

# Solution to global climate change?

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SCIENTISTS and practitioners are now able to show robust and compelling scientific projections that seem to support the possibilities of halting the detrimental effects of global emissions. However, political involvement and policy support are crucial to the issue but are still lacking.

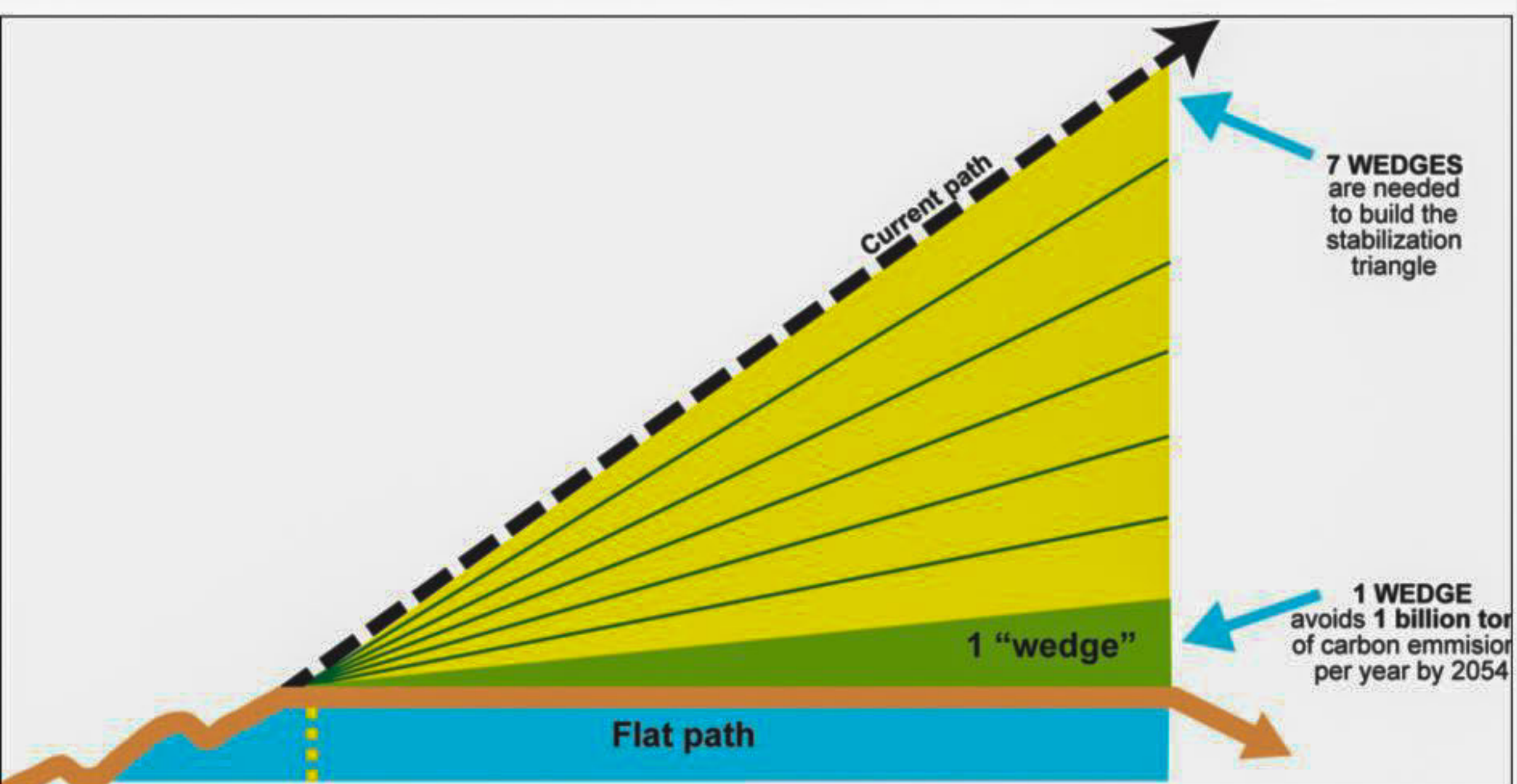
The US, one of the highest emitters of greenhouse gases would need to hold carbon emissions under 7 billion tons or less each year. This is an ambitious goal, as even at the time of the study, the emissions were more than doubling, and projected to continue to do so, for the next 50 years.

In order to graphically illustrate the simple reduction phenomenon, 'Business as Usual (BAU)' line can be initially projected and is increasing exponentially above a flat line called the reduced trajectory, constant at 7 billion tons. On one abscissa is the amount of emissions, while on the other is the time we have in years to hold-off the increased

Radical phasing out of current operations and energy sources is therefore perceived as highly unlikely from a logistical and financial standpoint as major mobilisation of energy sources and relevant infrastructure is required to achieve the wedges goals that are quantitatively identified. In other words, increased carbon emissions are not a predictive glitch within the stabilisation wedge model but are attributed to society's inability to do something about it as the outcome is dependent upon a multitude of variables and assumptions.

The BAU scenario is worse than predicted, and eighteen to twenty-five wedges will be required as opposed to the seven initial wedges. It would be extremely difficult to produce a huge amount of energy from carbon neutral sources as the world does not have enough resources to address it. Extremely expensive infrastructure mobilisation and substantial research and testing are needed to scale up the current operations.

Incentives, such as global subsidies, need to be offered so that this cycle of depleted energy with higher emissions



emissions. The triangle that forms in between is the net reduction required, and is divided into smaller triangles called wedges, each of which represents an active sector such as transportation, energy, waste management, construction or agriculture -- and this is where emissions can be reduced.

There is an immediate necessity to fill these wedges in the next half-century starting now, as delaying will cause the BAU trajectory to rise, making it harder to do something in the future. This is because current wasteful business operations and incapability to put comprehensive mitigation policies to effect will cause irreparable damage.

A shift in fuel from coal-based power to renewable sources, such as wind or photovoltaic or even nuclear energy, and using our natural gas reserves is required. Reducing deforestation is imperative as plants and trees absorb huge amounts of carbon from the atmosphere. Making such radical changes in such a short time is a challenge.

We can also observe subsequent advancements in the wedge concept plan and point out what seems like flaws in the scheme by analysing the difficulty in quitting the use of high carbon emitting fossil fuel sources. Government regulations such as the planned international agreements during the Kyoto Protocol have not worked and emissions are continuously rising, while the proposed scaling up of the required technologies is moving relatively slowly.

could be decisively stopped. Revolutionary changes are needed to combat global climate change. The unpredictable emissions scenario is due to public acceptance of policies, technological innovations, fuel prices and especially cost reduction across many sectors.

Scientists agree on the underlying assumption that 1.5% annual carbon emissions growth rate could grow to 2% or even 3% by the end of the century, in which case instead of seven wedges, even more than twenty five respective wedges would be necessary, pushing the climate change solution and goals away from our reach.

Revolutionary changes in technology are not required at all. Technologies that exist today can be scaled up to meet set milestones. None of the relevant technologies are pipe-dreams or lab tests waiting to be operational, but viable and proven options that require major funding from the public sector to be scaled up.

There is enough capital in the world to finance a rapid transition to a low-carbon society with mitigated emissions and significantly clean technological systems. Although there are great challenges associated with a change, such as with the deployment and integration of renewable energy sources in the electricity sector around the world, it is still possible.

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# Final frontier of our 'Solar Bubble'

DATA from Voyager 1, now more than 11 billion miles (18 billion kilometers) from the sun, suggest the spacecraft is closer to becoming the first human-made object to reach interstellar space.

Research using Voyager 1 data and published in the journal Science today provides new detail on the last region the spacecraft will cross before it leaves the heliosphere, or the bubble around our sun, and enters interstellar space. Three papers describe how Voyager 1's entry into a region called the magnetic highway resulted in simultaneous observations of the highest rate so far of charged particles from outside the heliosphere and the disappearance of charged particles from inside the heliosphere.

Scientists have seen two of the three signs of interstellar arrival they expected to see: charged particles disappearing as they zoom out along the solar magnetic field, and cosmic rays from far outside zooming in. Scientists have not yet seen the third sign, an abrupt change in the direction of the magnetic field, which would indicate the presence of the interstellar magnetic field.

"This strange, last region before interstellar space is coming into focus, thanks to Voyager 1, humankind's most distant scout," said Ed Stone, Voyager project scientist at the California Institute of Technology in Pasadena. "If you looked at the cosmic ray and energetic particle data in isolation, you might think Voyager had reached interstellar space, but the team feels Voyager 1 has not yet gotten there because we are still within the domain of the sun's magnetic field."

Scientists do not know exactly how far Voyager 1 has to go to reach interstellar space. They estimate it could take several more months, or even years, to get there. The heliosphere extends at least 8 billion miles (13 billion kilometers) beyond all the planets in our solar system. It is dominated by the sun's magnetic field and an ionised wind expanding outward from the sun. Outside the heliosphere, interstellar space is filled with matter from other stars and the magnetic field present in the nearby region of the Milky Way.

Voyager 1 and its twin spacecraft, Voyager 2, were launched in 1977. They toured Jupiter, Saturn, Uranus and Neptune before embarking on their interstellar mission in 1990. They now aim to leave the heliosphere. Measuring the size of the heliosphere is part of the Voyagers' mission.

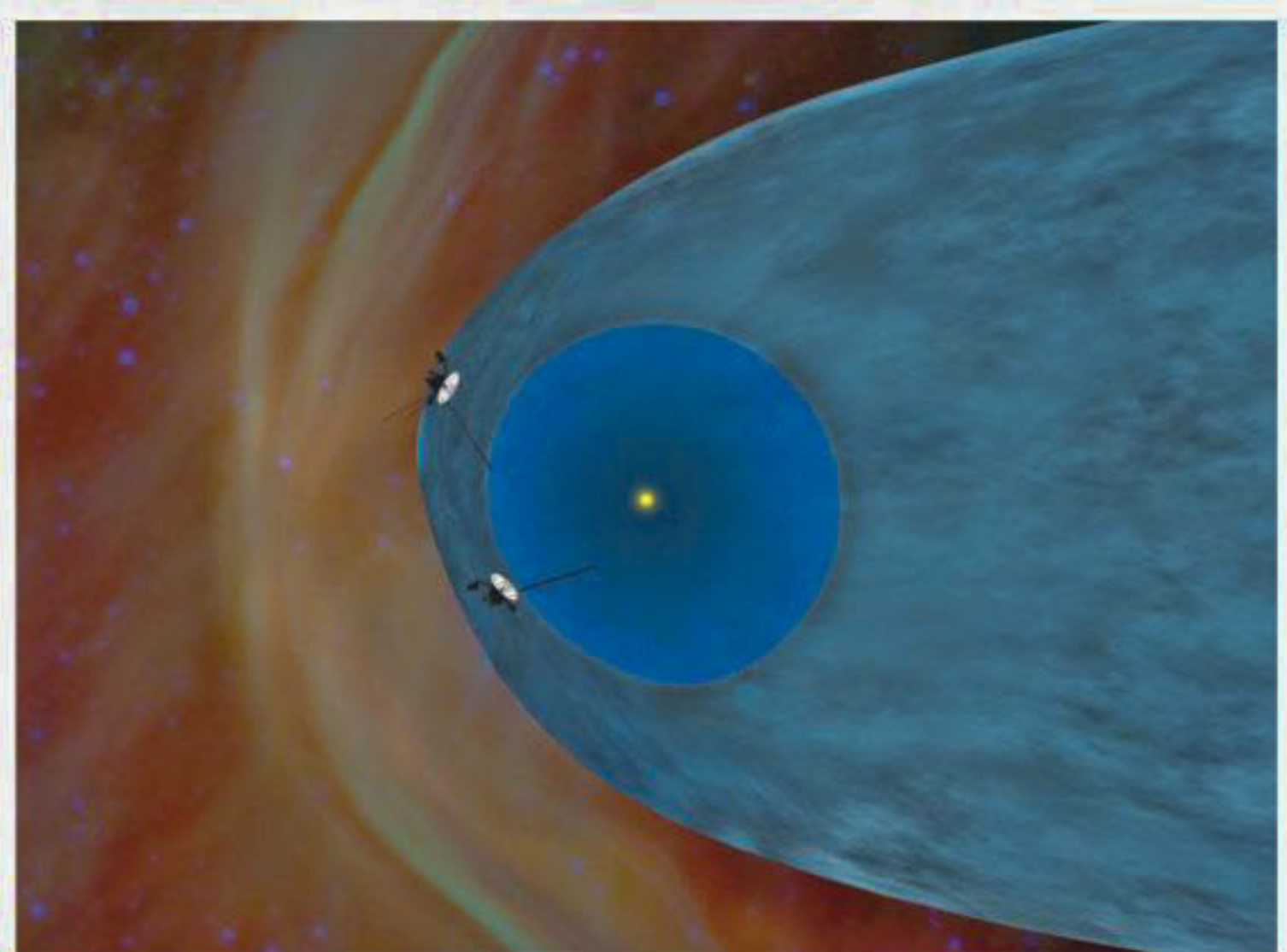
The Science papers focus on observations made from May to September 2012 by Voyager 1's cosmic ray, low-energy charged particle and magnetometer instruments, with some additional charged particle data obtained through April of this year.

Voyager 2 is about 9 billion miles (15 billion kilometers) from the sun and still inside the heliosphere. Voyager 1 was about 11 billion miles (18 billion kilometers) from the sun August 25 when it reached the magnetic highway, also known

as the depletion region, and a connection to the interstellar space. This region allows charged particles to travel into and out of the heliosphere along a smooth magnetic field line, instead of bouncing around in all directions as if trapped on local roads. For the first time in this region, scientists could detect low-energy cosmic rays that originate from dying stars.

"We saw a dramatic and rapid disappearance of the solar-originating particles. They decreased in intensity by more than 1,000 times, as if there was a huge vacuum pump at the entrance ramp onto the magnetic highway," said Stamatios Krimigis, the low-energy charged particle instrument's principal investigator at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md. "We have never witnessed such a decrease before, except when Voyager 1 exited the giant magnetosphere of Jupiter, some 34 years ago."

Other charged particle behaviour observed by Voyager also indicates the spacecraft still is in a region of transition to the interstellar medium. While crossing into the new region, the charged particles originating from the heliosphere that decreased most quickly



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were those shooting straightest along solar magnetic field lines. Particles moving perpendicular to the magnetic field did not decrease as quickly. However, cosmic rays moving along the field lines in the magnetic highway region were somewhat more populous than those moving perpendicular to the field. In interstellar space, the direction of the moving charged particles is not expected to matter.

In the span of about 24 hours, the magnetic field originating from the sun also began piling up, like cars backed up on a freeway exit ramp. But scientists were able to quantify that the magnetic field barely changed direction -- by no more than 2 degrees.

"A day made such a difference in this region with the magnetic field suddenly doubling and becoming extraordinarily smooth," said Leonard Burlaga, the lead author of one of the papers, and based at NASA's Goddard Space Flight Center in Greenbelt, Md. "But since there was no significant change in the magnetic field direction, we're still observing the field lines originating at the sun."

NASA's Jet Propulsion Laboratory, in Pasadena, California, built and operates the Voyager spacecraft. California Institute of Technology in Pasadena manages JPL for NASA. The Voyager missions are a part of NASA's Heliophysics System Observatory, sponsored by the Heliophysics Division of the Science Mission Directorate at NASA Headquarters in Washington.

Source: Science Daily

# Investment in IT

MD. ABDULLAH AL MAMOON

Information Technology (IT) is globally accepted as one of the key drivers in coping with the rapidly changing marketplace. Most countries where IT investment was inducted in the late '70s are already at the peak of maturity curve. Irrespective of geographical boundaries, expected Return on Investment (ROI) from IT has been inadequate due to reasons which are controllable but are often overlooked or neglected by the organisations, thereby turning the blessing of IT into a burden.

In some companies, investment in technology has almost surpassed every other investment in terms of financial value, making technology the most dominant factor in achieving the competitive edge. While these increases in technology investment make sense for the companies involved in pure technology business, they may not be the right fit for the companies whose core business is something other than IT.

Jim Collins, in "Good to Great," delineated the research findings highlighting that most of the companies that moved from good to great didn't use technology as their driving engine during their breakthrough stage. Rather, good to great companies focused on identifying and defining their core business at which they could be the best, things

that they were more passionate about, and their economic stimulus (referred to as the 'Hedgehog Concept'). Once they identified their 'Hedgehog,' they diverted all their management attention to it and mobilised all their resources in achieving it. As they started realising the benefits, only then they considered investing in technology in support of their Hedgehog as an accelerator towards greatness and sustainability.

To gain the benefits of becoming the pioneer or fast mover in the industry by incorporating new technology into the business, many organisations invest heavily in IT. Some organisations invest in technology with the rationalisation that the competitors used IT so why should we lag behind. Hence, they remain unaware of many of the crucial prerequisites like availability of resources to manage and run the systems, written down business rules and processes, infrastructure availability and readiness, etc., prior to implementing IT systems.

The foremost aspects of undertaking such radical decisions on IT investment are conceptualising the organisational needs, determining the time needed for such investment and selecting the right technology that would complement the strategic intents of the organisation. But conducting feasibility study and requirement analysis; identifying the alignment with core competencies and, last but not the

least, analysing financial benefit, including a thorough ROI analysis prior to investing in IT, are not done. The end result is a failed venture.

Selection of right technology and service provider is one of the important factors for ensuring the desired ROI. Inclination towards a cheaper solution with high-grade

*It is crucial to ensure an appropriate strategic mix prior to investing in IT that would ensure the maximisation of profits and shareholders' return through securing a healthy return on investment.*

features (lucrative functions but less qualitative), leaving aside high quality solution (right functions and robustness) that would cost comparatively more, is common in the selection of technology system. A detailed analysis of Total Costs of Ownership (TCO), which consists of cost of acquisition and cost of operations/maintenance, would be the most cost effective approach while selecting IT systems.

Methodically selected technology investment may turn into a losing concern due to mismanagement during project implementation. While selection of a project manager

(PM) along with an efficient project team is vital, one of the most critical factors for success of IT projects is the sponsorship. Without support from the project sponsor, the PM and the project team may find themselves in 'No Mans Land' with a troubled project engulfed by many unresolved issues and risks that seriously impede the progress of the project and jeopardise the intended project outcomes.

A project is a temporary endeavour undertaken for the delivery of clearly charted outcomes within a predefined schedule and budget, ensuring the desired specifications/quality. This demands prompt decision making in addressing the project issues and risks. At this stage, involvement of project sponsor is extremely critical in resolving many issues and risks that are sometimes beyond the delegated authority of the PM.

Investment in information technology has double-edged impact despite the fact that it has many inherent benefits that can be optimised for the growth and sustainability of the organisations. It is thus very crucial to ensure an appropriate strategic mix prior to investing in IT that would ensure the maximisation of profits and shareholders' return through securing a healthy return on investment.

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**ACROSS**

1 Small plateaus

6 Bamboo eaters

12 Big commotion

13 Old Roman tax

14 Strengthen by heating and cooling

15 Move a painting, maybe

16 Medicinal amount

17 Computer brand

19 Chaps

20 Nickelodeon's explorer

22 Marley or Dylan

24 Underwear with underwire

27 Madams' mates

29 Moth variety

**32** "The House That Ruth Built"

**35** Advantage

**36** Out of play

**37** List-ending abbr.

**38** Consume

**40** Williams or Warhol

**42** —de-sac

**44** On pension;

**46** Killer whale

**50** "I, Robot"

**52** Passionate states

**54** Cookbook entry

**55** Lab monkey

**56** Merchant

**57** Appointed

**DOWN**

1 Stereo forerunner

2 Billions of years

3 Haste

4 Miss.

5 Not free-lance

6 Skin opening

7 Bitter

8 To the — degree

9 Scotch-based liqueur

**10** Top-rated

**11** Autograph

**12** Possessed

**18** Persons traveling accessory

**21** Sugar suffix

**23** Antiquated

**24** "See ya"

**25** "Awesome!"

**26** Sweet fortified wine

**28** Norm

**30** Eccentric

**31** HBO alternative

**33** Mauna —

**34** Toss in

**39** Figure of speech

**41** Mountain air?

**42** Shopper's aid

**43** Addict

**45** Always

**47** "Golden Girls" role

**48** Gunk

**49** Donkey

**51** Central

**53** Pi follower

**CRYPTOQUIP**

HRLGC TICUC QUC JUVCC

XAUJKQKCH QUCQOT RL

OCVQDEJ, ALC XAUC XQT

UCHDEJ RL VADU GEABDUCH.

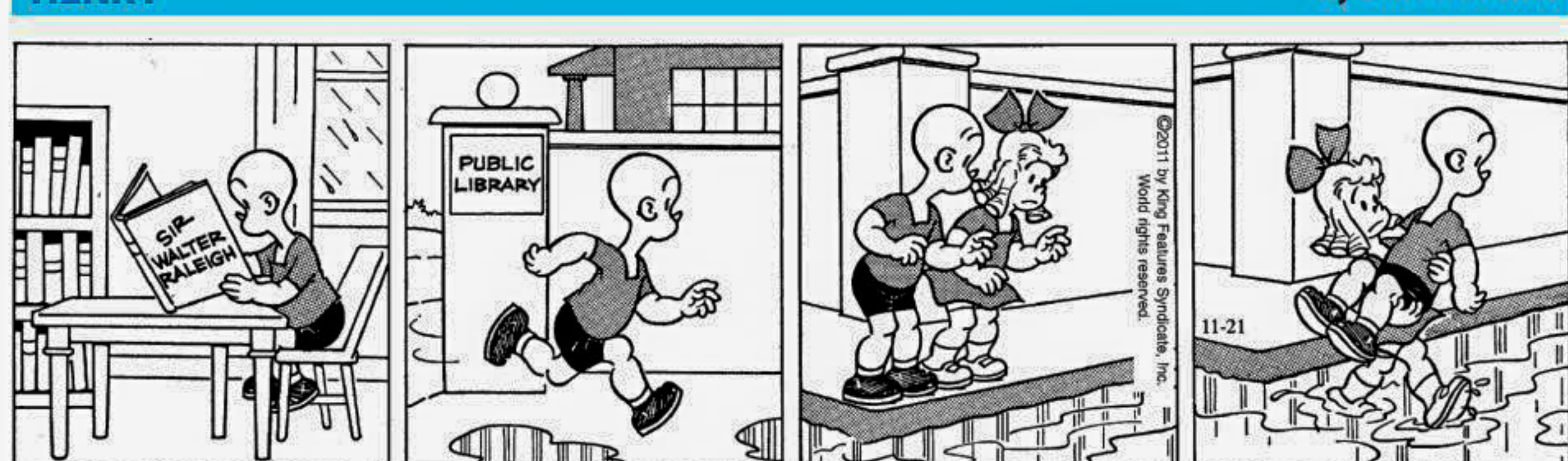
**Yesterday's Cryptoquip:**  
OLD TALE ABOUT A YOUNG BEAUTY WHO VISITS A SEPTET OF PIERS: "SNOW WHITE AND THE SEVEN WHARFS."

**Today's Cryptoquip Clue:** C equal E

## BEETLE BAILY



## HENRY



**QUOTABLE Quotes**

"He knows nothing and thinks he knows everything. That points clearly to a political career."

**George Bernard Shaw**