SkyWave

SkyWave IsatM2M and DMR-800D

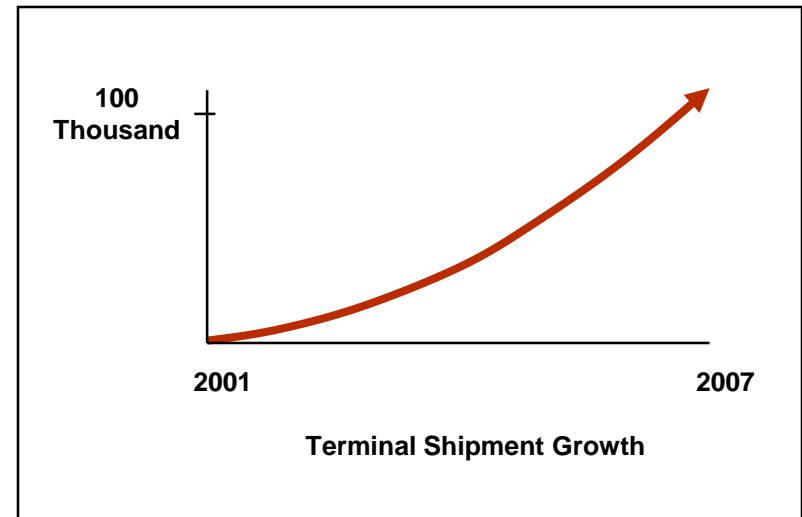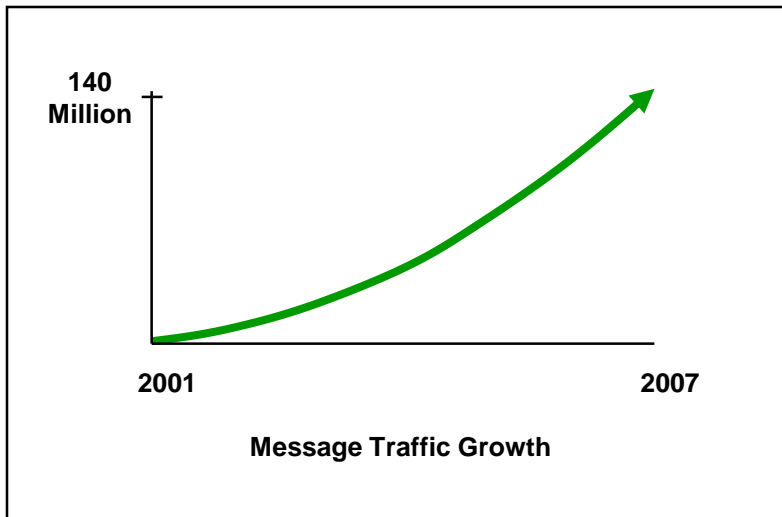# Who Is SkyWave…

SkyWave

- Pioneer of low-cost global telematics
  - 10+ years experience operating D+ network
  - Part of the initial team who designed D+ with Inmarsat
  - Delivering 6th generation of reliable, low-cost terminals
  - Part of the team who designed IsatM2M based on D+ success

- Privately held with stable financial operation

- Headquarters in Ottawa, Canada
  - Sales offices in Mexico, Brazil & Hong Kong

- 70 employees
  - Direct support in English, Spanish, Portuguese, Chinese, others

The Leader by Performance

SkyWave

By Quality and Quantity, the Global Leader in D+ Terminals and Network Services

140 Million

2001   2007

Message Traffic Growth

100 Thousand

2001   2007

Terminal Shipment Growth

Proven, Experienced, Stable & Reliable

The Keys to Our Success

SkyWave

- Global Network of Value-Add Partners
  - Over 170 Channel Partners
  - Over 45 Countries served

- High quality, rugged, reliable products
  - Less than 1% failure rate, 5th-gen DMR-200
  - Reliable, consistent satellite service worldwide

Working with Partners in Mutual Success

SkyWave IsatM2M Creates Opportunities

SkyWave

IsatM2M: ~1 min, 25-bytes

D+: ~4 min, 10-bytes

New Opportunities

IsatM2M Applications

D+ Applications

Message Size

Message Delivery
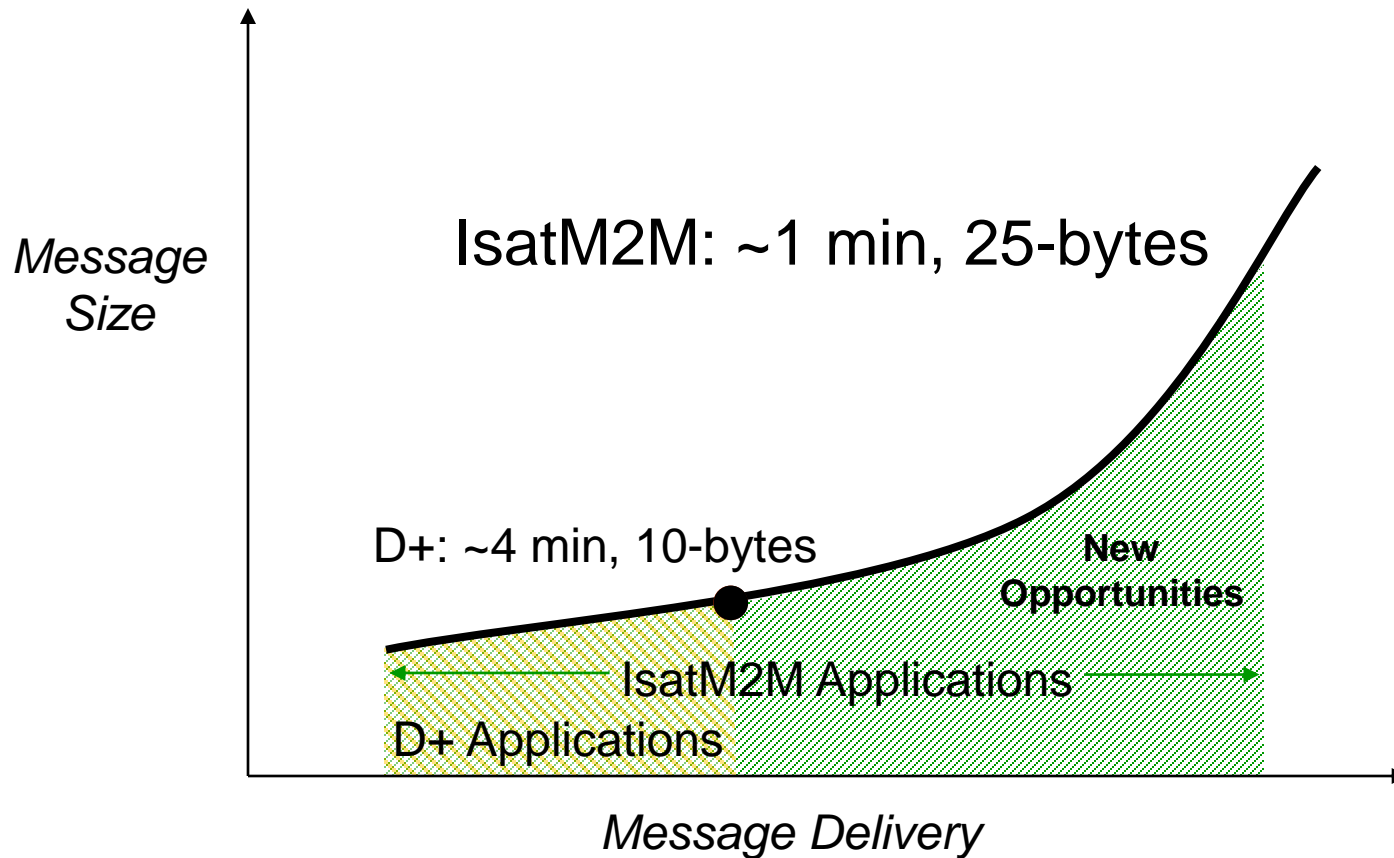
IsatM2M creates new opportunities, enhances existing applications. Greater responsiveness

Helping Your Business Grow

SkyWave

Reliable
SkyWave D+

- Vehicle tracking (AVL)
- Vehicle security
- Canned messaging
- Fishing buoys
- Environmental buoys
- SSAS
- VMS
- Low-end SCADA
- Container tracking

+

Reliable + Responsive
SkyWave IsatM2M

- Enhanced vehicle security
- Freeform text messaging
- Mid-range SCADA
- Advanced fishing & environmental buoys
- Leisure marine

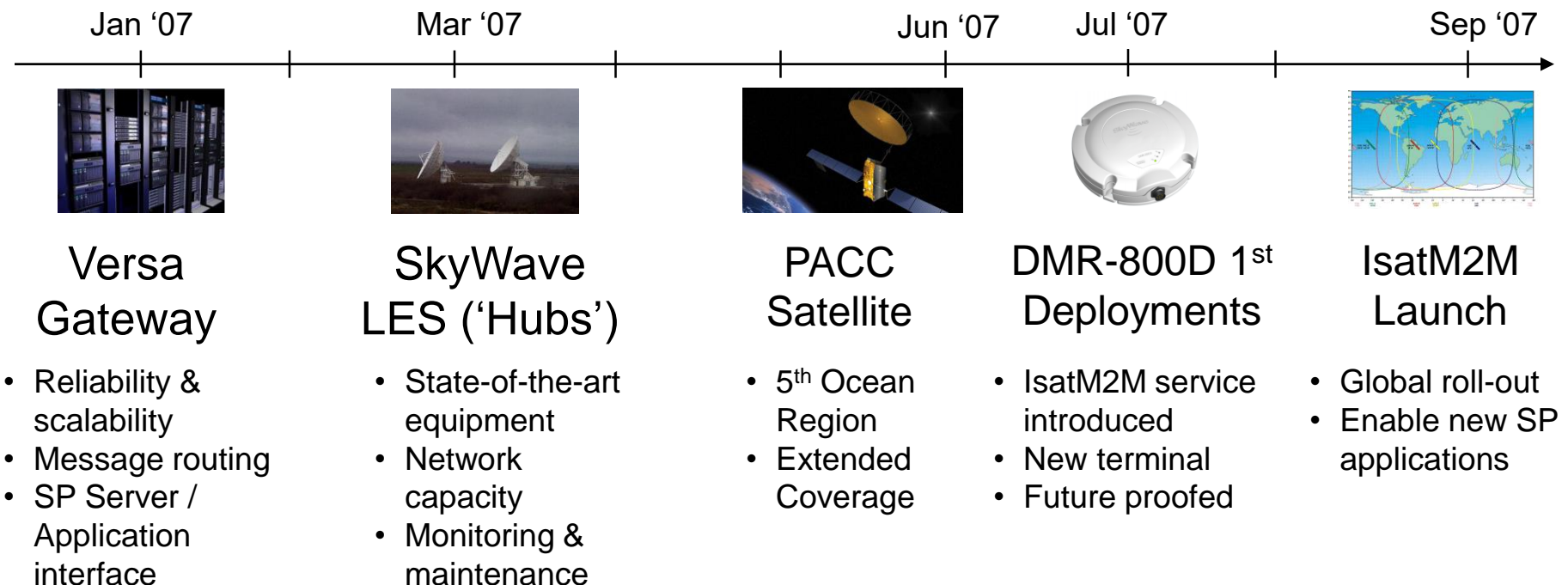**+**

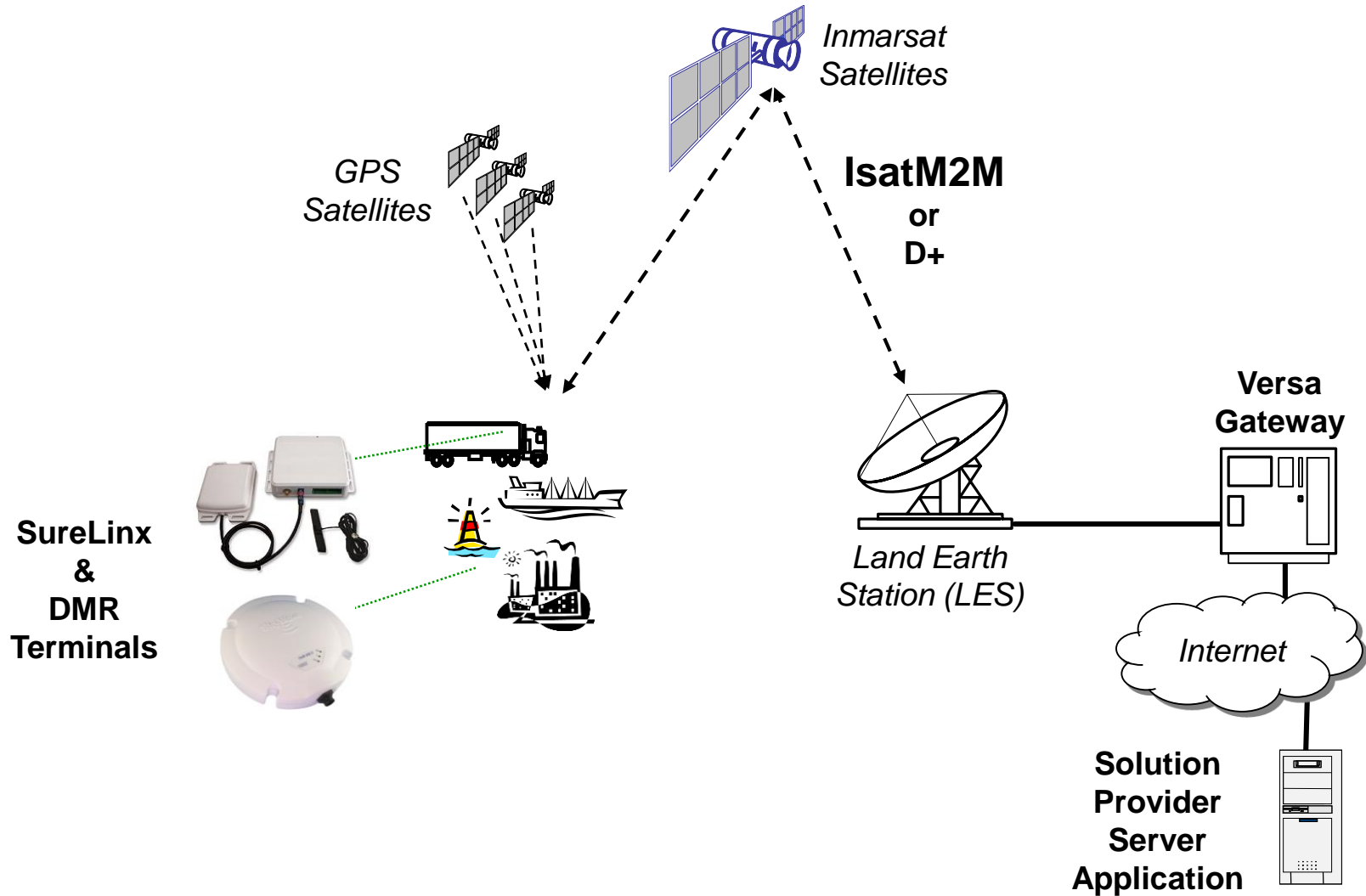### + Flexible
Satellite/GPRS

- Real-time logistics
- Driver monitoring
- Maintenance services
- Operations analysis
- Urban and remote operation
- Reliable backup communications

SkyWave solutions leverage your D+ investment to expand into new business and applications

Investing in Responsiveness

SkyWave

- Purpose-built infrastructure for SkyWave D+ and SkyWave IsatM2M
  - Independently operated network
  - More data, faster with SkyWave IsatM2M

Jan '07	Mar '07	Jun '07	Jul '07	Sep '07

Versa Gateway

- Reliability & scalability
- Message routing
- SP Server / Application interface

SkyWave LES ('Hubs')

- State-of-the-art equipment
- Network capacity
- Monitoring & maintenance

PACC Satellite

- 5th Ocean Region
- Extended Coverage

DMR-800D 1st Deployments

- IsatM2M service introduced
- New terminal
- Future proofed

IsatM2M Launch

- Global roll-out
- Enable new SP applications

SkyWave IsatM2M

Inmarsat Satellites

GPS Satellites

IsatM2M or **D+**

Versa Gateway

Land Earth Station (LES)

Internet

SureLinx & DMR Terminals

Solution Provider Server Application

New Products

- SkyWave IsatM2M
  - New enhanced service based on D+
    - 4x improved latency
    - 2.5x data payload capability
    - Over 2x low-power savings
  - More data faster = Responsive Service

- DMR-800D
  - Evolution of DMR-200D
    - Better antenna performance
    - 2x low-power efficiency
    - 2x processing power for feature enhancements
 - More flexibility = Responsive Applications

SkyWave IsatM2M and D+

SkyWave

Feature	D+	IsatM2M
Frame size	2 min	30 sec
To-terminal message latency	5 min	1 min
Round-trip latency (poll/response)	6 min	1.5 min
Wake-up time to send message	5 min	45 sec
From-Terminal message size	10 bytes	10 or 25 bytes
To-Terminal message size	Up to 100 bytes	Up to 100 bytes
Coverage	Global	Global
Battery life* when sending 1 msg/day	12 months	Up to 24 months

SkyWave D+ strong service base for existing applications; SkyWave IsatM2M extends to new business opportunities

Performance may vary with busy traffic periods
* 12V, 8.5Ah battery based on alkaline C cells

SkyWave Network Coverage
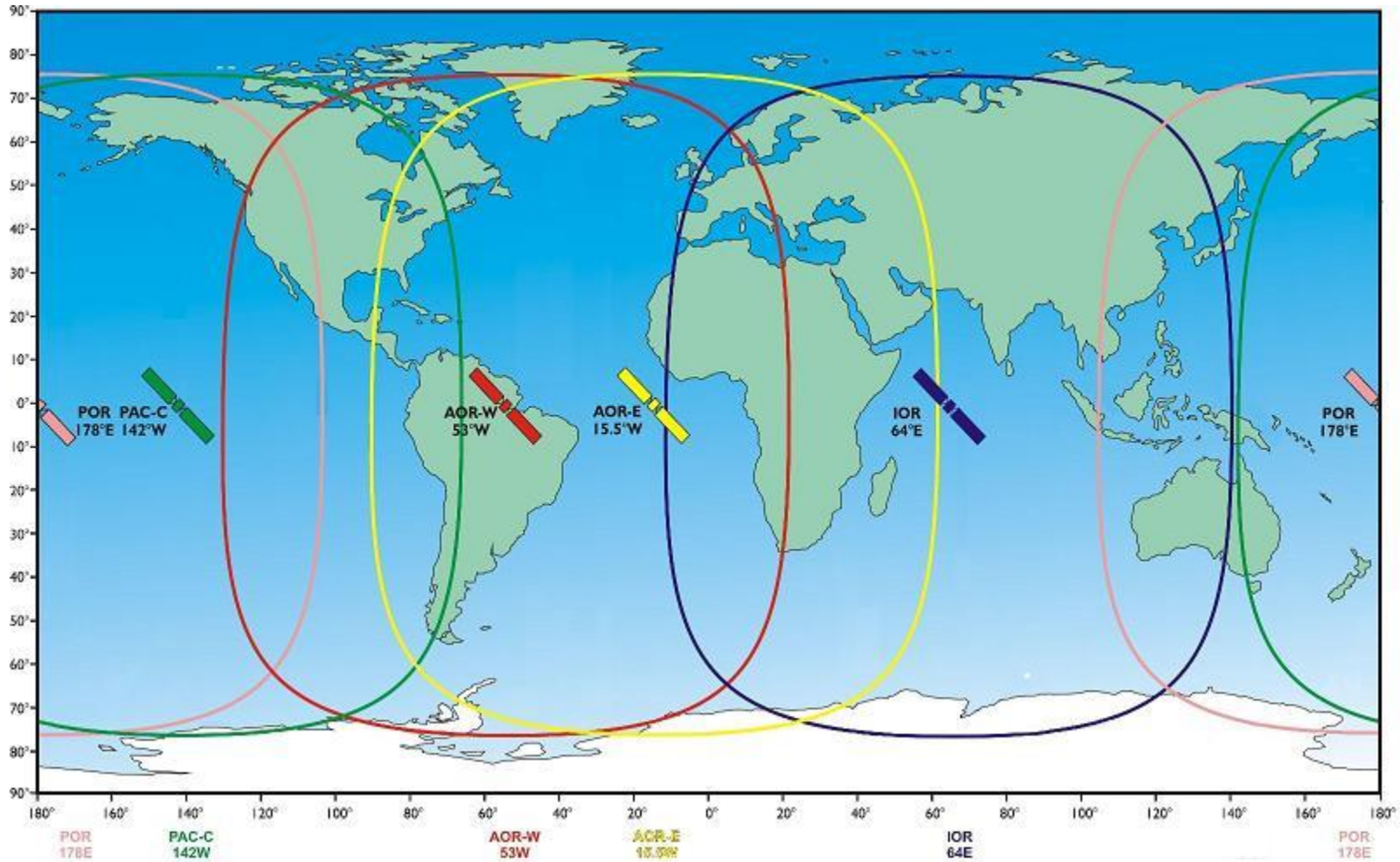
SkyWave

* 25-byte messages in mobile applications have reduced coverage

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DMR-800D Satellite Terminal

SkyWave

Integrated
- **Satellite modem**
- **Antenna**
- **GPS receiver**
- **Script engine**
- **Input/Output (4)**
- **Geo-fence**
- **Data logger**
- **Visual diagnostic LEDs**

Rugged Construction
- **Durable plastic**
- **Water resistant**
- **- 40C to + 70C operating temperature range**
- **IP-56/NEMA-4X**

Enhanced Performance
- **5 degree elevation angle**
- **50% Lower sleep current**
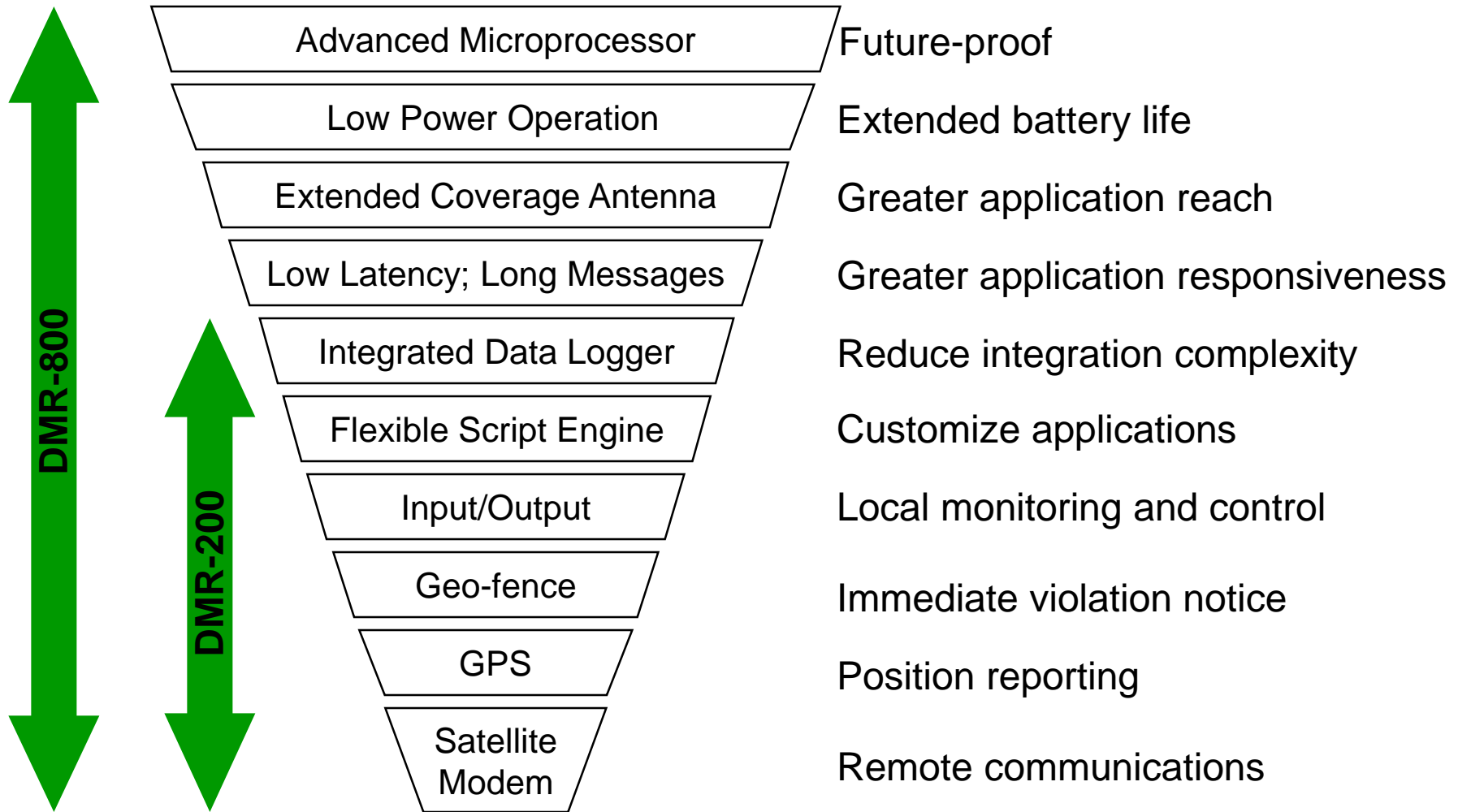- **2x processing power**

Compact
- **160 mm diameter**
- **55 mm height (D)**

Connector Access
- **Side**
- **Bottom**

DMR-800D Features & Benefits SkyWave

Feature	Benefit
Advanced Microprocessor	Future-proof
Low Power Operation	Extended battery life
Extended Coverage Antenna	Greater application reach
Low Latency; Long Messages	Greater application responsiveness
Integrated Data Logger	Reduce integration complexity
Flexible Script Engine	Customize applications
Input/Output	Local monitoring and control
Geo-fence	Immediate violation notice
GPS	Position reporting
Satellite Modem	Remote communications

DMR-800

DMR-200

Low Latency Benefit for AVL

SkyWave

- ## Security applications

  - ### Faster response in mission critical situations

    - Lock doors
    - Block engine
    - Dispatch police

- ## Tracking applications

  - ### Fast-response polling

  - ### Enables near real-time tracking

?

Large Message Benefit for AVL

SkyWave
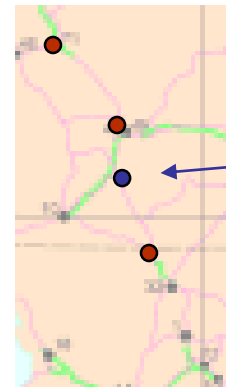
- ## Tracking Applications
  - ### More position reports for lower total cost

$1x ➡ $0.75x

- ## Freeform Text Messaging
  - ### Up to 33 characters from driver
  - ### Up to 133 characters to drivers
  - ### Broadcast capable
  - ### Better coverage than SMS*
  - ### Often lower cost than SMS*

* When roaming, delay and cost increase with SMS

Low latency benefit for Marine

- Query ship between position reports
  - 'Ping' response in almost 1 minute

- Efficient power use
  - Faster to send when waking up from sleep
  - Stay awake less time for to-terminal message
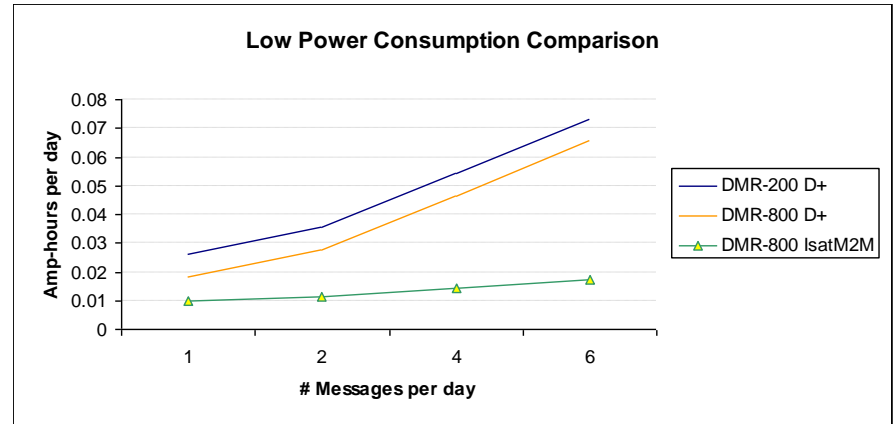
D+
Wake-up

IsatM2M
Wake-up

Large Message Benefit for Marine

SkyWave
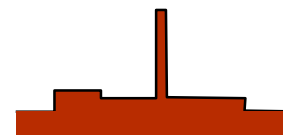
- ## Buoys
  - More accurate information for fishing or weather detection

- ## Text Messaging
  - Up to 33 characters from ship
  - Up to 133 chars. shore-to-ship
  - Ship-to-ship, broadcast options
  - Often lower cost than SMS*

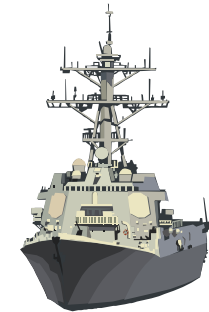** When roaming, delay and cost increase with SMS*

Low power benefit for Marine

SkyWave

- ## Buoys
  - ## Extends service life
  - ## Reduces primary battery cost

Low Power Consumption Comparison

- DMR-200 D+
- DMR-800 D+
- DMR-800 IsatM2M

Amp-hours per day

Messages per day

- ## Ships
  - ## Tracking continues longer if power fails
  - ## Reduces backup battery cost

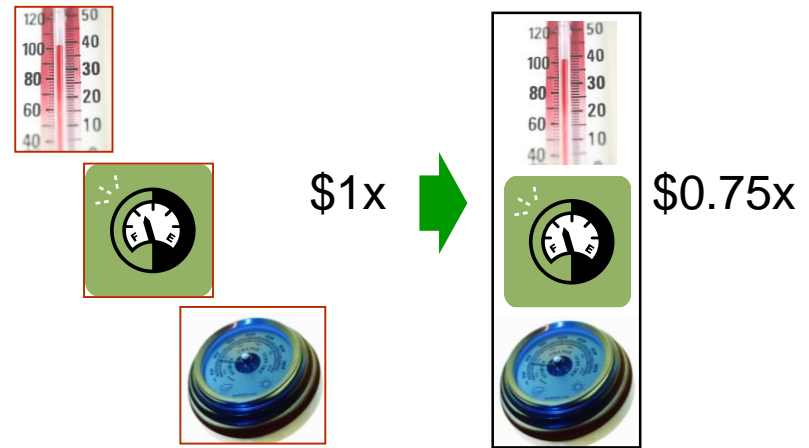# Low latency benefit for Fixed

- ## Near real-time data
  - ### More measurement and monitoring accuracy

- ## Control systems
  - ### Low-cost SCADA
  - ### Remote maintenance
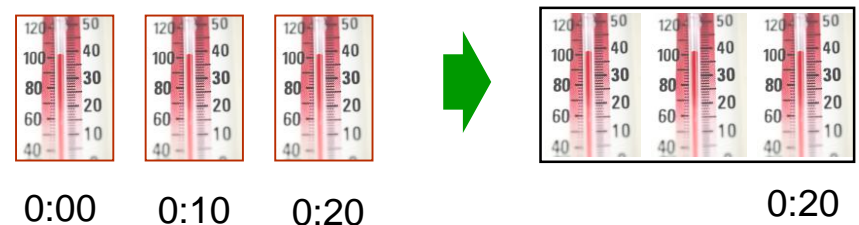 - ### Mission-critical applications
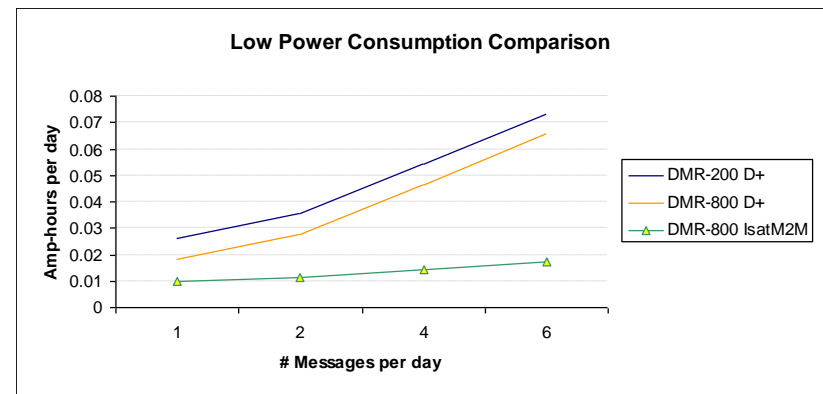
SkyWave

- **Accurate monitoring**
  - More data per report
  - Faster, lower cost than sending 2-3 messages

$1x ➡ $0.75x

- **Up to 25% lower cost**
  - Consolidate multiple small reports

0:00 0:10 0:20 ➡ 0:20

Low power benefit for Fixed

- ## Rechargeable units
  - ### Smaller, lower cost solar panels

- ## Primary battery power
  - ### Lower cost battery
  - ### Less maintenance = lower operating cost

Low Power Consumption Comparison

- DMR-200 D+
- DMR-800 D+
- DMR-800 IsatM2M

(y-axis: Amp-hours per day, 0 to 0.08; x-axis: # Messages per day, 1, 2, 4, 6)

SkyWave D+ Update

SkyWave

- SkyWave D+ continues to operate and provide high quality of service and reliability

- DMR-200 D series terminals continue to be sold and to support existing applications

- Firmware upgrade will enable DMR-200 D series terminals to support IsatM2M

- DMR-800 is an enhanced satellite terminal
  - Enables IsatM2M and D+
  - 100% compatible with D+

Upgrading to Support IsatM2M

SkyWave

- DMR-200 "D series" (D/L/S/OEM) continue to support SkyWave D+

  - DMR-800D is enhanced for new business opportunities
  - Free firmware upgrade to support IsatM2M (activation charges apply) available towards end of 2007

- SureLinx 8100 continues to support SkyWave D+

  - Free firmware upgrade to support IsatM2M (activation charges apply) available Sep 2007

Summary

SkyWave

- SkyWave IsatM2M enhances D+ applications
  - 4x improved latency
  - Over 2x low-power efficiency

- More data, faster = more money from applications
  - Larger payload: from Monitoring to Logistics
  - Improved latency: from Measurement to Control

- SkyWave IsatM2M builds on your D+ business
  - Preserves your DMR-200 and SureLinx investments

- SkyWave D+ and DMR-200 D series terminals continue to support your existing applications