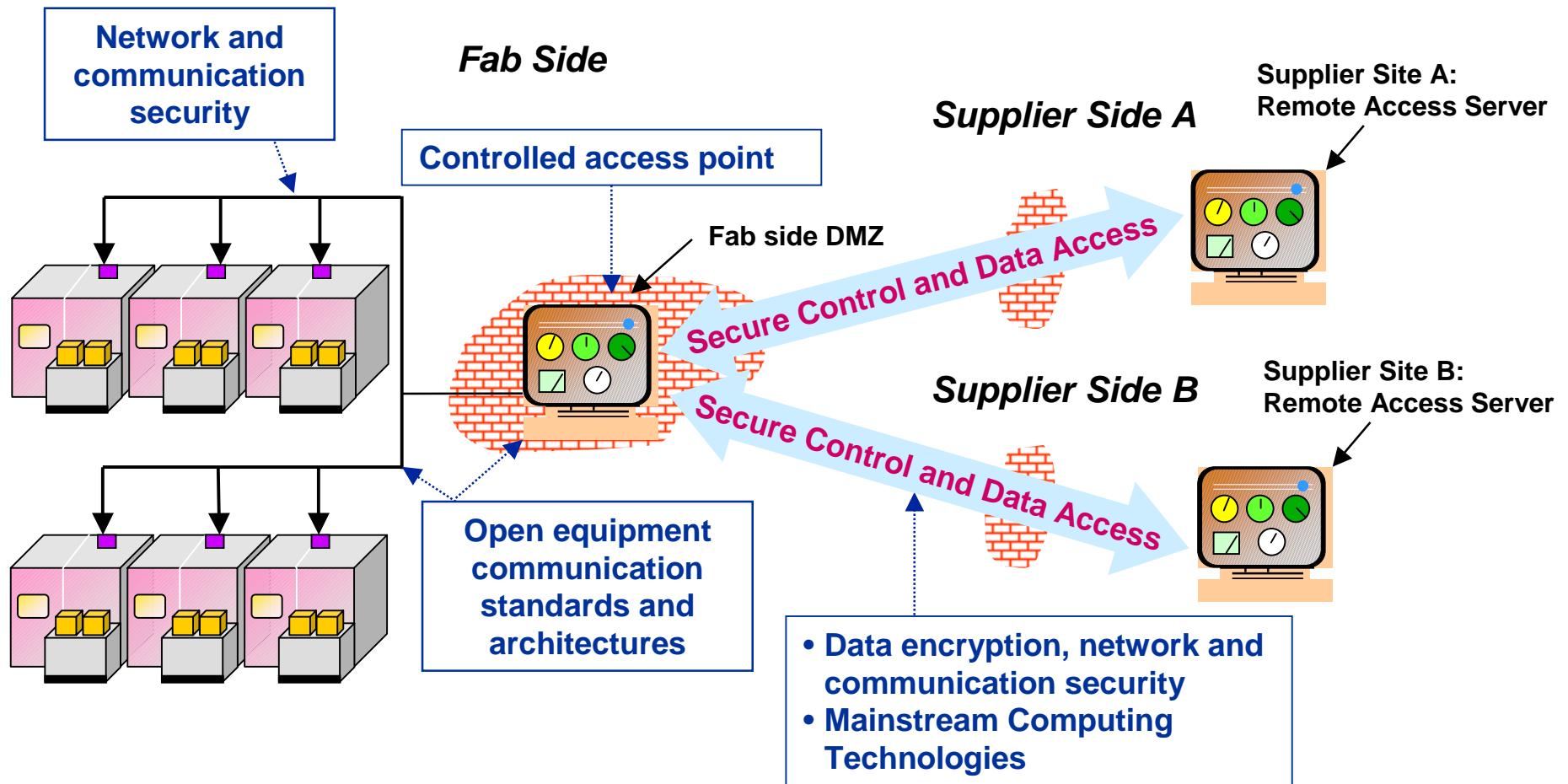
② Proactive Monitoring

- Monitor leading indicators / summary data
- Some external system or people analyze the data and predict future tool behavior

① Reduce MTTR

- Basic remote access to tool data
- Equipment experts can review and analyze 'raw data' from anywhere in the world

ISMT e-Diagnostic Guidelines



Full guideline document available at:

<http://www.sematech.org/public/resources/ediag/index.htm>

ISMT e-Diagnostic Capability Definitions

Level 3 - Prediction:

Predictive Maintenance, Self
Diagnostics, Automated Notification

Level 2 - Analysis:

Automated Reporting and
Advanced Analysis with SPC capability

Level 1 - Collection and Control:

Remote Tool Operation, Remote Performance
Monitoring, Remote Equipment Configuration

Level 0 - Access and Remote Collaboration:

Remote connectivity to the tool and remote
collaboration capabilities (text, audio, video)

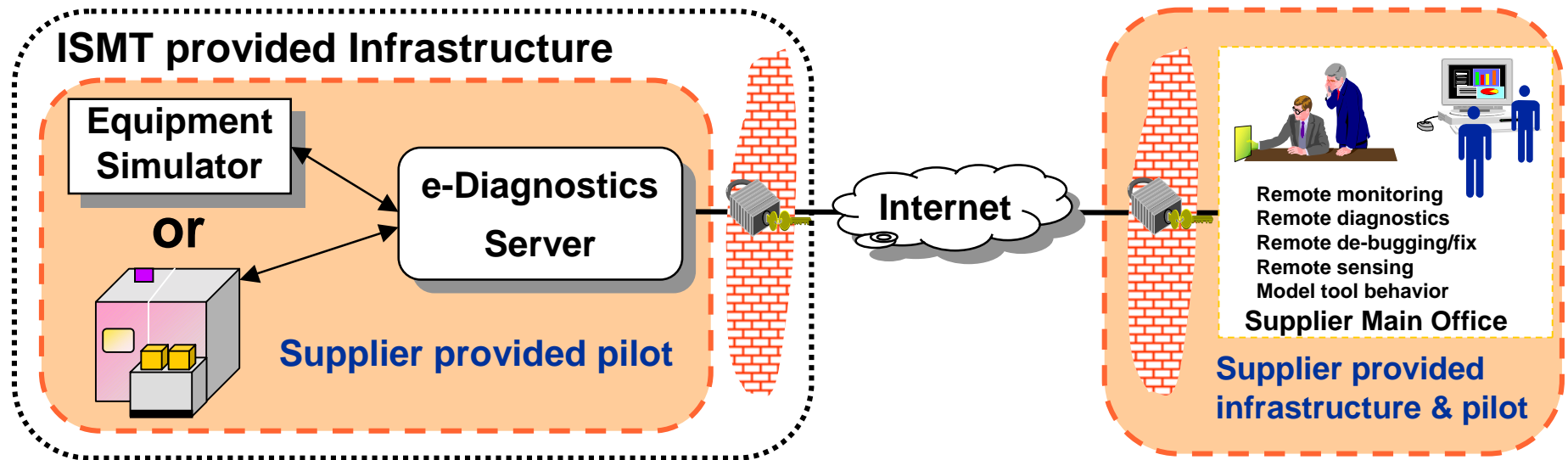
Full capability definition document available at:

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e-Diagnostics Deliverables

- Key Program Outputs
 - ✓ e-Diagnostics Guidelines 06/29/00
 - ✓ e-Manufacturing included in the ITRS 07/10/00
 - ✓ IT Security Council Guidelines 08/24/00
 - ✓ SEMICON SW seminar, e-Diagnostics Guidebook 10/19/00
 - ✓ Network Bandwidth requirements 08/03/00
 - ✓ Data Definition 08/24/00
 - ✓ e-Diagnostics Capability Definition 08/24/00
 - ✓ e-Diagnostics Protocol Definition 10/05/00
 - ✓ SEMICON Japan workshop 12/05/00
 - ✓ Validation / Proof of Concept plans 12/20/00
 - Initiate SEMI standards activity 03/22/01
 - LaJolla seminar, e-Diagnostics Guidebook update 03/23/01
 - ✓ Data Security Model 01/11/01
 - SEMICON Europa seminar 04/25/01
 - Measurement and Assessment Method 06/30/01
 - SEMICON West seminar, EEC Guideline Rollout 07/16/01
 - C/Prototyping at ISMT, Report 09/30/01

e-Diagnostics Prototype



★ ISMT Provides

- ☞ Network infrastructure, internal firewall, hosts pilot activities

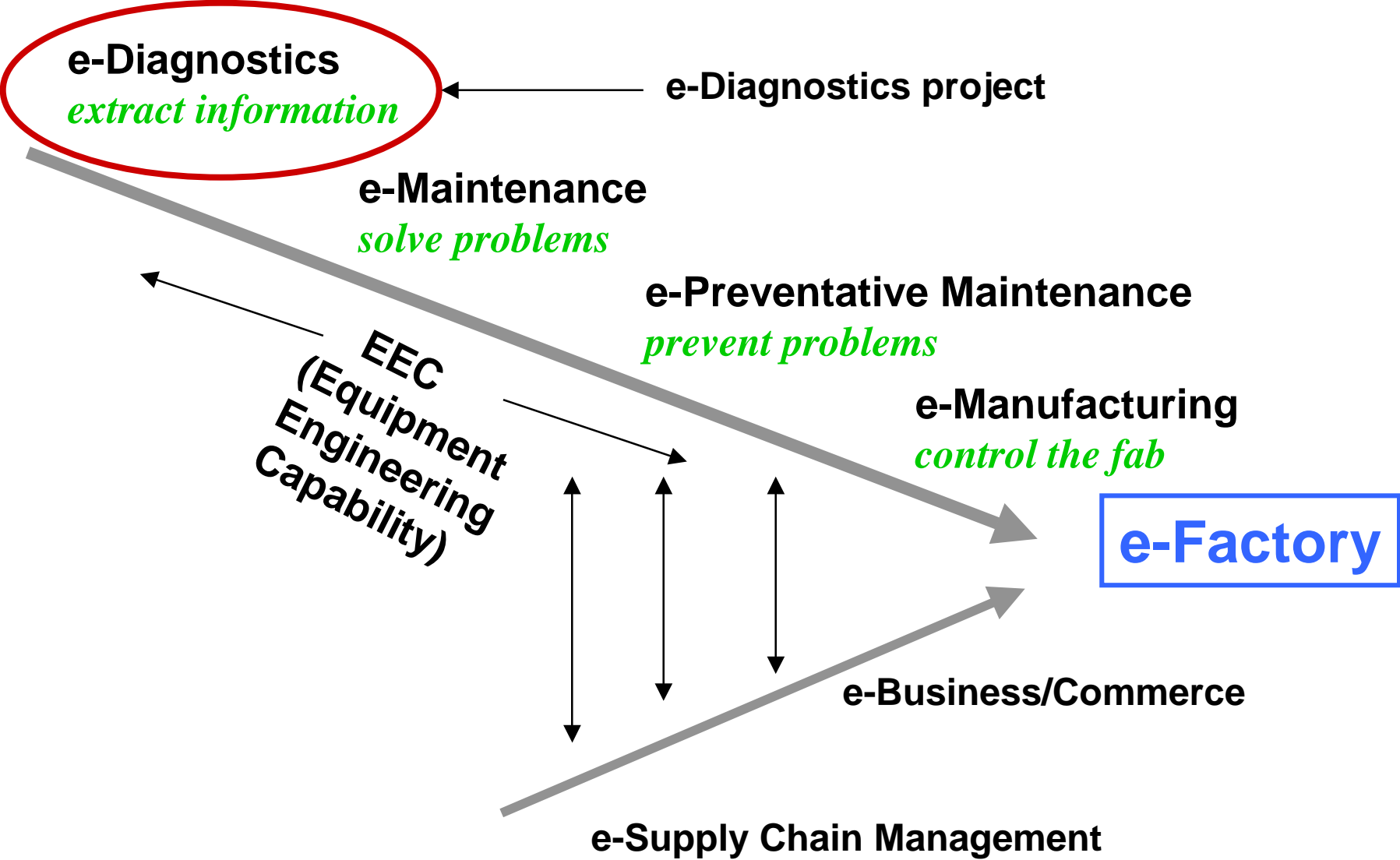
★ Supplier Provides

- ☞ Equipment simulator or tool, e-Diagnostics pilot, remote pilot
- ☞ Must include OEM, but may also include 3rd party

★ e-Diagnostics Working Group provides


- ☞ Prototype (Guidebook) evaluation criteria, evaluation results

Path to e-Factory - ISMT



An e-Manufacturing Vision


Linkages to/from Enterprise systems & suppliers



For Planners/Schedulers

- Enterprise interfaces
- Finance interfaces
- Materials interfaces
- Warehousing Interfaces

Summary Data & Analysis




For Mangers

Senior mgr. Cockpit

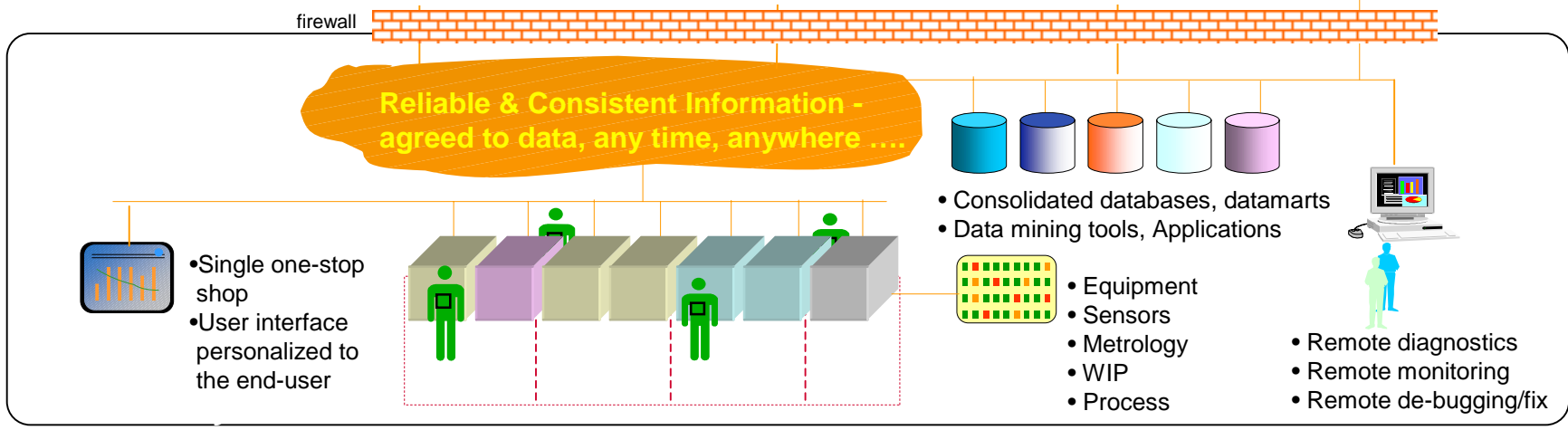
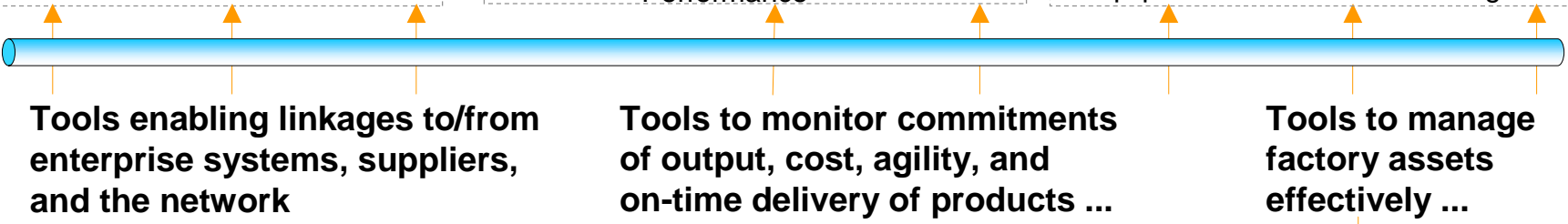
- Productivity Status
- Yield, Engineering
- Capacity planning
- Output Schedule
- Performance

Drill-down data



For Engineers/Technicians

- Equipment performance
- Inventory management
- Remote diagnostics
- Equip/Process excursion management



e-Diagnostics Summary

- **e-Diagnostics is an outstanding ISMT example of IC makers and suppliers working together on a win-win initiative**
 - e-Diagnostic guidelines and capability definitions developed in H2'00
 - For the industry to reap the benefits, we must adhere to the Guidelines
 - e-Diagnostics solutions should follow these Guidelines
- **e-Diagnostics Guidelines are complete, they are now transitioning into a standard**
- **Moving into prototyping and implementation**
- **Suppliers and IC makers developing roadmap for standards and implementations**

For further information please contact:
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