ABS Software ™
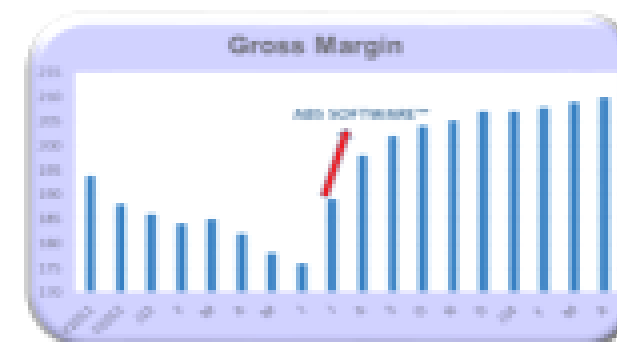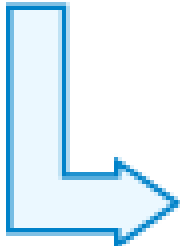
2018 – Version 12.1

Proven results: ABS SOFTWARE™
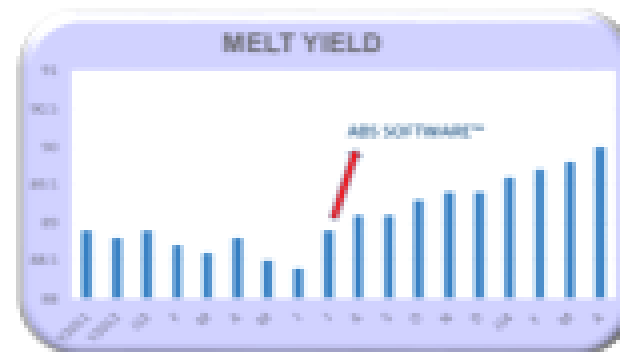

- Reduce Scrap Costs
- Raise Gross Margins
- Reduce Alloy Costs
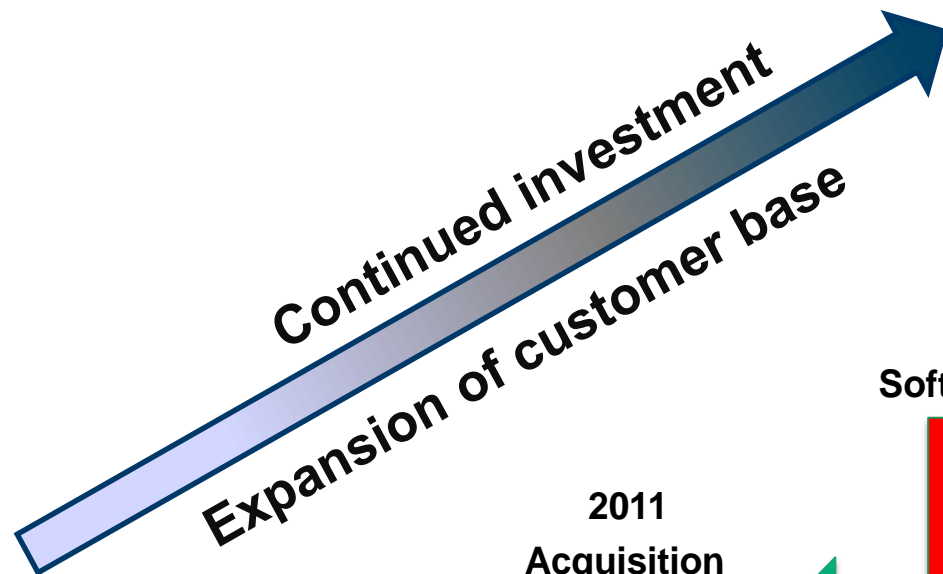- Improve Scrap & Alloy Yields
- Lower Cash needs
- Lower Inventory

Who are We?

TMS International

> The leading provider of on-site, industrial steel mill services for steelmakers around the world for 90 years.

> Operates 36 brokerages offices from which it buys and sells raw materials across five continents. We understand scrap, alloys & inventory costs.

> ABS Software™ is a comprehensive software package offered by TMS International that allows ferrous and non-ferrous customers to create value within their melt operations. ABS is a fully integrated, linear program based system.

> We are committed to creating value for our customers through a partnership of service and innovation.

Brief History: ABS Software™

Continued investment

Expansion of customer base

Today
Customized for Shop

Aluminum
Iron & Steel
Non-Ferrous
Traders
Research
Foundries

2011 - 2018
Software upgrades

Interfacing ERP's
Security
Inventories
Custom reports
Real Time
Batch
Melter Holder
Import/Export
Spectro Linkage
Continuous

2011
Acquisition
TMS International

Develop and execute
plan for enhanced
flexibility

1980"s
"Keystone"

Initiated to reduce
alloy cost additions

Customer
Support

Ensure
Specifications

Reduce
Inventory

Reduce Alloy
Costs

Reduce Scrap
Costs

ABS Software™ World Wide Presence
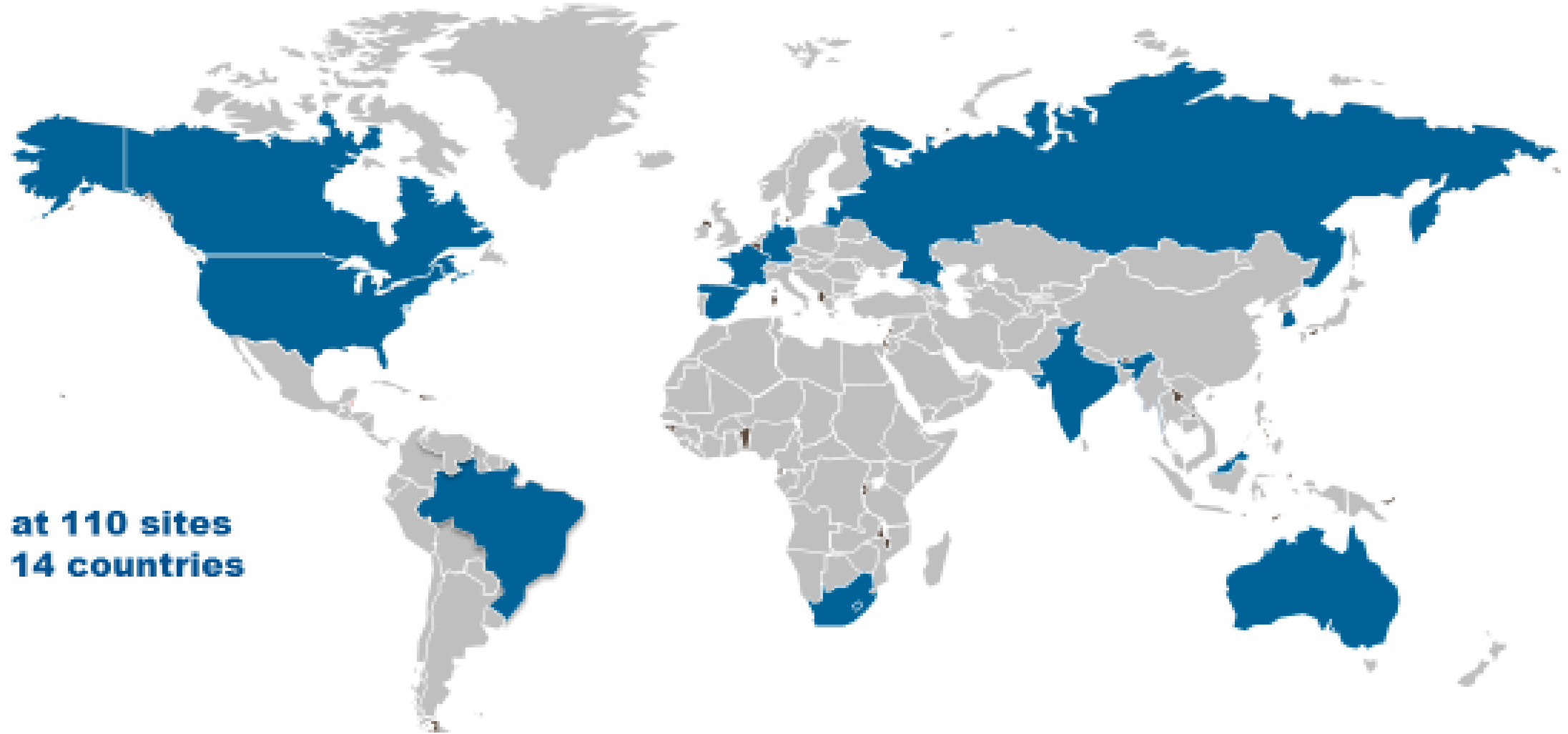
In use at 110 sites across 14 countries

ABS Software™ – How it Works

SEGMENTENTED MODULES

* 9 distinct targeted modules

* Each module builds upon the other

* Modules communicate to each other

* Special options built for unique shops

* Results in Excel or customized

CONTROL OF PROCESS

Liquid Metal Cost
Inventory and Customer Specs

Chemistry Routing
Advanced Element Relationships

Purchase Evaluation
Forecast & Management Reports

Companies that Optimize

Reduce their costs in alloys and scrap. Reduce nickel, chrome, silicon, vanadium, moly, copper and other alloy additions.

Maximize the lowest price scrap into their charge, and still have tight control on their residuals.
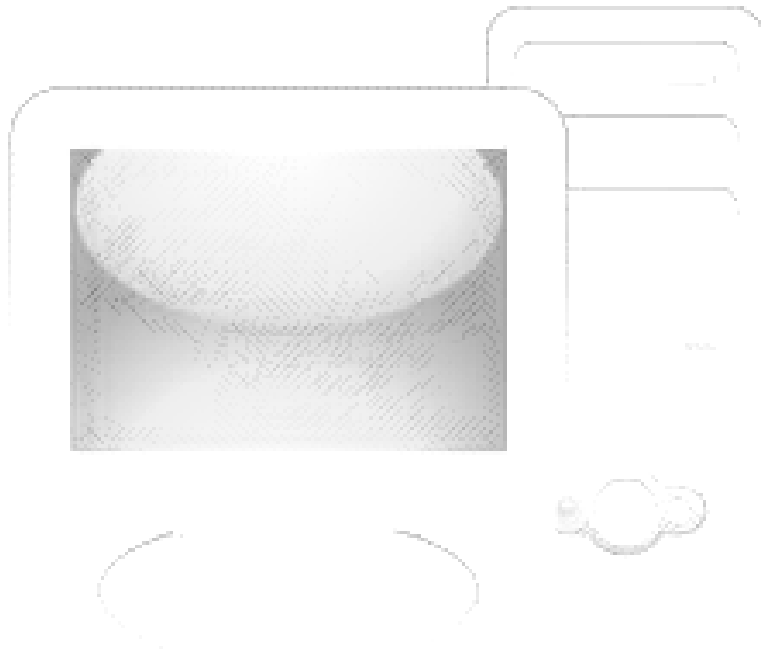
Know what is "on hand" and what they will need to purchase in the future.

Weave their process together. From procurement to the chem lab to melting and pouring to final delivery to the customer.

Believe in math and quantitative analysis, but do not have the time or internal resources to write complex linear programs.

Surrounding Technology

- ABS modules may be licensed separately or as a complete package. Custom modifications, if needed and/or desired, are available.

- ABS is available in single or multi-user versions and operates on Intel compatible hardware platforms utilizing the Windows operating system.

- Input and information can be shared or restricted among users. From a single computer or shared on your network.

- We communicate to other devices through CSV or ASCII flat files, the safest way to avoid overwriting databases.

- Free temporary upgrades and support are provided for the first 60 days after installation.

- Several plans for on-going software maintenance and support are available.

Differentiation:
ABS Software™ vs. Competition

We Create Value®

- ABS Software™ is flexible. It is used by iron and steel foundries, aluminum foundries, high alloy and non-ferrous shops, as well as scrap brokers and traders. We customize to your needs, and do not expect you to modify to ours.

- Our software can be used in batch, continuous and melter/holder applications. We control liquid steel costs as well as specific charges that are provided through traders.

- We offer what you need, module by module. Our competitors package often includes what you do not need, and still charge you for it.

- It is all about the math, which is proven in the industry. Our software is designed for operator ease, as well as managing analysis.

- With our IT Team, we can interface with all spectrometers and ERP's. ABS Software™ can drive your shop, or your current ERP can continue to lead.

- No software is more aware of the importance of inventory. Let it be by lot, batch or invoice number identification, we can track it all, in real time.

- TCIMS is the leading supplier of mill services. This is our business, and we have been providing solutions to customers for over 8 decades.

Significant repeatable cost savings

In Method 1 below, a standard recipe calls for CP Nickel, one of the more expensive raw materials, whereas ABS (Method 2) will look at all materials to make the specification using the lowest combination possible. In the case below, nearly $.17/lb is saved as a result. ABS looks at all elemental combinations.

Raw Material: *Method 1 - Typical*

Raw Material: *Method 2 – Optimal ABS*

Method 1

```
Alloy Blending System File Review - [e:\ABS\stainless\spool.out]
File  Edit  Search  Output  Mail  F1-Help  <Esc>-Cancel

          Stainless  and  High  Alloy  Demo

             CHARGE   MAKE-UP  REPORT

   Heat  Number : testcomp
   Alloy Code    : A286        -Stainless286
   Furnace       :  6

       Material       Lot      Location      Pounds
         Name        Number                 Requested

   1.13_8 Stain                              1,350

   2.304 Scrap                               3,000

   3.317 Stain                               2,655

   4.431 Stain                               3,154

   5.800 Incon                               1,000

   6.A286                                    6,000

   7.CP Nickel                               2,588

   8.Ti 6-4                                    250

   Total Pounds Charged          20,000

   The Final Weight will be      20,000 Pounds

   - - - - - Solution - - - -    - - - - - Optimal - - - -   Number of
     Actual Cost      Cost/Lb      Actual Cost     Cost/Lb   Solves
     23,860.67        1.19303      20,532.14       1.02661     14
```

Method 2

```
Alloy Blending System File Review - [e:\ABS\stainless\spool.out]
File  Edit  Search  Output  Mail  F1-Help  <Esc>-Cancel

          Stainless  and  High  Alloy  Demo

             CHARGE   MAKE-UP  REPORT

   Heat  Number : testcomp
   Alloy Code    : A286        -Stainless286
   Furnace       :  6

       Material       Lot      Location      Pounds
         Name        Number                 Requested

   1.304L                                    4,668

   2.316L                                    1,082

   3.431 Stain                               1,367

   4.600 Incon                                 100

   5.718 Incon                               3,990

   6.A286                                    3,452

   7.N80                                       254

   8.S5S Ni Res                              1,012

   9.Ti 6-4                                    269

   10.Weld Wire6                             3,800

   Total Pounds Charged          20,000

   The Final Weight will be      20,000 Pounds

   - - - - - Solution - - - -    - - - - - Optimal - - - -   Number of
     Actual Cost      Cost/Lb      Actual Cost     Cost/Lb   Solves
     20,532.14        1.02661      20,532.14       1.02661      1
```

Behind the savings

How it saves

By using the lowest combination of raw materials that allow finishing on the low side of the specifications on the most expensive materials (in this case, nickel and chromium).

```
Heat   Number : testcomp      Theoretical Analysis
Alloy Code    : A286
Furnace       : 6

        Element      Pounds     Theoretical         Aim Range
        Symbol       Charged     Analysis            Charge

        C    =        16        0.08000      0.00000 /   0.08000
        Si   =       200        1.00000      0.00000 /   1.00000
        P    =         5        0.02500      0.00000 /   0.02500
        Ni   =     4,800       24.00000     24.00000 /  27.00000
        Cr   =     2,700       13.50000     13.50000 /  16.00000
        Mn   =       272        1.36388      0.00000 /   2.00000
        S    =         3        0.01912      0.00000 /   0.03000
        Al   =        70        0.35000      0.00000 /   0.35000
        Cu   =        23        0.11970
        B    =         0        0.00300      0.00300 /   0.01000
        Mo   =       200        1.00000      1.00000 /   1.50000
        Pb   =         0        0.00003
        Ti   =       380        1.90000      1.90000 /   2.35000
        V    =        29        0.14597      0.10000 /   0.50000
        Co   =        43        0.21861      0.00000 /   1.00000
        Zr   =         0        0.00153
        Fe   =    11,254       56.27316     48.03375 /  59.49700
```
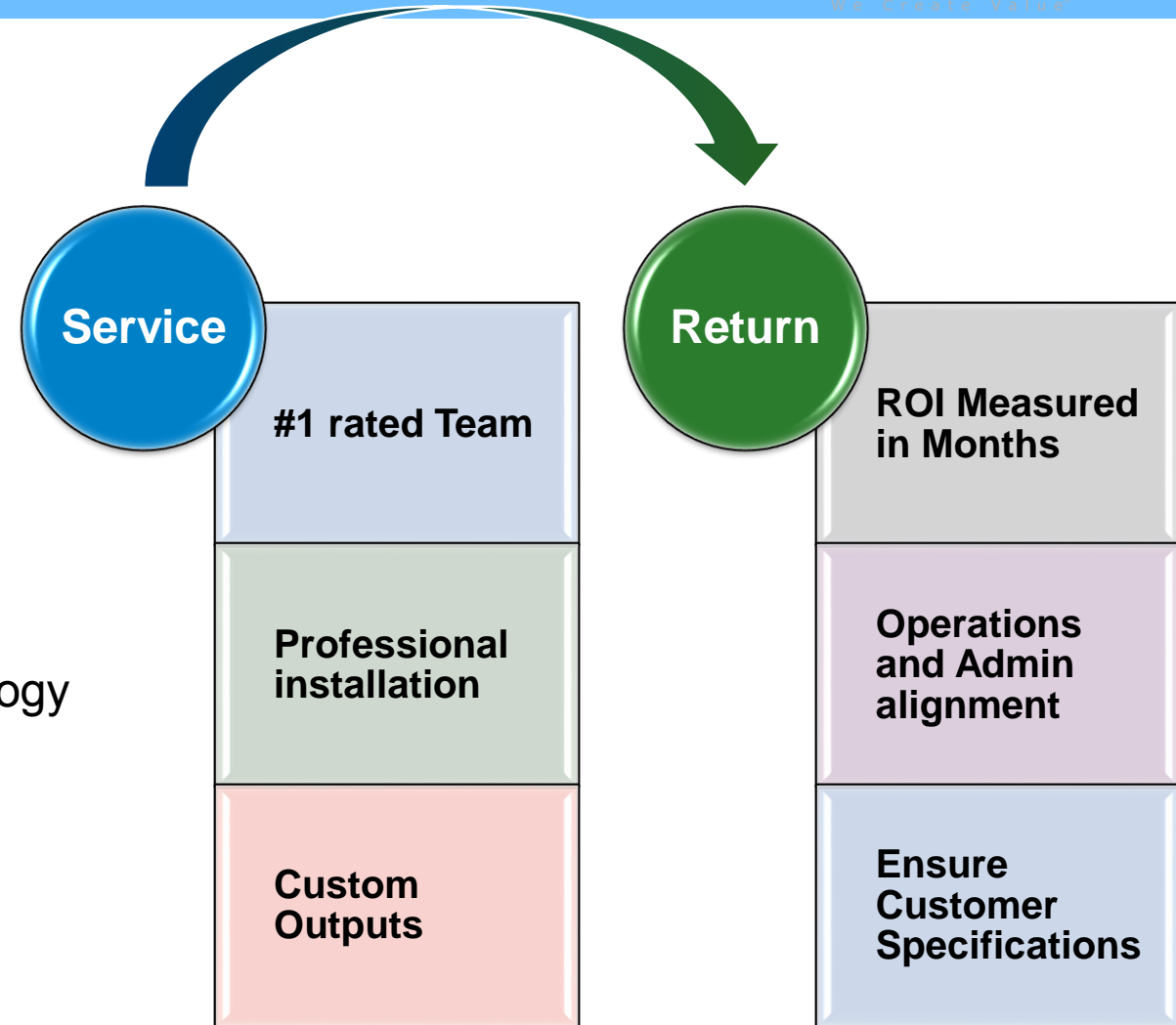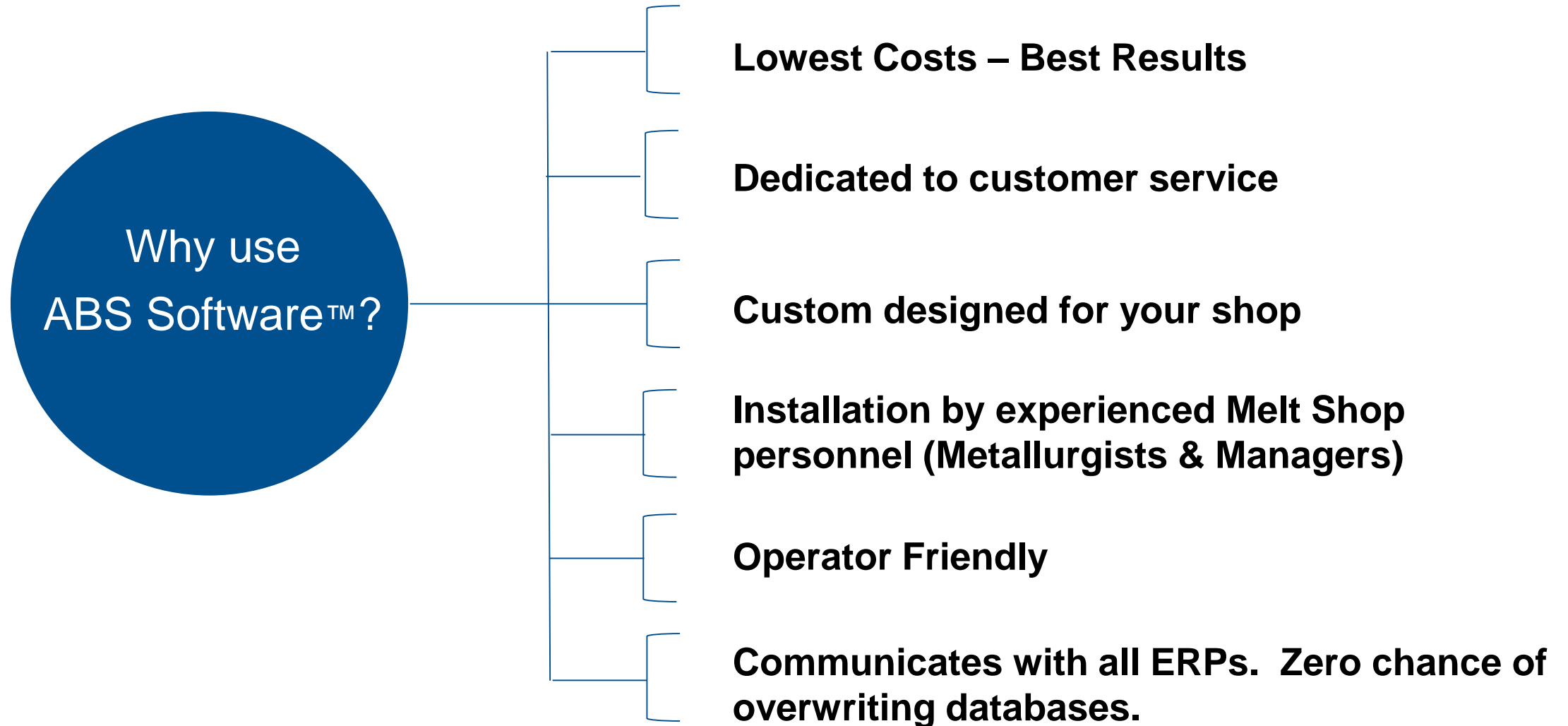
Value Proposition

What we will do:

- **Design** to your own operations

- **Recommend** only what you need. No "Bells and Whistles".

- **Train** all employees in use of software

- **Review** raw material and customer specifications

- **Upgrade** ABS Software™ to meet advancing technology

- **Interface** software with Spectrometers and ERP's

- **Offer** Trial to prove savings before purchase

We Create Value for the Customer

Service

| #1 rated Team |
| Professional installation |
| Custom Outputs |

Return

| ROI Measured in Months |
| Operations and Admin alignment |
| Ensure Customer Specifications |

Summary

Why use ABS Software™?

- **Lowest Costs – Best Results**
- **Dedicated to customer service**
- **Custom designed for your shop**
- **Installation by experienced Melt Shop personnel (Metallurgists & Managers)**
- **Operator Friendly**
- **Communicates with all ERPs. Zero chance of overwriting databases.**

Thank you for your consideration!