

Control Solution



Brief Intro for Trane ICS 特灵集成舒适系统简介

Thomas Wang
Trane Control & Contracting Team
March-2014



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ICS的系统架构及产品

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ICS的展望

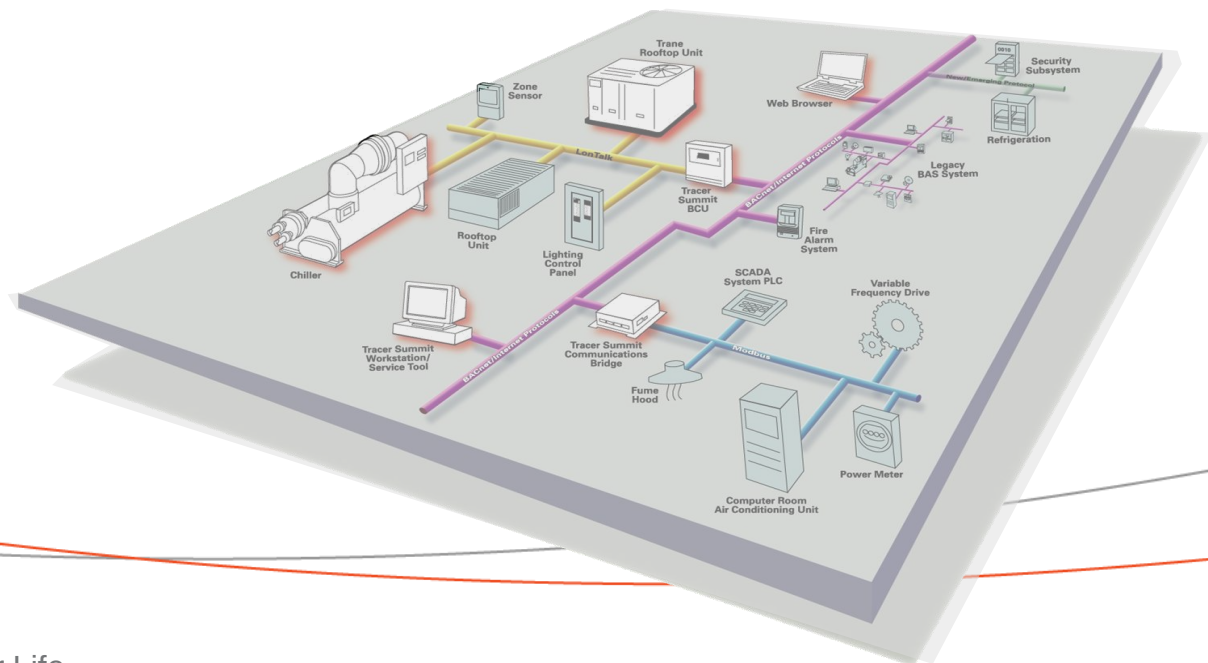
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ICS案例介绍

What is ICS ?

Integrated Comfort Systems

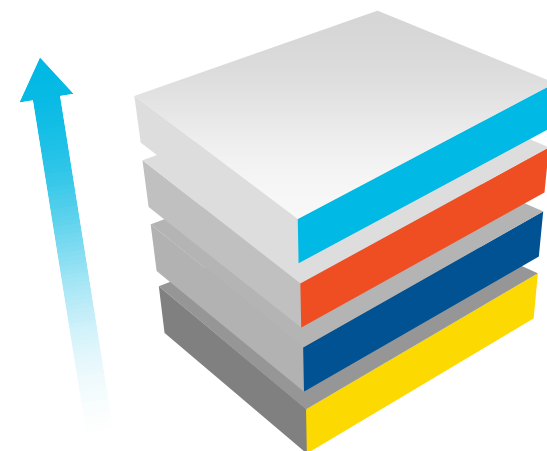
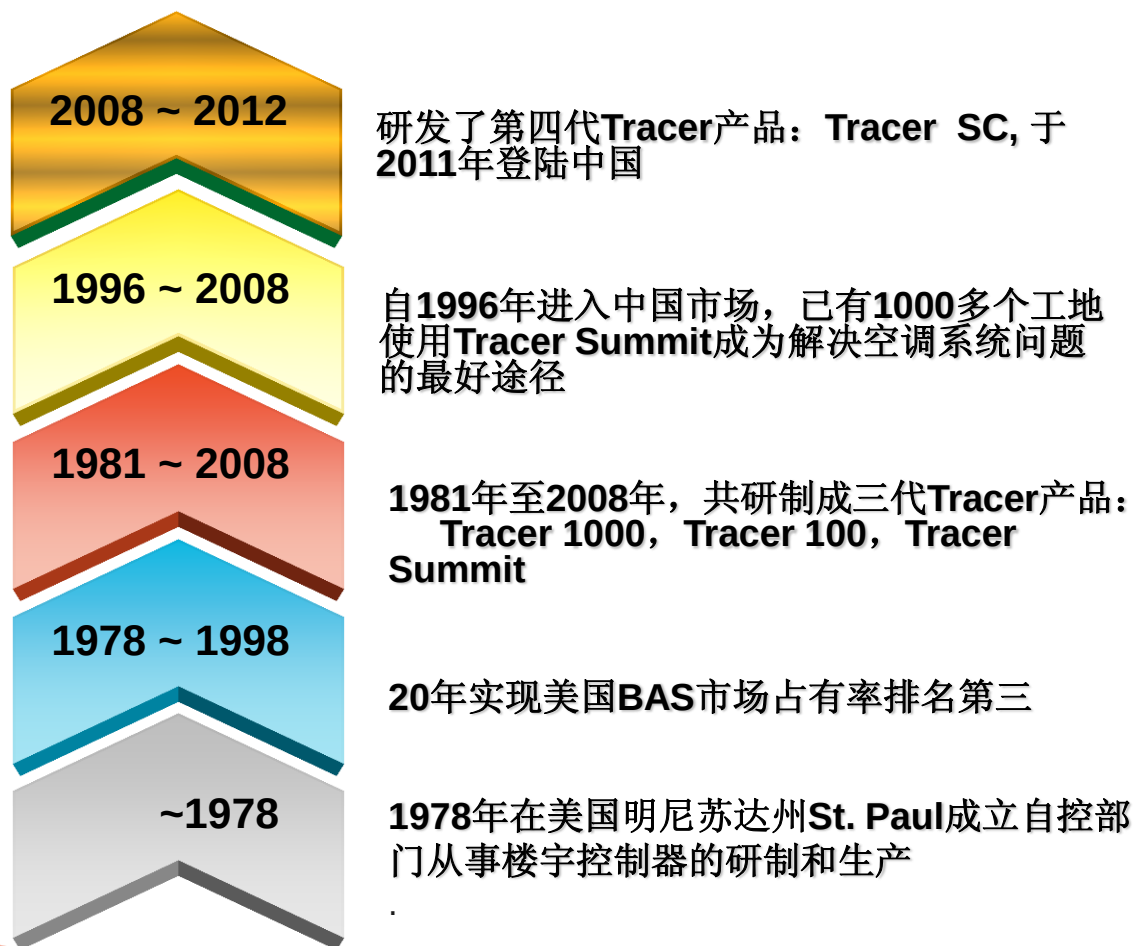
ICS = 设备 + 系统/现场控制器 + 专业安装调试 + 卓越可靠的运行 + 增值服务



历史篇

1

ICS的发展及组成



特灵投身专业控制领域中已多年...

40年代投入冷冻机控制	(Chiller controls since the '40s)
60年代投入屋顶机控制	(Rooftop Controls since the '60s)
70年代投入末端控制	(Terminal Controls since the '70s)
34年楼宇自控历史	(34 years in the automated building control networking)

特灵帮助用户集成控制系统,提高系统管理效率,并减少投资、运行成本

灵活的日程表	(Flexible Scheduling)
远程登入功能	(Remote Access - Internet, Phone)
能源管理	(Energy Management)

特灵, 空调系统控制专家 -- 集成舒适系统 (ICS)

ICS的组成



系统应用及设计支持



自控产品生产中心



系统集成应用



全球配件供应



产品研发中心



自控培训中心



售后服务中心



ISO 9001
认证

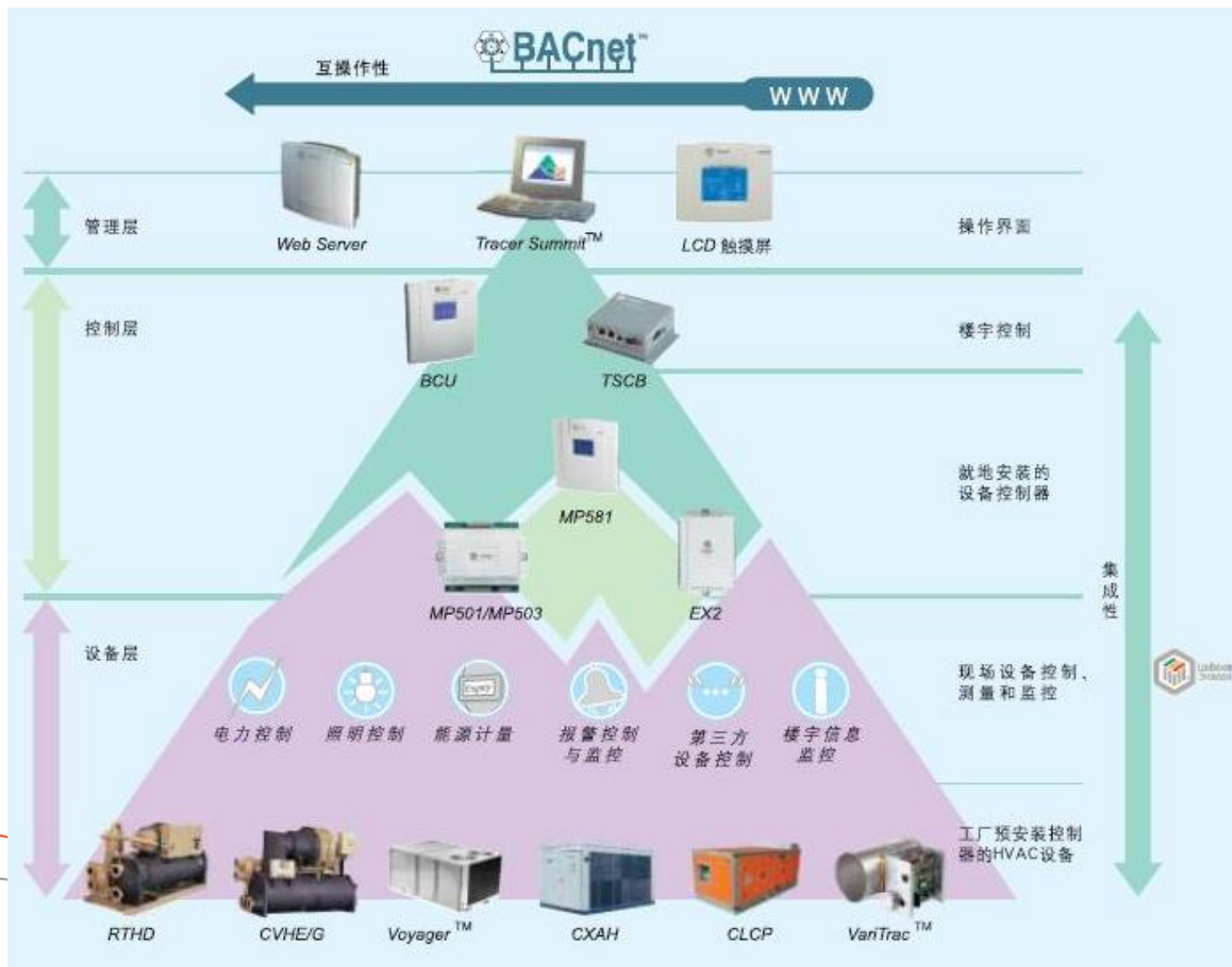


认知篇

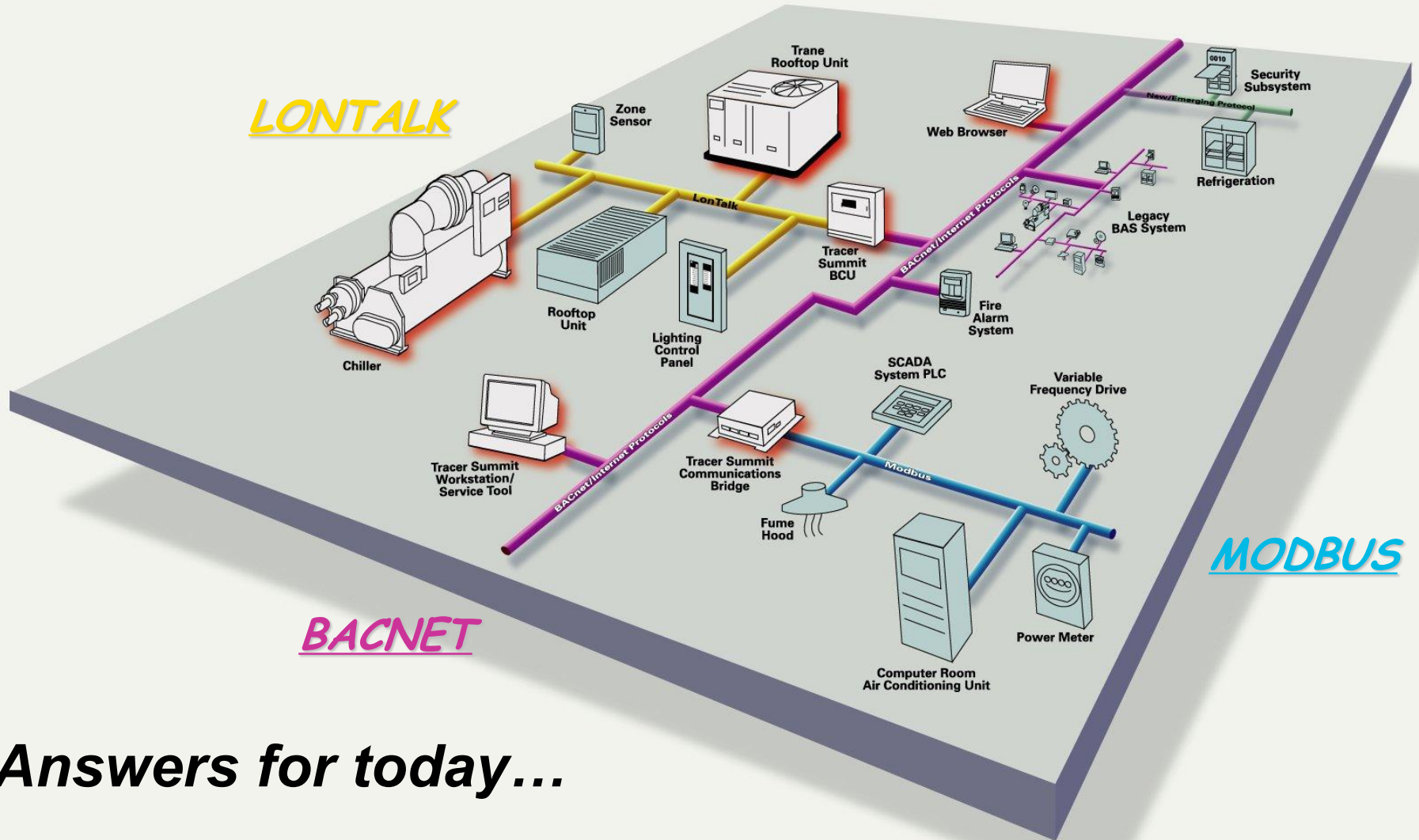
2

ICS的系统架构及产品





ICS架构-Tracer Summit



Answers for today...

...Options for tomorrow

ICS架构-Tracer Summit



Tracer Summit
Workstation



WebOPS



Firewall



Internet/Intranet

BACnet

Ethernet LAN

BCU



BCU
with modem



CH530



MP581



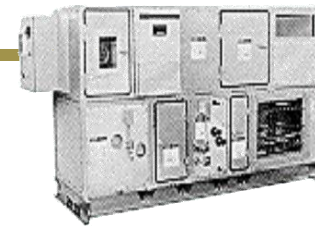
ZN521



LonTalk



AH541



VV550

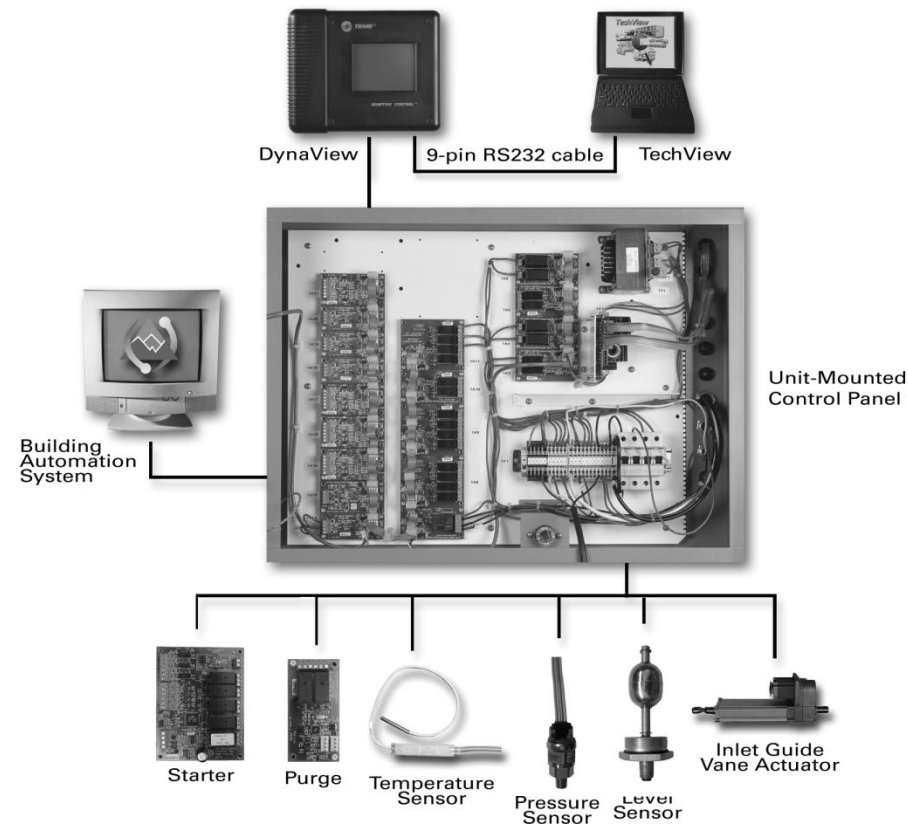


单元控制器UCMs

单元控制器UCMs

工厂预装单元控制器 – Trane 机组

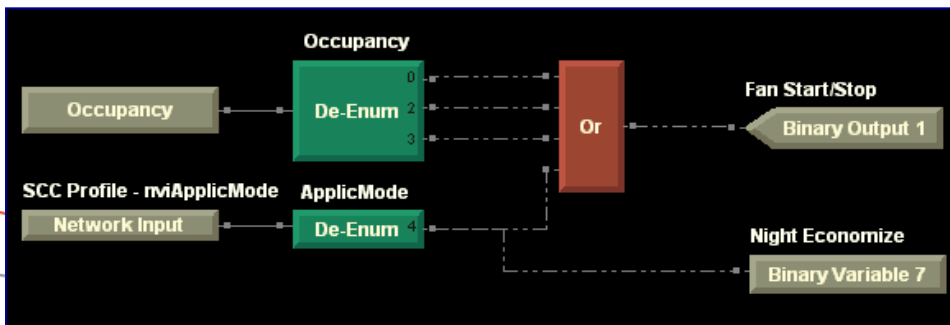
- 内置控制逻辑
- 安全整合
- 自诊断
- 全自动智能运行
- 工厂运行调试
- 到工地即可开机运行
- 预留Tracer Summit接口



单元控制器UCMs

现场安装单元控制器 – 辅助设备

- 用于辅助设备的控制
- 定制逻辑
- 自诊断
- **TGP**图形化编程
- **Trane**工程师现场调试
- **LonTalk**



ICS架构-Tracer Summit



Tracer Summit
Workstation



WebOPS



Firewall

BACnet

Ethernet LAN

BCU



BCU
with modem



Internet/Intranet

楼宇控制器BCU

CH530



MP581



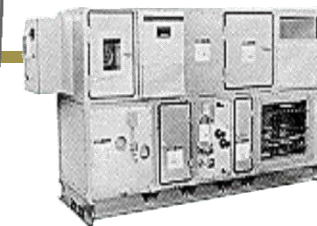
ZN521



LonTalk



AH541



VV550

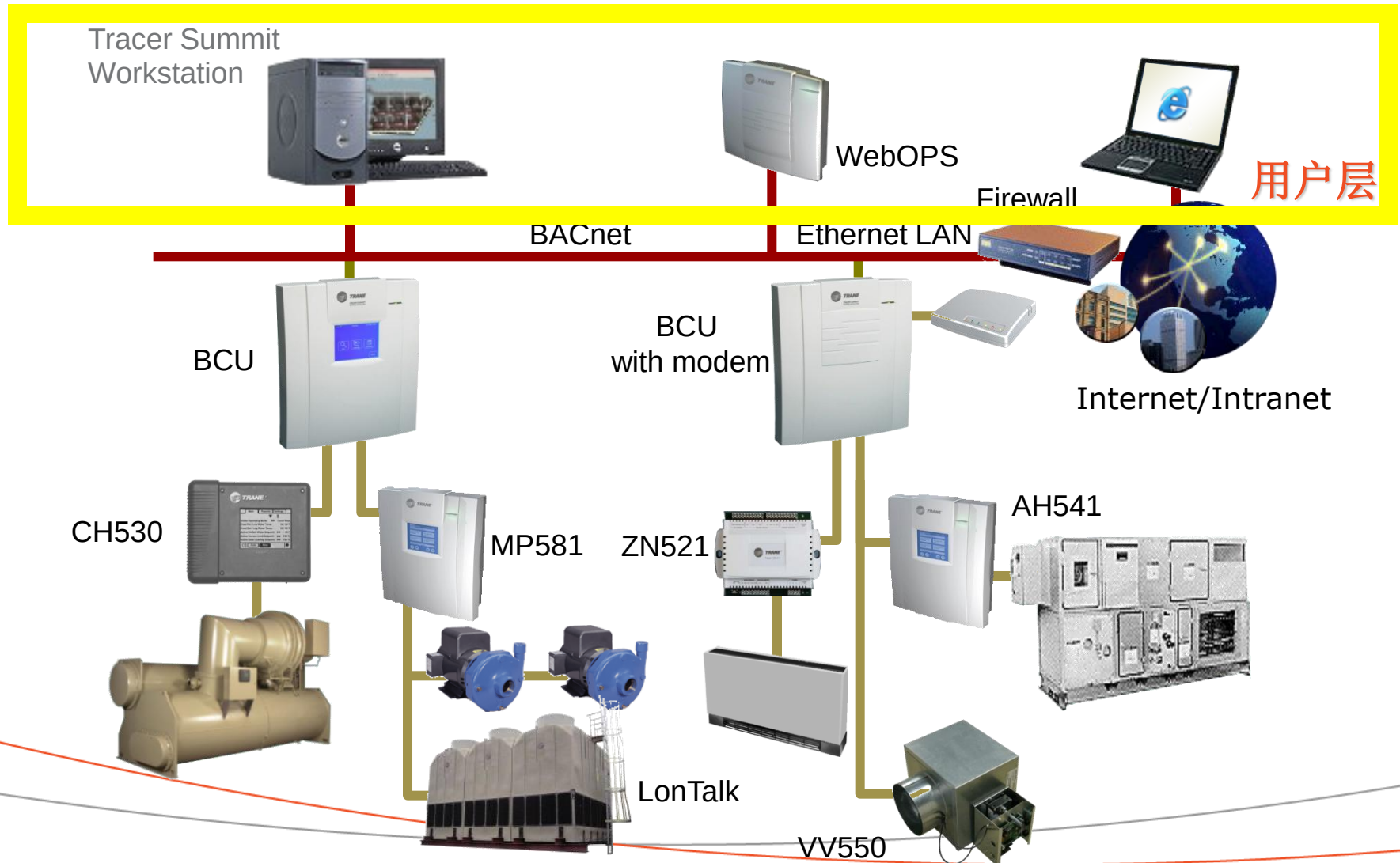


楼宇控制器BCU

- **HVAC系统集成单元**
- **提供集中监视及控制:**
 - 运行时间表
 - 报警
 - 报告
 - 设备状态信息
- **系统集成平台(LON, BACnet, Modbus)**
- **标准、可编程**
- **Modem and Ethernet/IP 网络接入**
- **系统优化**



ICS架构-Tracer Summit



用户控制

- **Windows** 操作系统
- 多用户
- 多级安全操作
- 易学 易用



用户控制

Tracer Summit™ WebOPS

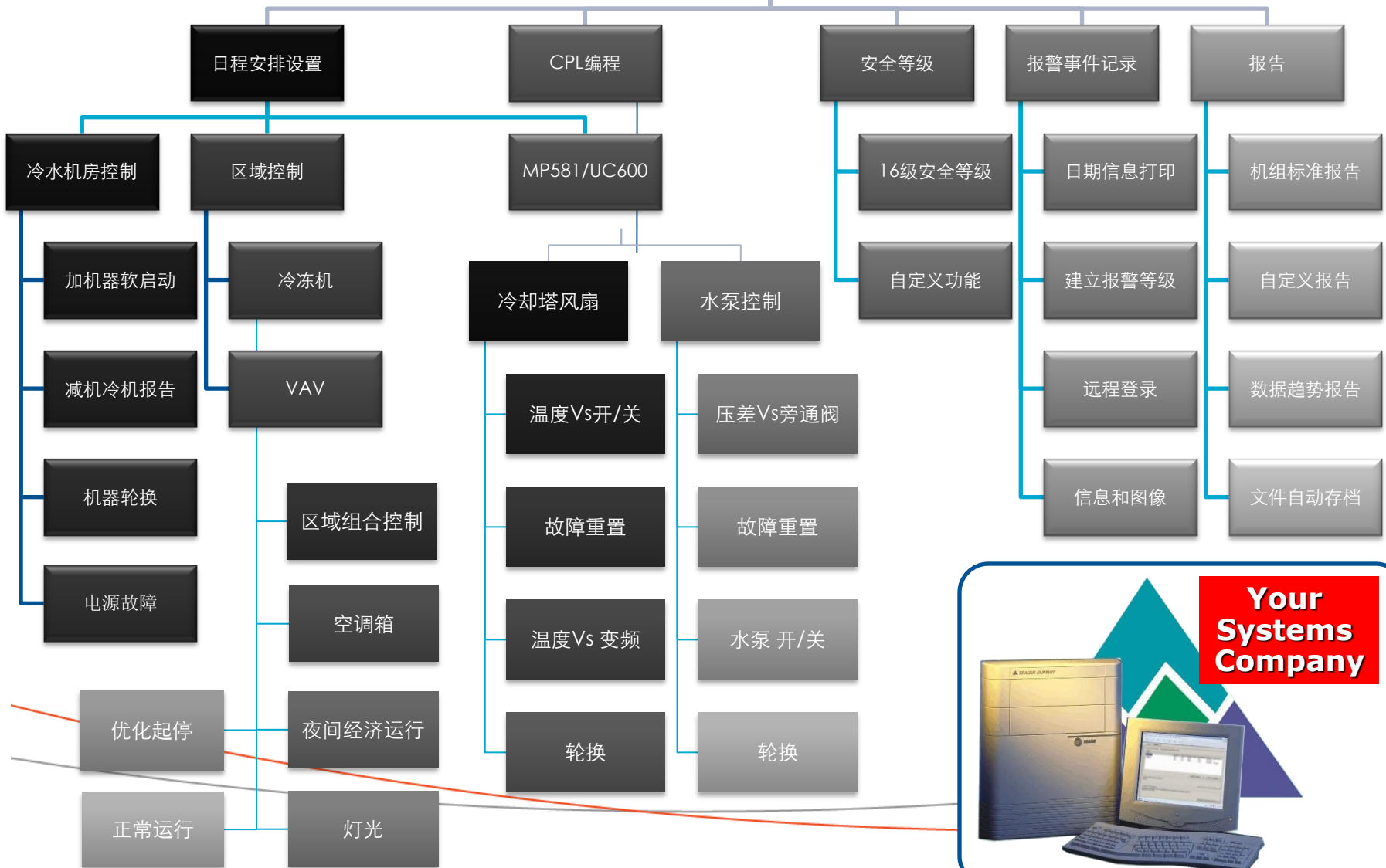
- **BACnet**和标准**Internet**技术
- **IE**浏览器
- 监视、执行日常**BAS**操作
- 无需运行**Tracer Summit**软件
- 多用户、任意地点远程接入
- 多级安全操作



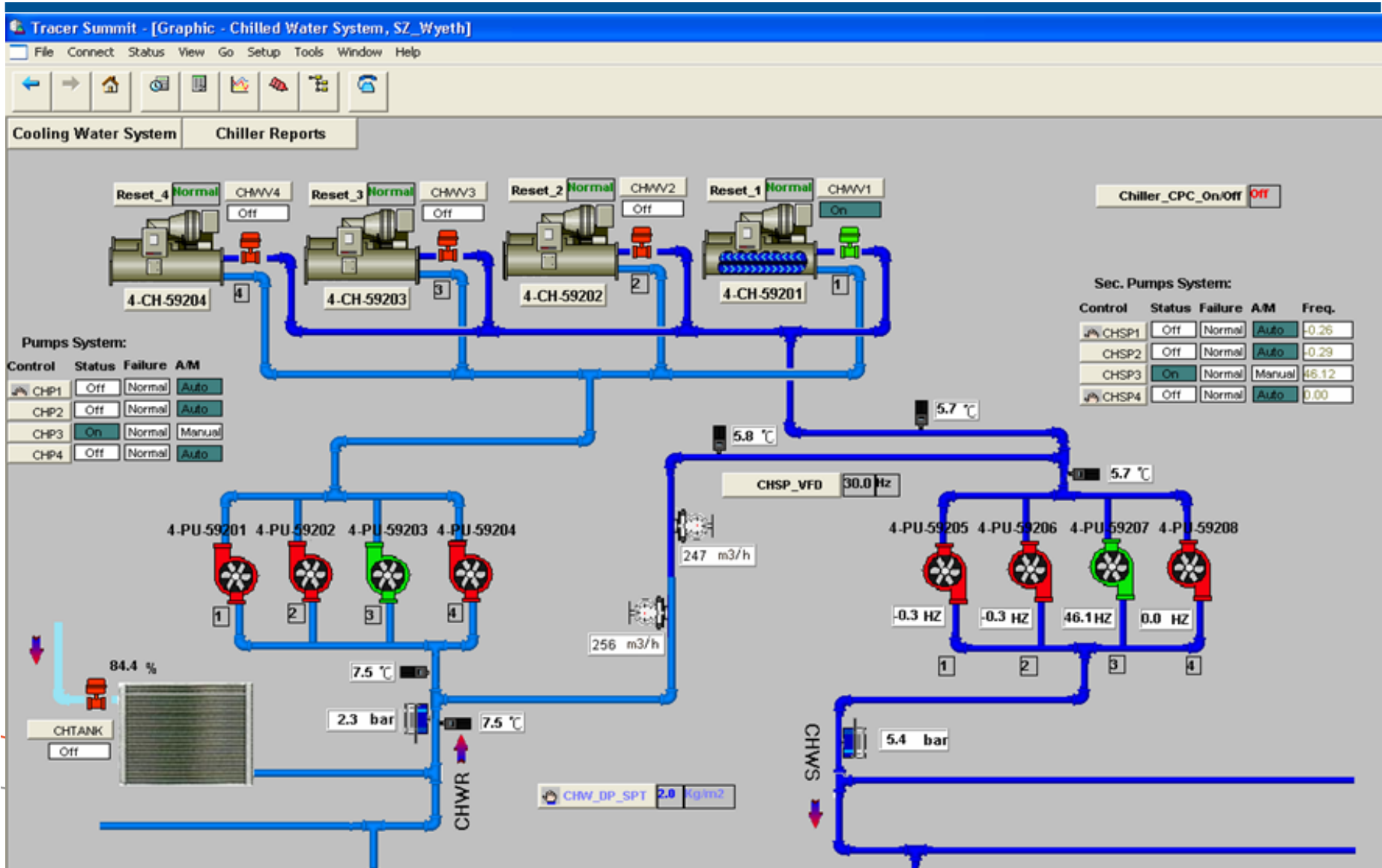
ICS架构-Tracer Summit



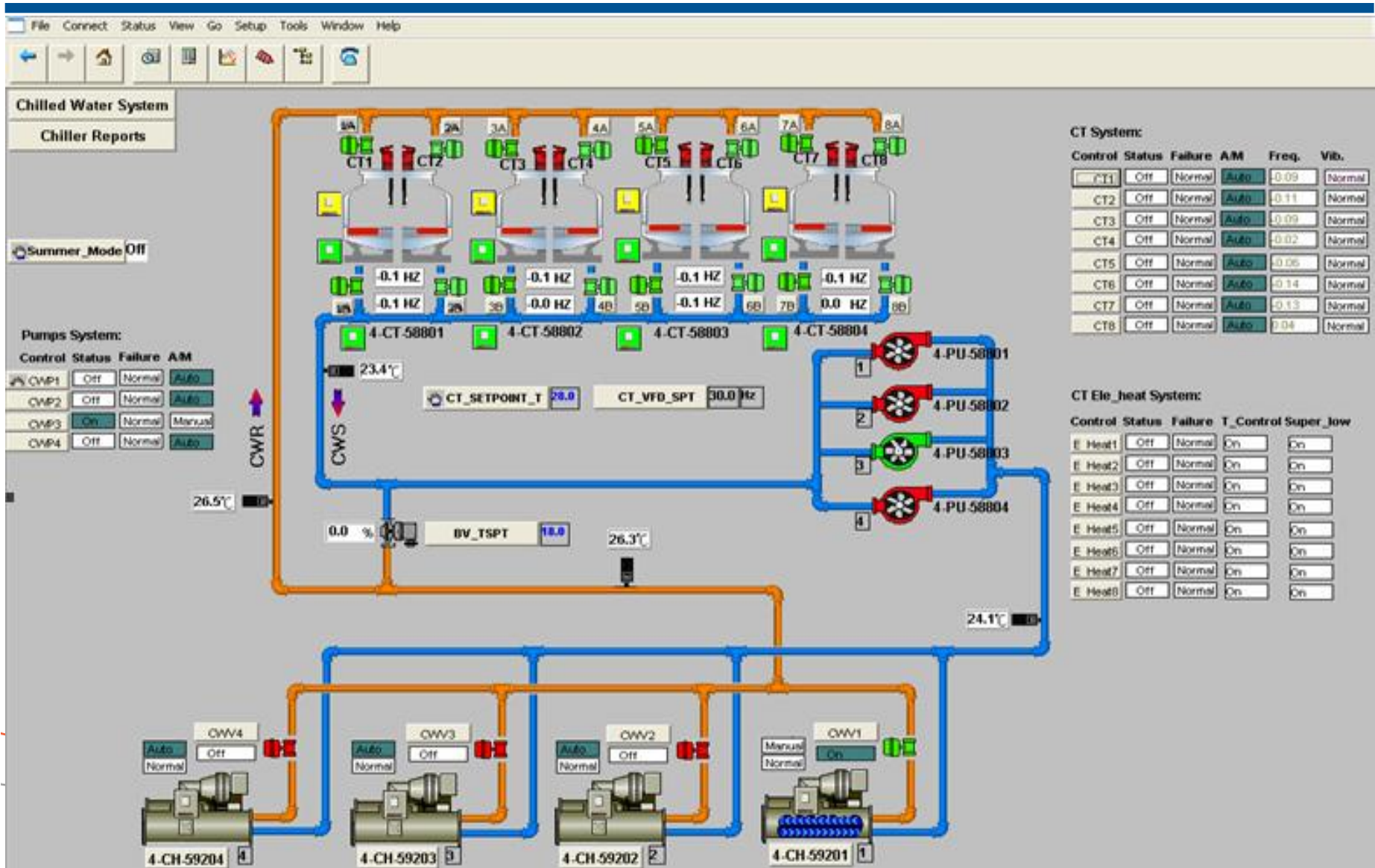
Tracer Summit

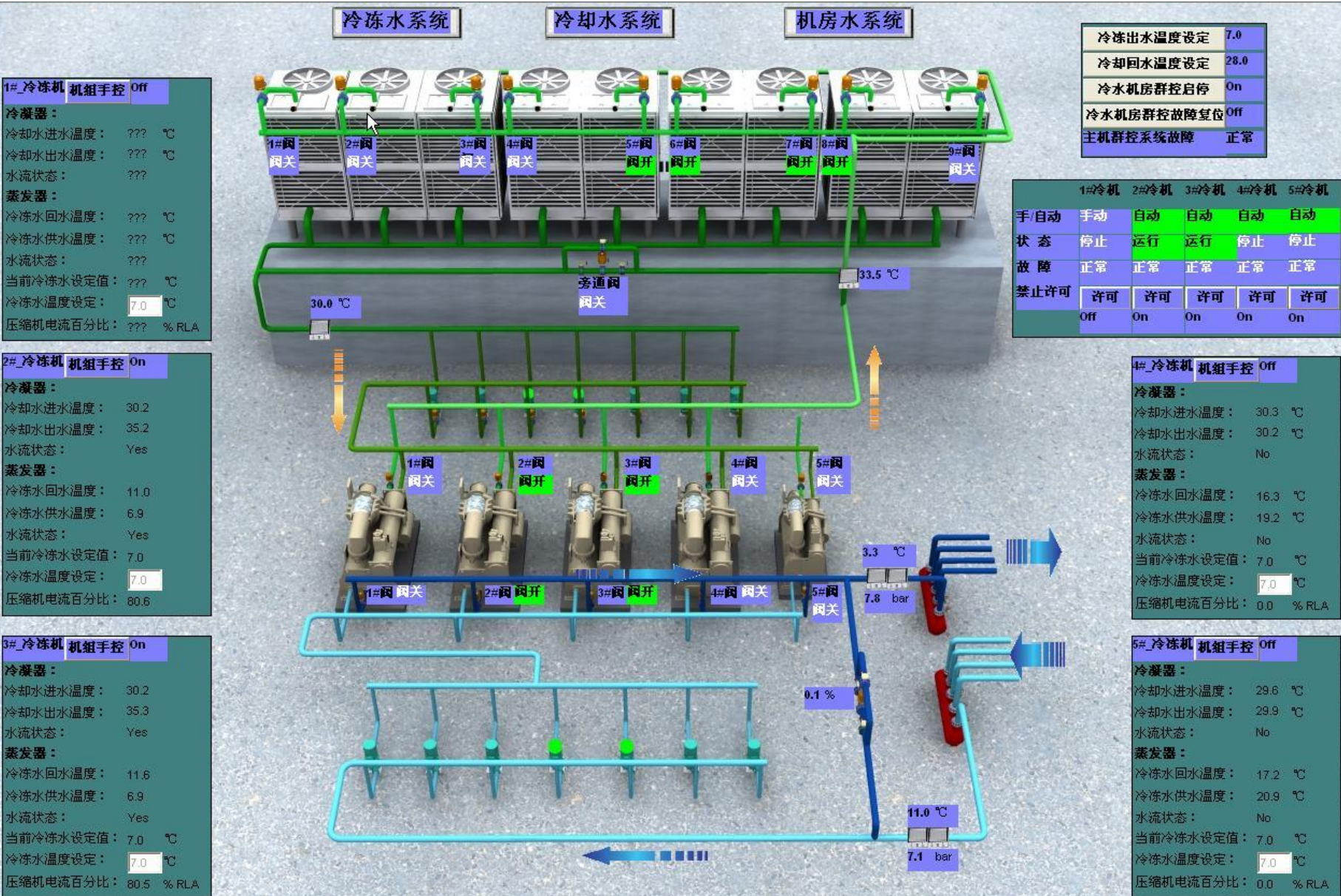


ICS架构-Tracer Summit

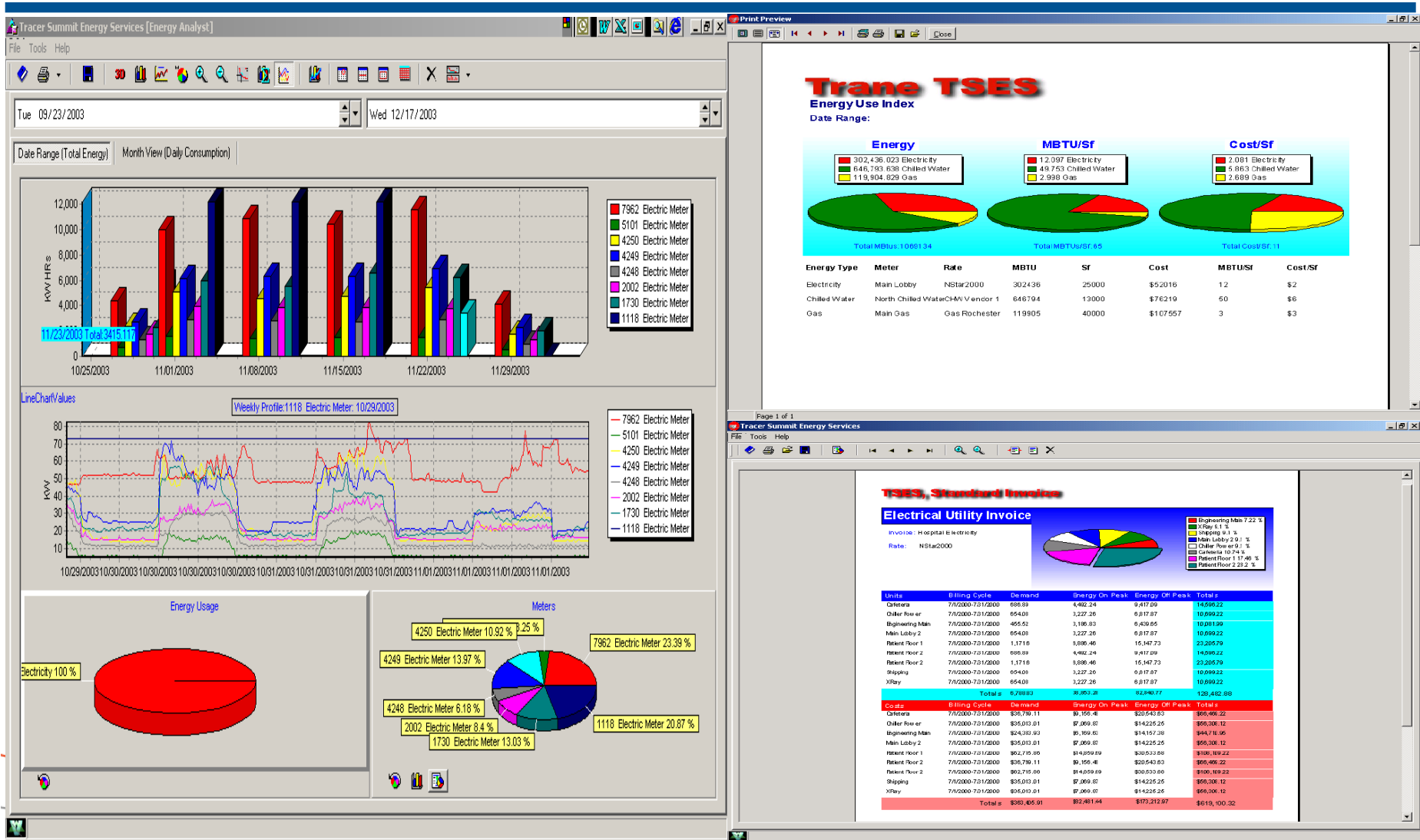


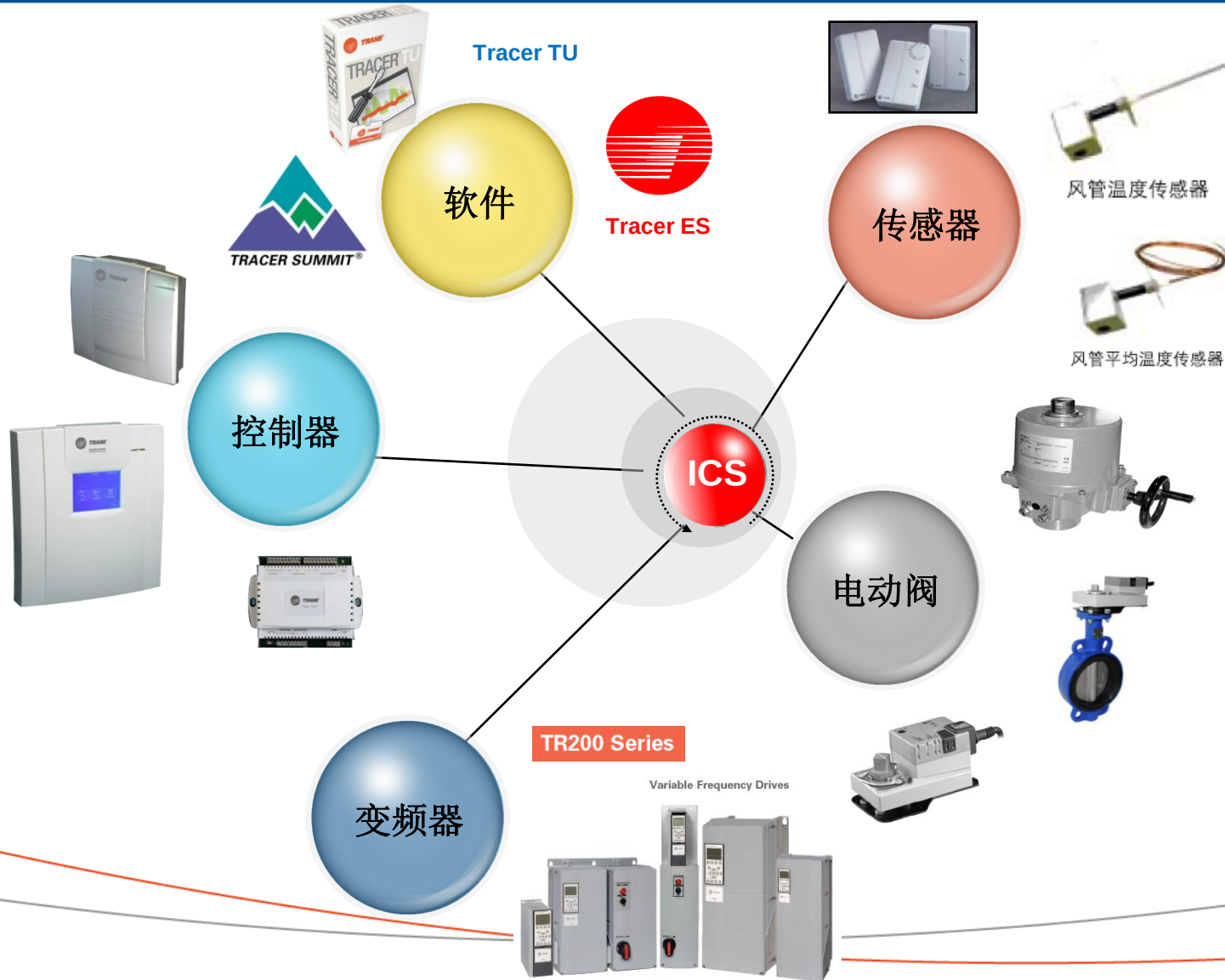
ICS架构-Tracer Summit





ICS架构-Tracer Summit

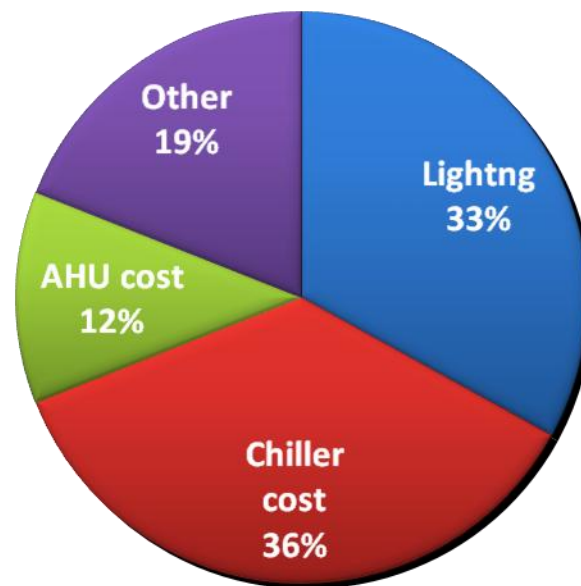
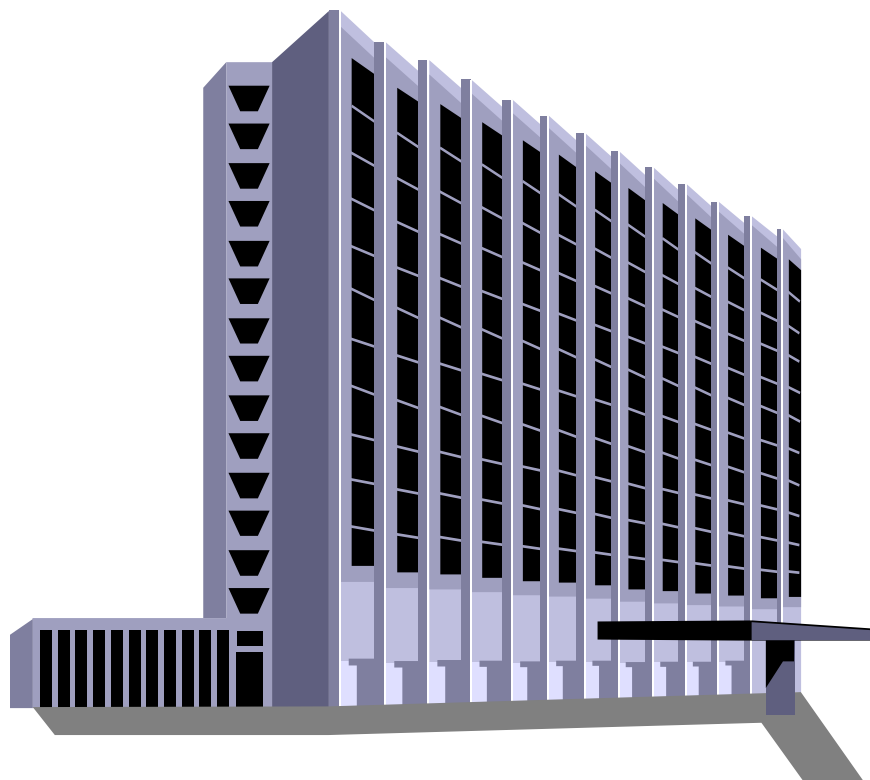




应用篇

3

ICS的特色及应用



空调用电是大楼用电的50%，而主机用电又占空调用电的70%
怎样能更好的控制冷源中心才是一个最重要的问题

The Trane Advantage



Knowledge-based Software Solutions

Information Integration
Front-end Solutions

Systems Integration
Fire, Security, Access, Lighting

Integrated Comfort System
Control System Products

HVAC
Solutions

专业的软件解决方案

信息集成——前端解决方案

系统集成——消防、安防、照明

系统舒适集成——自控产品

Tracer Summit

机房群控四大基本功能

- 控制系统出水温度 (Control System Leaving Water Temperature)
- 自动复归失效模式 (Recover from Failures)
- 能源最佳化高效率运转 (Optimize Energy Use)
- 平均运转小时及启停 (Equalize Run Time/Wear)



加机逻辑

建立在供水温度与冷冻水设定温度的基础上

操作员修改延迟时间及死区



减机逻辑

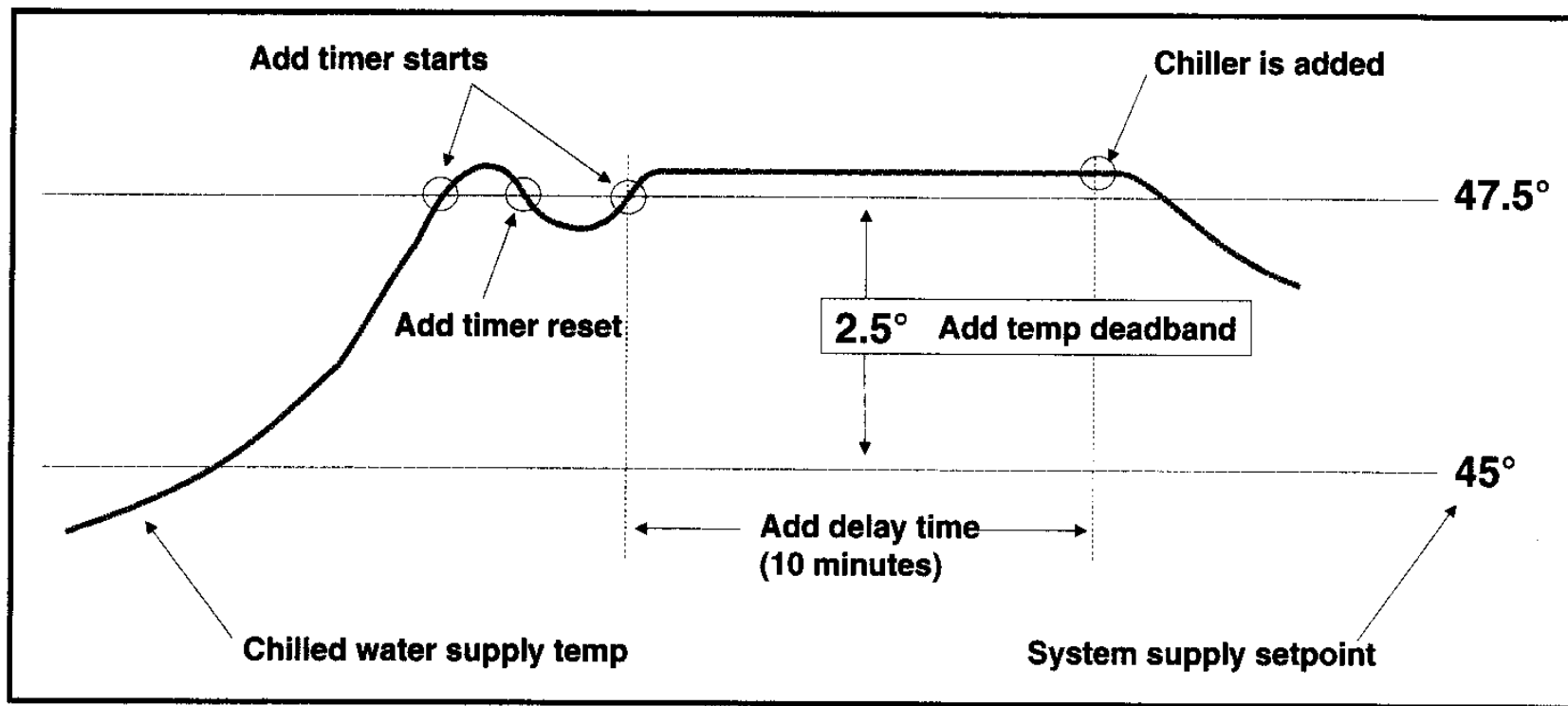
建立在供回水温度或旁通流量（大系统）和主机容量的基础上

操作员修改延迟时间及死区

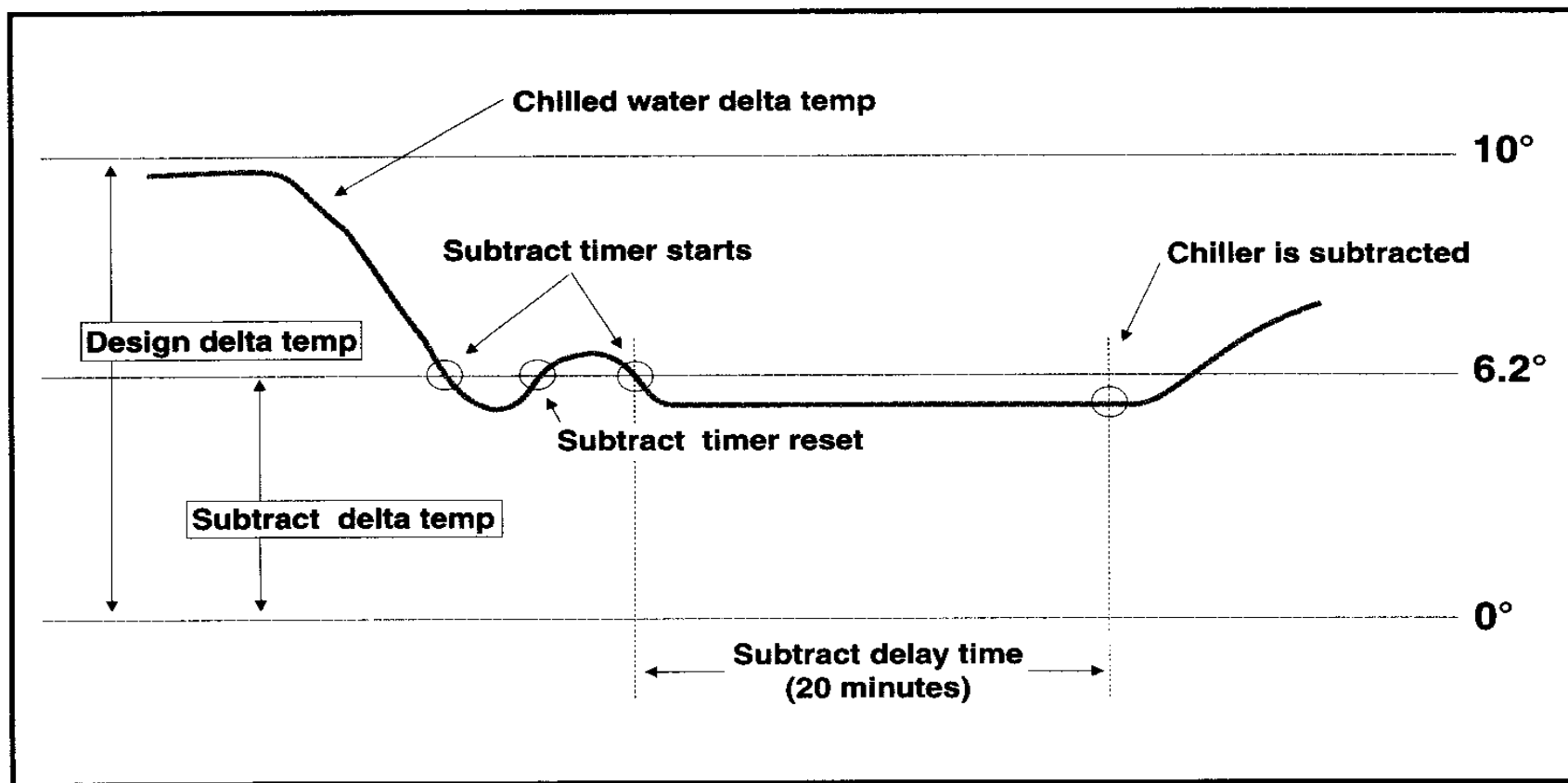


客户编制

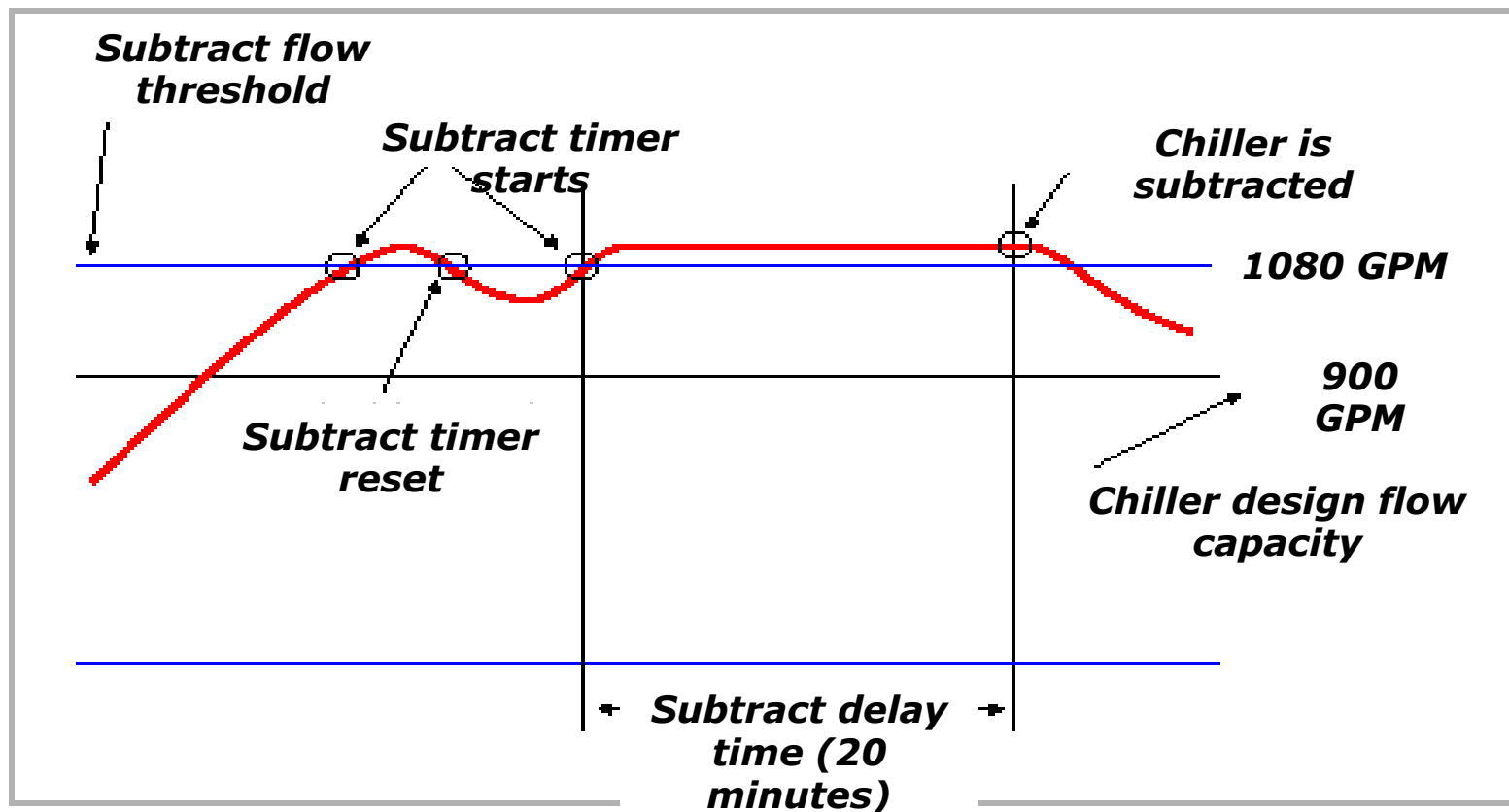
可由客户按自身特殊逻辑需要进行修改



冷冻机房控制的加机逻辑比较了：
系统的供水温度与系统的供水温度设定值
加上加机死区。



根据温度的减机逻辑检测系统实际供回水温差 ΔT_a 。



根据流量的减机逻辑检测系统实际旁通流量 Q 。

ICS机房群控的特点与优势

特 点

- Trane 设备+自控整体销售
- 专业的暖通空调系统知识
- 对暖通空调系统的了解
- 系统应用经验
- 基于空调系统而研发设计
- 冷水机组控制器UCMs

优 势

- 配合空调设备特点制定系统方案
- 配合系统特点制定控制逻辑
- 专业高效的调试
- 优化运行降低风险
- 与其它楼宇公司的区别
- 冷水机组与ICS系统无缝通讯

product info



tech support

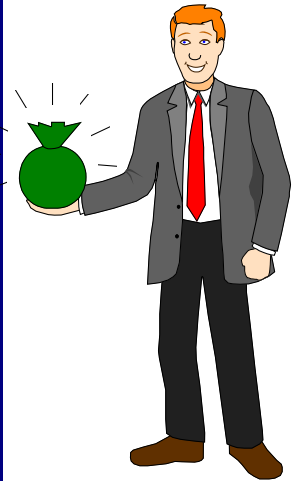
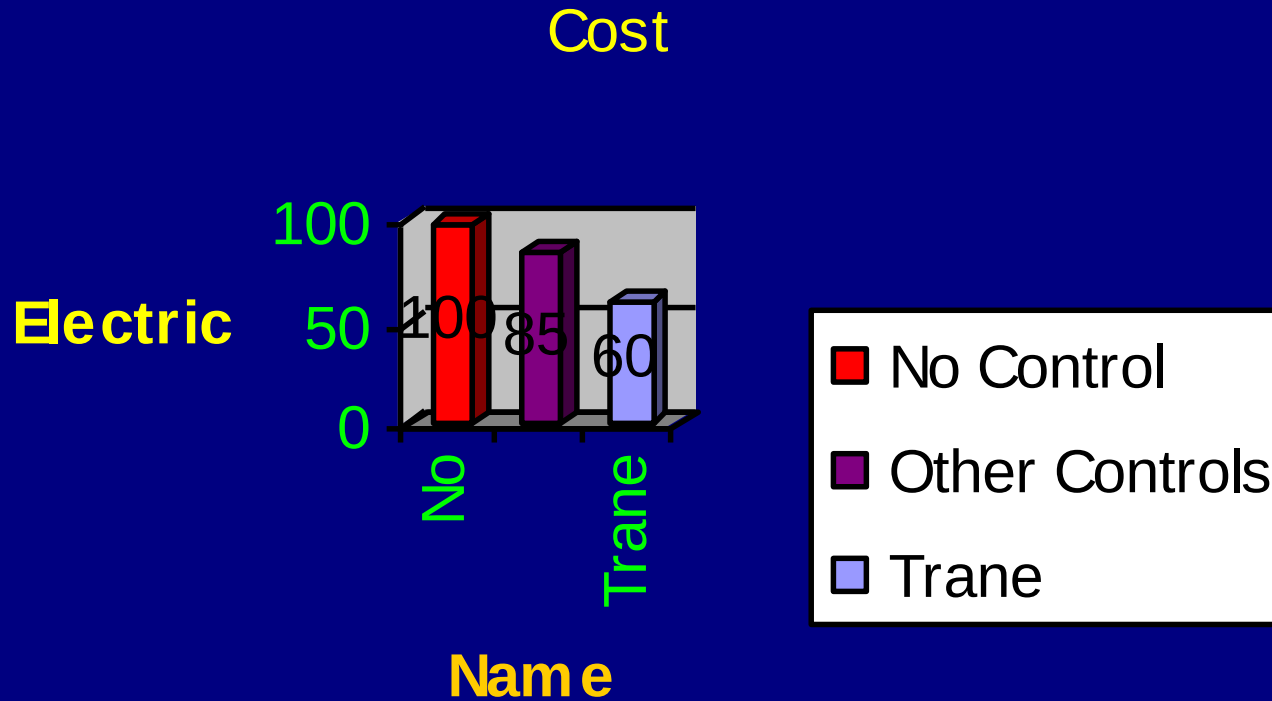


points bank



training center

节能！省钱！



ICS 的应用——细分市场的集成商



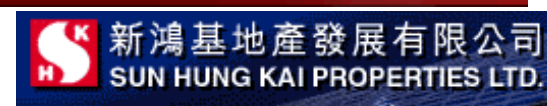
半导体



酒店



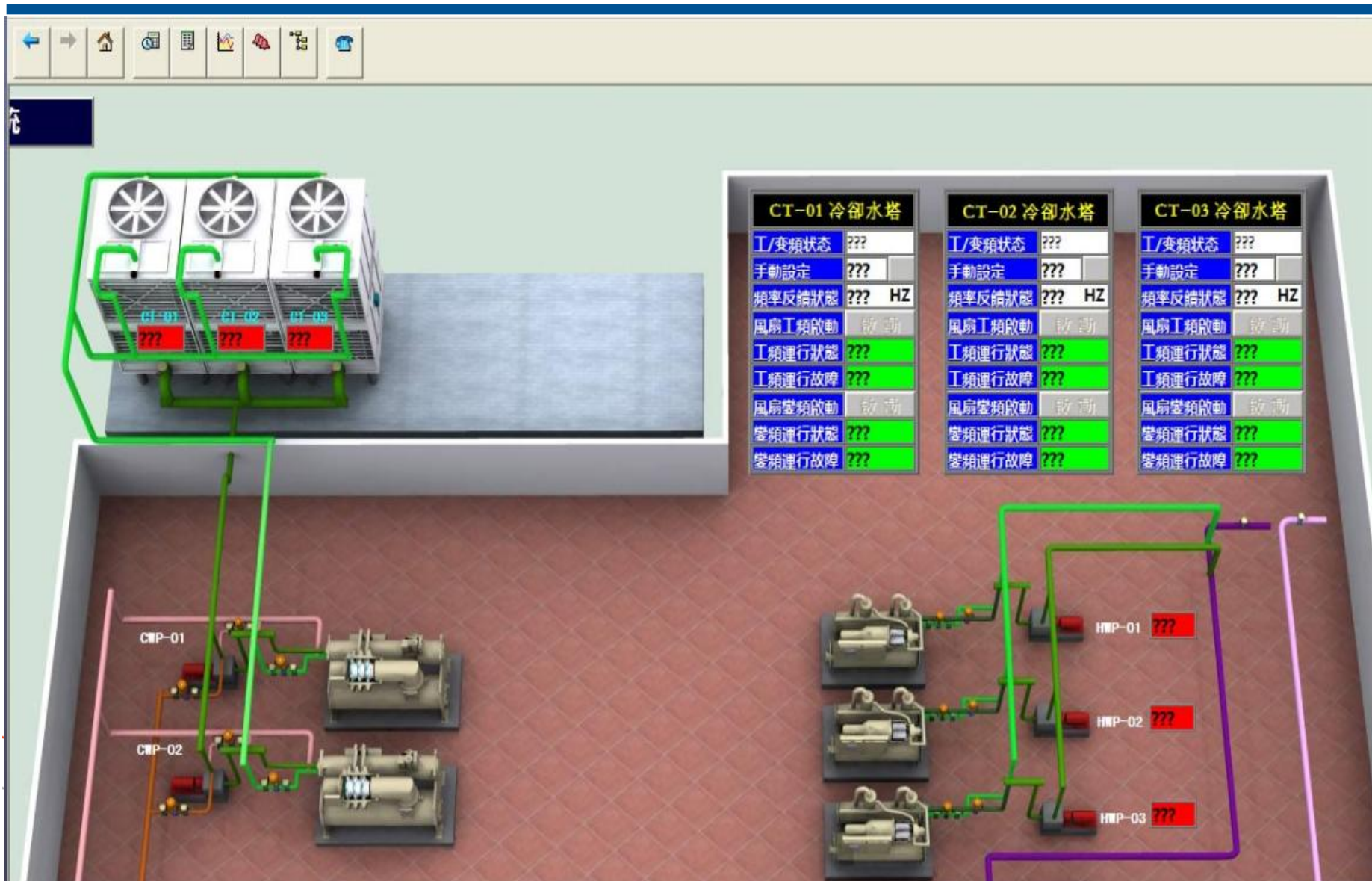
商业地产



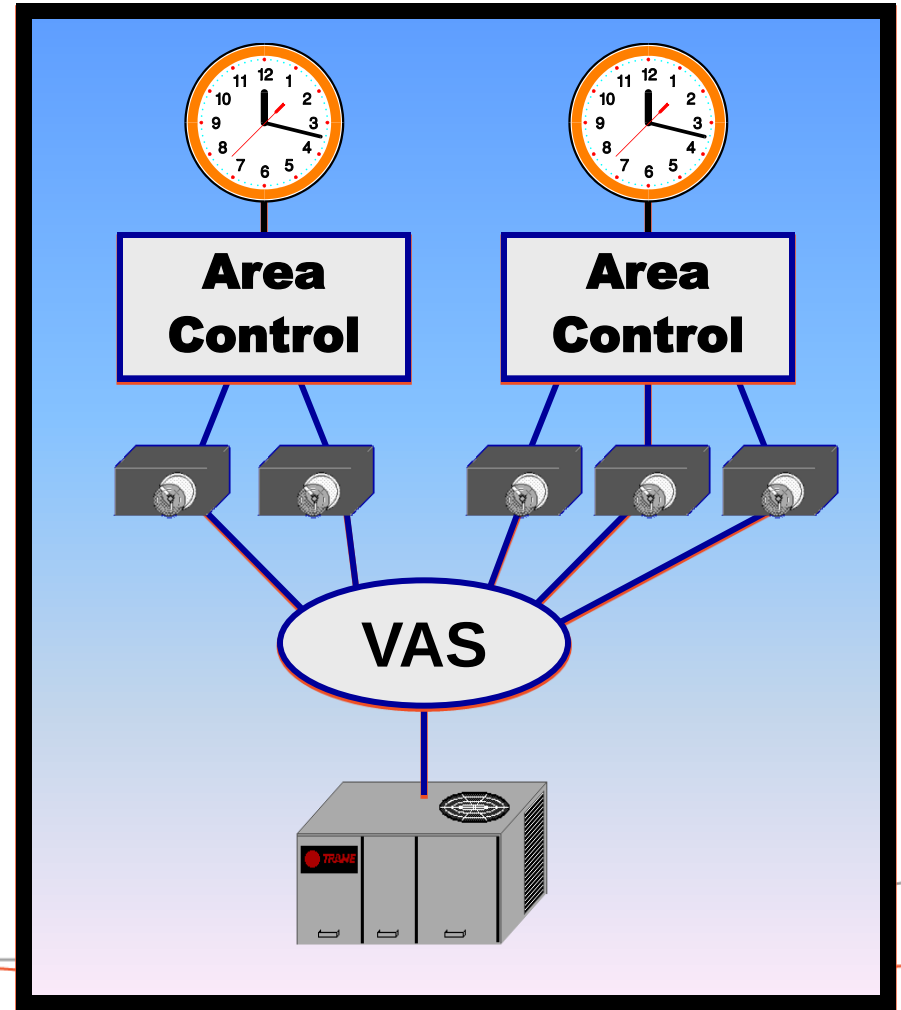
超市/零售

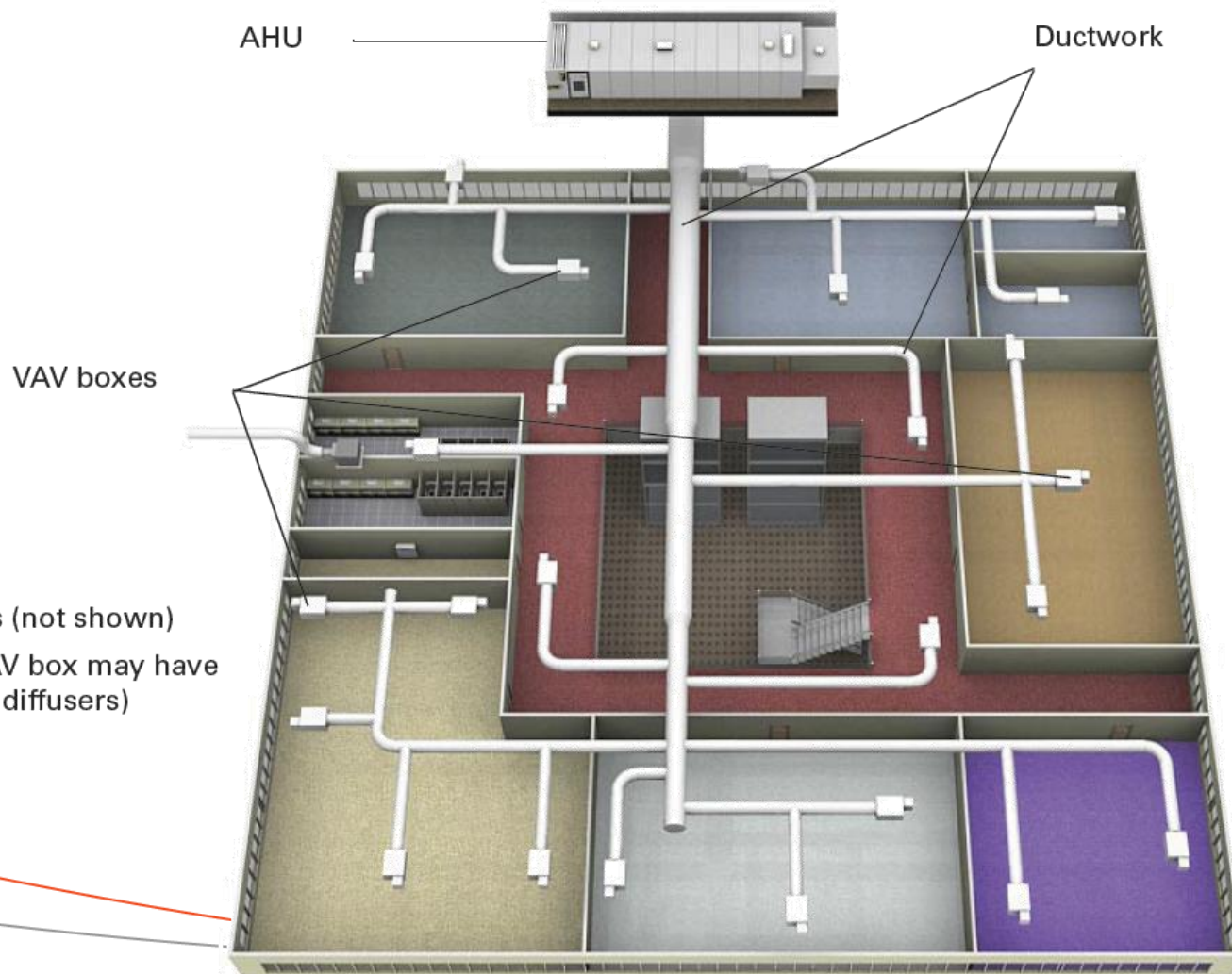


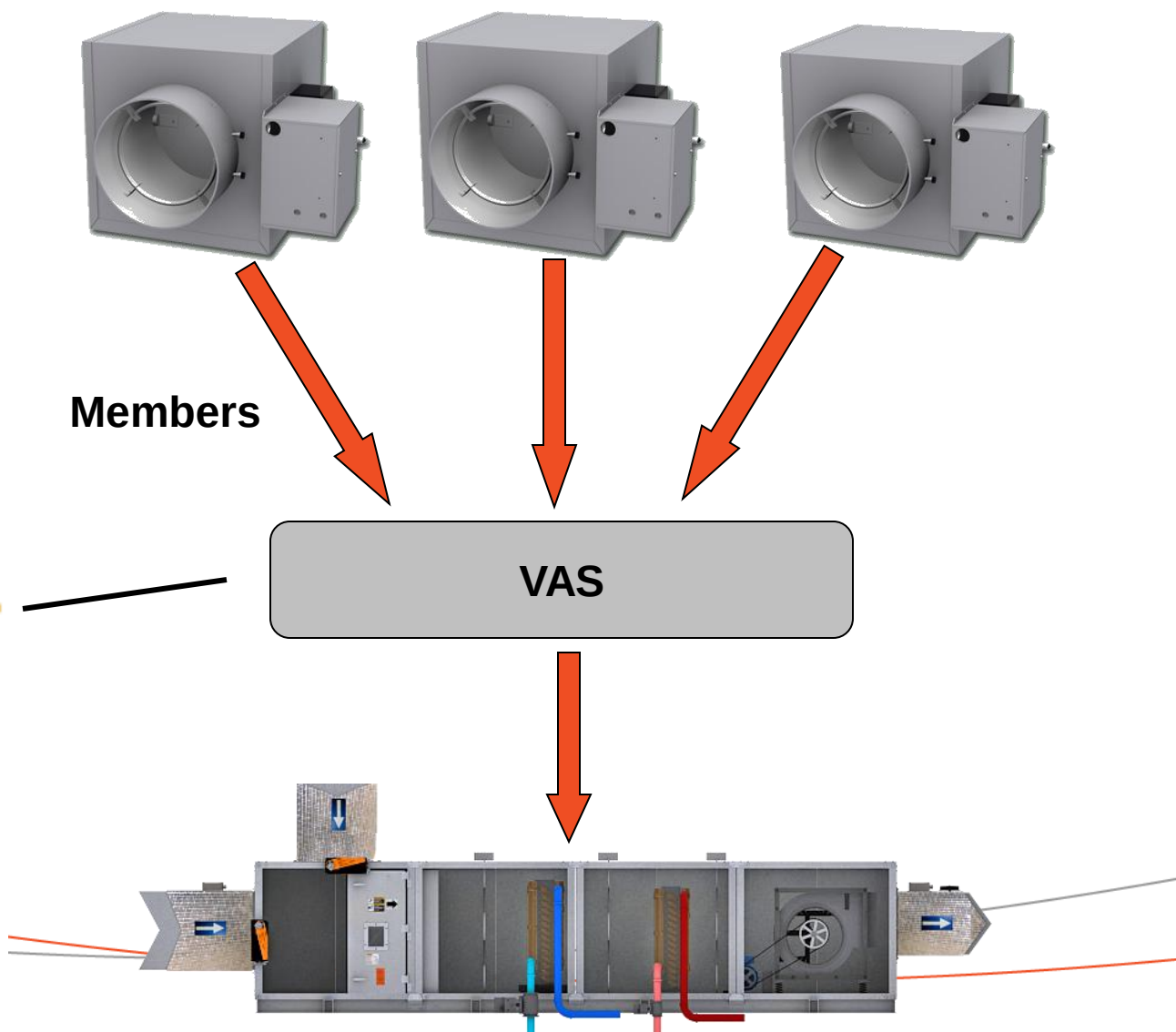
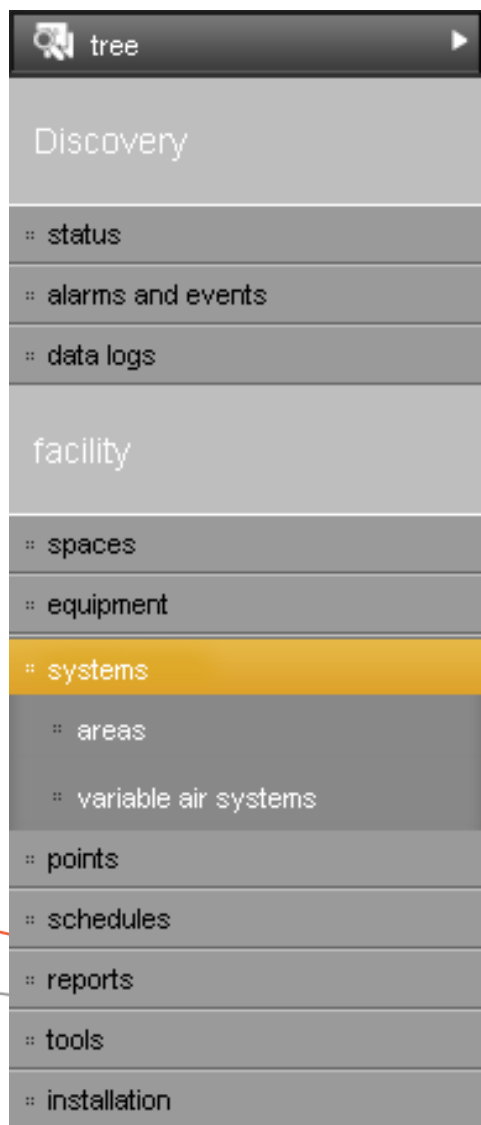
ICS 的应用——水系统



Build it!





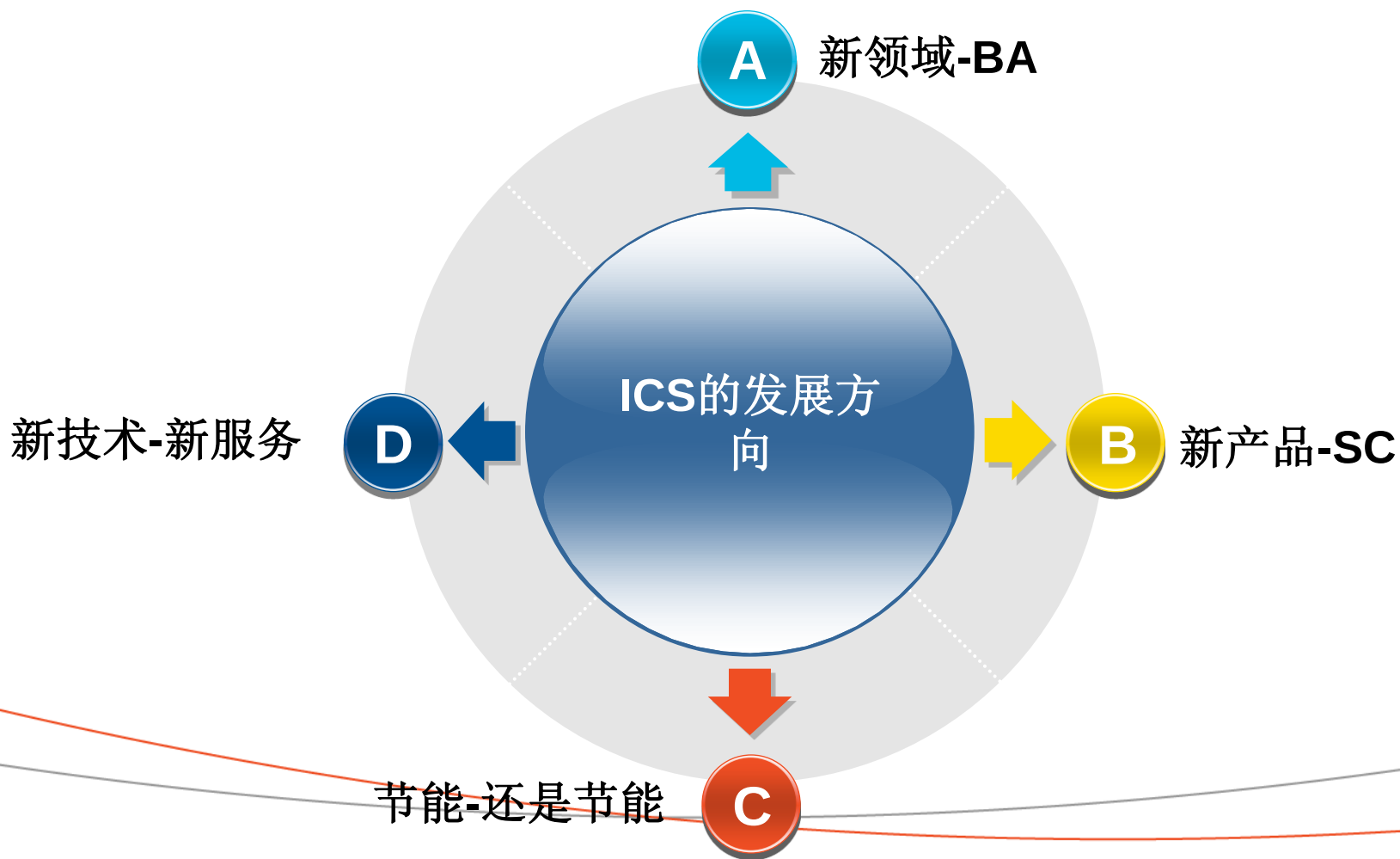




展望篇

4

ICS的展望





System Overview >

Learn About Tracer™ SC >

The Tracer™ SC

The Tracer SC system controller acts as the central coordinator for all individual equipment devices on a Tracer building automation system. It communicates with unit controllers that provide standalone control of heating, ventilation, and air conditioning (HVAC) equipment.

Explore Tracer™ SC Online Management >



便捷的网页平台

Provides Easy Web Access

开放的协议

Supports Open-Standard Protocol

简便的测试性

Eases Scalability

提供节能的程序

Energy-Saving Programs

预安装系统应用功能

Pre-Programmed
System Applications

主流产品

新产品

Enterprise
企业



Tracer Summit
Workstation



Tracer ES™



Building
楼宇



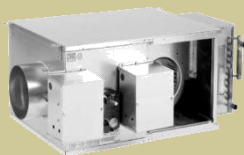
Tracer Summit
Workstation and BCU



Tracer™ SC



Equipment
设备



Tracer Unit Controls
(LonTalk)



Tracer™ UC
(BACnet)



Spaces
区域

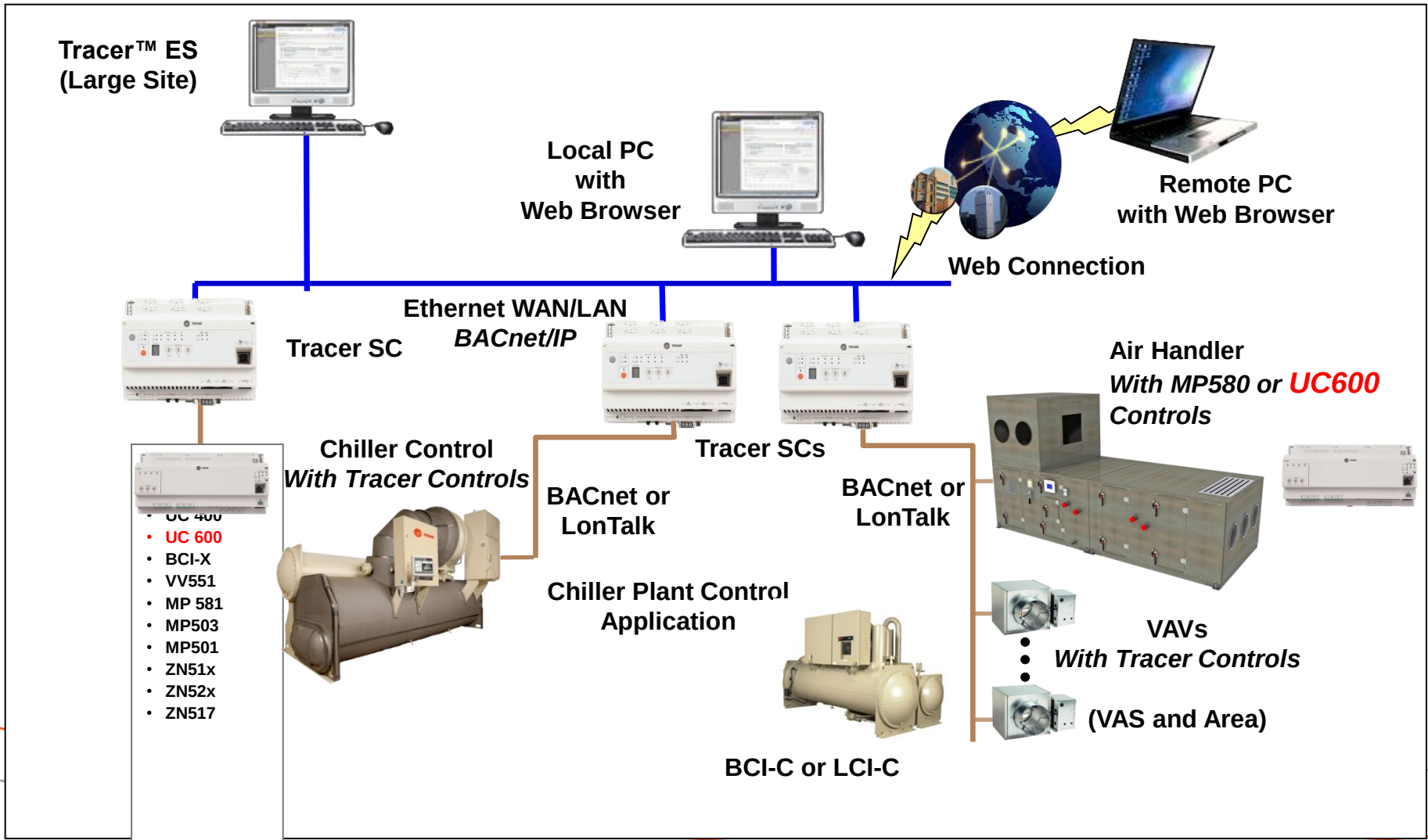


Wired Sensors

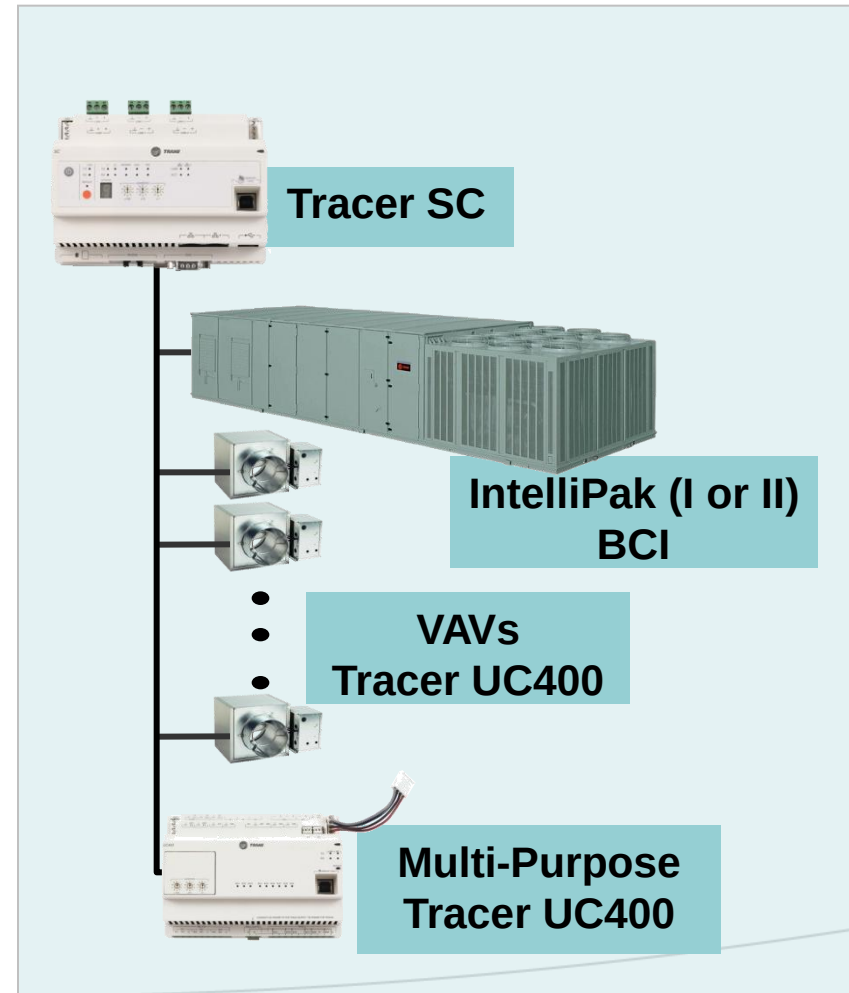


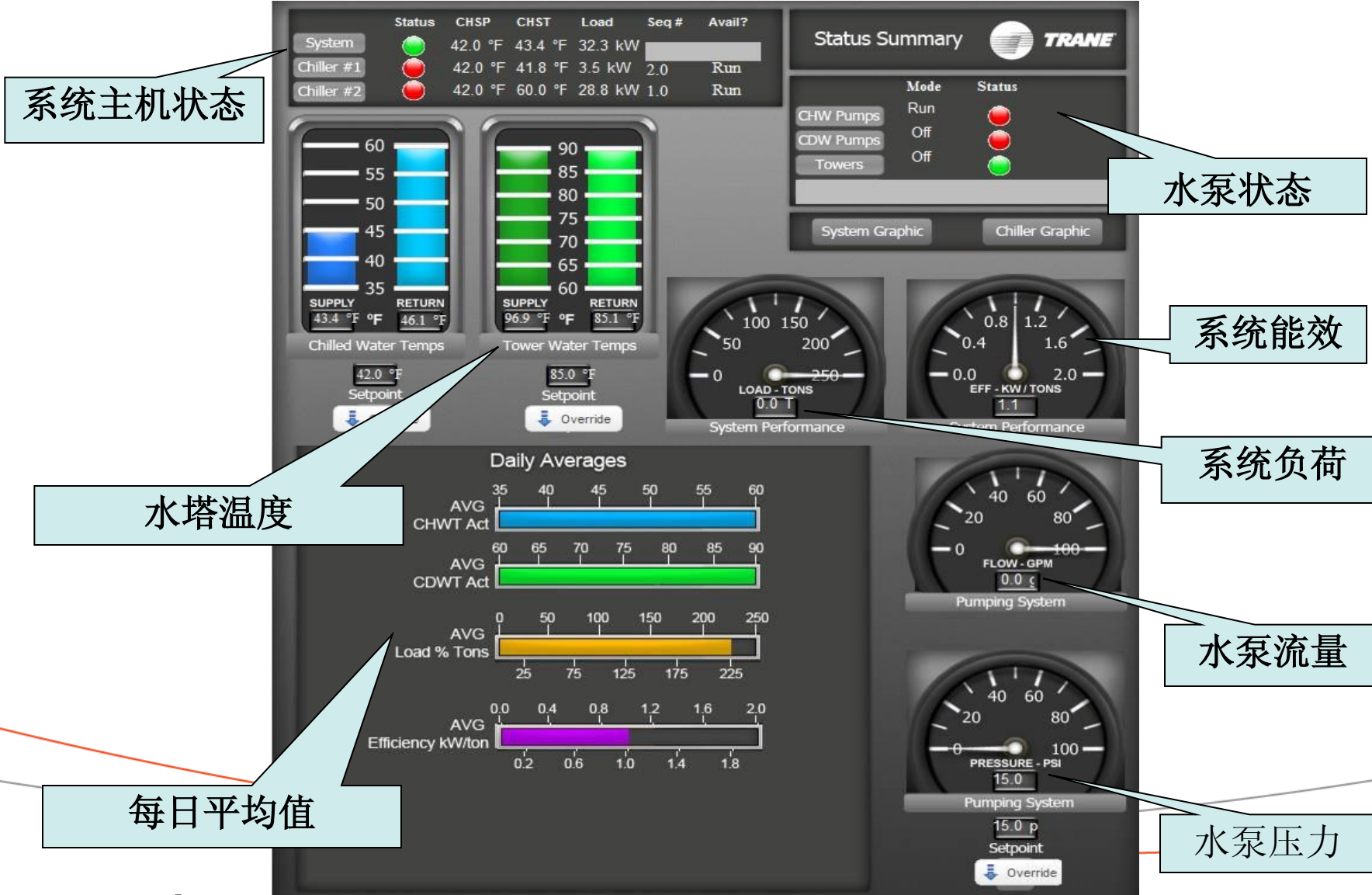
Wireless Sensors





- Supports 2 MSTP links
 - 60 devices per link
 - 120 maximum per SC
- Tracer TU service tool
 - Configure Devices
 - UC400
 - UC600
 - UC800
 - Program devices using TGP2
 - Create custom graphics
- Support for third party devices









ICS的展望——新产品



Back to System Overview

Learn About Tracer™ SC

Status >

1 2 3 4 5 6

Scheduling >

1 2 3

Trending >

1 2

Alarming >

1 2 3

Reporting >

1 2 3 4

tree

status

alarms and events

data logs

facility

spaces

equipment

systems

points

schedules

reports

tools

installation

Name: Floor 1 IntelliPak RTU

Active Mode: Cooling

Present Value: Occupied

IntelliPak Roof Top VAV, DX Cooling

Outdoor Conditions
78°F Humidity 58%

Supply Air Conditions
Temperature: 56.2 Deg
Cooling Setpoint: 55.0 Deg
Pressure: 1.96 IWG
Pressure Setpoint: 2.0 IWG
Fan IGV/VFD: 85 %

Space Conditions
Temperature: 74.9 Deg
Exhaust Fan: ON
Space RH: 54 %
O.A. Setpoint: 3,200 CFM
O.A. Flow:
Fan Status: ON
Cooling Status:
Capacity In Use:

3200

Did You Know?
Users can quickly and easily understand current operating conditions of their rooftop unit.
Standard equipment graphics provide visual representation of HVAC unit parameters.

©2009 Trane

May 11 2009 4:56 PM EDT

完成

ICS的展望——新产品



Back to System Overview
Learn About Tracer™ SC

Status > 1 2 3 4 5 6

Scheduling > 1 2 3

Trending > 1 2

Alarming > 1 2 3

Reporting > 1 2 3 4

Alarming (Page 2 of 3) Did You Know?

On the go building operating staff can get notification anywhere.

Tracer SC can send alarms to remote devices such as cell phones or Smartphones.

E-mail
1 KB
To: GreenwayTracerSC@Tracer SC.com
Subject: (SPS Event Notification)
The following event has been detected by the Trane building automation system:
Facility: Greenway Office Plaza
Point Name: Greenway Office Plaza Power

完成

Internet

100%

BAS 子系统类型

HVAC 控制系统

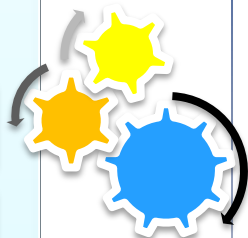
照明控制系统

给排水监控系统

变配电监视系统

电梯运行监视系统

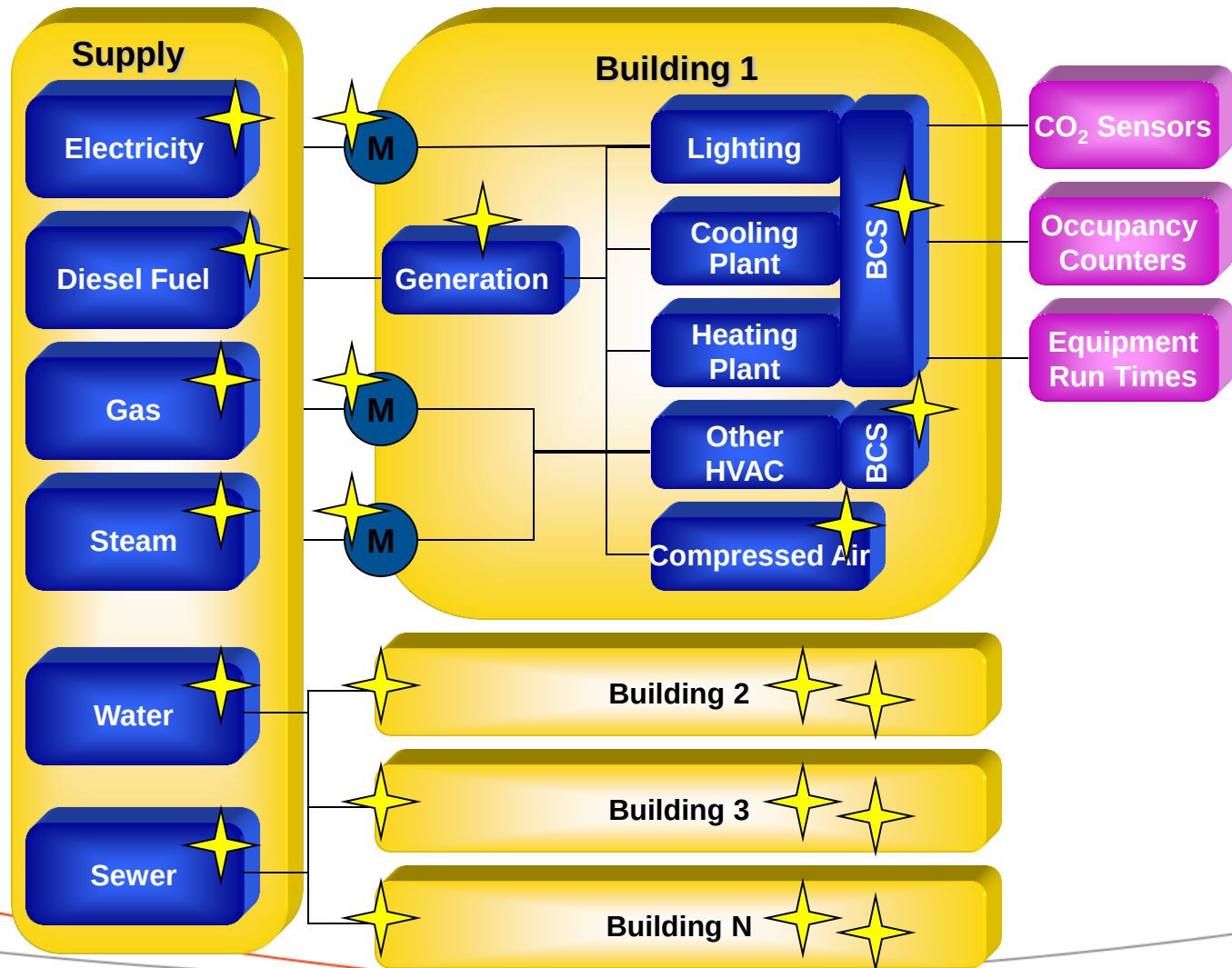
巡更监视系统



HVAC 系统构成

- 冷冻机房 (Chiller Plant)
- 冷却塔系统 (Cooling Tower System)
- 锅炉 (Boilers)
- 热交换系统 (Heat Exchange)
- 空调机单元 (Air Handling Units)
- 风机盘管单元 (Fan Coil Units)
- 变风量箱 (VAV Boxes)
- 加热 (Electric Heaters)
- 送排风 (Exhaust & Ventilation Fans)
- 泵 (Pumps)
- 等等 (Etc.)

Trane control system – Tracer Summit



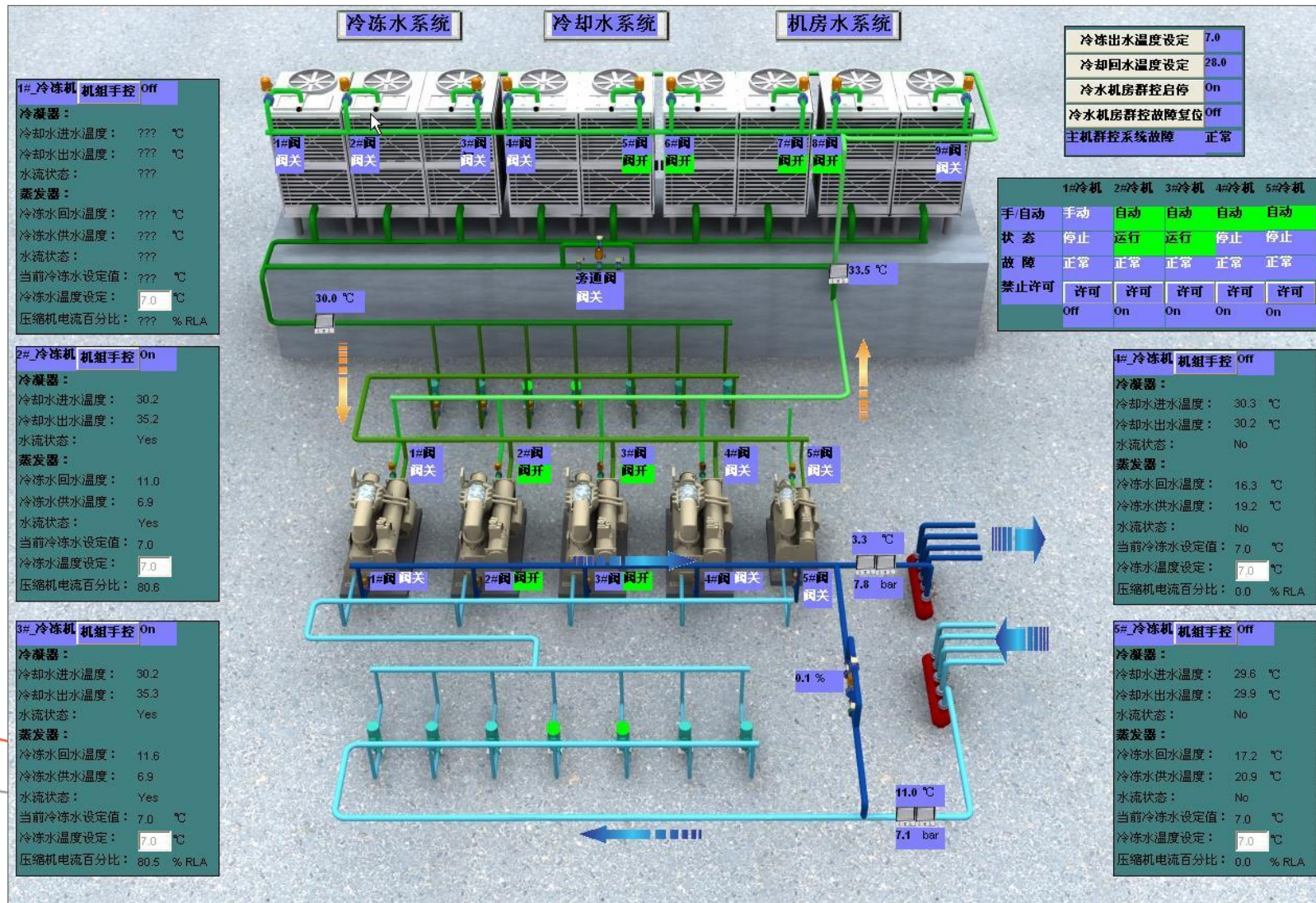


案例篇

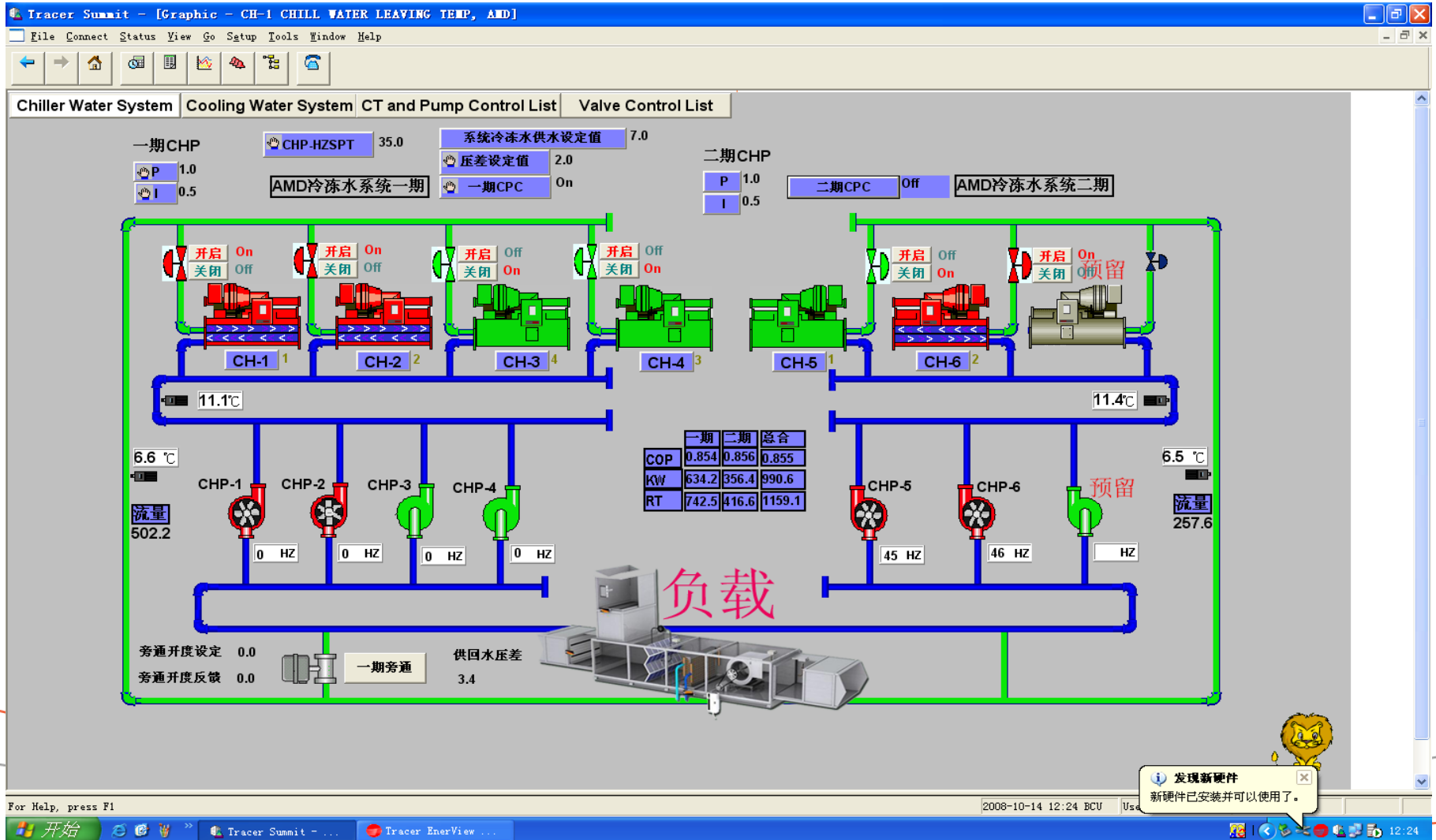
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ICS案例介绍

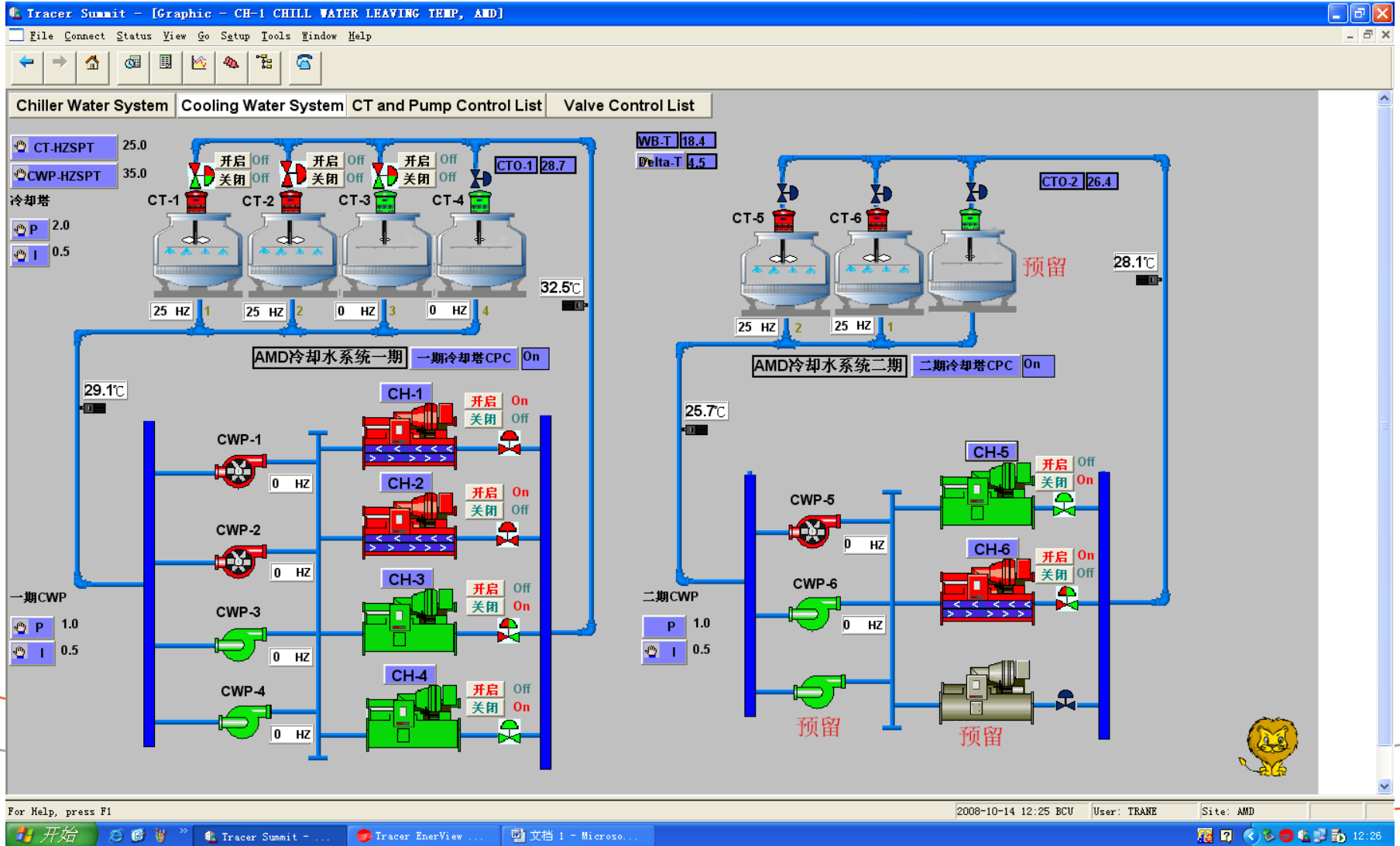
上海由由国际软件园



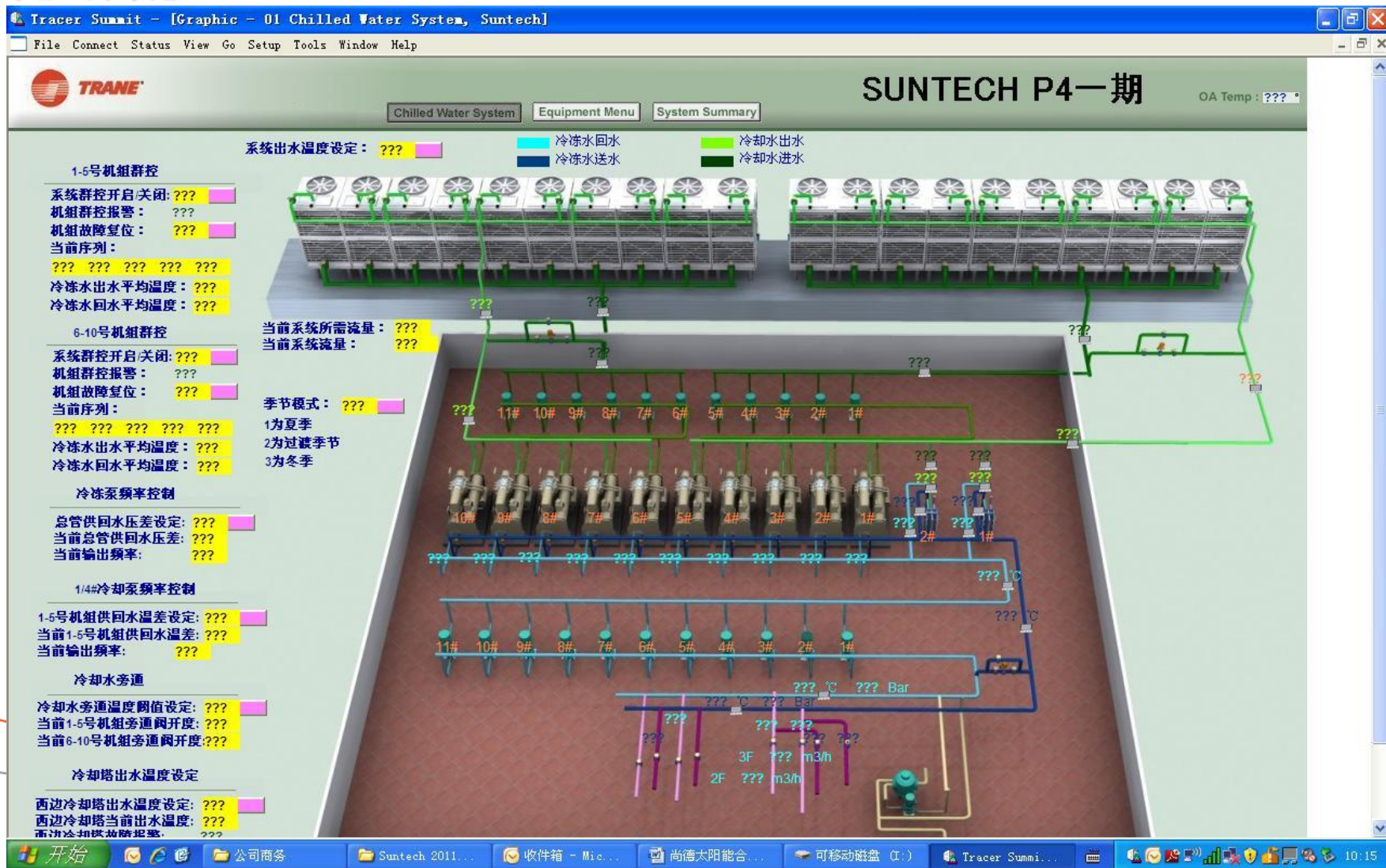
苏州AMD



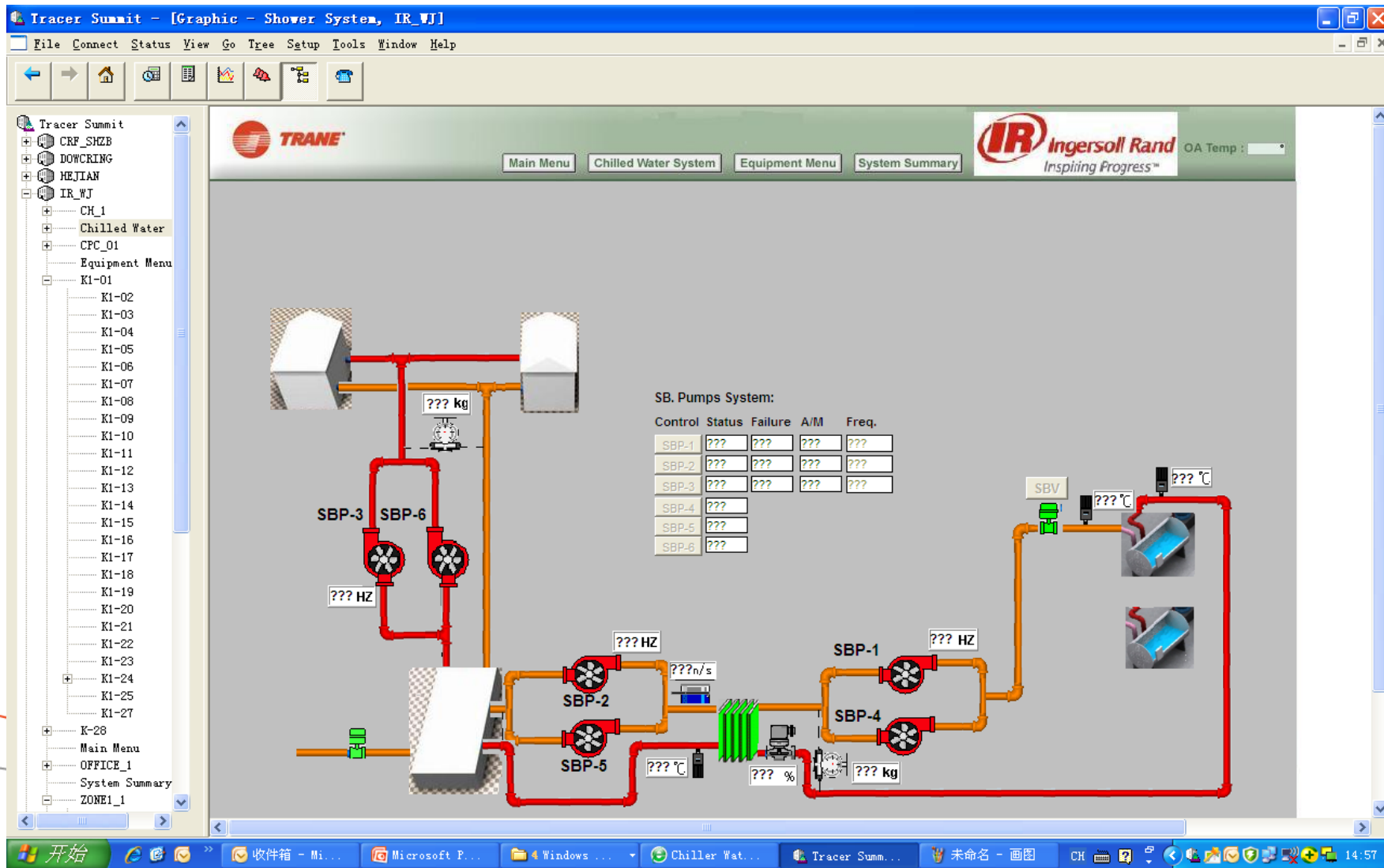
苏州AMD



无锡尚德



吴江IR工厂



ICS案例介绍



吴江IR工厂



Carrefour China – Remote Control Center



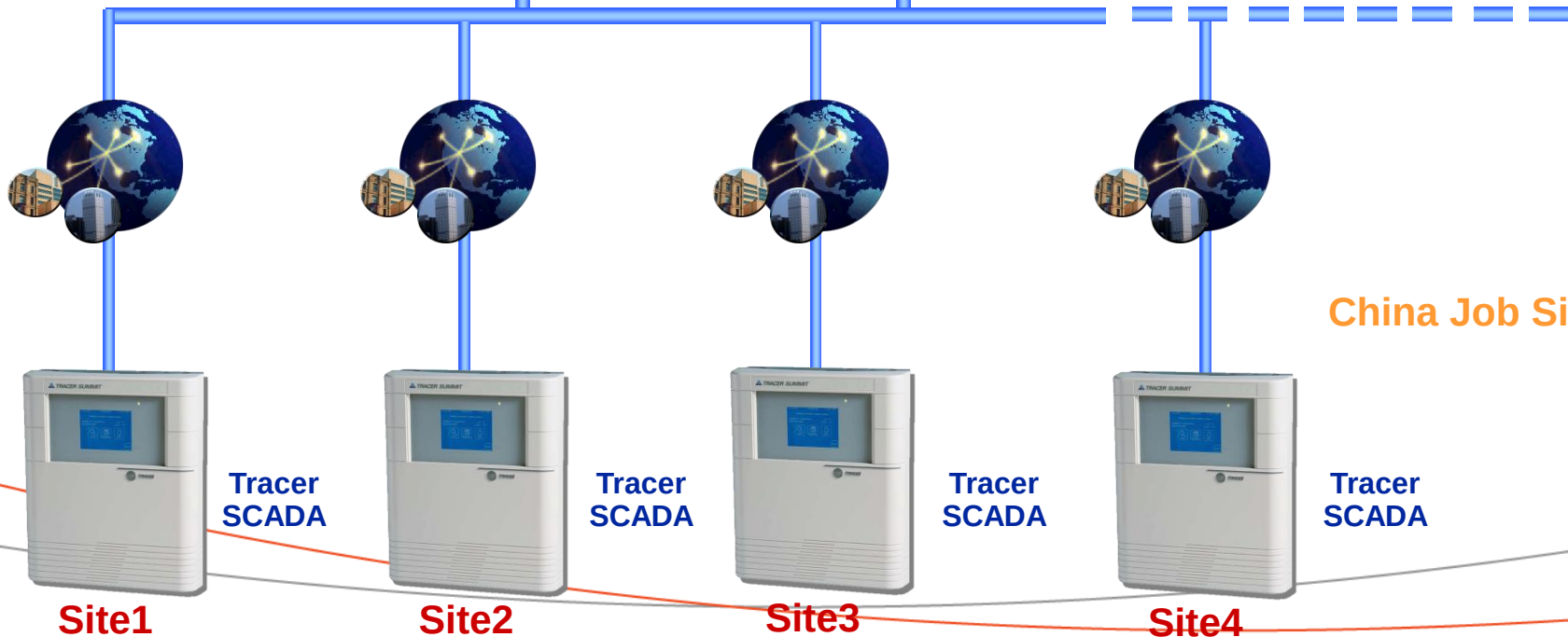
Remote
Work Station



Remote
Work Station



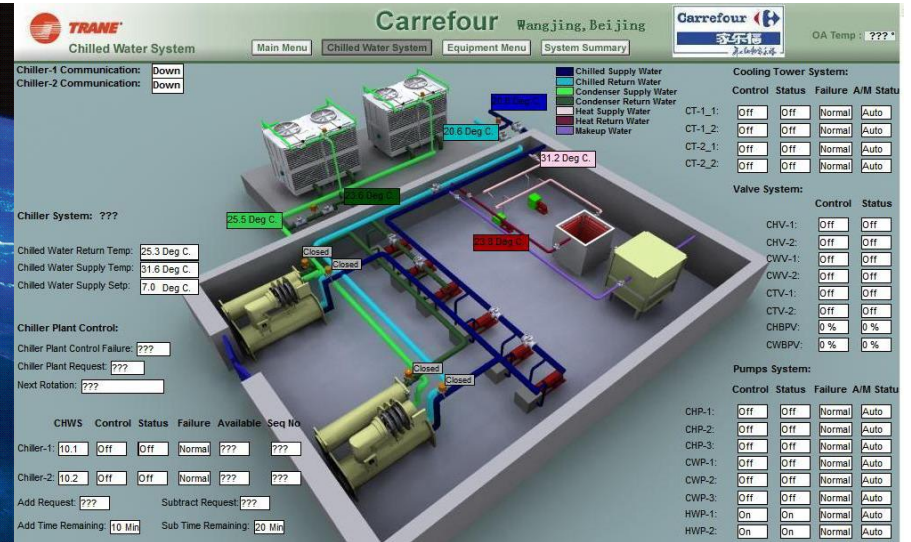
Shanghai
Monitoring Center



ICS案例介绍- 家乐福



3D interface

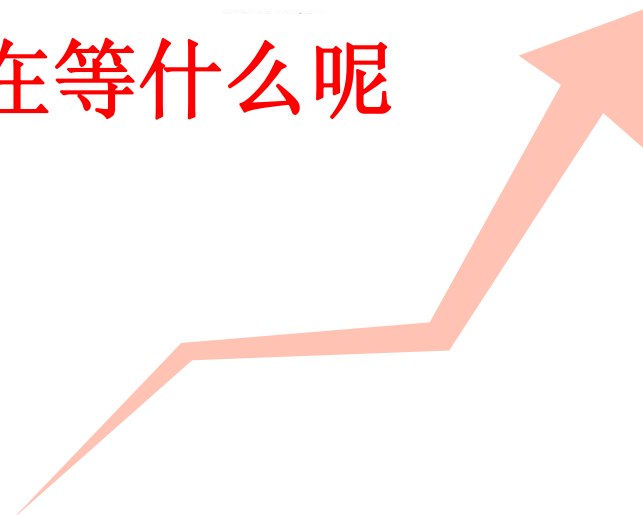


厚积而薄发

卓越性能 钻石品质



您还在等什么呢



TRANE C & C TEAM ECD



TRANE C & C TEAM ECD