

EDISON Scale research report - Initiation

mic

Refocusing in progress

mic is still in the midst of a major and, to some extent, painful refocusing process. It is to be hoped that the major unpleasant surprises are behind us but we are still some way short of having a firm basis for valuation. All of mic's operating investments are at an early stage of development. Of three major high-potential business units only one has generated material revenue.

Major refocusing in progress

After a phase of ambitious expansion that increased total assets by 78% to €51.9m in the five years to 2015 and appears to have overstretched the company, it is now refocusing and paring back its activities. Having once addressed five different areas (together with other unrelated investments), mic is now paring back to three areas of high potential. Of these, Dimensio's and Diso's IT products have already won contracts. The other most promising businesses are PiMON, which has a system that uses fibre-optic networks for the acoustic monitoring of infrastructure, and SHS, which has an automated optical inspection system for automotive bodywork manufacture. The programme of divesting non-core businesses has begun well but still has some way to go.

Negative accounting effects

The refocusing has involved, and may have been spurred by, management change. It has necessitated two rounds of severe write-downs – €14.7m in the first half of 2016 and, somewhat unexpectedly, an extra €12.3m in the second – which have almost halved the size of the balance sheet. So far there has been no evidence of balance sheet strain, but mic's room for manoeuvre will clearly be restricted until the refocusing is complete.

Valuation: Deep uncertainty

With only preliminary figures available for 2016, it is almost impossible to gauge the impact of the write-downs on asset value per share. Moreover, the divestiture programme had only just begun before year end 2016 and major transactions in the first half will further change the balance sheet. Specifically as mic does not pay a dividend, earnings-based measures are of very limited value. A healthy equity ratio of 88% provides a comfort factor to investors.

Historical financials									
Net profit (€m)	Total equity (€m)	EPS (€)	NAV/share (€)	P/E (x)	P/NAV (X)				
(4.69)	34.25	(0.68)	4.99	N/A	0.13				
1.27	39.03	0.16	5.05	4.1	0.13				
1.42	45.40	0.14	4.44	4.7	0.15				
(29.7)	20.90	(2.14)	1.51	N/A	0.44				
	Net profit (€m) (4.69) 1.27 1.42	Net profit (€m) Total equity (€m) (4.69) 34.25 1.27 39.03 1.42 45.40	Net profit (€m) Total equity (€m) EPS (€) (4.69) 34.25 (0.68) 1.27 39.03 0.16 1.42 45.40 0.14	Net profit (€m) Total equity (€m) EPS (€) NAV/share (€) (4.69) 34.25 (0.68) 4.99 1.27 39.03 0.16 5.05 1.42 45.40 0.14 4.44	Net profit (€m) Total equity (€m) EPS (€) NAV/share (€) P/E (x) (4.69) 34.25 (0.68) 4.99 N/A 1.27 39.03 0.16 5.05 4.1 1.42 45.40 0.14 4.44 4.7				

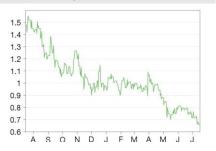
Source: mic data. Note: p = preliminary figures.

Financials

18 July 2017



Share price graph



Share details

Code	M3BG
Listing	Deutsche Börse Scale
Shares in issue	13.87m
Last reported equity ratio	88%

Business description

mic is a diversified technology investment company with a particular focus on large-scale data handling, automated optical inspection, acoustic and strain monitoring over fibre-optic networks. It holds majority stakes in companies through intermediate holding companies.

Bull

- Comfortable stated equity ratio.
- Refocusing in progress.
- Upside potential in new technology businesses.

Bear

- Heavy write-downs create uncertainty.
- Delayed reporting.
- Divestitures not completed.

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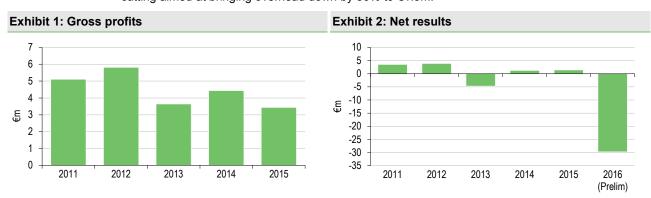
Company description: Technology investment company

Founded in 2001 and listed publicly since 2006, mic is an investment company focused on a number of areas of technology with potential for exceptionally high growth. It is managed and approximately one-quarter owned by its founder, Claus-Georg Müller. He is supported by a team of professional managers. In recent years the company has undergone significant changes, which are still under way. There has been an almost complete change in both management and supervisory boards in the past two years.

mic conducts its operations through distinct business units, each focused on a specific area of technology and application and incorporated in discrete corporate entities: micData (large-scale data handling), Smarteag (fibre-optic infrastructure monitoring) and 4industries (industrial applications). One of these – micData – has a stock market quotation in its own right. The three core units are based at the corporate headquarters in Munich. There are some minority shareholdings in these companies and an overlap of personnel between them and the parent company. The company states that, going forward, these companies will develop their own independent management teams.

The areas of focus are: large-scale data retrieval (big data); digital factory and Industry 4.0, in particular automated optical inspection; and fibre-optic sensing within the context of monitoring infrastructure systems.

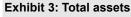
After a phase of ambitious expansion that increased total assets by 78% to €51.9m in the five years to 2015, which appears to have overstretched the company, it is now refocusing and paring back its activities. mic has begun to shrink and refocus its operations. This involves extensive divestitures that are still ongoing and are likely to have significant balance sheet implications. Investments have already been written down sharply across the board. There is also a programme of overhead cost cutting aimed at bringing overhead down by 30% to €1.5m.



Source: mic accounts Source: mic accounts and statement

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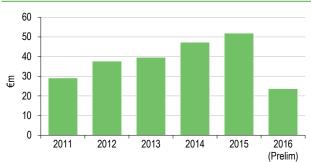
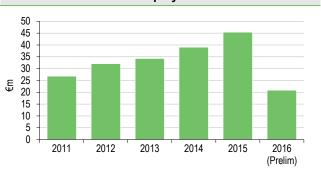


Exhibit 4: Shareholders' equity



Source: mic accounts and statement

Source: mic accounts and statement

Structure

Ownership, structure and management

mic Holding, an investment holding company linked to the company's founder and Chief Executive Claus-Georg Müller, owns a stake of 25%. Otherwise the company's shareholders have been portfolio investors since 2015 when Carsten Maschmeyer, a well-known investor in technology and other sectors, disposed of his holding of approximately 25%, which he had built up over the three preceding years. These shares were sold to long-term institutional holders.

mic is now structured around three business units (micData AG, 4industries AG and Smarteag AG), each with its own specific technological focus. The group's interests in the individual operating companies are held through these intermediate companies except for Aifotec AG and Flores Solar Water, which are held directly by the parent.



micData
61.67%
(quoted)
Large scale data handling

Diso
51%

4industries
87.82%
Industrial applications

Smarteag
100%
Fibre option infrastructre
monitoring

Airotec
37.05%
Photonics components

Wearable Technologies
24.9%

Flores Solar Water
100%

Exhibit 5: mic and principal ongoing businesses

Source: mic data

The ongoing portfolio of companies thus consists of six businesses, in all of which the group holds a majority stake.

At the time of writing the group owns at least four other companies that are earmarked for divestiture in the short term as they no longer meet investment criteria. For the sake of clarity they have been omitted from Exhibit 6, except for Wearable Technologies AG. These are discussed separately.

At present mic has two managing board members: its founder and major shareholder Claus-Georg Müller as chief executive officer and Christian Damjakob as chief operating officer, who joined in August 2016 with a background in technology investment. Two other managing board members departed at different times in 2016, so this makes for a significant change in operational leadership.

There has been a similar renewal in mic's supervisory board. Two of its three members including the chairman changed in early 2017. The new chairman is Dr Jürgen Gromer, former CEO of TE Connectivity, who brings an extensive network of contacts in the technology sphere. The third member only joined in October 2015.



Exhibit 6: Group management structure



Source: mic data

In addition to their group level responsibilities, all of the members of mic play a part in the senior operational management of its chief holdings. Below the level of the holding companies, each of the operating subsidiaries has its own discrete management structure. The company states that, going forward, these companies will develop their own independent management teams.

Technology units

mic was founded as technology incubator company. It has financed its investments through a mixture of shareholder loans, direct equity investments in the technology units and exit proceeds. These give some indication of the level of investment in the operating businesses although the financing mix may be different at individual business level. These figures reflect the position before the write-downs in the second half of 2016.

(€m)	Equity investment	Loans	Total	% of total
micData	4.02	1.01	5.03	18%
4industries	5.50	5.05	10.55	38%
Smarteag	5.91	3.63	9.54	34%
Wearable Technologies			1.5	5%
Aifotec			1.3	5%
Total			27.92	

Smarteag

Smarteag conducts mic's activities in the area of fibre-optic infrastructure monitoring. In turn it controls PiMON GmbH (pipeline monitoring), fibrisTerre GmbH and other smaller holdings.

The core technology consists of systems and equipment that transform fibre-optic cable into a network of virtual acoustic microphones through which sound changes along the length of pipelines can be monitored for safety and management purposes. It uses existing telecommunications fibres that do not require any modification and can still perform their original function. Oil, water and gas pipelines can all be monitored. Threats both intentional and unintentional that might compromise pipeline operation can be detected remotely, allowing the operator to take protective measures before flow is interrupted seriously. Threats include illicit tapping of pipelines, unconnected construction work in the vicinity and seismic events. Such systems are especially valuable in remote regions where the alternative is costly, vulnerable and unreliable ground patrolling. There is also a potential application in border and perimeter security.



The current PiMON monitor can take and analyse readings from a distance of 15km either side of its location, thus giving coverage of 30km of pipeline. The stations can be monitored remotely. Events can be located with an accuracy of 5-15m. Together with fibris Terre's strain and temperature sensing, Smarteag is in the position to offer comprehensive fibre sensing to its customers.

The technology has attracted serious interest. In March 2016 an agreement was signed with an affiliate of Beltron, a state entity in the Indian state of Bihar, under which it was to acquire technology assets from PiMON for €10m. As yet the completion of the deal is mired in the delays typical of doing business with public-sector entities in the sub-continent but as and when this is overcome, there is clear potential for commercial orders on the back of the relationship.

Exhibit 8: Smarteag financials						
	2015	2016				
Turnover (€m)	0.9	0.7				
EBIT (€m)	(3.1)	(1.5)				
Source: Company data						

4industries

4industries conducts mic's activities in the area of industrial systems with a focus on digital factory and Industry 4.0. It controls two quite distinct businesses.

SHS Technologies GmbH (51% held) develops automated optical inspection (AOI) systems for the automotive industry in particular the body-work pressing process. They offer the classic advantages of AOI: high speed, accuracy and consistency. SHS's SOANA system (speed optical analyser) consists of an assembly of cameras and computer with proprietary image processing software. It can detect and flag any of a large range of potential defects in parts immediately they emerge from the press. The parts can be subjected to more detailed human eye inspection or scrapped according to the system settings.

SHS is working closely with the VW group in developing the system. One of VW's US suppliers has a SOANA system in operation on a trial basis. The addressable market is the entire automobile assembly industry worldwide and is correspondingly large.

3-Edge GmbH holds the German distributorship for the products of a quoted Canadian company EXFO. With 2016 sales of \$232m EXFO claims world leadership in portable optical testing equipment for fibre-optic networks with a market share of one third.

Revenue from EXFO products accounts for the majority of current turnover. R&D costs on AOI systems appear to have peaked.

Exhibit 9: 4industries financials		
	2015	2016
Turnover (€m)	3.9	3.7
EBIT (€m)	(3.3)	(0.1)
Source: mic data		

micData

micData conducts mic's activities in the area of large-scale data handling, which it conducts through its Swiss IT and cloud service company Diso and the German database developer Dimensio. It is quoted in its own right with a value of some €2.3m.

mic has been invested in Dimensio Informatics since 2013. It was originally a spinout from the Chemnitz University of Technology. Dimensio has developed and markets software tools that allow large enterprises to extract and process data from across their whole systems. This can be done securely and without disrupting the operations of the individual components. It operates at very high speeds, making for major efficiency gains.



Dimensio has achieved three major license sales, all outside Germany: Mobiliar insurance of Bern; the Canton of Aargau; the Kabeg hospital of Klagenfurt. In 2014 mic took control of DISO AG, Dimensio's distributor in Switzerland. The company states that Diso generates consistent high euro millions in revenue.

Sales growth has fallen short of initial plans and the value of the holding was written down in the first half of 2016.

Exhibit 10: micData financials					
	2015	2016			
Turnover (€m)	10.77	9.15			
EBIT (€m)	(2.97)	(0.46)			
Source: Company data					

Aifotec

mic's 37% stake in Aifotec is held directly. Aifotec undertakes high-end contract design and assembly of components for photonics systems, notably fibre-optic networks. Its particular speciality lies in techniques to bond different materials together.

Non-core operations

As part of the restructuring initiated in 2016, mic decided to cut back sharply the spread of its operations. A number of investments have been divested but others are still held pending exit transactions, these include:

- μ-GPS Optics 72.5% directly held. Written down to zero
- ProximusDA 39.5% directly held. Written down to zero
- SmartM 100% directly held. Written down to zero
- Exergy 95% part of micData AG. Written down to zero

mic also retains a holding of 24.9% in Wearable Technologies AG, a conference organiser focused on its eponymous segment. A 50% stake was sold to the company's management as part of mic's refocusing in December 2016.

Development and strategy

Even before the preliminary full year results for the year were published, the company had described 2016 as the most turbulent in its history. It was marked by a major change in company strategy (now partially implemented), significant management changes and heavy downward revisions in the value of investments.

History

Prior to 2015 mic had pursued a strategy of rapid growth and portfolio expansion. Since its foundation in 2001 it invested in over 30 different companies spread across five distinct technology areas as well as unrelated direct shareholdings. Between 2011 and 2015 total assets grew by 78% to €51.9m, in part because the pace of exits slowed. Profits growth did not keep pace and mic dipped into the red in 2013 and profits in the two years following remained well below the levels of 2011/12. Notwithstanding, the 2015 annual report stated that mic planned to expand into two more areas of technology: fintech and renewable resources. Perhaps significantly, the auditors pointed out that mic's investments were valued on a going concern basis and that financing was a prerequisite.



A number of factors appear to have coincided to bring about a reversal in mic's strategy. In April the long-standing CFO Manfred Reitmeier left the company's management board in a planned departure, although he retains responsibility for 4industries AG. The share price was coming under increasing pressure and in May 2017 the company issued a formal announcement that it was unaware of any particular reason for this. Claus-Georg Müller was incapacitated by illness, forcing the postponement of the AGM for 2016.

More significant changes followed the appointment of Christian Damjakob to the management board as chief operating officer in August 2016. Within a fortnight the supervisory board summarily dismissed the chief investment officer, Oliver Kolbe. Shortly afterwards the company published results for the first half of 2016, which indicated that its investment strategy might not have been entirely well-founded.

Financial measures

On top of an operating loss of €0.44m the company made write-downs on its holdings of €14.7m, which took the company to an overall loss of €15.2m. The write-downs were focused on the direct shareholdings as well as micData and Wearable Technologies; they were described as one-off and were purely accounting items with no effect on liquidity.

In order to bolster the balance sheet Claus-Georg Müller agreed to convert €4.6m of shareholder loans to the company into 3.65m newly issued shares. The company also launched a programme of overhead reduction including staff cuts aimed at reducing annual costs from €2.4m by 30% to €1.5m

mic also began a programme of sharply refocusing its investment portfolio. Just ahead of the year end one direct investment, Fibotec, was fully disposed of for an undisclosed price of €0.1-1.0m together with an earn-out component. 50% of Wearable Technologies was also sold to its management although mic retains 24.9% as well as potential income from an earn-out agreement. Even before the strategy overhaul it had already been planned partially to float mic's healthcare businesses on the Australian ASX stock exchange, which took place successfully in January 2017. This was then followed by the disposal of mic's remaining investment for an undisclosed consideration, which was described as sufficient to pay off the majority of the company's short-term debt.

Unsettled conditions have made themselves felt on mic's investor dialogue schedule. An unsuccessful court action by a shareholder to force a change in auditors hampered the rescheduled 2015 AGM, for which a date has yet to be fixed after the first date had been cancelled. The release of results for 2016 was also held back. Initially the full report and accounts were to have been published on 30 June, but in the event only preliminary figures appeared and a date of 31 July 2017 was given as a target for the full data.

The preliminary figures for 2016 showed that there was still considerable work to be done in terms of cleaning up the company's investment portfolio. There was a net loss of €29.7m, made up of a loss before depreciation of €2.7m – which was ascribed to portfolio adjustments rather than current trading – and €27m of write-downs. The €12.3m of additional write-downs taken in the second half were taken across the board, affecting the main technology units as well as direct shareholdings. The balance sheet shrunk further to €20.9m from €45.4m the year before, although the preliminary equity ratio (equity as percentage of total assets) was almost unchanged at 88% due to a debt for equity swap of shareholder Claus-Georg Müller.



Outlook

mic's restructuring is far from over and market attention will doubtless focus on how it is progressing. This will embrace both the accounting and balance sheet effects of the measures as well as the execution of the programme.

The publication of the full 2016 annual report and accounts should offer further indications as to what lay behind the large valuation measures undertaken that year. Particular attention should be paid to the question of whether the write-downs concerned the intermediate holdings companies or whether the operating subsidiaries themselves were affected. In turn this might raise interest in the degree to which the management might be refreshing its assessment of the commercial prospects of these companies. This might have been the case with the direct shareholdings. The company has indicated that there will be a web conference that should give further background.

The 2016 accounts will not, though, show the effects of the major divestiture of mic's healthcare operations, which only took place in the first half of 2017. These should be visible in the 2017 interim figures.

As and when mic executes the remainder of its divestiture programme, this should bring capital gains into the profit and loss account now that most of the holdings slated for sale have been fully written off. Liquidity inflows will underpin mic's capacity to finance the expansion of its core operating businesses.

Financials

mic publishes accounts in line with German HGB solely for the parent company. The presence of intermediate holding companies dilutes the impact of trading performance at the operating subsidiaries. General trends can be adduced from the figures.

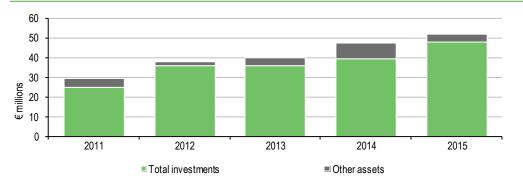
Year to 31 December (€m)	2011	2012	2013	2014	2015	2016p	H115	H116
	HGB	HGB	HGB	HGB	HGB	HGB	HGB	HGB
Income statement								
Gross profit	5.11	5.82	3.64	4.43	3.44	N/A	3.14	0.14
Net profit	3.52	3.91	(4.69)	1.27	1.42	(29.7)	2.11	(15.19)
Balance sheet								
Equity in related companies	19.82	29.00	23.89	26.68	31.07		23.25	30.42
Loans to related companies	2.6	4.51	8.91	9.67	13.71		11.21	11.95
Investments	2.12	2.42	2.81	2.81	2.78		2.78	0
Trade debtors	0.05	0.02	0.03	4.62	0.02		1.38	0.03
Owed by related companies	4.18	0.18	3.11	3.87	3.16		3.4	3.64
Cash in hand	0.07	1.05	0.29	0.25	0.06		0.4	0.05
Equity	26.81	32.07	34.25	39.03	45.40	20.9		
Convertible bonds	0	0	3.78	0	0.00			
Owed to related companies	0.67	0.58	0.11	0.79	0.95			
Other liabilities	1.44	4.71	1.07	6.31	4.67			
Total assets	29.11	37.71	39.63	47.31	51.89	23.7		

Record

As can be seen, the growth in the company's investments was solely responsible for the huge expansion in the balance sheet up to 2015.



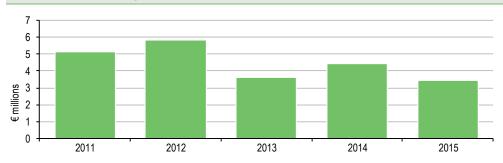
Exhibit 12: Investments drove growth in total assets



Source: mic data, Edison Investment Research calculations

This process contnued well after 2012 when gross profits had peaked. The chief influence in the decline in gross profits suggests that the income from exits was starting to lag.

Exhibit 13: Decline in gross profits



Source: mic data

Valuation

Given the scale of the uncertainties surrounding the company's refocusing programme it is difficult to make hard and fast assertions as to mic's valuation.

As it is an investment company, the most appropriate basis for valuing mic will be asset based. Moreover, as the company's structural and operational adjustment continues, profit and loss account data is likely to remain highly volatile, with major impacts notably from divestitures, which limits the value of any earnings-based method. No dividend has been paid.

The key tool for valuing the shares against this background is the net asset value (book value in US parlance) per share. The published accounts offer only a rudimentary guide to the value of the individual operating companies. German HGB accounting does not permit upward revaluation of holdings so they appear solely at written down cost price. mic does not provide a detailed analysis of the value of its holdings, beyond the regulatory list showing investments, percentage held, equity and net profits. Investors thus face the task of establishing their own longer-term equity valuations for the subsidiaries.

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Sensitivities

- The influences on mic's share price will be almost exclusively internal given the uncertainties over the progress of the refocusing.
- Arguably, the most dangerous threat is that the latest round of write-downs reflected issues within the individual operating companies either in terms of financing or their businesses. Bad news in this respect could curtail the operational upside potential in the business, which is a major source of potential upside in the share value. This might imply a need for additional or longer-term finances. When the 2016 accounts are published, the difference in the equity values from those at end 2015 will provide a guide.
- Of the financial structure of the intermediate holding companies, only micData publishes
 accounts as a quoted company. Any increase in disclosure of this point would help a more
 accurate valuation of the investments.
- When the deal with Beltron over PiMON was first announced, it was stated that it would bring a book profit of €7m implying book value of the assets of some €10m. With a minority stake of only 7% in PiMON this could feed through as a useful boost to shrunken holding company equity as and when the transaction progresses.
- Assessment of the prospects at the technology units may be significantly affected by any large contract announcements. Dimensio, together with Diso, have the potential to generate large single contracts. PiMON/fibrisTerre and SHS are in development phase so there will be corresponding leverage as and when major commercial contracts are announced. In addition to the normal revenue impacts, such announcements would be felt to add credibility to the products and improve expectations of further orders.
- The progress of the divestiture programme will be watched closely. While it is not liquidity critical, it will absorb management time and attention until it is completed. Successful divestitures will probably be taken well by the market especially if they bring significant cash inflows.

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